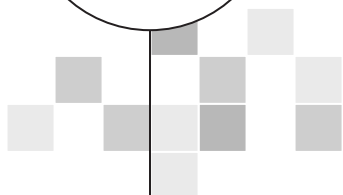




AIR FLOW SOLUTIONS

Model SPCD II
Static Pressure Control System
Installation, Operation, and Maintenance



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References

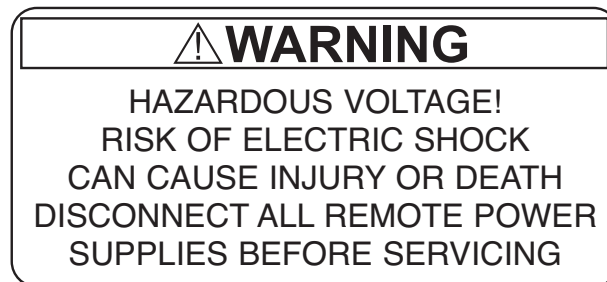
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Receiving and Inspection Instructions

- Check the bill of lading to verify receipt of all listed items (including any loose accessory items). Notify the carrier and the local ANEMOSTAT representative of any shortages or items shipped in error.
- Thoroughly examine all units for transportation damage (dents, punctures, etc). If damage is found, immediately notify and file a claim with the carrier. Note details of any damage on the bill of lading before signing for the shipment.
- Store units in a secure, dry location in the original packing, and do not stack any higher than as shipped.

Warning – Electrical Shock, Burn, and other Hazards

- Make certain all power sources are disconnected prior to installation or servicing this equipment. Make certain if there are multiple power connections, that all are securely disconnected to avoid electrocution or shock injuries.
- Disconnect control circuits or pneumatic control systems to avoid injury when working on dampers or actuators, which may respond automatically to a remote control source.



Clearance Requirements

- Line voltage and low voltage electrical enclosures must have adequate clearances to meet requirements of NFPA 70 (NEC). This is typically 36" minimum. Note that additional clearance requirements may be required by local codes or building construction specifications.

Electrical Connections

NOTE: This manual was written with the understanding that the line power and control wiring drawings submitted for the specific project have been acquired and are available during installation.

- Electrical wiring, connections, fusing and installation must conform to the local building codes and the NATIONAL ELECTRIC CODE (ANSI / NFPA 70).
- Connect the electronically actuated SPCD per wiring diagram supplied with the unit.
- The power source must be within 10% of nameplate voltage, for safety and longevity. If incoming voltage is 10% above or below nameplate voltage, contact Power Company to correct before operating terminal.

Maintenance

- The SPCD unit has been designed and constructed for years of reliable use. There is no maintenance required.
- Components should be replaced with ANEMOSTAT authorized parts.

General

Anemostat Model SPCD II Static Pressure Control Systems consists of a consolidated control package in one enclosure intended as an add-on to new or existing airflow control dampers. Dampers may be of any configuration (round, rectangular, opposed or parallel bladed). Typical applications for static pressure control include pressure dependent VAV diffusers and bypass control for constant volume systems. 2 possible control strategies are available to maintain a constant static pressure within a positive pressure supply duct:

1. Control Package SD-A-5046: This strategy uses pressure relief or bypass to control the static pressure. As the pressure within the controlled duct increases above static pressure set point as sensed by the controls, the airflow control damper **OPENS** to reduce pressure to maintain a constant static pressure at the sensor location. The air through the damper may dump into a ceiling plenum or be ducted with a direct return air path back to the central air handling system.
2. Control Package SD-A-5047: This strategy maintains a constant static pressure **DOWNSTREAM** of the airflow control damper with the static pressure sensor located after the damper in the downstream duct. As the pressure within the controlled duct increases above static pressure set point as sensed by the controls, the airflow control damper **CLOSES** to reduce pressure to maintain a constant static pressure at the sensor location.

The controller can be field configured and changed from factory defaults if necessary.

The SPCD is not position sensitive and can be oriented in any plane.

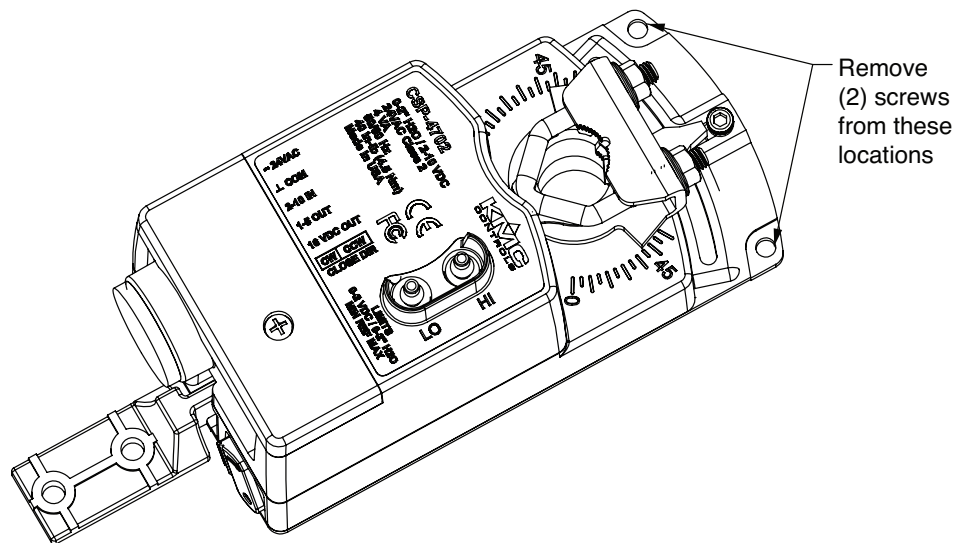
The SPCD static pressure setpoint references ambient pressure where the controller is located. Changes in the ambient static pressure will slightly change the controlled static pressure in the duct.

Damper Requirements

The control damper configuration may be round, square, rectangular and can be a single or a multi-bladed design. The damper must modulate via rotary action with a 1/4" to 5/8" round or 1/4" to 7/16" square damper shaft (minimum of 3" in length from enclosure mounting surface), and must be capable of a full range of operation from open to closed within a 90° angular rotation of the shaft. The CSP-4702 controller by default operates through 90 degree rotation, and has an adjustable stop that can be used to limit the angular rotation. If the damper has integral full open and full closed stops, these can be used in lieu of the controller stops. The CSP-4702 controller develops a minimum of 40 in-lbs of torque and the damper torque requirements should be verified based on damper size, velocity, and pressure.

Installation

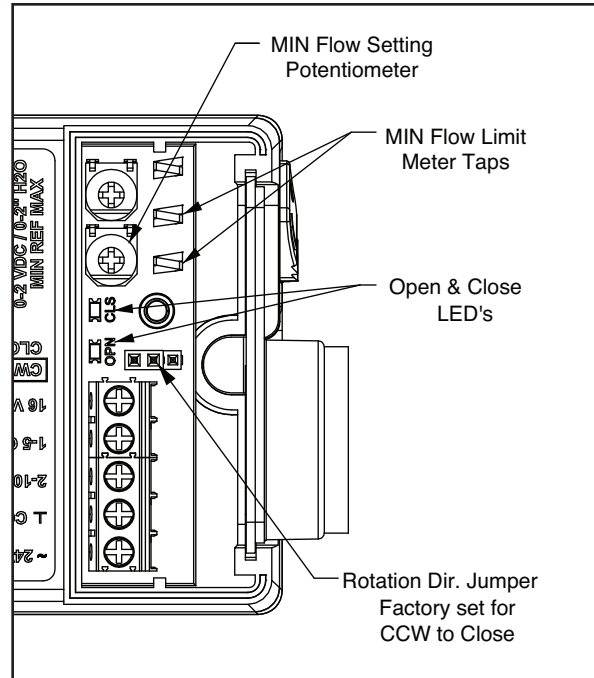
1. Remove the cover from the enclosure by removing the (4) screws.
2. Slip the enclosure over the damper shaft, with the damper shaft coming through the hole in the enclosure base, and through the motor hub and V-Bolt. Lightly finger tighten the (2) hex nuts on the V-Bolt that clamps the damper shaft to the actuator hub.
3. Fasten the enclosure to the side of the duct or any flat mounting surface that is perpendicular to the damper shaft. Be careful the screws do not impede full operation of the volume control damper.
4. **IMPORTANT:** Remove and toss the (2) controller shipping screws. The controller-actuator must be allowed to float as the damper rotates. Any binding may cause the actuator to stall in position.



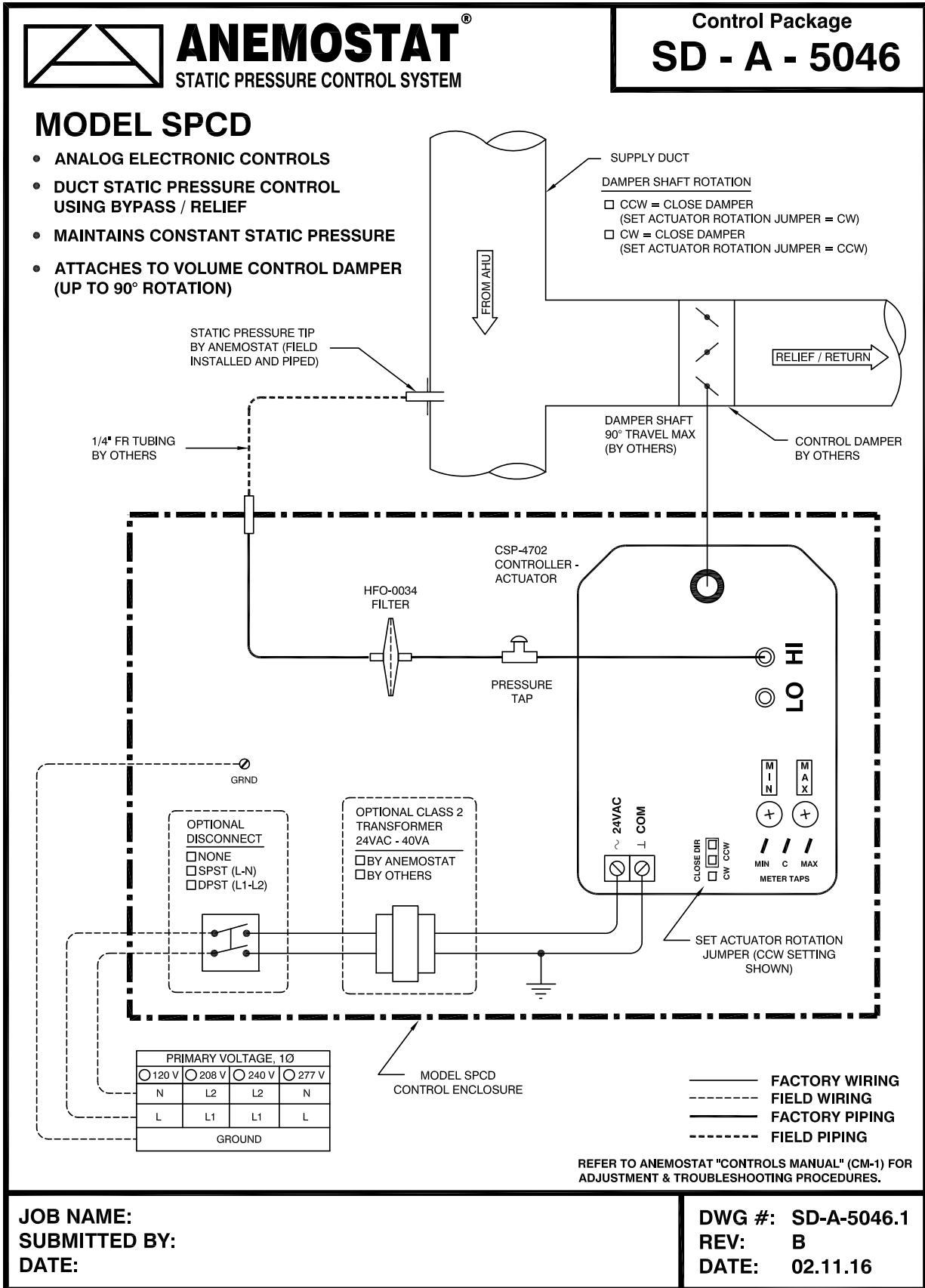
5. The damper rotation/position and the controller rotation/position **MUST** be synchronized to function properly. Loosen slightly the (2) hex nuts on the V-Bolt clamp on the actuator and manually rotate the damper shaft fully CCW. Use pliers or vise-grips to rotate the shaft if needed. Manually rotate the controller hub fully CCW by depressing and holding down the gray motor disengagement lever on the side of the controller's plastic housing and turning the hub until the controller hits the fully CCW end stop. Release the disengagement lever. With the controller tight to the enclosure mounting base, and securely located in the anti-rotation bracket, evenly tighten the two hex nuts (30-35 lbs) on the V-Bolt on the motor hub to secure to the damper shaft (the 4-sided enclosure housing can be removed from the base to simplify this step if desired). Check operation from full CCW to full CW by depressing the gray disengagement lever on the controller, and manually rotating the damper shaft / controller hub for full travel. Verify that the controller **STAYS IN THE ANTI-ROTATION BRACKET** during full operation, and does not bind.
6. Install the duct static pressure sensor at a location in the supply duct for the controlled static pressure feedback to the controller. Carefully consider the location for this sensor and install in a straight length of duct where possible, away from T fittings, elbows, transitions, etc. Drill a 1/2" diameter hole in the side of the duct, and attach the sensor with (2) sheet metal screws. Seal as required.
7. Connect the duct static pressure sensor to the SPCD controller enclosure fitting with 1/4" FR pneumatic tubing.
8. Bring electrical service to the control enclosure thru the 7/8" diameter knock-out, noting the voltage requirements as shown on the control diagram. An optional disconnect switch and/or transformer may be provided to step down the voltage to 24vac as required for the controller. Terminate the conductors and ground wire to the labeled terminal strip within the enclosure.
9. Replace the enclosure cover with (4) sheet metal screws. If the damper shaft extends through the enclosure, remove the knockout in the cover. The controls are now operational and ready for adjustment.

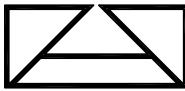
Controller Calibration / Static Pressure Adjustments

1. Remove the cover from the enclosure by removing the (4) screws. The controller should have 24vac power.
2. Remove the plastic cover from the CSP-4702 controller to expose the controller circuit board.
3. The damper rotation direction must be configured based on the application and what direction (CW or CCW) the damper opens or closes. Refer to the applicable control package. On the controller, find 3 pins labeled CLOSE DIRECTION, and position the plastic jumper for CW=Close or CCW=Close based on the control package used.



4. Connect a voltmeter to the MIN voltage setting meter taps on the controller. With a small, flat blade screwdriver, adjust the blue MIN potentiometer to desired voltage, knowing 0-2" Static Pressure = 0-2 VDC. For example, if the desired static pressure set point is .75" w.c., adjust the minimum voltage to .75 vdc. The red and green indicator lights illuminate when the actuator is turning. These will go out when the damper stops moving, and the controller has achieved the dialed-in set point.





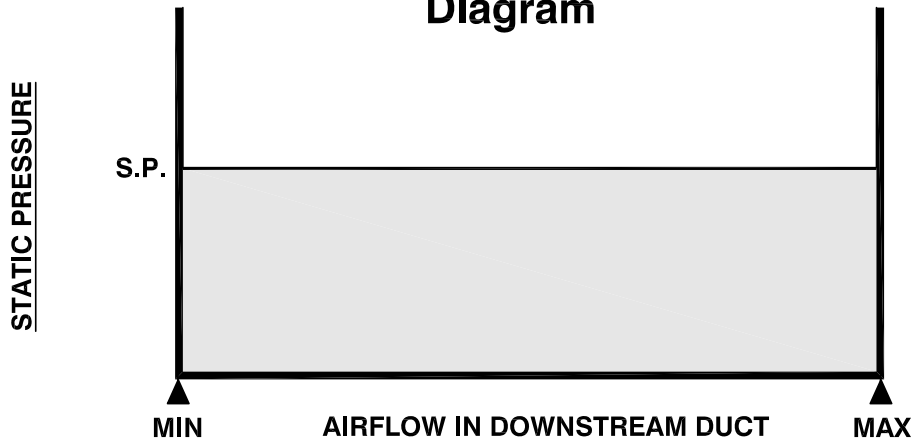
ANEMOSTAT[®]
STATIC PRESSURE CONTROL SYSTEM

Control Package
SD - A - 5046

MODEL SPCD

- ANALOG ELECTRONIC CONTROLS
- DUCT STATIC PRESSURE CONTROL USING BYPASS / RELIEF
- MAINTAINS CONSTANT STATIC PRESSURE
- ATTACHES TO VOLUME CONTROL DAMPER OR VAV BOX (UP TO 90° ROTATION)

Pressure Control Diagram

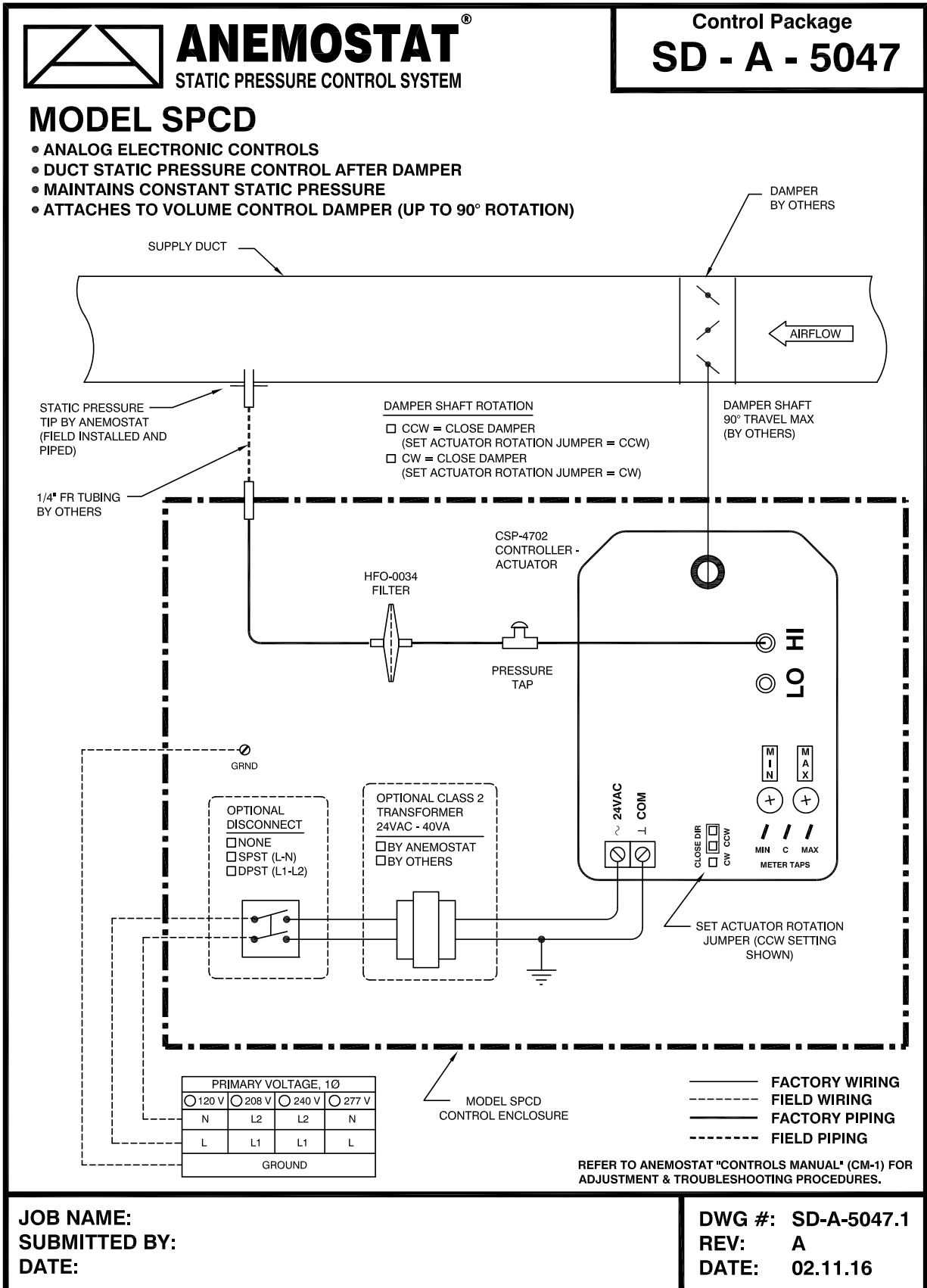


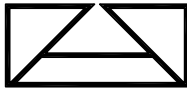
SEQUENCE OF OPERATION

1. THIS SEQUENCE IS OFTEN USED WITH VAV DIFFUSERS TO MAINTAIN A CONSTANT STATIC PRESSURE IN THE DISTRIBUTION DUCT, AS THE VAV DIFFUSERS MODULATE AIRFLOW TO THE SPACE, USED WITH CONSTANT VOLUME SUPPLY AIR SYSTEMS.
2. THE STATIC PRESSURE TAP IS STRATEGICALLY LOCATED IN THE SUPPLY AIR DUCT SYSTEM.
3. A STATIC PRESSURE SIGNAL IS FED TO THE CONTROLLER, AND THE CONTROLLER OPERATES IN A CONSTANT PRESSURE MODE TO MAINTAIN THE STATIC PRESSURE. AS THE PRESSURE INCREASES, THE CONTROLLER OPENS A RELIEF / BYPASS DAMPER.
4. THE STATIC PRESSURE CONTROL UPPER LIMIT IS 2" Ps.
5. UPON LOSS OF POWER, DAMPER FAILS IN PLACE.

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DATE: 02.11.6





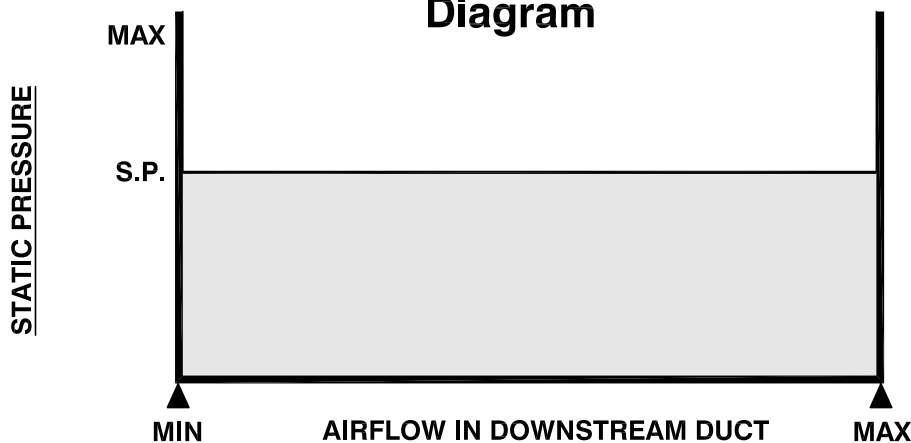
ANEMOSTAT[®]
STATIC PRESSURE CONTROL SYSTEM

Control Package
SD - A - 5047

MODEL SPCD

- ANALOG ELECTRONIC CONTROLS
- DUCT STATIC PRESSURE CONTROL AFTER DAMPER
- MAINTAINS CONSTANT STATIC PRESSURE
- ATTACHES TO VOLUME CONTROL DAMPER OR VAV BOX (UP TO 90° ROTATION)

Pressure Control Diagram



SEQUENCE OF OPERATION

1. THIS SEQUENCE IS OFTEN USED WITH VAV DIFFUSERS TO MAINTAIN A CONSTANT STATIC PRESSURE IN THE DISTRIBUTION DUCT, AS THE VAV DIFFUSERS MODULATE AIRFLOW TO THE SPACE.
2. THE STATIC PRESSURE TAP IS LOCATED AFTER THE DAMPER IN THE DOWNSTREAM DUCT WORK.
3. A STATIC PRESSURE SIGNAL IS FED TO THE CONTROLLER, AND THE CONTROLLER OPERATES IN A CONSTANT PRESSURE MODE TO MAINTAIN THE STATIC PRESSURE.
4. THE STATIC PRESSURE CONTROL UPPER LIMIT IS 2" Ps.
5. UPON LOSS OF POWER, DAMPER FAILS IN PLACE.

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DWG #: SD-A-5047.2
REV: A
DATE: 02.11.6