BERTHOUD®

TANDEM 1000

82.511-A *ENGLISH*

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Read carefully
and keep for future reference

Safety, checks and maintenance of crop sprayers: **see manual** **82471**

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GENERAL POINTS AND SAFETY

Technical characteristics
Nameplate
Weight
Dimensions
Positions of the safety stickers

See "Safety, Checks and Maintenance of crop sprayers" manual No. 82.471.

TECHNICAL CHARACTERISTICS

TANDEM

- CHASSIS

- Mechanically welded protected by epoxy paint.

- HITCH

- Mount on the front hitch (3-point) or on the tractor chassis (half chassis for tractors which do not have a front hitch).

- HANDLING WHEELS

- to be mounted and removed from the machine when hitching and unhitching the machine for easy storage.

- MAIN TANK

- made of high density polyethylene, large filling opening, screwed or hinged cover and drain valve.

- Nominal capacity 1000 litres.

- GAUGE

- tube gauge for easy reading.

- PUMP

- electric centrifuge pump for mixing and transfer to the spray tank, the transfer can be performed by the sprayer pump depending on the equipment.

-FILLING THE TANK:

- Filling and incorporation via the crop sprayer hopper

- MIXING

- hydraulic by independent high-pressure circuit (hydro-injector).

- DISTRIBUTION:

- Electric cab control to power the pump and control the 3-way electric mixing or transfer selection valve.

- Manual 3-way valve for incorporation of the phytosanitary product and filling into the crop sprayer or into the Tandem.

- Manual transfer valve for return to the crop sprayer tank.

- LIGHTING

- High-beam lights at the front of the Tandem in accordance with the Highway Code.

- DIMENSIONS and REGULATORY WIDTH OF THE MACHINE

- See table page 6.

- WEIGHT

- See table page 5.

NAMEPLATE

The nameplate on your machine is located on the chassis at the front right-hand side of the machine.

The Type box contains letters and figures.
Example: TAN M 10 00 00 = TANDEM 1000 litres manual control.

00 = Length of the boom.

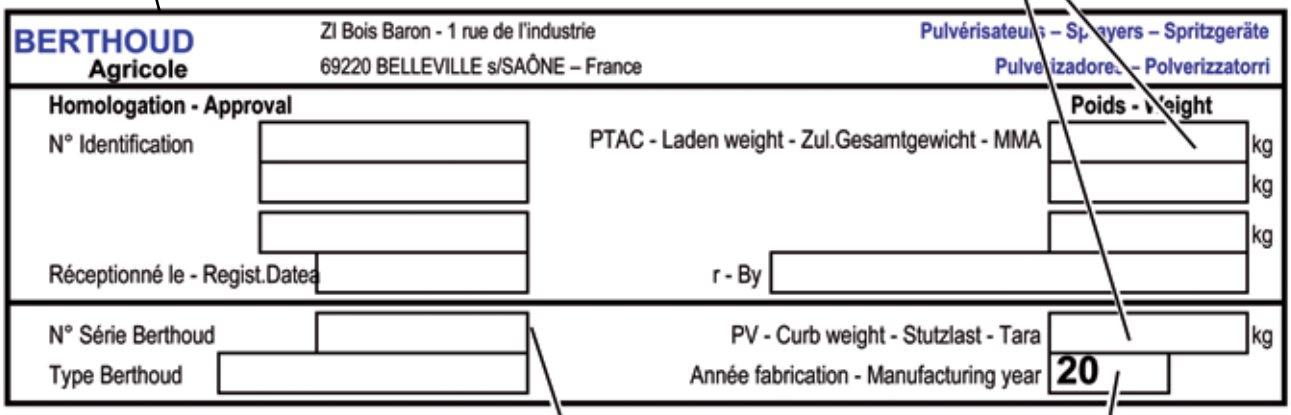
00 = Type of arch (00 = no boom).

10 = capacity of the tank 100 litres (**10** = 1000L).

E = electric control or **M** = manual control.

TAN = TANDEM (basic machine).

The empty weight and G.V.W.R. boxes use the data from the table below.



The serial number box contains 7 figures
Example: 107 1042 = serial number

Year of manufacture

WEIGHT

The weight is given for information only and may vary depending on the options.

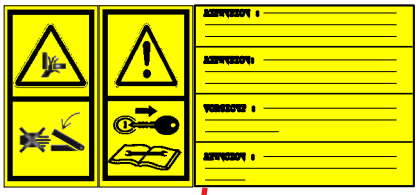
APPAREILS		POIDS
TANDEM 1000	Poids à vide (kg)	220 Kg
	P.T.A.C. (kg)	1250 Kg

TANDEM DIMENSIONS

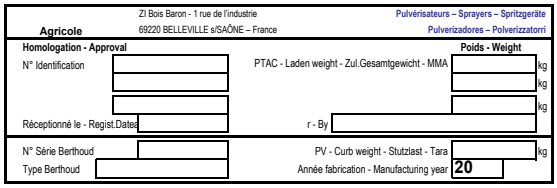
L1: Overall length of chassis	1430 mm
L2: Overall length of chassis + electric unit	1520 mm
l : Overall width	1780 mm
H1: Height with wheels and with gauge	1900 mm
H2: Height with wheels and without gauge	1210 mm
H3: Height without wheels and without gauge	1110 mm
H4: Height without wheels and with gauge	1800 mm

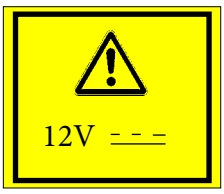
POSITION OF THE SAFETY STICKERS

417.585 417.575 467.289



492.782





426.484

417.597 418.630 417.572

It is very important to keep the safety stickers in place and in good condition. They attract your attention to the possible dangers and refer to the user manual.
Check their location on the crop sprayer and see their meaning in the manual No. ***82.471 (safety, controls, crop sprayer maintenance).***

COMMISSIONING
THE
CROP SPRAYER

Checks before use
Functions control unit

See "Safety, Checks and Maintenance of crop sprayers" manual No. 82.471.

CHECKS BEFORE USE

CHECK THAT THERE ARE NO FOREIGN BODIES IN THE TANK

- Some of the elements or accessories of your crop sprayer may have been put into the tank for transport.
- Ensure that no foreign bodies remain in the tank.

HITCHING THE MACHINE TO THE TRACTOR

- Hitch the machine to the front 3-point hitch on the tractor: (figure 1)

- Mount the hitch balls on the TANDEM eye bolts.
- Bring the crop sprayer up to the tractor's front hitch.
- Lower the tractor's front hitch to its stop.
- Bring the tractor up to the TANDEM so that the drawbar couplings are under the hitch balls mounted previously.
- Lift and lock the couplings when they are in position under the hitch balls.
- Hitch the push bar (top link) of the tractor to the TANDEM pin.
- Lift the tool.
- Connect the pipes: Filling pipes (large pipe) to connect to the filling valve cam lock nut (at the front of the crop sprayer).
  Transfer pipes (small pipe) to connect to the cam lock nut at the front of the TANDEM.
- Run the pipes (figure 1): run them along the right-hand side of the tractor along the chassis, taking care at the wheel arches.
- Mount the electric unit so that it is clearly visible and easy to access by the user.
- Run the wires (figure 1): the wires follow the crop sprayer pipes and run to the right or left of the rear window of the tractor (location reserved for this purpose).
- Connect the unit to the 7-pin socket at the front of the TANDEM.
- Connect the 3-pin socket in the cab.
- Connect the 2-pin socket to the light levers to have lighting on the TANDEM.

-Hitch the machine to the tractor's ballast support: (figures 1 and 3)

- Screw the sub frame to the TANDEM tank, at the 3-point hitch location on the TANDEM (figure 3).
- Lift the TANDEM using a lifting appliance.
- Bring the tractor up to the TANDEM so that the sub frame comes into contact with the ballast support so that the screw can be inserted through the ballast support and the half chassis.
- Tighten the screw and withdraw the lifting tool.
- Connect the pipes: Filling pipes (large pipe) to connect to the filling valve cam lock nut (at the front of the crop sprayer).
  Transfer pipes (small pipe) to connect to the cam lock nut at the front of the TANDEM.
- Run the pipes (figure 1): run them along the right-hand side of the tractor along the chassis, taking care at the wheel arches.
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- Connect the 3-pin socket in the cab.
- Connect the 2-pin socket to the light levers to have lighting on the TANDEM.

1

3

CROP SPRAYER CONTROL UNIT

Your machine is fitted with an electric control unit.
It is attached near to the cab.
It has two switches to control:

- the power supply to the pump,
- the transfer and mixing valve

Note: *The unit is protected by a 10 amp fuse, reference BERTHOUD 749.519.*
The fuse is placed at the rear of the unit.

1 - Power on switch (not powered).
2 - Power on switch (powered).
3 - Switch controlling the spraying circuit (transfer to the crop sprayer tank position).
4 - Switches controlling the spraying circuit (mixing in the Tandem tank position).

USE
OF THE
CROP SPRAYER

Rinsing before 1st use
Filling and incorporating the product
Operation
Rinsing the tank
Gauge
Handling wheels

See "Safety, Checks and Maintenance of crop sprayers" manual No. 82.471.

RINSING BEFORE FIRST USE

RINCAGE DU CIRCUIT D'INCORPORATION

- Block the drain aperture using the handle (1) (figure 4) located under the right-hand side of the tank.
- Set the various valves on the crop sprayer to incorporation position.
- Set the incorporation valve to TANDEM incorporation position.
- Put 100 to 200 litres of clean water (sieved beforehand if it is likely to contain impurities in suspension) into the hopper, which will rinse the TANDEM incorporation circuit.
- Drain.

RINSING THE TRANSFER CIRCUIT

- Set the electric valve to transfer position.
- Uncouple the transfer pipe at the cam lock connection.
- Put 100 to 200 litres of clean water (sieved beforehand if it is likely to contain impurities in suspension) into the tank.

Start up the electric pump which will rinse it and the TANDEM transfer circuit.

- Drain.

FILLING AND INCORPORATION OF THE PRODUCT

FILLING VIA THE CROP SPRAYER HOPPER (spray mixture version)

- Block the drain aperture using the handle (1) (figure 4) located under the right-hand side of the tank.
- Set the crop sprayer to incorporation position.
- Set the incorporation valve (2 figure 5) to TANDEM incorporation position.
- Fill the TANDEM with the desired quantity of product via the hopper.
- Finish filling the TANDEM via the hopper.

FILLING VIA THE MANHOLE (clean water version)

- Block the drain aperture using the handle (1) (figure 4) located under the right-hand side of the tank.
- Open the manhole.
- Fill the TANDEM directly via the manhole.

OPERATION

INCORPORATION

- Block the drain aperture using the handle (1) (figure 4) located under the right-hand side of the tank.
- Set the various valves on the crop sprayer to incorporation position.
- Set the incorporation valve (2 figure 5) to TANDEM incorporation position.
- Fill the TANDEM tank 3/4 full via the crop sprayer hopper.
- Insert the products via the hopper and if necessary clean the empty containers.
- Fill the tank via the hopper.
- Switch to mixing mode to blend the contents of the tank (see the MIXING chapter).

MIXING

- Set the incorporation valve (2 figure 6) to CROP SPRAYER incorporation position.
- Push the "valve" button (4 figure 7) on the control unit down (mixing).
- Push the "pump" button (5 figure 7) on the control unit down (on) to start mixing and blend the contents of the tank.

TRANSFER

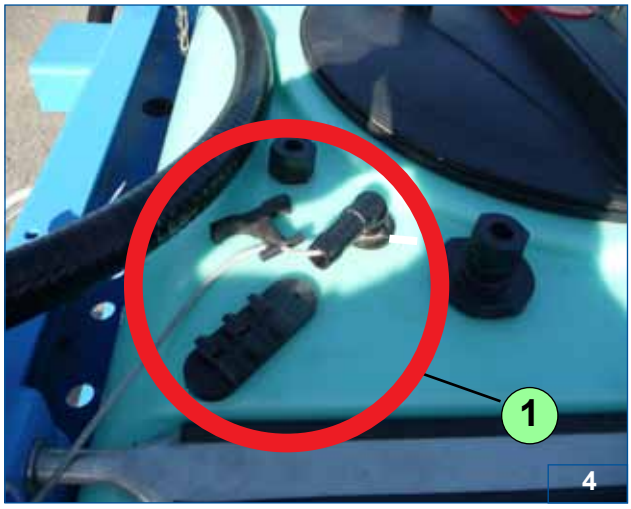
- Set the transfer valve (6 figure 8) to flow reception position.
- Push the "valve" button (4 figure 9) on the control unit up (transfer).
- Push the "pump" button (5 figure 9) on the control unit down (on) to start transfer and fill the crop sprayer tank.

Transfer must be carried out as early as possible to avoid the crop sprayer unpriming before the TANDEM tank is empty.

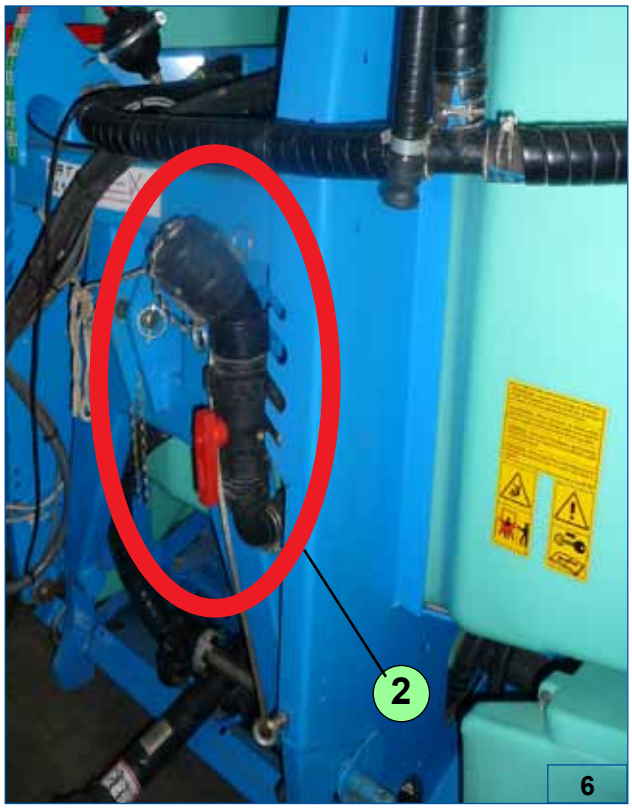
On the other hand, remember to stop transfer at the end of the row, or in other cases, to avoid the crop sprayer overflowing and polluting the parcel or the user.

WARNING:
Valve movements must always be carried out:

WITH THE TRACTOR POWER TAKE-OFF DISCONNECTED
to avoid any risk of pollution.


1
4

2
5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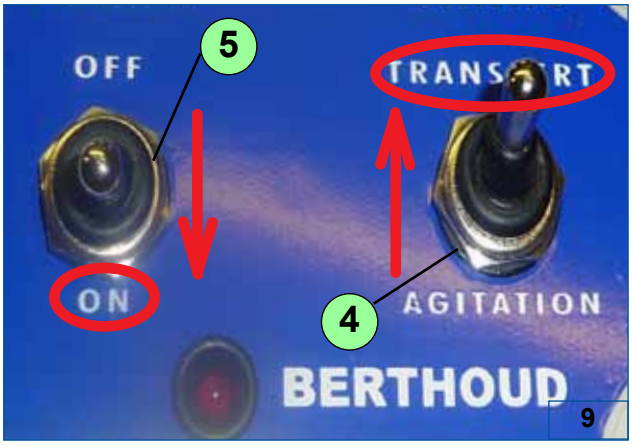
6

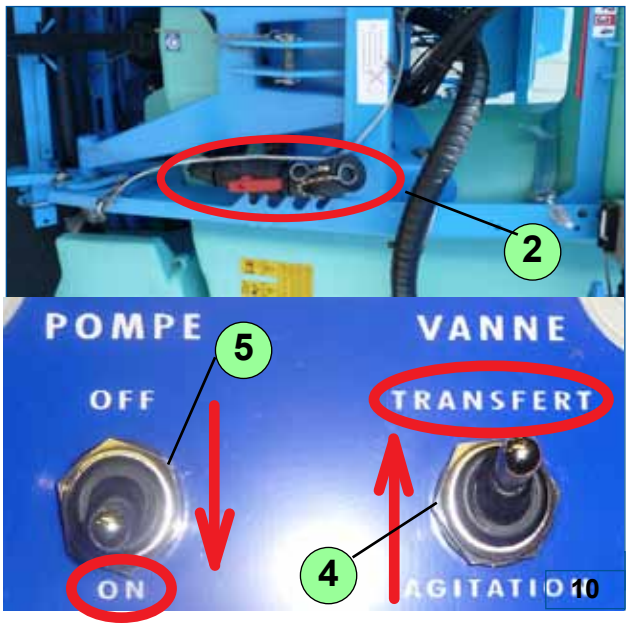
POMPE
VANNE
5
4
OFF
TRANSFERT
ON
AGITATION
BERTHOUD
7

6
8


OFF
5
TRANSFERT
ON
4
AGITATION
BERTHOUD
9

RINSING THE TANK

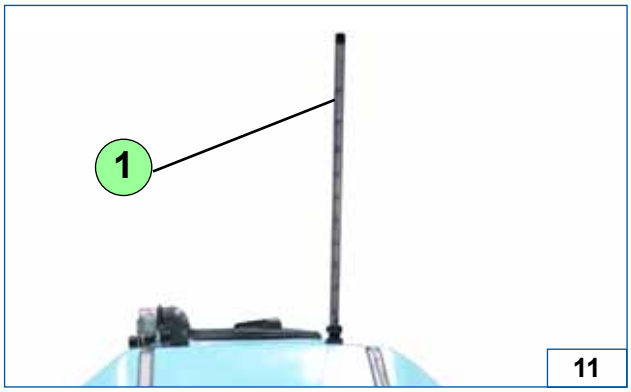
- Set the crop sprayer valves to rinsing position.
- Set the incorporation valve (2 figure 10) to TANDEM incorporation position.
- Push the "valve" button (4 figure 10) on the control unit up (transfer).
- Push the "pump" button (5 figure 10) on the control unit down (on) to start transfer and evacuate the residual liquid to the crop sprayer tank.



10

TUBE GAUGE

- The tube gauge (1 figure 11) placed on the top of the machine tank.
- The floater follows the level of the water perfectly for easy reading.

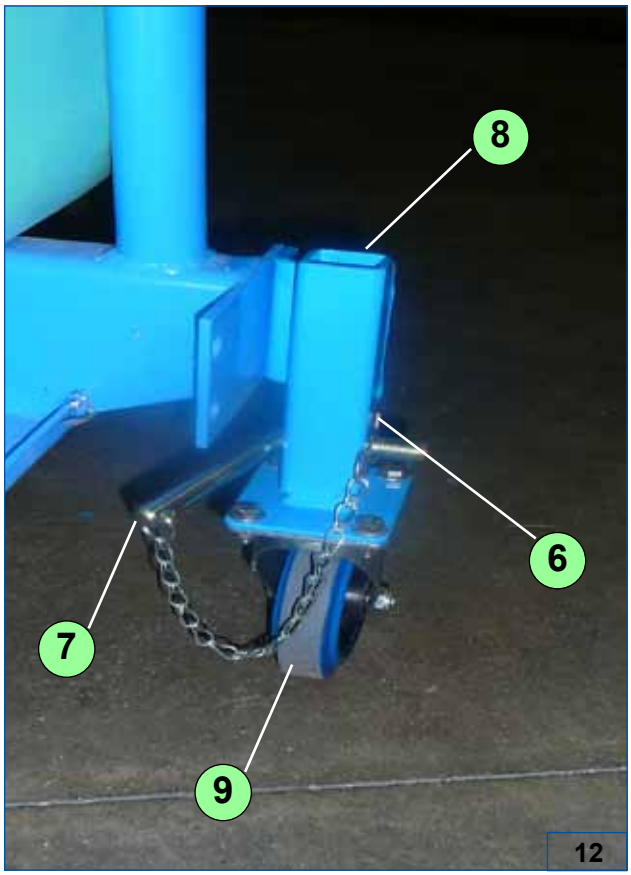


11

HANDLING WHEELS

- Remove the retainer pin (6).
- Remove the pin (7).
- Remove the wheels.
- Turn the wheels over (9) and place them upside down on the square tube provided for this purpose (8).
- Refit the pin (7) then the retainerpin (6).

NOTE:
- When the TANDEM is hitched to the tractor, remember to flip the wheels (9) to avoid damaging them and the crop sprayer frame.



12

CROPS
PRAYER
MAINTENANCE

Practical advice for maintaining your crop sprayer
Frost protection
Checks before the spraying season
Formation of foam in the tank
End-of-spraying maintenance
Protection against oxidising agents
Wintering
Last filling

See "Safety, Checks and Maintenance of crop sprayers" manual No. 82.471.

PRACTICAL ADVICE FOR MAINTAINING YOUR CROP SPRAYER

- By cleaning your machine regularly during and at the end of the spraying campaign:
  - you will avoid spreading phytosanitary residues on the crops,
  - you will ensure the product is evenly distributed by preventing total or partial blockage of the nozzles,
  - you will increase the lifetime of your crop sprayer.

Carry out maintenance operations on your crop sprayerwith the engine off, ignition stopped and the power take-off disconnected.

FROST PROTECTION

- Drain the tank.
- Drain the spraying circuit:
  - disconnect all the low points in the pipes and let them drain,
  - operate the distributor control lever or the switches on the electrical unit.
- Drain the pump or fill it with anti-freeze.

CHECKS BEFORE THE SPRAYING SEASON

- **Check the tightness of the nuts on the sub frame (optional)**
- **Pipes:**
  Search for any leaks and check the bends in the pipes.
- **Seals and connectors:**
  Check that the nuts on the connectors are correctly tightened, change the seals if necessary.
- **Tank:**
  Check that there are no foreign bodies in the tank.
- **Check the transfer flow rate.**

FORMATION OF FOAM IN THE TANK

- If this happens, reduce the engine speed or add an anti-foam additive to the contents of the tank when filling.
- Switch off mixing

Do not add fuel-oil to the spray mixture as an anti-foaming agent.

END-OF-SPRAYING MAINTENANCE

- It is important to rinse the exterior of the spray tank and the tractor regularly. This cleaning operation should be repeated particularly during the day between applications of different products.

PROCEDURE

- Put 20% of water into the tank, adding a detergent (ALL CLEAR reference 771.053 one-litre container or 778.886 five-litre container).
- Move the tractor forwards and backwards to swill the water in the tank.
- Leave to act for 12 to 24 hours.
- Switch on mixing and move the tractor backwards and forwards a few times then empty via the drain valve.
- Put clean water into the tank.
- Rinse with clean water.

PROTECTION AGAINST OXIDISING AGENTS

- Before spraying with liquid fertiliser, it is preferable to fully protect the machine by spraying an oily product to avoid any rusting or damage to the paint.
- Rinsing with a high-pressure jet wash after spraying removes any trace of dust and oily product.

WINTERING THE CROP SPRAYER.

- The crop sprayer must be cleaned before wintering *(see above)*.
- Rinse the entire circuit (with cleaning product).
- Drain the tank.
- Rinse with clean water.
- Completely drain the circuit of liquid, ensuring that the pump does not run for too long without water (2 minutes maximum).
- Protect the machine against frost by putting sufficient anti-freeze liquid into the tank (glycol or cooling liquid).
- Start the pump.
- Operate all the valves to protect the pump, valves, regulation, filters and pipes.
- Grease or oil the metal parts and joints which may rust.
- Deoxidise the electric plug contacts (reference BERTHOUD 765.065 KF F2 aerosol).
- Clean the outside of the machine, repaint the bare mechanical parts (reference BERTHOUD 769.077 blue aerosol paint or 778.890 green aerosol paint).
- Store the machine out of sunlight and bad weather on a stable, flat surface.

LAST FILLING

- When you fill the tank for the last time, only add the quantity of water and product required to spray the remaining surface of the field.

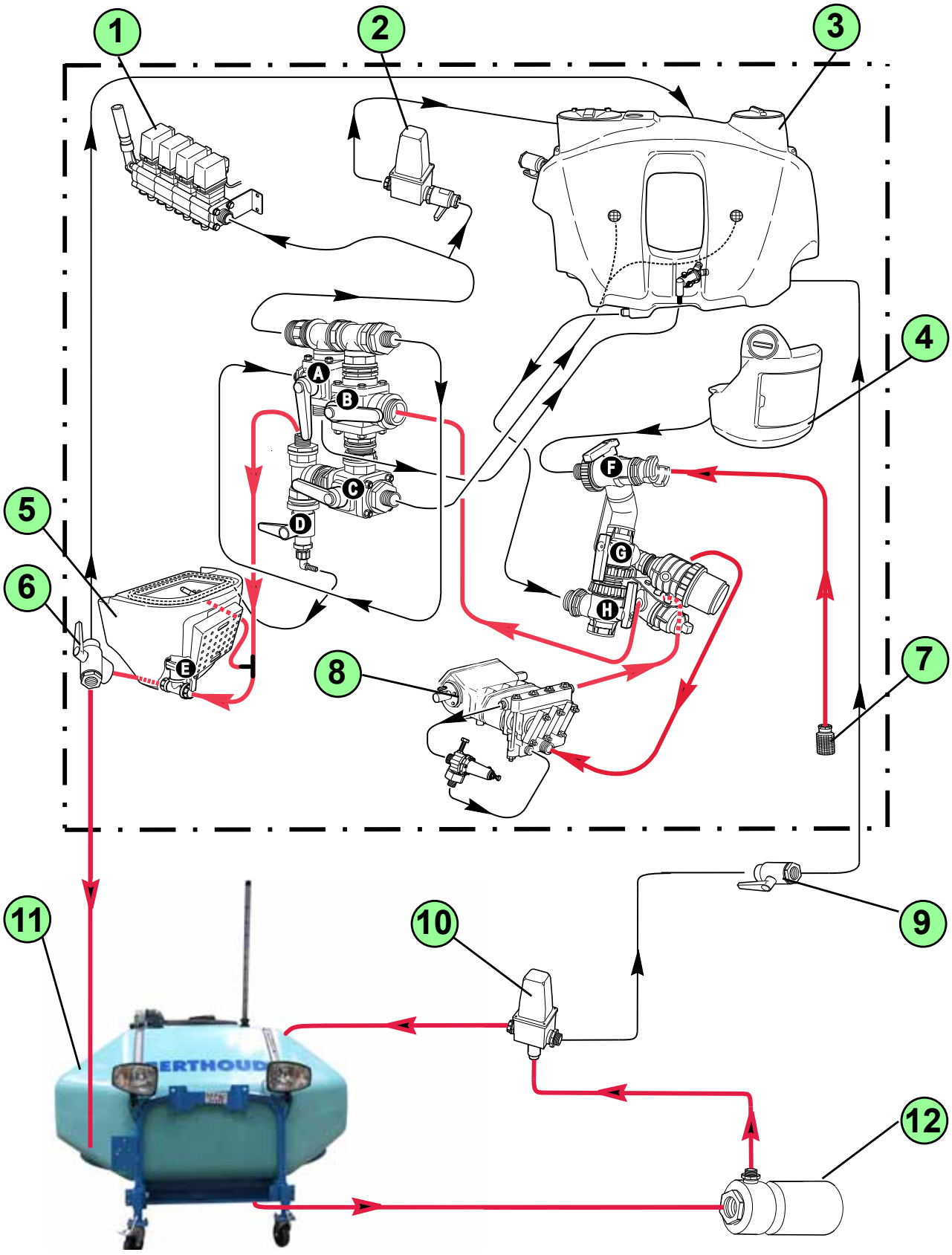
MAINTENANCE DIAGRAMS

DESCRIPTION OF THE SPRAYING CIRCUITIDENTIFICATION NUMBERS ON PAGES 24 TO 43

1 - VEC block.
2 - 2-way valve to cut off the regulator valve tank return.
3 - Main tank of the ELYTE.
4 - Rinsing tank.
5 - Incorporation hopper.
6 - Manual 3-way valve.
7 - Strainer.
8 - Crop sprayer pump.
9 - Manual 2-way valve.
10 - Electric 3-way valve.
11 - Main tank of the TANDEM.
12 - TANDEM electric pump.

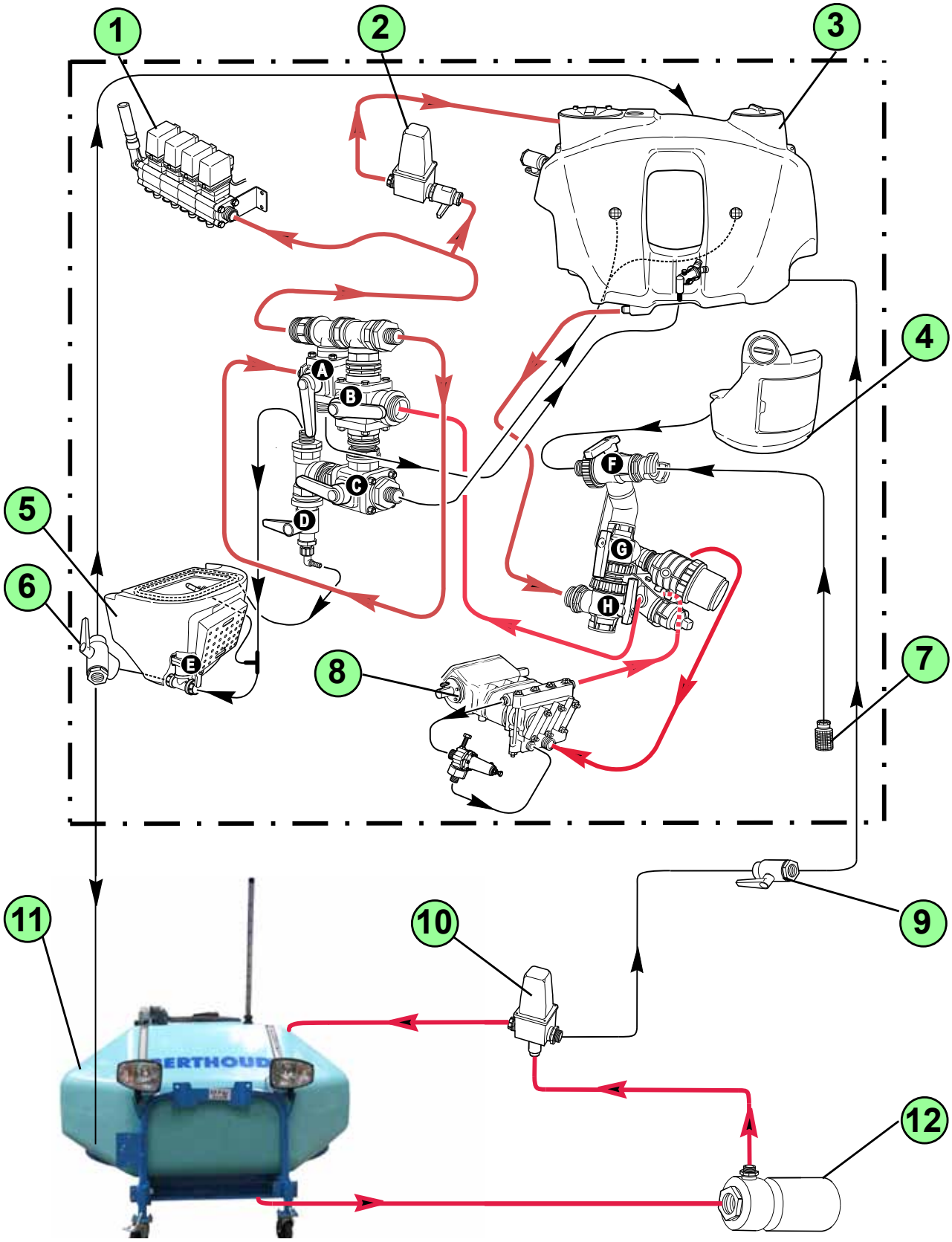
ELYTE + TANDEM SCHEMATIC DIAGRAM
SPRAY MIXTURE VERSION

FILLING THE TANDEM
(Filling and mixing of the TANDEM
Elyte in external suction mode)



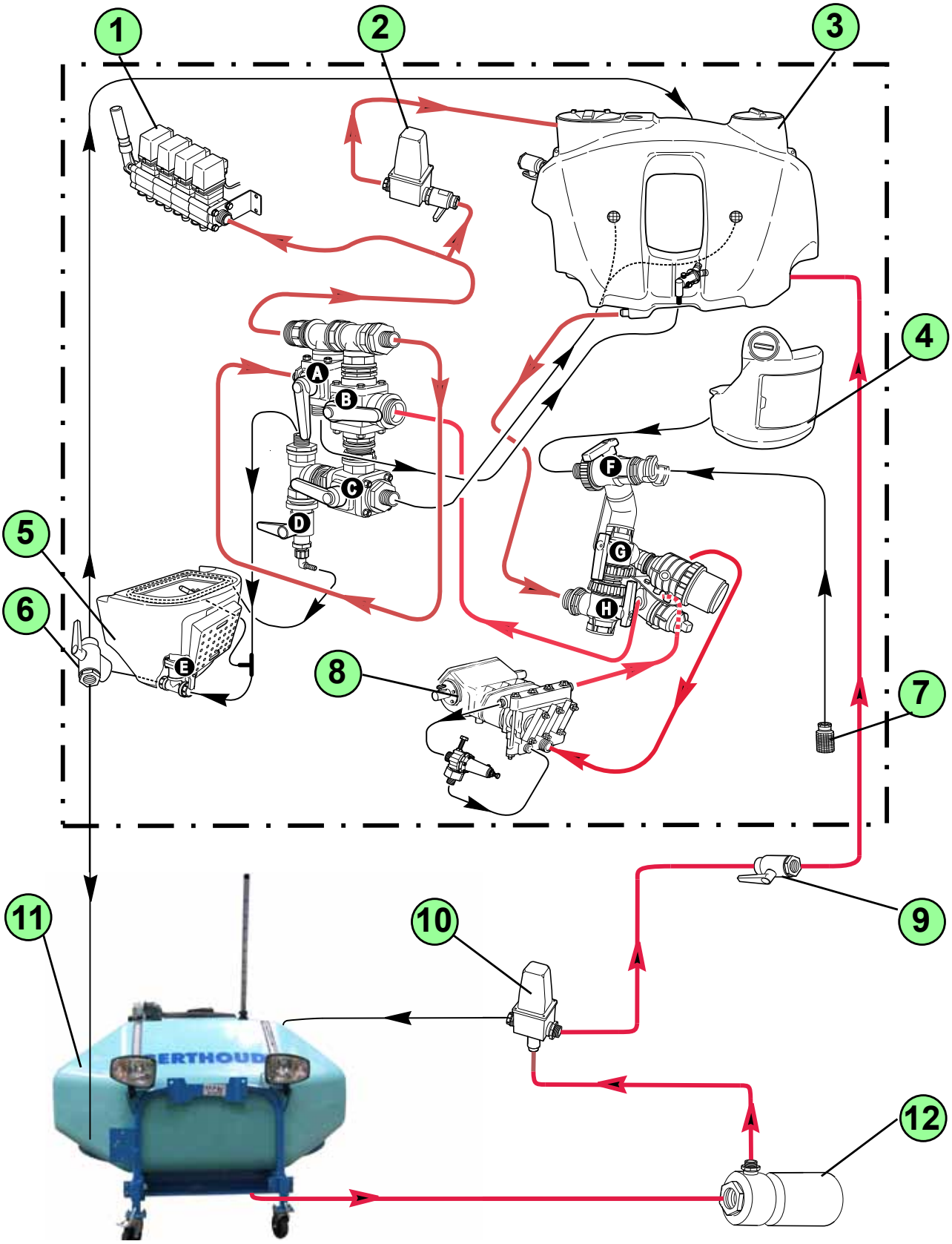
ELYTE + TANDEM SCHEMATIC DIAGRAM
SPRAY MIXTURE VERSION

MIXING DURING SPRAYING
(Mixing of the TANDEM
Elyte in spraying mode)



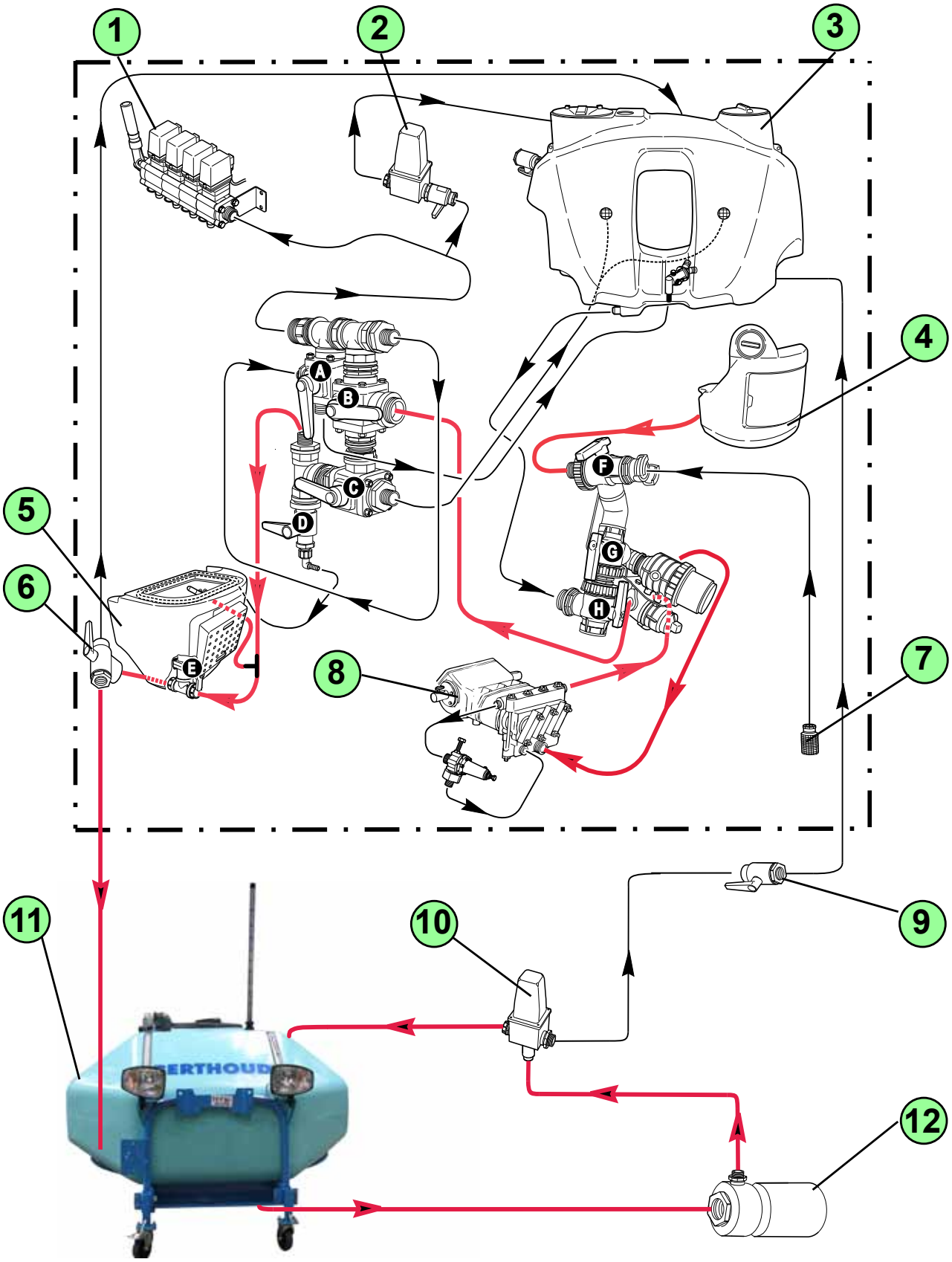
ELYTE + TANDEM SCHEMATIC DIAGRAM
SPRAY MIXTURE VERSION

TRANSFER DURING SPRAYING
(Transfer of the TANDEM
Elyte in spraying mode)



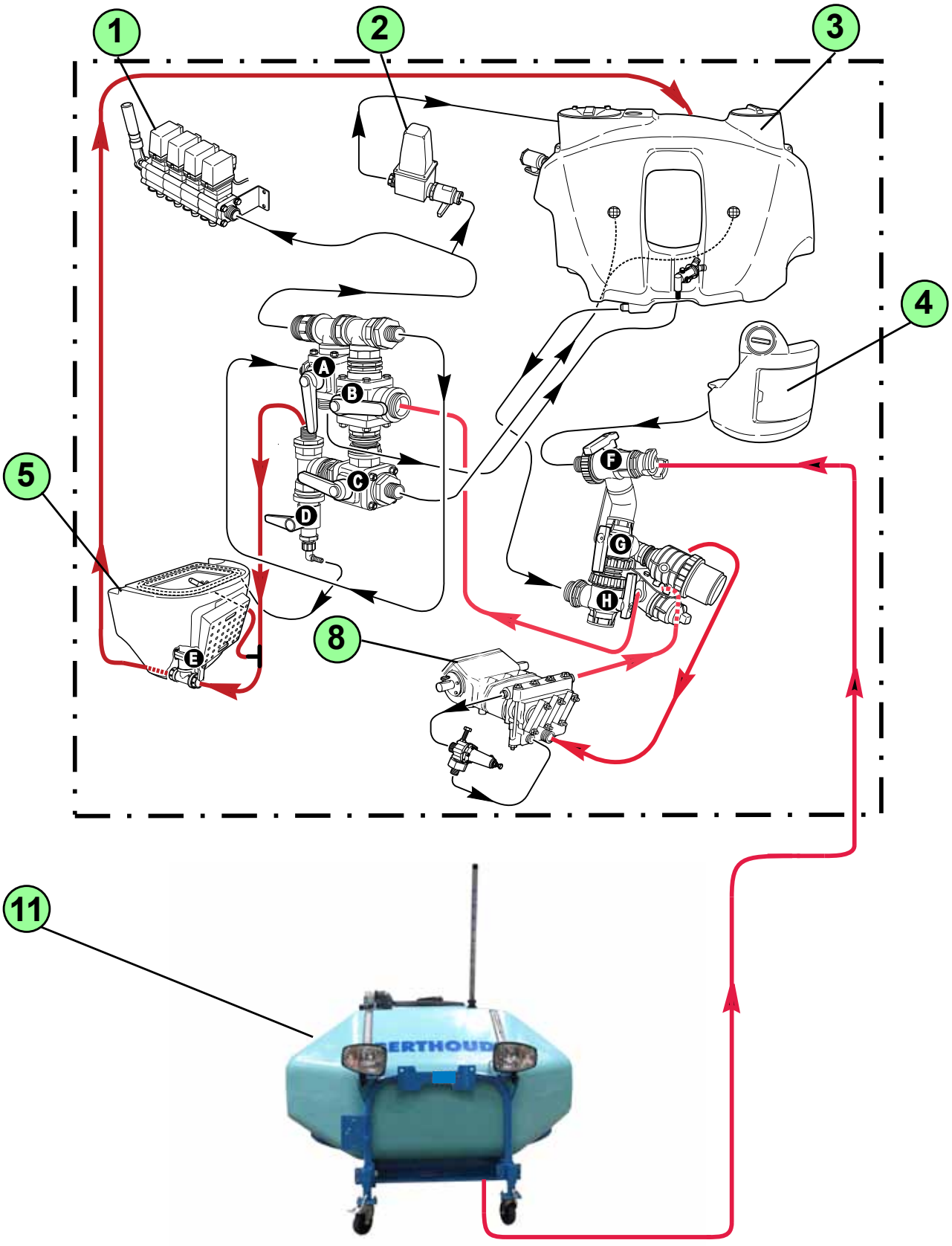
ELYTE + TANDEM SCHEMATIC DIAGRAM
SPRAY MIXTURE VERSION

RESIDUAL LIQUID DILUTION
(Transfer and mixing of the TANDEM
Elyte in rinsing mode)



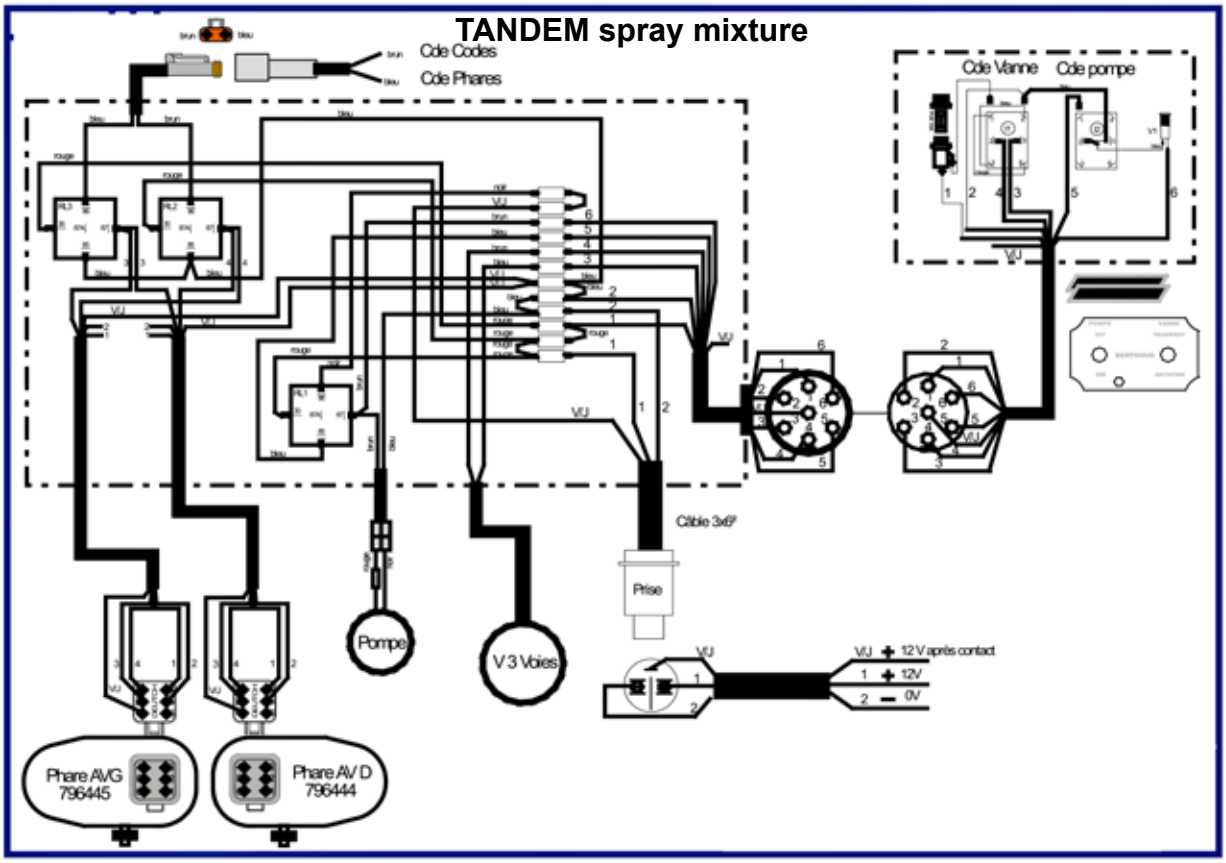
ELYTE + TANDEM SCHEMATIC DIAGRAM
CLEAN WATER VERSION

Transfer of the TANDEM
(Transfer of the TANDEM
Elyte in external suction mode)

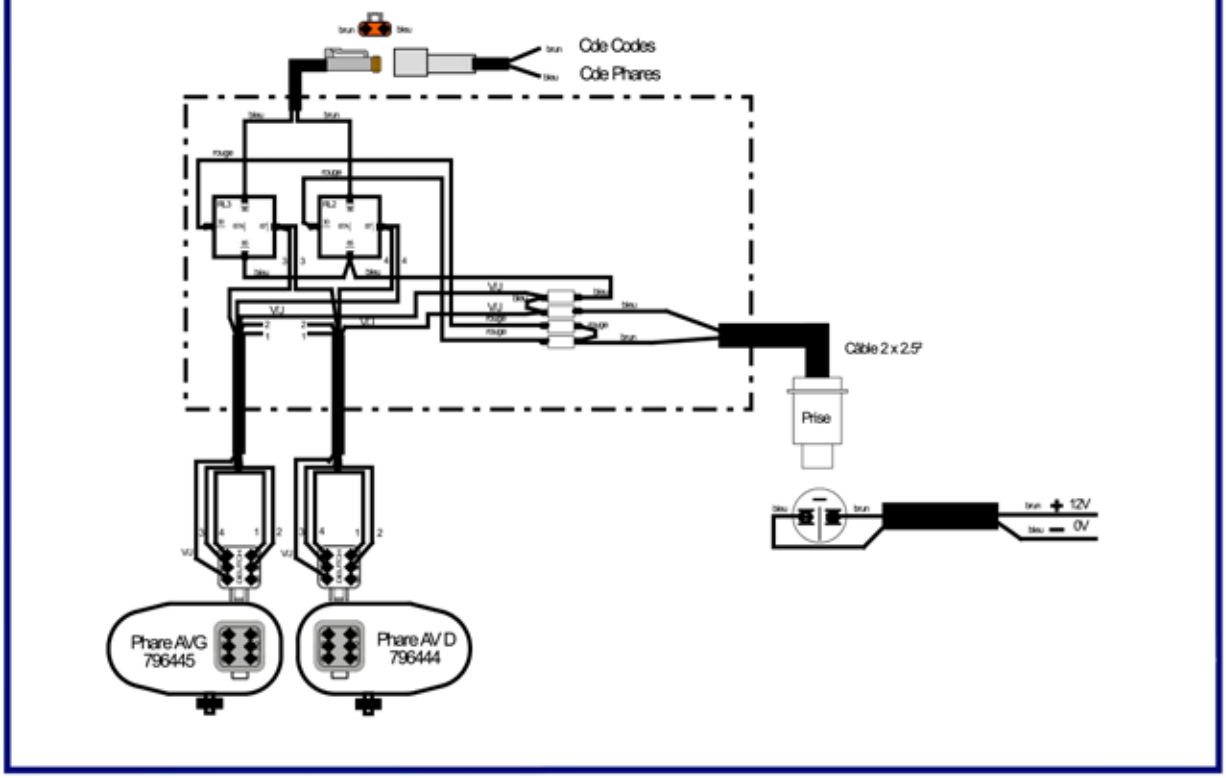


WIRING DIAGRAM FOR TANDEM SPRAY MIXTURE AND CLEAN WATER

TANDEM spray mixture



TANDEM clean water



NOTES CONCERNING SPRAYING CARRIED OUT DURING THE SEASON

Date	Parcel	Treatment	Product	Dose	Volume l/ha	Nozzle	Pressure	Speed km/hour

Due to the improvements we are constantly seeking to make to our production,
we reserve the right to modify the design or specifications without prior notice.

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