Hanson Lab Solutions, LLC
747 Calle Plano
Camarillo, CA 93021
(805) 498-3121

Hanson Lab Solutions

ControlAir Fume Hood

Operation and Maintenance Manual

Conforms to UL 1805
OGOY
MH27922

www.HansonLab.com

OPERATION AND MAINTENANCE

Hanson Lab Solutions Fume Hoods

WARNING- Read this manual in its entirety prior to making electrical connections to fume hoods and prior to operation of this equipment.

Electrical supply requirements for Hanson Lab Solutions 4SA and 5SA model fume hoods.

- This device has electrical circuits and electrical components. If the device is factory pre-wired, please refer to the wiring diagrams supplied in this manual for further information. Wiring is available according to options A through E. Wiring diagram utilized in this device is marked on the Model Number label located on the top left of the hood next to the electrical connection junction box.
- If the device is field wired (i.e. by the customer), then field wiring must be in accordance with all applicable NEC and local codes and should be completed by a licensed electrical contractor.
- This device may contain more than one circuit. If factory wired refer to wiring diagram A through E for additional information. To reduce the risk of electrical shock, verify that all circuits are disconnected at the external circuit breaker prior to servicing this unit
- Supply voltage to the unit is 120V/60Hz AC for standard outlets and lighting. Supply voltage to the unit is 230V/60Hz if equipped with optional 220V outlets or exhaust blower
- This device must be connected to wiring with external circuit breakers in the building. Building circuit breakers should be in close proximity and within easy reach of the operator and shall be marked as the disconnecting device for the equipment.
- External circuit breakers are required overcurrent protection devices. External circuit breakers to be rated at 110V/20A and 220V/20A for the 110V and 220V supply respectively.
- This device requires protective earthing (grounding). Connect green wire in supply junction box to building ground circuit. Verify that all user devices contain ground circuits and utilize three prong electrical cords to outlets supplied in the fume hood device.
- This device may contain an optional 220V receptacle. If the device contains a 220V receptacle then the device will contain more than one connection to the source of supply. To reduce the risk of electrical shock, disconnect all such connections prior to servicing.
- User supplied electrical equipment to be operated via the electrical circuits/outlets supplied on the fume hood should be rated at 110V/20A or less for 110V devices. 220V/20A or less for 220V devices.

- Hard-wired input connections must be made according to NEC and local building code requirements. Electrical connections should be made by a licensed electrical contractor.
- The following factory standard and optional pre-wired switches and outlets are provided:
  - Light switch: Toggle switch, single pole, brown, 110V
  - Blower switch: Toggle switch, two pole, illuminated red, 110V or 220V
  - Duplex outlet: NEMA 5-20 brown, 110V, Duplex outlet
  - 220V single plex: NEMA L6-20 brown, 220V, Twist lock outlet
- All 110V output connections use a NEMA-15 style UL listed, CSA certified three prong male plug.
- All 220V output connections use a NEMA L6-20 style UL listed three prong male twist lock plug.
- Electrical input connections to the device are made at the 4S junction box located on the top left side of the fume hood. Connections are made according to NEC and local electrical codes. Pre-wired devices use the following color coded 12 GA THHN Cu internal wiring:
  - 110V Circuit
    - Black Hot
    - White Neutral
    - Green Ground
    - Yellow Switched leg
  - 220V Circuit (optional 220V outlet)
    - Blue Hot
    - Blue Neutral
    - Green Ground
  - 220V Switched Leg Circuit (optional blower switch circuit)
    - Brown Switched leg
    - Brown Switched leg
- This device requires a remote exhaust blower for operation. The remote exhaust blower may be switched from a blower switch located on the upper right-side foil of the fume hood. If the exhaust blower switch is located on the fume hood then a switched leg of the exhaust blower circuit is connected to the exhaust blower switch. The exhaust blower may be operated on either a l l0V or 220V circuit. This circuit may (110V application) be the same circuit as the balance of the 110V supply to the hood. If the exhaust blower is operated on 220V then the 220V power circuit will be separate from the 110V supply. Verify that all circuits are disconnected prior to servicing the hood or exhaust blower. "To reduce the risk of electrical shock, disconnect all connections before servicing".
- The environmental conditions for which the device is designed to operate are as follows:
  - Indoor use
  - Altitude up to 2000m
  - Temperature range 5 degrees C to 40 degrees C
  - Maximum relative humidity is 80% for temperatures up to 30 degrees C,

decreasing linearly to 50% relative humidity at 40 degrees C
- Main supply voltage not to exceed+/- 10% on the nominal voltage
- Pollution Degree 2 in accordance with IEC 664

INSTALLATION REQUIREMENTS

Assembly locations:

Fume hoods are typically installed against existing walls or in pairs placed in a back-to-back configuration. Fume hoods should be placed away from existing ventilation sources which may affect the safe operation of the hood. Fume hoods are typically placed away from doorways which may also produce air currents affecting safe operation of the fume hood. Fume hoods should be placed in a location to facilitate easy exit from the area in the event of an unsafe or hazardous condition occurring in the hood. Fume hoods requiring plumbing, electrical or drains should be placed in a location to facilitate connection to these services.

Installation of 5SA Benchtop models:

Benchtop fume hoods are designed to be mounted on a dished epoxy fume hood work surface. Dished epoxy work surface mounts on base casework. Epoxy work surface and base casework is typically ordered with the benchtop fume hood assembly.
For fume hoods greater than four feet wide, two or more base cabinets will be required.
Set base case work on floor and level base cabinets by turning leveling legs. Attach multiple base cabinets together by inserting bolts or sheet metal screws through the adjoining sides of base casework. Attach a 1" x 2" wall cleat to the wall with 2" lag bolts into wall studs so that the top of wall cleat is flush with top of base casework. Place a bead of silicon adhesive along top edge of base cabinets and along top edge of wall cleat. Place epoxy work surface on top of base casework with rear edge of work surface resting on wall cleat. Allow silicone adhesive to set overnight and/or insert ½” wood screws from the underside of work surface up through top edge of base cabinet and into the epoxy work surface.
Set fume hood superstructure on to work surface. Remove side panels of hood by grasping top front edge of removable side panel and gently pulling out and away from the sides of the hood. Screw exposed frame of superstructure to the work surface with ½ inch wood screws. If seismic installation is required, attach seismic installation cleats between top rear frame of hood and wall with machine bolts (at hood) and wood lag bolts (at wall studs).
Replace removable fume hood side panels by aligning rear edge of side panel with rear frame of hood and pressing front edge of side panel into hood against Velcro attachment points.
Connect exhaust duct to top of hood and rout out of the building connecting to the remote exhaust blower unit.
Typically qualified electrical, mechanical and HVAC contractors are employed to make

all electrical plumbing and exhaust duct and blower installations/connections. Verify that all connections are in accordance with local building codes and fume hood installation instructions.

Installation of 4SA floor-mounted (walk-in) fume hood models:

Set fume hood on floor and push back against wall. If seismic installation is required, attach seismic installation cleats between top rear frame of hood and wall with machine bolts (at hood) and wood lag bolts (at wall studs).
Floor-mounted fume hood models may be equipped with optional epoxy floors. Optional epoxy floors fit inside of the hood and are placed into the hood after the hood is set in place. A bead of silicone or other sealer, as appropriate, may be placed along the inside edge of the hood at the floor to seal the floor to the hood. Any sealing material used is at the discretion of the user and should be appropriate to the chemistry to be conducted in the fume hood.
Connect exhaust duct to top of hood and rout out of the building connecting to the remote exhaust blower unit.
Typically qualified electrical, mechanical and HVAC contractors are employed to make all electrical plumbing and exhaust duct and blower installations/connections. Verify that all connections are in accordance with local building codes and fume hood installation instructions.

GENERAL MAINTENANCE OF FUME HOODS:

Fume hood maintenance procedures consist primarily of clean-up, adjustments, lubrication and replacement of worn, damaged or non-functioning parts. Use “good housekeeping” in laboratory fume hoods at all times. Periodically clean sash, exterior and interior surfaces, including LED light panel. The exhaust system and blower of a fume hood must function properly for safety. Maintenance personnel should service the fan and the motor assembly regularly, lubricate as required, and make sure that the exhaust system is free from obstructions. Semi-annually, accumulated deposits should be removed from the impeller blade and housing.
A simple test with a lighted match or smoke will show if the air is being drawn into the hood. More accurate checks of air velocity can be made with an anemometer. See Fume Hood Field Evaluation and Field Inspection procedures for additional information.
Sashes occasionally require service. The glass may fog due to the condensation of chemical vapors and such materials should be removed promptly by washing with water and detergent to prevent etching of the glass.
Replacement of glass and sash cable should be done by an experienced Hanson Lab Solutions LLC installer. In the event that the sash glass breaks or the sash cables bind or appear frayed or broken, STOP operation of the hood. The sash glass assembly is heavy and continued operation may result in injury to the operator or damage to the

hood.

Fume hood interior maintenance

Fume hood liners are maintained by an occasional wash-down with detergent and warm water. Remove baffles for access to all surfaces. For deposits or dirt or stubborn stains on stainless steel, follow procedures outlined under Working Surface Section. Clean-up should be accomplished by, or under the supervision of, a knowledgeable laboratorian and should include removal of the baffle for clean-up of all interior surfaces.
Never use the hood to store apparatus and equipment, and don't allow containers of corrosives or volatile materials to remain in the hood for long periods of time.
When hot plates or water baths are installed in the hood, adjust the baffles so that the heat and fumes are properly exhausted.

REMOVAL OF ACCESS PANEL

Access panel is held in place by a black rubber gasket. Carefully pull the top edge of the gasket away from the interior of the hood and the gasket and panel will release from the hood.

INSTALLATION OF ACCESS PANEL

Seat the bottom of the access panel, with the gasket in place around the pane into the bottom of the access panel opening and work the panel and gasket back into place. Press down on the panel while working the gasket/ panel into the access panel opening.

OPERATING INSTRUCTIONS FOR LABORATORY FUME HOODS

Turn on interior light for proper illumination of working area.
Verify that exhaust system is operating properly before starting any activities within the hood. Always place equipment and apparatus as far back into the fume hood as possible since this provides greater assurance of proper fume collection and removal. Large bulky apparatus or equipment should be placed in the fume hood to permit air-flow around it, and never placed to interfere with the operation of the baffle system. Raise large items an inch or two above work surface. Any spilled liquids, acids, or corrosive materials should be immediately wiped up and the proper neutralizing agent applied so as to prevent damage to the working surface and the hood interior or to apparatus and equipment installed in the hood.
Remember that special fume hoods are required for the handling of perchloric acid, 4SA and 5SA fume hoods are not designed for use with perchloric acid.
Install burners, water baths, hot plates, set-ups and other apparatus as far back in the hood as possible for safety and optimum performance.
Laminated safety glass is designed to be used a safety shield. Move sash to the

lowest position that provides access to carry out operations while the sash protects the head and upper body.
Limit fume hood use to those activities which can be performed safely. Substitute biosafety cabinets or glove boxes as safety dictates.
Safety requires a regular program of cleaning, maintenance and performance evaluation. Perchloric acid work should be performed in specialized perchloric acid fume hood and not in general purpose laboratory hoods. Miscellaneous work should not be performed in perchloric acid hoods because of extreme hazard.

Baffle Settings - 4SA walk in hoods

Rotate upper, mid and lower baffle adjustment knobs to counterclockwise to loosen. Adjustable low, mid and high baffle slots to desired positions. Turn baffle adjustment knob clockwise to tighten securing baffle in place.

(1) Lighter-Than-Air Gases:

This setting will open the upper baffle to draw the majority of the exhausted fumes to the top of the fume hood. To do this, pull on the baffle adjustment knob while lifting it towards the roof of the hood. This will swing the upper baffle into a position that will maximum an opening at the roof of the fume hood.

(2) Normal Position:

This position allows an even exhaust of fumes at all points inside the fume hood. Use the
baffle adjustment knob to place the baffle in a mid-range position.

(3) Heavier-Than-Air Gases:

For fumes and gases which tend to settle at countertop level, pull the baffle adjustment knob and push it down towards the lower rear of the hood. This closes the opening between the roof of the hood and the top edge of the upper baffle creating a chamber where the exhaust will be concentrated to the middle and lower portions of the fume hood.

Baffle Settings - 5SA Bench top fume hoods

5SA model bench top hoods have a fixed upper baffle set to optimize exhaust flow for all conditions. No field adjustment is required.

FUME HOOD EVALUATION IN THE FIELD

Fume hoods should be field certified by an independent field certification company

prior to use, and on an ongoing basis.
It is recommended that the user make provisions to contract a qualified field certification company to verify that fume hood face velocity and capture efficiency are within the recommended ranges as specified by local code and company safety policies.
Fume hood certification companies will set up optional flow monitoring devices if present. Flow monitoring devices are calibrated to actual flow and high flow and low flow limits and alarm points will be set according to acceptable guide lined and company safety policy.
The test of the fume hoods should be performed after the installation is complete, the building ventilation system has been balanced and all connections made.
Any unsafe conditions disclosed by these tests should be corrected before using the hood. Verify that the building make-up air system is in operation, the doors and windows are in normal operating position, and that all other hoods and exhaust devices are operating at designed conditions.

FUME HOOD INSPECTION PROCEDURES

Safety considerations require that a schedule of inspection and documentation be set up for every laboratory fume hood, not limited to but at least annually. Fume hoods should be tested in the as-installed condition at the time of installation and in the as used condition to verify that conditions in the building and in the hood have not changed since the installation of the hood.
An inspection record should be maintained. This record may be in the form of a label attached to the fume hood, or a log held by the laboratory director or health safety director.
Inspection procedures should include but not be limited to instrument verification for fume hood face velocity and a determination of usage by observation and interview. These procedures should also consist of a physical examination of liner condition and cleanliness, baffle and sash operation and condition, counterbalance cables, light operation and condition, and service fixture function.
Inspection results should be recorded and reported to the proper authority for any required action.

NOTE: Special purpose fume hoods such as those used with radioactive materials or perchloric acid require additional inspection procedures to cover special equipment and requirements.

Low flow detectors, when installed, should be inspected at least annually. Where hazardous or corrosive conditions exist or when filters are present in the system, the inspection frequency should be increased appropriately. Velocity and pressure-sensing detectors should be tested
at each inspection. Low-Flow or No-Flow alarms of the visible (lights) or audible (horns or bells) type should be tested for correct operation at least at each inspection. Signal transmission

for alarms designed to activate signals at more than one location should be verified at location during each inspection. Inspect fan belts on a regular basis and adjust or replace as required.

NOTE: Special parts, options, and accessories should be maintained as required.

REMEMBER: If the exhaust system fails follow those procedures appropriate to the activity. Such procedures should be developed within your organization and should consider the specific activity in the fume hood.

TYPICAL FUME HOOD CALIBRATION PROCEDURE

Equipment list

- A properly calibrated hot-wire thermal anemometer similar to or equal to Alnor model #8500.
- A supply of ½ minute smoke bombs.
- A bottle of titanium tetrachloride and a supply of cotton swabs or other recognized devices for producing smoke.

Test procedure

(1) Room Conditions
Check room condition in front of the fume hood using a thermal anemometer and a smoke source to verify that the velocity of cross drafts does not exceed 20% of the specified average fume hood face velocity. Any cross drafts the exceed these valued shall be limited before proceeding with fume hood test.

CAUTION: Titanium tetrachloride fumes are toxic and corrosive, use Sparingly, avoid inhalation and exposure to body, clothing and equipment that might be affected by corrosive fumes.

NOTE: It must be recognized that no fume hood can operate properly if excessive cross drafts are present.

(2) Face Velocity
Determine specified average face velocity for fume hood being tested. Perform the following
tests to determine if fume hood face velocities conform to specifications. With the sash in full open position, turn on the exhaust blower. The face velocity shall be determined by average the velocity of six readings taken at the fume hood face. Readings shall be taken at the centers of a grid made up of three sections of equal area across the top half of the fume hood face and three sections of equal area across the bottom half of the fume hood face.

NOTE: If not in accordance with specified face velocity, refer to troubleshooting guide for aid determining the cause of variation in air flow. If face velocity cannot be corrected to that specified, reclassify fume hood to conform to actual face velocity.

1. Area (W x H) _____sq.ft.
2. Average Velocity _____fpm
3. Volume (1 x 2) _____cfm

(3) Sash Operations

Check operation by moving sash through its full travel. Sash operation shall be smooth and easy. Vertical rising sash shall hold at any height without creeping up or down.

AIRFLOW

(1) Fume Hoods without Auxiliary Air

Turn fume hood exhaust blower on. With sash in the open position, check air flow into the fume hood using a cotton swab dipped in titanium tetrachloride or other smoke source. A complete traverse of the fume hood face should verify that air flow is into the fume hood over the entire face area. A reverse flow of air indicates unsafe fume hood operation. Consult the troubleshooting guide for possible cause and take corrective action. Move a lighted smoke bomb throughout the fume hood work area directing smoke across the work surface and against the side walls and baffle. Smoke should be contained within the fume hood and be rapidly exhausted.

(2) Fume Hoods with Auxiliary Air

Calculate exhaust volume from face velocity data above. Turn on auxiliary air, verify that auxiliary air volume is as specified. Locate a straight section of supply air duct and drill two holes 90deg. apart on a place through the duct at the downstream end of the straight section. Measure the air velocity and calculate the air volume. Compare figure with the specified volume of auxiliary air and with exhaust volume to determine if proper ratio exists. Deviations of plus or minus five percent are acceptable. If deviations of more than five percent are noted, corrective measures should be taken. With sash in the open position, check air flow into the fume hood using a cotton swab in titanium tetrachloride or other smoke source. A complete traverse of the fume hood face should verify that air flow is into the fume hood over the entire face area. A reverse flow indicates unsafe fume hood operation. Consult the troubleshooting guide for possible causes of the reverse flow and take corrective action.
Move lighted smoke bomb throughout the fume hood work area directing smoking across the work surface and against the side walls and baffle. Smoke should be contained within the fume hood and be rapidly exhausted.

(3) Low Air Flow Monitor

On fume hoods with flow warning devices, verify that the monitor functions properly and indicates unsafe conditions.

TROUBLESHOOTING

When fume hood test procedures detect improper function, the cause is normally due to insufficient quantity of air flowing through the hood, or due to room cross drafts blowing into or across the face of the fume hood, or a combination of both. The following suggestions are offered to help pinpoint and correct the problem:

(1) Room Cross Drafts

Air moving through an open door located adjacent to the fume hood can cause cross drafts. An open window or a room air supply grill located to one side or across from the fume hood can cause disturbing cross drafts. High velocity air from ceiling mounted diffusers can cause a flow of air down and into the top half of the fume hood face that can cause reverse flows of air out of the bottom half of the face.

(2) Insufficient Air Flow

Insufficient air flow through the fume hood can be caused by one or more of the following conditions. Each condition should be checked, and eliminated if possible, to determine which one or combination of conditions may exist.
One possible explanation for low face velocity readings is inaccurate face velocity readings. Check air flow velocity meter type.
Was the recommended model used?
When was it calibrated last?
If the recommended model was not used, check to make sure the instrument is recommended for low air velocities in the 50 to 150 feet per minute range.
If possible, verify readings with another air velocity meter or by checking air volume using a pitot tube traverse of exhaust duct.

Hanson Lab Solutions LLC
747 Calle Plano, Camarillo, CA, 93012
(805) 498-3121

Limited Warranty

LIMITED WARRANTY

Hanson Lab Solutions LLC, a California corporation (hereafter called "Hanson") warrants to the purchaser that furniture and equipment supplied by Hanson will be free from defects in material and workmanship for a period of one year from the date of original purchase.

This warranty is applicable only when a product is installed, used and operated in accordance with Hanson's operations manual, applicable building codes and industry standards. This warranty does not cover any misuse of any product or improper installation or use of any Hanson product.

ANY AND ALL IMPLIED WARRANTIES APPLICABLE HERETO ARE EXCLUDED. THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE FACE
OF THIS WRITTEN WARRANTY. Some states do not allow limitations on how long an implied warranty lasts, so the above time limitation may not apply to you.

In the event the purchaser believes that a product or any parts thereof covered by this warranty is defective, a letter outlining the alleged defect should be sent first class mail postage prepaid to the following address:

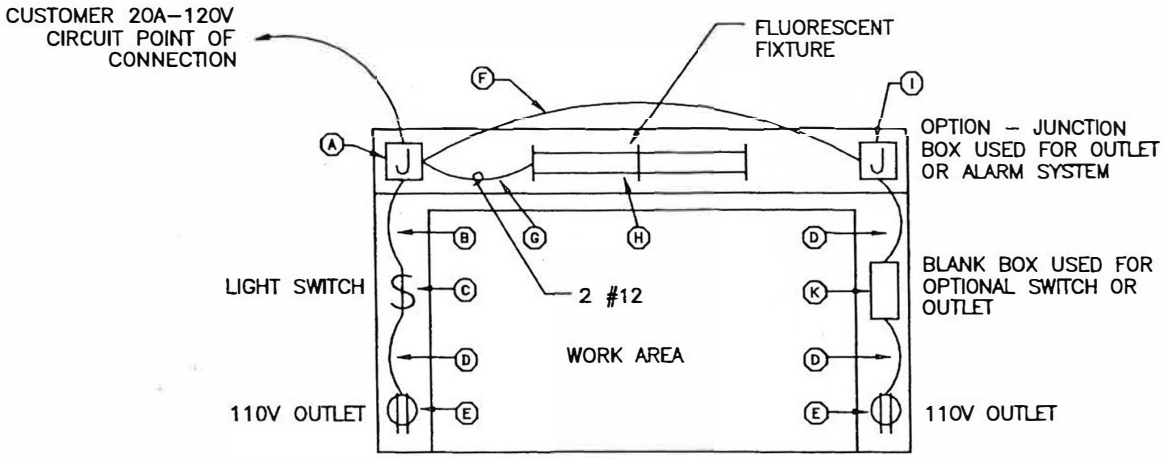
Hanson Lab Solutions LLC
Attention: Warranty Department
747 Calle Plano, Camarillo, CA, 93012

Any Hanson product or any parts thereof covered by this warranty which, upon inspection by an authorized representative of Hanson, are found by said representative to be defective will, at the option of Hanson, either repair, replace, credit or refund the purchase price of product or parts thereof. LIABILITY IS LIMITED TO REPAIR, REPLACEMENT OR REFUND AND DOES NOT INCLUDE LABOR, INSTALLATION COSTS, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES OF ANY NATURE.

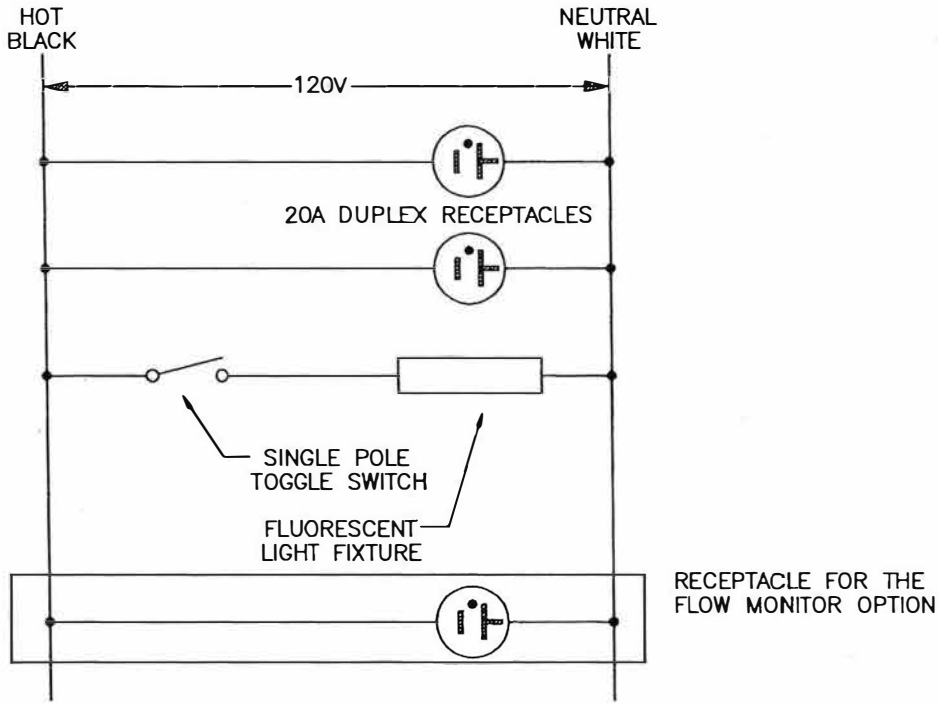
U.L. WIRING DIAGRAMS

CONTROLAIR FUME HOOD ELECTRICAL SPECIFICATIONS

"INDEX"



STANDARD HOOD

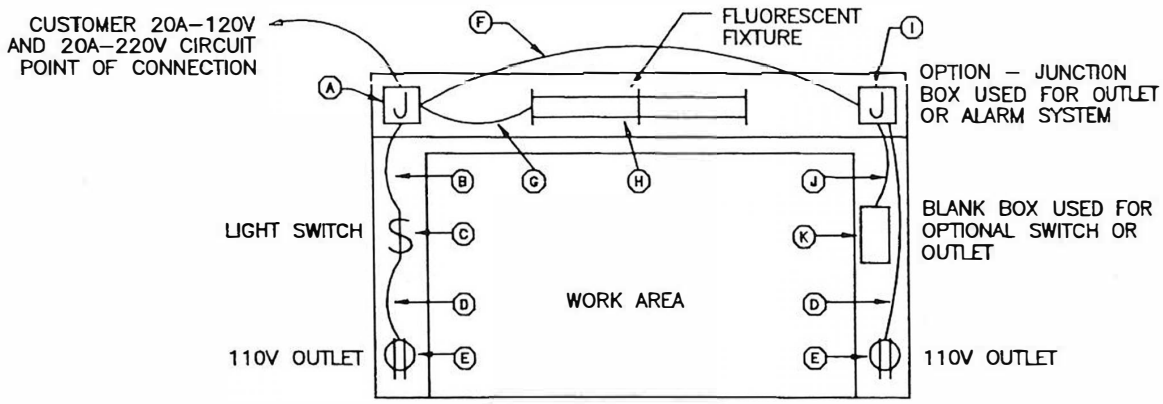


STANDARD HOOD ELECTRICAL SCHEMATIC

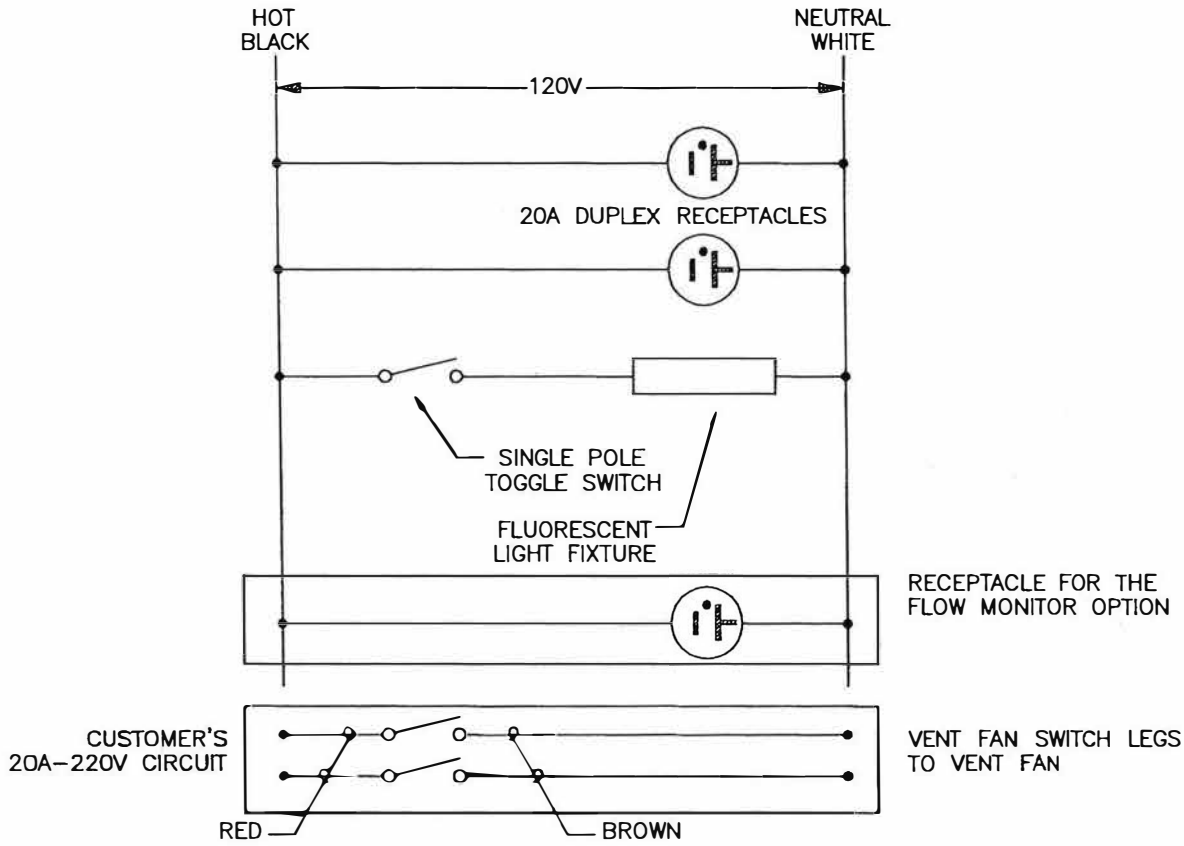
ELECTRICAL MATERIAL SCHEDULE

TAG	DESCRIPTION OF MATERIAL	MFG. PART #	QTY
Ⓐ	4"x4"x2–1/8" JUNCTION BOX	RACO 232	1
	4" SQUARE FLAT BLANK COVER PLATE	RACO 752	1
	8–32x1/2" SCREW, CAD PLATED	DOTTIE RMC83212	2
	8–32 NYLOCK NUT	DOTTIE HNY832	2
	RED WIRE NUTS	IDEAL 452	3
	GROUND PIGTAIL	DOTTIE GP650	1

Ⓑ	1/2" AL FLEX CONDUIT		2'
	SCREW-IN, UNINSULATED DIE CAST ZINC	RACO 2281	2
	#12 THHN CU WIRE WHITE		3'
	#12 THHN CU WIRE BLACK		3'
	#12 THHN CU WIRE YELLOW		3'
	#12 THHN CU WIRE GREEN		3'
Ⓒ	3-1/2" DEEP SWITCH BOX	RACO 590	1
	TOGGLE SWITCH, SINGLE-POLE, IVORY	GE 1121-2	1
	STAINLESS STEEL COVER PLATE	GE 93071	1
	6-32x1/2" SCREW, CAD PLATED, FLAT HEAD	DOTTIE FM63212	4
	6-32 NYLOCK NUT	DOTTIE HNY632	4
	GROUND PIGTAIL	DOTTIE GP650	1
	RED WIRENUT	IDEAL 452	1
Ⓓ	1/2" AL FLEX CONDUIT		2'
	SCREW-IN, UNINSULATED DIE CAST ZINC	RACO 2281	2
	#12 THHN CU WIRE WHITE		3'
	#12 THHN CU WIRE BLACK		3'
	#12 THHN CU WIRE GREEN		3'
Ⓔ	2-1/2" DEEP OUTLET BOX	RACO 500	1
	NEMA 5-20R BROWN DUPLEX RECEPTACLE	GE GCRB 20-1	1
	STAINLESS STEEL COVER PLATE	GE 93101	1
	6-32x1/2" SCREW, CAD PLATED, FLAT HEAD	DOTTIE FM63212	4
	6-32 NYLOCK NUT	DOTTIE HNY632	4
	GROUND PIGTAIL	DOTTIE GP650	1
	RED WIRENUT	IDEAL 452	1
Ⓕ	1/2" AL FLEX CONDUIT		6'
	SCREW-IN, UNINSULATED DIE CAST ZINC	RACO 2281	2
	#12 THHN CU WIRE WHITE		7'
	#12 THHN CU WIRE BLACK		7'
	#12 THHN CU WIRE GREEN		3'
	ONE-HOLE STRAP	RACO 1332	2
	#10-1/2" TEK SCREW	DOTTIE TEK HW1012	2
Ⓖ	1/2" AL FLEX CONDUIT		2'
	SCREW-IN, UNINSULATED DIE CAST ZINC	RACO 2281	2
	#12 THHN CU WIRE WHITE		3'
	#12 THHN CU WIRE YELLOW		3'
	#12 THHN CU WIRE GREEN		3'
Ⓗ	FLUORESCENT LIGHT FIXTURE		
	2', 2-LAMP STRIP (3' & 4' WIDE HOODS)		1
	2', 2-LAMP STRIP (8' WIDE HOODS)		2
	3', 2-LAMP STRIP (5' & 6' WIDE HOODS)		1
	8-32x1/2" SCREW, CAD PLATED	DOTTIE RMC83212	4/FIXTURE
	8-32 NYLOCK NUT	DOTTIE HNY832	4/FIXTURE
	GROUND PIGTAIL	DOTTIE GP650	1/FIXTURE
	RED WIRENUT	IDEAL 452	1/FIXTURE
	ORANGE WIRENUT	IDEAL 73B	2/FIXTURE
Ⓘ	4"x4"x2-1/8" JUNCTION BOX	RACO 232	1
	4" SQUARE FLAT BLANK COVER PLATE	RACO 752	1
	8-32x1/2" SCREW, CAD PLATED	DOTTIE RMC83212	2
	8-32 NYLOCK NUT	DOTTIE HNY832	2
	RED WIRENUTS	IDEAL 452	3
	GROUND PIGTAIL	DOTTIE GP650	1
	AIR FLOW MONITOR OPTION		
	4S RAISED DUPLEX RECEPTACLE COVER	RACO 802	1
	NEMA 5-20R BROWN DUPLEX RECEPTACLE	GE GCRB20	1
Ⓚ	3-1/2" DEEP ONE-GANG BOX	RACO 590	1
	ONE-GANG BLANK STAINLESS STEEL PLATE	GE 93221	1
	6-32x1/2" SCREW, CAD PLATED, FLAT HEAD	DOTTIE FM63212	4
	6-32 NYLOCK NUT	DOTTIE HNY632	4
	GROUND PIGTAIL	DOTTIE GP650	1
	RED WIRENUT	IDEAL 452	1



STANDARD HOOD WITH VENT FAN SWITCH



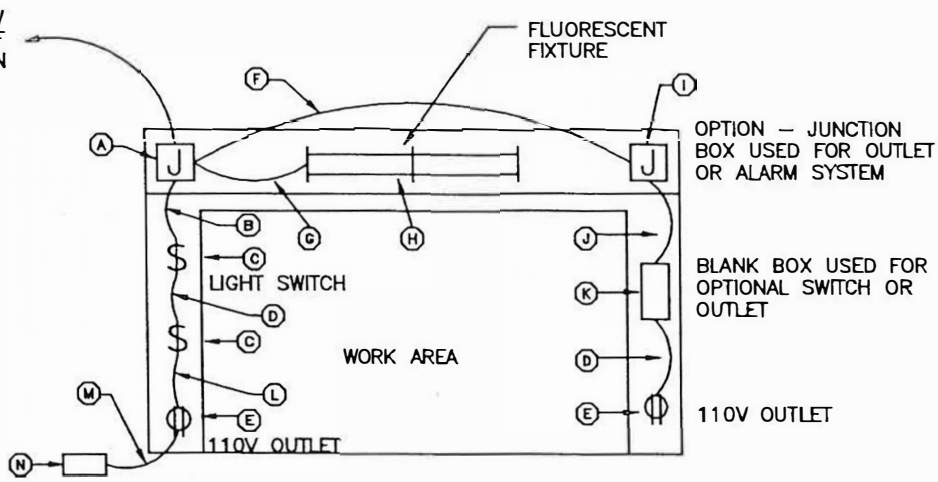
STANDARD HOOD WITH VENT FAN SWITCH ELECTRICAL SCHEMATIC

ELECTRICAL MATERIAL SCHEDULE

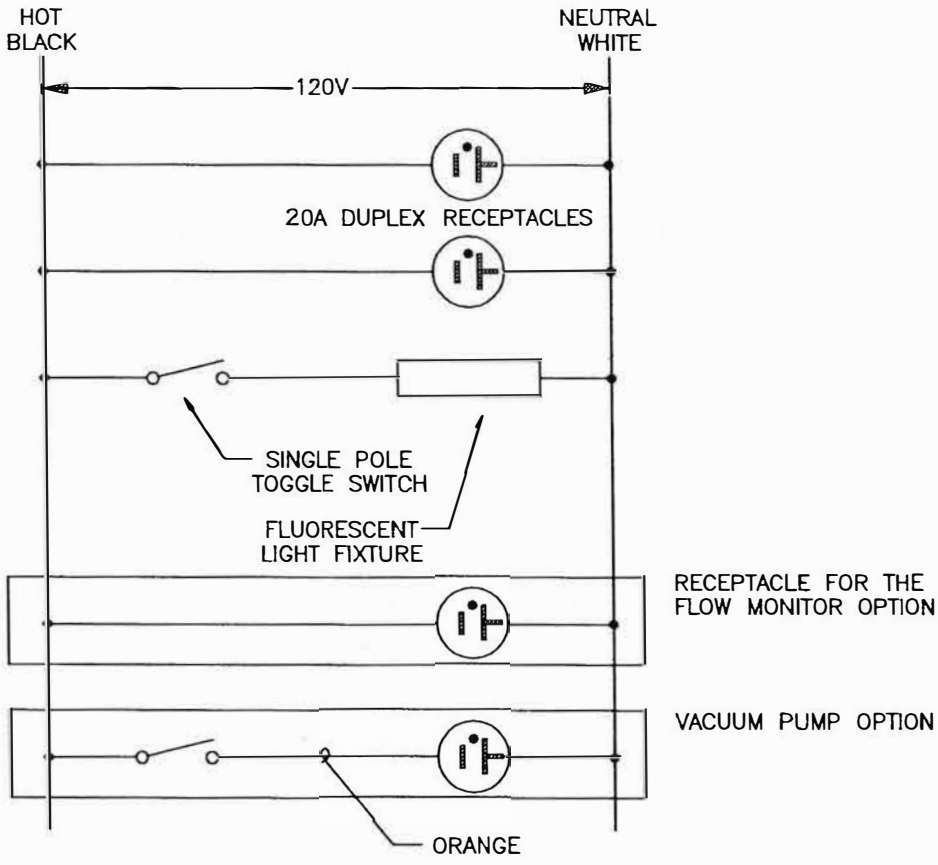
TAG	DESCRIPTION OF MATERIAL	MFG. PART #	QTY
Ⓐ	4"x4"x2–1/8" JUNCTION BOX	RACO 232	1
	4" SQUARE FLAT BLANK COVER PLATE	RACO 752	1
	8–32x1/2" SCREW, CAD PLATED	DOTTIE RMC83212	2
	8–32 NYLOCK NUT	DOTTIE HNY832	2
	RED WIRE NUTS	IDEAL 452	3
	GROUND PIGTAIL	DOTTIE GP650	1
Ⓑ	1/2" AL FLEX CONDUIT		2'
	SCREW–IN, UNINSULATED DIE CAST ZINC	RACO 2281	2
	#12 THHN CU WIRE WHITE		3'
	#12 THHN CU WIRE BLACK		3'
	#12 THHN CU WIRE YELLOW		3'
	#12 THHN CU WIRE GREEN		3'

LAYOUT B DATE 4–6–01	HANSON LAB SOLUTIONS LLC 747 CALLE PLANO CAMARILLO, CA 93012 PH: 805–498–3121 HANSON	U.L. WIRING DIAGRAMS SHEET 4 of 14	*CONTROLAIR FUME HOOD ELECTRICAL SPECIFICATION* BASIC+220V MBSW – B

Ⓒ	3–1/2" DEEP SWITCH BOX	RACO 590	1
	TOGGLE SWITCH, SINGLE–POLE, IVORY	GE 1121–2	1
	STAINLESS STEEL COVER PLATE	GE 93071	1
	6–32x1/2" SCREW, CAD PLATED, FLAT HEAD	DOTTIE FM63212	4
	6–32 NYLOCK NUT	DOTTIE HNY632	4
	GROUND PIGTAIL	DOTTIE GP650	1
	RED WIRENUT	IDEAL 452	1
Ⓓ	1/2" AL FLEX CONDUIT		2'
	SCREW–IN, UNINSULATED DIE CAST ZINC	RACO 2281	2
	#12 THHN CU WIRE WHITE		3'
	#12 THHN CU WIRE BLACK		3'
	#12 THHN CU WIRE GREEN		3'
Ⓔ	2" DEEP OUTLET BOX	RACO 500	1
	NEMA 5–20R BROWN DUPLEX RECEPTACLE	GE GCRB 20–1	1
	STAINLESS STEEL COVER PLATE	GE 93101	1
	6–32x1/2" SCREW, CAD PLATED, FLAT HEAD	DOTTIE FM63212	4
	6–32 NYLOCK NUT	DOTTIE HNY632	4
	GROUND PIGTAIL	DOTTIE GP650	1
	RED WIRENUT	IDEAL 452	1
Ⓕ	1/2" AL FLEX CONDUIT		6'
	SCREW–IN, UNINSULATED DIE CAST ZINC	RACO 2281	2
	#12 THHN CU WIRE WHITE		7'
	#12 THHN CU WIRE BLACK		7'
	#12 THHN CU WIRE GREEN		3'
	(2)#12 THHN CU WIRE BROWN		12' EA.
	(2)#12 THHN CU WIRE RED		12' EA.
	ONE–HOLE STRAP	RACO 1332	2
	#10–1/2" TEK SCREW	DOTTIE TEK HW1012	2
Ⓖ	1/2" AL FLEX CONDUIT		2'
	SCREW–IN, UNINSULATED DIE CAST ZINC	RACO 2281	2
	#12 THHN CU WIRE WHITE		3'
	#12 THHN CU WIRE YELLOW		3'
	#12 THHN CU WIRE GREEN		3'
Ⓗ	FLUORESCENT LIGHT FIXTURE		
	2', 2–LAMP STRIP (3' & 4' WIDE HOODS)		1
	2', 2–LAMP STRIP (8' WIDE HOODS)		2
	3', 2–LAMP STRIP (5' & 6' WIDE HOODS)		1
	8–32x1/2" SCREW, CAD PLATED	DOTTIE RMC83212	4/FIXTURE
	8–32 NYLOCK NUT	DOTTIE HNY832	4/FIXTURE
	GROUND PIGTAIL	DOTTIE GP650	1/FIXTURE
	RED WIRENUT	IDEAL 452	1/FIXTURE
	ORANGE WIRENUT	IDEAL 73B	2/FIXTURE
Ⓘ	4"x4"x2–1/8" JUNCTION BOX	RACO 232	1
	4" SQUARE FLAT BLANK COVER PLATE	RACO 752	1
	8–32x1/2" SCREW, CAD PLATED	DOTTIE RMC83212	2
	8–32 NYLOCK NUT	DOTTIE HNY832	2
	RED WIRE NUTS	IDEAL 452	3
	GROUND PIGTAIL	DOTTIE GP650	1
	AIR FLOW MONITOR OPTION		
	4S RAISED DUPLEX RECEPTACLE COVER	RACO 802	1
	NEMA 5–20R BROWN DUPLEX RECEPTACLE	GE GCRB20	1
Ⓙ	1/2" AL FLEX CONDUIT		2'
	SCREW–IN, UNINSULATED DIE CAST ZINC	RACO 2281	2
	(2)#12 THHN CU WIRE RED		3' EA.
	#12 THHN CU WIRE GREEN		3'
	(2)#12 THHN CU WIRE BROWN		3' EA.
Ⓚ	3–1/2" DEEP ONE–GANG BOX	RACO 590	1
	ONE–GANG STAINLESS STEEL PLATE	GE 93071	1
	6–32x1/2" SCREW, CAD PLATED, FLAT HEAD	DOTTIE FM63212	2
	6–32 NYLOCK NUT	DOTTIE HNY632	2
	GROUND PIGTAIL	DOTTIE GP650	1
	TWO–POLE TOGGLE SWITCH, IVORY	GE 5952–2G	1
	RED WIRENUT	IDEAL 452	1



STANDARD HOOD WITH VACUUM PUMP CIRCUIT



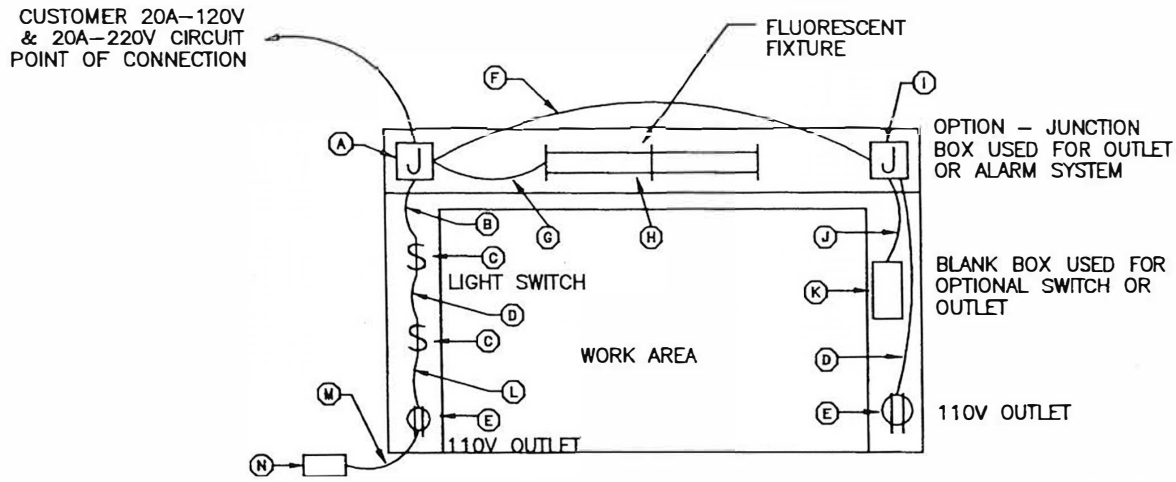
STANDARD HOOD WITH VACUUM PUMP CIRCUIT ELECTRICAL SCHEMATIC

LAYOUT C DATE 4–6–01	HANSON HANSON LAB SOLUTIONS LLC 747 CALLE PLANO CAMARILLO, CA 93012 PH: 805.498–3121	U.L. WIRING DIAGRAMS SHEET 6 of 14	*CONTROLAIR FUME HOOD ELECTRICAL SPECIFICATION* BASIC+VAC PUMP – C

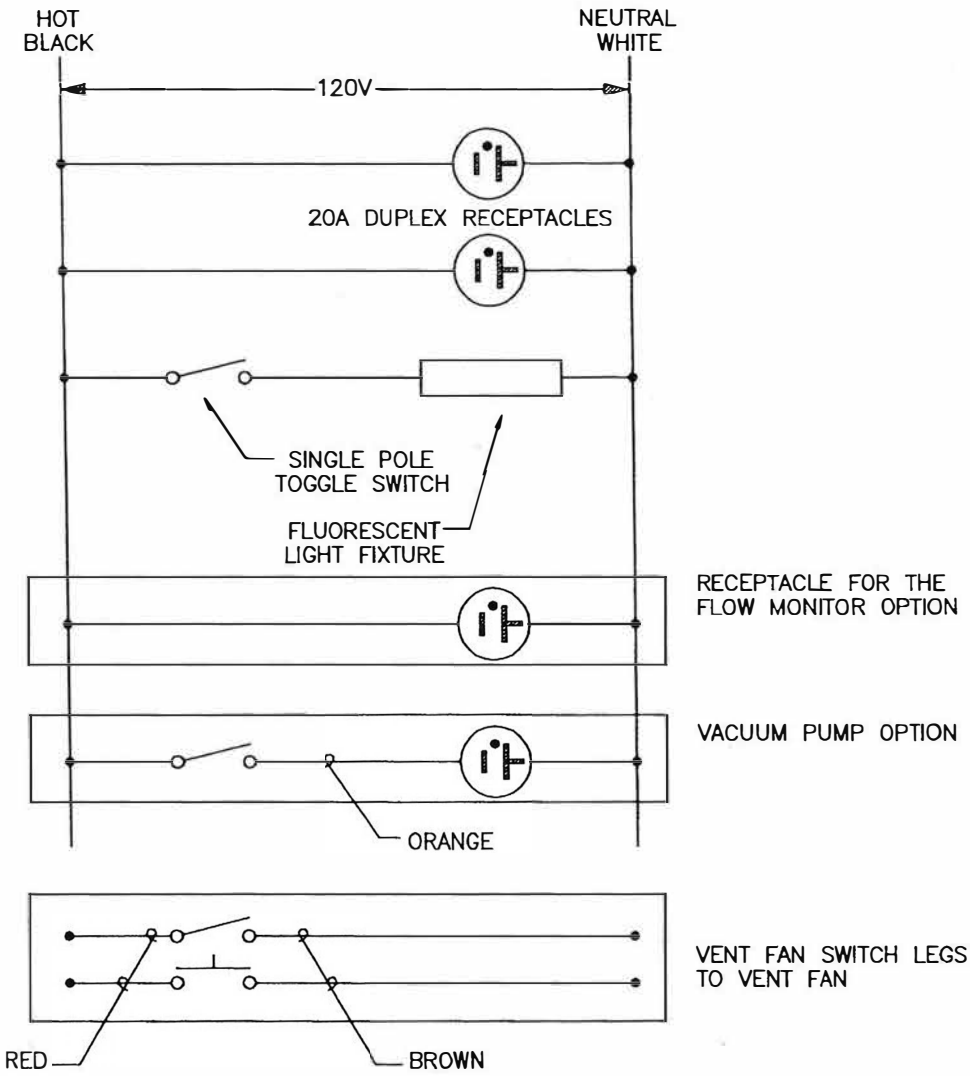
ELECTRICAL MATERIAL SCHEDULE

TAG	DESCRIPTION OF MATERIAL	MFG. PART #	QTY
Ⓐ	4"x4"x2-1/8" JUNCTION BOX	RACO 232	1
	4" SQUARE FLAT BLANK COVER PLATE	RACO 752	1
	8-32x1/2" SCREW, CAD PLATED	DOTTIE RMC83212	2
	8-32 NYLOCK NUT	DOTTIE HNY832	2
	RED WIRE NUTS	IDEAL 452	3
	GROUND PIGTAIL	DOTTIE GP650	1
Ⓑ	1/2" AL FLEX CONDUIT		2'
	SCREW-IN, UNINSULATED DIE CAST ZINC	RACO 2281	2
	#12 THHN CU WIRE WHITE		3'
	#12 THHN CU WIRE BLACK		3'
	#12 THHN CU WIRE YELLOW		3'
	#12 THHN CU WIRE GREEN		3'
Ⓒ	3-1/2" DEEP SWITCH BOX	RACO 590	1
	TOGGLE SWITCH, SINGLE-POLE, IVORY	GE 1121-2	1
	STAINLESS STEEL COVER PLATE	GE 93071	1
	6-32x1/2" SCREW, CAD PLATED, FLAT HEAD	DOTTIE FM63212	4
	6-32 NYLOCK NUT	DOTTIE HNY632	4
	GROUND PIGTAIL	DOTTIE GP650	1
	RED WIRENUT	IDEAL 452	1
Ⓓ	1/2" AL FLEX CONDUIT		2'
	SCREW-IN, UNINSULATED DIE CAST ZINC	RACO 2281	2
	#12 THHN CU WIRE WHITE		3'
	#12 THHN CU WIRE BLACK		3'
	#12 THHN CU WIRE GREEN		3'
Ⓔ	2" DEEP OUTLET BOX	RACO 500	1
	NEMA 5-20R BROWN DUPLEX RECEPTACLE	GE GCRB 20-1	1
	STAINLESS STEEL COVER PLATE	GE 93101	1
	6-32x1/2" SCREW, CAD PLATED, FLAT HEAD	DOTTIE FM63212	4
	6-32 NYLOCK NUT	DOTTIE HNY632	4
	GROUND PIGTAIL	DOTTIE GP650	1
	RED WIRENUT	IDEAL 452	1
Ⓕ	1/2" AL FLEX CONDUIT		6'
	SCREW-IN, UNINSULATED DIE CAST ZINC	RACO 2281	2
	#12 THHN CU WIRE WHITE		7'
	#12 THHN CU WIRE BLACK		7'
	#12 THHN CU WIRE GREEN		3'
	ONE-HOLE STRAP	RACO 1332	2
	#10-1/2" TEK SCREW	DOTTIE TEK HW1012	2
Ⓖ	1/2" AL FLEX CONDUIT		2'
	SCREW-IN, UNINSULATED DIE CAST ZINC	RACO 2281	2
	#12 THHN CU WIRE WHITE		3'
	#12 THHN CU WIRE YELLOW		3'
	#12 THHN CU WIRE GREEN		3'
Ⓗ	FLUORESCENT LIGHT FIXTURE		
	2', 2-LAMP STRIP (3' & 4' WIDE HOODS)		1
	2', 2-LAMP STRIP (8' WIDE HOODS)		2
	3', 2-LAMP STRIP (5' & 6' WIDE HOODS)		1
	8-32x1/2" SCREW, CAD PLATED	DOTTIE RMC83212	4/FIXTURE
	8-32 NYLOCK NUT	DOTTIE HNY832	4/FIXTURE
	GROUND PIGTAIL	DOTTIE GP650	1/FIXTURE
	RED WIRENUT	IDEAL 452	1/FIXTURE
	ORANGE WIRENUT	IDEAL 73B	2/FIXTURE

(I)	4"x4"x2-1/8" JUNCTION BOX	RACO 232	1
	4" SQUARE FLAT BLANK COVER PLATE	RACO 752	1
	8-32x1/2" SCREW, CAD PLATED	DOTTIE RMC83212	2
	8-32 NYLOCK NUT	DOTTIE HNY832	2
	RED WIRE NUTS	IDEAL 452	3
	GROUND PIGTAIL	DOTTIE GP650	1
	AIR FLOW MONITOR OPTION		
	4S RAISED DUPLEX RECEPTACLE COVER	RACO 802	1
	NEMA 5-20R BROWN DUPLEX RECEPTACLE	GE GCRB20	1
(J)	1/2" AL FLEX CONDUIT		2'
	SCREW-IN, UNINSULATED DIE CAST ZINC	RACO 2281	2
	#12 THHN CU WIRE BLACK		3'
	#12 THHN CU WIRE WHITE		3'
	#12 THHN CU WIRE GREEN		3'
(K)	3-1/2" DEEP ONE-GANG BOX	RACO 590	1
	ONE-GANG BLANK STAINLESS STEEL PLATE	GE 93071	1
	6-32x1/2" SCREW, CAD PLATED, FLAT HEAD	DOTTIE FM63212	2
	6-32 NYLOCK NUT	DOTTIE HNY632	2
	GROUND PIGTAIL	DOTTIE GP650	1
	RED WIRENUT	IDEAL 452	1
(L)	1/2" AL FLEX CONDUIT		3'
	SCREW-IN, UNINSULATED DIE CAST ZINC	RACO 2281	2
	#12 THHN CU WIRE WHITE		3'
	#12 THHN CU WIRE BLACK		3'
	#12 THHN CU WIRE GREEN		3'
	#12 THHN CU WIRE ORANGE		3'
(M)	1/2" AL FLEX CONDUIT		4'
	SCREW-IN, UNINSULATED DIE CAST ZINC	RACO 2281	2
	#12 THHN CU WIRE WHITE		5'
	#12 THHN CU WIRE ORANGE		5'
	#12 THHN CU WIRE GREEN		5'
(N)	20A-102V VACUUM PUMP RECEPTACLE		1
	3-1/2" DEEP, SINGLE GANG BOX	RACO 590	1
	SINGLE RECEPTACLE 20A-120V	GE 4102-2	1
	SINGLE GANG RECEPTACLE COVER	GE 93091	1
	6-32x1/2" SCREW, CAD PLATED, FLAT HEAD	DOTTIE FM63212	4
	6-32 NYLOCK NUT	DOTTIE HNY632	4
	GROUND PIGTAIL	DOTTIE GP650	1
	RED WIRENUT	IDEAL 452	1



STANDARD HOOD WITH VACUUM PUMP CIRCUIT AND FAN SWITCH



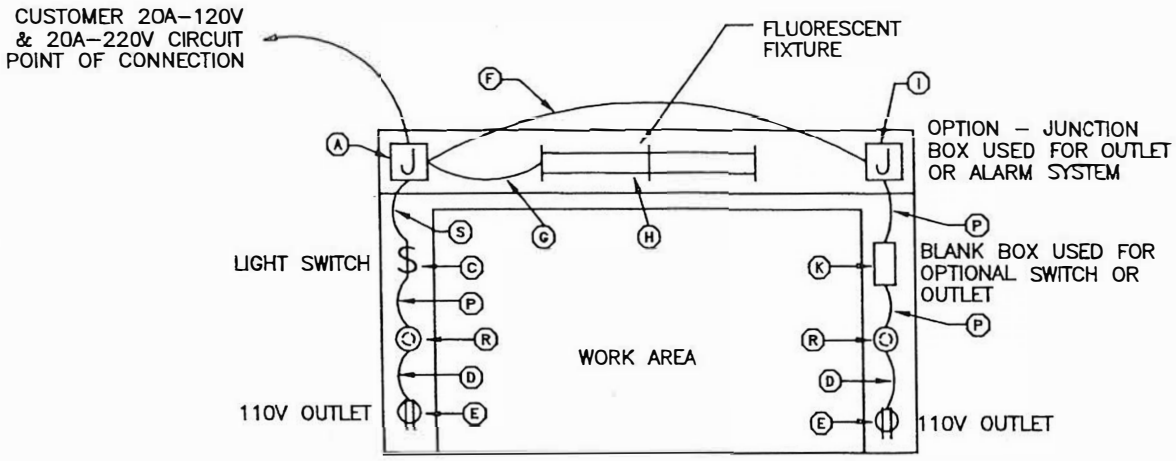
STANDARD HOOD WITH VACUUM PUMP CIRCUIT AND FAN SWITCH ELECTRICAL SCHEMATIC

LAYOUT D DATE 4–6–01	HANSON LAB SOLUTIONS LLC 747 CALLE PLANO CAMARILLO, CA 93012 PH: 805–498–3121 HANSON	U.L. WIRING DIAGRAMS SHEET 9 of 14	*CONTROLAIR FUME HOOD ELECTRICAL SPECIFICATION* A + B + C – D

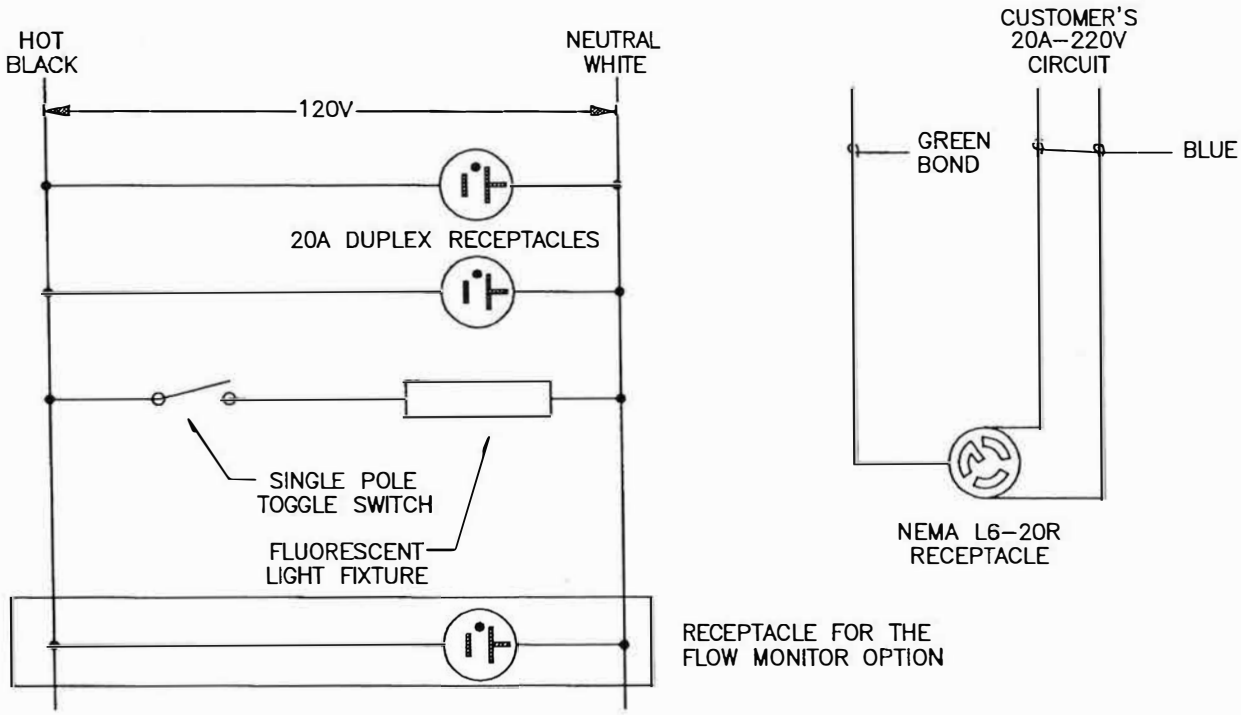
ELECTRICAL MATERIAL SCHEDULE

TAG	DESCRIPTION OF MATERIAL	MFG. PART #	QTY
Ⓐ	4"x4"x2-1/8" JUNCTION BOX	RACO 232	1
	4" SQUARE FLAT BLANK COVER PLATE	RACO 752	1
	8-32x1/2" SCREW, CAD PLATED	DOTTIE RMC83212	2
	8-32 NYLOCK NUT	DOTTIE HNY832	2
	RED WIRE NUTS	IDEAL 452	3
	GROUND PIGTAIL	DOTTIE GP650	1
Ⓑ	1/2" AL FLEX CONDUIT		2'
	SCREW-IN, UNINSULATED DIE CAST ZINC	RACO 2281	2
	#12 THHN CU WIRE WHITE		3'
	#12 THHN CU WIRE BLACK		3'
	#12 THHN CU WIRE YELLOW		3'
	#12 THHN CU WIRE GREEN		3'
Ⓒ	3-1/2" DEEP SWITCH BOX	RACO 590	1
	TOGGLE SWITCH, SINGLE-POLE, IVORY	GE 1121-2	1
	STAINLESS STEEL COVER PLATE	GE 93071	1
	6-32x1/2" SCREW, CAD PLATED, FLAT HEAD	DOTTIE FM63212	4
	6-32 NYLOCK NUT	DOTTIE HNY632	4
	GROUND PIGTAIL	DOTTIE GP650	1
	RED WIRENUT	IDEAL 452	1
Ⓓ	1/2" AL FLEX CONDUIT		2'
	SCREW-IN, UNINSULATED DIE CAST ZINC	RACO 2281	2
	#12 THHN CU WIRE WHITE		3'
	#12 THHN CU WIRE BLACK		3'
	#12 THHN CU WIRE GREEN		3'
Ⓔ	2" DEEP OUTLET BOX	RACO 500	1
	NEMA 5-20R BROWN DUPLEX RECEPTACLE	GE GCRB 20-1	1
	STAINLESS STEEL COVER PLATE	GE 93101	1
	6-32x1/2" SCREW, CAD PLATED, FLAT HEAD	DOTTIE FM63212	4
	6-32 NYLOCK NUT	DOTTIE HNY632	4
	GROUND PIGTAIL	DOTTIE GP650	1
	RED WIRENUT	IDEAL 452	1
Ⓕ	1/2" AL FLEX CONDUIT		6'
	SCREW-IN, UNINSULATED DIE CAST ZINC	RACO 2281	2
	#12 THHN CU WIRE WHITE		7'
	#12 THHN CU WIRE BLACK		7'
	#12 THHN CU WIRE GREEN		3'
	(2)#12 THHN CU WIRE BROWN		12'
	(2)#12 THHN CU WIRE RED		12'
	ONE-HOLE STRAP	RACO 1332	2
	#10-1/2" TEK SCREW	DOTTIE TEK HW1012	2
Ⓖ	1/2" AL FLEX CONDUIT		2'
	SCREW-IN, UNINSULATED DIE CAST ZINC	RACO 2281	2
	#12 THHN CU WIRE WHITE		3'
	#12 THHN CU WIRE YELLOW		3'
	#12 THHN CU WIRE GREEN		3'
Ⓗ	FLUORESCENT LIGHT FIXTURE		
	2', 2-LAMP STRIP (3' & 4' WIDE HOODS)		1
	2', 2-LAMP STRIP (8' WIDE HOODS)		2
	3', 2-LAMP STRIP (5' & 6' WIDE HOODS)		1
	8-32x1/2" SCREW, CAD PLATED	DOTTIE RMC83212	4/FIXTURE
	8-32 NYLOCK NUT	DOTTIE HNY832	4/FIXTURE
	GROUND PIGTAIL	DOTTIE GP650	1/FIXTURE
	RED WIRENUT	IDEAL 452	1/FIXTURE
	ORANGE WIRENUT	IDEAL 73B	2/FIXTURE

(I)	4"x4"x2-1/8" JUNCTION BOX	RACO 232	1
	4" SQUARE FLAT BLANK COVER PLATE	RACO 752	1
	8-32x1/2" SCREW, CAD PLATED	DOTTIE RMC83212	2
	8-32 NYLOCK NUT	DOTTIE HNY832	2
	RED WIRE NUTS	IDEAL 452	3
	GROUND PIGTAIL	DOTTIE GP650	1
	AIR FLOW MONITOR OPTION		
	4S RAISED DUPLEX RECEPTACLE COVER	RACO 802	1
	NEMA 5-20R BROWN DUPLEX RECEPTACLE	GE GCRB20	1
(J)	1/2" AL FLEX CONDUIT		2'
	SCREW-IN, UNINSULATED DIE CAST ZINC	RACO 2281	2
	(2)#12 THHN CU WIRE RED		3' EA.
	(2)#12 THHN CU WIRE BROWN		3' EA.
	#12 THHN CU WIRE GREEN		3'
(K)	3-1/2" DEEP ONE-GANG BOX	RACO 590	1
	ONE-GANG STAINLESS STEEL PLATE	GE 93071	1
	6-32x1/2" SCREW, CAD PLATED, FLAT HEAD	DOTTIE FM63212	2
	6-32 NYLOCK NUT	DOTTIE HNY632	2
	GROUND PIGTAIL	DOTTIE GP650	1
	TWO-POLE TOGGLE SWITCH, IVORY	GE 5952-2G	1
	RED WIRENUT	IDEAL 452	1
(L)	1/2" AL FLEX CONDUIT		3'
	SCREW-IN, UNINSULATED DIE CAST ZINC	RACO 2281	2
	#12 THHN CU WIRE BLACK		3'
	#12 THHN CU WIRE WHITE		3'
	#12 THHN CU WIRE ORANGE		3'
	#12 THHN CU WIRE GREEN		3'
(M)	1/2" AL FLEX CONDUIT		4'
	SCREW-IN, UNINSULATED DIE CAST ZINC	RACO 2281	2
	#12 THHN CU WIRE WHITE		5'
	#12 THHN CU WIRE ORANGE		5'
	#12 THHN CU WIRE GREEN		5'
(N)	20A-102V VACUUM PUMP RECEPTACLE		1
	3-1/2" DEEP, SINGLE GANG BOX	RACO 590	1
	SINGLE RECEPTACLE 20A-120V	GE 4102-2	1
	SINGLE GANG RECEPTACLE COVER	GE 93091	1
	6-32x1/2" SCREW, CAD PLATED, FLAT HEAD	DOTTIE FM63212	4
	6-32 NYLOCK NUT	DOTTIE HNY632	4
	GROUND PIGTAIL	DOTTIE GP650	1
	RED WIRENUT	IDEAL 452	1



STANDARD HOOD WITH 20A–220V TWIST–LOCK RECEPTACLE



STANDARD HOOD 20A–220V TWIST–LOCK RECEPTACLE ELECTRICAL SCHEMATIC

LAYOUT E DATE 4–6–01	HANSON HANSON LAB SOLUTIONS LLC 747 CALLE PLANO CAMARILLO, CA 93012 PH: 805–498–3121	U.L. WIRING DIAGRAMS SHEET 12 of 14	*CONTROLAIR FUME HOOD ELECTRICAL SPECIFICATION* BASIC+DBL. 220V – E

ELECTRICAL MATERIAL SCHEDULE

TAG	DESCRIPTION OF MATERIAL	MFG. PART #	QTY
Ⓐ	4"x4"x2-1/8" JUNCTION BOX	RACO 232	1
	4" SQUARE FLAT BLANK COVER PLATE	RACO 752	1
	8-32x1/2" SCREW, CAD PLATED	DOTTIE RMC83212	2
	8-32 NYLOCK NUT	DOTTIE HNY832	2
	RED WIRENUTS	IDEAL 452	3
	GROUND PIGTAIL	DOTTIE GP650	1
Ⓒ	3-1/2" DEEP SWITCH BOX	RACO 590	1
	TOGGLE SWITCH, SINGLE-POLE, IVORY	GE 1121-2	1
	STAINLESS STEEL COVER PLATE	GE 93071	1
	6-32x1/2" SCREW, CAD PLATED, FLAT HEAD	DOTTIE FM63212	4
	6-32 NYLOCK NUT	DOTTIE HNY632	2
	GROUND PIGTAIL	DOTTIE GP650	4
	RED WIRENUT	IDEAL 452	1
Ⓓ	1/2" AL FLEX CONDUIT		2'
	SCREW-IN, UNINSULATED DIE CAST ZINC	RACO 2281	2
	#12 THHN CU WIRE WHITE		3'
	#12 THHN CU WIRE BLACK		3'
	#12 THHN CU WIRE GREEN		3'
Ⓔ	3-1/2" DEEP OUTLET BOX	RACO 590	1
	NEMA 5-20R BROWN DUPLEX RECEPTACLE	GE GCRB 20-1	1
	STAINLESS STEEL COVER PLATE	GE 93101	1
	6-32x1/2" SCREW, CAD PLATED, FLAT HEAD	DOTTIE FM63212	4
	6-32 NYLOCK NUT	DOTTIE HNY632	4
	GROUND PIGTAIL	DOTTIE GP650	1
	RED WIRENUT	IDEAL 452	1
Ⓕ	1/2" AL FLEX CONDUIT		6'
	SCREW-IN, UNINSULATED DIE CAST ZINC	RACO 2281	2
	#12 THHN CU WIRE WHITE		7'
	#12 THHN CU WIRE BLACK		7'
	#12 THHN CU WIRE GREEN		3'
	(2)#12 THHN CU WIRE BLUE		12'
	ONE-HOLE STRAP	RACO 1332	2
	#10-1/2" TEK SCREW	DOTTIE TEK HW1012	2
Ⓖ	1/2" AL FLEX CONDUIT		2'
	SCREW-IN, UNINSULATED DIE CAST ZINC	RACO 2281	2
	#12 THHN CU WIRE WHITE		3'
	#12 THHN CU WIRE YELLOW		3'
	#12 THHN CU WIRE GREEN		3'
Ⓗ	FLUORESCENT LIGHT FIXTURE		
	2', 2-LAMP STRIP (3' & 4' WIDE HOODS)		1
	2', 2-LAMP STRIP (8' WIDE HOODS)		2
	3', 2-LAMP STRIP (5' & 6' WIDE HOODS)		1
	8-32x1/2" SCREW, CAD PLATED	DOTTIE RMC83212	4/FIXTURE
	8-32 NYLOCK NUT	DOTTIE HNY832	4/FIXTURE
	GROUND PIGTAIL	DOTTIE GP650	1/FIXTURE
	RED WIRENUT	IDEAL 452	1/FIXTURE
	ORANGE WIRENUT	IDEAL 73B	2/FIXTURE
Ⓘ	4"x4"x2-1/8" JUNCTION BOX	RACO 232	1
	4" SQUARE FLAT BLANK COVER PLATE	RACO 752	1
	8-32x1/2" SCREW, CAD PLATED	DOTTIE RMC83212	2
	8-32 NYLOCK NUT	DOTTIE HNY832	2
	RED WIRE NUTS	IDEAL 452	3
	GROUND PIGTAIL	DOTTIE GP650	1
	AIR FLOW MONITOR OPTION		
	4S RAISED DUPLEX RECEPTACLE COVER	RACO 802	1
	NEMA 5-20R BROWN DUPLEX RECEPTACLE	GE GCRB20	1

(J)	1/2" AL FLEX CONDUIT		2'
	SCREW-IN, UNINSULATED DIE CAST ZINC	RACO 2281	2
	#12 THHN CU WIRE BLACK		3'
	#12 THHN CU WIRE WHITE		3'
	#12 THHN CU WIRE GREEN		3'
	#12 THHN CU WIRE BROWN		3'
(K)	3-1/2" DEEP ONE-GANG BOX	RACO 590	1
	ONE-GANG BLANK STAINLESS STEEL PLATE	GE 93071	1
	6-32x1/2" SCREW, CAD PLATED, FLAT HEAD	DOTTIE FM63212	4
	6-32 NYLOCK NUT	DOTTIE HNY632	4
	GROUND PIGTAIL	DOTTIE GP650	1
	RED WIRENUT-2 POLE TOGGLE W/IVORY SWITCH	IDEAL 452	1
(P)	1/2" AL FLEX CONDUIT		4'
	SCREW-IN, UNINSULATED DIE CAST ZINC	RACO 2281	2
	(2)#12 THHN CU WIRE BLUE		5' EA.
	#12 THHN CU WIRE BLACK		5'
	#12 THHN CU WIRE WHITE		5'
	#12 THHN CU WIRE GREEN		5'
(R)	3-1/2" DEEP OUTLET BOX	RACO 590	1
	NEMA L6-20R RECEPTACLE	GE GL0620	1
	STAINLESS STEEL COVER PLATE	GE 93111	1
	6-32x1/2" SCREW, CAD PLATED, FLAT HEAD	DOTTIE FM63212	4
	6-32 NYLOCK NUT	DOTTIE HNY632	4
	GROUND PIGTAIL	DOTTIE GP650	1
	RED WIRENUT	IDEAL 452	1
(S)	1/2" AL FLEX CONDUIT		4'
	SCREW-IN, UNINSULATED DIE CAST ZINC	RACO 2281	2
	(2)#12 THHN CU WIRE BLUE		5' EA.
	#12 THHN CU WIRE YELLOW		5'
	#12 THHN CU WIRE BLACK		5'
	#12 THHN CU WIRE WHITE		5'
	#12 THHN CU WIRE GREEN		5'