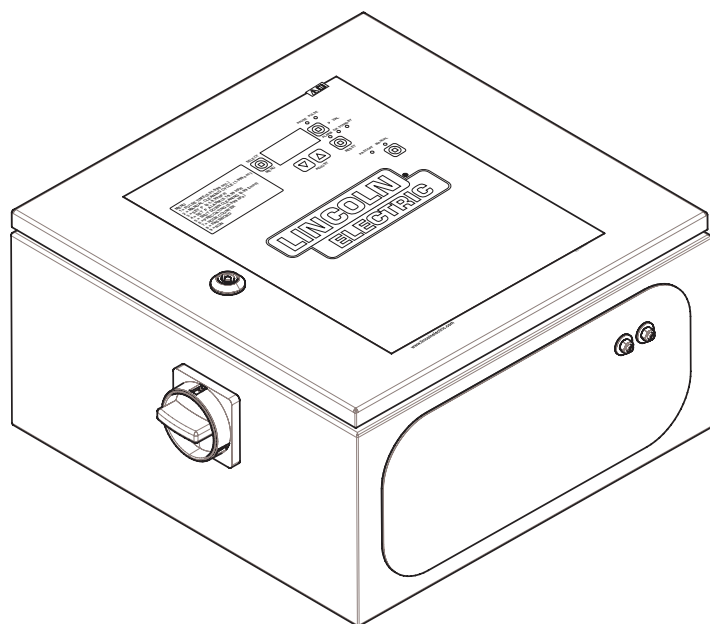


Operator's Manual

Cont B & Cont C Control Panels



For use with machines having Code Numbers:



Register your machine:

Register your machine!
www.lincolnelectric.com/register

Authorized Service and Distributor Locator:

www.lincolnelectric.com/locator

Save for future reference

--

Date Purchased

Code: (ex: 10859)

--

Serial: (ex: U1060512345)

THANK YOU FOR SELECTING A QUALITY PRODUCT BY LINCOLN ELECTRIC.

PLEASE EXAMINE CARTON AND EQUIPMENT FOR DAMAGE IMMEDIATELY

When this equipment is shipped, title passes to the purchaser upon receipt by the carrier. Consequently, claims for material damaged in shipment must be made by the purchaser against the transportation company at the time the shipment is received.

SAFETY DEPENDS ON YOU

Lincoln arc welding and cutting equipment is designed and built with safety in mind. However, your overall safety can be increased by proper installation ... and thoughtful operation on your part. **DO NOT INSTALL, OPERATE OR REPAIR THIS EQUIPMENT WITHOUT READING THIS MANUAL AND THE SAFETY PRECAUTIONS CONTAINED THROUGHOUT.** And, most importantly, think before you act and be careful.

WARNING

This statement appears where the information must be followed exactly to avoid serious personal injury or loss of life.

CAUTION

This statement appears where the information must be followed to avoid minor personal injury or damage to this equipment.



KEEP YOUR HEAD OUT OF THE FUMES.

DON'T get too close to the arc. Use corrective lenses if necessary to stay a reasonable distance away from the arc.

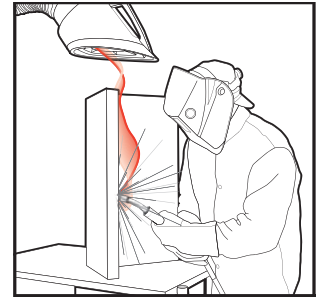
READ and obey the Safety Data Sheet (SDS) and the warning label that appears on all containers of welding materials.

USE ENOUGH VENTILATION or exhaust at the arc, or both, to keep the fumes and gases from your breathing zone and the general area.

IN A LARGE ROOM OR OUTDOORS, natural ventilation may be adequate if you keep your head out of the fumes (See below).

USE NATURAL DRAFTS or fans to keep the fumes away from your face.

If you develop unusual symptoms, see your supervisor. Perhaps the welding atmosphere and ventilation system should be checked.



WEAR CORRECT EYE, EAR & BODY PROTECTION

PROTECT your eyes and face with welding helmet properly fitted and with proper grade of filter plate (See ANSI Z49.1).

PROTECT your body from welding spatter and arc flash with protective clothing including woolen clothing, flame-proof apron and gloves, leather leggings, and high boots.

PROTECT others from splatter, flash, and glare with protective screens or barriers.

IN SOME AREAS, protection from noise may be appropriate.

BE SURE protective equipment is in good condition.

Also, wear safety glasses in work area **AT ALL TIMES.**



SPECIAL SITUATIONS

DO NOT WELD OR CUT containers or materials which previously had been in contact with hazardous substances unless they are properly cleaned. This is extremely dangerous.

DO NOT WELD OR CUT painted or plated parts unless special precautions with ventilation have been taken. They can release highly toxic fumes or gases.

Additional precautionary measures

PROTECT compressed gas cylinders from excessive heat, mechanical shocks, and arcs; fasten cylinders so they cannot fall.

BE SURE cylinders are never grounded or part of an electrical circuit.

REMOVE all potential fire hazards from welding area.

ALWAYS HAVE FIRE FIGHTING EQUIPMENT READY FOR IMMEDIATE USE AND KNOW HOW TO USE IT.



SECTION A: WARNINGS



CALIFORNIA PROPOSITION 65 WARNINGS



WARNING: Breathing diesel engine exhaust exposes you to chemicals known to the State of California to cause cancer and birth defects, or other reproductive harm.

- Always start and operate the engine in a well-ventilated area.
- If in an exposed area, vent the exhaust to the outside.
- Do not modify or tamper with the exhaust system.
- Do not idle the engine except as necessary.

For more information go to
www.P65warnings.ca.gov/diesel

WARNING: This product, when used for welding or cutting, produces fumes or gases which contain chemicals known to the State of California to cause birth defects and, in some cases, cancer. (California Health & Safety Code § 25249.5 *et seq.*)



WARNING: Cancer and Reproductive Harm
www.P65warnings.ca.gov

ARC WELDING CAN BE HAZARDOUS. PROTECT YOURSELF AND OTHERS FROM POSSIBLE SERIOUS INJURY OR DEATH. KEEP CHILDREN AWAY. PACEMAKER WEARERS SHOULD CONSULT WITH THEIR DOCTOR BEFORE OPERATING.

Read and understand the following safety highlights. For additional safety information, it is strongly recommended that you purchase a copy of "Safety in Welding & Cutting - ANSI Standard Z49.1" from the American Welding Society, P.O. Box 351040, Miami, Florida 33135 or CSA Standard W117.2-1974. A Free copy of "Arc Welding Safety" booklet E205 is available from the Lincoln Electric Company, 22801 St. Clair Avenue, Cleveland, Ohio 44117-1199.

BE SURE THAT ALL INSTALLATION, OPERATION, MAINTENANCE AND REPAIR PROCEDURES ARE PERFORMED ONLY BY QUALIFIED INDIVIDUALS.



FOR ENGINE POWERED EQUIPMENT.

- Turn the engine off before troubleshooting and maintenance work unless the maintenance work requires it to be running.
- Operate engines in open, well-ventilated areas or vent the engine exhaust fumes outdoors.
- Do not add the fuel near an open flame welding arc or when the engine is running. Stop the engine and allow it to cool before refueling to prevent spilled fuel from vaporizing on contact



with hot engine parts and igniting. Do not spill fuel when filling tank. If fuel is spilled, wipe it up and do not start engine until fumes have been eliminated.

- Keep all equipment safety guards, covers and devices in position and in good repair. Keep hands, hair, clothing and tools away from V-belts, gears, fans and all other moving parts when starting, operating or repairing equipment.
- In some cases it may be necessary to remove safety guards to perform required maintenance. Remove guards only when necessary and replace them when the maintenance requiring their removal is complete. Always use the greatest care when working near moving parts.
- Do not put your hands near the engine fan. Do not attempt to override the governor or idler by pushing on the throttle control rods while the engine is running.
- To prevent accidentally starting gasoline engines while turning the engine or welding generator during maintenance work, disconnect the spark plug wires, distributor cap or magneto wire as appropriate.
- To avoid scalding, do not remove the radiator pressure cap when the engine is hot.



ELECTRIC AND MAGNETIC FIELDS MAY BE DANGEROUS



- Electric current flowing through any conductor causes localized Electric and Magnetic Fields (EMF). Welding current creates EMF fields around welding cables and welding machines
- EMF fields may interfere with some pacemakers, and welders having a pacemaker should consult their physician before welding.
- Exposure to EMF fields in welding may have other health effects which are now not known.
- All welders should use the following procedures in order to minimize exposure to EMF fields from the welding circuit:
 - Route the electrode and work cables together - Secure them with tape when possible.
 - Never coil the electrode lead around your body.
 - Do not place your body between the electrode and work cables. If the electrode cable is on your right side, the work cable should also be on your right side.
 - Connect the work cable to the workpiece as close as possible to the area being welded.
 - Do not work next to welding power source.



ELECTRIC SHOCK CAN KILL.



- 3.a. The electrode and work (or ground) circuits are electrically “hot” when the welder is on. Do not touch these “hot” parts with your bare skin or wet clothing. Wear dry, hole-free gloves to insulate hands.
- 3.b. Insulate yourself from work and ground using dry insulation. Make certain the insulation is large enough to cover your full area of physical contact with work and ground.

In addition to the normal safety precautions, if welding must be performed under electrically hazardous conditions (in damp locations or while wearing wet clothing; on metal structures such as floors, gratings or scaffolds; when in cramped positions such as sitting, kneeling or lying, if there is a high risk of unavoidable or accidental contact with the workpiece or ground) use the following equipment:

- Semiautomatic DC Constant Voltage (Wire) Welder.
 - DC Manual (Stick) Welder.
 - AC Welder with Reduced Voltage Control.
- 3.c. In semiautomatic or automatic wire welding, the electrode, electrode reel, welding head, nozzle or semiautomatic welding gun are also electrically “hot”.
 - 3.d. Always be sure the work cable makes a good electrical connection with the metal being welded. The connection should be as close as possible to the area being welded.
 - 3.e. Ground the work or metal to be welded to a good electrical (earth) ground.
 - 3.f. Maintain the electrode holder, work clamp, welding cable and welding machine in good, safe operating condition. Replace damaged insulation.
 - 3.g. Never dip the electrode in water for cooling.
 - 3.h. Never simultaneously touch electrically “hot” parts of electrode holders connected to two welders because voltage between the two can be the total of the open circuit voltage of both welders.
 - 3.i. When working above floor level, use a safety belt to protect yourself from a fall should you get a shock.
 - 3.j. Also see Items 6.c. and 8.



ARC RAYS CAN BURN.



- 4.a. Use a shield with the proper filter and cover plates to protect your eyes from sparks and the rays of the arc when welding or observing open arc welding. Headshield and filter lens should conform to ANSI Z87.1 standards.
- 4.b. Use suitable clothing made from durable flame-resistant material to protect your skin and that of your helpers from the arc rays.
- 4.c. Protect other nearby personnel with suitable, non-flammable screening and/or warn them not to watch the arc nor expose themselves to the arc rays or to hot spatter or metal.



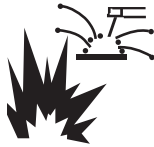
FUMES AND GASES CAN BE DANGEROUS.



- 5.a. Welding may produce fumes and gases hazardous to health. Avoid breathing these fumes and gases. When welding, keep your head out of the fume. Use enough ventilation and/or exhaust at the arc to keep fumes and gases away from the breathing zone. **When welding hardfacing (see instructions on container or SDS) or on lead or cadmium plated steel and other metals or coatings which produce highly toxic fumes, keep exposure as low as possible and within applicable OSHA PEL and ACGIH TLV limits using local exhaust or mechanical ventilation unless exposure assessments indicate otherwise. In confined spaces or in some circumstances, outdoors, a respirator may also be required. Additional precautions are also required when welding on galvanized steel.**
- 5.b. The operation of welding fume control equipment is affected by various factors including proper use and positioning of the equipment, maintenance of the equipment and the specific welding procedure and application involved. Worker exposure level should be checked upon installation and periodically thereafter to be certain it is within applicable OSHA PEL and ACGIH TLV limits.
- 5.c. Do not weld in locations near chlorinated hydrocarbon vapors coming from degreasing, cleaning or spraying operations. The heat and rays of the arc can react with solvent vapors to form phosgene, a highly toxic gas, and other irritating products.
- 5.d. Shielding gases used for arc welding can displace air and cause injury or death. Always use enough ventilation, especially in confined areas, to insure breathing air is safe.
- 5.e. Read and understand the manufacturer's instructions for this equipment and the consumables to be used, including the Safety Data Sheet (SDS) and follow your employer's safety practices. SDS forms are available from your welding distributor or from the manufacturer.
- 5.f. Also see item 1.b.



WELDING AND CUTTING SPARKS CAN CAUSE FIRE OR EXPLOSION.



- 6.a. Remove fire hazards from the welding area. If this is not possible, cover them to prevent the welding sparks from starting a fire. Remember that welding sparks and hot materials from welding can easily go through small cracks and openings to adjacent areas. Avoid welding near hydraulic lines. Have a fire extinguisher readily available.
- 6.b. Where compressed gases are to be used at the job site, special precautions should be used to prevent hazardous situations. Refer to "Safety in Welding and Cutting" (ANSI Standard Z49.1) and the operating information for the equipment being used.
- 6.c. When not welding, make certain no part of the electrode circuit is touching the work or ground. Accidental contact can cause overheating and create a fire hazard.
- 6.d. Do not heat, cut or weld tanks, drums or containers until the proper steps have been taken to insure that such procedures will not cause flammable or toxic vapors from substances inside. They can cause an explosion even though they have been "cleaned". For information, purchase "Recommended Safe Practices for the Preparation for Welding and Cutting of Containers and Piping That Have Held Hazardous Substances", AWS F4.1 from the American Welding Society (see address above).
- 6.e. Vent hollow castings or containers before heating, cutting or welding. They may explode.
- 6.f. Sparks and spatter are thrown from the welding arc. Wear oil free protective garments such as leather gloves, heavy shirt, cuffless trousers, high shoes and a cap over your hair. Wear ear plugs when welding out of position or in confined places. Always wear safety glasses with side shields when in a welding area.
- 6.g. Connect the work cable to the work as close to the welding area as practical. Work cables connected to the building framework or other locations away from the welding area increase the possibility of the welding current passing through lifting chains, crane cables or other alternate circuits. This can create fire hazards or overheat lifting chains or cables until they fail.
- 6.h. Also see item 1.c.
- 6.i. Read and follow NFPA 51B "Standard for Fire Prevention During Welding, Cutting and Other Hot Work", available from NFPA, 1 Batterymarch Park, PO box 9101, Quincy, MA 02269-9101.
- 6.j. Do not use a welding power source for pipe thawing.



CYLINDER MAY EXPLODE IF DAMAGED.



- 7.a. Use only compressed gas cylinders containing the correct shielding gas for the process used and properly operating regulators designed for the gas and pressure used. All hoses, fittings, etc. should be suitable for the application and maintained in good condition.
- 7.b. Always keep cylinders in an upright position securely chained to an undercarriage or fixed support.
- 7.c. Cylinders should be located:
 - Away from areas where they may be struck or subjected to physical damage.
 - A safe distance from arc welding or cutting operations and any other source of heat, sparks, or flame.
- 7.d. Never allow the electrode, electrode holder or any other electrically "hot" parts to touch a cylinder.
- 7.e. Keep your head and face away from the cylinder valve outlet when opening the cylinder valve.
- 7.f. Valve protection caps should always be in place and hand tight except when the cylinder is in use or connected for use.
- 7.g. Read and follow the instructions on compressed gas cylinders, associated equipment, and CGA publication P-1, "Precautions for Safe Handling of Compressed Gases in Cylinders," available from the Compressed Gas Association, 14501 George Carter Way Chantilly, VA 20151.



FOR ELECTRICALLY POWERED EQUIPMENT.



- 8.a. Turn off input power using the disconnect switch at the fuse box before working on the equipment.
- 8.b. Install equipment in accordance with the U.S. National Electrical Code, all local codes and the manufacturer's recommendations.
- 8.c. Ground the equipment in accordance with the U.S. National Electrical Code and the manufacturer's recommendations.

Refer to
<http://www.lincolnelectric.com/safety>
for additional safety information.

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TECHNICAL SPECIFICATIONS	
MEASUREMENTS	15.8"H X 15.8"W X 8.7"D
WEIGHT	32 LB/ 14.5 kg
ELECTRICAL RATING	115 Vac 50/60Hz 230 Vac 50/60Hz (factory set)
OUTPUT VOLTAGE	24 Vac
LOAD / OUTPUT	Max. 2 valves per output, total of 24/64 valves
PANEL MAX POWER	56w
COMPRESSED AIR FEED	Max. 65 PSI/ 5 BAR
PULSE TIME	0.01-9.99 sec. (0.25 sec. factory set)
PAUSE	1-999 sec. (60 sec. factory set)
SHUT DOWN CLEANING	0-99 cycles (3 cycles factory set)
SAFETY CLASSIFICATION	IP 54 / NEMA 12
MINIMUM OPERATING TEMPERATURE	14°F (-10°C)
MAXIMUM OPERATING TEMPERATURE	122°F (+50°C)
CONT-B24	Timer controlled cleaning, 24 valves, power supply: 115/230V, alarm function, with analog pressure measuring.
CONT-B64	Timer controlled cleaning, 64 valves, power supply: 115/230V, alarm function, with analog pressure measuring.
CONT-C24	Pressure controlled cleaning, 24 valves, power supply: 115/230V, alarm function, digital pressure measuring.
CONT-C64	Pressure controlled cleaning, 64 valves, power supply: 115/230V, alarm function, digital pressure measuring.

SELECT SUITABLE LOCATION

Position the control panel in a dry location where there is free circulation of clean air. Dirt, dust or any foreign material that can be drawn into the machine should be kept at a minimum. Do not expose the control box to direct sunlight, as the electrical circuits must not be subjected to extreme temperatures. All electrical connections must be made in such a manner that water and condensation cannot run into the control panel via the cables. The control box should be powered from a non-switched source. The main power switch on the side of the control box should be used as a disconnect switch.

Mounting location should be at eye level as periodic adjustments may be needed. The removable access panel on the bottom of the enclosure should be used for wire entry.

ENVIRONMENTAL AREA

Keep the machine inside and dry at all times. Do not expose to rain. Never place liquids on top of the machine.

STACKING

The control panel cannot be stacked.

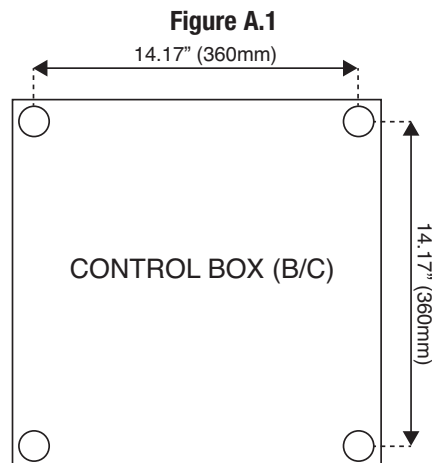
TILTING

Place the control panel directly on a secure, level surface that is not subject to vibration.

INSTALLATION

NOTE: There is a key provided to lock the control panel door. Please keep it safe or tied to the control panel.

1. Using a drill, make four mounting holes approximately 14.17" apart on the selected mounting surface. See Figure A.1.
2. Carefully position the control panel onto the mounting surface and secure it using the supplied mounting hardware.



3. Remove the blinding plugs from junction box on the rear of the filter bank assembly. See Figure A.2.
4. Install the glands in the backside and the inner wall. See Figure A.3.
5. Carefully route the pressure hoses thru the glands.
6. Fit the pressure hoses from the back of the filter bank assembly into the + and - on the bottom of the control panel. See Figure A.4.

Figure A.2

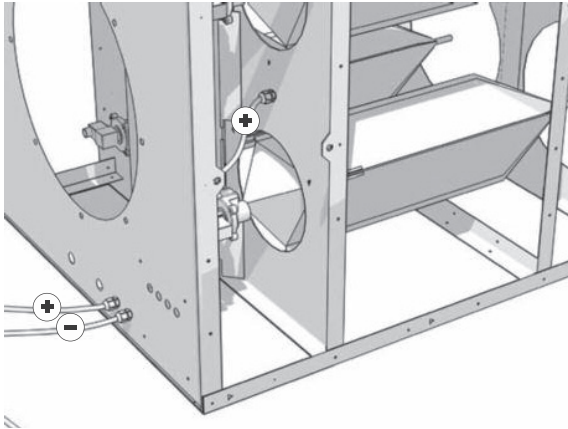


Figure A.3

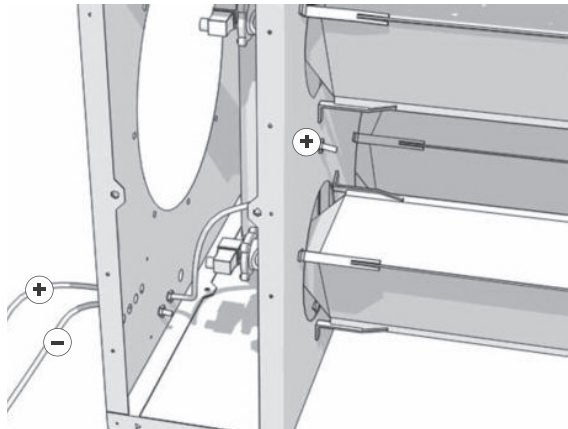
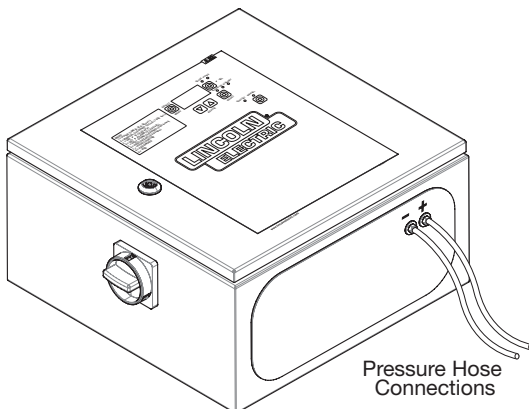


Figure A.4



ELECTRICAL CONNECTIONS

Make all electrical connections compatible to your local city / state code.



WARNING

ELECTRIC SHOCK can kill.

- Only qualified personnel should perform this installation.
- Insulate yourself from the work and ground.
- Always connect the Control Panel to a power supply grounded according to the National Electrical Code and local codes.



See Figures A.5 - A.11.

7. Using minimum of 16AWG/1.5 sq mm wire, connect the valves from the terminal block on the filter module(s) to the terminal block inside the control panel, between common and the numbered outputs on the control card. See Figures A.5 and A.6. See Wiring Diagram.

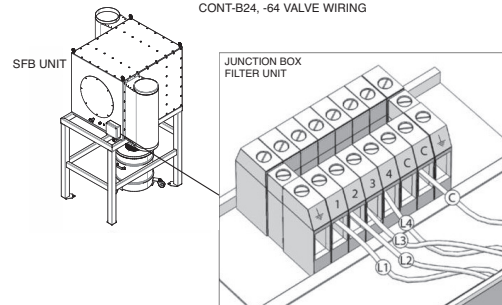
NOTE: Some larger installations may require additional holes to be made in the access panel on the bottom the control panel to allow for addition wiring.

8. Valves must be connected in such a manner that the cleaning cycle begins with the valves at the top of the filter bank and progresses to the valves at the bottom of the filter bank. See Figure A.7. See Cleaning Schedule. See Wiring Diagram.

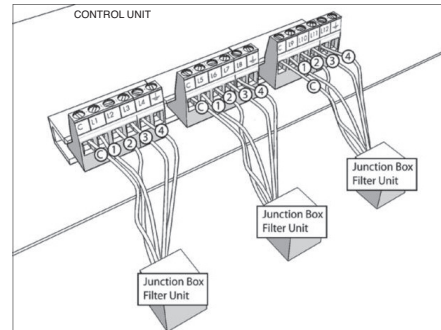
NOTE: It may be necessary to remove the terminal block to read the numbers printed on the circuit card.

Figure A.5

CONT-B24, -64 VALVE WIRING



CONT-B24, -64
MAX. 2 VALVES PER OUTPUT



CONT-B24, -64
MAX. 2 VALVES PER OUTPUT

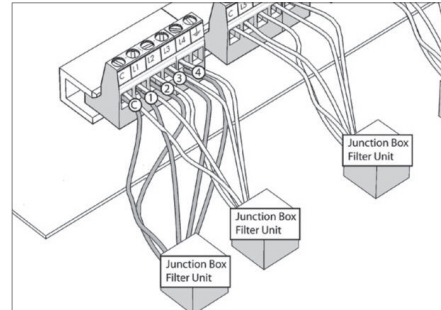
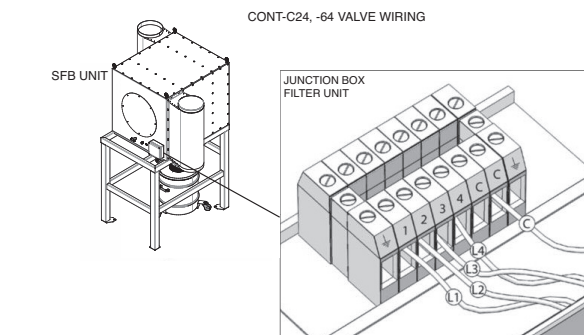
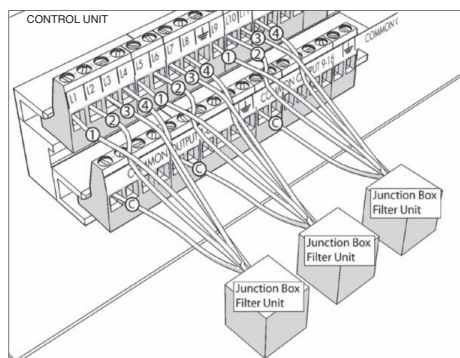


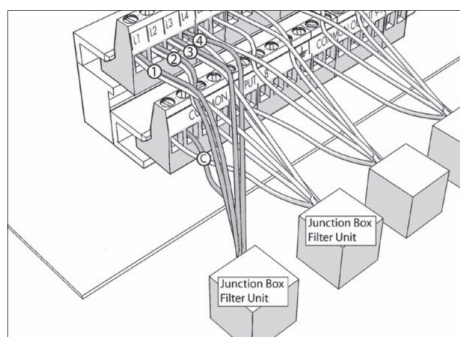
Figure A.6



CONT-C24, -64
MAX. 2 VALVES PER OUTPUT



CONT-C24, -64
MAX. 2 VALVES PER OUTPUT



9. Connect the equipment to a permanent power feed if shut-down cleaning is required.
10. Make sure that the terminal voltage on the transformer matches the actual line supply voltage coming into the control box. Check transformer output once connected. It should be 24 - 28 volts. See Figures F.8 and F.9. See Table A.1. See Wiring Diagram.

NOTE: See Wiring Diagram for connection to normally closed contactor accessory points. This connection will control on-line and off-line filter cleaning functions. There are three fuses inside the control box that are located on the upper side of the terminal strip. Two for the primary power going to the transformer and one on the secondary power side of the transformer.

11. When all connections have been made secure the junction box on the rear of the filter bank and secure the access panel on the bottom of the control panel.

Table A.1 - Transformer terminal wiring

240V	120V
CONNECT JUMPER J1 BETWEEN TERMINALS 3 AND 4.	CONNECT JUMPER J1 BETWEEN TERMINALS 2 AND 4.
LEAVE ONE END OF 103 NOT CONNECTED. INSULATE THE UNCONNECTED END OF 103.	CONNECT 103 TO TERMINAL 3.

Figure A.7

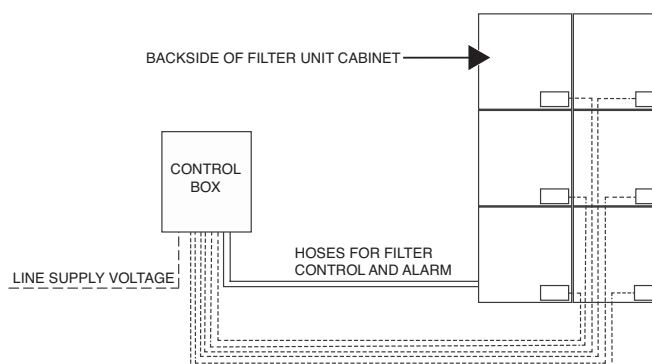


Figure A.8

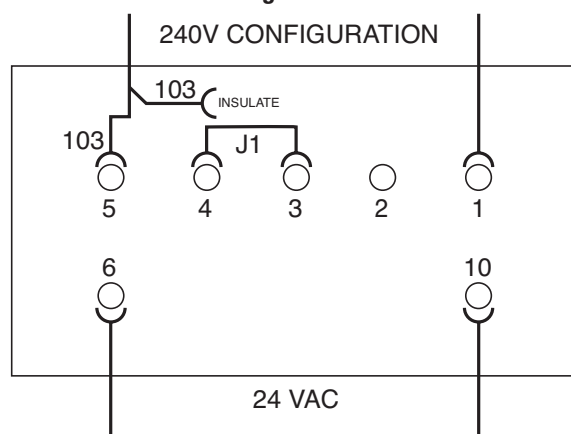
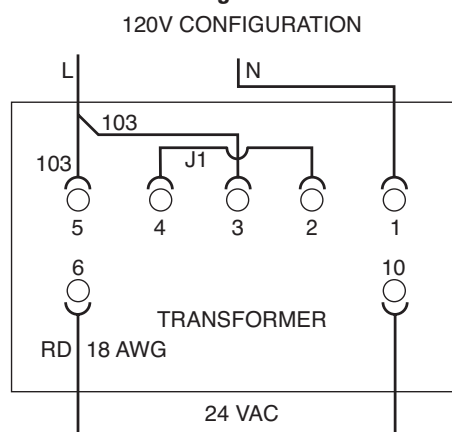


Figure A.9



CLEANING SCHEDULE

Valves are connected in such a manner that the cleaning cycle begins with the valves at the top of the filter bank and progress to the valves at the bottom of the filter bank. See Figure A.10 and **Figure A.11**.

For systems with more than 6 modules or 24 valves, the control box must have 32 valve output (B-64, C-64 and so on).

NOTE: Control box 24 can handle 24 valves double connected or 12 valves single connected.

NOTE: Control box 64 can handle 64 valves double connected or 32 valves single connected.

Figure A.10
EXAMPLE
ONE VALVE / ONE OUTPUT

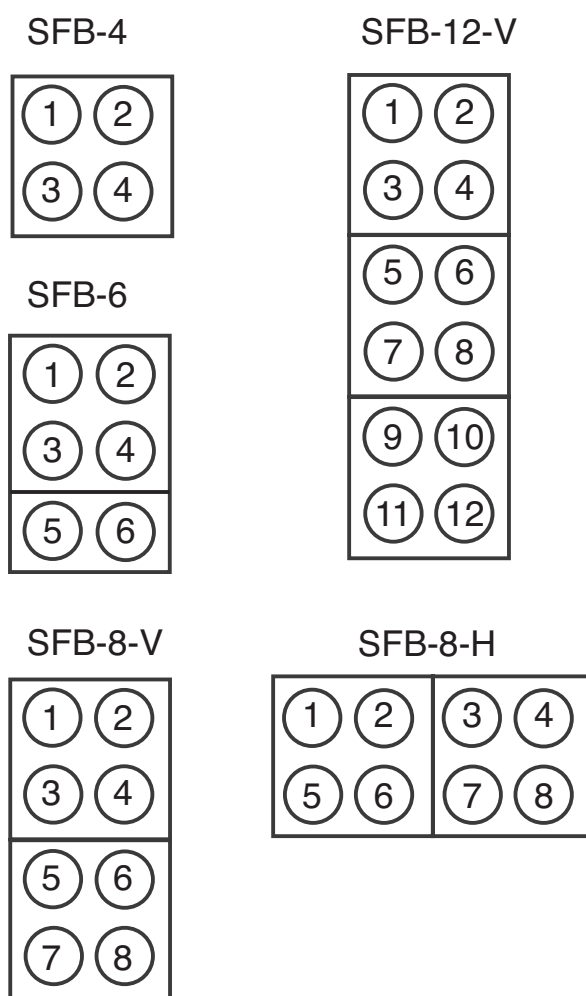
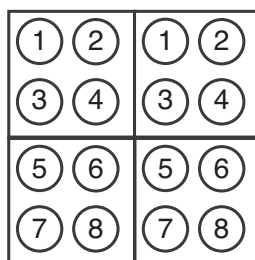
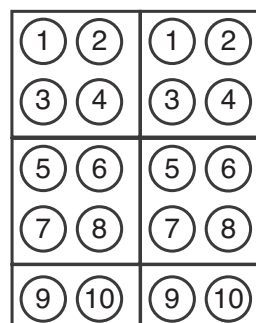


Figure A.11
EXAMPLE
TWO VALVE / ONE OUTPUT

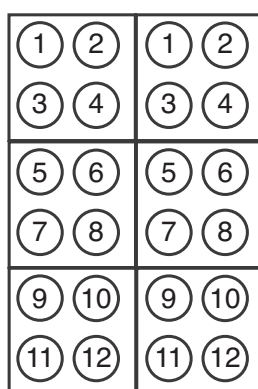
SFB-16



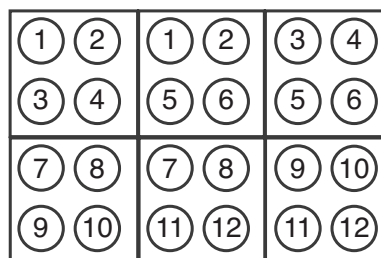
SFB-20



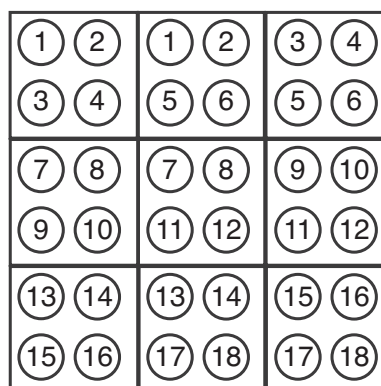
SFB-24/V



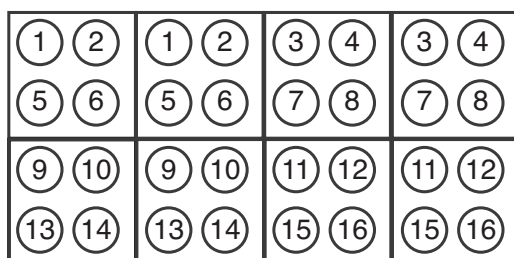
SFB-24



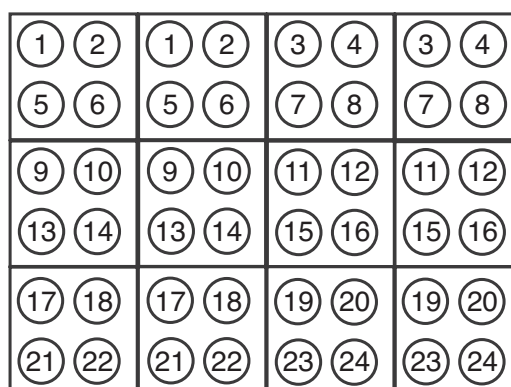
SFB-36



SFB-32



SFB-48-H



PRODUCT DESCRIPTION

Dust filled air passes through a multi-flow inlet. The highly efficient pleated cartridges clean the air up to 99.9%. The cartridge filters are cleaned by compressed air pulses.

A multiflow outlet is to be connected on the side where clean air exits. Dust particles pass through the hopper to the dustbin. Clean air leaves via the outlet sleeve and can, in many cases be recirculated into the premises. If this is not possible, then the energy can be conserved by means of an heat exchanger. The filter cartridges are easily replaced at the front of the unit.

The unit requires clean dry air with a maximum pressure of 5bar/65 psi and therefore a pressure regulator and filter must be installed at the filter as a dehumidifier.

ALARM FUNCTION

The system is equipped with an alarm which monitors the status of the filter cartridges. The pressure difference across the filter cartridges is continuously monitored and when the pressure drop exceeds set delta pressure for Cont C or factory set 1500 Pa / 6.0"wg for Cont B, a red alarm LED will illuminate. The filter must then be attended to and changing the filter cartridges may be required. When changing filter cartridges, the start-up procedure must be followed.

SHUT DOWN CLEANING

(When using external fan contactor)

Shut-down cleaning entails that cleaning the filter cartridges using compressed air is carried out with the fan switched off. This cleaning is standard on the Statiflex Filter Bank. The number of cleaning cycles can be set between 0 - 99. This cleaning is needed for some applications when there is a high concentration of dust or when the particle weight is light.

By overcoming the under pressure inside the filter housing the maximum number of particles are released from the filter cartridge. These particles fall down via a hopper into the dust bin.

CONT -B24 & -B64

See **Figure B.1**.

The Cont -B24 & -B64 control panels operate a time based system of filter cleaning. The control panel contains a controller card for sequential pulsing of the valves in the high-efficiency cleaning system. Each magnetic valve is activated from the control cabinet. After-cleaning with the fan turned off, "shut-down cleaning", is included. A visual alarm, which continuously monitors the condition of the filter cartridges, is built in.

SETTINGS

SET PULSE TIME:

Press the 'Select Menu' button: the number 1 will flash on the display. Using the 'UP' and 'DOWN' buttons, set the 'Pulse Time' (0.01-9.99 sec.) 0.25 sec. factory setting.

SET PAUSE TIME:

Press the 'Select Menu' button: the number 2 will flash on the display. Using the 'UP' and 'DOWN' buttons, select the 'Pause Time' (1-999 sec.) 60 sec. factory setting.

SET PAUSE FOR THE SHUT DOWN CLEANING:

Press the 'Select Menu' button: the number 3 will flash on the display. Using the 'UP' and 'DOWN' buttons, select the 'Pause For The Shut Down Cleaning' (1-999 sec.) 20 sec. is the factory setting.

This function requires a signal from a fan controller. See Wiring Diagram.

SET NUMBER OF CYCLES FOR SHUT DOWN CLEANING:

Press the 'Select Menu' button: the number 4 will flash on the display. Using the 'UP' and 'DOWN' buttons, select 'Number of Cycles For Shut Down Cleaning' (0-99 times) 3 times is the factory setting.

By selecting the number 000 you will bypass the 'Shut Down Cleaning' function. This function requires a signal from the fan controller. See Wiring Diagram.

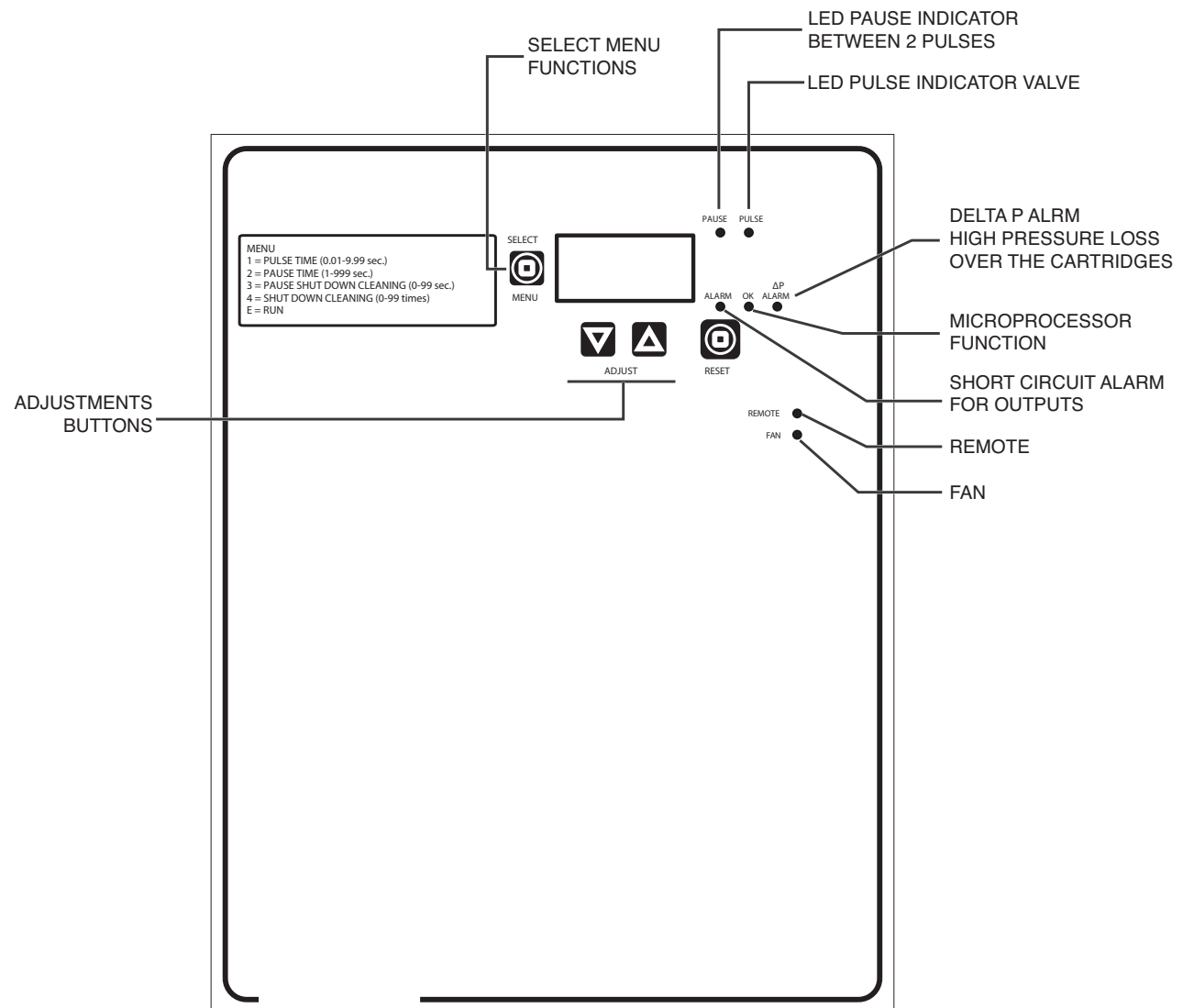
START CLEANING CYCLE:

Press the 'Select Menu' button: the letter E will flash on the display and the cleaning cycle will begin.

NOTE: The system will automatically ignore the outlets which have not been connected (load search) displaying rapidly the outlets which have not been detected.

During the first cycle, check that none of the outlets which have been connected are ignored (in the case that they are ignored check the connections to the valves).

Figure B.1



CONT -C24 & -C64

See **Figure B.2**.

The Cont -C24 & -C64 is a Control system with Delta-P sensor. The Cont -C24 & -C64 operate a pressure based cleaning system. The system will measure the air pressure to determine when filter cleaning is needed based on user entered parameters. The Cont -24 & -64 control panels contain a controller card for sequential pulsing of the valves in the high-efficiency cleaning system. Each magnetic valve is activated from the control cabinet by an integrated Delta-P sensor. After-cleaning with the fan turned off, "shut-down cleaning", is included. A visual alarm, which continuously monitors the condition of the filter cartridges, is built in.

SETTINGS

SET PULSE TIME:

Press the 'Select Menu' button: the number 1 will flash on the display. Using the 'UP' and 'DOWN' buttons, select the 'Pulse Time' (0.01-9.99 sec.) 0.25 sec. is the factory setting. **DO NOT CHANGE.**

SET MANUAL CYCLE TIME:

Press the 'Select Menu' button: the number 2 will flash on the display. Using the 'UP' and 'DOWN' buttons, select the 'Manual Cycle Time' (1-999 sec.) 60 sec. is the factory setting.

Set this function to select after how many seconds the controller card returns to command the same valve. The controller card will automatically calculate the 'Pause Time' depending on the 'Manual Time' and the number of connected outputs.

NOTE: 1/3 of manual pause time setting is pause time in automatic mode (should not be shorter than 10 sec. between pulses).

EXAMPLE: Typical configuration for filter SFB-B-12-V. 4 x 3 modules equal to 12 valves (outputs on controller card).

When setting manual cycle time, calculate 12 outputs x 30 sec. equal to 360 sec. When using automatic mode the cycle time will be 1/3 of manual set time (30 sec.) equal to 10 sec. between pulses.

SET DELTA-P:

Press the 'Select Menu' button: the number 3 will flash on the display. Using the 'UP' and 'DOWN' buttons, select the 'Set Delta-P' desired (0.01-9.99 kPa) 0.798kPa/ 3.14"wg is the factory setting.

SET DELTA-P VALUE WHICH WILL ACTIVATE ALARM:

Press the 'Select Menu' button: the number 4 will flash on the display. Using the 'UP' and 'DOWN' buttons, select the 'Delta-P value which will activate Alarm'. (Normally a value greater than 'Set Delta-P' 1.5 kPa (6"wg) is the factory setting.

SET SHUT DOWN CLEANING:

Press the 'Select Menu' button: the number 5 will flash on the display. Using the 'UP' and 'DOWN' buttons, select the number of cycles for the 'Shut Down Cleaning' which is automatically started when the Delta-P goes below 0.1 kPa (0.39"wg) when the fan has been switched off. By selecting 0 you will bypass the 'Shut Down Cleaning'.

During the 'Shut Down Cleaning' cycle (3 cycle factory setting) the letter E will flash on the display. Upon termination of the shut down cleaning the word END will appear on the display, to indicate that the cleaning cycle has ceased.

SET DELTA-P PRECOATING:

Press the 'Select Menu' button: the number 6 will flash on the display. Using the 'UP' and 'DOWN' buttons, select the 'Delta-P Precoating' value (0 - 9.99 kPa) by selecting 0 you will bypass this function.

The controller card will ONLY accept a Delta-P value greater than the 'Set Delta-P Precoating' value. The valves will not pulse until the 'Delta-P Precoating' value has been reached. Once the 'Delta-P Precoating' value is reached, the cycle of the valves will start and the Precoating function will auto delete until you assign it a new value.

VIEW RUNNING HOURS:

Press the 'Select Menu' button: code 7L (Running Hours) will flash on the display. Immediately after it appears the letter L and the 3 last numbers (from 0 to 999) of the 5 numbers displayed indicate the running hours. Running hours 12 370, shows L370.

Press the 'Select Menu' button: code 7H (Running Hours) will flash on the display. Immediately after it appears the letter H and the 2 first numbers (from 0 to 65) of the 5 numbers displayed indicate the running hours. Running hours 12 370, shows H12.

SELECT SUBMENU:

Press the 'Select Menu' button: 8 PAS will flash on the display, key access to the SUBMENU (to be used only if necessary).

START CLEANING CYCLE:

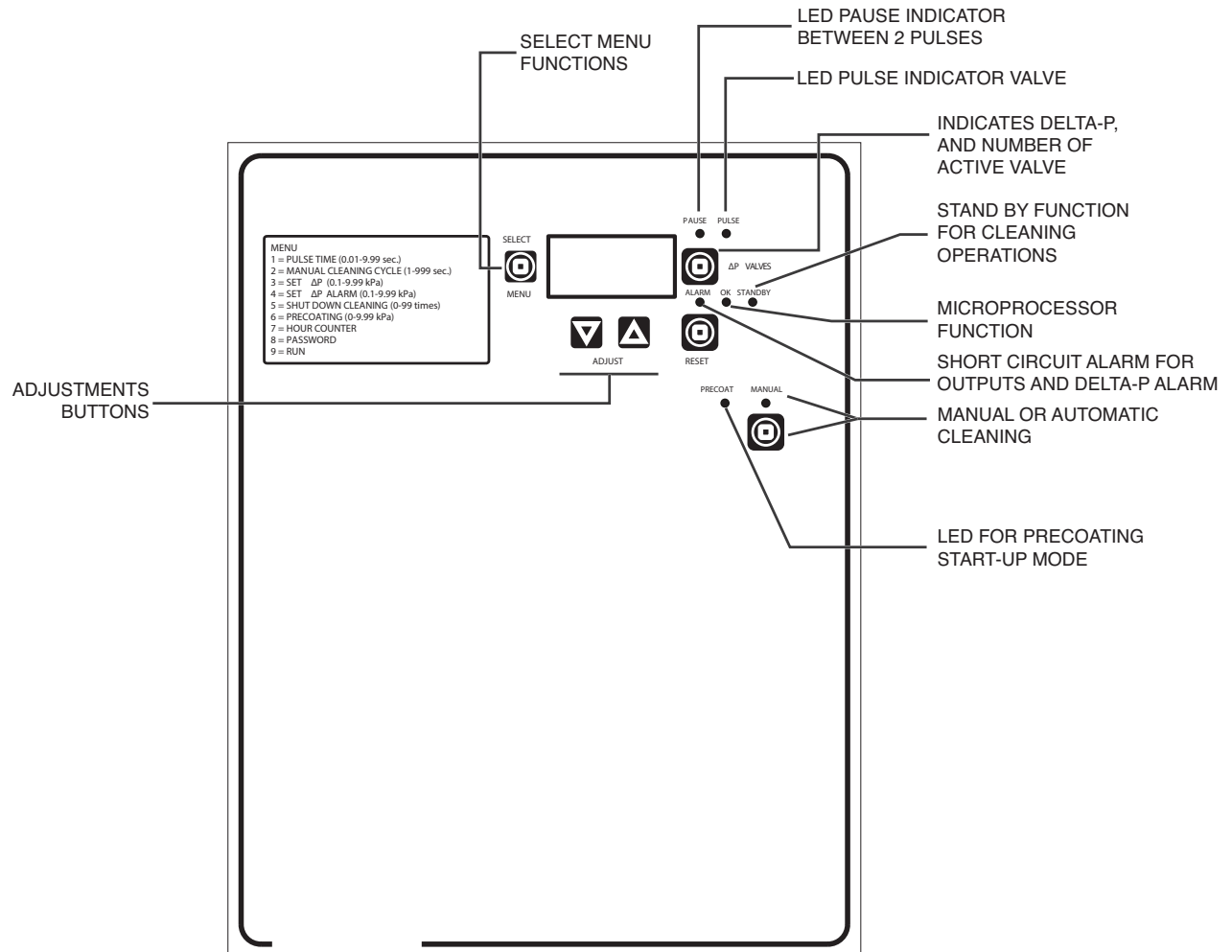
Press the 'Select Menu' button: the letter E will appear on the display and the cleaning cycle will start.

NOTE: When pressing the key Delta-P/Valves you can return in

E position from every step of the programming MENU.

During programming, after 2 minutes from the last setting, the unit will automatically go to E position. The system will automatically ignore the outlets which have not been connected. During the first cycle, check that all of the outlets function correctly (in the case that they are ignored check the connections to the valves).

Figure B.2



INITIAL START UP PROCEDURE

The following items are to be inspected prior the control panel and filter bank system being put into operation.

ELECTRICAL

1. Verify that the correct input supply voltage (115 V/230 V) is connected to the control panel.
2. Place the Main Switch into the "ON" position.
3. Verify the correct settings have been programmed into the control panel.
4. Verify that the magnetic valves are properly connected. See Wiring Diagram.

When the main switch is turned ON and the system is properly configured, the system will start cleaning and the LED will illuminate to indicate the activated output. The system will ignore outputs that are not connected in order to avoid unnecessary pauses.

NOTE: During the first cleaning cycle, it is **IMPORTANT** to check the automatic search to ensure that no connected outputs are ignored.

ADJUSTMENT DAMPER

Check that the damper for adjusting the airflow is fitted to the filter's outlet side.

As the pressure drop across the filter cartridges is low during the break-in period, the airflow will exceed the estimated operating flow. This can mean that the life-span of the cartridges is shortened drastically. Therefore the following adjustments must be made before the filtration is started up.

1. Adjust the damper to about 40-50% open.
2. Start up the fan.
3. Using a flow meter, adjust the airflow to the correct flow for the application.
4. Read off the pressure drop on the digital display (control cabinet C type) and make a note of it.
5. Open the damper gradually during the break-in period (about 2-4 weeks) until the digital displays shows an operating pressure of 700-1.000 Pa (2.8-4" wg). The time it takes to achieve normal operating pressure can vary depending on the dust concentration and the type of application.
6. During the break-in period, readings of the digital display have to be done continuously. Make a note of all values as these form the basis for checking the status of the filter cartridges.
7. In certain applications, (e.g. plasma and laser cutting), the filter cartridges must be precoated with synthetic particles in order to obtain maximum filter functionality. If precoating of the filter cartridge is directed, contact Lincoln Electric Automation Department.

PRECOATING

Precoating is recommended in all applications, especially in applications with plasma and laser cutting.

Precoating will be undertaken with Neutralite pigment and dosed with 0.5 - 1.0 kg pigment for one filter cartridges.

- Dosage shall be done for a minimum of 30 seconds per filter cartridges (0.5 - 1.0 kg).
- Dosage shall be earned out in a even flow.
- Neutralite pigment shall be dosaged in the nearest extracting point to the filter.
- The fan shall work at full capacity.
- The filter cleaning system shall be shut off.
- No process gas (dust) may pass thru the filter system during the precoating process.

NOTE: Use protective gloves.

EXTERNAL OUTPUTS (OPTIONAL)

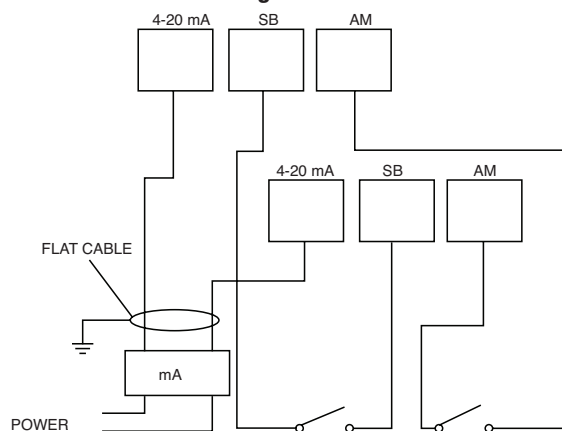
CONT C panels only.

Connecting an indicator or recording tool (power supplied) to the 4-20 mA terminals (passive outlet), will allow the user to view the Delta-P value.

Closing the SB contact, the unit will go into stand-by position.

Closing the AM you exclude the Automatic Mode. The unit will work in Manual Mode only.

Figure B.3



ACCESSORIES

There are currently no accessories available for the control panels.

**WARNING**

- Observe the maintenance intervals given in this manual. Overdue maintenance can lead to high costs for repair and revisions and can render the guarantee null and void.
- During service, maintenance and repair jobs, always use Personal Protective Equipment (PPE) to avoid injury. This also applies to persons who enter the work area during installation.
- Always use tools, materials, lubricants and service techniques which have been approved by the manufacturer. Never use worn tools and do not leave any tools in or on the product.
- Safety features which have been removed for service, maintenance or repairs, must be put back immediately after finishing these jobs and it must be checked that they still function properly.
- Use sufficient climbing gear and safety guards when working on a higher level than 2 meter.
- Ensure the workspace is well illuminated.

PERIODIC MAINTENANCE

The product has been designed to function without problems for many hours with minimal maintenance. In order to guarantee this, some simple, regular maintenance and cleaning activities are required which are described in this section. If you observe the necessary caution and carry out the maintenance at regular intervals, any problems that occur will be detected and corrected before they lead to a total breakdown.

The indicated maintenance intervals can vary depending on the specific working and ambient conditions. Therefore it is recommended to thoroughly inspect the complete product once every year other than the indicated periodic maintenance.

The maintenance activities in Table D.1 indicated by [X] can be carried out by the user; other activities are strictly reserved for well trained and authorized service engineers.

MAINTENANCE SCHEDULE

NOTE: * REQUIRES Lincoln Electric factory authorized service technician.

AS NEEDED

- Program and verify system auto on/off timer. *

MONTHLY

- Check and log filter pressure.

EVERY 6 MONTHS

- Inspect and clean (with a non-aggressive detergent) the filter control box.

YEARLY*

- Check for functionality of control panel fan.
- Inspect and clean any buildup or dirt on fan blade impellers in control panel.
- Inspect and replace control panel filters if necessary.

Table D.1 – Maintenance frequency

COMPONENT	ACTION	FREQUENCY		
		EVERY MONTH	EVERY 3 MONTHS	EVERY 6 MONTHS
CONTROL PANELS	CHECK FILTERS FOR DAMAGE. TAKE THEM OUT OF THE DOOR OF THE CONTROL PANEL AND CLEAN THEM WITH COMPRESSED AIR.	X		
	CLEAN INSIDE USING AN INDUSTRIAL VACUUM CLEANER.		X	

HOW TO USE TROUBLESHOOTING GUIDE



WARNING

Service and repair should be performed by only Lincoln Electric Factory Trained Personnel. Unauthorized repairs performed on this equipment may result in danger to the technician and machine operator and will invalidate your factory warranty. For your safety and to avoid Electrical Shock, please observe all safety notes and precautions detailed throughout this manual.

This Troubleshooting Guide is provided to help you locate and repair possible machine malfunctions. Simply follow the three-step procedure listed below.

Step 1. LOCATE PROBLEM (SYMPTOM).

Look under the column labeled "PROBLEM (SYMPTOMS)." This column describes possible symptoms that the machine may exhibit. Find the listing that best describes the symptom that the machine is exhibiting.

Step 2. POSSIBLE CAUSE.

The second column labeled "POSSIBLE CAUSE" lists the obvious external possibilities that may contribute to the machine symptom.

Step 3. RECOMMENDED COURSE OF ACTION

This column provides a course of action for the Possible Cause, generally it states to contact your local Lincoln Authorized Field Service Facility.

If you do not understand or are unable to perform the Recommended Course of Action safely, contact your local Lincoln Authorized Field Service Facility.



CAUTION

If for any reason you do not understand the test procedures or are unable to perform the test/repairs safely, contact the Lincoln Electric Service Department for electrical troubleshooting assistance before you proceed. Call 1-888-935-3877.

Observe Safety Guidelines
detailed in the beginning of this manual.

TROUBLESHOOTING GUIDE

SYMPTOMS	POSSIBLE CAUSE	RECOMMENDED COURSE OF ACTION
Operating LED (Green) does not illuminate.	1. Possible bad electrical connections.	1. Verify the correct input voltage is being applied. 2. Verify that all fuses and circuit breakers are not blown/tripped.
Cleaning cycle is not functioning.	1. Possible bad connection between control box and junction box. 2. Possible bad electrical connection.	1. Verify that the operating LED (Green) is illuminated. 2. Verify the correct input voltage is being applied. 3. Verify that all fuses and circuit breakers are not blown/tripped. 4. Verify that the LED's on the circuit card are illuminated.
Cleaning valve fails to open.	1. The pulsation cycle may be faulty. 2. Possible dirt in the housing of the valve. 3. Possible incorrect flow direction on the cleaning valves. 4. Possible incorrect control voltage for the magnetic valves.	1. Verify that the pulsation cycle is OK. 2. Clean the housing of the valve. 3. Verify that the airflow directions on the cleaning valves are in accordance with the airflow. 4. Verify that the cleaning system is working properly (Max 65 psi / 5 bar). 5. Verify that control voltage for the magnetic valve is 24 VAC.
Alarm buzzer sounds.	1. The filter may be saturated. 2. Cleaning system not working properly. 3. Compressed air not connected. 4. Compressed air pressure too low. 5. Damaged valve or solenoid. 6. Damaged PC board or pressure switch.	1. Replace filter. 2. Connect compressed air. 3. Adjust air pressure. 4. Replace valve-solenoid assembly. 5. Replace PC board or pressure switch.



CAUTION

If for any reason you do not understand the test procedures or are unable to perform the test/repairs safely, contact the Lincoln Electric Service Department for electrical troubleshooting assistance before you proceed. Call 1-888-935-3877.

Observe Safety Guidelines
detailed in the beginning of this manual.

TROUBLESHOOTING GUIDE

SYMPTOMS	POSSIBLE CAUSE	RECOMMENDED COURSE OF ACTION
Cleaning valve fails to close.	<ol style="list-style-type: none"> 1. The pulsation cycle may be faulty. 2. Possible dirt in the housing of the valve. 3. Possible incorrect flow direction on the cleaning valves. 4. Possible incorrect control voltage for the magnetic valves. 	<ol style="list-style-type: none"> 1. Verify that the pulsation cycle is OK. 2. Clean the housing of the valve. 3. Verify that the airflow directions on the cleaning valves are in accordance with the airflow. 4. Verify that the cleaning system is working properly (Max 65 psi / 5 bar). 5. Verify that control voltage for the magnetic valve is 0 VAC.
One of the cleaning valves does not function properly.	<ol style="list-style-type: none"> 1. Possible incorrect control voltage for the magnetic valve. 2. Possible bad connection between control box and junction box. 3. Possible short circuit in the coil for the magnetic valves. 	<ol style="list-style-type: none"> 1. Verify that control voltage for the magnetic valve is 24 VAC. 2. Verify all connections between the control box and the junction box. 3. Check the coil for the magnetic valve for shorts.
Timer not functioning properly.	<ol style="list-style-type: none"> 1. Possible incorrect line voltage being applied. 2. Possible faulty circuit breaker and/or fuses. 3. Possible incorrect or faulty connection in the controller. 	<ol style="list-style-type: none"> 1. Verify that the correct line voltage is being applied. 2. Verify that all fuses and circuit breakers are not blown/tripped. 3. Verify the position of the programming wire on the controller is correct. 4. Verify that the adjustments of the potentiometers on the circuit card are correct. See Wiring Diagram.
Alarm system does not function.	<ol style="list-style-type: none"> 1. Possible automatic fuse may be faulty. 2. Possible loose or faulty connection between the control box and the junction box. 3. Possible bad connection at the pressure switch. 4. Possible incorrect setting of the pressure switch. 	<ol style="list-style-type: none"> 1. Verify that the automatic fuse is not blown. 2. Verify all connections between the control box and the junction box. 3. Verify the connection at the pressure switch. 4. Verify the pre-set level of the pressure switch is 1500 Pa / 6"wg.

**CAUTION**

If for any reason you do not understand the test procedures or are unable to perform the test/repairs safely, contact the Lincoln Electric Service Department for electrical troubleshooting assistance before you proceed. Call 1-888-935-3877.

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Control Box C24/C64 Electrical Interconnection (115V & 230V)	F-3

Figure F.1 - Control box B24/B64 Electrical Interconnection (115V & 230V)

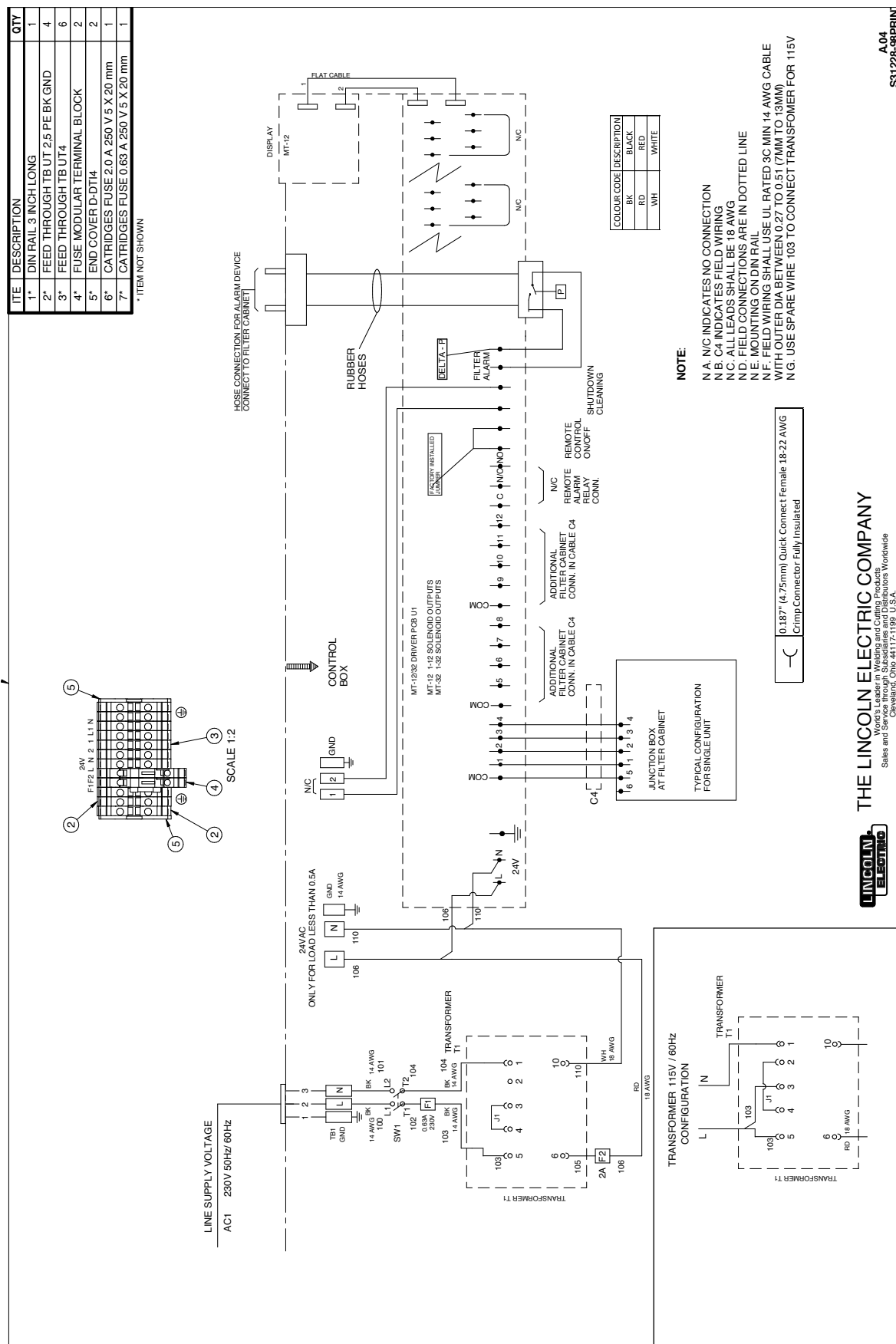
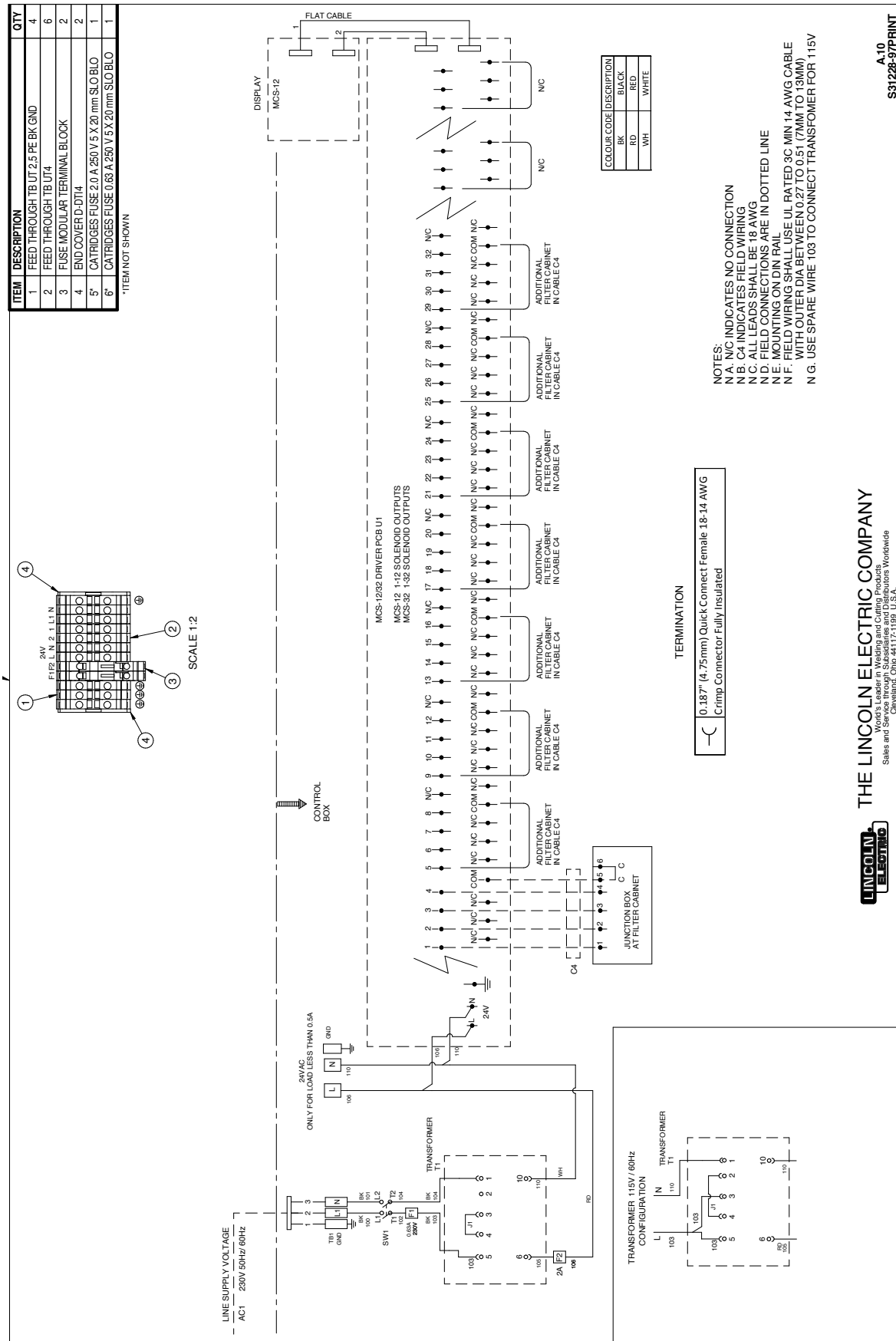


Figure F.2 - Control box C24/C64 Electrical Interconnection (115V & 230V)



WARNING	<ul style="list-style-type: none"> Do not touch electrically live parts or electrode with skin or wet clothing. Insulate yourself from work and ground. 	<ul style="list-style-type: none"> Keep flammable materials away. 	<ul style="list-style-type: none"> Wear eye, ear and body protection.
Spanish AVISO DE PRECAUCION	<ul style="list-style-type: none"> No toque las partes o los electrodos bajo carga con la piel o ropa mojada. Aíslese del trabajo y de la tierra. 	<ul style="list-style-type: none"> Mantenga el material combustible fuera del área de trabajo. 	<ul style="list-style-type: none"> Protéjase los ojos, los oídos y el cuerpo.
French ATTENTION	<ul style="list-style-type: none"> Ne laissez ni la peau ni des vêtements mouillés entrer en contact avec des pièces sous tension. Isolez-vous du travail et de la terre. 	<ul style="list-style-type: none"> Gardez à l'écart de tout matériel inflammable. 	<ul style="list-style-type: none"> Protégez vos yeux, vos oreilles et votre corps.
German WARNUNG	<ul style="list-style-type: none"> Berühren Sie keine stromführenden Teile oder Elektroden mit Ihrem Körper oder feuchter Kleidung! Isolieren Sie sich von den Elektroden und dem Erdboden! 	<ul style="list-style-type: none"> Entfernen Sie brennbares Material! 	<ul style="list-style-type: none"> Tragen Sie Augen-, Ohren- und Körperschutz!
Portuguese ATENÇÃO	<ul style="list-style-type: none"> Não toque partes elétricas e electrodos com a pele ou roupa molhada. Isole-se da peça e terra. 	<ul style="list-style-type: none"> Mantenha inflamáveis bem guardados. 	<ul style="list-style-type: none"> Use proteção para a vista, ouvido e corpo.
Japanese 注意事項	<ul style="list-style-type: none"> 通電中の電気部品、又は溶材にヒフやぬれた布で触れないこと。 施工物やアースから身体が絶縁されている様にして下さい。 	<ul style="list-style-type: none"> 燃えやすいものの側での溶接作業は絶対にしてはなりません。 	<ul style="list-style-type: none"> 目、耳及び身体に保護具をして下さい。
Chinese 警告	<ul style="list-style-type: none"> 皮肤或湿衣物切勿接触带电部件及焊条。 使你自己与地面和工件绝缘。 	<ul style="list-style-type: none"> 把一切易燃物品移离工作场所。 	<ul style="list-style-type: none"> 佩戴眼、耳及身体劳动保护用具。
Korean 위험	<ul style="list-style-type: none"> 전도체나 용접봉을 젖은 형갑 또는 피부로 절대 접촉치 마십시오. 모재와 접지를 접촉치 마십시오. 	<ul style="list-style-type: none"> 인화성 물질을 접근시키지 마십시오. 	<ul style="list-style-type: none"> 눈, 귀와 몸에 보호장구를 착용하십시오.
Arabic تحذير	<ul style="list-style-type: none"> لا تلمس الاجزاء التي يسري فيها التيار الكهربائي أو الألكترود بجسد الجسم أو بالملابس المبللة بالماء. ضع عازلا على جسمك خلال العمل. 	<ul style="list-style-type: none"> ضع المواد القابلة للاشتعال في مكان بعيد. 	<ul style="list-style-type: none"> ضع أدوات وملابس واقية على عينيك وأذنيك وجسمك.

READ AND UNDERSTAND THE MANUFACTURER'S INSTRUCTION FOR THIS EQUIPMENT AND THE CONSUMABLES TO BE USED AND FOLLOW YOUR EMPLOYER'S SAFETY PRACTICES.

SE RECOMIENDA LEER Y ENTENDER LAS INSTRUCCIONES DEL FABRICANTE PARA EL USO DE ESTE EQUIPO Y LOS CONSUMIBLES QUE VA A UTILIZAR, SIGA LAS MEDIDAS DE SEGURIDAD DE SU SUPERVISOR.

LISEZ ET COMPRENEZ LES INSTRUCTIONS DU FABRICANT EN CE QUI REGARDE CET EQUIPMENT ET LES PRODUITS A ETRE EMPLOYES ET SUIVEZ LES PROCEDURES DE SECURITE DE VOTRE EMPLOYEUR.

LESEN SIE UND BEFOLGEN SIE DIE BETRIEBSANLEITUNG DER ANLAGE UND DEN ELEKTRODENEINSATZ DES HERSTELLERS. DIE UNFALLVERHÜTUNGSVORSCHRIFTEN DES ARBEITGEBERS SIND EBENFALLS ZU BEACHTEN.

			
<ul style="list-style-type: none"> ● Keep your head out of fumes. ● Use ventilation or exhaust to remove fumes from breathing zone. 	<ul style="list-style-type: none"> ● Turn power off before servicing. 	<ul style="list-style-type: none"> ● Do not operate with panel open or guards off. 	WARNING
<ul style="list-style-type: none"> ● Los humos fuera de la zona de respiración. ● Mantenga la cabeza fuera de los humos. Utilice ventilación o aspiración para gases. 	<ul style="list-style-type: none"> ● Desconectar el cable de alimentación de poder de la máquina antes de iniciar cualquier servicio. 	<ul style="list-style-type: none"> ● No operar con panel abierto o guardas quitadas. 	Spanish AVISO DE PRECAUCION
<ul style="list-style-type: none"> ● Gardez la tête à l'écart des fumées. ● Utilisez un ventilateur ou un aspirateur pour ôter les fumées des zones de travail. 	<ul style="list-style-type: none"> ● Débranchez le courant avant l'entretien. 	<ul style="list-style-type: none"> ● N'opérez pas avec les panneaux ouverts ou avec les dispositifs de protection enlevés. 	French ATTENTION
<ul style="list-style-type: none"> ● Vermeiden Sie das Einatmen von Schweißrauch! ● Sorgen Sie für gute Be- und Entlüftung des Arbeitsplatzes! 	<ul style="list-style-type: none"> ● Strom vor Wartungsarbeiten abschalten! (Netzstrom völlig öffnen; Maschine anhalten!) 	<ul style="list-style-type: none"> ● Anlage nie ohne Schutzgehäuse oder Innenschutzverkleidung in Betrieb setzen! 	German WARNUNG
<ul style="list-style-type: none"> ● Mantenha seu rosto da fumaça. ● Use ventilação e exaustão para remover fumo da zona respiratória. 	<ul style="list-style-type: none"> ● Não opere com as tampas removidas. ● Desligue a corrente antes de fazer serviço. ● Não toque as partes elétricas nuas. 	<ul style="list-style-type: none"> ● Mantenha-se afastado das partes moventes. ● Não opere com os painéis abertos ou guardas removidas. 	Portuguese ATENÇÃO
<ul style="list-style-type: none"> ● ヒュームから頭を離すようにして下さい。 ● 換気や排煙に十分留意して下さい。 	<ul style="list-style-type: none"> ● メンテナンス・サービスに取りかかる際には、まず電源スイッチを必ず切して下さい。 	<ul style="list-style-type: none"> ● パネルやカバーを取り外したままで機械操作をしないで下さい。 	Japanese 注意事項
<ul style="list-style-type: none"> ● 頭部遠離煙霧。 ● 在呼吸區使用通風或排風器除煙。 	<ul style="list-style-type: none"> ● 維修前切斷電源。 	<ul style="list-style-type: none"> ● 儀表板打開或沒有安全罩時不準作業。 	Chinese 警告
<ul style="list-style-type: none"> ● 얼굴로부터 용접가스를 멀리하십시오. ● 호흡지역으로부터 용접가스를 제거하기 위해 가스제거기나 통풍기를 사용하십시오. 	<ul style="list-style-type: none"> ● 보수전에 전원을 차단하십시오. 	<ul style="list-style-type: none"> ● 판넬이 열린 상태로 작동치 마십시오. 	Korean 위험
<ul style="list-style-type: none"> ● ابعد رأسك بعيداً عن الدخان. ● استعمل التهوية أو جهاز ضغط الدخان للخارج لكي تبعد الدخان عن المنطقة التي تتنفس فيها. 	<ul style="list-style-type: none"> ● اقطع التيار الكهربائي قبل القيام بأية صيانة. 	<ul style="list-style-type: none"> ● لا تشغيل هذا الجهاز اذا كانت الاغطية الحديدية الواقية ليست عليه. 	Arabic تحذير

LEIA E COMPREENDA AS INSTRUÇÕES DO FABRICANTE PARA ESTE EQUIPAMENTO E AS PARTES DE USO, E SIGA AS PRÁTICAS DE SEGURANÇA DO EMPREGADOR.

使う機械や溶材のメーカーの指示書をよく読み、まず理解して下さい。そして貴社の安全規定に従って下さい。

請詳細閱讀並理解製造廠提供的說明以及應該使用的銀焊材料，並請遵守貴方的有關勞動保護規定。

이 제품에 동봉된 작업지침서를 숙지하시고 귀사의 작업자 안전수칙을 준수하시기 바랍니다.

اقرأ بتمعن وافهم تعليمات المصنع المنتج لهذه المعدات والمواد قبل استعمالها واتبع تعليمات الوقاية لصاحب العمل.

CUSTOMER ASSISTANCE POLICY

The business of The Lincoln Electric Company is manufacturing and selling high quality welding equipment, consumables and cutting equipment. Our challenge is to meet the needs of our customers and to exceed their expectations. On occasion, purchasers may ask Lincoln Electric for advice or information about their use of our products. We respond to our customers based on the best information in our possession at that time. Lincoln Electric is not in a position to warrant or guarantee such advice and assumes no liability, with respect to such information or advice. We expressly disclaim any warranty of any kind, including any warranty of fitness for any customer's particular purpose, with respect to such information or advice. As a matter of practical consideration, we also cannot assume any responsibility for updating or correcting any such information or advice once it has been given, nor does the provision of information or advice create, expand or alter any warranty with respect to the sale of our products.

Lincoln Electric is a responsive manufacturer, but the selection and use of specific products sold by Lincoln Electric is solely within the control of and remains the sole responsibility of the customer. Many variables beyond the control of Lincoln Electric affect the results obtained in applying these types of fabrication methods and service requirements.

Subject to Change – This information is accurate to the best of our knowledge at the time of printing. Please refer to www.lincolnelectric.com for any updated information.



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