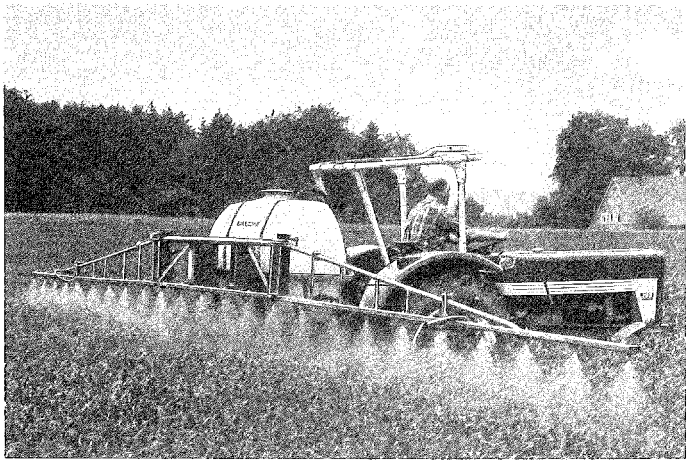
Operator's Manual

Tractor-Mounted Universal Sprayers

AMAZONE

US 401 T US 602 T US 1000 T



Please read and observe these instructions carefully to ensure that you will make the best possible use of your "Amazone". You will appreciate that we will not be able to accept any claims under guarantee if the demage has been caused because of incorrect operation.

AMAZONEN-WERKE H. DREYER GmbH & Co. KG

D-4507 Hasbergen-Gaste · D-2872 Hude (Olbg.) · F 57602 Forbach

Factories for: Mineral-fertilizer spreaders, seed drills, reciprocating harrows, potato grading-machines, fertilizer silos, conveyors universal sprayers, fertilizer containers

Printed in F. R. Germany

Please enter the serial No. of your universal sprayer here. You will find it on the right-hand frame section near the regulator.
Please always quote the serial No. when ordering spares or making complaints.

No.

Contents

1. Sprayer data

1.1. Manufacturer: Amazonenwerke H. Dreyer, D-4507 Hasbergen/Gaste.

1.2. Types: AMAZONE US 401 T, AMAZONE US 602 T, AMAZONE US 1000 T.

1.3. Technical data:

Width x depth (length) x height

1.3.1. Type US 401 T: 2720 x 1250 x 1400 mm
US 602 T: 2720 x 1250 x 1500 mm
US 1000 T: 2720 x 1650 x 1550 mm

1.3.2. Weights

Basic unit:	US 401 T	118 kg
	US 602 T	143 kg
	US 1000 T	205 kg
Spraying beam:	10 m	72 kg
	12 m	75 kg

1.3.3. Distance between centre of gravity and the bottom link pin.

Type	Empty	Full
US 401 T	600 mm	400 mm
US 602 T	500 mm	350 mm
US 1000 T	730 mm	550 mm

1.3.4. Tank capacity

US 401 T	440 litres
US 602 T	660 litres
US 1000 T	1120 litres

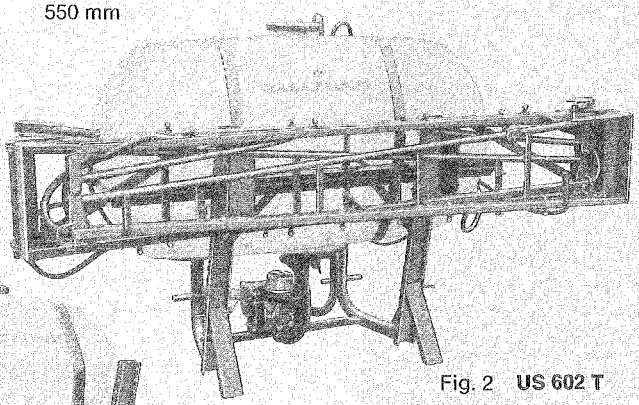


Fig. 2 **US 602 T**

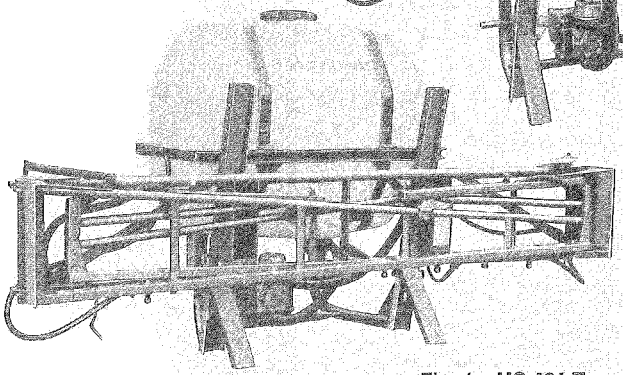


Fig. 1 **US 401 T**

1.3.5. Standard equipment

US 401 T: Universal design with 10 m boom (adjustable in height, made up of 5 sections, can be folded), particularly robust, 440-litre tank, robust tubular frame with storage supports, 3-point mounting cat. I, glycerine pressure gauge 10 bar, pressure regulator with back suction device, 3 quick-acting valves with plug-in coupling and 3-section spraying area, with fixed piston-operated diaphragm pump (100 litres/min) and Walterscheid P.T.O. shaft W 100, 420 mm long, 20 ball valve filters and flat fan nozzles, intensive hydraulic agitator and tail light holders.

US 602 T: 10 m boom (adjustable in height, made up of 5 sections, can be folded), 660-litre container, robust tubular frame with 3-point mounting cat. I and II, with storage supports, glycerine pressure gauge 10 bar, pressure regulator with back suction device, 3 quick-acting valves with plug-in coupling and 3-section spraying area, fixed piston-operated diaphragm pump (100 l/min), driven via a 250 mm long Walterscheid P.T.O. shaft W 100, 20 ball valve filters and flat fan nozzles, intensive hydraulic agitator, with tail light holders.

US 1000 T: 10 m boom (adjustable in height, made up of 5 sections, can be folded), 1120-litre container, robust tubular frame with 3 point mounting cat. I and II, glycerine pressure gauge 25 bar, pressure regulator with back suction device, 3 quick-acting valves with plug-in coupling and 3-section spraying area, fixed piston-operated diaphragm pump (150 l/min), driven via a 520 mm long Walterscheid P.T.O. shaft W 100 – 20 ball valve filters and flat fan nozzles, intensive hydraulic agitator, with tail light holders.

1.4. Application

The sprayers are used for applying pesticides and herbicides as well as liquid fertilizers. When using liquid fertilizers, the brass nozzles have to be replaced by stainless steel nozzles. Instead of the pressure gauge we recommend that the spridometer be used since it is resistant to liquid fertilizers.

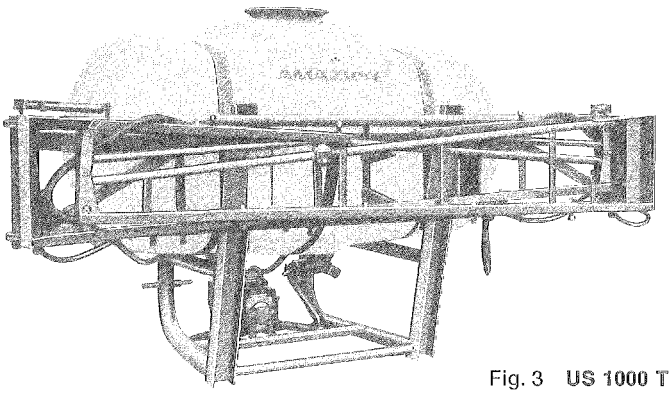


Fig. 3 **US 1000 T**

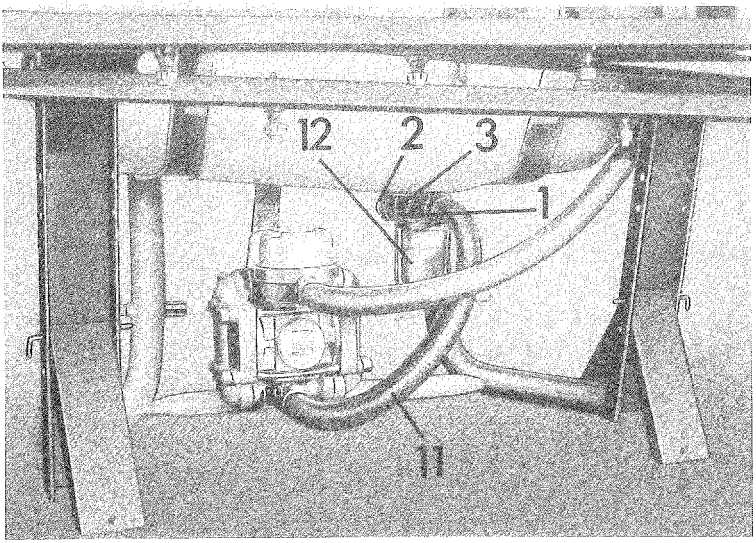


Fig. 4 **US 401 T US 602 T**

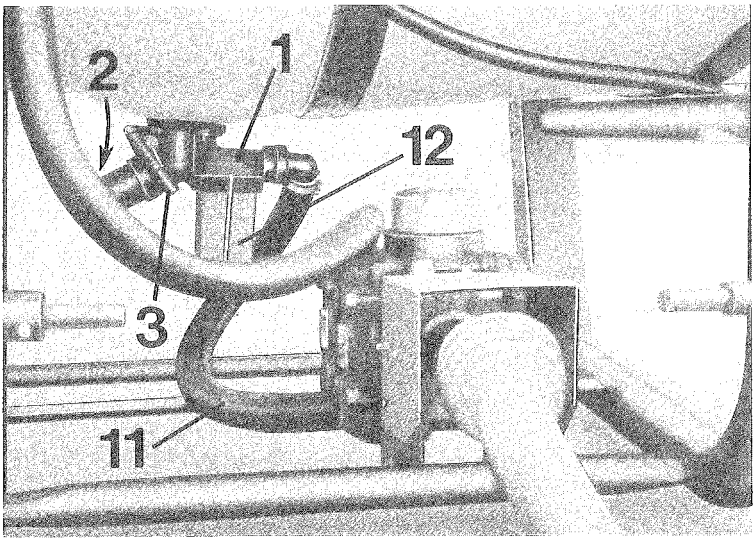


Fig. 4 a **US 1000 T with 1506 pump**

1.5. Operation

To fill the tank using the pump, a suction hose (optional extra) is pushed onto the filter valve (4/1). For this remove the plug (4/2). At the same switch the filter valve handle (4/3) on to "filling".

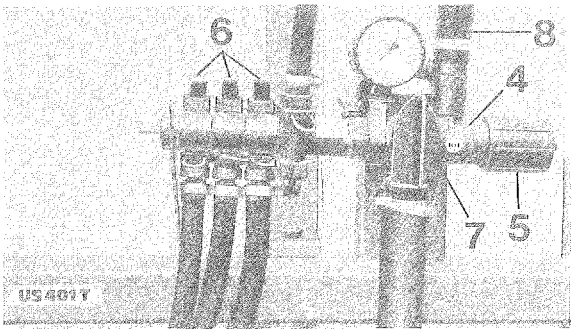


Fig. 5 **US 401 T, US 602 T**

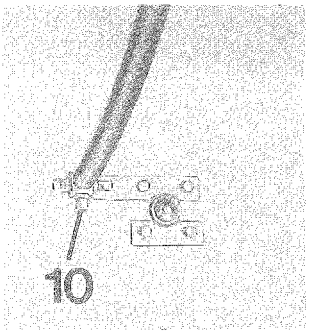


Fig. 6 **US 401 T, US 602 T**

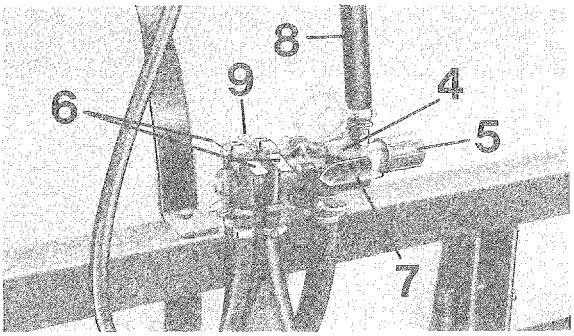


Fig. 5 a **US 1000 T**

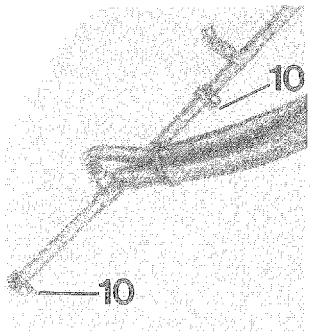


Fig. 6 a **US 1000 T**

During spraying the self-priming pump draws the liquid from the tank via the filter cock and supplies it to the regulator (5/4) (turn the handle [4/3] to "spraying"). Set the required pressure on the spring-loaded regulator nut (5/5). The liquid flow is then divided by the quick-acting valves (5/6) for the spraying beams. These valves can be switched on and off individually.

When in horizontal position (spraying position), the central control disc (5a/7) supplies liquid to the flat fan nozzles provided the quick-acting valves (5/6) are open.

When in the vertical position (shut-off and filling position), the control disc (5/7) blocks the liqud flow to the nozzles. This produces a suction effect at the regulators which prevents any dripping at the nozzles in conjunction with the ball valves. Excess liquid supplied is returned to the tank under low pressure via the return line (5/8).

Operation of the quick-acting valve (5/9) switches on the intensive agitator (6/10). The agitator may remain switched on during spraying up to a spraying pressure of approximately 4 bar. For liquids which foam heavily and which are sprayed at pressures above 4 bar, it is sufficient if the agitator is operated prior to spraying using the full pump output.

To empty the tank, the suction hose (4/11) is removed from the pump or the cup (4/12) is removed from the filter valve.

When the pump is switched off, the quick-acting valves (5/6) must be closed.

Nozzle tips with ball filter 05104 000 0202

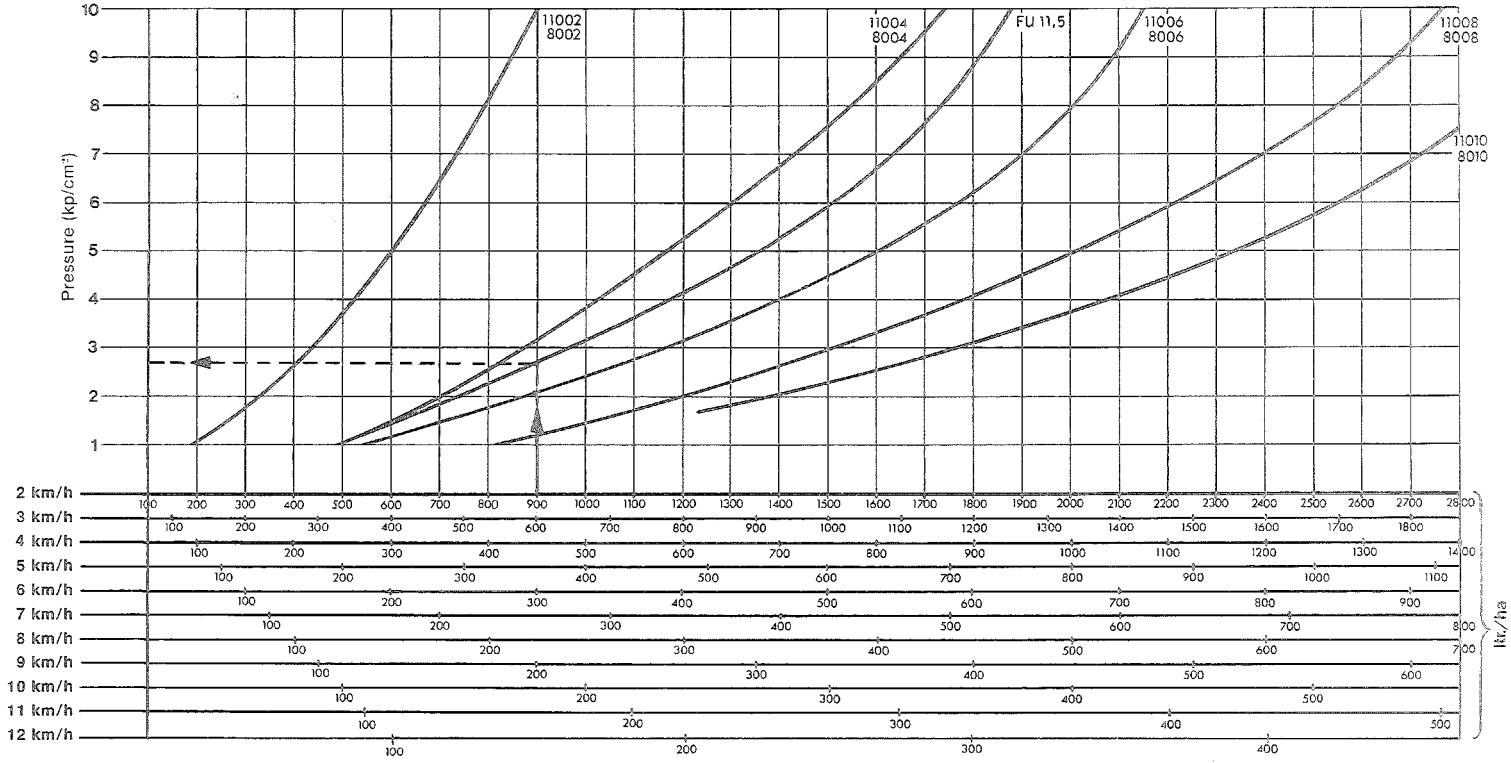


Fig. 7

2. Notes on taking delivery

2.1. Taking delivery

When receiving the machine, check for transit damage or missing components. Claims must be made to the carriers immediately if compensation is to be obtained.

3. Taking into operation

3.1. Fitting

The sprayer is attached to the 3-point links of the tractor hydraulic system.

CAUTION! When fitting the unit take into account the reduced front axle load.

3.2. P.T.O. shaft

Make sure that the propeller shaft has the correct length. If it is too long, pump fracture will result (shorten both P.T.O. shaft tubes).

3.3. Filling (note operating instructions for pump 6.1. and regulator 6.2.)

The tank is filled from the main water supply using a water hose or from open water using the suction hose. The spraying agent is to be added with the water.

3.4. Determining the exact application rate

Having filled the tank with the required spraying liquid, determine the setting from the application rate table.
For this look for the required quantity on the line to the right of the travelling speed and move upwards on to the curve for the available nozzle tips. The horizontal through this intersection shows the required pressure on the left.

Example:

If 600 litres of liquid are to be sprayed per hectare travelling at a speed of 3 km/h and using a nozzle tip 11006 with ball filter, a pressure of 2.1 kp/cm² must be set.

If the pressure is specified, then determine the quantity and travelling speed by reversing the sequence. Whenever making any adjustments please note: Low pressure – large droplet formation; high pressure – fine droplet formation (risk of droplets drifting away). Do not use pressures in excess of 10 bar.

The values given in the table were determined with water. The values may vary and it is therefore advisable to carrying out a check before starting work using the calibration kit (optional extra). When this is used, the spraying agent from the centre spraying beam is collected in plastic bags while travelling over a distance of 20 m at the intended working speed and at the required pressure setting. The amount collected per nozzle in ml (cm³) corresponds to the total application rate in litres/hectare.

3.5. Operating practice

Before starting work on the field, check the nozzle tip position using the nozzle spanner. The nozzle tip should lie in the appropriate spanner opening and the angled spanner section should fit over the pipe. This is necessary to ensure that the spray cones are not in contact but overlap (avoiding incorrect spraying). To obtain a continued spray pattern overlap, the following distances should be maintained between nozzle and incidence point of the spraying agent as required: 35, 53 or 70 cm.

When using spraying agents which tend to settle in the tank, then the tank contents must be stirred at full pump output for a little while before starting to spray. (Switch on intensive agitator).

The following applies when spraying large areas:

Select a greater nozzle-to-ground distance (better overlap) but watch for drifting. Always maintain the travelling speed accurately.

The pumps are driven at 540 rpm. The spraying mechanism is switched on and off at the end of the field by the regulator control disc (the pump does not need to be switched off).

CAUTION:

I. The spraying agent mixture must not be left in the tank for any length of time, for example overnight.

II. Spraying equipment must be cleaned thoroughly immediately after use.

III. The spraying agent concentration must not be increased – this is also so as not be harm the spraying equipment.

4. Special esquipment

4.1. Spraying beam winch

The beam winch makes it easy to adjust the spray beam height. It can be fitted to types US 401 T, US 602 T and US 1000 T later without requiring any modification on the sprayers.

First attach the right-hand sliding rail (8/1) to the sprayer frame using the bolt 8/4 and the counter-sunk screw (8/5). Push the winch tube (8/3) into the bush of (8/1) and then the left-hand sliding rail (8/2) on to the winch tube (8/3) and attach to the sprayer frame like (8/1) above. Then lock part (8/3) using the pins (8/6), push the ratchet safety crank (8/7) on to the square and secure with the pin (8/8). Now insert the roller holders (9/9) together with fitted rollers (9/10) into the sliding rails and fix in position using the quick-release levers (9/11) at the same level on either side so that the spraying beam (9/12) can be attached and secured easily using the bolts and nuts (9/13 and 9/14). The bolts (9/14) with the chain link are used at the top. The rope (9/15) is attached to this and secured with two rope clamps (9/16) each on both ends. To prevent the spraying beam from being distorted while making the adjustment, the rope is tensioned evenly on both sides. Although the double pawl (8/7) will stop the winch tube from turning back, the beam must be secured with the quick release levers (9/11) after each adjustment to ensure that the load on the rope is relaxed and the rope does not tear.

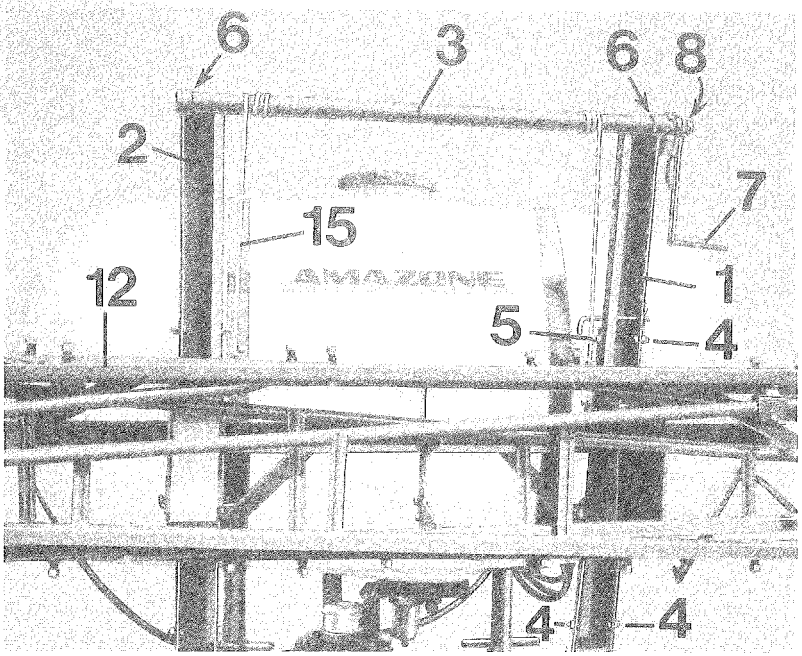


Fig. 8

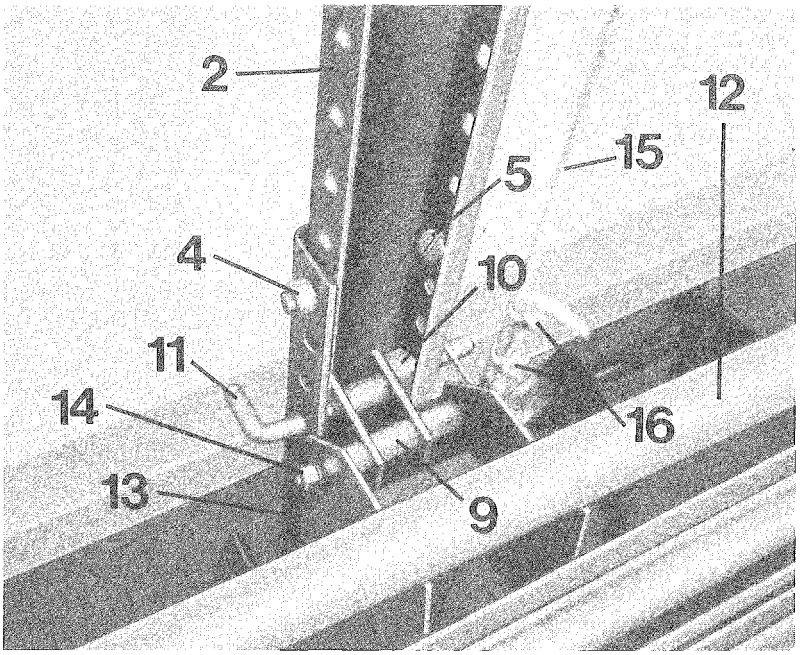


Fig. 9

4.2. Suction hose for filling the sprayer from open water

The suction hose is used for filling the sprayer tank from open water. Remove the plug from the filter cock (10/1) and connect the suction hose (10/2) to it, securing it with the clevis pin. The filter (10/3) at the other end of the hose prevents foreign matter from entering the system.

To prevent the filter from lying at the bottom of the water, it is advisable to use the float (10/4) also. However, it is also sufficient if a bucket or similar container is used over the edge of which only clean water will flow which is then drawn in. During spraying the suction hose should be stowed away as shown in Fig. (10/5).

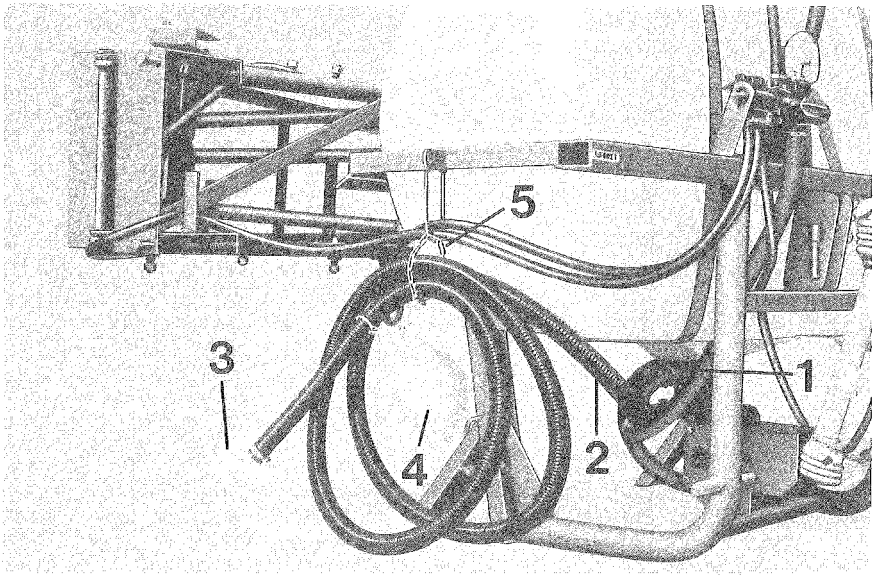


Fig. 10

4.3. **Tank-filling device** (only for US 401 T and US 602 T)

The tank filling device (11/1) enables the spray tank to be filled quickly from open water. The liquid which is supplied to the unit under high pressure from the pump generates a suction effect in the sunction hose (11/2). To ensure satisfactory operation during each filling, approximately 20 litres of liquid have to be left in the tank to enable the suction effect to be produced. Before the first filling operation, the necessary amount of water has to be supplied by bucket or water hose.

Because of the high pressure required, the standard 10-bar pressure regulator (B 101) is not sufficient for operating the tank filling device. It requires a 20-bar regulator (B 102) in conjunction with a 25-bar pressure gauge (11/3). This regulator requires an additional quick-acting cock to which the pressure hose (11/4) from the tank filling device is fitted. If the tank filling device is fitted at a later stage, then it is possible to adapt the existing

regulator to 20 bar by fitting a stronger compression spring. The 10-bar pressure gauge is exchanged for a 25-bar version. During the filling operation the pressure hose to the tank filling device may also be connected to a quick action valve which serves for supplying the spraying beam.

CAUTION! Change the connection back to normal before starting with the spraying work.

When filling please note: The handle on the filter valve must be on "spraying" the quick action valve to which the pressure hose (11/4) for the tank filling device is connected, must be open whereas the quick action valve (11/5) for the spaying beam must be closed. The regulator (11/6) must be set to the maximum possible pressure and the control disc on the regulator must allow the liquid to flow to the quick action valves. To ensure that the suction hose is emptied completely, do not switch off the pump until the hose has been withdrawn from the water. This also prevents any spraying agent mixture from flowing back via the suction hose.

When spraying the quick action valve for the tank filling device is closed and the others (11/5) are opened. When the correct spraying pressure has been reset, work may begin.

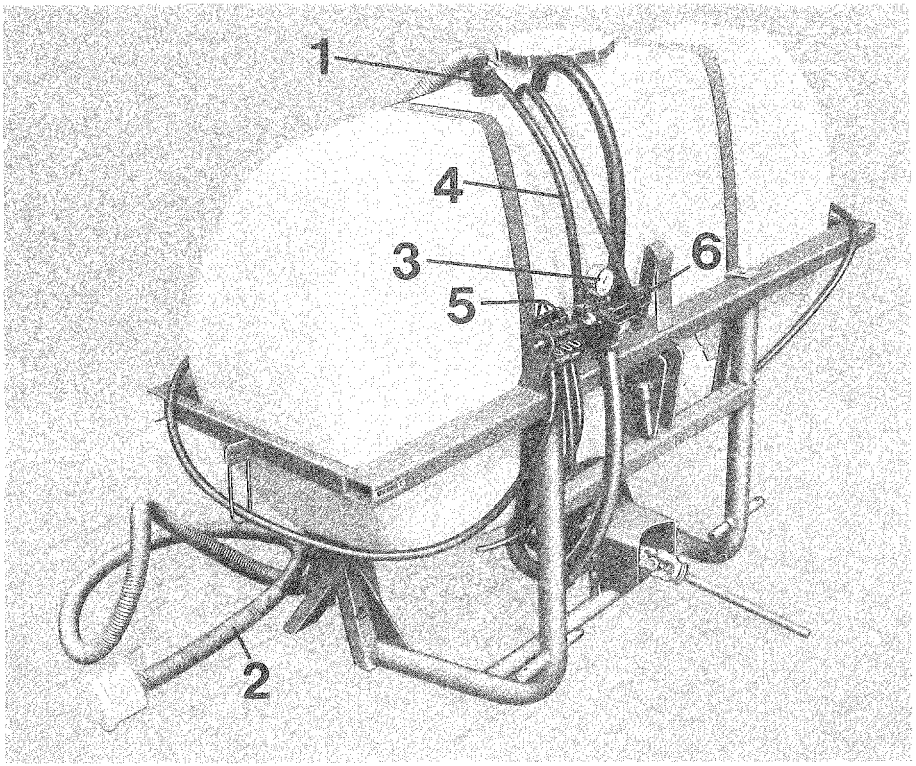


Fig. 11 **Tank filling device only for US 401 T and US 602 T**

4.4. Spray gun

4.4.1. The spray gun is used for cleaning or disinfecting. It is connected to the regulator (12/1) direct. In this case the saftey valve and the return hose are not required. The pressure is set on the regulator and the return flow is via the regulator.

The pressure may be increased to 20 bar by fitting a stronger regulator spring. The standard pressure gauge then has to be replaced by a 25-bar pressure gauge.

4.4.2. If the spray gun is connected to the pump (13/1) direct, then the safety valve and a return hose (13/2) have to be used.

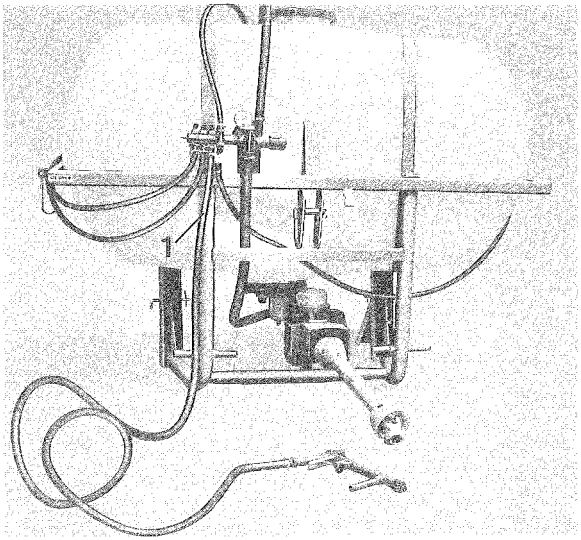


Fig. 12

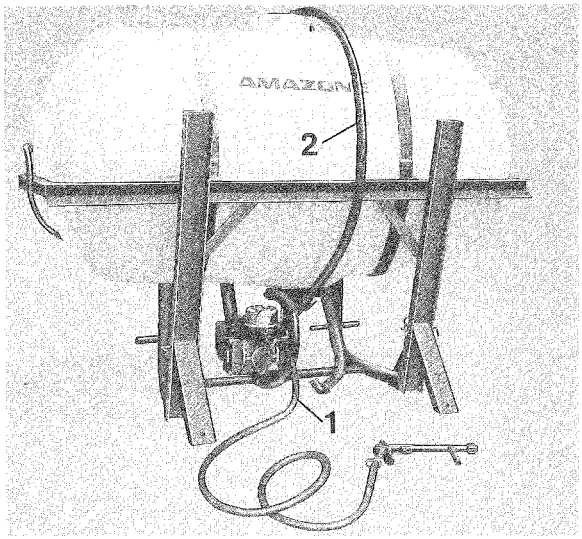


Fig. 13

4.5. Spridometer

The spridometer enables the required application rate to be set directly as a function of the travelling speed without need for a chart. It can be mounted on any pressure regulator instead of the pressure gauge and it is suitable for any working width. In other words it can be fitted to any sprayer at a later date.

The scale is exchangeable for different nozzles. The spridometer is absolutely corrosion-resistant and therefore also suitable for liquid fertilizers.

The circles around the pointer axis (alternately in blue and red) indicate the travelling speed. The broken black curves determine the application rate for a certain nozzle type. The nozzle designation is given in the right-hand bottom corner on the scale. In addition a pressure scale is marked around the periphery (e. g. for band spraying). When changing the nozzle type, the scale has to be changed too.

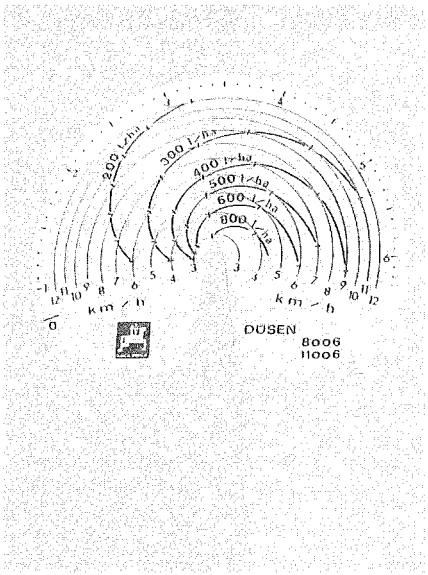


Fig. 14 **Exchangeable scale for any type of nozzle (Düsen = Nozzle types 8006/11006 and 8004/11004)**

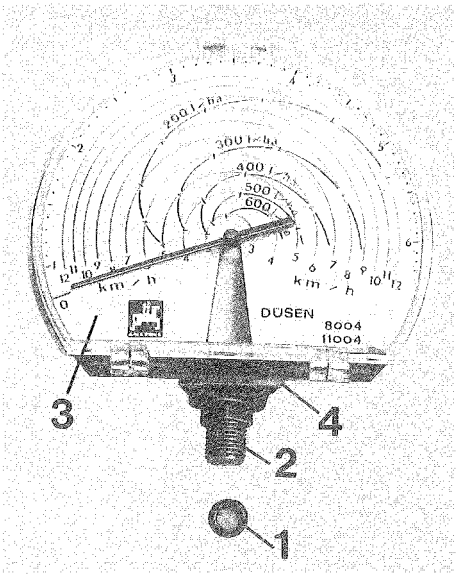


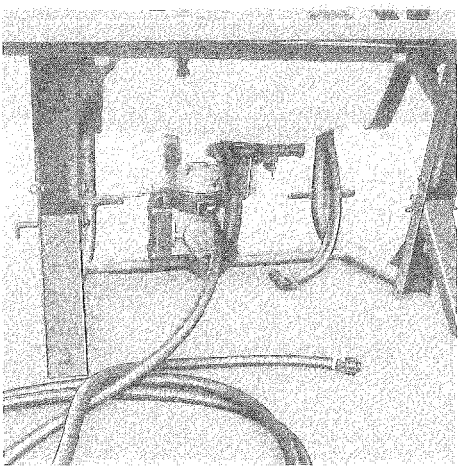
Fig. 15

The spridometer is fitted to the pressure regulator in place of the pressure gauge as follows:

a) Replace the O ring in the pressure gauge socket by the filter disc with slotted ring (15/1) supplied with the spridometer.

b) Screw the threaded plug (15/2) into the regulator.

c) Turn the spridometer (15/3) into the required position and tighten the lock nut (15/4).



4.6. Washing nozzle

The washing nozzle is suitable for cleaning machines etc. It is connected to the pump direct. To avoid accidents, the correct nozzle must be used for each pump size. The associated pump is quoted on the nozzle sticker. P 102 (100-litre-pump) 6 mm nozzle bore.

The only hose to be used is a ½" high pressure hose which will withstand the pump pressure of 20 bar.

Fig. 16

4.7. Tractor-mounting kit for the regulator

To enable the regulator to be operated more easily, we offer a set of hose extensions with plug-in couplings and brackets. For this purpose all hoses are removed from the regulator and the regulator unscrewed from its mounting on the sprayer frame. The perforated disc (17/1) is then mounted on the regulator. The bracket (17/2) is mounted on the tractor and the regulator inserted in it. The bolts (18/1) provided with a hole are screwed into the bracket on the frame so that the regulator may be stowed away there using a locking pin when the sprayer is parked (Fig. 18). The hose extensions (17/4) are attached to the regulator and connected to the sprayer using the hoses.

The hoses are retained on the sprayer frame by means of the hose holder (18/2). The hose extensions are normally 1.50 m long. Longer hoses have to be ordered for tractors such as Unimog, MB-Trac, Intrac and other forward control tractors (please quote length).

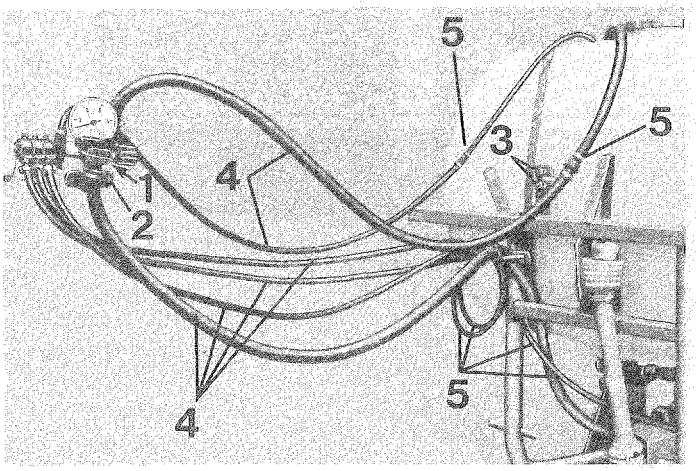


Fig. 17

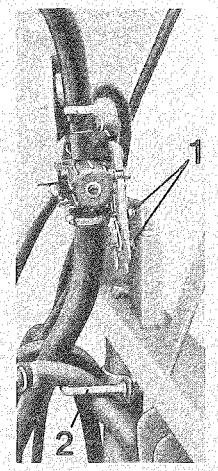


Fig. 18

5. Care and maintenance

After each use thoroughly rinse the entire sprayer through using clear water; operate all levers several times. **When frost has to be expected, drain water from tank, pump etc.**

Furthermore please note the special instructions applying to the following components:

a) Piston-operated diapraghm pump (see para. 6.1.)
b) Regulator (see para. 6.2.)
c) Filter cock

5.1. Cleaning the filter cock

A clogged filter cock is recognised among other things by the fact that the pump output deteriorates. To clean the filter cock, carry out the following operations in the sequence given here:

a) Switch the control handle (86). On the sprayer US 1000 T, switch control handle (86 a) on to "filling".
b) Fold back the spring clip (94)
c) Pull off the cup (95)
d) Pull off the filter seal (93)
e) Remove the filter element (91)

Filter element and cup may be rinsed with water.

When assembling the filter cock, ensure that the filter element (91) is fitted centrally in the cup (95) with the opening (97) pointing upwards.

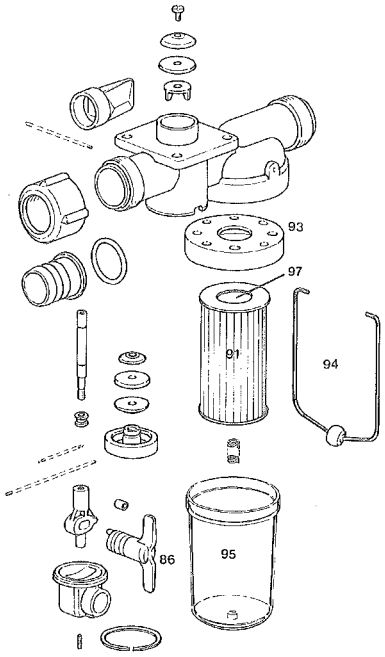


Fig. 19 **Filter cock K**

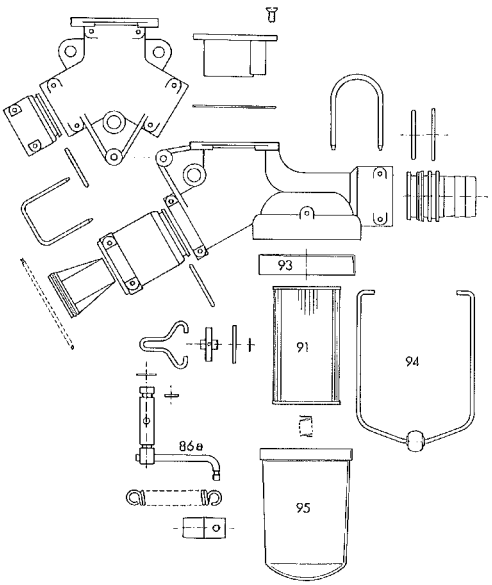


Fig. 19 a **Filter cock S**

6. Operating instructions for fittings

6.1 Operating instructions for the piston/diaphragm pump

6.1.1. General

The pump is a multi-chamber piston-operated diaphragm pump where the piston and its drive mechanism are protected from the harmful effect of the pump medium by diaphragms.

The pump is self-priming and, referred to its dimensions and weight, features a very high delivery as shown by the diagram below: **Delivery curves for the piston-operated diaphragm pumps at a p.t.o. speed of 540 rpm.**

Sprayers: US 401 T, US 602 T . . . . . Pump: P 102
Sprayer : US 1000 T . . . . . Pump: P 152
Sprayers: US 401 T, US 602 T, US 1000 T
for a spraying pressure up to 40 bar Pump: P 104
(optional extra)

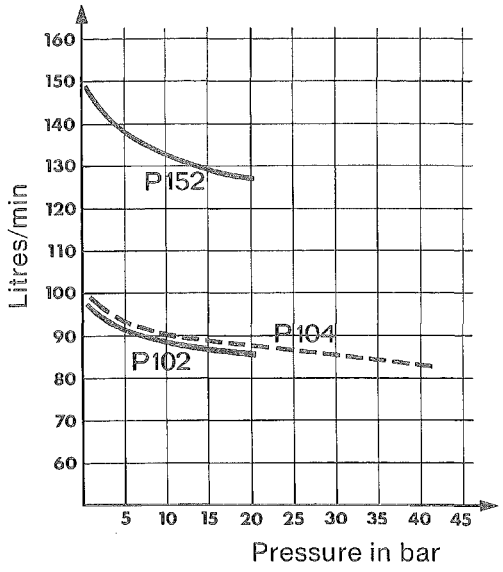


Fig. 20

Although the pump is checked for correct operation by carrying out a short trial run, similarly to an internal combustion engine, it will not achieve its maximum output until after a certain running-in time. During this **running-in time,** the duration of which is approximately 10 hours, the pressure quoted in the running-in specfication must not be exceeded. The permissible **continous loading** for pumps which have been run-in is given on a sticker attached to the pump.

The value quoted here applies to a standard p.t.o. speed of 540 rpm and at liquid temperatures up to 30° C. At higher speeds or higher temperatures the permissible pressures are reduced accordingly. The exact values depend on the operating conditions and have to be determined for each application. The pump must on no account be more than hand hot.

To remain within the above limits, the pump must only be used in connection with the pressure regulator type B or type G or a safety valve or with a regulator which is designed such that the pressure does not exceed the maximum pressure quoted for the pump (see pump sticker) even if the nozzles are switched off (when the entire pump delivery returns to the tank).

ATTENTION!

The pump may be run with anti-clockwise or clockwise rotation. It will achieve the same delivery.

6.1.2. Taking into operation

Before first taking the pump into operation, fill the specified amount of engine oil SAE 40 or gearbox oil SAE 90 (see pump sticker) into the oil filler neck (on the top of the pump). The oil level is correct when the oil level shown on the dip stick is between max and min when the pump is horizontal.

6.1.3. Caution at sub zero temperatures

When taking the pump into operation at temperatures below 0° C, care must be taken to ensure that the opening towards the pressure line and the pressure line itself are not iced up. If this is the case or if the pressure side of the pump is sealed, destruction of the pump will result.

6.1.4. Pressure-Accumulator

The specified accumulator pressure of approximately 3 bar should be obtained by using an air pump or compressor. Take care to ensure that the spraying pressure is roughly the same as the accumulator pressure (see accumulator sticker).
An incorrect accumulator pressure will result in pulsating delivery which is shown by the high pressure gauge deflection. An incorrectly adjusted pressure will result in the accumulator diaphragm being damaged. The pressure should then be corrected.

6.1.5. Maintenance

The oil level is of very great importance for fault-free pump operation; it should therefore be checked each time before the pump is taken into operation again.

6.1.5.1. Oil change

The pump oil has to be changed every 50 hours. Use standard engine oil SAE 40 or gearbox oil SAE 90. 0.7 litres are required for pumps P 102, P 104 and P 152. If too much oil is used, then it will escape through the vent when the pump is running.

CAUTION!

Before making the check, run the pump for approximately 1 minute at a pressure of approximately 3 bar. Then switch the pump off and insert the dip stick; the oil level should then be between max and min.

6.1.5.2. Pump scavenging

The pump should be scavenged thoroughly after each period of use; this is best done by switching the pump on again and running it with clear water.

6.1.5.3. Winter storage

To avoid frost damage, any water residue must be removed from the pump at the end of the annual spraying season. For this invert the **piston-operated diaphragm pump** (filler neck pointing downwards) and rotate it by hand – any remaining water will then flow out.

To avoid corrosion damage to the pump drive components, the old oil must be drained completely. For this open the oil drain plug and leave the pump to stand until no more oil comes out.

Then fill with the specified amount of oil (engine oil SAE 40 or gearbox oil SAE 90) and store the pump upright (oil filler neck pointing upwards).

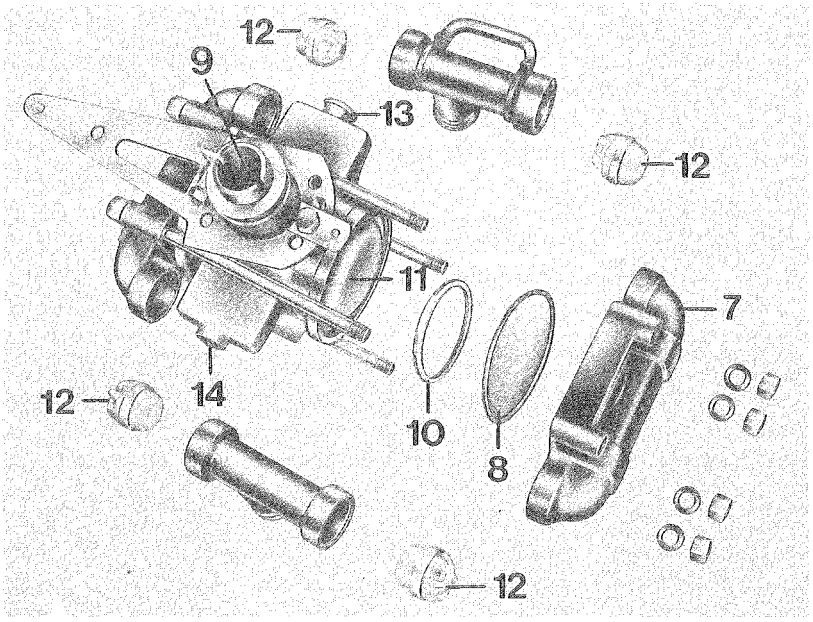


Fig. 21 **Pump P 102**

Piston-operated diaphragm pumps

7 and 7a: valve cover
8 and 8a: diaphragm
9 and 9a: pump shaft
10 and 10a: conical ring
11 and 11a: piston
12 and 12a: valves (position valves as shown in Fig. 21)
13 and 13a: oil filler neck
14 and 14a: oil drain plug

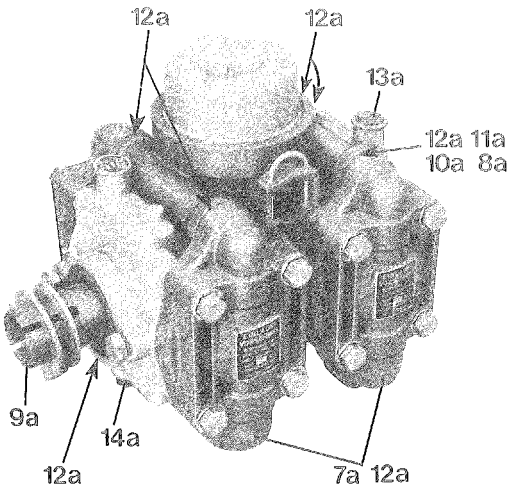


Fig. 21 a
Pump P 102

6.1.6. Pump faults and remedial action

Even if chosen and tested carefully, diaphragms can become damaged as a result of extreme operating conditions. To avoid this, we recommend to fit new diaphragms after every 400 operating hours or no later than after two years. To replace the diaphragm, remove the 4 hexagon nuts or bolts (M 12) – Fig. 21. The valve cover (21/7) can then be removed and this makes the diaphragm (21/8) accessible.

A broken pump diaphragm results in a continuous oil flow from the oil filler neck.

If spraying agent has come into contact with the inside of the pump due to diaphragm fracture, then the spraying agent/oil mixture must be drained completely and scavenged through with clean oil.

Corrosion damage as a result of not cleaning the pump is not covered by the guarantee.

To fit a new diaphragm, centralize the piston by turning the shaft (21/9); it can then be left in this position until the pump is fully reassembled.

Before fitting the diaphragms, check the concial rings (21/10), which are located between diaphragm and piston, for damage and replace if necessary. When inserting the diaphragm, take particular care to ensure that it fits exactly into the recess in the cylinder or the valve cover. The label "aussen" (outside) must face towards the valve cover.

Having replaced the valve cover on the pump cylinder, tighten the hexagon nuts or bolts diagonally and evenly so that they are quite firm but the shaft (21/9) can still be rotated by hand. Only after this is the specified oil quantity – see pump sticker – (engine oil SAE 40 or gearbox oil SAE 90) added.

Important Note

If damage has been caused by lack of oil or overheating, all drive components have to be checked. This repair work can be carried out only by an expert.

6.1.6.1. Pressure-Accumulator diaphragm – escaping air

Air escaping slowly from the accumulator is recognised by the fact that the pump delivery is even only initially after the accumulator has been pressurized, whereas after some time it is pulsating. This can generally be remedied by tightening the accumulator cover (clockwise). For this the air must be drained first since otherwise there is too much pressure on the cover and it cannot be turned.

When it is not possible to seal the accumulator by tightening the cover, it must be removed **(Caution! depressurize first)** and the thread oiled; when tightening the cover it is then possible to exert more pressure on the sealing rings.

6.1.6.2. Damaged accumulator diaphragm

Accumulator diaphragm damage which may be due to the specified pressure not having been maintened, is recognised by the fact that the pump delivery is suddenly and for no reason pulsating (the pressure gauge pointer oscillates excessively). When trying to pressurize the accumulator, it no longer contains the air.

In this case unscrew the accumulator cover **(Caution: depressurize first)** and replace the damaged diaphragm. Clean all sealing surfaces before fitting the new diaphragm. Then screw the accumulator cover back in as far as it will go.

The accumulator can be tested for leaks quite easily by pressurizing it and then immersing it into a container filled with water.

A pulsating pump delivery can also be one of the four valves sticking or being damaged. In this case replace the affected valve.

CAUTION!

We are **not** liable for damage or accidents which may be caused by intake or pressure lines other than our own being used on the **piston-operated diaphragm pumps.**

6.2 Operating instructions for the regulator

6.2.1. General

The regulator type B for sprayers US 401 T and US 602 T and the regulator type G for the sprayer US 1000 T are matched specially to the piston-operated diaphragm pumps and therefore not onl allow maximum utilization of these pumps but also guarantee long and fault-free pump operation if the specified load limits are not exceeded.

On the regulator type B the back suction is through the back suction hose whereas on the regulator type G is it integral with the regulator.

The regulator comprises the following elements:

a) Quick-acting connection for the pressure hose (leading to the pump)
b) Connection for the return hose (leading to the tank).
c) Four connections with quick-acting valves for the spray nozzles and the agitator nozzle.
d) Connection for the liquid pressure gauge.
e) Pressure limiting valve, spring-loaded by an adjustable compression spring.
f) Control valves for switching on and off.
g) Back suction nozzle to prevent dripping from the nozzles after the sprayer has been switched off.
h) A control disc for initiating the following operating states:

Fig. 22 **Regulator position "spraying"**

Control disc in horizontal position (spraying position). The liquid can flow to the nozzles and the pressure limiting valve is spring-loaded by the compression spring so that the required pressure can be adjusted.

Fig. 23 **Regulator position "shut-down and tank filling position"**

Control disc in vertical position (shut-down and tank filling position). Liquid flow to the nozzles is blocked, the nozzles are subjected to a suction effect. The pressure limiting valve is lifted off its seat so that the return flow can occur at a lower pressure.
On the regulator type G the switching travel is 180°. The shut-down and tank filling position of the control disc is exactly opposite to the spraying position.

6.2.2. Maintenance

After each use the regulator must be rinsed through thoroughly; this is best done by switching the entire sprayer system on once again and pumping through clean water. While this happens move the control levers several times to "open" and "close".

6.2.2.1. Winter storage

At the end of the spraying season the regulator must be rinsed through thoroughly as described under maintenance and then emptied completely to prevent frost damage.

For this move the control disc in horizontal position and remove the pressure hose leading to the pump. Release the compression spring acting on the pressure limiting valve.

6.2.3. Regulator faults and remedial action

The regulator can be damaged only by foreign matter getting into the valve seats or other flow restrictions occurring.

The following components can be affected:

A) Pressure limiting valve (A) Fig. 22

Foreign matter in this valve is recognised by the fact that the pressure setting does not remain constant but keeps changing.

To remove any foreign matter, first carry out several switching cycles. If this is not successful, then dismantle the following components in the sequence listed:

a) Remove the locking ring (24/75) which secures the regulator nut.

b) Remove the regulator nut (24/17).

c) Remove the regulator spring (24/15) and the regulator slide valve (24/11); take care not to lose the thrust spring (24/160) and the washer (24/76).

The foreign matter can be removed after withdrawing the regulator slide valve.

When reassembling make sure that the washer (24/76) is in contact with the articulated bolt (24/9). The spring (24/10) is inserted into the regulator slide valve.

B) Control valve for the nozzles (B) Fig. 22

Any foreign matter at this point makes it impossible to stop the liquid flow to the nozzles.

This valve becomes accessible after removing the flanged sleeve with the quick-acting valves. For this remove the following components in the sequence listed:

a) Undo the hose clamp (24/27).

b) Pull off the connecting hose (24/26)

c) Undo the two hexagon nuts M5 (24/8)

d) Remove the flanged sleeve with the quick-acting valves.

The foreign matter can be removed once the flanged sleeve has been removed. When reassembling please take care to ensure that the plug for the connecting hose points towards the correct side.

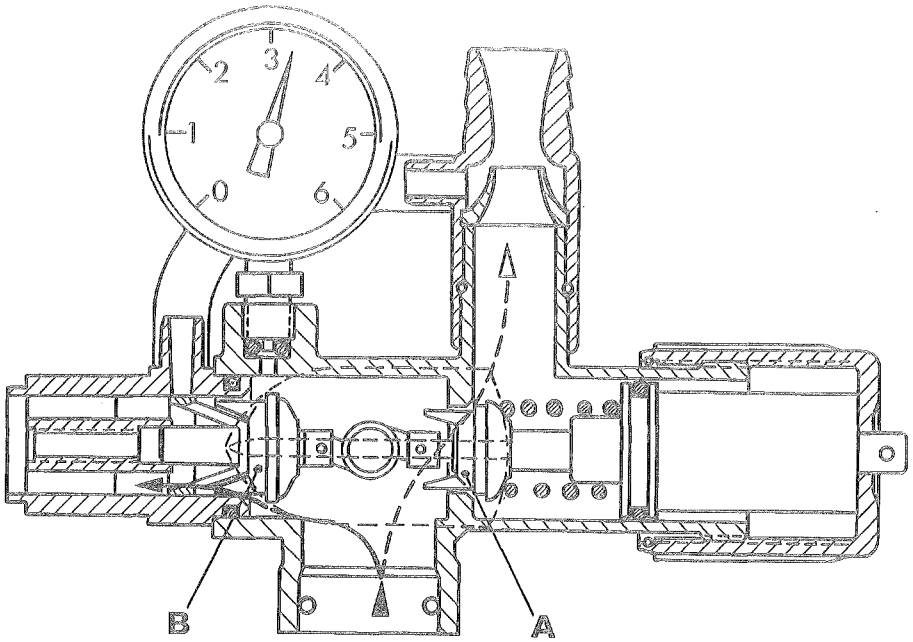


Fig. 22 **Regulator position "spraying"**

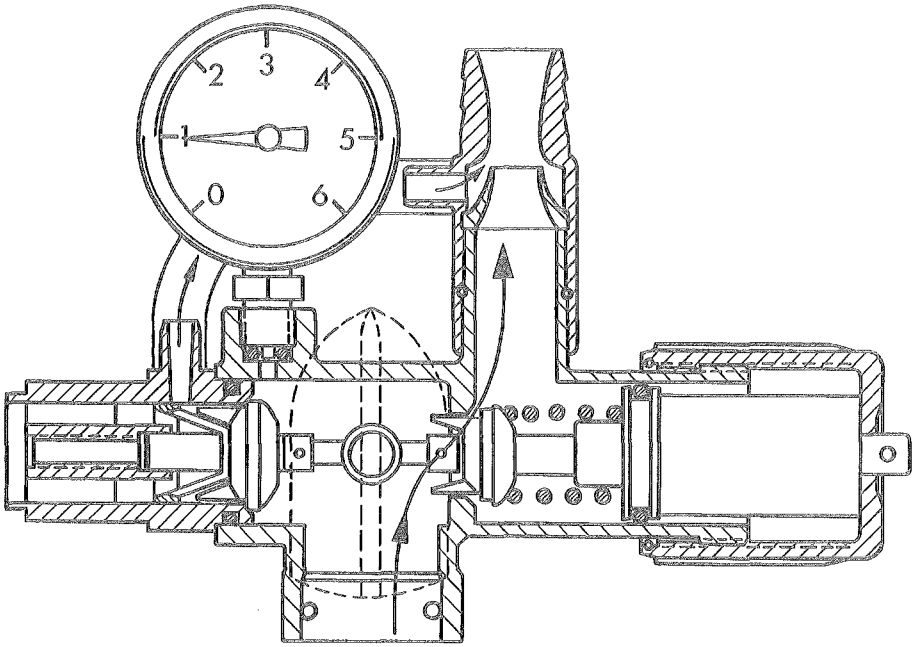


Fig. 23 **Regulator position "shut-down and tank filling"**

Pressure controller type B

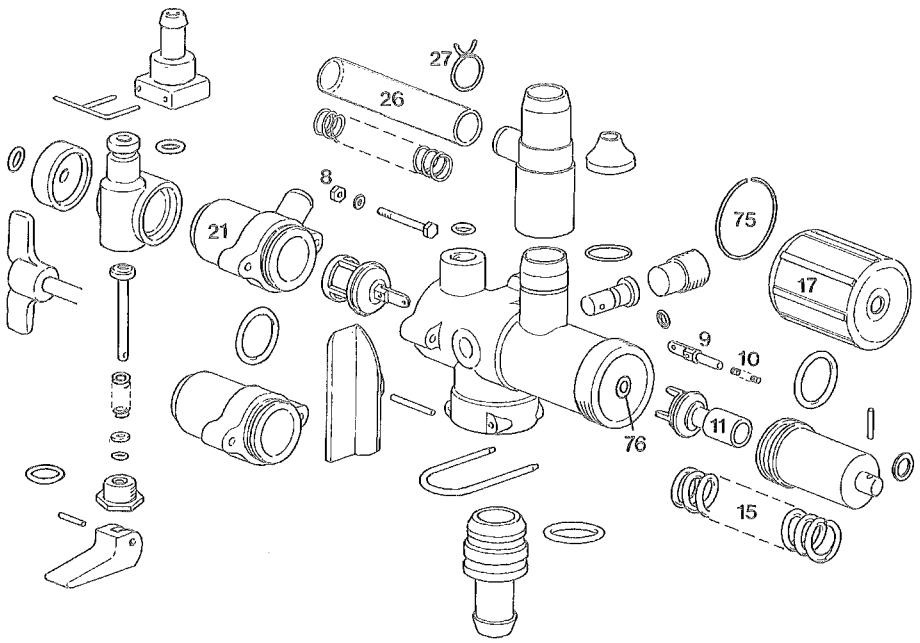


Fig. 24

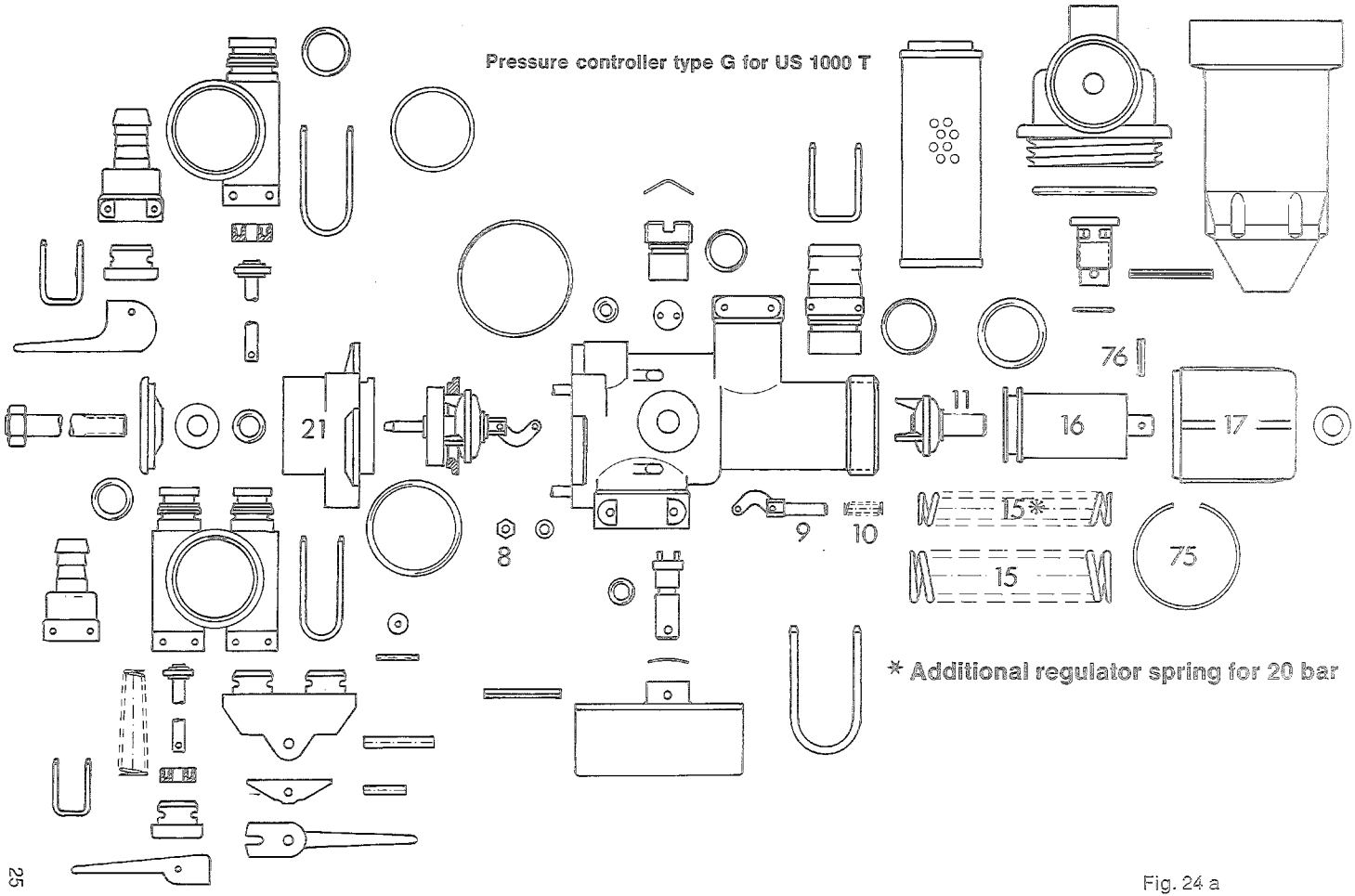

Pressure controller type G for US 1000 T
21
8
9
10
11
16
17
76
15*
15
75
* Additional regulator spring for 20 bar

Fig. 24 a

7. Special notes

The sprayers are equipped for spraying plant protection agents as standard. If agents containing hydrocarbons such as Nata, Lasso etc. are to be sprayed, the pump diaphragms must be replaced by "Viton" diaphragms (extra charge).

The corrosion resistance of the brass nozzle tips is not adequate for spraying liquid fertiliser. They have to be replaced by stainless steel nozzle tips.

Furthermore it is highly advisable in this context to use the spridometer instead of the standard presssure gauge (extra charge).

CAUTION!

Do not use "Viton" diaphragms in the pump when spraying liquid fertiliser.

8. Notes regarding hazards, environmental influences and pollution control

8.1. Notes regarding hazards

If the sprayer is used with attachments like the spray gun or the tank filling device which require a pressure above 10 bar, then the hoses used must correspond to the higher pressure. The pressure gauge has to be exchanged as well.

When connecting the spray gun to the pump direct, always use a safety valve.

8.2. Environmental influences and pollution control

For winter storage drain all spraying agents and any residual water from the entire spraying system, otherwise there is a risk of fracture at sub-zero temperatures (see Point 6.1.3., 6.1.5.3., 6.2.2.1.).
When spraying always observe the wind direction.

When handling spraying agents make sure that drinking water cannot become polluted (see also description of the tank filling device, item 4.3.).

9. Safety measures regarding removal and storage

Prior to removing the sprayers US 401 T and US 602 T from the tractor hydraulic system, ensure that the two supports which are hinged to the rear spraying beam carriers, are moved out towards the rear. They stop the sprayer from falling over.

The storage site should be as level as possible and provide firm ground.

Unsere Werksvertreter:

Gebiet Bayern: Firma Josef Eger KG Tel.: 09 11 / 44 32 66 Telex: 06 22 318	Bruneckerstraße 93 **8500 Nürnberg**
Filiale Landshut Tel.: 08 71 / 7 19 42	Oberndorfer Straße 26 a **8300 Landshut**
Gebiet Baden-Württemberg: Firma Helmut Walker u. Arthur Haug Tel.: 07 31 / 3 74 10	Postfach 4169 **7900 Ulm** Büro und Lager: Im Güterbahnhof
Gebiet Schwaben: Herr Jürgen Sommerkamp Tel.: 0 83 42 / 22 10	Meichelbeckstraße 25 **8952 Marktoberdorf** Lager: 8872 Burgau/Schwaben
Gebiet Rheinland: Firma Jos. Meffert Tel.: 0 22 21 / 36 34 88 Telex: 08 85 518	Postfach 200488 **5300 Bonn 2 - Bad Godesberg** Lager: 5300 BN-Mehlem, Am Güterbahnhof
Gebiet Hessen: Firma Hans Dierkes Tel.: 0 56 71 / 20 71 Telex: 09 94 822	Papiermühlenweg 2 **3520 Hofgeismar** Lager: Ladestraße – Lindenweg Lager: 6402 Großenlüder, Kr. Fulda
Gebiet Westfalen: Herr Rolf Tempel Tel.: 0 52 03 / 35 85	Am Riegelbrink 4 **4806 Werther** bei Bielefeld Lager: 4771 Altengeseke bei Soest
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Gebiet Osnabrück: Werk Gaste Tel.: 0 54 05 / 10 43 Telex: 09 4 801	Firma AMAZONEN-WERKE H. Dreyer Postfach 109 **4507 Hasbergen-Gaste**