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MOBIFLEX® 400-MS(/HE) Mobile Filter Unit + LFA 3.1/4.1 Extraction Arm

IM882
September, 2010

For use with machines having Code Numbers: **K1741-1 / K1741-2 / K2633-1 / K2633-2 / K2633-3 / K2633-4**

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.

OPERATOR'S MANUAL

LINCOLN® ELECTRIC

• World's Leader in Welding and Cutting Products •
• Sales and Service through Subsidiaries and Distributors Worldwide •
Cleveland, Ohio 44117-1199 U.S.A. TEL: 216.481.8100 FAX: 216.486.1751 WEB SITE: www.lincolnelectric.com

SAFETY

⚠ WARNING

⚠ CALIFORNIA PROPOSITION 65 WARNINGS ⚠

Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects, and other reproductive harm.

The Above For Diesel Engines

The engine exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm.

The Above For Gasoline Engines

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 W117.2-01. 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.

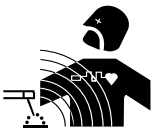
1.d. Keep all equipment safety guards, covers and devices in position and in good repair.Keep hands, hair, clothing and tools away from V-belts, gears, fans and all other moving parts when starting, operating or repairing equipment.

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.

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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. I 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 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 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 material safety data sheet (MSDS) and follow your employer’s safety practices. MSDS forms are available from your welding distributor or from the manufacturer.

5.f. Also see item 1.b.

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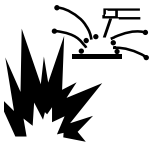


WELDING SPARKS can cause fire or explosion.

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.

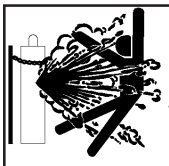
6.d. Do not heat, cut or weld tanks, drums or containers until the proper steps have been taken to insure that such procedures will not cause flammable or toxic vapors from substances inside. They can cause an explosion even though they have been “cleaned”. For information, purchase “Recommended Safe 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.



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-l, “Precautions for Safe Handling of Compressed Gases in Cylinders,” available from the Compressed Gas Association 1235 Jefferson Davis Highway, Arlington, VA 22202.

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.

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PRÉCAUTIONS DE SÛRETÉ

Pour votre propre protection lire et observer toutes les instructions et les précautions de sûreté specifiques qui parraissent dans ce manuel aussi bien que les précautions de sûreté générales suivantes:

Sûreté Pour Soudage A L'Arc

1. Protegez-vous contre la secousse électrique:

   a. Les circuits à l'électrode et à la piéce sont sous tension quand la machine à souder est en marche. Eviter toujours tout contact entre les parties sous tension et la peau nue ou les vétements mouillés. Porter des gants secs et sans trous pour isoler les mains.
   b. Faire trés attention de bien s'isoler de la masse quand on soude dans des endroits humides, ou sur un plancher metallique ou des grilles metalliques, principalement dans les positions assis ou couché pour lesquelles une grande partie du corps peut être en contact avec la masse.
   c. Maintenir le porte-électrode, la pince de masse, le câble de soudage et la machine à souder en bon et sûr état defonctionnement.
   d.Ne jamais plonger le porte-électrode dans l'eau pour le refroidir.
   e. Ne jamais toucher simultanément les parties sous tension des porte-électrodes connectés à deux machines à souder parce que la tension entre les deux pinces peut être le total de la tension à vide des deux machines.
   f. Si on utilise la machine à souder comme une source de courant pour soudage semi-automatique, ces precautions pour le porte-électrode s'applicuent aussi au pistolet de soudage.

2. Dans le cas de travail au dessus du niveau du sol, se protéger contre les chutes dans le cas ou on recoit un choc. Ne jamais enrouler le câble-électrode autour de n'importe quelle partie du corps.

3. Un coup d'arc peut être plus sévère qu'un coup de soliel, donc:

   a. Utiliser un bon masque avec un verre filtrant approprié ainsi qu'un verre blanc afin de se protéger les yeux du rayonnement de l'arc et des projections quand on soude ou quand on regarde l'arc.
   b. Porter des vêtements convenables afin de protéger la peau de soudeur et des aides contre le rayonnement de l'arc.
   c. Protéger l'autre personnel travaillant à proximité au soudage à l'aide d'écrans appropriés et non-inflammables.

4. Des gouttes de laitier en fusion sont émises de l'arc de soudage. Se protéger avec des vêtements de protection libres de l'huile, tels que les gants en cuir, chemise épaisse, pantalons sans revers, et chaussures montantes.

5. Toujours porter des lunettes de sécurité dans la zone de soudage. Utiliser des lunettes avec écrans lateraux dans les zones où l'on pique le laitier.

6. Eloigner les matériaux inflammables ou les recouvrir afin de prévenir tout risque d'incendie dû aux étincelles.

7. Quand on ne soude pas, poser la pince à une endroit isolé de la masse. Un court-circuit accidental peut provoquer un échauffement et un risque d'incendie.

8. S'assurer que la masse est connectée le plus prés possible de la zone de travail qu'il est pratique de le faire. Si on place la masse sur la charpente de la construction ou d'autres endroits éloignés de la zone de travail, on augmente le risque de voir passer le courant de soudage par les chaines de levage, câbles de grue, ou autres circuits. Cela peut provoquer des risques d'incendie ou d'echauffement des chaines et des câbles jusqu'à ce qu'ils se rompent.

9. Assurer une ventilation suffisante dans la zone de soudage. Ceci est particuliérement important pour le soudage de tôles galvanisées plombées, ou cadmiées ou tout autre métal qui produit des fumeés toxiques.

10. Ne pas souder en présence de vapeurs de chlore provenant d'opérations de dégraissage, nettoyage ou pistolage. La chaleur ou les rayons de l'arc peuvent réagir avec les vapeurs du solvant pour produire du phosgéne (gas fortement toxique) ou autres produits irritants.

11. Pour obtenir de plus amples renseignements sur la sûreté, voir le code "Code for safety in welding and cutting" CSA Standard W 117.2-1974.

PRÉCAUTIONS DE SÛRETÉ POUR LES MACHINES À SOUDER À TRANSFORMATEUR ET À REDRESSEUR

1. Relier à la terre le chassis du poste conformement au code de l'électricité et aux recommendations du fabricant. Le dispositif de montage ou la piece à souder doit être branché à une bonne mise à la terre.

2. Autant que possible, l'installation et l'entretien du poste seront effectués par un électricien qualifié.

3. Avant de faires des travaux à l'interieur de poste, la debrancher à l'interrupteur à la boite de fusibles.

4. Garder tous les couvercles et dispositifs de sûreté à leur place.

⚠ WARNING

FUMES & GASES can be dangerous to your health

- **Keep fumes and gases from your breathing zone and general area.**
- **Keep your head out of the fumes.**
- **Use enough ventilation or exhaust at the arc, or both, to keep fumes and gases from your breathing zone and general area.**

Fumes and Gases

Because of the variables involved in fume and gas generation from arc welding, cutting and allied processes (such as the welding process and electrode, the base metal, coatings on the base metal, and other possible contaminants in the air), we'll have to treat the subject in a rather general way, lumping all but the more hazardous situations together. The precautions we describe will hold true for all arc welding processes.

The **fume plume** contains solid particles from the consumables, base metal, and base metal coating. For common mild steel arc welding, depending on the amount and length of exposure to these fumes, most immediate or short term effects are temporary, and include symptoms of burning eyes and skin, dizziness, nausea, and fever. For example, zinc fumes can cause metal fume fever, a temporary illness that is similar to the flu.

Long-term exposure to welding fumes can lead to siderosis (iron deposits in the lungs) and may affect pulmonary function. Bronchitis and some lung fibrosis have been reported.

Some consumables contain certain compounds in amounts which may require special ventilation and/or exhaust. These Special Ventilation products can be identified by reading the labels on the package. If Special Ventilation products are used indoors, use local exhaust. If Special Ventilation products are used outdoors, a respirator may be required. Various compounds, some of which may be in welding fume, and reported health effects, in summary, are:

Barium: Soluble barium compounds may cause severe stomach pain, slow pulse rate, irregular heart beat, ringing of the ears, convulsions and muscle spasms. In extreme cases can cause death.

Cadmium also requires extra precautions. This toxic metal can be found on some steel and steel fasteners as a plating, or in silver solder. Cadmium fumes can be fatal even under brief overexposures, with symptoms much like those of metal fume fever. These two conditions should not be confused. Overexposure to cadmium can be enough to cause fatalities, with symptoms appearing quickly, and, in some circumstances, death a few days later.

Chromium: Chromium is on the IARC (International Agency for Research on Cancer) and NTP (National Toxicology Program) lists chromium as posing a carcinogenic risk to humans. Fumes from the use of stainless steel, hardfacing and other types of consumables contain chromium and/or nickel. Some forms of these metals are known or suspected to cause lung cancer in processes other than welding and asthma has been reported. Therefore, it is recommended that precautions be taken to keep exposures as low as possible. OSHA recently adopted a lower PEL (Permissible Exposure Limit) for chromium (see chart of TLV and PEL values for Typical Electrode Ingredients). The use of local exhaust and/or an approved respirator may be required to avoid overexposure.

Coatings on the metal to be welded, such as paint, may also contain toxic substances, such as lead, chromium and zinc. In general, it is always best to remove coatings from the base metal before welding or cutting.

Cobalt: Exposure to cobalt can cause respiratory disease and pulmonary sensitization. Cobalt in metallic form has been reported to cause lung damage.

Copper: Prolonged exposure to copper fume may cause skin irritation or discoloration of the skin and hair.

Manganese: Manganese overexposure may affect the central nervous system, resulting in poor coordination, difficulty in speaking, and tremor of arms or legs. This condition is considered irreversible.

Nickel: Nickel and its compounds are on the IARC (International Agency for Research on Cancer) and NTP (National Toxicology Program) lists as posing a carcinogenic risk to humans.

Silica: Crystalline silica is present in respirable dust form submerged arc flux. Overexposure can cause severe lung damage (silicosis).

Zinc: Overexposure to zinc (from galvanized metals) may cause metal fume fever with symptoms similar to the common flu.

The **gases** that result from an arc welding process also present potential hazard. Most of the shielding gases (argon, helium, and carbon dioxide) are non-toxic, but, as they are released, they **displace oxygen** in your breathing air, causing dizziness, unconsciousness, and death, the longer your brain is denied the oxygen it needs. Carbon monoxide can also be developed and may pose a hazard if excessive levels are present.

The **heat and UV radiation** can cause irritation to the eyes and lungs. Some degreasing compounds such as trichlorethylene and perchlorethylene can decompose from the heat and ultraviolet radiation of an arc. Because of the chemical breakdown of vapor-degreasing materials under ultraviolet radiation, arc welding should not be done in the vicinity of a vapor-degreasing operation. Carbon-arc welding, gas tungsten-arc welding and gas metal arc welding should be especially avoided in such areas, because they emit more ultraviolet radiation than other processes. Also, keep in mind that ozone and nitrogen oxides are formed when UV radiation passes through the air. These gases cause headaches, chest pains, irritation of the eyes, and an itchiness in the nose and throat.

There is one easy way to **reduce the risk** of exposure to hazardous fumes and gases: **keep your head out of the fume plume!** As obvious as this sounds, the failure to follow this advice is a common cause off ume and gas overexposure because the concentration off ume and gases is greatest in the plume. Keep fumes and gases from your breathing zone and general area using natural ventilation, mechanical ventilation, fixed or moveable exhaust hoods or local exhaust at the arc. Finally, it may be necessary to wear an approved respirator if adequate ventilation cannot be provided (see Ventilation section).

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 also steps that you can take to identify hazardous substances in your welding environment. First, 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 and 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	10	15
Aluminum oxide and/or Bauxite*****	1344-28-1	10	5**
Barium compounds (as Ba)*****	513-77-9	****	****
Chromium and chromium alloys or compounds (as Cr)*****	7440-47-3	0.5(b)	.005(b)
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	10*	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	0.2	5.0(c)
Mineral silicates	1332-58-7	5**	5**
Molybdenum alloys (as Mo)	7439-98-7	10	10
Nickel*****	7440-02-0	1.5	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.

(****) There is no listed value for insoluble barium compounds. The TLV for soluble barium compounds is 0.5 mg/m^3.

TLV and PEL values are as of April 2006. Always check Material Safety Data Sheet (MSDS) with product or on the Lincoln Electric website at http://www.lincolnelectric.com

http://www.lincolnelectric.com/safety

Thank You —— for selecting a **QUALITY** product by Lincoln Electric. We want you to take pride in operating this Lincoln Electric Company product ••• as much pride as we have in bringing this product to you!

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.

Please record your equipment identification information below for future reference. This information can be found on your machine nameplate.

Product _____

Model Number _____

Code Number or Date Code_____

Serial Number_____

Date Purchased_____

Where Purchased_____

Whenever you request replacement parts or information on this equipment, always supply the information you have recorded above. The code number is especially important when identifying the correct replacement parts.

On-Line Product Registration

- Register your machine with Lincoln Electric either via fax or over the Internet.

• For faxing: Complete the form on the back of the warranty statement included in the literature packet accompanying this machine and fax the form per the instructions printed on it.

• For On-Line Registration: Go to our **WEB SITE at www.lincolnelectric.com.** Choose "Quick Links" and then "Product Registration". Please complete the form and submit your registration.

Read this Operators Manual completely before attempting to use this equipment. Save this manual and keep it handy for quick reference. Pay particular attention to the safety instructions we have provided for your protection. The level of seriousness to be applied to each is explained below:

⚠ 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**.

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PREFACE

Using this Instruction Manual

This instruction manual is intended to be used as a work of reference for professional, well trained and authorized users to be able to safely install, use and maintain the product mentioned on the cover of this document.

Always keep this manual with the product.

Pictograms and Symbols

The following pictograms and symbols are used in this manual:

	**TIP** Suggestions and recommendations to simplify carrying out tasks and actions.
	**ATTENTION!** Remark with additional information for the user. A remark brings a possible problem to the user's attention.
	**CAUTION!** This statement appears where the instructions **must** be followed to avoid **minor personal injury** or **damage to this equipment**.
	**WARNING!** This statement appears where the instructions **must** be followed **exactly** to avoid **serious personal injury** or **loss of life**.
	**WARNING!** Denotes risk of electric shock.
	**WARNING!** Important warning about potential fire hazard.

Service and Technical Support

For information about specific adjustments, maintenance or repair jobs which are not dealt with in this manual, please contact Lincoln Electric Automation Service 888-935-3878.
Make sure you have the following data on hand:
- product name
- serial number
- purchase order (number + date) for warranty verification

1 INTRODUCTION

1.1 Identification of the Product

The product name and serial number can be found on the identification label located at the units.
Location identification label:
- K1741-1 Mobiflex 400-MS Base Unit; and
- K1741-2 Mobiflex 400-MS/HE Base Unit: next to input power cord connection
- K2633-1 LFA 3.1 Mobile Manual; and
- K2633-3 LFA 4.1 Mobile Manual; and
- K2633-2 LFA 3.1 Mobile Automatic; and
- K2633-4 LFA 4.1 Mobile Automatic: on arm section fan side

1.2 General Description

This instruction manual describes two base units:
- K1741-1 Mobiflex 400-MS Base Unit (mobile filter unit with self-cleaning filter cartridge - filter class MERV 11 (untreated); MERV 15 (treated)
- K1741-2 Mobiflex 400-MS/HE Base Unit (mobile filter unit with high efficiency self-cleaning filter cartridge - filter class MERV 16)

and four types of extraction arms + one hose:
- K2633-1 LFA 3.1 Mobile Manual (10 ft. extraction arm)
- K2633-3 LFA 4.1 Mobile Manual (13 ft. extraction arm)
- K2633-2 LFA 3.1 Mobile Automatic (10 ft. extraction arm with integrated Lamp + Arc Sensor Kit)
- K2633-4 LFA 4.1 Mobile Automatic (13 ft. extraction arm with integrated Lamp + Arc Sensor Kit)
- K1668-3 Hose & Hood Set

1.2.1 Mobiflex 400-MS Base Unit

The K1741-1 Mobiflex 400-MS Base Unit is a mobile filter unit with integrated fan that provides extraction and filtration for use with a flexible extraction arm or optional hose.
The Mobiflex 400-MS Base Unit features a steel mesh prefilter and a round cellulose LongLife filter cartridge. This LongLife filter cartridge is provided with a precoat (ExtraCoat) to extend the lifespan and increase initial operating efficiency of the filter. A separate MSDS sheet for the ExtraCoat is included with the instruction manual package.
The Mobiflex 400-MS Base Unit is provided with a RotaPulse system for automatic cleaning of the LongLife filter cartridge.
The Mobiflex 400-MS is a portable unit suitable to be used in relatively small facilities or near sources of pollution without a fixed location.

The Mobiflex 400-MS Base Unit with Flexible Extraction Arm is used for extracting and filtering fume which is released during the most common welding processes, such as:

- MIG/MAG solid wire (GMAW)
- MIG/MAG flux cored wire (FCAW)
- TIG (GTAW) welding
- stick welding (MMA or SMAW)
- autogeneous welding

The Mobiflex 400-MS is designed for intermittent or continuous welding applications as indicated above.

The Mobiflex 400-MS filter is recommended for annual consumable use of approximately*):
- 2,750 kg (6,000 lbs) GMAW or FCAW or GTAW
- 1,800 kg (4,000 lbs) MMA or SMAW or autogeneous

**) Variables such as coatings (e.g. oil), base material, weld process, humidity and procedures can affect filter life and performance.*

1.2.2 Mobiflex 400-MS/HE Base Unit

The K1741-2 Mobiflex 400-MS/HE Base Unit is a mobile filter unit with integrated fan that provides extraction and filtration for use with a flexible extraction arm or optional hose.
The Mobiflex 400-MS/HE Base Unit features a steel mesh prefilter and a high efficiency round cellulose/polyester blend LongLife filter cartridge.
The Mobiflex 400-MS/HE Base Unit is provided with a RotaPulse system for automatic cleaning of the LongLife filter cartridge.
The Mobiflex 400-MS/HE is a portable unit suitable to be used in relatively small facilities or near sources of pollution without a fixed location.

The Mobiflex 400-MS/HE Base Unit with Flexible Extraction Arm is used for extracting and filtering fume which is released during the most common welding processes, such as:
- MIG/MAG solid wire (GMAW)
- MIG/MAG flux cored wire (FCAW)
- TIG (GTAW) welding
- stick welding (MMA or SMAW)
- autogeneous welding

The Mobiflex 400-MS/HE is designed for intermittent or continuous welding applications as indicated above.

The Mobiflex 400-MS/HE filter is recommended for annual consumable use of approximately*):
- 250 kg (550 lbs) GMAW or FCAW or GTAW
- 175 kg (385 lbs) MMA or SMAW or autogeneous

**) Variables such as coatings (e.g. oil), base material, weld process and procedures can affect filter life and performance.*

1.2.3 LFA 3.1/4.1 Mobile Manual/Automatic

The LFA 3.1/4.1 Mobile Manual and Mobile Automatic Extraction Arms are flexible fume extraction arms with a 360° rotatable hood. Incorporated into the arm hood is a throttle valve that can be fully opened, partially opened or completely closed to control airflow at hood opening. The hood features an airflow focus vane, which directs the air into the hood.
The arms' balance system increases its durability and stability. As soon as the arms are raised, it is free to move in any direction. Once the arm is positioned, it is fixed into place. This makes repositioning the arms simple, easy and effortless.
The extraction arms are made of solid, lightweight, 203 mm (8 in.) diameter dent and scratch resistant tube. They are provided with a spring balance system for ultra-light, user friendly positioning of the arm.

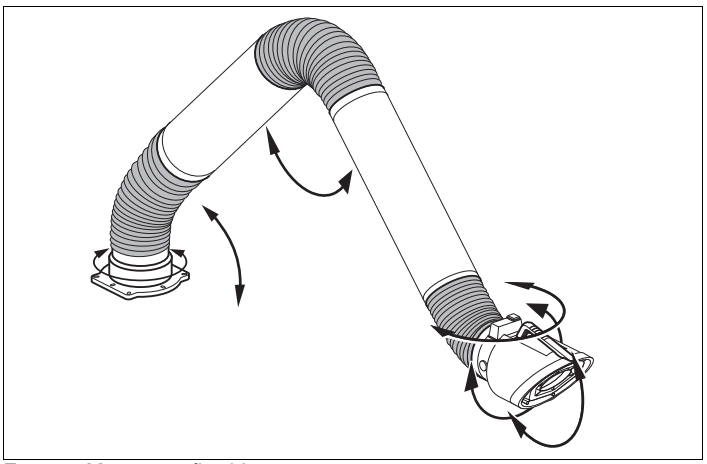


Fig. 1.1: Movement flexible arm

The K2633-2 and K2633-4 LFA 3.1/4.1 Mobile Automatic arms contain an integrated Lamp + Arc Sensor Kit in the hood. The 35W/24V halogen lamp provides additional light to the workpiece. With the use of a delayed arc sensor, the extraction fan will operate automatically. The automatic start/stop utilizes a 20 second auto stop to help conserve energy and reduce noise level.

1.3 Product Combinations

In order to operate the Mobiflex 400-MS(/HE) Base Unit, selection of following product is required:
- K2633-1 (1) LFA 3.1 Mobile Manual (10 ft. extraction arm); or
- K2633-3 (1) LFA 4.1 Mobile Manual (13 ft. extraction arm); or
- K2633-2 (1) LFA 3.1 Mobile Automatic (10 ft. extraction arm with integrated Lamp + Arc Sensor Kit); or
- K2633-4 (1) LFA 4.1 Mobile Automatic (13 ft. extraction arm with integrated Lamp + Arc Sensor Kit)
- K1668-3 (1) Hose and Hood Set instead of extraction arm

1.4 Technical Specifications

1.4.1 Mobiflex 400-MS(/HE) Base Unit

	Mobiflex 400-MS Base Unit	Mobiflex 400-MS/ HE Base Unit
Product part #	K1741-1	K1741-2
Input	115V/1~/60Hz	115V/1~/60Hz
Motor power	0.75 kW (1 HP)	0.75 kW (1 HP)
Dimensions	Refer to Fig. 1.2	Refer to Fig. 1.2
Weight	117 kgs (258 lbs)	121 kgs (267 lbs)
Extraction type	Low vacuum; high volume	Low vacuum; high volume
Airflow rate	Max. 1,250 m^3/h (735 CFM)	Max. 1,250 m^3/h (735 CFM)
Filter type	Self-cleaning cellulose/polyester blend LongLife filter cartridge with precoat	Self-cleaning cellulose/polyester blend LongLife filter‘
Filter class according to ASHRAE 52.2	- untreated: MERV 11 - treated: MERV 15	MERV 16
Filter surface area	30 m^2 (325 ft^2)	30 m^2 (325 ft^2)
Compressed air connection	4-5 bar (60-75 PSI)	4-5 bar (60-75 PSI)
Required compressed air quality	Dry and oil-free according to ISO 8573-3 class 6	Dry and oil-free according to ISO 8573-3 class 6
Compressed air consumption	Max. 60 nl/min. (2.1 SCFM) (depending on the degree of saturation of the filter)	Max. 60 nl/min. (2.1 SCFM) (depending on the degree of saturation of the filter)
Cleaning cycle time	60 min.	60 min.
Sound level	69 dB(A) (according to ISO 3746)	69 dB(A) (according to ISO 3746)
Input power cable	6 m (20 ft.)	6 m (20 ft.)
Operating temperature: - minimum - nominal - maximum	 - 5°C (41°F) - 20°C (68°F) - 45°C (113°F)	 - 5°C (41°F) - 20°C (68°F) - 45°C (113°F)
Max. relative humidity	80%	80%

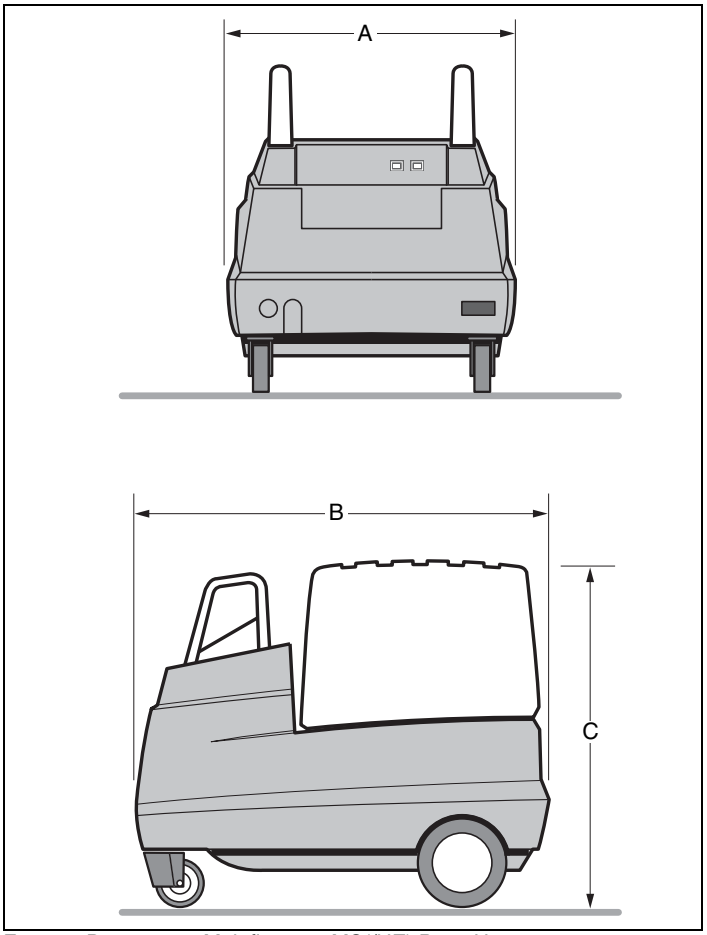


Fig. 1.2: Dimensions Mobiflex 400-MS(/HE) Base Unit

Fig. 1.2
- A = 810 mm (31.9 in.)
- B = 1,210 mm (47.6 in.)
- C = 1,020 mm (40.2 in.)

1.4.2 LFA 3.1/4.1 Mobile Manual

	LFA 3.1 Mobile Manual	LFA 4.1 Mobile Manual
Product part #	K2633-1	K2633-3
Arm length	3 m (10 ft.)	4 m (13 ft.)
Reach	Refer to Fig. 1.3A	Refer to Fig. 1.3B
Weight	14.9 kg (32.8 lbs.)	16.9 kg (37.3 lbs.)
Diameter	Ø 203 mm (8 in.)	Ø 203 mm (8 in.)
Recommended extraction capacity	600-1,600 m^3/h (355-940 CFM)	600-1,600 m^3/h (355-940 CFM)

1.4.3 LFA 3.1/4.1 Mobile Automatic

	LFA 3.1 Mobile Automatic	LFA 4.1 Mobile Automatic
Product part #	K2633-2	K2633-4
Arm length	3 m (10 ft.)	4 m (13 ft.)
Reach	Refer to Fig. 1.3A	Refer to Fig. 1.3B
Weight	15.2 kg (33.5 lbs.)	17.2 kg (38 lbs.)
Diameter	Ø 203 mm (8 in.)	Ø 203 mm (8 in.)
Recommended extraction capacity	600-1,600 m^3/h (355-940 CFM)	600-1,600 m^3/h (355-940 CFM)
Lamp + Arc Sensor Kit	Integrated	Integrated

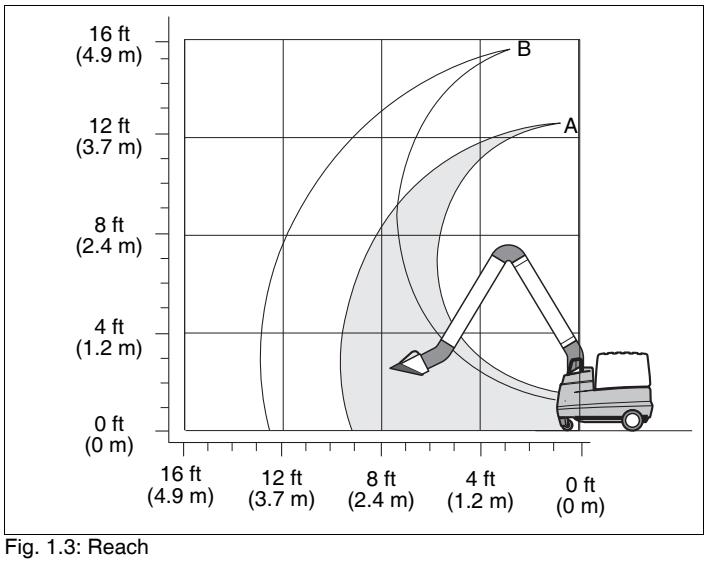


Fig. 1.3: Reach

1.5 Pressure drop

Fig. 1.4
- X = Airflow (CFM)
- Y = Static pressure (in. WG)

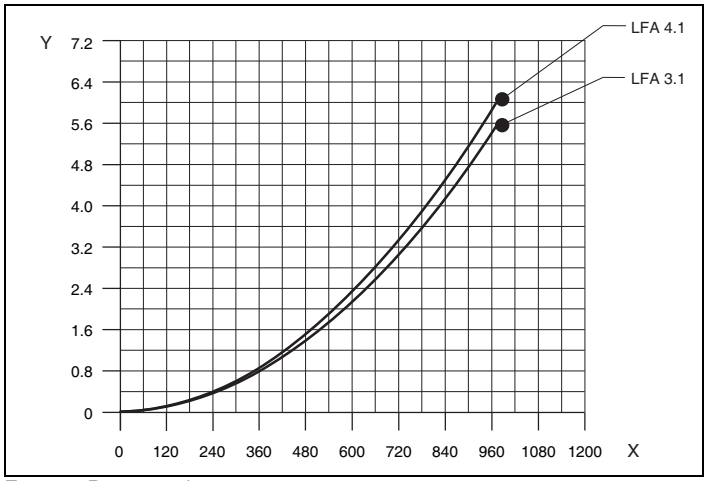


Fig. 1.4: Pressure drop extraction arms

2 PRODUCT DESCRIPTION

2.1 Components

2.1.1 Mobiflex 400-MS(/HE) Base Unit

The Mobiflex 400-MS(/HE) Base Unit consists of the following components (Fig. 2.1):
- A control panel
- B handles
- C connection for extraction arm
- D filter cover with outlet grid
- E base swivel mount
- F Mobiflex 400-MS: LongLife filter cartridge FCC 30; or Mobiflex 400-MS/HE: LongLife filter cartridge FCC 30-HE
- G base
- H transport wheels
- I dust tray
- J RotaPulse automatic filter cleaning system
- K prefilter
- L swivel casters (right one with lock)
- M flexible hose
- N fan housing
- O extraction fan
- P pressure reducing valve
- Q compressed air connection ¼ in.

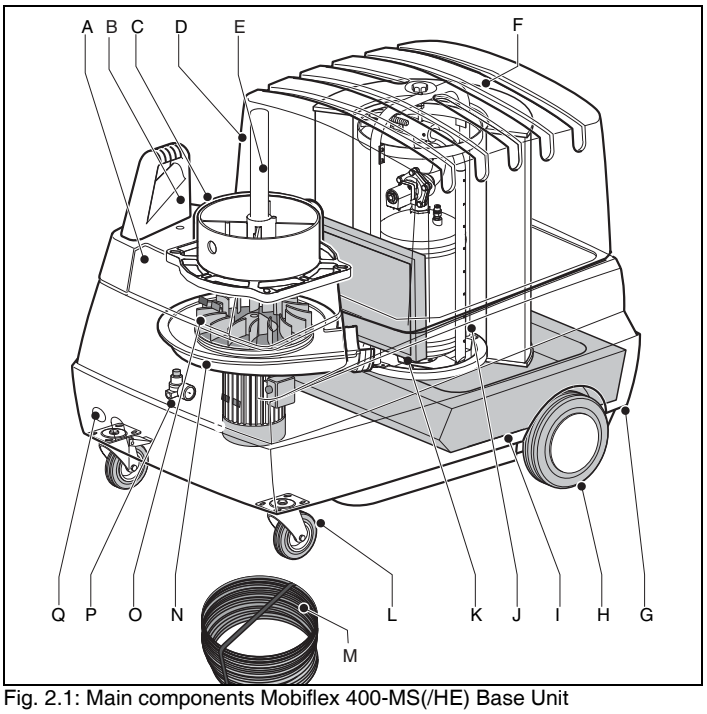


Fig. 2.1: Main components Mobiflex 400-MS(/HE) Base Unit

2.1.2 LFA 3.1/4.1 Mobile Manual/Automatic

The LFA 3.1/4.1 Mobile Manual/Automatic extraction arm consists of the following components (Fig. 2.2):
- A hinge fan side
- B arm section (fan side)
- C middle hinge with hose running guard
- D flexible hose

E connection wire arm (K2633-2, K2633-4 only)
F extraction hood
G Lamp + Arc Sensor (K2633-2, K2633-4 only)
H throttle valve
I hood hinge with rubber protection cover
J flexible hose
K arm section (hood side)

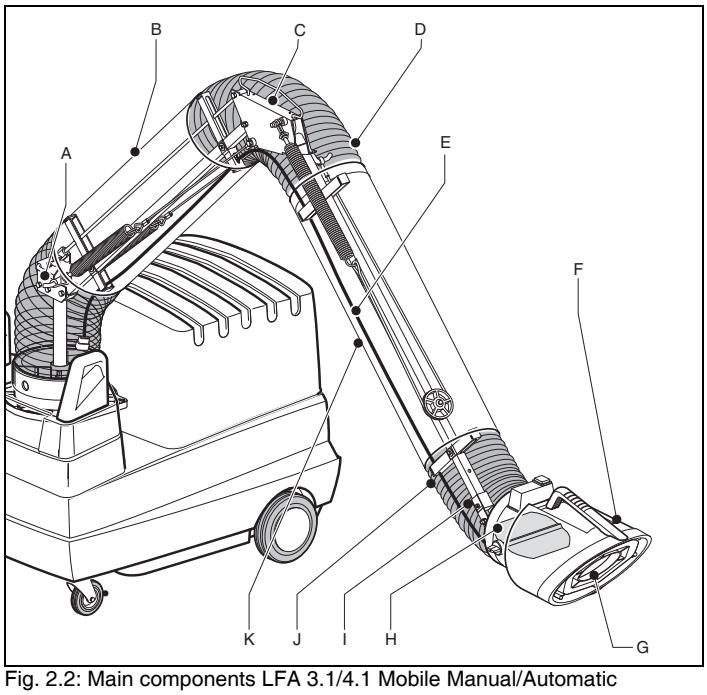


Fig. 2.2: Main components LFA 3.1/4.1 Mobile Manual/Automatic

2.2 Operation

The air which contains welding fume is captured, extracted, and filtered, before being recirculated back into the work environment. First, the welding fume is extracted through an adjustable fume extraction arm by the internal extraction fan. Second, as the welding fume enters the Base Unit, it passes through the prefilter. The prefilter separates larger particles, debris and most sparks prior to the welding fume entering the LongLife filter. Third, the air passes from the outside through the LongLife filter cartridge. Fourth, after passing through the LongLife filter, the filtered air exits the Mobiflex 400-MS(/HE) Base Unit via the outlet grid at top of filter housing.

During use, an electronic pressure differential system measures the static air pressure as it enters and exits the filter cartridge. If the air pressure entering the filter unit is greater than the air pressure exiting the filter unit, the electronic circuit signals the internal cleaning system to clean the filter cartridge. Compressed air from the internal tank releases through multiple airjets to clean one section of the filter cartridge at each air burst. A complete cleaning cycle can be activated by depressing a manual switch on the front of the control panel. The particulate is blown off the filter cartridge into a dust tray.

3 SAFETY

General

The manufacturer does not accept any liability for damage to the product caused by a failure to follow the safety and other instructions in this manual, modifications made to equipment or by negligence during installation, use, maintenance and repair of the product mentioned on the cover of this document and any corresponding accessories. Specific working conditions or used accessories may require additional safety instructions. Immediately contact your supplier if you detect a potential hazard when using the product.

WARNING!

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 federal, state and/or local regulations and guidelines (i.e. OSHA PEL and ACGIH TLV limits in the U.S.).

User Manual

- Personnel working on or with the product must be familiar with the contents of this manual and must strictly observe the instructions herein. Management should instruct and train the operators in accordance with the manual and observe all instructions and directions given.
- Never change the order of steps-to-be-performed.
- Always keep the manual available to those employees that use and maintain the product.

Users

This product should only be used by authorized, trained and qualified users.

Intended Use[1]

The product has been designed exclusively for extracting and filtering fume which is released during common weld processes. Using the product for other purposes is considered contrary to its intended use. The manufacturer accepts no liability for any damage resulting from such use. Only use the product in mechanically sound condition in accordance with its intended use and the instructions set forth in the user manual.

1. "Intended use" as laid down in EN-292-1 is the use for which the technical product is suited as specified by the manufacturer, inclusive of his directions in the sales brochure. In case of doubt it is the use which can be deduced from the construction, the model and the function of the technical product which is considered normal use. Operating the machine within the limits of its intended use also involves observing the instructions in the user manual.

Modifications

Modifications of this product, other than those specified in this manual, are not allowed. Any unauthorized modification will void the product warranty.

Use

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

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

If the product is used in combination with products mentioned in the introduction of this manual (refer to section 1.4), the safety instructions in the documentation of these products also apply.

- Routinely inspect the product and check it for damage.
- 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 facility is always sufficiently ventilated; this applies especially to confined spaces.
- Never place the product in front of entrances and exits which must be used by emergency services.
- Make sure that the facility where the equipment is used contains sufficient approved fire extinguishers.

WARNING:

Only use the product for the welding processes described in section 1.2. **Avoid** using the product for extracting and/or filtering fumes and gases which are released during the following (welding) processes:
- oxy-fuel cutting
- aluminum laser cutting
- oil-treated metal
- arc-air gouging
- oil mist
- paint mist
- heavy oil mist in welding fume
- hot gases (more than 40°C/100°F continuously)
- aggressive gases (e.g. from acids)
- plasma cutting
- grinding aluminum and magnesium
- flame spraying
- extraction of cement, saw dust, wood dust etc.
- sucking cigarettes, cigars, oiled tissues and other burning particles, objects and acids
- in all situations where explosions can occur (This list is not comprehensive.)

If the product is used in above situations it could result in potential fire hazard, non-compliance with local regulations and reduction in product performance and life.

WARNING!

Avoid using the product for filtering dust particles which are released when welding surfaces treated with primer.

WARNING!

Never use the product without prefilter and LongLife filter cartridge.

Service, Maintenance and Repairs

This manual clearly makes a distinction between service, maintenance and repair jobs which have to be carried out by the user and those which have to be exclusively carried out by well trained and authorized service personnel.

- Observe the maintenance intervals given in this manual. Overdue maintenance can lead to additional costs for repair and revisions and can render the warranty 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.
- Regularly clean or replace the pre filter.

4 INSTALLATION

ATTENTION!
The installer or enduser is responsible for following federal, state and local safety codes and regulations.

4.1 Unpacking

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

4.1.1 Mobiflex 400-MS/(HE) Base Unit

- (1) Mobiflex 400-MS(/HE) Base Unit with input power cord (20 ft)
- (1) flexible hose 65 cm (2 ft.)
- (1) instruction manual

4.1.2 LFA 3.1/4.1 Mobile Manual/Automatic Extraction Arm

- (1) LFA 3.1/4.1 Extraction Arm
- (2) bolt M8
- (2) self-locking nut M8
- (2) washer

If parts are missing or damaged, contact Lincoln Electric Automation Service 888-935-3878.

4.2 Installation

4.2.1 Mobiflex 400-MS(/HE) Base Unit

The base swivel mount on top of the machine contains two tie wraps. A split pin has been attached to the lower one.

Installation Steps:
Use Fig. 4.1 for steps 1-6
1) Cut through the lower tie wrap (A) to release the split pin.

ATTENTION!
Make sure the tie wrap and the split pin do not fall into the fan. If it falls into the fan it must be removed prior to turning the base unit on.

2) Lift the post of the base swivel mount by the upper tie wrap (B).
3) Put the split pin through the lowest hole in the post (C) and bend it around.
4) Remove the upper tie wrap (D) and let down the post.
5) Remove clamping pin from under rubber seal of the base swivel mount.
6) Fold down the rubber seal and take off the red plastic ring.

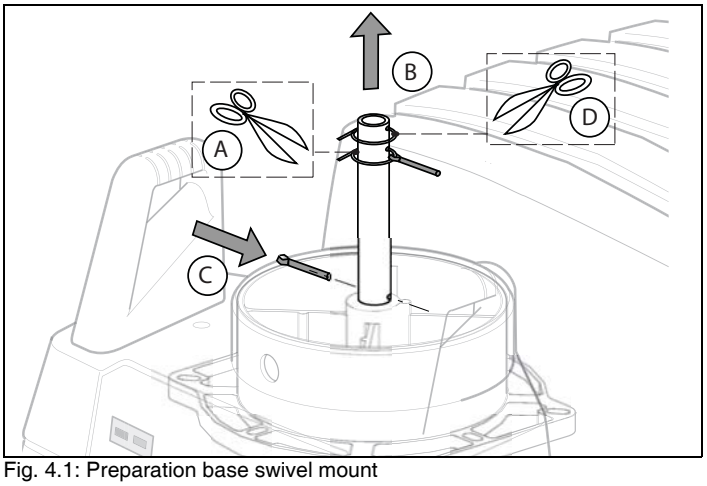


Fig. 4.1: Preparation base swivel mount

Use Fig. 4.2 for step 7-8
7) Insert the clamping pin (A) through the hole in the post above the split pin.
8) Place back the red plastic ring (B) and place the clamping pin in the ridges (C) by turning the red plastic ring.

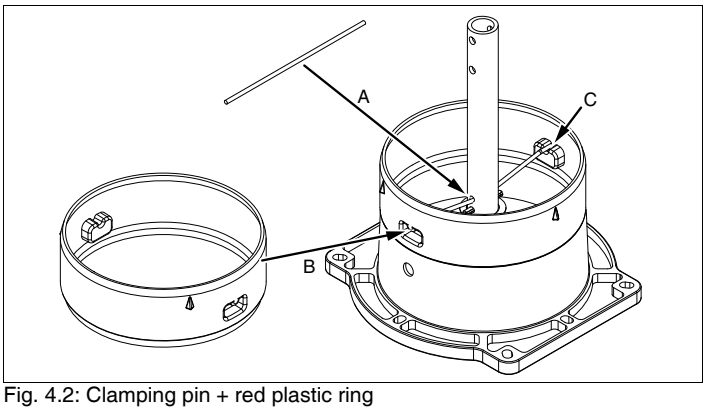


Fig. 4.2: Clamping pin + red plastic ring

Use Fig. 4.3 for steps 9-12
9) Turn the base swivel mount in such a way, that the stop pin (A) is in line with the cable lead-through hole (B).
10) Remove the wrap of the flexible hose.
11) Place the hose over the red plastic ring of the base swivel mount. To secure the hose, at least one metal ring of the hose should be applied over the ridges at the red plastic ring.
12) Fold back the rubber seal and place it over the hose. The underside of the rubber seal should cover the red plastic ring 0.5-1 in.

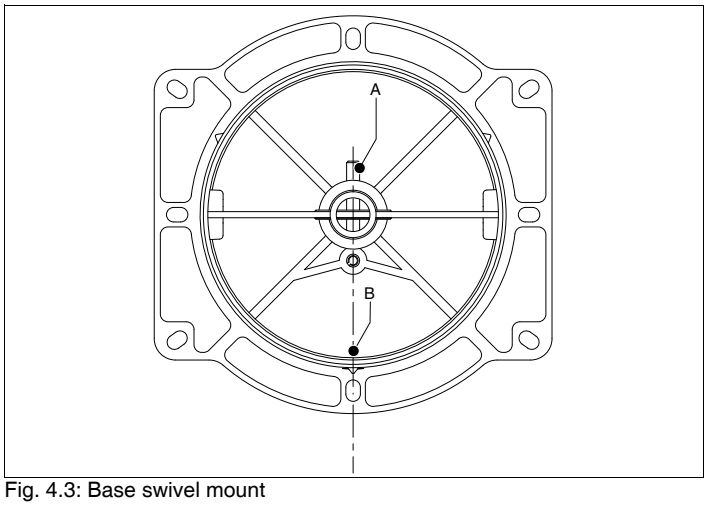


Fig. 4.3: Base swivel mount

4.2.2 LFA 3.1/4.1 Mobile Manual

The supply cable inside the base swivel mount of the Mobiflex 400-MS/(/HE) Base Unit is not used when mounting a K2633-1 or K2633-3 LFA 3.1/4.1 Mobile Manual arm. Do not remove jumper.

ATTENTION!
Do **not** remove the yellow tape attaching both arm sections.

ATTENTION!
The supply cable inside the base swivel mount should hang down vertically. Do **not** remove the wire bridge.

Installation Steps:
Fig. 4.4
1) Mount the extraction arm LFA 3.1/4.1 Mobile Manual (A) on the post (B) using the two bolts M8 and two self-locking nuts M8 with washers.
2) Remove the yellow tape from both arm sections.

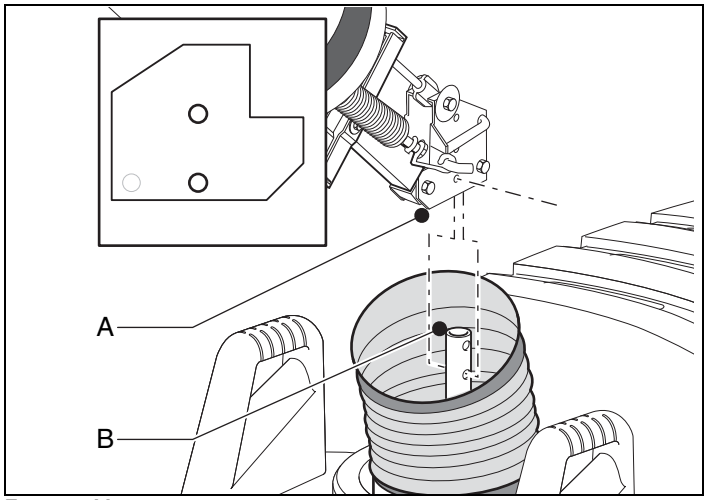


Fig. 4.4 : Mounting arm

Now proceed with section 4.2.4.

4.2.3 LFA 3.1/4.1 Mobile Automatic

The K2633-2 or K2633-4 LFA 3.1/4.1 Mobile Automatic extraction arm contains an integrated Lamp + Arc Sensor Kit.

ATTENTION!
Do **not** remove the yellow tape attaching both arm sections.

Installation Steps:
Fig. 4.4
1) Mount the extraction arm LFA 3.1/4.1 Mobile Automatic (A) on the post (B) using the two bolts M8 and two self-locking nuts M8 with washers.
2) Remove the wire bridge from the supply cable inside the base swivel mount.
3) Connect the supply cables of the Mobiflex 400-MS(/HE) Base Unit and the extraction arm.
4) Remove the yellow tape from both arm sections.
5) Turn the extraction arm 359° and check whether the supply cable is long enough. If necessary, pull the supply cable of the Mobiflex 400-MS(/HE) Base Unit to a sufficient length.

4.2.4 Balance check

The extraction arms have been pre-balanced in the factory for optimal balance and positioning. However, they sometimes need adjustment. To check and adjust the balance system, proceed as follows.

Fig. 4.5
1) Bring the extraction hood to a horizontal position. The hood should stay in this position.

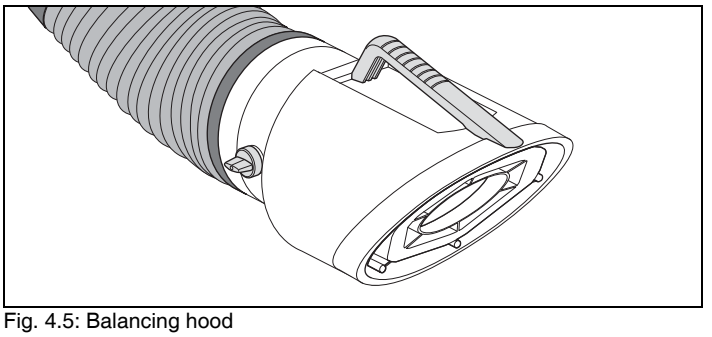


Fig. 4.5: Balancing hood

Fig. 4.6
If the extraction hood falls on its own:
- Cut the tie wrap of the rubber protection cover which is applied over the hood hinge.
- Pull down the protection cover.
- Turn bolt (A) in the hood hinge clockwise to tighten extraction hood.
- Replace the protection cover and secure it with the spare tie wrap supplied.

If the extraction hood does not stay to a horizontal position (left/right):

- Cut the tie wrap of the rubber protection cover which is applied over the hood hinge.
- Pull down the protection cover.
- Turn bolt (B) in the hood hinge clockwise to tighten horizontal movement.
- Replace the protection cover and secure it with the spare tie wrap supplied.

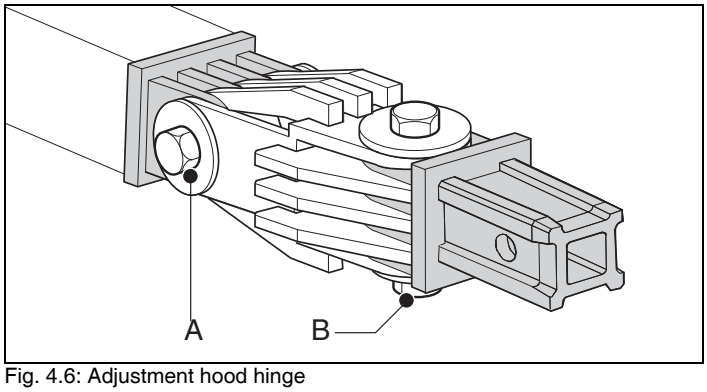


Fig. 4.6: Adjustment hood hinge

Fig. 4.7

1) Bring the arm (including extraction hood) to a horizontal position The arm should stay in this position.

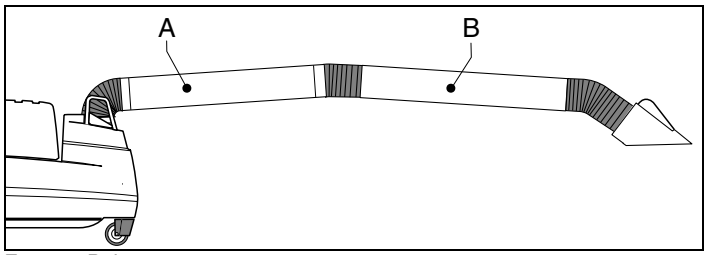


Fig. 4.7: Balancing arm

Fig. 4.8

If the entire arm (refer to Fig. 4.7.A+B) falls on its own:

- Tighten bolt (A) in the hinge fan side to increase spring tension. **Ensure spring does not turn as you tighten.**

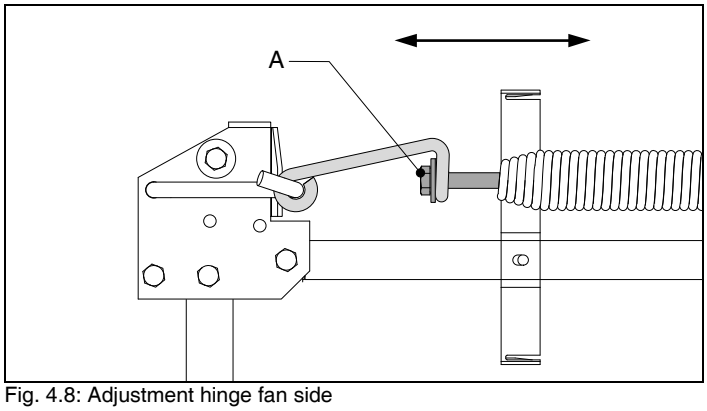


Fig. 4.8: Adjustment hinge fan side

Fig. 4.9

If the hood section (refer to Fig. 4.7.B) of the arm falls on its own:

- Tighten bolt (A) in middle hinge to increase spring (B) tension. **Ensure spring does not turn as you tighten.**

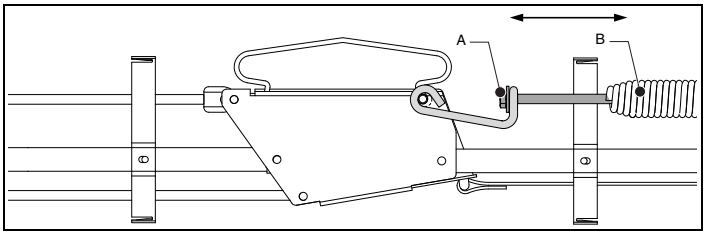


Fig. 4.9: Adjustment middle hinge

4.2.5 LFA 3.1/4.1 Mobile Manual/Automatic

A hose running guard is attached to the middle hinge of the extraction arm by a piece of tape.

Fig. 4.10

1) Take the hose running guard (A) and snap it into place at the middle hinge (B).
2) Fold back 2/3 of both rubber seals.
3) Remove the wrap of the flexible hose.
4) Place the flexible hose over both arm sections. To secure the hose, at least one metal ring of the hose should be applied over the ridges at each arm section.
5) Fold back the rubber seals and place them over the hose. The rubber seal should cover the arm section 0.5-1 in.

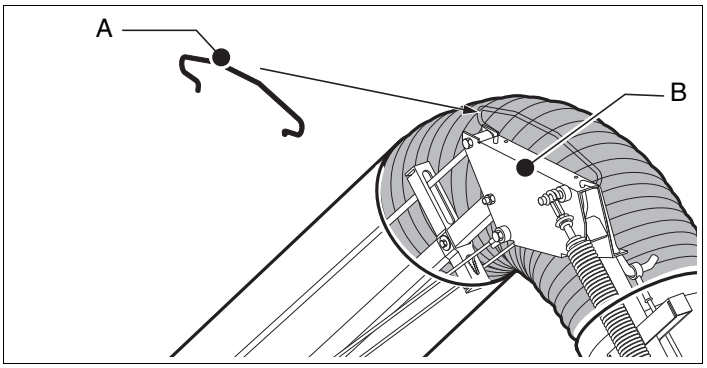


Fig. 4.10: Hose running guard

Now mount the flexible hose at the hood side.

6) Fold back 2/3 of both rubber seals.
7) Remove the wrap of the flexible hose hood side.
8) Place the flexible hose over the hood and the arm section hood side. To secure the hose, at least one metal ring of the hose should be applied over the ridges.
9) Fold back the rubber seals and place them over the hose. The rubber seals should cover the hood and the arm section 0.5-1 in.

4.2.6 K1668-3 Hose and Hood Set (option)

The Mobiflex 400-MS(HE) Base Unit can be equipped with a Hose and Hood Set instead of a flexible extraction arm. Mount the Hose and Hood Set in accordance with the corresponding manual.

5 OPERATION

5.1 Use

ATTENTION!
Never use the Mobiflex 400-MS(HE) Base Unit without extraction arm or Hose and Hood Set.

WARNING!
Worker exposure level should be checked upon installation and periodically thereafter to be certain it is within applicable federal, state and/or local regulations and guidelines (i.e. OSHA PEL and ACGIH TLV limits in the U.S.).

The control panel contains the following controls:
Fig. 5.1

A Power switch OFF
B Power switch ON
C FAN ON/OFF switch
D Control light (orange)
- "CLEANING": the control light is **on** indicating that the machine is busy performing the (self-)cleaning process
- "ALARM": the control light **blinks** indicating that the filter is saturated and cannot be cleaned sufficiently in the automatic cleaning mode

E Filter cleaning ON/OFF - RESET button for off-line cleaning and reset

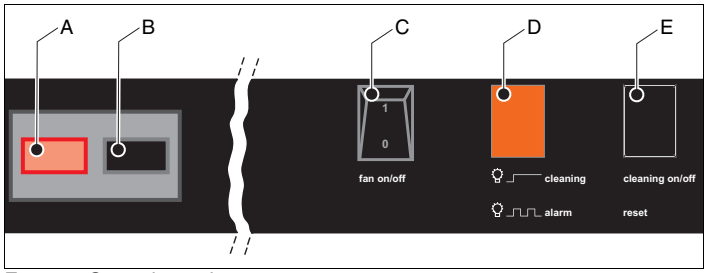


Fig. 5.1: Control panel

- Use the handles to move the Mobiflex 400-MS(/HE) to the workplace.
- Lock the right swivel caster.
- Apply input power.
- Connect the Mobiflex 400-MS(/HE) Base Unit to compressed air (refer to Fig. 2.1Q).

WARNING!
The compressed air should be dry and oil-free according to ISO 8573-3 class 6.

- Make sure the FAN ON/OFF switch (refer to Fig. 5.1C) is in the OFF position.

WARNING!
The position of the hood should be approx. 15-30 cm (6-12 in.) in front of the welding arc. Performance depends on factors such as part vs. operator and weld position, airflow (CFM and velocity level), ambient conditions and maintenance. Reposition hood as needed to maintain efficient fume capture.

5.1.1 Mobiflex 400-MS(/HE) + LFA 3.1/4.1 Mobile Manual

The hood of the extraction arm is provided with a handle for easy positioning and a throttle valve for adjustment of the airflow.

Fig. 5.1 and Fig. 5.2

- Using the handle (Fig. 5.2A), position the hood of the extraction arm in the desired position at approx. 15-30 cm (6-12 in.) from the source of fume.
- Open the throttle valve (Fig. 5.2B).
- Press the power switch ON (Fig. 5.1B) to turn power to the unit on.
- Turn on the FAN ON/OFF switch (Fig. 5.1C) to start the machine.
- Start welding.
- Turn off the FAN ON/OFF switch approx. 20 seconds after finishing welding.
- Press the power switch OFF (Fig. 5.1A) to interrupt power supply.

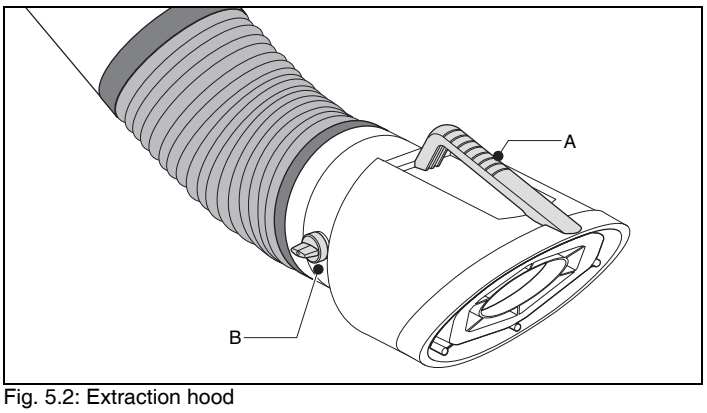


Fig. 5.2: Extraction hood

5.1.2 Mobiflex 400-MS(/HE) + LFA 3.1/4.1 Mobile Automatic

Fig. 5.1 and Fig. 5.3

- Press the power switch ON (Fig. 5.1B) to turn power to the unit.

- Using the handle (Fig. 5.3A), position the hood of the extraction arm in the desired position at approx. 15-30 cm (6-12 in.) from the source of fume.
- If desired: turn on the halogen lamp using on/off switch (Fig. 5.3C).
- Open the throttle valve (Fig. 5.3B).
- Start welding.

Due to the built-in Arc Sensor, the machine will start automatically. After finishing welding, the machine will automatically stop after approx. 20 seconds.

- Press the power switch OFF (Fig. 5.1A) to interrupt power supply.

5.1.3 Mobiflex 400-MS(/HE) + LFA 3.1/4.1 Mobile Automatic (manual start)

Manual start of the Lamp + Arc Sensor Kit is recommended for TIG welding*) or in case the Arc Sensor is unable to detect the arc due to weld position.

**) UV from TIG welding is less than other weld processes resulting in arc sensor perhaps not detecting weld.*

Fig. 5.1 and Fig. 5.3

- Press the power switch ON (Fig. 5.1B) to turn power to the unit on.
- Using the handle (Fig. 5.3A), position the hood of the extraction arm in the desired position at approx. 15-30 cm (6-12 in.) from the source of fume.
- If desired: turn on the halogen lamp using on/off switch (Fig. 5.3C).
- Open the throttle valve (Fig. 5.3B).
- Turn on the machine using the on/off switch (Fig. 5.3D).
- Start welding.
- Turn off the machine approx. 20 seconds after finishing welding using the on/off switch (Fig. 5.3D).
- Press the power switch OFF (Fig. 5.1A) to interrupt power supply.

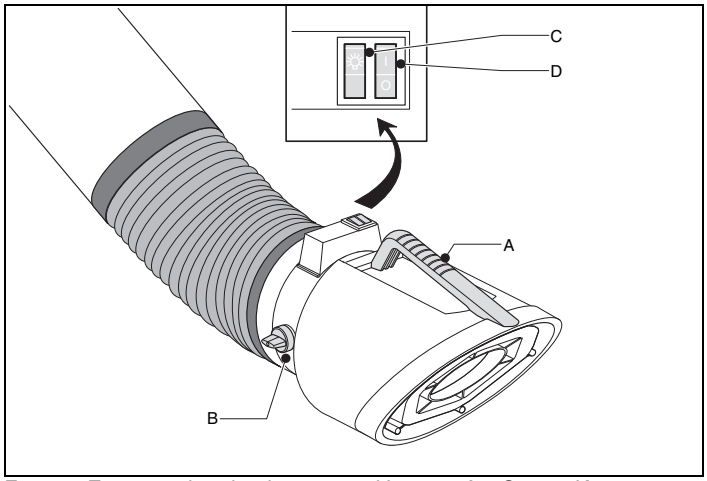


Fig. 5.3: Extraction hood with integrated Lamp + Arc Sensor Kit

	Due to the parallel connection, extraction fan on/off can be arranged in three different ways: • automatically by Arc Sensor • manually by on/off switch at the hood of the extraction arm • manually by push button switch fan on/off on the machine

5.2 Automatic filter cleaning system

5.2.1 Control light: CLEANING

During normal operation (i.e. with a clean, non-saturated filter cartridge), the Mobiflex 400-MS(/HE) functions fully automatically. As soon as a miniumum airflow has been reached as a result of the clogging, the pressure difference switch activates the RotaPulse compressed air cleaning system which subsequently cleans the filter using controlled jets of compressed air. The particulate then falls into the dust tray.

During the automatic cleaning process the control light (refer to Fig. 5.1D) is **on** (“CLEANING”). The cleaning system stops when the airflow is sufficient again.
This procedure is called online cleaning.

When no welding takes place during the automatic cleaning process, the fan will start running during 30 seconds after every four compressed airjets to check the pressure difference. This happens max. 15 times.
When the airflow hasn’t reached the required airflow rate after 60 compressed airjets, the control light will change into the “ALARM” mode.

- In this case, proceed with section 5.2.2.

5.2.2 Control light: ALARM

When the control light (refer to Fig. 5.1D) **blinks** (“ALARM”), proceed as follows.

- Stop welding.
- Press filter cleaning ON/OFF - RESET button (refer to Fig. 5.1E) to stop the control light from blinking.
- Make sure the FAN ON/OFF switch (refer to Fig. 5.1C) is **off**.
- Close throttle valve in extraction hood.
- Press filter cleaning ON/OFF - RESET button again (refer to Fig. 5.1E) to start off-line cleaning.

During the off-line cleaning cycle the entire filter cartridge is cleaned systematically by compressed airjets. This cycle takes approx. one hour.

	ATTENTION! Do not use the machine during the off-line cleaning cycle.

	If desired, the off-line cleaning cycle can be interrupted by pressing the filter cleaning ON/OFF - RESET button (refer to Fig. 5.1E) .

After the cleaning cycle is finished, system operation can be continued.

When you continue welding and the control light starts **blinking** again immediately or shortly after the cleaning cycle is finished, the LongLife filter cartridge is saturated and should be replaced.

- For filter replacement refer to section 6.2.1.

	WARNING! Saturation or clogging of the filter cartridge results in a decrease of the extraction capacity which could result in a reduced extraction of welding fumes. Therefore, stop welding immediately when the machine enters the ALARM phase.

5.2.3 Off-line cleaning

	ATTENTION! For more efficient filter cleaning, it is recommended to carry out an off-line cleaning cycle on a regular basis.

Run a manual off-line cleaning routine minimum twice a week. The most convenient cleaning interval is a matter of experience.

	ATTENTION! For off-line cleaning after working hours, make sure compressed air is connected and available.

To carry out an off-line cleaning cycle, proceed as follows.

- Make sure the FAN ON/OFF switch (refer to Fig. 5.1C) is **off**.
- Close throttle valve in extraction hood.
- Press filter cleaning ON/OFF - RESET button (refer to Fig. 5.1E) to start off-line cleaning.

	ATTENTION! The off-line cleaning cycle takes approx. one hour. Do not use the machine during the off-line cleaning cycle.

	If desired, the off-line cleaning cycle can be interrupted by pressing the filter cleaning ON/OFF - RESET button (refer to Fig. 5.1C) .

6 MAINTENANCE

The product has been designed to function with minimal maintenance. In order to guarantee optimal performance level, periodic maintenance and cleaning activities are required which are described in this chapter.

Maintenance intervals can vary depending on the specific working conditions, such as ambient conditions, welding consumables and process(es), base material, coatings on base material and operator procedure. Therefore, it is required that regular inspection of the entire system is carried out. It is recommended a thorough inspection of the system occurs at least once every year.

	WARNING! Use of equipment with clogged filters can cause fire.

	WARNING! **Electric shock can kill.** Always switch **OFF** the machine, remove input power and **disconnect compressed air** before carrying out the maintenance activities below.

	WARNING! Do **not** use compressed air or high pressure water sprayer to clean LongLife filter cartridge or prefilter.

6.1 Periodic Maintenance

The maintenance activities in the table below indicated by [*] can be carried out by the user; other activities are strictly reserved for well trained and authorized service personnel.

	WARNING! When cleaning equipment or replacing filter use personal protection equipment (PPE) such as gloves, respirators and protective clothing to protect against overexposure to particulate. It is recommended that a vacuum cleaner or wet methods be used to clean up any loose particulate that is present in the extraction arm. It is necessary to use a vacuum cleaner with HEPA rated filtration.

6.1.1 Mobiflex 400-MS(/HE) Base Unit

Table 1: Periodic maintenance Mobiflex 400-MS(/HE) Base Unit

Component	Action	Every month	Every 6 months	Every 12 months
Prefilter	Check for damage, clogging and saturation. If damaged, clogged or saturated, refer to section 6.2.2.	X		
	Clean with an industrial vacuum cleaner that meets OSHA guidelines for Cr6 housekeeping.	X [*]		
LongLife filter cartridge	Check for damage, clogging and saturation. If damaged, clogged or saturated, refer to section 6.2.1.	X		
Base and filter cover	Clean inside with an industrial vacuum cleaner that meets OSHA guidelines for Cr6 housekeeping and remove the dust from the filter compartment.	X [*]		
	Clean outside with a mild detergent.		X [*]	
	Check for cracks or holes. If damaged, refer to chapter 7.	X [*]		
Fan	Check the extraction fan and the extraction fan housing for encrusted particulate. Clean if necessary.			X
	Check the sealing material of the extraction fan. Replace if necessary.			X
RotaPulse cleaning mechanism	Check proper turning of compressed air rod. Repair/replace if necessary.		X	
	Check the cleaning mechanism for leakage. Repair/replace if necessary.		X	
Dust tray	Check the contents of the dust tray. Empty if necessary.	X [*]		
Flexible hose	Check for cracks, holes or deformities. Replace if necessary.	X [*]		
Input power cord	Check the input power cord for damages.	Before every use [*]		

6.1.2 LFA 3.1/4.1 Mobile Manual/Automatic

Table 2: Periodic maintenance LFA 3.1/4.1 Mobile/Automatic

Component	Action	Every month	Every 6 months
General:			
Entire extraction arm	Check the outside of the extension arm and clean it with a non-aggressive detergent.	X [*]	
	Check the inside of the extraction arm and clean it with an industrial vacuum cleaner that meets OSHA guidelines for Cr6 housekeeping.	X	
Flexible hoses	Check for cracks, holes or deformities. Replace if necessary.	X [*]	
Steel cables of balance system	Check the steel cables for wear. If worn, refer to chapter 7.		X
Extraction hood	Check free movement of the extraction hood.	X [*]	
	Check if the hood stays in any desired position. If not refer to section 4.2.4.	X [*]	
Throttle valve	Check 90° rotation of the throttle valve using the rotary knob.		X [*]
Hinges	Check and lubricate the hinge points with bearing grease. Refer to Fig. 6.1C.		X
Balance system	Check and lubricate the steel cable near the balance wheel with lubricating oil (20W50). Refer to Fig. 6.1B.		X
	Check the balance construction of the extraction arm. Adjust mechanism if necessary. Refer to Fig. 6.1A and section 4.2.4.		X
LFA 3.1/4.1 Mobile Automatic only:			
Halogen lamp	Check halogen lamp by turning on the on/off switch (refer to Fig. 5.3A). Replace if necessary.	X [*]	
	Check glass spatter guard for weld spatters. Replace if necessary.	X [*]	

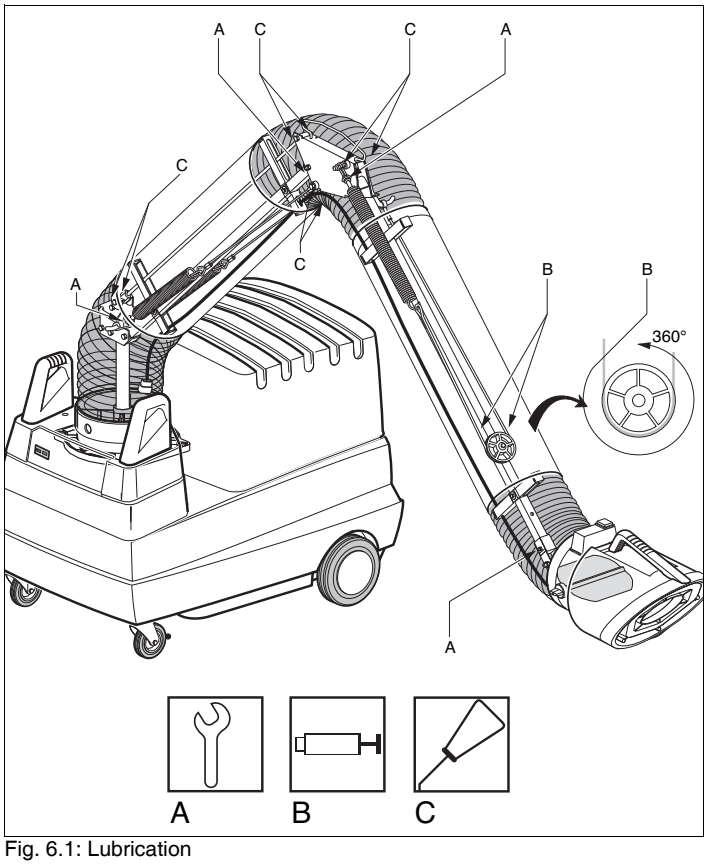


Fig. 6.1: Lubrication

6.2 Filter Replacement

WARNING!

Take necessary precautions so that you and your fellow workers are not over-exposed to particulate. Wear suitable personal protection equipment, such as gloves, respirator, eye glass and protective clothing when disposing of the filter and particulate.

Check with local waste management or local agency(ies) for assistance in the disposal of filter. If filter has collected certain types of particulate which local agencies define as hazardous waste, filter may be classified as hazardous waste and will need to be disposed in accordance with federal, state and local regulations - which could vary from state to state, and between local municipalities within the state.

6.2.1 LongLife filter cartridge

Replace the LongLife filter cartridge:
- when the control light keeps blinking (shortly) after an off-line cleaning cycle; or
- when the airflow is reduced to the point that extraction performance is no longer satisfactory; or
- when it has been damaged.

Replacement Steps:

Fig. 6.2

1) Turn off the machine and disconnect it from input power and compressed air.
2) Loosen the thumb nut (A) and remove the filter cover (B).

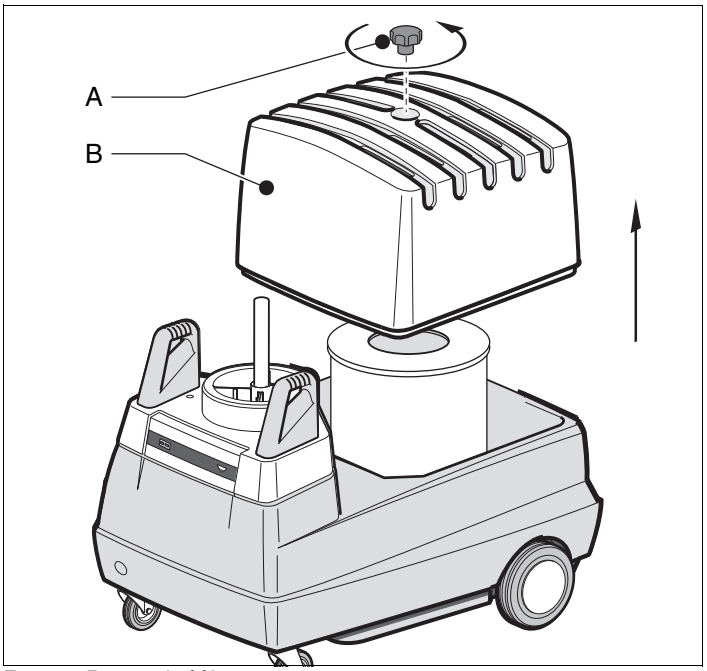


Fig. 6.2: Removal of filter cover

Fig. 6.3

3) Lift the LongLife filter cartridge (A) up and out of the base.
4) If required by federal, state and/or local regulations and guidelines, conceal filter in appropriate bag, e.g. plastic bag.
5) Clean the prefilter (B) and filter compartment (C) with an industrial vacuum cleaner that meets OSHA guidelines for Cr6 housekeeping.
6) Install a new LongLife filter cartridge.
7) Replace the dismounted parts in reverse order.

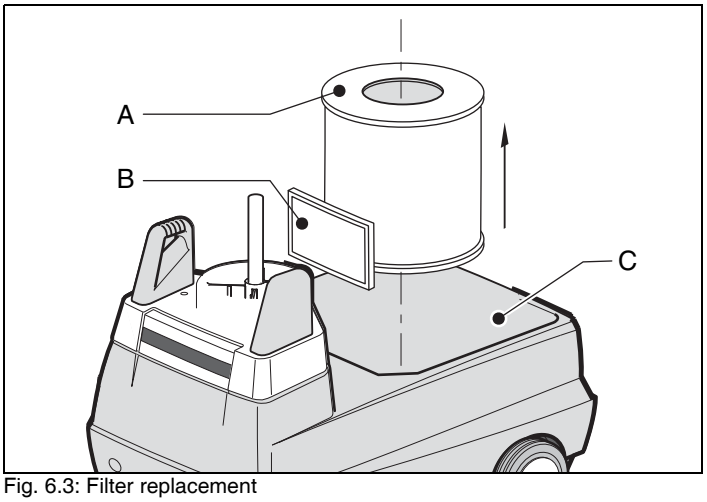


Fig. 6.3: Filter replacement

6.2.2 Prefilter

Replace the prefilter (Fig. 6.3B):
- when it is clogged or saturated and cannot be cleaned using a vacuum cleaner; or
- when it has been damaged.

	In case the prefilter has been damaged, it is recommended to also replace the LongLife filter cartridge.

6.3 Emptying the dust tray

Dust and dirt particles from the main filter end up in the dust tray underneath the machine. To avoid the dust tray to overflow thus polluting the workshop, it needs to be emptied on a regular basis. Refer to section 6.1.1 for the frequency of emptying.

	ATTENTION! **Always** wear face mask and gloves during emptying the dust tray.

	WARNING! Never open the dust tray while the motor is running.

Fig. 6.4

1) Loosen the star knob (B), which is accessible from the underside at the back of the machine.
2) Carefully take out the dust tray (A).

The dust tray can be emptied in different ways:
- using an industrial vacuum cleaner (preferred way); or
- empty it in a plastic bag.

3) Empty the dust tray. In case of emptying it in a plastic bag, make sure to seal the bag firmly.
4) Slide the dust tray back into the machine.
5) Carefully tighten the star knob making sure that the dust tray is sealed airtight.

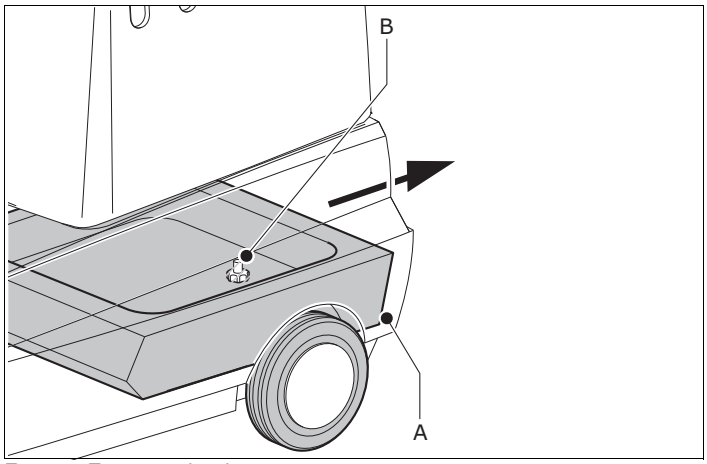


Fig. 6.4: Emptying the dust tray

7 TROUBLESHOOTING

Observe all safety guidelines detailed throughout this instruction manual.

	ATTENTION! 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 instruction manual. **Lincoln Electric Automation Service Dept: phone # 888.935.3878**

This troubleshooting guide is provided to help you locate and repair possible machine malfunctions. Simply follow the four-step procedure listed below.

Step 1: Symptom
The first column labeled “Symptom” describes possible symptoms that the machine may exhibit. Find the listing that best describes the symptoms that the machine is exhibiting.

Step 2: Locate Problem
The second column “Problem” describes the possible consequences of the found symptom.

Step 3: Possible Cause
The third column labeled “Possible cause” lists the obvious external possibilities that may contribute to the machine symptom.

Step 4: Solution
The fourth column labeled “Solution” provides a course of action for the possible cause. Generally it states to contact your local Lincoln Authorized Field Service Facility.

	CAUTION! If for any reason you do not understand the test procedures or are unable to safely perform the tests and repairs, contact your Local Lincoln Authorized Field Service Facility for technical troubleshooting assitance before you proceed.

7.1 Mobiflex 400-MS(/HE) Base Unit

Table 3: Troubleshooting guide Mobiflex 400-MS(/HE) Base Unit

Symptom	Problem	Possible Cause	Solution
Mobiflex 400-MS(/HE) Base Unit + LFA 3.1/4.1 Mobile/Automatic			
Motor does not start.	Machine does not function.	No input power.	Check the input power.
		Missing jumper on input connection.	Wire in base swivel mount.
		Input power cord defective.	Repair or replace input power cord.
		Loose contacts.	Repair the contacts.
		Motor protection switch defective.	Replace the motor protection switch.
Motor makes a humming sound.	Machine does not function.	Motor capacitor defective/not connected.	Repair or replace the motor capacitor.
Motor stops automatically.	Machine does not function.	Motor protection switch activated.	Let the machine cool down for some time. Check overload current setting 12A.
		Motor defective.	Repair or replace the motor.
Control light extinguished during cleaning process.	No indication.	Control light defective.	Replace control light.
		Control PC board defective.	Replace control PC board.
Control light blinks (“ALARM”)	Insufficient airflow.	Saturated LongLife filter.	Carry out off-line filter cleaning cycle (refer to section 5.2.3).
			Replace LongLife filter (refer to section 6.2.1).
Control light keeps blinking (“ALARM”)	No automatic filter cleaning.	Filter cleaning mechanism defective:	
		- 24 VAC magnetic valve defective.	Replace magnetic coil or diaphragm.
		- Control PC board defective.	Replace control PC board.
		- Filter cleaning mechanism defective or worn.	Replace the filter cleaning mechanism.
		- No compressed air or compressed air pressure too low.	Check compressed air system and/or compressed air connection.
		- Pressure difference switch defective.	Replace pressure difference switch.
Machine does not react to pressing filter cleaning ON/OFF - RESET button.	Activating off-line cleaning and reset not possible.	Filter cleaning ON/OFF - RESET button defective.	Replace filter cleaning ON/OFF - RESET button.
		Control PC board defective.	Replace control PC board.
		24 VAC supply defective.	Repair 24 VAC supply.
Poor suction.	Machine does not function properly.	LongLife filter cartridge clogged.	Carry out off-line filter cleaning cycle (refer to section 5.2.3) and check that control light is on.
			Replace LongLife filter cartridge (refer to section 6.2.1).
		Prefilter clogged.	Clean (refer to section 6.1) or replace (refer to section 6.2.2) the prefilter.
		Throttle valve closed.	Open throttle valve.
		Outside air is being extracted.	Check or replace the sealing material.
		Outlet grid blocked.	Remove obstructions from the outlet grid.
		Extraction fan polluted.	Clean the extraction fan.
Dust or smoke coming out of the filter cover.	Pollution of the facility.	LongLife filter cartridge damaged.	Replace LongLife filter cartridge (refer to section 6.2.1).
		Sealing on LongLife filter cartridge damaged.	Replace LongLife filter cartridge (refer to section 6.2.1).
		LongLife filter cartridge placed incorrectly.	Replace the LongLife filter cartridge or place correctly.
Dust or smoke coming out of dust tray.	Pollution of the facility.	Dust tray placed incorrectly.	Position dust tray correctly.
		Sealing material of dust tray defective.	Replace sealing material.
Vibrations in the machine.	Machine not steady.	Imbalance in the extraction fan	Clean the extraction fan.

Table 3: Troubleshooting guide Mobiflex 400-MS(/HE) Base Unit

Symptom	Problem	Possible Cause	Solution
Mobiflex 400-MS(/HE) Base Unit + LFA 3.1/4.1 Mobile Automatic only:			
Motor does not start automatically.	Machine does not function.	Lens cap of arc sensor damaged or dirty.	Replace or clean plastic lens cap of arc sensor.
		Arc Sensor defective.	Replace arc sensor.

7.2 LFA 3.1/4/1 Mobile Manual/Automatic

Table 4: Troubleshooting guide LFA 3.1/4.1 Mobile Manual/Automatic

Symptom	Problem	Possible Cause	Solution
General:			
Extraction hood not in balance.	Extraction hood does not stay in desired position.	Not enough friction.	Adjust balance. Refer to section 4.2.4.
	Extraction hood can't be moved in desired position.	Too much friction.	Adjust friction. Refer to section 4.2.4.
Extraction capacity insufficient.	Pollution of the facility.	Throttle valve closed.	Open throttle valve.
		Flexible hose(s) torn or loose.	Replace flexible hose(s) or apply correctly.
		Rubber seal(s) torn.	Replace rubber seal(s).
Extraction arm not in balance.	Entire arm falls on its own.	Lack of spring tension fan side.	Increase spring tension. Refer to section 4.2.4.
	Hood section falls on its own.	Lack of spring tension hood side.	Increase spring tension. Refer to section 4.2.4.
Extraction arm creaks or squeaks.	Excessive wear of parts.	Insufficient lubrication in hinges.	Lubricate hinges using oil or grease. Refer to section 6.1.
		Worn out steel cable.	Replace steel cable and lubricate.
		Worn out bearing of balance wheel.	Replace bearing and lubricate.
LFA 3.1/4.1 Mobile Automatic only:			
Insufficient light to the workpiece.	No clear view.	Weld spatters on glass spatter guard.	Replace glass spatter guard.
		Halogen lamp defective.	Replace halogen lamp.

8 SPARE PARTS

The available spare parts for the unit are indicated on the exploded views.

Address your order to your supplier and always state the data below:
- product name and serial number (see the identification label)
- article number of the particular part
- description
- quantity

8.1 Mobiflex 400-MS(/HE) Base Unit

Table 5: Spare parts Mobiflex 400-MS(/HE) Base Unit

Item/Description	Part #	Qty
A Motor Capacitor	S23281-4	1
B Motor	S23281-14	1
C Fan Housing	S23281-1	1
D Washer	S23281-15	1
E Fan Wheel	S23281-2	1
F Control Housing	S23281-3	1
G Rubber Seal 8 in.	S23282-1	1
H Replacement Hose	S23282-12	1
I Pre Filter	S23281-24	1
J Filter Cover (Special Order)	S23281-26	1
K Thumb nut	S23281-7	1
L Mobiflex 400-MS: LongLife Filter Cartridge FCC 30*) Mobiflex 400-MS/HE: LongLife Filter Cartridge FCC 30-HE*)	K1673-2 K1673-4	1 1
M Filter Cleaning Unit, Complete (includes AI, M, AH, N, O)	S23281-27	1
N Pressure Relief Valve 6-10 bar (2400-4000 in. WG)	S23281-31	1
O Membrane Valve	S23281-28	1
P Dust Tray	S23281-30	1
R Rear Wheel	S23281-9	2
S Base Housing (Special Order)	S23281-29	1
T Front Caster with Brake	S23281-10	1
V Pressure Regulating Valve & Gauge	S23385-2	1
W Control Light Indicator	S23281-32	1
Y On/Off - Reset Button	S23281-33	1
Z Contactor, 24V/60HZ, 10VA	S23284-5	1
AA Main Switch/Starter Overload SW	K1494-2	1
AB Control PC Board	S23281-34	1
AC Fuse 2A/250V, Slow Blow	S23284-2	1
AD Transformer 115/24V, 48VA	S23284-4	1

Table 5: Spare parts Mobiflex 400-MS(/HE) Base Unit

Item/Description	Part #	Qty
AE Pressure DifferenceSwitch	S23281-35	1
AF Red Plastic Ring	S23282-36	
AG Clamping Pin	S23282-19	
AH Valve	S23281-62	
AI Piston Mechanism	S23281	
AJ Base Swivel Mount	S23282-34	

**) Suggested extra spare parts*

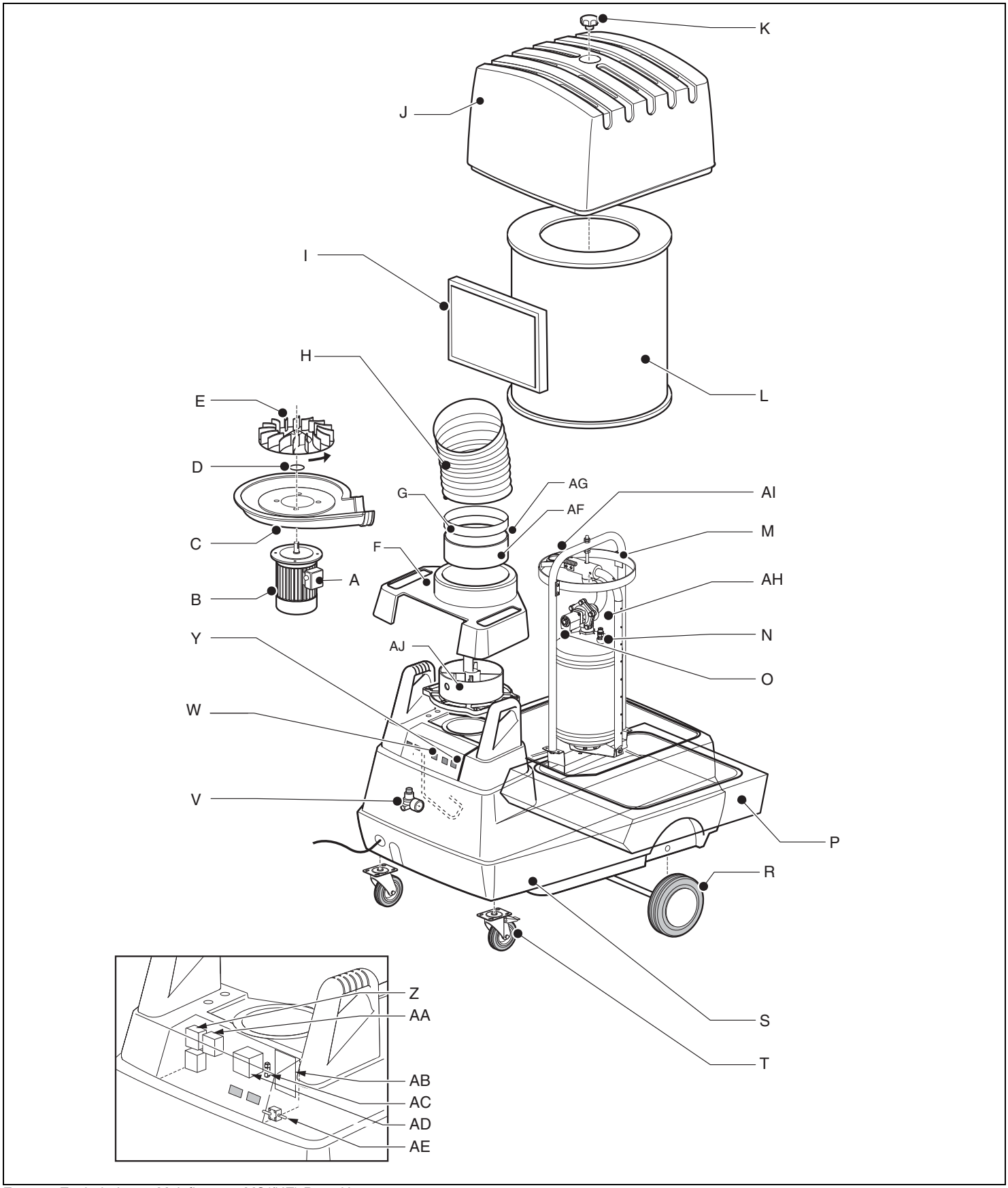


Fig. 8.1: Exploded view Mobiflex 400-MS(/HE) Base Unit

8.2 LFA 3.1/4.1 Mobile Manual/Automatic

Table 6: Spare parts LFA 3.1/4.1 Mobile Manual/Automatic extraction arm

Item/Description	Part #	Qty
A Rubber seal 8 in.	S23282-1	6
B Replacement Hose Section	S23282-12	3
C Arm Section LFA 3.1 Arm Section LFA 4.1	S23282-2 S23282-3	2 2
D Throat Rotatable Hood	S23384-37	1
E Rotary Knob Throttle Valve	S23282-4	2
F Airflow Focus Vanes	S23382-33	1
G Rotatable Hood Rim	S23282-40	1
H Rotatable Hood assembly	S23282-5	1
I Tee Connection Rod	S23282-39	2
J Tube Spacer	S23282-28	4
K Spring Set Fan Side LFA 3.1 Spring Set Fan Side LFA 4.1	S23282-31 S23282-32	1 1
L Spring Set Hood Side LFA 3.1 Spring Set Hood Side LFA 4.1	S23282-29 S23282-30	1 1
M Rod LFA 3.1 Rod LFA 4.1	S23282-37 S23171-38	1 1
N Hood Hinge with Rubber Protection Cover Rubber Protection Cover only	S23282-23 S23284-41	1 1
O Steel Tube Fan Side LFA 3.1 Steel Tube Fan Side LFA 4.1	S23282-26 S23282-27	1 1
P Hose Running Guard	S23282-35	1
Q Plastic Friction Plug	S23282-6	2
R Aluminum Tube Hood Side LFA 3.1 Aluminum Tube Hood Side LFA 4.1	S23282-24 S23282-25	1 1
LFA 3.1/4.1 Mobile Automatic - PN's K2633-2 & K2633-4		
S Connection Wire (wire only)	S23270-1	1
T Remote Switch, Lamp	S23283-1	1
U Switch Enclosure	S23283-2	1
V Interconnection PC Board	S23283-3	1
W Automatic Start-Stop Arc Sensor	S23275	1
X Plastic Lens Cap	S23283-8	2
Y Halogen Lamp	S23283-6	1
Z Glass Spatter Guard	S23283-10	1
AA Holding Spring	S23283-9	1
AB Red Plastic Ring	S23282-36	1
AC Clamping Pin	S23282-19	1
AD Base Swivel Mount		1

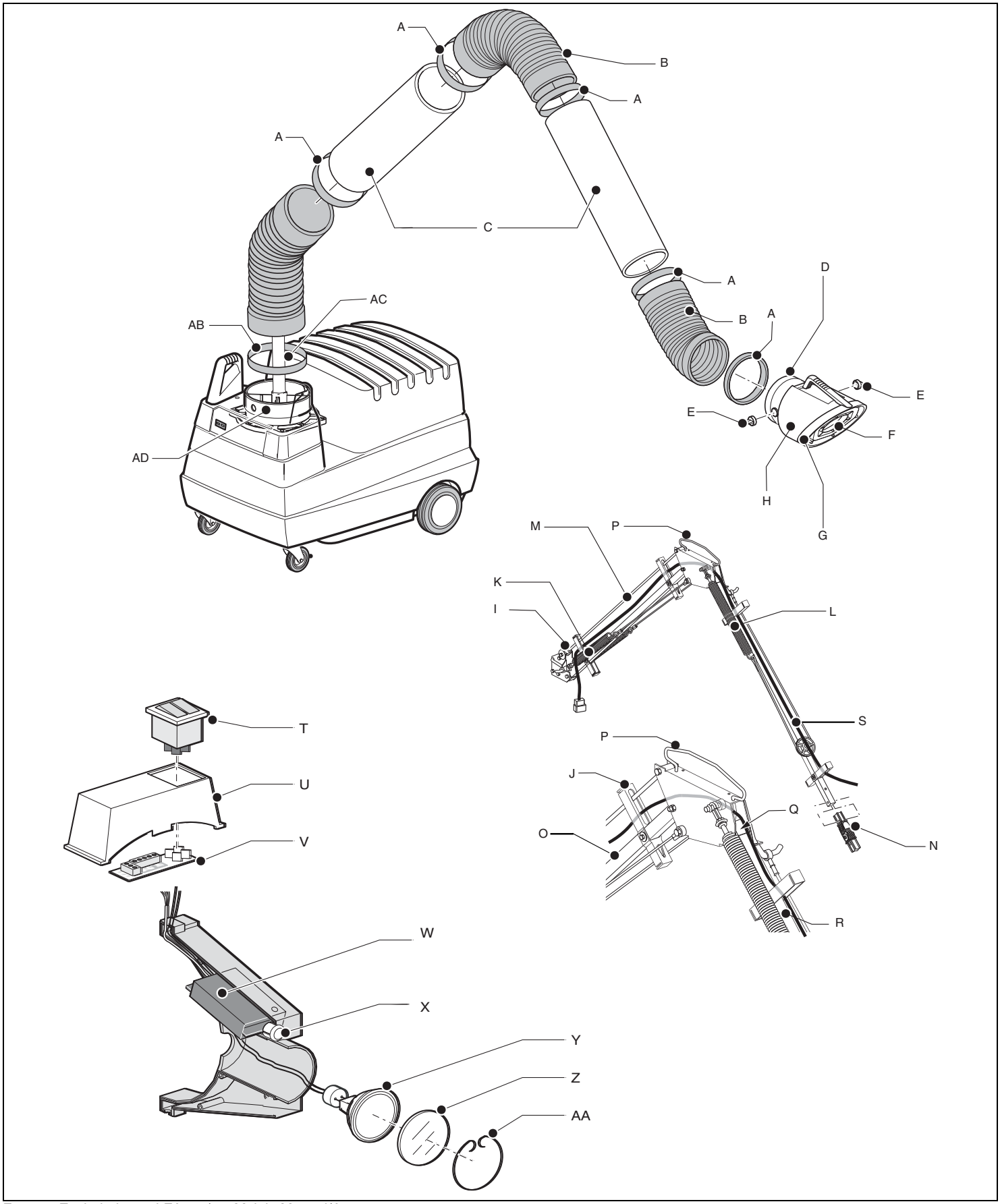
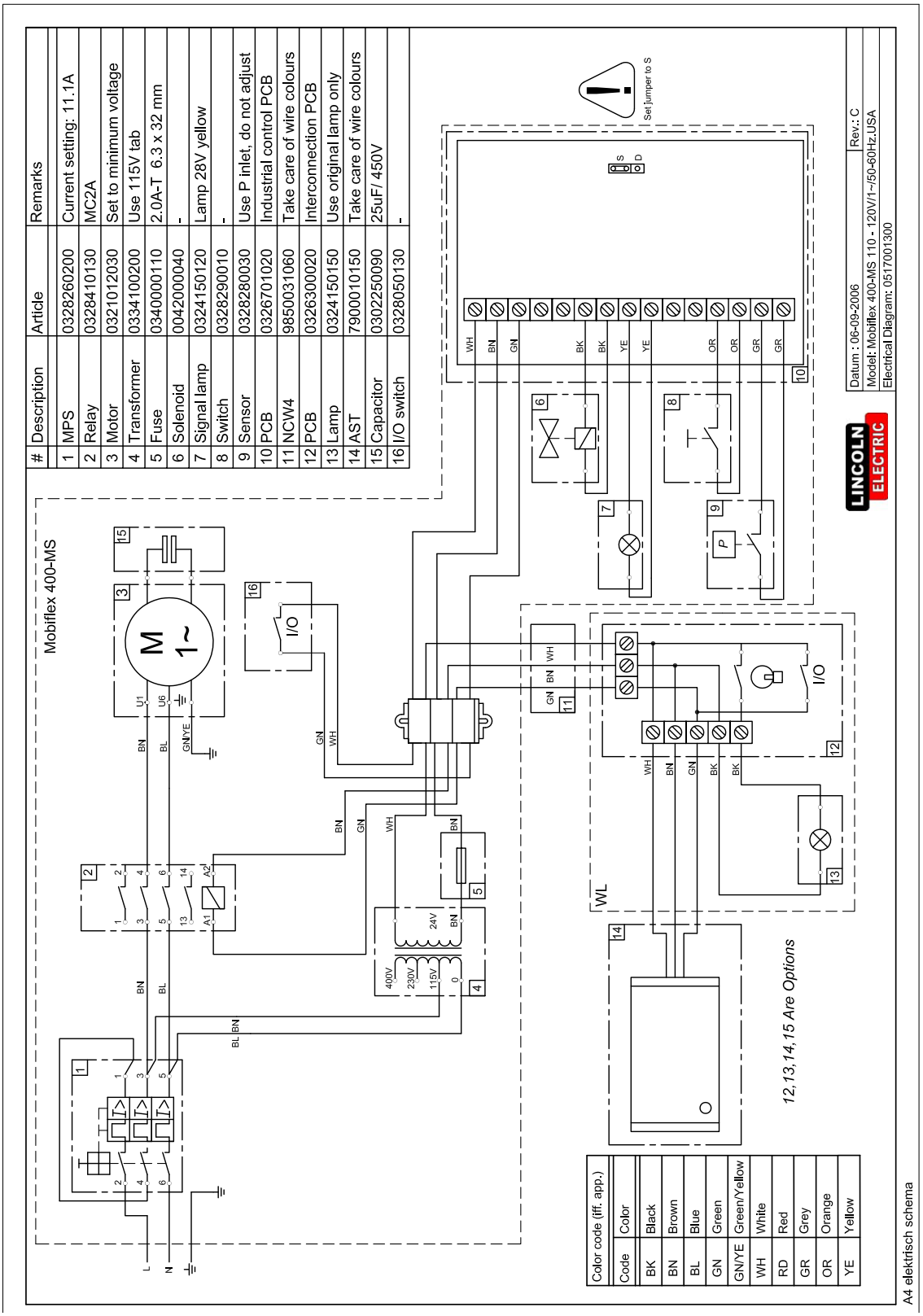


Fig. 8.2: Exploded view LFA 3.1/4.1 Mobile Manual/Automatic

9 DISPOSAL

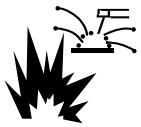
After life of the product, dispose of product in accordance with federal, state or local regulations.

10 ELECTRICAL DIAGRAM



#	Description	Article	Remarks
1	MPS	0328260200	Current setting: 11.1A
2	Relay	0328410130	MC2A
3	Motor	0321012030	Set to minimum voltage
4	Transformer	0334100200	Use 115V tab
5	Fuse	0340000110	2.0A-T 6.3 x 32 mm
6	Solenoid	0042000040	-
7	Signal lamp	0324150120	Lamp 28V yellow
8	Switch	0328290010	-
9	Sensor	0328280030	Use P inlet, do not adjust
10	PCB	0326701020	Industrial control PCB
11	NCW4	9850031060	Take care of wire colours
12	PCB	0326300020	Interconnection PCB
13	Lamp	0324150150	Use original lamp only
14	AST	7900010150	Take care of wire colours
15	Capacitor	0302250090	25uF/ 450V
16	I/O switch	0328050130	-

Color code (iff. app.)	
Code	Color
BK	Black
BN	Brown
BL	Blue
GN	Green
GN/YE	Green/Yellow
WH	White
RD	Red
GR	Grey
OR	Orange
YE	Yellow

			
WARNING	● Do not touch electrically live parts or electrode with skin or wet clothing. ● Insulate yourself from work and ground.	● Keep flammable materials away.	● Wear eye, ear and body protection.
Spanish **AVISO DE PRECAUCION**	● No toque las partes o los electrodos bajo carga con la piel o ropa mojada. ● Aislese del trabajo y de la tierra.	● Mantenga el material combustible fuera del área de trabajo.	● Protéjase los ojos, los oídos y el cuerpo.
French **ATTENTION**	● 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.	● Gardez à l'écart de tout matériel inflammable.	● Protégez vos yeux, vos oreilles et votre corps.
German **WARNUNG**	● Berühren Sie keine stromführenden Teile oder Elektroden mit Ihrem Körper oder feuchter Kleidung! ● Isolieren Sie sich von den Elektroden und dem Erdboden!	● Entfernen Sie brennbarres Material!	● Tragen Sie Augen-, Ohren- und Körperschutz!
Portuguese **ATENÇÃO**	● Não toque partes elétricas e electrodos com a pele ou roupa molhada. ● Isole-se da peça e terra.	● Mantenha inflamáveis bem guardados.	● Use proteção para a vista, ouvido e corpo.
Japanese **注意事項**	● 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。	● 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。	● 目、耳及び身体に保護具をして下さい。
Chinese **警 告**	● 皮肤或濕衣物切勿接觸帶電部件及銲條。 ● 使你自己與地面和工件絕緣。	● 把一切易燃物品移離工作場所。	● 佩戴眼、耳及身體勞動保護用具。
Korean **위 험**	● 전도체나 용접봉을 젖은 헝겁 또는 피부로 절대 접촉치 마십시요. ● 모재와 접지를 접촉치 마십시요.	● 인화성 물질을 접근 시키지 마시요.	● 눈, 귀와 몸에 보호장구를 착용하십시요.
Arabic **تحذير**	● لا تلمس الاجزاء التي يسري فيها التيار الكهربائي أو الالكترود بجلد الجسم أو بالملابس المبللة بالماء. ● ضع عازلا على جسمك خلال العمل.	● ضع المواد القابلة للاشتعال في مكان بعيد.	● 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.

			
● Keep your head out of fumes. ● Use ventilation or exhaust to remove fumes from breathing zone.	● Turn power off before servicing.	● Do not operate with panel open or guards off.	**WARNING**
● Los humos fuera de la zona de respiración. ● Mantenga la cabeza fuera de los humos. Utilice ventilación o aspiración para gases.	● Desconectar el cable de alimentación de poder de la máquina antes de iniciar cualquier servicio.	● No operar con panel abierto o guardas quitadas.	Spanish **AVISO DE PRECAUCION**
● Gardez la tête à l'écart des fumées. ● Utilisez un ventilateur ou un aspirateur pour ôter les fumées des zones de travail.	● Débranchez le courant avant l'entretien.	● N'opérez pas avec les panneaux ouverts ou avec les dispositifs de protection enlevés.	French **ATTENTION**
● Vermeiden Sie das Einatmen von Schweibrauch! ● Sorgen Sie für gute Be- und Entlüftung des Arbeitsplatzes!	● Strom vor Wartungsarbeiten abschalten! (Netzstrom völlig öffnen; Maschine anhalten!)	● Anlage nie ohne Schutzgehäuse oder Innenschutzverkleidung in Betrieb setzen!	German **WARNUNG**
● Mantenha seu rosto da fumaça. ● Use ventilação e exhaustão para remover fumo da zona respiratória.	● Não opere com as tampas removidas. ● Desligue a corrente antes de fazer serviço. ● Não toque as partes elétricas nuas.	● Mantenha-se afastado das partes moventes. ● Não opere com os paineis abertos ou guardas removidas.	Portuguese **ATENÇÃO**
● 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。	● 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って下さい。	● 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**
●頭部遠離煙霧。 ●在呼吸區使用通風或排風機除煙。	●維修前切斷電源。	●在敞開打開或沒有安全罩時不操作。	Chinese **警 告**
● 얼굴로부터 용접가스를 멀리하십시오. ● 호흡지역으로부터 용접가스를 제거하기 위해 가스제거기나 통풍기를 사용하십시오.	● 보수전에 전원을 차단하십시오.	● 판넬이 열린 상태로 작동하지 마십시오.	Korean **위 험**
● ابعد رأسك بعيداً عن الدخان. ● استعمل التهوية أو جهاز شفط لدخان للخارج لكي تبعد الدخان عن المنطقة التي تتنفس فيها.	● اقطع التيار الكهربائي قبل القيام بأية صيانة.	● لا تشغل 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商的說明以及廠商使用的焊接材料，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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