

ENVIRO-TEC

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REVISED MARCH 1991
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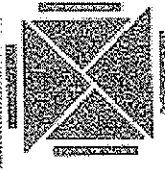
ELECTRONIC CONTROL
ELECTION GUIDE

ENVIRO-TEC

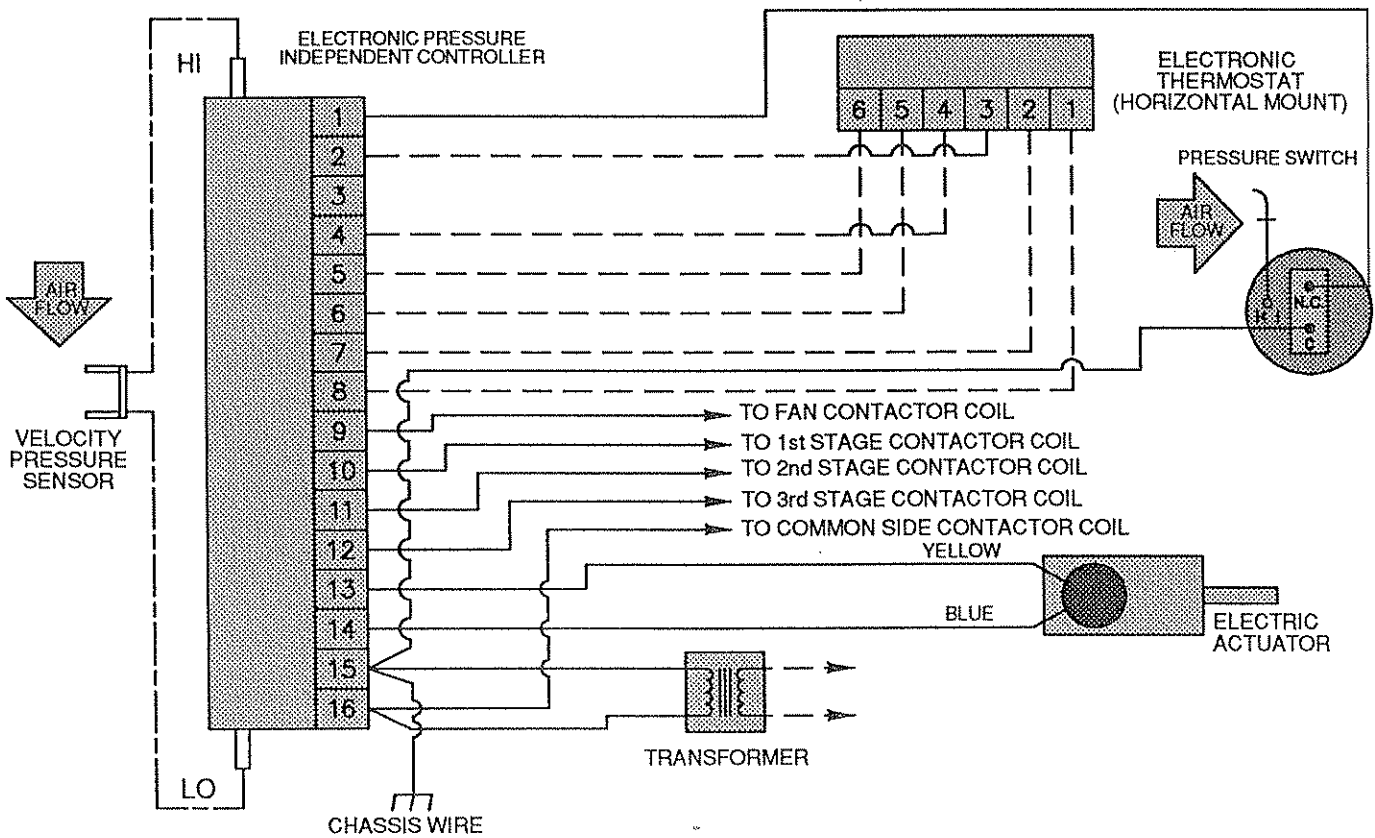
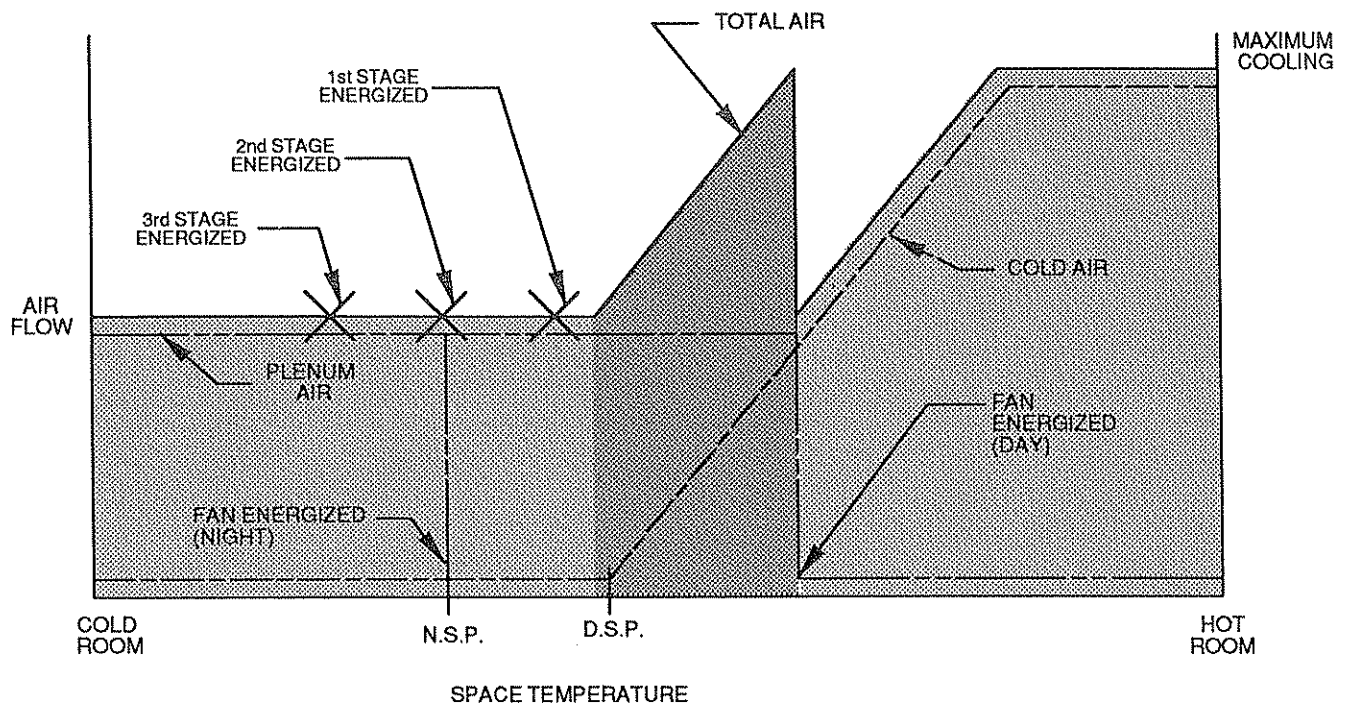
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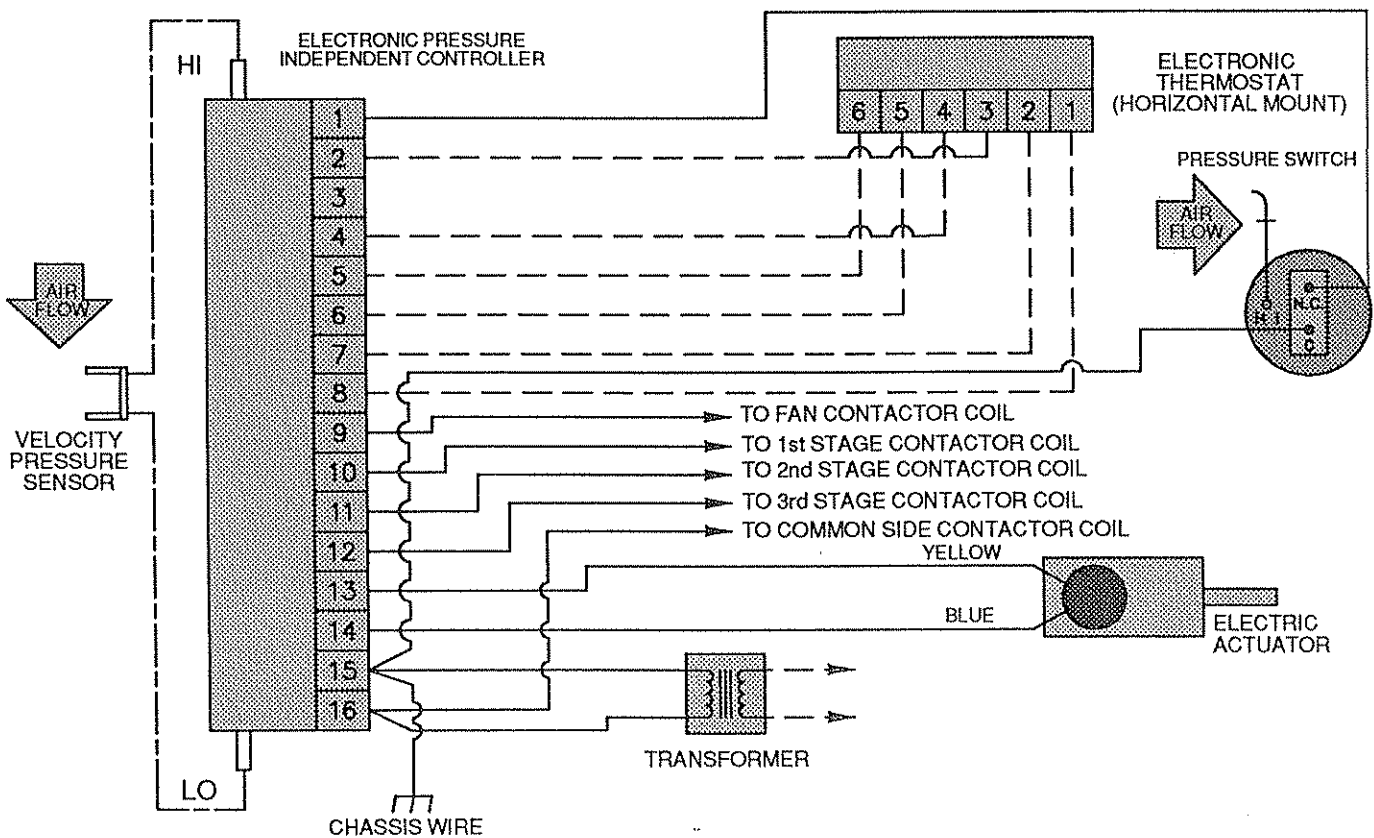
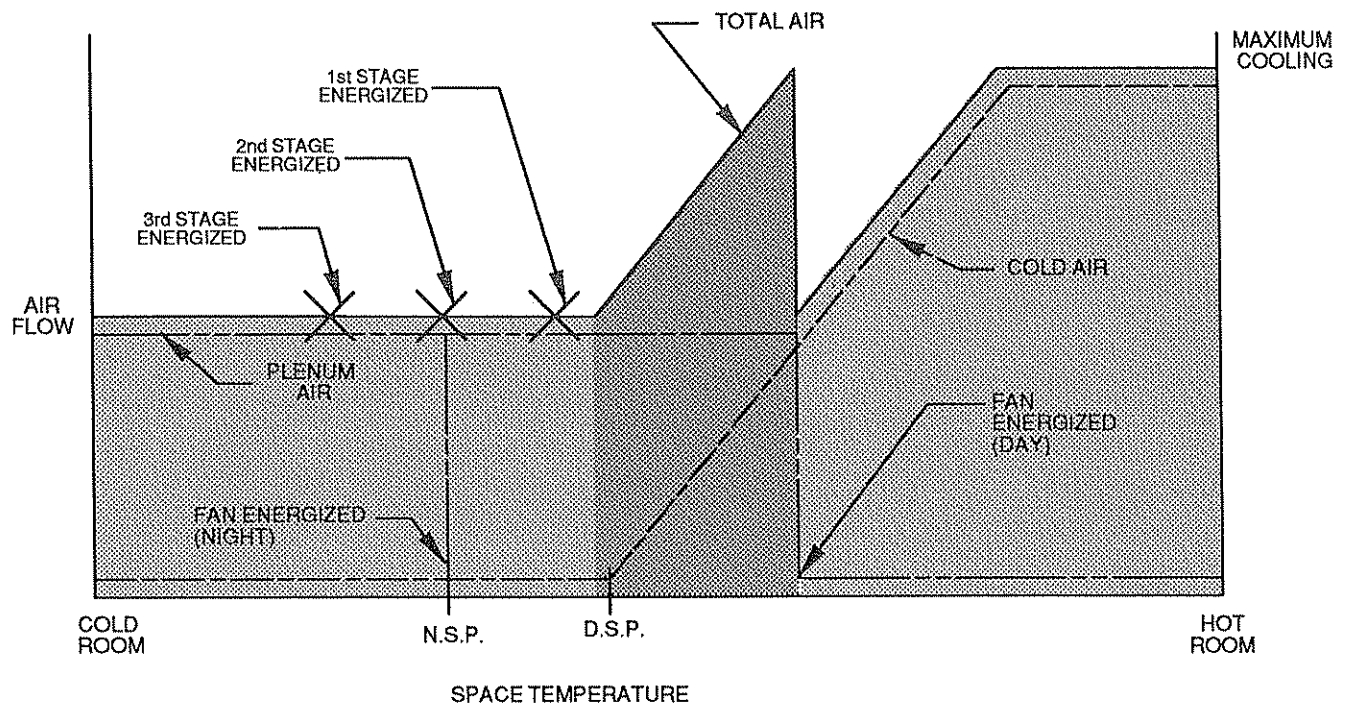
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ENVIRONMENTAL TECHNOLOGIES
A CORPORATION



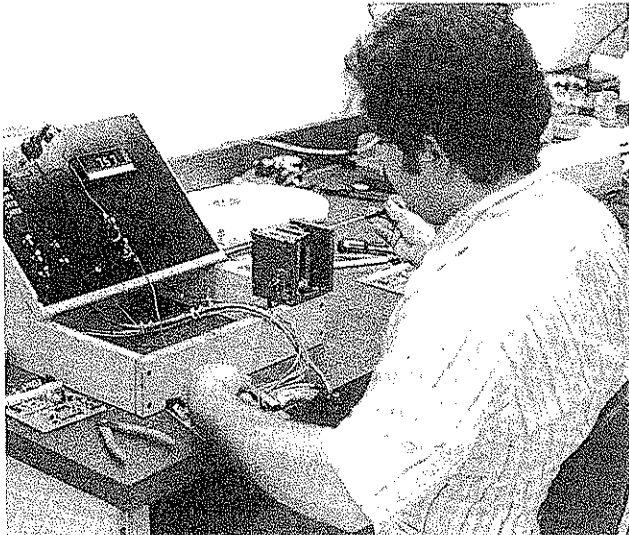


Technology

ENVIRONMENTAL TECHNOLOGIES INCORPORATED (ETI) is a highly specialized organization dedicated to the design, development and manufacturing of state of the art products for HVAC air distribution system control.

ETI, through its various product divisions, manufactures in house, over 95% of every *Air Terminal* shipped - from complex pneumatic and electronic control components to complete fan assemblies and electric heaters used in *Fan Powered Terminals*. Vertically integrated manufacturing is the main contributor to ETI's international reputation for quality products and its position as a leader in the field of *Air Terminal Control*.

Many HVAC system designers confidently specify **ENVIRO-TEC®** *Air Terminals* and control components knowing they carry the full technical support of a highly qualified group of specialists.



ETI's controls manufacturing division produces both pneumatic controls and highly sophisticated electronic controls specifically for HVAC systems. The controls division staff comprises a broad range of control knowledge and expertise to insure optimum support capability.

All controls are 100% quality control tested prior to being released for sub-assembly or final installation on an *Air Terminal*. The controls are checked again in that stage of assembly for operational integrity. Such attention to quality assurance results in less than one quarter of one percent field failure.

ETI's laboratory facilities are designed and equipped to simulate virtually all functions of the most complex HVAC application thus providing a highly sophisticated arena for the development of new control innovations.

ETI was the first *Air Terminal* manufacturer in the industry to design, develop and manufacture, in house, the most sophisticated line of *Air Terminal Controls* available, and with the most comprehensive warranty support in the industry.



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Control Series Descriptions

Temperature Responsive System (600 Series)

Air Valve Control

A signal developed in the electronic thermostat from a rapid response thermistor (electronic temperature sensing device) and a setpoint adjustment, indicates if the space is above, below or at setpoint. The temperature responsive controller receives this signal and, if not indicating setpoint, drives the electric air valve actuator open or closed, thereby increasing or decreasing supply air. The resulting change in space temperature is sensed by the thermistor thereby correcting the signal received by the controller, and maintaining space temperature. Airflow limits are set by mechanical stops at the air valve actuator.

Heat

If the thermostat signal indicates the space temperature has dropped two (2) degrees below setpoint, one stage of electric or hydronic heat is energized by the controller. Up to two additional stages of electric heat may also be energized, at three (3) and four (4) degree increments below setpoint.

Variable Volume Fan

Two mounting slots on the air valve actuator provide means to adjust a position switch for unit fan energization based on air volume (pressure dependent).

Night Setback

An airflow switch senses when the main air handlers have been shut down, initiating night setback. The controller causes the air valve actuator to close the valve. When space temperature falls to the value set on the night adjustment of the dual setpoint thermostat the fan is energized. Heat is then energized in increments as set for daytime operation, but using the night setpoint.

Morning Warmup

An electronic duct sensor signals the presence of warm supply air to the terminal. This inhibits heat and fan operation and drives the air valve actuator to open the valve. When the thermostat is satisfied, the controller drives the air valve actuator as necessary to maintain day setpoint.

Summer/Winter Changeover

With cool supply air, the system controls as described above around the summer setpoint of a dual setpoint thermostat. When the electronic duct sensor signals the presence of warm supply air to the terminal, heat and fan operation are inhibited, and the controller reverses the direction of control of the air valve actuator to maintain the thermostat's winter setpoint.

Pressure Independent System (700 Series)

Flow Sensing Method

An averaging differential pressure sensor located in the inlet collar of the VAV terminal is piped to a hot wire differential pressure transducer located within the electronic controller. A small orifice in the transducer creates a minute airflow which is proportional to the differential pressure. This flow passes over a hot thermistor causing its dissipation to increase thereby increasing its resistance. Since cooler air would also have the effect of increasing resistance, a second thermistor is incorporated for temperature compensation. The electronic circuitry causes a constant difference in resistance (temperature) between the two thermistors by increasing power to the hot thermistor as flow increases, and decreasing power to the hot thermistor as flow decreases. The power required to maintain this constant difference is the parameter used for flow control.

Air Valve Control

The electronic signal developed by the differential pressure transducer is compared to a signal developed from a rapid response thermistor within the electronic thermostat. Setpoint corresponds to the minimum flow limit set at the thermostat. The electronic controller modulates the air valve actuator from minimum flow to maximum flow (also set at the thermostat) to provide cooling as necessary to maintain space temperature. A calibration curve of DC Voltage versus CFM is provided so that flow limits may be set without actual airflow being present.

Heat

If the thermostat signal indicates the space temperature has dropped two (2) degrees below setpoint, one stage of electric or hydronic heat is energized by the controller. Up to two additional stages of electric heat may also be energized, at three (3) and four (4) degrees below setpoint. Single duct control sequences offer an optional

auxiliary heating minimum setpoint (set at the thermostat) to allow additional flow when heat is energized.

Intermittent Fan Operation

Terminal unit fan may be energized by the controller at a given CFM by setting an adjustment located at the thermostat according to the aforementioned Voltage versus CFM curve. Alternatively, this adjustment may be set so that the fan is energized at one degree below setpoint.

Night Setback

An airflow switch senses when the main air handlers have been shut down initiating night setback. The controller causes the air valve actuator to close the valve. When space temperature falls to the value set on the night adjustment of the dual setpoint thermostat, the fan is energized. Heat is energized in increments as set for daytime operation, but using the night setpoint.

Morning Warmup

An electronic duct sensor signals the presence of warm supply air to the terminal, which inhibits heat and fan operation, and drives the air valve open to the maximum airflow setpoint. When the thermostat is satisfied, the controller drives the air valve as necessary to maintain day setpoint. (If used in combination with night setback in fan-powered sequences, the air valve remains at maximum airflow setpoint).

Summer/Winter Changeover

With cool supply air, the system controls as described above around the summer setpoint of a dual setpoint thermostat. When the electronic duct sensor senses the presence of warm supply air to the terminal, heat and fan operation are inhibited, and the controller reverses the air valve actuator to maintain the thermostat's winter setpoint.

Electronic Control Components

Temperature Responsive Controller (600 Series)

Description

This device is an electronic printed circuit board assembly housed in a sheet metal enclosure. A computer generated label indicates controller type, inventory number, serial number, and ETI order number. Terminal number designations are screened on the printed circuit board.

Connections

Thermostat and sensor connections are fixed screw terminal type for rapid installation and servicing. Field connections are made by stripping wire approximately 1/4 inch, inserting wire in connector, and tightening screw firmly. 24VAC input and control output connections are 0.25" quick disconnect type. All wiring, except input power, thermostat, and hot water valve, is provided by the factory.

Calibration

Models incorporating a duct sensor input are equipped with an adjustment for supply air temperature at which control will switch from heating to cooling and vice-versa. Scale on printed circuit board indicates temperature.

Mounting

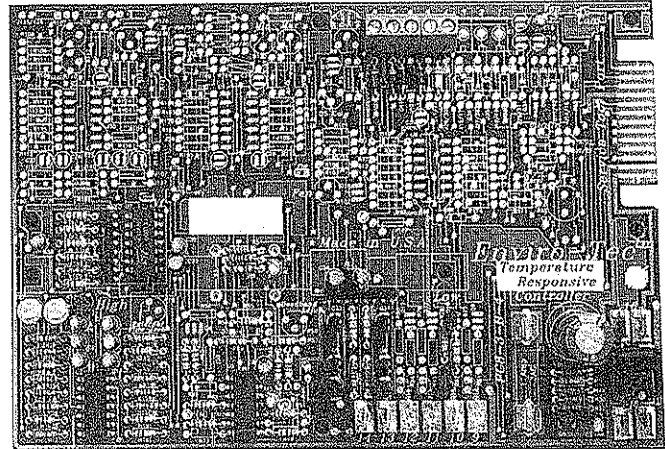
Attaches to mounting plate with plastic standoffs. May be mounted in any position. Controllers are factory mounted, except on some retrofit applications.

Maintenance

Input power must be maintained within specified limits. No other maintenance is necessary.

Specifications

Supply Voltage: 24 VAC - 10%, + 15%, 50/60Hz
 Power Consumption: 2 VA
 AC Control Outputs: 24 VAC, 10 VA Max each,
 3 Optional (Heat),
 1 Optional (Fan)



DC Control Outputs: Standard 12 VDC, current limited (actuator)

Thermostat Outputs: + 18 VDC (short circuit protected)
 DC Common
 Setpoint Select (optional)

Thermostat Input: V Setpoint

Sensor Inputs: Damper Position Switch (optional),
 Duct Sensor (optional),
 Airflow Switch (optional)

Heat: First stage energized at 2 degrees below setpoint; others at one degree increments below first stage

Connectors: Screw Type, Terminal Block, (Thermostat and Sensor)
 0.25" quick disconnect (24 VAC input and control outputs)

Ambient Storage Temperature: -35 to 150 °F, 0 to 95% rH, non-condensing

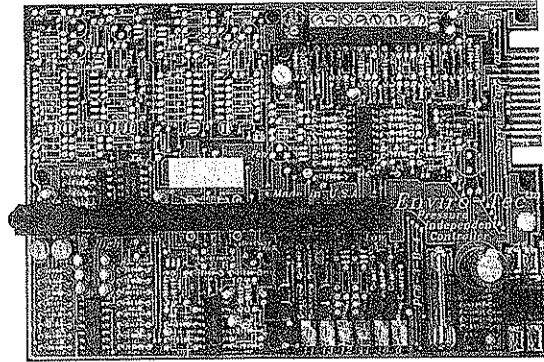
Ambient Operating Temperature: 0 to 120 °F, 10 to 95% rH, non-condensing

Size: 4.96" W x 7.25" L

Pressure Independent Controller (700 Series)

Description

This device is an electronic printed circuit board assembly housed in a sheet metal enclosure. A hot-wire differential pressure transducer is mounted on the printed circuit board. A computer generated label indicates controller type, inventory number, serial number, and ETI order number. High and low ports, along with terminal number designations are screened on the printed circuit board.



Connections

Thermostat and sensor connections are fixed screw terminal type for rapid installation and servicing. Field connections are made by stripping wire approximately 1/4 inch, inserting wire in connector, and tightening screw firmly. 24 VAC input and control output connections are 0.25" quick disconnect type. All wiring, except input power, thermostat, and hot water valve, is provided by the factory.

The ports of the pressure transducer are located on the printed circuit board. Flexible tubing provides airtight, kink-free connection to transitions through the wall of the sheet metal enclosure. 1/4 inch I.D. flame retardant tubing is used for piping external to the sheet metal enclosure. Piping is provided at the factory except in retrofit applications.

Calibration

The pressure transducer is pre-calibrated at the factory. It should never need recalibration and cannot be calibrated in the field. Controllers incorporating a duct sensor input are equipped with an adjustment for supply air temperature at which control will switch from heating to cooling and vice-versa. Scale on printed circuit board indicates temperature.

Mounting

Attaches to mounting plate with plastic standoffs. May be mounted in any position. Controllers are factory mounted, except in some retrofit applications.

Maintenance

Input power must be maintained within specified limits. No other maintenance is necessary.

Specifications

Supply Voltage: 24 VAC - 10%, + 15%, 50/60Hz
 Power Consumption: 2 VA

Flow Sensing Method:	Averaging Differential Pressure Sensor and Hot Wire Differential Pressure Transducer
Range:	0.02 - 1.0 inches w.g.
Thermostat Outputs:	+ 18 VDC (short circuit protected) DC Common Setpoint Select (optional) Heat Min Select (optional)
Thermostat Inputs:	V Flow Setpoint V Heat Setpoint (optional) V Heat Min (optional) V Fan Start/Stop (optional)
AC Control Outputs:	24 VAC, 10 VA Max each 3 Optional (Heat) 1 Optional (Fan)
DC Control Outputs:	Standard 12 VDC, current limited (actuator) Optional 4-20 mA or 0-10 VDC (proportional hot water or electric heat)
Sensor Inputs:	Differential Pressure Transducer (tubing) Duct Sensor (optional) Airflow Switch (optional)
Heat:	First stage energized at 2 degrees below setpoint; others at one degree increments below first stage
Connectors:	Screw-type terminal block (thermostat and sensor) 0.25" quick disconnect type (24 VAC control output)
Ambient Storage Temperature:	-35 to 150 °F, 0 to 95% rH, non-condensing
Ambient Operating Temperature:	0 to 120 °F, 10 to 95% rH, non-condensing
Size:	4.96" W x 7.25" L

Temperature Responsive Thermostat (600 Series)

Description

This device consists of an electronic printed circuit board assembly housed in a two piece (base and cover) enclosure. It incorporates a temperature measuring device and one or two temperature setpoints. The standard device uses hidden temperature setpoints, but an exposed setpoint version is available as an option. A locking cover (pictured) is also available as an option.

Connections

Connectors are captive-screw terminal blocks. Required wire is 18 to 20 AWG, stranded copper.

Calibration

This device is pre-calibrated at the factory to a controller with matching serial number. For greatest setpoint accuracy, it is desirable, but not essential, for these components to be installed as a pair. Thermostat should never need recalibration and cannot be effectively calibrated in the field.

Mounting

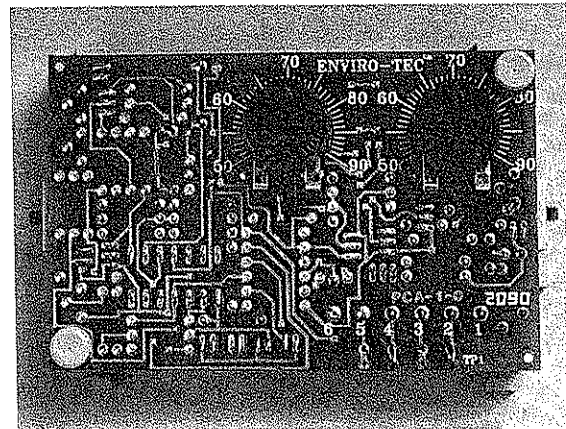
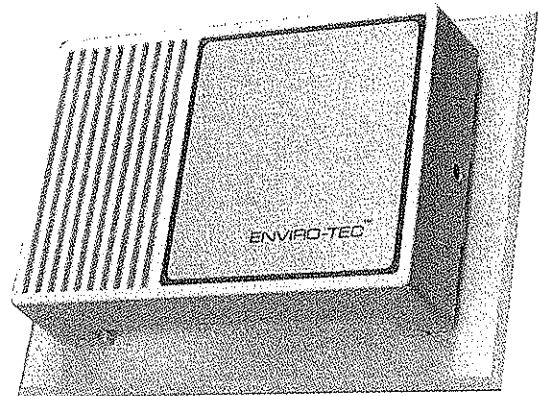
Standard horizontal mounting uses wall anchors and screws (provided) to mount directly to dry wall. An electrical junction box may be horizontally mounted behind the dry wall, but it is not necessary unless required by code. Thermostat signals are all low voltage, low current and short circuit protected DC. If code requires direct junction box mounting, hardware is provided for installation to a horizontally mounted, single gang electrical junction box.

Maintenance

No routine maintenance is required.

Specifications

Temperature Sensor:	Rapid response, glass encapsulated, hermetically sealed thermistor
Temperature Setpoints:	One standard, second optional for summer/winter or night setback sequences
Setpoint Range:	50 - 90 °F

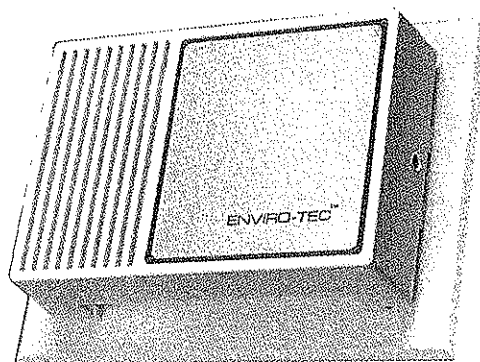


Setpoint Scale:	55 - 85 °F, 1 Deg increments
Supply Voltage:	18 VDC (supplied by controller; short circuit protected)
Output:	V Setpoint
Input:	Setpoint Select (optional)
Connectors:	Screw Type Terminal Block
Ambient Storage Temperature:	-35 to 150 °F, 0 to 95% rH, non-condensing
Ambient Operating Temperature:	0 to 120 °F, 10 to 95% rH, non-condensing
Size:	Base: 4.5" W x 3.35" H Cover: 3.6" W x 2.5" H 1.05" deep

Pressure Independent Thermostat (700 Series)

Description

This device consists of an electronic printed circuit board assembly housed on a two-piece (base and cover) enclosure. It incorporates a temperature measuring device, one or two temperature setpoints, and two or three balancing adjustments. The standard device uses hidden temperature setpoints, but an exposed setpoint version is available as an option. A locking cover (pictured) is also available as an option.

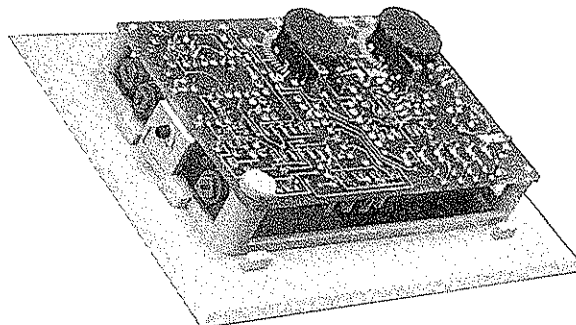


Connections

Connectors are captive-screw terminal blocks. Required wire is 18 to 20 AWG, stranded copper.

Calibration

Adjustment of airflow limits is accomplished using Series 700 Airflow Calibration Curves with a digital voltmeter, or optionally, a flow hood. Specific instructions are provided in the Operation and Balancing Manual for Series 700 Analog Electronic Controls.



Mounting

Standard horizontal mounting uses wall anchors and screws (provided) to mount directly to dry wall. An electrical junction box may be horizontally mounted behind the dry wall, but is not necessary unless required by code. Thermostat signals are all low voltage, low current, short circuit protected DC. If code requires direct junction box mounting, hardware is provided for installation to a horizontally mounted, single gang electrical junction box.

Maintenance

No routine maintenance is required.

Specifications

Temperature Sensor:	Rapid response, glass encapsulated, hermetically sealed thermistor
Temperature Setpoints:	One standard, second optional for summer/winter or night setback sequences
Setpoint range:	50 - 90 °F
Scale:	55 - 85 °F, 1 Deg increments

Supply Voltage:	18 VDC (supplied by controller; short circuit protected)
Outputs:	V Flow Setpoint V Heat Setpoint (optional) V Heat Min (optional) V Fan Start/Stop (optional)
Inputs:	Setpoint Select (optional) Heat Min Select (optional)
Adjustments:	Minimum Flow Maximum Flow Fan Start/Stop (optional) Heating Minimum Flow (optional)
Connectors:	Screw Type Terminal Block
Ambient Storage Temperature:	-35 to 150 °F, 0 to 95% rH, non-condensing
Ambient Operating Temperature:	0 to 120 °F, 10 to 95% rH, non-condensing
Size:	Base: 4.5" W x 3.35" H, Cover: 3.6" W x 2.5" H, 1.05" deep

Air Valve Actuator

Description

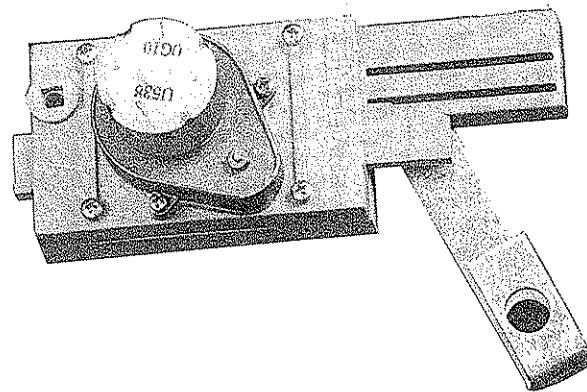
The electric air valve actuator is a rack and pinion type linear motion device, providing position control of the air valve. It contains provision for mounting a damper position switch. Mechanical power is obtained from a DC motor. A steel tooth rack is provided for exceptional low wear characteristics.

When used with ETI 600 and 700 Series controls, circuitry is provided at the controller to remove power under stall conditions. When used with other controls, this circuitry is incorporated into a small printed circuit board assembly mounted on top of the motor.

Calibration

No calibration of this device is necessary when used with Pressure Independent Systems (Series 700). When used with Temperature Responsive Systems (Series 600), either a maximum or minimum mechanical air valve position stop may be set. If both limits are required, an optional pressure switch can be provided to limit maximum flow.

Minimum air valve position is set mechanically (600 Series only) by loosening the air valve shaft coupler bolt, running the actuator rack full out, moving the air valve to the desired position, and tightening the damper shaft coupler bolt. Unless a pressure switch is provided, maximum position will be full open.



Maximum air valve position is set mechanically (600 Series only) by loosening the air valve shaft coupler bolt, running the actuator rack in full, moving the air valve to the desired position, and tightening the damper shaft coupler bolt. Using this procedure minimum position will be full closed.

Connections

Motor connections are factory wired to terminals on the controller using quick disconnect type terminals.

Mounting

This device is attached to a sheet metal mounting plate using a carriage bolt and bushing. A tinnerman clip attaches a crank arm to the actuator rack. The other end of the crank arm slips over the air valve shaft and is fastened by a bolt. The actuator is factory mounted and wired except in some retrofit applications.

Optional Position Switch For Actuator

Description

This device is mounted on the air valve actuator with some Temperature Responsive Systems only. It is used on variable volume fan sequences to energize the fan by air valve position.

Mounting

This device is mounted using two screws which extend into two slots in the air valve actuator body. Two captive nuts hold the switch in position. A ridge on the actuator rack depresses the switch button, causing it to make continuity.

Calibration

Adjustment of this device is accomplished by loosening the two mounting screws, sliding the switch to the appropriate position and tightening the mounting screws.

Maintenance

No routine maintenance is required on this device.

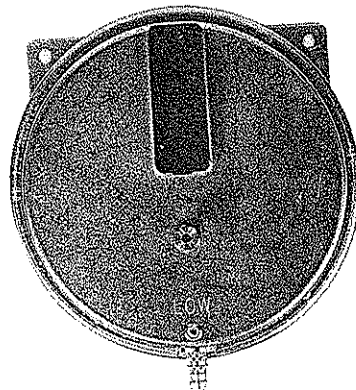
Specifications

Maximum Ratings: 4 Amp, 125 VAC

Air Pressure Switch

Description

This device is used in conjunction with a total pressure sensor located in the primary air inlet of fan terminals. When primary air is shut down, the air pressure switch makes, thus closing a circuit to the electronic controller. This indicates the desire for night time operation and the controller goes into the night setback mode.



Connections

Two barbed fittings are provided for standard 3/8" O.D. flexible tubing to sample total and/or static pressure signals.

Calibration

The control setpoint comes either fixed or adjustable depending on the sequence of operation. If the adjustable model is used, the control setpoint comes factory set at the low end (≈ 0.05 " w.g.). For the majority of applications this device will not require field calibration.

Mounting

This device is secured to terminal by two sheet metal screws through mounting holes located on a bracket. It should be mounted in the vertical plane so the internal diaphragm is not working against gravity.

Maintenance

No routine maintenance is required.

Specifications

Voltage:	278 VA pilot duty @ 24 VAC 300 VA pilot duty @ 120 to 277 VAC
Electrical Switch:	Single pole, normally closed, snap acting contacts
Electrical Connection:	1/4" male quick-connect terminals
Operating Pressure:	Fixed - 0.05" w.g. (± 0.02 " w.g.) Adjustable - 0.05" w.g. (± 0.02 " w.g.) to 12.0" w.g.
Maximum Pressure:	1/2 PSI
Operating Temperature Range:	-40 to 190 °F

Transformer

Function

This device provides the control voltage (24 VAC) to the controller, actuator, and contactors from a high voltage source in the building.

Description

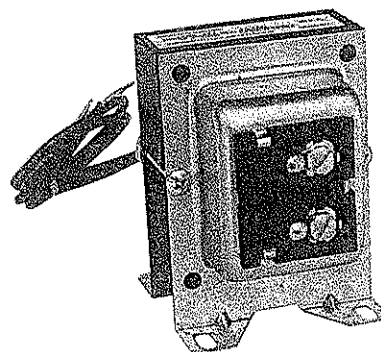
This device is an UL rated component. Where applicable, it is incorporated in the electric heater or fan power circuitry.

Connections

All primary voltages are connected via wires. Secondary voltages may be connected via wires or screw terminals.

Mounting

This device is factory mounted using sheet metal screws.



Maintenance

No routine maintenance is required on this device.

Specifications

Secondary Voltage:	24 VAC, $\pm 15\%$, 50/60 Hz
Primary Voltages Available:	120, 208, 240, 277, 480 VAC All Single Phase

Duct Sensor

Description

This device incorporates a rapid response, glass encapsulated, hermetically sealed thermistor and linearization network encapsulated in flame retardant tubing. An aluminum tube and flange support the device's cable and allow mounting to ductwork.

Calibration

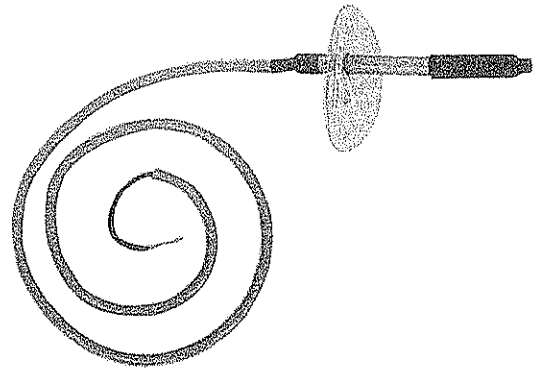
This device is pre-calibrated at the factory to a specific controller bearing a matching serial number. It should never need recalibration and cannot be effectively calibrated in the field.

Mounting

This device is factory mounted to the air valve inlet using two sheet metal screws except in retrofit applications.

Maintenance

No routine maintenance is required on this device.



Specifications

Resistance:	20.8K ohm, +/- 10% at 77 °F
Ambient Storage Temperature:	-35 to 150 °F, 0 to 95% rH, non-condensing
Ambient Operating Temperature:	0 to 120 °F, 10 to 95% rH, non-condensing

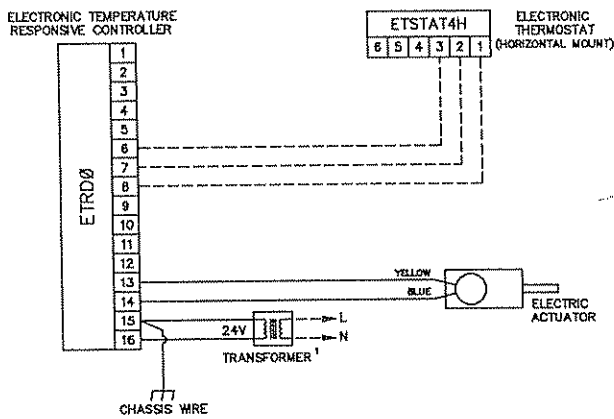
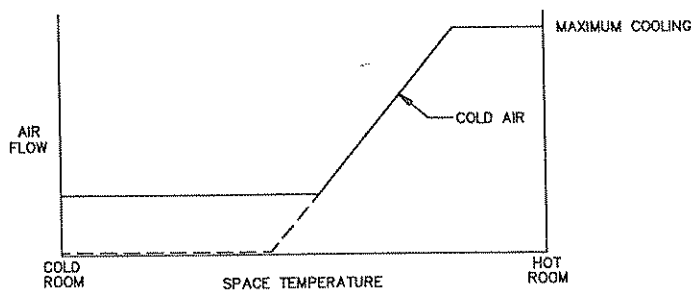
Single Duct (SSD-II) Control Sequences

Page No.	Control Sequence	Class							Sequence of Operation			Number of Heat Stages			Control Sequence	Page No.
		TEMPERATURE RESPONSIVE	PRESSURE INDEPENDENT	VARIABLE AIR VOLUME ONLY	VAV W/ WARM UP	SUM/WIN CHANGEOVER	DUAL MINIMUM CFM'S	WARM UP & DUAL MIN CFM'S	CONSTANT VOLUME	NONE	ONE STAGE	TWO STAGES	THREE STAGES			
15	SD601A	☒		☒					☒					SD601A	15	
15	SD603A	☒		☒						☒				SD603A	15	
15	SD605A	☒		☒							☒			SD605A	15	
15	SD607A	☒		☒								☒		SD607A	15	
16	SD609A	☒			☒				☒					SD609A	16	
16	SD611A	☒			☒					☒				SD611A	16	
16	SD613A	☒			☒						☒			SD613A	16	
16	SD615A	☒			☒							☒		SD615A	16	
17	SD617A	☒				☒			☒					SD617A	17	
17	SD619A	☒				☒				☒				SD619A	17	
17	SD621A	☒				☒					☒			SD621A	17	
17	SD623A	☒				☒						☒		SD623A	17	
18	SD701A		☒	☒					☒					SD701A	18	
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22	SD724A		☒						☒		☒			SD724A	22	
23	SD725A		☒						☒			☒		SD725A	23	
23	SD726A		☒						☒			☒		SD726A	23	

Temperature Responsive Control Sequences

SD601A

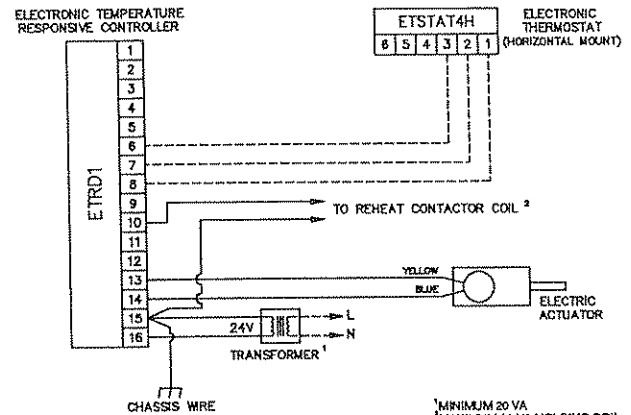
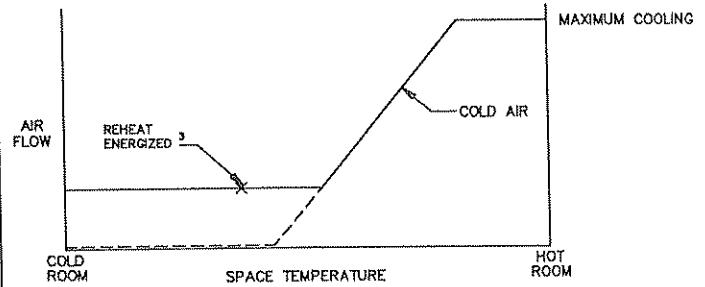
This control sequence provides single duct variable air volume cooling. As space temperature drops, airflow is reset from maximum to minimum setpoint. Maximum or minimum air volume limit is field set by mechanical stops.



¹MINIMUM 10 VA

SD603A

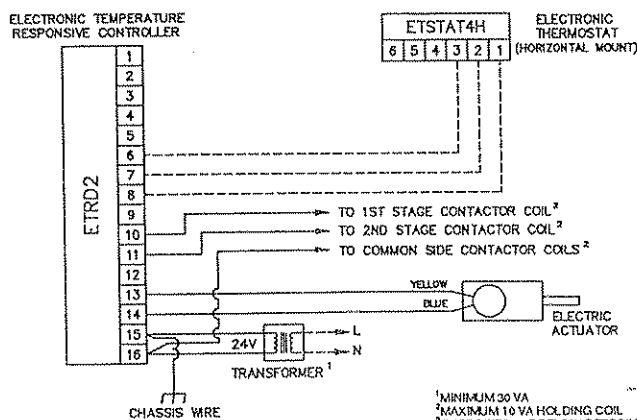
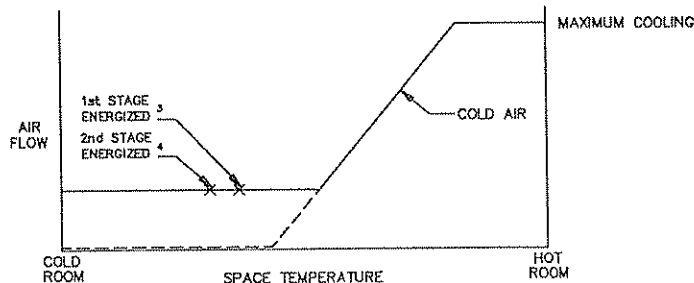
This control sequence provides single duct variable air volume cooling with one stage of electric or hot water reheat. As space temperature drops, airflow is reset from maximum to minimum setpoint. As space temperature continues to drop, reheat is energized to satisfy the load. Maximum or minimum air volume limit is field set by mechanical stops.



¹MINIMUM 20 VA
²MAXIMUM 10 VA HOLDING COIL
³ENERGIZED 2° F BELOW SETPOINT

SD605A

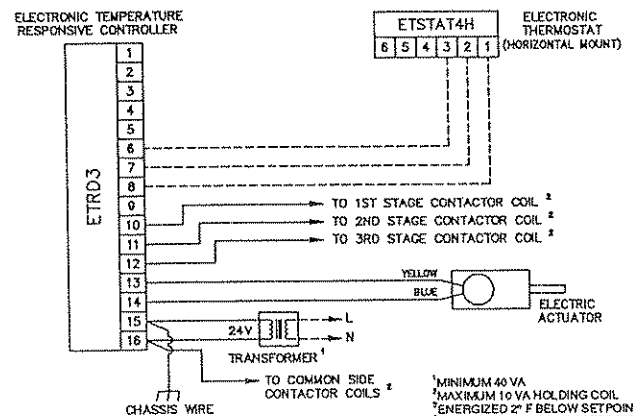
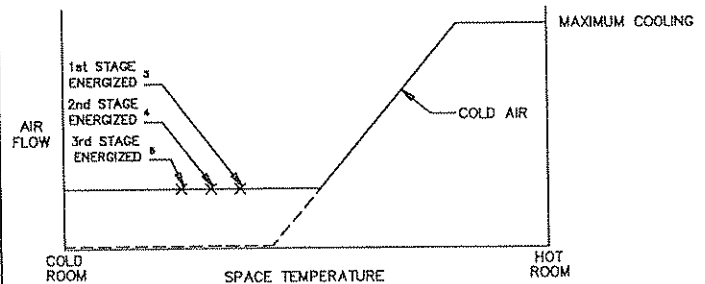
This control sequence provides single duct variable air volume cooling with two stages of electric reheat. As space temperature drops, airflow is reset from maximum to minimum setpoint. As space temperature continues to drop, reheat is energized in stages to satisfy the load. Maximum or minimum air volume limit is field set by mechanical stops.



¹MINIMUM 30 VA
²MAXIMUM 10 VA HOLDING COIL
³ENERGIZED 2° F BELOW SETPOINT
⁴ENERGIZED 3° F BELOW SETPOINT

SD607A

This control sequence provides single duct variable air volume cooling with three stages of electric reheat. As space temperature drops, airflow is reset from maximum to minimum setpoint. As space temperature continues to drop, reheat is energized in stages to satisfy the load. Maximum or minimum air volume limit is field set by mechanical stops.

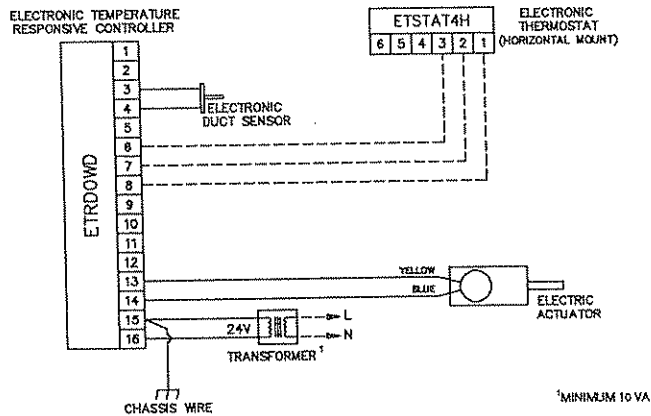
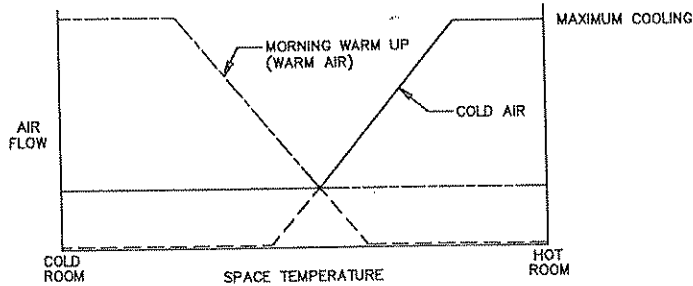


¹MINIMUM 40 VA
²MAXIMUM 10 VA HOLDING COIL
³ENERGIZED 2° F BELOW SETPOINT
⁴ENERGIZED 3° F BELOW SETPOINT
⁵ENERGIZED 4° F BELOW SETPOINT

----- Field Wiring ——— Factory Wiring

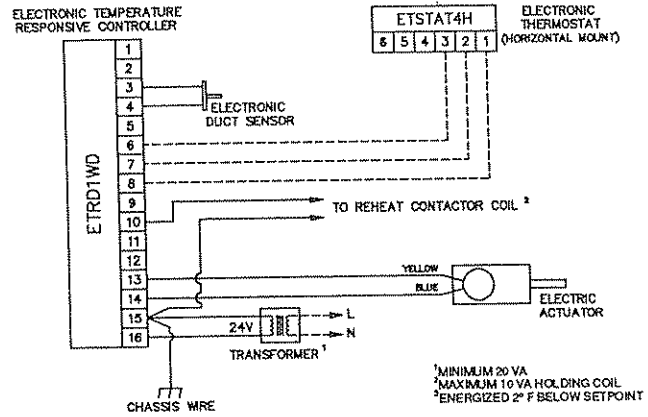
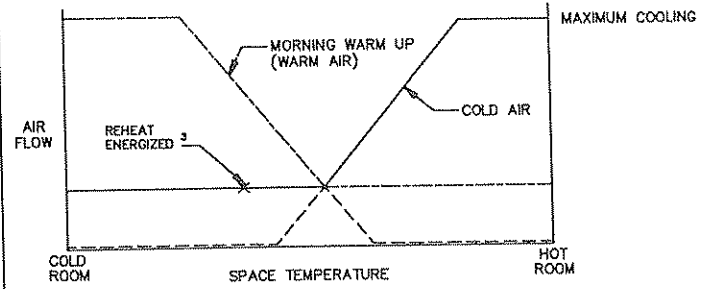
SD609A

This control sequence provides single duct variable air volume cooling with morning warm up. As space temperature drops, airflow is reset from maximum to minimum setpoint. Warm air is sensed by an electronic duct sensor causing the sequence to reverse for morning warm up. Maximum or minimum air volume limit is field set by mechanical stops.



SD611A

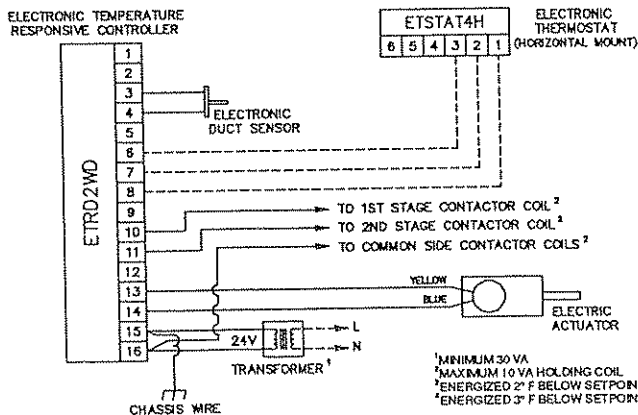
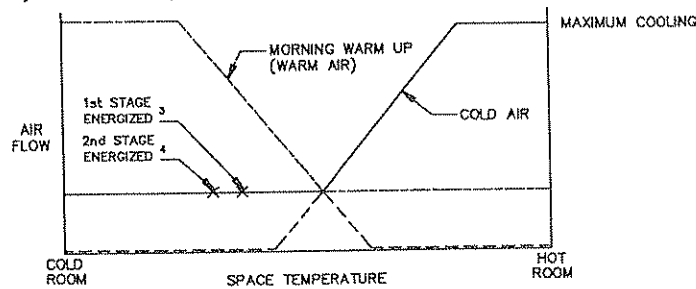
This control sequence provides single duct variable air volume cooling with one stage of electric or hot water reheat and morning warm up. As space temperature drops, airflow is reset from maximum to minimum setpoint. As space temperature continues to drop, reheat is energized to satisfy the load. Warm air is sensed by an electronic duct sensor causing the sequence to reverse for morning warm up (reheat is disabled). Maximum or minimum air volume limit is field set by mechanical stops.



¹MINIMUM 20 VA
²MAXIMUM 10 VA HOLDING COIL
³ENERGIZED 2° F BELOW SETPOINT

SD613A

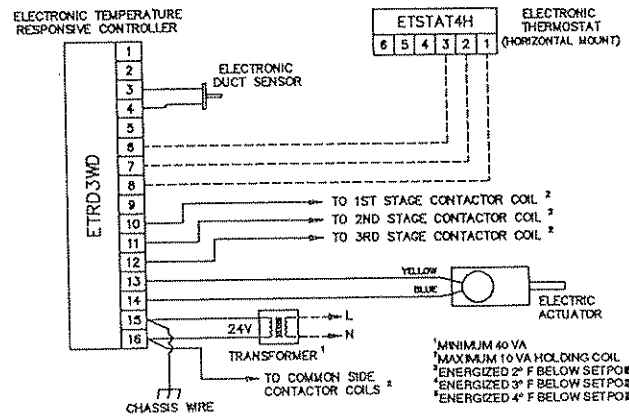
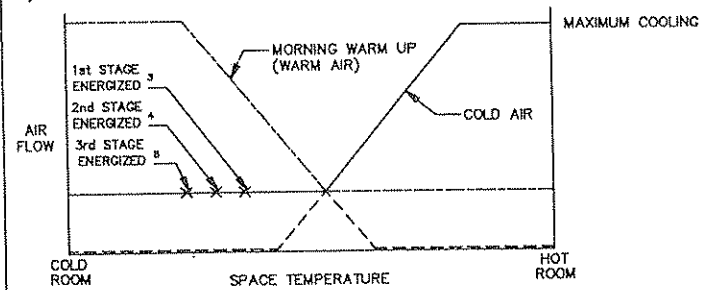
This control sequence provides single duct variable air volume cooling with two stages of electric reheat and morning warm up. As space temperature drops, airflow is reset from maximum to minimum setpoint. As space temperature continues to drop, reheat is energized in stages to satisfy the load. Warm air is sensed by an electronic duct sensor causing the sequence to reverse for morning warm up (reheat is disabled). Maximum or minimum air volume limit is field set by mechanical stops.



¹MINIMUM 30 VA
²MAXIMUM 10 VA HOLDING COIL
³ENERGIZED 2° F BELOW SETPOINT
⁴ENERGIZED 3° F BELOW SETPOINT

SD615A

This control sequence provides single duct variable air volume cooling with three stages of electric reheat and morning warm up. As space temperature drops, airflow is reset from maximum to minimum setpoint. As space temperature continues to drop, reheat is energized in stages to satisfy the load. Warm air is sensed by an electronic duct sensor causing the sequence to reverse for morning warm up (reheat is disabled). Maximum or minimum air volume limit is field set by mechanical stops.

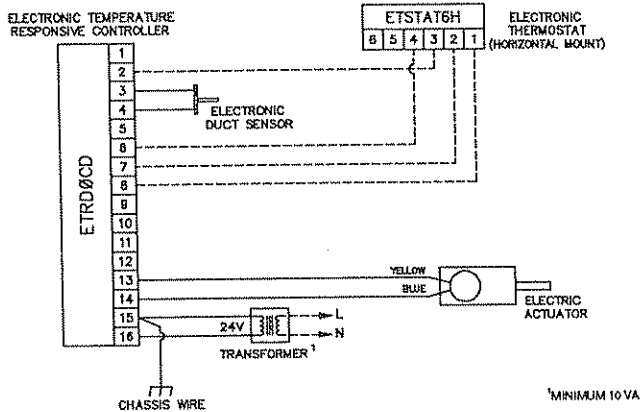
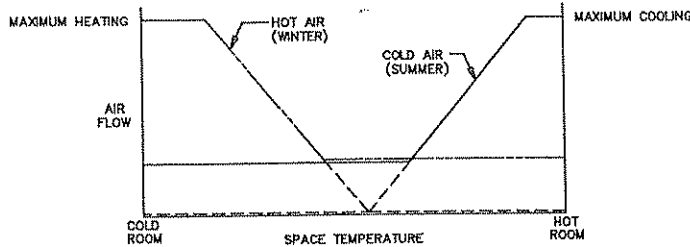


¹MINIMUM 40 VA
²MAXIMUM 10 VA HOLDING COIL
³ENERGIZED 2° F BELOW SETPOINT
⁴ENERGIZED 3° F BELOW SETPOINT
⁵ENERGIZED 4° F BELOW SETPOINT

----- Field Wiring ——— Factory Wiring

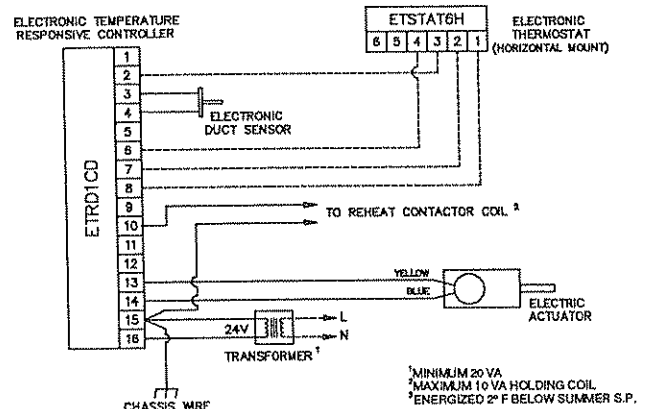
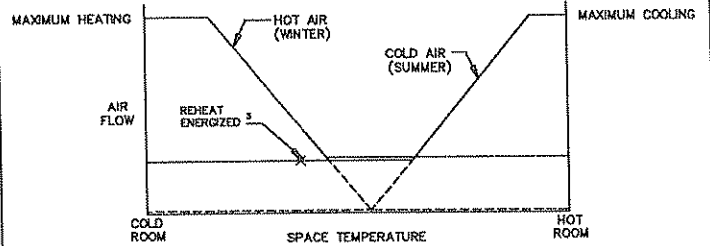
SD617A

This control sequence provides single duct variable air volume cooling with summer/winter changeover. As space temperature drops during summer operation, airflow is reset from maximum to minimum setpoint. In the winter mode, warm air is sensed by an electronic duct sensor causing the sequence to reverse. Maximum or minimum air volume limit is field set by mechanical stops.



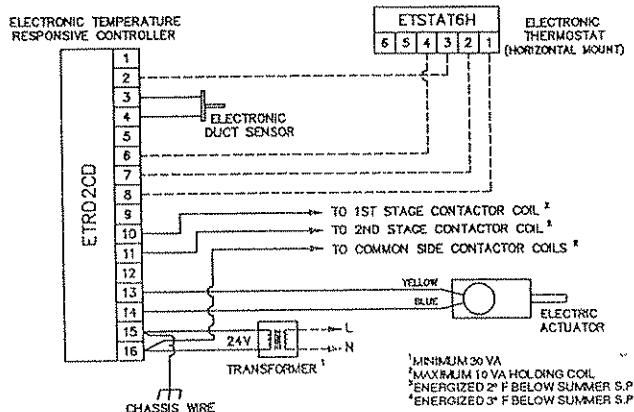
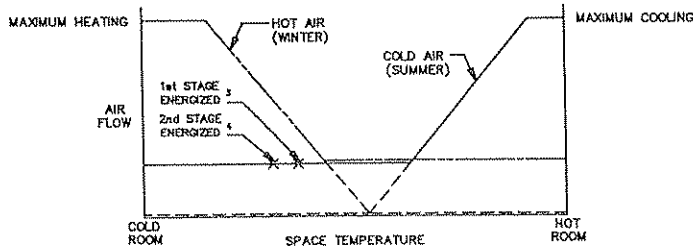
SD619A

This control sequence provides single duct variable air volume cooling with one stage of electric or hot water reheat and summer/winter changeover. As space temperature drops during summer operation, airflow is reset from maximum to minimum setpoint. As space temperature continues to drop, reheat is energized to satisfy the load. In the winter mode, warm air is sensed by an electronic duct sensor causing the sequence to reverse (reheat is disabled). Maximum or minimum air volume limit is field set by mechanical stops.



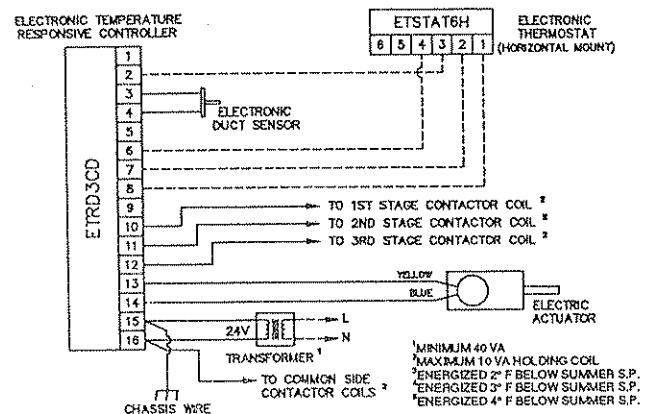
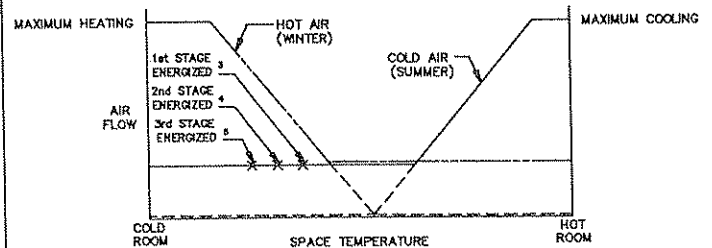
SD621A

This control sequence provides single duct variable air volume cooling with two stages of electric reheat and summer/winter changeover. As space temperature drops during summer operation, airflow is reset from maximum to minimum setpoint. As space temperature continues to drop, reheat is energized in stages to satisfy the load. In the winter mode, warm air is sensed by an electronic duct sensor causing the sequence to reverse (reheat is disabled). Maximum or minimum air volume limit is field set by mechanical stops.



SD623A

This control sequence provides single duct variable air volume cooling with three stages of electric reheat and summer/winter changeover. As space temperature drops during summer operation, airflow is reset from maximum to minimum setpoint. As space temperature continues to drop, reheat is energized in stages to satisfy the load. In the winter mode, warm air is sensed by an electronic duct sensor causing the sequence to reverse (reheat is disabled). Maximum or minimum air volume limit is field set by mechanical stops.

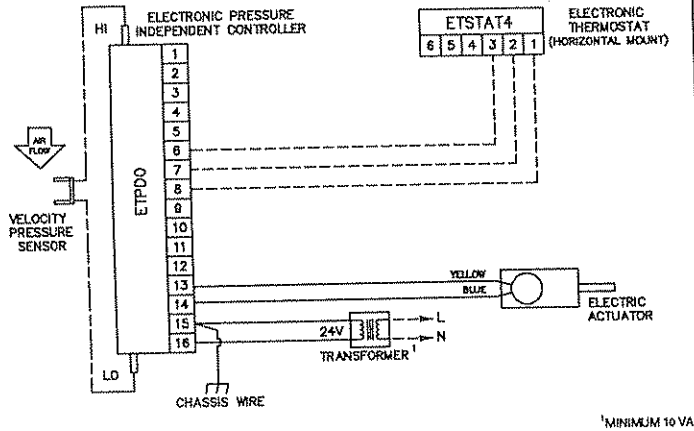
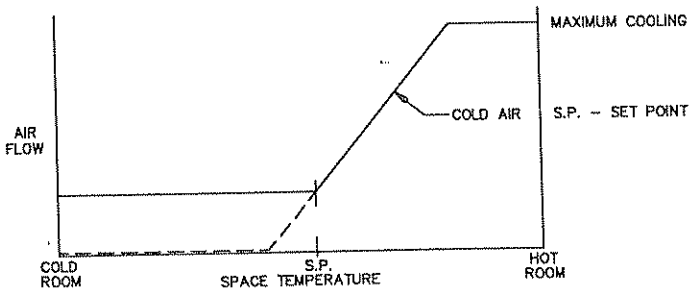


----- Field Wiring ——— Factory Wiring

Pressure Independent Control Sequences

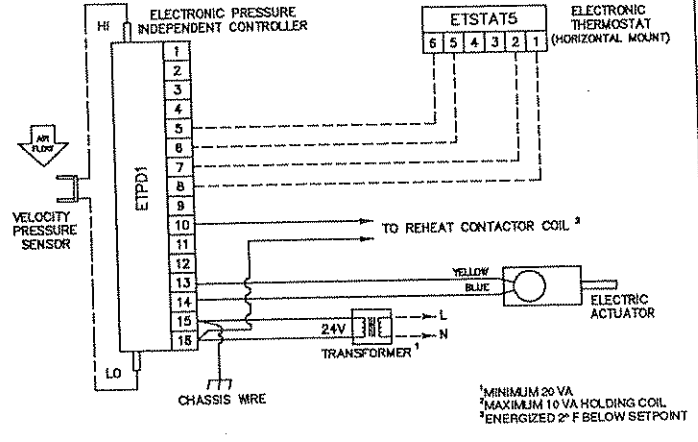
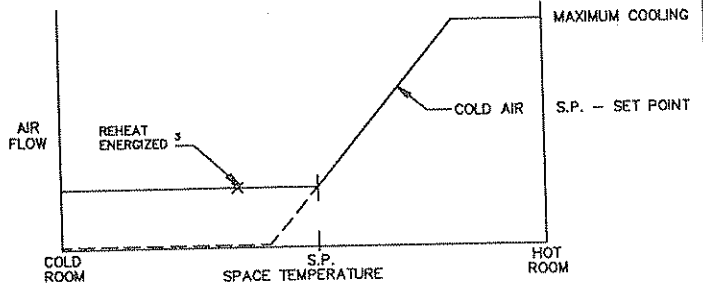
SD701A

This control sequence provides single duct variable air volume cooling. As space temperature drops, airflow is reset from maximum to minimum setpoint. Air volume limits are located at the thermostat.



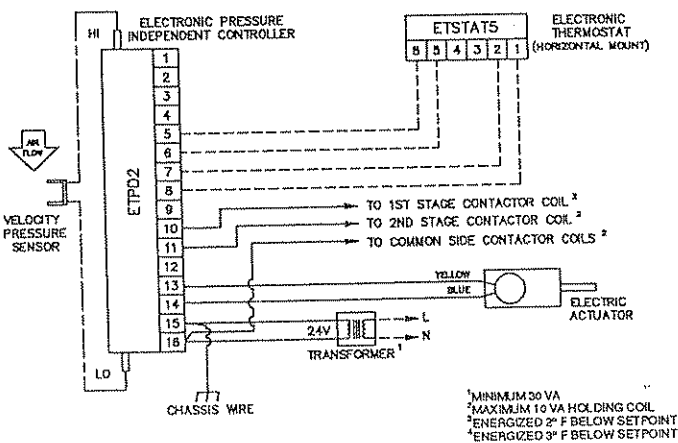
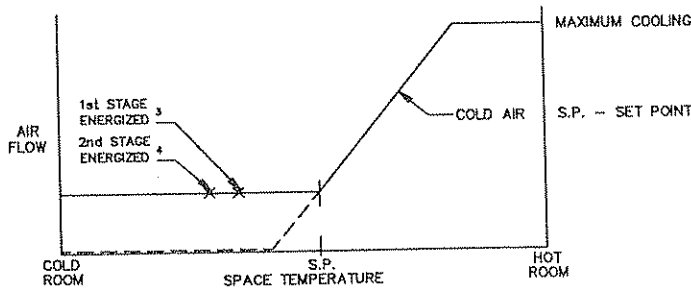
SD702A

This control sequence provides single duct variable air volume cooling with one stage of electric or hot water reheat. As space temperature drops, airflow is reset from maximum to minimum setpoint. As space temperature continues to drop, reheat is energized to satisfy the load. Air volume limits are located at the thermostat.



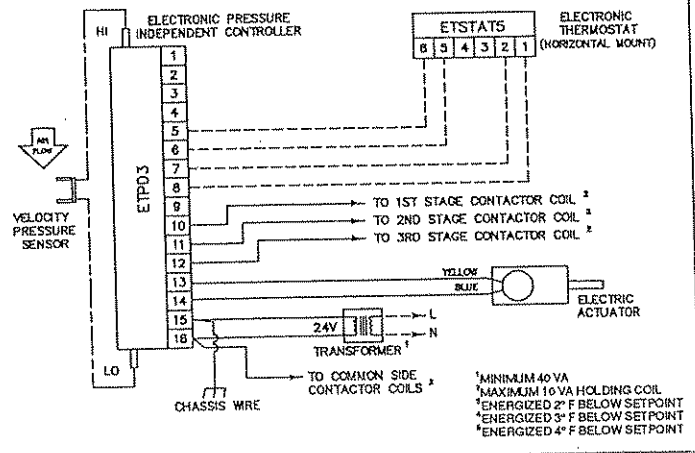
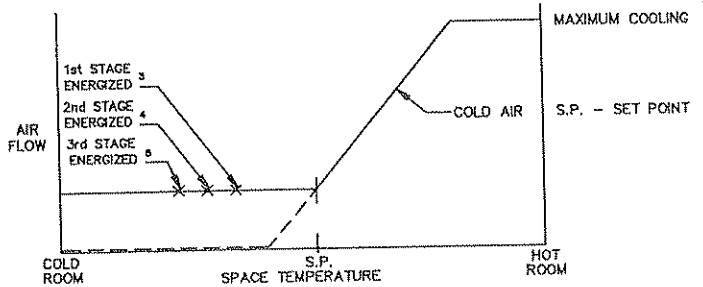
SD703A

This control sequence provides single duct variable air volume cooling with two stages of electric reheat. As space temperature drops, airflow is reset from maximum to minimum setpoint. As space temperature continues to drop, reheat is energized in stages to satisfy the load. Air volume limits are located at the thermostat.



SD704A

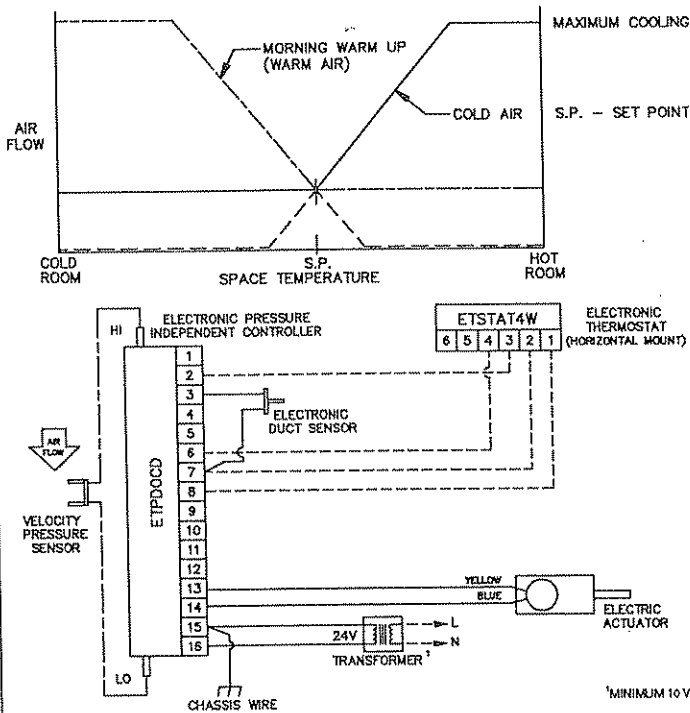
This control sequence provides single duct variable air volume cooling with three stages of electric reheat. As space temperature drops, airflow is reset from maximum to minimum setpoint. As space temperature continues to drop, reheat is energized in stages to satisfy the load. Air volume limits are located at the thermostat.



- - - - - Field Wiring ——— Factory Wiring - - - - - Tubing

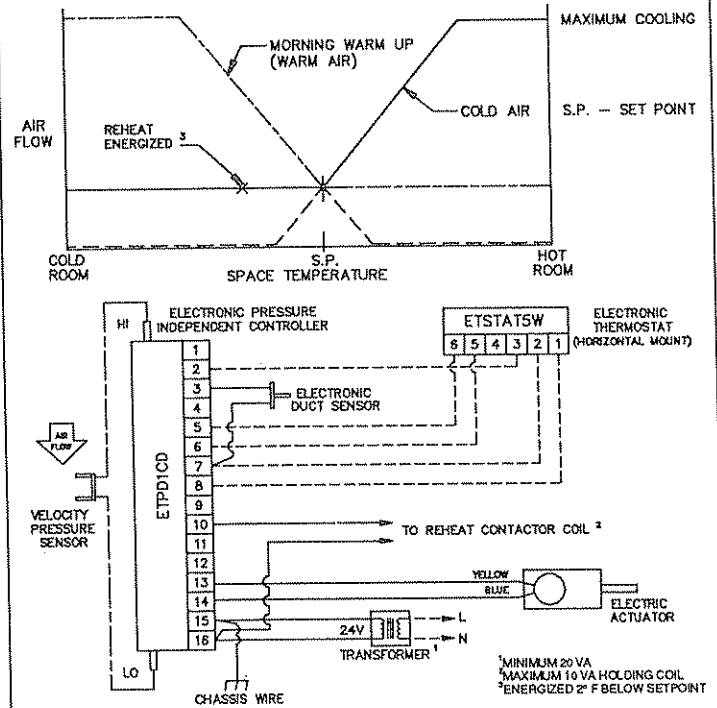
SD705A

This control sequence provides single duct variable air volume cooling with morning warm up. As space temperature drops, airflow is reset from maximum to minimum setpoint. Warm air is sensed by an electronic duct sensor causing the sequence to reverse for morning warm up. Air volume limits are located at the thermostat.



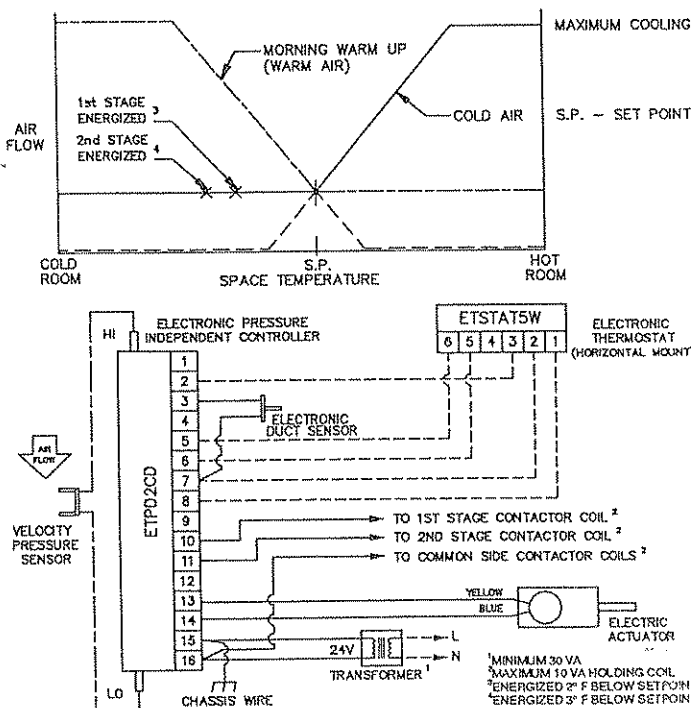
SD706A

This control sequence provides single duct variable air volume cooling with one stage of electric or hot water reheat and morning warm up. As space temperature drops, airflow is reset from maximum to minimum setpoint. As space temperature continues to drop, reheat is energized to satisfy the load. Warm air is sensed by an electronic duct sensor causing the sequence to reverse for morning warm up (reheat is disabled). Air volume limits are located at the thermostat.



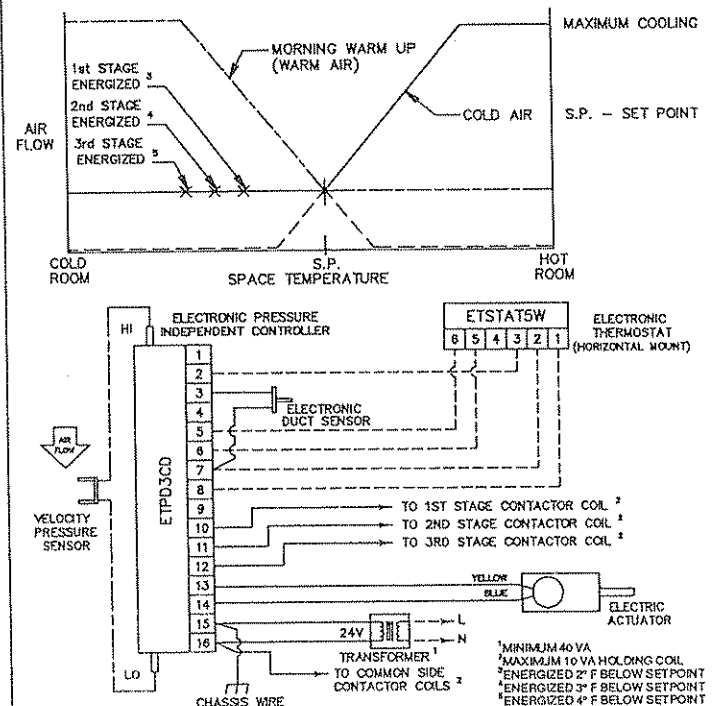
SD707A

This control sequence provides single duct variable air volume cooling with two stages of electric reheat and morning warm up. As space temperature drops, airflow is reset from maximum to minimum setpoint. As space temperature continues to drop, reheat is energized in stages to satisfy the load. Warm air is sensed by an electronic duct sensor causing the sequence to reverse for morning warm up (reheat is disabled). Air volume limits are located at the thermostat.



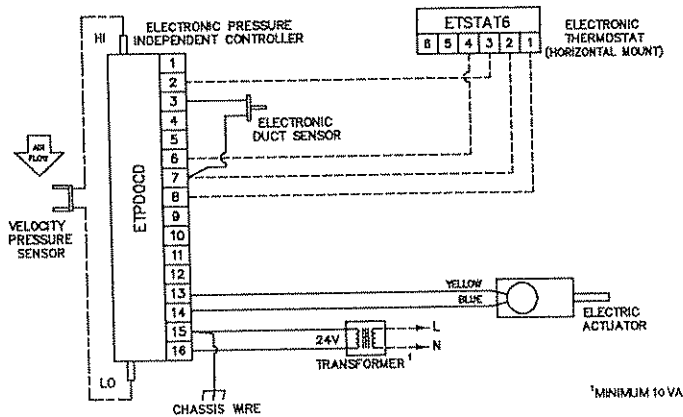
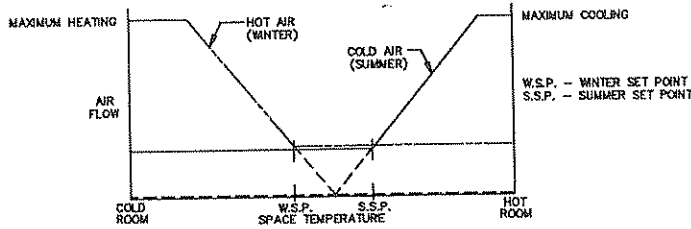
SD708A

This control sequence provides single duct variable air volume cooling with three stages of electric reheat and morning warm up. As space temperature drops, airflow is reset from maximum to minimum setpoint. As space temperature continues to drop, reheat is energized in stages to satisfy the load. Warm air is sensed by an electronic duct sensor causing the sequence to reverse for morning warm up (reheat is disabled). Air volume limits are located at the thermostat.



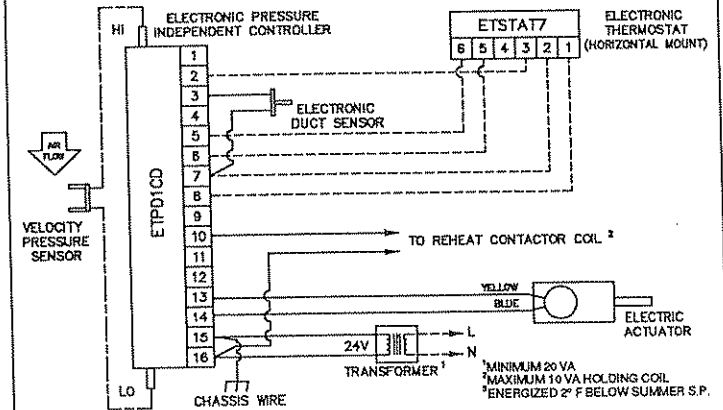
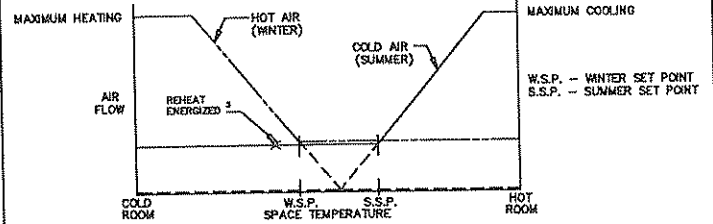
SD709A

This control sequence provides single duct variable air volume cooling with summer/winter changeover. As space temperature drops during summer operation, airflow is reset from maximum to minimum setpoint. In the winter mode, warm air is sensed by an electronic duct sensor causing the sequence to reverse. Air volume limits are located at the thermostat.



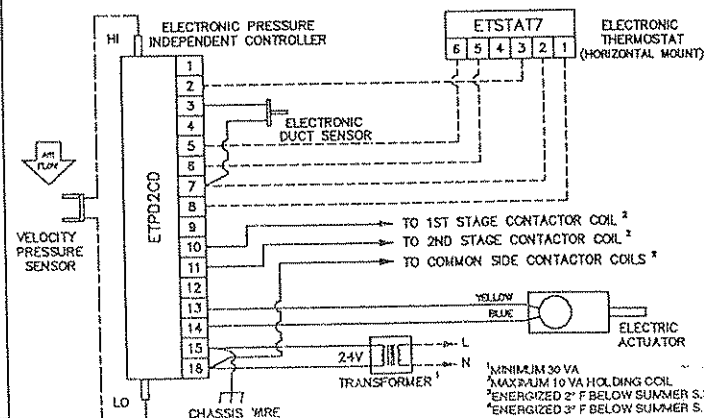
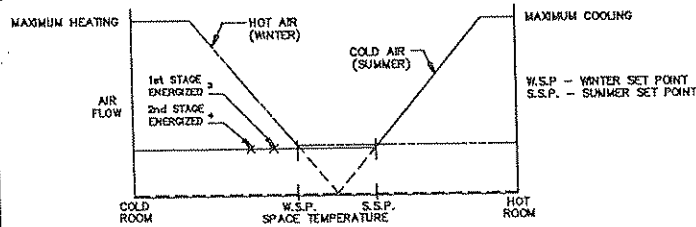
SD710A

This control sequence provides single duct variable air volume cooling with one stage of electric or hot water reheat and summer/winter changeover. As space temperature drops during summer operation, airflow is reset from maximum to minimum setpoint. As space temperature continues to drop, reheat is energized to satisfy the load. In the winter mode, warm air is sensed by an electronic duct sensor causing the sequence to reverse (reheat is disabled). Air volume limits are located at the thermostat.



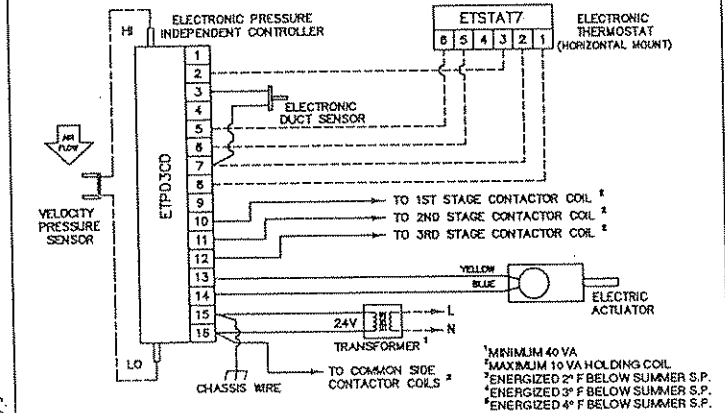
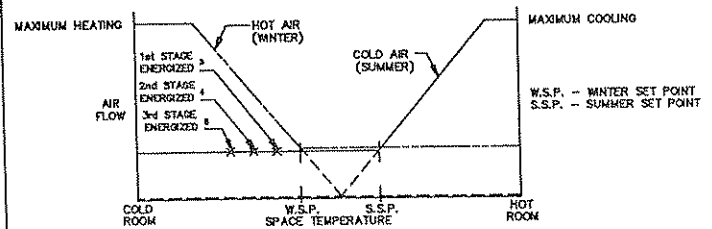
SD711A

This control sequence provides single duct variable air volume cooling with two stages of electric reheat and summer/winter changeover. As space temperature drops during summer operation, airflow is reset from maximum to minimum setpoint. As space temperature continues to drop, reheat is energized in stages to satisfy the load. In the winter mode, warm air is sensed by an electronic duct sensor causing the sequence to reverse (reheat is disabled). Air volume limits are located at the thermostat.



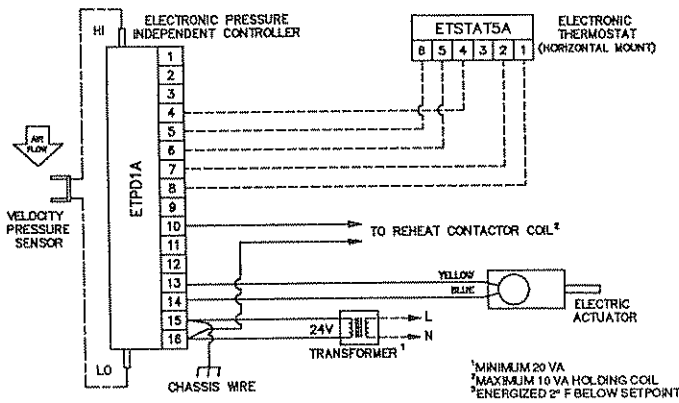
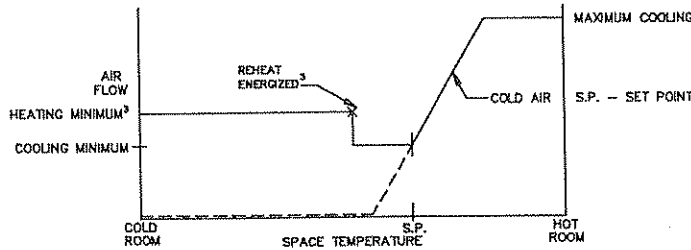
SD712A

This control sequence provides single duct variable air volume cooling with three stages of electric reheat and summer/winter changeover. As space temperature drops during summer operation, airflow is reset from maximum to minimum setpoint. As space temperature continues to drop, reheat is energized in stages to satisfy the load. In the winter mode, warm air is sensed by an electronic duct sensor causing the sequence to reverse (reheat is disabled). Air volume limits are located at the thermostat.



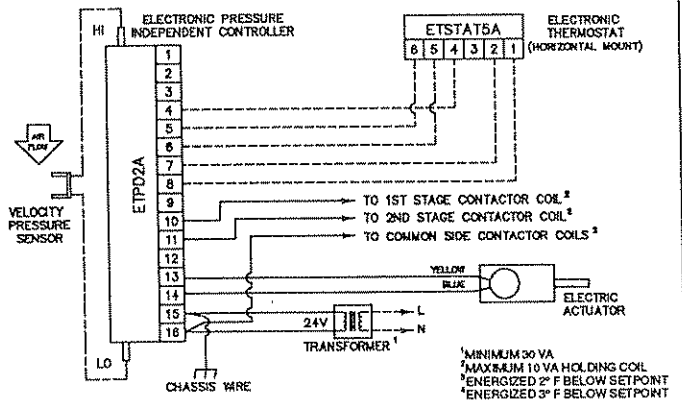
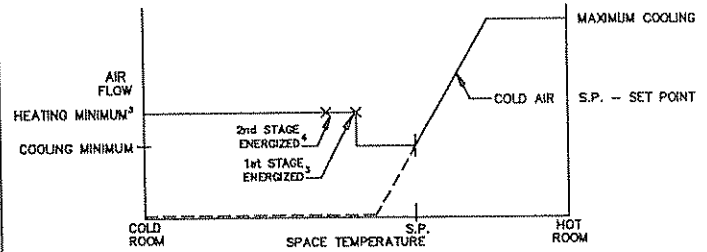
SD713A

This control sequence provides single duct variable air volume cooling with one stage of electric or hot water reheat and dual minimum setpoints. As space temperature drops, airflow is reset from maximum to minimum setpoint. As space temperature continues to drop, airflow is reset to a higher setpoint and reheat is energized to satisfy the load. Air volume limits are located at the thermostat.



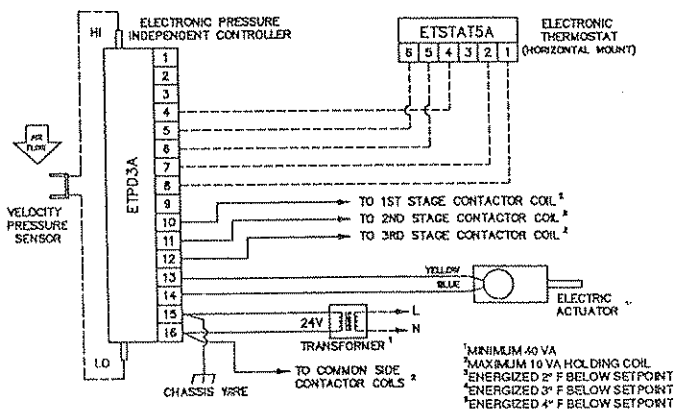
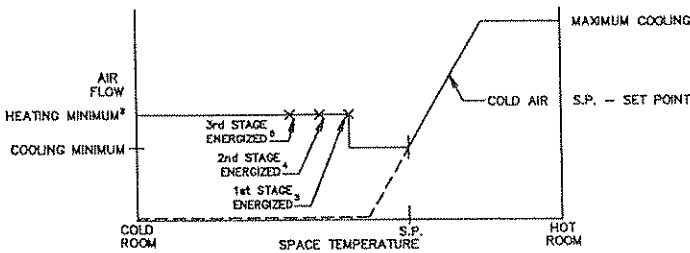
SD714A

This control sequence provides single duct variable air volume cooling with two stages of electric reheat and dual minimum setpoints. As space temperature drops, airflow is reset from maximum to minimum setpoint. As space temperature continues to drop, airflow is reset to a higher setpoint and reheat is energized in stages to satisfy the load. Air volume limits are located at the thermostat.



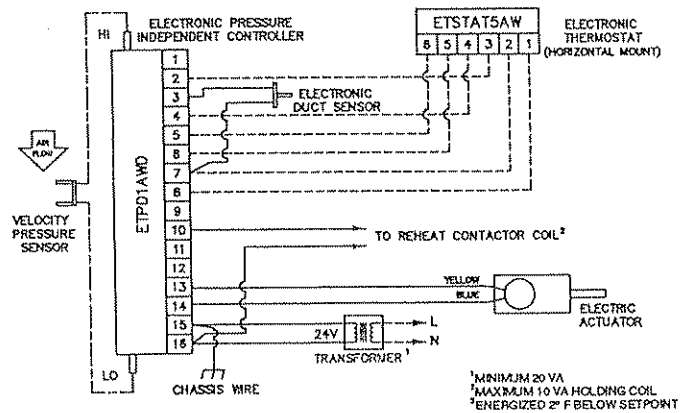
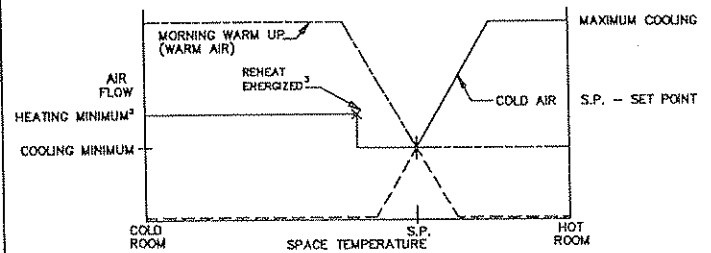
SD715A

This control sequence provides single duct variable air volume cooling with three stages of electric reheat and dual minimum setpoints. As space temperature drops, airflow is reset from maximum to minimum setpoint. As space temperature continues to drop, airflow is reset to a higher setpoint and reheat is energized in stages to satisfy the load. Air volume limits are located at the thermostat.



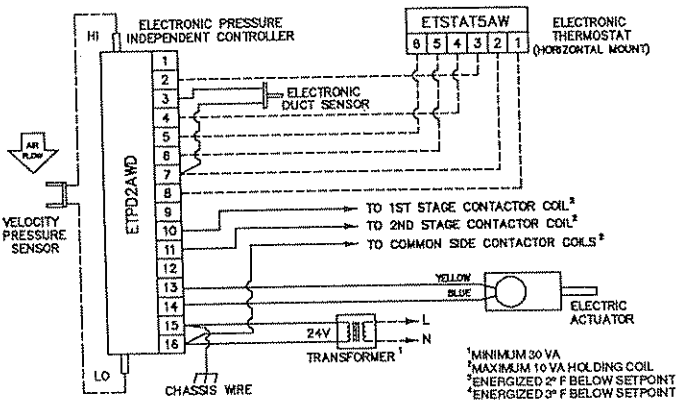
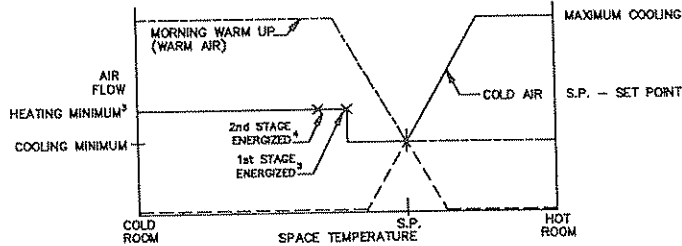
SD716A

This control sequence provides single duct variable air volume cooling with one stage of electric or hot water reheat, morning warm up, and dual minimum setpoints. As space temperature drops, airflow is reset from maximum to minimum setpoint. As space temperature continues to drop, airflow is reset to a higher setpoint and reheat is energized to satisfy the load. Warm air is sensed by an electronic duct sensor causing the sequence to reverse for morning warm up (reheat is disabled). Air volume limits are located at the thermostat.



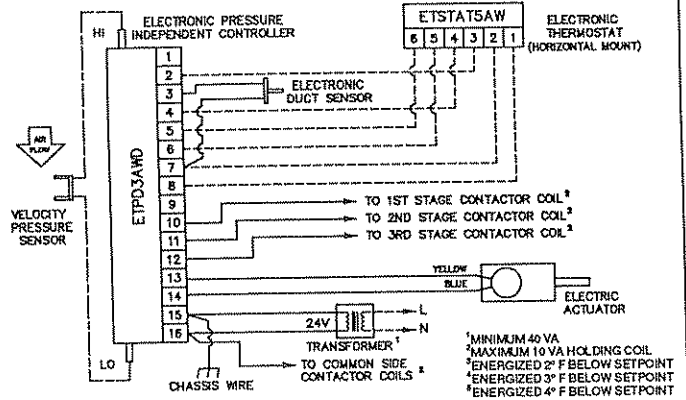
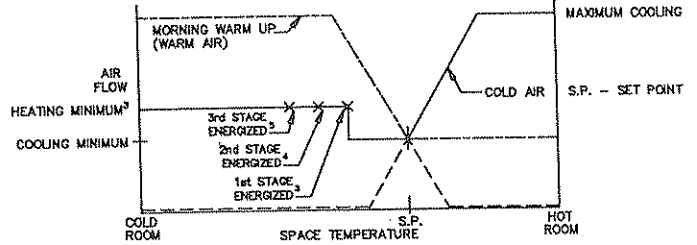
SD717A

This control sequence provides single duct variable air volume cooling with two stages of electric reheat, morning warmup, and dual heating minimum setpoints. As space temperature drops, airflow is reset from maximum to minimum setpoint. As space temperature continues to drop, airflow is reset to a higher setpoint and reheat is energized in stages to satisfy the load. Warm air is sensed by an electronic duct sensor causing the sequence to reverse for morning warm up (reheat is disabled). Air volume limits are located at the thermostat.



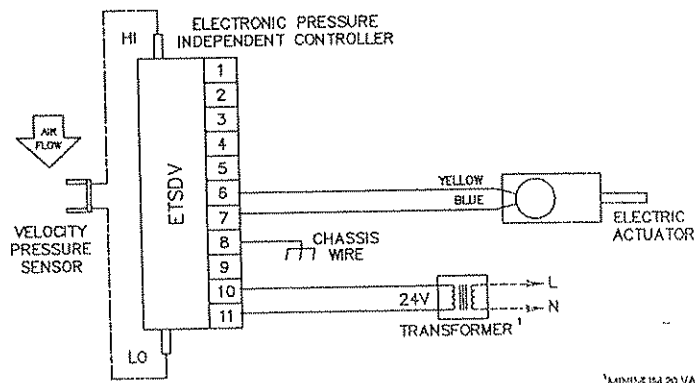
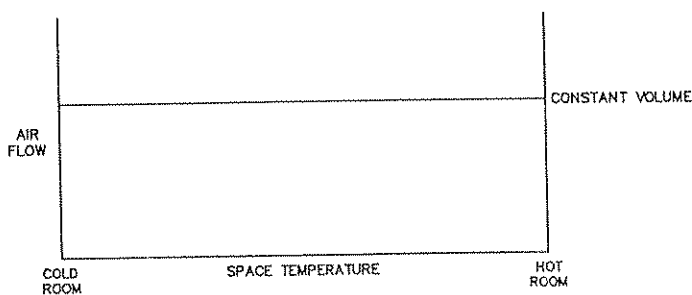
SD718A

This control sequence provides single duct variable air volume cooling with three stages of electric reheat, morning warmup, and dual heating minimum setpoints. As space temperature drops, airflow is reset from maximum to minimum setpoint. As space temperature continues to drop, airflow is reset to a higher setpoint and reheat is energized in stages to satisfy the load. Warm air is sensed by an electronic duct sensor causing the sequence to reverse for morning warm up (reheat is disabled). Air volume limits are located at the thermostat.



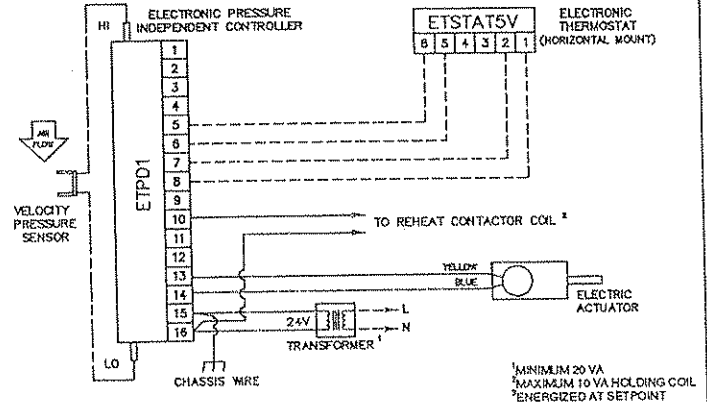
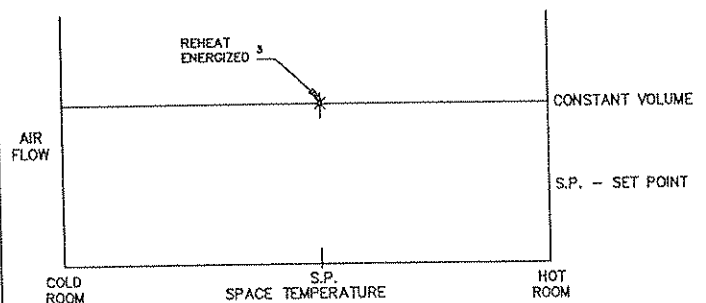
SD723A

This control sequence provides single duct constant volume cooling. Air volume limit is located at the controller.



SD724A

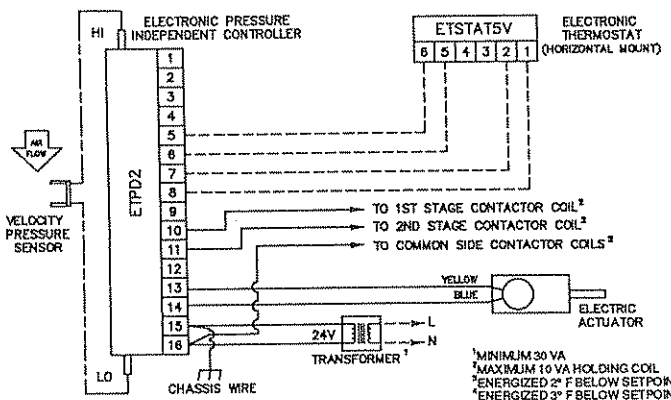
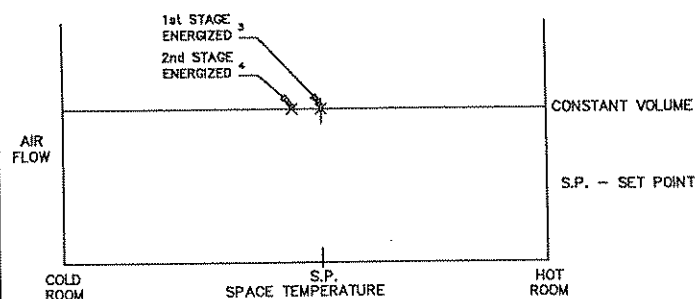
This control sequence provides single duct constant volume cooling with one stage electric or hot water reheat. As space temperature drops, reheat is energized to satisfy the load. Air volume limit is located at the thermostat.



-----Field Wiring -----Factory Wiring -----Tubing

SD725A

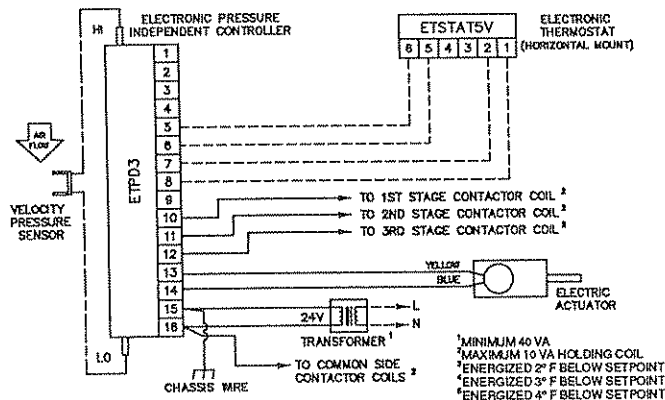
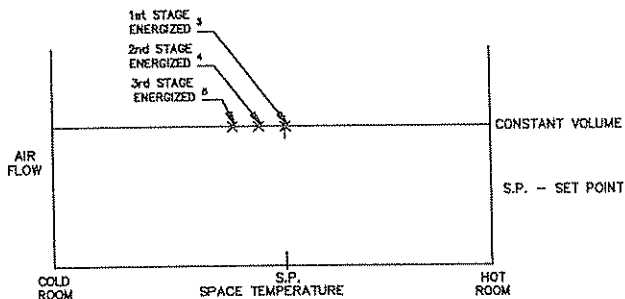
This control sequence provides single duct constant volume cooling with two stages of electric reheat. As space temperature drops, reheat is energized in stages to satisfy the load. Air volume limit is located at the thermostat.



- ¹MINIMUM 30 VA
- ²MAXIMUM 10 VA HOLDING COIL
- ³ENERGIZED 2° F BELOW SETPOINT
- ⁴ENERGIZED 3° F BELOW SETPOINT

SD726A

This control sequence provides single duct constant volume cooling with three stages of electric reheat. As space temperature drops, reheat is energized in stages to satisfy the load. Air volume limit is located at the thermostat.



- ¹MINIMUM 40 VA
- ²MAXIMUM 10 VA HOLDING COIL
- ³ENERGIZED 2° F BELOW SETPOINT
- ⁴ENERGIZED 3° F BELOW SETPOINT
- ⁵ENERGIZED 4° F BELOW SETPOINT

-----Field Wiring ——— Factory Wiring - - - - Tubing

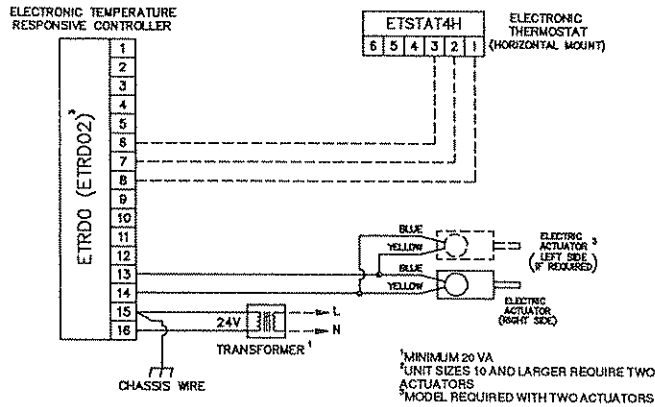
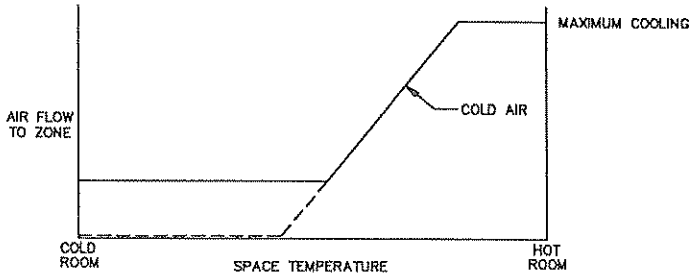
Single Duct Bypass (BT-II) Control Sequences

Page No.	Control Sequence	Sequence of Operation				Number of Heat Stages			Control Sequence	Page No.
		TEMPERATURE RESPONSIVE	VARIABLE AIR VOLUME ONLY	VAV W/ WARM UP	SUM/WIN CHANGEOVER	NONE	ONE STAGE	TWO STAGES		
25	BT601A	☒	☒			☒			BT601A	25
25	BT603A	☒	☒				☒		BT603A	25
25	BT605A	☒	☒					☒	BT605A	25
25	BT607A	☒	☒					☒	BT607A	25
26	BT609A	☒		☒		☒			BT609A	26
26	BT611A	☒		☒			☒		BT611A	26
26	BT613A	☒		☒				☒	BT613A	26
26	BT615A	☒		☒				☒	BT615A	26
27	BT617A	☒			☒	☒			BT617A	27
27	BT619A	☒			☒		☒		BT619A	27
27	BT621A	☒			☒			☒	BT621A	27
27	BT623A	☒			☒			☒	BT623A	27

Temperature Responsive Control Sequences

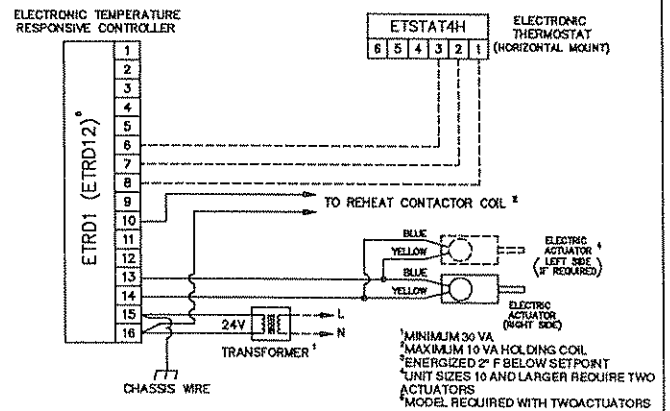
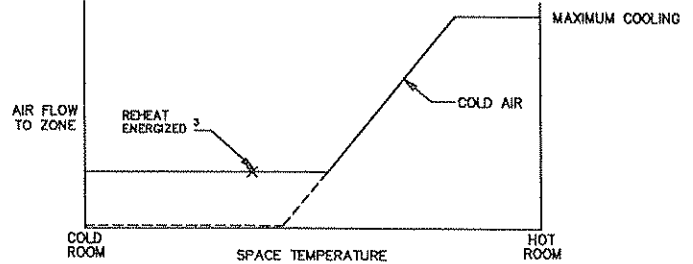
BT601A

This control sequence provides single duct bypass variable air volume cooling. As space temperature drops, airflow to the zone is reset from full open to minimum airflow setpoint. The minimum airflow setpoint is field calibrated by adjusting the damper linkage. The maximum airflow setpoint is obtained through adjustment of an upstream damper provided by others.



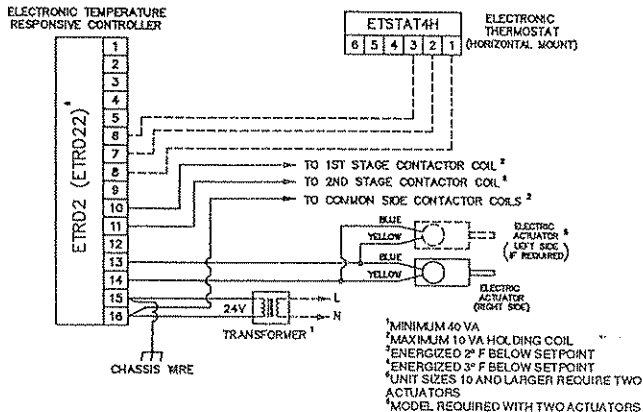
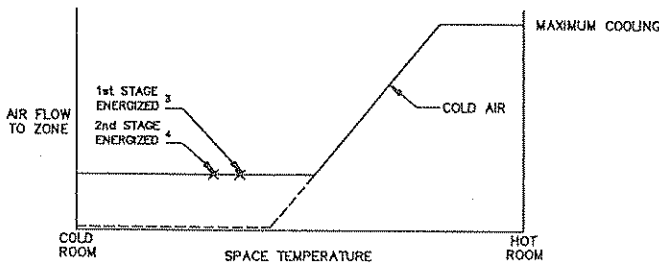
BT603A

This control sequence provides single duct bypass variable air volume cooling with one stage of electric or hot water reheat. As space temperature drops, airflow to the zone is reset from full open to minimum airflow setpoint. As space temperature continues to drop, reheat is energized to satisfy the load. The minimum airflow setpoint is field calibrated by adjusting the damper linkage. The maximum airflow setpoint is obtained through adjustment of an upstream damper provided by others.



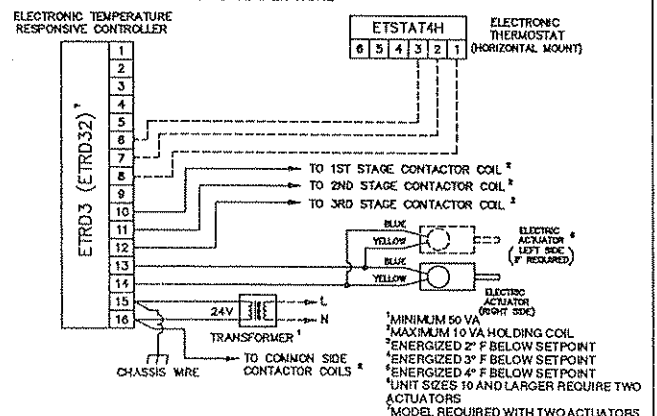
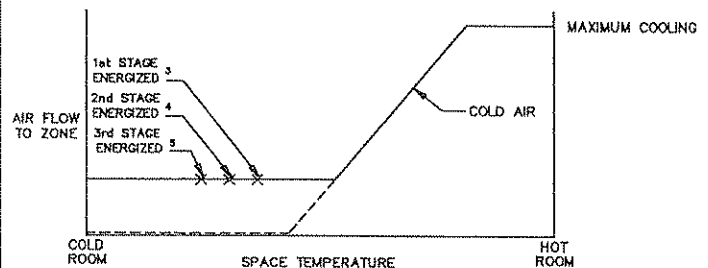
BT605A

This control sequence provides single duct bypass variable air volume cooling with two stages of electric reheat. As space temperature drops, airflow to the zone is reset from full open to minimum airflow setpoint. As space temperature continues to drop, reheat is energized in stages to satisfy the load. The minimum airflow setpoint is field calibrated by adjusting the damper linkage. The maximum airflow setpoint is obtained through adjustment of an upstream damper provided by others.



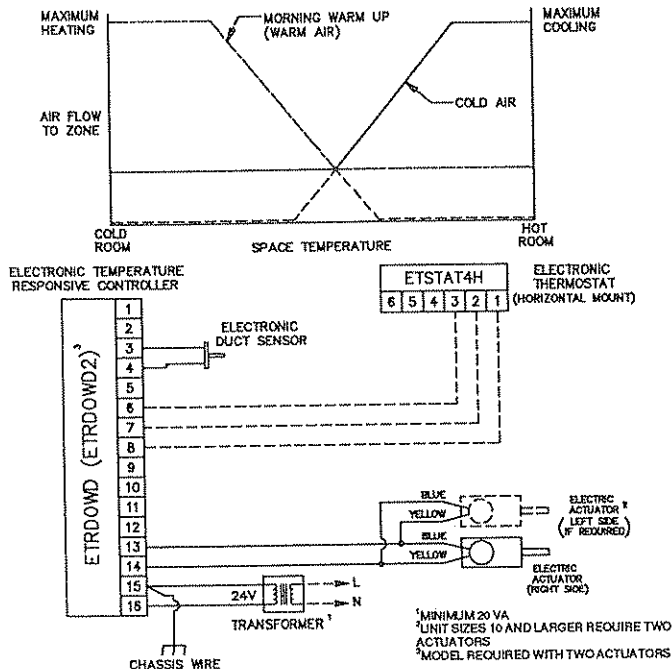
BT607A

This control sequence provides single duct bypass variable air volume cooling with three stages of electric reheat. As space temperature drops, airflow to the zone is reset from full open to minimum airflow setpoint. As space temperature continues to drop, reheat is energized in stages to satisfy the load. The minimum airflow setpoint is field calibrated by adjusting the damper linkage. The maximum airflow setpoint is obtained through adjustment of an upstream damper provided by others.



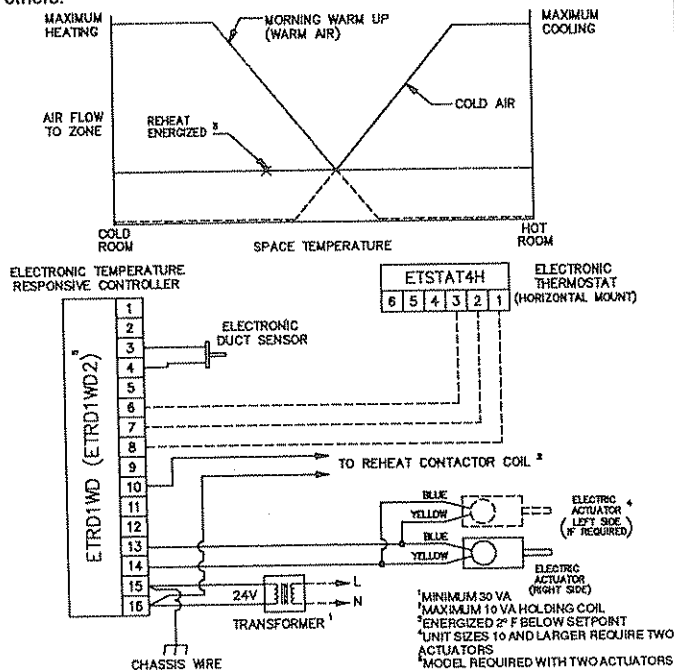
BT609A

This control sequence provides single duct bypass variable air volume cooling with morning warm up. As space temperature drops, airflow to the zone is reset from full open to minimum airflow setpoint. Warm air is sensed by an electronic duct sensor causing the sequence to reverse for morning warm up. The minimum airflow setpoint is field calibrated by adjusting the damper linkage. The maximum airflow setpoint is obtained through adjustment of an upstream damper provided by others.



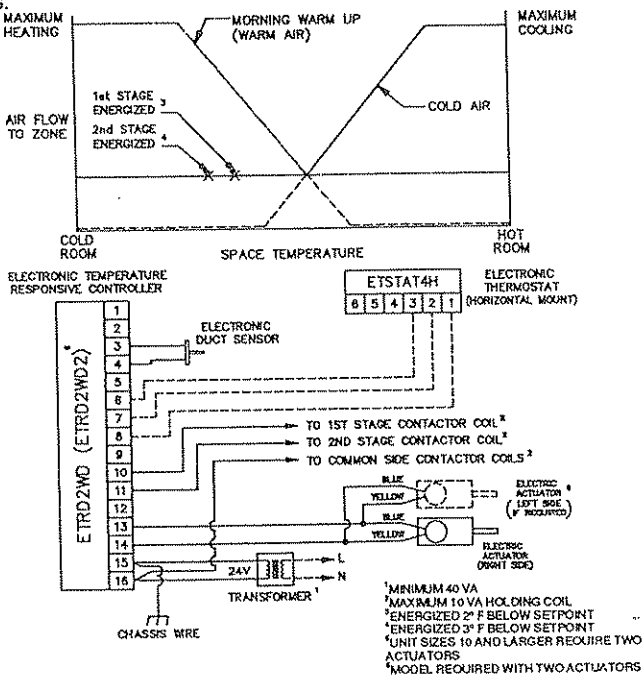
BT611A

This control sequence provides single duct bypass variable air volume cooling with one stage of electric or hot water reheat and morning warm up. As space temperature drops, airflow to the zone is reset from full open to the minimum airflow setpoint. As space temperature continues to drop, reheat is energized to satisfy the load. Warm air is sensed by an electronic duct sensor, causing the sequence to reverse for morning warm up (reheat is disabled). The minimum airflow setpoint is field calibrated by adjusting the damper linkage. The maximum airflow setpoint is obtained through adjustment of an upstream damper provided by others.



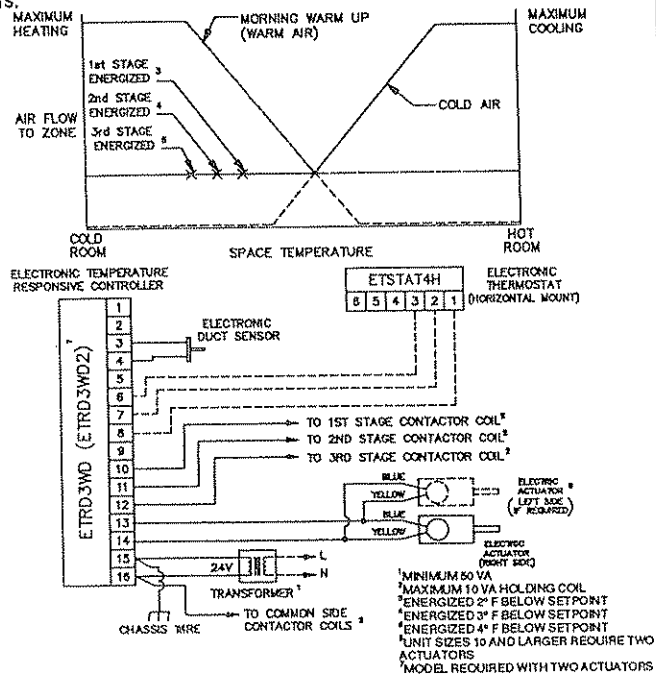
BT613A

This control sequence provides single duct bypass variable air volume cooling with two stages of electric reheat and morning warm up. As space temperature drops, airflow to the zone is reset from full open to minimum airflow setpoint. As space temperature continues to drop, reheat is energized in stages to satisfy the load. Warm air is sensed by an electronic duct sensor, causing the sequence to reverse for morning warm up (reheat is disabled). The minimum airflow setpoint is field calibrated by adjusting the damper linkage. The maximum airflow setpoint is obtained through adjustment of an upstream damper provided by others.



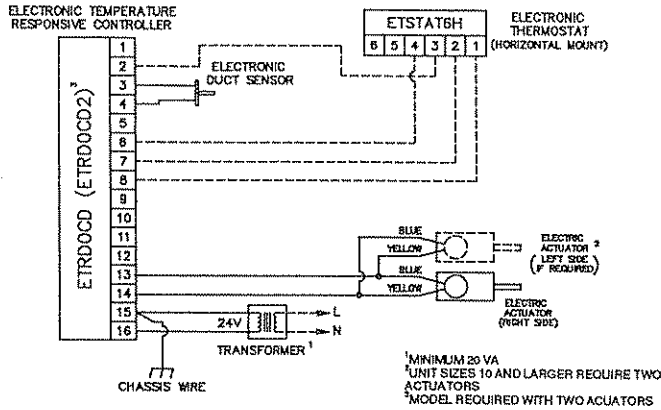
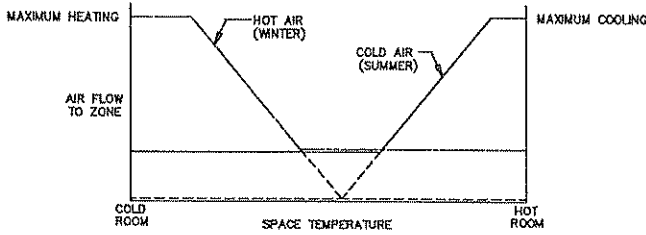
BT615A

This control sequence provides single duct bypass variable air volume cooling with three stages of electric reheat and morning warm up. As space temperature drops, airflow to the zone is reset from full open to minimum airflow setpoint. As space temperature continues to drop, reheat is energized in stages to satisfy the load. Warm air is sensed by an electronic duct sensor, causing the sequence to reverse for morning warm up (reheat is disabled). The minimum airflow setpoint is field calibrated by adjusting the damper linkage. The maximum airflow setpoint is obtained through adjustment of an upstream damper provided by others.



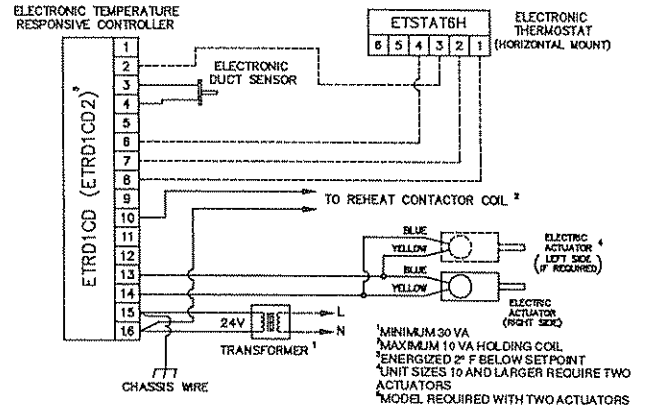
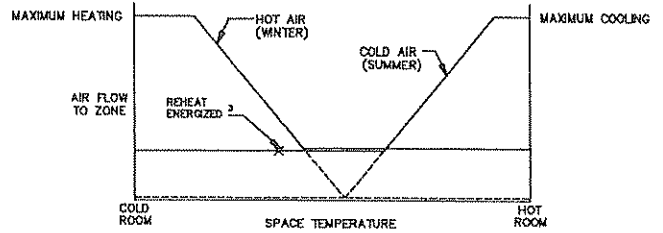
BT617A

This control sequence provides single duct bypass variable air volume cooling with summer/winter changeover. As space temperature drops during summer operation, airflow to the zone is reset from full open to minimum setpoint. In the winter mode, warm air is sensed by an electronic duct sensor, causing the sequence to reverse. The minimum airflow setpoint is field calibrated by adjusting the damper linkage. The maximum airflow setpoint is obtained through adjustment of an upstream damper provided by others.



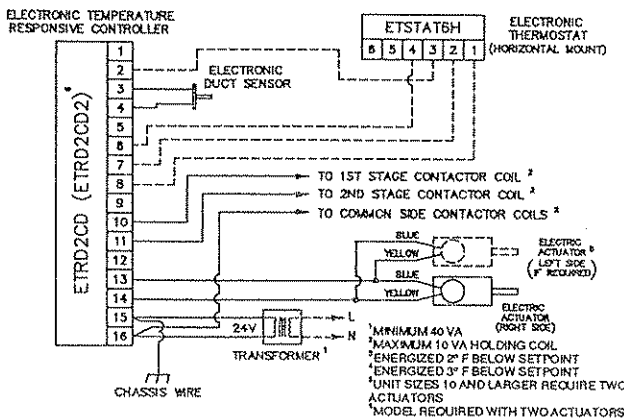
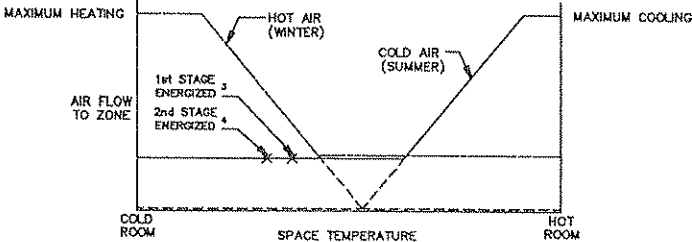
BT619A

This control sequence provides single duct bypass variable air volume cooling with one stage of electric or hot water reheat and summer/winter changeover. As space temperature drops during summer operation, airflow to the zone is reset from full open to minimum airflow setpoint. As space temperature continues to drop, reheat is energized to satisfy the load. In the winter mode, warm air is sensed by an electronic duct sensor, causing the sequence to reverse (reheat is disabled). The minimum airflow setpoint is field calibrated by adjusting the damper linkage. The maximum linkage airflow setpoint is obtained through adjustment of an upstream damper provided by others.



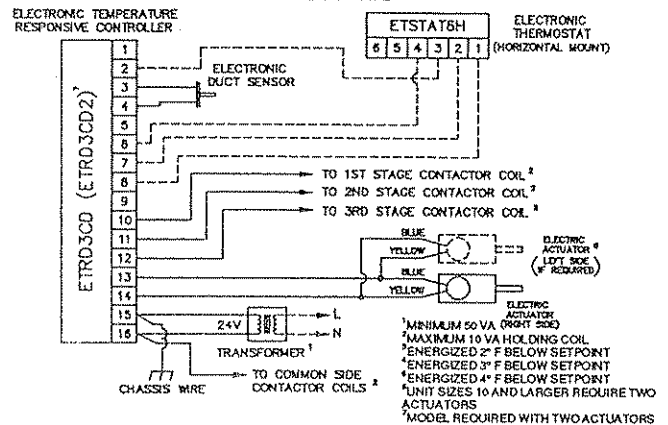
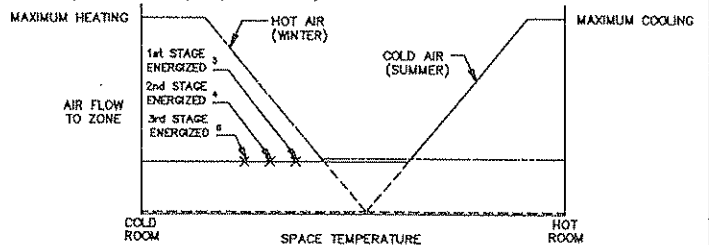
BT621A

This control sequence provides single duct bypass variable air volume cooling with two stages of electric reheat and summer/winter changeover. As space temperature drops during summer operation, airflow to the zone is reset from full open to minimum airflow setpoint. As space temperature continues to drop, reheat is energized in stages to satisfy the load. In the winter mode, warm air is sensed by an electronic duct sensor, causing the sequence to reverse (reheat is disabled). The minimum airflow setpoint is field calibrated by adjusting the damper linkage. The maximum airflow setpoint is obtained through adjustment of an upstream damper provided by others.



BT623A

This control sequence provides single duct bypass variable air volume cooling with three stages of electric reheat and summer/winter changeover. As space temperature drops during summer operation, airflow to the zone is reset from full open to minimum airflow setpoint. As space temperature continues to drop, reheat is energized in stages to satisfy the load. In the winter mode, warm air is sensed by an electronic duct sensor, causing the sequence to reverse (reheat is disabled). The minimum airflow setpoint is field calibrated by adjusting the damper linkage. The maximum airflow setpoint is obtained through adjustment of an upstream damper provided by others.



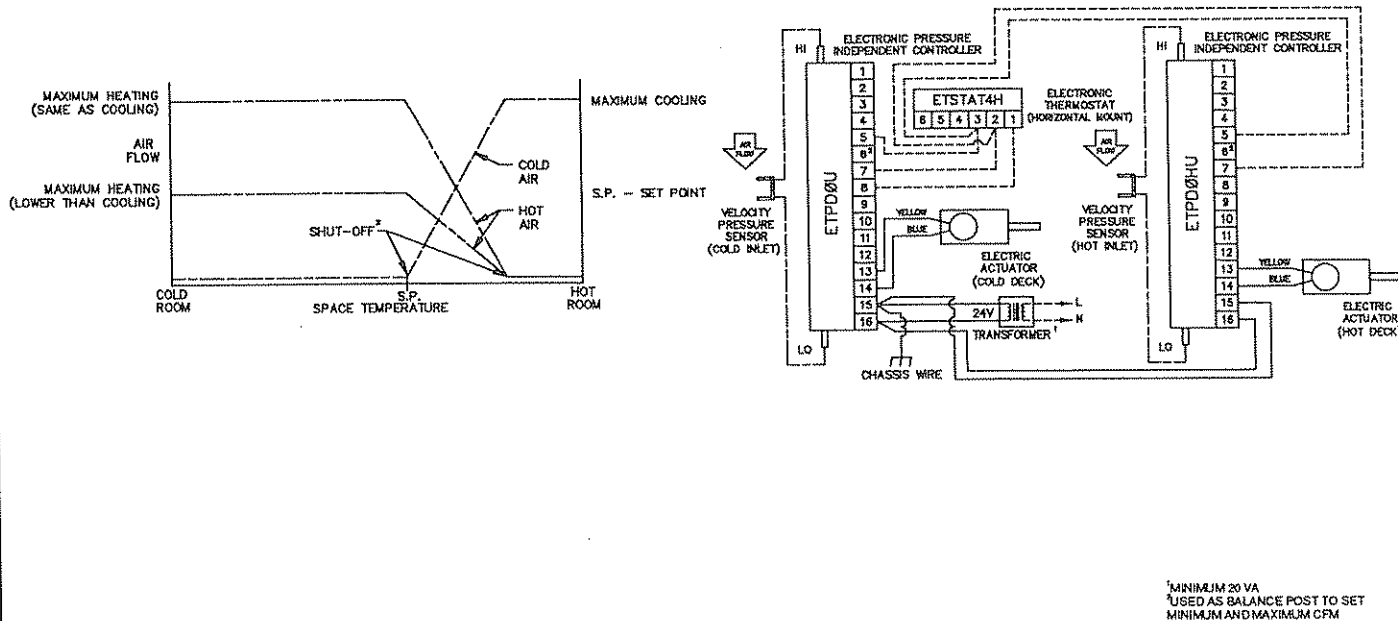
Dual Duct (SDD) Control Sequences

Page No.	Control Sequence	Sequence of Operation			Control Sequence	Page No.
		PRESSURE INDEPENDENT	WITH MIXING	WITHOUT MIXING		
29	DD701	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		DD701	29
29	DD702	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	DD702	29

Pressure Independent Control Sequences

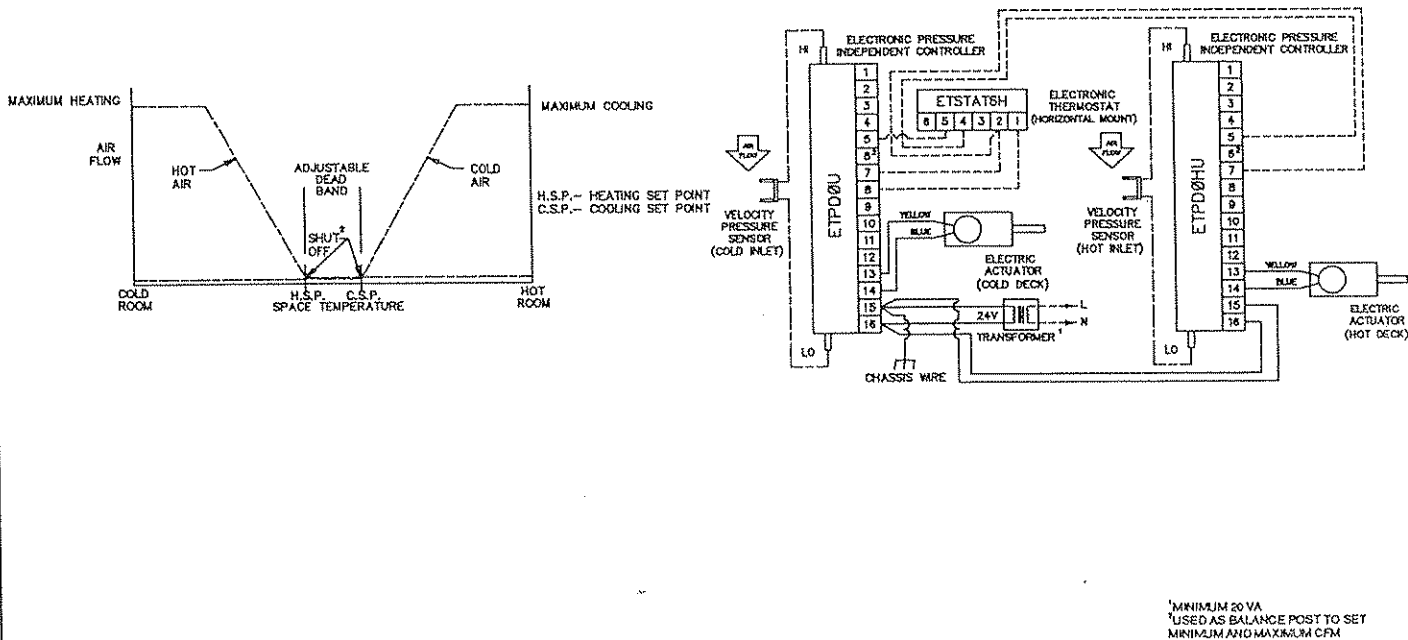
DD701A

This sequence provides dual duct variable air volume control. When the space temperature is warm, the cold damper is maintaining the maximum cooling airflow setpoint while the hot damper is closed. As space temperature drops, the cold damper modulates closed while the hot damper opens. As the space temperature continues to fall, the cold damper shuts off and the hot damper maintains the maximum heating airflow setpoint. Air volume limits are located at thermostat.



DD702A

This sequence provides dual duct variable air volume control. When the space temperature is warm, the cold damper is maintaining the maximum cooling airflow setpoint while the hot damper is closed. As the space temperature drops, the cold damper modulates closed. As the space temperature continues to fall below the heating setpoint, the hot damper will modulate open to its maximum heating airflow setpoint with the cold deck damper closed. Air volume limits are located at the thermostat.



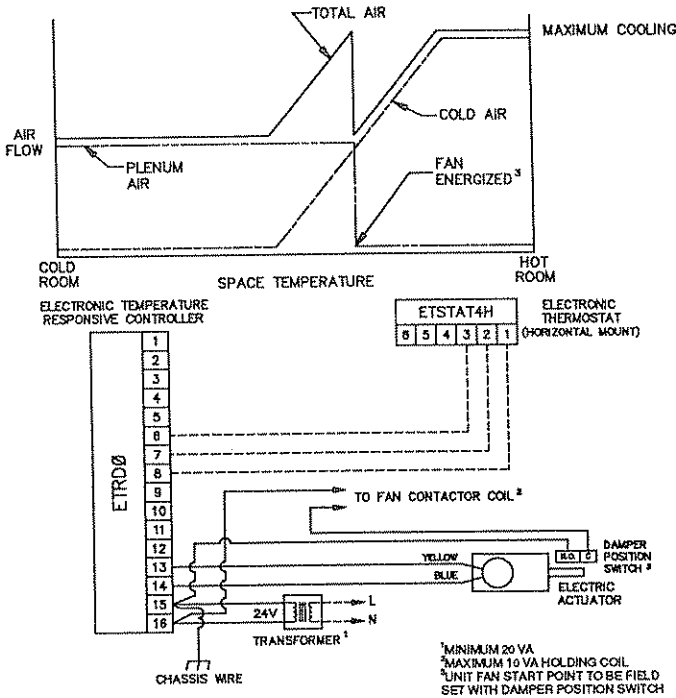
Fan Powered Parallel Flow (VVF-II) Control Sequences

Page No.	Control Sequence	Class					Sequence of Operation			Number of Heat Stages			Control Sequence	Page No.
		TEMPERATURE RESPONSIVE	PRESSURE INDEPENDENT	CONVENTIONAL SEQUENCE	NIGHT SET BACK (N.S.B.)	MORNING WARM UP (M.W.U.)	N.S.B. AND M.W.U.	NONE	ONE STAGE	TWO STAGES	THREE STAGES			
31	FV601A	☒		☒				☒				FV601A	31	
31	FV603A	☒		☒					☒			FV603A	31	
31	FV605A	☒		☒						☒		FV605A	31	
31	FV607A	☒		☒							☒	FV607A	31	
32	FV609A	☒			☒			☒				FV609A	32	
32	FV611A	☒			☒				☒			FV611A	32	
32	FV613A	☒			☒					☒		FV613A	32	
32	FV615A	☒			☒						☒	FV615A	32	
33	FV633A	☒				☒		☒				FV633A	33	
33	FV635A	☒				☒			☒			FV635A	33	
33	FV637A	☒				☒				☒		FV637A	33	
33	FV639A	☒				☒					☒	FV639A	33	
34	FV641A	☒					☒	☒				FV641A	34	
34	FV643A	☒					☒		☒			FV643A	34	
35	FV645A	☒					☒			☒		FV645A	35	
35	FV647A	☒					☒				☒	FV647A	35	
36	FV701A		☒	☒				☒				FV701A	36	
36	FV702A		☒	☒					☒			FV702A	36	
36	FV703A		☒	☒						☒		FV703A	36	
36	FV704A		☒	☒							☒	FV704A	36	
37	FV705A		☒		☒			☒				FV705A	37	
37	FV706A		☒		☒				☒			FV706A	37	
37	FV707A		☒		☒					☒		FV707A	37	
37	FV708A		☒		☒						☒	FV708A	37	
38	FV717A		☒			☒		☒				FV717A	38	
38	FV718A		☒			☒			☒			FV718A	38	
38	FV719A		☒			☒				☒		FV719A	38	
38	FV720A		☒			☒					☒	FV720A	38	
39	FV721A		☒				☒	☒				FV721A	39	
39	FV722A		☒				☒		☒			FV722A	39	
40	FV723A		☒				☒			☒		FV723A	40	
40	FV724A		☒				☒				☒	FV724A	40	

Temperature Responsive Control Sequences

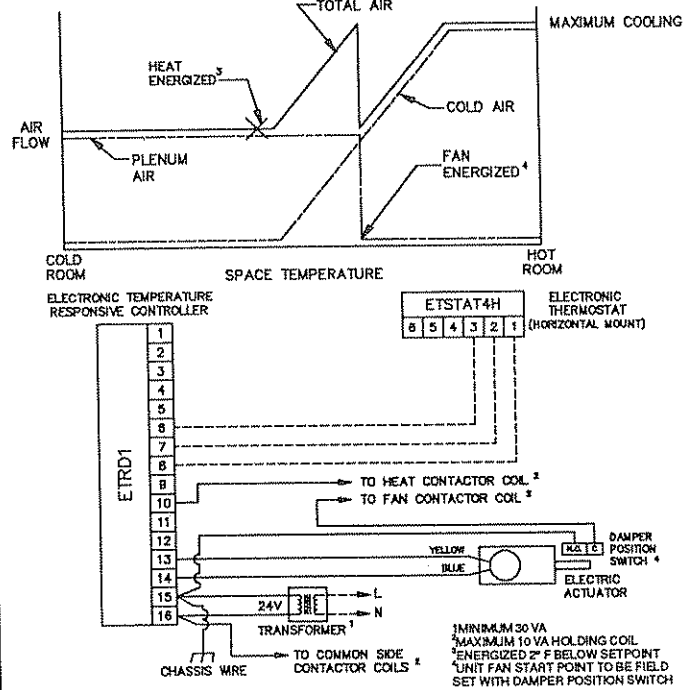
FV601A

This control sequence provides intermittent fan powered variable air volume control. As space temperature drops, primary airflow is reset from maximum to minimum setpoint. When primary airflow decreases to a field adjustable volume the unit fan is energized by a damper position switch thus supplying primary air mixed with plenum air to the space. Maximum or minimum air volume limit is field set by mechanical stops.



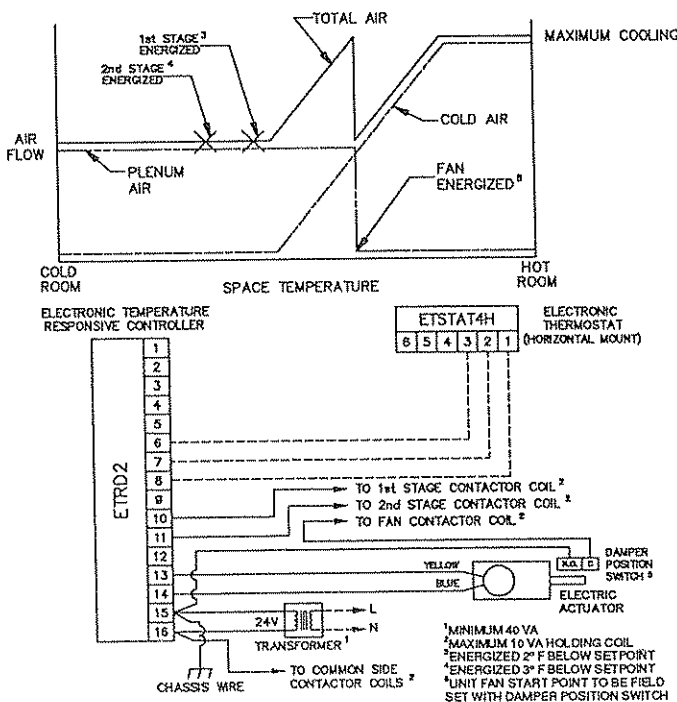
FV603A

This control sequence provides intermittent fan powered variable air volume control with one stage of electric or hot water heat. As space temperature drops, primary airflow is reset from maximum to minimum setpoint. When primary airflow decreases to a field adjustable volume the unit fan is energized by a damper position switch thus supplying primary air mixed with plenum air to the space. As space temperature continues to drop, heat is energized to satisfy the load. Maximum or minimum air volume limit is field set by mechanical stops.



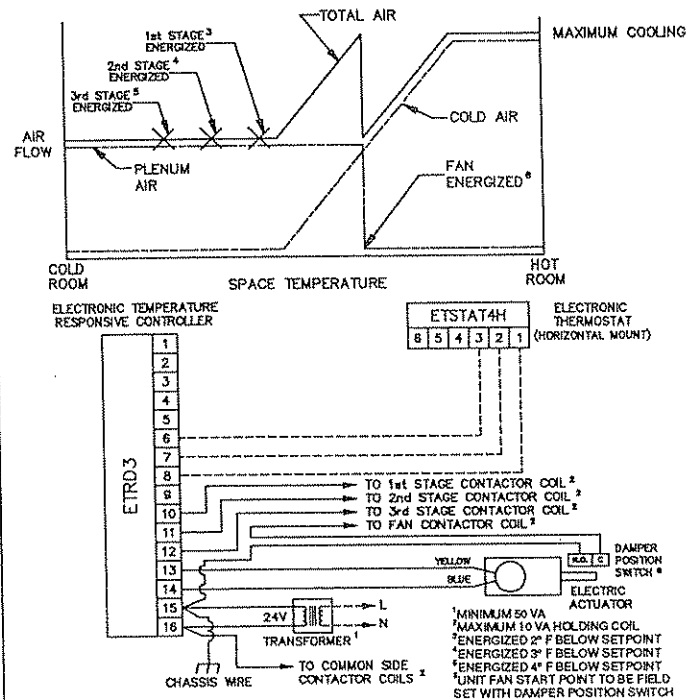
FV605A

This control sequence provides intermittent fan powered variable air volume control with two stages of electric heat. As space temperature drops, primary airflow is reset from maximum to minimum setpoint. When primary airflow decreases to a field adjustable volume the unit fan is energized by a damper position switch thus supplying primary air mixed with plenum air to the space. As space temperature continues to drop, heat is energized in stages to satisfy the load. Maximum or minimum air volume limit is field set by mechanical stops.



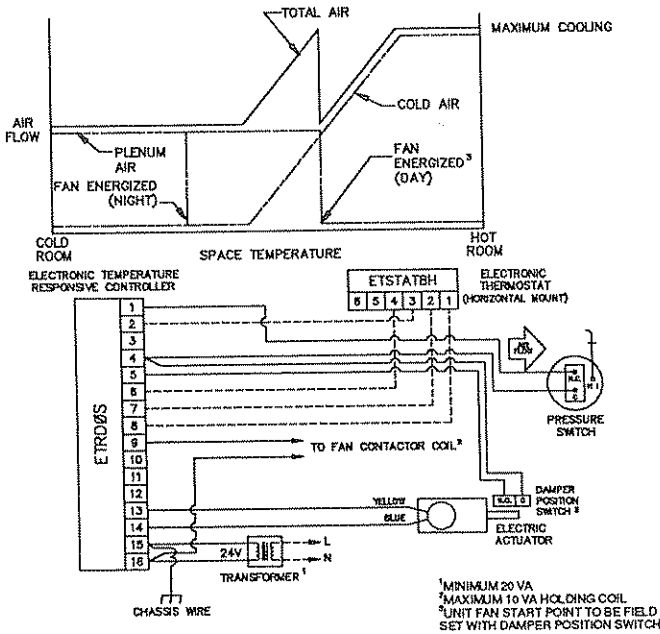
FV607A

This control sequence provides intermittent fan powered variable air volume control with three stages of electric heat. As space temperature drops, primary airflow is reset from maximum to minimum setpoint. When primary airflow decreases to a field adjustable volume the unit fan is energized by a damper position switch thus supplying primary air mixed with plenum air to the space. As space temperature continues to drop, heat is energized in stages to satisfy the load. Maximum or minimum air volume limit is field set by mechanical stops.



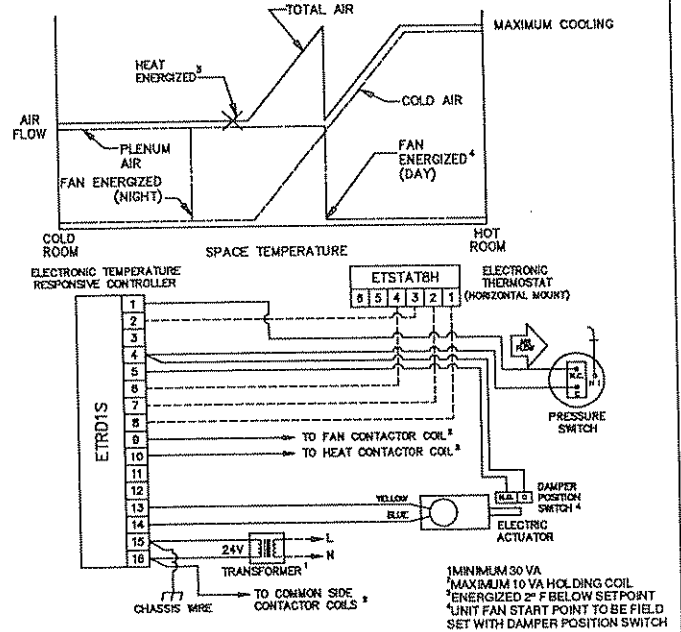
FV609A

This control sequence provides intermittent fan powered variable air volume control with night setback. As space temperature drops, primary airflow is reset from maximum to minimum setpoint. When primary airflow decreases to a field adjustable volume, the unit fan is energized by a damper position switch thus supplying primary air mixed with plenum air to the space. When system air is failed, the unit automatically switches into the night setback mode. The primary air valve remains closed and the unit fan is cycled to maintain the night setpoint. Maximum or minimum air volume limit is field set by mechanical stops.



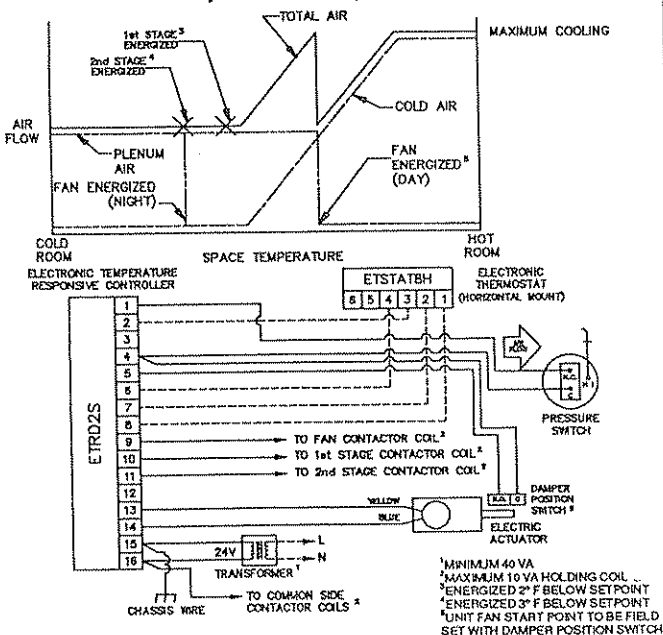
FV611A

This control sequence provides intermittent fan powered variable air volume control with one stage of electric or hot water heat and night setback. As space temperature drops, primary airflow is reset from maximum to minimum setpoint. When primary airflow decreases to a field adjustable volume, the unit fan is energized by a damper position switch thus supplying primary air mixed with plenum air to the space. As space temperature continues to drop, heat is energized to satisfy the load. When system air is failed, the unit automatically switches into the night setback mode. The primary air valve remains closed and the unit fan and heat are cycled to maintain the night setpoint. Maximum or minimum air volume limit is field set by mechanical stops.



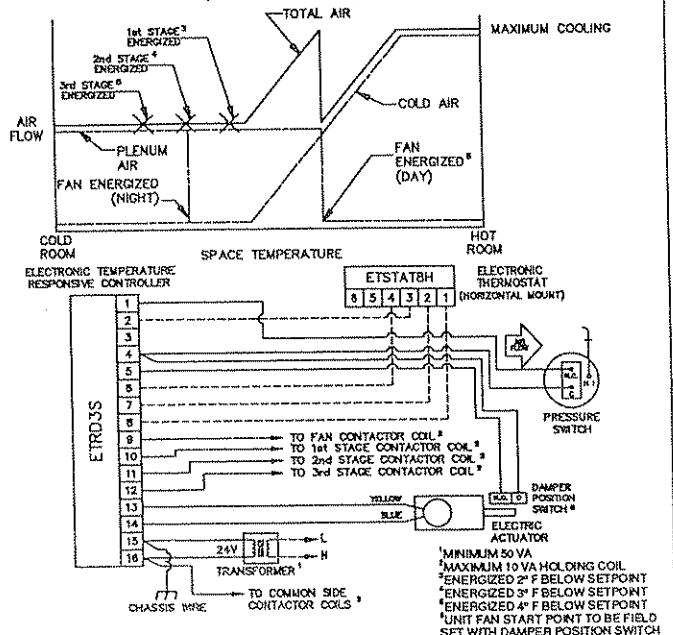
FV613A

This control sequence provides intermittent fan powered variable air volume control with two stages of electric heat and night setback. As space temperature drops, primary airflow is reset from maximum to minimum setpoint. When primary airflow decreases to a field adjustable volume, the unit fan is energized by a damper position switch thus supplying primary air mixed with plenum air to the space. As space temperature continues to drop, heat is energized in stages to satisfy the load. When system air is failed, the unit automatically switches into the night setback mode. The primary air valve remains closed and the unit fan and heat are cycled to maintain the night setpoint. Maximum or minimum air volume limit is field set by mechanical stops.



FV615A

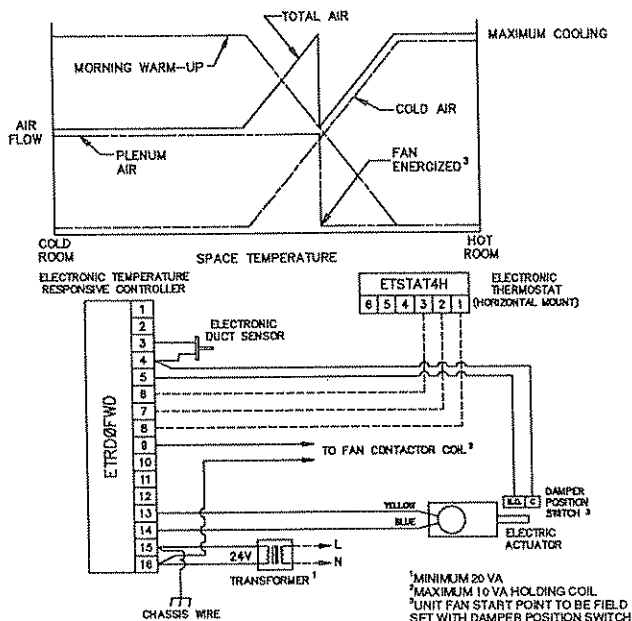
This control sequence provides intermittent fan powered variable air volume control with three stages of electric heat and night setback. As space temperature drops, primary airflow is reset from maximum to minimum setpoint. When primary airflow decreases to a field adjustable volume, the unit fan is energized by a damper position switch thus supplying primary air mixed with plenum air to the space. As space temperature continues to drop, heat is energized in stages to satisfy the load. When system air is failed, the unit automatically switches into the night setback mode. The primary air valve remains closed and the unit fan and heat are cycled to maintain the night setpoint. Maximum or minimum air volume limit is field set by mechanical stops.



-----Field Wiring -----Factory Wiring

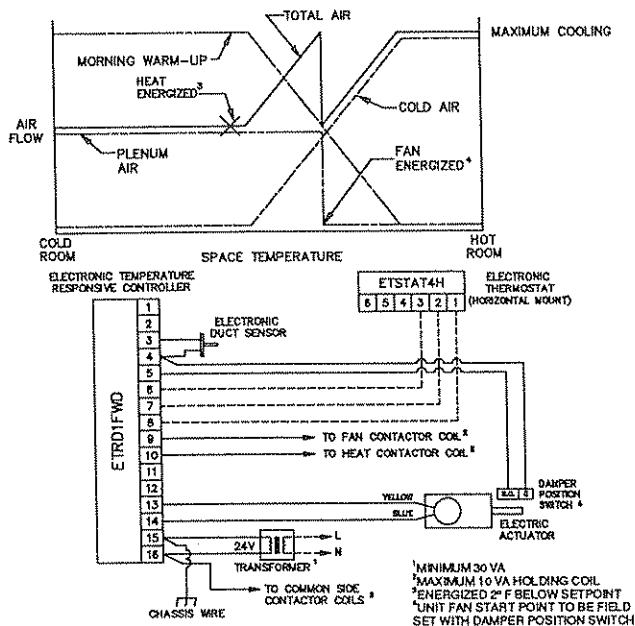
FV633A

This control sequence provides intermittent fan powered variable air volume control with morning warm up. As space temperature drops, primary airflow is reset from maximum to minimum setpoint. When primary airflow decreases to a field adjustable volume, the unit fan is energized by a damper position switch thus supplying plenum air mixed with primary air to the space. When warm air is sensed by an electronic duct sensor, the unit fan is de-energized and the primary air valve reverses operation for morning warm up. Maximum or minimum air volume limit is field set by mechanical stops.



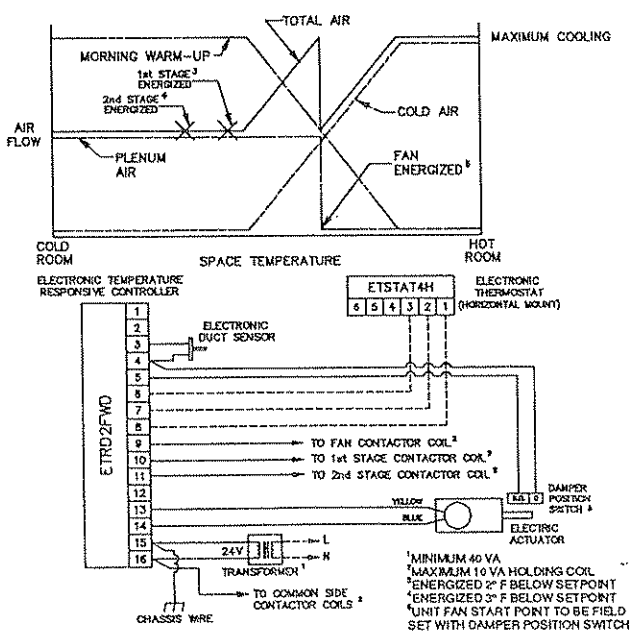
FV635A

This control sequence provides intermittent fan powered variable air volume control with one stage of electric or hot water heat and morning warm up. As space temperature drops, primary airflow is reset from maximum to minimum setpoint. When primary airflow decreases to a field adjustable volume, the unit fan is energized by a damper position switch thus supplying plenum air mixed with primary air to the space. As space temperature continues to drop, heat is energized to satisfy the load. When warm air is sensed by an electronic duct sensor, the unit fan and heat are de-energized and the primary air valve reverses operation for morning warm up. Maximum or minimum air volume limit is field set by mechanical stops.



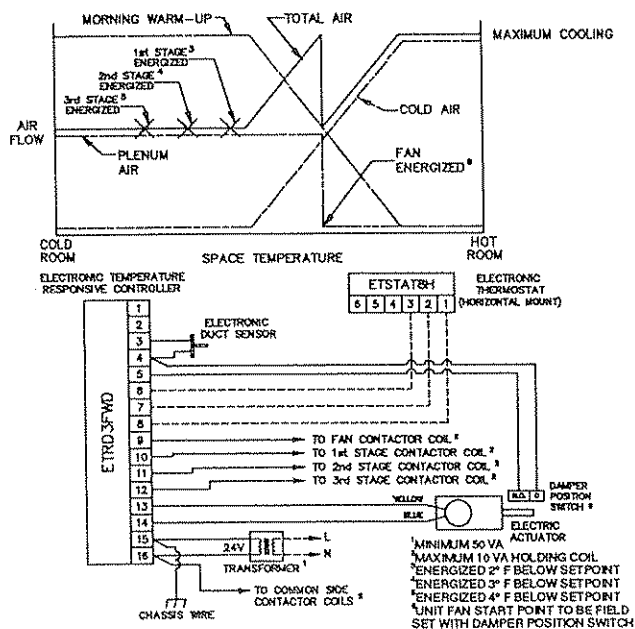
FV637A

This control sequence provides intermittent fan powered variable air volume control with two stages of electric heat and morning warm up. As space temperature drops, primary airflow is reset from maximum to minimum setpoint. When primary airflow decreases to a field adjustable volume, the unit fan is energized by a damper position switch thus supplying plenum air mixed with primary air to the space. As space temperature continues to drop, heat is energized in stages to satisfy the load. When warm air is sensed by an electronic duct sensor, the unit fan and heat are de-energized and the primary air valve reverses operation for morning warm up. Maximum or minimum air volume limit is field set by mechanical stops.



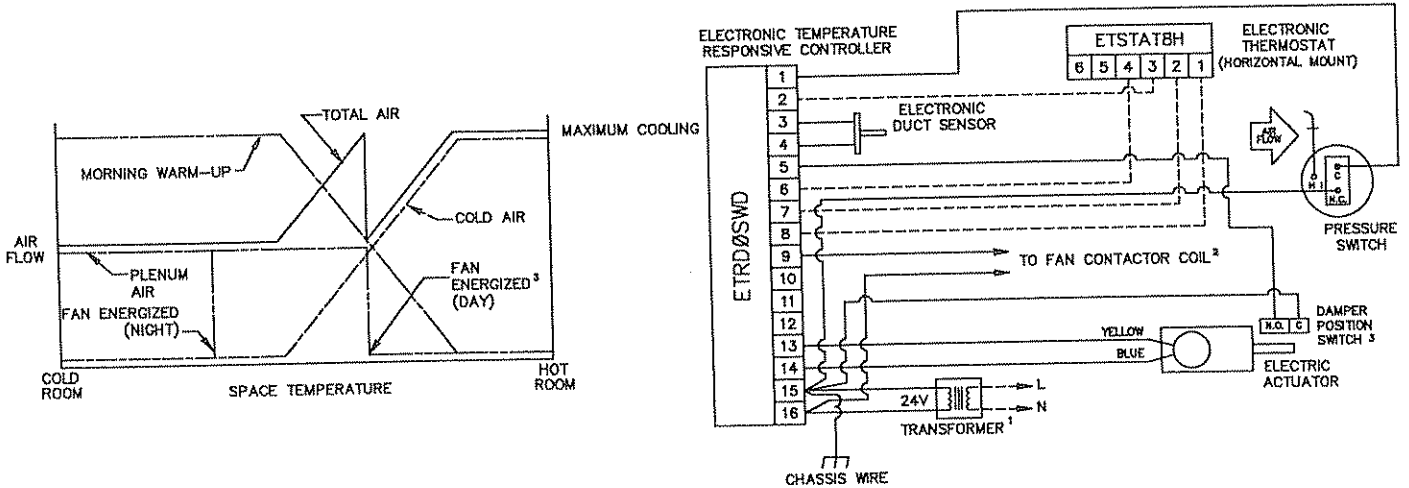
FV639A

This control sequence provides intermittent fan powered variable air volume control with three stages of electric heat and morning warm up. As space temperature drops, primary airflow is reset from maximum to minimum setpoint. When primary airflow decreases to a field adjustable volume, the unit fan is energized by a damper position switch thus supplying plenum air mixed with primary air to the space. As space temperature continues to drop, heat is energized in stages to satisfy the load. When warm air is sensed by an electronic duct sensor, the unit fan and heat are de-energized and the primary air valve reverses operation for morning warm up. Maximum or minimum air volume limit is field set by mechanical stops.



FV641A

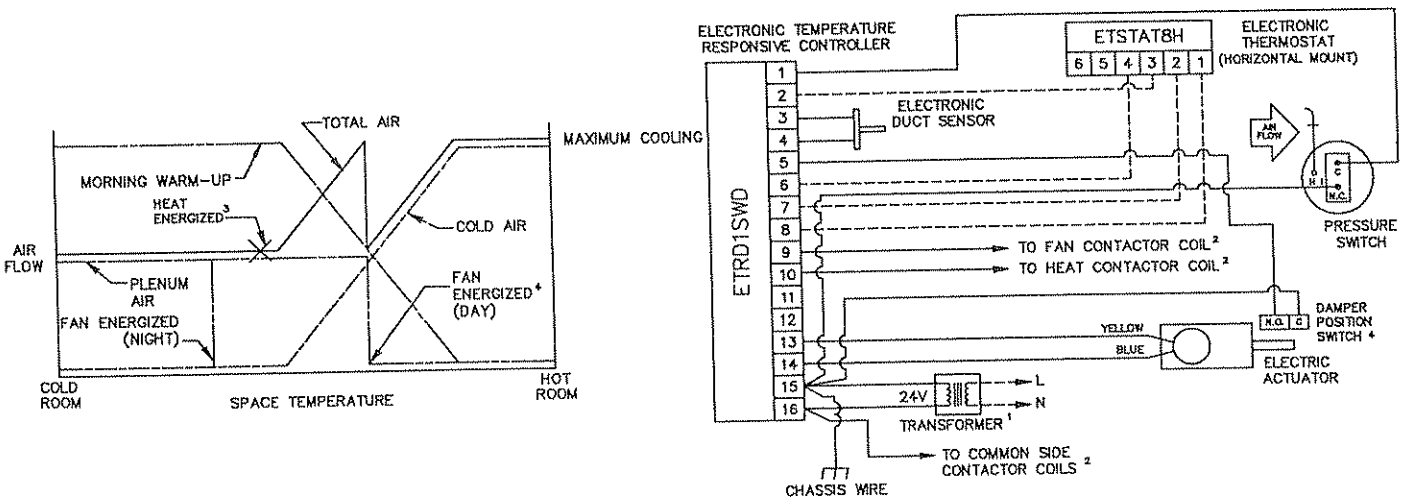
This control sequence provides intermittent fan powered variable air volume control with night setback and morning warm up. As space temperature drops, primary airflow is reset from maximum to minimum setpoint. When primary airflow decreases to a field adjustable volume, the unit fan is energized by a damper position switch thus supplying primary air mixed with plenum air to the space. When system air is failed, the unit automatically switches into the night setback mode. The primary air valve remains closed and the unit fan is cycled to maintain the night setpoint. Warm air is sensed by an electronic duct sensor causing the sequence to reverse for morning warm up (fan is disabled). Maximum or minimum air volume limit is field set by mechanical stops.



¹MINIMUM 20 VA
²MAXIMUM 10 VA HOLDING COIL
³UNIT FAN START POINT TO BE FIELD SET WITH DAMPER POSITION SWITCH

FV643A

This control sequence provides intermittent fan powered variable air volume control with one stage of electric or hot water heat, night setback and morning warm up. As space temperature drops, primary airflow is reset from maximum to minimum setpoint. When primary airflow decreases to a field adjustable volume, the unit fan is energized by a damper position switch thus supplying primary air mixed with plenum air to the space. As space temperature continues to drop, heat is energized to satisfy the load. When system air is failed, the unit automatically switches into the night setback mode. The primary air valve remains closed and the unit fan and heat are cycled to maintain the night setpoint. Warm air is sensed by an electronic duct sensor causing the sequence to reverse for morning warm up (fan and heat are disabled). Maximum or minimum air volume limit is field set by mechanical stops.

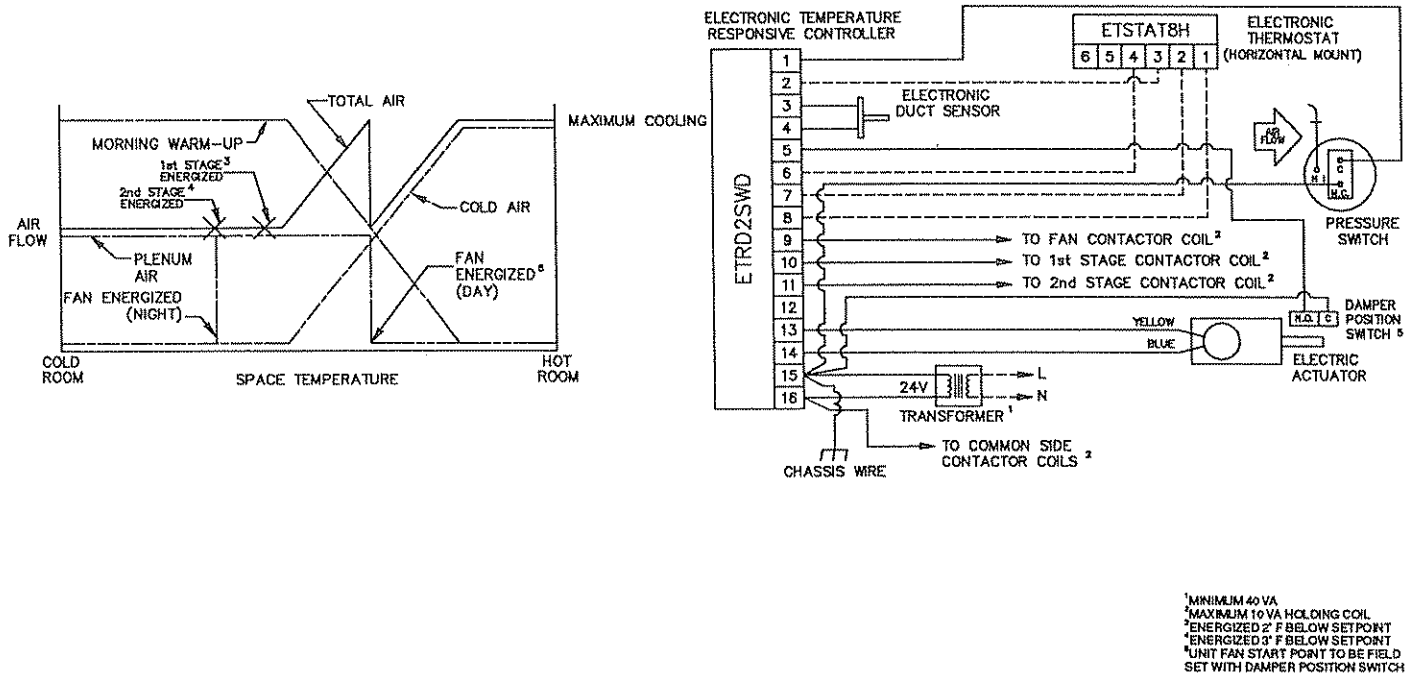


¹MINIMUM 30 VA
²MAXIMUM 10 VA HOLDING COIL
³ENERGIZED 2° BELOW THE SETPOINT
⁴UNIT FAN START POINT TO BE FIELD SET WITH DAMPER POSITION SWITCH

-----Field Wiring -----Factory Wiring

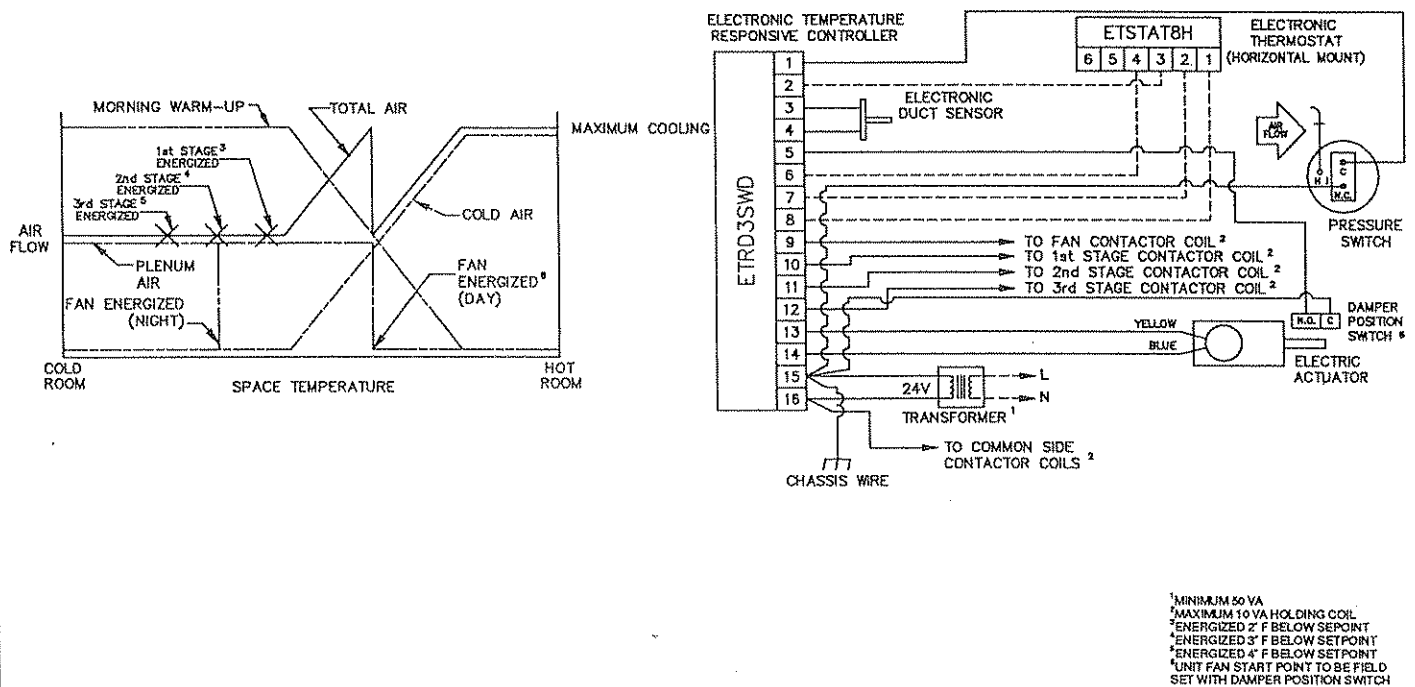
FV645A

This control sequence provides intermittent fan powered variable air volume control with two stages of electric heat, night setback and morning warm up. As space temperature drops, primary airflow is reset from maximum to minimum setpoint. When primary airflow decreases to a field adjustable volume, the unit fan is energized by a damper position switch thus supplying primary air mixed with plenum air to the space. As space temperature continues to drop, heat is energized in stages to satisfy the load. When system air is failed, the unit automatically switches into the night setback mode. The primary air valve remains closed and the unit fan and heat are cycled to maintain the night setpoint. Warm air is sensed by an electronic duct sensor causing the sequence to reverse for morning warm up (fan and heat are disabled). Maximum or minimum air volume limit is field set by mechanical stops.



FV647A

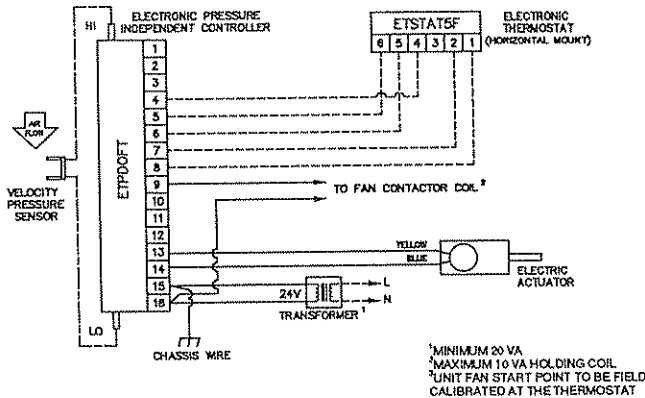
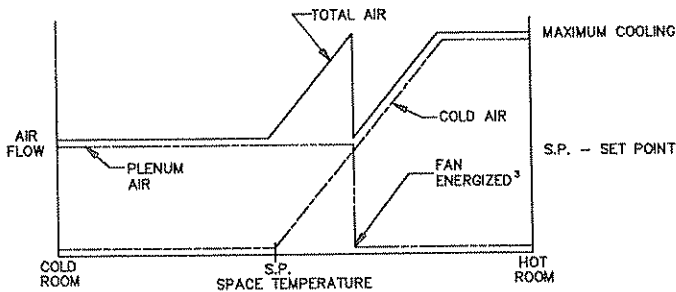
This control sequence provides intermittent fan powered variable air volume control with three stages of electric heat, night setback and morning warm up. As space temperature drops, primary airflow is reset from maximum to minimum setpoint. When primary airflow decreases to a field adjustable volume, the unit fan is energized by a damper position switch thus supplying primary air mixed with plenum air to the space. As space temperature continues to drop, heat is energized in stages to satisfy the load. When system air is failed, the unit automatically switches into the night setback mode. The primary air valve remains closed and the unit fan and heat are cycled to maintain the night setpoint. Warm air is sensed by an electronic duct sensor causing the sequence to reverse for morning warm up (fan and heat are disabled). Maximum or minimum air volume limit is field set by mechanical stops.



Pressure Independent Control Sequences

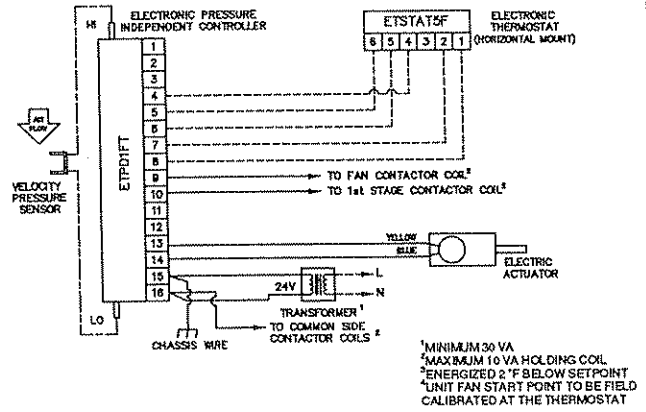
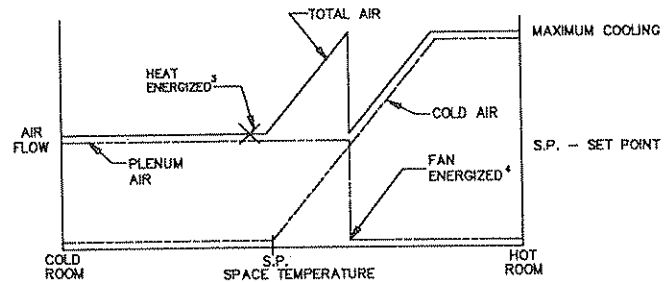
FV701A

This control sequence provides intermittent fan powered variable air volume control. As space temperature drops, primary airflow is reset from maximum to minimum setpoint. When primary airflow decreases to a field adjustable volume the unit fan is energized thus supplying primary air mixed with plenum air to the space. Air volume limits are located at the thermostat.



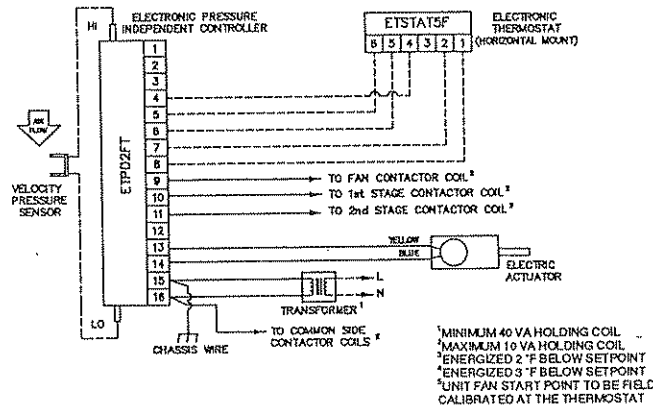
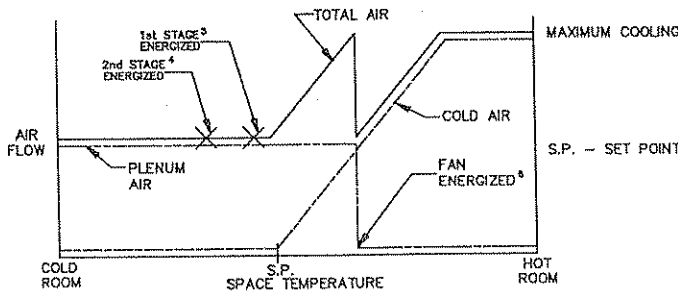
FV702A

This control sequence provides intermittent fan powered variable air volume control with one stage of electric or hot water heat. As space temperature drops, primary airflow is reset from maximum to minimum setpoint. When primary airflow decreases to a field adjustable volume the unit fan and heat are energized thus supplying primary air mixed with plenum air to the space. As space temperature continues to drop, heat is energized to satisfy the load. Air volume limits are located at the thermostat.



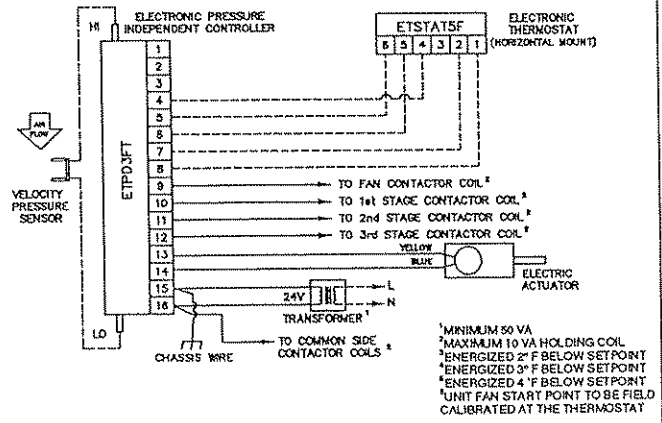
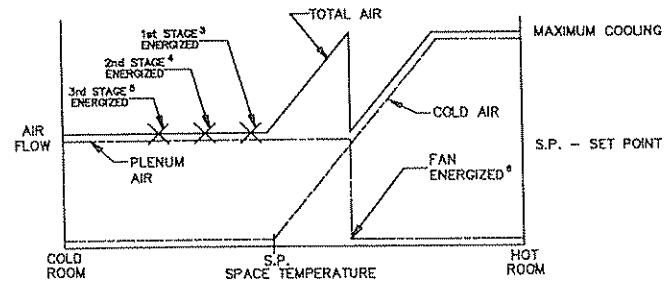
FV703A

This control sequence provides intermittent fan powered variable air volume control with two stages of electric heat. As space temperature drops, primary airflow is reset from maximum to minimum setpoint. When primary airflow decreases to a field adjustable volume the unit fan and heat are energized thus supplying primary air mixed with plenum air to the space. As space temperature continues to drop, heat is energized in stages to satisfy the load. Air volume limits are located at the thermostat.



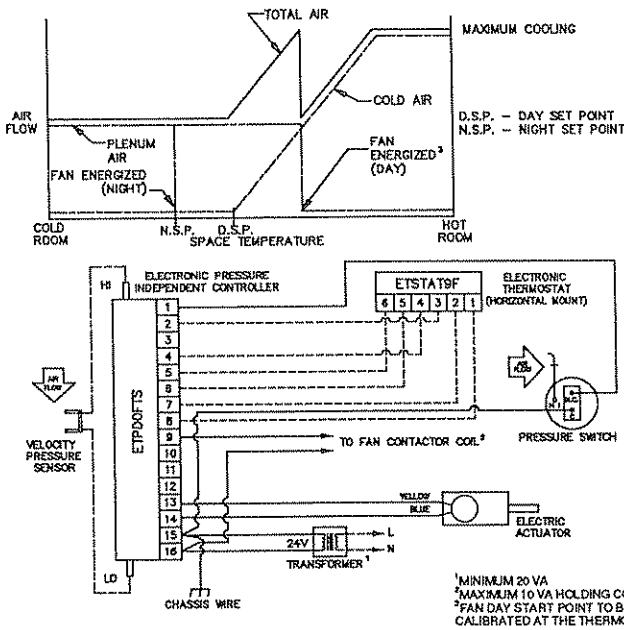
FV704A

This control sequence provides intermittent fan powered variable air volume control with three stages of electric heat. As space temperature drops, primary airflow is reset from maximum to minimum setpoint. When primary airflow decreases to a field adjustable volume the unit fan and heat are energized thus supplying primary air mixed with plenum air to the space. As space temperature continues to drop, heat is energized in stages to satisfy the load. Air volume limits are located at the thermostat.



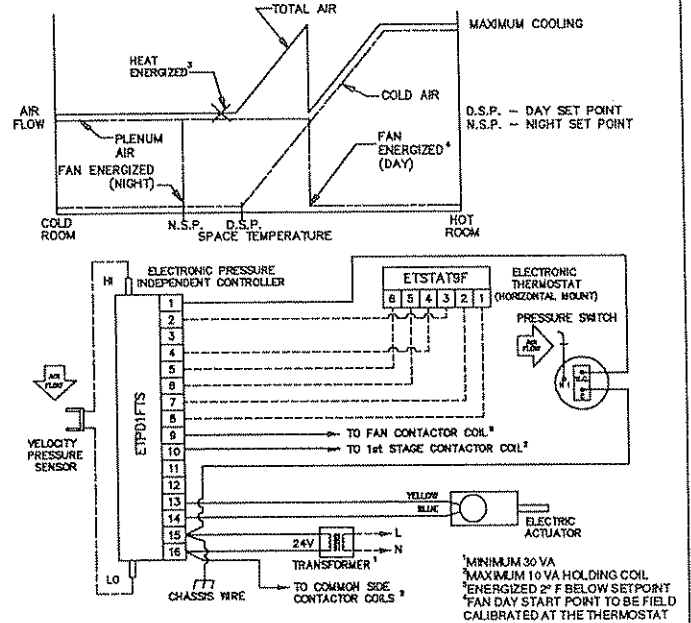
FV705A

This control sequence provides intermittent fan powered variable air volume control with night setback. As space temperature drops, primary airflow is reset from maximum to minimum setpoint. When primary airflow decreases to a field adjustable volume, the unit fan is energized thus supplying primary air mixed with plenum air to the space. When system air is failed, the unit automatically switches into the night setback mode. The primary air valve remains closed and the unit fan is cycled to maintain the night setpoint. Air volume limits are located at the thermostat.



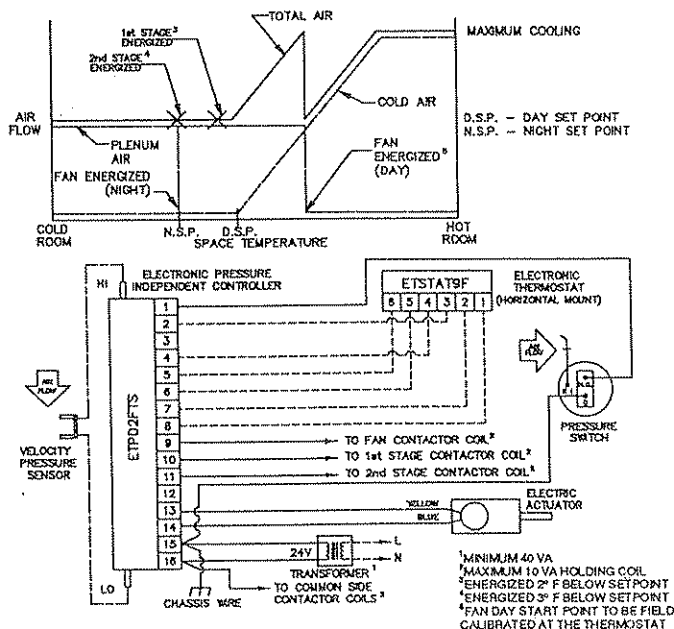
FV706A

This control sequence provides intermittent fan powered variable air volume control with one stage of electric or hot water heat and night setback. As space temperature drops, primary airflow is reset from maximum to minimum setpoint. When primary airflow decreases to a field adjustable volume, the unit fan is energized thus supplying primary air mixed with plenum air to the space. As space temperature continues to drop, heat is energized to satisfy the load. When system air is failed, the unit automatically switches into the night setback mode. The primary air valve remains closed and the unit fan and heat are cycled to maintain the night setpoint. Air volume limits are located at the thermostat.



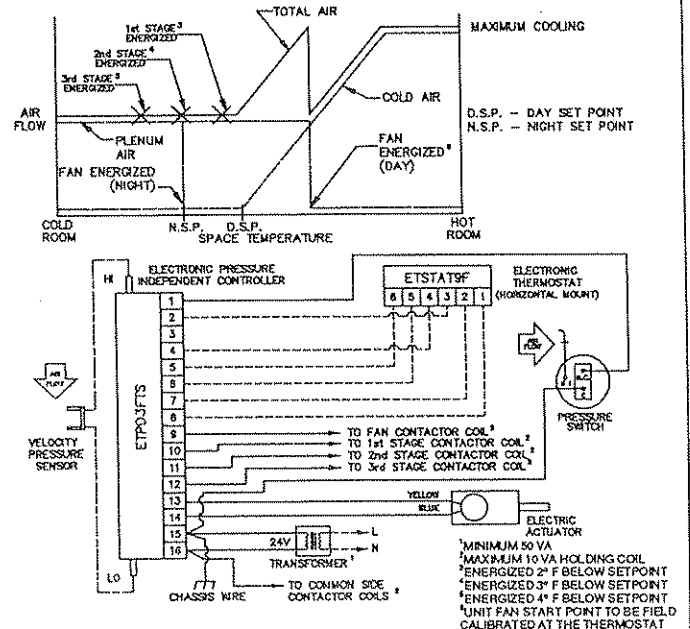
FV707A

This control sequence provides intermittent fan powered variable air volume control with two stages of electric heat and night setback. As space temperature drops, primary airflow is reset from maximum to minimum setpoint. When primary airflow decreases to a field adjustable volume, the unit fan is energized thus supplying primary air mixed with plenum air to the space. As space temperature continues to drop, heat is energized in stages to satisfy the load. When system air is failed, the unit automatically switches into the night setback mode. The primary air valve remains closed and the unit fan and heat are cycled to maintain the night setpoint. Air volume limits are located at the thermostat.



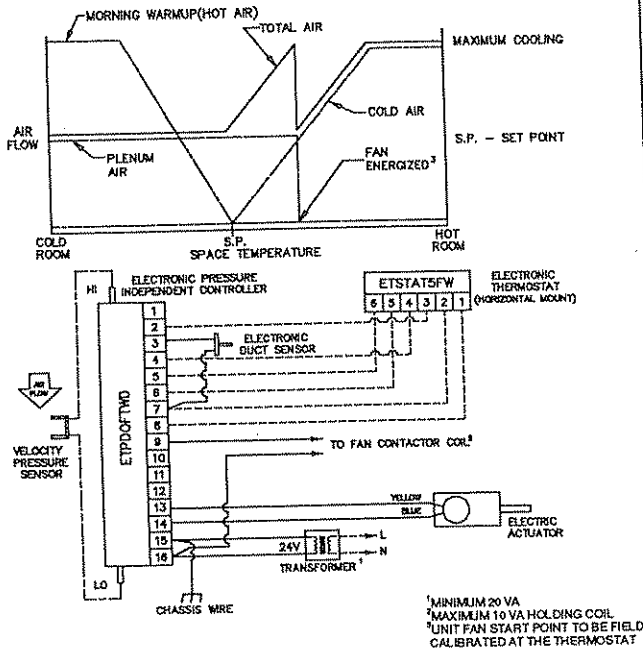
FV708A

This control sequence provides intermittent fan powered variable air volume control with three stages of electric heat and night setback. As space temperature drops, primary airflow is reset from maximum to minimum setpoint. When primary airflow decreases to a field adjustable volume, the unit fan is energized thus supplying primary air mixed with plenum air to the space. As space temperature continues to drop, heat is energized in stages to satisfy the load. When system air is failed, the unit automatically switches into the night setback mode. The primary air valve remains closed and the unit fan and heat are cycled to maintain the night setpoint. Air volume limits are located at the thermostat.



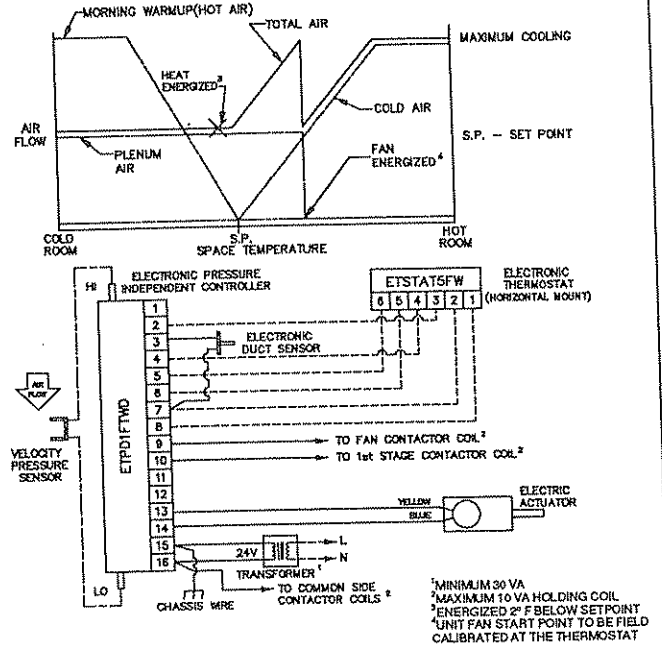
FV717A

This control sequence provides intermittent fan powered variable air volume control with morning warm up. As space temperature drops, primary airflow is reset from maximum to minimum setpoint. When primary airflow decreases to a field adjustable volume, the unit fan is energized thus supplying primary air mixed with plenum air to the space. When warm air is sensed by an electronic duct sensor, the unit fan is de-energized and the primary air valve reverses operation for morning warm up. Air volume limits are located at the thermostat.



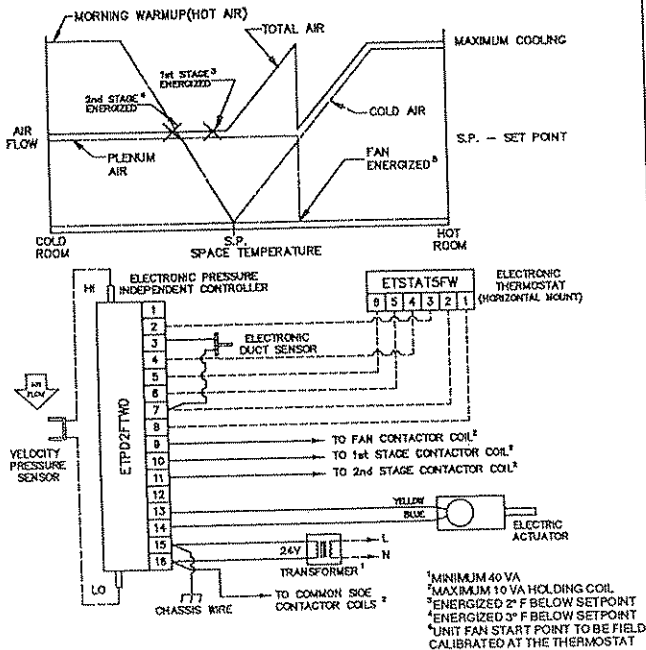
FV718A

This control sequence provides intermittent fan powered variable air volume control with one stage of electric or hot water heat and morning warm up. As space temperature drops, primary airflow is reset from maximum to minimum setpoint. When primary airflow decreases to a field adjustable volume, the unit fan is energized thus supplying primary air mixed with plenum air to the space. As space temperature continues to drop, heat is energized to satisfy the load. When warm air is sensed by an electronic duct sensor, the unit fan and heat are de-energized and the primary air valve reverses operation for morning warm up. Air volume limits are located at the thermostat.



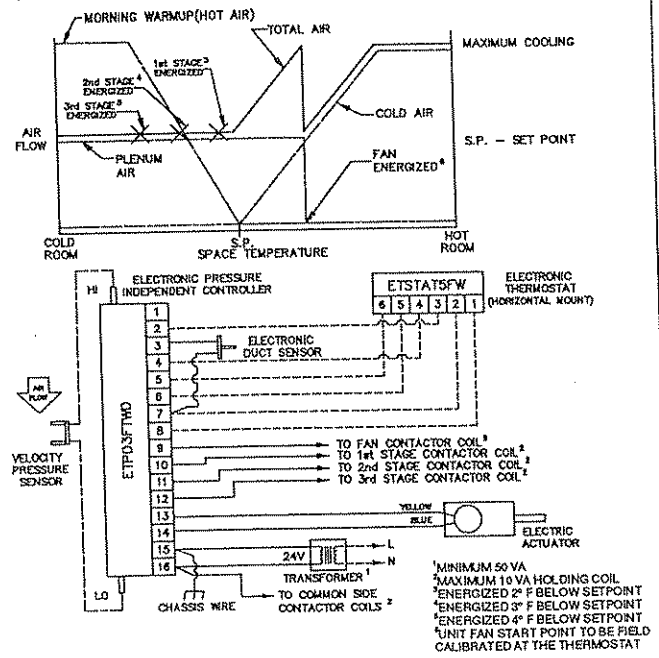
FV719A

This control sequence provides intermittent fan powered variable air volume control with two stages of electric heat and morning warm up. As space temperature drops, primary airflow is reset from maximum to minimum setpoint. When primary airflow decreases to a field adjustable volume, the unit fan is energized thus supplying primary air mixed with plenum air to the space. As space temperature continues to drop, heat is energized in stages to satisfy the load. When warm air is sensed by an electronic duct sensor, the unit fan and heat are de-energized and the primary air valve reverses operation for morning warm up. Air volume limits are located at the thermostat.



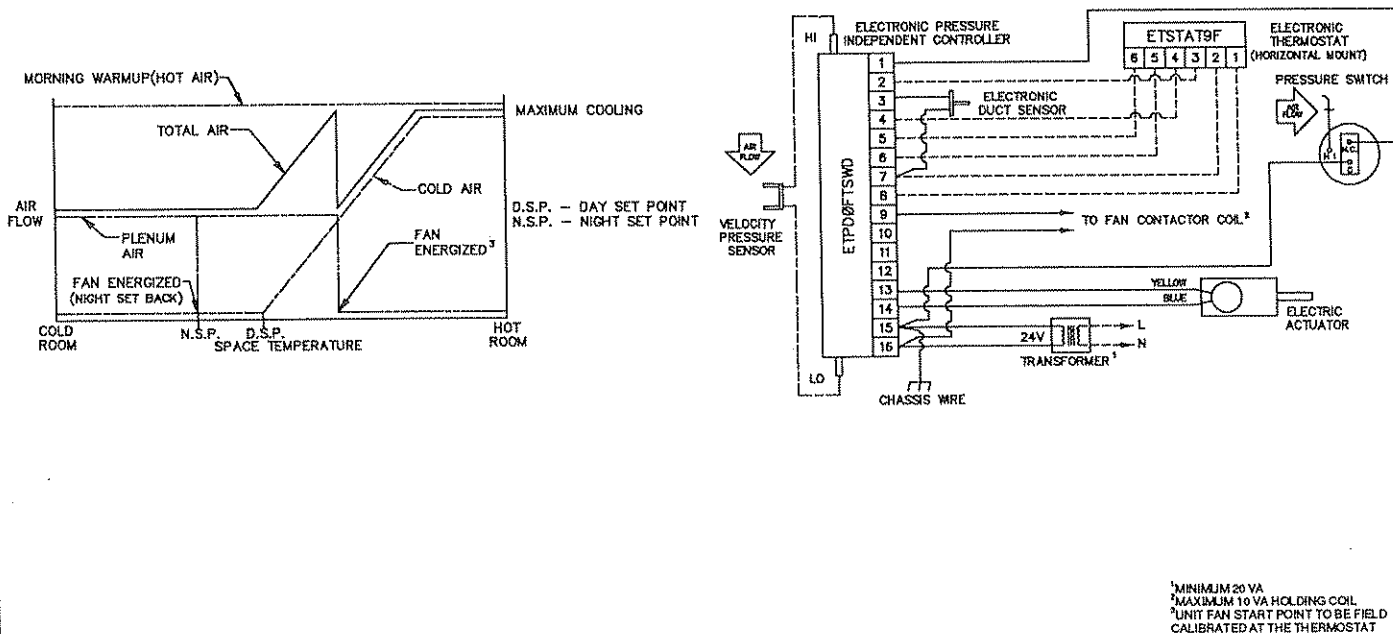
FV720A

This control sequence provides intermittent fan powered variable air volume control with three stages of electric heat and morning warm up. As space temperature drops, primary airflow is reset from maximum to minimum setpoint. When primary airflow decreases to a field adjustable volume, the unit fan is energized thus supplying primary air mixed with plenum air to the space. As space temperature continues to drop, heat is energized in stages to satisfy the load. When warm air is sensed by an electronic duct sensor, the unit fan and heat are de-energized and the primary air valve reverses operation for morning warm up. Air volume limits are located at the thermostat.



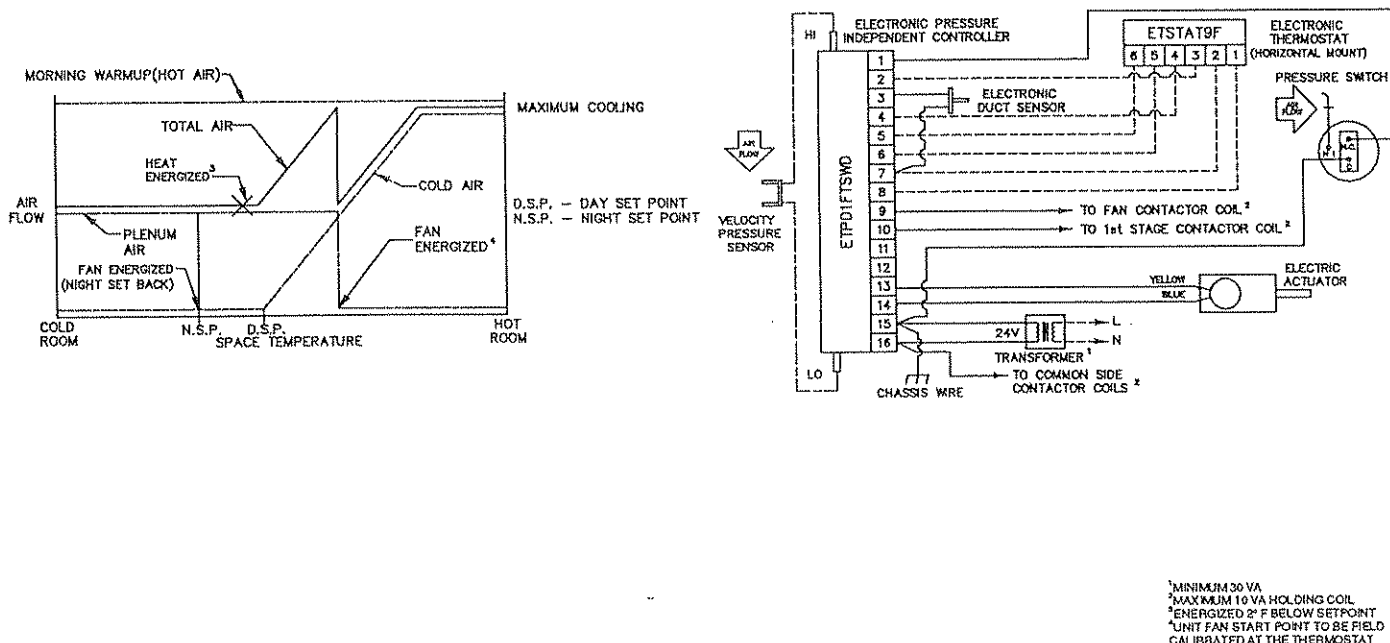
FV721A

This control sequence provides intermittent fan powered variable air volume control with night setback and morning warm up. As space temperature drops, primary airflow is reset from maximum to minimum setpoint. When primary airflow decreases to a field adjustable volume, the unit fan is energized thus supplying primary air mixed with plenum air to the space. When system air is failed, the unit automatically switches into the night setback mode. The primary air valve remains closed and the unit fan is cycled to maintain the night setpoint. When warm air is sensed by an electronic duct sensor, the unit fan is de-energized and the primary air valve opens to the maximum airflow setpoint for morning warm up. Air volume limits are located at the thermostat.



FV722A

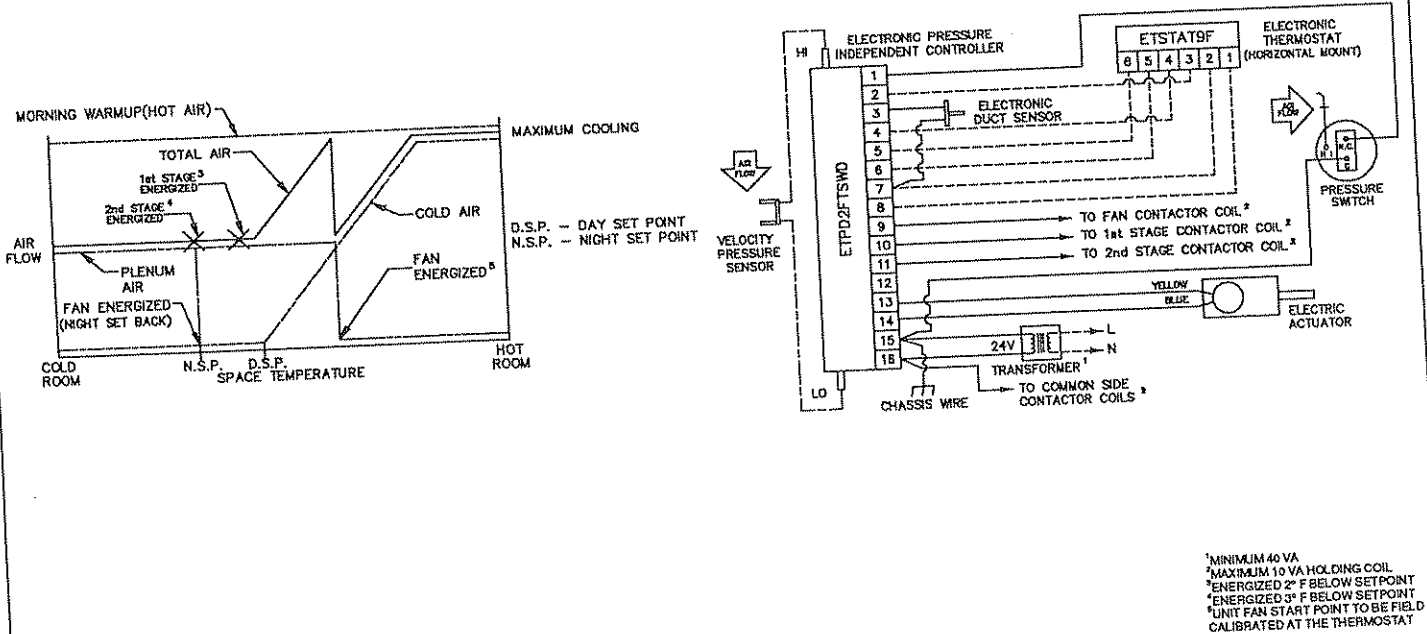
This control sequence provides intermittent fan powered variable air volume control with one stage of electric or hot water heat, night setback and morning warm up. As space temperature drops, primary airflow is reset from maximum to minimum setpoint. When primary airflow decreases to a field adjustable volume, the unit fan is energized thus supplying primary air mixed with plenum air to the space. As space temperature continues to drop heat is energized to satisfy the load. When system air is failed, the unit automatically switches into the night setback mode. The primary air valve remains closed and the unit fan and heat are de-energized and the primary air valve opens to the maximum airflow setpoint for morning warm up. Air volume limits are located at the thermostat.



-----Field Wiring ———Factory Wiring - - - -Tubing

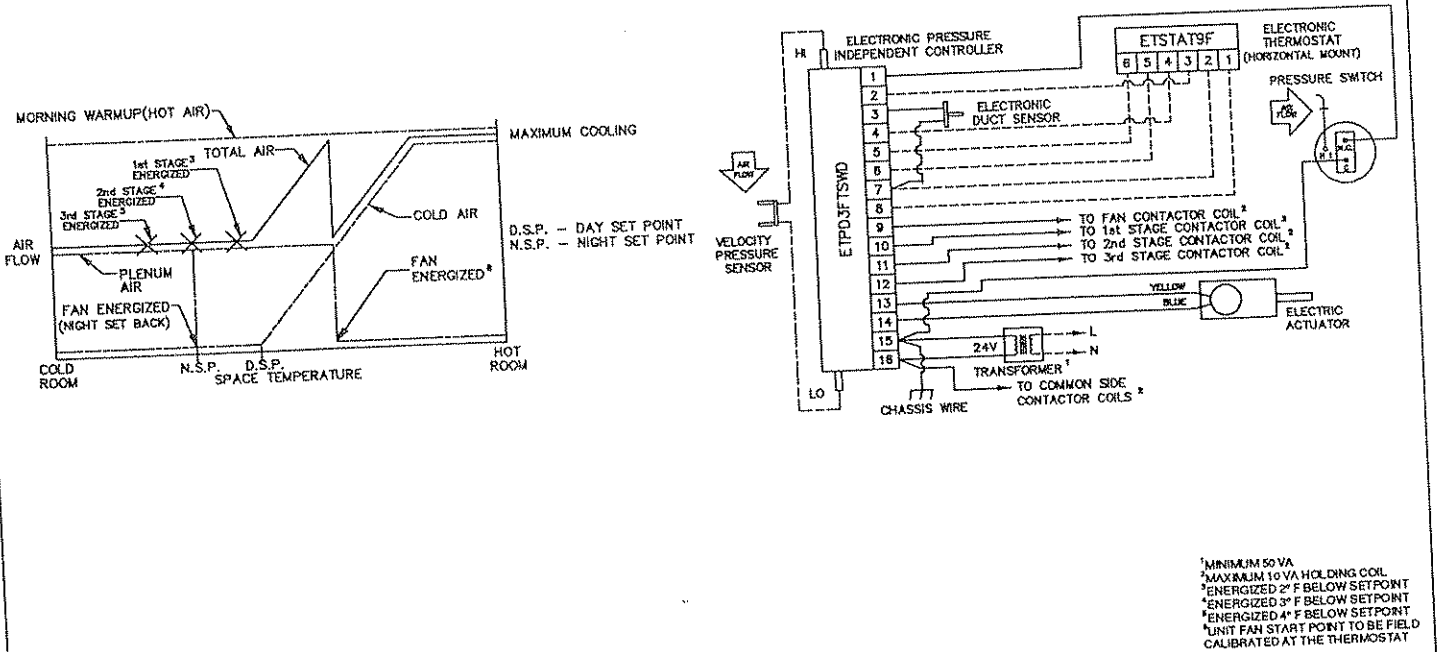
FV723A

This control sequence provides intermittent fan powered variable air volume control with two stages of electric heat, night setback and morning warm up. As space temperature drops, primary airflow is reset from maximum to minimum setpoint. When primary airflow decreases to a field adjustable volume, the unit fan is energized thus supplying primary air mixed with plenum air to the space. As space temperature continues to drop heat is energized in stages to satisfy the load. When system air is failed, the unit automatically switches into the night setback mode. The primary air valve remains closed and the unit fan and heat are de-energized and the primary air valve opens to the maximum airflow setpoint for morning warm up. Air volume limits are located at the thermostat.



FV724A

This control sequence provides intermittent fan powered variable air volume control with three stages of electric heat, night setback and morning warm up. As space temperature drops, primary airflow is reset from maximum to minimum setpoint. When primary airflow decreases to a field adjustable volume, the unit fan is energized thus supplying primary air mixed with plenum air to the space. As space temperature continues to drop heat is energized in stages to satisfy the load. When system air is failed, the unit automatically switches into the night setback mode. The primary air valve remains closed and the unit fan and heat are de-energized and the primary air valve opens to the maximum airflow setpoint for morning warm up. Air volume limits are located at the thermostat.



-----Field Wiring ———Factory Wiring - - - - -Tubing

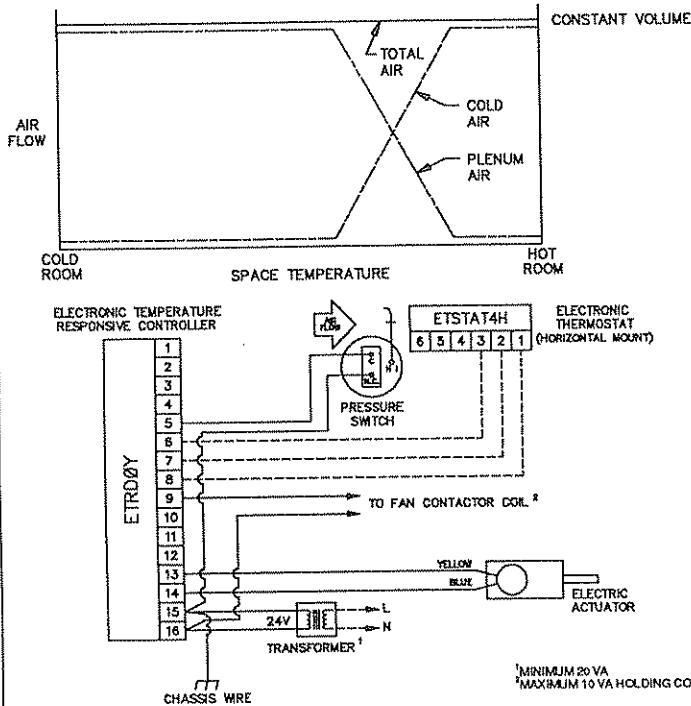
Fan Powered Series Flow (CVF-II) Control Sequences

Page No.	Control Sequence	Class							Sequence of Operation			Number of Heat Stages			Control Sequence	Page No.
		TEMPERATURE RESPONSIVE	PRESSURE INDEPENDENT	NIGHT LOCK OUT	NIGHT SET BACK (N.S.B.)	CONTINUOUS FAN OPERATION	WARM UP AND NIGHT MODE	WARM UP AND N.S.B.	NONE	ONE STAGE	TWO STAGES	THREE STAGES				
42	FC601A	⊗		⊗					⊗				FC601A	42		
42	FC603A	⊗		⊗						⊗			FC603A	42		
42	FC605A	⊗		⊗							⊗		FC605A	42		
42	FC607A	⊗		⊗								⊗	FC607A	42		
43	FC609A	⊗			⊗				⊗				FC609A	43		
43	FC611A	⊗			⊗	⊗				⊗			FC611A	43		
43	FC613A	⊗			⊗	⊗					⊗		FC613A	43		
43	FC615A	⊗			⊗							⊗	FC615A	43		
44	FC617A	⊗				⊗			⊗				FC617A	44		
44	FC619A	⊗				⊗				⊗			FC619A	44		
44	FC621A	⊗				⊗					⊗		FC621A	44		
44	FC623A	⊗				⊗						⊗	FC623A	44		
45	FC625A	⊗					⊗		⊗				FC625A	45		
45	FC627A	⊗					⊗			⊗			FC627A	45		
45	FC629A	⊗					⊗				⊗		FC629A	45		
45	FC631A	⊗					⊗					⊗	FC631A	45		
46	FC633A	⊗						⊗	⊗				FC633A	46		
46	FC635A	⊗						⊗		⊗			FC635A	46		
47	FC637A	⊗						⊗			⊗		FC637A	47		
47	FC639A	⊗						⊗				⊗	FC639A	47		
48	FC701A		⊗	⊗					⊗				FC701A	48		
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51	FC714A		⊗				⊗			⊗			FC714A	51		
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52	FC718A		⊗					⊗		⊗			FC718A	52		
53	FC719A		⊗					⊗			⊗		FC719A	53		
53	FC720A		⊗					⊗				⊗	FC720A	53		

Temperature Responsive Control Sequences

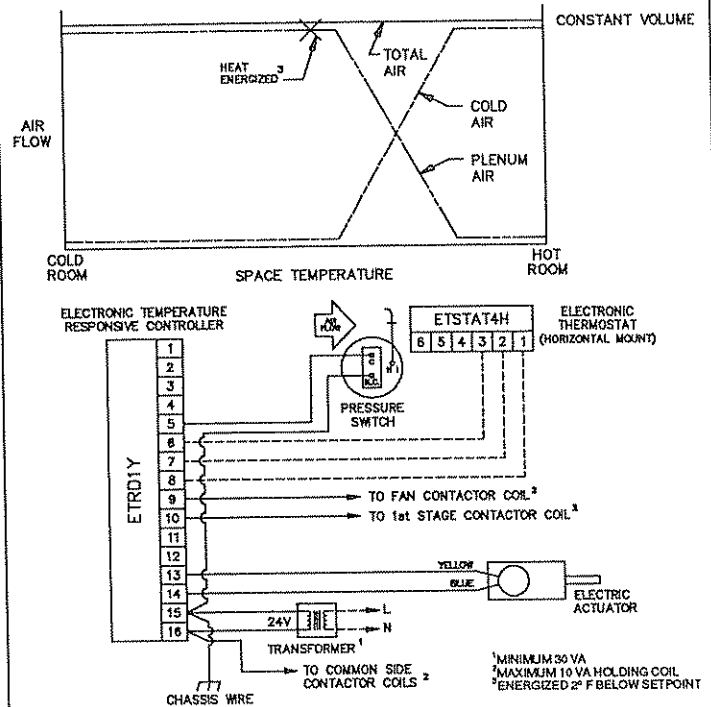
FC601A

This control sequence provides constant fan powered variable primary air volume control. The unit fan draws either cold primary air or warm plenum air to satisfy the load. When system air is failed, the unit fan de-energizes for night operation. Maximum or minimum air volume limit is field set by mechanical stops.



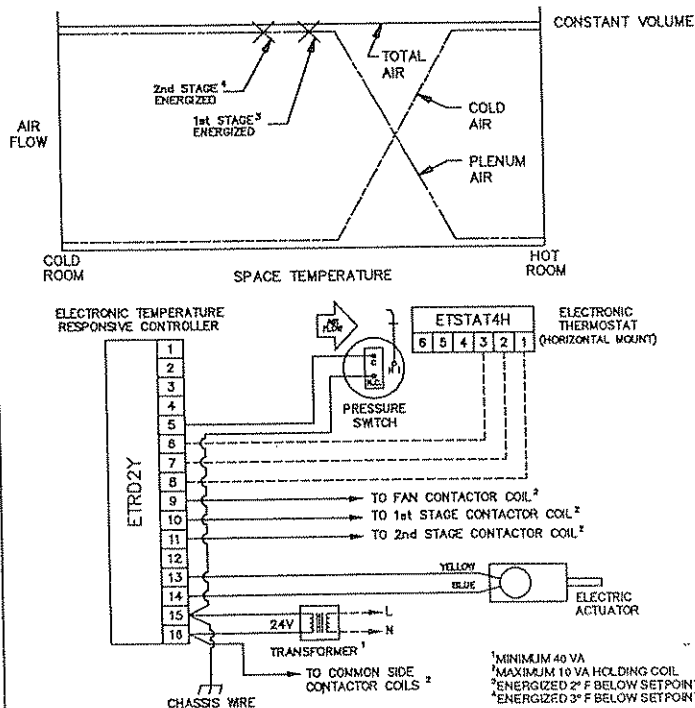
FC603A

This control sequence provides constant fan powered variable primary air volume control with one stage of electric or hot water heat. The unit fan draws either cold primary air or warm plenum air to satisfy the load. If plenum air fails to maintain setpoint, heat is energized to satisfy the load. When system air is failed, the unit fan and heat are de-energized for night operation. Maximum or minimum air volume limit is field set by mechanical stops.



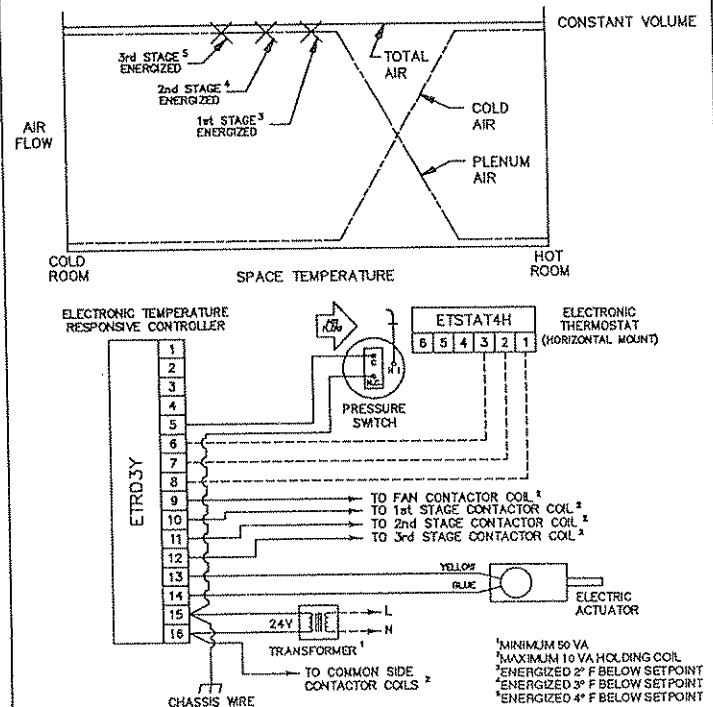
FC605A

This control sequence provides constant fan powered variable primary air volume control with two stages of electric heat. The unit fan draws either cold primary air or warm plenum air to satisfy the load. If plenum air fails to maintain setpoint, heat is energized in stages to satisfy the load. When system air is failed, the unit fan and heat are de-energized for night operation. Maximum or minimum air volume limit is field set by mechanical stops.



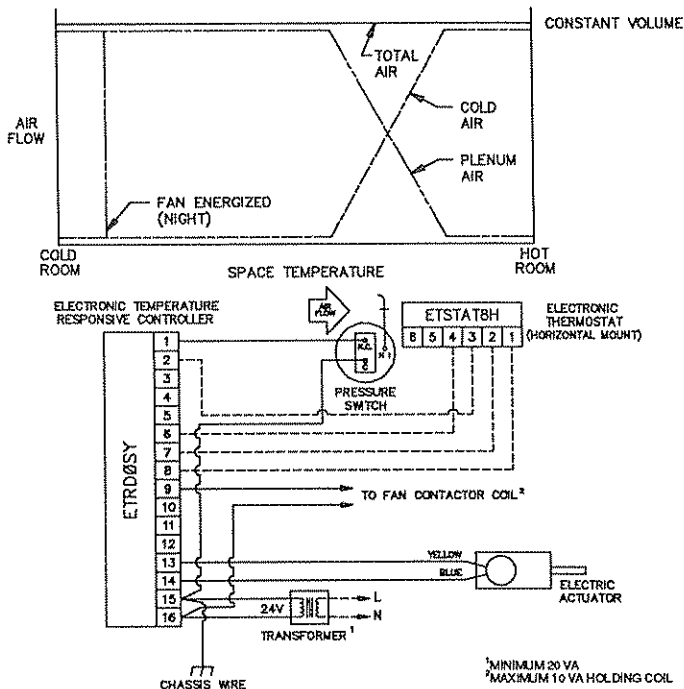
FC607A

This control sequence provides constant fan powered variable primary air volume control with three stages of electric heat. The unit fan draws either cold primary air or warm plenum air to satisfy the load. If plenum air fails to maintain setpoint, heat is energized in stages to satisfy the load. When system air is failed, the unit fan and heat are de-energized for night operation. Maximum or minimum air volume limit is field set by mechanical stops.



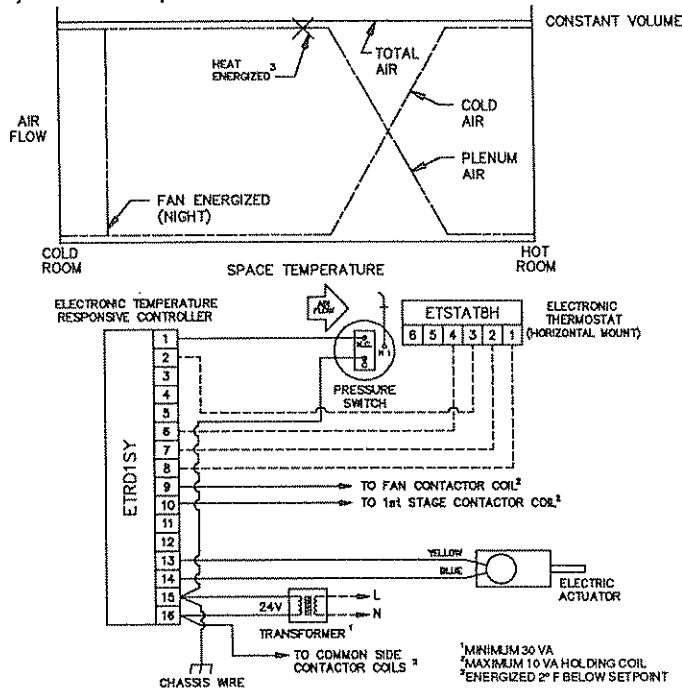
FC609A

This control sequence provides constant fan powered variable primary air volume control with night setback. The unit fan draws either cold primary air or warm plenum air to satisfy the load. When system air is failed, the unit automatically switches to the night setback mode. The primary air valve remains closed and the unit fan is cycled to maintain the night setpoint. Maximum or minimum air volume limit is field set by mechanical stops.



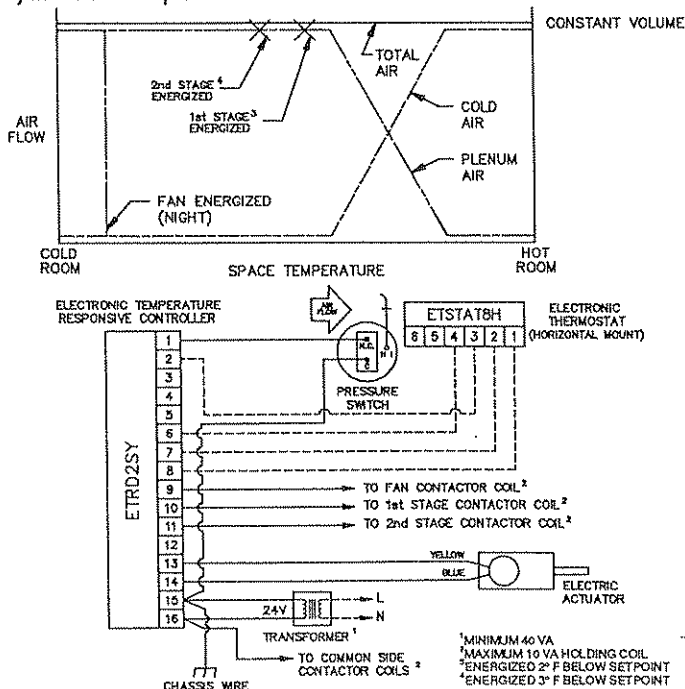
FC611A

This control sequence provides constant fan powered variable primary air volume control with one stage of electric or hot water heat and night setback. The unit fan draws either cold primary air or warm plenum air to satisfy the load. If plenum air fails to maintain setpoint, heat is energized to satisfy the load. When system air is failed, the unit automatically switches to the night setback mode. The primary air valve remains closed and the unit fan and heat are cycled to maintain the night setpoint. Maximum or minimum air volume limit is field set by mechanical stops.



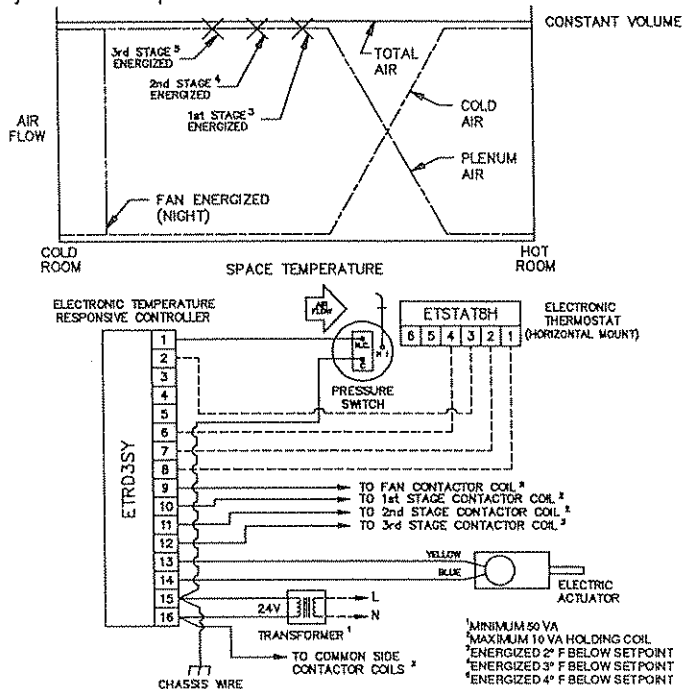
FC613A

This control sequence provides constant fan powered variable primary air volume control with two stages of electric heat and night setback. The unit fan draws either cold primary air or warm plenum air to satisfy the load. If plenum air fails to maintain setpoint, heat is energized in stages to satisfy the load. When system air is failed, the unit automatically switches to the night setback mode. The primary air valve remains closed and the unit fan and heat are cycled to maintain the night setpoint. Maximum or minimum air volume limit is field set by mechanical stops.



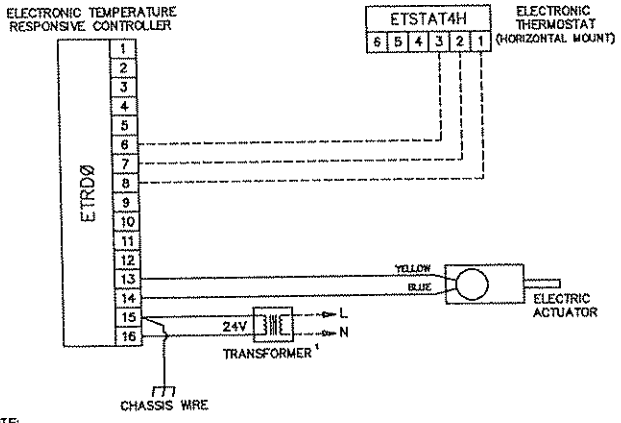
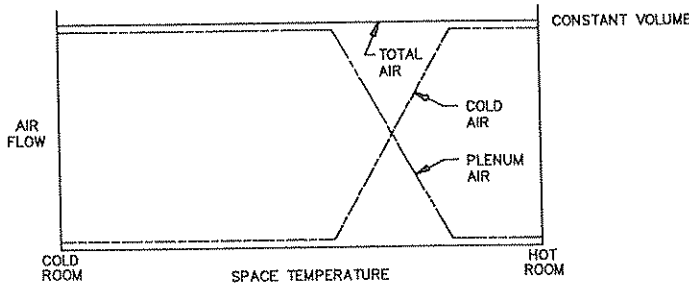
FC615A

This control sequence provides constant fan powered variable primary air volume control with three stages of electric heat and night setback. The unit fan draws either cold primary air or warm plenum air to satisfy the load. If plenum air fails to maintain setpoint, heat is energized in stages to satisfy the load. When system air is failed, the unit automatically switches to the night setback mode. The primary air valve remains closed and the unit fan and heat are cycled to maintain the night setpoint. Maximum or minimum air volume limit is field set by mechanical stops.



FC617A

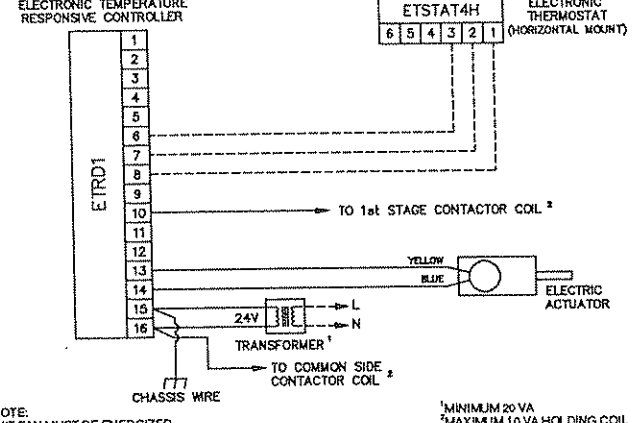
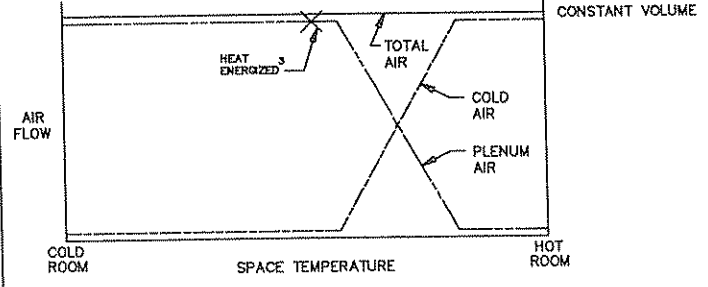
This control sequence provides constant fan powered variable primary air volume control. The unit fan draws either cold primary air or warm plenum air to satisfy the load. Maximum or minimum air volume limit is field set by mechanical stops.



¹MINIMUM 10 VA
²ENERGIZED 2° F BELOW SETPOINT
³ENERGIZED 3° F BELOW SETPOINT
⁴ENERGIZED 4° F BELOW SETPOINT
⁵ENERGIZED 5° F BELOW SETPOINT
⁶ENERGIZED 6° F BELOW SETPOINT
⁷ENERGIZED 7° F BELOW SETPOINT
⁸ENERGIZED 8° F BELOW SETPOINT
⁹ENERGIZED 9° F BELOW SETPOINT
¹⁰ENERGIZED 10° F BELOW SETPOINT
¹¹ENERGIZED 11° F BELOW SETPOINT
¹²ENERGIZED 12° F BELOW SETPOINT
¹³ENERGIZED 13° F BELOW SETPOINT
¹⁴ENERGIZED 14° F BELOW SETPOINT
¹⁵ENERGIZED 15° F BELOW SETPOINT
¹⁶ENERGIZED 16° F BELOW SETPOINT

FC619A

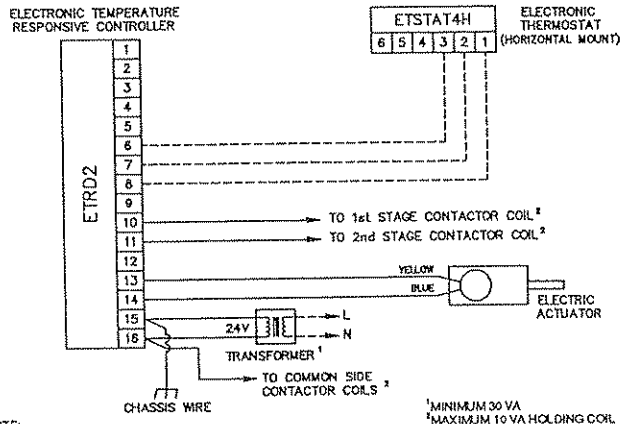
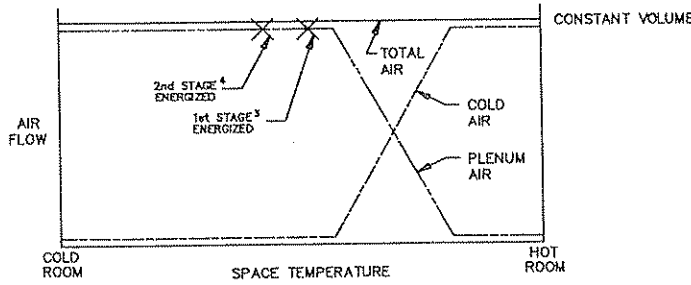
This control sequence provides constant fan powered variable primary air volume control with one stage of electric or hot water heat. The unit fan draws either cold primary air or warm plenum air to satisfy the load. If plenum air fails to maintain setpoint, heat is energized. Maximum or minimum air volume limit is field set by mechanical stops.



¹MINIMUM 20 VA
²MAXIMUM 10 VA HOLDING COIL
³ENERGIZED 2° F BELOW SETPOINT
⁴ENERGIZED 3° F BELOW SETPOINT
⁵ENERGIZED 4° F BELOW SETPOINT
⁶ENERGIZED 5° F BELOW SETPOINT
⁷ENERGIZED 6° F BELOW SETPOINT
⁸ENERGIZED 7° F BELOW SETPOINT
⁹ENERGIZED 8° F BELOW SETPOINT
¹⁰ENERGIZED 9° F BELOW SETPOINT
¹¹ENERGIZED 10° F BELOW SETPOINT
¹²ENERGIZED 11° F BELOW SETPOINT
¹³ENERGIZED 12° F BELOW SETPOINT
¹⁴ENERGIZED 13° F BELOW SETPOINT
¹⁵ENERGIZED 14° F BELOW SETPOINT
¹⁶ENERGIZED 15° F BELOW SETPOINT

FC621A

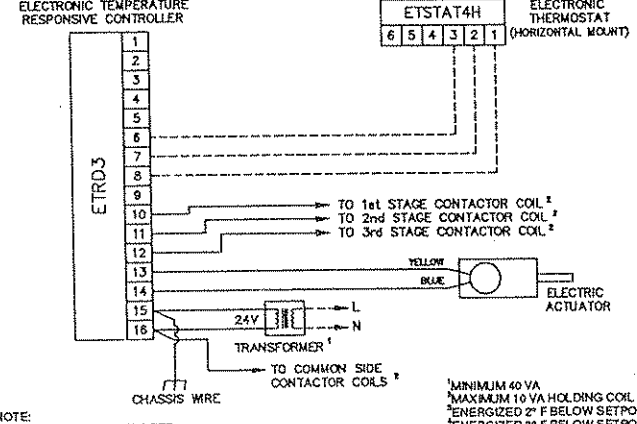
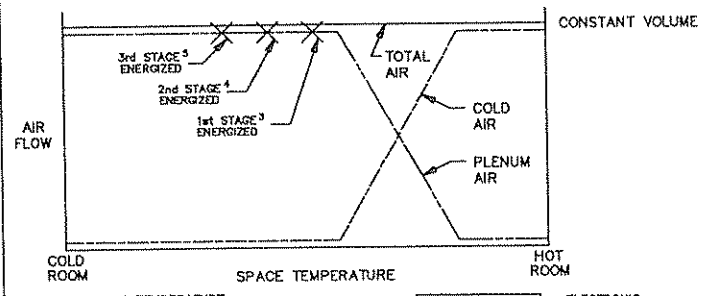
This control sequence provides constant fan powered variable primary air volume control with two stages of electric heat. The unit fan draws either cold primary air or warm plenum air to satisfy the load. If plenum air fails to maintain setpoint, heat is energized in stages to satisfy the load. Maximum or minimum air volume limit is field set by mechanical stops.



¹MINIMUM 30 VA
²MAXIMUM 10 VA HOLDING COIL
³ENERGIZED 2° F BELOW SETPOINT
⁴ENERGIZED 3° F BELOW SETPOINT
⁵ENERGIZED 4° F BELOW SETPOINT
⁶ENERGIZED 5° F BELOW SETPOINT
⁷ENERGIZED 6° F BELOW SETPOINT
⁸ENERGIZED 7° F BELOW SETPOINT
⁹ENERGIZED 8° F BELOW SETPOINT
¹⁰ENERGIZED 9° F BELOW SETPOINT
¹¹ENERGIZED 10° F BELOW SETPOINT
¹²ENERGIZED 11° F BELOW SETPOINT
¹³ENERGIZED 12° F BELOW SETPOINT
¹⁴ENERGIZED 13° F BELOW SETPOINT
¹⁵ENERGIZED 14° F BELOW SETPOINT
¹⁶ENERGIZED 15° F BELOW SETPOINT

FC623A

This control sequence provides constant fan powered variable primary air volume control with three stages of electric heat. The unit fan draws either cold primary air or warm plenum air to satisfy the load. If plenum air fails to maintain setpoint, heat is energized in stages to satisfy the load. Maximum or minimum air volume limit is field set by mechanical stops.

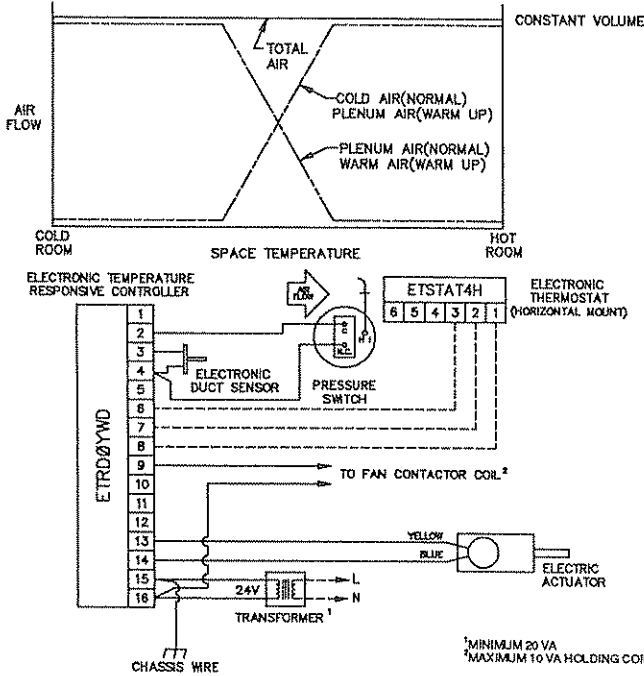


¹MINIMUM 40 VA
²MAXIMUM 10 VA HOLDING COIL
³ENERGIZED 2° F BELOW SETPOINT
⁴ENERGIZED 3° F BELOW SETPOINT
⁵ENERGIZED 4° F BELOW SETPOINT
⁶ENERGIZED 5° F BELOW SETPOINT
⁷ENERGIZED 6° F BELOW SETPOINT
⁸ENERGIZED 7° F BELOW SETPOINT
⁹ENERGIZED 8° F BELOW SETPOINT
¹⁰ENERGIZED 9° F BELOW SETPOINT
¹¹ENERGIZED 10° F BELOW SETPOINT
¹²ENERGIZED 11° F BELOW SETPOINT
¹³ENERGIZED 12° F BELOW SETPOINT
¹⁴ENERGIZED 13° F BELOW SETPOINT
¹⁵ENERGIZED 14° F BELOW SETPOINT
¹⁶ENERGIZED 15° F BELOW SETPOINT

-----Field Wiring -----Factory Wiring

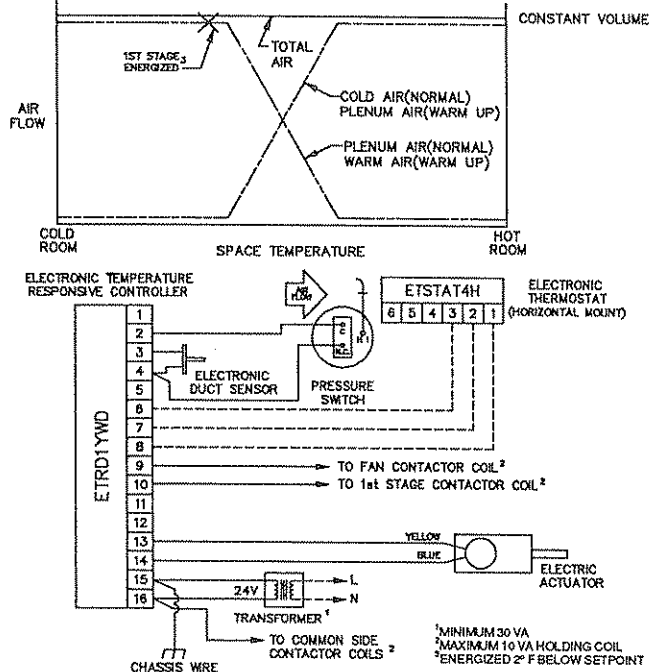
FC625A

This control sequence provides constant fan powered variable primary air volume control with morning warm up. The unit fan draws either cold primary air or warm plenum air to satisfy the load. When system air is failed, the unit fan de-energizes for night operation. Warm air is sensed by an electronic duct sensor causing the primary air valve to reverse operation for morning warm up. Maximum or minimum air volume limit is field set by mechanical stops.



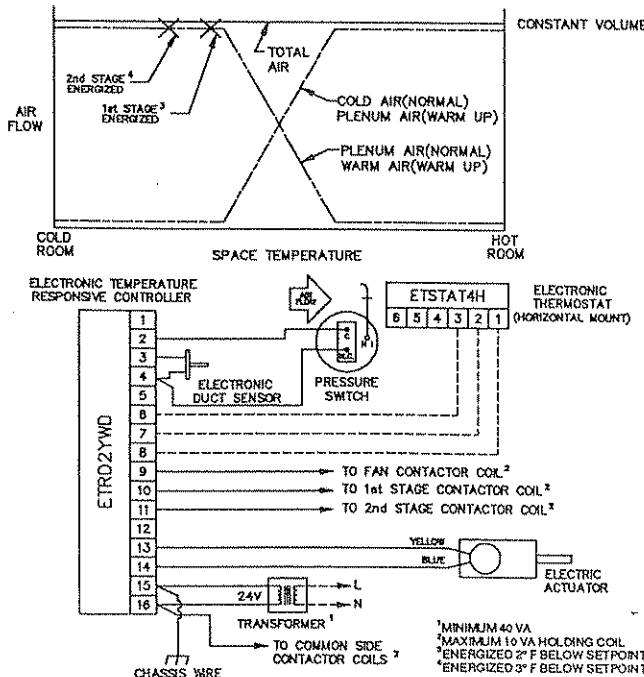
FC627A

This control sequence provides constant fan powered variable primary air volume control with one stage of electric or hot water heat and morning warm up. The unit fan draws either cold primary air or warm plenum air to satisfy the load. If plenum air fails to maintain setpoint, heat is energized to satisfy the load. When system air is failed, the unit fan and heat are de-energized for night operation. Warm air is sensed by an electronic duct sensor causing the primary air valve to reverse operation for morning warm up (heat is de-energized). Maximum or minimum air volume limit is field set by mechanical stops.



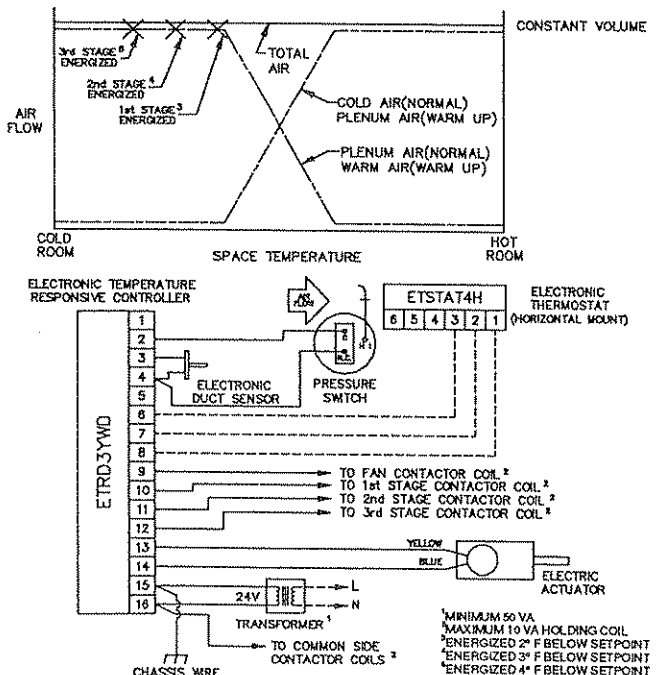
FC629A

This control sequence provides constant fan powered variable primary air volume control with two stages of electric heat and morning warm up. The unit fan draws either cold primary air or warm plenum air to satisfy the load. If plenum air fails to maintain setpoint, heat is energized in stages to satisfy the load. When system air is failed, the unit fan and heat are de-energized for night operation. Warm air is sensed by an electronic duct sensor causing the primary air valve to reverse operation for morning warm up (heat is de-energized). Maximum or minimum air volume limit is field set by mechanical stops.



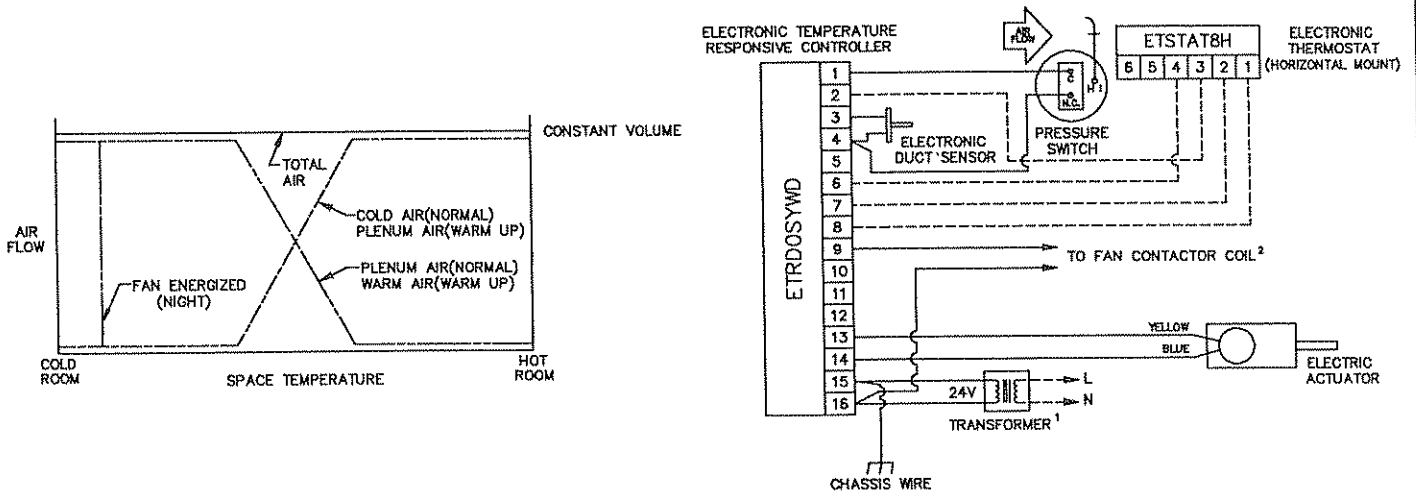
FC631A

This control sequence provides constant fan powered variable primary air volume control with three stages of electric heat and morning warm up. The unit fan draws either cold primary air or warm plenum air to satisfy the load. If plenum air fails to maintain setpoint, heat is energized in stages to satisfy the load. When system air is failed, the unit fan and heat are de-energized for night operation. Warm air is sensed by an electronic duct sensor causing the primary air valve to reverse operation for morning warm up (heat is de-energized). Maximum or minimum air volume limit is field set by mechanical stops.



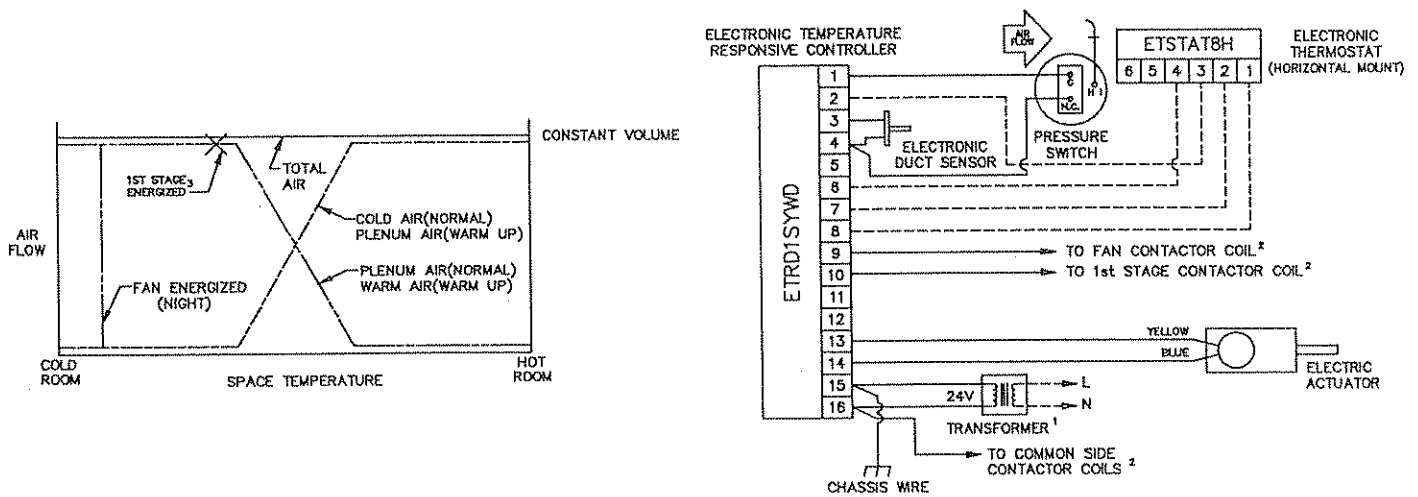
FC633A

This control sequence provides constant fan powered variable primary air volume control with morning warm up and night setback. The unit fan draws either cold primary air or warm plenum air to satisfy the load. When system air is failed, the unit automatically switches into the night setback mode. The primary air valve remains closed and the unit fan is cycled to maintain the night setpoint. Warm air is sensed by an electronic duct sensor causing the sequence to reverse for morning warm up. Maximum or minimum air volume limit is field set by mechanical stops.



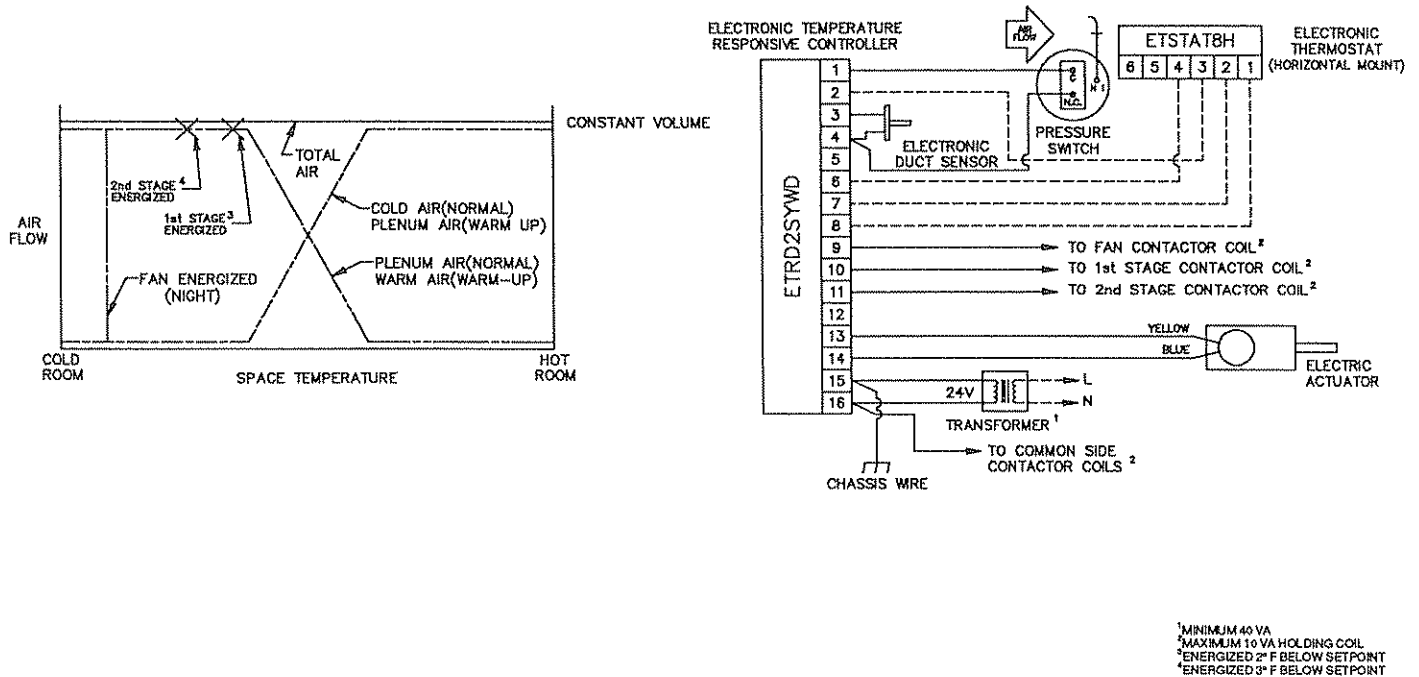
FC635A

This control sequence provides constant fan powered variable primary air volume control with one stage of electric or hot water heat, morning warm up and night setback. The unit fan draws either cold primary air or warm plenum air to satisfy the load. If plenum air fails to maintain setpoint, heat is energized to satisfy the load. When system air is failed, the unit automatically switches into the night setback mode. The primary air valve remains closed and the unit fan and heat are cycled to maintain the night setpoint. Warm air is sensed by an electronic duct sensor causing the sequence to reverse for morning warm up (heat is de-energized). Maximum or minimum air volume limit is field set by mechanical stops.



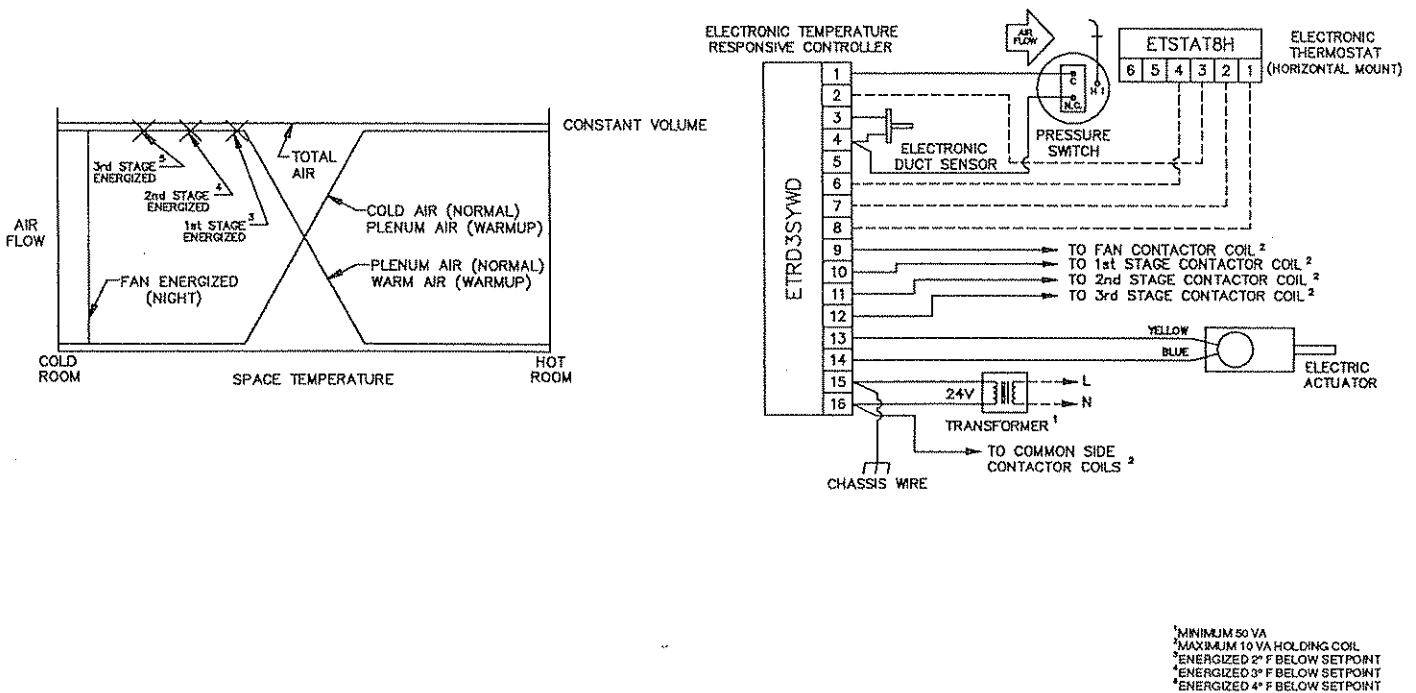
FC637A

This control sequence provides constant fan powered variable primary air volume control with two stages of electric heat, morning warm up and night setback. The unit fan draws either cold primary air or warm plenum air to satisfy the load. If plenum air fails to maintain setpoint, heat is energized in stages to satisfy the load. When system air is failed, the unit automatically switches into the night setback mode. The primary air valve remains closed and the unit fan and heat are cycled to maintain the night setpoint. Warm air is sensed by an electronic duct sensor causing the sequence to reverse for morning warm up (heat is de-energized). Maximum or minimum air volume limit is field set by mechanical stops.



FC639A

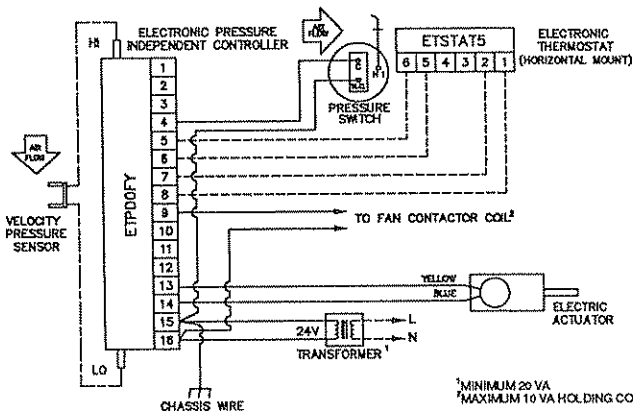
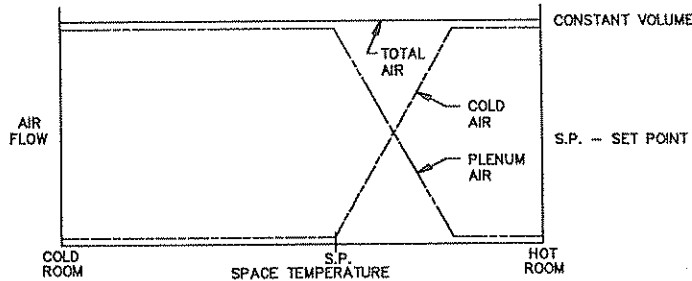
This control sequence provides constant fan powered variable primary air volume control with three stages of electric heat, morning warm up and night setback. The unit fan draws either cold primary air or warm plenum air to satisfy the load. If plenum air fails to maintain setpoint, heat is energized in stages to satisfy the load. When system air is failed, the unit automatically switches into the night setback mode. The primary air valve remains closed and the unit fan and heat are cycled to maintain the night setpoint. Warm air is sensed by an electronic duct sensor causing the sequence to reverse for morning warm up (heat is de-energized). Maximum or minimum air volume limit is field set by mechanical stops.



--- Field Wiring ——— Factory Wiring

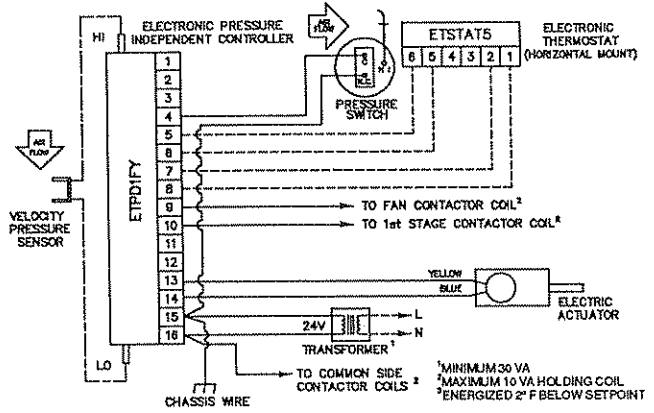
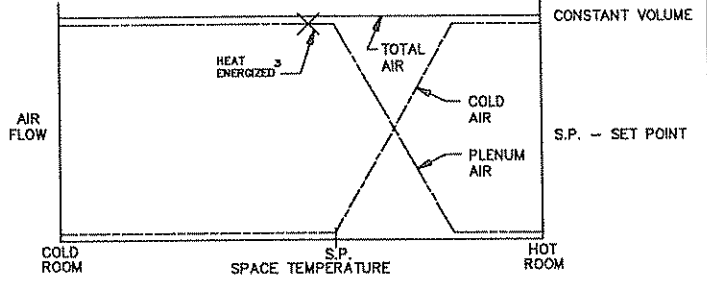
FC701A

This control sequence provides constant fan powered variable primary air volume control. The unit fan draws either cold primary air or warm plenum air to satisfy the load. When system air is failed, the unit fan de-energizes for night operation and the primary air valve remains closed. Air volume limits are located at the thermostat.



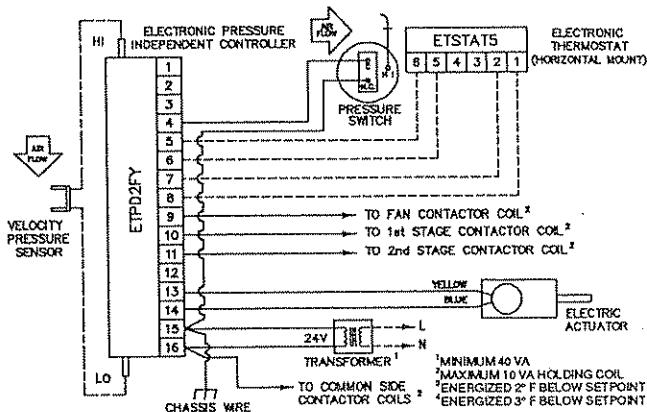
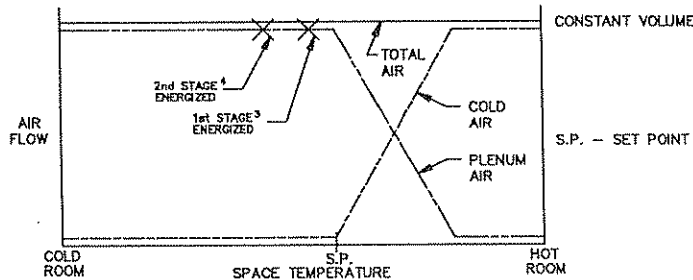
FC702A

This control sequence provides constant fan powered variable primary air volume control with one stage of electric or hot water heat. The unit fan draws either cold primary air or warm plenum air to satisfy the load. If plenum air fails to maintain setpoint, heat is energized. When system air is failed, the unit fan and heat are de-energized for night operation and the primary air valve remains closed. Air volume limits are located at the thermostat.



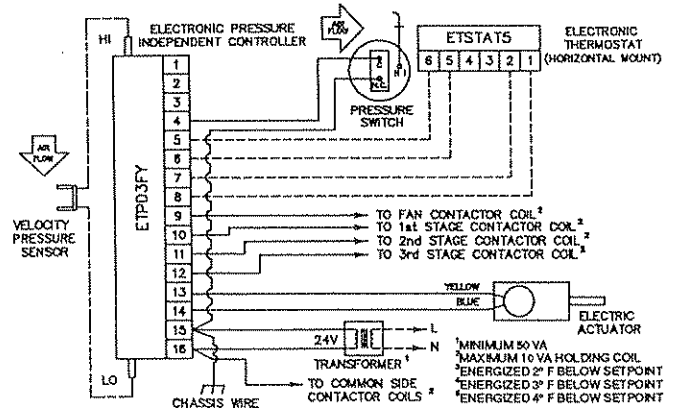
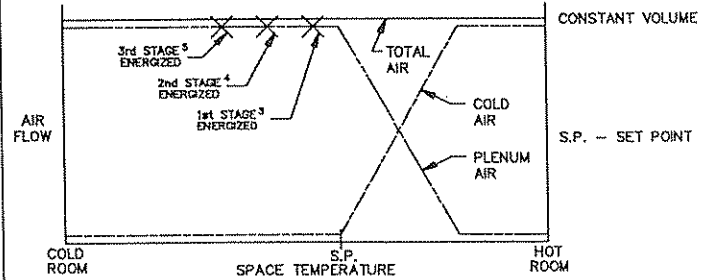
FC703A

This control sequence provides constant fan powered variable primary air volume control with two stages of electric heat. The unit fan draws either cold primary air or warm plenum air to satisfy the load. If plenum air fails to maintain setpoint, heat is energized in stages to satisfy the load. When system air is failed, the unit fan and heat are de-energized for night operation and the primary air valve remains closed. Air volume limits are located at the thermostat.



FC704A

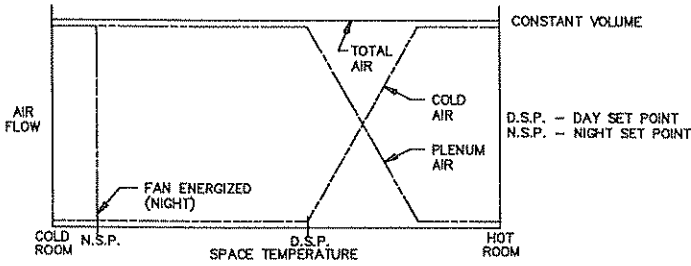
This control sequence provides constant fan powered variable primary air volume control with three stages of electric heat. The unit fan draws either cold primary air or warm plenum air to satisfy the load. If plenum air fails to maintain setpoint, heat is energized in stages to satisfy the load. When system air is failed, the unit fan and heat are de-energized for night operation and the primary air valve remains closed. Air volume limits are located at the thermostat.



----- Field Wiring ----- Factory Wiring ----- Tubing

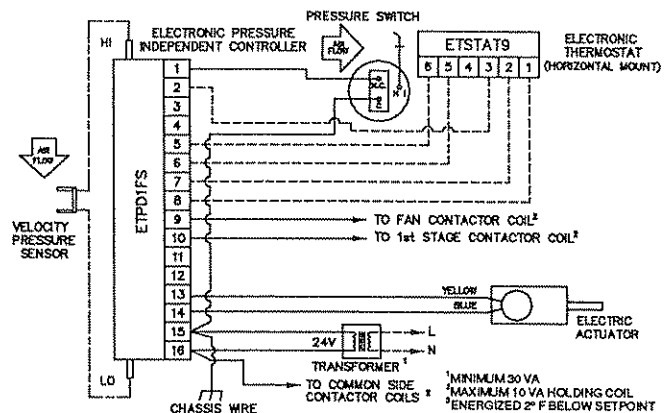
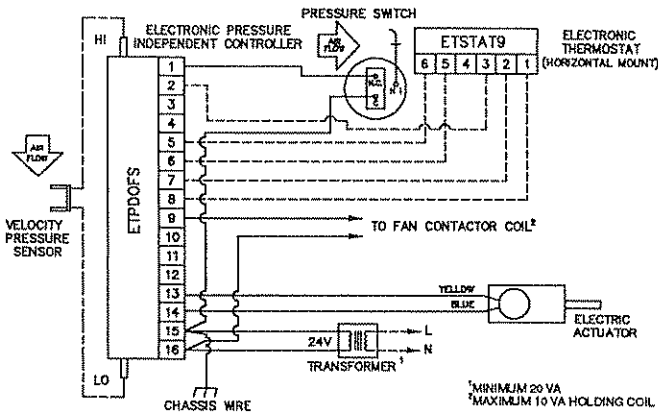
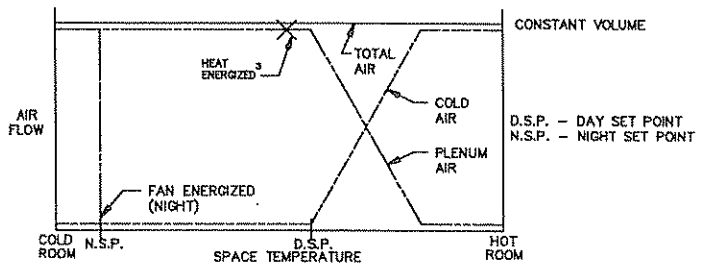
FC705A

This control sequence provides constant fan powered variable primary air volume control with night setback. The unit fan draws either cold primary air or warm plenum air to satisfy the load. When system air is failed, the unit automatically switches to the night setback mode. The primary air valve remains closed and the unit fan is cycled to maintain the night setpoint. Air volume limits are located at the thermostat.



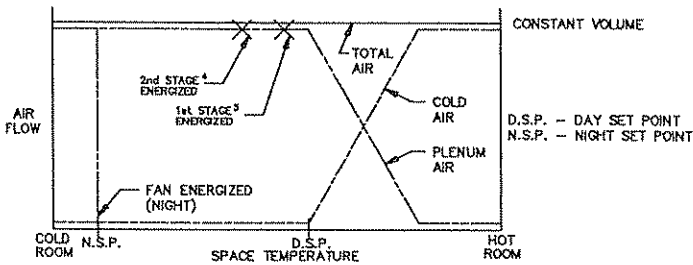
FC706A

This control sequence provides constant fan powered variable primary air volume control with one stage of electric or hot water heat and night setback. The unit fan draws either cold primary air or warm plenum air to satisfy the load. If plenum air fails to maintain setpoint, heat is energized to satisfy the load. When system air is failed, the unit automatically switches to the night setback mode. The primary air valve remains closed and the unit fan and heat are cycled to maintain the night setpoint. Air volume limits are located at the thermostat.



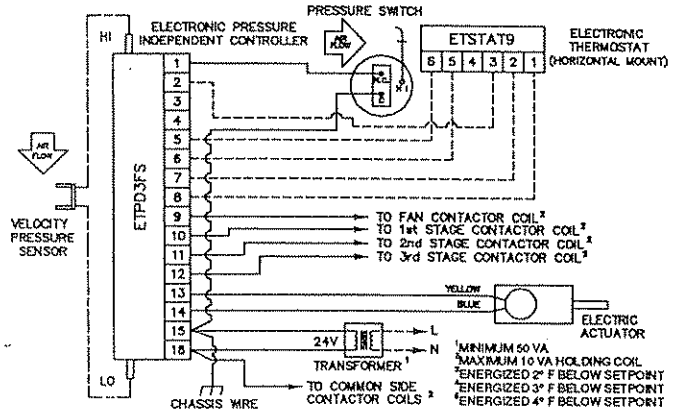
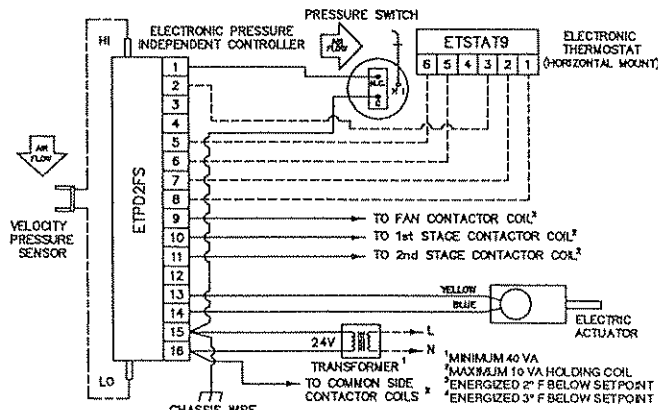
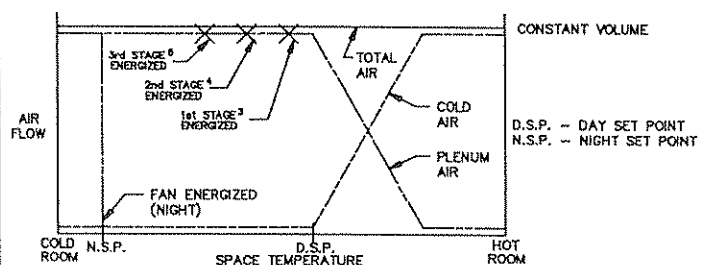
FC707A

This control sequence provides constant fan powered variable primary air volume control with two stages of electric heat and night setback. The unit fan draws either cold primary air or warm plenum air to satisfy the load. If plenum air fails to maintain setpoint, heat is energized in stages to satisfy the load. When system air is failed, the unit automatically switches to the night setback mode. The primary air valve remains closed and the unit fan and heat are cycled to maintain the night setpoint. Air volume limits are located at the thermostat.



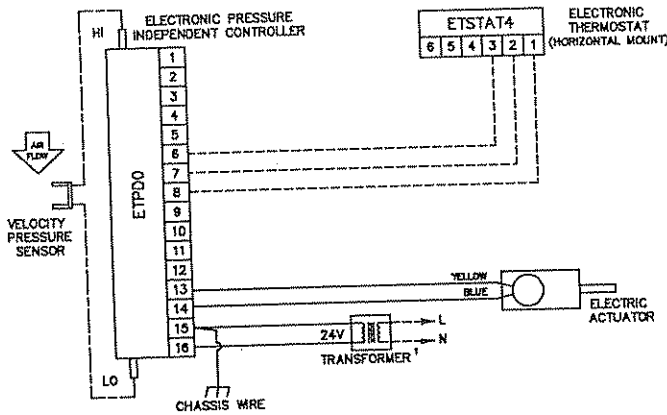
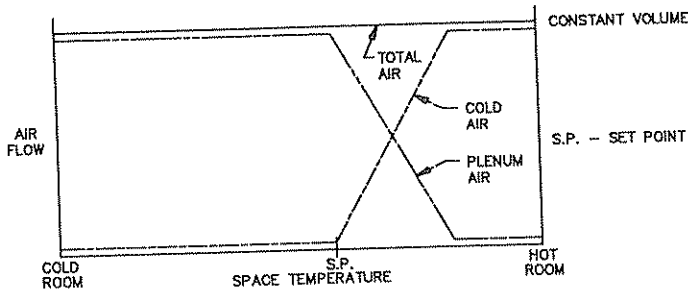
FC708A

This control sequence provides constant fan powered variable primary air volume control with three stages of electric heat and night setback. The unit fan draws either cold primary air or warm plenum air to satisfy the load. If plenum air fails to maintain setpoint, heat is energized in stages to satisfy the load. When system air is failed, the unit automatically switches to the night setback mode. The primary air valve remains closed and the unit fan and heat are cycled to maintain the night setpoint. Air volume limits are located at the thermostat.



FC709A

This control sequence provides constant fan powered variable primary air volume control. The unit fan draws either cold primary air or warm plenum air to satisfy the load. Air volume limits are located at the thermostat.

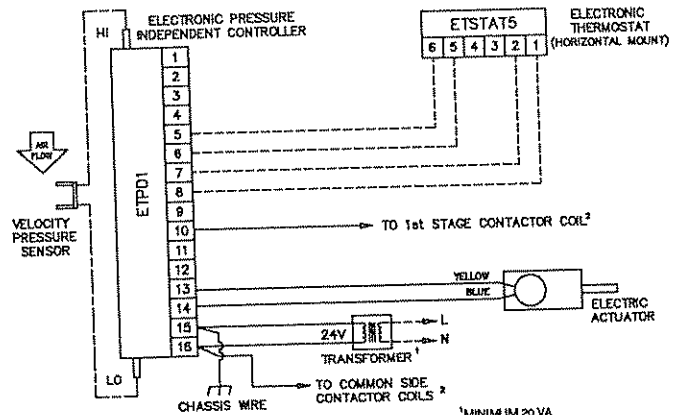
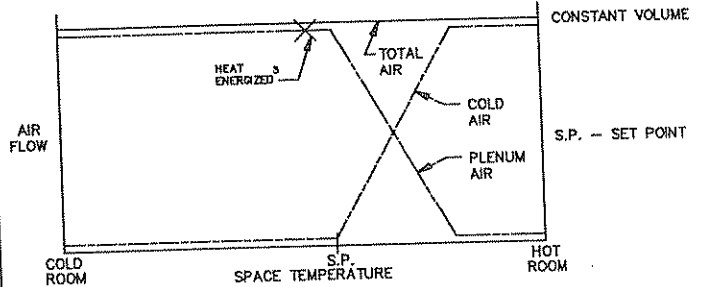


¹NOTE: UNIT FAN MUST BE ENERGIZED BEFORE PRIMARY AIR IS INTRODUCED

²MINIMUM 10 VA

FC710A

This control sequence provides constant fan powered variable primary air volume control with one stage of electric or hot water heat. The unit fan draws either cold primary air or warm plenum air to satisfy the load. If plenum air fails to maintain setpoint, heat is energized. Air volume limits are located at the thermostat.

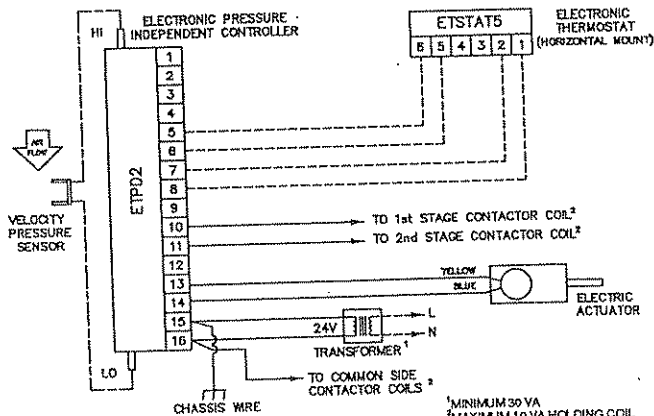
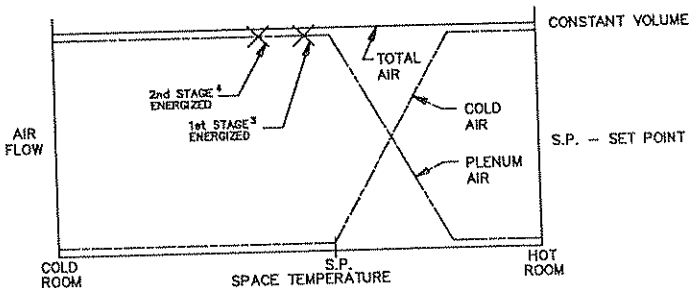


¹NOTE: UNIT FAN MUST BE ENERGIZED BEFORE PRIMARY AIR IS INTRODUCED

¹MINIMUM 20 VA
²MAXIMUM 10 VA HOLDING COIL
³ENERGIZED 2° F BELOW SETPOINT

FC711A

This control sequence provides constant fan powered variable primary air volume control with two stages of electric heat. The unit fan draws either cold primary air or warm plenum air to satisfy the load. If plenum air fails to maintain setpoint, heat is energized in stages to satisfy the load. Air volume limits are located at the thermostat.

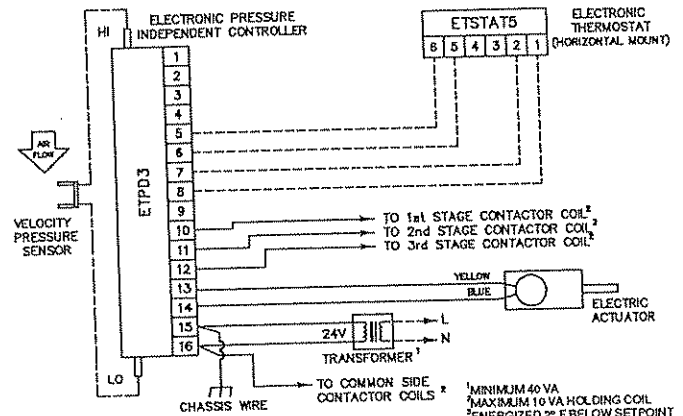
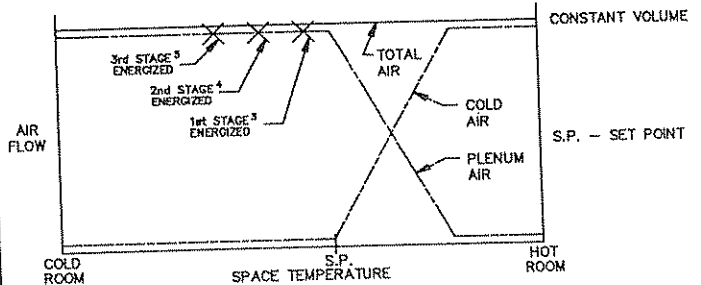


¹NOTE: UNIT FAN MUST BE ENERGIZED BEFORE PRIMARY AIR IS INTRODUCED

¹MINIMUM 30 VA
²MAXIMUM 10 VA HOLDING COIL
³ENERGIZED 2° F BELOW SETPOINT
⁴ENERGIZED 3° F BELOW SETPOINT

FC712A

This control sequence provides constant fan powered variable primary air volume control with three stages of electric heat. The unit fan draws either cold primary air or warm plenum air to satisfy the load. If plenum air fails to maintain setpoint, heat is energized in stages to satisfy the load. Air volume limits are located at the thermostat.



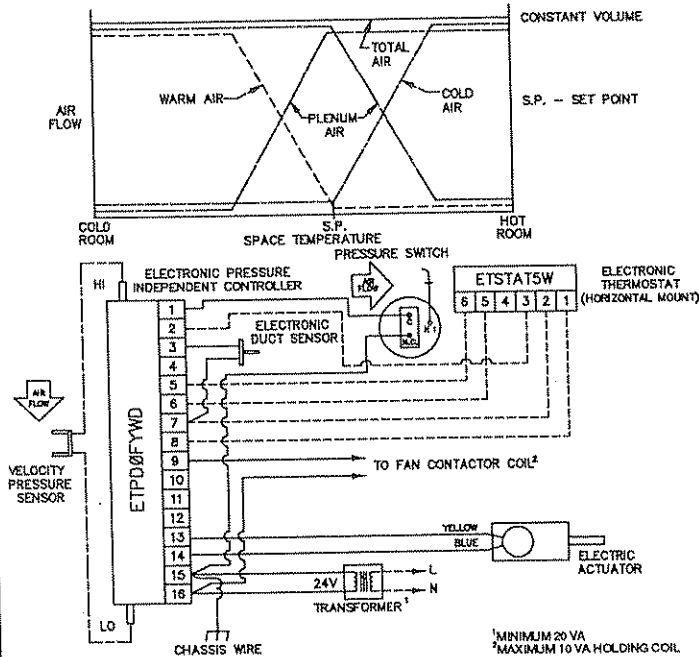
¹NOTE: UNIT FAN MUST BE ENERGIZED BEFORE PRIMARY AIR IS INTRODUCED

¹MINIMUM 40 VA
²MAXIMUM 10 VA HOLDING COIL
³ENERGIZED 2° F BELOW SETPOINT
⁴ENERGIZED 3° F BELOW SETPOINT
⁵ENERGIZED 4° F BELOW SETPOINT

-----Field Wiring -----Factory Wiring -----Tubing

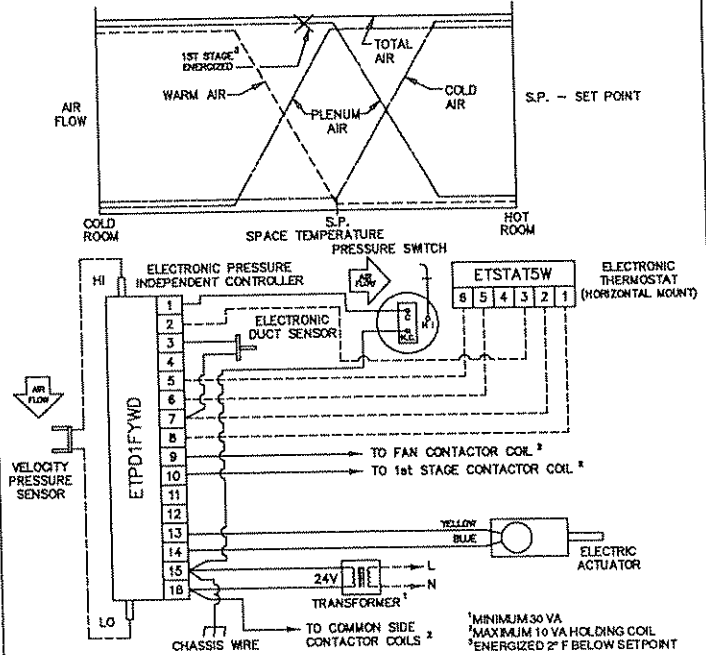
FC713A

This control sequence provides constant fan powered variable primary air volume control with morning warm up. The unit fan draws either cold primary air or warm plenum air to satisfy the load. Warm air is sensed by an electronic duct sensor, energizing the fan and causing the primary air valve to reverse operation for morning warm up. When system air is failed, the unit fan de-energizes and the primary air valve remains closed for night operation. Air volume limits are located at the thermostat.



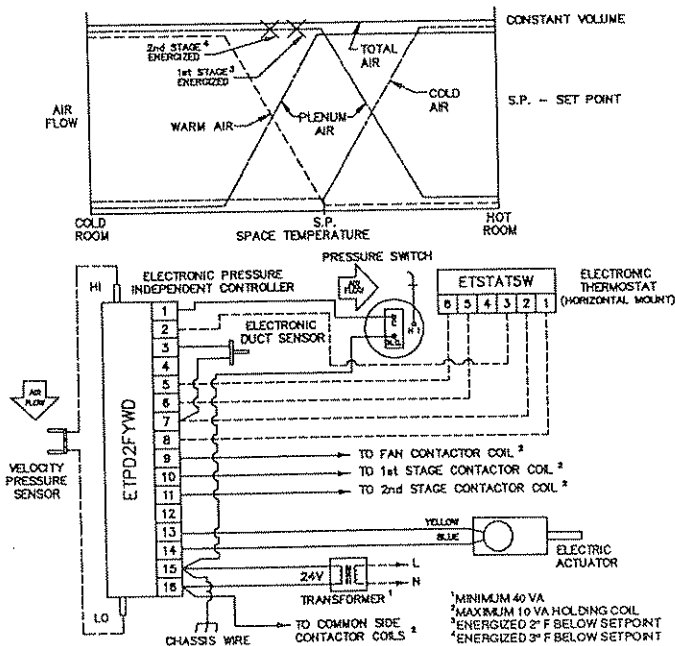
FC714A

This control sequence provides constant fan powered variable primary air volume control with morning warm up and one stage of electric or hot water heat. The unit fan draws either cold primary air or warm plenum air to satisfy the load. If plenum air fails to maintain setpoint, heat is energized to satisfy the load. Warm air is sensed by an electronic duct sensor, energizing the fan, (reheat is disabled) and causing the primary air valve to reverse operation for morning warm up. When system air is failed, the unit fan and heat de-energize and the primary air valve remains closed for night operation. Air volume limits are located at the thermostat.



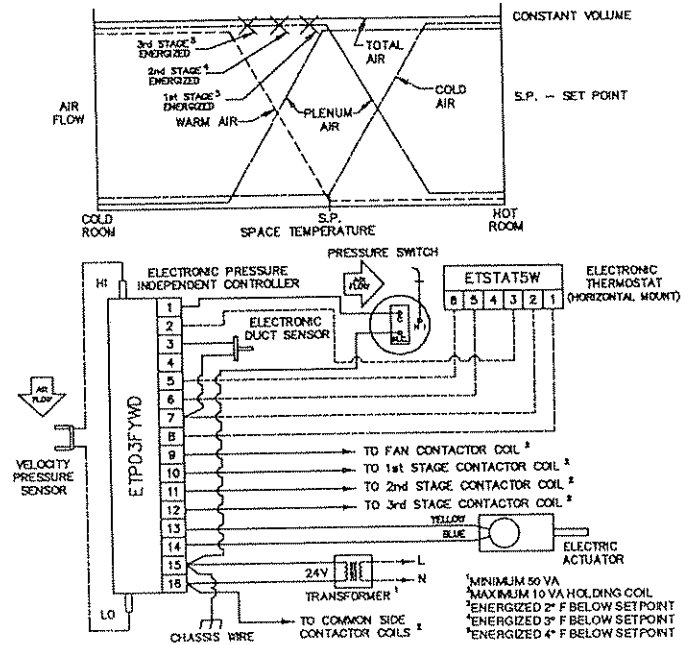
FC715A

This control sequence provides constant fan powered variable primary air volume control with morning warm up and two stages of electric heat. The unit fan draws either cold primary air or warm plenum air to satisfy the load. If plenum air fails to maintain setpoint, heat is energized in stages to satisfy the load. Warm air is sensed by an electronic duct sensor, energizing the fan, (reheat is disabled) and causing the primary air valve to reverse operation for morning warm up. When system air is failed, the unit fan and heat de-energize and the primary air valve remains closed for night operation. Air volume limits are located at the thermostat.



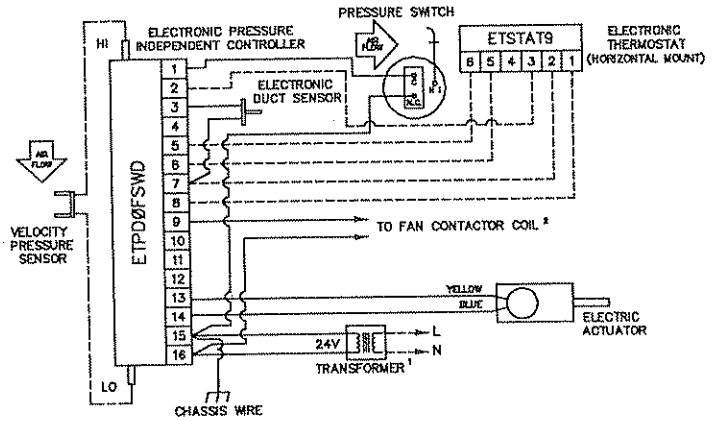
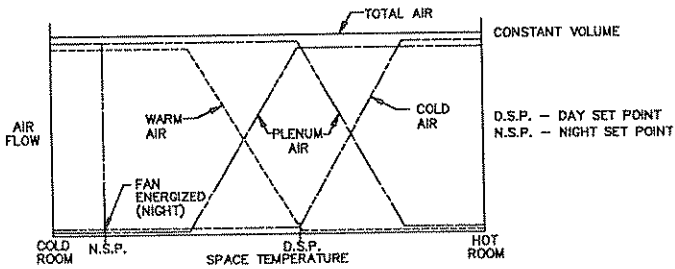
FC716A

This control sequence provides constant fan powered variable primary air volume control with morning warm up and three stages of electric heat. The unit fan draws either cold primary air or warm plenum air to satisfy the load. If plenum air fails to maintain setpoint, heat is energized in stages to satisfy the load. Warm air is sensed by an electronic duct sensor, energizing the fan, (reheat is disabled) and causing the primary air valve to reverse operation for morning warm up. When system air is failed, the unit fan and heat de-energize and the primary air valve remains closed for night operation. Air volume limits are located at the thermostat.



FC717A

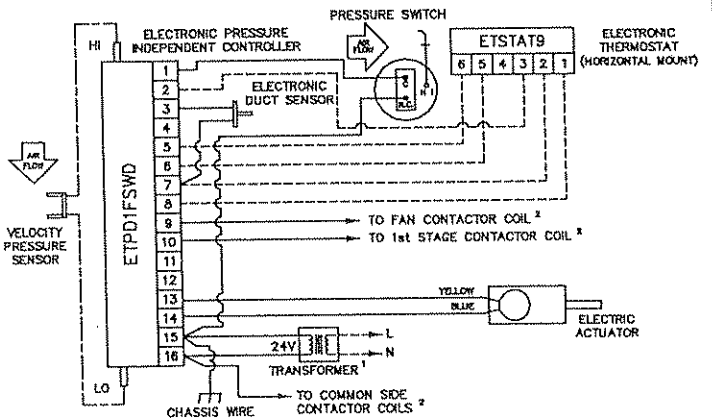
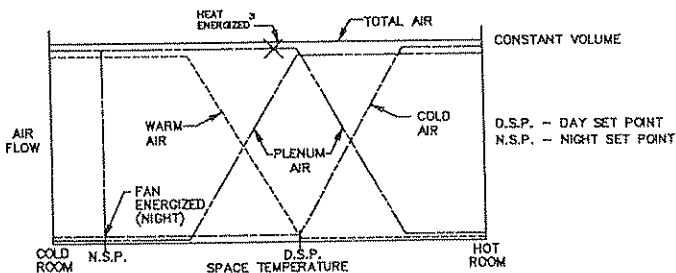
This control sequence provides constant fan powered variable primary air volume control with night setback and morning warm up. The unit fan draws either cold primary air or warm plenum air to satisfy the load. When system air is failed, the unit automatically switches into the night setback mode. The primary air valve remains closed and the unit fan is cycled to maintain the night setpoint. Warm air is sensed by the electronic duct sensor, energizing the fan and causing the primary air valve to go to maximum airflow setpoint for morning warm-up. Air volume limits are located at the thermostat.



¹MINIMUM 20 VA
²MAXIMUM 10 VA HOLDING COIL

FC718A

This control sequence provides constant fan powered variable primary air volume control with one stage of electric or hot water heat, night setback and morning warm up. The unit fan draws either cold primary air or warm plenum air to satisfy the load. If plenum air fails to maintain setpoint, heat is energized to satisfy the load. When system air is failed, the unit automatically switches into the night setback mode. The primary air valve remains closed and the unit fan and heat are cycled to maintain the night setpoint. Warm air is sensed by the electronic duct sensor, energizing the fan and causing the primary air valve to go to maximum airflow setpoint for morning warm up (reheat is disabled). Air volume limits are located at the thermostat.

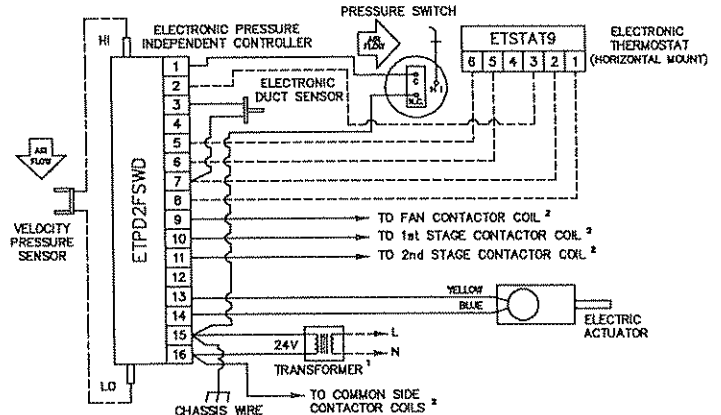
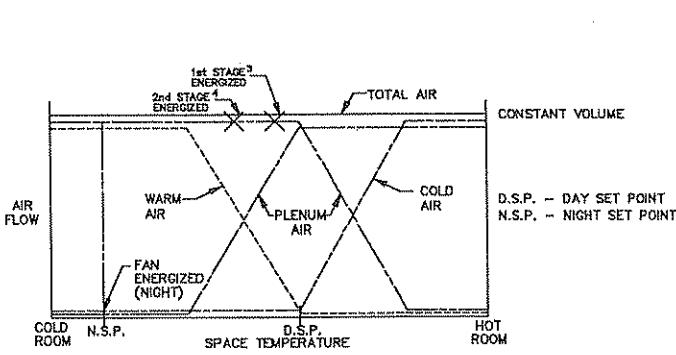


¹MINIMUM 30 VA
²MAXIMUM 10 VA HOLDING COIL
³ENERGIZED 2° F BELOW SETPOINT

-----Field Wiring -----Factory Wiring -----Tubing

FC719A

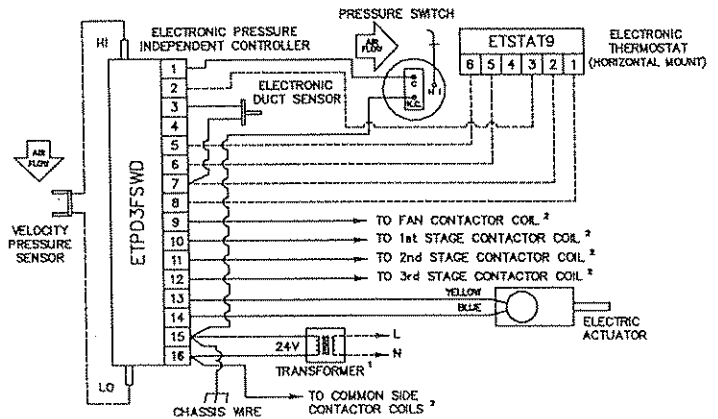
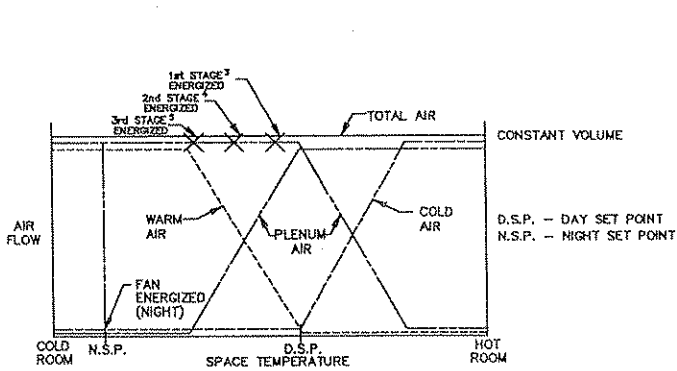
This control sequence provides constant fan powered variable primary air volume control with two stages of electric heat, night setback and morning warm up. The unit fan draws either cold primary air or warm plenum air to satisfy the load. If plenum air fails to maintain setpoint, heat is energized in stages to satisfy the load. When system air is failed, the unit automatically switches into the night setback mode. The primary air valve remains closed and the unit fan and heat are cycled to maintain the night setpoint. Warm air is sensed by the electronic duct sensor, energizing the fan and causing the primary air valve to go to maximum airflow setpoint for morning warm-up (reheat is disabled). Air volume limits are located at the thermostat.



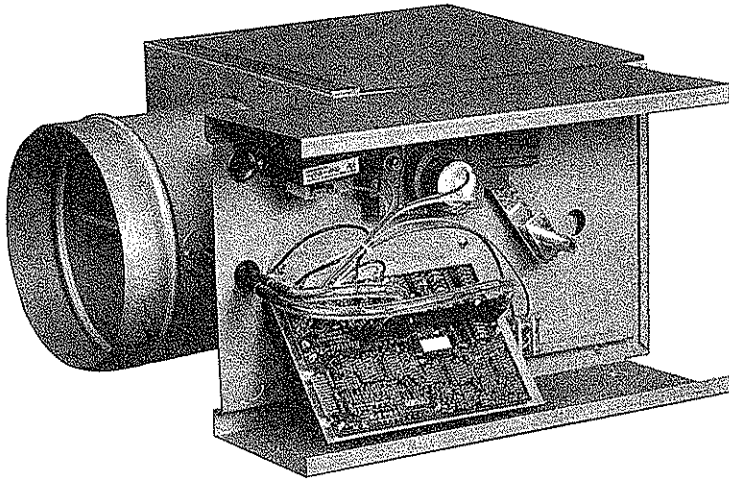
¹MINIMUM 40 VA
²MAXIMUM 10 VA HOLDING COIL
³ENERGIZED 2° F BELOW SETPOINT
⁴ENERGIZED 3° F BELOW SETPOINT

FC720A

This control sequence provides constant fan powered variable primary air volume control with three stages of electric heat, night setback and morning warm up. The unit fan draws either cold primary air or warm plenum air to satisfy the load. If plenum air fails to maintain setpoint, heat is energized in stages to satisfy the load. When system air is failed, the unit automatically switches to the night setback mode. The primary air valve remains closed and the unit fan and heat are cycled to maintain the night setpoint. Warm air is sensed by the electronic duct sensor, energizing the fan and causing the primary air valve to go to maximum airflow setpoint for morning warm-up (reheat is disabled). Air volume limits are located at the thermostat.



¹MINIMUM 50 VA
²MAXIMUM 10 VA HOLDING COIL
³ENERGIZED 2° F BELOW SETPOINT
⁴ENERGIZED 4° F BELOW SETPOINT



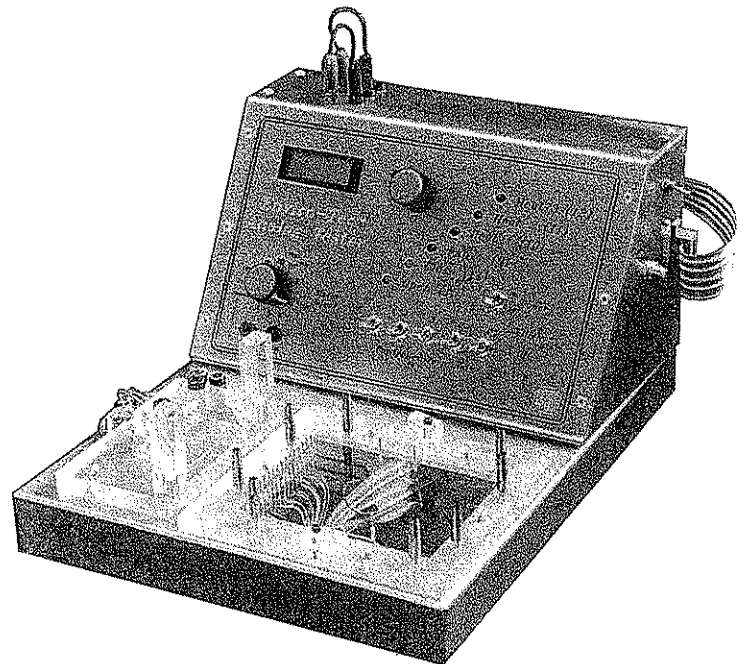
Typical Electronic Controls Installation

Picture at left shows Enviro-Tec's® typical control enclosure and installation configuration of electronic controls.

Enviro-Tec® Analog Controls Tester

The Analog Controls Tester verifies the functionality of all Enviro-Tec® 600 and 700 Series Electronic Controls. Test Procedures for the 700 Series are shipped with the Analog Tester and are available, upon request, for the 600 Series.

This device is unique in the industry and will significantly enhance proper installation and maintenance of Enviro-Tec® terminal units equipped with electronic controls.

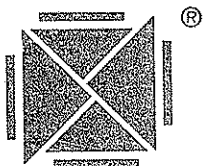


Notes

A large, empty rectangular box with a thin black border, occupying most of the page. It is intended for handwritten notes. On the left side of the page, there are three circular punch holes, indicating the page is part of a binder.



Pictured above is ETI's modern 185,000 square foot engineering center and general manufacturing facility located at 6750 Bryan Dairy Rd., Largo, Florida 34647.



ENVIRONMENTAL TECHNOLOGIES
A CORPORATION