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TRAILED SPRAYERS

Cropsaver tracking/trailer sprayer
Models CST12-24-2000/A 2500H18-24TC/A
3000ASA18-24/A 4000ASA18-24

OPERATORS MANUAL

1999

Safety / hazards

Read this manual carefully before using the machine.

Safety Notes

You must understand and follow the instructions in this manual. You must observe all relevant laws and regulations. Remember - never assume always check and if in doubt ask. Yours and others health and safety may be at risk.

⚠ WARNING

Warnings call attention to instructions that need to be followed precisely to avoid a hazardous situation.

⚠ CAUTION

Cautions call attention to instructions that must be followed precisely to avoid damage to the machine.

Safety Check List

In addition to warnings in this chapter, specific warnings are given throughout this handbook. This section is designed to give a safety code for use of the machine generally and for operation and maintenance practices.

Safety Notes

Operating Safety

⚠WARNING

Ensure all guards are kept in their proper condition and are in their correct position. If any safety decals or guards are damaged, they should be replaced immediately.

⚠WARNING

Do not permit any person to ride on the machine in addition to the driver.

⚠WARNING

The machine should never be driven at speeds in excess of 40 km/h (25 mph) on the road. The top speed of the machine may be restricted by the choice of wheel equipment Reversing at high speed can cause accidents. Always drive at a safe speed to suit working conditions.

⚠WARNING

Before using the machine always ensure all scheduled maintenance tasks have been carried out in, accordance with this handbook and that any inspections required have been carried out. A defective machine can injure you or others. Do not operate a machine, which is defective or has missing parts.

⚠CAUTION

Keep the machine controls clean and dry. Your hands and feet could slide off slippery controls. If that happens you will lose control of the machine.

⚠WARNING

The ATLAS is a high clearance machine so extreme caution should be exercised when cornering and when working on side slopes, especially with narrow track width settings. Never operate the machine beyond its intended design limits as damage may occur to the machine, it can also be highly dangerous. Do not try to upgrade the performance of the machine with unapproved modifications.

⚠WARNING

Working can cause accidents in poor visibility. Keep windows clear, and use your lights to improve visibility. Do not operate the machine if you cannot see properly.

⚠WARNING

Always ensure that your speed is low enough to allow a safe stopping distance in the event of an emergency (allowing for maximum load).

Safety Notes

Maintenance Safety

⚠WARNING

Always ensure engine is stopped before attempting to undertake any work on the machine. Before carrying out any work on the exterior of the machine ensure it is cleaned of chemical residue. Also inform others you are working on the machine to ensure it is not started or moved whilst work is being carried out. Remove the ignition key and leave a notice in the cab and around the machine to inform others. Follow any safety guidelines laid down in this handbook specific to the operation you carry out as yours and others safety depend on it.
Remember - Never assume always check and if in doubt ask!

⚠WARNING

Hose the machine down regularly to remove chemical residue especially liquid fertilizer, which will attack any exposed steelwork and may cause a fire hazard.

⚠WARNING

Breathing exhaust gases can harm and possibly kill you. Do not operate the machine in confined areas without ensuring that there is adequate ventilation.

⚠WARNING

A machine can roll off jacks and crush you unless the wheels have been chocked. Always chock the wheels at the opposite end to that which is being lifted. Do not work underneath a machine supported only by jacks. Always support the machine on axle stands prior to commencement of work.

⚠WARNING

Understand the electrical circuit before connecting or disconnecting an electrical component. A wrong connection can cause injury and damage the machine.

⚠WARNING

Ensure any chemical residue is disposed of in accordance with the guidelines provided by the chemical manufacturer.

⚠WARNING

Fine jets of hydraulic fluid at high pressure can penetrate the skin. Do not use your fingers to check for hydraulic leaks. Do not put your face close to suspected leaks. If hydraulic fluid penetrates your skin seek medical attention immediately. Damaged hydraulic hoses can cause fatal accidents. Inspect the hoses regularly and replace any which are damaged in any way.

⚠CAUTION

⚠WARNING

HAZARDS

The hazards in crop spraying fall into four broad groups. To the operator, the crop, the machine and the environment. These can and do overlap.

Hazards to the Operator

These can arise from careless filling, poor product mixing leading to system blockages and the need to clear these blockages. The disposal of the resultant material. Adjustment to the mechanics of the machine when both in the field and stationary. Spending time in the cab with contaminated overalls and boots. Not determining and wearing the correct P.P.E. for the products in use.

Hazards to the Crop

These can arise from both under and overdose of the material in use. Underdose often means the use of the same or another product again. Overdose sometimes can kill the crop being sprayed; sometimes the next crop in the field is impaired by inaccurate work on headlands and narrow sections. With some products narrow sections would be best not sprayed. This would remove the problem of residue effecting the following crop from the unlawful overdose of the current crop. Headland accuracy in this respect can be improved by spraying the headland with 1 1/2 bouts or 2 1/2 bouts of the boom, leaving a wheel mark indicating the applied edge and shut off mark.

There is a drift hazard to the next crop if it is sensitive to product being used. There is hazard to the crop from not determining the optimum spray quality for the product in use and selecting a water volume and forward speed that are most likely to optimise the product used and it's investment. These can be seen in both crop contamination and resultant yield.

Hazards to the Machine

Hazards to the machine come about frequently from inattention when in work resulting in impact with objects, moving and stationary. The constant use of settings, which are at the top end of the range for the components on the machine, will bring about component failure more quickly than those that do not reach these limits.

Machine breakdowns can often come from high road speeds on poor roads and long distances.

⚠CAUTION

Hazards to the Environment

Hazards to the environment from the spraying operation are well documented in numerous publications from The B.A.A., H.S.E., N.F.U., E.A. and others. The next crop, hedge bottoms, gardens, watercourses etc. are some of the sensitive areas. It must be remembered by all operators and managers that the Airtec system allows for immediate and instant control over driftability by the rapid change from an operational spray quality of fine or medium, to that of coarse and the reduction in drift that this brings. Selecting the suitable spray quality for the job and the conditions will reduce the likelihood of drift.

Always keep a detailed notebook of settings and mixtures, both good and bad. The bad ones are the most important to record.

INTRODUCTION TO THE AIRTEC SYSTEM

The Cleanacres Airtec sprayer has been designed to allow low volume application when applying chemicals, while at the same time dramatically reducing spray drift and blockages.

With the knowledge and advice of your agronomist, we are confident that great benefits will come from the correct operation of this sprayer.

GENERAL LAYOUT

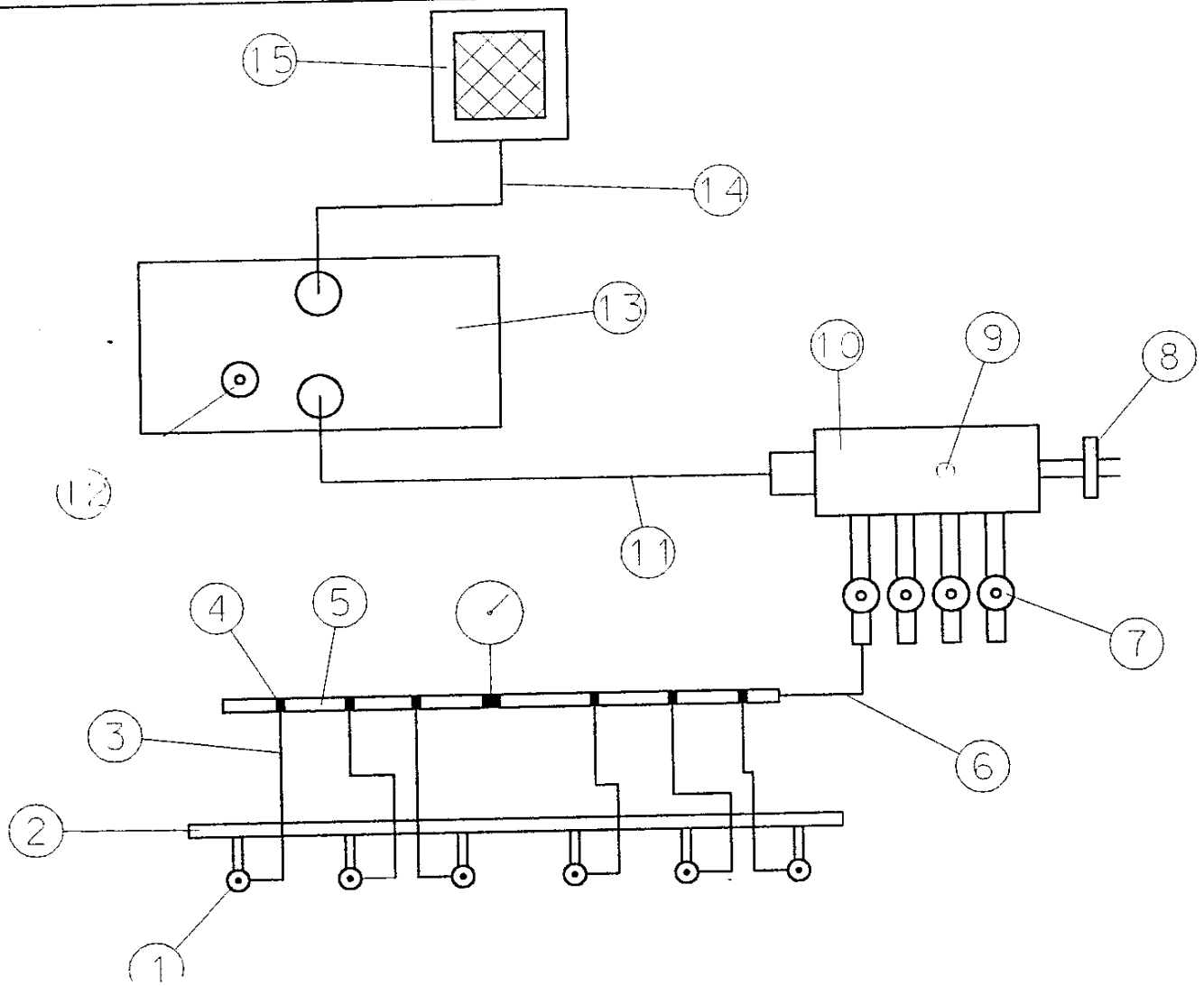
Liquid is drawn from the tank, through a suction filter, to the diaphragm pump. On the pressure side of the pump the liquid is pumped through a flushing pressure filter and into the liquid distribution manifold, on which are mounted the individual boom section ball valves.

When the spray line controls are in the 'on' position, the liquid is passed through the open ball valves to the spray lines, on which are mounted the Airtec nozzle assemblies. The spray lines are fitted with a constant re-circulating system (C.R.S.). This is a return to tank pipe fitted on the outer end of the spray lines that allows agitation to take place within the spray lines, as well as in the tank. The C.R.S. ensures that when low volumes are being used, powders do not settle out in the spray line, thus becoming a potential blockage problem. All liquid from the C.R.S. is returned to the sprayer tank to provide additional agitation. When the spray line controls are in the 'off' position the liquid passes through the opposite side of the ball valves, via throttle valves and back into the tank to provide further agitation. The throttle valves ensure that when individual sections are turned off the liquid pressure in the remaining sections stays constant.

The air system on the sprayer uses a high volume, rotary compressor to supply airflow to the boom sections. Air is fed from the compressor into the air distribution manifold. From here the air passes through electric solenoid valves to the individual boom sections. Air is fed to the Airtec nozzle through a separate set of pipelines, the air and the liquid is then mixed in the nozzle to provide the air included droplet formation. Liquid pressure is controlled by the use of a motorised electric valve. Application rates can be altered by changing the tractor's forward speed and/or using the in-cab controls to vary air and liquid pressure. Spray quality can be altered by changing the ratio between the liquid and air pressure.

PICTURE OF AIRTEC PARTS LAYOUT

1	Airtec nozzle
2	Spray line
3	1/4" air delivery pipe
4	1" band clamp
5	1" air line
6	3/4" flexible hose
7	Air section control valve
8	Air pressure control valve
9	Port for air pressure sensor
10	Air distribution manifold
11	1 1/2" air delivery hose
12	Pressure relief valve
13	Air compressor
14	1 1/2 air suction hose
15	Air intake filter
16	Air pressure gauge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GUIDE TO EFFECTIVE CROP SPRAYING

For effective crop spraying with modern expensive agrochemicals it is very important to spray accurately.

SPRAYING OBJECTIVES

Always aim to spray the recommended chemical rate safely and effectively by ensuring that the correct volume of chemical reaches the intended target and that as little as possible drifts or runs off and consequently fails to reach the target.

Aim to carry out the operation quickly and cost effectively by using the lowest spray volume compatible with chemical and conditions and a forward speed without excessive boom bounce, drift or inefficient application.

There are four key aspects to accurate, trouble free spraying:

Preparation
Airtec setting selection
Calibration
Good field work

Procedure

Read and understand Airtec application charts. Note that at any one flow rate, different spray qualities are achieved by increasing air pressure, giving more atomisation of the selected rate of flow.

Determine settings for different spray qualities on the charts for the 35, 40 and 50 restrictors.

If unfamiliar with the Airtec system run some settings with water, in a clean machine, at flow rates of 350, 550 and 750 mls./min. through the spray quality of coarse, medium and fine.

Observe these settings and their differences.

Select application volume and spray quality for the target identified and the product and dose chosen for the application.

Always part fill the tank before adding any product.

Calculate product required for the area to be treated, measure this out if it cannot be achieved from full packs. Adding some water in a measure jug can be helpful.

Always shake the unopened can.

Add product in the order detailed on the labels.

Prepare the containers for tipping into the input bowl, and do this as quickly as the venturi system will allow.

Check product's labels to see which type of P.P.E. should be used for the filling, and concentrate handling phase. Avoid contaminated covers in the drivers cab, use the protective clothing locker provided.

To spray 5 ha. at 80 Ltr./ha. with 4 Ltr./ha. of product

5 ha. at 80 Ltr. is - 400 Ltr.

5 ha. at 4 Ltr. is - 20 Ltr.

Water needed is - 380 Ltr.

Fill tank to the required mark with sight gauge on level ground or through a Cleanacres Filling Flow Meter.

Avoid frothing when filling and agitating. This can occur from air leaks and splashing in the tank.

<u>After Spraying</u> or when changing chemicals

Flush tank and booms with clean water.

Spray onto an area of the crop which has been designated for this purpose. This area should have been previously sprayed with a dose of the product in use, that is lower than the maximum allowed dose, to prevent this being exceeded.

Leaving the washings on the crop is the way to avoid the difficulty of washings disposal in the farm yard, sprayer filling area. This enables operators to adhere to advisory statements regarding the preservation of water quality.

This should be done on every spraying occasion.

<u>Sprayline rinsing and C.R.S.</u>

Constant re-circulating plumbing, this feature allows for inline momentum of the spray liquid.

Liquid from the end of the spraylines is returned to tank.

Designed to prevent sludge deposit in the line ends and the resulting nozzle blockage.

The C.R.S. can be diverted to allow the lines to be flushed out with clean water if the tank is left with chemical in it.

GENERAL GUIDELINES FOR THE SELECTION OF SPRAY QUALITY

⚠CAUTION

The following guidelines are designed to help operators select Airtec settings. However, reference should be made to your agronomist for guidance on tank mix compatibility, spray quality selection and volume requirements.

SOIL APPLIED HERBICIDES

For overall application to bare soil, the target is clear and the spray quality setting is not highly critical, provided the chemical is deposited on the ground evenly without too much gap between spray drops, at the required dose, and with minimum drift.

FOLIAR APPLIED PRODUCTS

Application to plant foliage are more complex. The target for foliage herbicides is the weed and not the crop, whereas fungicides, insecticides, and crop growth regulators are aimed at the crop. In many instances a tank mix of the above products requires an application system to compromise between the requirements for different droplet sizes.

With conventional sprayers, herbicides, systemic fungicides, insecticides, and growth regulators are generally applied at a pressure of 3 bars (45 p.s.i.) through fan nozzles, at volumes of 100-200 Ltr. ha. (10-20 G.P.A.). At these pressures and volumes, there is a tendency towards producing a wide range of drop sizes from 1 – 600 um. in diameter within which are a very large number of small drops of less than 100 um. which are liable to drift over long distances. Although the total amount of active ingredient falling outside the target area may be very small, the environmental effects could be undesirable. The very large drop fraction (350 um. upwards) is also undesirable due to run off from foliage leading to a relatively small proportion of the spray drops being retained by the foliage. Manufacturers application rates tend to allow for a relatively high proportion of waste to cope with the inefficiency of the hydraulic nozzle.

Airtec sprayers emit a significantly smaller fraction of large droplets, and those which it does are air included and consequently retain on the target, which leads to less wastage and a commensurate reduction of the amount of water required to treat a unit area. In addition the fine droplets (1 – 100 um.) are entrained in the curtain of air

emitted from the nozzle and are consequently carried into the crop canopy rather than drifting outside the target area.

All the required spray quality categories can be achieved with Airtec, not by changing nozzles as with conventional sprayers, but merely by altering the combination of air and water pressures. One can also change spray quality category in the middle of an application without altering the application rate – particularly useful if spraying is not to be interrupted due an increase in wind speed.

SPRAY QUALITY GUIDE

If a chemical is applied at the correct application rate, at the correct time, and with the correct spray quality for the target, you will get the best possible results from your chemicals with minimum risk of drift.

The British Crop Protection Council has divided spray qualities into five categories, very fine, fine, medium, coarse, very coarse. The very fine and very coarse categories are not commonly used.

Your chemical label recommendations may well refer to a preferred spray quality to give best effectiveness and safety, so you should select a setting to give this quality. If no spray quality is recommended by the chemical manufacturer, use a medium spray quality. The spray quality for each setting is indicated in the jet chart (appendix 1).

SPRAY QUALITY	USED FOR	LEAF RETENTION	DRIFT RISK
Fine	Good cover e.g. some fungicides & insecticides	Good	Medium/high WARNING - do not use for very toxic products or where drift may cause problems.
Medium	Most products, general herbicides	Good	Medium
Coarse	Soil-applied herbicides	Poor	Low

APPLICATION

Pre-emergence Soil Applied Products

In the main these can be applied in between 80 and 120 Ltr. water with a coarse or medium spray quality.

Some mixtures containing components with low soil solubility would be better applied with a medium spray quality, to increase the droplet numbers (for example, products containing Pendimethalin).

When soil conditions are poor for the performance of this group of products, additional water volume may be helpful so a change to a 50 restrictor could overcome some poor conditions. In very dry, rough and lumpy conditions a change to a latter applied post emergence product choice should be encouraged.

Potato Ridges

Boom height as measured from the line of the top of the ridge is important. Forward speed and boom stability must be optimum for application performance.

The application to ridges is influenced by side winds, head winds, incorrect boom height and travelling at speeds above 7 or 8 k.p.h.

Post Emergence

These products, herbicides, fungicides, growth regulators, insecticides and plant nutrients are often applied in multi-combination mixtures. Care needs to be taken to ensure the correct filling procedure.

A spray quality choice of medium or fine for the intended volume should suffice. Applications in 65-125 Ltr. ha. are adequate with the finer spray quality coming from the lower volume.

Mixtures dominated by herbicides and growth regulators and often with plant nutrients may need 90-125 ltr. ha. medium spray quality where the foliage is thick and some of the target area is at the bottom of the canopy.

Sugar Beet Weed Control

Weed control evaluations from independent trials, over the period 1991-95 confirmed that spray quality was a significant factor of product performance. Control was consistently superior with Airtec settings giving a fine spray quality. (80 Ltr. ha. from 525 mls./min. at 8 k.p.h. with p.s.i. 25 air/45 liquid, Morley 1991-95)

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Grass Weed

Mixtures targeting grass weed control in cereals and B.L.C. should perform well in the volume range of 65-90 Ltr. ha. with a fine spray quality.

Use the higher volume when the crop canopy is well established, otherwise volumes of 50-65 Ltr. ha. would be efficient.

Aspects of grass weed and wild oat herbicide performance can be adversely effected if boom height, speed, nozzle, performance, spray quality selection and volume selection are not carefully considered. A poor product performance will enhance the opportunities for the build-up of the varying types of herbicide resistance.

Fungicide Mixtures

These products can be powders, suspensions and E.C. solutions. Pay attention to the filling procedure and the adequate wetting of powders before adding to the tank and agitating. Fine spray qualities in volumes from 65-90 Ltr. ha. should give good product performance with the chosen product dose.

Independent trials work has showed that 80 Ltr. ha. fine spray quality, applied at 8 k.p.h. was superior in evaluations where Chlorothalonil was included in the mixture on a 10 tonne/ha. crop. (35 restrictor, 8 k.p.h., 525 mls./min., 20 p.s.i. air, 36 p.s.i. liquid, Morley 1993)

Potato Fungicides

This procedure is largely dominated by systemic materials often in mixtures with multi-site contact inhibitors.

It is important not to waste product from the plant leaf by run off.

A spray plan starting with 50-60 Ltr. ha. fine spray quality at the first time through and then increasing the volume as the plant gets larger, up to 120 Ltr. ha. at full canopy should give efficient product utilisation.

Some very strong foliage types of potato, in fertile conditions with irrigation, may need to be sprayed with volumes to 150/160 Ltr. ha. to cover the greater foliage mass.

Use the highest air setting that can be achieved with the chosen volume.

Forward speed should be 7-8 k.p.h. when the canopy has developed. Boom height and stability are important.

DESICCATION

Oil Seed Rape

A significant area of oil seed rape has been desiccated with Airtec since the system was introduced in 1985.

The Zeneca product has been successfully used when the plant has reached the correct stage of senescence, with water volumes of 90-120 Ltr. ha.

The 50 restrictor was introduced to give some growers an opportunity to use 250 Ltr. ha. when the conditions for use where adverse, dense flat crop with resurgent weed growth.

Translocated materials have been used effectively in 90-120 Ltr. ha. Attention to the crop condition is important for the correct stage for application.

Use high air settings for the chosen volume.

Linseed

Presents no problems when done at the correct plant stage.

Potatoes

Volume depends on the amount of haulm, the plant stage and the amount of blight in the crop.

Crops with a significant amount of blight should be treated with acid.

Each crop should be assessed for blight and late blight fungicides (containing a fentin product) included in the desiccant wherever there is a risk potential.

100-140 Ltr. ha. is usually a sufficient volume. 250 Ltr. ha. can be used with the 50 restrictor, very strong haulm may respond better to two applications some 2-4 days apart.

The total product dose should not be exceeded.

SPRAYER CONTROL BOX

Cleanacres sprayers are all fitted with in-cab controls for operation of boom section control, pressure adjustment and boom hydraulic functions for your safety and comfort.

See figure 1.

HYDRAULIC CONTROLS

1. Hydraulic on/off
2. Mainfold switch
3. Raise/lower switch
4. Right hand outer fold
5. Left hand outer fold
6. Boom tilt

SPRAYER CONTROLS

7. RDS on/off
8. Individual section controls
9. Boom master control
10. Front tank control
11. Air pressure control
12. Liquid pressure control
13. Fuse holders

1. Hydraulic on/off: this switch must be on before any of the electro-hydraulic services on the sprayer will work.

2. Mainfold switch: this switch controls the folding and unfolding of the main boom sections.

3. Raise/lower switch: this switch controls the raising and lowering of the booms on the sprayer.

4. Right hand outer fold: this switch controls the folding and unfolding of the outer section of the boom.

5. Left hand outer fold

6. Boom tilt: this switch controls the boom tilt, which allows the boom to remain parallel to the ground, even when working on sloping ground.

7. Power on/off switch for RDS monitor.

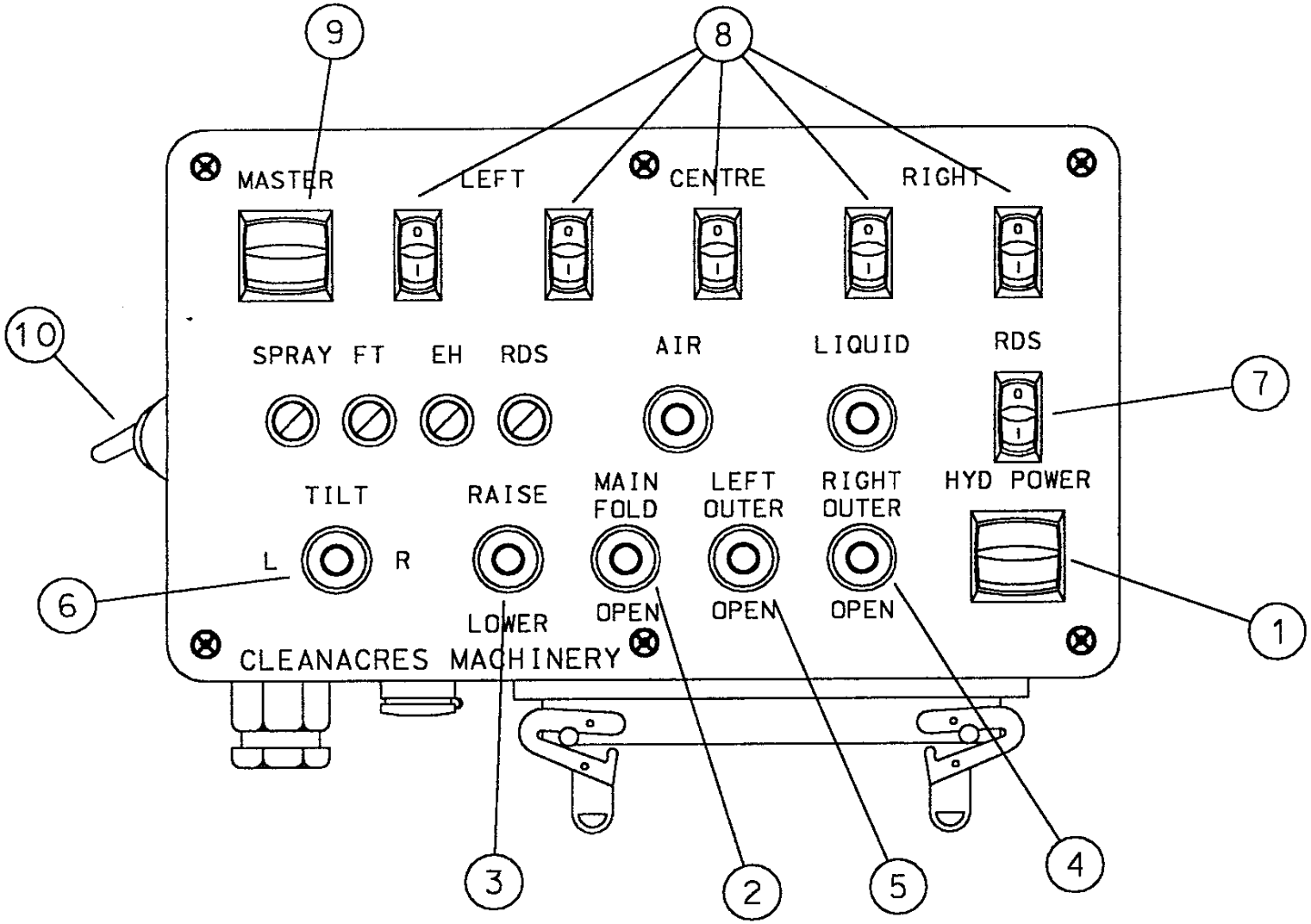
8. Individual section controls: these are used for operating in short work to isolate individual boom sections. The switches control both the air and liquid lines.

9. Boom master control: this switch shuts and opens all boom sections when turning at the headlands etc. Spraylines are on when the red light is glowing, This switch also shuts off the air supply to the air lines.

10. Front tank switch: this is used to transfer liquid from the front to the rear tank.

11. 11/12. Air and liquid pressure controls: these increase or decrease the air and liquid pressure, push the switch to the right and pressure will increase, to the left and it will decrease. These switches operate butterfly valves on the air and liquid manifolds.

CONTROL BOX CB20 FIG 1.



BOOM UNFOLDING AND FOLDING

Electro hydraulic controls may be used on all of the boom functions. This means that all boom functions can be controlled from the cab using the control box and one spool valve. In order to unfold the booms, follow the following procedure referring to figure 1.

⚠WARNING

Ensure that sprayer is well away from over head power cables.

Turn on the hydraulic on/off switch (number 1) on the control box.

Place the appropriate spool valve in the constant flow position.

Using the raise/lower switch (number 3) raise the booms out of the boom rests until the booms are in the fully raised position.

Using the manifold switch (number 2) open out the booms until both sides are in the fully unfolded position.

Using the outer section, fold/unfold switche/s (numbers 4 & 5). Always ensure that both outer sections are fully unfolded. (The two outer sections can be unfolded simultaneously by operating both switches at the same time if individual switching is fitted.).

⚠WARNING

Always beware of overhead power cables and never unfold or fold the sprayer booms when parked beneath these cables.

Level the boom parallel to the ground, using the boom tilt switch number 6.

Lower the booms to the required working height. (See jet chart). If the working height is such that the booms are at the bottom of their travel it is required to raise them 50 mm., so that the boom suspension has room to work.

Folding the booms is the reverse of the above procedure.

⚠CAUTION

Never travel with the booms in a partially folded position, always ensure that the booms are parked securely in the rests.

OPERATION OF TILT FOR BOOM INCLINATION

The boom on the Cleanacres Airtec sprayer, pivots on a single, central bearing. The boom is provided with a float facility by means of springs and shock absorbers. Under normal conditions these will account for undulations in terrain. If however, the

field is drilled along the side of a bank, it may be necessary to incline the boom to the left or right to follow the contour of the ground.

⚠ CAUTION

Always ensure that the booms are level before folding. If this is not done, damage to the booms may result.

BALL VALVES

Airtec and conventional sprayers are fitted with electric ball valves. The ball valves are designed to direct liquid from the manifold out to the spraylines when the boom master or boom section switch is turned on. When switched off liquid is directed back to tank via the throttle valves.

THROTTLE VALVES

Throttle valves are fitted to all Airtec and conventional sprayers. The throttle valve is designed to give a metered flow return back to tank when a boom section is turned off. These valves are set at the factory but require adjustment if large variations of application rate are used.

To adjust throttle valves:

1. Set sprayer running (in manual mode if fitted with a R.D.S. monitor).
2. Set a liquid pressure (spray pressure) of an application rate you intend to use with all boom sections on.
3. Shut off one section, if the pressure alters up or down from the above then adjust the throttle valve on that particular section until the same pressure is achieved.
4. When the adjustment is complete, turn the section back on.
5. Shut off the next section and adjust as above.

Always adjust one section at a time. Adjustment will be necessary when using high volumes on a secondary spray line, e.g. liquid fertiliser.

CHEMICAL INCORPORATOR STAINLESS STEEL TYPE

This unit has a spray bar around the inside edge for washing the sides of the bowl. There is also a T-bar can wash in the centre of the incorporator when the can wash is activated liquid will be directed out of the bottom tube. When a can is placed on the T-bar and pushed down it directs liquid through a small jet into the can under pressure. Removal of liquid from the bowl takes place through the use of a venturi

system. Liquid under pressure from the pump is forced through a small port under the incorporator. This causes a suction effect drawing the liquid from the incorporator via a shut off tap.

⚠CAUTION

- The more pressure from the pump the better the venturi will draw. Do not exceed 8 bar.

FILTRATION SYSTEM

PRESSURE FILTRATION

Cleanacres sprayers are fitted with a self flushing pressure filter. This should be flushed daily after washing the sprayer out.

SUCTION FILTRATION

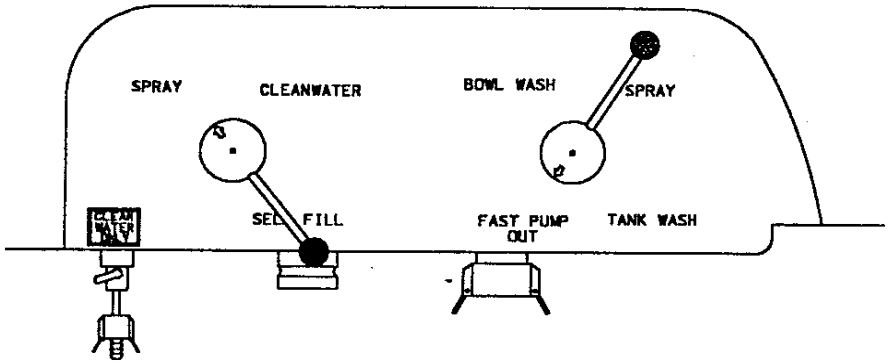
Cleanacres sprayers are fitted with a suction filter. The screen should be removed and cleaned daily after washing the sprayer out. Care should be taken not to loose or pinch the bowl seal.

USE OF CONSTANT RECIRCULATING SYSTEM (C.R.S.)

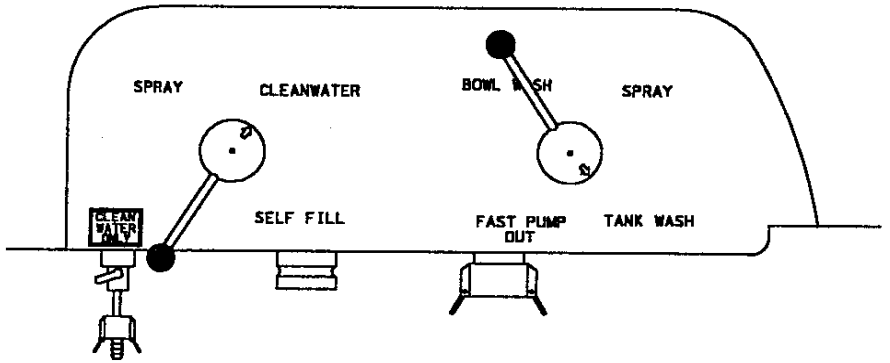
The liquid lines on the boom are fitted with a constant recirculating system. This ensures that when low volumes are being used, powdered formulation will not start to settle out in the line.

The spray line is fed from the end nearest to the spray tank. At the other end of the spray line there is a return pipe routed back down the boom and back to the tank. Inside the tank there are drop pipes which return the excess liquid not sprayed through the line.

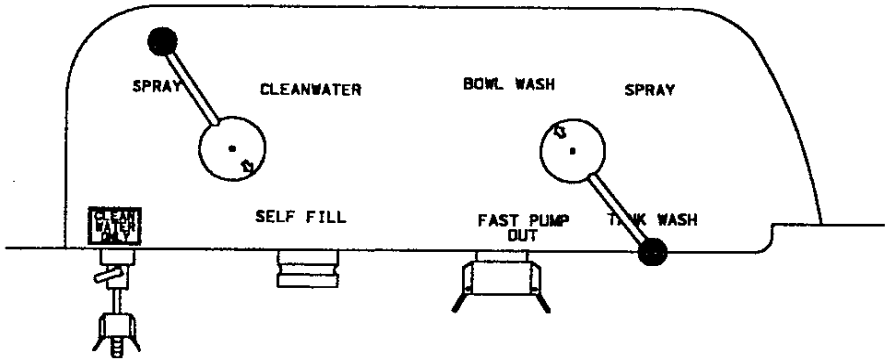
PUMP OUT



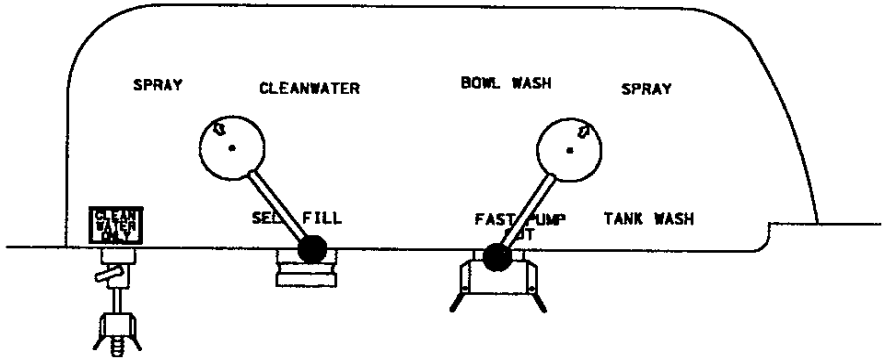
TANK WASH



FILL



SPRAY



FLUSHING SPRAYER THROUGH WITH FRESH WATER WHEN SPRAY TANK IS EMPTY

The sprayer should always be flushed through every day after spraying and before a change of chemicals. This is critical to avoid damage to rubber components such as pump diaphragms, cross contamination of products and possible crop damage.

Please carry out the following procedure:

Turn off the P.T.O.

Turn the suction valve to 'self fill' and connect the self fill hose. Place the filter end of the self fill hose in a clean water source or set suction valve to 'from clean water'.

Set the pressure valve to 'spray' and engage the P.T.O. with all of the boom sections in the 'on' position and turn the C.R.S. taps to flush. Flush water through the boom for approximately five minutes.

Turn off the P.T.O. Then repeat the process and whilst carrying this out turn on the flushing filter, and pressure gauge drain valves individually for approximately 10 seconds each.

If it is likely to freeze either add antifreeze through the chemical induction bowl, or park the sprayer in a suitably insulated barn (see Frost Protection).

Thoroughly wash down the exterior of the sprayer, using a suitable detergent.

Open all drain taps as listed below:

Sprayer Tank
Cleanwater Tank
Sight gauge
Flushing filter
Pressure gauge

Clean the suction filter and replace.

⚠CAUTION

Ensure that washing out of the sprayer is carried out where spray residue will cause no harm to livestock or the environment in accordance with the guidelines set out in the Food and Environment Protection Act, 1985.

FROST PROTECTION

There is no way to drain your sprayer completely without taking a lot of time. The most effective protection is to run a 50% concentration of antifreeze through the entire sprayer. This mixture can be saved and used for the duration of the winter season. At the first sign of low temperatures it is important to flush the machine.. It is NOT recommended to use liquid fertiliser for this purpose.

FLUSHING SPRAYLINES ONLY

Flushing of the spraylines can be achieved without contaminating the remaining chemical in the tank.

1. Open C.R.S. taps on boom.
2. Shut off return tap after liquid pressure control valve situated on the liquid manifold on the back frame.
3. Shut off tap after pressure relief valve.
4. Select a clean water supply - either from on board tank on via the self fill point.
5. Switch boom master and all section switches on.
6. Engage P.T.O. and run only at tractor idle.

Important - do not engage pump until procedures one to four have been actioned. To stop flushing, disengage pump before shutting off boom sections.

TANK WASH SYSTEM

This system uses jetted spheres mounted inside the roof of the tank. Clean water is pumped through the spheres spraying the inside of the tank. Tank wash can be used drawing water from the internal clean water supply if fitted or from your external water supply. Set pressure tap to tank wash and suction tap to either internal clean water or self fill position. Engage liquid pump and set liquid pressure to minimum. Do not run pump over 540 r.p.m. Once a small quantity of water is in the system, e.g. 100 litre spray out and repeat (possibly with the use of a tank cleaning agent). Always clean out the sprayer straight after use.

CALIBRATION PROCEDURE MANUAL SPRAYER

⚠ CAUTION

Read label on chemical pack (or accompanying leaflet). For recommended spray quality and application rate. The label will also advise you on the safety equipment that you are obliged to wear.

Carry out a trial run to establish a forward speed which gives an acceptable level of boom stability and a gear which gives a P.T.O. speed of 540 r.p.m. This is important to maintain the correct air volume to liquid ratio.

Carry out speed check over 100 metres, using gear and P.T.O. r.p.m. as above. Take the time in seconds to cover the distance. To establish the forward speed from the formula:

360 ÷ time (in seconds) = speed (in kilometres per hour)

Select required Airtec setting by referring to the jet chart for the restrictors fitted (appendix 1). Establish the desired air and liquid pressure to give the correct application rate at the desired forward speed and spray quality. Make a note of the required pressures and nozzle output. Also note the other settings that give different spray qualities within the same application rate should you need to alter the settings to allow for a change in the weather conditions.

Turn boom sections on and set pressures.

Check nozzle spray patterns and alignment visually. Replace any rogue nozzles.

Re-check pressures.

Compare the output of individual nozzles by use of the calibration beaker provided. Check at least two nozzles on each boom section and compare the output over one minute. If the output differs by a large amount, re-check calibration pressure and calculations.

CHANGING TO SECOND SPRAY LINE

Ensure that the sprayer has been thoroughly flushed out.

Turn change over valves to the second line position and swap the pressure gauge take off to the spray line which is now to be used. The change over valves are fitted to each section either on the back frame or boom sections.
The second line is not fitted with C.R.S. as it is used for high volume spraying such as liquid fertiliser. The sprayer is now ready to spray through the second line.
NOTE: the air system will have no effect on the second line and the sprayer will be operating as a conventional sprayer. For calibration refer to the liquid fertiliser or hydraulic nozzle, calibration chart.

LIQUID FERTILISER

All Cleanacres Airtec sprayers are suitable for applying liquid fertiliser solution if a second fertiliser line is fitted. The Airtec nozzle is not suitable for the application of liquid fertiliser. It is important to realise that fertiliser solution in this case is considered only as nitrogen, as either a compound or straight, in a fully aqueous solution. Fertiliser of the suspension type cannot be applied using standard Cleanacres sprayers. To avoid plant scorch the use of Agroco nozzles is recommended as these produce very large droplets which roll off the plant leaves.

LIQUID FERTILISER CALIBRATION

Calibration must be carried out using clean water. Using the chart provided select an application rate within the desired speed range. Then move across the chart to find the flow rate and pressure to achieve this application rate.
E.G.: 260 Ltr./ha. at 10 k.p.h. blue nozzle, red disc. The flow rate per minute will be 2.170 mls. per minute at a pressure of 3 bar.
IMPORTANT - check that you have the correct pattern from your nozzles as per the diagram on the back of the Agroco chart.
Please note - liquid fertiliser is a very corrosive liquid. It is most important to wash down your sprayer thoroughly as this will prolong it's life.

HYDRO FILL

The ATLAS sprayer is fitted with hydro fill, which allows the operator to fill the spray tank at the full rate without running the engine at high speed. To fill the spray tank the following sequence should be observed:

1. Connect the self fill hose and place the foot strainer in a clean water supply.
2. Set the suction valve to self fill and the pressure valve to bowl wash.
3. Lower the chemical incorporator.
4. Start the engine and engage the P.T.O. (leaving the engine at tick over).
5. Move the hydro fill control to '12'.

This runs the liquid pump at 540 r.p.m. Water is now being added to the tank and the chemical incorporator is ready to take chemical. Chemicals should never be added to an empty tank. When the desired quantity of water is in the spray tank the following procedure readies the machine for spraying:

1. Set the suction valve to the spray position.
2. When the required chemical has been added turn off the bowl rinse can wash valve and the chemical bowl isolation valve. Set the pressure valve to the spray position. (Note steps 1 and 2 can be performed in reverse order.)
3. Move the hydro fill control to 5 (this setting varies between 4 and 6).
4. Stow the chemical incorporator.
5. Allow the chemical mix to agitate for at least 5 minutes before spraying. (Please note this may need to be repeated in the field as the P.T.O. should not be running when travelling on public roads.)

The liquid pump is fitted with a shaft speed sensor so that the operator can monitor the pump speed. If the hydro fill control is in the wrong position and the pump over speeds the alarm will sound in the R.D.S. monitor to alert the operator.

NEOPRENE BLOCKS

These are located at the centre of the back frame and cushion the yaw on the booms. The blocks will wear and therefore should be inspected on a weekly basis. If they show signs of wear deformation or damage they should be replaced immediately. When fitting new blocks they should not be greased as this will cause them to distort and will seriously reduce their service life.

Expensive damage can occur to the fold rams and the centre section if the sprayer is used with worn or damaged neoprene blocks. whilst checking blocks ensure that all nuts and bolts in the block housing assembly are tight and that the ram ends are properly secured.

Damage to the sprayer resulting from worn blocks will not be covered under warranty.

SELF FILLING PROCEDURE

With the liquid pump disengaged connect the filling hose to the sprayer and water supply ensuring that both connections are perfectly sealed. Set taps to filling positions and engage pump drive - do not run pump over 540 r.p.m. Decrease liquid and air pressures while filling to a minimum setting to relieve system of unnecessary strain. When the required amount has entered the tank, disengage the pump. Turn taps to spray position and disconnect the suction hose.

PRESSURE GAUGES

IMPORTANT: at the start of each day's spraying, partially fill the spray tank with water, set the machine to spray and open the tap on the bottom of the liquid pressure gauge. Wait for all of the air to be expelled (water will flow under pressure from the drain pipe) and then close the tap. This will ensure no air is trapped and that the correct liquid pressure reading is given. This tap must also be opened when flushing out to prevent residue build up and when protecting from frost.

PRE AND POST SPRAYING CHECKS

PERIOD	ITEM/AREA	CHECK

⚠ WARNING

Disengage P.T.O. and switch off tractor engine.

Daily pre-spraying See Warning	Liquid suction filter Compressor air filter	Clean and replace. Check not clogged with dust, replace if necessary. See Caution

⚠ CAUTION

When conditions are dusty it can become clogged and damage to the compressor could result.

Daily pre-spraying		Examine pipe to compressor for air leaks or damage. check for any water contamination.
Daily pre-spraying	Pump oil	Check level – only use specified oil.
Daily pre-spraying	P.T.O. shaft	Grease universal joints and guard.
Daily pre-spraying	Tank/plumbing	Ensure that absolutely no residue has been left over from the last spray application.
Daily pre-spraying Checks with sprayer running with water in tank	Pump	Check oil is not overflowing from cap. See Caution. Check oil for discolouration or loss.

⚠ CAUTION

Switch off immediately if this is occurring.

Daily pre-spraying	C.R.S.	Check restrictors for blockages. (Flush valves.)
Daily pre-spraying	Agitation	Visually check for flow.
Daily pre-spraying	Boom solenoids	Check for operation.
Daily pre-spraying	Nozzles	Check for alignment and pattern and that nozzle is correct for desired

		application rate.
Daily pre-spraying	General	Walk around machine to observe any leaks or chafing hoses.
Daily pre-spraying	Compressor pressure relief valve	Should be blowing off at 2-2.5 bar.
Daily pre-spraying	Pressure adjustment	Check full range of both liquid and air pressures is available.
Daily pre-spraying	Boom height	Adjust to 60 cm. above desired target or top of crop which ever is taller.
Daily pre-spraying	Calibrate	Always carry this out using clean water.

YOU ARE NOW READY TO ADD THE CHEMICAL

During spraying	Pressure settings	Ensure they remain correct and constant. Re-adjust if necessary. See Caution

⚠CAUTION

Flickering of the liquid pressure gauge may indicate a pump problem or an empty tank. Stop immediately.

During spraying	Nozzle blockages	Be aware that a nozzle may only partially block showing a smoky stream of droplets.
During spraying	Forward speed and P.T.O. r.p.m.	Keep both as constant as possible.
During spraying	Pressures	Keep a constant watch for any changes in either liquid or air pressures and re-adjust as necessary.
During spraying	Height/angle of boom	Boom must be parallel to ground and at correct height. Use boom controls to adjust.

During spraying	Tank contents	Do not start another pass if you do not have enough in the tank to complete that pass.
During spraying	Weather conditions	If wind increases and yet there is an over-riding urgency to finish the job, select a coarser droplet pressure setting for the same application rate. See Caution

⚠CAUTION

Consult your agronomist if in doubt about spray quality range.

After spraying	Surplus chemical in the tank	Either pump into a storage tank or if small amount dispose of safely in accordance with Codes of Practice.
After spraying	Flushing out	Flush out and wash down. See Caution

⚠CAUTION

If flushing out is not done on a daily basis damage may occur.

After spraying	Frost protection	Anti-freeze or store in a frost free building.
Weekly or more frequently if large acreage being covered	Boom break-back	Check full break-back is unrestricted and returns quickly when released.
Weekly or more frequently if large acreage being covered	All grease points	Grease.
Weekly or more frequently if large acreage being covered	Gear box oil	Check level.

Monthly	Nozzle wear	Calibrate and check flood tips for wear. Also check visual pattern and alignment.
Monthly	Electrical connections	Clean and spray with a water dispersing oil.
Monthly	Plumbing	Check for any signs of hoses chafing.
Seasonally	Flood tips	Remove and thoroughly clean.
Seasonally	Gearbox	Change oil.

ROUTINE MAINTENANCE

Guidelines for replacement components are as follows:

COMPONENT	PERIOD
Compressor air filter	Check frequently particularly in dusty conditions - replace monthly.
Pump diaphragms D.C.V. rubbers C.R.S. returns restrictors Pressure set diaphragm & gaskets Polo mint washers Filter 'O' rings	Annually or every 5,000 hectares which ever is sooner.
Pump valves	Bi-annually or every 10,000 hectares, whichever is sooner.
Floodtips	When they show signs of wear. This is caused by hard quality water and the abrasiveness of chemicals. A simple check is to rub the end of a match stick along the flood tip face and if you feel a dimple they need replacing.
Restrictors	When the flow rate varies by more than 5% from chart.

FAULT FINDING WHILST FILLING

FAULT	POSSIBLE CAUSE	REMEDIAL ACTION
Water not self filling or filling slowly	Lift from water source too long, (over 3.7 m.)	Reduce lift
	Suction valve not set to self fill	Set to self fill
	Blocked filter on self fill hose	Clean
	Blocked suction filter	Clean
	Suction filter/self fill hose drawing in air/faulty or worn pump	Tighten, check seals, replace diaphragms and/or valve.
	Air lock in pump	Prime pump
No spray pressure	Electric's not connected	Connect up and switch on
	No water in tank	Check sight gauge and fill if necessary
	Pressure valve set to self fill	Set to spray
	Blocked suction filter	Clean
	Air leak around suction filter	Check filter bowl is seating correctly on sealing ring
	Air leak at suction valve	Tighten and check seals
	Air leak on suction pipe	Check joints for leaks and tighten if necessary
	Blocked pressure filter	Check and clean, change to coarser mesh if frequent blockages
	Faulty or worn pump	Replace diaphragms and/or valves

No spray pressure	Blocked breather hole in tank lid	Clear obstruction
No spray pressure	Blockage in suction pipe pump not turning	If machine will self fill with water, blockage is in suction pipe from tank
Cannot attain required nozzle output	Worn or wrong jets P.T.O. not running at 540 R.P.M.	Fit new or correct jets check speed
	Application rate or pressure excessive for pump	Contact dealer
Spray pressure not constant	Faulty diaphragm in pump (diaphragm pumps only)	Replace diaphragm
Spray pressure too high	Faulty pressure regulation valve Isolation valve in off position	Contact dealer Re-set valve
Sudden pressure loss	No liquid in tank	Check sight gauge
	Liquid pipe burst	Check for leaks
	Blocked breather hole in tank	Clean obstruction
Cannot stop spraying	Electrical fault on master ON/OFF spray switch or valves	Stop P.T.O., effect repair if possible
Nozzle drip when spray switched off	Worn or faulty diaphragm check valves on nozzle body Blocked C.R.S. debris in units	Replace Clean
Spray pattern incorrect	Incorrect boom height for jets selected	Check height
	Worn flood tips	Replace

Frequent blocked jets	Damaged or incorrectly fitted pressure filter	Replace
Frequent blocked jets	Machine not flushed out after use	Flush system thoroughly using approved detergent
	Pressure filter too coarse	Select finer pressure filter mesh
Frequent blocked filters	If pressure filter then suction filter inoperative	Check and replace
	Filter mesh too fine	Fit coarser mesh

FAULT FINDING ON ELECTRICS

FAULT	POSSIBLE CAUSE	REMEDIAL ACTION
No electric control	Electric's not connected	Connect up
	Blown line fuse	Check and replace

FAULT FINDING ON BOOM OPERATION

FAULT	POSSIBLE CAUSE	REMEDIAL ACTION
No hydraulic function	Faulty dump slice, faulty flow control	Check operation inspect for debris, replace
Booms will not raise	Hydraulic pipe not connected	Connect with spool valve
	Hydraulic connections not fully inserted or blocked restrictors	Check and fully tighten clean
Boom will not open	Blocked restrictors	Check clean
	Hydraulic pipe trapped	Check
Booms will not close	Hydraulic pipe trapped	Check
	Restrictor on hydraulics blocked, booms not raised sufficiently	Check and clean, raise to maximum height

Boom will not maintain height	Hydraulic leak /faulty seals	Check unions and tighten if necessary
	Spool valve faulty	Contact dealer
	Damaged accumulator	Contact dealer
Boom will not maintain incline	Worn or damaged centre springs	Adjust spring tension or replace
Too much boom movement	Worn or damaged pivot worn dampers	Replace
Boom sag	Badly adjusted stay bars/eyebolts	Adjust

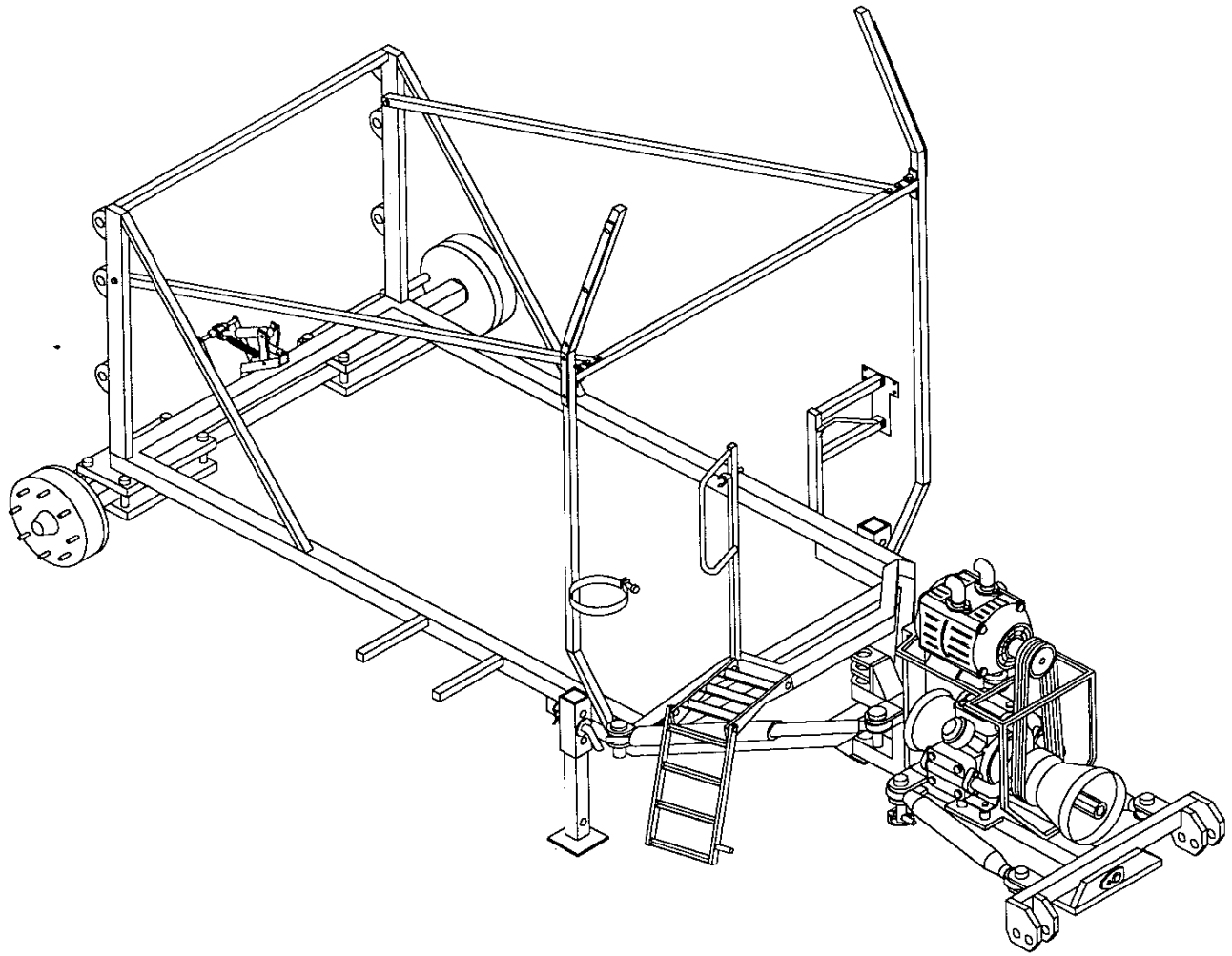
FAULT FINDING ON DRAINING

FAULT	POSSIBLE CAUSE	REMEDIAL ACTION
Tank will not drain	Blocked breather hole in tank lid	Remove lid and clear hole
	Blocked sump drain	Check and clear

FAULT FINDING ON AIR SYSTEM

FAULT	POSSIBLE CAUSE	REMEDIAL ACTION
Cannot obtain air pressure	Air filter blocked VANES WET (DRUM)	Change filter dry out
	Air pressure gauge disconnected	Reconnect pipe
	P.T.O. not at 540 r.p.m.	Set P.T.O. speed
	Pressure relief valve not working correctly	Replace
	Air solenoids faulty	Check electrical connections and solenoids
	Coupling damaged between gear box and compressor	Fit new coupling
	Compressor damaged	Contact dealer
	Pressure gauge faulty	Change gauge
	Electric's not connected	Connect
Compressor over heating	P.T.O. speed too fast	Adjust to 540 r.p.m.
	Filter blocked	Replace
Air pressure too high	P.T.O. running too fast	Adjust to 540 r.p.m.
	Blocked silencer	Clean
	Faulty butterfly valve	Replace valve

TRACKING TRAILER CHAISSIS LAYOUT



HEADSTOCK ASSEMBLY

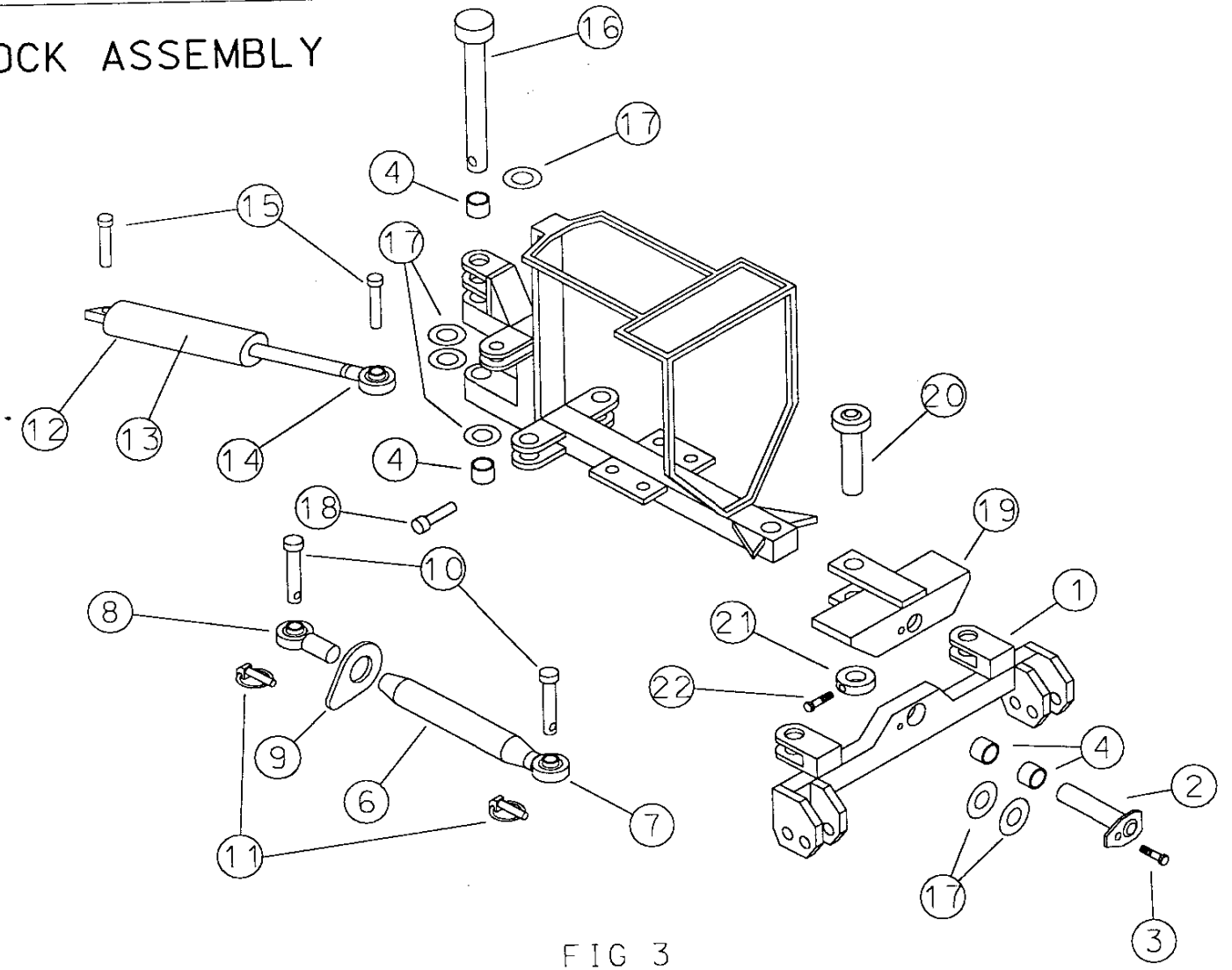


FIG 3

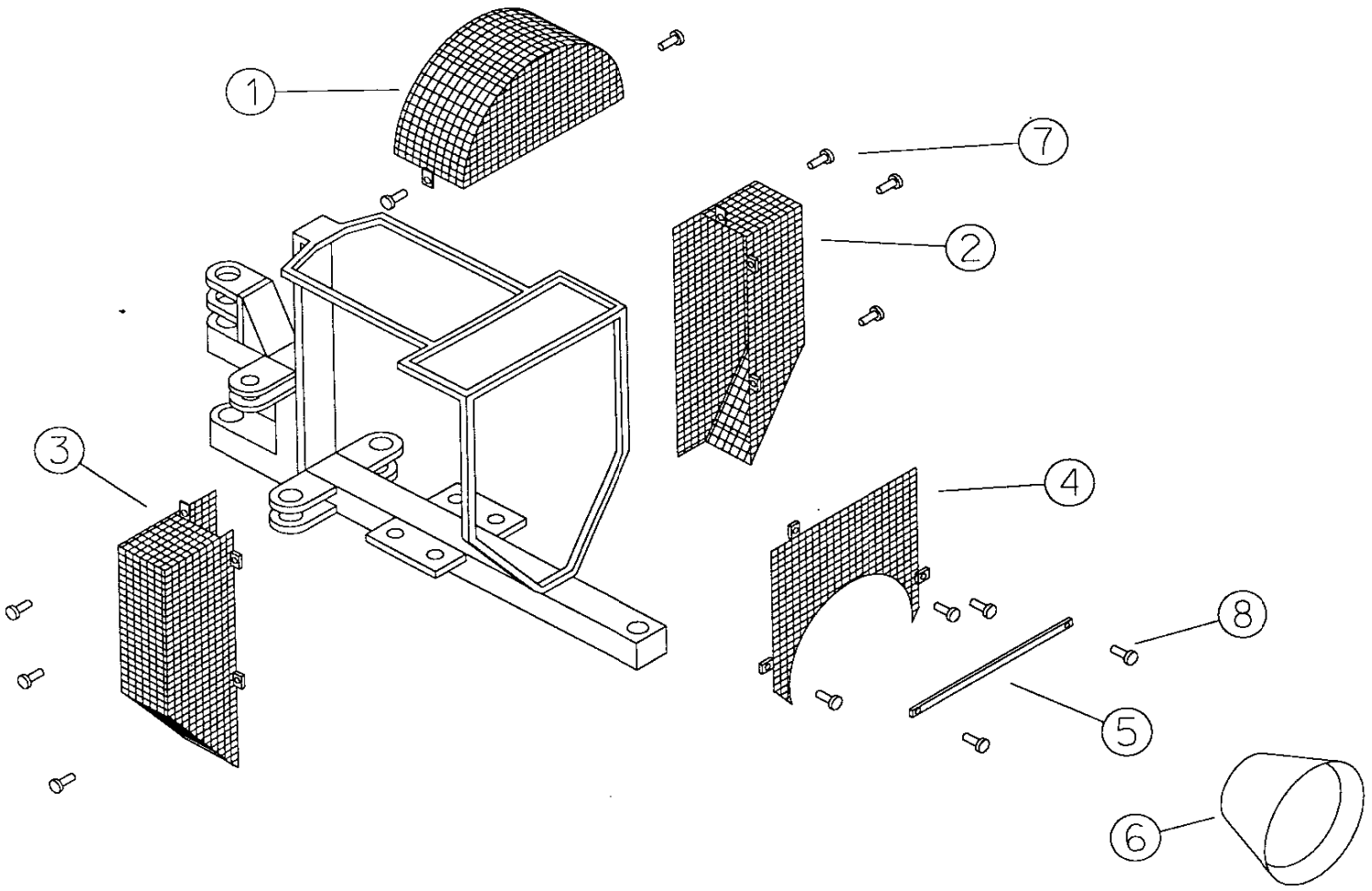
HEADSTOCK ASSEMBLY

ITEM	PART No.	QTY.	DESCRIPTION
1	BMF465	1	Linkage bar
2	BMF464	1	Front linkage bar pivot pin
3	M10X35HB	1	Bolt
4	BMF480B	6	Pivot pin bushes
5	BMF463	1	Head stock
6	S331	2	Top link centre tube
7	S346	2	1 1/8"unc x 1" left hand top link end
8	S347	2	1 1/8"unc x 1" right hand top link end
9	S348	2	1 1/8"unc x 1" locking collar
10	LPS69	4	1" top link pin
11	LPS40	4	Lynch pin
12	RM4866	2	Damper ram
13	RSK4866	2	Damper ram seal kit
14	BR1027	2	Rod end
15	M16X110HB	4	Bolt & lock nut
16	BMF480	1	Main pivot pin
17	BMF481	6	Thrust washer
18	M12X100HB	1	Bolt & lock nut
19	BMF465A	1	Linkage bar pivot bar
20	BMF465B	1	Rear linkage bar pivot pin
21	BMF465C	1	Locking collar
22	M12X100HB	1	Bolt & lock nut

HEADSTOCK ASSEMBLY

ITEM	PART No.	QTY.	DESCRIPTION
1	BMF465	1	Linkage bar
2	BMF464	1	Front linkage bar pivot pin
3	M10X35HB	1	Bolt
4	BR 1094	6	Pivot pin bushes
5	BMF463	1	Head stock
6	S331	2	Top link centre tube
7	S346	2	1 1/8"unc x 1" left hand top link end
8	S347	2	1 1/8"unc x 1" right hand top link end
9	S348	2	1 1/8"unc x 1" locking collar
10	LPS69	4	1" top link pin
11	LPS40	4	Lynch pin
12	RM4866	2	Damper ram
13	RSK4866	2	Damper ram seal kit
14	BR1027	2	Rod end
15	M16X110HB	4	Bolt & lock nut
16	BMF	1	Main pivot pin
17	BR 1094/1	6	Thrust washer
18	M12X100HB	1	Bolt & lock nut
19	BMF465A	1	Linkage bar pivot bar
20	BMF465B	1	Rear linkage bar pivot pin
21	BMF465C	1	Locking collar
22	M12X100HB	1	Bolt & lock nut

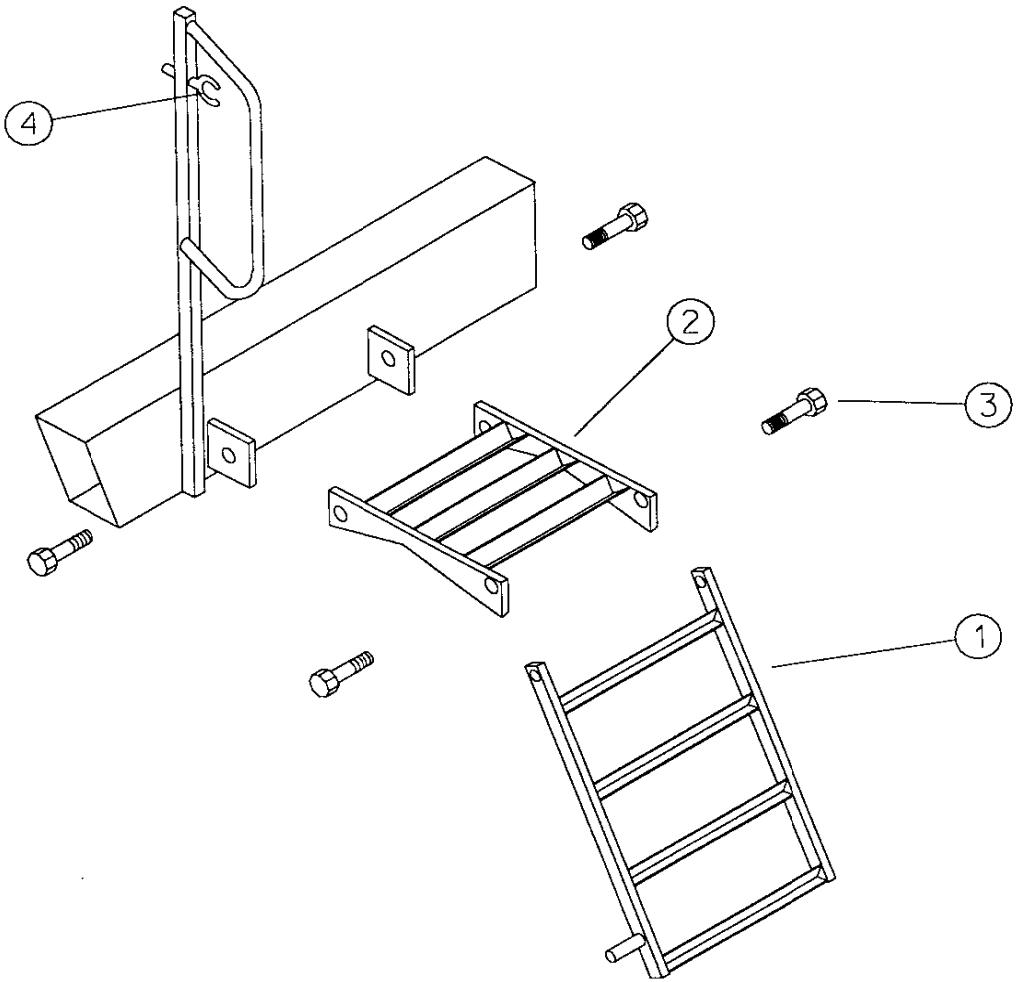
HEADSTOCK GAURD ASSEMBLY



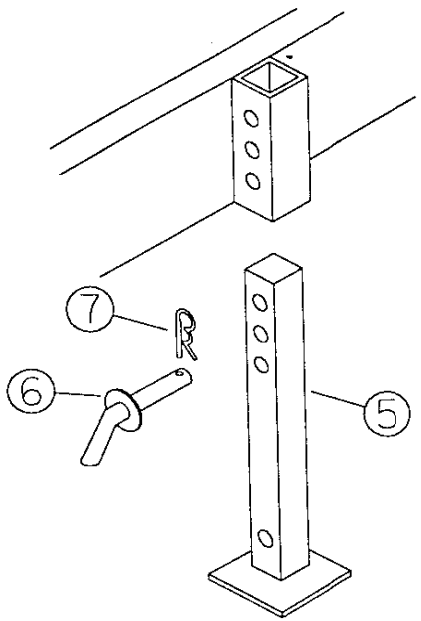
HEADSTOCK GUARD ASSEMBLY

ITEM	PART No.	QTY.	DESCRIPTION
1	BMF487	1	Compressor drive top guard
2	BMF489	1	Compressor drive left hand guard
3	BMF488	1	Compressor drive right hand guard
4	BMF490	1	Compressor drive front guard
5	BMF491	1	PTO guard support
6	PT1	1	PTO guard
7	M6X16HB	11	Fixing bolt
8	M8X20HB	2	Fixing bolt

ACCESS LADDER



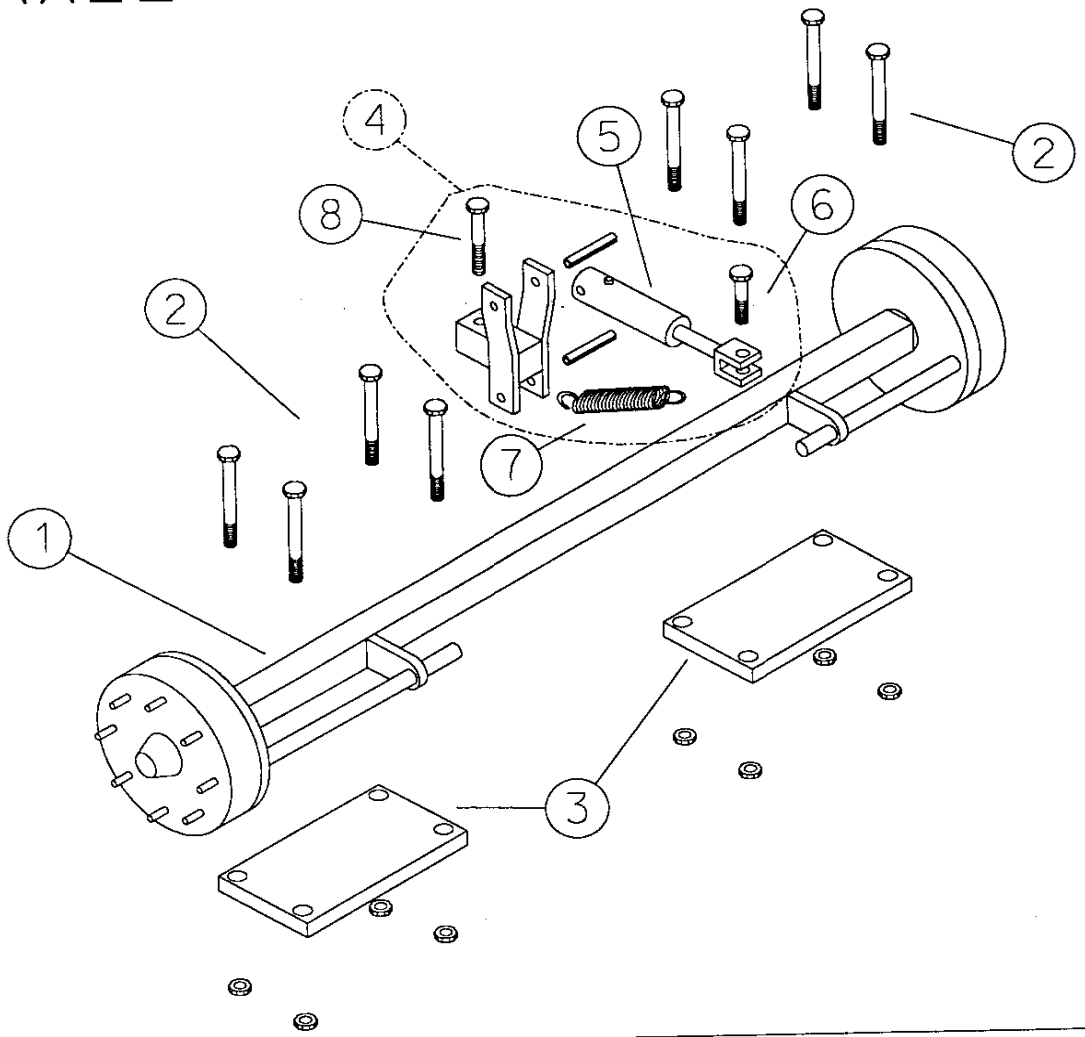
DE-MOUNT LEG



ACCESS LADDER & DE-MOUNT LEG

ITEM	PART No.	QTY.	DESCRIPTION
1	BMF473	1	Steps
2	BMF472	1	Steps platform
3	M10X35HB	4	Fixing bolt & lock nut
4	PFC050C	1	Step retaining clip
5	BMF469	2	De - mount leg
6	BMF470	2	De - mount leg pin
7	S12	2	4mm R' clip

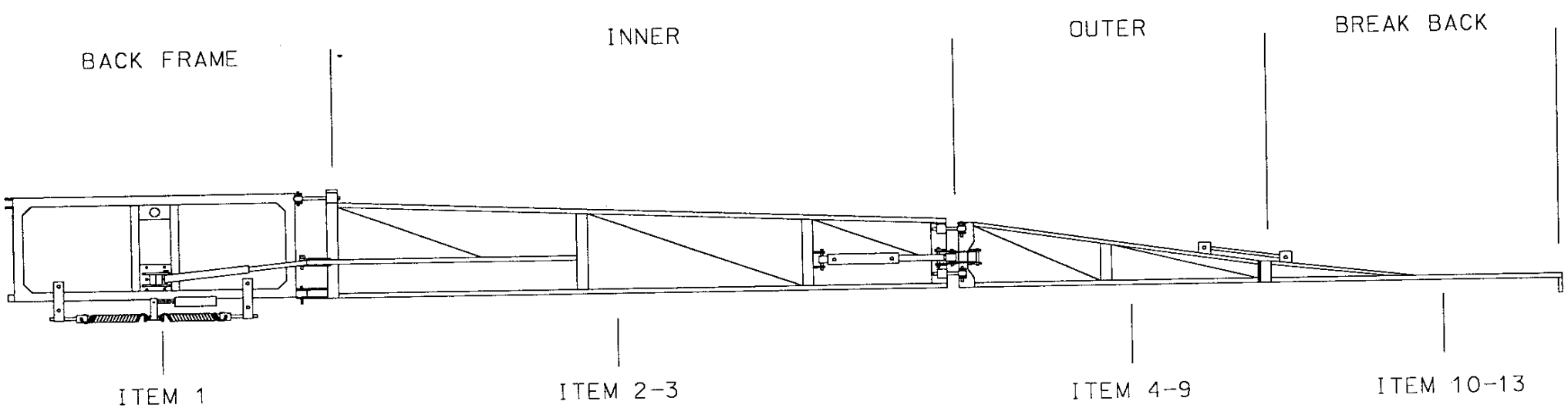
AXLE & BRAKE ACTUATOR



AXLE & BRAKE ACTUATOR

ITEM	PART No.	QTY.	DESCRIPTION
1	BMF456	1	6 stud axle
	BMF457	1	8 stud axle
	BMF458	1	10 stud axle
2	M20X150HB	8	Bolt & lock nut
3	BMF456A	2	Axle clamp plate
4	ADX20251	1	Brake actuator complete
5	ADX20263	1	Brake ram
6	ADX20288	1	Clevis pin
7	ADX20290	1	Return spring
8	M12X70SS	1	M12 set screw - brake adjuster

BOOM SECTIONS



CROPSAVER BOOMS

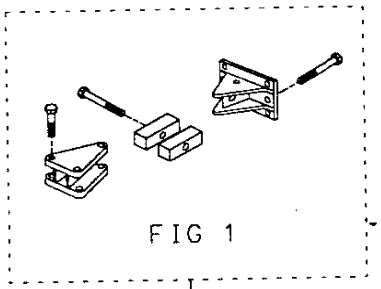
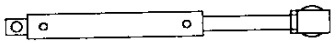


FIG 1



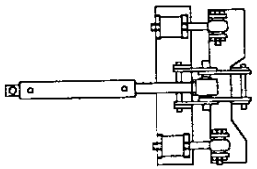


FIG 2

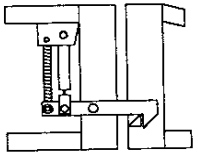


FIG 3

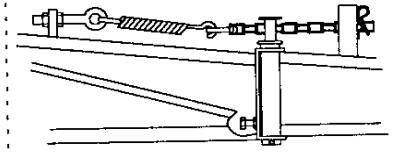
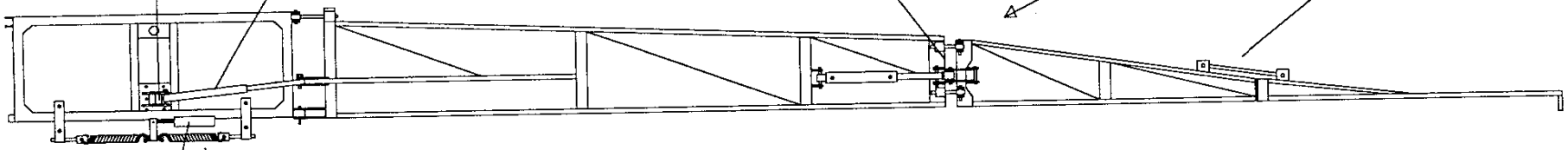
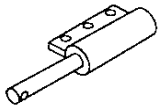


FIG 4





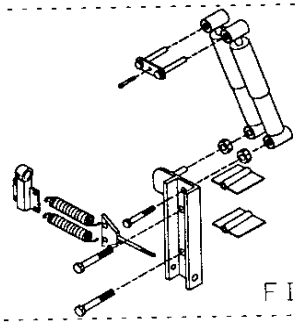


FIG 5

BOOM SECTIONS

LOW INCLINE

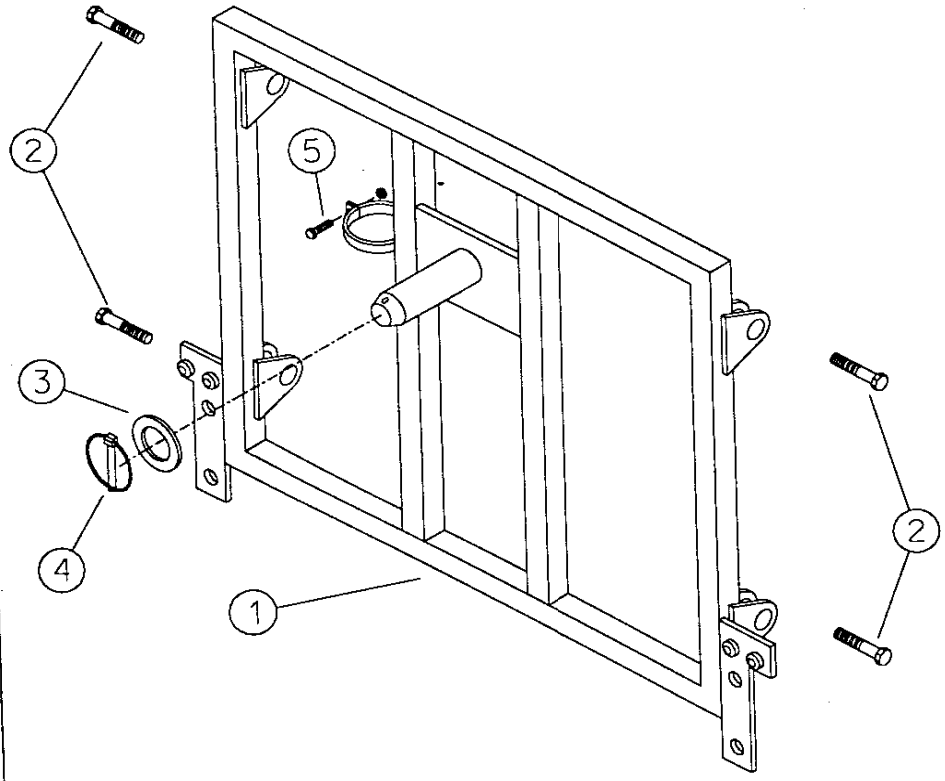
ITEM	PART No.	QTY.	DESCRIPTION
1	BMF356	1	Outer back frame low incline
2	BMF352	1	Left hand inner
3	BMF351	1	Right hand inner
4	BMF337	1	18m left hand outer
5	BMF336	1	18m right hand outer
6	BMF321	1	20m & 21m left hand outer
7	BMF320	1	20m & 21m right hand outer
8	BMF354	1	24m left hand outer
9	BMF353	1	24m right hand outer
10	BMF323	1	Standard left hand break back
11	BMF322	1	Standard right hand break back
12	BMF329	1	21m left hand break back
13	BMF326	1	21m right hand break back

NORMAL INCLINE

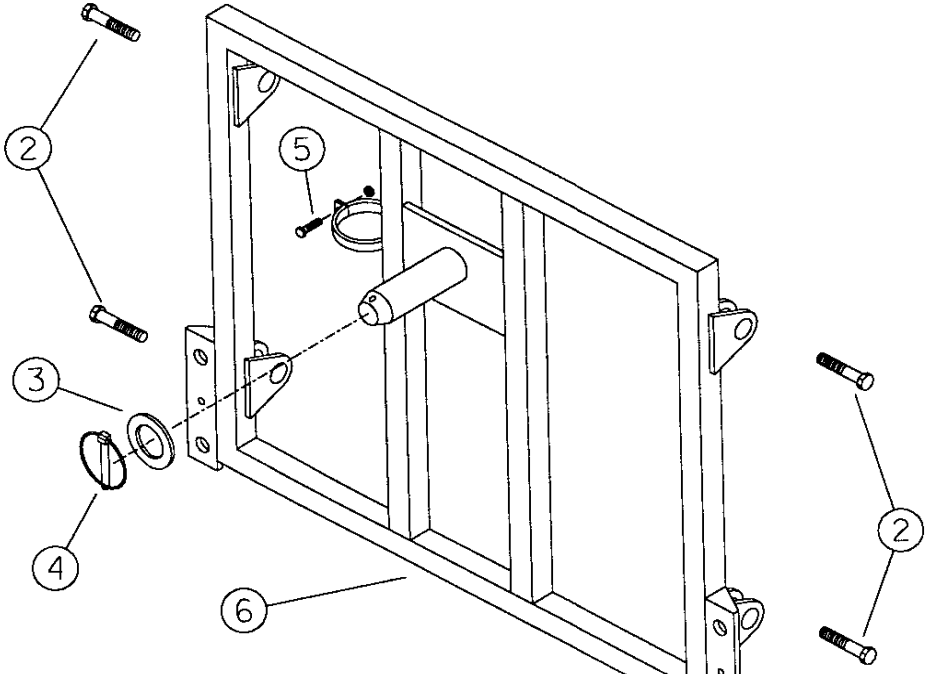
ITEM	PART No.	QTY.	DESCRIPTION
1	BMF312	1	Outer back frame normal incline
2	BMF319	1	Left hand inner
3	BMF318	1	Right hand inner
4	BMF321	1	20m & 21m left hand outer
5	BMF320	1	20m & 21m right hand outer
6	BMF337	1	18m left hand outer
7	BMF336	1	18m right hand outer
10	BMF323	1	Standard left hand break back
11	BMF322	1	Standard right hand break back
12	BMF326	1	21m right hand break back
13	BMF329	1	21m left hand break back

INNER BACK FRAME

LOW INCLINE



NORMAL INCLINE



INNER BACKFRAME

ITEM	PART No.	QTY.	DESCRIPTION
1	BMF355	1	Inner back frame
2	M20X120HB	4	Bolt & lock nut
3	S6845	1	30mm washer
4	LPS40	1	Lynch pin
5	M4X40HB	1	Bolt & lock nut
6	BMF311	1	Inner back frame

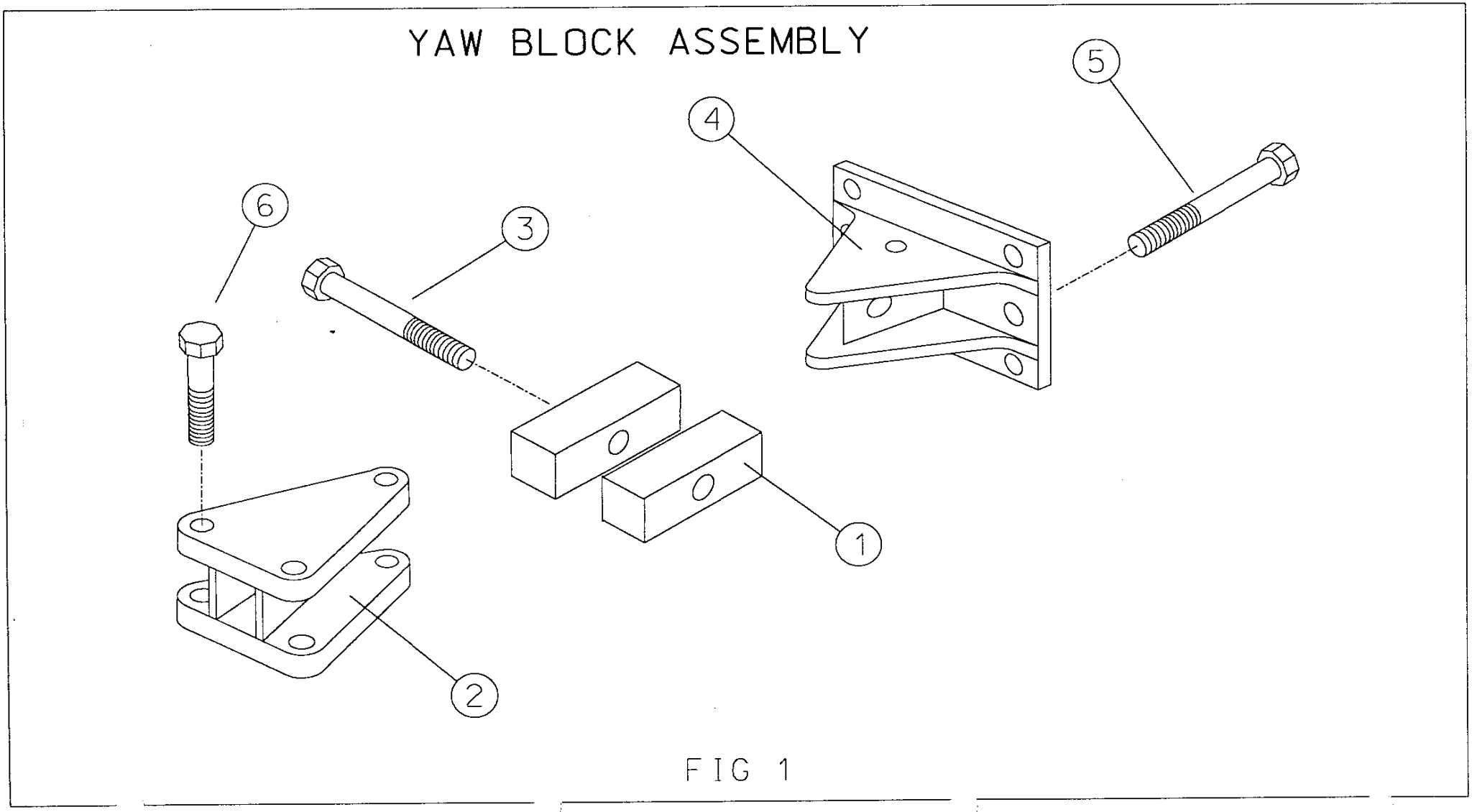


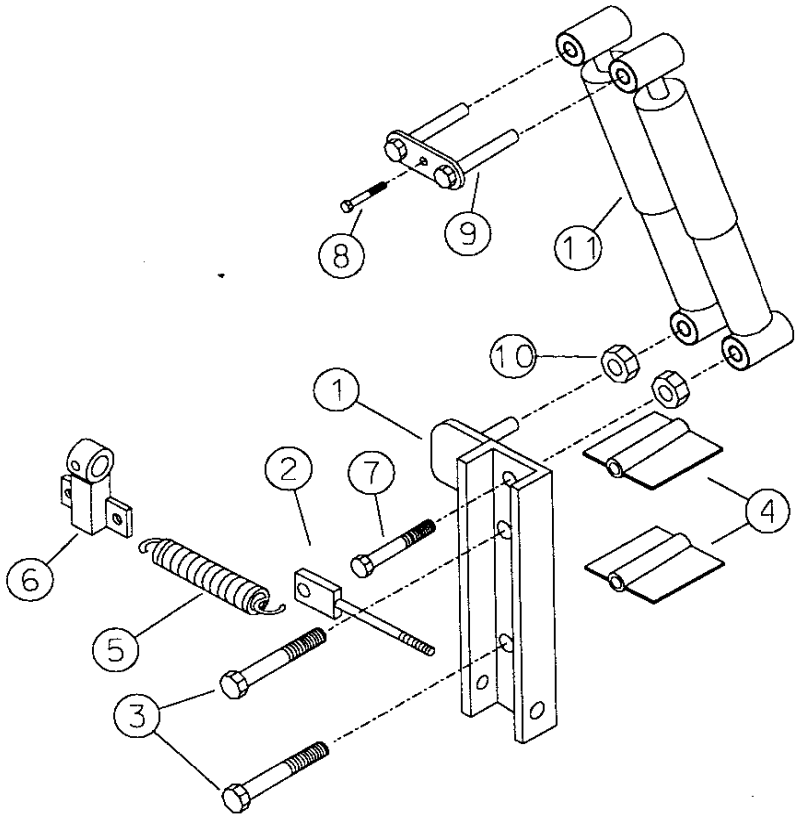
FIG 1

YAW BLOCK ASSEMBLY

ITEM	PART No.	QTY.	DESCRIPTION
1	BS01	2	Poly yaw block
2	BMF004/4	1	Poly block housing
3	M10X130HB	1	Bolt & nut
4	BMF004	1	Centre mount
5	M12X55HB	6	Bolt & nut
6	M20X110HB	3	Bolt & nut

TILT MECHANISM

LOW INCLINE



NORMAL INCLINE

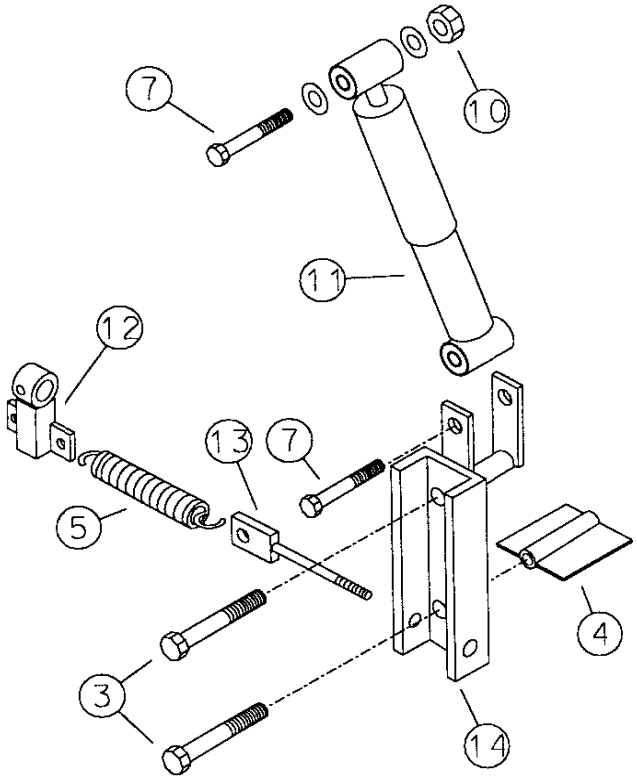
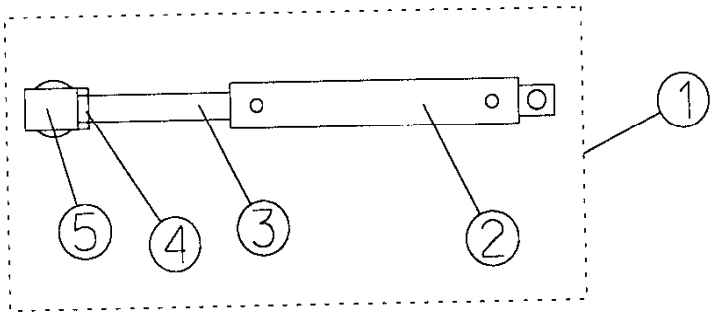


FIG 5

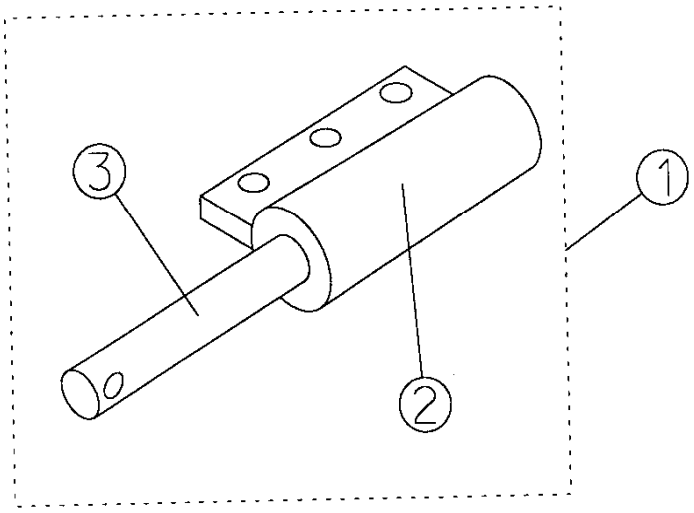
TILT MECHANISM

ITEM	PART No.	QTY.	DESCRIPTION
1	BMF359	2	Giude channel
2	BMF316	2	Spring tension adjuster
3	M16X100HB	4	Clamp retaining bolt & lock nut
4	BMF317	2	Clamp spacer
5	SPT10	4	Tilt spring
6	BMF314	1	Tilt ram spring mount
7	M12X100HB	2	Bolt & locknut
8	M8X20	2	Bolt & locknut
9	BMF360	2	Shock absorber bracket
10	M16	4	Spacer nut
11	SAR3202	4	Shock absorber
12	BMF361	1	Tilt ram bracket
13	BMF358	1	Spring tension adjuster
14	BMF315	2	Centre section back frame clamp

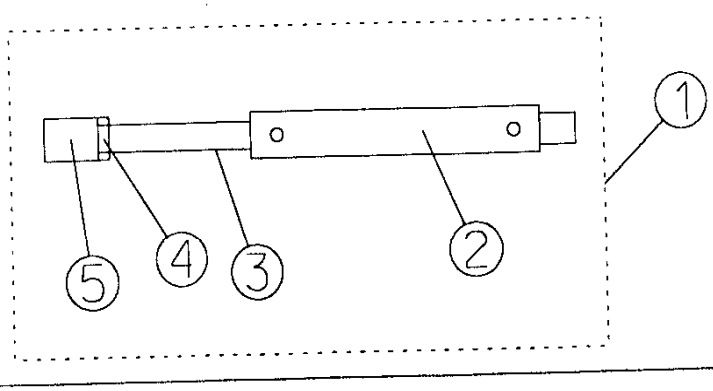
MAIN FOLD RAM



TILT RAM



OUTER FOLD RAM



MAIN FOLD RAM

ITEM	PART No.	QTY.	DESCRIPTION
1	RM4703	2	Complete ram assembly
2	RSK4703	2	Seal kit
3	RM4703P	2	Piston
4	M20X1.5LN	2	Locking nut
5	BR1027	2	Rod eye

TILT RAM

ITEM	PART No.	QTY.	DESCRIPTION
1	RM5849	1	Complete ram assembly
2	RSK5849	1	Seal kit
3	RM5849P	1	Piston

OUTER FOLD RAM

ITEM	PART No.	QTY.	DESCRIPTION
1	RM5656	2	Complete ram assembly
2	RSK5656	2	Seal kit
3	RM5656P	2	Piston
4	M20X1.5LN	2	Locking nut
5	RM5656-E	2	Rod eye

FOLD HINGE ASSEMBLY

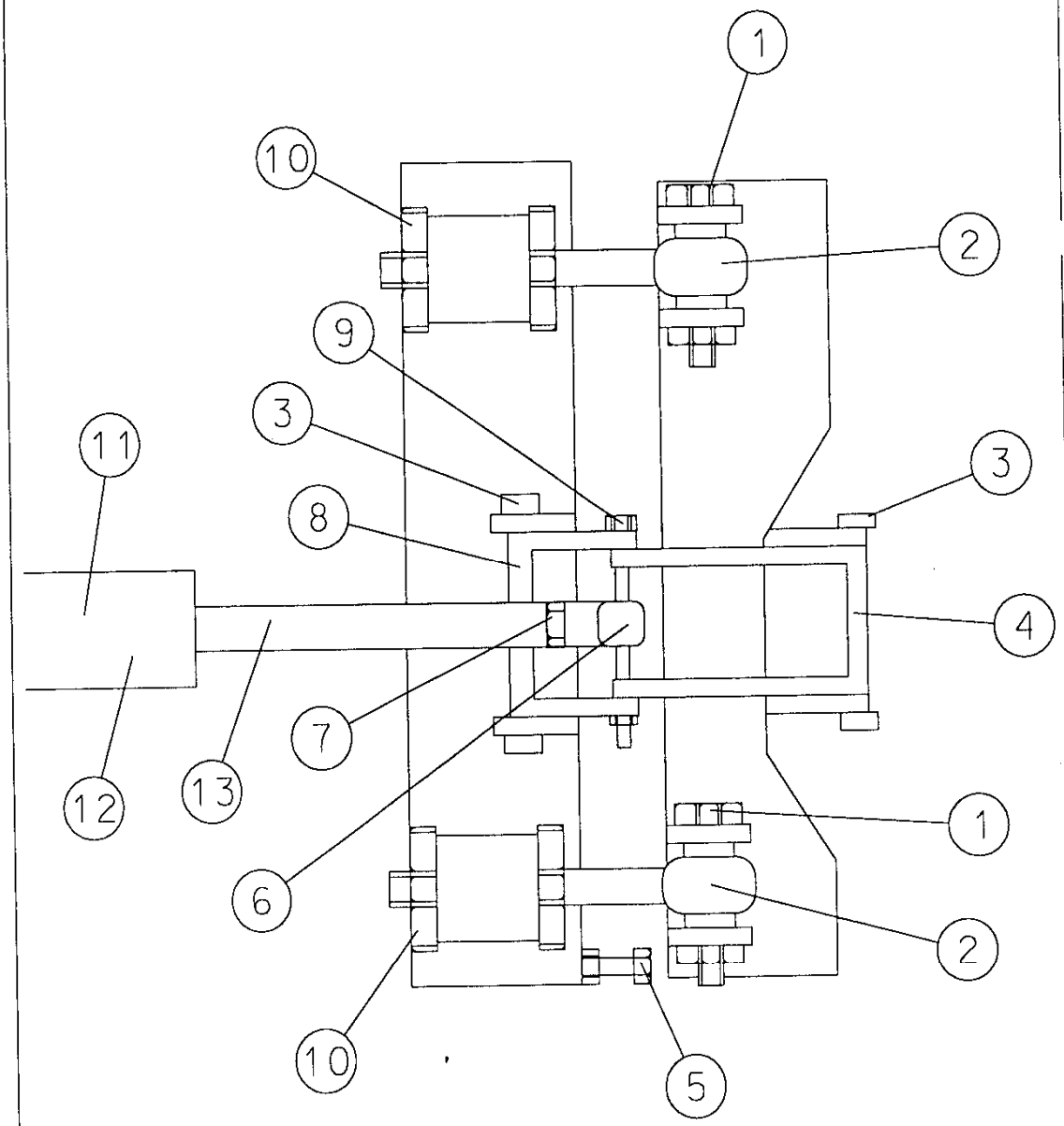


FIG 2

FOLD HINGE ASSEMBLY

ITEM	PART No.	QTY.	DESCRIPTION
1	3/4"X4"UNC	4	Bolt & nut
2	S291	4	Top link end
3	M16X180HB	4	Bolt & nut
4	BMF334	2	Outer scissor
5	M16X60HB	2	Bolt & nut
6	RM5656-E	2	Rod end
7	M20X1-SLN	2	Lock nut
8	BMF333	2	Inner scissor
9	M16X160HB	2	Bolt & nut
10	11/8"UNC	12	Nut
11	RM5656	2	Ram assembly complete
12	RSK5656	2	Seal kit
13	RM5656P	2	Piston assembly

lock catch

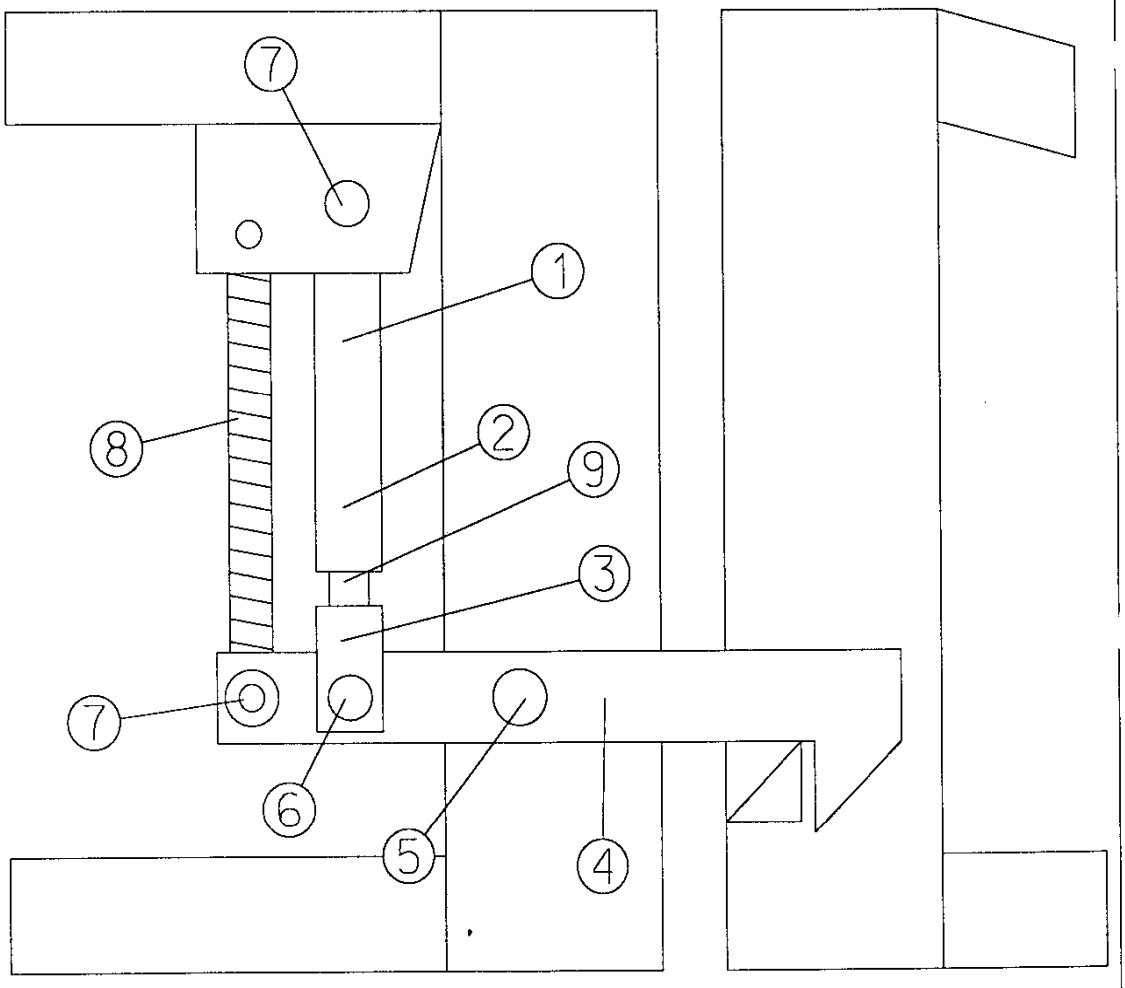


FIG 3

LOCKING CATCH ASSEMBLY

ITEM	PART No.	QTY.	DESCRIPTION
1	RM6133	2	Double acting locking ram
2	RSK4867	2	Seal kit
3	RM6133-G	2	Piston socket
4	BMF335	2	Locking hook
5	M16X75HB	2	Bolt & nut
6	M12X55HB	2	Bolt & nut
7	M10X75HB	2	Bolt & nut
8	SP14501	2	Spring
9	RM6133P	2	Piston

BREAKBACK ASSEMBLY

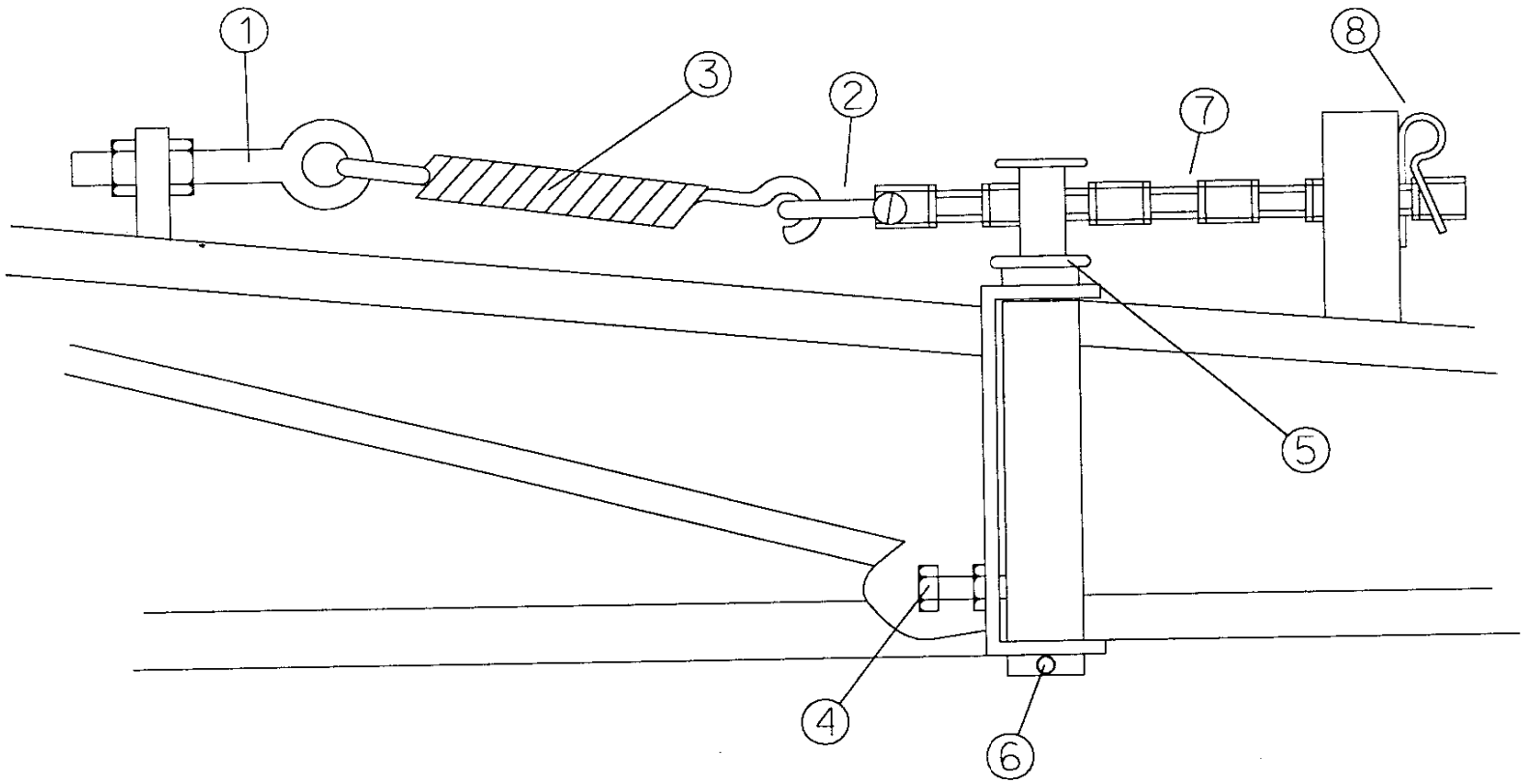


FIG 4

BREAKBACK ASSEMBLY

ITEM	PART No.	QTY.	DESCRIPTION
1	WS12	1	12mm rigging screw
2	DS2764	4	D' shackle
3	SPT8	2	Tension spring
4	M16X60HB	2	Set bolt & lock nut
5	M20X230	2	Retaining pin
6	M6X40HB	2	Pin retaining bolt
7	BR1037	2	400mm roller chain
8	S14	2	R' clip

CROPSAVER
SPRAYLINE / AIRLINE

DESCRIPTION	PART No.
Crop Saver 12/24	
Centre section	BMF356
Right inner	BMF351
Left inner	BMF352
Right outer	BMF353
Left outer	BMF354
Right break back	BMF322
Left break back	BMF323
Crop saver 18/20/21	
Centre section	BMF312
Right inner	BMF318
Left inner	BMF319
Right outer 18m	BMF336
Right outer 20m	BMF320
Left outer 18m	BMF337
Left outer 20m	BMF321
Right break back	BMF322
Right break back 21m	BMF328
Left break back	BMF323
Left break back 21m	BMF329

Suffix No.

PVC sprayline

Conventional	Airtec
P12C	P12A

Stainless spray line

Conventional	Airtec
S12C	S12A

Air line

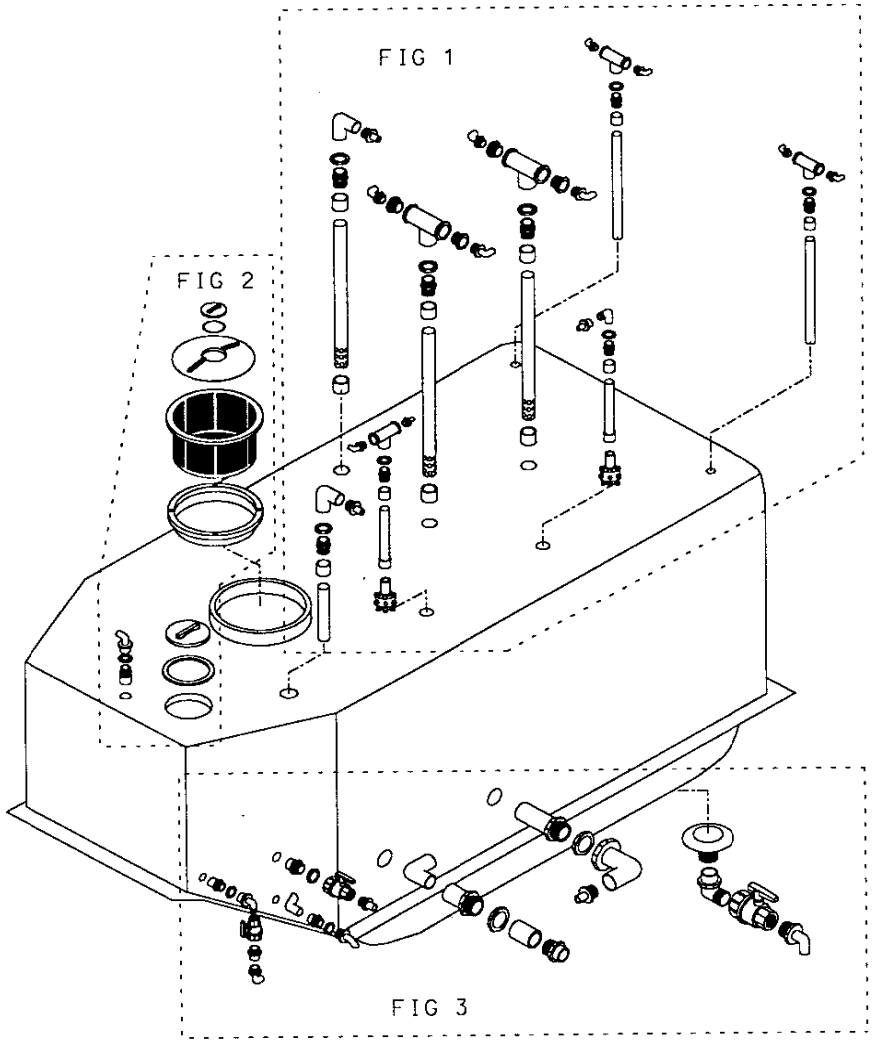
A10

For example; Crop saver 12/24 left inner PVC spray line for Airtec system

BMF352 P12A

Part No. | Suffix No.

TRACKING TRAILER TANK LAYOUT



TANK FITTING (6 DIAPHRAGM PUMP)

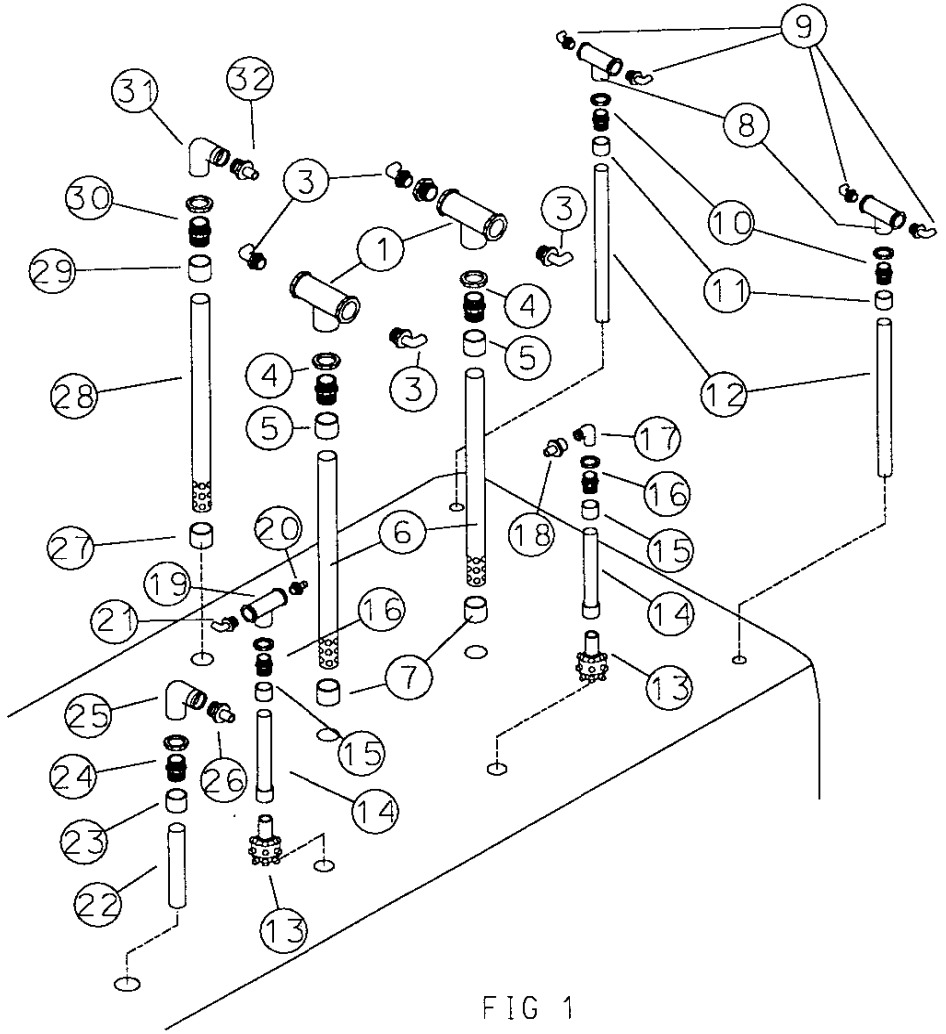


FIG 1

TANK FITTING (6 DIAPHRAGM PUMP)

ITEM	PART No.	QTY.	DESCRIPTION
1	NFWTT100	2	1" t piece
3	NFWEL1034	4	3/4" elbow
4	PF100TU	2	1" tank union
5	PF100SPP	2	1"plain socket
6	PHT100	2	1" PVC pipe
7	PF100CP	2	1" plain cap
8	NFWTT12	2	1/2" t piece
9	NFWEL1214	4	1/2" - 1/4" elbow
10	PF050TU	2	1/2" tank union
11	PF050SPP	2	1/2" plain socket
12	PHT050	2	1/2" PVC pipe
13	LUTS1	2	Spray tank washer
14	PHT075	2	3/4" PVC pipe
15	PF075SPP	2	3/4" plain socket
16	PF075TU	2	3/4" tank union
17	PF075TT90	1	3/4" threaded elbow
18	NFWA3434	1	3/4" Hose tail
19	NFWTT3/4	1	3/4" t piece
20	NFWA3434	1	3/4" Hose tail
21	NFWEL3410	1	3/4" - 1" elbow
22	PHT125	1	1 1/4" PVC pipe H.I.T.
23	PF125SPP	1	1 1/4" PVC socket p/p
24	PF125TU	1	1 1/4" PVC tank union
25	PF125TT90	1	1 1/4" PVC elbow t/t 90
26	NFWA114	1	1 1/4" hose tail
27	PF100CP	1	1" PVC cap plain
28	PHT100	1	1" PVC pipe H.I.T.
29	PF100SPP	1	1" socket
30	PF100TU	1	1" tank union
31	PF100TT90	1	1" elbow
32	NFWA1010	1	1" hose tail

TANK LID/BREATHER/BASKET
&
CLEAN WATER TANK LID

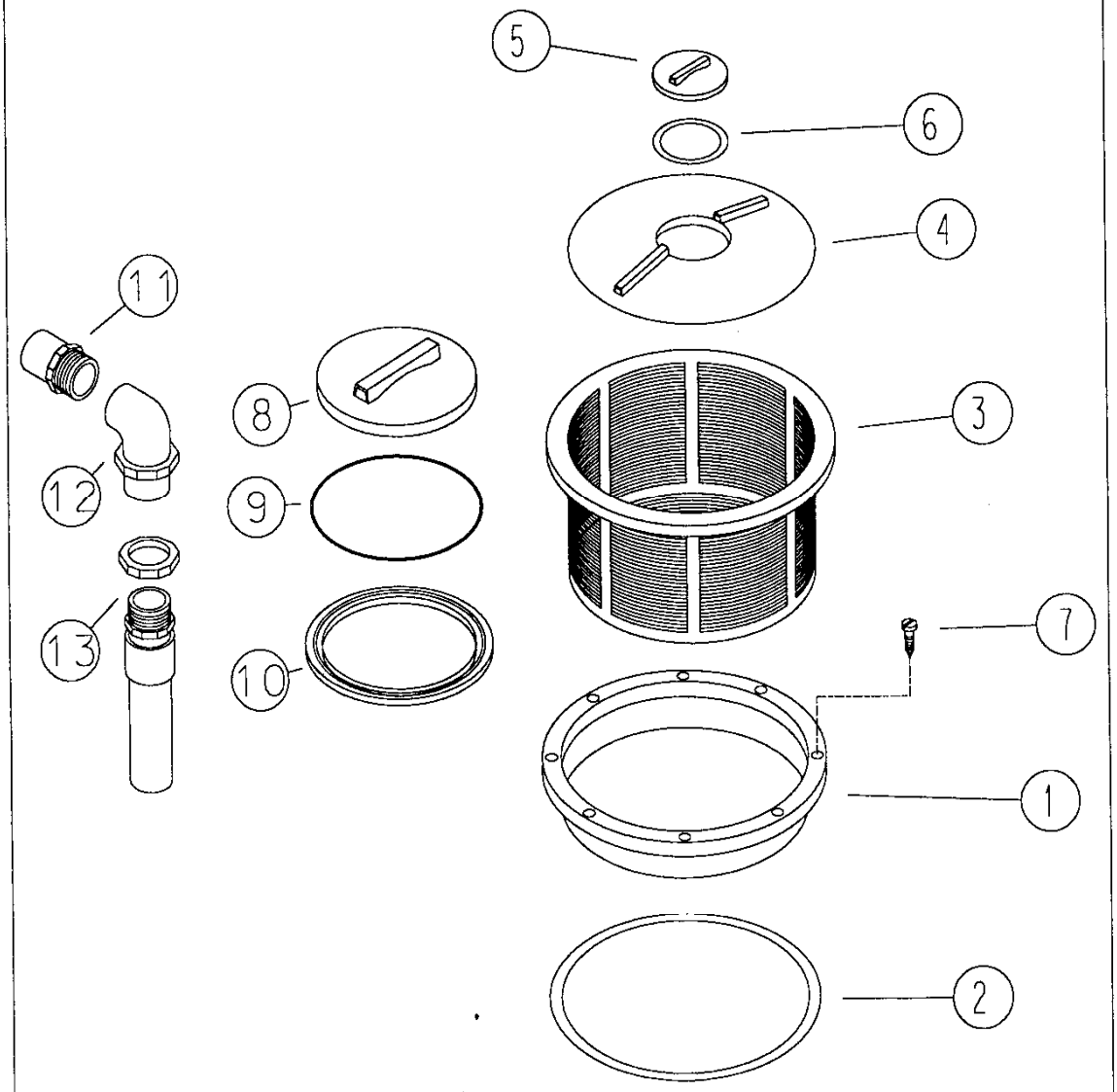


FIG 2

TANK LID/BREATHER/BASKET
&
CLEAN WATER TANK LID

ITEM	PART No.	QTY.	DESCRIPTION
1	TL063-057	1	Rim
2	TL063-037	1	Gasket
3	TF-5300A649	1	Basket
4	TL063-059	1	Lid
5	TL063-059	1	Vent
6	TL01352000-020	1	Vent seal
7	TL028-388	8	Fixing screws
8	TL063-059	1	Tank lid vent
9	TL01352000-020	1	Tank lid vent seal
10	TL01350401	1	Neck ring
11	NFWA114	1	1 1/4" hose tail
12	PF125TT90	1	1 1/4" PVC elbow t/t 90
13	PF125TU	1	1 1/4" PVC tank union

TANK FITTINGS (6 DIAPHRAGM) PUMP

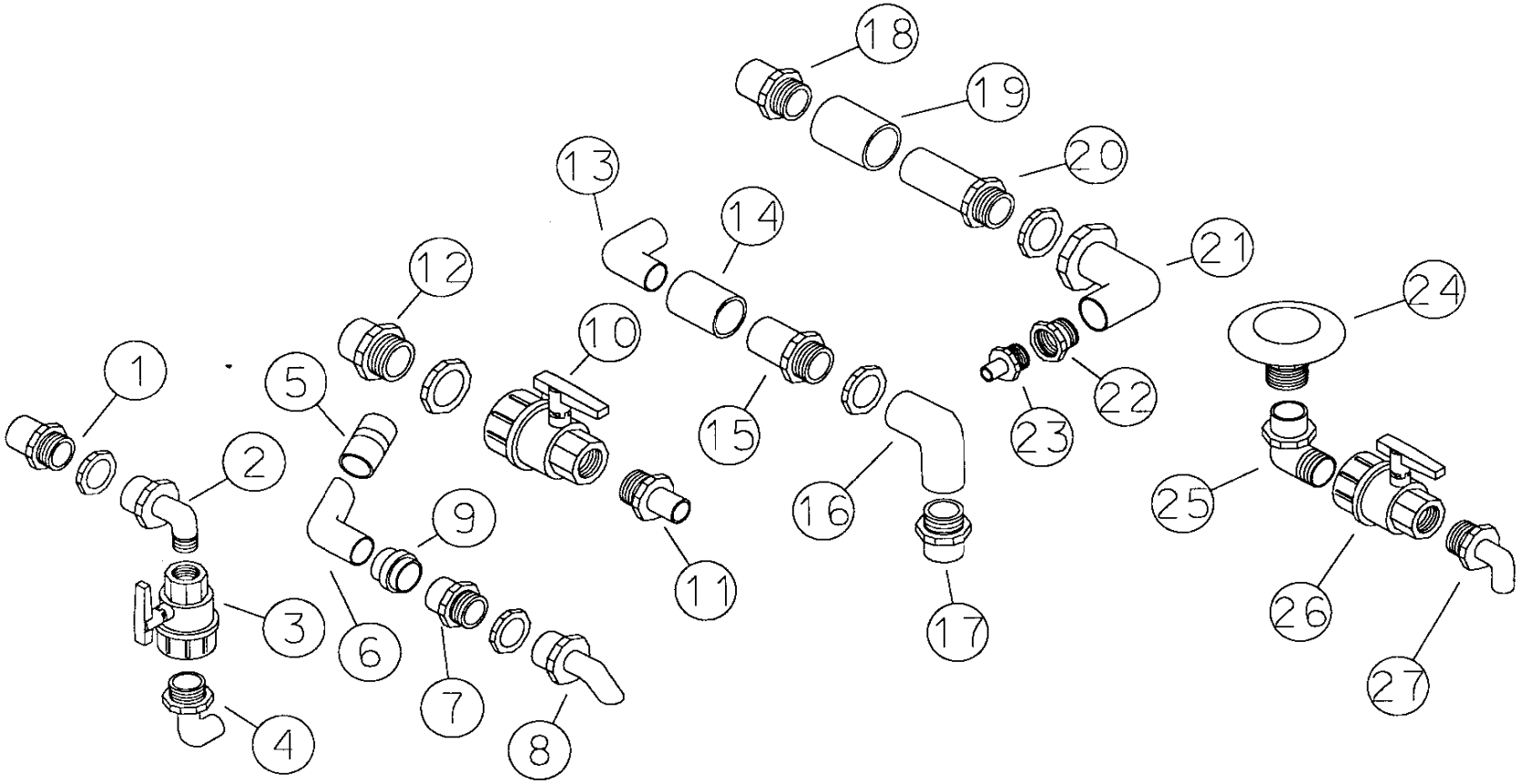


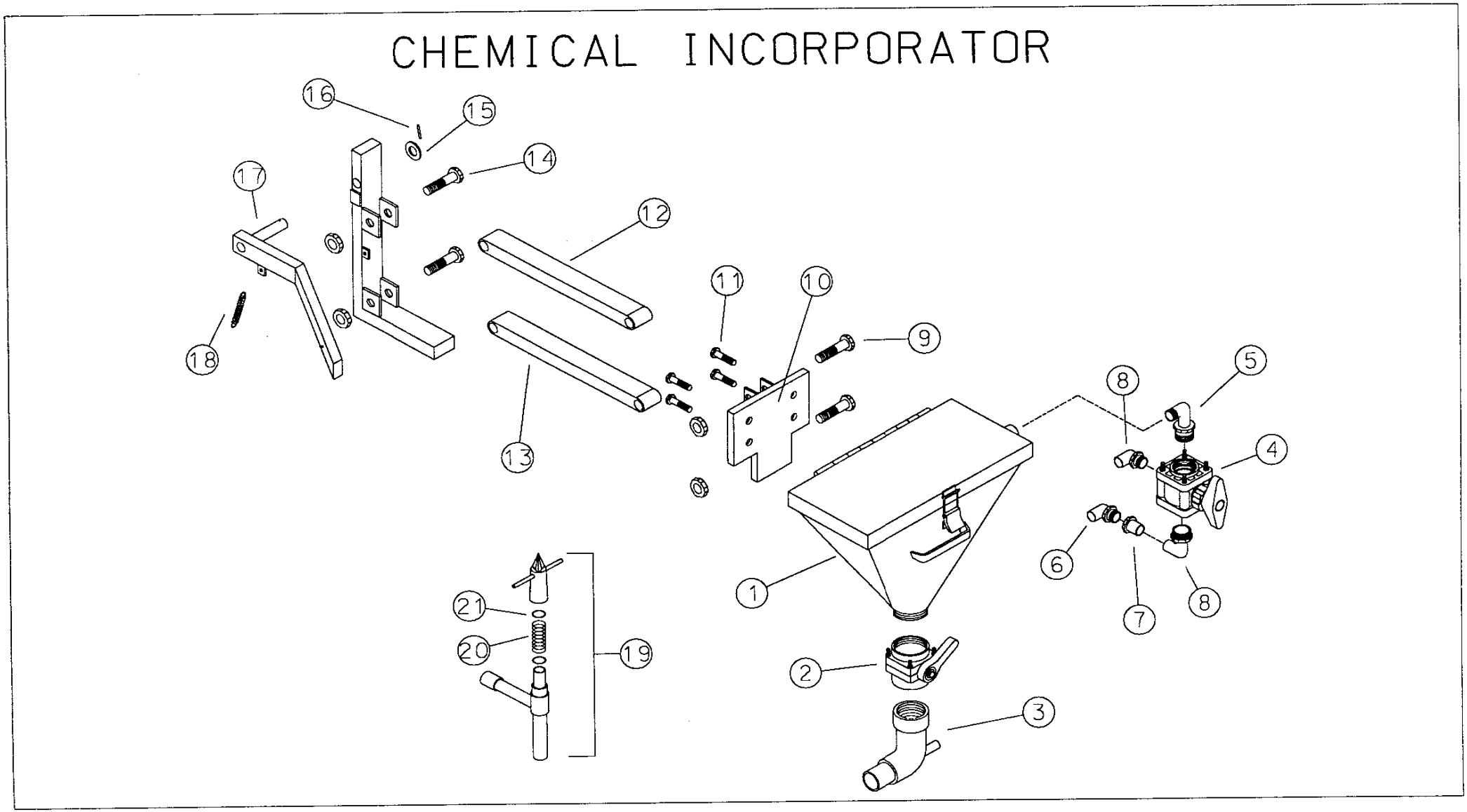
FIG 3

TANK FITTING (6 DIAPHRAGM PUMP)

FIG 3

ITEM	PART No.	QTY.	DESCRIPTION
1	PF075TU	1	3/4" tank union
2	PF075TT90	1	3/4" PVC elbow t/t 90 deg.
3	VE34	1	3/4" economy ball valve
4	NFWEL3434	1	3/4" - 3/4" hose tail elbow
5	PF100SPT	1	1" PVC socket p/t
6	PF100PP45	1	1" PVC elbow p/p 45 deg.
7	PF100TU	1	1" PVC tank union
8	NFWA1010	1	1" hose tail
9	PF100FAPT	1	1" PVC adaptor m/p f/t
10	VE12	1	1/2" economy ball valve
11	NFWA1212	1	1/2" hose tail
12	PF050TU	1	1/2" PVC tank union
13	PF200PP90	1	2" PVC elbow p/p 90 deg
14	PF200SPP	1	2" PVC socket p/p
15	PF200TU	1	2" PVC tank union
16	PF200TT90	1	2" PVC elbow t/t 90 deg.
17	NFWA200	1	2" hose tail
18	NFWA200	1	2" hose tail
19	PF200SPT	1	2" PVC socket p/t
20	PF200TU	1	2" PVC tank union
21	PF200TT90	1	2" PVC elbow t/t 90 deg.
22	NFWRB200112	1	2" - 1 1/4" red bush
23	NFWA112	1	1 1/2" hose tail
24	TA125BSP	1	1 1/2" anti vortex outlet
25	NFWSE114	1	1 1/2" street elbow
26	VE114	1	1 1/4" economy ball valve
27	NFWEL114	1	1 1/4" hose tail elbow

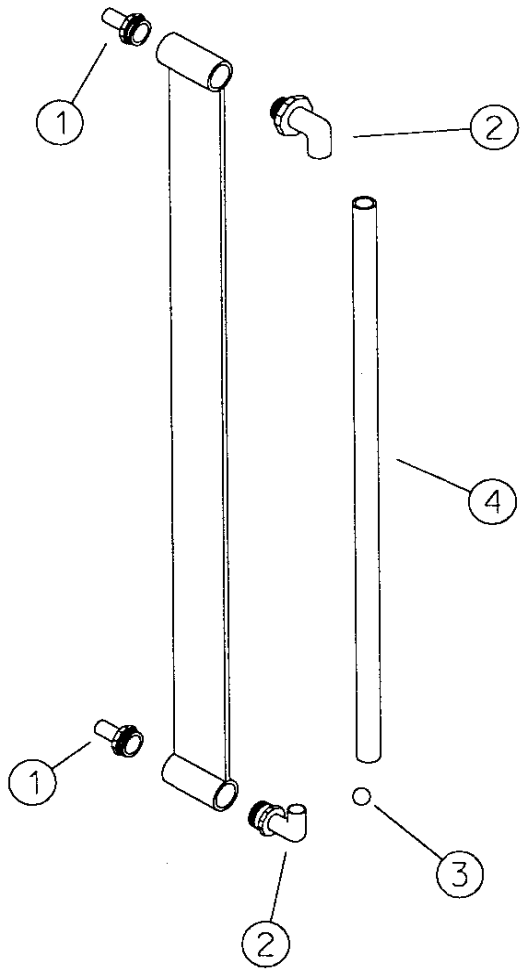
CHEMICAL INCORPORATOR



CHEMICAL INCORPORATOR

ITEM	PART No.	QTY.	DESCRIPTION
1	ACC112	1	15L SS incorporater bowl
	ACC107	1	25L SS incorporater bowl
2	VE200	1	2" banjo stubby valve
3	ACC1077	1	SS venturi
4	VS3W12	1	1/2" 3 way safi valve
5	NFWSE12	1	1/2" street elbow
6	PF050TT90	1	1/2" pvc elbow
7	NFWA1212	1	1/2" hose tail
8	NFWEL1212	1	1/2" hose tail elbow
9	M12X65HB	2	Bolt & lock nut
10	BMF474	1	Incorporater mounting plate
11	M8X25HB	4	Bolt & lock nut
12	BMF466	1	Upper incorporater arm
13	BMF467	1	Lower incorporater arm
14	M12X65HB	2	Bolt & lock nut
15	M12F	1	12mm flat washer
16	S12	1	4mm R' clip
17	BMF468	1	Incorporater latch
18	SP13613	1	185 break back spring
19	ACC107A	1	Plunger assembly complete
19a	ACC107B	1	Plunger assembly less spigot
20	ACC107C	1	SS spring
21	ACC107D	2	O' ring

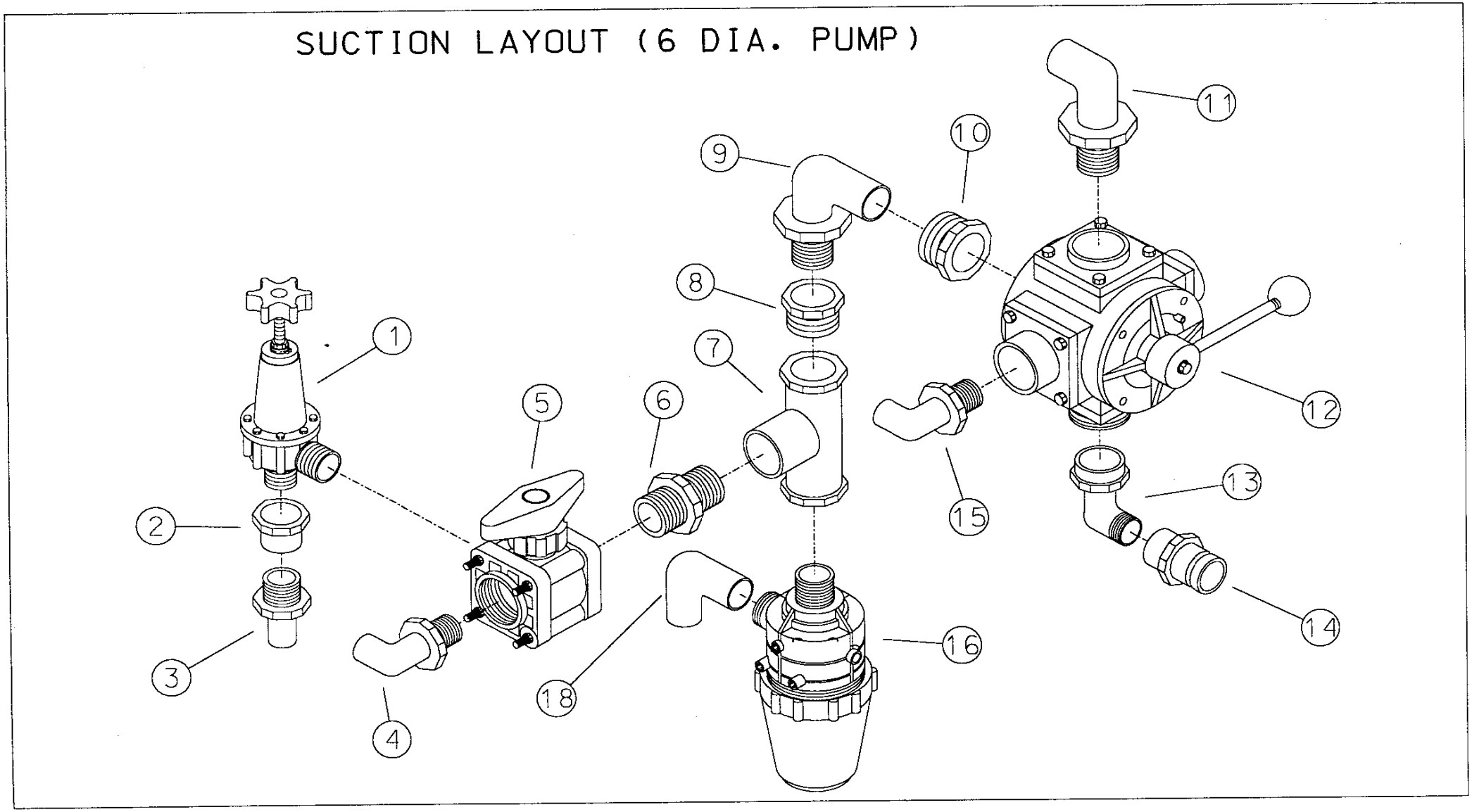
LEVEL INDICATOR



LEVEL INDICATOR

ITEM	PART No.	QTY.	DESCRIPTION
1	NFWA1212	1	1/2" hose tail
2	NFWEL1234	3	1/2" - 3/4" hose tail
3	PB916	1	Poly ball 9/16" dia.
4	HC217	1	3/4" clear sight hose

SUCTION LAYOUT (6 DIA. PUMP)

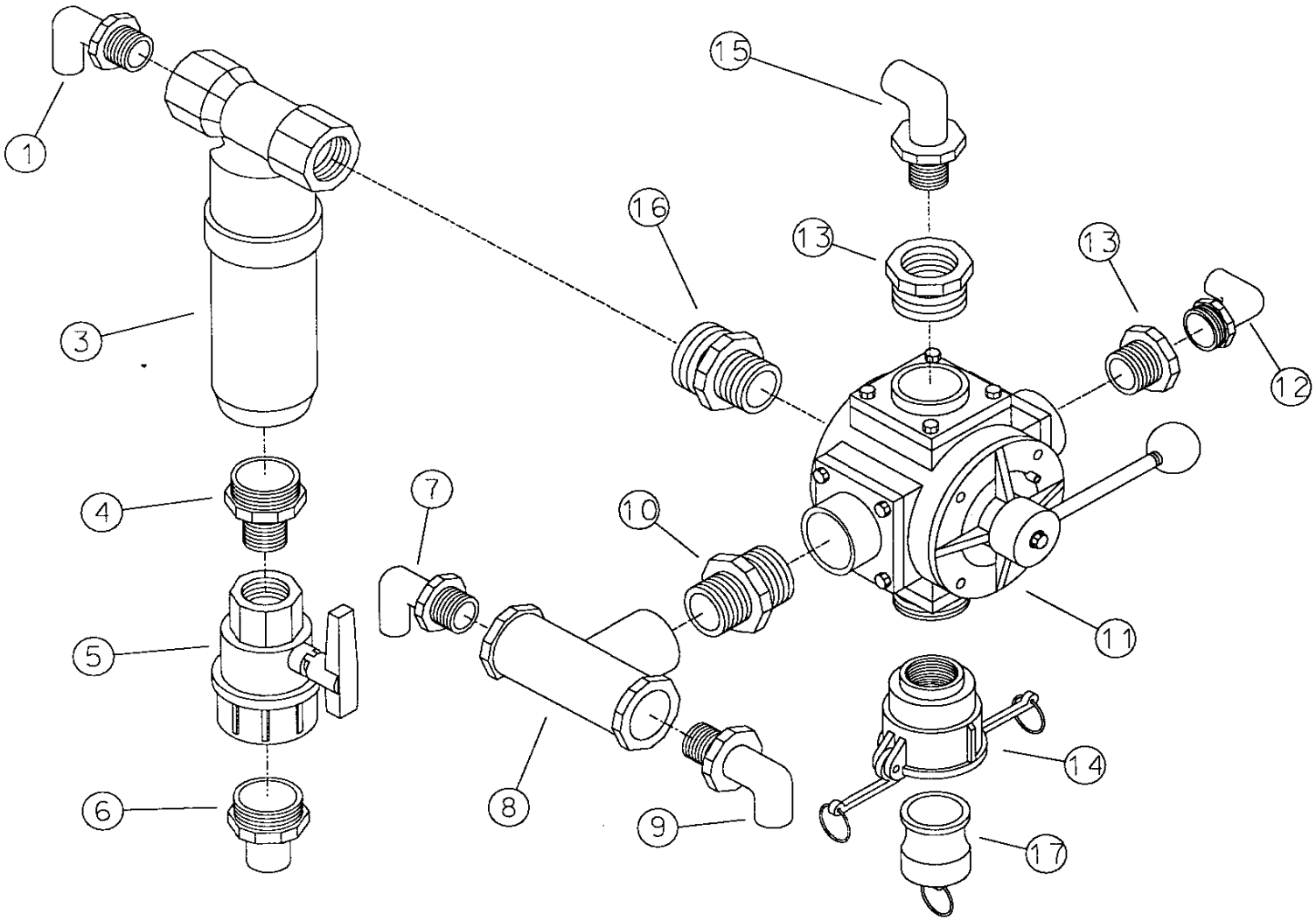


POLMAC LAYOUT

SUCTION

ITEM	PART No.	QTY.	DESCRIPTION
1	PV1PR	1	Safety valve
2	PF100STT	1	1" PVC sockett t/t
3	NFWA1034	1	1" - 3/4" hose tail
4	NFWEL1141	1	11/4" - 1" elbow hose tail
5	VS3W144	1	1 1/4" 3 way safi ball valve
6	NFWM200114	1	2" - 11/4" reducing nipple
7	NFWTT200	1	2" tee piece
8	NFWM200114	1	2" hexagonal nipple
9	NFWSE200	1	2" street elbow
10		1	
11	NFWEL200	1	2" elbow hose tail
12	PV5W	1	5 way polmac valve
13	NFWSE112	1	1 1/2" street elbow 90 deg.
14	CL150AM	1	1/2" adaptor male
15	NFWEL114	1	1/4" hose tail
16	FS200-50	1	2" suction filter
17			
18	PF150TT90	1	1 1/2" PVC elbow t/t 90

PRESSURE LAYOUT (6 DIA. PUMP)

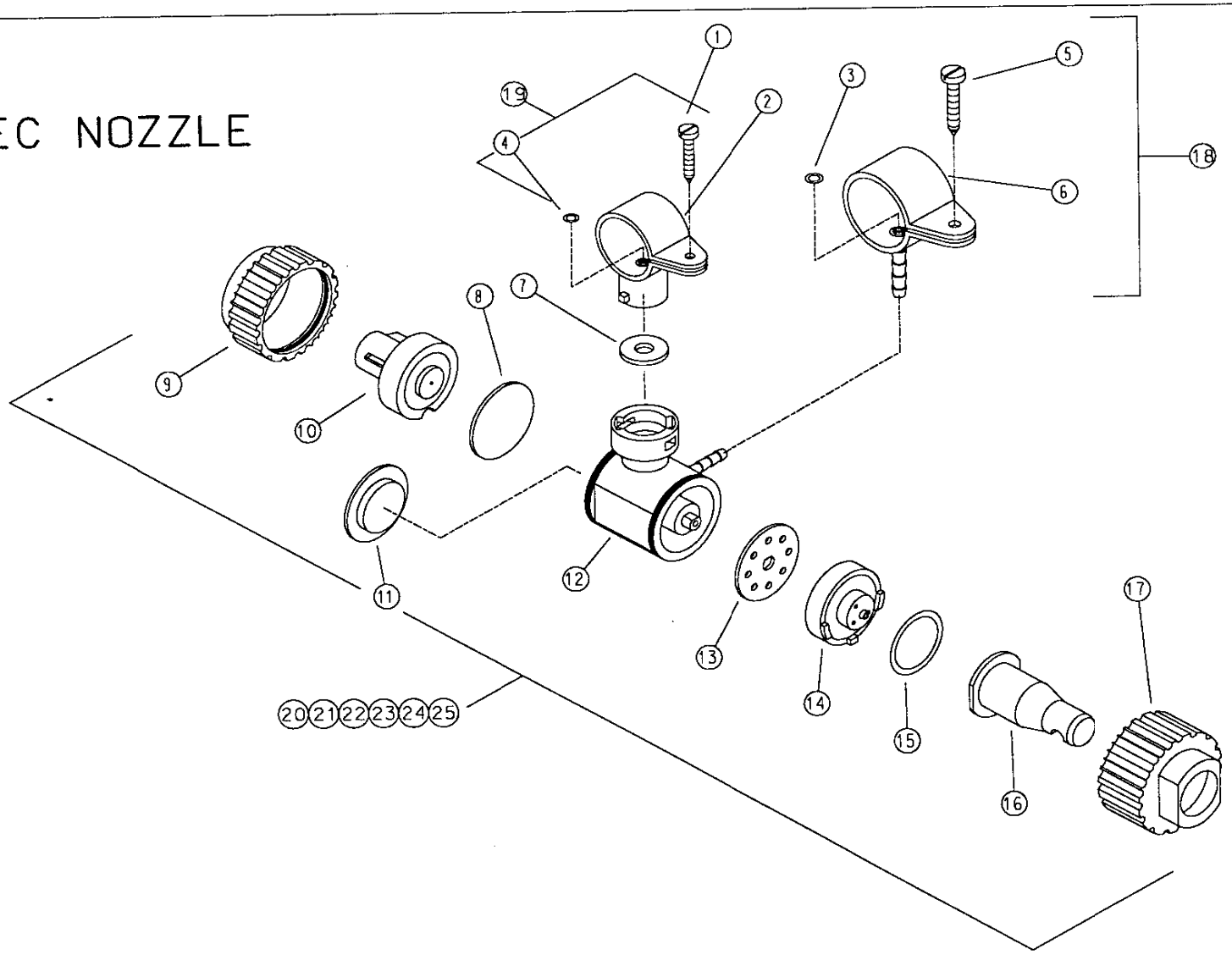


POLMAC LAYOUT

PRESSURE

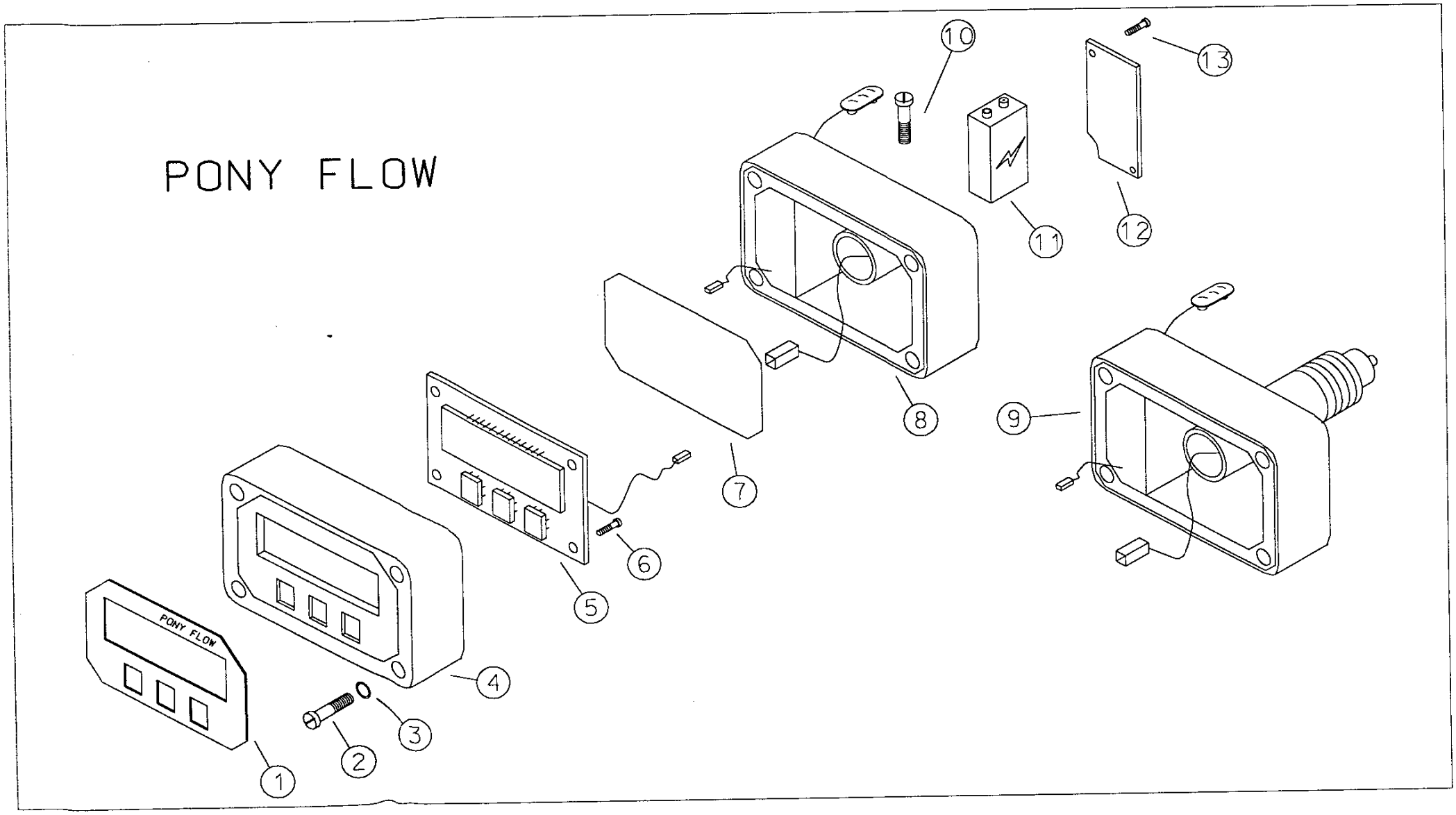
ITEM	PART No.	QTY.	DESCRIPTION
1	NFWEL114	1	1 1/4" hose tail elbow (4 dia. pump)
2	NFWEL112	1	1 1/2" hose tail elbow (6 dia. Pump)
3	FL150NY	1	Pressure filter
4	NFWM1034	1	Reducing nipple
5	VE34	1	Valve
6	NFWA3410	1	1" hose tail
7	NFWEL3412	1	3/4" - 1/2" hose tail elbow
8	NFWTT3/4	1	3/4" tee piece
9	NFWEL3434	1	3/4" - 3/4" hose tail elbow
10	NFWM11434	1	Reducing nipple
11	PV5W	1	5 way polmac valve
12	NFWEL1141	1	11/4" - 1" hose tail elbow
13	NFWRB200-114	1	2" - 11/4" reducing bush
14	CL200CF	1	2" cam lock
15	NFWEL114	1	1 1/4" Hose tail elbow
16	NFWM200112	1	2" - 11/2" reducing nipple
17	CL200AP	1	2" cam lock plug

AIRTEC NOZZLE



AIRTEC NOZZLE

ITEM	PART No.	QTY.	DESCRIPTION
1	NAP21	1	Pan head screw 14 x .75" self tap
2	NAP16	1	One piece liquid band clamp green
3	N215AQ2706	1	Seal - air band clamp
4	N215LY2706	1	Seal - liquid band clamp
5	NAP21	1	Pan head screw 14 x .75" self tap
6	NAP13	1	One piece air band clamp
7	CR9438-EPR	1	Teejet body seal
8	NAT0006	1	DCV rubber
9	NAP19	1	Rear ring green
10	NAP058-420	1	New type DCV unit
11	NAP20	1	DCV blanking cap (when fitted to quad jets)
12	NAP17L	1	Airtec body green (left hand)
12A	NAP17R	1	Airtec body green (right hand)
13	NAP10	1	Located fluid cap seal
14	NAP09	1	Size 35 plastic restrictor green
14A	NAP12	1	Size 40 plastic restrictor blue
14B	NAP11	1	Size 50 plastic restrictor yellow
15	NAP08	1	Plastic restrictor o'ring
16	NAP06	1	Located flood tip
17	NAP18	1	Front ring green
18	NAP13C	1	Air band clamp complete
19	NAP16C	1	Liquid band clamp complete
20	NAP2L35	1	Left hand Airtec body complete 35 restrictor
21	NAP2R35	1	Right hand Airtec body complete 35 restrictor
22	NAP2L40	1	Left hand Airtec body complete 40 restrictor
23	NAP2R40	1	Right hand Airtec body complete 40 restrictor
24	NAP2L50	1	Left hand Airtec body complete 50 restrictor
25	NAP2R50	1	Right hand Airtec body complete 50 restrictor


PONY FLOW
PONY FLOW
1
2
3
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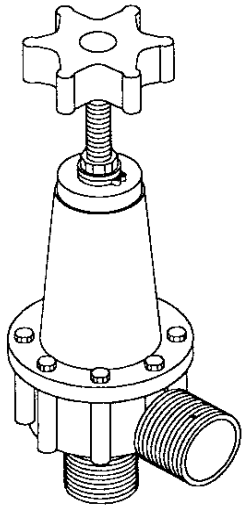
PONY FLOW

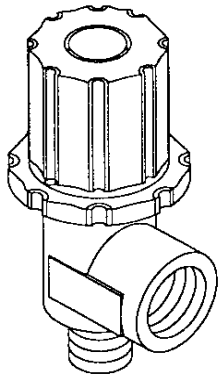
FIG	ITEM	PART No.	QTY.	DESCRIPTION
	1	30305732	1	PRINTED FRONT
	2	86465625	4	STAINL. STEEL SELF-TAPPING SCREW 2.9 x 32
	3	80006900	4	O-RING 2010
	4	01300232	1	TOP BOX
	5	01300199	1	CIRCUIT BOARD
	6	86466225	4	STAINL. STEEL SELF-TAPPING SCREW 2.2 x 6.5
	7	01300631	1	EPDM GASKET
	8	30304432	1	PONY FLOW SENSOR (STANDARD)
	9	01300732	1	PONY FLOW SENSOR (RAPID CHECK)
	10	86465525	4	STAINL. STEEL SELF-TAPPING SCREW 2.9 x 9.5
	11	83130000	1	9 VOLT BATTERY
	12	01300832	1	BATTERY HOUSING COVER
	13	86466425	2	STAINLESS STEEL SCREW 2.2 x 9.5

1



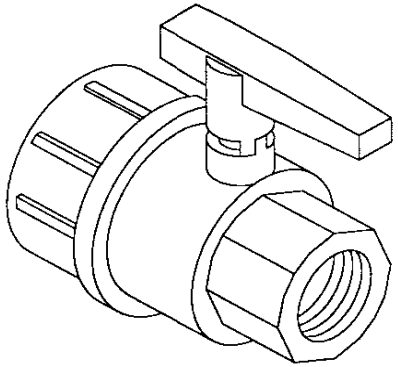
POLMAC SAFETY VALVE

2



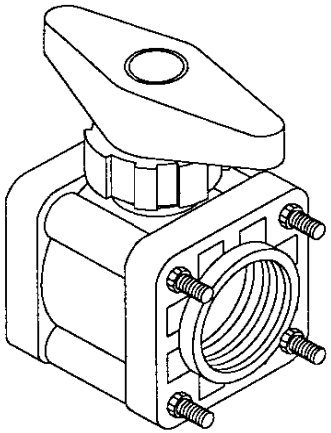
THROTTLE VALVE

3



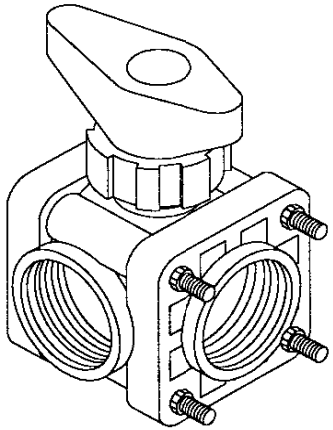
2 WAY ECONOMY BALL VALVE

4



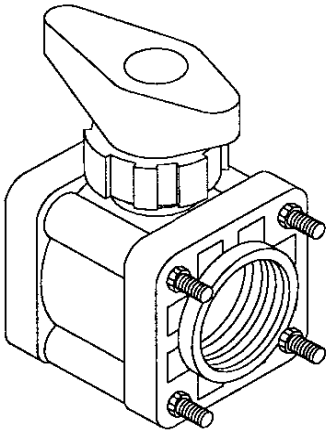
2 WAY / 3 WAY SAFI VALVE

5



3 WAY BALL VALVE

6



2 WAY BALL VALVE

POLMAC SAFETY VALVE

ITEM	PART No.	QTY.	DESCRIPTION
1	PV1PR	1	Safety valve

THROTTLE VALVE

ITEM	PART No.	QTY.	DESCRIPTION
2	VT23520	1	1/2" Throttle valve
	VT34	1	3/4" Throttle valve

2 WAY BALL VALVE

ITEM	PART No.	QTY.	DESCRIPTION
6	VCT2W12	1	1/2" Valve
	VCT2W34	1	3/4" Valve
	VCT2W1	1	1" Valve
	VCT2W114	1	1 1/4" Valve
	VCT2W112	1	1 1/2" Valve

3 WAY BALL VALVE

ITEM	PART No.	QTY.	DESCRIPTION
5	VCT3W12	1	1/2" Valve
	VCT3W34	1	3/4" Valve
	VCT3W1	1	1" Valve
	VCT3W114	1	1 1/4" Valve
	VCT3W112	1	1 1/2" Valve

2 WAY SAFI BALL VALVE

ITEM	PART No.	QTY.	DESCRIPTION
4	VS2W12	1	1/2" Valve
	VS2W34	1	3/4" Valve
	VS2W1	1	1" Valve
	VS2W114	1	1 1/4" Valve
	VS2112	1	1 1/2" Valve
	VS2W2	1	2" Valve

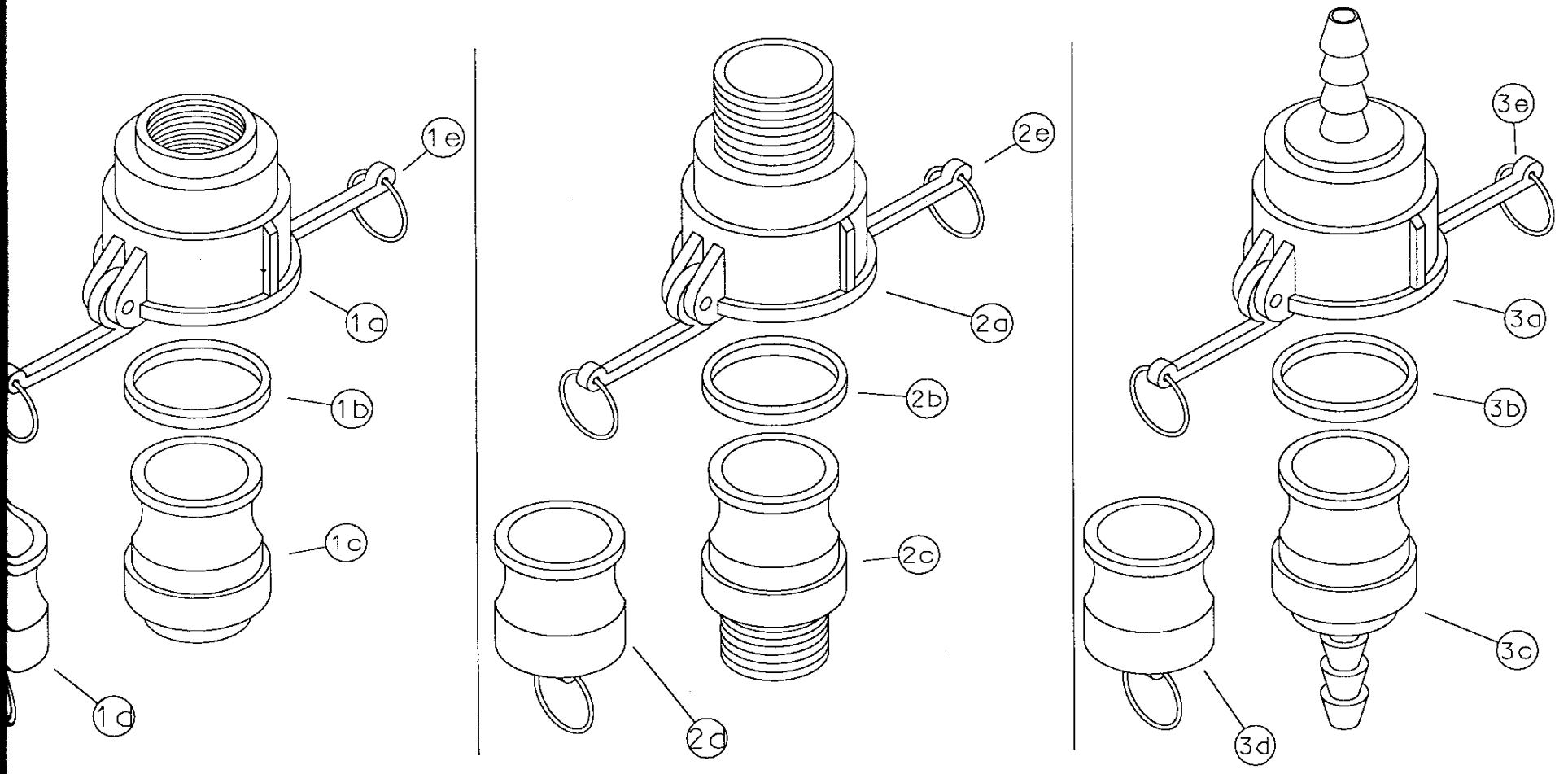
3 WAY SAFI BALL VALVE

ITEM	PART No.	QTY.	DESCRIPTION
4	VS3W12	1	1/2" Valve
	VS3W34	1	3/4" Valve
	VS3W1	1	1" Valve
	VS3W114	1	1 1/4" Valve
	VS3W112	1	1 1/2" Valve
	VS3W2	1	2" Valve

2 WAY ECONOMY BALL VALVE

ITEM	PART No.	QTY.	DESCRIPTION
3	VE12	1	1/2" Valve
	VE34	1	3/4" Valve
	VE12	1	1" Valve
	VE114	1	1 1/4" Valve
	VE112	1	1 1/2" Valve
	VE2	1	2" Valve
	VE200	1	2" Stubby valve (male to female)

CAM LOCKS



2" CAM LOCK

ITEM	PART No.	QTY.	DESCRIPTION
1a	CL200CF	1	2" coupler female
1b	CL200S	1	2" cam lock seal
1c	CL200AF	1	2" female adaptor
1d	CL200AP	1	2" adaptor plug
1e	CL200H	1	2" coupler handle

2a	CL200CM	1	2" coupler male
2b	CL200S	1	2" cam lock seal
2c	CL200AM	1	2" adaptor male
2d	CL200AP	1	2" adaptor plug
2e	CL200H	1	2" coupler handle

3a	CL200CH	1	2" coupler hose tail
3b	CL200S	1	2" cam lock seal
3c	CL200AH	1	2" adaptor hose tail
3d	CL200AP	1	2" adaptor plug
3e	CL200H	1	2" coupler handle

11/2" CAM LOCK

ITEM	PART No.	QTY.	DESCRIPTION
1a	CL150CF	1	11/2" coupler female
1b	CL150S	1	11/2" cam lock seal
1c	CL150AF	1	11/2" female adaptor
1d	CL150AP	1	11/2" adaptor plug
1e	CL150H	1	11/2" coupler handle

2a	CL150CM	1	11/2" coupler male
2b	CL150S	1	11/2" cam lock seal
2c	CL150AM	1	11/2" adaptor male
2d	CL150AP	1	11/2" adaptor plug
2e	CL150H	1	11/2" coupler handle

3a	CL150CH	1	11/2" coupler hose tail
3b	CL150S	1	11/2" cam lock seal
3c	CL150AH	1	11/2" adaptor hose tail
3d	CL150AP	1	11/2" adaptor plug
3e	CL150H	1	11/2" coupler handle

11/4" CAM LOCK

ITEM	PART No.	QTY.	DESCRIPTION
1a	CL125CF	1	11/4" coupler female
1b	CL125S	1	11/4" cam lock seal
1c	CL125AF	1	11/4" female adaptor
1d	CL125AP	1	11/4" adaptor plug
1e	CL125H	1	11/4" coupler handle

2a	CL125CM	1	11/4" coupler male
2b	CL125S	1	11/4" cam lock seal
2c	CL125AM	1	11/4" adaptor male
2d	CL125AP	1	11/4" adaptor plug
2e	CL125H	1	11/4" coupler handle

3a	CL125CH	1	11/4" coupler hose tail
3b	CL125S	1	11/4" cam lock seal
3c	CL125AH	1	11/4" adaptor hose tail
3d	CL125AP	1	11/4" adaptor plug
3e	CL125H	1	11/4" coupler handle

1" CAM LOCK

ITEM	PART No.	QTY.	DESCRIPTION
1a	CL100CF	1	1" coupler female
1b	CL100S	1	1" cam lock seal
1c	CL100AF	1	1" female adaptor
1d	CL100AP	1	1" adaptor plug
1e	CL100H	1	1" coupler handle

2a	CL100CM	1	1" coupler male
2b	CL100S	1	1" cam lock seal
2c	CL100AM	1	1" adaptor male
2d	CL100AP	1	1" adaptor plug
2e	CL100H	1	1" coupler handle

3a	CL100CH	1	1" coupler hose tail
3b	CL100S	1	1" cam lock seal
3c	CL100AH	1	1" adaptor hose tail
3d	CL100AP	1	1" adaptor plug
3e	CL100H	1	1" coupler handle

3/4" CAM LOCK

ITEM	PART No.	QTY.	DESCRIPTION
1a	CL075CF	1	3/4" coupler female
1b	CL075S	1	3/4" cam lock seal
1c	CL075AF	1	3/4" female adaptor
1d	CL075AP	1	3/4" adaptor plug
1e	CL075H	1	3/4" coupler handle

2a	CL075CM	1	3/4" coupler male
2b	CL075S	1	3/4" cam lock seal
2c	CL075AM	1	3/4" adaptor male
2d	CL075AP	1	3/4" adaptor plug
2e	CL075H	1	3/4" coupler handle

3a	CL075CH	1	3/4" coupler hose tail
3b	CL075S	1	3/4" cam lock seal
3c	CL075AH	1	3/4" adaptor hose tail
3d	CL075AP	1	3/4" adaptot plug
3e	CL075H	1	3/4" coupler handle

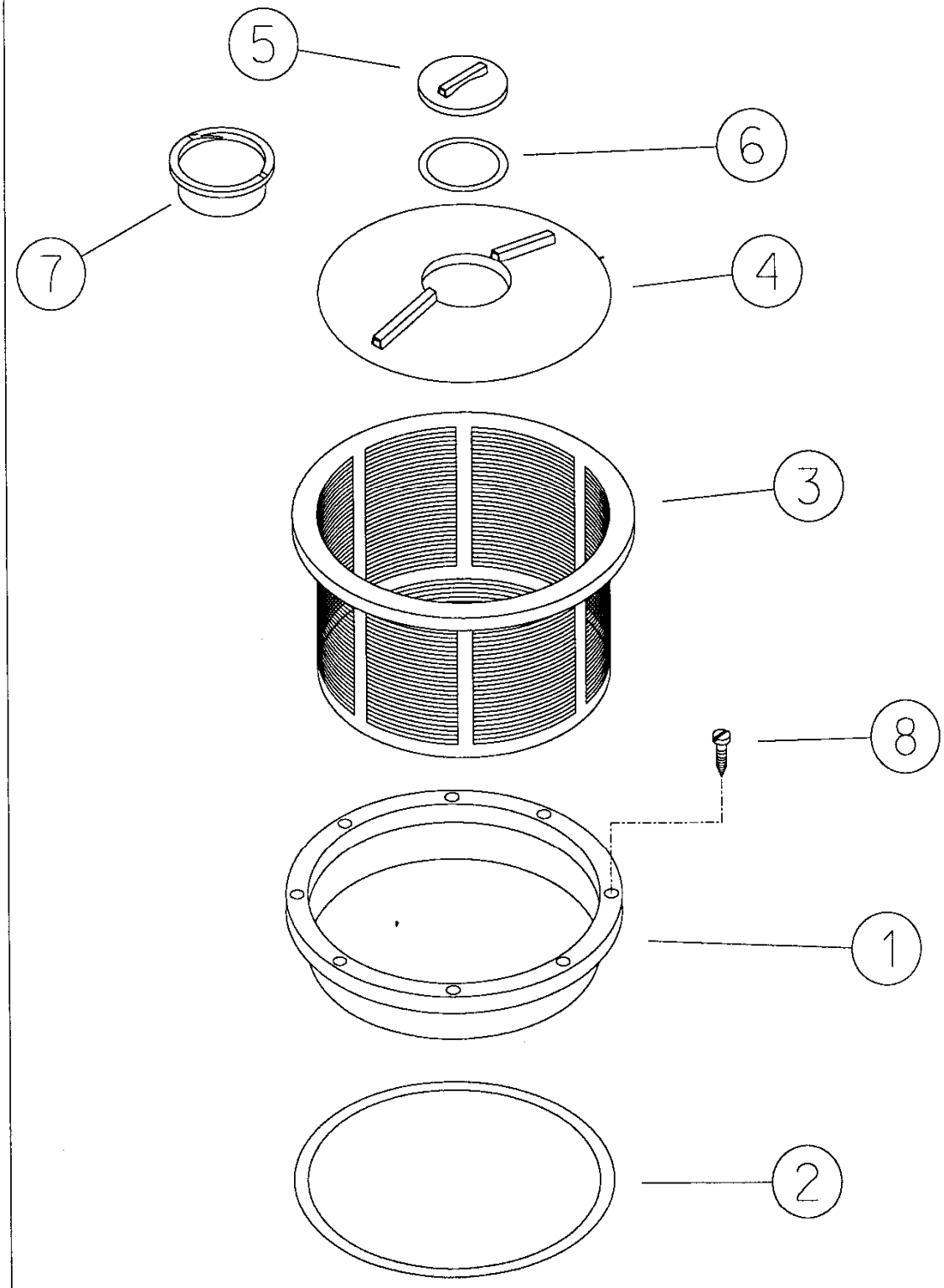
1/2" CAM LOCK

ITEM	PART No.	QTY.	DESCRIPTION
1a	CL050CF	1	1/2" female cam lock
1b	CL050S	1	1/2" cam lock seal
1c	CL050AF	1	1/2" female adaptor
1d	CL050AP	1	1/2" adaptor plug
1e	CL050H	1	1/2" coupler handle

2a	CL050CM	1	1/2" coupler male
2b	CL050S	1	1/2" cam lock seal
2c	CL050AM	1	1/2" adaptor male
2d	CL050AP	1	1/2" adaptor plug
2e	CL050H	1	1/2" coupler handle

3a	CL050CH	1	1/2" coupler hose tail
3b	CL050S	1	1/2" cam lock seal
3c	CL050AH	1	1/2" adaptor hose tail
3d	CL050AP	1	1/2" adaptor plug
3e	CL050H	1	1/2" coupler handle

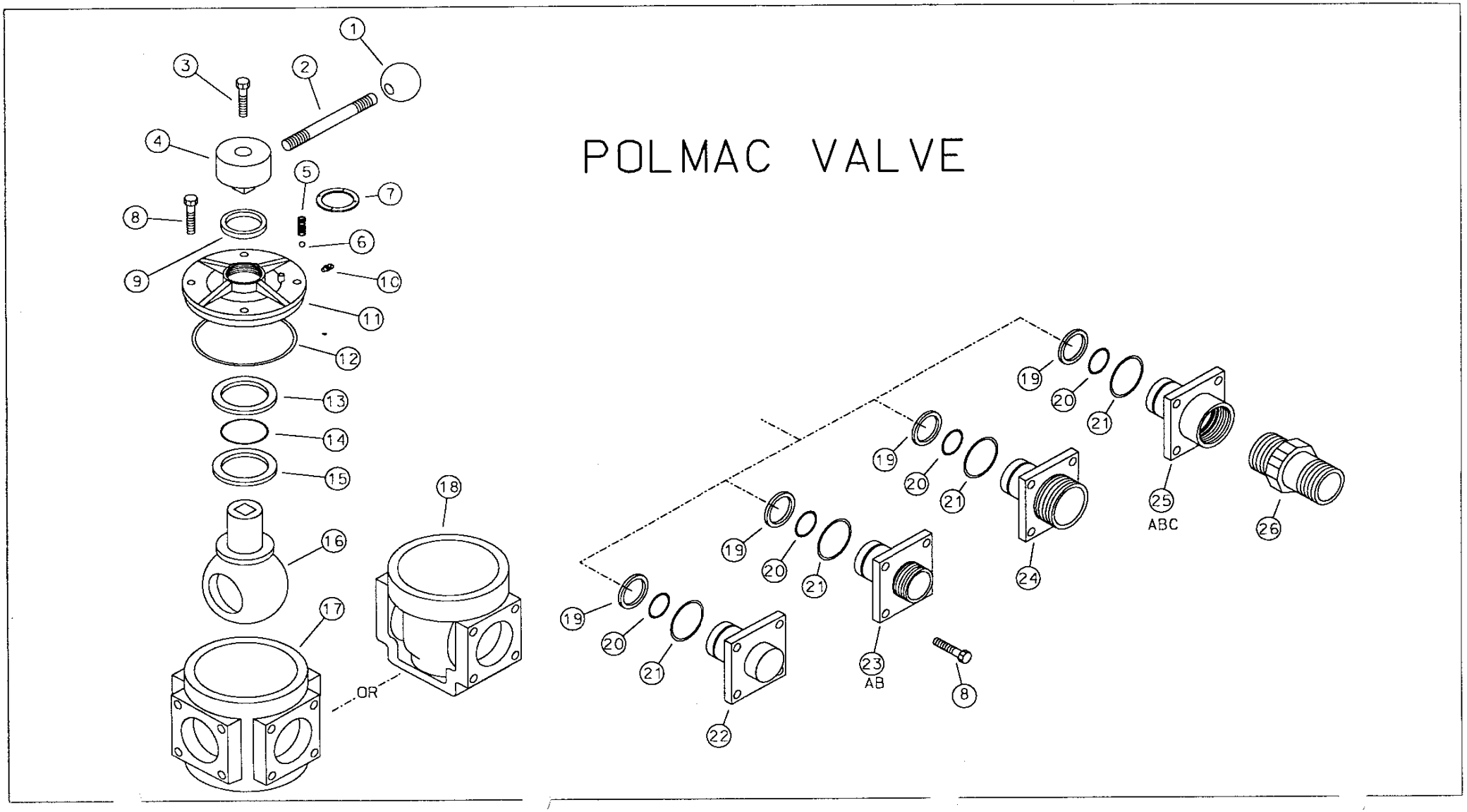
TANK LID/BREATHER/BASKET



PRESSURE FILTER

ITEM	PART No.	QTY.	DESCRIPTION
1	FL150NY	1	Complete unit
2	FL150NB	1	Bowl
3	FL150NH	1	Hood
4	FL12291	1	Bowl seal
5	FE150-50	1	50 mesh screen
5A	FE150-30	1	30 mesh screen
6	NFWF1000	1	Plug
7	FL7717-2/VI	1	Plug seal
FLUSHING OPTION			
8	NFWM1034	1	Reducing nipple
9	VE34	1	Valve

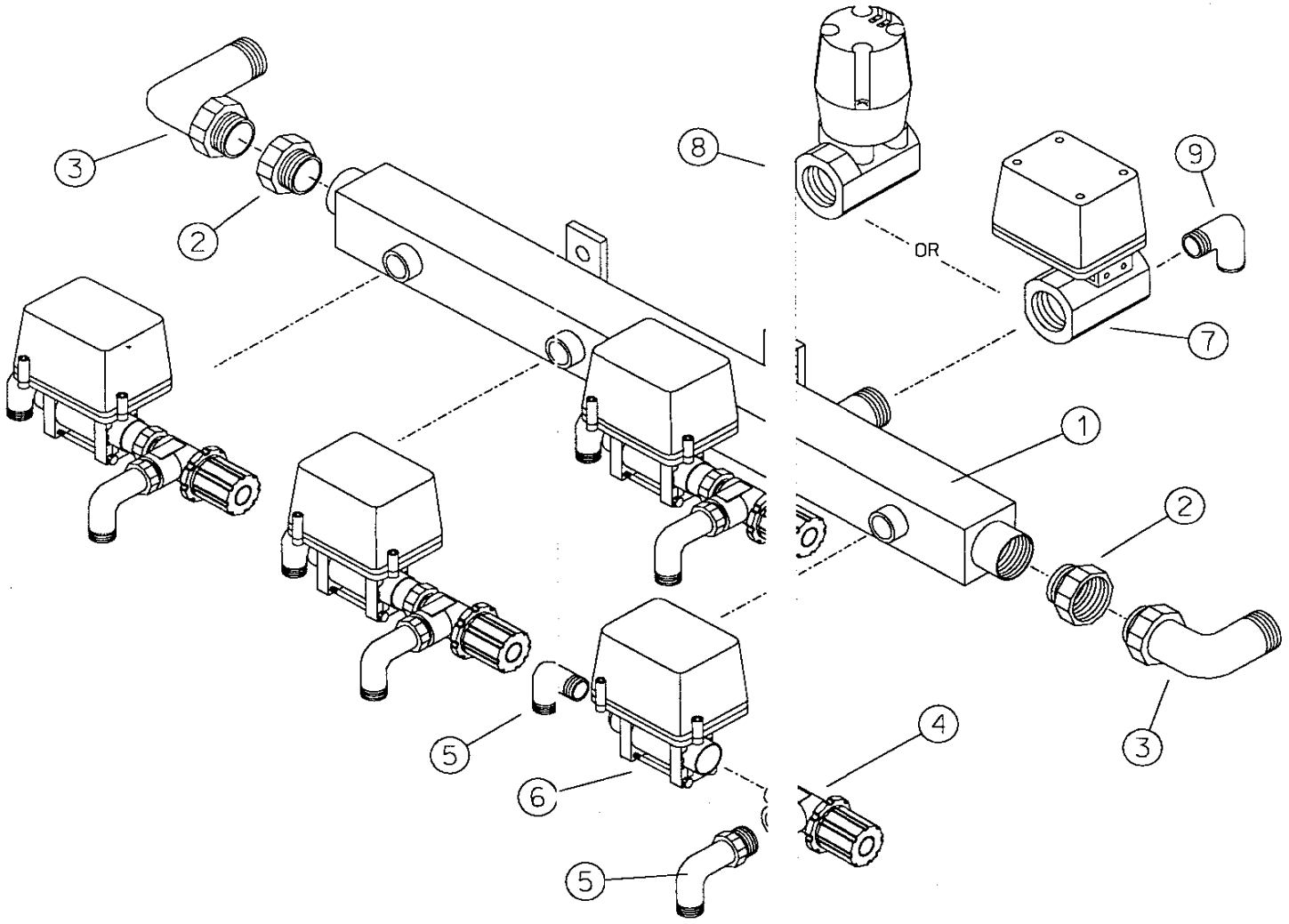
POLMAC VALVE



POLMAC VALVE

ITEM	PART No.	QTY.	DESCRIPTION
1	PV82420832		Knob
2	PV10403625		Handle shaft
3	PV86194925		M5 x 80 bolt
4	PV10400932		Handle hub
5	PV72401361		Spring
6	PV80110100		Ball bearing
7	PV10403732		Locating disc
8	PV86321125		M10 x 20 bolt
9	PV80028000		De-tent ring
10	PV81465700		Grease nipple
11	PV10400829		Front cover
12	PV80006500		O' ring
13	PV80028700		Front seal
14	PV80006600		O' ring
15	PV10401332		Teflon disc
16	PV10402232		Ball
17	PV10400529		5 Way body
18	PV10401529		3 Way body
19	PV10400300		Teflon disc
20	PV10400231		O' ring
21	PV80006400		O' ring
22	PV10401732		Blank flange
23A	PV10401432		1 1/4"B.S.P. male flange
23B	PV10401432		1 1/2"B.S.P. male flange
24	PV10400132		2"B.S.P. male flange
25A	PV10400132		1 1/4"B.S.P. female flange
25B	PV10400132		1 1/2"B.S.P. female flange
25C	PV10400132		2"B.S.P. female flange
26	PV10400632		60 mm. Hose tail

LIQUID MANIFOLD



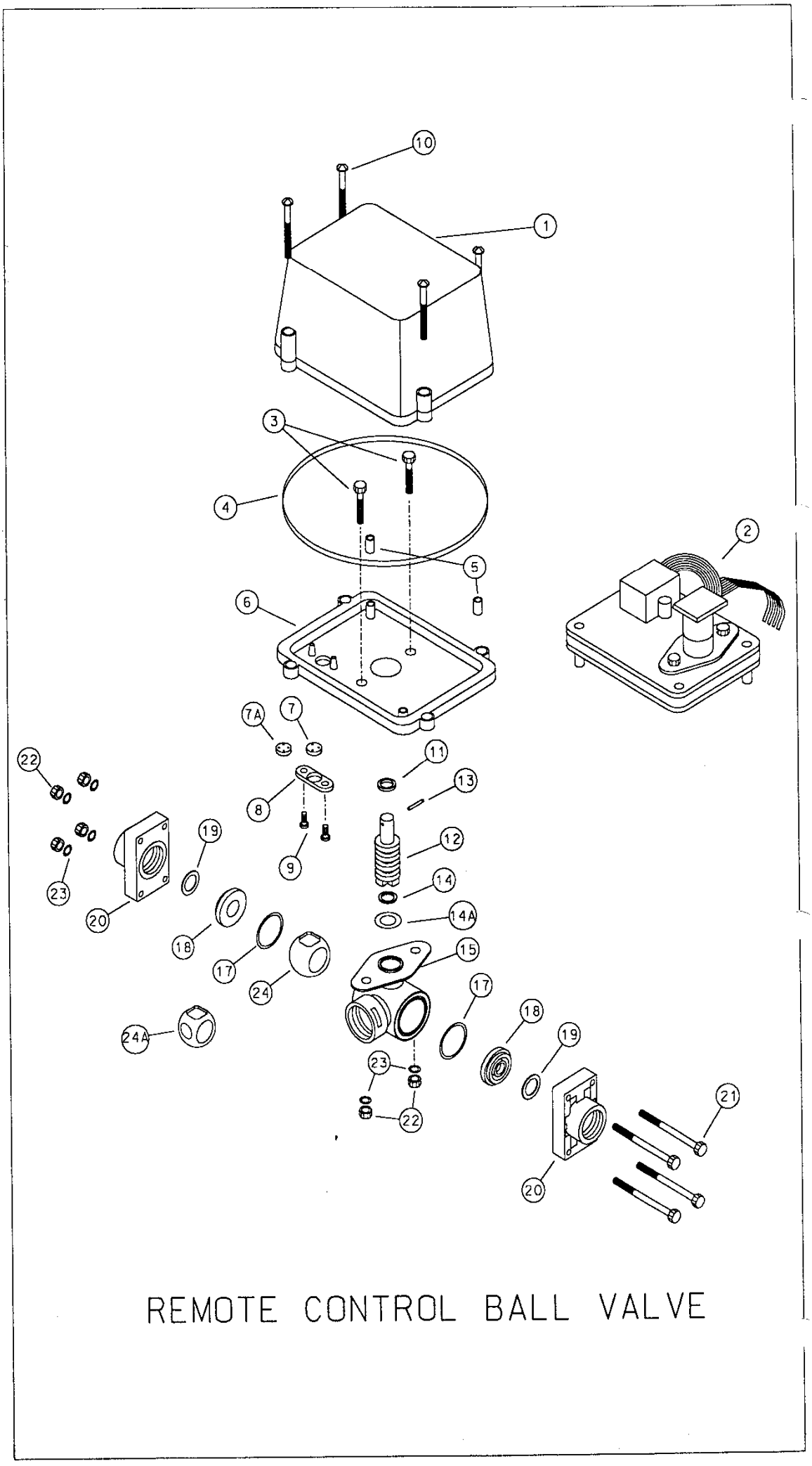
REMOTE CONTROL BALL VALVE

	ITEM	PART No.	QTY.	DESCRIPTION
	1	CP20113-PPB	1	Cover, polypropylene (black)
	2	20122-3-SS	1	Motor sub-assembly for //344AE-(three wire)
	3	CP20127-SS	2	Self-clinching stud, stainless steel
	4	CP7717-2-155/40-EPR	1	O' ring, EPDM rubber
	5	CP20124-NEO	2	Motor mount, neoprene
	6	CP20111-NYB	1	Mounting plate, nylon
	7	CP22158-3-EPR	1	Grommet, EPDM rubber for //344AE - - - -
	7A	CP22158-4-EPR	1	Grommet, EPDM rubber for //344AEC - - - -
	8	CP22157-PP	1	Grommet retainer, polypropylene
	9	CP20123-3/4-430SS	2	Slotted hex washer screw
	10	CP38036-1-1/4-430SS	4	Phillips/square pan head screw
*	11	CP20125-TEF	1	Thrust washer, teflon
*	12	CP26250-NY	1	Ball valve stem, nylon for //344AE & 344AEC
*	12	CP38442-SS	1	Ball valve stem, stainless steel for //344AEC-2-SS
	13	CP23477-420SS	1	Spring pin, type 420 stainless steel
*	14	CP7717-2/14-VI	1	O' ring, viton
*	14A	CP7717-M12X2.5-VITEF	1	O' ring, viton, teflon coated
	15	CP20101-NYB	1	Body, nylon (black) for //344AE & AEC-2
	15	CP20102-3/4-NYB	1	Body, nylon (black) for //344AE & AEC-3-3/4 (NPT)
	15	CP20102-1-NYB	1	Body, nylon (black) for //344AE & AEC-3-1 (NPT)
	15	CPB20102-3/4-NYB	1	Body, nylon (black) for //B344AE & AEC-3-3/4 (BSPT)
	15	CPB20102-1-NYB	1	Body, nylon (black) for //B344AE & AEC-3-1 (BSPT)
*	17	CP7717-2/031-VI	2	O' ring, viton
*	18	CP20103-TEF	2	Seal, teflon for //344AE & AEC
*	18	CP20103-CTEF	2	Seal, carbon filled teflon for //344AEC-2- - -SS
*	19	CP7717-2/213-VI	2	O' ring, viton
	20	CP20104-3/4-NYB	2	End cap, nylon (black) for //344AE & AEC (NPT)
	20	CP20104-1-NYB	2	End cap, nylon (black) for //344AE & AEC (NPT)
	20	CPB20104-3/4-NYB	2	End cap, nylon (black) for //B344AE & AEC (BSPT)
	20	CPB20104-1-NYB	2	End cap, nylon (black) for //B344AE & AEC (BSPT)
	21	CP20129-SS	4	Hex head cap screw, stainless steel
	22	CP8535-SS	6	Hex nut, stainless steel

	23	CP20128-SS	6	Lock washer, stainless steel
*	24	CP20106-PP	1	Ball, polypropylene for //344AE & AEC-2
*	24	CP19926-SS	1	Ball, stainless steel for //344AE-2---SS
*	24A	CP20109-PP	1	Ball, polypropylene for //344AE & AEC-3
	25	CP23496-NY	1	Fuse, holder, nylon (not shown)
	26	CP21046-1.5-GLASS	1	Fuse, glass (not shown)
	27	CP22872-PHE	1	Limit switch, phenolic (included with item 3)
AB344AE-2-KIT, Spare parts kit (includes all items marked with*), except item 24A				
AB344AE-3-KIT, Spare parts kit (includes all items marked with*), except item 24A				
AB344AE-2-KIT, Spare parts kit (includes all items marked with*), except item 24A				

LIQUID MANIFOLD

ITEM	PART No.	QTY.	DESCRIPTION
1	MASS003	1	800mm ss. Manifold
2	NFWRB112-114	1	1 1/2" - 1 1/4" reducer
3	NFWEL114	1	1 1/4" elbow
4	VT34	1	3/4" throttle valve
5	NFW3434	2	3/4" elbow
6	V344EC	1	3/4" electrical ball valve (4 wires)
7	RDS018	1	1" pressure control valve
8	VBT100	1	1" butterfly valve
9	NFWEL1010	1	1" elbow

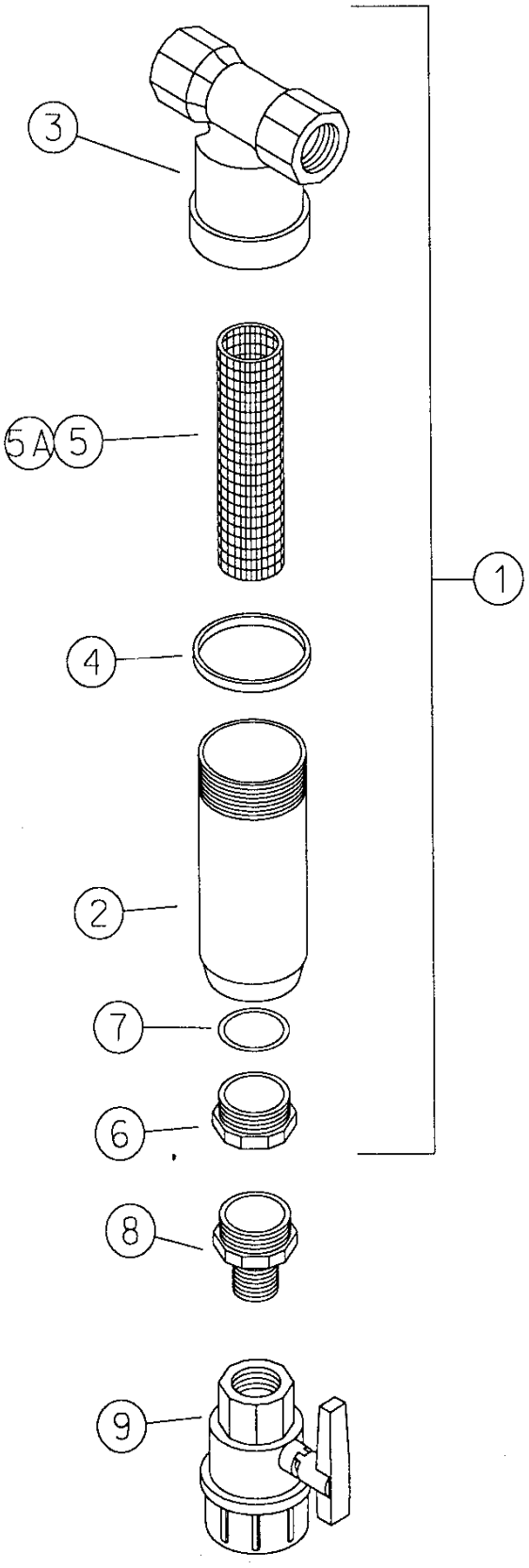


REMOTE CONTROL BALL VALVE

"Y" LINE STRAINER

ITEM	PART No.	QTY.	DESCRIPTION
1	BF200NH	1	Body
2	BF150SEAL	1	Gasket
3	BF200NB	1	Bowl
4	BF200-50FL	1	50 mesh screen
4A	BF200-80FL	1	80 mesh screen
5	BF200NP	1	Plug
6	BF200BG	1	Gasket
7	BF200-50	1	Complete unit

PRESSURE FILTER



SUCTION FILTER 1 1/4"

ITEM	PART No.	QTY.	DESCRIPTION
1	FS125/50	1	Complete unit
2	FS125FH	1	Filter hood
3	FS125FB	1	Filter bowl
4	FS125RR	1	Retaining ring
5	FS125OR	1	Bowl seal
6	FS125EW30	1	Filter mesh

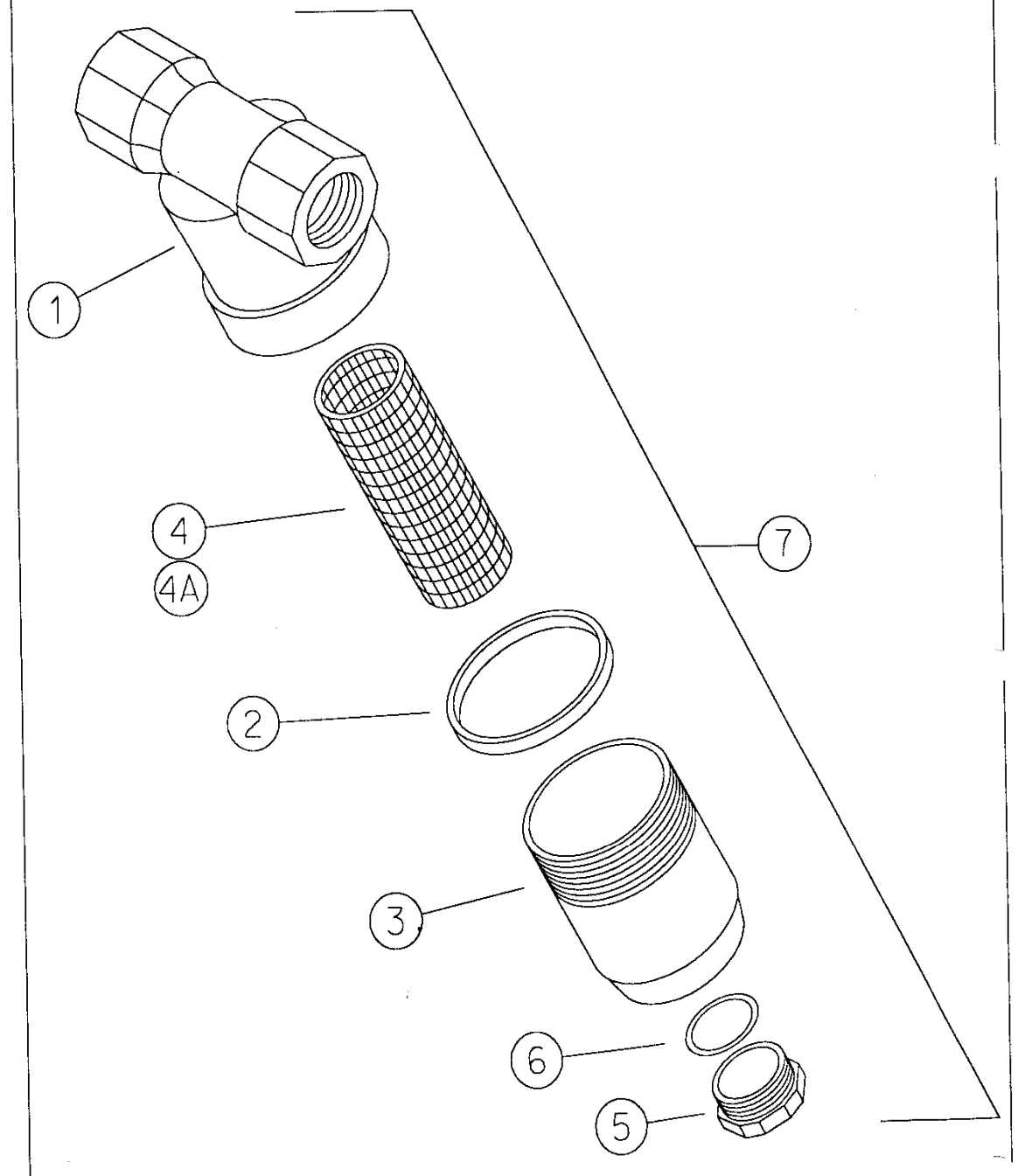
SUCTION FILTER 1 1/2"

1	FS150/50	1	Complete unit
2	FS150FH	1	Filter hood
3	FS150FB	1	Filter bowl
4	FS150RR	1	Retaining ring
5	FS150OR	1	Bowl seal
6	FS150EW30	1	Filter mesh

SUCTION FILTER 2"

1	FS200/50	1	Complete unit
2	FS200FH	1	Filter hood
3	FS200FB	1	Filter bowl
4	FS200RR	1	Retaining ring
5	FS200OR	1	Bowl seal
6	FS200EW30	1	Filter mesh

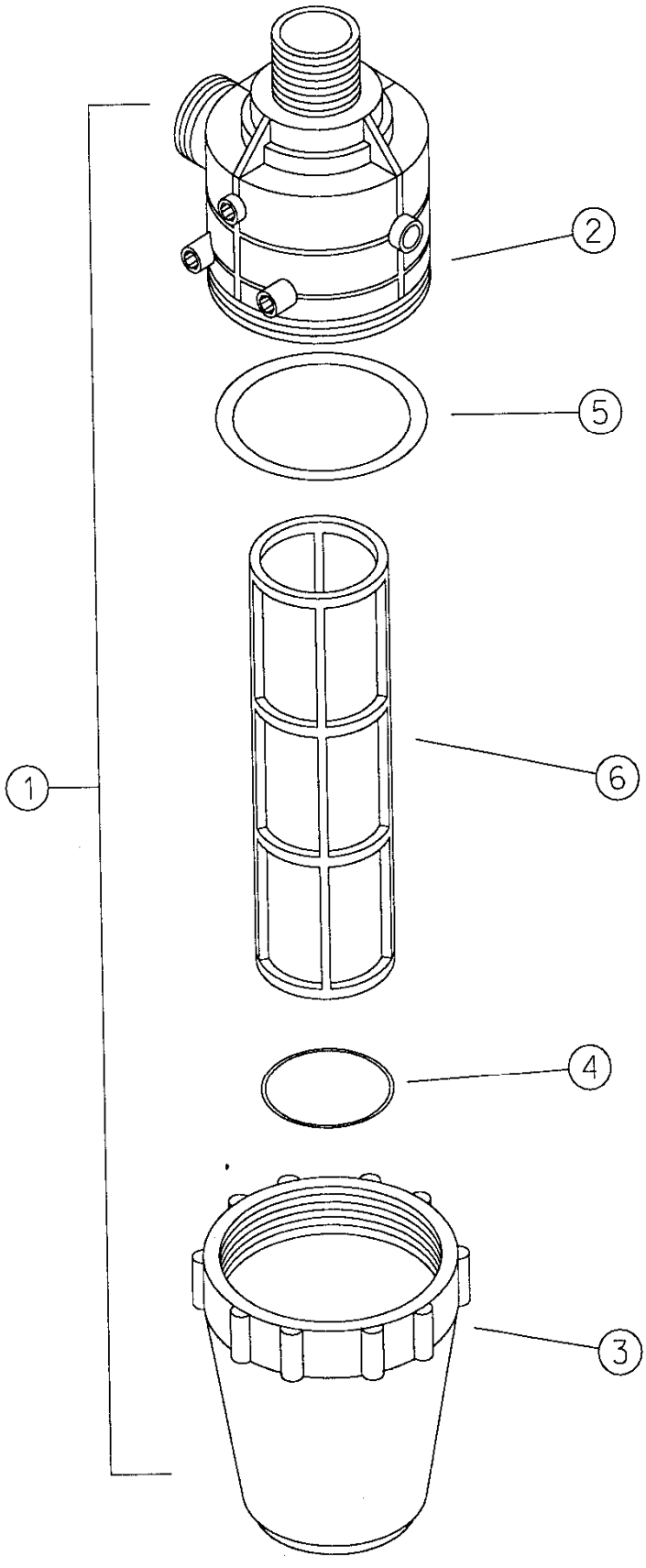
'Y' LINE STRAINER



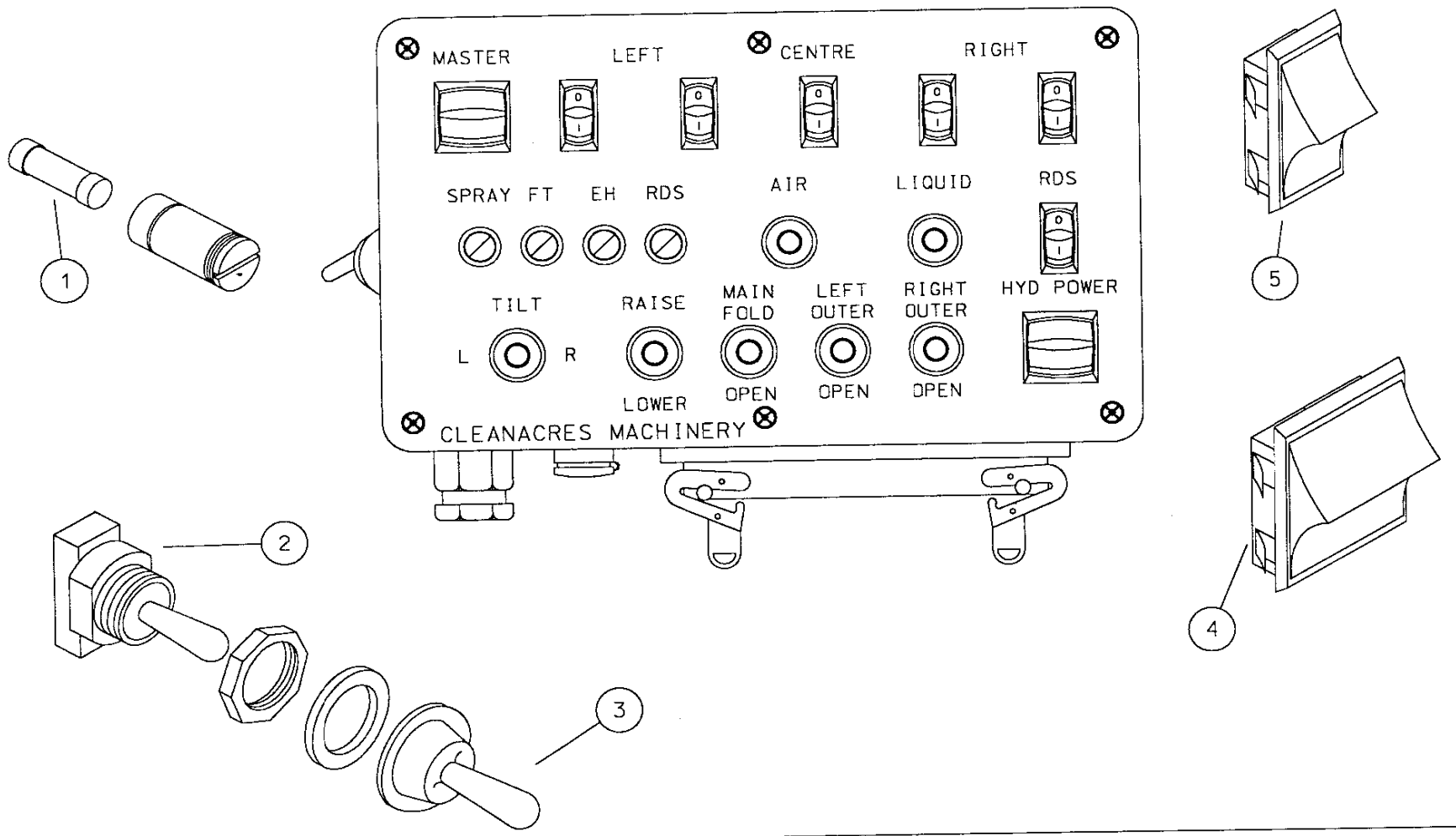
TANK LID / BREATHER / BASKET

ITEM	PART No.	QTY.	DESCRIPTION
1	TL063-057	1	Rim
2	TL063-037	1	Gasket
3	TF-5300A649	1	Basket
4	TL063-058	1	Lid
5	TL063-059	1	Vent
6	TL01352000-020	1	Vent seal
7	TL01350401	1	Neck ring
8	TL028-388	8	Fixing screws

SUCTION FILTER



CONTROL BOX CB20



CB 20 ELECTRIC HYDRAULICS 24 PIN

WIRES			COLOUR	PIN No.
1 & 24		BALL VALVE LIVE		1
2, 23, & GREEN/YELLOW		EARTH		2
3		LEFT OUTER	BROWN	3
4		LEFT INNER	BLUE	4
5		CENTER	YELLOW	5
6		RIGHT INNER	GREEN	6
7		RIGHT OUTER	RED	7
8	*	AIR VALVE +	YELLOW/RED	8
9	*	AIR VALVE -	WHITE/RED	9
10		LIQUID VALVE +	PINK	10
11		LIQUID VALVE -	PURPLE	11
12		BOOM RAISE	YELLOW/GREEN	12
13		BOOM LOWER	WHITE/GREEN	13
14		MAIN FOLD OPEN	GREEN/BLUE	14
15		MAIN FOLD CLOSE	GREY/BLUE	15
16		LEFT FLIP OPEN	ORANGE/GREEN	16
17		LEFT FLIP CLOSE	GREY/GREEN	17
18		RIGHT FLIP OPEN	YELLOW/BROWN	18
19		RIGHT FLIP CLOSE	WHITE/BROWN	19
20		TILT LEFT	WHITE	20
21		TILT RIGHT	GREY	21
22		DUMP VALVE	TURQOISE	22
23		SEE PIN 2		
24		SEE PIN 1		

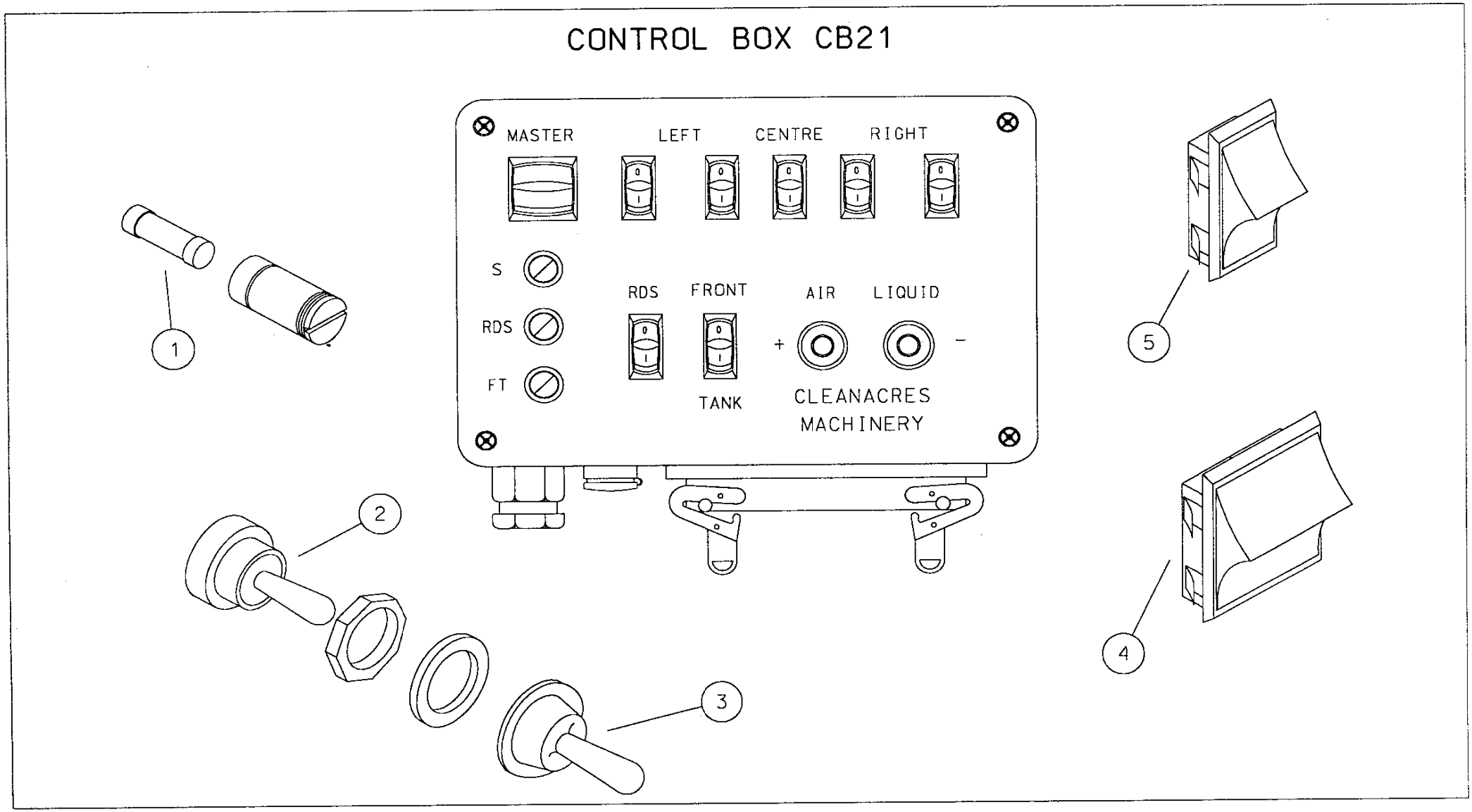
- * IF RDS USE WIRE 8 AND PIN 8 FOR WHEEL SPEED SENSOR +
- WIRE 9 AND PIN 9 FOR WHEEL SPEED SENSOR –
- DISCONNECT / INSULATE 12v + FEED WIRE TO AIR AND LIQUID VALVE SWITCHES.

NOTE: CHECK SPRAY FUSE – MUST BE 5 amp

4 SECTION BOXES – BLANK OFF CENTRE Sw.
3 SECTION BOXES – BLANK OFF LEFT AND RIGHT OUTER SWITCHES

ALSO DISCONNECT / INSULATE 12v FEED WIRE TO SWITCHES THAT HAVE BEEN BLANKED OFF.

CONTROL BOX CB21



CB 21 MANUAL HYDRAULICS 16 PIN

WIRES			COLOUR	PIN No.
1 & 16		BALL VALVE LIVE		1
2 & GREEN/YELLOW		BALL VALVE EARTH		2
3		LEFT OUTER	BROWN	3
4		LEFT INNER	BLUE	4
5		CENTER	YELLOW	5
6		RIGHT INNER	GREEN	6
7		RIGHT OUTER	RED	7
8	*	AIR VALVE +	GREY	8
9	*	AIR VALVE -	GREY	9
10		LIQUID VALVE +	PURPLE	10
11		LIQUID VALVE -	PURPLE	11
12		EARTH		12
13		EARTH		12

WIRES 14, 15, 17, 18, 19, 20, 21, 22, 23, 24, ARE NOT USED.

- * IF RDS USE WIRE 8 AND PIN 8 FOR WHEEL SPEED SENSOR +
- WIRE 9 AND PIN 9 FOR WHEEL SPEED SENSOR –
- DISCONNECT / INSULATE 12v + FEED WIRE TO AIR AND LIQUID VALVE SWITCHES.

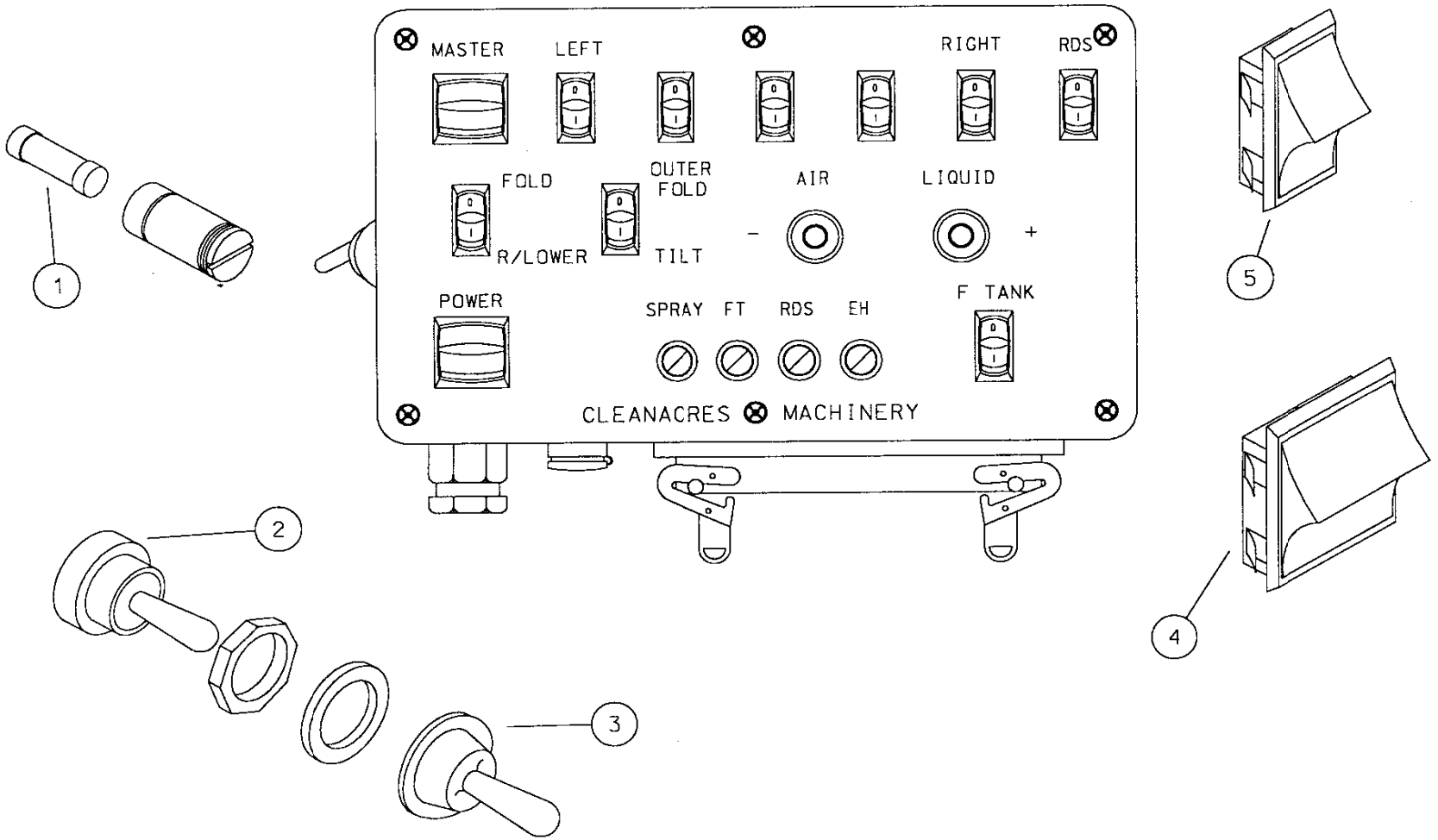
NOTE: CHECK SPRAY FUSE – MUST BE 5 amp

4 SECTION BOXES – BLANK OFF CENTER Sw.
3 SECTION BOXES – BLANK OFF LEFT AND RIGHT OUTER SWITCHES

ALSO DISCONECT / INSULATE 12v + FEED WIRE TO SWITCHES THAT HAVE BEEN BLANKED OFF.

IMPORTANT: CHECK 16 PIN SOCKET HAS HAD EARTH WIRE FITTED BETWEEN PIN 12 AND BOX EARTH TERMINAL BLOCK.
IF NOT FIT ONE.

CONTROL BOX CB22



CB 22 MANUAL HYDRAULICS 16 PIN
ELECTRIC DIVERTER VALVES

WIRES			COLOUR	PIN No.
1 & 16		BALL VALVE LIVE		1
2 & GREEN/YELLOW		BALL VALVE EARTH		2
3		LEFT OUTER	BROWN	3
4		LEFT INNER	BLUE	4
5		CENTER	YELLOW	5
6		RIGHT INNER	GREEN	6
7		RIGHT OUTER	RED	7
8	*	AIR VALVE +	GREY	8
9	*	AIR VALVE -	GREY	9
10		LIQUID VALVE +	PURPLE	10
11		LIQUID VALVE -	PURPLE	11
12		OUTER FOLD/TILT Sw. 1st DIVERTER VALVE		12
13		EARTH		13
14		MAIN FOLD/RAISE Sw. 2nd DIVERTER VALVE		14
15		EARTH		15
16		SEE PIN 1		
17		EARTH		17
18		EARTH		17

WIRES 19, 20, 21, 22, 23, 24 ARE NOT USED

- * IF RDS USE WIRE 8 AND PIN 8 FOR WHEEL SPEED SENSOR +
- WIRE 9 AND PIN 9 FOR WHEEL SPEED SENSOR –
- DISCONNECT / INSULATE 12v + FEED WIRE TO AIR LIQUID VALVE SWITCHES.

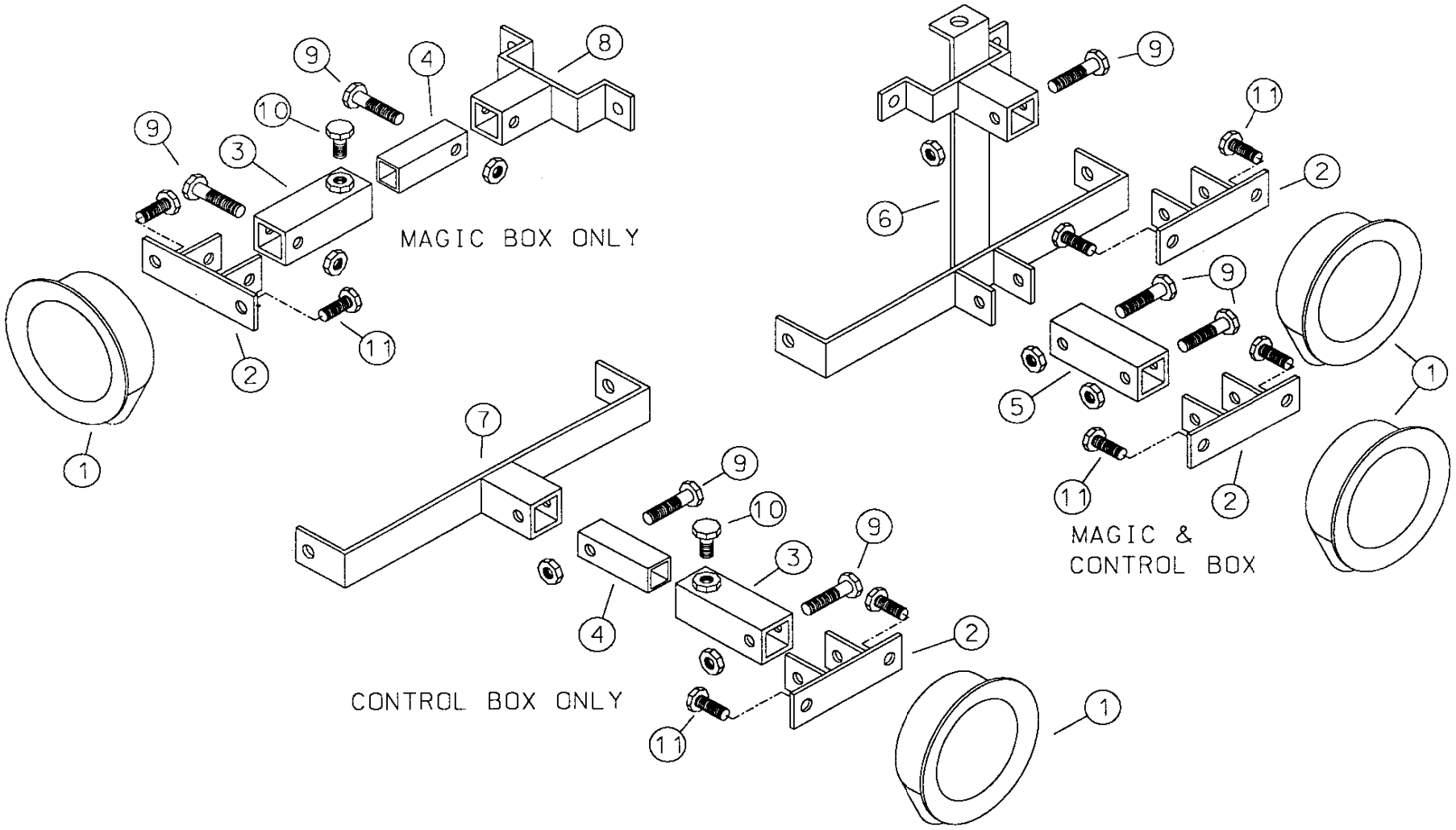
NOTE: CHECK SPRAY FUSE MUST BE 5 amp

4 SECTION BOXES – BLANK OFF CENTRE Sw
3 SECTION BOXES – BLANK OFF LEFT AND RIGHT OUTER SWITCHES

ALSO DISCONNECT / INSULATE 12v + FEED WIRE TO SWITCHES THAT HAVE BEEN BLANKED OFF.

IMPORTANT: CHECK 16 PIN SOCKET HAS HAD EARTH WIRES FITTED BETWEEN PIN 2 AND EARTH TERMINAL BLOCK – AND BETWEEN PIN 17 AND EARTH TERMINAL BLOCK. IF NOT FIT ONE.

MAGIC BOX & CONTROL PANEL MOUNTINGS



MAGIC BOX & CONTROL PANEL MOUNTING

ITEM	PART No.	QTY.	DESCRIPTION
1	RS288-4226	1	Suction pad
2	BMF114	1	Mounting base
3	BMF119	1	Magic box extension bar
4	BMF120	1	Magic box extension bar insert
5	BMF115	1	Mounting extension bar
6	BMF112	1	Magic box & small control box mount
	BMF113	1	Magic box & large control box mount
7	BMF116	1	Small control box mount
	BMF117	1	Large control box mount
8	BMF118	1	Magic box mount
9	M8X35HB	1	Bolt & lock nut
10	M8X20HB	1	Bolt
11	M6X20HB	2	Bolt & lock nut

DRUM INTERNATIONAL

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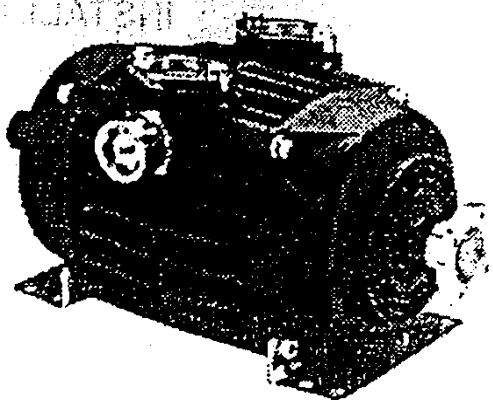


JUPITER 100 RANGE COMPRESSORS

Jupiter 100 range specifications (C348-...)

Range includes:
J100, J102
JCD150, J150S

Lightweight, oil free compressor for pressure discharge of liquid road tankers

For advice on high altitude use (over 1000 metres), vacuum applications, extreme temperature conditions or confined installations which may affect cooling contact your Drum distributor.

CONTENTS

INSTALLATION INSTRUCTIONS

Please read thoroughly before commencing work

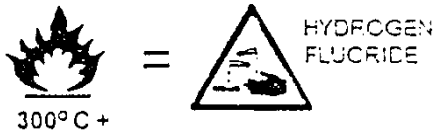
General Installation Instructions

Static Electricity - Care should be taken to ensure where necessary, this and any other equipment is earthed in accordance with BS 5958 Part 1 1983 "Control of Undesirable Static Electricity.

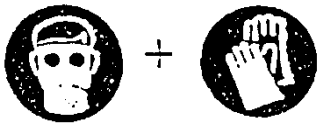
Drive Line Guards - Although care has been taken to avoid exposed rotating parts, it is the responsibility of the installer of the equipment to guard the exposed drive line in accordance with any prevailing safety legislation.

IN CASE OF FIRE

FLUOROELASTOMER POLYMERS (VITON)



IMPORTANT : Fluoroelastomer Polymer seals that have been exposed to temperatures of 300°C and above MUST not be handled with bare hands even when the seals have cooled down.



Surface temperatures can exceed 150°C. Combustible materials must not come into contact with the discharge pipework / compressor.

Handling - The bare machine weighs 25Kg, therefore it is recommended that the machine is lifted with a suitable sling. The machine must be supported under the main body and not by the plastic cowls.

Storing - Store the machine in a dry, heated building. Handle the machine with care and keep the suction and delivery ports covered when not in use. Rotate the drive shaft of the machine each week, in the direction shown by the arrow between the suction and delivery ports on the machine body, to prevent the moving parts from sticking.

For optimum life and performance - It is recommended that Drum supply a fully compatible air inlet filter, full flow relief valve and non-return valve. The use of non-approved ancillaries could affect the warranty conditions.

NOTE : Oil, Grease or dirt must not be allowed to enter the machine body as this could cause severe damage.

A filter (# 4C) with a fine element must be installed on the suction side of the machine. Drum can supply a suitable unit which provides a low pressure drop and a long service life.

Unless the filter is of a lightweight type and is fitted directly to the machine without additional pipework, it should be supported by a suitable bracket.

Mount the filter clear of any water sprayed from vehicle road wheels and do not subject it to steam cleaning or water washing jets. Inspect and clean or replace the filter element at regular intervals to prevent the inlet vacuum exceeding 380mm (15") water gauge.

For foodstuffs aplications a filter must be used on the suction and delivery side.

Air Pipe Components

Ensure that hot exhaust gases cannot enter the inlet filter or blow on to the compressor.

The flanges supplied with the machine are for use with 1.5" nominal bore pipe (# 4B). Ensure that the pipework is free from welding beads etc. before connecting it to the machine.

NOTE : Support the pipework with suitable brackets to avoid distorting the machine body.

All rigid pipework should be as free from bends as possible and end with a flexible section to the pipework on the tank.

A relief valve (# 4D) set at a maximum 2.5 Bar (36 psi) is installed on the delivery side of the machine . Alternately, the relief valve may be fitted into a suitable boss (M35 x 1mm), mounted in the pipework (Must be first in line and within 1m of the machine). Ensure that the relief valve outlet is not obstructed resulting in hot air being deflected back on to the compressor.

A check (non-return) valve (# 4A) must be fitted into the pipework on the delivery side of the machine. Consult Drum Representative for a suitable valve

Power Take-Off Unit

If a propshaft is fitted, its length and angle must be kept to a minimum. The angle must not exceed 12 degrees.

The propshaft should be balanced and the spline fitted at the end nearest the compressor.

The shaft of the machine and the driving shaft must be parallel to within 1 degree in any plane (# 5).

Compressor Unit

A system must be available for driving the machine within its speed range of 1000 rpm to 1600 rpm and providing a continuous power of 9.5 Kw (2.5 Bar @ 1600 rpm).

The machine must only be driven in the direction shown by the arrow between the suction and delivery ports on the body. Driving the machine in reverse, Even for a short period, can cause severe damage. The suction and delivery ports can be identified by the letter 'S' (suction) and 'D' (delivery) half way down the machine body below the respective port.

To change the drive direction to accomodate PTO units working in the opposite direction, the machine can be driven from either shaft end by interchanging the cowls and companion flange (# 1).

The machine is supplied with two mounting brackets. Each bracket can be fixed underneath, on top, or onto either side of the machine.

By using the four alternate mounting bolt positions at either end of the machine and by facing the brackets inwards or outwards, various combinations of fitting positions and hole centres are available.

It is important that a mounting Bracket is fitted at each end of the machine.

See # 2 for a selection of mounting bracket positions. If the machine is to be used as a direct replacement for the **Drum Europa 130** machine, the brackets should face in the direction shown at 'A'.

NOTE : The compressor must **NOT** be mounted with the ports facing downwards.

The brackets are attached to the machine using the two long capscrews (# 3B) and washers (# 3C) with the spacing bushes (# 3D) fitted between the brackets (# 3A) and the cowls.

NOTE : Only the long capscrews must be used for securing the brackets. All fastenings should be tightened to 35 Nm.

The mounting brackets have 12mm diameter holes to enable 10mm studs or screws to be used for holding down purposes.

Ensure that the machine is fastened to a flat surface to avoid stresses in expansion.

A cooling fan is fitted at each end of the machine. Ensure that the flow of cool air is not restricted. **A space of at least 25mm must be allowed around the machine when it is mounted in position.** If the machine is fitted to a solid base plate, it should be mounted a minimum of 25mm from the plate, or a suitable size hole cut in the plate to permit the cool air to circulate.

The rotation direction arrow on top of the machine points to the **suction** port.

If the machine is connected to a hydraulic pump or motor, allow adequate clearance of 1mm between the shaft ends to accommodate the end float (# 6).

OPERATING INSTRUCTIONS

Please read thoroughly before operating the compressor.

To Avoid the risk of burns, do not touch pipework or stand next to venting valves. If there is a risk for any reason we recommend the use of heat resistant gloves / clothing.

The compressor must operate only at speeds between 1000rpm and 1600rpm.

Drum International's own tests show noise levels exceed 70dB(A). Measured levels are between 81-86dB(A) at operating speeds between 1000 - 1600 rpm and pressures between 1 - 2.5bar.
If the operator is subjected to long exposure to noise, ear protection is recommended.

Starting the Compressor

Check that the Power Take Off is disengaged then start the engine.
With engine ticking over :

Depress the clutch.
Engage P.T.O.
Slowly release clutch.
Set the engine speed to give correct compressor operating speed.

Important : Avoid starting and stopping the compressor against pressure.

Return engine speed to tick over before disengaging P.T.O.
Disconnect the jumper hose and fit a blanking cap to disengage pipework during transit.

If in doubt consult Drum representative.

MAINTENANCE

Examine the machine at regular intervals to make sure that the ribs along the body, the fans, cowls etc do not become blocked with dirt.

Ensure the drive to the machine can not be engaged whilst maintainance is in progress and that no toxic or hazardous contamination has taken place.

The Compressor can be cleaned with steam or water jets, but this must be done when the machine is cold or serious damage could be caused.

NOTE : Do not allow steam or water to enter the machine body or filter.

The bearings are packed with grease on assembly and need no regular attention.

Under normal working conditions the blades should last for a considerable period. Examine them every six months, however, and replace them when necessary. Failure to do this could result in the blades wearing down until they fall from their slots and damage the machine.

NOTE : The performance of the machine will deteriorate once the blades have worn down to 36mm, (16mm less than their original size).

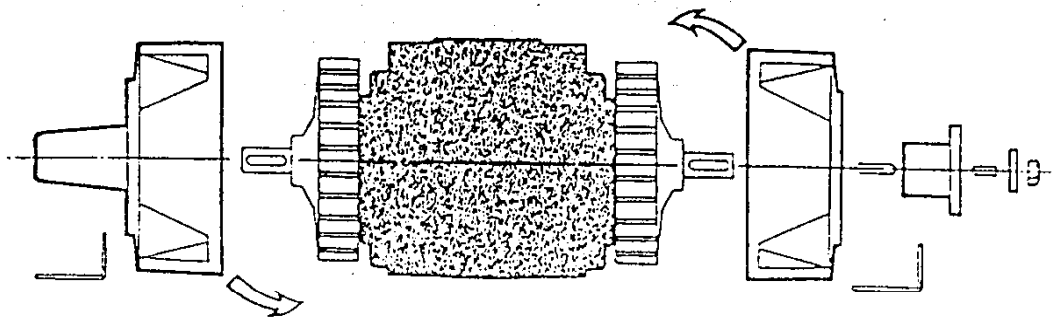
Replace the blades before this situation arises.

Every seven days clean the fans, fan covers and body ribs.
Check the air filter and pipework for leaks.

Every thirty days check the operation of the non-return valve and relief valve.

Every ninety days check the fixing bolts holding feet onto machine and also bolts mounting machine onto chassis. Tighten as necessary.
(M10 bolts MAX. torque: 35Nm).
Change Filter element (Drum filter element part number 628 55 00 000-2).

NOTE : Seals have been fitted into screws at each end of this machine.
Do not remove these seals during the warranty period as this will invalidate the warranty.



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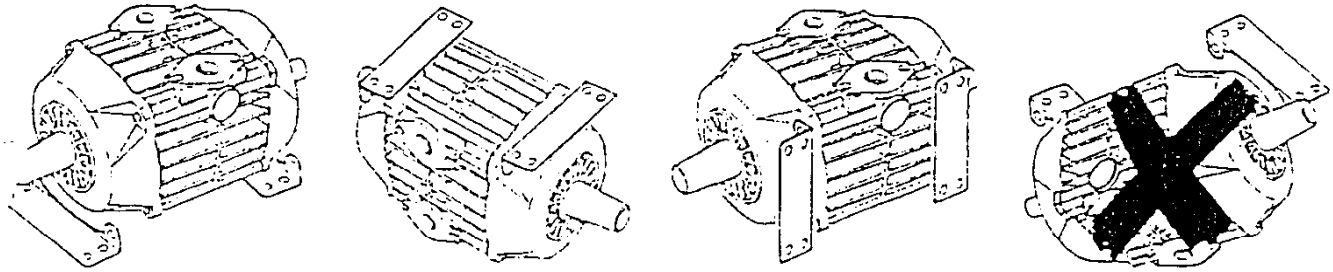

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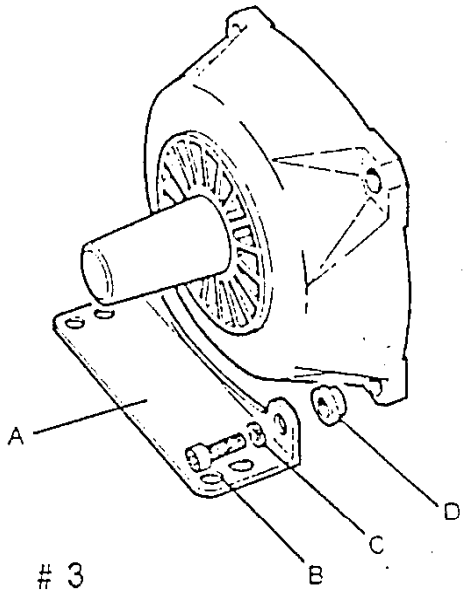

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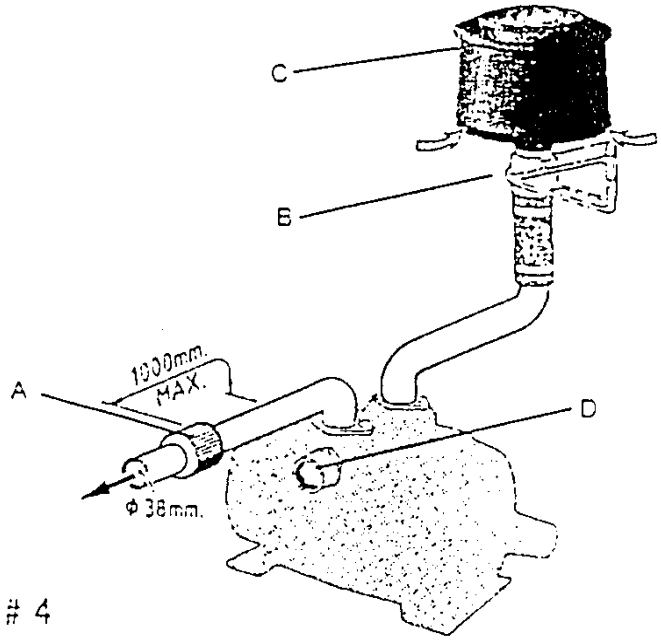

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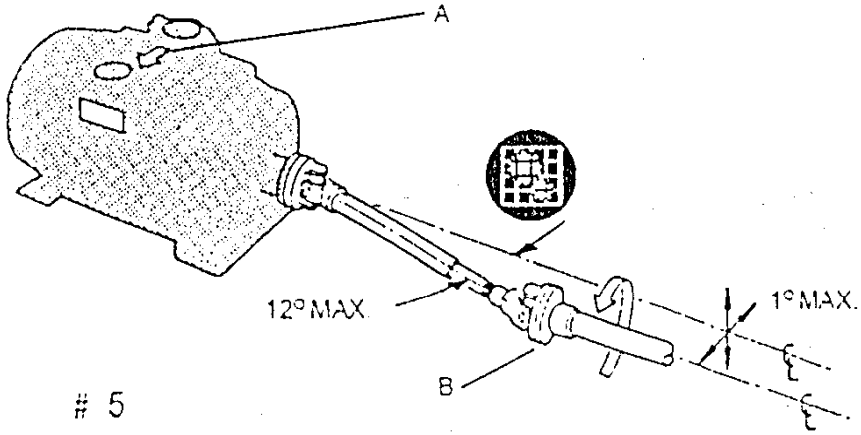

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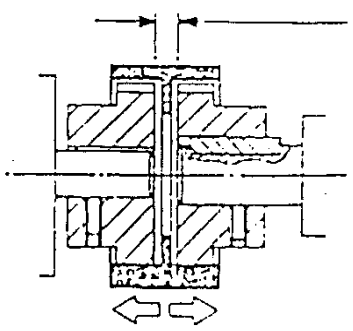

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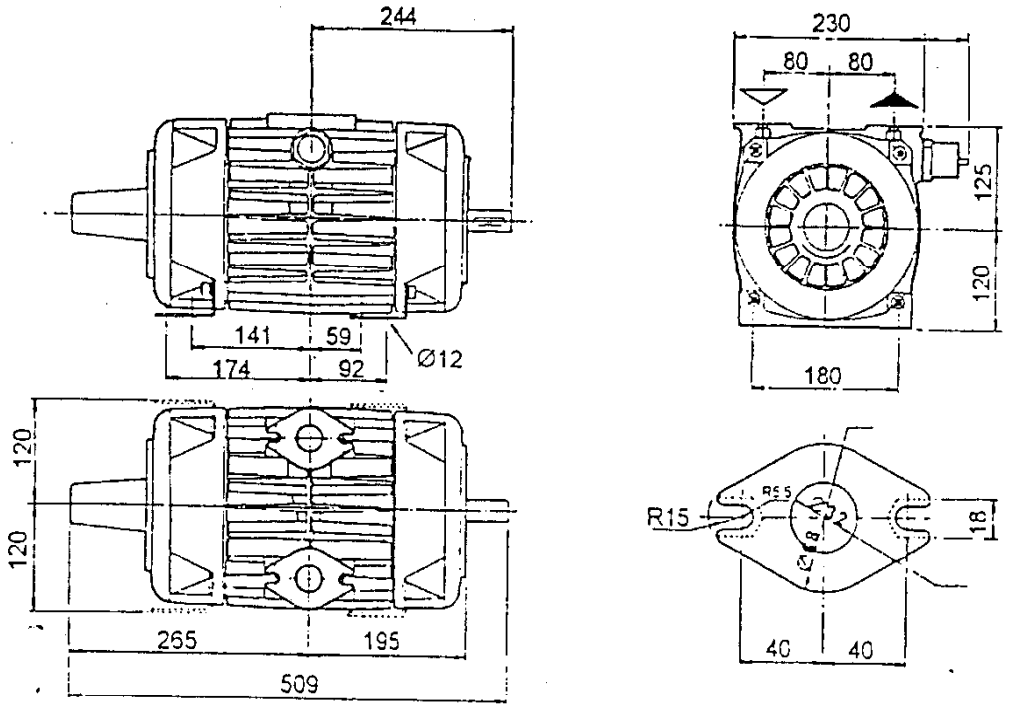
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Fax:(20) 23610223

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Drum International reserve the right to alter details and specifications without notice.

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DRUM

MACHINERY DIRECTIVE

(89/392/EEC amended by 91/368/EEC
amended by 93/44/EEC amended by 93/68/EEC)

DECLARATION OF INCORPORATION

Vehicle Discharge Equipment Comprising :

J100, J102, JCD150, J150S

(e.g. C348-...)

& Associated Equipment

Installation Instructions - 49910500

We :

Drum International Ltd
of
Edward Street Works,
Tong Street, Bradford BD4 9SH
West Yorkshire
England

Declare that "Drum Products" must be installed in accordance with our customer safety instructions and must not be put into service until the machinery in to which it is incorporated has been declared in conformity with the machinery directive.

Signed .....

John Fletcher (Engineering Director)

July 1996 Issue 2

DRUM INTERNATIONAL

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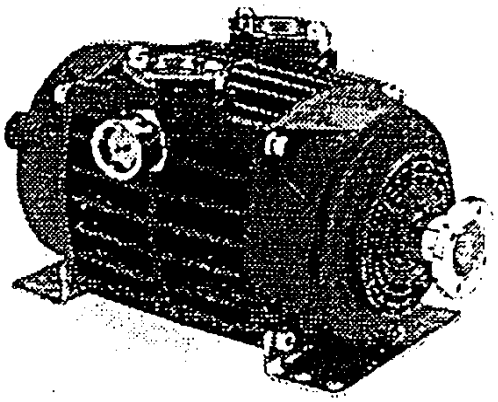


JUPITER 100 RANGE COMPRESSORS

Jupiter 100 range specifications (C348-...)

Range includes:
J100, J102
JCD150, J150S

SERVICE INSTRUCTIONS

SAFETY : Ensure that no toxic or hazardous contamination has taken place and that the drive to the machine can not be engaged whilst servicing is in progress.

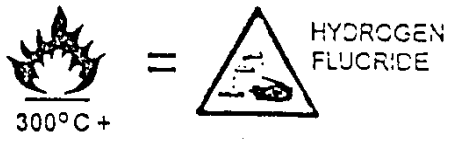
GENERAL INSTRUCTIONS

Please read these instructions thoroughly before starting any work on this machine.

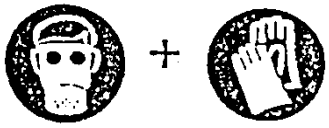
One screw on each bearing housing cap and sideplate is fitted with a seal. Do not remove these seals whilst the machine is still covered by the warranty as this will invalidate the warranty.

IN CASE OF FIRE

FLUORCELASTOMER POLYMERS (VITON)



IMPORTANT : Fluorcelastomer Polymer seals that have been exposed to temperatures of 300°C and above MUST not be handled with bare hands even when the seals have cooled down.



Surface temperatures can exceed 150°C. Combustible materials must not come into contact with the discharge pipework / compressor.

NOTE : The arrow between the ports on top of the machine shows the direction of rotation. It also points towards the suction port. The letter 'S' (suction) and 'D' (delivery) are marked half-way down the machine body below the respective port.

Mark all mating parts during dismantling to ensure correct re-assembly.

Considerable sideways movement of the drive shaft would suggest bearing wear and the rotor may have damaged the bore of the body. If this is the case, the machine should be returned to Drum International or the distributor for examination.

DISMANTLING

1.1 Preparation

Cover the suction and delivery ports to prevent oil, grease, dirt etc. entering the machine.

Clean the outside of the machine thoroughly before dismantling.

A clean working area and equipment are essential.

1.2 Replacing the Blades (removing the Non-Drive-End Cowl, Fan and Sideplate)

Remove the relief valve on the delivery side of the machine, then stand the machine on the suction and delivery ports with the **Non-Drive End** towards the front of the bench.

Unscrew the 4 capscrews, holding the NDE cowl and lift off the cowl along with the attached mounting bracket.

Tap off the fan using a soft "drift" on the central boss. **Take care not to damage the fins.**

Remove and discard the star tolerance ring from the shaft.

Raise the **suction** side until the machine is tilted to 45° and support it **securely** to prevent it falling over. A large vee block is most suitable. In this position the body will support the rotor, avoiding strain on the bearing when the sideplates are being removed (# 1).

The sideplate is located in position by a shouldered screw alongside the "NIP" (i.e. where the rotor and the body bore are closest.) Unscrew the shouldered pins and the 3 capscrews holding the sideplate and remove the sideplate assembly ensuring the carbon disk does not drop out (J102 / JCD150 only).

Slide out the worn blades and discard them. If any of the blades are chipped, make sure that no pieces of broken blade are left behind in the rotor slots or machine body. No further dismantling is needed for the blade replacement only.
See section 2.5 for re-assembly from this point.

1.3 Removing the Rotor

Remove the coupling from the Drive-end of the shaft and with the machine positioned as in # 1, remove the Drive-End cowl, fan and sideplate assembly, then slide out the rotor from the body.

1.4 Removing the Bearing, Inner Race Sleeve

After removing the rotor from the body, if necessary pull off the bearing inner race and sleeve using a suitable extractor in the groove of the sleeve.

1.5 Dismantling the Sideplate

This is only necessary if damage to bearing seal or carbon disk (J102 / JCD150 only) is suspected.

Unscrew the 3 capscrews, holding the bearing housing cap to the sideplate and remove it along with any shims fitted beneath it.

Pull out the bearing outer race from the sideplate.

Examine the seals in the bearing housing cap and sideplate and discard them if damaged.

Repeat with the other sideplate

RE-ASSEMBLY

2.1 General Notes

NOTE : Tighten all M10 screws to a torque of 35 Nm

Each Sideplate is marked "A" or "B". The machine body is also marked "A" and "B". The sideplates must be fitted to corresponding body marks.

Although many components appear to be interchangeable, it is essential that each one is replaced in its original position.

2.2 Replacing Sleeve and Bearing Inner Race to the Rotor Shaft

Ensure that all adjoining faces are smooth and clean.

Press the drive-End sleeve on to the Drive-End of the shaft against the face of the rotor (# 2).

In order to assist assembly the sleeve may be heated in oil bath to 100°C (212°F).

Press the bearing inner race, large diameter first, onto the shaft against the sleeve.

Repeat with the other shaft end.

2.3 Re-Assembling the Sideplate *Do not interchange sideplate assemblies*

NOTE : Tighten all M8 shoulder screws to a torque of 15 Nm

When replacing seals, use a round "Dolly" 0.5mm smaller than the seal outside diameter to avoid damaging the seal.

Tap the smallest seal, uppermost side first, into the bearing housing cap.

Fit the middle-size seal, with its stepped face outermost, into the bottom recess of the side-plate.

Replace the largest seal, flat face first, into the large bore of the sideplate.

Press the bearing outer race into the sideplate so that the reference number is on the bearing cap side.

For reasons of cleanliness it is advisable to pack the bearing with grease after the sideplate / rotor clearance has been determined.

Replace the bearing housing cap along with any shims beneath it and secure it with 3 evenly tightened capscrews.

Replace the carbon disk assembly by locating a pin in the sideplate.

2.4 Checking the Sideplate / Rotor clearance

Stand the rotor with the shaft in a vertical position, Drive-End uppermost and support it fi... to prevent it falling over.

Slide the Drive-End sideplate assembly down the shaft onto the bearing inner race and sleeve

Place a weight on to the sideplate to make sure it is held down firmly and evenly, then, using 2 feeler gauges of equal thickness at opposite sides, simultaneously, check that a clearance of 0.150mm - 0.200 mm (0.005" - 0.008") exists between the sideplate and rotor faces. This must be done in several places to make sure that the clearance is constant. If the clearance is outside the recommended limits add or remove shims from underneath the bearing housing cap to reduce or increase the clearance.
Use the thickest shims possible, minimum of 1 and a maximum of 3 per bearing cap.

NOTE : All clearances to be checked when the machine is cold and before greasing

See # 6 for the clearances below :

Position	Max.	Min.
1 Rotor / Sideplate	0.200	0.150
2 Rotor / Sideplate	0.200	0.150
3 Blade / Sideplate	0.227	0.135
4 Float	0.292	0.150
5 Blade / Slot	0.220	0.070

Remove the sideplate from the rotor

Take off the bearing housing cap and withdraw the bearing outer race.

Smear a layer of grease into the recess on each side of the bearing outer race and fill the hollow on the inside of the bearing housing cap - Aeroshell No.5

Refit and grease the bearing outer race. Refit the correct shims and bearing housing cap.

Repeat with the other sideplate at the other shaft end.

It is recommended that greases are not intermixed : If in doubt contact Drum International.

2.5 Replacing the Rotor, Sideplate and Blades

Stand the machine body with the Drive-End towards the front of the bench and tilted (# 1).

Carefully slide the rotor, Non-Drive-End first, into the body, **Make sure that the slots in the rotor are facing in the correct direction (# 1).**

Slide the Drive-End sideplate onto the rotor shaft taking care not to damage the seal and secure it to the body with the shouldered pins and the 3 capscrews.

Ensure that the seal in the bearing housing cap is located concentrically around the rotor shaft adjusting the cap if necessary.

Stand the assembly with the Non-Drive-End towards the front of the bench and still tilted (# 1).

Make sure that each blade is undamaged, free from oil, grease and dirt, and slide one carefully into each slot.

Ensure that the leading edge of each blade is facing in the correct direction (# 3).

Taking care not to damage the seals, slide the Non-Drive-End sideplate along the shaft and secure it to the body with the shouldered pin and the 3 capscrews.

Make sure that the seal in the bearing housing cap is located concentrically around the rotor shaft.

Adjust the cap if necessary.

2.6 Checking the End Float

Stand the assembly on the suction and delivery ports.

Fit a steel plate (approximately 100mm a 50mm x 6mm) to the machine using one of the M10 holes and capscrews by which the cowl is secured.

Using a dial test indicator with a magnetic stand, place the magnetic base onto the steel plate and with the button of the "clock" on the end of the shaft, check that there is an end float 0.150mm - 0.292mm (0.006" - 0.0115") (See # 4).

2.7 Replacing the Fans and Cowls

Stand the assembly on the suction and delivery ports with the Non-Drive-End towards the front of the bench.

Slide a new star tolerance ring along the shaft and into the groove in front of the sideplate assembly.

Tap the fan (using a hollow "dolly" on the central boss,) fins first, onto the star tolerance ring and against the shoulder on the shaft.

Replace the Non-Drive-End cowl and mounting bracket. Fit the mount bracket on top of the mounting bush and secure it with the 2 capscrews and spring washer (# 5)

Repeat with the Drive-End fan, cowl and mounting bracket at the other end of the machine.

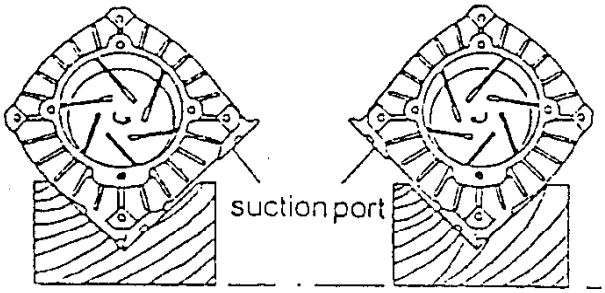
Refit the relief valve into the threaded hole on the Delivery side of the machine.

Replace the coupling onto the drive shaft and turn the shaft several times in the direction shown by the arrow on the machine body, to ensure that the rotor revolves freely.

REPLACEMENT PARTS

If ordering spare parts, please quote the serial number found on the nameplate attached to the mach along with the complete identification of the component from the following spares list.

Item	Description	Part No	Qty	Item	Description	Part No	Qty
1	BODY	3050316461-2	1	13	SHIM (0.075)	7711100635-2	2
2	ROTOR ASSEMBLY	RRC 348-0	1	14	SHIM (0.125)	7721100635-2	2
2a	ROTOR DRUM COATED	3662416849-2	1	15	SHIM (0.250)	7731100635-2	2
2b	SLEEVE	3770116061-2	2	16	SEALING DISC	7200300470-2	4
2c	BEARING INNER RACE	6037000850-2	2	17	DRUM NAMEPLATE	6711000451-2	1
3	SIDEPLATE ASSEMBLY	SC 348-0	2	18	GREASE (AEROSHELL NO 5)	6581400000-2	50g
3a	SIDEPLATE	3801816469-2	2	19	AVSEAL PLUG	6950900841-2	
3b	AIR SEAL	3730700835-2	1	20	SHOULDER SCREW	7050400059-2	
3c	CIRCLIP Ø62	M140620000-8	1	21	CAP SCREW M10 X 20	M450107020-9	6
3d	OIL SEAL-SINGLE LIP	7154500855-2	1	22	DRIVE SCREW Ø3 X 6	M510038006-2	4
3e	BEARING OUTER RACE	6037100850-2	1	23	CAP SCREW M10 X 35	M450107035-2	8
3f	OIL SEAL-DOUBLE LIP	7160700833-2	1	24	RELIEF VALVE	V200-Dxx	1
3g	BEARING HSG CAP	3150116455-2	1	25	FLANGE PACK	FLG-20	1
3h	CAP SCREW M10 X 20	M450107020-9	3	25a	NUT M10	M250107000-2	4
4	FAN	3301016450-2	2	25b	M10 X 35 SET SCREW	M470107035-2	4
5	COWL-NON DRIVE END	3210316634-2	1	25c	M10 WASHER PLAIN	M500100000-2	4
6	COWL-DRIVE END	3210416634-2	1	25d	OVAL GASKET	3350416871-2	
7	'O' RING Ø147	6758300600-2	2	25e	MOUNTING BRACKET	3950116843-2	2
8	BLADE	3090216760-2	6	25f	SECURING FLANGE	6297316240-2	2
9	MOUNTING BUSH	3131216848-2	8	26	WARNING LABEL	6717616451-2	1
10	STAR TOL RING	M750280015-7	2	27	LUBRICATION LABEL	6714100451-2	1
11	KEY	M200807040-4	1	30	LABEL (ROT ARROW)	6710300451-2	1
12	SHIM (0.050)	7701100635-2	2				



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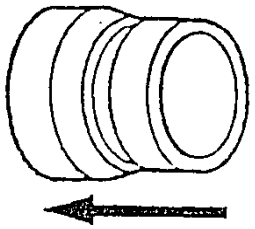

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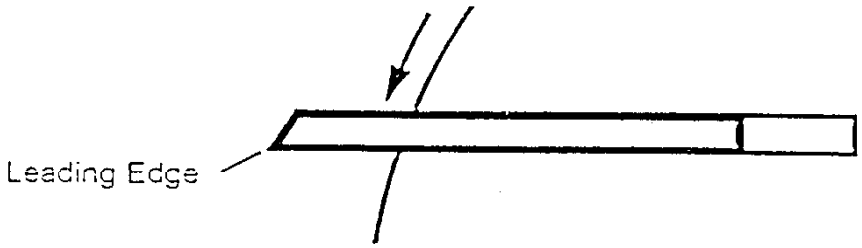

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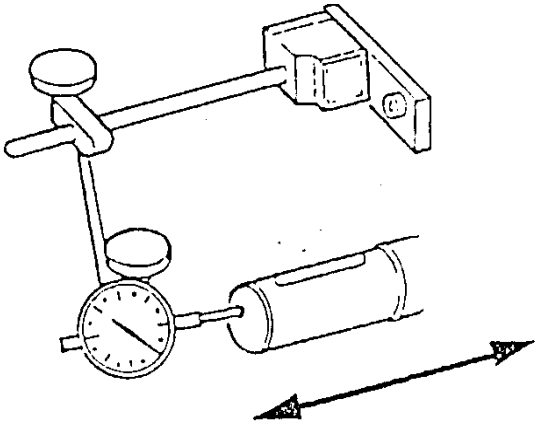

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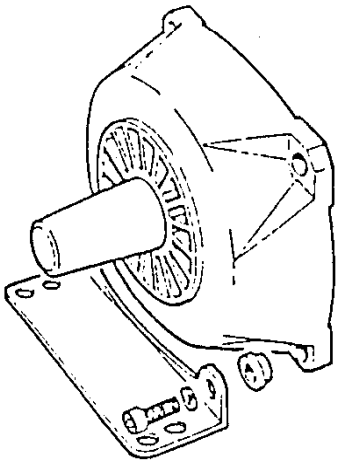

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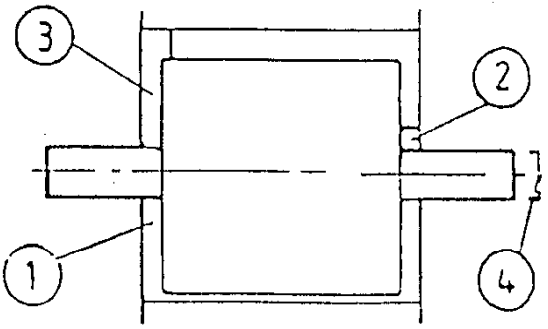

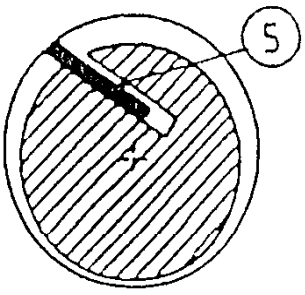

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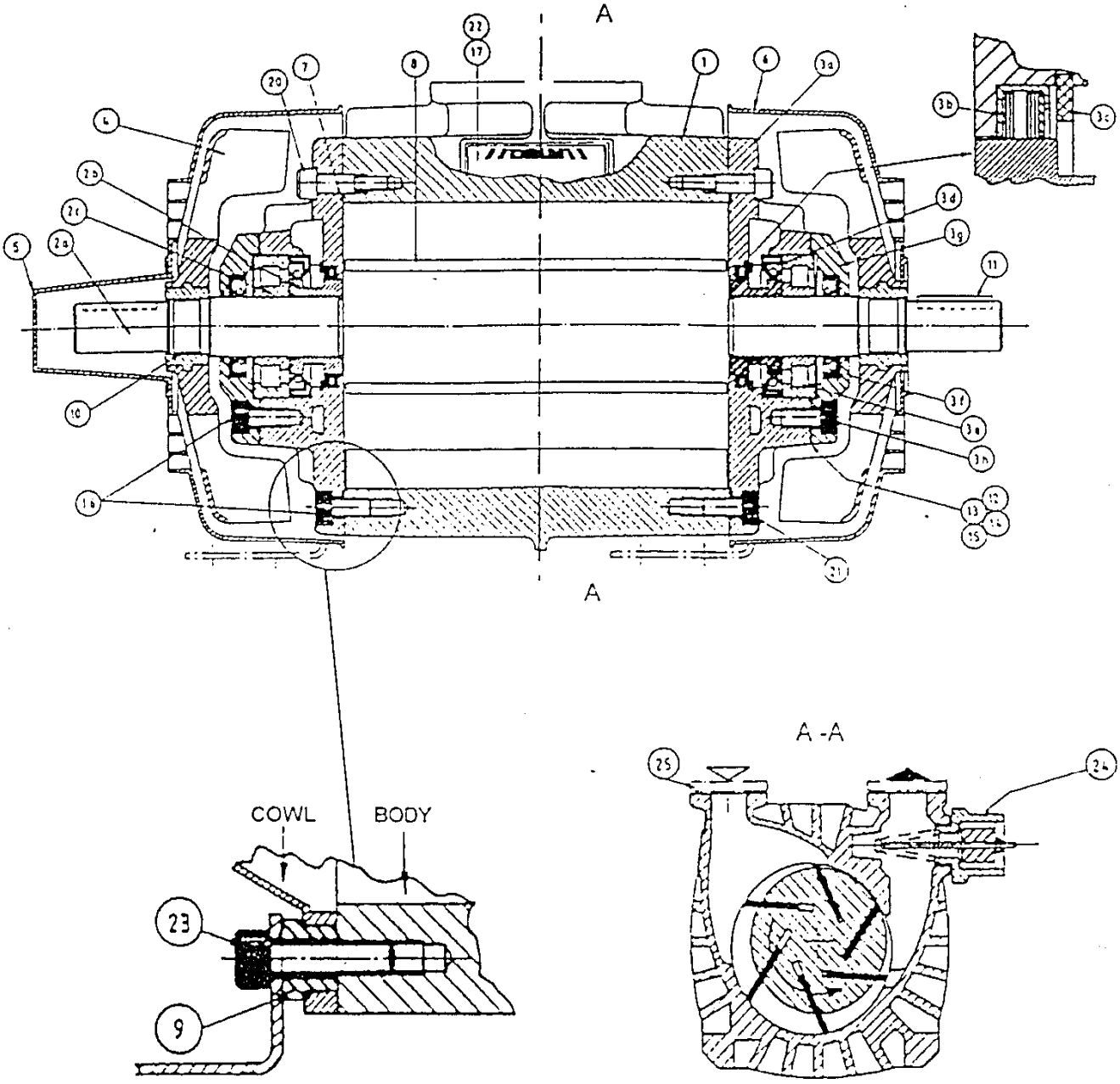

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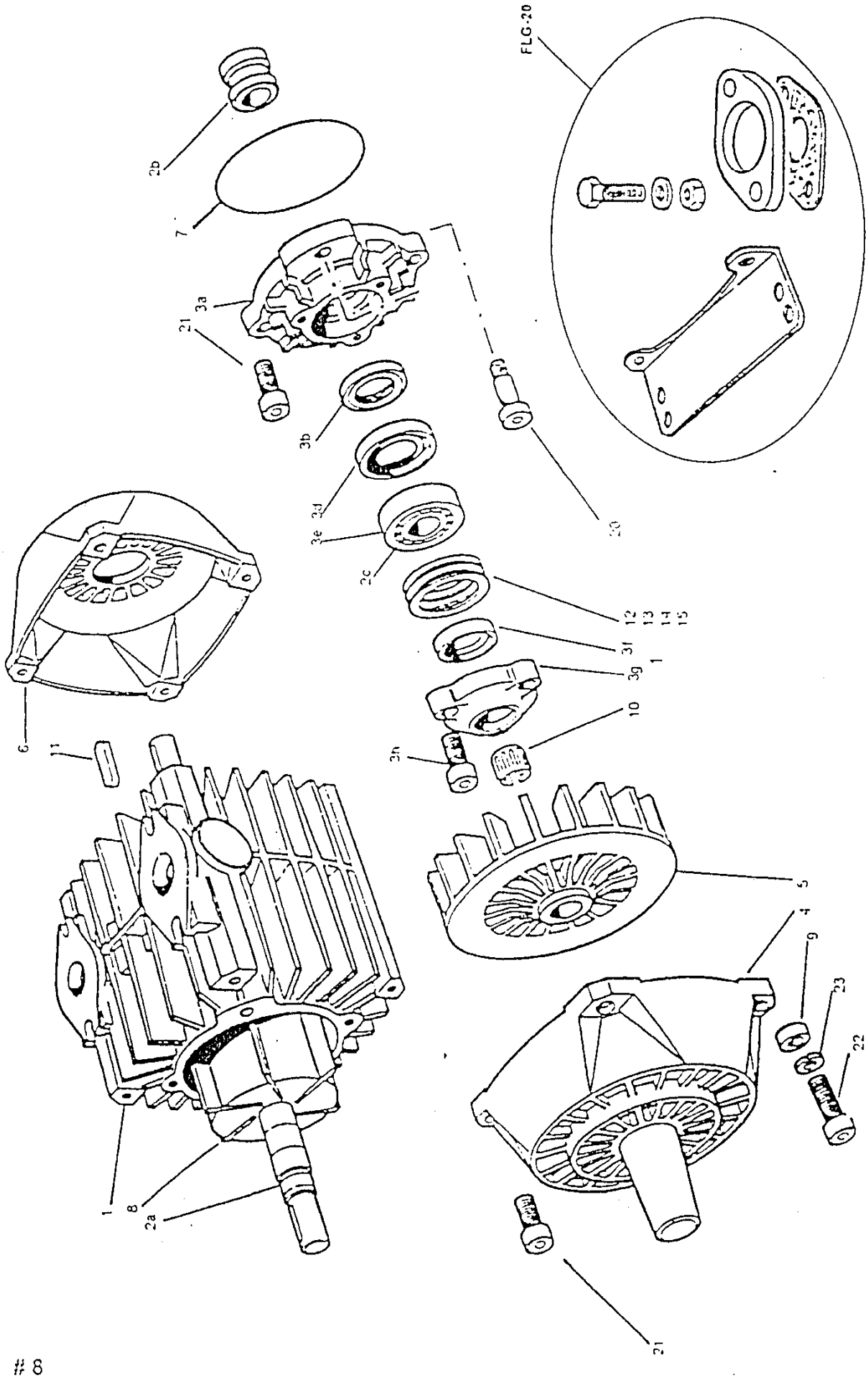
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2b
7
3a
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3b
3d
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2c
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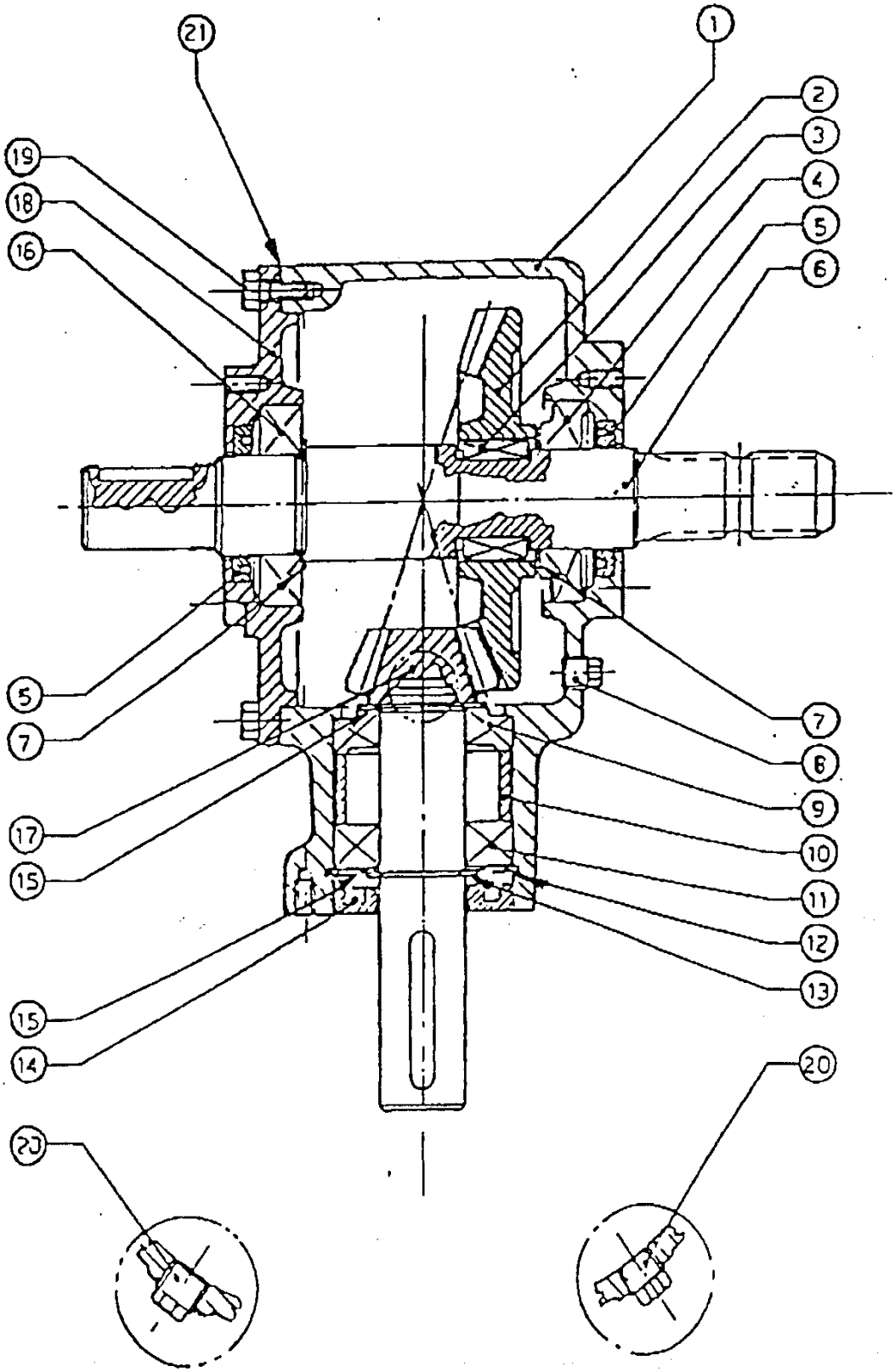
COMER

COMPANY	DATE	CODE No	DESIGNATION
	30.10.90	244.373.00/e	T-4A

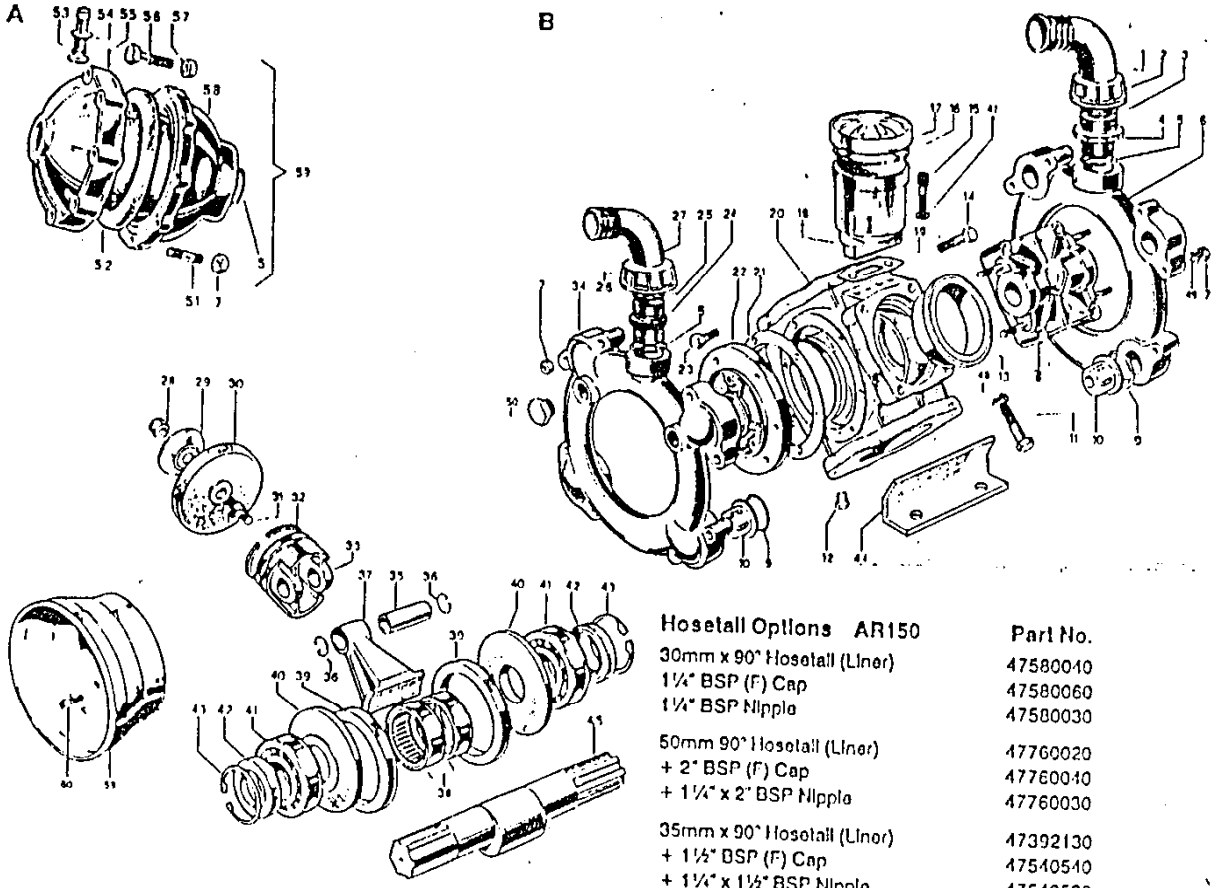
Now T-304 A



DESIGNATION GEAR BOX T-4A	CODE No 9.244.373.00

POS.	DRG. N.	PIEC	DESCRIPTION
1	0.244.0304.00	1	CASING
2	0.244.6005.00	1	GEAR Z30 M5
3	8.4.1.00057	2	PARALLEL KEY A 10X8X30
4	8.0.9.00024	1	BEARING 30208
5	8.7.3.00603	2	OIL SEAL 40X62X7
6	0.244.4612.00	1	SHAFT
7	0.244.7500.00	2	SHIM 51.5
8	8.6.5.00339	1	PLUG 1/4"GAS
9	8.0.9.00026	1	BEARING 30207
10	0.253.7107.00	1	SPACER
11	8.0.1.00025	1	BEARING 6207
12	8.5.2.00131	1	SNAP RING 72 UNI7437
13	8.5.1.00005	1	SNAP RING 35 UNI7435
14	8.7.3.00055	1	OIL SEAL 35X72X10
15	0.259.7500.00	2	SHIM 48.0
16	8.0.1.00023	1	BEARING 6208
17	0.253.5000.00	1	PINION Z10 M5
18	0.244.1316.00	1	COVER
19	8.1.1.00083	6	BOLT M8X20 8,8
20	8.6.5.00006	2	PLUG 3/8"GAS
21	0.247.7201.00	1	GASKET

AR150bp

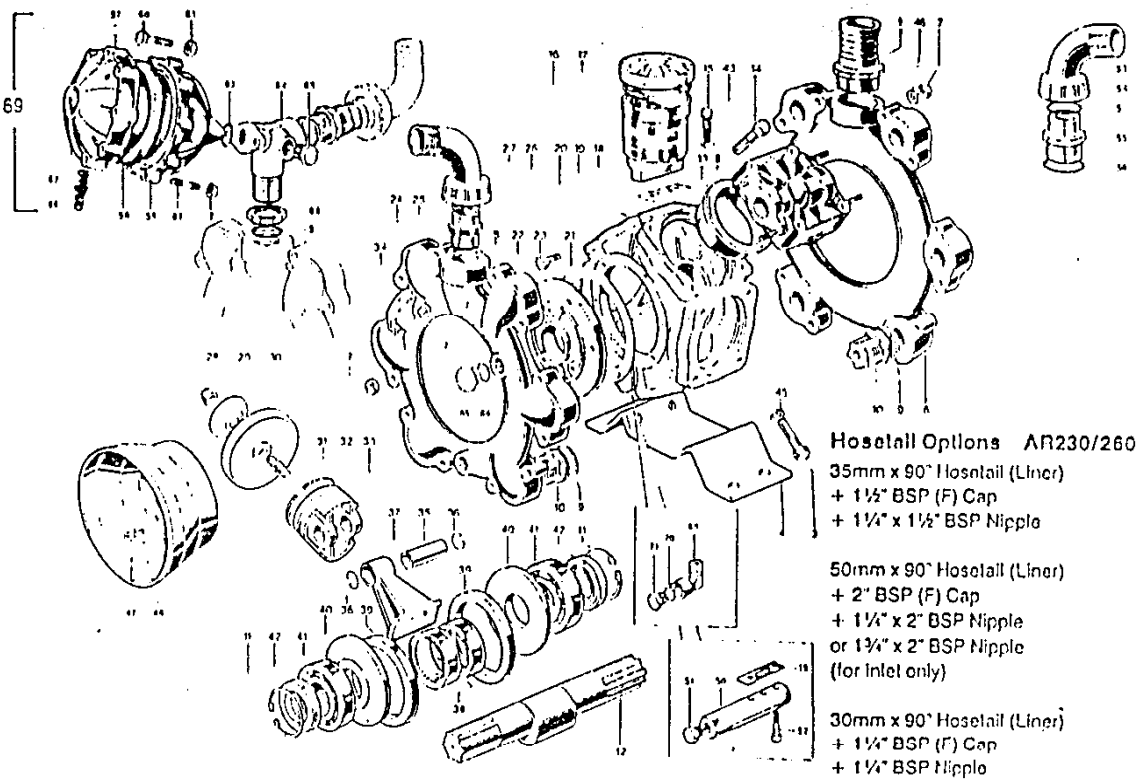


★ = Items in Winter Overhaul Kit – 47KIT150

	Ref.	Description	Qty	Part No.
B	1	50mm 90° Hosetail	1	47760020
	2	Hosetail Nut	1	47760040
	3	'O' Ring	1	47620210
	4	Hexagon Nipple	1	47760030
	5	'O' Ring	2	47250310
	6	Inlet Manifold	1	47760220
	7	Nut 8MA	16	47380240
	8	Cylinder Head	4	47750100
★	9	'O' Ring	8	47680070
	10	Valve	8	47759050
	11	Bolt 12MA x 70	4	47750070
	12	⅜" BSP Plug	1	47030171
	13	Piston Sleeve	4	47750110
	14	Bolt 12MA x 65	12	47750060
	15	Screw	2	47680350
	16	'O' Ring	1	47580230
	17	Oil Reservoir Cap	1	47750050
	18	Oil Reservoir	1	47750030
	19	Gasket	1	47750040
	20	Body	1	47760010
	21	Body Gasket	1	47680250
	22	Body Plate	1	47680020
	23	Bolt 10MA x 25	6	47160670
	24	Hexagon Nipple	1	47540530
	25	'O' Ring	1	47250310
	26	Hosetail Nut	1	47540540
	27	35mm 90° Hosetail	1	47392130
	28	Diaph. Retaining Nut	4	47550131
	29	Diaph. Retaining Plate	4	47580090
★	30	Diaphragm	4	47550085
	31	Stud	4	47550270

Hosetail Options AR150	Part No.
30mm x 90° Hosetail (Liner)	47580040
1¼" BSP (F) Cap	47580060
1¼" BSP Nipple	47580030
50mm 90° Hosetail (Liner)	47760020
+ 2" BSP (F) Cap	47760040
+ 1¼" x 2" BSP Nipple	47760030
35mm x 90° Hosetail (Liner)	47392130
+ 1½" BSP (F) Cap	47540540
+ 1¼" x 1½" BSP Nipple	47540530

	Ref.	Description	Qty	Part No.
	32	Piston Ring	4	47500260
	33	Piston	4	47750120
	34	Outlet Manifold	1	47760070
	35	Piston Spindle 48 x 8	4	47160700
	36	Circlip 18mm	8	47160691
	37	Con Rod (price each)	1	47760140
	38	Needle Bearing	2	47750090
	39	Spacer Ring	2	47750130
	40	Spacer	2	47540040
	41	Bearing	2	47230350
	42	Seal	2	47230380
	43	Circlip 62mm	2	47200390
	44	Pump Base	2	47760200
	45	Shaft	1	47750170
	47	Washer	2	47380241
	48	Washer	4	47250141
	49	Washer	16	47390311
	50	Bung	2	47330170
	59	P.T.O. Guard	1	47540660
	60	Screw 8M8 x 15	3	47180431
A	5	'O' Ring	1	47390290
	7	Nut 8MA	2	47380240
	51	Stud 8MA x 40	2	47390670
	52	Diaphragm	1	47550190
	53	'O' Ring	1	47650542
	54	Air Valve	1	47180020
	55	Upper Air Chamber	1	47620230
	56	Screw 8MA x 45	8	47380250
	57	Nut 8MA	8	47390270
	58	Lower Air Chamber	1	47680180
	59	Air Receiver Assy	1	37AHARA1



Hosetail Options AR230/260	Part No.
35mm x 90° Hosetail (Liner)	47392130
+ 1½" BSP (F) Cap	47540540
+ 1¼" x 1½" BSP Nipple	47540530
50mm x 90° Hosetail (Liner)	47760020
+ 2" BSP (F) Cap	47760040
+ 1¼" x 2" BSP Nipple	47760030
or 1¾" x 2" BSP Nipple (for inlet only)	477503..
30mm x 90° Hosetail (Liner)	47580040
+ 1¼" BSP (F) Cap	47580060
+ 1¼" BSP Nipple	47580030

★ = Items in Winter Overhaul Kit 40KIT230 40KIT260

Ref.	Description	Qty	Part No.
1	50mm Hosetail	1	47750160
1	60mm Hosetail	1	47750150
2	'O' Ring	1	47030281
3	Bolt 12MA x 70	4	47750070
4	Pump Base	1	47750200
5	'O' Ring	1	47620210
6	Inlet Manifold	1	47750220
7	Nut 8MA	24	47380240
8	Cylinder Head	6	47750100
★ 9	'O' Ring	12	47680070
★ 10	Valve	12	47750050
11	Circlip 62mm	2	47200390
12	Shaft (AR230BP)	1	47750170
12	Shaft (AR260BP)	1	47750171
13	Piston Sleeve (AR230BP)	6	47750111
13	Piston Sleeve (AR260BP)	6	47750112
14	Bolt 12MA x 65	20	47750060
15	Bolt 8MA x 35	2	47680350
16	'O' Ring	1	47500230
17	Cap (AR180)	1	47750051
17	Oil Reservoir Cap	1	47750050
18	Oil Reservoir	1	47750030
19	Gasket	1	47750040
20	Body	1	47750010
21	Body Gasket	1	47680250
22	Body Plate	1	47680020
23	Bolt 10MA x 25	6	47160670
24	Hexagon Nipple	1	47540530
25	'O' Ring	1	47250310
26	Hosetail Nut	1	47540540
27	35mm 90° Hosetail	1	47392130
28	Diaph. Retaining Nut	6	47550131
29	Diaph. Retaining Plate	6	47580090
★ 30	Diaphragm	6	47550065
31	Stud	6	47550270
32	Piston Ring	6	47500260

Ref.	Description	Qty	Part No.
33	Piston	6	47750120
34	Outlet Manifold	1	47750420
35	Piston Spindle 48 x 18	6	47160700
36	Circlip 18mm	12	47160691
37	Con Rod	6	47750140
38	Needle Bearing	2	47750090
39	Spacer Ring	2	47750130
40	Spacer	2	47540040
41	Bearing	2	47230350
42	Seal	2	47230380
43	Nut 8MA	2	47380241
45	Washer	4	47250141
46	Washer	24	47390311
47	Screw	3	47160430
48	PTO Guard	1	47540660
50	Oil Outlet	1	47750230
51	Bung	1	47030171
52	Screw	2	47540290
53	Hosetail	1	47760020
54	Hosetail Nut	1	47760040
55	Nipple	1	47750330
56	'O' Ring	1	47030281
57	Upper Air Chamber	1	47620230
58	Diaphragm	1	47550190
59	Lower Air Chamber	1	47680180
60	Screw Bolt 8MA 45	8	47380250
61	Nut 8MA H65	8	47390270
62	Stud	2	47390670
63	'O' Ring	1	47390290
64	Elbow	1	47760300
65	Bung	2	47330170
66	Nut	1	47760310
67	'O' Ring	1	47650540
68	Air Valve	1	47180020
69	Air Receiver Assy	1	37ARARA1

USEFUL CONTACT NUMBERS

Head Office tel.		01451 860721	
Head Office fax		01451 860139	
Technical	Clive Christian	01908 551222	or 0860 638942
Service	Mark Curtoys	01285 651644	or 0468 936787
	Julian Weston	01285 821226	or 0468 742787
	Andrew Loddington	01367 860151	or 0468 444742
Engineers on weekends	Vodapage no.	01426 171777	

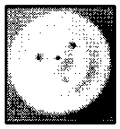
RT PLASTIC BODY SIZE 35 PLASTIC RESTRICTOR

Pressure Settings		Spray Quality	Air Flow Litres Per Nozzle	Liquid Flow Mls/Min per Nozzle	Application Rates Ltrs per HA at KPH									
AIR Bar	LIQUID Bar				6	7	8	9	10	11	12	13	15	16
0.69	1.03	Med/Fine	6.5											
1.03	1.38	Fine	10	332	66	57	50	44	40	36	33	31	27	25
1.38	1.72	Very Fine	11.5											
1.72	2.14	Very Fine	15											
0.69	1.17	Medium	6											
1.03	1.59	Fine	7.5	386	77	66	58	51	46	42	39	36	31	29
1.38	1.93	Very Fine	10.5											
1.72	2.34	Very Fine	13.5											
0.69	1.31	Medium	5.5											
1.03	1.66	Medium	7	420	84	72	63	56	50	46	42	39	34	32
1.38	2.00	Fine	10											
1.72	2.48	Very Fine	13											
0.69	1.52	Medium	4.5											
1.03	1.79	Medium	6.5	465	93	80	70	62	56	51	47	43	37	35
1.38	2.21	Fine	8.1											
1.72	2.62	Very Fine	12											
0.69	1.66	Medium	4											
1.03	1.93	Medium	6.5	500	100	86	75	67	60	55	50	46	40	38
1.38	2.34	Fine	7											
1.72	2.69	Very Fine	11.5											
0.69	1.72	Medium	3.7											
1.03	2.07	Medium	5.5	525	105	90	79	70	63	57	53	48	42	39
1.38	2.48	Fine	6.5											
1.72	2.76	Very Fine	11											
0.69	1.93	Coarse	3.5											
1.03	2.28	Medium	5	580	116	99	87	77	70	63	58	54	46	44
1.38	2.69	Medium	6											
1.72	3.03	Fine	10											
0.69	2.14	Coarse	2.7											
1.03	2.48	Medium	4	615	123	105	92	82	74	67	62	57	49	46
1.38	2.76	Medium	5.5											
1.72	3.17	Fine	9.5											
1.03	2.83	Coarse	3.7											
1.38	3.17	Coarse	4.5	680	136	117	102	91	82	74	68	63	54	51
1.72	3.52	Medium	5.7											
1.03	3.24	Coarse	3											
1.38	3.52	Coarse	4	740	148	127	111	99	89	81	74	68	59	56
1.72	3.86	Medium	5											
1.03	3.45	Coarse	2.5											
1.38	3.90	Coarse	3.5	790	158	135	119	105	95	86	79	73	63	59
1.72	4.14	Medium	7											

METRIC CALIBRATION CHART PLASTIC BODY SIZE 40 PLASTIC RESTRICTOR

Pressure Settings AIR Bar	Pressure Settings LIQUID Bar	Spray Quality	Air Flow Litres Per Nozzle	Flow Rate Mls/Min per Nozzle	Application Rates Ltrs per HA at KPH									
					6	7	8	9	10	11	12	14	15	16
0.69	1.03	Medium	8.5											
1.03	1.38	Fine	11	395	79	68	59	53	47	43	40	34	32	30
1.38	1.72	Very Fine	12											
0.69	1.17	Medium	8											
1.03	1.52	Medium	9.5	470	94	81	71	63	56	51	47	40	38	35
1.38	1.93	Fine	10.5											
0.69	1.31	Medium	7											
1.03	1.66	Medium	8.5	525	105	90	79	70	63	57	53	45	42	39
1.38	2.00	Fine	10											
0.69	1.45	Medium	5.5											
1.03	1.79	Medium	7.5											
1.38	2.14	Medium	9.5	580	116	99	87	77	70	63	58	50	46	44
1.72	2.41	Fine	12											
2.07	2.76	Very Fine	13.5											
0.69	1.59	Coarse	5											
1.03	1.93	Medium	7.5											
1.38	2.28	Medium	9	630	126	108	95	84	76	69	63	54	50	47
1.72	2.62	Fine	10.5											
2.07	2.90	Very Fine	12											
0.69	1.72	Coarse	4.5											
1.03	2.07	Medium	6.5											
1.38	2.48	Medium	8	680	136	117	102	91	82	74	68	58	54	51
1.72	2.76	Medium	10											
2.07	3.10	Fine	11											
2.41	3.45	Very Fine	12.5											
0.69	1.93	Coarse	4											
1.03	2.28	Medium	5.5											
1.38	2.62	Medium	7.5	730	146	125	110	97	88	80	73	63	58	55
1.72	2.90	Medium	9											
2.07	3.24	Fine	10.5											
2.41	3.59	Fine	12											
0.69	2.14	Coarse	3.5											
1.03	2.48	Medium	5											
1.38	2.83	Medium	6.5											
1.72	3.10	Medium	8.5	790	158	135	119	105	95	86	79	68	63	59
2.07	3.45	Medium	9.5											
2.41	3.79	Fine	11											
1.03	2.83	Coarse	4											
1.38	3.17	MED/COARSE	5.5											
1.72	3.52	Medium	7	880	176	151	132	117	106	96	88	75	70	66
2.07	3.79	Medium	8.5											
2.41	4.14	Fine	9.5											
1.03	3.10	Coarse	3.5											
1.38	3.52	Coarse	5											
1.72	3.86	Medium	6.5	960	192	165	144	128	115	105	96	82	77	72
2.07	4.14	Medium	7.5											
2.41	4.48	Fine	8.5											
1.03	3.45	Coarse	3											
1.38	3.79	Coarse	4.5											
1.72	4.14	Medium	5.5	1020	204	175	153	136	122	111	102	87	82	77
2.07	4.48	Medium	6.5											
2.41	4.83	Medium	8											

METRIC CALIBRATION CHART PLASTIC BODY SIZE 50 PLASTIC RESTRICTOR



Pressure Settings AIR Bar	Pressure Settings LIQUID Bar	Spray Quality	Flow Rate Mls/Min per Nozzle	Application Rates Ltrs per HA at KPH 6	7	8	9	10	11	12	13	15	16
0.69	1.03	Medium											
1.03	1.38	Medium	600	120	103	90	80	72	65	60	55	48	45
1.38	1.72	Medium											
0.69	1.17	Medium											
1.03	1.59	Medium	766	153	131	115	102	92	84	77	71	61	57
1.38	1.93	Medium											
0.69	1.31	Coarse											
1.03	1.66	Medium	833	167	143	125	111	100	91	83	77	67	62
1.38	2.00	Medium											
0.69	1.52	Coarse											
1.03	1.79	Medium	926	185	159	139	123	111	101	93	85	74	69
1.38	2.21	Fine											
0.69	1.66	Medium											
1.03	1.93	Med/Coarse	986	197	169	148	131	118	108	99	91	79	74
1.38	2.34	Medium											
0.69	1.72	Coarse											
1.03	2.07	Coarse	1073	215	184	161	143	129	117	107	99	86	80
1.38	2.48	Medium											
0.69	1.93	Coarse											
1.03	2.28	Coarse	1173	235	201	176	156	141	128	117	108	94	88
1.38	2.69	Medium											
0.69	2.14	Coarse											
1.03	2.48	Coarse	1240	248	213	186	165	149	135	124	114	99	93
1.38	2.76	Medium											
1.03	2.83	Coarse											
1.38	3.17	Coarse	1400	280	240	210	187	168	153	140	129	112	105
1.72	3.52	Medium											
1.03	3.24	Coarse											
1.38	3.52	Coarse	1526	305	262	229	203	183	166	153	141	122	114
1.72	3.86	Medium											
1.03	3.45	Coarse											
1.38	3.90	Coarse	1640	328	281	246	219	197	179	164	151	131	123
1.72	4.14	Medium											

XR TeeJet® Extended range flat spray tips

Tip No (strainer screen size)		Liquid Pressure (Bar)	Capacity 1 Nozzle (L/min)	Litres per Hectare 500mm Nozzle Spacing									
80° Series	110° Series			3 km/h	4 km/h	5 km/h	6 km/h	7 km/h	8 km/h	9 km/h	10 km/h	12 km/h	14 km/h
ORANGE XR8001VS (100 mesh)	ORANGE XR11001VS (100 mesh)	1.0	0.23	92.0	69.0	55.2	46.0	39.4	34.5	30.7	27.6	23.0	19.7
		1.5	0.28	112.0	84.0	67.2	56.0	48.0	42.0	37.3	33.6	28.0	24.0
		2.0	0.32	128.0	96.0	76.8	64.0	54.8	48.0	42.7	38.4	32.0	27.4
		3.0	0.39	156.0	117.0	93.6	78.0	66.8	58.5	52.0	46.8	39.0	33.4
		4.0	0.46	184.0	138.0	110.4	92.0	78.8	69.0	61.3	55.2	46.0	39.4
GREEN XR80015VS (100 mesh)	GREEN XR110015VP (100 mesh)	1.0	0.34	136.0	102.0	81.6	68.0	58.3	51.0	45.3	40.8	34.0	29.1
		1.5	0.42	168.0	126.0	100.8	84.0	72.0	63.0	56.0	50.4	42.0	36.0
		2.0	0.48	192.0	144.0	115.2	96.0	82.3	72.0	64.0	57.6	48.0	41.1
		3.0	0.59	236.0	177.0	141.6	118.0	101.1	88.5	78.6	70.8	59.0	50.6
		4.0	0.68	272.0	204.0	163.2	136.0	116.6	102.0	90.6	81.6	68.0	58.3
YELLOW XR8002VS (50 mesh)	YELLOW XR11002VP (50 mesh)	1.0	0.46	184.0	138.0	110.4	92.0	78.8	69.0	61.3	55.2	46.0	39.4
		1.5	0.56	224.0	168.0	134.4	112.0	96.0	84.0	74.6	67.2	56.0	48.0
		2.0	0.64	256.0	192.0	153.6	128.0	109.7	96.0	85.3	76.8	64.0	54.8
		3.0	0.79	316.0	237.0	189.6	158.0	135.4	118.5	105.3	94.8	79.0	67.7
		4.0	0.91	364.0	273.0	218.4	182.0	156.0	136.5	121.3	109.2	91.0	78.0
BLUE XR8003VS (50 mesh)	BLUE XR11003VP (50 mesh)	1.0	0.68	272.0	204.0	163.2	136.0	116.6	102.0	90.6	81.6	68.0	58.3
		1.5	0.84	336.0	252.0	201.6	168.0	144.0	126.0	112.0	100.8	84.0	72.0
		2.0	0.97	388.0	291.0	232.8	194.0	166.3	145.5	129.3	116.4	97.0	83.1
		3.0	1.18	472.0	354.0	283.2	236.0	202.3	177.0	157.3	141.6	118.0	101.1
		4.0	1.37	548.0	411.0	328.8	274.0	234.8	205.5	182.6	164.4	137.0	117.4
RED XR8004VS (50 mesh)	RED XR11004VP (50 mesh)	1.0	0.91	364.0	273.0	218.4	182.0	156.0	136.5	121.3	109.2	91.0	78.0
		1.5	1.12	448.0	336.0	268.8	224.0	192.0	168.0	149.3	134.4	112.0	96.0
		2.0	1.29	516.0	387.0	309.6	258.0	221.1	193.5	172.0	154.8	129.0	110.6
		3.0	1.58	632.0	474.0	379.2	316.0	270.8	237.0	210.6	189.6	158.0	135.4
		4.0	1.82	728.0	546.0	436.8	364.0	311.9	273.0	242.6	218.4	182.0	156.0
BROWN XR8005VS (50 mesh)	BROWN XR11005VP (50 mesh)	1.0	1.14	456.0	342.0	273.6	228.0	195.4	171.0	152.0	136.8	114.0	97.7
		1.5	1.40	560.0	420.0	336.0	280.0	240.0	210.0	186.6	168.0	140.0	120.0
		2.0	1.61	644.0	483.0	386.4	322.0	275.9	241.5	214.6	193.2	161.0	138.0
		3.0	1.97	788.0	591.0	472.8	394.0	337.7	295.5	262.6	236.4	197.0	168.8
		4.0	2.28	912.0	684.0	547.2	456.0	390.8	342.0	303.9	273.6	228.0	195.4
GREY XR8006VS (50 mesh)	GREY XR11006VP (50 mesh)	1.0	1.37	548.0	411.0	328.8	274.0	234.8	205.5	182.6	164.4	137.0	117.4
		1.5	1.67	668.0	501.0	400.8	334.0	286.2	250.5	222.6	200.4	167.0	143.1
		2.0	1.93	772.0	579.0	463.2	386.0	330.9	289.5	257.3	231.6	193.0	165.4
		3.0	2.37	948.0	711.0	568.8	474.0	406.2	355.5	315.9	284.4	237.0	203.1
		4.0	2.74	1096.0	822.0	657.6	548.0	469.5	411.0	365.2	328.8	274.0	234.8
XR8008VS (50 mesh)	XR11008VP (50 mesh)	1.0	1.82	728.0	546.0	436.8	364.0	311.9	273.0	242.6	218.4	182.0	156.0
		1.5	2.23	892.0	669.0	535.2	446.0	382.2	334.5	297.3	267.6	223.0	191.1
		2.0	2.58	1032.0	774.0	619.2	516.0	442.2	387.0	343.9	309.6	258.0	221.1
		3.0	3.16	1264.0	948.0	758.4	632.0	541.6	474.0	421.2	379.2	316.0	270.8
		4.0	3.65	1460.0	1095.0	876.0	730.0	625.5	547.5	486.5	438.0	365.0	312.8
XR8010SS (50 mesh)	XR11010SS (50 mesh)	1.0	2.28	912.0	684.0	547.2	456.0	390.8	342.0	303.9	273.6	228.0	195.4
		1.5	2.79	1116.0	837.0	669.6	558.0	478.2	418.5	371.9	334.8	279.0	239.1
		2.0	3.22	1288.0	966.0	772.8	644.0	551.9	483.0	429.2	386.4	322.0	276.0
		3.0	3.95	1580.0	1185.0	948.0	790.0	677.0	592.5	526.5	474.0	395.0	338.5
		4.0	4.56	1824.0	1368.0	1094.4	912.0	781.5	684.0	607.8	547.2	456.0	390.8
XR8015SS (50 mesh)	XR11015SS (50 mesh)	1.0	3.42	1368.0	1026.0	820.8	684.0	586.2	513.0	455.9	410.4	342.0	293.1
		1.5	4.19	1676.0	1257.0	1005.6	838.0	718.2	628.5	558.5	502.8	419.0	359.1
		2.0	4.83	1932.0	1449.0	1159.2	966.0	827.9	724.5	643.8	579.6	483.0	413.9
		3.0	5.92	2368.0	1776.0	1420.8	1184.0	1014.7	888.0	789.1	710.4	592.0	507.3
		4.0	6.84	2736.0	2052.0	1641.6	1368.0	1172.4	1026.0	911.8	820.8	684.0	586.2

CLEANACRES MACHINERY LTD

AGROCO UMBRELLA

CLEANACRES MACHINERY LTD

CALIBRATION CHART FOR AGROCO NOZZLES

CAP COLOUR	DISC COLOUR	LIQUID BAR	LIQUID P S I	FLOW Mls/Min	APPLICATION RATE Ltrs per HA at KPH			
					8	10	12	14
RED	ORANGE	2	29	998	149.7	119.8	99.8	85.5
		2.5	36.25	1070	160.5	128.4	107.0	91.7
		3	43.5	1200	180.0	144.0	120.0	102.9
		3.5	50.75	1230	184.5	147.6	123.0	105.4
		4	58	1300	195.0	156.0	130.0	111.4
RED	RED	1	14.5	1320	198.0	158.4	132.0	113.1
		1.5	21.75	1700	255.0	204.0	170.0	145.7
		2	29	1900	285.0	228.0	190.0	162.9
		2.5	36.25	2025	303.8	243.0	202.5	173.6
		3	43.5	2180	327.0	261.6	218.0	186.9
RED	BLUE	1	14.5	1920	288.0	230.4	192.0	164.6
		1.5	21.75	2430	364.5	291.6	243.0	208.3
		2	29	2840	426.0	340.8	284.0	243.4
		2.5	36.25	3045	456.8	365.4	304.5	261.0
BLUE	RED	2	29	1840	276.0	220.8	184.0	157.7
		2.5	36.25	2030	304.5	243.6	203.0	174.0
		3	43.5	2170	325.5	260.4	217.0	186.0
		3.5	50.75	2225	333.8	267.0	222.5	190.7
		4	58	2290	343.5	274.8	229.0	196.3
BLUE	BLUE	1	14.5	1910	286.5	229.2	191.0	163.7
		1.5	21.75	2465	369.8	295.8	246.5	211.3
		2	29	2815	422.3	337.8	281.5	241.3
		2.5	36.25	3050	457.5	366.0	305.0	261.4
		3	43.5	3300	495.0	396.0	330.0	282.9
		3.5	50.75	3535	530.3	424.2	353.5	303.0
		4	58	3735	560.3	448.2	373.5	320.1
BLUE	YELLOW	1	14.5	2675	401.3	321.0	267.5	229.3
		1.5	21.75	3465	519.8	415.8	346.5	297.0
		2	29	3910	586.5	469.2	391.0	335.1
GREEN	YELLOW	1	14.5	2500	375.0	300.0	250.0	214.2
		1.5	21.75	3000	450.0	360.0	300.0	257.1
		2	29	3500	525.0	420.0	525.0	300.0
GREEN	GREEN	1	14.5	3500	522.0	417.0	348.0	298.3
		1.5	21.75	4600	690.0	552.0	460.0	394.3
		2	29	5480	819.0	655.2	546.0	468.0
		2.5	36.25	6090	913.5	730.8	609.0	522.0
		3	43.5	6720	1008.0	806.4	672.0	576.0
GREEN	WHITE	1	14.5	4600	690.0	552.0	460.0	394.3
		1.5	21.75	5300	795.0	636.0	530.0	454.3
		2	29	6320	984.0	758.4	632.0	541.7
		3	43	8640	1296.0	1036.0	864.0	740.0

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