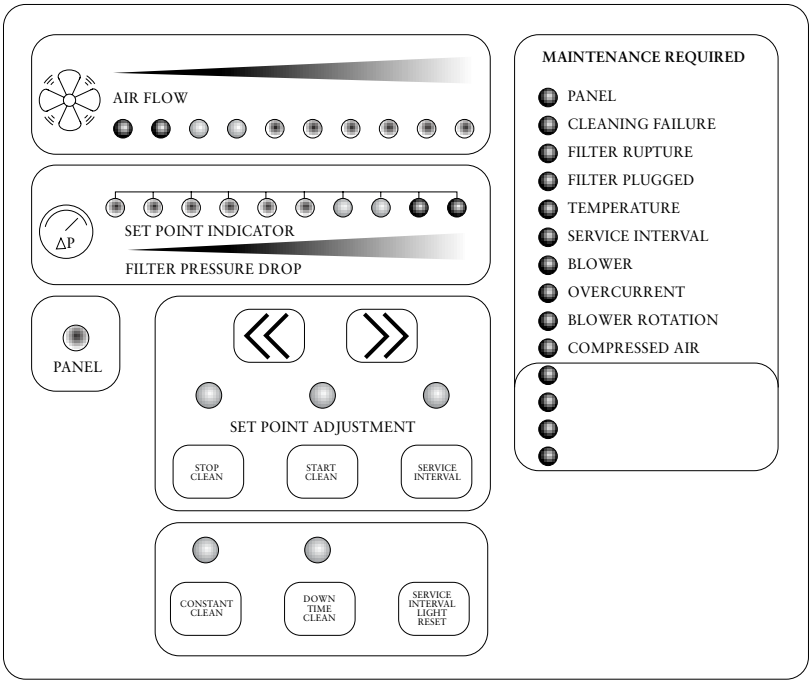
Donaldson
Torit®

Installation and Operation Manual

Installation, Operation, Service and Replacement Parts Information

Checker™ board Control Panel



Throughout this manual statements indicating precautions necessary *to avoid equipment failure* are referenced in a **Note.** Statements indicating potential hazards that could result in *personal injury or property damage* are referenced in a **Caution!** box.

This manual is property of the owner. Leave with the unit when set-up and start-up are complete. Donaldson Company reserves the right to change design and specifications without prior notice.

IOM-72206-01
Revision 4

Caution!

Application of Dust Control Equipment

- Combustible materials such as buffing lint, paper, wood, aluminum or steel dust, weld fume, or flammable solvents represent fire or explosion hazards. Use special care when selecting and operating all dust or fume collection equipment when combustible materials are present to protect workers and property from damage due to fire and/or explosion. Consult and comply with National and Local Codes relating to fire or explosion and all other appropriate codes when determining the location and operation of dust or fume collection equipment.
- When combustible materials are present, consult with an installer of fire extinguishing systems familiar with these types of fire hazards and local fire codes for recommendations and installation of fire extinguishing and explosion protection systems. Donaldson dust collection equipment is not equipped with fire extinguishing or explosion protection systems.
- DO NOT allow sparks, cigarettes or other burning objects to enter the hood or duct of any dust or fume control equipment as these may initiate a fire or explosion.
- For optimum collector performance, use only Donaldson replacement parts.

Warning – Improper operation of a dust control system may contribute to conditions in the work area or facility that could result in severe personal injury and product or property damage. Check that all collection equipment is properly selected and sized for the intended use.

Contents

This manual contains specific precautionary statements relative to worker safety. Read thoroughly and comply as directed. Discuss the use and application of this equipment with a Donaldson representative. Instruct all personnel on safe use and maintenance procedures.

Data Sheet

Model Number _____ **Serial Number** _____

Ship Date _____ **Installation Date** _____

Customer Name _____

Address _____

_____

Filter Type _____

Accessories _____

Other _____

Checker board Control Panel

The Checker board provides cleaning control, diagnostic review of the operational parameters, diagnostic review of the system components, and a record of operational data and fault conditions for future review. The operator interface provides control of unit functions and operational status information.

The design allows for a host computer to remotely control the unit, change operational parameters, and check operational status.

Inspection on Arrival

1. Unpack and open the Checker board enclosure by loosening the clamp screws on the sides. Remove packing materials. Compare components received with the packing list.
2. Inspect unit on delivery.
3. Report any damage to the delivery carrier.
4. Request a written inspection report from the Claims Inspector to substantiate claim.
5. File claims with the delivery carrier.
6. Report incomplete shipments to the delivery carrier and your Donaldson representative.

Items shipped loose include:

Control box	Safety filter
Current sensor board	Connector, tube to tube
Twisted pair cables	Print 3EA-37129
Clear tubing, two 35-ft	Label stickers, 1/4 x 4-in
Black tubing, 35-ft long	

Tools Required

Wire strippers	Wire cutter
Knife	Needle nose pliers
Crescent wrench	Channel lock pliers

Screw driver, 5/16-in wide and 9/64-in narrow slot tip
Hole knockout: 1/2-in connector use .859 to .906 and for 3/4-in connection use 1.094 to 1.141.

Supplies Required

Conduit, 1/2 and 3/4-in	Grounding lugs
Elbow connectors	Wire ties
Straight connectors	Wire nuts

Wire, green/white/black/red, #16, 14, or 12 awg

Operation

The Checker board is used to control, diagnose, and troubleshoot Donaldson Torit dust collectors. The microprocesser-based control can be programmed to control solenoid valves used for filter cleaning, control the blower motor starter, control setpoints used to start and stop the filter cleaning operation, monitor and diagnose the mechanical and electronic system components, and store diagnostic readings for up to one year. Operating system parameters, abnormal operating conditions, and mechanical failure messages appear on the Checker board display. It also allows a host computer to control the unit, change operational parameters, and check operational status from a remote location.

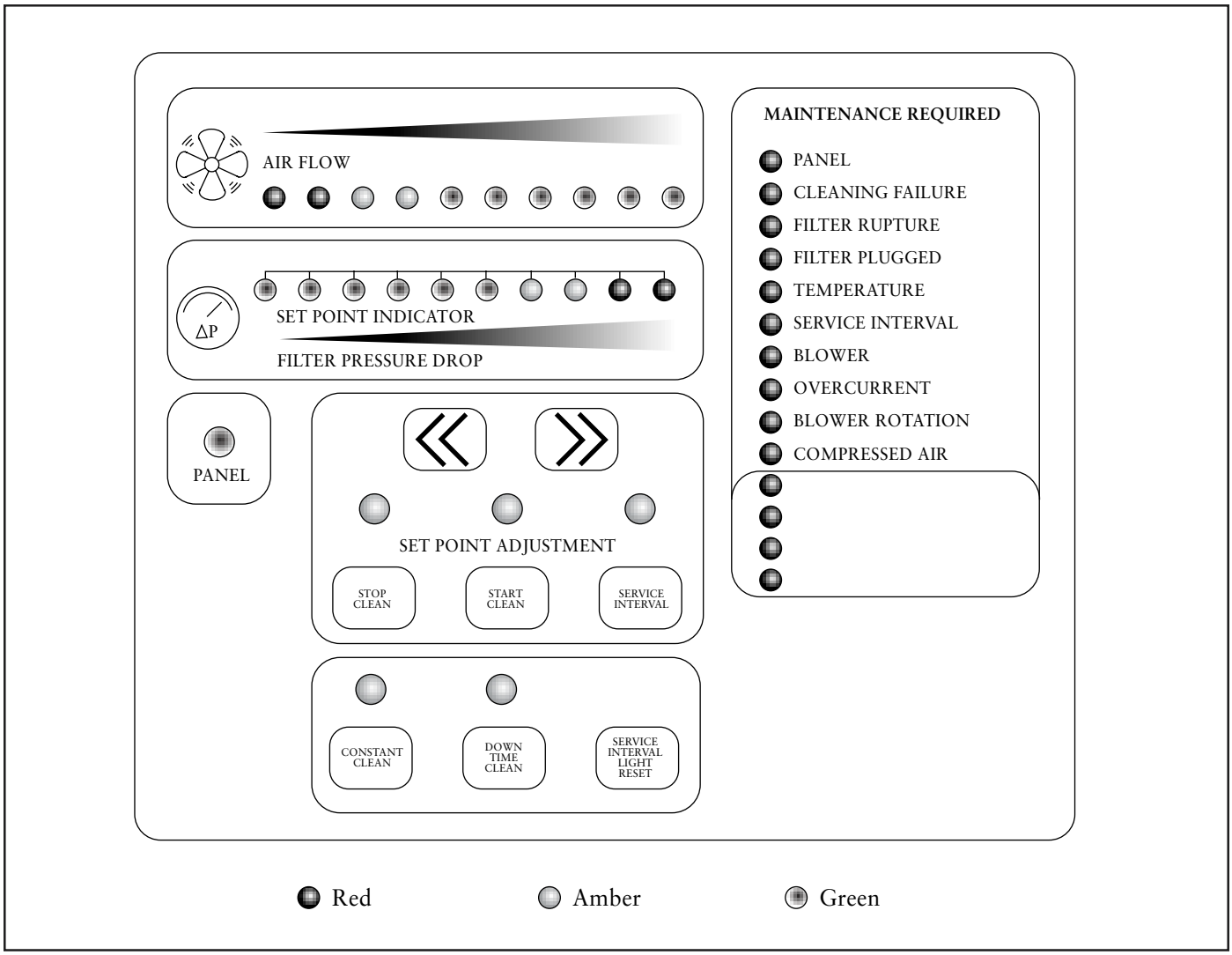
Pulse Cleaning Operation

The Checker board can be set to control the filter cleaning operation of the unit, including starting and stopping at adjustable setpoints, initiating the pulse, pulse sequence, and pulse duration. The Checker board also provides the logic to control alternate cleaning modes.

The microprocessor compares the sensor readings with the stored values to determine the operational health of the system. This comparison can indicate ruptured or plugged filters, cleaning system component malfunction, excessive temperature, and blower motor overload due to excess air flow or motor failure. The microprocessor also has an extensive self-diagnostic test program that provides technical assistance to the service technician when necessary.

A built-in memory stores operational data at preset intervals and stores all fault indications for approximately one year before overwriting and replacing the oldest information. This data storage assists the service technician by providing accurate problem diagnosis of intermittent system failures.

The Checker board has an RJ-11 connector that allows access by a host computer. This connection provides two-way communication and allows changes to operational parameters, check operational status from a remote location and retrieval of current operating conditions. Using host computer software addressing, one computer can provide setpoint adjustment, start/stop, and monitoring of numerous collectors. The board also accepts a remote ON/OFF push button or an external control voltage source to actuate the board.



Checker board Display Panel

Standard Features

In sections Airflow, Filter Pressure Drop, Setpoint Indicator, and illustrations Airflow Display and Filter Pressure Drop and Setpoint Indicator Display are descriptions and illustrations of two of the windows located on the cover of the Checker board enclosure.

ON Display

The green ON indicator light on the control display indicates that the board is activated by an external voltage source, usually the control voltage that actuates the blower motor starter.

Airflow

The airflow window display uses a light bar to indicate the operating position based on the airflow or fan curve information placed in the microprocessor memory at start-up.

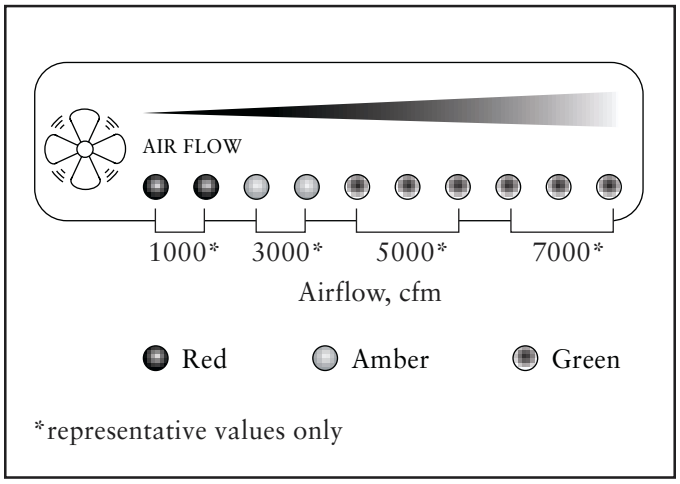
The light bar has 10 segments. From left to right, the first two are red, the second two are amber, and the remaining six are green. The initial reading at start-up should be in the green range. As the filters accumulate dust, the airflow indicator will move; the first amber light indicates that the collector airflow is approximately 40-50 percent of full rated flow, the first red light indicates a flow of approximately 25-33 percent of the full rated airflow. One light is illuminated at a time and indicates the relative position within the range.

Included with the enclosure are two stickers to be used on the Checker board display. Apply one sticker under the circles on the airflow display. Write in the appropriate airflow as measured in the system. These measurements can be determined during start-up and calibration. See Start-Up, Calibration, and Adjustment on Page 20.

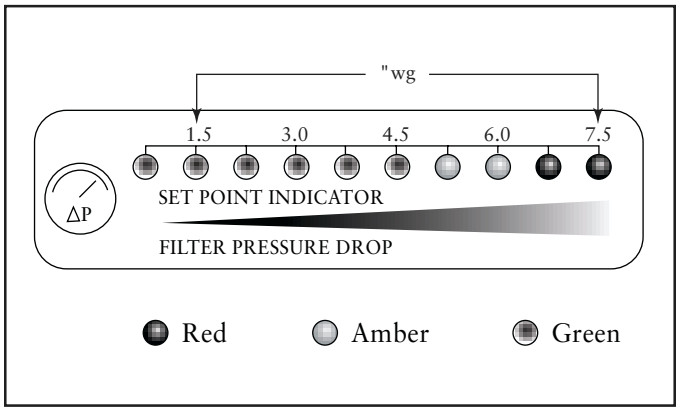
Filter Pressure Drop

A single window alternately displays the filter pressure drop and the relative setpoints.

The pressure drop indicator uses a light bar to indicate the amount of static pressure required to move the air from the dirty-air chamber to the clean-air chamber. The light bar has 10 segments. From left to right, the first six lights are green, the next two are amber, and the final two are red. Each light indicates a 3/4-in pressure drop. The display provides a linear division of the available static pressure. One light is illuminated at a time and indicates the relative position within the range.



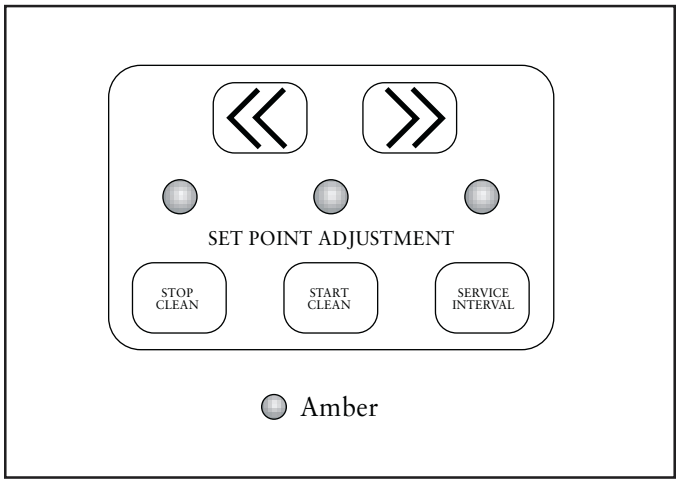
Airflow Display



Filter Pressure Drop and Setpoint Indicator

Setpoint Indicator

When using the setpoint adjustment window, the bar display switches to a setpoint display with one or two lights illuminated. One light illuminated indicates the setpoint, and two lights bracket the setpoint.



Setpoint Adjustment Display

Setpoint Adjustment

The setpoints are indicated in a ten-light LED bar graph display labeled Setpoint Indicator. Two arrow keys on the adjustment display change the setpoints. Each single press of an arrow key moves the indicator position a half step to the right or left. Holding down the arrow key produces a stepping action.

To use the arrow keys, press one of the three adjustment buttons. For example, if the START CLEAN button is pressed, an amber light above the key will glow and the setpoint bar graph will change to show the setpoint. Use the arrow keys to change the setpoint. The lights in the setpoint indicator bar graph display will show the new value. When the adjustment is complete, press the START CLEAN button again and the amber indicator light will go out. The bar graph will display the actual filter pressure drop. Adjust the STOP CLEAN and SERVICE INTERVAL functions the same way.

The system logic prevents overlap of the START CLEAN and STOP CLEAN setpoints.

Note: If one of the setpoint functions is left ON, the microprocessor automatically reverts to displaying the filter pressure drop after two minutes.

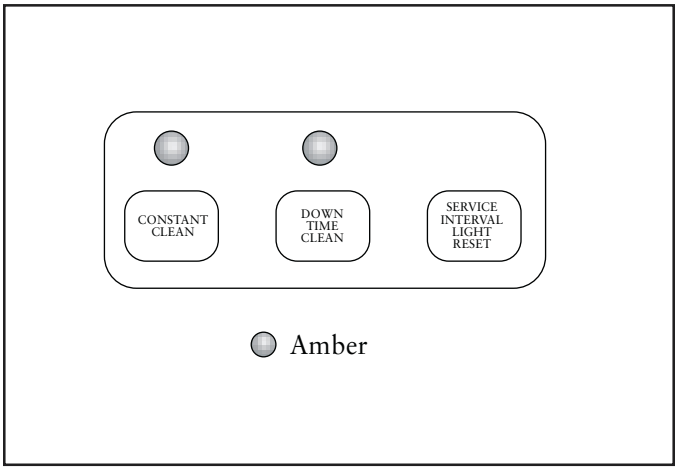
Mode

The window below the Setpoint Adjustment window is used to modify the cleaning mode. The normal cleaning mode provides cleaning only when the pressure drop is within the range defined by the START CLEAN and STOP CLEAN setpoints.

Constant Clean ignores the START and STOP CLEAN setpoints and operates the filter cleaning system continuously while the blower is running. Press and hold the Constant Clean button until the green indicator light illuminates. Press and hold again to deactivate the Constant Clean mode.

Downtime Clean allows the filter cleaning to continue after the blower motor is turned off. After a blower run-down delay, the cleaning mode starts sequentially pulse cleaning until the end of the cycle. At the end of the cleaning cycle, the system shuts down and remains dormant until reactivation. This mode will remain in effect until turned OFF, initiating downtime cleaning each time the OFF button shuts the system down. Press and hold the Downtime Clean button until the green indicator light illuminates. Deactivate by holding the button down until the light goes out.

Service Interval Light Reset
Reset the Service Interval indicator light located in the maintenance window. **The system must be shut down before the reset button will function.** If the system is ON, the reset button will have no effect. To reset the indicator light, turn the system OFF, perform the necessary maintenance such as empty the collection container, and reset the light before starting the blower.



Mode Display

Maintenance Required

With the exception of service interval, the maintenance required window contains a group of diagnostic functions that indicate an abnormal conditions. The service interval indicator allows you to schedule routine service as required by your system. Each of the fault indicator lights, with the exception of the service interval, is either reset each time you press the OFF button or reset automatically when the abnormal condition ends. A fault light that resets at shut down remains OFF only if the fault condition has been corrected. The service interval light has a separate reset button.

Panel indicates that either the printed circuit board has self-diagnosed a fault in its operation or the power supply voltage applied to the board is not within acceptable limits.

Cleaning Failure indicates that a solenoid valve, diaphragm valve, or relay failed to operate resulting in an improper cleaning pulse. This light also indicates low pressure or complete lack of compressed air for the cleaning system.

Filter Rupture indicates an unexplained, sudden decrease in pressure drop across the filters. Verify this fault condition by examining the air discharge from the collector. The fault light can also illuminate as a result of a sudden closure of an inlet or discharge damper, or other system changes that cause a rapid decrease in airflow.

Filter Plugged indicates that the pressure drop across the filters exceed the START CLEAN setpoint and that the cleaning system cannot lower the pressure drop measurement below the upper limit setpoint. If the pressure drop does not appear excessive, check the START CLEAN setpoint for proper adjustment.

Temperature preset at shipment, signals that the air temperature has exceeded the maximum temperature recommended for the filters installed.

Service Interval The service interval feature can be based on a timer function or an external event. If the setpoint adjustment for service interval responds, the unit is configured as an elapsed time indicator and will signal proper service intervals for the dust collector. The timer can signal any routine service required. If the setpoint adjustment function does not work, the unit is configured to respond to an external signal, such as a high level indicator.

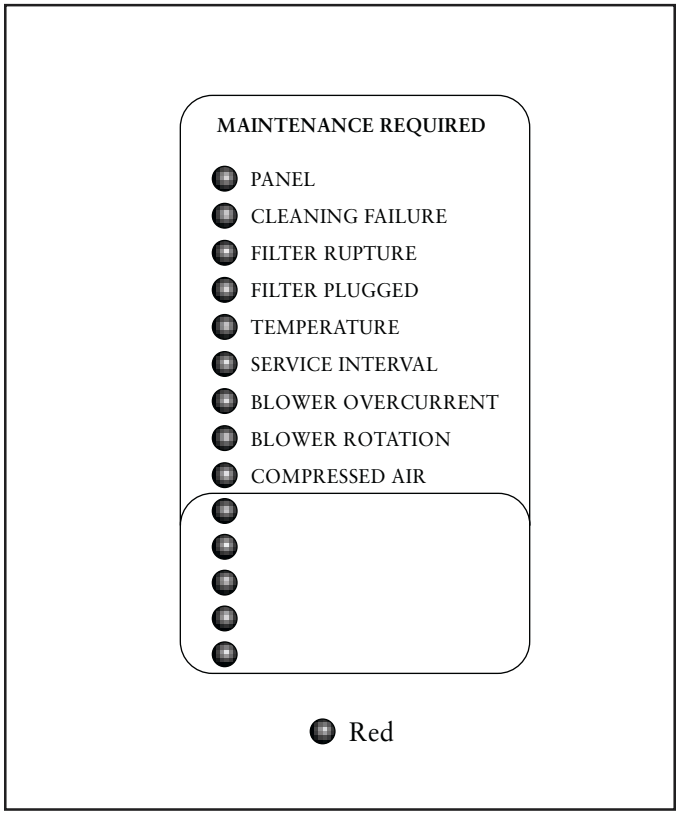
Blower Overcurrent This light indicates that the blower motor is exceeding the recommended horsepower output, including any service factor. This usually indicates that the system airflow exceeds the rated operating range. Changing the damper settings or increasing the external static pressure are ways of reducing the airflow. Operating the collector before installing ductwork, with filter cartridges removed, with the doors removed, or with the hopper open to the atmosphere will also create excess flow conditions.

Blower Rotation This fault light indicates that the blower rotation is incorrect.

Note: Three phase motors only.

Compressed Air This fault light indicates that the compressed air pressure has fallen below the recommended minimum value.

Unlabeled lights are for customer-defined fault indication. Contact Donaldson for further information.



Maintenance Required Display

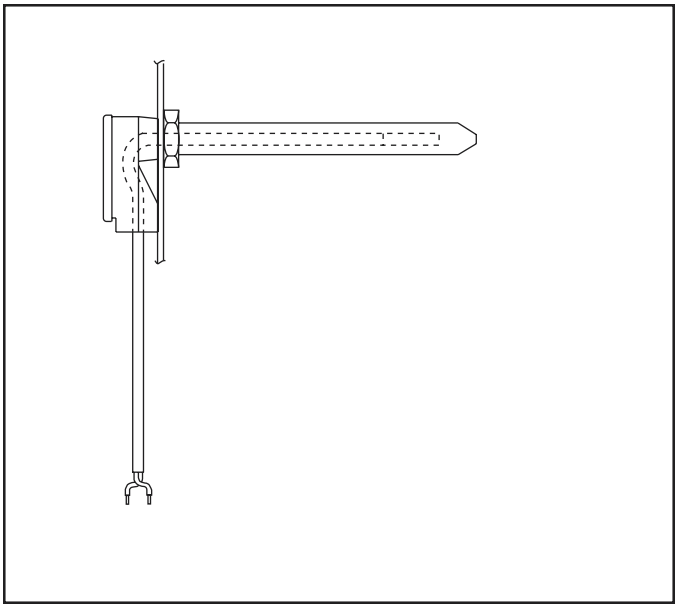
Installation

Mounting Instructions

Mount the control enclosure in a convenient, accessible location that provides the best visual advantage. Mount the enclosure to a wall or column with little or no vibration and away from static discharges that could damage components.

Pneumatic Sensor Line Connection

To get reliable signals to the sensors, the pneumatic sensor lines should not exceed 250-ft. Excess length can weaken the signal to the point that they are not readable. Included with the Checker board is 35-ft of each of the pneumatic lines. Contact Donaldson if the sensor lines must be longer than 250-ft.



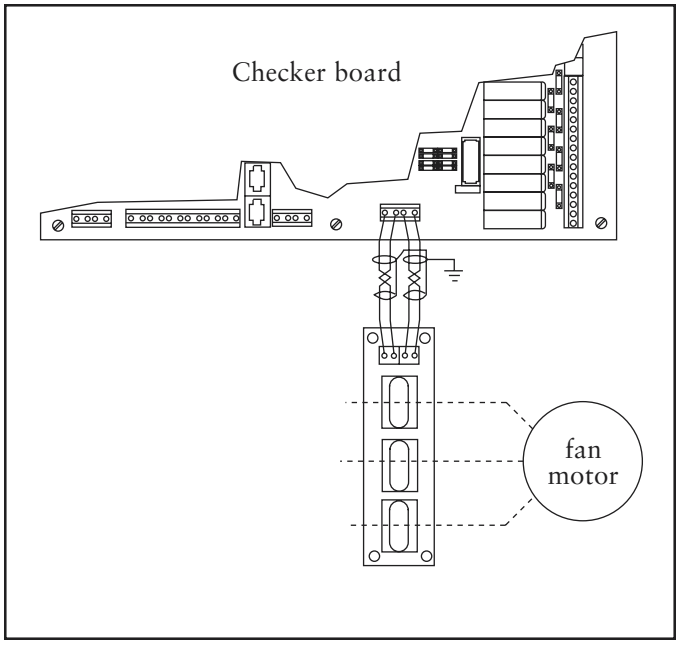
Thermistor Assembly

Thermistor

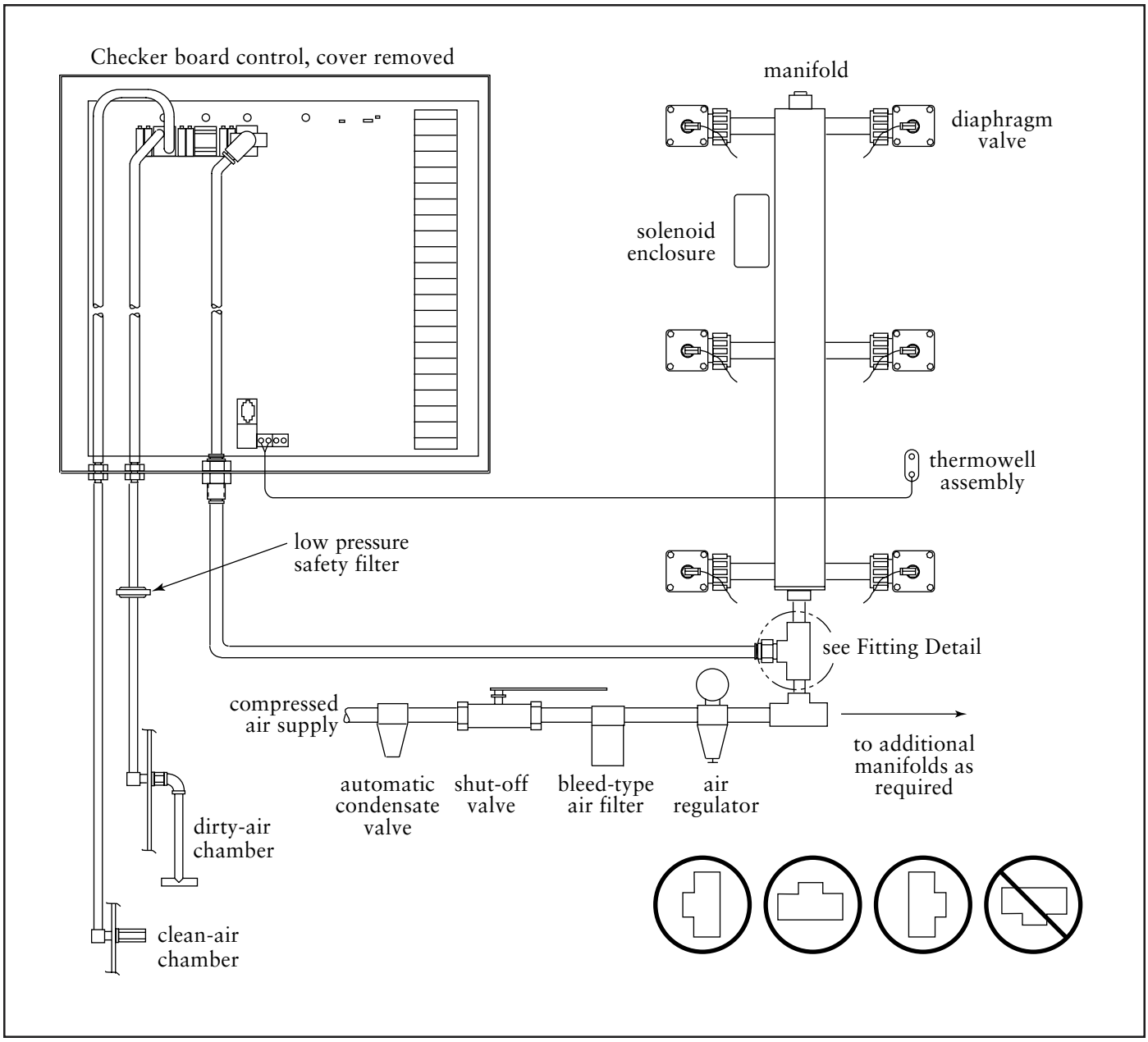
Connect the temperature sensor to the appropriate connection point on the Checker board using grounded, shielded, twisted pair wire (50-ft included), in metal conduit. Locate the thermistor and thermowell inside the clean-air chamber.

Current Sensor Wiring

The leads that connect the current sensor board to the main board should be shielded twisted pair wires (two 50-ft lengths included) enclosed in metal conduit.



Current Sensor Wiring



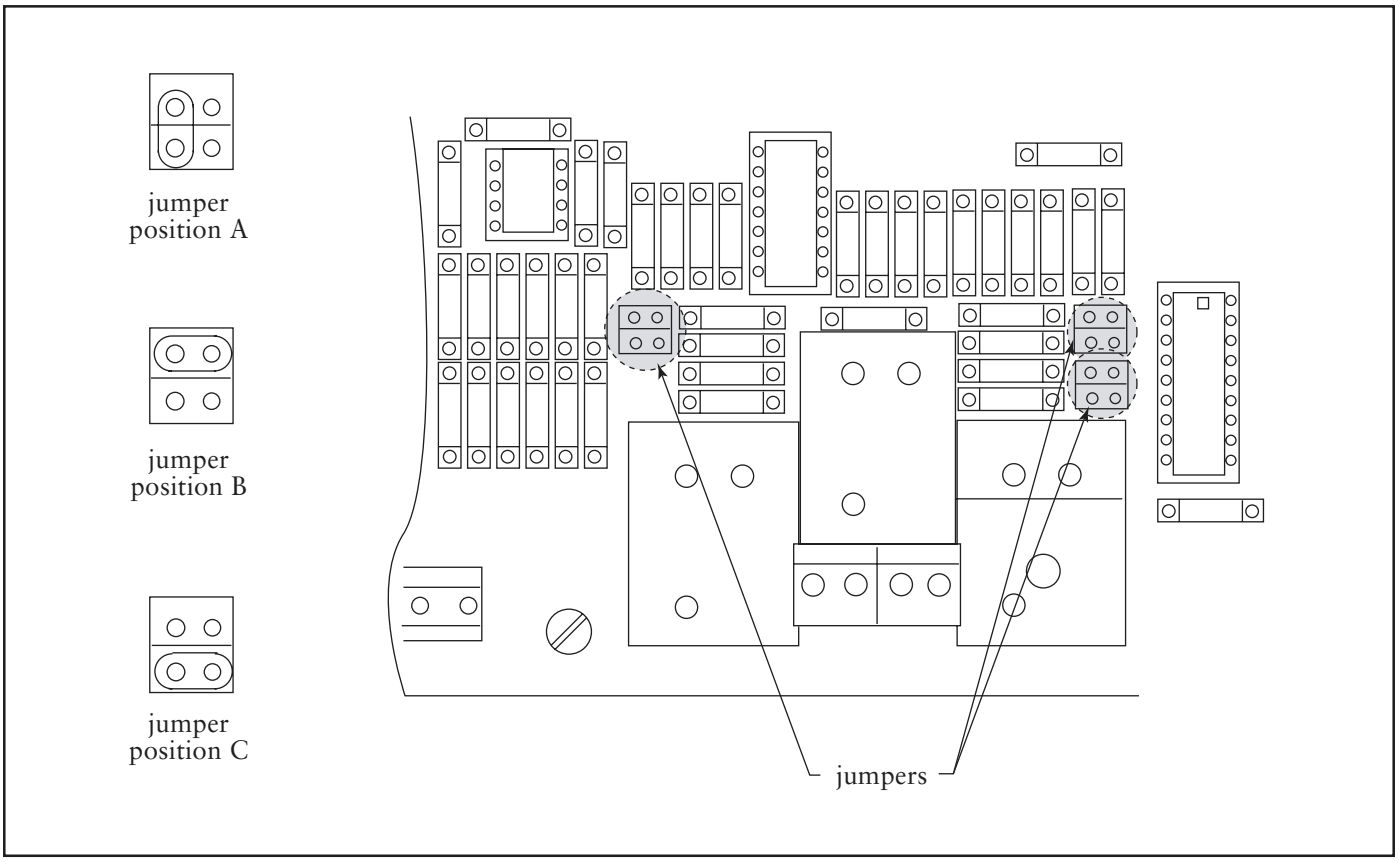
Pnuematic Installation

Electrical Installation

Reference the input voltage and motor amp draw listed on the motor's nameplate.

In the chart below, locate the amp rating of the motor and follow appropriate column for 50- or 100-Amp Current Sensor Jumper Position to find the correct jumper position, A, B, or C. The fourth column of the chart refers to the number of times that the motor leads pass through the current sensor coils.

There are three jumper plugs on the main printed circuit board as shown in Jumper Position. The three jumpers must be in the same position for proper performance. Reference the wiring diagram supplied with the Checker board.



Jumper Position

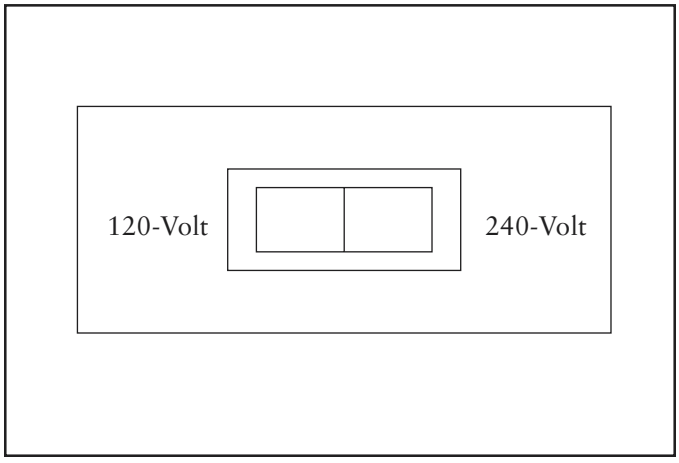
Motor Current Sensor Setup Table

Blower Motor Full-Load Amp	50 Amp Current Sensor Jumper Position	100 Amp Current Sensor Jumper Position	Primary Turns Through Sensor Core
0 to 5	A	N/A	2
6 to 10	A	N/A	1
11 to 25	B	A	1
26 to 50	C	B	1
51 to 100	N/A	C	1

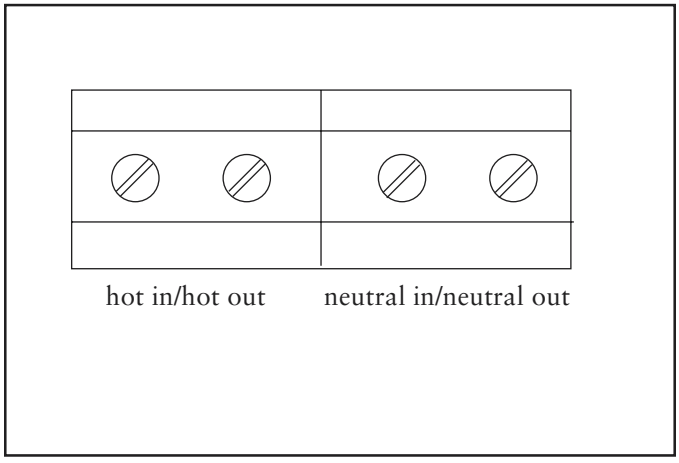
Primary Voltage

Switch Position

Position the voltage switch to correspond to the incoming power. When pushed to the left, the switch is set for 90 to 130-Volt AC. When pushed to the right, the switch is set for 180 to 260-Volt AC. A customer-supplied transformer must be provided for all other voltages.



Voltage Switch



Incoming Voltage

Incoming Voltage, Hot In/ Hot Out

This is the primary voltage source for the board. Acceptable voltage is 90 to 130 or 180 to 260-Volt AC, 50 or 60 Hz, Single Phase. The hot wire connects to the IN terminal. The OUT terminal provides a convenient point to connect the line voltage to other output connections that will operate on the same voltage, such as relays.

Incoming Voltage, Neutral In/ Neutral Out

This is the neutral connection for the primary voltage source. The primary connection attaches to the IN side. The OUT side provides common connections to the other output connections, such as relays.

ON/OFF

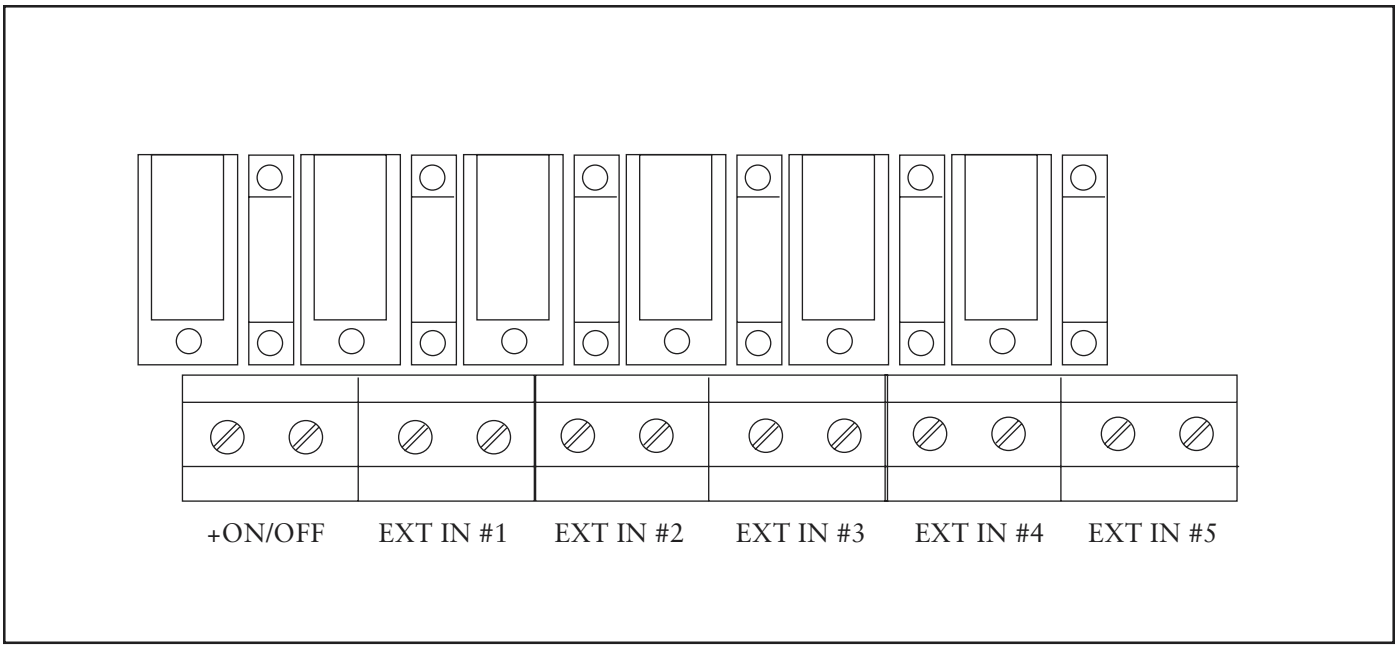
Power to the Checker board should be ON at all times, except while being serviced. The remote ON/OFF provides control of the Checker board status whether it is in standby or active mode. A typical installation would use the motor starter pull-in coil voltage to power the ON/OFF circuit, initiating the active mode any time the motor starter is engaged. Connecting one terminal to the motor starter coil voltage and the other terminal to neutral, allows the Checker board active mode to start and stop in conjunction with the blower motor.

EXT IN 1

External input #1, EXT IN, allows the operator to control the service interval fault light in the maintenance required panel with an external device, such as a high level control in a dust container, instead of using the internal timer. One terminal connects to neutral. The second terminal connects to a voltage source, either 120-Volt AC or 24-Volt DC, through a normally open switch provided by the external fault indication device. The EXT IN functions only if the configuration in the microprocessor was factory-set to read this input rather than the internal clock method of indicating a time-based service interval. If the service interval light is controlled by the internal clock, EXT IN 1 functions the same as 2 through 5.

EXT IN 2 through 5

External input 2 through 5 provides for an external input from customer-specified indication devices. One terminal connects to neutral. The second terminal connects to a voltage source, either 120-Volt AC or 24-Volt DC, through a normally open switch provided by the external fault indication device. When the external switch closes due to a fault condition, the matching LED illuminates on the panel and stays lit until the fault switch opens again. When the service interval function is based on an external switch, that function always occupies EXT IN 1.



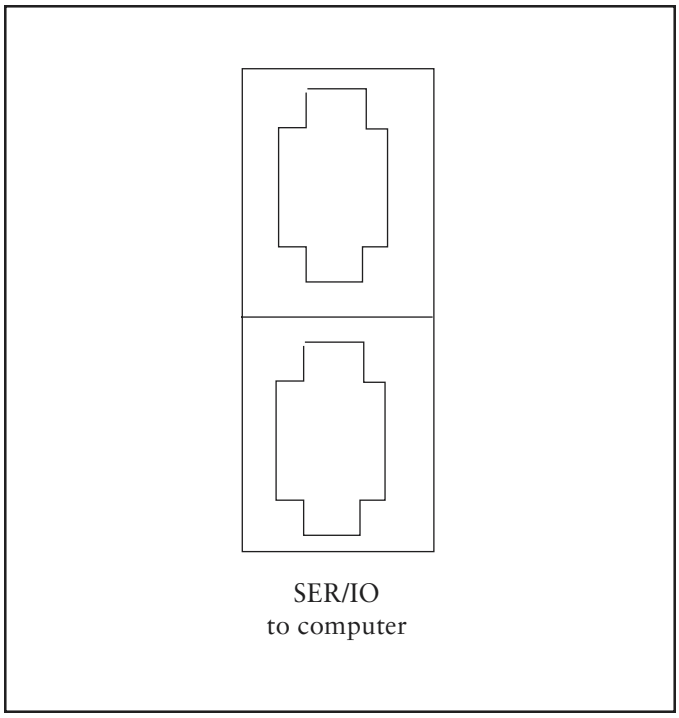
External Input

SER I/O

Serial Port Input/Output, SER I/O is a RJ-11 socket that provides the connection for monitoring and control of multiple collectors. Contact Donaldson for further information.

SER I/O to Computer

Serial Port Input/Output to Computer is a RJ-11 connection located closest to the edge of the printed circuit board that provides the computer interface, allows remote ON/OFF, setpoint adjustment, and monitors conditions by a host computer. Contact Donaldson for information related to communication requirements.



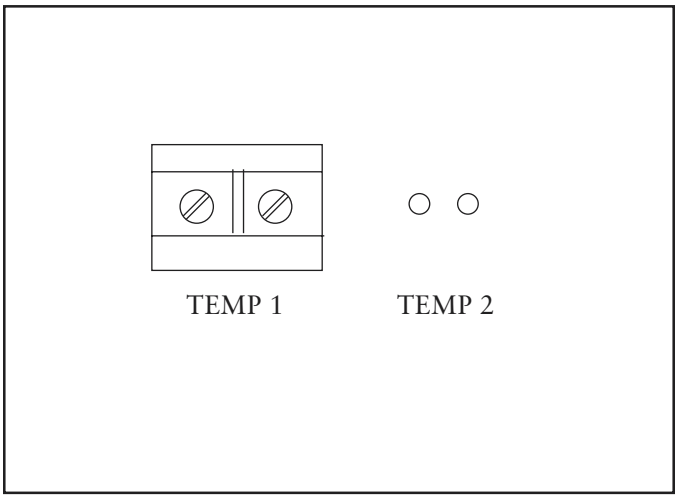
Serial Ports

TEMP 1

The Temperature, TEMP 1, is the connection for the thermistor that monitors the air temperature in the clean-air chamber.

TEMP 2

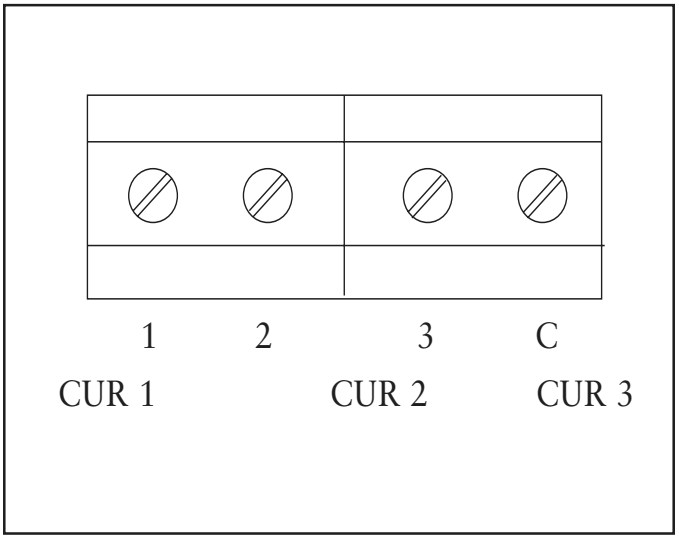
For future use.



Temperature 1 and 2 Ports

CUR 1, 2, 3

The Current, CUR 1, 2, and 3 connection blocks provide input from an external set of current sensors. See the wiring diagram for proper connections. The current sensors measure the amp draw of the blower motor and provides airflow information through the light bar display.



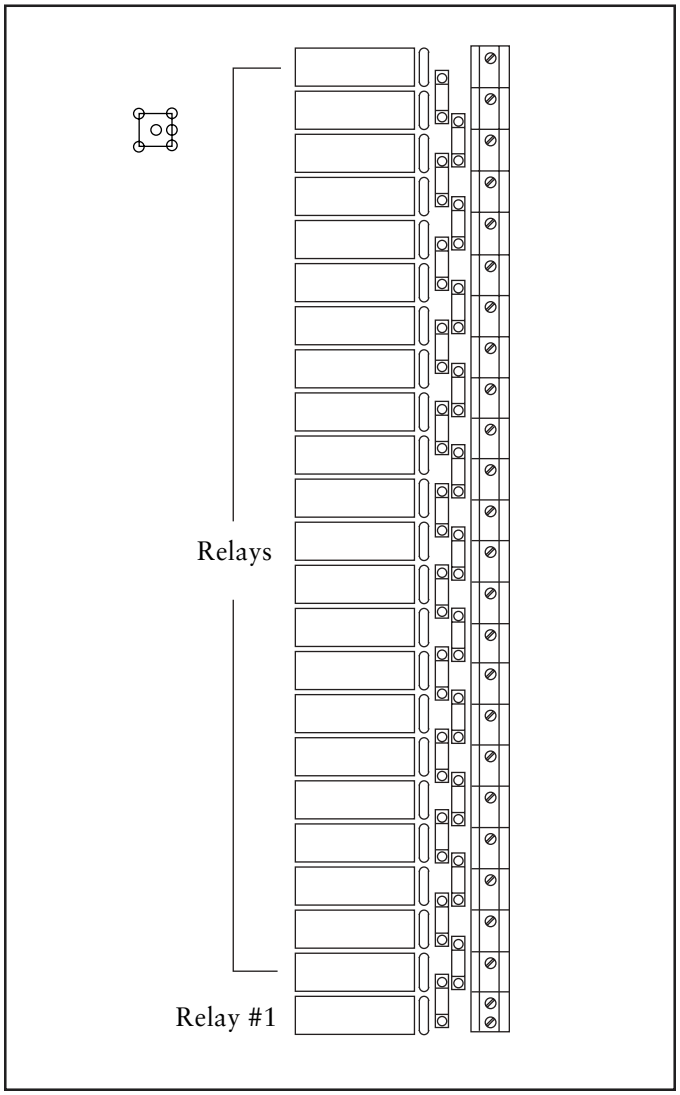
Current Sensors

Relay 1 through Relay 24

Relay 1 is always used to control the pull-in coil on the motor starter that starts and stops the system blower. Relays 2 and higher provide control of the system solenoid valves used for filter cleaning.

The relay outputs can be 115-Volt AC or 24-Volt DC. The 24-Volt DC version has a transformer that supplies DC current to the relays. The 24-Volt DC version leaves Relay 2 blank to separate the 115 or 230-Volt AC motor starter voltage from the 24-Volt DC used for the solenoid valves.

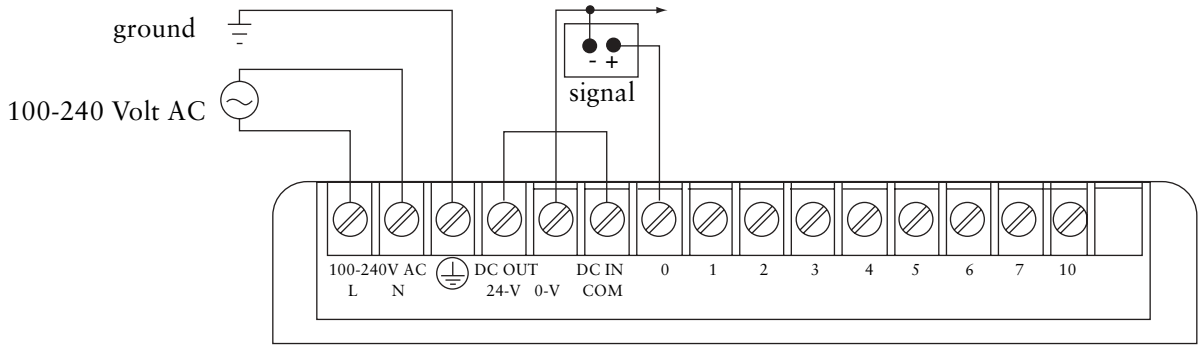
Relays used for solenoid control can operate up to three solenoids each. Do not connect more than one solenoid on any air manifold to a common relay.



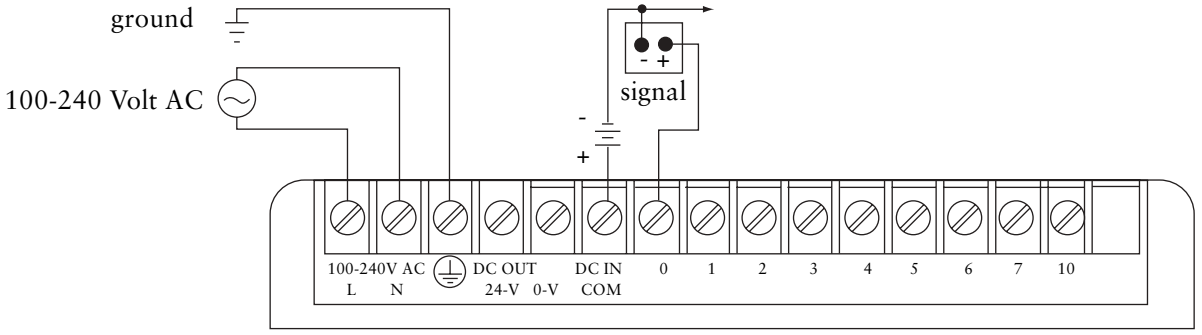
Relay 1 through 24

Signal Terminal

The Signal Terminal provides a way to export a logic signal to a PLC from a transistor-type optocoupler. Any fault light, except the Service Interval light and the unlabeled lights, causes the optocoupler to pass a DC logic signal to a connected PLC for approximately 0.5 seconds. Typical circuits to use this signal are illustrated in Signal Terminal.



PLC Sensor DC Power Supply



PLC and an External DC Power Supply

Signal Terminal

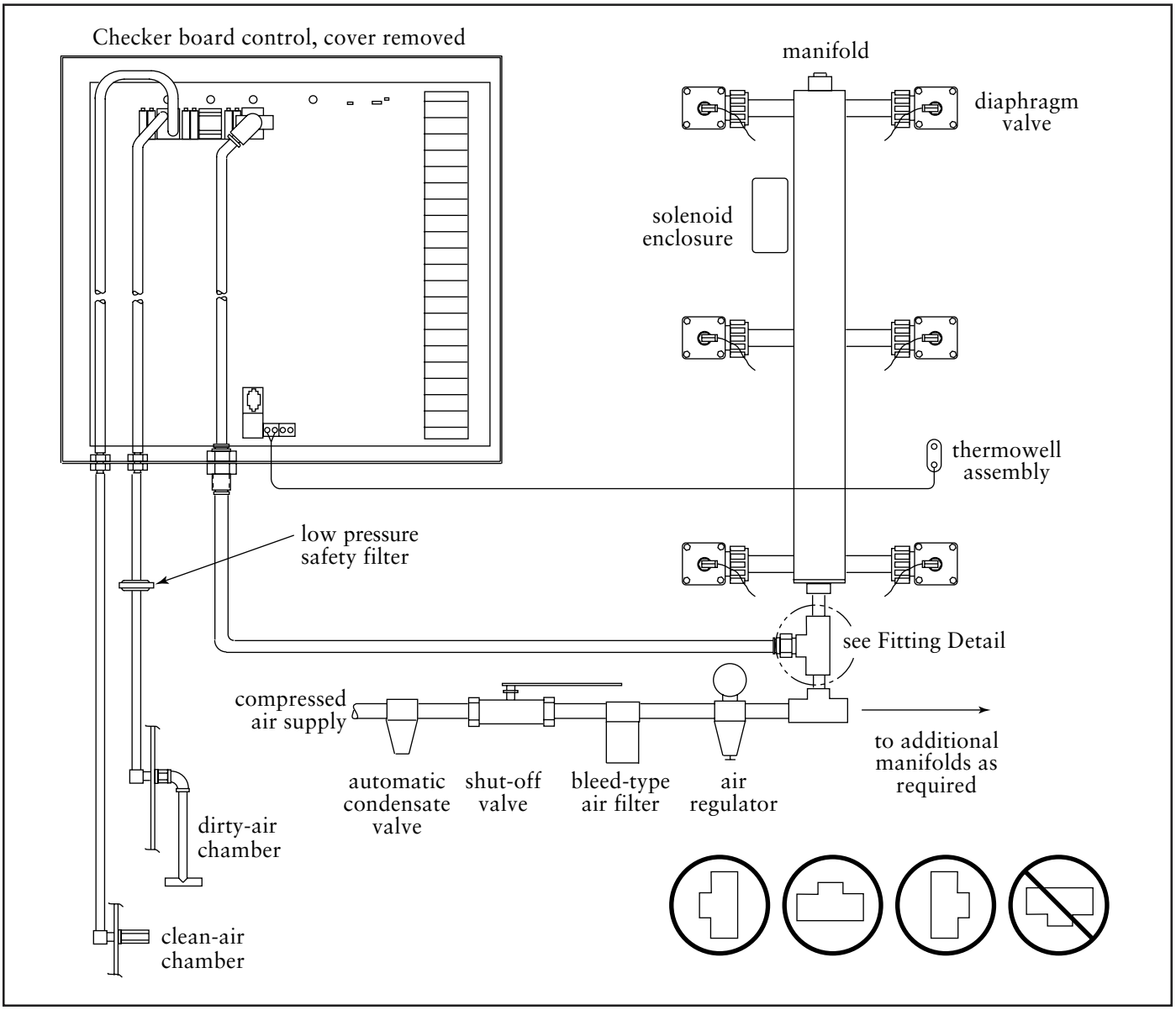
Pneumatic Installation

Install a customer-supplied regulator, filter, dryer, and lock-out bleed-type isolation valve between the plant air supply and the dust collector manifold to allow safe and convenient service.

Install the 1 x 1/4 x 1-in reducing tee at the connection point of the compressed air supply. Locate this fitting immediately adjacent to the manifold. See Fitting Installation. On multiple-module installations, install fitting between the manifolds.

The collector has tubing fittings installed in the clean- and dirty-air chambers. Attach a section of tubing from the clean-air chamber to the low pressure fitting on the enclosure. Attach a section of tubing from the dirty-air chamber to the high pressure fitting.

Connect a section of 1/4-in OD, 120-psi rated tubing from the collector's manifold at the point closest to the hookup of the plant air supply to the compressed air line pressure tap on the enclosure. An installation drawing has been shipped with the Checker board that illustrates proper connections.



Pneumatic Installation

Solenoid Connection

One of three types of solenoid enclosures, the weatherproof NEMA 4 with 1/8-in solenoid valves; the gas-explosion proof NEMA 7 with 1/8-in solenoid valves; or the dust-ignition proof NEMA 9 with 1/8-in solenoid valves, is mounted near or on the unit's compressed-air manifold.

Control Specifications

Input
Low Range: 90-130V/50-60Hz/1Ph
High Range: 180-260V/50-60Hz/1Ph

Output Relay Voltage and Contact Rating:
The output relays are independent of the input voltage. Relays can accept power from any voltage source desired.

VDE: 8 amp, 250-Volt AC
UL: 10 amp, 240-Volt AC
CSA: 8 amp, 24-Volt DC

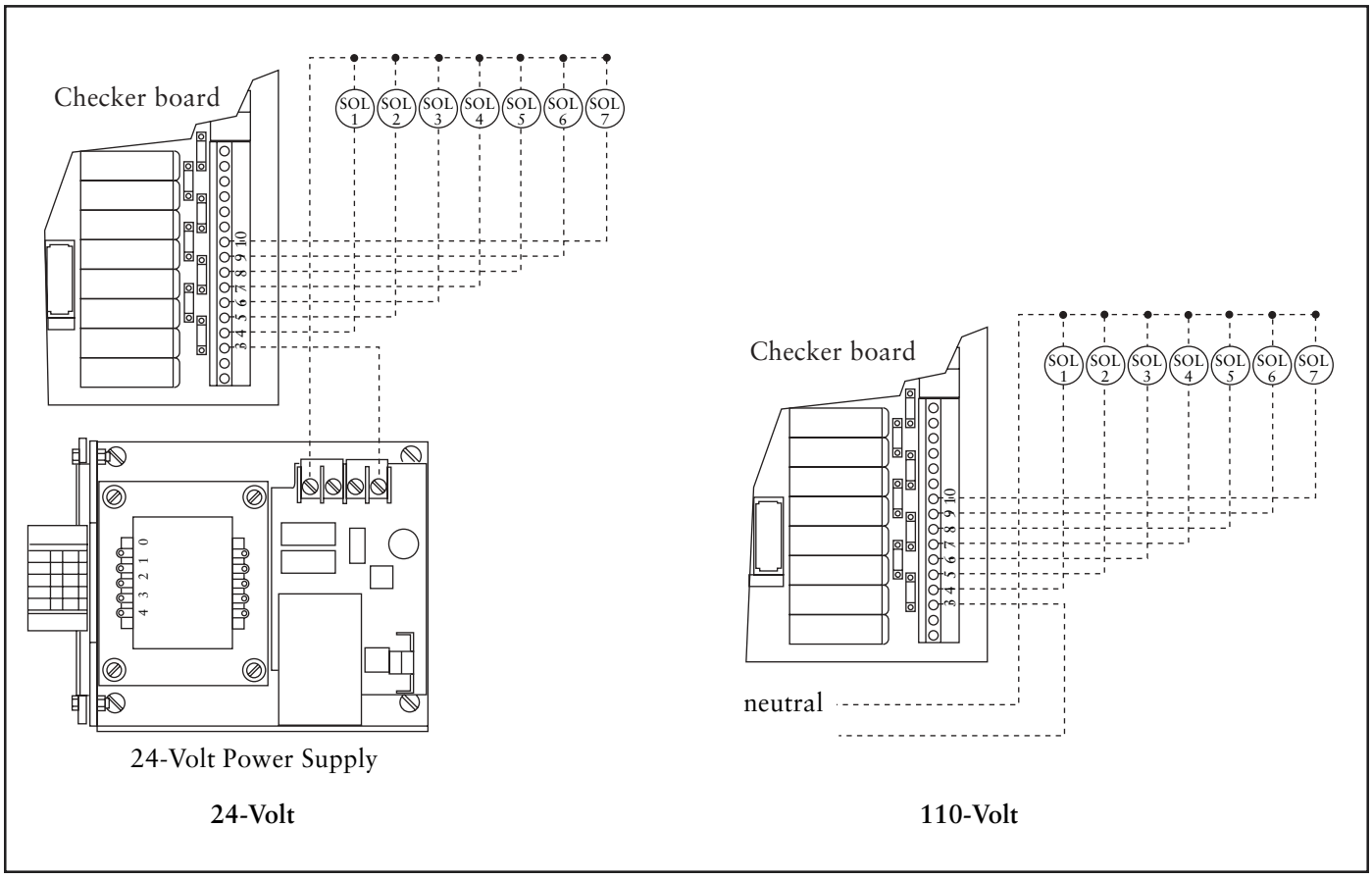
Pulse ON Time
Factory set at 100-milliseconds, or 1/10-second.

Note: *Do not* adjust pulse ON time unless the proper test equipment is available. Too much or too little ON time can cause shortened filter life.

Pulse OFF Time
Factory set at 10-seconds. The pulse OFF time can only be adjusted by modifying the parameters contained in the microprocessor software. Contact your representative for assistance.

Operating Temperature Range
Ambient 0° F to 140° F.

Relays
There are twenty-four relay positions, twenty-three on 24-Volt DC systems, that can be used to control solenoid valves or other filter cleaning devices.



Solenoid Wiring Diagram

Preliminary Start-Up Check

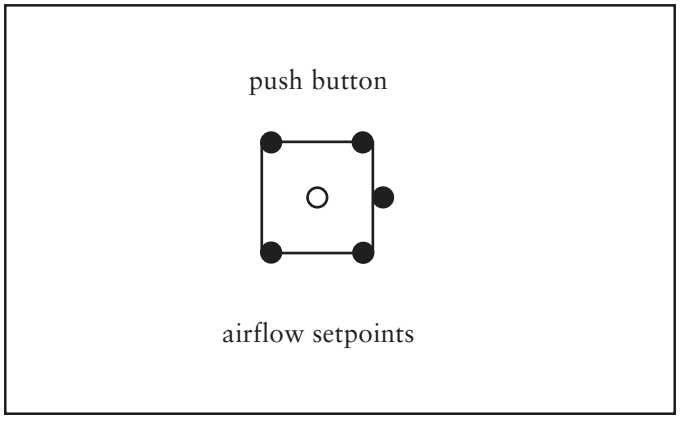
1. Check that all connections to the air and electrical supply are in the correct position according to the installation print.
2. Check electrical and pneumatic connections for tightness or leaks.
3. Verify that all electrical systems are properly grounded.
4. Verify the proper installation of the collector.
5. Check blower rotation by pushing the START-STOP button ON and OFF very quickly. Proper rotation is clockwise when looking down on the top of the motor.

Start-Up

Calibration

The computer requires a calibration procedure to display the correct airflow. Configure the system at the maximum airflow used in normal operation of the system. For example: clean filters, blower inlet or outlet damper open to the maximum flow, and operation within the horsepower rating of the motor.

1. Turn the motor ON and allow it to run for at least one hour to stabilize the operating temperature and amp draw. The motor amp draw may decrease due to run-in of bearings and belts. Run-in may vary in time from hours to days.
2. Open the electrical enclosure containing the Checker board main panel. Press and hold the push button labeled Airflow Setpoints, located to the left of Relays 23 and 24, until the panel fault light located in the Maintenance Required window on the cover of the enclosure is lit.



Airflow Setpoint Push Button

3. Press and hold the START CLEAN button until the indicator light above that button is lit. Use the arrow keys to light the LED in the airflow bar graph to the desired maximum airflow. Start with the 10th light from the left as the initial high flow setting. Press and hold the START CLEAN button until the indicator LED goes out.
4. Use the blower damper or other system airflow control to reduce the system airflow to the lowest airflow that will provide satisfactory performance. Normally this is dictated by the lowest airflow that generates transport velocity in the duct. When you are satisfied that the system is operating at its lowest practical airflow condition, press and hold the STOP CLEAN button until the indicator light above that button is lit. Again, use the arrow keys to locate and illuminate the light appropriate for displaying the low flow condition. Use the first or second light from the left end as a starting point.
5. Press and hold the STOP CLEAN button until the indicator light goes out. Press and hold the airflow setpoint push button on the main printed circuit board until the fault indicator light goes out.
6. The computer automatically assigns values for all the lights in the airflow light bar based on calibration values registered by the procedure above. The computer automatically assigns a blower overcurrent value based on 120 percent of the motor amp draw recorded at the time of maximum airflow calibration setpoint.
7. This calibration procedure can be repeated to change the light bar display or to compensate for changes in the system. The only setpoint that cannot be changed with this procedure is the blower overcurrent value.

   Note: If you find that the blower overcurrent fault light is displayed and ammeter readings indicate the motor is operating at less than the rating listed on the nameplate, contact Donaldson for assistance in reassigning the overcurrent value in the computer.

Blower Rotation

If the fault light remains on after it has been verified that the blower is rotating in the correct direction, reverse leads 1 and 2 at one end of the twisted pair wiring between the Current Sensor and the Checker board.

START CLEAN, STOP CLEAN Adjustment

The microprocessor has default settings from the factory; however, you should establish an initial setting for filter cleaning to match your system configuration.

Each light in the bar graph display is equal to approximately 0.75"wg. The system logic limits movement of the setpoint, not permitting the setpoints to overlap. For example, the STOP CLEAN value cannot be greater than the START CLEAN, and vice versa.

1. Start the collector, check the filter pressure drop reading, and set the STOP CLEAN one light to the right of the initial reading.
2. Set the START CLEAN three lights to the right of the initial reading. As the filter cartridge ages, the settings need to be adjusted to maintain stable pressure drop without continuous pulsing. Do not set the STOP CLEAN at the initial reading, as this will clean down to new filter pressure drop. A dust cake increases filter efficiency and attempting to maintain the initial reading uses excess compressed air.

Service Interval

The service interval is a timed interval, adjustable from 8 hours, first light illuminated, to 80 hours, tenth light illuminated. Adjust the interval in 4-hour increments by bracketing the half step as described in Setpoint Adjustments. For example, this timer function can indicate time intervals to empty the dust containers.

If the light above the Service Interval button will not light, it is configured to function from an external switch. See EXT IN 1 for further information.

Troubleshooting

Problem	Probable Cause	Remedy
Power ON light located at the center of the main printed circuit board not lit	Electrical supply circuit down	Check power supply circuit for proper voltage. Check for fuse or circuit breaker fault. Replace as necessary.
	Safety disconnect open	Close.
	Tranformer fuse blown	Check transformer fuses and replace as necessary.
	Circuit board input fuse blown	Check printed circuit board fuse and replace if necessary.
Fault light on display panel illuminated	Input voltage does not match the slide switch position.	Verify input voltage and set voltage slide switch to correct input voltage. See Switch Position on Page 13.
	Voltage outside the system limits	Provide external transformer circuit.
	Temporary low or high voltage	Turn Checker board OFF and restart when "brownout" conditions are corrected.
	System is in the Airflow Configuration mode	Complete airflow configuration settings and return to normal mode. See Mode Display on Page 8.
	Component failure	Contact your Donaldson Torit representative.
Cleaning Failure fault light on display panel is illuminated	Solenoid valve failure	Check solenoid valves for proper operation. Replace or repair valves as necessary.
	Faulty solenoid wiring	Check and correct solenoid valve wiring.
	Diaphragm valve failure	Check diaphragm valves for proper operation. Replace or repair valves as necessary.
	Relay failure	Check for proper output voltage at relays.
	Insufficient compressed air	Check and correct compressed air supply.
	Unused relay	Use all relay outputs in sequence.

Troubleshooting, continued

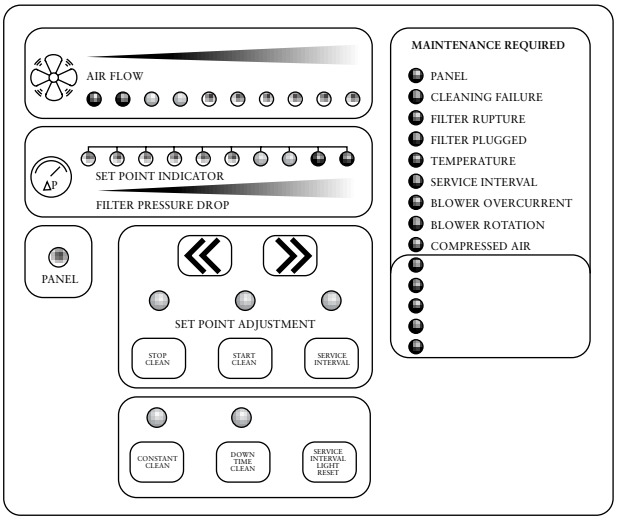
Problem	Probable Cause	Remedy
Filter Rupture fault light on diplay panel ON	Collapsed or ruptured filter cartridge	Check for visible dust in the discharge airstream. Replace filters as necessary.
	Airflow control damper closed rapidly	Reset damper settings.
	Motor failure	Check fuses and circuit breakers. Replace or reset as needed. Reset motor.
Filter Plugged fault light on display panel ON	Filter cartridge needs replacement	Replace filter cartridges as a complete set.
	Low compressed air pressure	Supply 90 to 100 psi compressed air to units manifold.
	Setpoint adjustment is incorrect	Set the START CLEAN setpoint above the normal differential pressure.
Temperature fault light on display panel ON	Incoming air temperature exceeds the rating of the filter cartridge	Replace existing cartridges with cartridges having a higher temperature rating. Contact your Donaldson Torit representative to reset the fault indicator setpoint.
	Fire	Extinguish fire and replace cartridges as required. Eliminate all sources of ignition before restarting the unit.
	Short circuit	Check twisted pair wire. Replace if damaged.
	Water in thermowell	Replace thermowell assembly.
Service Interval fault light on display panel ON	Timer function time elapsed	To reset the indicator light, press the OFF button, perform the service, press the Service Interval Light Reset button, and return to service.
	External device function	Perform service indicated by the external device and reset as above.
Blower Overcurrent fault light on display panel ON	Faulty motor	Repair or replace as required.
	Airflow exceeds the rated flow	Adjust inlet or outlet dampers.
	Lack of proper flow restriction device or access from ambient to clean- or dirty-air chamber open.	Close hopper discharge or other openings. Do not operate unit without inlet duct in place.

Problem	Probable Cause	Remedy
Blower rotation fault light on display panel ON	Motor rotation fault	Proper rotation is clockwise when looking down on the top of the motor. Incorrect rotation, three phase power supply: Turn electrical power OFF at source and switch any two leads on the output-side of the fan-motor starter. Correct rotation: Interchange leads 1 and 2 of the twisted pair that connects the current sensor board to the Checker board. Change one end only.
Compressed Air fault light on display panel ON	Low compressed air pressure in the manifold	Increase compressed air supply pressure.
	No connection from the compressed air manifold to the sensor	Install a pipe or tube providing compressed air to the pressure sensor fitting on the enclosure.
	Leak in the sensor line or the tubing has come loose from the fittings	Check for and repair any loose fittings or damaged tubing inside the enclosure.
	Supply line to the manifold too small	Increase the size of the compressed air supply line to the collector manifold.
	Isolation valve at manifold inlet closed	Open.
	Regulator not adjusted properly	Set regulator at 90 to 100 psi.
	Compressed air filter plugged	Clean or replace the filter in the compressed air supply line.
No display for the Airflow Bar Graph	Calibration procedure not competed.	See Calibration on Page 20.
	Current sensors not installed or not wired.	See Electrical Installation on Page 12 and Signal Terminal Wiring on Page 17.

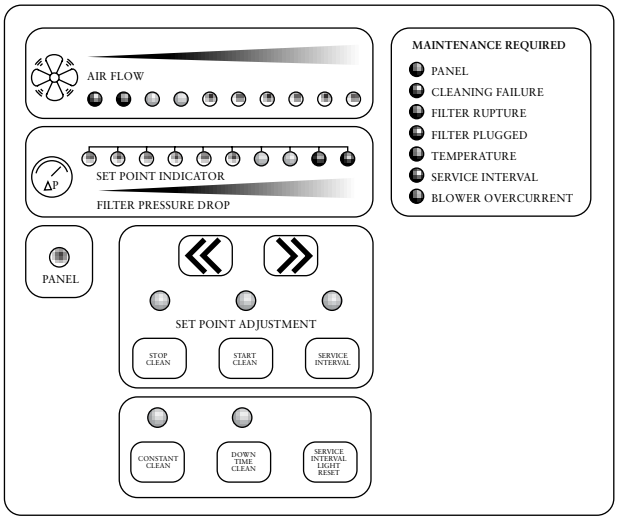
Troubleshooting, continued

Problem	Probable Cause	Remedy
Filter Pressure Drop bar graph out of calibration	One of the tube fittings on the pressure sensor has broken loose from the substrate	If the pressure sensor is mounted on the top of the printed circuit board, the tube can be remounted with cyanoacrylate adhesive. If mounted on the bottom of the printed circuit board, replace board.
	Leaking or plugged pneumatic fitting or lines	Correct leaks, loose fittings, kinked, or pinched air lines. Use compressed air to blow dust in lines back into dust collector. Clean or blow out plugged fittings.
	Plugged pneumatic safety filter	Replace the line filter that protects the pressure sensors.
	Zero point calibration error	The microprocessor recalibrates the zero point every time the board goes into the active mode. If the blower is already operating when the board enters the active mode, or if there is any pressure on either side of the Delta P sensor, the calibration will be incorrect. To correct, turn the blower OFF leaving the Checker board powered and in the inactive mode for two minutes. Check that the Checker board enters the active mode before or at the same time as the blower, or disconnect the tubing from the Checker board before going into the active mode.
	Damaged sensor due to overpressure.	Sensor rated for a maximum pressure of 6 psi (41kPa). Replace the Checker board.
No display or all lights illuminated on Filter Pressure Drop Bar Graph display	Incorrect pneumatic tubing connections	Reverse the tubing connections. Safety filter must be in the dirty-air chamber's tube.
	Clean filters	Unseasoned filters may not have sufficient pressure drop to illuminate even the first LED. Recheck after operating under load.

Replacement Parts



1-1 Checker board Display Label, DFT

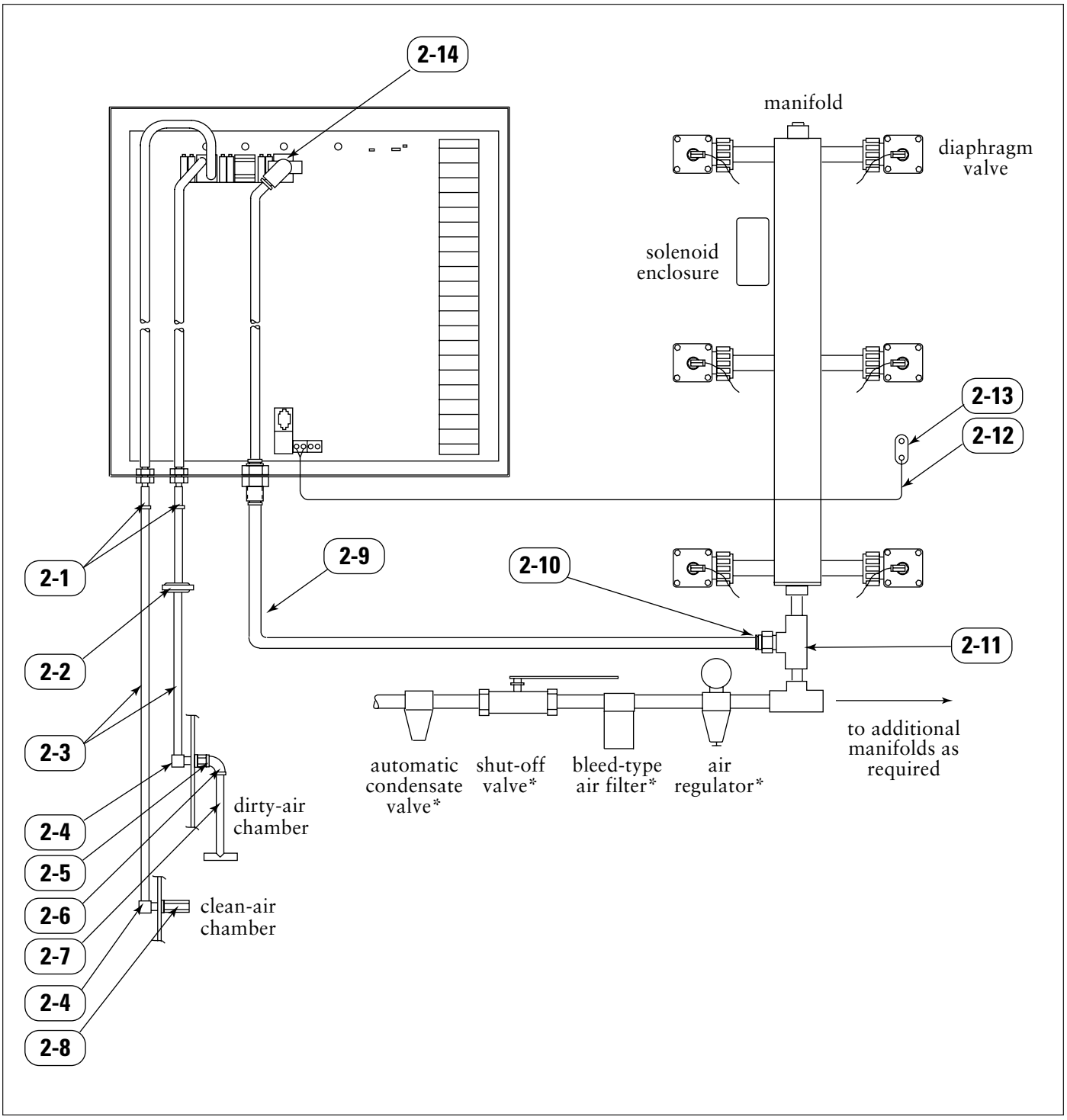


1-2 Checker board Display Label, SDF

Parts Drawing 1, Checker board Display Label

Item	Part Number	Description	Model
1-1	8PP-35530-01	Checker board Display Label	DFT
1-2	8PP-35530-02	Checker board Display Label	SDF

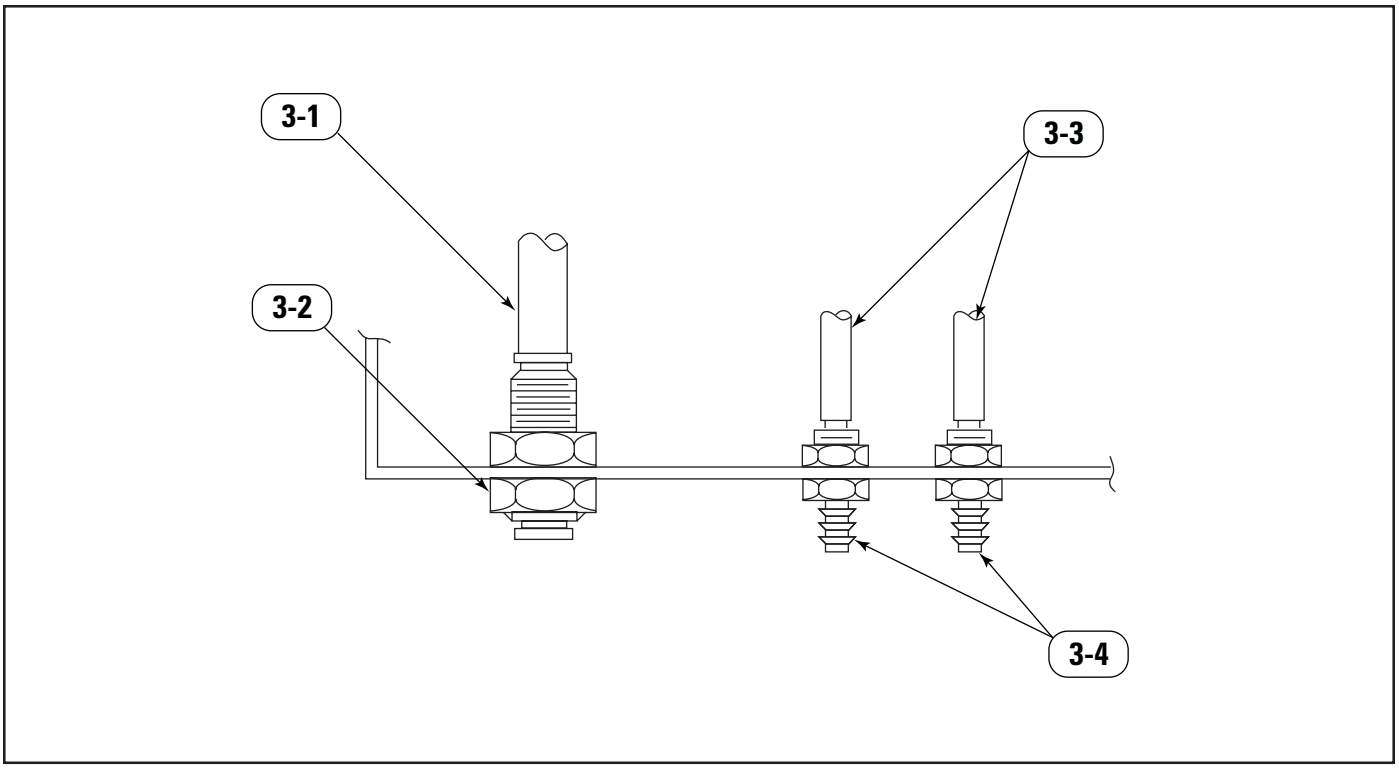
Pneumatic Installation



Parts Drawing 2, Pneumatic Installation

Item	Part Number	Description	Model
2-1	8PP-75396-01	Hose Clamp, 5/16-in	All Except Model SDF
2-2	8PP-37032-00	Safety Filter, 0.2 Micron PTFE	All
2-3	5PM-23342-00	1/4-in Plastic Tubing, 35-ft	All
2-4	8PP-16477-00	1/8-in NPT x 90° Plastic Male Elbow	All
2-5	8PP-21574-00	1/8-in NPT x 1/8-in FPT Adapter	All
2-6	8PP-23260-00	1/8-in NPT x 90° Brass Female Elbow	All
2-7	8PP-23245-01	Static Pressure Tee, Brass	All
2-8	8PP-18463-00	1/8-in Female Coupling	All
2-9	5PM-37262-02	Polyethylene Tubing, 1/4-in x 35-ft	All
2-10	8PP-21461-00	Connector, 1/4-in OD Plastic x 1/4-in NPT, Male	All
2-11	8PP-52267-00	Tee, 1 x 1/4 x 1-in NPT	All Except Model SDF
2-12	5PM-37153-02	Wire, Twisted Pair, Shielded, 50-ft	All
2-13	2SG-37180-00	Thermowell Assembly	All
2-14	8PP-37165-00	Elbow, Swivel, 1/4-in x 10-32	All Except Model SDF

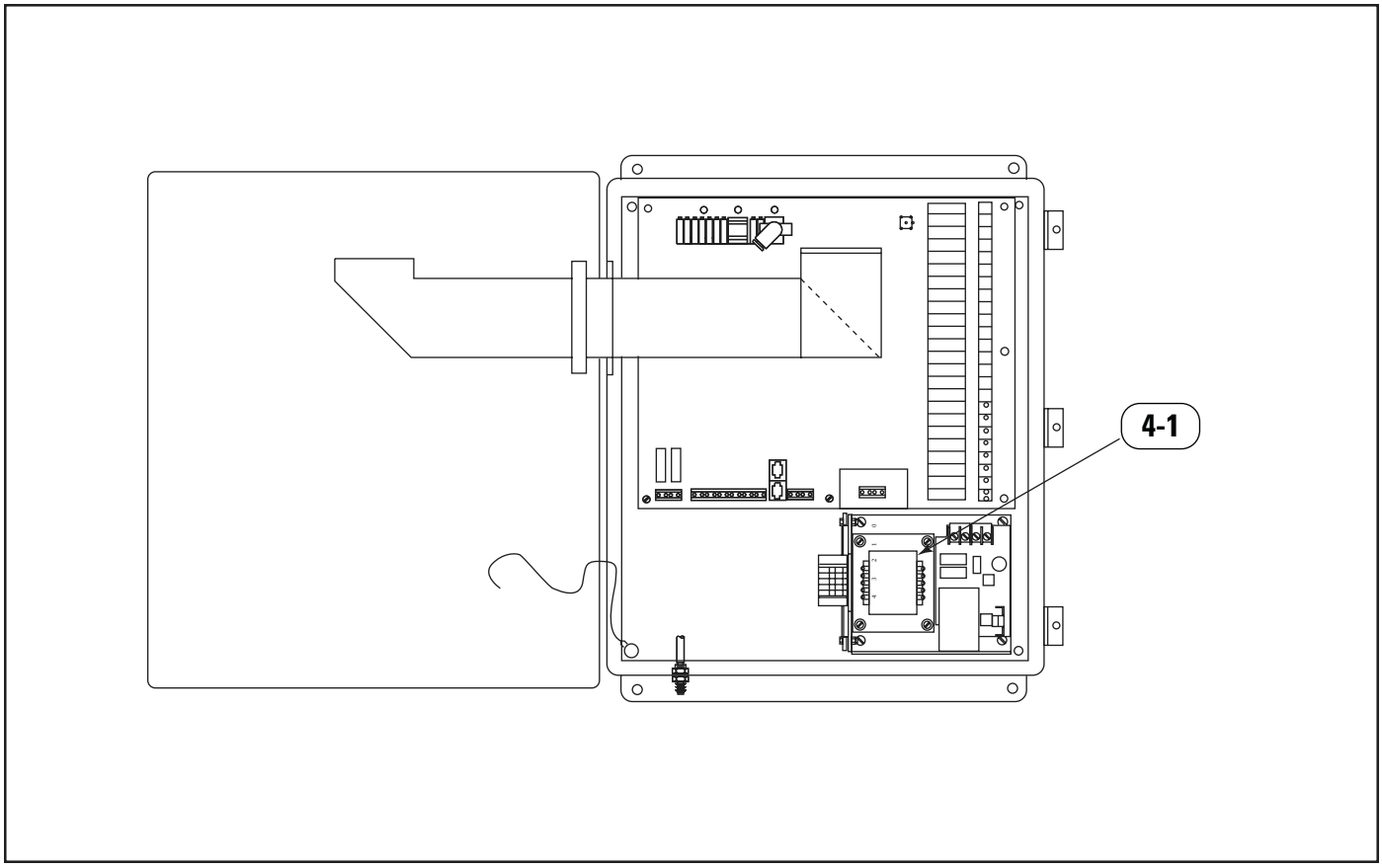
Pneumatic Connectors



Parts Drawing 3, Pneumatic Connectors

Item	Part Number	Description	Model
3-1	5PM-37262-01	Polyethylene Tubing, 1/4-in x 18-in	All
3-2	8PP-37055-00	Bulkhead Union, 1/4-in	All
3-3	5PM-37891-01	Plastic Tubing, 1/8-in ID x 18-in	All
3-4	8PP-37054-00	Barbed Bulkhead Union, 1/4-in OD x .170 ID, 5/16-24	All

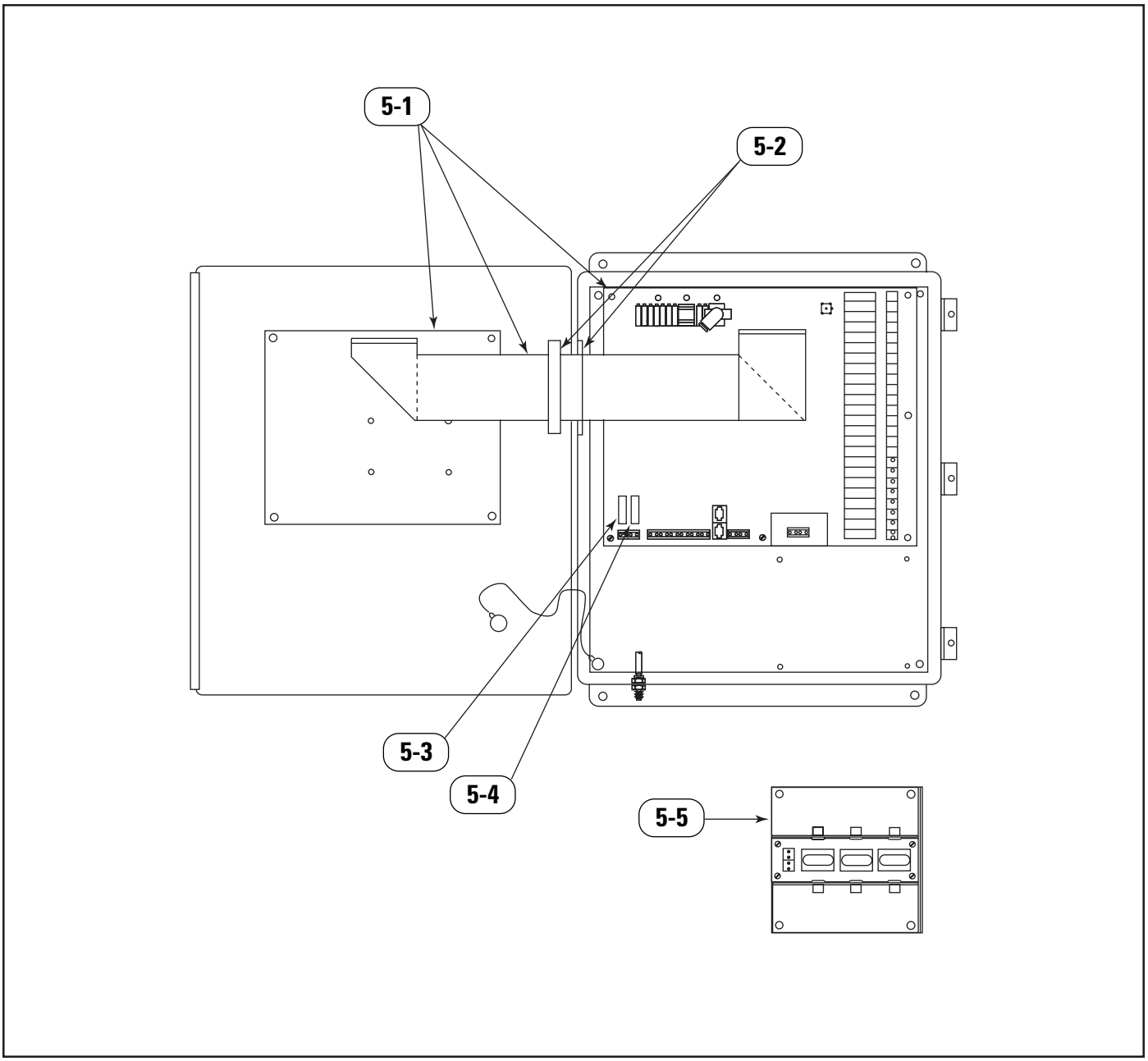
Transformer



Parts Drawing 4, 24-Volt DC Transformer

Item	Part Number	Description	Model
4-1	8PP-37086-00	Transformer, 24-Volt DC	All

Checker board Assembly Kit



Parts Drawing 5, Checkerboard Assembly Kit

Item	Part Number	Description	Model
5-1	8PP-36804-15	Checker board Assembly Kit, 110-V AC, 8 w/1 PS	All
	8PP-36804-02	Checker board Assembly Kit, 110-V AC, 8 w/2 PS	All
	8PP-36804-03	Checker board Assembly Kit, 110-V AC, 16 w/2 PS	All
	8PP-36804-04	Checker board Assembly Kit, 110-V AC, 24 w/2 PS	All
	8PP-36804-16	Checker board Assembly Kit, 24-V DC, 8 w/1 PS	All
	8PP-36804-06	Checker board Assembly Kit, 24-V DC, 8 w/2 PS	All
	8PP-36804-07	Checker board Assembly Kit, 24-V DC, 16 w/2 PS	All
	8PP-36804-08	Checker board Assembly Kit, 24-V DC, 24 w/2 PS	All
5-2	8PP-37169-03	Flat Cable Mount	All
5-3	8PP-53929-01	Fuse, .16 Amp, 115-Volt	All
	8PP-53929-02	Fuse, .08 Amp, 220-Volt	All
5-4	8PP-53929-03	Fuse, 2 Amp	All
5-5	3EA-48842-01	Current Sensor, 50 Amp	All
	3EA-48842-02	Current Sensor, 100 Amp	All

The Donaldson Torit Warranty

Donaldson Company, Inc. warrants to the original purchaser that for a period of ten (10) years from the date of shipment, the product described herein shall be free from defects in materials and workmanship if properly installed, maintained and operated under normal conditions. Donaldson Company makes no warranty against damage due to corrosion, abrasion, normal wear and tear, modification or misapplication and makes no warranty whatsoever as to any goods manufactured or supplied by others. After Donaldson Company has been given adequate opportunity to remedy any defects in material or workmanship, Donaldson Company retains the option to accept the return of the product, with return freight paid by the purchaser, and to refund the purchase price for the product after confirming the product is returned undamaged and in usable condition. Such a refund will be the full extent of Donaldson Company's liability and Donaldson Company shall not be liable for any other costs, expenses or damages whether direct, indirect, consequential or otherwise. The terms of this warranty may be modified only by a special warranty document signed by a Director, General Manager or Vice President of Donaldson Company. Failure to use genuine Donaldson replacement parts will cancel this warranty. THERE EXIST NO OTHER REPRESENTATIONS, WARRANTIES OR GUARANTEES EXCEPT AS STATED IN THIS PARAGRAPH AND ALL OTHER WARRANTIES INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, WHETHER EXPRESS OR IMPLIED ARE HEREBY EXPRESSLY EXCLUDED AND DISCLAIMED.

Parts and Service

For genuine Donaldson Torit replacement filters
and parts, call the Parts Express Line

800-365-1331 USA
800-343-3639 within Mexico

www.donaldsontorit.com

For faster service, have unit's model and serial number,
part number, description, and quantity available.

Donaldson®
Filtration Solutions

Donaldson Company, Inc.
Industrial Air Filtration
P.O. Box 1299
Minneapolis, MN 55440-1299
dustmktg@mail.donaldson.com

Donaldson Company, Inc. is the leading designer and manufacturer of dust, mist, and fume collection equipment used to control industrial-air pollutants. Our equipment is designed to help reduce occupational hazards, lengthen machine life, reduce in-plant maintenance requirements, and improve product quality.

IOM-72206-01, Revision 4
Printed in USA
November 2003