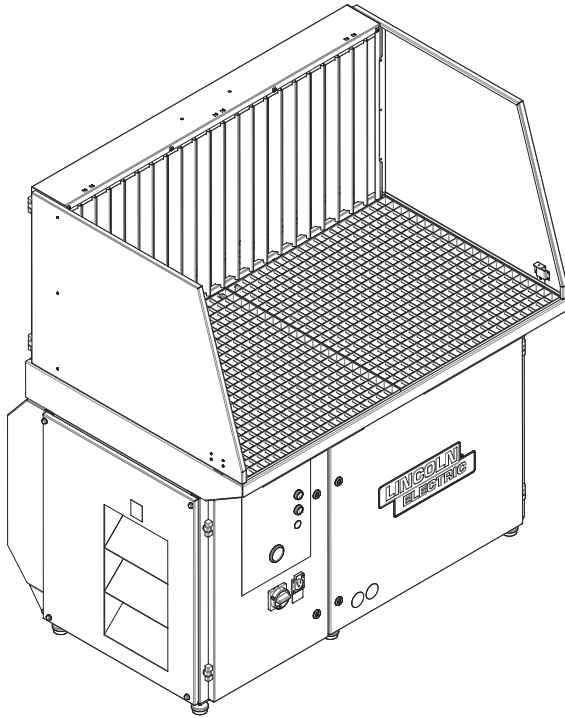


Operator's Manual

DownFlex[®] 200-M & 400-MS/A



For use with machines having Code Numbers:

**12640, 12641, 12720, 12368,
12837, 12838**



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.

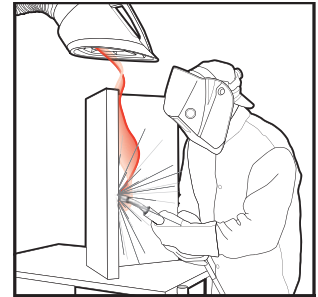
READ and obey the Safety Data Sheet (SDS) and the warning label that appears on all containers of welding materials.

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.

- 1.a. Turn the engine off before troubleshooting and maintenance work unless the maintenance work requires it to be running.
- 1.b. Operate engines in open, well-ventilated areas or vent the engine exhaust fumes outdoors.
- 1.c. 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.

- 1.d. 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.
- 1.e. 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.
- 1.f. 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.
- 1.g. 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.
- 1.h. To avoid scalding, do not remove the radiator pressure cap when the engine is hot.



ELECTRIC AND MAGNETIC FIELDS MAY BE DANGEROUS



- 2.a. Electric current flowing through any conductor causes localized Electric and Magnetic Fields (EMF). Welding current creates EMF fields around welding cables and welding machines
- 2.b. EMF fields may interfere with some pacemakers, and welders having a pacemaker should consult their physician before welding.
- 2.c. Exposure to EMF fields in welding may have other health effects which are now not known.
- 2.d. All welders should use the following procedures in order to minimize exposure to EMF fields from the welding circuit:
 - 2.d.1. Route the electrode and work cables together - Secure them with tape when possible.
 - 2.d.2. Never coil the electrode lead around your body.
 - 2.d.3. 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.
 - 2.d.4. Connect the work cable to the workpiece as close as possible to the area being welded.
 - 2.d.5. 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.



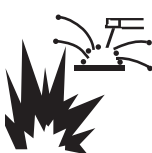
FUMES AND GASES CAN BE DANGEROUS.



- 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.



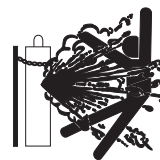
WELDING AND CUTTING SPARKS CAN CAUSE FIRE OR EXPLOSION.



- 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.



WARNINGS



READ AND SAVE THESE INSTRUCTIONS

WARNING

Important safety instructions – Save these instructions

When using an electrical appliance, basic precautions should always be followed, including the following:

- The use of this machine in conjunction with the pick-up of ingredients in weld fume has not been investigated by CSA Group.
- This fume extraction unit shall NOT be used to pick up anything that is hot or burning.
- Use only as described in this manual. Use only manufacturer's recommended attachments.
- Do not use with damaged cord or plug. If appliance is not working as it should, has been dropped, damaged, left outdoors, or dropped into water, return it to a service center.
- Do not pull or carry by cord, use cord as a handle, close a door on cord, or pull cord around sharp edges or corners. Do not run appliance over cord. Keep cord away from heated surfaces.
- Do not unplug by pulling on cord. To unplug, grasp the plug, not the cord.
- Do not handle plug or appliance with wet hands.
- Do not put any object into openings. Do not use with any opening blocked; keep free of dust, lint, hair, and anything that may reduce air flow.
- Keep hair, loose clothing, fingers, and all parts of body away from openings and moving parts.
- Turn off all controls before unplugging.
- Do not use to pick up flammable or combustible liquids, such as gasoline, or use in areas where they may be present.
- Connect to a properly grounded outlet only. See Grounding Instructions.

GROUNDING INSTRUCTIONS

A qualified electrician should be consulted if there is any doubt as to whether an outlet box is properly grounded.

Grounding Instructions for cord and plug connection:

This appliance must be grounded. If it should malfunction or breakdown, grounding provides a path of least resistance for electric current to reduce the risk of electric shock. This appliance is equipped with a cord having an equipment-grounding conductor and grounding plug. The plug must be inserted into an appropriate outlet that is properly installed and grounded in accordance with all local codes and ordinances.



DANGER

Improper connection of the equipment-grounding conductor can result in a risk of electric shock.

The conductor with insulation having an outer surface that is green with or without yellow stripes is the equipment-grounding conductor. If repair or replacement of the cord or plug is necessary, do not connect the equipment-grounding conductor to a live terminal. Check with a qualified electrician or serviceman if the grounding instructions are not completely understood, or if in doubt as to whether the appliance is properly grounded. Do not modify the plug provided with the appliance – if it will not fit the outlet, have a proper outlet installed by a qualified electrician.

Grounding Instructions for permanent connection:

This appliance must be connected to a grounded, metal, permanent wiring system.



WARNING

The installer is responsible for following Federal, State and Local safety codes and regulations.

ELECTRIC SHOCK can kill.

- Do not touch electrically live parts such as internal wiring.
- Turn the input power off at the fuse box before working on this equipment.
- Have a qualified person install and service this equipment.



MOVING PARTS can injure.

- Do not operate with covers open or filter removed.
- Keep away from moving parts.



Only qualified personnel should install, use or service this equipment.



WARNING

**To Reduce The Risk Of Electric Shock –
Do not use on wet surfaces.
Do not expose to rain. Store indoors.**



CAUTION

**To Reduce The Risk Of Injury From Moving
Parts – Unplug Before Servicing**



WARNING

**TO REDUCE THE RISK OF
ELECTRIC SHOCK – UNPLUG BEFORE
CLEANING OR SERVICING.**

As a rule of thumb, for many mild steel electrode, if the air is visibly clear and you are comfortable, then the ventilation is generally adequate for your work. The most accurate way to determine if the worker exposure does not exceed the applicable exposure limit for compounds in the fumes and gases is to have an industrial hygienist take and analyze a sample of the air you are breathing. This is particularly important if you are welding with stainless, hardfacing or Special Ventilation products. All Lincoln MSDS have a maximum fume guideline number. If exposure to total fume is kept below that number, exposure to all fume from the electrode (not coatings or plating on the work) will be below the TLV.

There are steps that you can take to identify hazardous substances in your welding environment. Read the product label and material safety data sheet for the electrode posted in the work place or in the electrode or flux container to see what fumes can be reasonably expected from use of the product and to determine if special ventilation is needed. Secondly, know what the base metal is and determine if there is any paint, plating, or coating that could expose you to toxic fumes and/or gases. Remove it from the metal being welded, if possible. If you start to feel uncomfortable, dizzy or nauseous, there is a possibility that you are being overexposed to fumes and gases, or suffering from oxygen deficiency. Stop welding and get some fresh air immediately. Notify your supervisor and co-workers so the situation can be corrected and other workers can avoid the hazard. Be sure you are following these safe practices, the consumable labeling and MSDS to improve the ventilation in your area. Do not continue welding until the situation has been corrected.

NOTE: The MSDS for all Lincoln consumables is available on Lincoln's website: www.lincolnelectric.com

Before we turn to the methods available to control welding fume exposure, you should understand a few basic terms:

Natural Ventilation is the movement of air through the workplace caused by natural forces. Outside, this is usually the wind. Inside, this may be the flow of air through open windows and doors.

Mechanical Ventilation is the movement of air through the workplace caused by an electrical device such as a portable fan or permanently mounted fan in the ceiling or wall.

Source Extraction (Local Exhaust) is a mechanical device used to capture welding fume at or near the arc and filter contaminants out of the air.

The ventilation or exhaust needed for your application depends upon many factors such as:

- Workspace volume
- Workspace configuration
- Number of welders
- Welding process and current
- Consumables used (mild steel, hardfacing, stainless, etc.)
- Allowable levels (TLV, PEL, etc.)
- Material welded (including paint or plating)
- Natural airflow

Your work area has adequate ventilation when there is enough ventilation and/or exhaust to control worker exposure to hazardous materials in the welding fumes and gases so the applicable limits for those materials is not exceeded. See chart of TLV and PEL for Typical Electrode Ingredients, the OSHA PEL (Permissible Exposure Limit), and the recommended guideline, the ACGIH TLV (Threshold Limit Value), for many compounds found in welding fume.

Ventilation

There are many methods which can be selected by the user to provide adequate ventilation for the specific application. The following section provides general information which may be helpful in evaluating what type of ventilation equipment may be suitable for your application. When ventilation equipment is installed, you should confirm worker exposure is controlled within applicable OSHA PEL and/or ACGIH TLV. According to OSHA regulations, when welding and cutting (mild steels), natural ventilation is usually considered sufficient to meet requirements, provided that:

1. The room or welding area contains at least 10,000 cubic feet (about 22' x 22' x 22') for each welder.
2. The ceiling height is not less than 16 feet.
3. Cross ventilation is not blocked by partitions, equipment, or other structural barriers.
4. Welding is not done in a confined space.

Spaces that do not meet these requirements should be equipped with mechanical ventilating equipment that exhausts at least 2000 CFM of air for each welder, except where local exhaust hoods or booths, or air-line respirators are used.

Important Safety Note:

When welding with electrodes which require special ventilation such as stainless or hardfacing (see instructions on container or MSDS) or on lead or cadmium plated steel and other metals or coatings which produce hazardous fumes, keep exposure as low as possible and below exposure limit values (PEL and TLV) for materials in the fume using local exhaust or mechanical ventilation. In confined spaces or in some circumstances, for example outdoors, a respirator may be required if exposure cannot be controlled to the PEL or TLV. (See MSDS and chart of TLV and PEL for Typical Electrode Ingredients.) Additional precautions are also required when welding on galvanized steel.

BIBLIOGRAPHY AND SUGGESTED READING

ANSI Z87.1, Practice for Occupational and Educational Eye and Face Protection, American National Standards Institute, 11 West 42nd Street, New York, NY 10036.

Arc Welding and Your Health: A Handbook of Health Information for Welding. Published by The American Industrial Hygiene Association, 2700 Prosperity Avenue, Suite 250, Fairfax, VA 22031-4319.

NFPA Standard 51B, Cutting and Welding Processes, National Fire Protection Association, 1 Batterymarch Park, P.O. Box 9146, Quincy, MA 02269-9959.

OSHA General Industry Standard 29 CFR 1910 Subpart Q. OSHA Hazard Communication Standard 29 CFR 1910.1200. Available from the Occupational Safety and Health Administration at <http://www.osha.org> or contact your local OSHA office.

The following publications are published by The American Welding Society, P.O. Box 351040, Miami, Florida 33135. AWS publications may be purchased from the American Welding society at <http://www.aws.org> or by contacting the AWS at 800-443-9353.

ANSI, Standard Z49.1, Safety in Welding, Cutting and Allied Processes. Z49.1 is now available for download at no charge at <http://www.lincolnelectric.com/community/safety/> or at the AWS website <http://www.aws.org>.

AWS F1.1, Method for Sampling Airborne Particulates Generated by Welding and Allied Processes.

AWS F1.2, Laboratory Method for Measuring Fume Generation Rates and Total Fume Emission of Welding and Allied Processes.

AWS F1.3, Evaluating Contaminants in the Welding Environment: A Strategic Sampling Guide.

AWS F1.5, Methods for Sampling and Analyzing Gases from Welding and Allied Processes.

AWS F3.2, Ventilation Guide for Welding Fume Control

AWS F4.1, Recommended Safe Practices for the Preparation for Welding and Cutting of Containers and Piping That Have Held Hazardous Substances.

AWS SHF, Safety and Health Facts Sheets. Available free of charge from the AWS website at <http://www.aws.org>.

LISTED BELOW ARE SOME TYPICAL INGREDIENTS IN WELDING ELECTRODES AND THEIR TLV (ACGIH) GUIDELINES AND PEL (OSHA) EXPOSURE LIMITS

| INGREDIENTS | CAS No. | TLV mg/m ³ | PEL mg/m ³ |
|---|------------|-----------------------|-----------------------|
| Aluminum and/or aluminum alloys (as Al)**** | 7429-90-5 | 1.0 | 15 |
| Aluminum oxide and/or Bauxite**** | 1344-28-1 | 1.0 | 5** |
| Barium compounds (as Ba)**** | 513-77-9 | 0.5 | 0.5 |
| Chromium and chromium alloys or compounds (as Cr)**** | 7440-47-3 | 0.5(b) | 0.5(b) |
| Hexavalent Chromium (Cr VI) | 18540-29-9 | 0.05(b) | .005(b) |
| Copper Fume | 7440-50-8 | 0.2 | 0.1 |
| Cobalt Compounds | 7440-48-4 | 0.02 | 0.1 |
| Fluorides (as F) | 7789-75-5 | 2.5 | 2.5 |
| Iron | 7439-89-6 | 10* | 10* |
| Limestone and/or calcium carbonate | 1317-65-3 | 10* | 15 |
| Lithium compounds (as Li) | 554-13-2 | 15 | 10* |
| Magnesite | 1309-48-4 | 10 | 15 |
| Magnesium and/or magnesium alloys and compounds (as Mg) | 7439-95-4 | 10* | 10* |
| Manganese and/or manganese alloys and compounds (as Mn)**** | 7439-96-5 | 0.02 | 5.0(c) |
| Mineral silicates | 1332-58-7 | 5** | 5** |
| Molybdenum alloys (as Mo) | 7439-98-7 | 10 | 10 |
| Nickel**** | 7440-02-0 | 0.1 | 1 |
| Silicates and other binders | 1344-09-8 | 10* | 10* |
| Silicon and/or silicon alloys and compounds (as Si) | 7440-21-3 | 10* | 10* |
| Strontium compounds (as Sr) | 1633-05-2 | 10* | 10* |
| Zirconium alloys and compounds (as Zr) | 12004-83-0 | 5 | 5 |

Supplemental Information:

(*) Not listed. Nuisance value maximum is 10 milligrams per cubic meter. PEL value for iron oxide is 10 milligrams per cubic meter. TLV value for iron oxide is 5 milligrams per cubic meter.

(**) As respirable dust.

(****) Subject to the reporting requirements of Sections 311, 312, and 313 of the Emergency Planning and Community Right-to-Know Act of 1986 and of 40CFR 370 and 372.

(b) The PEL for chromium (VI) is .005 milligrams per cubic meter as an 8 hour time weighted average. The TLV for water-soluble chromium (VI) is 0.05 milligrams per cubic

meter. The TLV for insoluble chromium (VI) is 0.01 milligrams per cubic meter.

(c) Values are for manganese fume. STEL (Short Term Exposure Limit) is 3.0 milligrams per cubic meter. OSHA PEL is a ceiling value.

(****) The TLV for soluble barium compounds is 0.5 mg/m³.

TLV and PEL values are as of October 2013. Always check Safety Data Sheet (SDS) with product or on the Lincoln Electric website at <http://www.lincolnelectric.com>

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| FILTER REPLACEMENT | D-3 |
| HEPA FILTER (OPTIONAL) | D-3 |
| Troubleshooting..... | Section E |
| Parts | parts.lincolnelectric.com |

Content/details may be changed or updated without notice. For most current Instruction Manuals or Parts Page, go to parts.lincolnelectric.com.

TECHNICAL SPECIFICATIONS - DownFlex 200-M & 400-MS/A

PHYSICAL DIMENSIONS

| LENGTH | DEPTH | HEIGHT | HEIGHT ADJUSTMENT |
|------------------|-------------------|--------------------|---|
| 54.7. 1389 MM | 39.2 IN 996 MM | 61.6 IN 1565 MM | 1.5 IN. (38 MM) ADDITIONAL HEIGHT FOR LEVELING FOR WHEEL KIT, HEIGHT IS 62.9 IN. (1598 MM) |

DOWNFLEX 400-MS/A ONLY:

| | |
|---------------------------------|--------------------------|
| COMPRESSED AIR CONNECTION | 3/8 IN. NPT (FEMALE) |
| COMPRESSED AIR PRESSURE | 70 - 120 PSI (5 - 8 BAR) |
| REQUIRED COMPRESSED AIR QUALITY | DRY AND OIL-FREE |

WEIGHT

| | |
|-------------------|-------------------|
| DOWNFLEX 200-M | 683 LBS. (310 KG) |
| DOWNFLEX 400-MS/A | 718 LBS. (326 KG) |

MAXIMUM LOAD

| |
|---|
| 440 LBS. (200 KG) (IN CASE OF WHEEL KIT: 330 LBS. (150KG)) |
|---|

CONNECTION VOLTAGE

| | |
|---------------------|------------------------|
| K2751-10 & K2751-11 | 208-230V/460V/3PH/60HZ |
| K2751-13 & K2751-15 | 380V/3PH/50HZ |
| K2751-14 & K2751-16 | 575V/3PH/60HZ |

RATED CURRENT DRAW

| | |
|-----------|-------|
| 208V/60HZ | 11.7A |
| 230V/60HZ | 10.5A |
| 380V/50HZ | 4.1A |
| 460V/60HZ | 5.4A |
| 575V/60HZ | 3.8A |

DEFAULT SETTING

| | |
|---------------------|------|
| K2751-10 & K2751-11 | 460V |
| K2751-13 & K2751-15 | 380V |
| K2751-14 & K2751-16 | 575V |

POWER CONSUMPTION

| |
|------------|
| 3 KW (4HP) |
|------------|

MAINS CORD

| |
|--------------------------------------|
| 6 FT. (1.8 M) - PLUG NOT SUPPLIED |
|--------------------------------------|

PROTECTION CLASS

| |
|---------------------------|
| NEMA 1 (CONTROL BOX ONLY) |
|---------------------------|

SOUND LEVEL

| | |
|----------------------------|----------|
| WITHOUT OPTIONS | 78 DB(A) |
| WITH SILENCER | 74 DB(A) |
| WITH SILENCER AND HEPA KIT | 71 DB(A) |

MAIN FILTER SURFACE AREA

| |
|-------------------------|
| 2 X 284 FT² (2 X 26 M²) |
|-------------------------|

MERV 16 FILTER CLASS TO DIN EN 60335-2-69

| |
|---|
| M |
|---|

AMBIENT CONDITIONS

| | |
|------------------------|--------------|
| MIN. OPERATING TEMP | 41°F (5°C) |
| NOM. OPERATING TEMP | 68°F (20°C) |
| MAX. OPERATING TEMP | 104°F (40°C) |
| MAX. RELATIVE HUMIDITY | 80% |

GENERAL DESCRIPTION

The downdraft table is a workbench with an integrated extraction fan and filtration system that is used for welding, grinding and plasma cutting applications. Depending on the specific application, the use of certain accessories is required and/or recommended. See Accessories section of this manual.

The downdraft table features a work grid, a three-stage prefiltration system for optimum spark arresting and two oval main filter cartridges. Both pre and main filters have dust drawers underneath.

INTENDED USE

The product has been designed as a workbench with integrated extraction and filtration facility for welding, plasma cutting and grinding purposes, provided the appropriate options have been installed (See Accessories Section of this manual). Using the product for other purposes is considered contrary to its intended use.

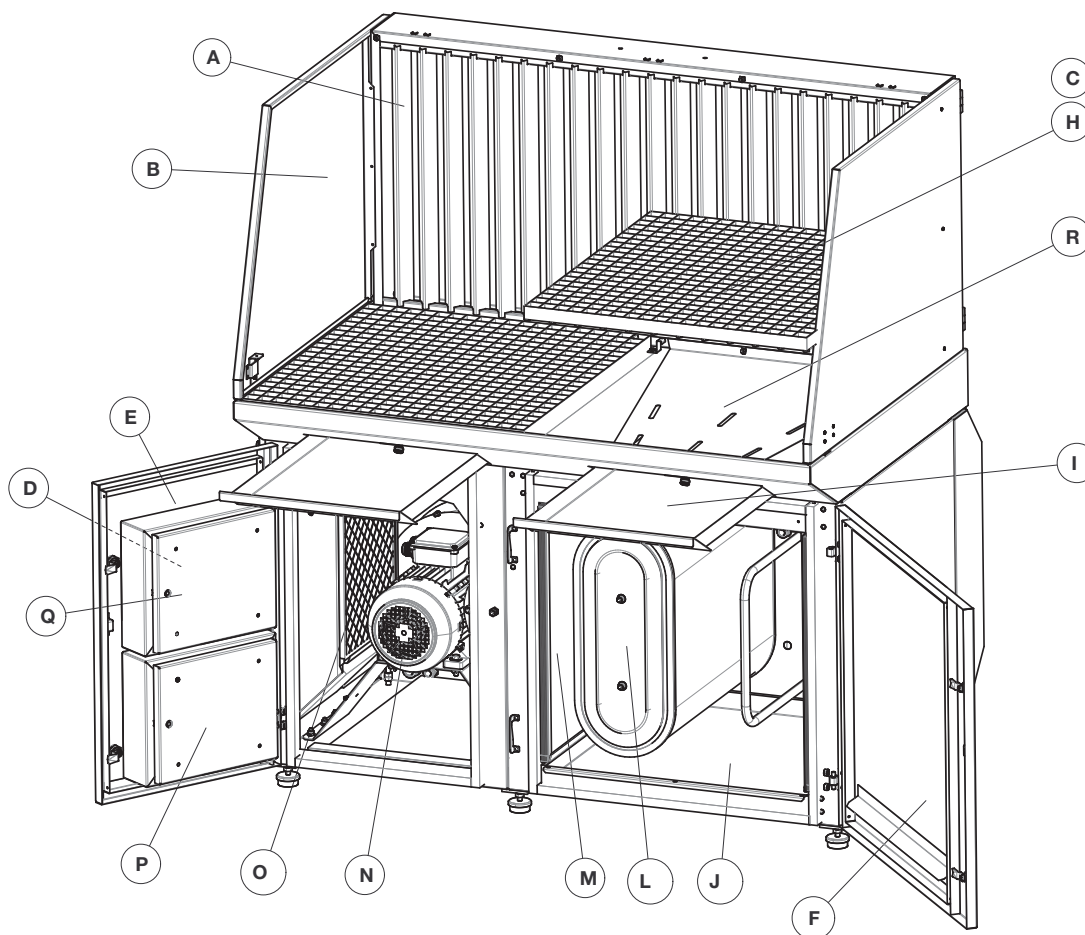
The manufacturer accepts no liability for any damage or injury resulting from such use. The product has been built in accordance with state-of-the-art standards and recognized safety regulations. Only use this product when in technically perfect condition in accordance with its intended use and the instructions explained in the user manual.

COMPONENTS

The downdraft table consists of the following main components See Figures A.1:

- A. Backdraft Panel with louvers
- B. Side panels (left + right)
- C. Work grid (two-piece)
- D. Control panel
- E. Left door (controls/fan)
- F. Right door (filter compartment)
- G. Compressed air tank (DownFlex 400-MS/A only)
- H. Two Prefilters (1st stage; located under work grid)
- I. Dust drawers (2nd stage prefiltration)
- J. Dust drawer (main filter cartridges)
- K. Filter cleaning mechanism (DownFlex 400-MS/A only)
- L. Filter cartridges (2)
- M. Two Prefilters (3rd stage)
- N. Fan and motor
- O. Outlet grid
- P. High voltage electrical box
- Q. Low voltage electrical box
- R. Diffusion plates (2)

FIGURE A.1



INSTALLATION

SELECT SUITABLE LOCATION

The DownFlex® table must be installed on a dry, level and secure surface.

ENVIRONMENTAL AREA

The DownFlex® table is for indoor use only.

STACKING

The DownFlex® table CANNOT be stacked.

TOOLS REQUIRED:

10mm Wrench
10mm Socket Wrench
13mm Wrench
Phillips Screwdriver

UNPACKING

Check that the product is complete. The package should contain:

- Downdraft table
- Prefilter (2)
- Diffusion plate (2)
- Standard work grid (2)
- Backdraft panel
- Side panels (left & right)
- Hardware bag which includes:
 - Square key 8 mm (to lock/unlock front doors)
 - Square key 6 mm (to lock/unlock dust drawers and electrical boxes)
 - Screws M6 x 20 mm philips head (10)
 - Hex coupling nut M8 x 25mm (4)
 - Three-part block hinge M8 (4) (each hinge includes 3 M8 nuts and 3 M8 lock washers)
 - Locking clamp for work grid (2)

If parts are missing or damaged, contact Lincoln Electric.

NOTE: Remove all foam sheet packing material from around the prefilters and diffusion plates.

REMOVING UNIT FROM PALLET

Remove the (4) wood screws that are holding the front blocking board to the pallet. Carefully use a fork-lift truck to lift the unit off of the pallet. The forks of the truck should not penetrate past the back side of the unit, or they will catch on the rear blocking board.

POSITIONING

The downdraft table can be positioned using:

- A fork-lift truck (preferred way); or
- A pallet jack (downdraft table has to be tilted); or
- Cargo lashings lifted by a fork-lift truck. See Figure A.2.

CAUTION

Do not position the product where it is exposed to vibrations or heat radiation from heat sources. Observe the earlier described ambient conditions.

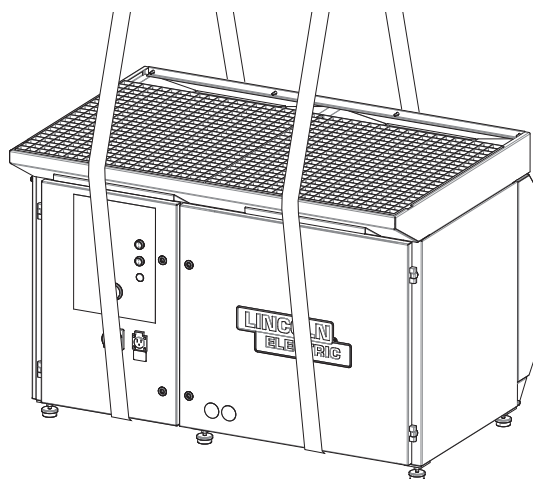
WARNING

FALLING EQUIPMENT can cause injury.

- Lift only with equipment of adequate lifting capacity.
- Be sure machine is stable when lifting.
- Do not lift this machine using lift bail if it is equipped with a heavy accessory such as trailer or gas cylinder.
- Do not lift machine if lift bail is damaged.
- Do not operate machine while suspended from lift bail.

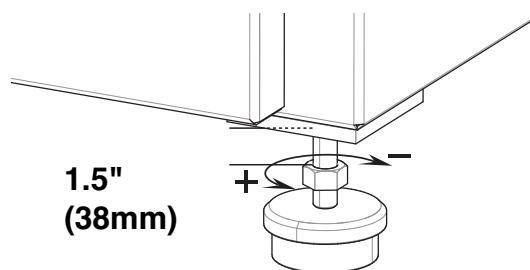


FIGURE A.2



- Position the downdraft table against the wall.
- If necessary, use the adjusting feet to level the downdraft table and to adjust it to the desired height 37-38.5 in (940mm - 978mm). See Figure A.3.

FIGURE A.3



BACKDRAFT PANEL AND SIDE PANELS

NOTE: When the downdraft table will be used for grinding only, it is not necessary to mount the diffusion plates. For welding and plasma cutting, however, the diffusion plates are required.

NOTE: The Backdraft Panel is required for welding applications.

1. In order to gain access inside the Backdraft Panel, remove the Backdraft louver panel by removing the (6) M6 x 20 mm Philips head screws.
2. Assemble and Install the four Block Hinges onto the sides of the Backdraft Table. See Fig. A.4. Use the M8 nuts and M8 washers included with the hinge. Remove and discard the standard M8 Hex Nut that is located on the door side of the hinge. See Fig. A.8.
3. Reassemble the louver panel to the Backdraft Panel by using only (4) of the M6 x 20mm screws. Leave the bottom two screws out until the Backdraft Panel is lifted onto the Dust Collection Tray.
4. Using two people, lift the Backdraft Panel, with louvers and hinges, onto the back of the Dust Collection Tray. Use (8) of the M6 x 20 mm Philips head screws to fasten them together. See Fig. A.5 & A.6. Be sure the diffusion plates are in place over the spark arrestors, if the table is being used for welding or plasma cutting applications.
5. Fasten the two Side Door Panels onto the four Block Hinges using the four 25mm long Hex Connection Nuts. See Fig. A.7

FIGURE A.4

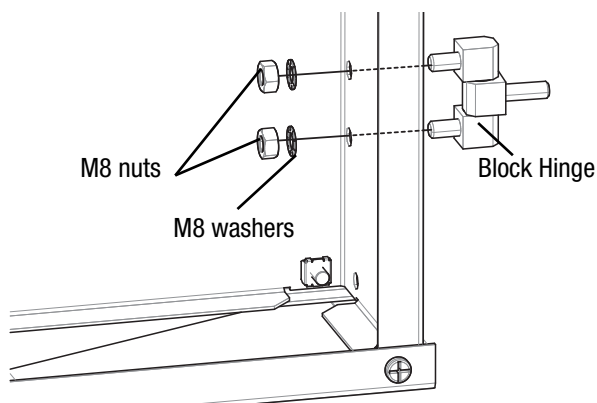


FIGURE A.5

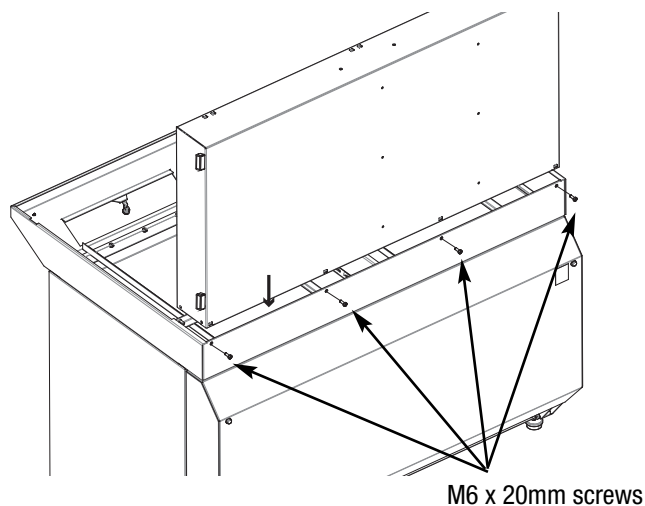


FIGURE A.6

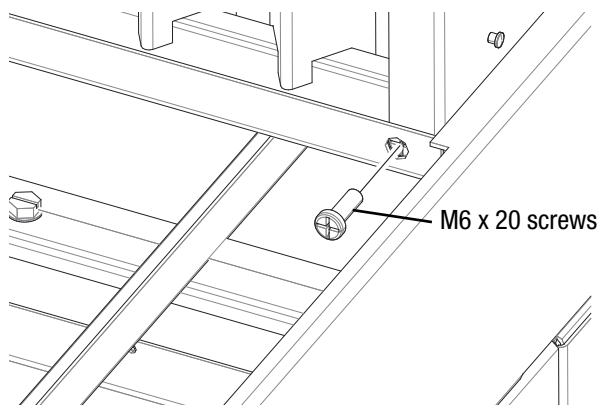


FIGURE A.7

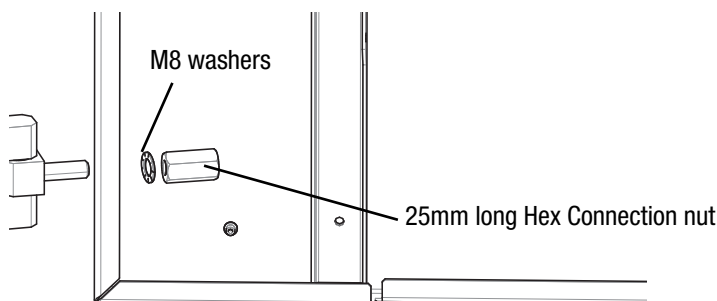
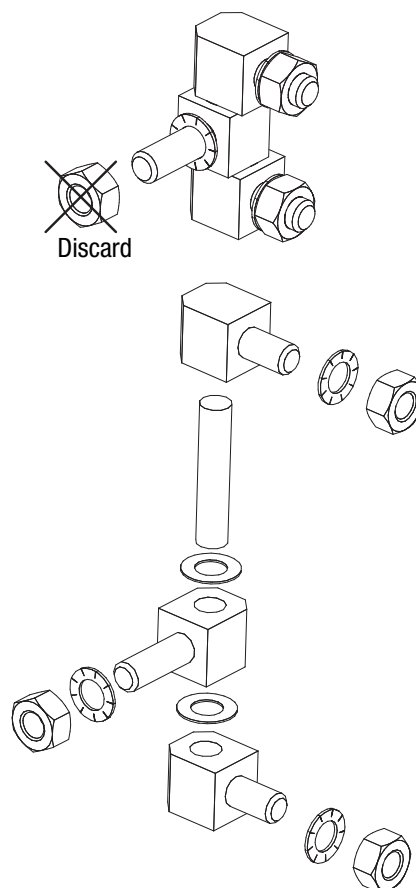


FIGURE A.8



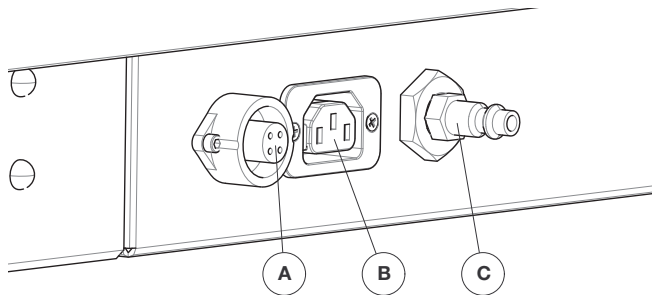
COMPRESSED AIR CONNECTION (DownFlex 400-MS/A only)

The downdraft table cleaning mechanism functions on compressed air with a recommended supply pressure of 70-120 psi (5-8 bar). If required, mount a pressure reducing valve to prevent overpressure.

The internal pressure regulator is factory set to ensure a working pressure between the values of 65-70 psi (4.5-5 bar). If the pressure is too high, the safety valve of the system will be opened, thus decreasing the pressure until the system pressure has reached an appropriate level.

1. Connect the downdraft table to compressed air. See Figure A.9, item C. Connection is a 1/4 inch male industrial quick-connect pneumatic nipple.

FIGURE A.9 – CONNECTIONS



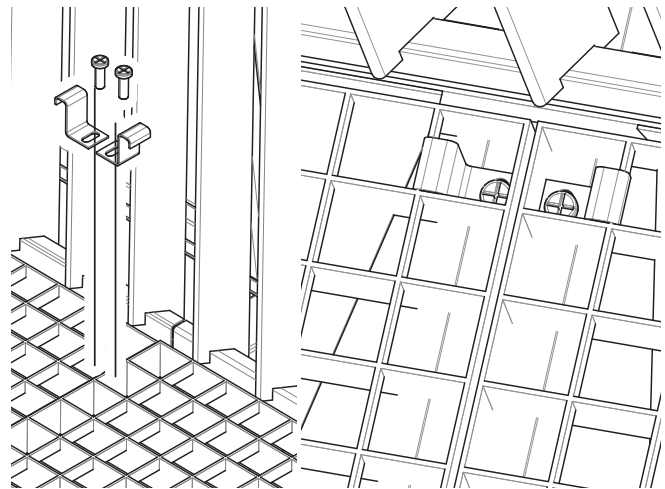
WORK GRID

To mount the standard work grid, proceed as follows. See Figure A.10

1. Be sure that the prefilters and diffusion plates are in place, and all foam sheet packing material has been removed.
2. Place the work grids into position.
3. Place the locking clamp over both work grids.
4. Tighten the locking clamp using (2) M6 x 20 Philips head screws.

NOTE: It is necessary to install the bracket to ground the work grids.

FIGURE A.10



ELECTRICAL CONNECTION

WARNING

**TO REDUCE THE RISK OF FIRE,
ELECTRIC SHOCK, OR INJURY
TO PERSONS, OBSERVE
THE FOLLOWING:**



Installation work and electrical wiring must be done by qualified person(s) in accordance with all applicable codes and standards, including fire-rated construction.

If necessary: change motor from 460V to 208/230V

The table is shipped as either:

1. 460V 3~ 60Hz; with 115V (5-15) convenience outlet on front door
2. 380V 3~ 50Hz; with 230V (CEE 7/4 Schuko) convenience outlet on front door
3. 575V 3~ 60Hz; with 115V (5-15) convenience outlet on front door

WARNING

**Make sure the downdraft table is disconnected
from input power.**



Depending on the local input power voltage, the 460V table can be changed to 208V 3~ 60Hz or 230V 3~ 60Hz

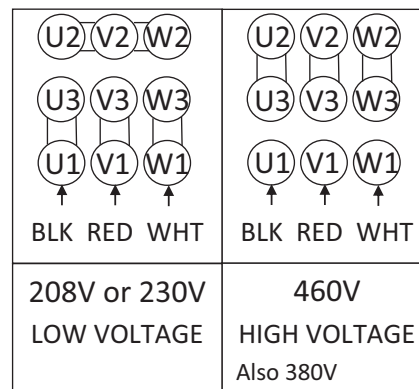
This is a three step process and concerns the motor, the transformer, and the overload relay.

STEP 1 – Change the motor from high voltage (460V) to low voltage (208-230V)

1. Using the large 8mm square key to unlock and open the left door / fan compartment - Fig. A.1 item E.
2. Using a Philips screw driver (or 9/32 nut driver), remove 4 screws from the motor connection box cover (Fig. A.1 item N), and set it aside.
3. Using a 5/16 nut driver, disconnect the black, red and white motor power leads from contacts U1, V1 and W1.
4. Using the 5/16 nut driver, reconfigure the motor jumpers from the high voltage configuration (YY) to the low voltage configuration (Y). See Fig. A.11

MOTOR LEAD JUMPERS ARE PROVIDED WITH THE MOTOR IN THE CONNECTION BLOCK.

FIG. A.11

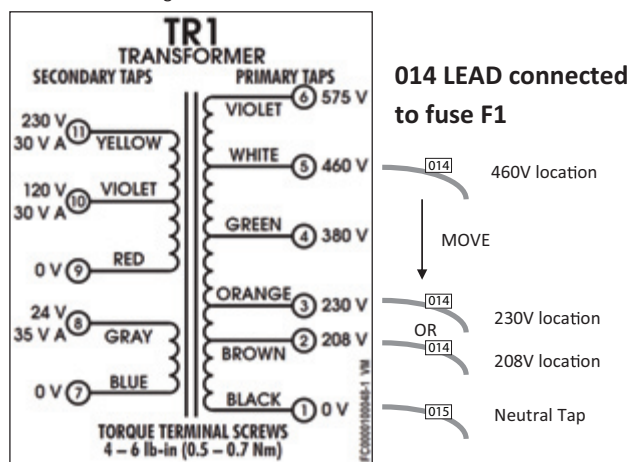


5. Reconnect the black, red and white motor power leads to contacts U1, V1 and W1 respectively.
6. Torque all motor terminal nuts to 51-53 lb-in (5.8-6.0 Nm)
7. Reassemble the motor connection box cover with the 4 screws.

STEP 2 – Reconfigure the transformer TRI from 460V to 208V or 230V

8. Use the small 6mm square key to unlock and open the high voltage electrical compartment - Fig. A.1 item P. It is the lower of the two inner doors.
9. Using a small flat head screwdriver, disconnect the grey lead 014 from the 460V tap (white) of the primary side of the toroidal transformer, and reattach it to either the 208V tap (brown) or the 230V tap (orange) of the transformer. See Fig. A.12.

FIG. A.12

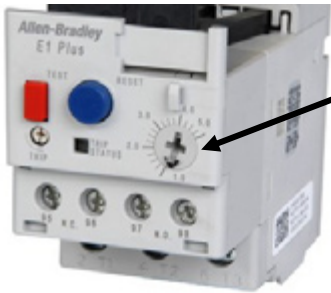


10. Torque the transformer terminal screws to 4-6 lb-in (0.5-0.7 Nm).

STEP 3 – Set the overload relay OL1

11. Using a small flat head screwdriver, set the current setting to the appropriate value as listed in the table.

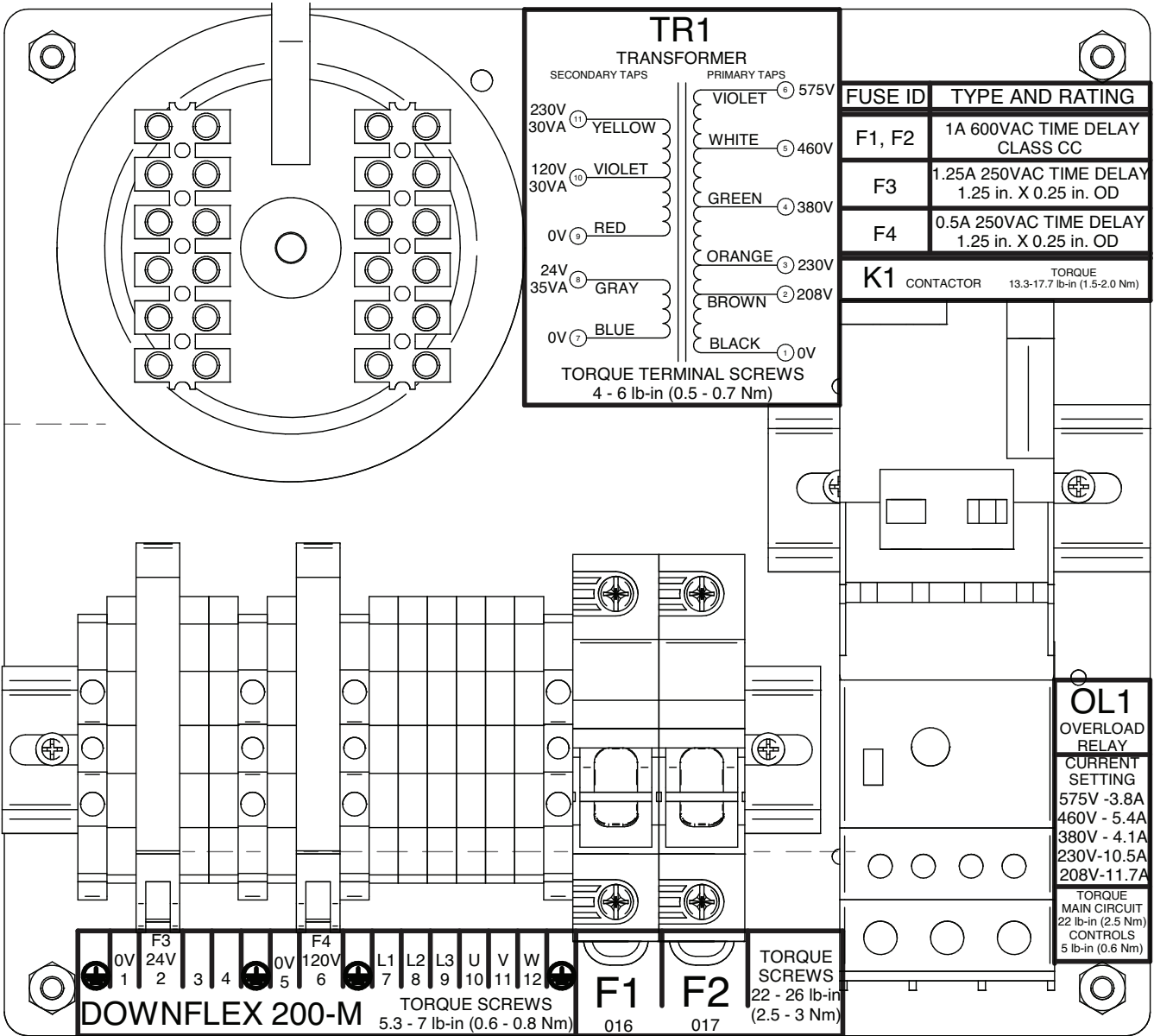
FIG. A.13



| OL1 OVERLOAD RELAY CURRENT SETTING | |
|------------------------------------|-------|
| 575V | 3.8A |
| 460V | 5.4A |
| 380V | 4.1A |
| 230V | 10.5A |
| 208V | 11.7A |

12. Close and lock all doors using the small and large square keys.

FIGURE A.14



CONNECTION TO THE INPUT POWER

To connect the downdraft table to the input power, proceed as follows.

1. Mount a fuse in the local fuse box to which the downdraft table will be connected. Check the electrical diagram for the right type of fuse. Refer to the following:

All Downflex 200-M will use wiring diagram S31227-142

All Downflex 400-MS/A will use wiring diagram S31227-274

WARNING

Be sure to mount the right fuse type.

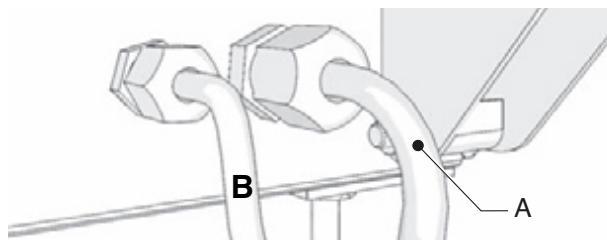
Plugs/connections to be installed in accordance with the National Electrical Code (NEC) and local requirements.



The downdraft table can be connected to input power by:

- 3 phase plug (grounded) for the main power, and a grounded 5-15 or CEE 7/4 Schuko for the front convenience outlet.
 - Directly to the power supply
1. Connect the main cord (A) to the input power. See Figure A.12.
 2. Connect the front convenience receptacle (B) to the input power.

FIGURE A.12 – ELECTRIC CONNECTION



WARNING

WARNING – TO REDUCE THE RISK OF FIRE, ELECTRIC SHOCK, OR INJURY TO PERSONS, OBSERVE THE FOLLOWING:

- a) Use this unit only in the manner intended by the manufacturer. If you have questions, contact the manufacturer.
- b) Before servicing or cleaning unit, switch power off at service panel and lock the service disconnecting means to prevent power from being switched on accidentally. When the service disconnecting means cannot be locked, securely fasten a prominent warning device, such as a tag, to the service panel.

WARNING

Do not open the door within 20 seconds after switching off the fan. Keep your hands away from the fan wheel.



DIRECTION OF ROTATION

Check the direction of rotation of the fan.

1. Turn on the main switch.
2. Push the ON button to switch on the fan.
3. Push the OFF button to switch off the fan.
4. Wait 10 seconds.
5. Open the left door.
6. Check the direction of label during the slow-down period of the fan. The motor contains a label indicating the correct direction rotation.

If the fan is not running in the correct direction, then:

1. Turn off the main switch.
2. Swap 2 phases of the 3~ input power in the motor connection box (N) see Fig A.1
3. Replace the cover of the motor connection block.
4. Close and lock all doors.

HEPA KIT

ATTENTION

Handle HEPA box and filter cartridge with care during unpacking and mounting to avoid damage.

The HEPA kit consists of:

- HEPA box with filter
- 2 Adjustable feet
- 4 Spare bolts M6
- Draft strip

To mount the HEPA kit, proceed as follows.

1. Unscrew and remove the outlet panel from the downdraft table. Keep the 4 screws. See Figure A.16, top image.
2. Unlock the HEPA filter cartridge by pressing a screwdriver or other tool at the position of the strips (B) on the top and bottom of unit. See Figure A.15.
3. Take out the filter cartridge.
4. Mount the adjustable feet underneath the HEPA kit.

NOTE: Remove the outlet panel from the HEPA kit, as well as the outlet grid inside the downdraft table, to facilitate mounting. Don't forget to replace them when mounting is complete.

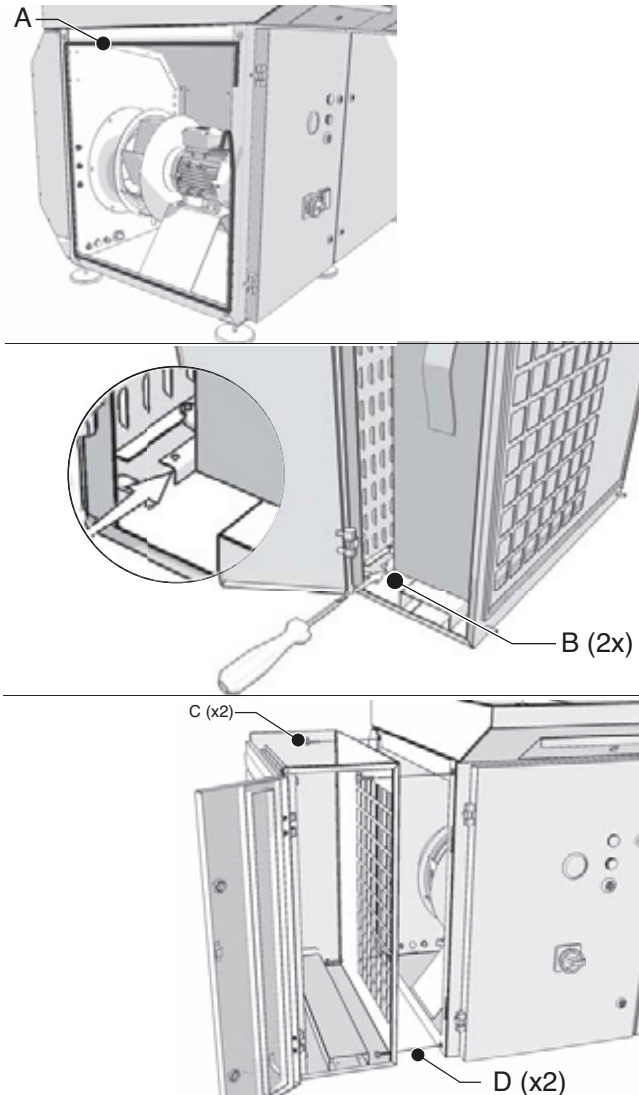
5. Place bolts halfway through the 2 upper holes (C) at the outlet of the downdraft table. See Figure A.15.
6. Hang the HEPA box on the bolts.
7. Place bolts through the 2 lower holes (D) in the HEPA box. See Figure A.15
8. Fasten the HEPA box by tightening the 4 bolts (C+D). See Figure A.15.
9. Replace the filter cartridge.
10. Lock the filter cartridge by pulling the two straps tightly. This is indicated by a "click" sound.

NOTE: If a Silencer/Outlet duct has to be installed as well, the outlet panel of the HEPA kit does not need to be mounted.

11. Adjust the feet when the downdraft table is placed in place in its final position.

NOTE: The outlet panel of the downdraft table is not used.

FIGURE A.15 – HEPA KIT



SILENCER/OUTLET DUCT

The Silencer/Outlet duct consists of:

- Shaft
- Draft strip

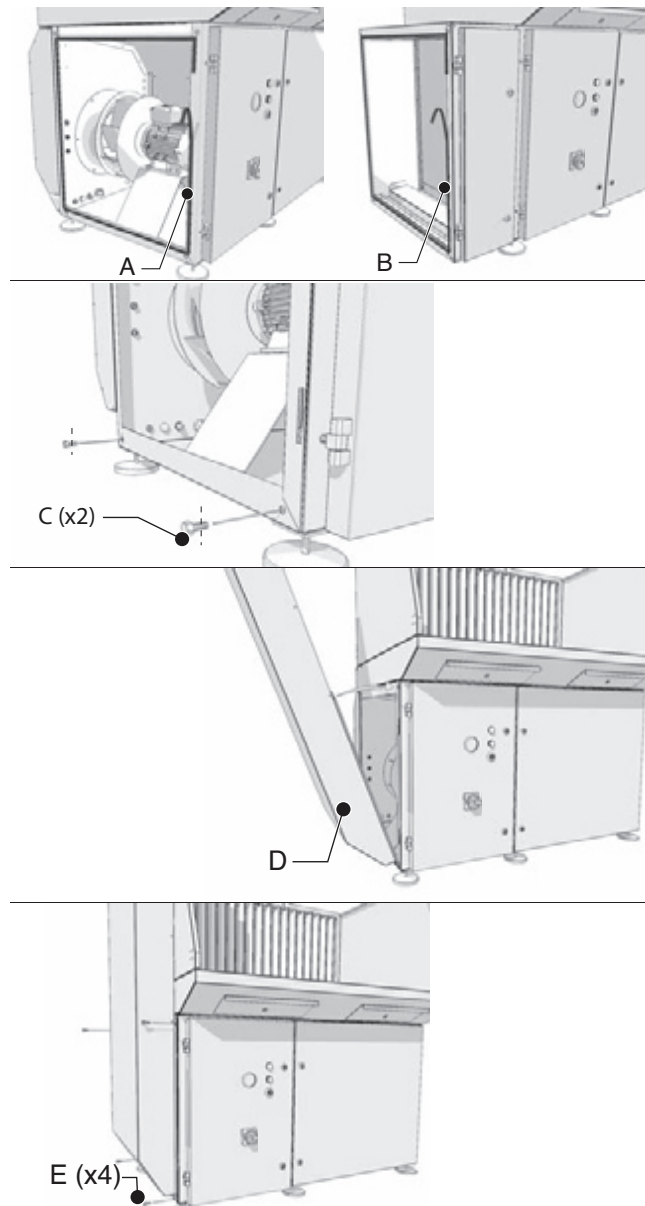
The Silencer/outlet duct can be connected to the HEPA kit or directly to the downdraft table.

To mount the silencer/outlet duct, proceed as follows. See Figure A.16.

1. If necessary: unscrew the outlet panel of the downdraft table or the outlet panel of the HEPA kit. Keep the 4 bolts.
2. Apply the draft strip to the downdraft table (A) or HEPA kit (B). See Figure A.16.
3. Place bolts halfway through the 2 lower holes at the outlet of the downdraft table or HEPA box (C). See Figure A.16.
4. Place the silencer/outlet duct over the bolts (D). See Figure A.16.
5. Put the silencer/outlet duct in an upright position and place 2 bolts in the 2 upper holes.
6. Fasten the silencer/outlet duct by tightening the 4 bolts (E). See Figure A.16.

NOTE: The outlet panel of the downdraft table is not used.

FIGURE A.16 – SILENCER / OUTLET DUCT



WORKING LIGHT

The working light consists of:

- Lighting fixture with 7.5 ft (2.3 m) of cable and plug
- 6 Bolts M6
- 3 Tie-wraps

To mount the working light, proceed as follows.

1. Mount the lighting fixture using the 6 bolts (A). See Figure A.17.
2. Route the cable down the back side of the downdraft table.
3. Attach the cable to the back panel using the 3 cable tie mounts and cable ties (B). See Figure A.17
4. Connect the cable. See Figure A.18, item B.

FIGURE A.17 – WORKING LIGHT

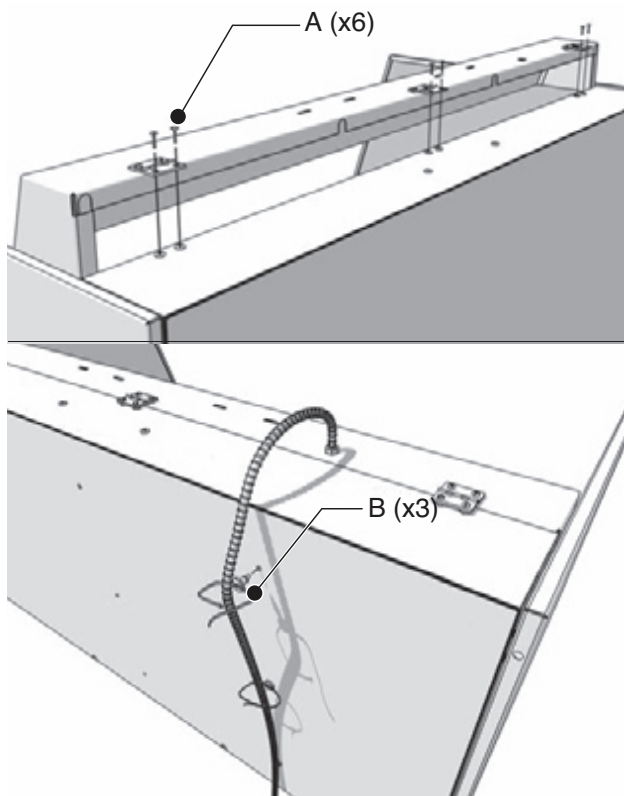
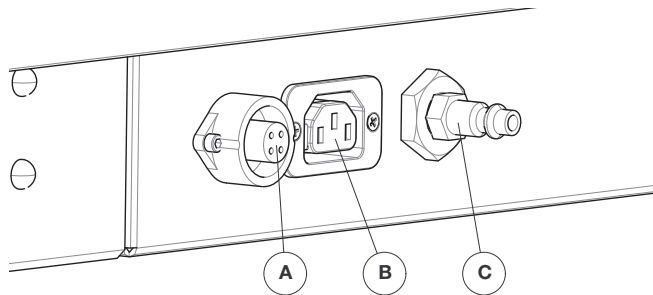


FIGURE A.18 – CONNECTIONS



MOVEMENT SENSOR

(DownFlex 400-MS/A only)

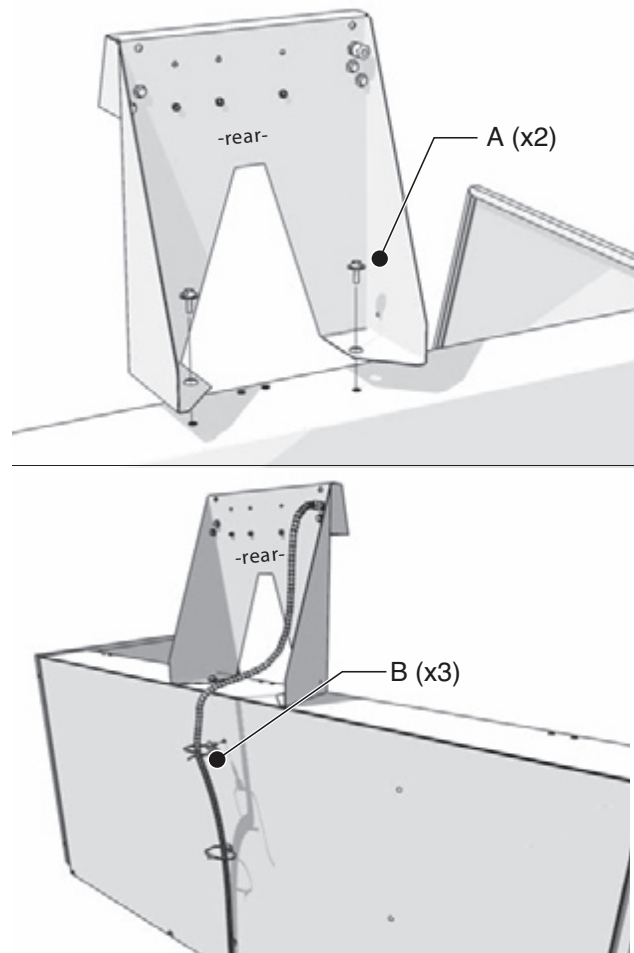
The movement sensor consists of:

- Automatic start/stop device with 7.5 ft (2.3 m) of cable and plug
- 2 Bolts M6
- 3 Tie-wraps

To mount the movement sensor, proceed as follows.

1. Mount the movement sensor on top of the back panel or backdraft panel using the 2 bolts (A). See Figure A.19.
2. Lead the cable down the back side of the downdraft table.
3. Attach the cable to the back panel or backdraft panel using the 3 tie-wraps (B). See Figure A.19.
4. Connect the cable. See Figure A.18, item A.

FIGURE A.19 – MOVEMENT SENSOR



WELDING CABLE SENSOR
(DownFlex 400-MS/A only)

The welding cable sensor consists of:

- Clamp with 7.5 ft (2.3 m) of cable and plug.

To mount the welding cable sensor, proceed as follows.

1. Connect the cable. See Figure A.18, item A.

BENCH VICE MOUNTING BRACKET

The bench vice mounting bracket can be mounted on the standard work grid only.

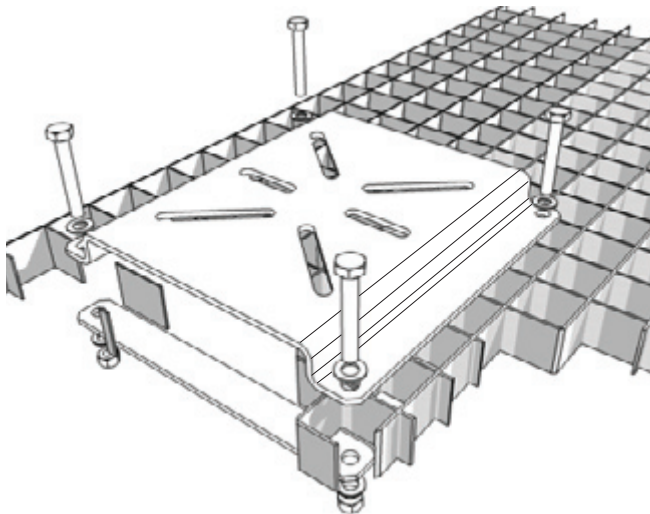
The bench vice mounting bracket consists of:

- Mounting bracket
- 2 Strips
- 4 Bolts M6
- 4 Nuts M6
- 8 Washers

To mount the bench vice mounting bracket, proceed as follows.

1. Position the mounting bracket on the grid.
2. Place the strips underneath the grid and fasten them using the bolts, nuts and washers. See Figure A.20.
3. Place the strips underneath the grid and fasten them using (from bottom to top): nut - washer - strip - grid - mounting bracket - washer - bolt.

FIGURE A.20 – BENCH VICE MOUNTING BRACKET



WHEEL KIT

The wheel kit consists of:

- 2 Swivel casters with brakes.
- 3 Swivel casters without brakes.

To mount the wheel kit, proceed as follows.

1. Carefully lift the downdraft table using a fork-lift truck or pallet jack.
2. Unscrew the 5 adjustable feet.
3. Mount the swivel casters; mount the ones with brakes at the left and right front corners.

NOTE: Drive in the screw thread of the swivel casters as deep as possible.

NOTE: By the use of the wheel set, the working height of the downdraft table is fixed to 37.4 in. (950 mm).

PLASMA CUTTING WORK GRID

The plasma cutting work grid consists of:

- 2 Grid frames 28.9 x 26.3 x 2.5 in.
(735 x 669 x 64 mm)
 - 2 x 13 Metal bars 28.54 x 2.36 x 0.16 in.
(725 x 60 x 4 mm)
 - 2 Additional perforated steel spark arresters
1. Remove the two standard work grids and work grid clamps that came with the product. Keep the two bolts.
 2. Remove the two narrowing plates
 3. Place the perforated steel spark arresters over the prefilters (A). The edgeless sides should be directed to the back. See Figure A.21.
 4. Replace the two narrowing plates over the perforated steel spark arresters.

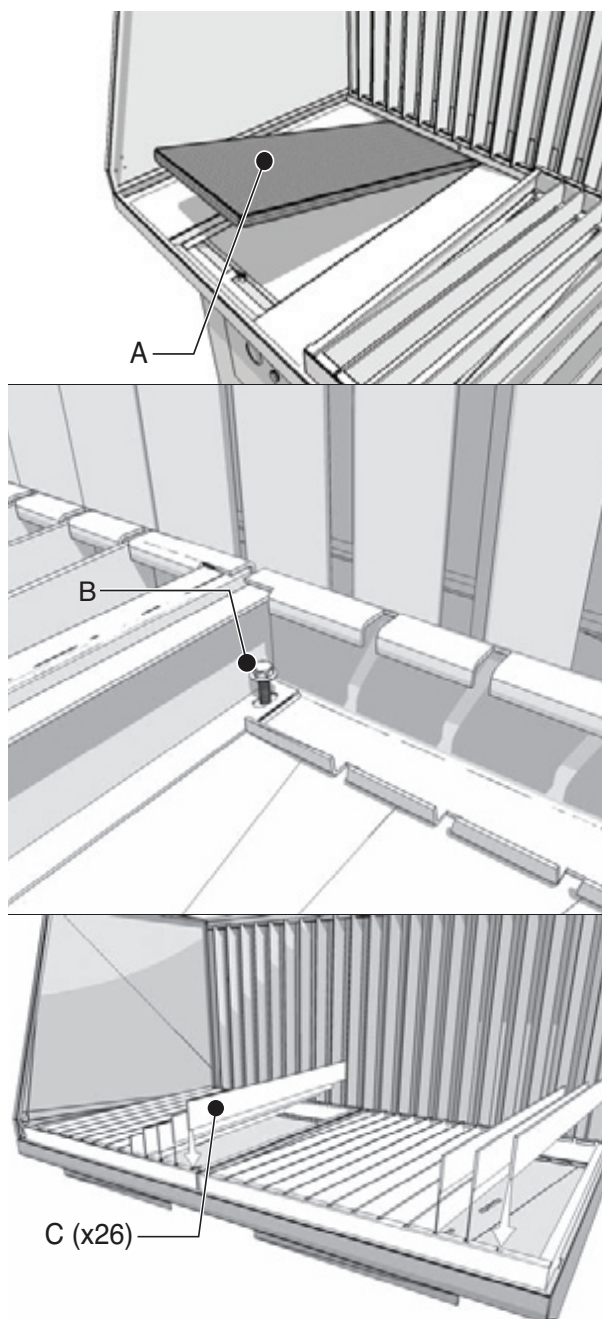
5. Place the plasma cutting frames into position.
6. Fasten the frames using the 2 bolts (B). See Figure A.21.

NOTE: It is necessary to install the bolts to ground the work grids.

7. Place the bars (C). See Figure A.21.

NOTE: The supplied standard work grid and the ground bracket are not used.

FIGURE A.21 – PLASMA CUTTING WORK GRID



OPERATION

DownFlex 200-M

The main filter cartridges of the DownFlex 200-M are disposable. A Magnehelic gauge on the control panel indicates when the filter cartridges need to be replaced.

DownFlex 400-MS/A

The filter cleaning system inside the DownFlex 400-MS/A starts automatically each time the fan is switched off (offline cleaning). The filter cartridges are cleaned from the inside by compressed air pulses. An integrated warning lamp indicates when the filter cartridges need to be replaced.

OPERATION

The air containing welding fume, grinding dust or debris from other processes is extracted and filtered, after which the filtered air is recirculated back into the work environment.

The air is extracted through the work grid and the backdraft panel by the internal extraction fan. The air passes through a prefilter for optimum air distribution. This prefilter is the first spark arresting stage. Next, the air passes through a labyrinth spark trap before it reaches the vertical prefilters in the main filter housing. Finally, the air passes through the main filter cartridges. The air exits the downdraft table through the outlet on the left side.

SAFETY PRECAUTIONS

WARNING

FUMES AND GASES can be dangerous



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 with electrodes which require special ventilation such as stainless or hard facing (see instructions on container or MSDS) 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. In confined spaces or in some circumstances, outdoors, a respirator may be required. Additional precautions are also required when welding on galvanized steel.

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.

WARNING

Never use the downdraft table without prefilters, main filter cartridges and dust drawers.



WARNING

Fire hazard!

Never use the product for:

- Filtering flammable, glowing or burning particles or solids or liquids.
- Filtering of aggressive fumes (such as hydrochloric acid) or sharp particles.
- Sucking cigarettes, cigars, oiled tissues, and other burning particles, objects, and acids.



**WARNING**

Never use the product for:

- Oxy-fuel cutting.
- Arc-air gouging.
- Oil mist.
- Paint mist.
- Heavy oil mist in welding fume.
- Extraction of hot gases (more than 45°C/113°F continuously).
- Grinding aluminum and magnesium.
- Flame spraying.
- Extraction of cement, saw dust, wood dust etc.
- Explosive environments or explosive substances/gases.

**WARNING**

Moving parts (fan) may cause injury. After switching off the fan, wait at least 20 seconds before opening the door(s) to carry out service, maintenance or repair jobs.



- Industrial vacuum cleaner used during service and maintenance should meet OSHA guidelines for Cr6 housekeeping.
- Always use the downdraft table with prefilters, filter cartridges and dust drawers properly installed.
- Do not tamper with the user-operated controls, or any of the safety devices of the downdraft table.

**WARNING**

In case of welding and plasma cutting, the use of a backdraft kit is required.

- Inspect the product and check it for damage. Verify the functioning of the safety features.
- Check the working environment. Do not allow unauthorized persons to enter the working environment.
- Protect the product against water and humidity.
- Use common sense. Stay alert and keep your attention to your work. Do not use the product when you are under the influence of drugs, alcohol or medicine.
- Make sure the room is always sufficiently ventilated; this applies especially to confined spaces.
- Never install the product in front of entrances and exits which must be used for emergency services.
- Make sure that the workshop in the vicinity of the product, contains sufficient approved fire extinguishers.
- Maintenance should only be performed by authorized, qualified and trained persons (skilled) using appropriate work practices.
- Always wear face mask and gloves during filter exchange / cleaning.

DOWNFLEX 200-M (ONLY)

FIGURE B.2 – CONTROL PANEL

CONTROL PANEL

The control panel is equipped with the following controls. (See Figure B.2):

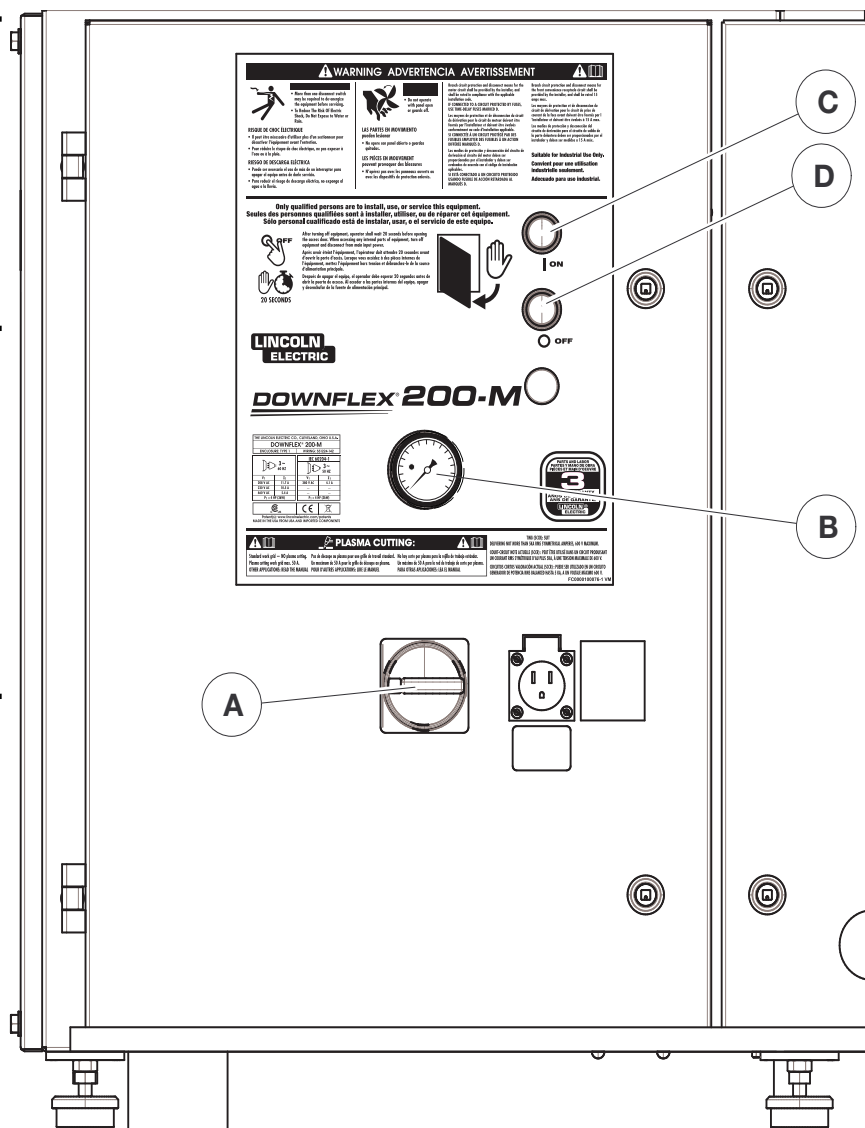
- A. Main disconnect switch
- B. Filter pressure-drop gauge
- C. ON Button
- D. OFF Button

OPERATION

1. Turn on the main switch (A). See Figure B.2.
2. Push the ON button (C) to switch on the fan. See Figure B.2.
3. Start welding/grinding.
4. After finishing welding/grinding, push the OFF button (D) to switch off the fan. See Figure B.2.
5. Turn switch (A) off to remove the main input power.

FILTER REPLACEMENT

1. During use, regularly check the Magnehelic gauge (B). When the pressure reaches 7 inches H₂O (0.25 psi or 1700 Pa), the filter cartridges need to be replaced. See Figure B.2.
2. Refer to Filter Replacement for the filter replacement procedure.



DOWNFLEX 400-MS/A (ONLY)

CONTROL PANEL

The control panel is equipped with the following controls.
(See Figure B.3):

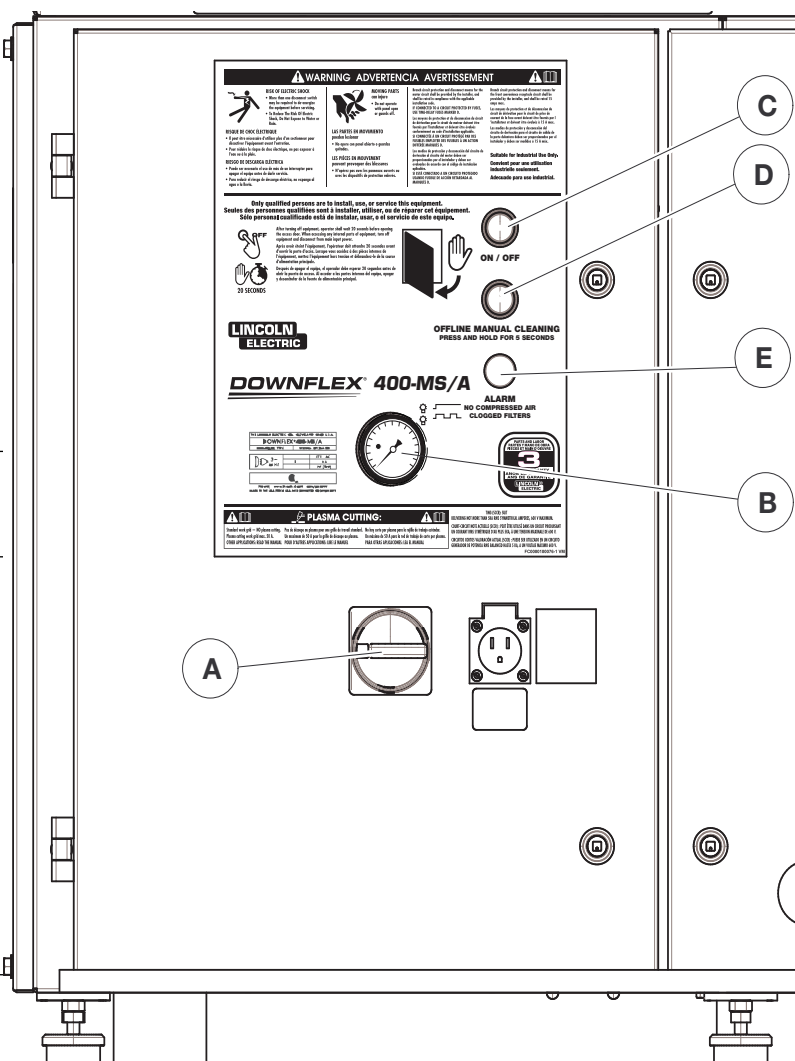
- A. Main disconnect switch
- B. Filter pressure-drop gauge
- C. ON/OFF Button
- D. OFFLINE MANUAL CLEANING
- E. Alarm Lamp

OPERATION

- Turn on the main switch (A). See Figure B.3.

FIGURE B.3 – CONTROL PANEL

| Without movement sensor and welding cable sensor: | With movement sensor: | With welding cable sensor: (for welding only): |
|--|--|--|
| <ul style="list-style-type: none"> Push the ON/OFF button (C) to switch on the fan. Start welding / grinding. After finishing welding / grinding, push the ON / OFF button (C) to switch off the fan. | <ul style="list-style-type: none"> Start welding / grinding. The fan will start and stop automatically. | <ul style="list-style-type: none"> Apply the clamp of the welding cable sensor to the ground cable of the welding machine. Start welding. The fan will start and stop automatically. |



DOWNFLEX 400-MS/A (ONLY)

AUTOMATIC OFFLINE FILTER CLEANING

Each time the downdraft table is switched off, the filter cartridges are automatically cleaned by a full cleaning cycle. This procedure takes approximately 2 minutes, during which each filter cartridge is cleaned by 10 compressed air blasts.

MANUAL FILTER CLEANING

If desired, the filter cleaning system can be activated manually (offline cleaning only).

1. Push the ON/OFF button (C) to switch off the fan. See Figure B.3.
2. Press and hold for 5 seconds the OFFLINE MANUAL CLEANING button (D) to activate the filter cleaning system. See Figure B.3.

This procedure takes approximately 2 minutes, during which each filter cartridge is cleaned by 10 compressed air blasts.

ALARM LAMP

The alarm lamp will flash two different signals:

- 2 Seconds on - 2 seconds off: clogged filter
- Continuously on - compressed air supply not available

When the differential pressure across the filter cartridges reaches 0.22 psi (1500 Pa) for more than 2 hours continuously, the alarm lamp will flash (2 seconds on - 2 seconds off). In this case push the ON/OFF button (C) to switch off the fan and initiate the automatic offline filter cleaning cycle.

See Figure B.3.

NOTE: When welding/grinding and cleaning is finished turn main disconnect switch (A) off to remove the main input power.

FILTER REPLACEMENT

When the filter cleaning system is unable to get the pressure below 0.22 psi (1500 Pa) the filter cartridges are probably saturated and need to be replaced. This is indicated by the warning lamp flashing an interrupted signal (2 seconds on - 2 seconds off).

1. Push the ON/OFF button (C) to switch off the fan. See Figure B.3.
2. Turn main disconnect switch (A) off to remove the main input power.
3. Wait 20 seconds for fan to stop rotating.
4. Refer to Filter Replacement for the filter replacement procedure.

ACCESSORIES

The following products are accessories for the DownFlex tables

A. Plasma Cutting Work Grid (required for plasma cutting applications)

Specially constructed work grid suitable for plasma cutting, including additional perforated steel spark arresters. The plasma cutting work grid is required for plasma cutting applications (max. 50 A). The additional perforated steel spark arresters protect the prefilters already present.



CAUTION

Current of plasma cutting machine should NOT exceed 50 Amps.

B. HEPA Kit

Consists of a filter housing with a HEPA filter to be mounted on the outlet of the downdraft table.

C. Silencer/Outlet Duct

Consists of a rectangular sheet metal shaft to be mounted on the outlet of the downdraft table or on the HEPA kit. The Silencer/Outlet duct is to be used as a silencer and prevents dust from blowing up from the floor at the same time. In case the Silencer/Outlet duct is used in a welding booth, it also prevents air turbulence in the booth and air disturbance to any adjacent booth.

E. Working Light

Lighting fixture with 30W LED light to be mounted to the back panel or backdraft panel. The working light provides a clear view to the workpiece. The cover can be hinged to facilitate exchange of the fluorescent light. The working light is activated upon turning on the main switch of the downdraft table.

F. Movement Sensor (DownFlex 400-MS/A only)

Automatic start/stop based on movement sensor, to be mounted on top of the back panel or backdraft panel. After detecting any movement above the work grid, the automatic start/stop device activates the fan to start running.

Start delay: 2 seconds. Stop delay: 60 seconds.

J. Welding Cable Sensor (DownFlex 400-MS/A only)

Metal clamp with built-in sensor that works as an automatic start/stop device. The clamp is to be connected to the ground cable of the welding machine. Suitable for welding applications only.

The welding cable sensor operates on the basis of a change in the magnetic field of the ground cable of a welding machine. When welding starts, the welding cable sensor detects a signal, as a result, the fan starts running automatically.

Start delay: 2 seconds. Stop delay: 60 seconds.

K. Bench Vice Mounting Bracket

To be connected to the standard work grid of the downdraft table (bench vice not included). Mounting bracket to mount various types of bench vices. Only suitable for standard work grid. See Figure A.20.

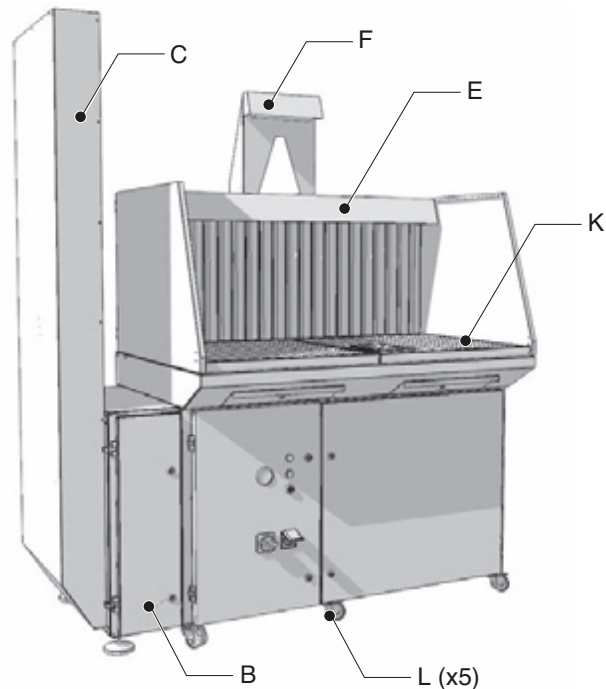
L. Wheel Kit

Consists of five swivel castors, two of which are equipped with brakes. These castors are to be mounted underneath the downdraft table. Wheel kit is to facilitate internal transport of the downdraft table. See Wheel Kit in Installation section of this manual.

M. Dust Tray Lid

Lid to cover the dust drawer underneath the main filter cartridges. Comes with a plastic bag, a face mask, and a pair of disposable gloves. When the dust drawer underneath the main filter cartridges needs to be emptied, the plastic bag and the personal protection equipment enable dust free removal.

FIGURE C.1 – ACCESSORIES



MAINTENANCE

Safety Precautions

WARNING

Before carrying out service, maintenance and/or repair jobs, fully disconnect power to both the motor circuit and the convenience outlet circuit



The front convenience outlet does not shut off with the main disconnect switch

Use Personal Protective Equipment (PPE), including safety glasses, dust mask and gloves to avoid injury. This also applies to persons who enter the work area.



MOVING PARTS can injure.

- Do not operate with doors open or guards off.
- Stop engine before servicing.
- Keep away from moving parts.



Have qualified personnel do all maintenance and troubleshooting work.



See additional warning information throughout this operator's manual.

The product has been designed to be reliable for extended periods of time with reasonable maintenance. In order to guarantee optimal performance level, regular maintenance and cleaning activities are required which are described in this section. If you observe the necessary safety precautions and carry out the maintenance at regular intervals, any problems occurring will be detected and corrected before they lead to a total breakdown.

FUSE REPLACEMENT

Open left electrical door P. Identify the fuses that need replaced.

| FUSE | |
|---------|---|
| FUSE ID | TYPE and RATING |
| F1 | 1 A 600 V AC TIME DELAY CLASS CC |
| F2 | 1 A 600 V AC TIME DELAY CLASS CC |
| F3 | 1.25 A 250 V AC TIME DELAY 1.25 IN X 0.25 IN OD |
| F4 | 0.5 A 250 V AC TIME DELAY 1.25 IN X 0.25 IN OD |

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 in addition to the indicated periodic maintenance.

WARNING

Improper maintenance can cause fire. Always maintain the product according to the instructions of this manual.



WARNING

Always switch OFF the system and disconnect the compressed air (if applicable) before carrying out the instructions below. First read the maintenance instructions at the beginning of this manual.



SERVICE, MAINTENANCE AND REPAIRS

- 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.
- 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 servicing and that they still function properly.

DownFlex 200-M

The main filter cartridges of the DownFlex 200-M are disposable.

DownFlex 400-MS/A

The main filter cartridges in the DownFlex 400-MS/A are self cleaning by means of an automatically controlled compressed air system.

PERIODIC MAINTENANCE

The maintenance activities in the table below are strictly reserved for well trained and authorized service engineers.

DISPOSAL

After life of the product, dispose of it in accordance with state or local regulations.

TABLE D.1 – MAINTENANCE SCHEDULES

| COMPONENT | ACTION | FREQUENCY | | |
|---|--|------------|---------------|-----------------|
| | | Every Week | Every 2 Weeks | Every 12 Months |
| Prefilters (1st stage) | Check for damage and correct installation. Replace if necessary. | X | | |
| | Clean prefilters using a power washer. | | X | |
| Prefilters (2nd stage) | Check for damage and correct installation. Replace if necessary. | X | | |
| | Clean prefilters using a power washer. | | X | |
| Filter Cartridges | Check for damage and correct installation. Replace if necessary. | X | | |
| Dust drawers | Check for damage and correct installation. Replace if necessary. | X | | |
| | Empty the dust drawer underneath the main filter cartridges, preferably by using an industrial vacuum cleaner. | | X | |
| Doors | Check for damage and correct installation. Replace if necessary. | X | | |
| Outlet grid | Clean prefilters using a power washer. | | | X |
| <i>Plasma work grid</i> | <i>Check for damage. Replace damaged bars if necessary.</i> | X | | |
| <i>Perforated steel spark arresters (underneath plasma work grid)</i> | <i>Check for damage and correct installation. Replace if necessary.</i> | X | | |

* Text printed in italics refers to accessories.

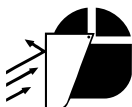
FILTER REPLACEMENT

FILTER CARTRIDGES AND PREFILTERS

If the filter cartridges and/or prefilters are damaged or saturated, they need to be replaced. To replace the filter cartridges or prefilters, proceed as follows:

WARNING

Always wear face mask and gloves during filter replacement. Other appropriate work clothing may be required to protect workers.



1. Turn off the main switch and remove the input power.
2. Unpack the replacement filter cartridges and prefilters.
3. Save plastic bag.
4. Wear mask and gloves.

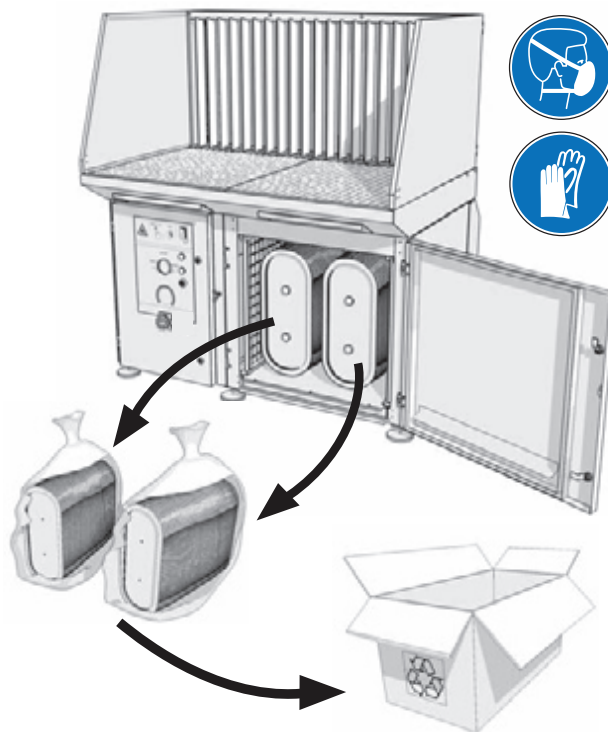
WARNING

Wait at least 60 seconds before opening the door to allow the dust in the filter compartment to settle.

NOTE: Turn square key to the left to unlock the door.

5. Remove the (4) nuts that hold the filter retaining plates in place. Remove the plates, and then remove the used filter cartridges and pack them in the plastic bags in which the new filters are supplied. See Figure D.1.
6. Seal the bags firmly with the supplied tie-wrap.
7. Remove the prefilters (both 1st and 2nd stage); See Figure A.2, items H and M.
8. Clean dust trays and work surfaces by using an industrial vacuum cleaner (HEPA where required) and wet wiping techniques.
9. If the 1st or 3rd stage prefilters (see Figure A.1), or the outlet grid are saturated, then clean with a power washer, or replace as necessary.
10. Seal prefilter bag firmly with supplied tie-wrap.
11. Install new filter cartridges in unit using filter retaining plates and (4) nuts.
12. Close and lock the door with square key and turn on main switch.
13. Dispose of filter cartridges and prefilters in accordance with federal, state and/or local regulations.

FIGURE D.1 – FILTER REPLACEMENT



HEPA FILTER (OPTIONAL)

The HEPA filter is supplied in a plastic bag and comes with face mask and a pair of disposable gloves. It should be replaced at the same time as the main filter cartridges.

WARNING

Always wear face mask and gloves during filter replacement. Other appropriate work clothing may be required to protect workers.

1. Turn off the main switch and remove the input power.
2. Open door of HEPA kit.
3. Unlock the HEPA filter cartridge (See Figure A.12, item B).
4. Remove the used filter cartridge and pack it in the plastic bag in which the new filter is supplied.
5. Clean filter housing, using a HEPA industrial vacuum cleaner and wet wiping techniques.
6. Install new HEPA filter cartridge.
7. Close and lock the door with square key
8. Dispose of materials in accordance with federal, state and/or local regulations.

TROUBLESHOOTING



WARNING

Service and Repair should only be performed by 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.

Observe all additional Safety Guidelines detailed throughout this manual.



If for any reason you do not understand the test procedures or are unable to perform the tests/repairs safely, contact your Lincoln Authorized Service Facility for technical troubleshooting assistance before you proceed.

WWW.LINCOLNELECTRIC.COM/LOCATOR

Observe all Safety Guidelines detailed throughout this manual

| PROBLEMS (SYMPTOMS) | POSSIBLE CAUSE | RECOMMENDED COURSE OF ACTION |
|--|---|---|
| GENERAL | | |
| Fan does not start running. Downdraft table does not function. | 1. No power supply. | 1. Check power supply. |
| | 2. Main switch off. | 2. Turn on main switch. |
| | 3. Motor defective. | 3. Repair or replace motor. |
| | 4. ON/OFF button defective. | 4. Replace ON/OFF button. |
| | 5. Fuse(s) defective | 5. Check fuses F1, F2 and F3. Replace if necessary. |
| | 6. Overload relay tripped. | 6. Check current settings and reset overload relay. |
| | 7. Overload relay defective. | 7. Replace overload relay. |
| | 8. Left and/or right door open. | 8. Close and lock both doors. |
| | 9. Safety switch in left and/or right door defective. | 9. Replace safety switch(es). |
| Poor extraction capacity. Downdraft table does not function properly. | 1. Filter cartridges saturated. | 1. Replace both filter cartridges (*See Filter Cartridges and Prefilters). 2. Replace HEPA filter cartridge. (*See HEPA Filter). |
| | 2. Magnehelic gauge defective (indicates value below 800 Pa). | 1. Replace Magnehelic gauge and filter cartridges (*See Filter Cartridges and Prefilters). 2. Replace HEPA filter cartridge. (*See HEPA Filter). |
| | 3. Sense of rotation of motor incor- rect. | 3. Invert connection of phases |
| | 4. Prefilter (1st and/or 2nd stage) polluted. | 4. Clean prefilters. |
| Dust or smoke coming out of the outlet. Pollution of the facility. | 1. Filter cartridge(s) torn. | 1. Replace both filter cartridges (*See Filter Cartridges and Prefilters) and clean the outlet grid. 2. Replace HEPA filter cartridge. (*See HEPA Filter). |
| Working light not lit. No light. | 1. Main switch off. | 1. *Turn on main switch. |
| | 2. Cable is not connected. | 2. *Connect cable (*See Figure A.11, item B). |
| | 3. Fluorescent light is defective. | 3. *Replace fluorescent light. |
| | 4. Fuse is defective. | 4. *Check fuse F4 and replace if necessary. |

* Accessory item.



If for any reason you do not understand the test procedures or are unable to perform the tests/repairs safely, contact your Lincoln Authorized Service Facility for technical troubleshooting assistance before you proceed.

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Observe all Safety Guidelines detailed throughout this manual

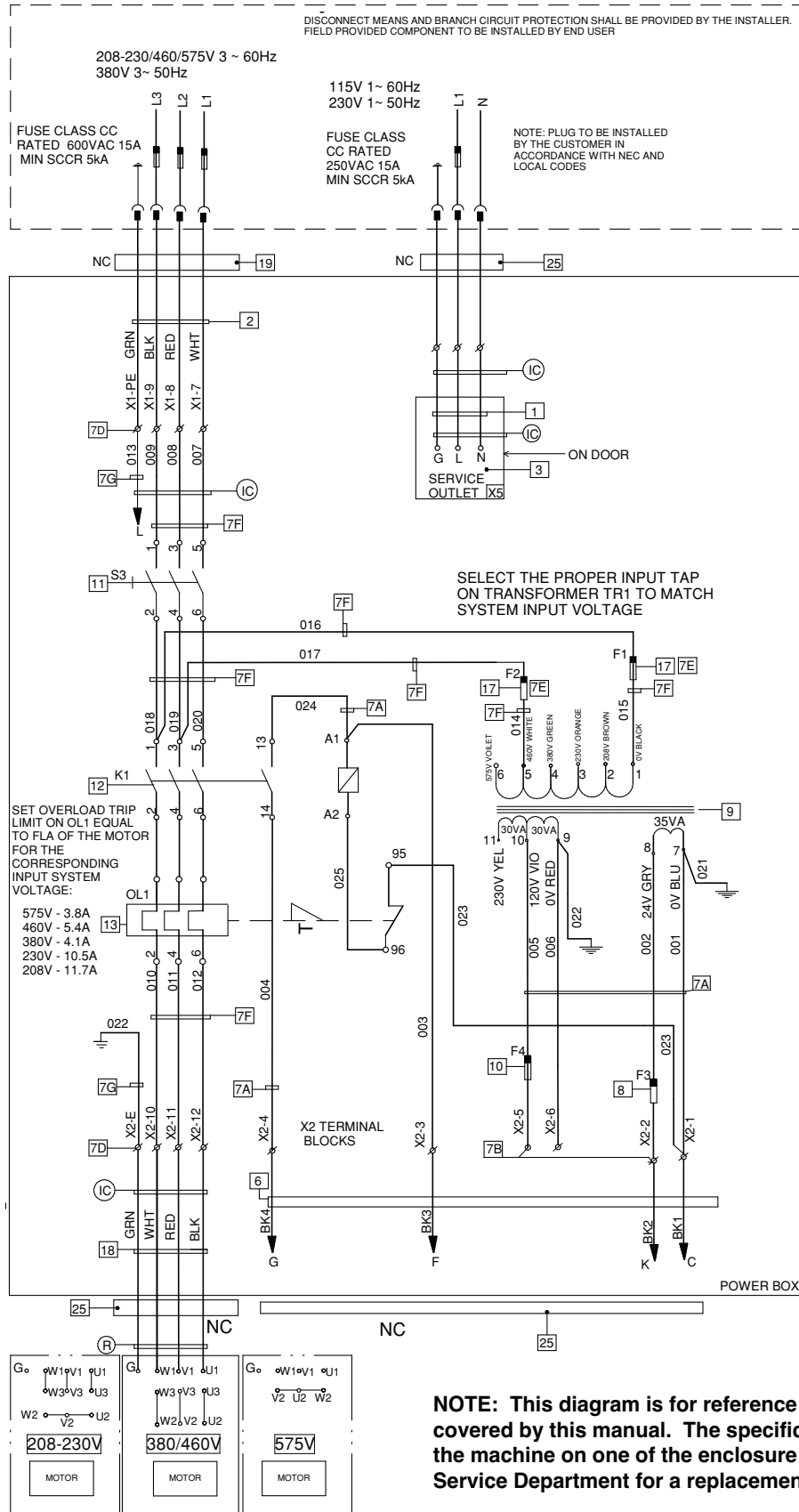
| PROBLEMS (SYMPTOMS) | POSSIBLE CAUSE | RECOMMENDED COURSE OF ACTION |
|---|---|---|
| DOWNFLEX 400-MS/A ONLY | | |
| Fan does not start running. Downdraft table does not function. | 1. No compressed air available or Low pressure - less than 60 psi (4 BAR) | 1. Connect/repair compressed air supply. |
| | 2. *Automatic start/stop (movement sensor or welding cable sensor) not connected. | 2. *Connect cable of automatic start / stop (*See Figure A.11, item A). |
| | 3. *Movement sensor is defective. | 3. *Replace sensor. |
| | 4. *Welding cable sensor not connected. | 4. *Connect clamp of welding cable sensor to ground cable of welding machine. |
| Irregular filter cleaning. One of the filter cartridges is not being cleaned. | 1. One of the membrane valves defective. | 1. Replace both membrane valves. |
| Poor extraction capacity. No filter cleaning. | 1. Membrane valve(s) defective. | 1. Replace both membrane valves. |
| | 2. Button RESET ALARM/MANUAL CLEANING defective. | 2. Replace button RESET ALARM/MANUAL CLEANING. |
| OFFLINE MANUAL CLEANING button does not work. No filter cleaning. | 1. Button was not pushed/held long enough. | 1. Push/hold button for 5 seconds. |
| The alarm lamp will flash 2 Seconds on - 2 seconds off Filter cartridges polluted. | 1. Pressure over the filter cartridges has reached 0.22 psi (1500 Pa.). | 1. Switch off the fan to initiate the automatic offline filter cleaning cycle |
| The alarm lamp will be continuously on Filter cleaning system does not function. | 1. No compressed air available. | 1 Connect/repair compressed air supply. |

* Accessory item.

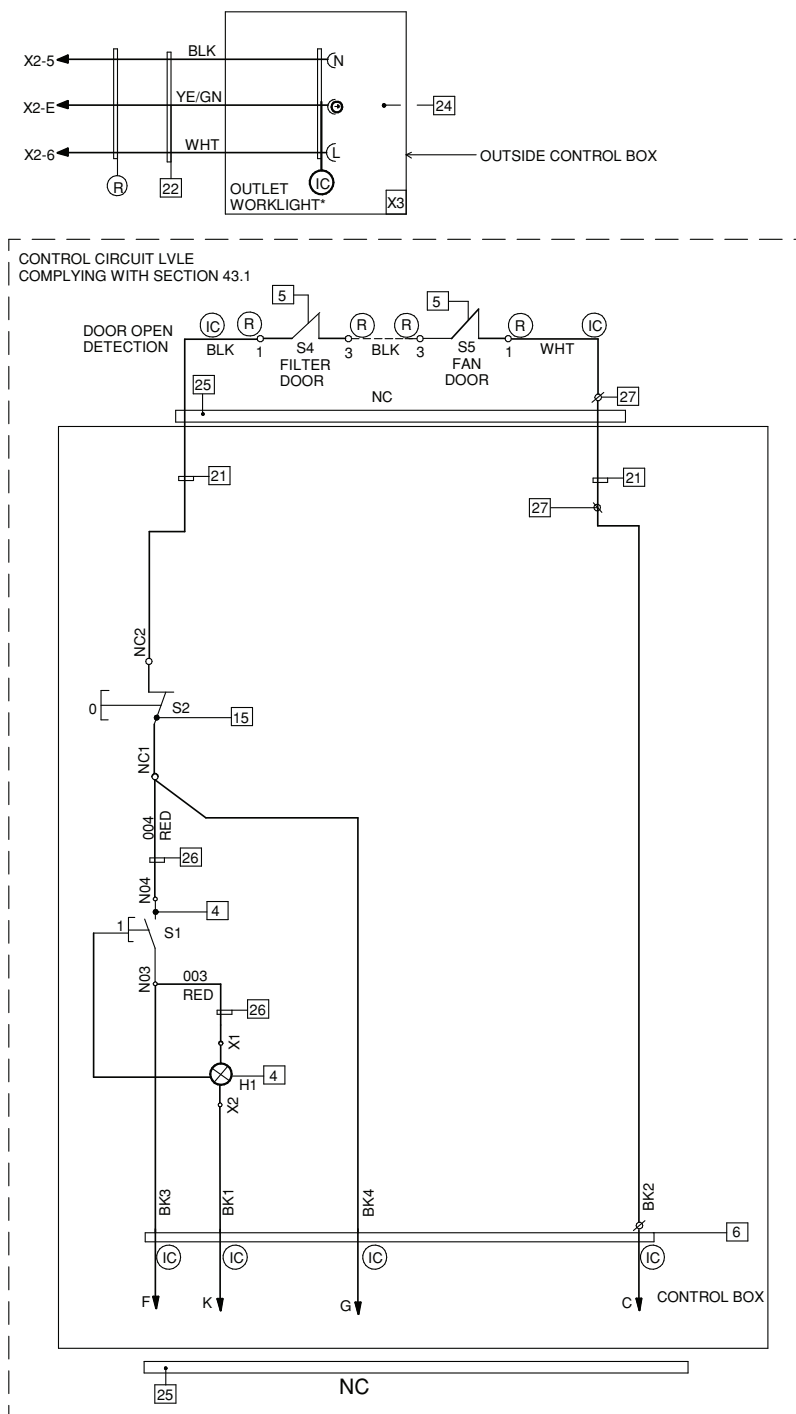


If for any reason you do not understand the test procedures or are unable to perform the tests/repairs safely, contact your Lincoln Authorized Service Facility for technical troubleshooting assistance before you proceed.
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Wiring Diagram for DownFlex 200



Wiring Diagram for DownFlex 200

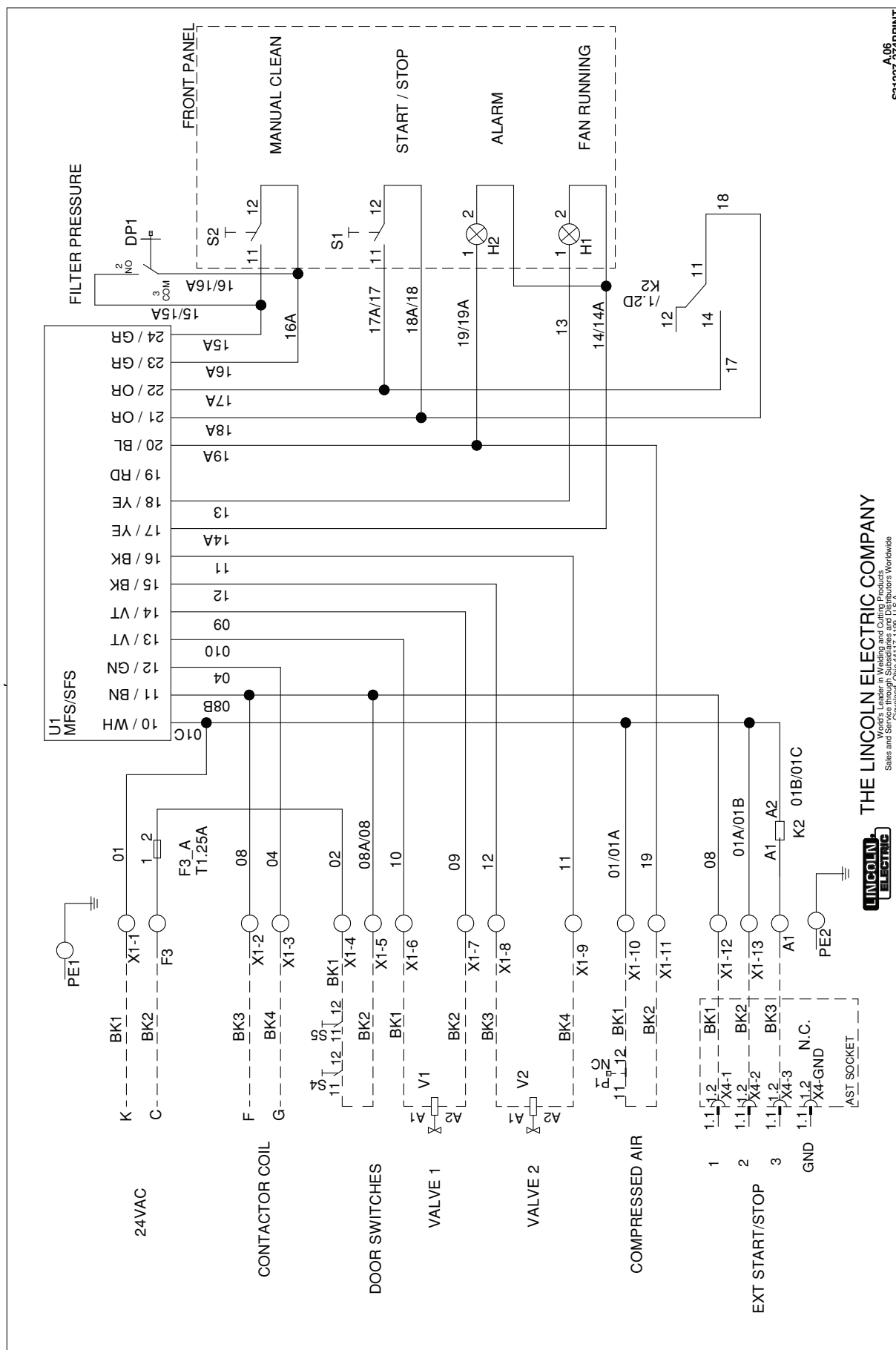


| ITEM # | REF | DESCRIPTION |
|--------|-------|---------------------------------|
| 1 | | CABLE POWER OUTLET USA DM |
| 2 | | CABLE MAINS USA DM |
| 3 | X5 | POWER SOCKET 5-15 |
| | X5 | POWER SOCKET CEE 7/4 SCHUKO |
| 4 | S1 | PUSHBUTTON, MOMENTARY GRN ILLUM |
| | H1 | LED MODULE GRN, PUSHBUTTON 24V |
| 7A | | WIRE HARNESS-DOWNFLEX TB |
| 7B | | FUSE TERMINAL BLOCK SM |
| 7C | X2 | TERMINAL BLOCK GREY |
| 7D | | TERMINAL BLOCK GRD |
| 7E | | FUSE TERMINAL BLOCK LG 2-POLE |
| 7F | | 14 AWG BLACK CABLES |
| 7G | | 14 AWG YELLOW/GREEN CABLES |
| 8 | F3 | FUSE 1.25A 250V |
| 9 | TR1 | TRANSFORMER 208-600V 24/120/230 |
| 10 | F4 | FUSE 0.5A 250V |
| 11 | S3 | SWITCH ROTARY ISOLATION 25A 3PH |
| 12 | K1 | RELAY CONTACTOR |
| 13 | OL-1 | RELAY THERMAL 3.2-16A |
| 15 | S2 | PUSHBUTTON, MOMENTARY BLACK |
| | S2 | CONTACT BLOCK 1 N.C. |
| 17 | F1-F2 | FUSE 1A 600VAC CLASS CC |
| 18 | | CABLE MOTOR DM |
| 19 | | CABLE GLAND M25 B DIA 11-17 |
| 20 | | WIRE-GND MAIN DOORS DM |
| 21 | | CABLE SNAP ACTION SWITCH |
| 22 | | CABLE LIGHTING DM |
| 23 | | WIRE-GND DOORS ELEC-COMP DM |
| 24 | X3 | AC OUTLET WL |
| 25 | | CABLE GLAND M20 |
| 26 | | RED WIRE |
| 27 | | CONNECTION TERMINAL - |

NOTES:

- N A. ALL WIRES CRIMPED WITH PIN TERMINALS UNLESS OTHERWISE SPECIFIED
 N B. REFER HARNESS S31227-140 FOR DETAILS
 N C. CABLE GLAND LOCATION IS DEFINED IN ASSEMBLY DRAWING
 N D. ENSURE PROPER TRANSFORMER TAP SETTING, MOTOR WIRING AND OVER LOAD SETTINGS BASED ON INPUT VOLTAGE
 N E. MOTOR CIRCUIT WIRING 14 AWG MIN, OTHER WIRING 18 AWG AND ALL LEADS SHALL UL STYLE 1015 600V 90°C
 N F. MOTOR CONNECTIONS SHALL BE DONE AS PER RECOMMENDATION BY MANUFACTURER
 N G. USED FOR 115V 60 Hz SERVICE OUTLET
 N H. USED FOR 230V 50 Hz SERVICE OUTLET
 N J. CABLE DIAMETER BETWEEN 8 MM TO 13 MM (0.314" TO 0.511")

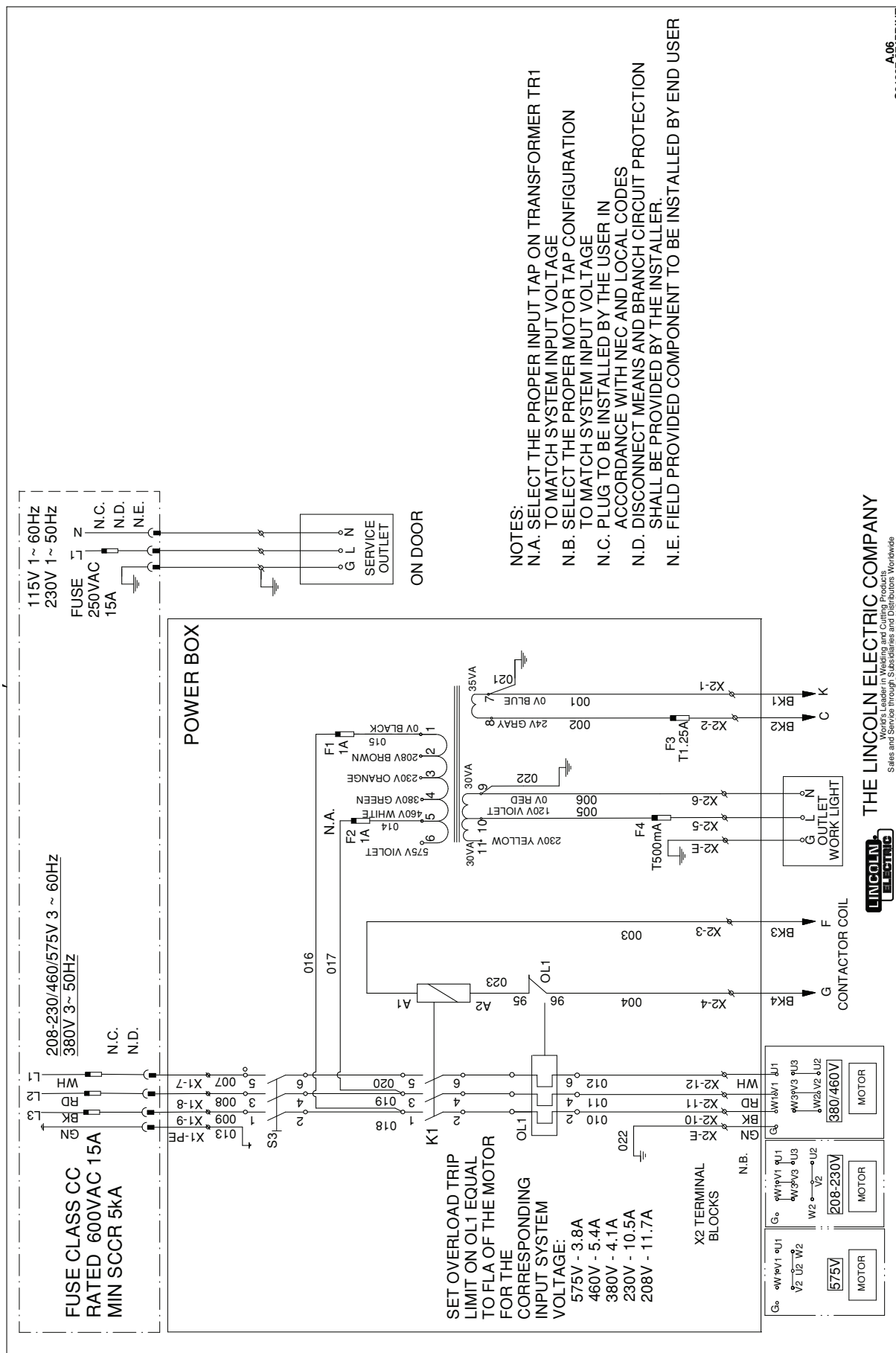
Wiring Diagram for DownFlex 400

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 Cleveland, Ohio 44117-1198 U.S.A.



Wiring Diagram for DownFlex 400



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| | | | |
|---------------------------------------|---|---|---|
| | | | |
| 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作件绝缘。 | <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.

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| <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.

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