HYPRO®

Form L-1475
(7/07)

ARAG® Foam Marker
Operating Instructions and Parts Manual

Description

A Complete Kit for Turf and Row-Crop Sprayers

Part # 520004

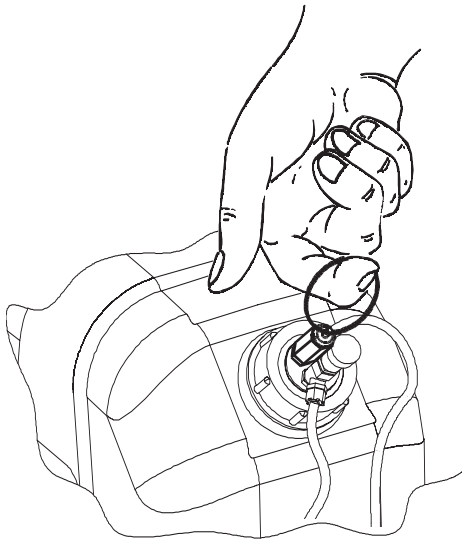
Features & Benefits:

- Save money and increase efficiency by avoiding costly misses and overlaps while spraying
- No premixing required; foam is made in the drop assembly at the end of the boom
- Fits any crop sprayer, turf sprayer or seeding machine (extra hose required for booms longer than 60 feet – part # 520000-751)
- Electro-pneumatically operated, requiring a 12-volt DC 6 Amp power supply
- 108' dual liquid/air hose with thermoformed polystyrene covering for UV protection

Warning!

Read the instructions in this manual carefully. Hypro/ARAG cannot be held responsible for damage caused by improper use or installation.

PRECAUTIONS:
1. Never spray the console with a pressure washer.
2. Never use solvents for cleaning console.
3. In case of electric welding, make sure to disconnect the battery cables.
4. Use only original Hypro/ARAG replacement parts.



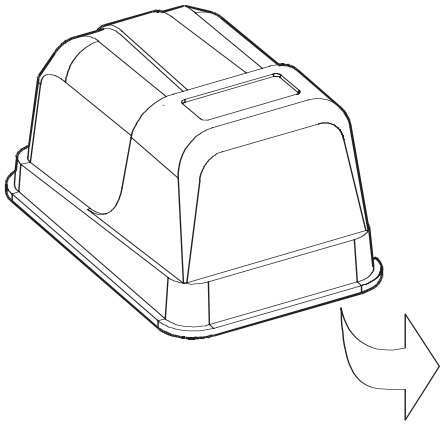
ATTENTION!
Read the instructions contained in this manual carefully. Hypro/ARAG cannot be held liable for damage caused by improper installation or use or non-observance of the general regulations for protection and safety at work. Foaming agents may be hazardous due to their toxicity! Never use the foam marker in enclosed or poorly ventilated places without wearing the appropriate Individual Protection Devices.

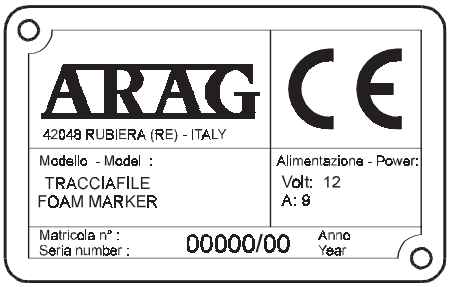
Keep this manual with the foam marker.

Opening the tank cap may cause foaming agent to suddenly come out!

This ⚠ symbol draws special attention to operations where it is necessary to:
• cut off the supply to the foam marker;
• lift the ring of the pressure relief valve on the tank cap and discharge the remaining pressure as shown in the illustration.

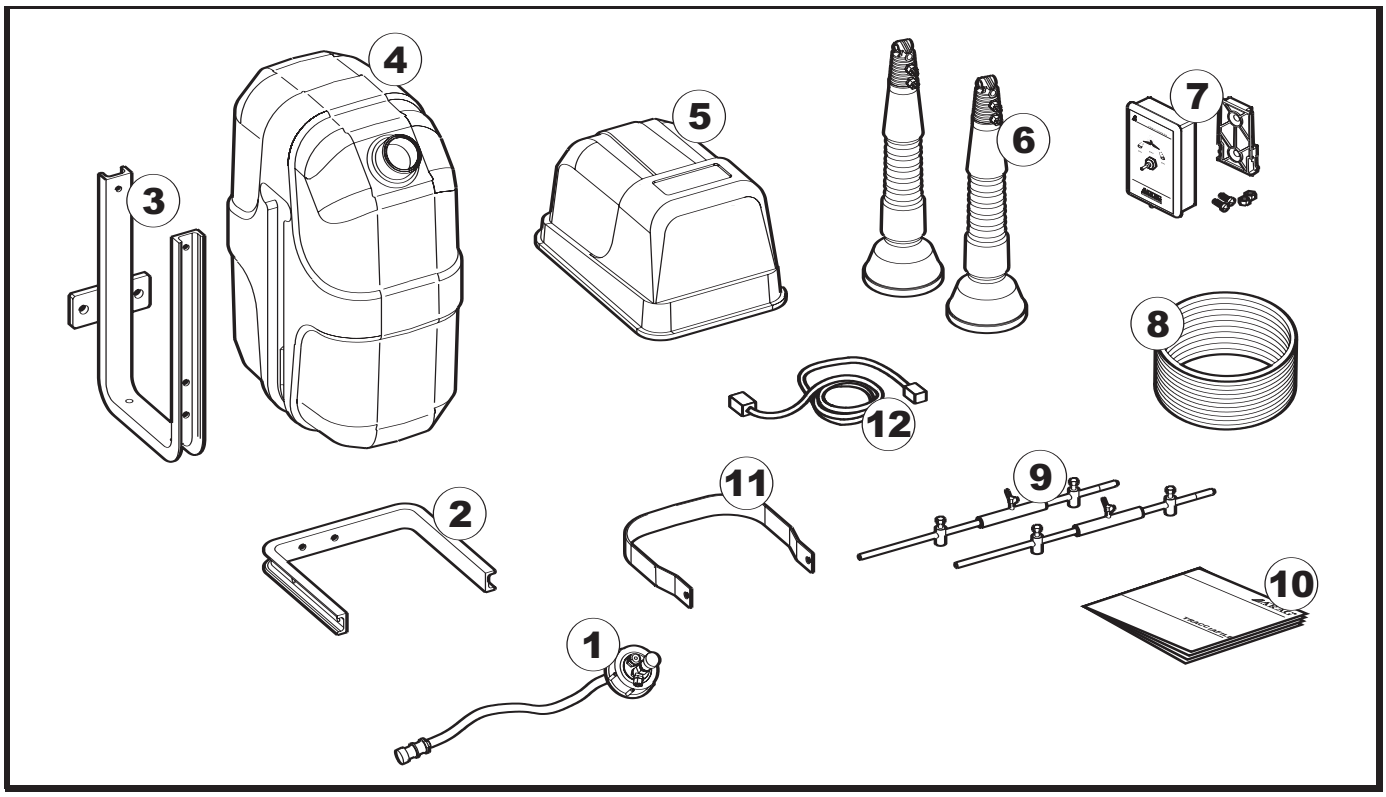
Identification





On all requests for spare parts, provide the serial number and year of manufacture of the foam marker given on the identification plate, located on bottom side of compressor/solenoid assembly.

Foam Marker Kit Contains:



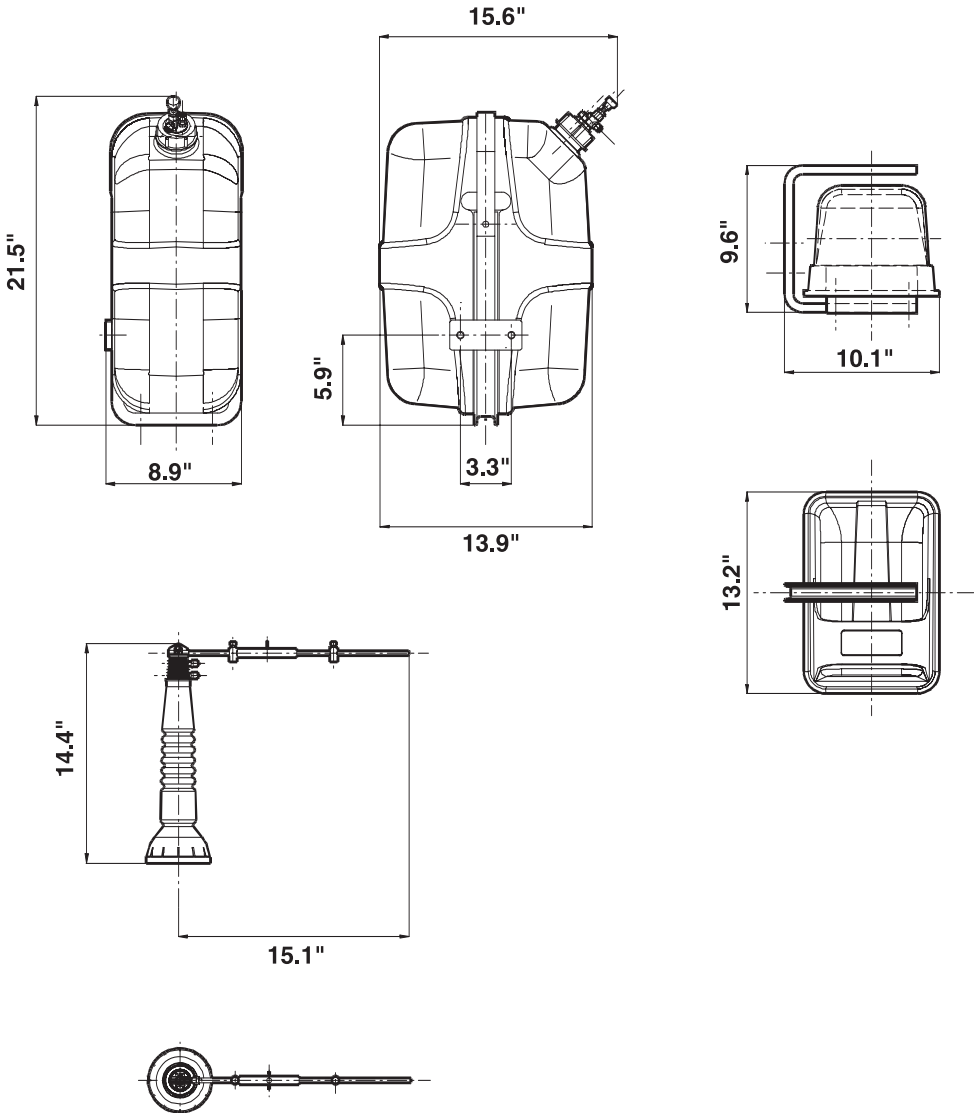
1. Complete tank cap assembly
2. Compressor mounting frame
3. Tank bottom support
4. 5-gallon tank
5. Complete compressor unit
6. Nozzle drop assembly
7. Switch box assembly, foam marker
8. Dual hose, 6 mm x 33 M (108')
9. Mounting parts for drop assembly
10. Instruction manual
11. Tank top bracket
12. Console-to-compressor cable

Note: Refer to pages 12 through 15 for individual part numbers.

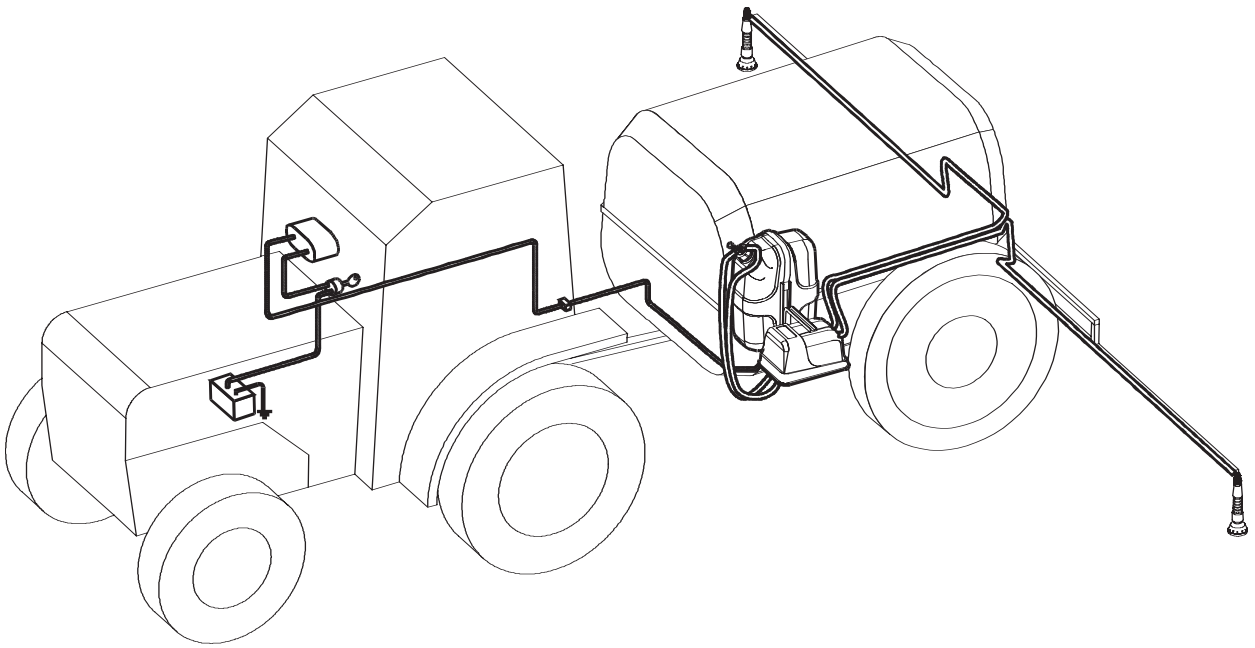
Technical and Operating Specifications

Description	Value
Power supply voltage	12 Vdc
Current draw (at 12 Vdc)	9 A
Working temperature	0 - 104°F
Tank capacity	5 gallons
Working pressure (at 12 Vdc)	10 PSI
Pressure relief valve setting	14.5 PSI
Total weight excluding packing	40 lbs.
Noise level	75 dB (A)

Overall Dimensions



System Installation



Installing the foam marker on a sprayer

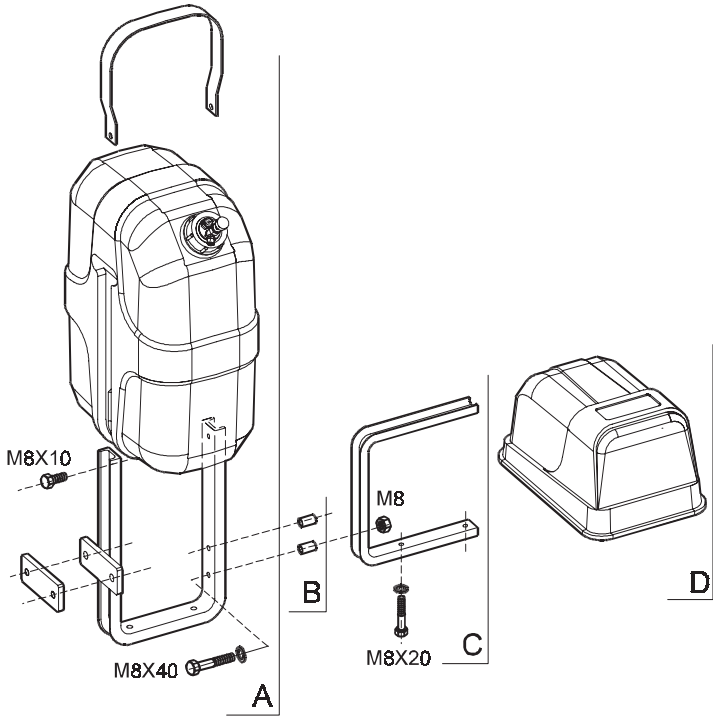
Foam Marker Installation

Precautions:

When installing the foam marker, it is necessary to observe a few essential rules.

- Secure the electric compressor unit in a position sheltered from stones picked up by the wheels or by the products sprayed from the booms.
- On seeders, install the electric compressor unit sheltered from areas that are too dusty.
- Using the clamps supplied, fit the air-liquid foam nozzles at the end of the booms at a distance from the last nozzle equal to half the distance of the spray tips. The foam must fall in an area sheltered from the nozzle, and the point where it falls must mark the area sprayed by the boom.
- Secure the hoses to the framework with clamps, in a position protected from possible impact with the ground or with the boom framework. At the joints of the booms, the hoses must be of such a length as to allow the booms to open and close without damaging the hoses.
- Place the tank upright with the cap easily accessible for filling and adjusting the flow rate.
- Install the tank so it's possible to remove for periodical washing.
- The cover of the electric compressor must be easy to remove for maintenance work.

Mounting the Electric Compressor and Tank



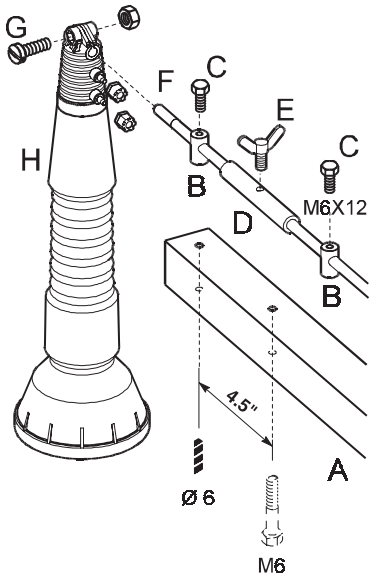
The electric compressor and tank can be mounted on the machine in two different ways (see illustration at left).

Option 1
When joining the electric compressor unit “D” to the foaming liquid tank “A,” place the spacers “B” and fixing bracket “C” between them.

Option 2
Install the compressor unit “D” and the tank “A” in different locations according to your own needs.

In this case, it is possible to secure the bed of the electric compressor to the machine, or to use the bracket “C”.

Mounting Foam Nozzles or Air-Liquid Mixers



Mounting foam nozzle onto the boom

The foam nozzle or air-liquid mixers must be mounted at the end of the booms as follows:

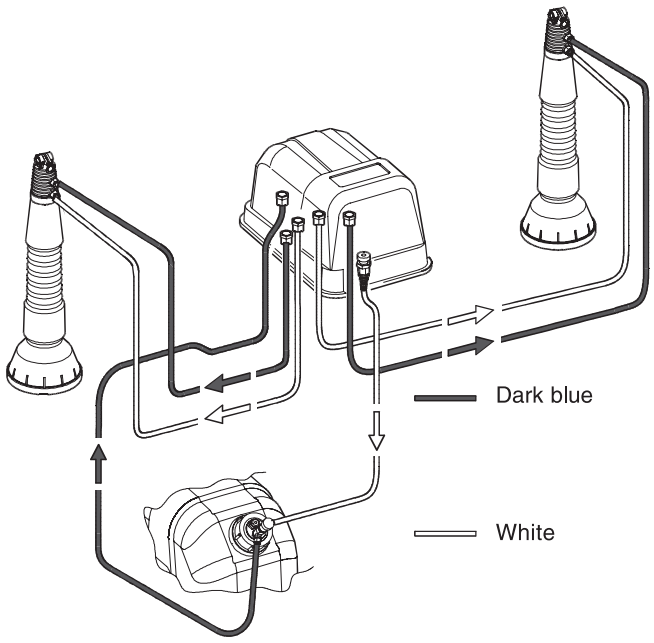
- On boom “A”, make 2 holes at a center distance of 4.5” using a drill with a bit Ø 6 mm.
- Secure the supports “B” to the boom using M6 screws of an appropriate length.
- Insert the foam nozzle “H” on the knurled portion of the support rod “F” and secure with the screw supplied “G.”
- Insert the support rod “F” into the supports “B.”
- Mount and tighten the wing nut “E” on the spacer “D.”

In this way, the foam nozzle will “**rotate.**”

To make the foam nozzle “**fixed**,” mount and tighten the screw “C” on the support “B.”

- Repeat the above operations for the other boom as well.

Mounting the Liquid/Air Circuit



Connect the white hoses (air) and the dark blue hoses (liquid) to the mixing sprayer farthest from the electric compressor unit, making sure the hoses and fittings are the same color.

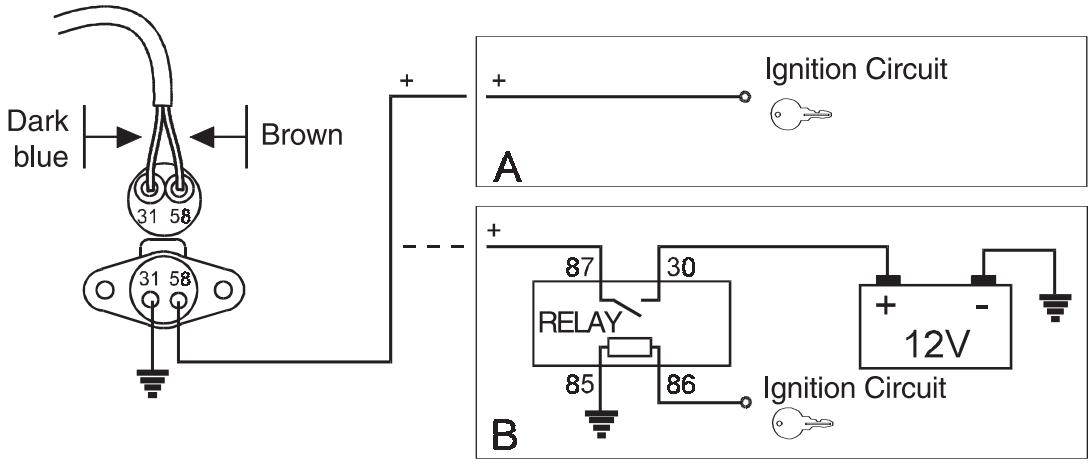
Lay the hoses along the framework of the boom as far as the electric compressor unit, allowing extra by the hinges. Connect the hoses to the electric compressor, respecting the hose/fitting coloring.

Connect the closest foam nozzle to the electric compressor unit, repeating the above procedure.

Connect the dark blue hoses (liquid) and the white hoses (air) to the fittings of the same color on the tank cap.

Insert the hose onto the cap with the bottom filter at the end.

Mounting the Control Unit



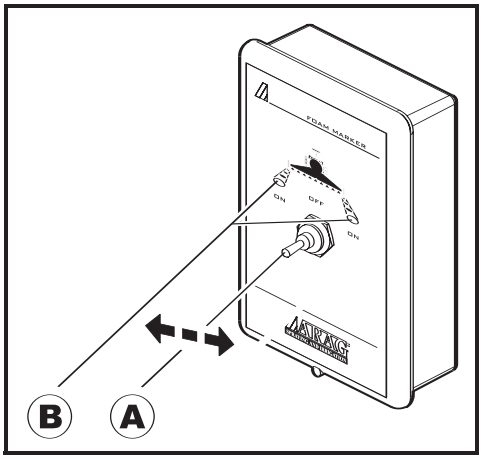
Supply cable connection

1. Secure the control box in the cab in a position that is easy to reach from the driver's seat.
2. Connect the two-pin outlet connector (58) to an ignition circuit capable of providing a continuous load of 10A. Make the connections shown in Section A. Otherwise, insert a relay as shown in Section B.
3. Protect the line with a 10A fuse.
4. Use cables with at least 13 gauge or larger.
5. To avoid the risk of short circuits, do not connect the supply cable connector until installation has been completed.
6. Connect the control box with the electric compressor unit using the extension cable supplied.
7. Secure the electric cables, making sure that the electric connections are mounted in a protected position.

Final Testing

1. Put some liquid in the tank.
2. Fully screw the cap onto the tank.
3. Start the electric compressor positioning the selector (“A” on illustration below) on the right.
4. After a few seconds, check that the liquid is coming out of the right-hand foam nozzle.
5. Check the correct seal of the hydraulic couplings.
6. Shift the selector to the left (“A” on illustration below) and repeat operations 4 and 5.
7. Stop delivery by positioning the selector to OFF (middle).
8. ⚠ **Discharge the remaining pressure from the tank as shown on page 2**.
9. Empty the water from the tank.
10. Clean the circuit as described in the maintenance section.

Using the Foam Marker



Control Unit

Control devices

A. Control lever selector — to distribute the foam (Left /Off /Right)

B. Fuse (10A) is located in back of console

Foam Marker Operation

Preliminary Checks

After a long period of inactivity, it is recommended to check the tightness of the seal fittings.

Preparation and Solution

- Pour an amount of concentrated foaming liquid into the tank according to the instructions given on the package of the product.
- Add clean water to fill the tank. Use a hose inserted down to the bottom of the tank to mix the product well and prevent foam from forming. Otherwise, it is necessary to mix carefully after filling the tank.
- Screw on the cap and tighten it carefully.
- To use it in wintertime, add windshield washer in the amounts indicated on the package.

Starting and Operation

- Start up the compressor with the lever selector A, on the control panel. After a few seconds, the circuit will reach its working pressure, making foam come out of the selected foam nozzle.
- Adjust the intensity of the foam outlet, using the flow-rate regulator on the tank cap.
- During use, it is possible to alternate the right- or left-hand foam nozzle by moving the selector lever.
- To stop operation of the foam marker, turn the selector lever to the OFF position (middle).
- To finally stop the supply to the foam marker, turn the starter key to the OFF position (if the electrical connections described in the **"Mounting control unit"** section have been made).

Topping up Liquid

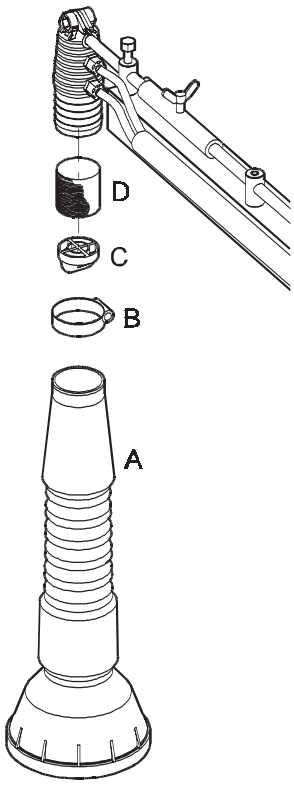
- ⚠ **Discharge the remaining pressure from the tank as shown on page 2.**
- Refill with liquid, observing the procedures described in the **"Preparation and Solution"** section.

Maintenance

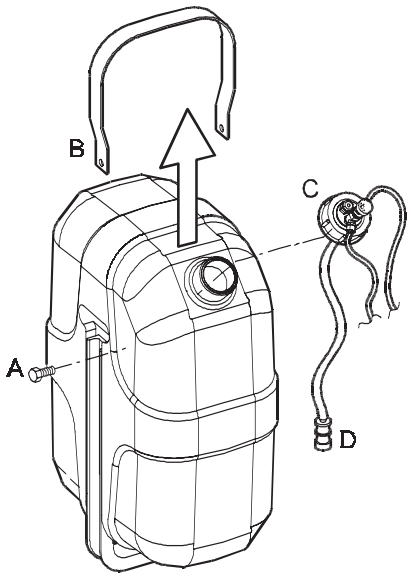
Flow-rate Adjustment

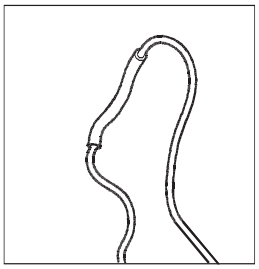
Pressure Relief Valve

The pressure relief valve on the tank cap needs no maintenance. Adjusting the pressure discharge ring under the tank cap prevents incrustations from forming on the pressure relief valve. At the same time, it checks efficiency.



Weekly Cleaning





Monthly Cleaning

Machine down for up to seven days

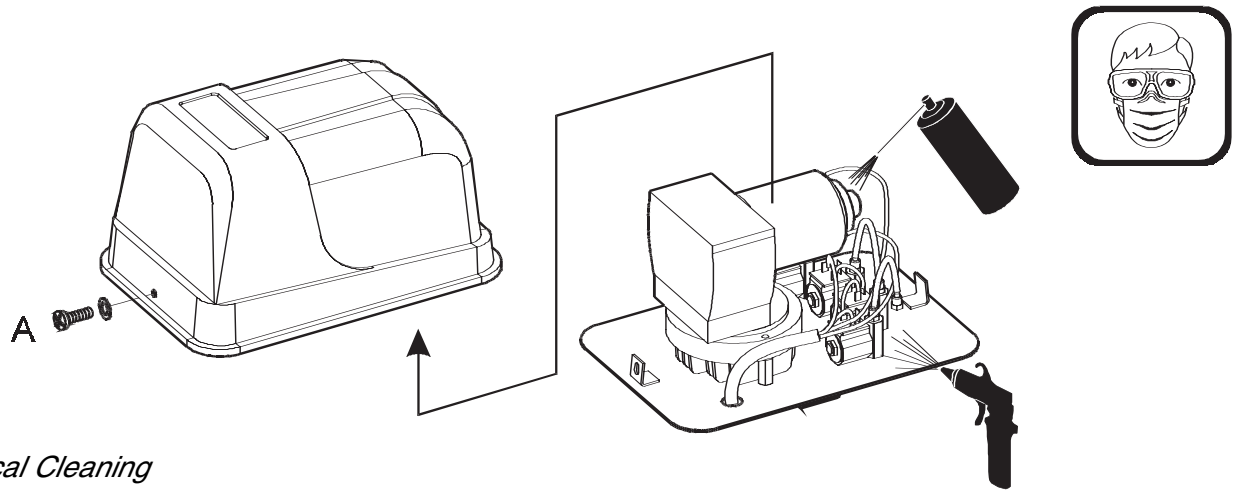
For periods of inactivity of up to seven days, carry out the following operations:

- Slacken the band “B” and remove the diffusor “A.”
- Remove the grid “C” by turning it counterclockwise.
- Take the sponge “D” out of the foam nozzle.
- Carefully wash the foam diffusers and sponge with water.
- Reassemble the parts. Use care when inserting the sponge as it must go freely into its seat without crushing, which would alter the operation of the foam marker.
- Repeat the above operations for the other foam nozzle as well.

Machine down for up to 30 days

For periods of inactivity of up to 30 days, carry out the following operations:

- ⚠ **Slacken and remove the cap “C.”**
- Remove the screws “A,” and take off the tank bracket “B.”
- Remove the tank, and wash with clean water.
- Wash the bottom filter “D.”
- Insert the tank into the support bracket.
- Add a few liters of water to the tank, and put the cap back on.
- Restore the electrical connections.
- Wash the hydraulic circuit. Operate the lever selector alternately in the position corresponding to the boom section involved until clean water comes out of the diffusers.
- ⚠ **Slacken and remove the cap,** and empty the tank of the remaining water.
- Dismantle the water/air hoses from the cap and join them using the section of hose supplied.
- Empty the hydraulic circuit by operating the lever selector in the position corresponding to the boom section involved until only air comes out of the diffusers.
- Fit all the parts back together to restore the initial conditions.
- Carry out the operations described in the “Machine down for up to seven days” section above.



Periodical Cleaning

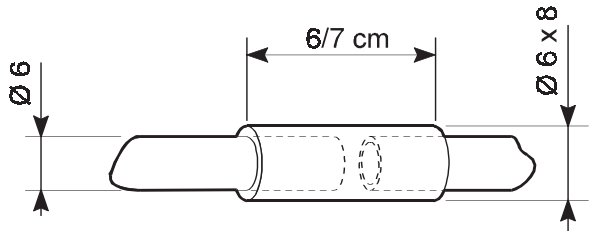
Machine down for longer than 30 days

For long periods of inactivity, proceed as follows:

- Carry out the operations described in the **"Machine down for up to 30 days"** section.
- ⚠ **Clean the electric compressor unit:**

1. Remove the cover by taking out the screws "A."
2. Clean the inside with compressed air (wearing a face mask and safety goggles).
3. Spray the self-cleaning liquid for electrical contacts through the slots on the electric motor.
4. Put the cover back on.

- **To ensure dense and lasting formation of foam, replace the sponges, Part No. 520004-747, ("D" in Weekly Cleaning Diagram) every year.**

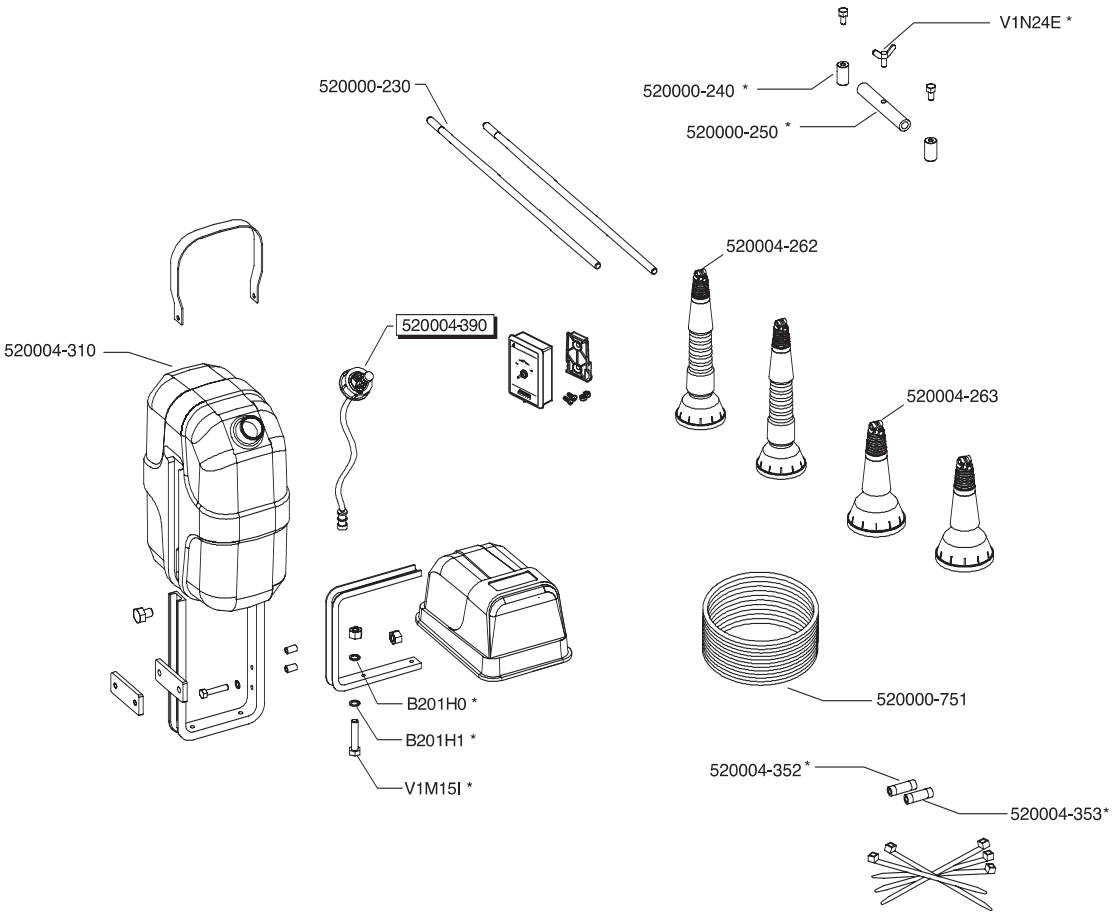


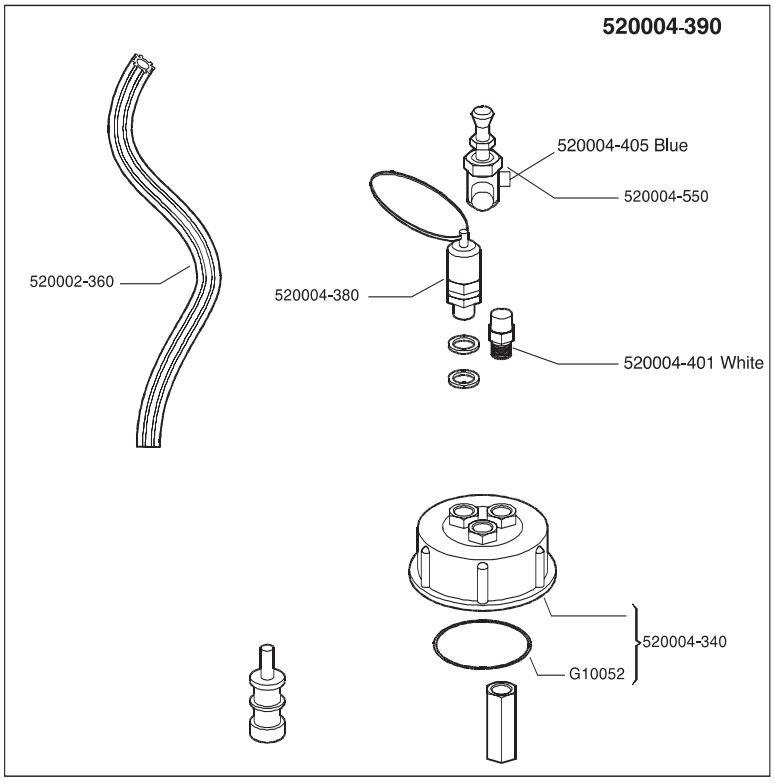
Pipe Repairs

Hose Repairs

If the hoses burst, complete the repair using a section of hose diameter 6cm (inside) x 8cm (outside), supplied in the kit.

Parts Included

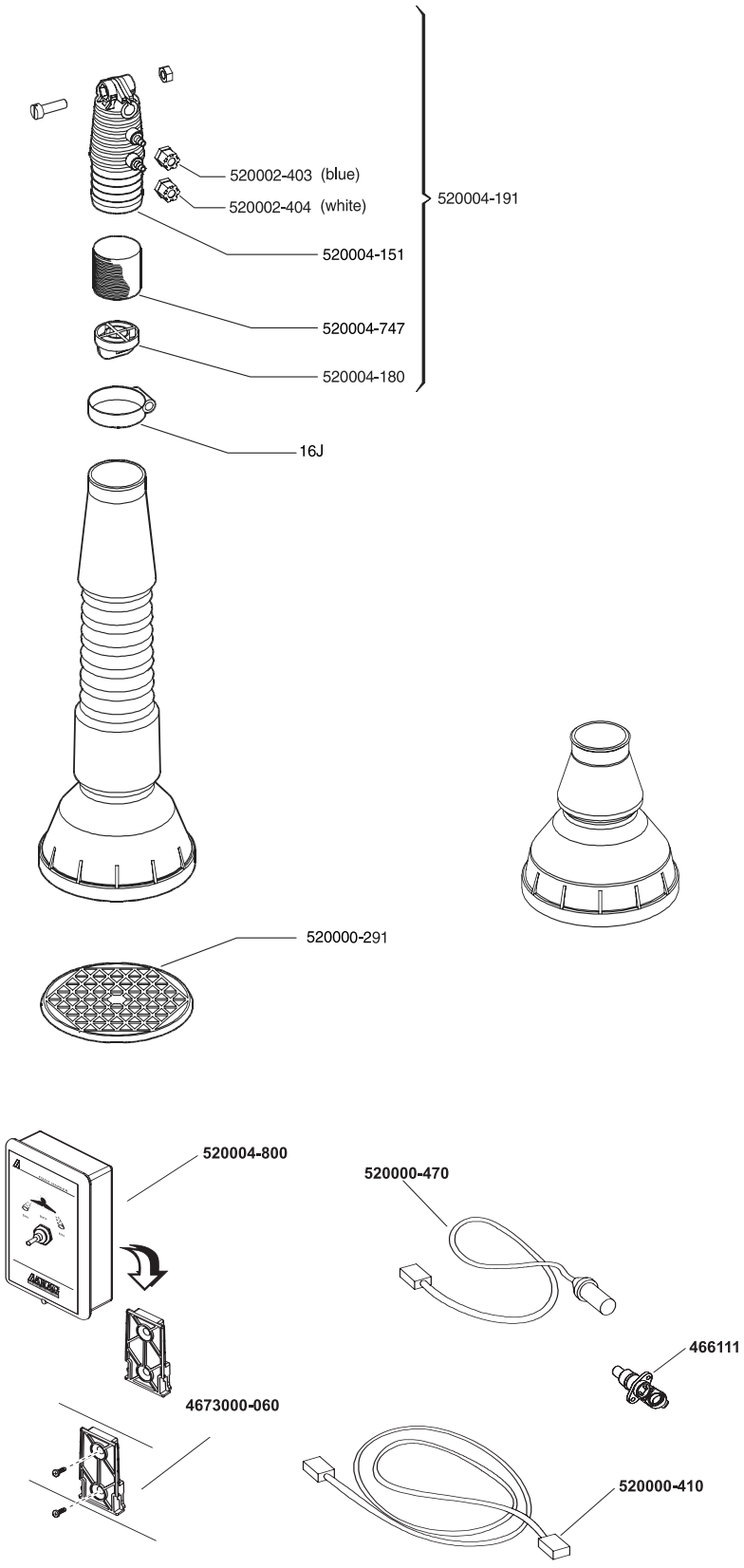




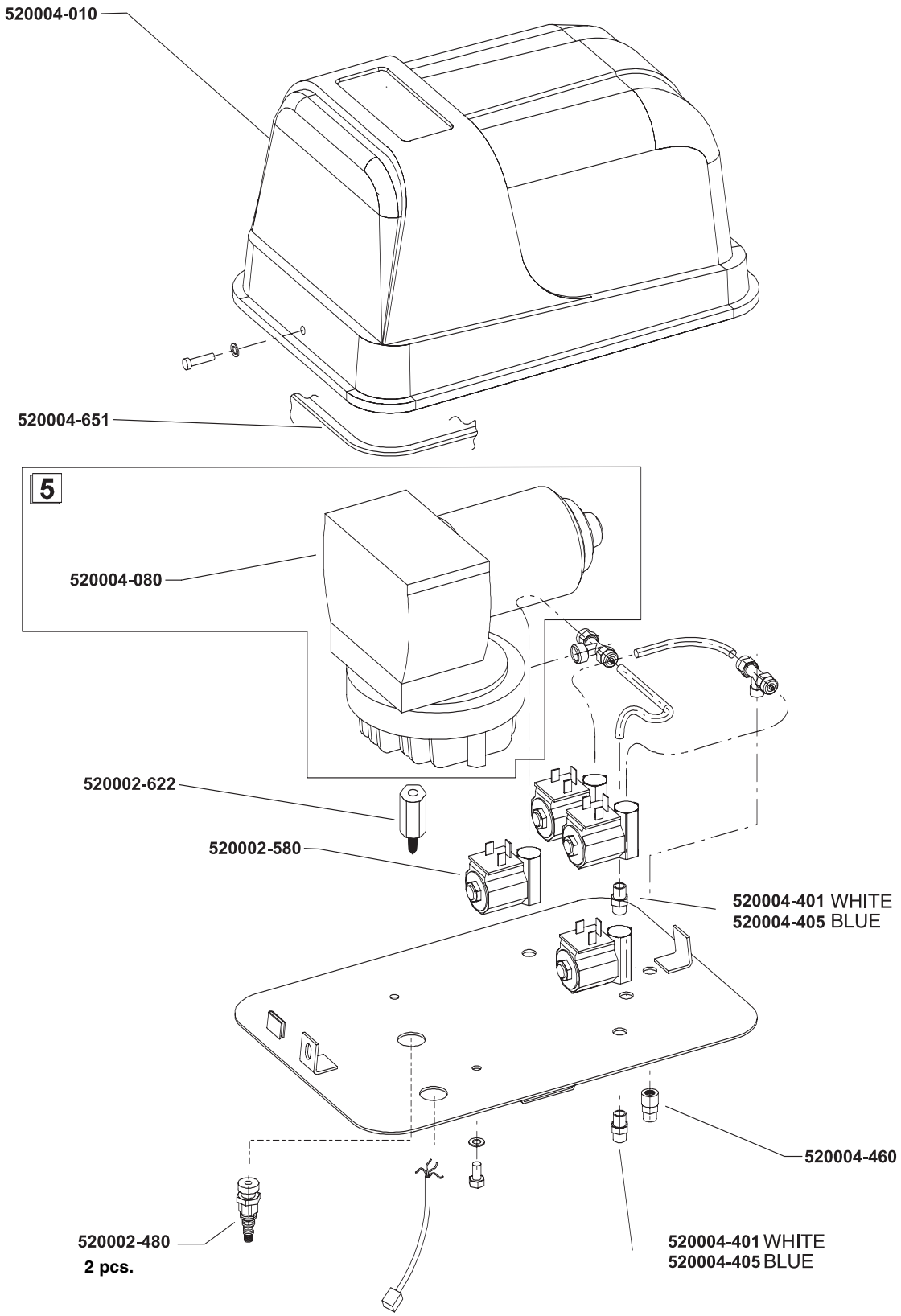
Parts Breakdown

FOAM MARKER

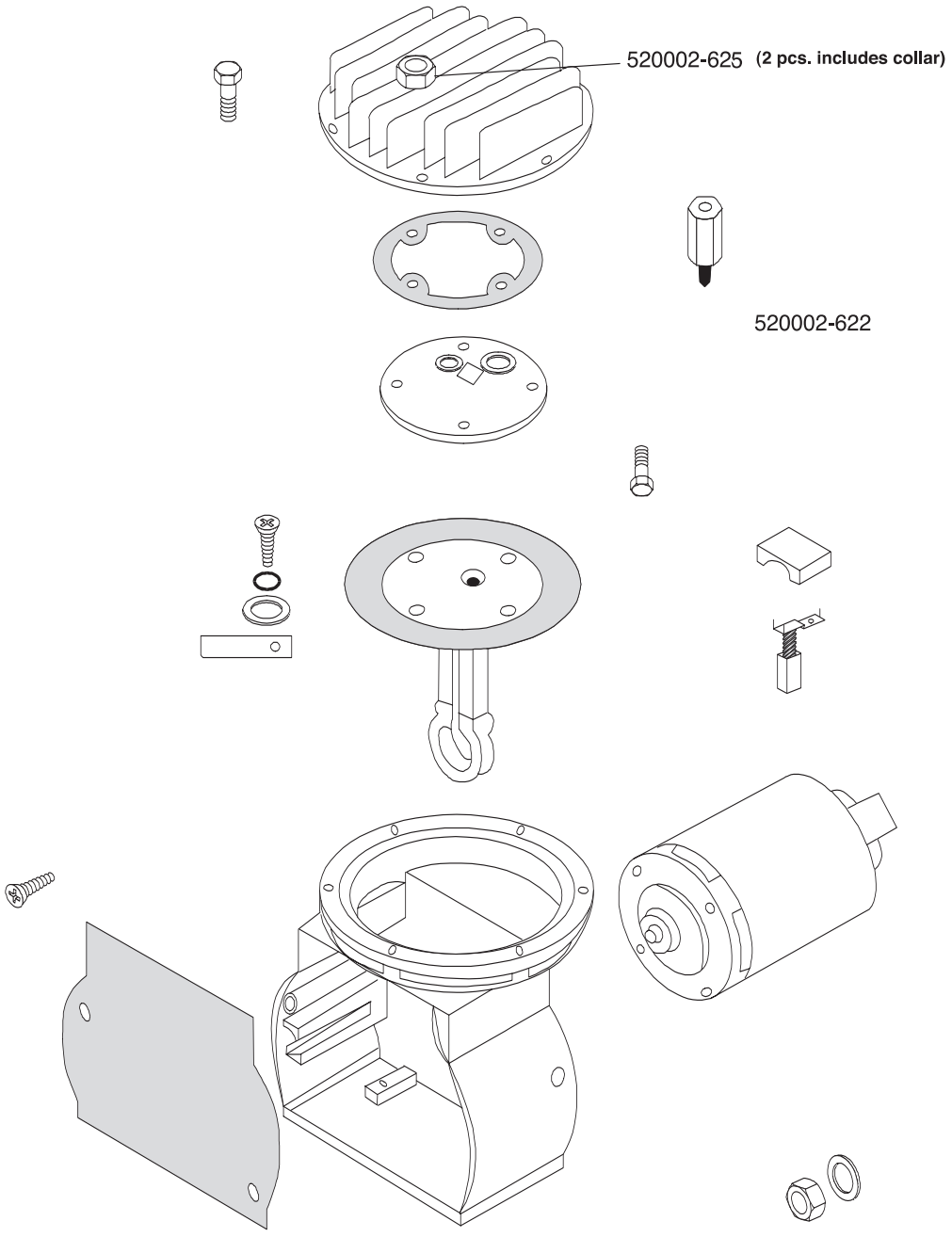
PART NUMBER 520004-262
520004-263



Complete Compressor Assembly No. 520004-060 (Discontinued)



Parts Breakdown



Drawing for reference only.

Troubleshooting

PROBLEM	CAUSE	REMEDY
The electric compressor will not work. The pilot lights fail to come on.	- No power reaches the console.	- Check the fuse. - Check the electrical connections of the console.
The electric compressor will not work. The pilot lights come on.	- Electrical connection between control unit and electric compressor broken.	- Check the connections between the control box and the electric compressor.
No foam comes out of the foam nozzles.	- The tank will not pressurize.	- Close the tank cap properly. - Check the tightness of the hoses connecting the compressor with the cap.
	- Break in the pneumo-hydraulic circuit.	- Check that there are no cracks in the hose inside the tank (from the filter to the plug) and on the outer hoses. - Clean the bottom filter of liquid. - Check for any constrictions along the hoses.
Foam formation is not good.	- Sponge dirty or hardened.	- Clean or replace the sponge inside the foam nozzle.
	- Water-foaming agent mix old.	- Redo the water-foaming agent mix.
	- Flow-rate adjustment wrong.	- Use the flow-rate regulator on the tank cap to obtain a sufficiently dense foam.
	- Constrictions in the hoses.	- Check the hoses towards the foam nozzle.
Foam continues to be formed in the foam nozzle, but not selected.	- Solenoid valve jammed.	- Disconnect the hoses going from the compressor unit to the foam nozzle, then blow with compressed air into the connection of the solenoid valves towards the compressor.
Air bleeds from the safety valve on the cap.	- Restriction in hoses.	- Check the hoses toward the foam nozzle.
	- Solenoid valve jammed.	- Clean liquid from relevant solenoid valve by blowing compressed air through the connections leading to the foam nozzle.

For problems not specified, call your dealer or the manufacturer.

— NOTES —

— NOTES —

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Limited Warranty on Hypro Products

Hypro warrants to the original purchaser of its products (the "Purchaser") that such products will be free from defects in material and workmanship under normal use for the period of one (1) year for all Hypro/ARAG controls, which includes all consoles, wiring, manual and electrical valves. "Normal use" does not include use in excess of recommended maximum speeds, pressures, vacuums and temperatures, or use requiring handling of fluids not compatible with component materials, as noted in Hypro product catalogs, technical literature, and instructions. This warranty does not cover freight damage, freezing damage, normal wear and tear, or damage caused by misapplication, fault, negligence, alterations, or repair that affects the performance or reliability of the product.

THIS WARRANTY IS EXCLUSIVE. HYPRO MAKES NO OTHER WARRANTY, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

Hypro's obligation under this warranty is, at Hypro's option, to either repair or replace the product upon return of the entire product to the Hypro factory in accordance with the return procedures set forth below. **THIS IS THE EXCLUSIVE REMEDY FOR ANY BREACH OF WARRANTY.**

IN NO EVENT SHALL HYPRO BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES OF ANY KIND, WHETHER FOR BREACH OF ANY WARRANTY, FOR NEGLIGENCE, ON THE BASIS OF STRICT LIABILITY, OR OTHERWISE.

Return Procedures

All products *must* be flushed of any chemical (ref. OSHA Section 0910.1200 (d)(e)(f)(g)(h)) and hazardous chemicals *must* be labeled before being shipped* to Hypro for service or warranty consideration. Hypro reserves the right to request a Material Safety Data sheet from the Purchaser for any pump or product Hypro deems necessary. Hypro reserves the right to "disposition as scrap" pumps or products returned which contain unknown substances, or to charge for any and all costs incurred for chemical testing and proper disposal of components containing unknown substances. Hypro requests this in order to protect the environment and personnel from the hazards of handling unknown substances.

For technical or application assistance, call the **Hypro Technical/Application number: 1-800-445-8360.**
To obtain service or warranty assistance, call the Hypro Service and Warranty number: 1-800-468-3428;
or call the Hypro Service and Warranty FAX: (651) 766-6618.

Be prepared to give Hypro full details of the problem, including the following information:

1. Model number and the date and from whom you purchased your product.
2. A brief description of the product problem.

Hypro may request additional information, and may require a sketch to illustrate the problem. Contact the factory to receive a return material authorization before sending the product. All products returned for warranty work should be sent shipping charges prepaid to:

HYPRO
Attention: Service Department
375 Fifth Avenue NW
New Brighton, Minnesota 55112

* Carriers, including U.S.P.S., airlines, UPS, ground freight, etc., require specific identification of any hazardous materials being shipped. Failure to do so may result in a substantial fine and/or prison term. Check with your shipping company for specific instructions.

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