



TJERNLUND PRODUCTS, INC.

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MODEL COP2

(Includes COP2 Control and Transducer)

INSTALLATION INSTRUCTIONS

 Recognize this symbol as an indication of important Safety Information!

OWNER INSTRUCTIONS, DO NOT DESTROY

WARNING

THESE INSTRUCTIONS ARE INTENDED AS AN AID TO QUALIFIED, LICENSED SERVICE PERSONNEL FOR PROPER INSTALLATION, ADJUSTMENT AND OPERATION OF THIS PRODUCT. READ THESE INSTRUCTIONS THOROUGHLY BEFORE ATTEMPTING INSTALLATION OR OPERATION. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN IMPROPER INSTALLATION, ADJUSTMENT, SERVICE OR MAINTENANCE POSSIBLY RESULTING IN FIRE, ELECTRICAL SHOCK, CARBON MONOXIDE POISONING, EXPLOSION, PERSONAL INJURY OR PROPERTY DAMAGE.

**DO NOT DESTROY. PLEASE READ CAREFULLY AND
KEEP IN A SAFE PLACE FOR FUTURE REFERENCE.**

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Tjernlund Products welcomes your comments and questions. Address all correspondence to:

Customer Service • Tjernlund Products, Inc. • 1601 Ninth Street • White Bear Lake, MN 55110-6794

Call us toll free at 800-255-4208, visit our web site @ www.tjernlund.com or email us at fanmail@tjfans.com.

DESCRIPTION

The COP2 Constant Operating Pressure Control includes a VFD that will modulate the speed of an approved Tjernlund exhaust fan to maintain a user adjustable negative pressure set point. The set point is adjusted through dip switches mounted on the COP2 circuit board. The operating range of the COP2 control is -0.05" W.C. to -0.53" W.C. in 0.01" W.C. increments.

Pressure is measured in a chase, duct or vent at the farthest point from the exhaust fan with the pressure transducer and sensing tube kit. As exhaust volume increases within the duct/chase/vent the resulting reduction in measured pressure causes the COP2 control VFD to speed the fan up to handle the additional exhaust volume and slow the fan down when the exhaust volume is reduced to maintain a constant exhaust pressure.

GENERAL INFORMATION

Each COP2 is electrically factory line tested before shipment.

After opening carton, inspect thoroughly for hidden damage. If any damage is found notify freight carrier and your distributor immediately and file a concealed damage claim.

INSTALLATION RESTRICTIONS

1. Do not use the COP2 with gas or oil fired heating equipment without interlocking all burners being served with a CIC1 Interlock Control and the required number of MAC-Series Multiple Appliance Controls. The interlock feature is not activated unless a jumper is installed between "A" and "GND" of the COP2 operational mode terminal strip. Follow instructions and wiring diagrams included with the CIC1 Interlock Control and perform operation check to validate the interface with the COP2 Control.
2. The COP2 is intended for indoor installation only. Do not mount the COP2 on a heat source or in an environment that exceeds 104°F (40°C).
3. The maximum distance wire can be ran from the COP2 Control to Fan Motor is 100 feet.
The maximum distance wire can be ran from the COP2 Control to Pressure Transducer is 250 feet. Transducer wiring should be in metal conduit or utilize shielded cable.

CAUTIONS

The COP2 must be installed by a qualified installer (an individual properly licensed and/or trained) in accordance with all local codes or, in their absence, in accordance with the National Electrical Code. Failure to install, maintain and/or operate the COP2 in accordance with manufacturer's instructions may result in conditions which can produce bodily injury and property damage.

1. Disconnect power supply from the COP2 when making wiring connections and servicing the COP2. Failure to do so may result in personal injury and/or equipment damage.
2. All installation restrictions and instructions in the Tjernlund Fan installation instructions must be followed when using the COP2.
3. Make certain power source is adequate for the COP2 and Tjernlund Fan requirements. Do not add equipment to a circuit when the total electrical load is unknown.

SIZING A COMMON VENT MANIFOLD SERVING MULTIPLE DRYERS

The most important step towards assuring that individual dryers vented into a common manifold exhaust smoothly is to size the manifold large enough to reduce the affects that velocity in the manifold has on the junctions of the dryer vent connections.

Exhaust moving too quickly in a common vent manifold can amplify the exhaust at vent connectors by aspirating across the connector opening and creating an amplified siphon affect. With a properly sized common vent manifold, velocities are maintained below the point where they have a significant affect on the exhaust of the individual dryer connections.

It is important to note that these sizing recommendations are for the common vent manifold only and that typically the smaller minimum vent diameter listed in the RT-Series Fan selection table may be used for the remainder of the horizontal vent and chimney. The larger diameter vent manifold should extend at least 2 diameters beyond the last dryer connection point.

1. When in doubt, get help from Tjernlund Tech Service at 800-255-4208, push 0 and ask for technical assistance or email fanmail@tjfans.com with details of the job.
2. When possible use 45° Manifold Tee connections to the common vent manifold in the direction of the RT-Series Fan instead of 90° Tee connections. This will reduce the aspiration effect.
3. If possible, locate larger exhaust volume vent connections closer to the RT-Series Fan. This reduces the affect of their exhaust on smaller volume connections.
4. The size of the common vent manifold should be at least 90% of the total area of all individual vent connections. See example below.

Breech Size Diameter	Area (Square Feet)
3"	0.0491
4"	0.0873
5"	0.1364
6"	0.1964
8"	0.3491
10"	0.5454
12"	0.7854
14"	1.0690
16"	1.3960
18"	1.7670
20"	2.1820

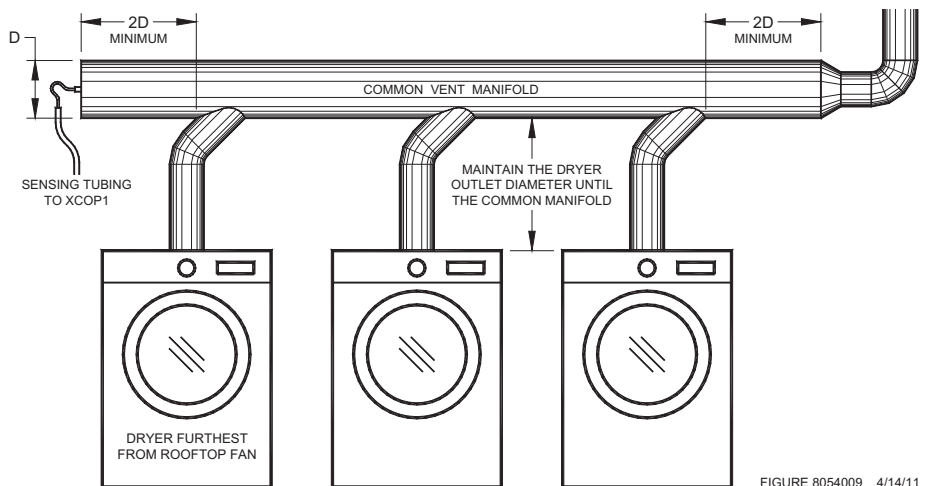


FIGURE 8054009 4/14/11

Example: A vent layout is required for a job that consists of 3 dryers with 6" diameter outlets.

Add these areas together:

$$3 \times 0.1964 = 0.5892$$

Total Area = 0.5892 Square Feet x 0.90 (90%) = 0.530. In looking at the table above, this area is greater than an 8" diameter pipe but smaller than a 10" diameter pipe. 10" diameter vent is the minimum size the common vent manifold should be. It is perfectly acceptable to be larger than this area if desired. It is also acceptable to have this area be reduced as the vent system works backward towards the appliance furthest from the RT-Series Fan. In this example, the common vent manifold should extend at least 20" past the connection point of the dryer furthest from the RT-Series Fan.

COP2 INSTALLATION

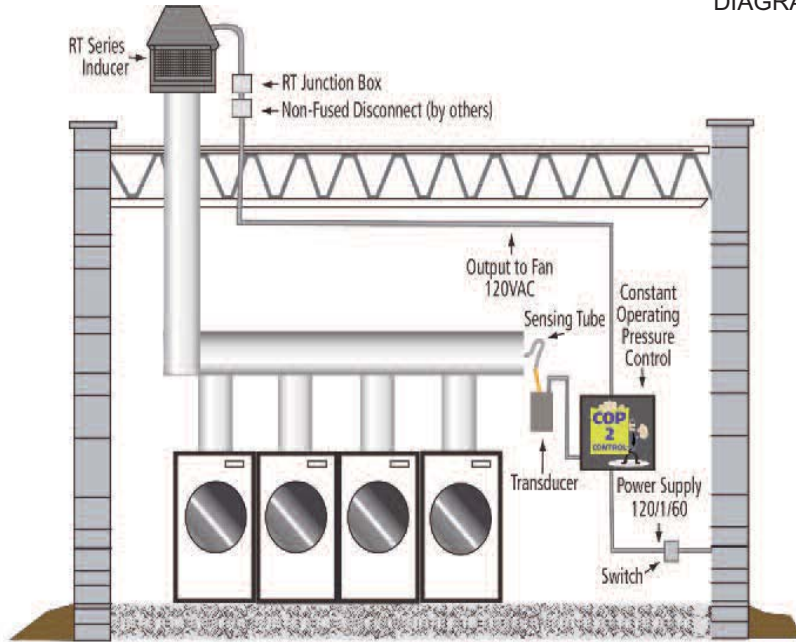
The COP2 is intended for indoor installation only. Do not mount the COP2 on a heat source or in an environment that exceeds 104°F (40°C). Examples of improper mounting surfaces include vent pipe, top of heater casing or any place where radiant or convective heat would cause the junction box temperature to exceed temperature limits.

Using the key hole slots on the back of the COP2 junction box as a template, mark (4) holes on the mounting surface, drill 1/4" pilot holes for wall anchors if necessary, and secure junction box using provided screws.

MULTIPLE DRYERS JOINED IN A COMMON HORIZONTAL DUCT

The sensing tube should be installed in the vent cap of a tee or at the rear of a common exhaust manifold, in back of the vent connector that is farthest from the RT-Series Fan. The tee is necessary so that only static pressure is measured, (See Diagram A). If the pressure sensing tube is installed in the side of a duct it will also measure velocity pressure, giving an incorrect signal back to the COP2 Control. If mounting on the side of the duct is unavoidable, the sensing tube should be flush to the interior wall of the duct. Avoid sampling near or in elbows. Duct connections should be sealed to prevent leakage or entrainment. Installer must provide access for lint clean out.

DIAGRAM A



Multiple Clothes Dryers Common Vented

IF POSSIBLE, THE SENSING TUBE SHOULD BE LOCATED TWICE THE MANIFOLD DIAMETER BEHIND THE DRYER FURTHEST FROM INDUCER

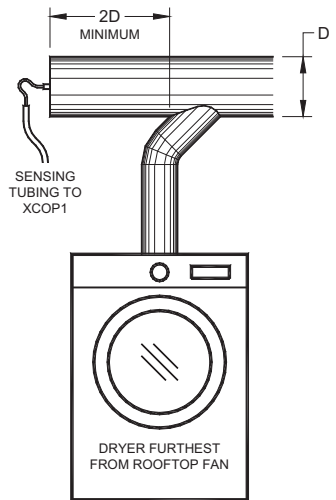
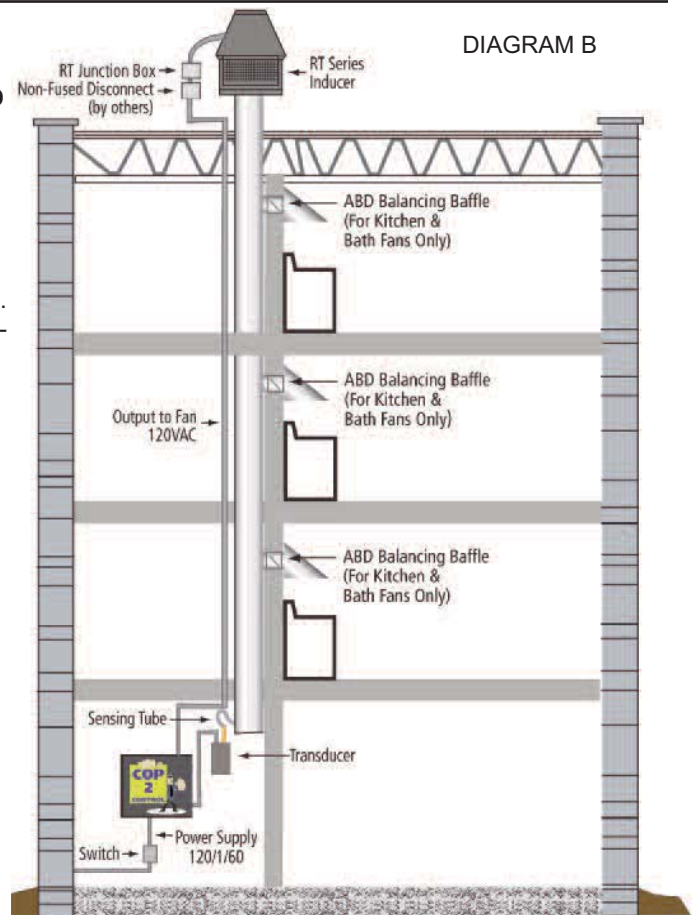


FIGURE 8054008 4/14/11

MULTIPLE DRYERS, KITCHEN OR BATH FANS EXHAUSTED INTO A COMMON VERTICAL CHASE

The sensing tube should be installed to sample the chase pressure at a point below the lowest duct connection but above any point in the clean out that may accumulate moisture or lint. If sampling pressure in the side of a chase, the sensing tube end should be flush to the interior wall of the chase, (See Diagram B). Duct connections should be sealed to prevent leakage or entrainment of air. Installer must provide access for lint clean out.

DIAGRAM B

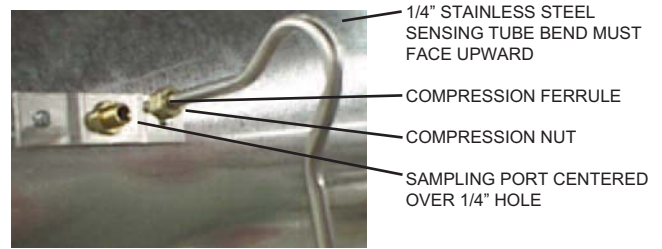


Chase Exhaust for Kitchens & Baths or Dryers

PRESSURE SENSING TUBE INSTALLATION

DIAGRAM C

1. Follow sensing tube location recommendations on page 3.
Use a sharp drill bit to reduce burr, drill a 1/4" hole for pressure sensing tube. Screw sensing tube bracket to duct/chase with sampling hole centered, (See Diagram C).
2. Insert stainless steel sensing tube through 1/4" hole enough to just penetrate interior of duct/chase and lock in place with compression ferrule and nut, (See Diagram C).

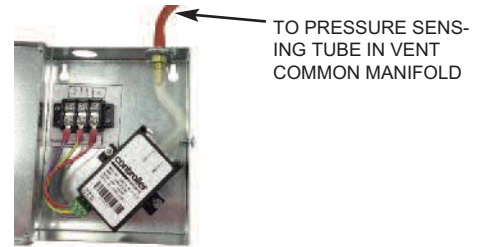


PRESSURE TRANSDUCER MOUNTING AND TUBING CONECTION

Using the key hole slots on the back of the Pressure Transducer junction box as a template, mark (2) holes on the mounting surface, drill 1/4" pilot holes for wall anchors if necessary, and secure junction box using provided screws.

Using the included flexible tubing connect the sensing tube to the barbed port on the exterior of the Pressure Transducer junction box. Excessive additional lengths of tubing will delay the response of the VFD which can lead to control lag, (See Diagram D).

DIAGRAM D



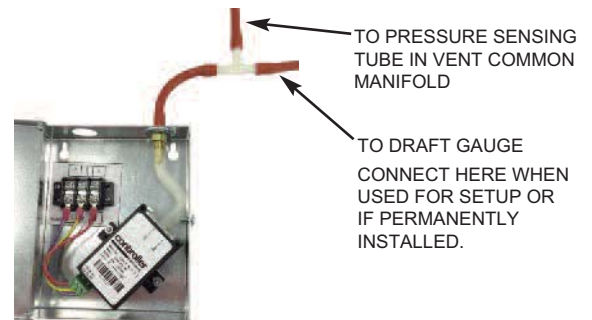
SYSTEM TEST PROCEDURE

When used in conjunction with oil or gas fired heating equipment follow the interlock test procedure outlined within the CIC1 installation instructions.

After wiring is complete with supply power switched on and the COP2 Activation terminals C1 & C2 closed with a switch or jumper start the Exhaust Fan. The fan should begin to operate and maintain the factory set point of -0.10" W.C. Disconnect the sensing tube from the barbed fitting on the Transducer electrical box. The fan should ramp to full speed. Reconnect the tube. The fan should slow down to the original speed.

This change in fan performance can be demonstrated by viewing a draft gauge that is teed into the tubing from the Pressure Transducer, (See Diagram E). Draft gauge should be connected as close as possible to COP2 Transducer to achieve a reading on draft gauge similar to COP2 Transducer.

DIAGRAM E



WIRING

⚠ WARNING

The COP2 must be wired by a qualified installer (an individual properly licensed and/or trained) in accordance with these instructions and in accordance with all local codes or in their absence, with the current editions of NFPA 70, National Electrical Code in the U.S. or CSA C22.1-12 Canadian Electrical Code in Canada.

All wiring from the COP2 to the RT-Series Fan junction box must be appropriate Class 1 wiring as follows: installed in rigid metal conduit, intermediate metal conduit, rigid non-metallic conduit, electrical metallic tubing, Type MI Cable, Type MC Cable, or be otherwise suitably protected from physical damage. Transducer wiring should be in metal conduit or utilize shielded cable.

COP2 Control supply power may be switched through a building management system, pressure switch or other 115 VAC switch.

The maximum distance VFD output power from the COP2 to RT-Series Motor is 100 feet. Exceeding this distance can result in undesirable COP2 and RT fan operation and possible damage to both the fan and the control.

The maximum distance control signal wire can be ran from the COP2 to Pressure Transducer is 250 feet. Exceeding this distance can result in lower than desired signal strength. Transducer wiring should be in metal conduit or utilize shielded cable. Non-shielded signal wiring can be influenced by outside conditions resulting in undesirable operation of the COP2 control.

IMPORTANT

The capacitor for the RT-Series fan should remain within the junction box of the flexible whip. Do not install within fan motor compartment.

Failure to wire cooling fan as directed voids warranty.

Installer must supply overload and disconnect protection as dictated by local and national codes. Do not use a fused disconnect.

INSTALLING RT-SERIES FAN ELECTRICAL WHIP

The RT series fan is shipped with an Electrical Whip Assembly which is not connected to the fan. Follow these instructions to connect and wire the whip to the fan. Pull the wires out of the fan through the gasketed hole provided on the fan cover of the RT unit and wire nut the fan leads to the corresponding colored wires on the free end of the whip.

Remove the (2) 8-32 nuts holding the gasket on the electrical access cover of the RT-Series fan. Carefully stuff the wire nutted connections back into the fan and secure the cover plate and gasket to the fan housing using the nuts removed in the above step.

Firmly tighten the (2) 8-32 nuts until the gasket compresses.

RT-SERIES FAN CONNECTIONS TO COP2 CONTROL

Secure the junction box on the opposite end of COP2 whip to the power supply conduit. Wire nut the 5 leads from the COP2 (Red, White/Red, Ground, Black and White) to the corresponding colors of the RT Series Whip. Stuff Wires into 4 x 4 box on whip.

Place provided gasket on 4 x 4 weather tight box opening. Install the 4 x 4 box cover to the j-box and firmly tighten with provided screws until the gasket compresses.

SUPPLY POWER TO THE COP2 CONTROL

Secure the junction box on the opposite end of COP2 whip to the power supply conduit. Place provided gasket on j-box, install the cover to the j-box and firmly tighten until the gasket compresses.

IMPORTANT: Installer must supply overload and disconnect protection. COP2 Control power may be switched through a building management system, pressure switch or other 115 VAC switch

Connect 115 VAC supply voltage to L1, N and the ground terminal of the COP2 right side power terminal strip. Connect Cooling Fan BLK and WHT terminals of COP2 right side power terminal strip to the Black and White cooling fan leads of the RT-Series fan. Connect Red, WHT/RED stripe & Ground of COP2 right side power terminal strip the corresponding colored wires of the RT-Series fan.

TRANSDUCER CONNECTIONS

Connect the V+, COM and 1-10 V terminal of the COP2 terminal strip to the corresponding terminals within the j-box of the Transducer.

ACTIVATION CONNECTIONS

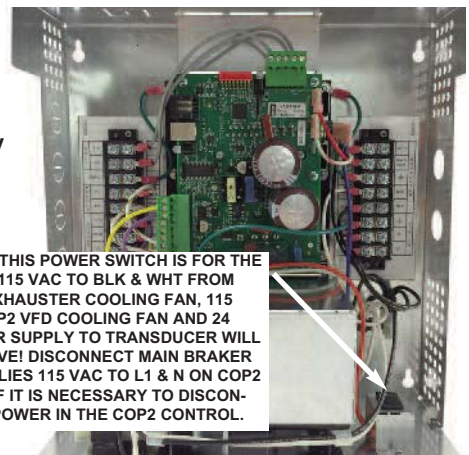
Use any type of dry contact switch to close Activation position C1 to Activation position C2 in COP2. Alternatively, jumper position C1 to position C2 for constant operation.

REMOVING POWER FROM & RESETING VFD DRIVE

A fault can be reset on the VFD Drive if the call to C1 & C2 is removed and/or the Power Switch to the VFD Board in lower right of COP2 box is turned off for a minimum of 1 minute so capacitors can fully discharge. **IMPORTANT:** Cycling the VFD Power Switch off/on without at least a minute delay may result in damage to the VFD.

WARNING: This power switch is for the VFD only. 115 VAC to BLK & WHT from COP2 to exhauster cooling fan, 115 VAC to COP2 VFD cooling fan and 24 VAC power supply to Transducer will still be live! Disconnect main breaker that supplies 115 VAC to L1 & N on COP2 Control if it is necessary to disconnect all power in the COP2 control, (See Diagram F).

DIAGRAM F



WARNING: THIS POWER SWITCH IS FOR THE VFD ONLY. 115 VAC TO BLK & WHT FROM COP2 TO EXHAUSTER COOLING FAN, 115 VAC TO COP2 VFD COOLING FAN AND 24 VAC POWER SUPPLY TO TRANSDUCER WILL STILL BE LIVE! DISCONNECT MAIN BREAKER THAT SUPPLIES 115 VAC TO L1 & N ON COP2 CONTROL IF IT IS NECESSARY TO DISCONNECT ALL POWER IN THE COP2 CONTROL.

TRANSUCER

COP2 SYSTEM WIRING

LEGEND

— = LOW VOLTAGE
 — = 115 VAC

WARNING

Do not use the COP2 with gas or oil fired heating equipment without interlocking all burners being served with a CIC1 Interlock Control and the required number of MAC-Series Multiple Appliance Controllers. The interlock feature is not activated unless a jumper is installed as shown in OPTION 3 or 4 below.

OPTION 1: Exhaust Only

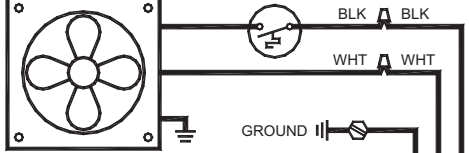
OPTION 2: Exhaust Only,
No Overdraft Fault

OPTION 3: Exhaust with CIC1 Interlock

OPTION 4: Exhaust with CIC1 Interlock,
No Overdraft Fault

EXHAUSTER
COOLING FAN
IF APPLICABLE

THERMOSTAT



PSC OR SP
EXHAUSTER
MOTOR

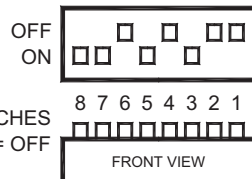
WHT / RED WHT / RED

RED RED

100 FT.
MAX.
LENGTH

250 FT.
MAX.
LENGTH

TOP VIEW



OPTION 1

OPTION 2

OPTION 3

OPTION 4

Z B A GND 3.3V

Z B A GND 3.3V

Z B A GND 3.3V

Z B A GND 3.3V

LED2

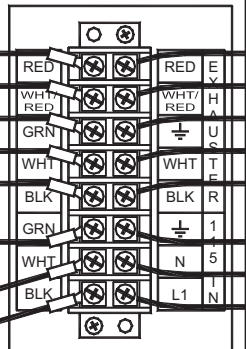
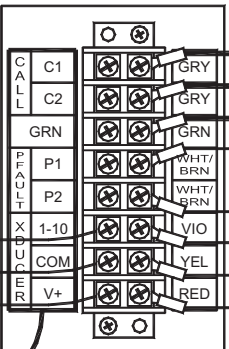
RED = FAULT
GREEN = OK

LED1

RED = FAULT
GREEN = OK

TB6

TB5



L1 N
POWER SUPPLY
115 VAC

These are Signal
Terminals.
DO NOT supply
power to them or
damage to the
VFD will result.

Input: 115 VAC +/- 10%, 47-64 Hz, Single Phase, 8.0 Amps maximum
Output: 115 VAC +/- 10%, 0-60 Hz, Single Phase, 0.12 - 6.2 Amps
 Over-Temperature and Over-Current Protected.
 For use only with approved Tjernlund Products, Inc. model fans.



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PART
1303907
FIGURE
8052082
6-3-14

ADJUSTING THE EXHAUST PRESSURE SET POINT

The pressure set point is adjusted by positioning dip switches 6 - 1 to match the desired setting listed on the Pressure Setpoint Table below. The factory set point is 0.10" W.C. The dip switches are located on the Red block on the top of the COP2 circuit board. A dip switch is ON when pulled OUT towards you. A dip switch is OFF when pushed IN away from you.

CAUTION: Disconnect electrical power to COP2 L1 & N prior to adjusting dip switch settings.

ACCELERATION SPEED SETTINGS

Dip Switches 7-8 are used to select drive response time. Slow (30 sec) = 7 ON, 8 OFF, Medium (20 sec) = 7 OFF, 8 ON, Fast (10 sec) = 7 ON, 8 ON,

The Fast (7 ON, 8 ON) acceleration is the factory default. Acceleration adjustment is typically not required unless set points of greater than 0.30" W.C. are selected or if the vent run is a long length.

6 —————> 1

Output WC	DIP switch settings					
	6	5	4	3	2	1
-0.05	IN	IN	OUT	OUT	OUT	OUT
-0.06	IN	OUT	IN	IN	IN	IN
-0.07	IN	OUT	IN	IN	IN	OUT
-0.08	IN	OUT	IN	IN	OUT	IN
-0.09	IN	OUT	IN	IN	OUT	OUT
-0.10	IN	OUT	IN	OUT	IN	IN
-0.11	IN	OUT	IN	OUT	IN	OUT
-0.12	IN	OUT	IN	OUT	OUT	IN
-0.13	IN	OUT	IN	OUT	OUT	OUT
-0.14	IN	OUT	OUT	IN	IN	IN
-0.15	IN	OUT	OUT	IN	IN	OUT
-0.16	IN	OUT	OUT	IN	OUT	IN
-0.17	IN	OUT	OUT	IN	OUT	OUT
-0.18	IN	OUT	OUT	OUT	IN	IN
-0.19	IN	OUT	OUT	OUT	IN	OUT
-0.20	IN	OUT	OUT	OUT	OUT	IN
-0.21	IN	OUT	OUT	OUT	OUT	OUT
-0.22	OUT	IN	IN	IN	IN	IN
-0.23	OUT	IN	IN	IN	IN	OUT
-0.24	OUT	IN	IN	IN	OUT	IN
-0.25	OUT	IN	IN	IN	OUT	OUT
-0.26	OUT	IN	IN	OUT	IN	IN
-0.27	OUT	IN	IN	OUT	IN	OUT
-0.28	OUT	IN	IN	OUT	OUT	IN
-0.29	OUT	IN	IN	OUT	OUT	OUT
-0.30	OUT	IN	OUT	IN	IN	IN
-0.31	OUT	IN	OUT	IN	IN	OUT
-0.32	OUT	IN	OUT	IN	OUT	IN
-0.33	OUT	IN	OUT	IN	OUT	OUT
-0.34	OUT	IN	OUT	OUT	IN	IN
-0.35	OUT	IN	OUT	OUT	IN	OUT
-0.36	OUT	IN	OUT	OUT	OUT	IN
-0.37	OUT	IN	OUT	OUT	OUT	OUT
-0.38	OUT	OUT	IN	IN	IN	IN
-0.39	OUT	OUT	IN	IN	IN	OUT
-0.40	OUT	OUT	IN	IN	OUT	IN
-0.41	OUT	OUT	IN	IN	OUT	OUT
-0.42	OUT	OUT	IN	OUT	IN	IN
-0.43	OUT	OUT	IN	OUT	IN	OUT
-0.44	OUT	OUT	IN	OUT	OUT	IN
-0.45	OUT	OUT	IN	OUT	OUT	OUT
-0.46	OUT	OUT	OUT	IN	IN	IN
-0.47	OUT	OUT	OUT	IN	IN	OUT
-0.48	OUT	OUT	OUT	IN	OUT	IN
-0.49	OUT	OUT	OUT	IN	OUT	OUT
-0.50	OUT	OUT	OUT	OUT	IN	IN
-0.51	OUT	OUT	OUT	OUT	IN	OUT
-0.52	OUT	OUT	OUT	OUT	OUT	IN
-0.53	OUT	OUT	OUT	OUT	OUT	OUT



ADJUSTMENT OF BALANCING BAFFLE(S) FOR KITCHEN AND BATH FANS

IMPORTANT: Balancing Baffles must not be used for dryer applications due to the potential for lint buildup.

1. With all balancing baffles closed and starting with connection at lowest floor drill a small sampling hole in duct connection to the chase 1 foot behind the Balancing Baffle (opposite side of chase connection).
2. With the COP2, RT-Series Fan and Bath/kitchen fans connected to the duct operating, gradually open the Balancing Baffle until desired negative exhaust pressure is measured and lock in place. Typically a measurement of a -0.02 to -0.05" W.C. is Adequate.
3. Repeat steps 1 and 2 for each floor, moving up towards the RT-Series Fan.
4. After all are set, review all measurements on each and readjust as needed.

OPERATION OVERVIEW

With 115 VAC supplied to L1 and N and the VFD power switch in the off position the following circuits are powered. The disconnect that powers L1 and N must be switched off to remove power from these circuits:

24 Volt Transformer

Pressure Transducer

BLK and WHT terminals to the thermostat of the Exhauster motor cooling fan

Thermostat for the VFD heat sync cooling fan

When the VFD switch is turned on, the VFD is powered but still must have Activation terminals C1 & C2 closed for the RT-Series fan to operate.

With the activation circuit closed the COP2 controller will reference the sampling tube pressure via a 1-10 VDC signal with 2.8 VDC = 0.00" W.C. As pressure is reduced by additional exhaust volume, winds or interior negative pressures the transducer will output a lower voltage to the VFD, increase the frequency from the VFD, causing the Exhaust Fan to speed up until the set point pressure is reached. Further fluctuations in measured pressure will cause the VFD to modulate the frequency to the Exhaust Fan so that the set point exhaust pressure is maintained.

If the fan cannot maintain the setpoint pressure within ± 0.02 " W.C. at anytime for more than a 50 second period, the Green LED on the middle left side of the VFD will turn Red and cause the system to fault. Reset the VFD by turning the on/off switch "Off" for one minute to reset the fault and cycle the fan to determine if a problem exists. If the set point is low enough to allow natural ventilation to exceed the set point jumper "B" to "GND" on the green logic terminal strip to disable over draft protection. The control will now only fault for an under draft condition.

TROUBLESHOOTING ELECTRICAL PROBLEMS

It is necessary to measure voltage during troubleshooting. Extreme caution must be exercised to prevent injury. If you are unable to determine the defective part with the use of this guide, call your Tjernlund distributor or Tjernlund Products direct at 1-800-255-4208 for further assistance.

EXHAUST FAN MOTOR DOES NOT OPERATE

Check that the COP2 control has power by verifying that the top LED is Green.

If this LED is Red, turn the VFD power switch off for a minimum of 1 minute to reset the fault. A Red status indicates an over-current or circuit board over-temperature issue. In some cases an acceleration rate that is too fast can cause an over-current fault. In most cases the RT-series fan should be checked to verify that the shaft rotates freely with power disrupted. Since the RT-Series fan may not operate if the exhaust set point is reached by natural means perform the following test:

Top LED is Green

Verify that the supply power to the COP2 is switched on and the Activation terminals C1 & C2 are closed with a switch or jumper to start the RT-Series fan. Disconnect the sensing tube from the barbed fitting on the Transducer electrical box. The fan should ramp to full speed. Reconnect the tube. The fan should slow down to the original speed. This change in fan performance can be demonstrated by viewing a draft gauge that is teed into the tubing from the pressure transducer as shown in Diagram E.

If removing the sensing tube does not cause the fan to speed up measure AC voltage at terminals V+ and COM of the Transducer and look for a reading between 22 - 30 VAC. If voltage in this range is measured remove tube from the barbed connection on the Transducer and look for between 2.7 - 2.9 VDC when measuring terminals 1-10 and COM.

If voltage to and from the Transducer are in the ranges listed above, measure COP2 VFD output AC voltage at the Red and WHT/RED stripe terminals with the Transducer tube still disconnected. Look for a reading of around 125 volts AC.

If around 125 VAC is measured check for voltage at the Red and White w/Red stripe leads in the j-box of the RT-Series electrical whip. If the referenced voltage is measured check motor capacitor and verify reading of $5\mu\text{F} \pm 5\%$. If the capacitor is within specs look for around 125 VDC at the Red and White w/Red stripe leads within the motor enclosure. If this voltage range is present, the RT-series motor is suspect and may need replacement. Remove and bench test with 115 VAC.

HOW TO OBTAIN SERVICE ASSISTANCE

1. If you have any questions about your COP2 or if it requires adjustment or repair, contact your installer, contractor or service agency.
2. If you require technical information contact Tjernlund Products, Inc. at 1-800-255-4208 with the following information.
 1. Model of the RT-Series Fan that COP2 is interlocked with as shown on the RT-Series nameplate.
 2. Name and address of installer and any service agency who performed work on the system.
 3. Date of original installation and dates any service work was performed.
 4. Details of the problem as you can best describe them.

LIMITED PARTS WARRANTY AND CLAIM PROCEDURE

Tjernlund Products, Inc. warrants the components of the COP2 for one year from date of installation. This warranty covers defects in material and workmanship. This warranty does not cover normal maintenance, transportation or installation charges for replacement parts or any other service calls or repairs. This warranty DOES NOT cover the complete COP2 if it is operative, except for the defective part.

Tjernlund Products, Inc. will issue credit or provide a free part to replace one that becomes defective during the one year warranty period. Proof of date of the installation in the form of the contractor sales/installation receipt is necessary to prove the unit has been in service for under one year. All receipts should include the date code of the COP2 to ensure that the defective component corresponds with the complete unit. This will help prevent possible credit refusal.

1. Follow troubleshooting guide to determine defective component. If unable to determine faulty component, contact your Tjernlund distributor or Tjernlund Technical Customer Service at 1-800-255-4208 for troubleshooting assistance.
2. After the faulty component is determined, return it to your Tjernlund distributor for replacement. Please include COP2 date code component was taken from. The date code is located on the Electrical Box cover. If the date code is older than one year, you will need to provide a copy of the original installation receipt to your distributor. Credit or replacement will only be issued to a Tjernlund distributor after the part has been returned prepaid to Tjernlund and verified defective.

WHAT IS NOT COVERED

Product installed contrary to our installation instructions, altered, neglected or misused
Product that has been wired incorrectly
Any freight charges related to the return of the defective part
Any labor charges related to evaluating and replacing the defective part

REPLACEMENT PARTS

<u>Component</u>	<u>Part Number</u>
24 Volt Transformer	950-2030
COP2 Pressure Transducer	950-9352
Heat Sync Cooling Fan T-Stat	950-8301
Heat Sync Cooling Fan	950-0020
COP2 Heater Interlock Control*	CIC1
*NOTE: The CIC1 Accessory Control is a standard UC1 Control with an included relay	

TJERNLUND LIMITED ONE YEAR WARRANTY

Tjernlund Products, Inc. warrants to the original purchaser of this product that the product will be free from defects due to faulty material or workmanship for a period of (1) year from the date of original purchase or delivery to the original purchaser, whichever is earlier. Remedies under this warranty are limited to repairing or replacing, at our option, any product which shall, within the above stated warranty period, be returned to Tjernlund Products, Inc. at the address listed below, postage prepaid. THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF, AND TJERNLUND PRODUCTS, INC. EXPRESSLY DISCLAIMS LIABILITY FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING FROM THE USE OF THIS PRODUCT. THIS WARRANTY IS IN LIEU OF ALL OTHER EXPRESS WARRANTIES AND NO AGENT IS AUTHORIZED TO ASSUME FOR US ANY LIABILITY ADDITIONAL TO THOSE SET FORTH IN THIS LIMITED WARRANTY. IMPLIED WARRANTIES ARE LIMITED TO THE STATED DURATION OF THIS LIMITED WARRANTY. Some states do not allow limitation on how long an implied warranty lasts, so that limitation may not apply to you. In addition, some states do not allow the exclusion or limitation of incidental or consequential damages, so that above limitation or exclusion may not apply to you. This warranty gives you specific legal rights and you may also have other rights which may vary from State to State. Send all inquiries regarding warranty work to Tjernlund Products, Inc. 1601 9th Street, White Bear Lake, MN 55110-6794. Phone (651) 426-2993 • (800) 255-4208 • Fax (651) 426-9547 • Email fanmail@tjfans.com.