CLEANACRES MACHINERY LTD

HAZLETON CHELTENHAM GLOS GL54 4DX Tel. 01451 860721 Fax. 01451 860139





INDEX

1. DECLARATION OF CONFORMITY

MACHINE SPECIFICATION

TECHNICAL SPECIFICATION

SAFETY / HAZARDS

- 2. ATLAS OPERATORS MANUAL
- 3. ATLAS PARTS MANUAL

CIRCUIT DIAGRAMS - HYDRAULIC & ELECTRIC

4. DE-MOUNT SPRAYER OPERATORS MANUAL

FAULT FINDING

DE-MOUNT MAINTENANCE

5. DE-MOUNT SPRAYER PARTS MANUAL

CIRCUIT DIAGRAMS - HYDRAULIC & ELECTRIC

6. ATLAS MAINTENANCE

ATLAS SERVICE RECORD

7. APPENDIX 1

APPLICATION CHARTS

FILLING FLOW METER

CLEANACRES MACHINERY LTD

HAZLETON CHELTENHAM GLOS. GL54 4DX

TEL NO. 01451 860721 FAX NO. 01451 860139

DECLARATION OF CONFORMITY

PRODUCT MODEL	
---------------	--

STANDARDS AND REGULATIONS

This product meets the requirements of the Machinery Directive 89/392/EEC, as amended by directive 91/368/EEC implemented in the UK by the Supply of Machinery (safety) regulations 1992.

The machine has been designed to conform to the Essential Heath and Safety Regulations and General Design Principals contained in EN292 parts 1 and 2.

YOUR MACHINE (SPECIFICATION)

MODEL		_
CHASSIS NO.		_
REGISTRATION NO.		-
ENGINE MODEL		-
ENGINE SERIAL NO.		-
TRANSMISSION PUMP		-
WHEEL MOTOR (front)		-
(rear)	***************************************	-
SPRAYER TANK		_LITRES
BOOM WIDTH		_

TECHNICAL SPECIFICATIONS

 DIMENSIONS
 Tyre
 48x25-20
 Height
 3.76m

 11.2R32
 3.85m

 540/65R24
 3.83m

Width 2.8m

Length 6.9m
(Minimum) Ground clearance 0.93m

(Minimum) Ground clearance
Track Width

WEIGHTS (With sprayer Unladen 6360kg

boom folded) Front axle 3580kg Rear axle 2780kg

ENGINE Perkins 1006-6T 165bhp turbocharged 6 cyl 6 lt. diesel

Oil specification SAE 10W 40
Oil capacity 14 litres
Coolant capacity 26 litres

HYDRAULICS

Oil specificationNevis 10SpecialOil capacity320 litres

TRANSMISSION Permanent four wheel drive hydrostatic braking

STEERING Switchable four wheel steer

Turning circle 5.3m

FORWARD SPEED Tyre 11.2R32 High (road work) 38km/hr
Low (field work) 14km/hr

WHEEL EQUIPMENT

WHEEL TYPE	SIZE	PRESSURE
Row crop	11.2 x 32	52 p.s.i.
General purpose	480/70 R28	23 p.s.i.
	540/65 R24	21 p.s.i.
Low ground pressure	48 x 25-20	16 p.s.i.
	600/55 R26.5	16 p.s.i.

WARNING

Tightness of wheel nuts should be checked daily.

Tightness of rim bolts should be checked daily.

Tyre pressure should be checked daily.

Recommended torque settings

TORQUE SETTINGS			
	NM.	FT./LBS.	
Wheel motor fixing bolt MS08	244	180	
Wheel motor fixing bolt MS11	338	250	
Wheel nut	338	250	
Wheel rim to centre disc	203	150	
Crank shaft drive plate	54	40	
Transmission pump fixing bolts	122	90	
Transmission pump drive hub	70	51	
Tie rod M30 (cross link) fixing bolt	406	300	
Suspension mount	149	110	
Engine mount (rear)	149	110	
Engine mount (front)	108	80	
Steering ram mount	149	110	

The following torque setting should be used unless otherwise specified.

METRIC BOLTING				
Diameter	Tensile Stress Area	Bolt Load KN.	Torque Settings	
	mm ²	Grade 8.8	Grade 8.8	
M5	14.2	6.9	6.9	
M6	20.1	9.8	11.7	
M8	36.6	17.8	28.4	
M10	58.0	28.1	56.3	
M12	84.3	40.9	98	
M16	157	76.2	244	
M20	245	119	476	
M24	353	171	822	
M30	561	272	1634	
M36	817	397	2855	

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.

MARNING

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.

ACAUTION

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.

MARNING

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.

MARNING

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



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.

MARNING

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.

NWARNING

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

MARNING

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

MARNING

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.

ACAUTION

MARNING

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.

ACAUTION

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.

CLEANACRES MACHINERY LTD

HAZLETON CHELTENHAM GLOS GL54 4DX Tel. 01451 860721 Fax. 01451 860139

ATLAS

Self Propelled Cropsprayer

Models 2000 - 2500 - 3000

OPERATORS MANUAL
1999

ATLAS 2500/3000

INTRODUCTION

Thank you for purchasing an ATLAS self propelled crop sprayer, time spent reading this operators manual will ensure that you can operate the vehicle safely, and to gain maximum benefit from the many unique features.

The manual is separated into various sections covering SAFETY, OPERATION, MAINTENANCE and PARTS. Each vehicle is supplied with an operator training course to supplement this instruction book.

It is of vital importance that any operator understands how to use the vehicle correctly and has a clear understanding of the vehicles capabilities. Incorrect operation of the vehicle could result in a serious accident or expensive damage to the vehicle systems.

GENERAL SAFETY

- Always ensure all guards are in place.
- 2. Never start the machine until bystanders are clear.
- 3. Always stop the engine and remove ignition key before maintaining the machine.
- 4. Always use axle stands when working under the machine.
- 5. Great care should be taken when working on sidling ground, The widest track setting on the vehicle will provide the greatest stability.
- 6. Always replace components with the same specification as the original.
- 7. Always wear the correct protective clothing when working with agri-chemicals.
- 8. Always stop before changing from forward to reverse.
- 9. Always stop before changing between high and low range.
- 10. Always use two wheel steer when travelling on the road.

DRIVING TECHNIQUE

Each user should be instructed in the safe operation of the machine, but we would like to draw your attention to the following point.

In the section covering the transmission, we have outlined in simple terms how a hydrostatic transmission works. As with any other transmission if it is operated incorrectly damage to the machine could occur. Please pay special attention to the driving tips given here. The engine should be warmed up at low engine speed before use at the start of each day.

ROAD USE FULLY LADEN

When the machine is fully laden stopping distances will be increased from when the machine is empty. THINK AHEAD when coming up to junctions, reduce speed with the hydrostatic lever earlier and brake smoothly. If the road you are travelling along has very steep hills, travel in LOW RANGE until you have passed the difficult section.

TRAVELLING WITH LIQUID FERTILISER

Liquid fertiliser has a higher specific gravity than water. This means that it is heavier that water. The weight in a full 3000 litre tank of water and chemical will be approximately 3000 kilos. If filled with liquid fertiliser of a specific gravity of 1.3 the weight will increase to 3900 kilos, 900 kilos heavier. We therefore recommend:

- 1. Establish what the SG (specific gravity) of your liquid fertiliser is and calculate its weight (litres x SG = weight in kilos).
- 2. When the ATLAS is fitted with a 3000 litre tank only travel on the road in low range fully laden. High range may be selected with 3000 kilos or less.

CHARGE PRESSURE GAUGE (4)

This gauge monitors charge or boost pressure. The hydrostatic transmission pump is fed oil under pressure from the charge pump. The charge pressure on all ATLAS machines should always be between 20 and 30 bar within five seconds of start up. If charge pressure does not reach 20 bar within five seconds of start up or drops below 20 bar or goes over 30 bar during operation stop immediately.

TORQUE SPLIT

OPERATING CONDITION				
	·-	FIELD	ROAD	
RANGE	NORMAL	STEEP HILL	STEEP HILL	LIQUID LOAD UP TO
SELECTED		UP	DOWN	3,000 KILOS
Front Low	✓		✓	
Front Hi		✓		✓
Rear Low	✓	~		
Rear Hi			✓	✓
E.A.S. On	✓	✓	-	
E.A.S. Off				-
	i	1		1

The ATLAS 2,500 has been designed to cope with steep ground safely and efficiently, and has been fitted as standard with torque split and as an option Electronic Anti Slip (E.A.S.). The torque split biases the power between front and rear axles. For normal operation it should be set in low/low, i.e. 50/50. If a steep hill has to be negotiated, (particularly if it has a loose or slippery surface) switch the front axle to high range. When coming down steep hills, switch the rear axle in high range and this will increase the braking ability of the machine. IN NO CIRCUMSTANCES SHOULD YOU EVER GO DOWN A STEEP HILL WITH THE FRONT AXLE IN HIGH RANGE EITHER IN FORWARD OR REVERSE. Always try to anticipate the correct torque settings rather than waiting to lose traction before selection.

ELECTRONIC ANTI SLIP

Electronic Anti Slip (E.A.S.) is fitted as an option to some machines. This allows the ATLAS to operate on very steep ground maintaining maximum traction. The speed of each wheel is monitored, and if any wheel rotates more than 20% faster than the others the oil flow to that wheel or wheels is reduced until they are all rotating at the same speed.

To operate E.A.S., Switch to the on position as you enter the field. This activates the system so that the wheel speed is monitored and controlled.

Wherever possible try to anticipate where you will need to engage E.A.S., and engage the system before you get onto the difficult ground. E.A.S. should NOT be used for road operation, as this will increase the system operating temperature.

SUSPENSION CONTROL

The ATLAS is fitted with a load sensing suspension system. In normal operation the 'auto suspension' switch (FIG.B) should be in the 'on' position. Then each time the parking brake is applied the suspension will re-set for the current load and weight distribution. The parking brake should be applied while filling the spray tank and when folding or unfolding the boom. There are manual over ride switches to be used as required such as when maintaining the vehicle. The axle should be parallel to the vehicle chassis for normal operation.

CAB LAYOUT

AIR CONDITIONING AND CARBON FILTRATION

The filtration unit is built to comply with E.C. Standard P.M. 74.

The air conditioning controls are situated on the centre of the roof panel. The air conditioning is switched on with the black knob with air fan motif in the centre, and the temperature is set with the thermostat knob, which has a snowflake motif in the centre. The cooling fan has three speeds and can be set to give the desired level of airflow. Cab temperature can be reduced by rotating the thermostat switch clockwise. Change the carbon filter situated centrally at the rear of the cab roof every 300 hours of operation.

HEATING SYSTEM

Pull knob to the left of the air conditioning controls for hot air, turn the air conditioning thermostat fully anti clockwise to shut down the cooler.

VEHICLE WARNING LIGHTS (FIG.A)

The vehicle system warning lights are contained in a bank mounted directly below the steering wheel. These lights are also wired into an audible buzzer. If a fault occurs the light will come on and the buzzer will sound. If the buzzer sounds stop immediately and investigate the problem, and if necessary contact Cleanacres Machinery Ltd. or your dealer for advice or a service visit.

R.D.S. MASTER ON/OFF (FIG.D)

This switch provides power to the Magic Box or R.D.S. Delta 3. For full Magic Box operating instructions, please see separate instruction book.

POWER TAKE OFF ENGAGEMENT

Always engage the power take off at engine tick over: DO NOT engage or disengage at high engine R.P.M.,

The P.T.O. is preset to 540 R.P.M. at 2100 R.P.M. engine speed.

If an implement is taken off the vehicle couple together the pressure and return ports of the P.T.O hydraulic service, this will protect the P.T.O. drive pump in the event of accidentally engaging the P.T.O.

TWO AND FOUR WHEEL STEERING (8)

All ATLAS vehicles are fitted with two and four steering. Two wheel steer must be selected for travelling on the road. The vehicle is equipped with steering alignment sensors, which indicate when the wheels are in the straight ahead position. When changing from two wheel steer to four wheel steer ensure that both wheel alignment lights (FIG.C) are lit before changing. When changing from four wheel steer to two wheel steer, depress foot switch. (Change over occurs when the rear wheels reach the straight ahead position)

Please note the 'auto steer' switch (FIG.D) should be left on to maintain correct alignment.

PARK BRAKE (12)

The rear motors on the ATLAS are fitted with multi disc brakes on a fail safe circuit. In normal operation the brakes are applied with the parking brake switch. If there is an engine failure or boost pressure failure, the brakes will automatically come on. When the brakes are released, the cabin entry ladder will automatically be raised. Please ensure that bystanders are well clear of the vehicle and not standing on or in the vicinity of the ladder when the brake is released.

SIDE LIGHT/HEADLIGHTS (FIG.C)

This is a three position illuminated switch. Push forward one click for sidelights. Push forward two clicks for headlights.

WORKING LIGHTS

These are two position-illuminated switches, operating front and rear work lights mounted in the left hand roof switch bank. The angle of the work lamps in both the horizontal and vertical plain can be adjusted to suit the particular application.

STEERING COLUMN SWITCH (1)

Mounted on the right hand side of the steering column is a multi function switch. This control operates the following:

- 1. Direction indicators push forward to indicate left, pull back to indicate right.
- 2. Main beam dip beam headlamp flash push down for main beam, pull up for dip beam, pull up (against spring) for headlamp flash.
- 3. Windscreen wiper (2 speed) twist the collar anti clockwise to position 'l' for low speed and 'll' for high speed.

- 4. Windscreen washer push the ring on the end of the column switch to wash the windscreen.
- 5. Horn push the button on the end of the column switch to sound the horn.

BEACON

This is a two position illuminated switch that operates the roof mounted flashing beacon (mounted on the left hand roof switch panel). The beacon should be switched on when travelling on the public highway.

HAZARD WARNING LIGHTS (FIG.C)

This is a two position illuminated switch. When switched on all four indicators will flash and inside the cab both indicator warning lights (FIG.A) will flash.

BOOM TILT SWITCH (FIG.E)

This is a sprung return to centre switch, press right and the boom will dip to the right, press left and the boom will dip to the left.

BOOM MASTER SWITCH (FIG.E)

This is a two position switch mounted on the joystick (red button) and operates all the boom sections. Power to all boom sections is on when the warning light is illuminated.

INDIVIDUAL BOOM SECTION SWITCHES (FIG.E)

These switches shut off individual boom sections. (mounted on the joy stick)

BOOM SECTION INDICATOR LIGHTS

There is a bank of warning lights mounted in the roof of the cab. The red warning light shows the boom master switch is on and the green warning lights, which boom section, is switched on.

BOOST FILTER INDICATOR

When this light comes on the filter element should be replaced immediately. If the machine is operated for any length of time with this light on, the main transmission pump could be damaged. (Please note machines fitted with an Eaton PV105 do not have a separate boost filter).

JOY STICK CONTROL

All ATLAS vehicles are fitted with an integral joy stick control, enabling the operator to perform several tasks at once. The primary function is hydrostatic control determining the speed and direction of travel of the vehicle. The lever must be in the

neutral position (locked to the left) to start the engine. Once started and the parking brake released, the control lever can be pushed away to the right and then forward or backward to move the vehicle accordingly. Once the vehicle is moving the lever should be allowed to move back to the left to a rest position. When slowing the vehicle keep the lever lightly pressured to the left so that the neutral position cannot be inadvertently missed. Always stop the vehicle before changing from forward to reverse or reverse to forward. The faster the joystick is moved the more rapid the response. The further the joystick is moved from neutral the faster the vehicle will go. Mounted in the handle of the joystick are switches for the boom master, boom sections, tilt and variable geometry control. When operating the joystick try to move the lever smoothly and gradually, keeping pace with the changes of the vehicle speed, until the desired speed is achieved.

IGNITION SWITCH (3)

All the main electrical systems on the vehicle are powered from the ignition switch. This has four positions, (1) off, (2) ignition on, (3) heat (4) start. The start side of the switch is sprung return to ignition on. The engine stop is also on the ignition switch, and the engine will stop when the switch is set to the off position. PLEASE NOTE WHEN WORK IS FINISHED FOR THE DAY, SWITCH THE BATTERY ISOLATOR OFF. This is a key lever on the inside of the near side engine cover.

BOUT MARKER OPERATION (FIG.D)

This is a three position switch press down left to mark left, right to mark right. For full bout marker instructions please refer to separate booklet.

VEHICLE TRANSMISSION SYSTEM

The transmission system on ATLAS vehicles is hydrostatic. This means an engine driven hydraulic pump supplies oil to the drive motors with the wheels mounted on them. The oil flow and pressure transmit the engine power directly to the wheels. The capacity difference between the pump and motors govern the speed and torque available at the wheels. They fit together in a closed loop circuit where oil from the pump feeds the wheel motors and once passed through the motor is returned back to the pump. In this closed loop the direction of flow determines which way the vehicle moves. The swash plate angle in the pump varies the quantity and direction of the oil flow, which then controls the speed, and direction of the vehicle. As both the pump and wheel motors are positive displacement, the pump can force oil into the motors,

giving traction or the motors can force oil into the pump giving braking. The oil absorbs energy in all these processes in the form of heat. To stop the closed loop over heating the charge pump replaces some of the oil by purging from the low pressure side of the circuit. The charge pump oil pressure is maintained between 20 and 30 bar, which is used to control the swash plate angle, operate the wheel motor two speed control, release the parking brake and cool the closed loop. If the charge pump pressure drops below 15 bar the pump will return to neutral and the brakes will be applied. This will happen if the engine or hydrostatic systems fail. The two speed control in the wheel motors give a further choice of operating conditions. displacement gives maximum torque and low forward speed. Part displacement gives reduced torque and high forward speed. Low range giving high torque should be used for fieldwork and high range giving high speed but reduced torque for roadwork. The hydrostatic pump and charge pump is built as a unit and is fitted to the flywheel housing of the engine. Fitted to the front of this is a unit containing two further hydraulic pumps. One supplies a circuit dedicated for auxiliary drives such as the sprayer pump and air compressor. The other feeds the power steering circuit; suspension and cab mounted spool block used for boom folding. The oil for the four pumps is taken from a common oil tank through suction filtration, around the various circuits and back through return filtration. The oil is Nevis 10 Special, which is a high specification hydraulic fluid. No other type should be used, as this will invalidate the warranty. A sample should be taken each time the vehicle is serviced. This will indicate when the oil in the system needs to be changed.

WHEEL EQUIPMENT

FAILURE TO RESPECT THE WHEEL NUT TORQUE SETTINGS COULD RESULT IN STUDS BREAKING CAUSING SERIOUS DAMAGE TO THE VEHICLE.

(See separate sheet)

MOUNTING AND DEMOUNTING IMPLEMENTS

To demount the implement fit the jacklegs at each corner of the implement. Disconnect the grey electrical plug and the two R.D.S. plugs from the front of the demount sprayer. Remove the vehicle front mudguards and rear engine side covers. Remove the drain tap body. Disconnect hydraulic P.T.O. hoses. REMEMBER COUPLE CONNECTIONS TOGETHER WITH THE HOSE PROVIDED. Remove the two bottle screws at the rear of the vehicle. Raise the rear jacks so that the bottom rail of the implement is clear of the vehicle chassis by 1". Move vehicle forwards until the front connecting hooks on the implement disengage and the rear locators hit the bump bar. Stop and apply the parking brake. Wind up all jacks until the sprayer is completely clear of the chassis. Check that the sump is well clear of obstacles. Drive clear of the implement. To refit implements reverse this procedure.

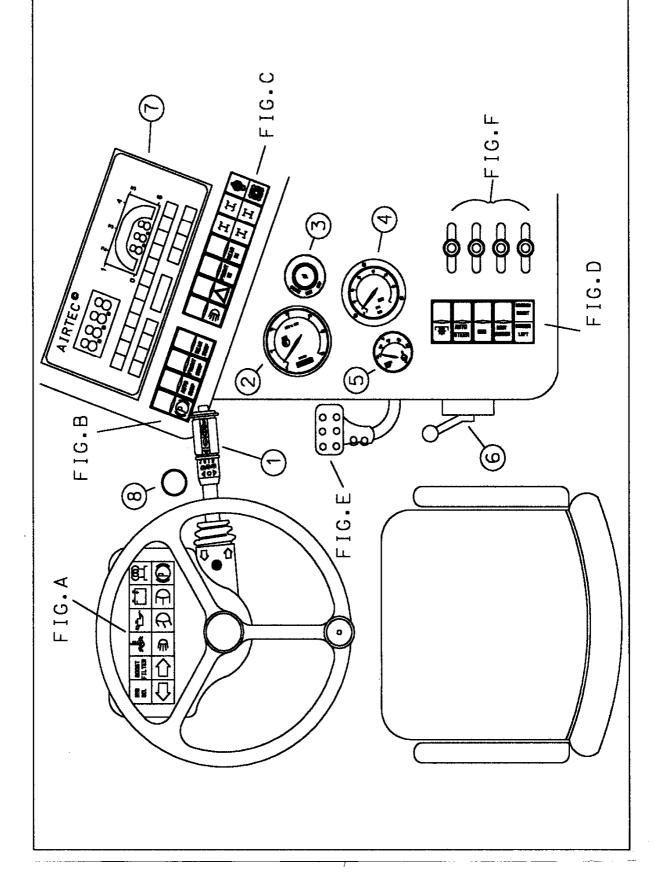
CAB CONTROL PANEL LAYOUT

KEY

- 1. Column Switch
- 2. Rev. Counted
- 3. Ignition Switch
- 4. Charge Pressure
- 5. Engine Temperature
- 6. Engine Speed Lever
- 7. R D S Monitor
- 8. Foot Switch (2 Wheel Steer / 4 Wheel Steer)

Fig A	Vehicle Warning Lights
Fig B	Switch Bank (Vehicle)
Fig C	Switch Bank (Vehicle)
Fig D	Switch Bank (Sprayer)
Fig E	Joystick Control (Sprayer)
Fia F	Spool Block (Boom)

CAB CONTROL LAYOUT



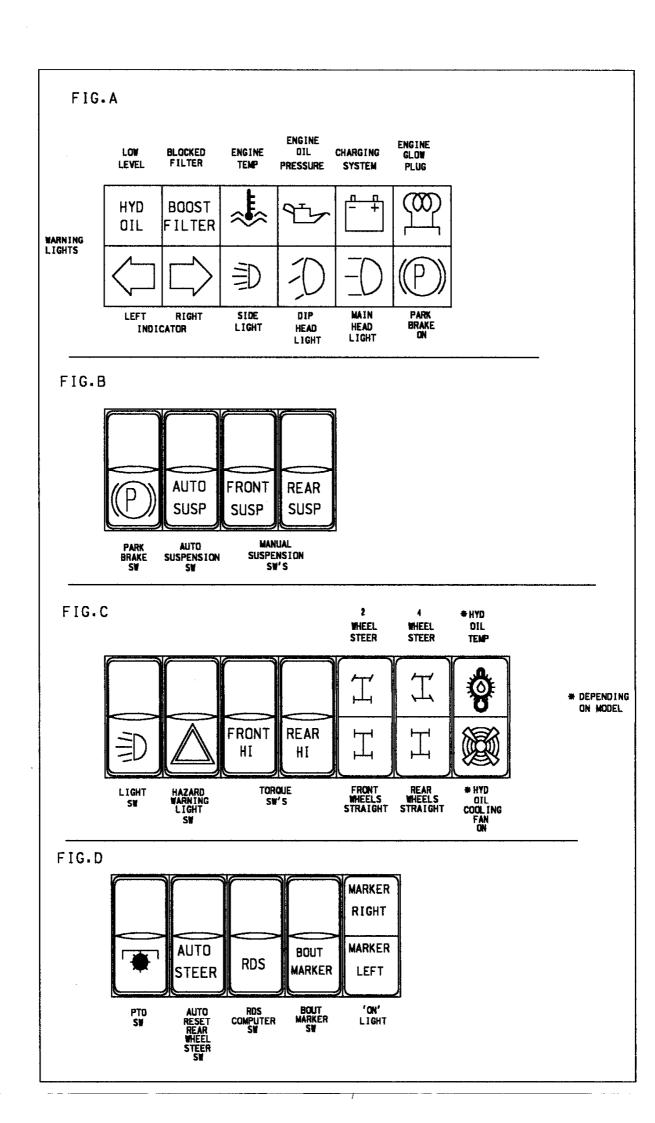
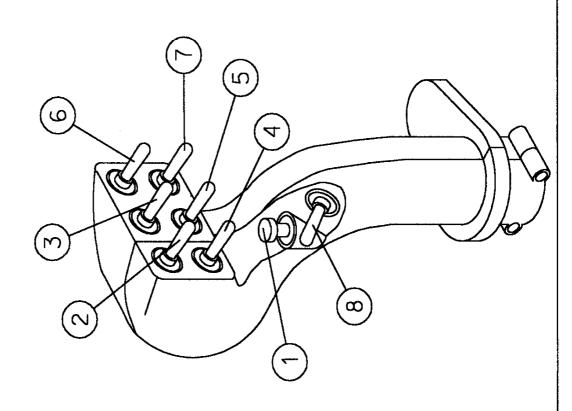
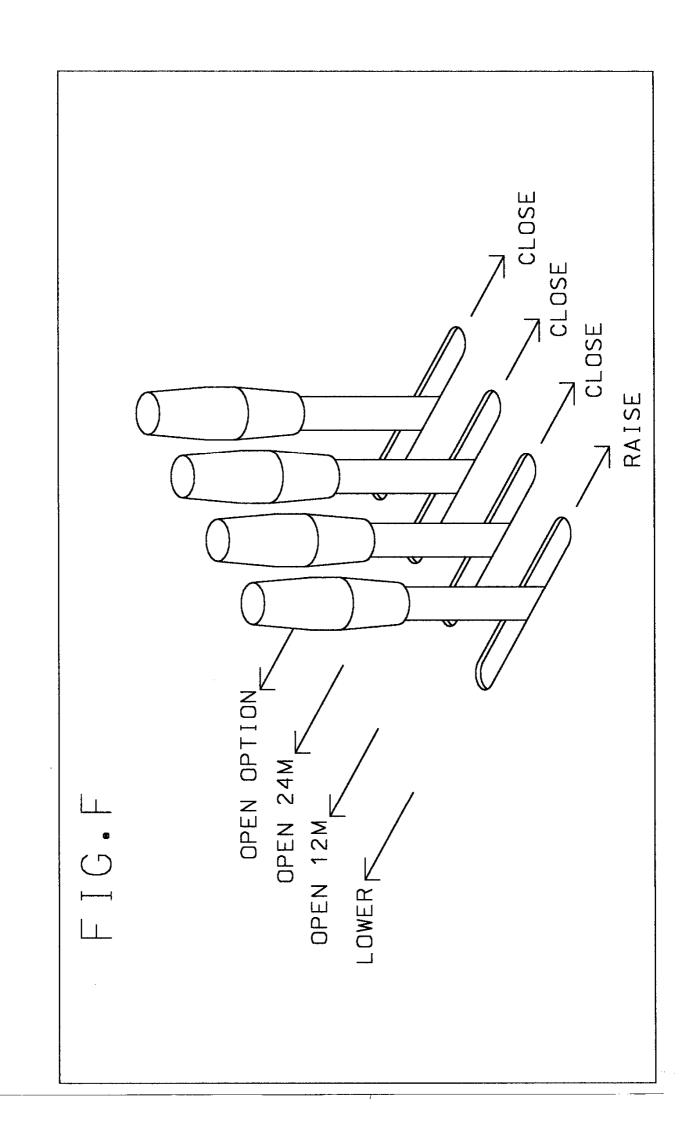
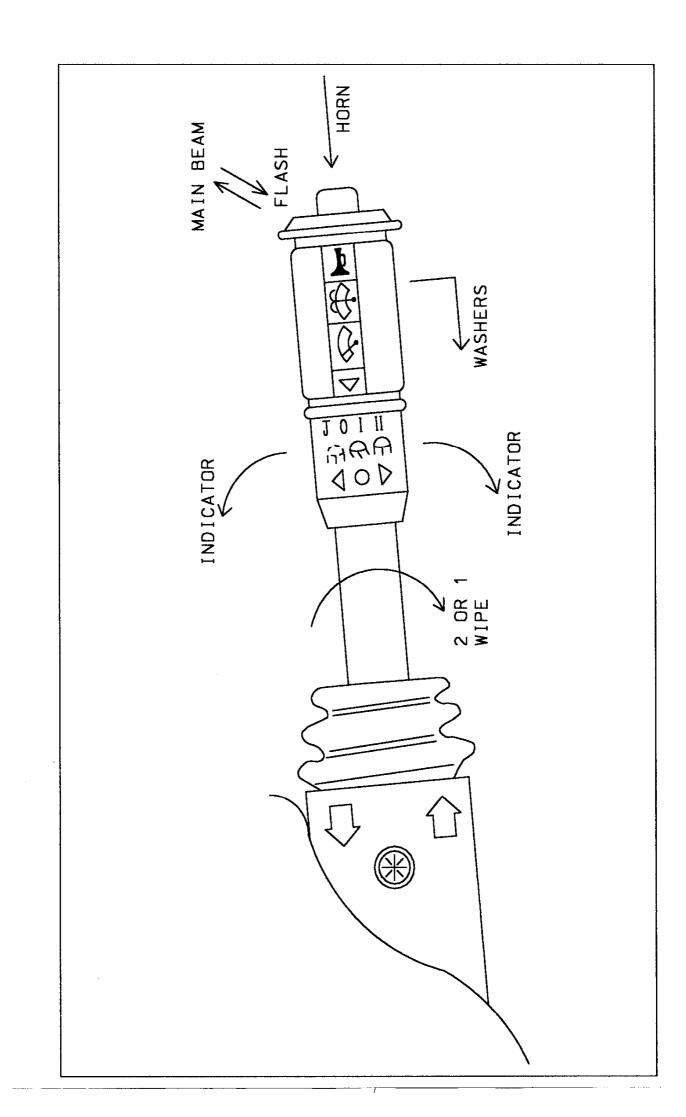


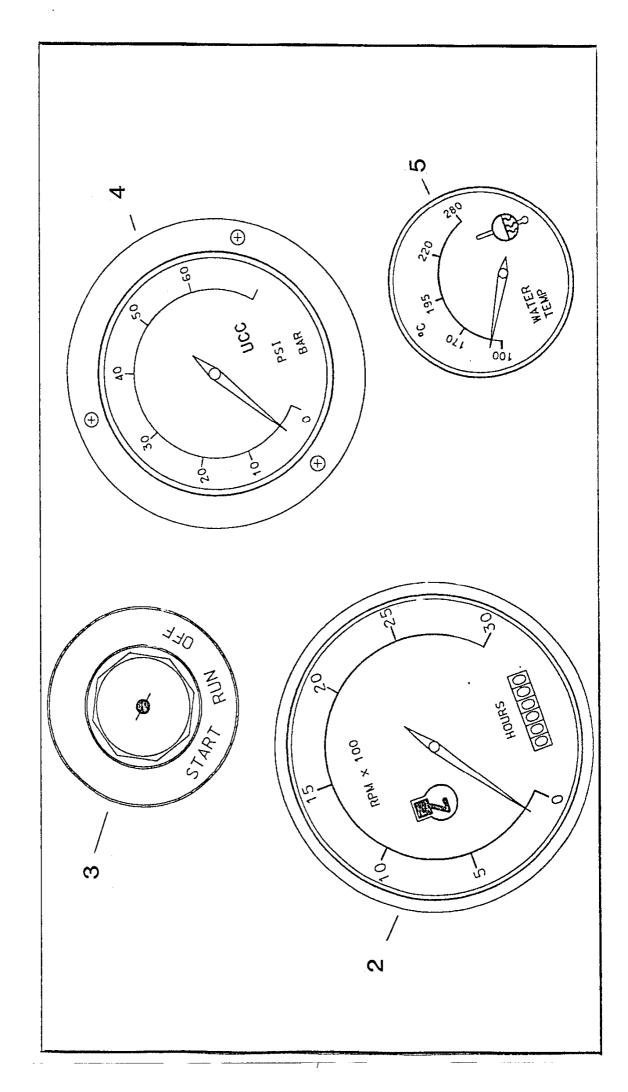
FIG.E - JOYSTICK CONTROL

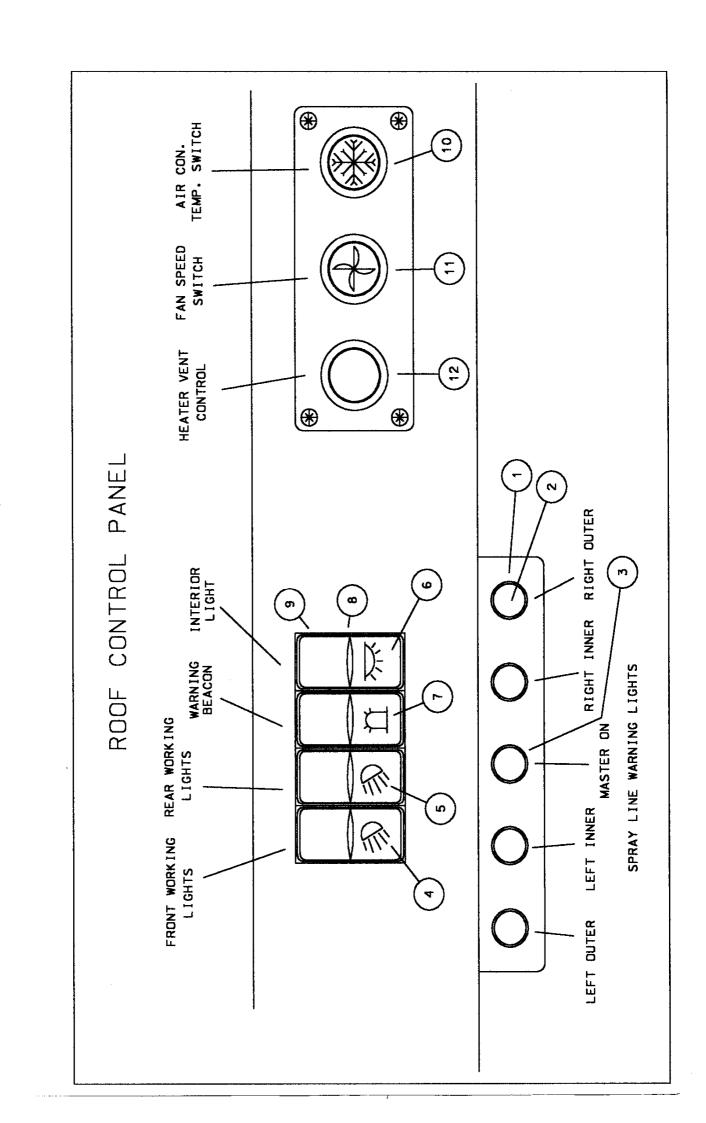


1 - BOOM MASTER
2 - LEFT INNER
3 - RIGHT INNER
4 - LEFT OUTER
5 - RIGHT OUTER
6 - V.G. LEFT
7 - V.G. RIGHT
8 - TILT









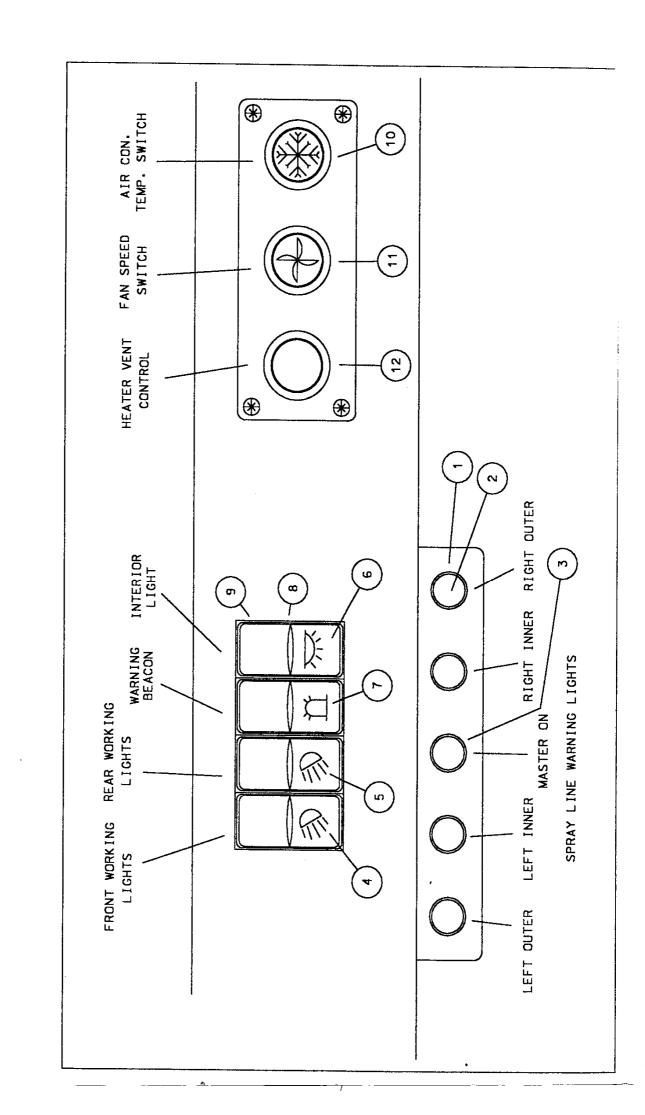
CLEANACRES MACHINERY LTD

HAZLETON CHELTENHAM GLOS GL54 4DX Tel. 01451 860721 Fax. 01451 860139



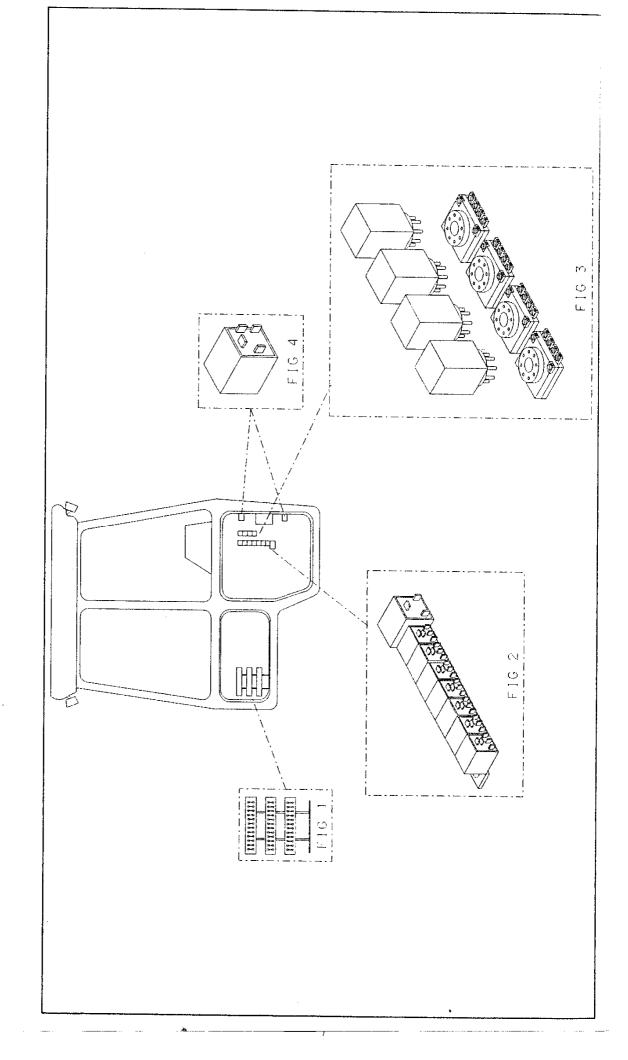
PARTS MANUAL

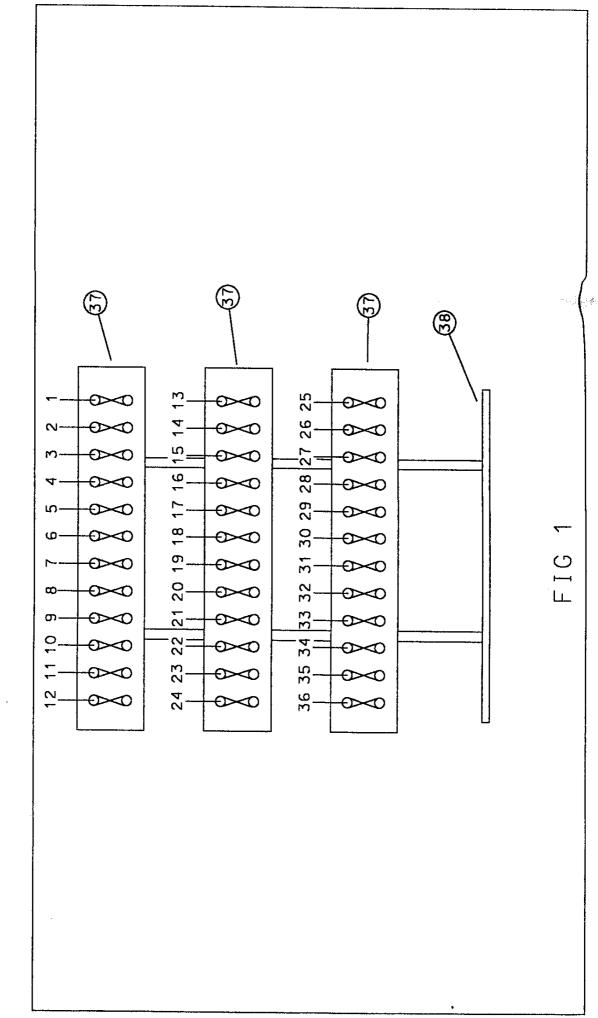
<u>1999</u>



SWITCH'S

ITEM	PART No.	QTY.	DESCRIPTION
1	EM	4	Amber warning light
2	RS	5	Warning light bulb
3	EM	1	Red warning light
4		1	Front work light decal
5		1	Rear work light decal
6		1	Interior light decal
7		1	Beacon decal
8		4	On/off switch
9		1	Switch housing
10		1	Thermostat
11		1	Fanswitch
12		1	Heater control



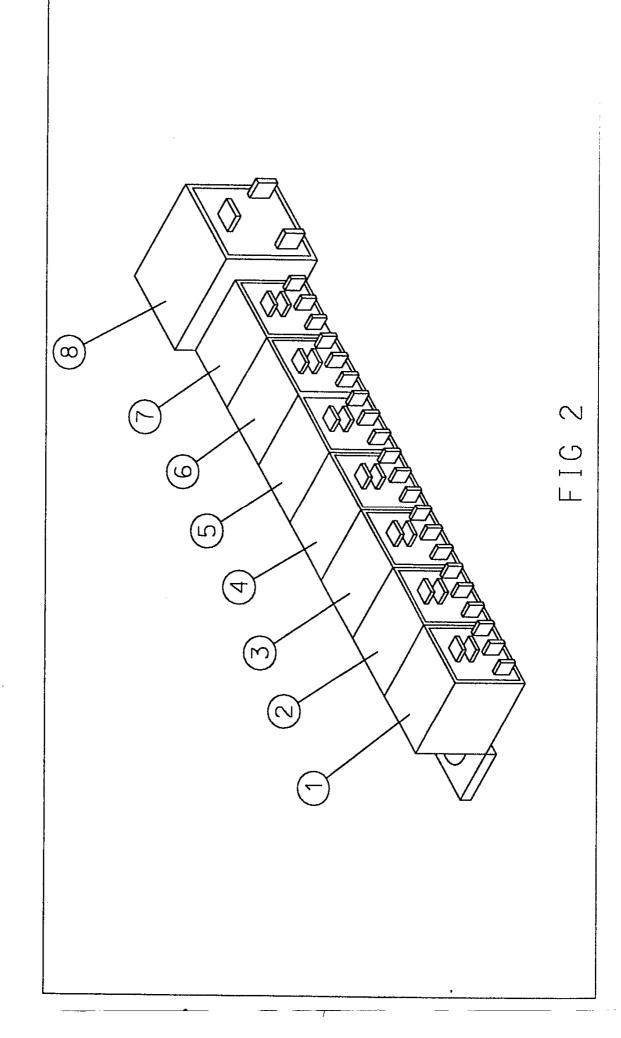


FUSE BOX

FUSE No.	RATING	QTY.	FUNCTION
1	25A	1	IGNITION SW TERM 1
2	5A	1	WARNIG LIGHTS
3	16A	1	INJECTOR PUMP
4	5A	1	TEMP GAUGE/REV. COUNTER
5	8A	11	BRAKE SW
6	8A	1	MASTER SPRAY SW
7	8A	1	BALL VALVES
8	5A	1	AUTO STEER/PTO/RDS SWS
9	5A	1	FRONT & REAR HI SWS & FRONT WHEEL ALIGN LIGHT
10	5A	1	K8 RELAY
11	5A	1	HYD. OIL TEMP
12	5A	1	REAR WHEEL ALIGN & 4 WHEEL STEER FOOT SW
13	16A	1	LIGHT SW
14	5A	1	H/LAMP FLASHER
15	16A	1	DIP/MAIN RELAYS
16	8A	1	BEACON
17	8A	1	HORN RELAY
18	8A	1	WASHER RELAY
19	8A	1	WIPE/WASH/HORN
20	8A	1	E/HYD. SWS
21	16A	1	BOUT MARKER SW
22	8A	1	HAZARD/IND
23	16A	1	WORKLIGHTS FRONT
24	16A	1	WORKLIGHTS REAR
25	5A	1	FRONT SUSP SENSOR
26	5A	1	REAR SUSP SENSOR
27	5A	1	TRANS RELAY TERM 5
28	5A	1	TRANS RELAY TERMS 1 & 11
29			
30			
31	5A	1	INT. LIGHT SW

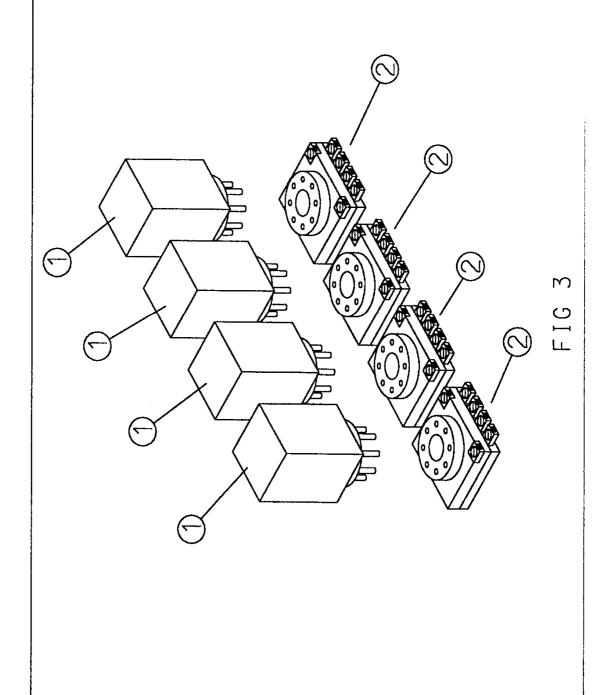
32	16A	1	STARTER RELAY	
33	16A	1	A/C - HEATER RELAY	
34	16A	1	COLD START RELAY	
35	35A	1	HYD. OIL RELAY	
36				

ITEM	PART No.	QTY.	DESCRIPTION
37		3	12 way fuse bank
38			Fuse bank bracket



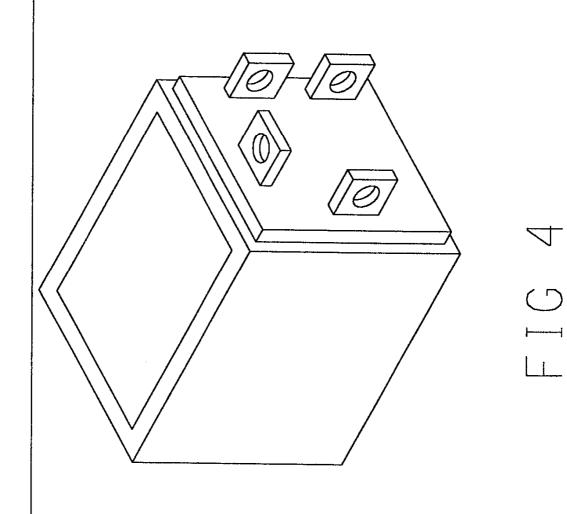
RELAY'S & FLASHER UNIT

ITEM	PART No.	QTY.	DESCRIPTION
1	EM912	1	30 amp. Relay (K1)
2	EM912 .	1	30 amp. Relay (K2)
3	EM912	1	30 amp. Relay (K3)
4	EM912	1	30 amp. Relay (k4)
5	EM912	1	30 amp. Relay (K5)
6	EM912	1	30 amp. Relay (k6)
7	EM912	1	30 amp. Relay (K7)
7A	RS-262-501	1	6 amp. Diode
8	EM916	1	Flasher relay



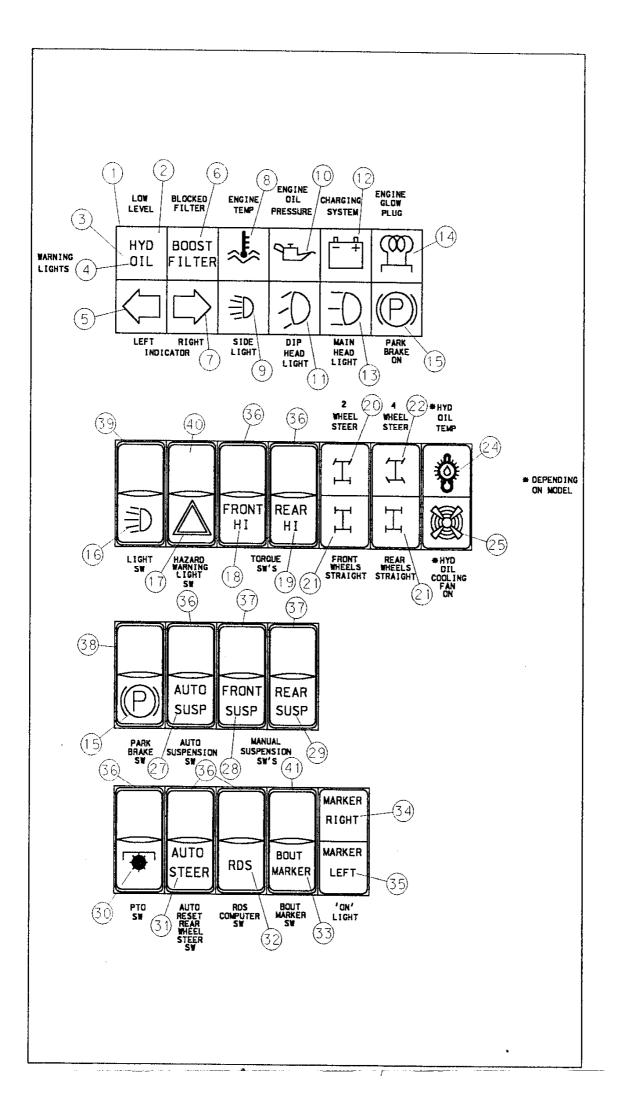
TRANSISTORIZED RELAY'S

ITEM	PART No.	QTY.	DESCRIPTION	
1	RS349-254	4	TRANSISTORISED RELAY	-
2	RS403-241	4	RELAY HOLDER	



60 AMP. RELAY

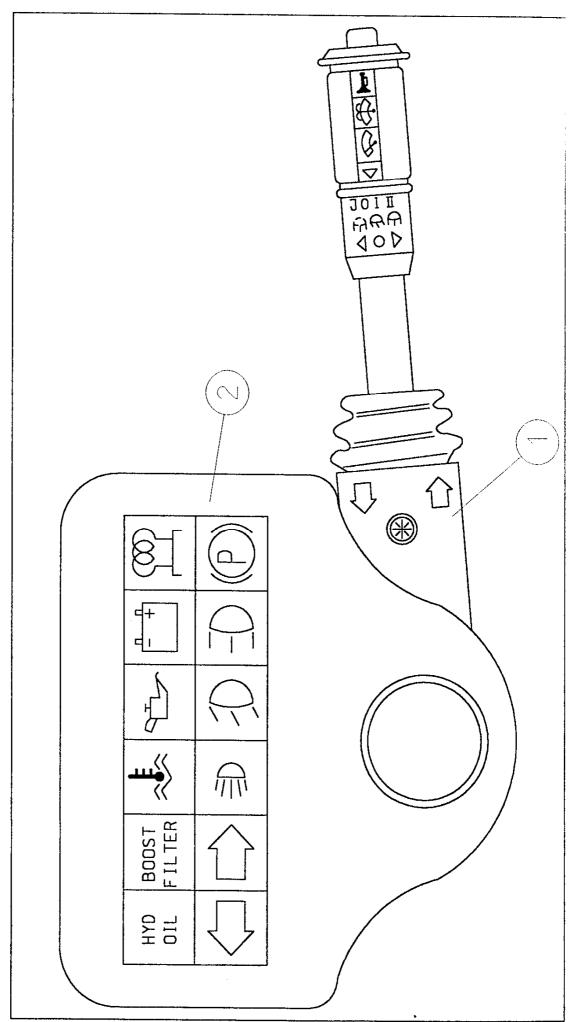
ITEM	PART No.	QTY.	DESCRIPTION
1	EM921	2	60 AMP RELAY



DASH & SWITCH'S

ITEM	PART No.	QTY.	DESCRIPTION
1		1	Warning light housing
2		33	Warning light unit
3		33	Warning light bulb
4		1	Decal - hydraulic oil
5	594461	1	Decal - left indicator
6		11	Decal - boost filter
7	594460	1	Decal - right indicator
8	595101	1	Decal - engine temp
9	596654	1	Decal - side light
10	596171	1	Decal - oil pressure
11	596303	1	Decal - Dip beam
12	596153	1	Decal - battery
13	596169	1	Decal - main beam
14	593068	1	Decal - heater plug
15	596173	2	Decal - park brake
16		1	Decal - light switch
17	596191	1	Decal - hazzard
18		1	Decal - front hi
19		1	Decal - rear hi
20	594786	1	Decal - 2 wheel steer
21		1	Decal - wheel alignment
22	594785	1	Decal - 4 wheel steer
23			
24	596141	1	Decal - hydraulic oil level
25	596642	1	Decal - oil cooler fan
26			
27		1	Decal - auto suspension
28		1	Decal - front suspension
29		1	Decal - rear suspension
30	596392	1	Decal - pto
31		1	Decal - auto steer

32	1	Decal - rds switch
33	1	Decal - bout marker
34	1	Decal - marker right
35	1	Decai - marker left
36	6	2 pole on/off switch
37	2	6 pole centre bias switch
38	1	3 pole on/on switch
39	1	3 pole off/on/on switch
40	1	Hazzard switch
41	1	6 pole on/off/on switch



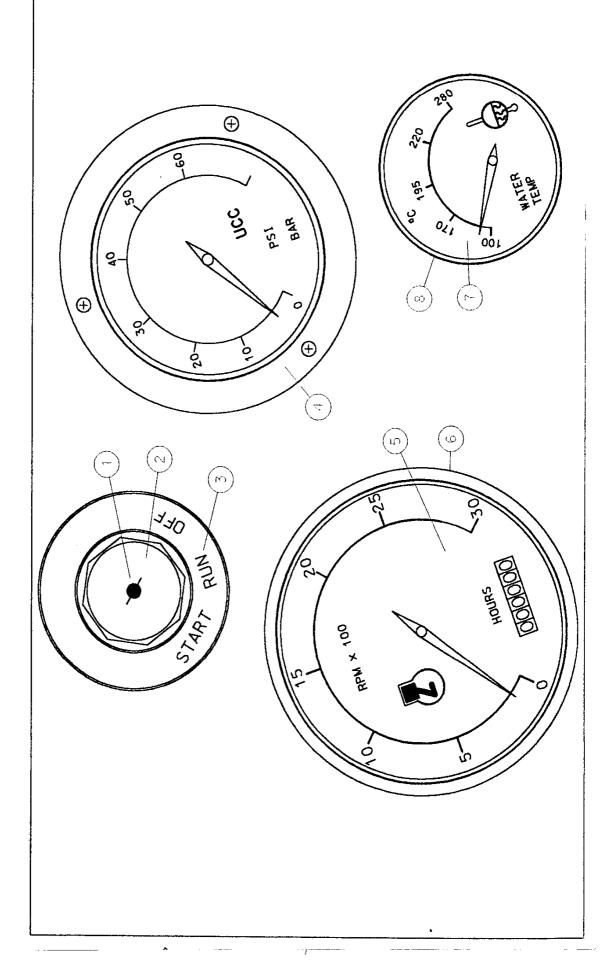
--

COLUNM & CONSOLE

ITEM	PART No.	QTY.	DESCRIPTION
1		1	Column switch
2		1	Console

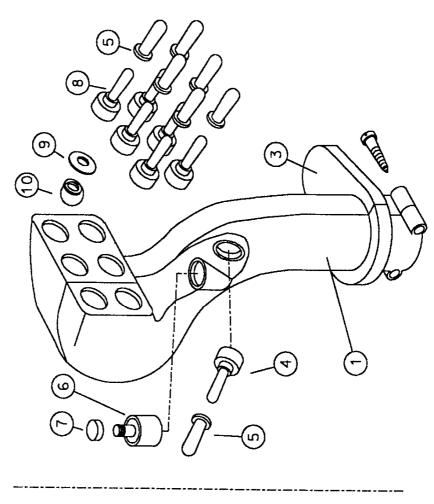
CLOCK'S & IGNITION

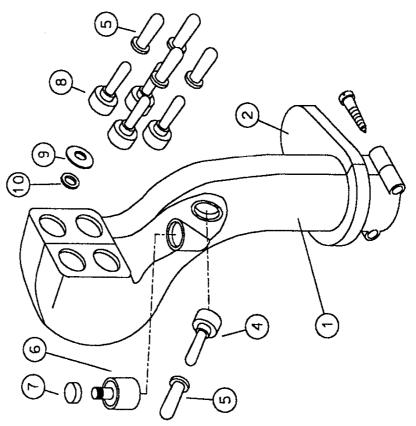
ITEM	PART No.	QTV.	DESCRIPTION
1	EM3429K	2	Ignition Key
2	EM3429	l	Ignition Switch
3	CMPD112	1	Start switch decal
4	HY603	l	Boost pressure gauge
5	AF4012	1	Rev. counter / hour meter
6	AF4012LK	1	Light for above
7	AF4011	1	Temperature gauge
8	AF4011LK	1	Light for above



CLOCK'S & IGNITION

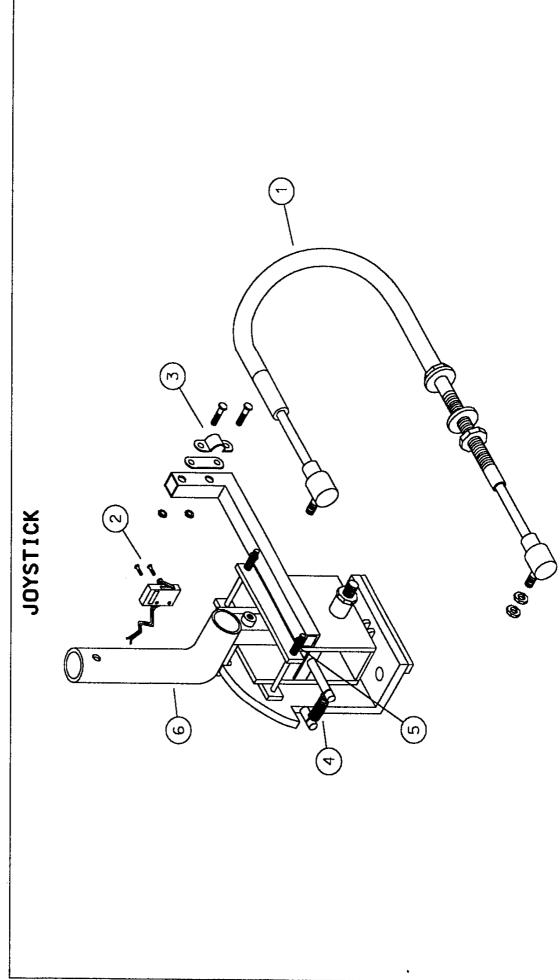
ITEM	PART No.	QTY.	DESCRIPTION
1		2	Ign. Key
2	EM	1	Ign. Switch
3	PD	1	Start switch decal
4	HY	1	Boost pressure gauge
5		1	Rev. counter / hour meter
6		1	Light for above
7		1	Temp. gauge
8		1	Light for above





JOYSTICK HANDLE

ITEM	PART No.	QTY.	DESCRIPTION
1	EM3450L	1	Joystick handle - left side
2	EM3450R	1	Joystick handle - right side - 2 switch
3	EM	1	Joystick handle - right side - 4 switch
4	RS317-178	1	6 pole centre bias switch
5	RS321-228	1	Toggle cover
6	RS339-241	1	Boom master switch
7	339-617	1	Red button
8		4	On/off toggle switch
9		6	Alloy switch spacer (front)
10		6	Alloy switch spacer (rear)



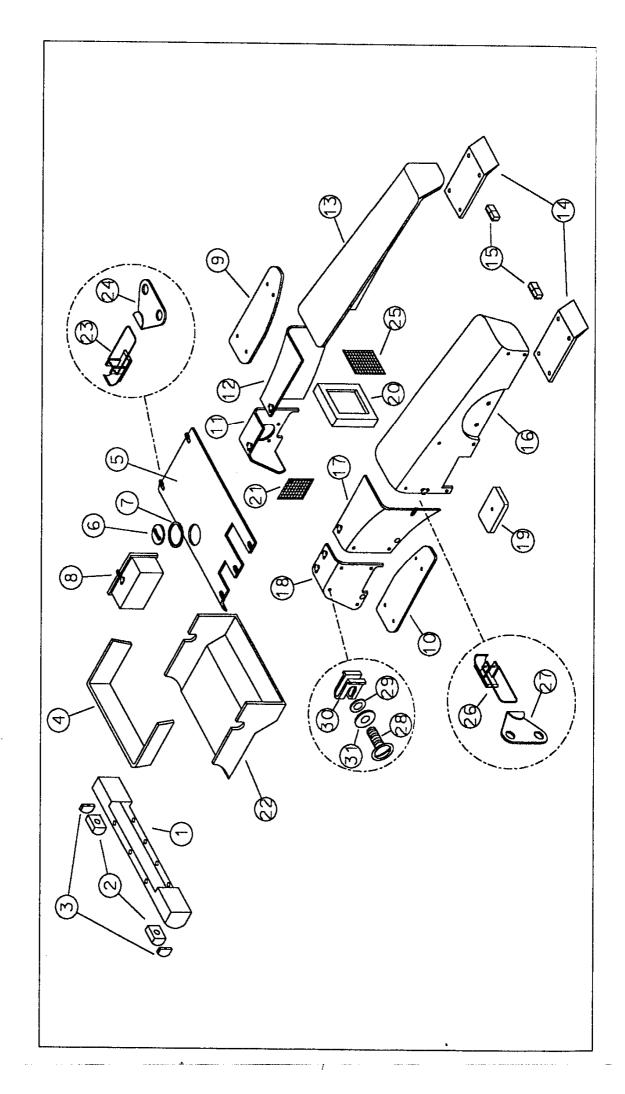
.

-

/

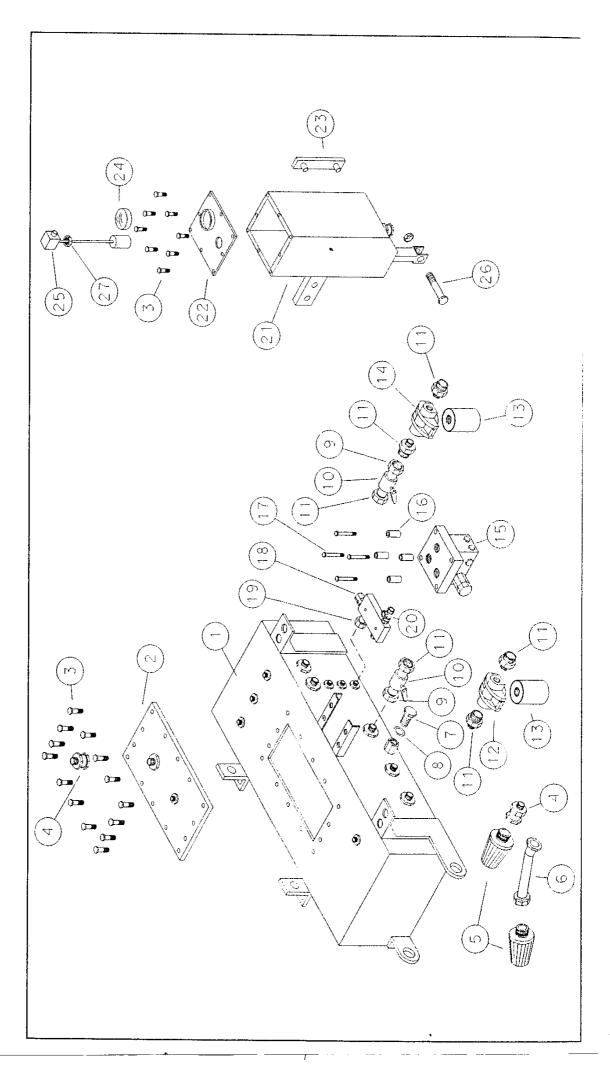
JOYSTICK

ITEM	PART No.	QTY.	DESCRIPTION
1	HY	1	Control cable
2	RS	1	Neutral switch
3	***************************************	1	Cable clamp
4		2	Neutral lock spring
5		2	Friction damper spring
6	BMF	1	Joystick assembly



BODY PANNELS

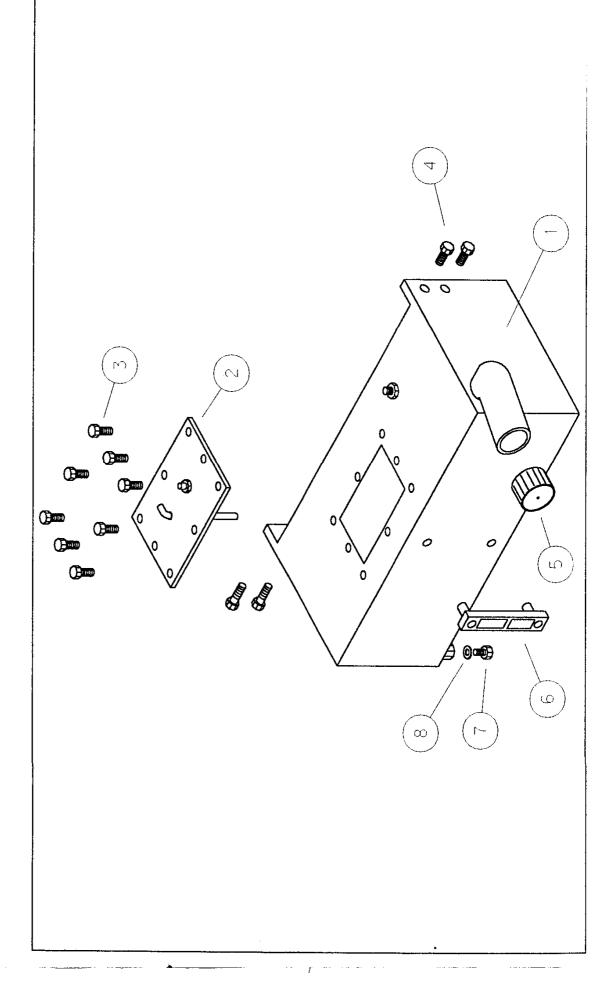
ITEM	PART No.	QTY.	DESCRIPTION
1	SPV001	1	Front bumper / light panel
2	EM3441	2	Head lamp complete unit
3	EM3445	2	Indicator complete unit
4	SPV002	1	Cab skirt panel
5	SPV009	1	Top engine panel
6	TL063-059	1	Tank lid vent
7	TL01350401	1	Neck ring
8	ACC102	1	Protective clothes locker
9	SPV012	1	Front mud guard offside
10	SPV011	1	Front mud guard nearside
11	SPV006	1	Engine offside panel 1
12	SPV007	1	Engine offside panel 2
13	SPV008	1	Sprayer chassis offside panel 3
14	ACC110	2	Rear mud guard's
15	EM901	2	Rear light assembly
16	SPV005	1	Sprayer chassis nearside panel 3
17	SPV004	1	Engine nearside panel 2
18	SPV003	1	Engine nearside panel 1
19	SPV010	1	Battery cover
20	SPV013	1	Radiator air box cover
21	BMF110-OCS	1	Oil cooler cover
22	SPV015	1	Front axle crop deflector
23	FP2	5	Protex fastner
24	FP2A	5	Lock plate protex fastner
25	BMF110-RS	1	Radiator mesh cover
26	FP3	2	Protex fastner
27	FP4	2	Lock plate protex fastner
28	DZ01	26	Screw
29	DZ02	26	Small plastic washer
30	DZ03	26	Locking clip
31	DZ05	26	Plastic washer



HYDRAULIC TANK

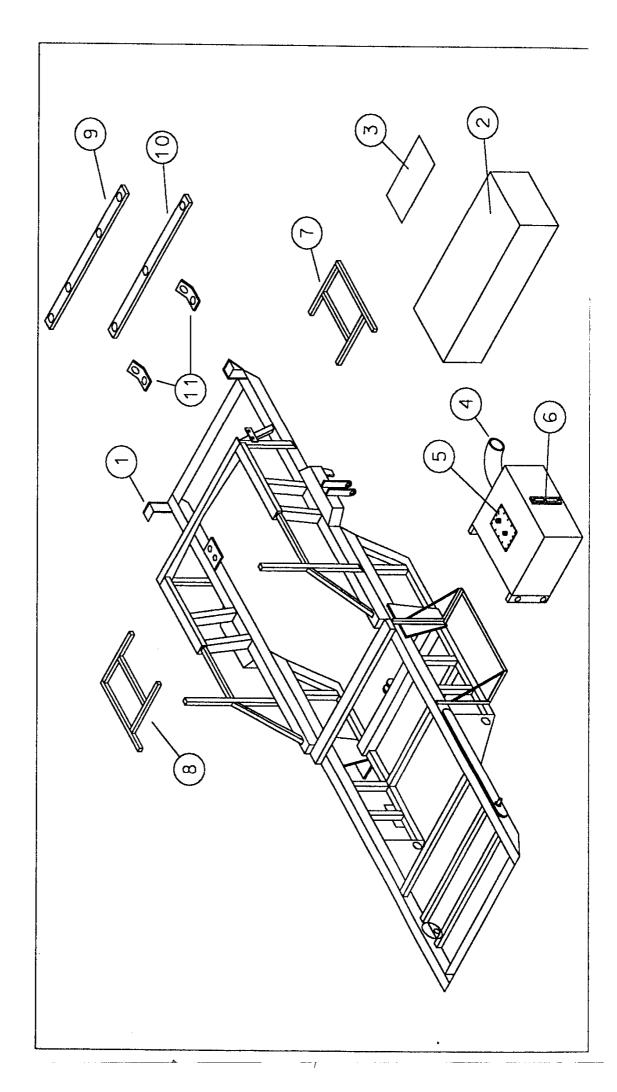
& FITTINGS

ITEM	PART No.	QTY.	DESCRIPTION
1	BMF831	1	Main hydraulic tank
2	BMF832	1	Main hydraulic tank lid
3	M6X20HS	22	Bolt
4	HY828	1	11/2" m-f swivel
5	HY619	2	11/2" suction strainer
6	BMF833	1	Hydraulic tank inlet tube
7	HY435	1	1/2" bsp. plug
8	HY417	1	1/2" bonded seal
9	HY828	2	11/4" bsp. m-f swivel
10	HY897	2	11/4" shut off valve
11	HY864	4	11/4" nipple
12	HY646	1	Suction filter
13	HY645	2	Filter cartridge
14	HY647	1	Return filter
15	HY4015	1	B.E.H.S. purge valve
16	S351	4	Spacer
17	M10X55HB	4	Bolt
18	HY4007	1	Pressure releif valve
19	HY414	1	1/2" m-f swivel
20	HY830	1	1/2" m-f-m tee
21	BMF829	1	Hydraulic header tank
22	BMF830	1	Inspection cover - header tank
23	HY618	1	Oil level gauge
24	HY642	1	Filler / breather
25	EM3447	1	Oil level warning switch
26	M10X55HB	1	Bolt and lock nut
27	PF100BN	1	Nut



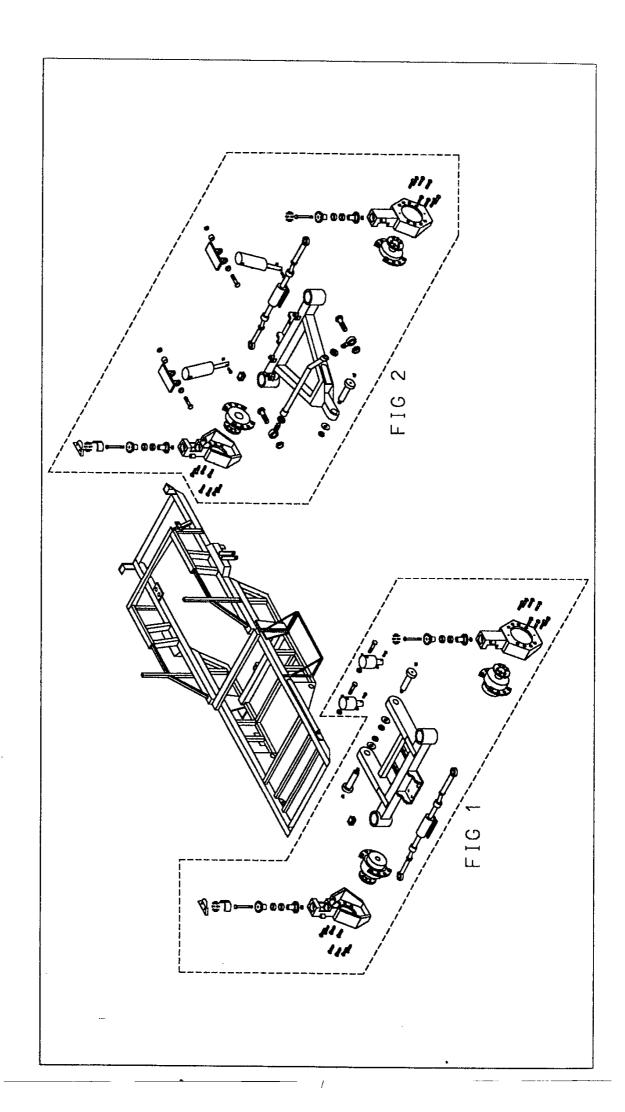
FUEL TANK

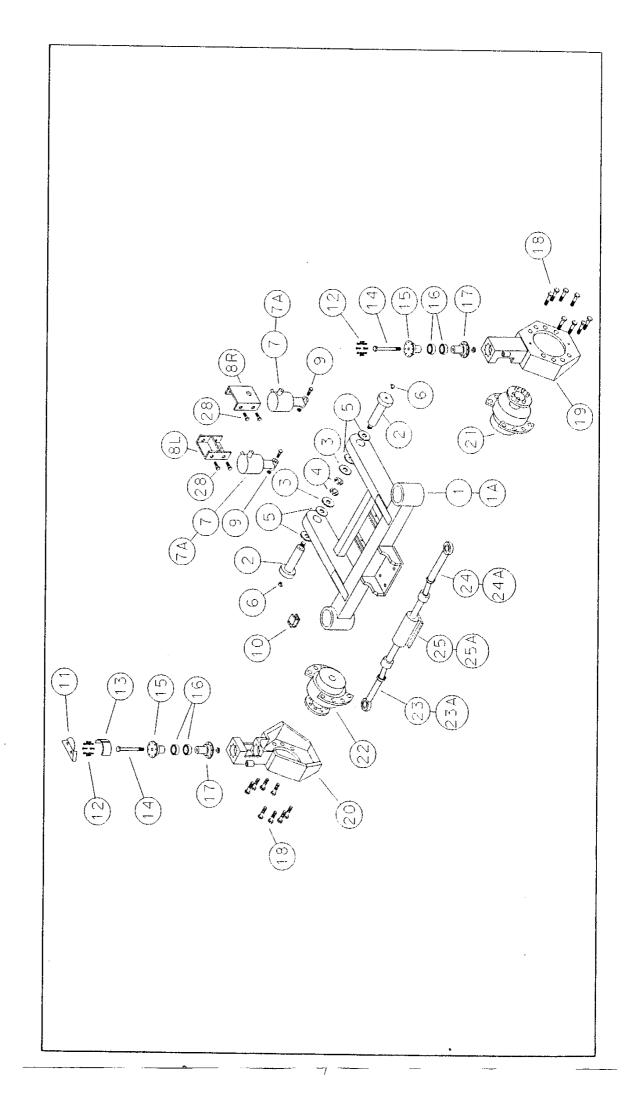
ITEM	PART No.	QTY.	DESCRIPTION	
1	BMF834	1	Fuel tank	
2	BMF835	1	Fuel tank inspection cover	
3	M6X16HS	8	Bolt	
4	M12X40HB	4	Bolt & locknut	
5		1	Filler / breather	
6		1	Fuel level gauge	
7		1	1/2" bsp plug	
8		1	1/2" bonded seal	



-

ITEM	PART No.	QTY.	DESCRIPTION
1	BMF810	1	6 cylinder chassis frame only
1	BMF811	1	4 cylinder chassis frame only
2	BMF831	1	Hydraulic oil tank
3	BMF832	1	Hydraulic oil tank lid
4	BMF834	1	Fuel tank
5	BMF835	1	Fuel tank inspection cover
6		1	Fuel tank level gauge
7	BMF874	1	O/S/F mud guard support
8	BMF875	1	N/S/F mud guard support
9	BMF871	1	Top front bumper mount
10	BMF872	1	Bottom front bumper mount
11	BMF873	2	Bottom front bumper adjuster

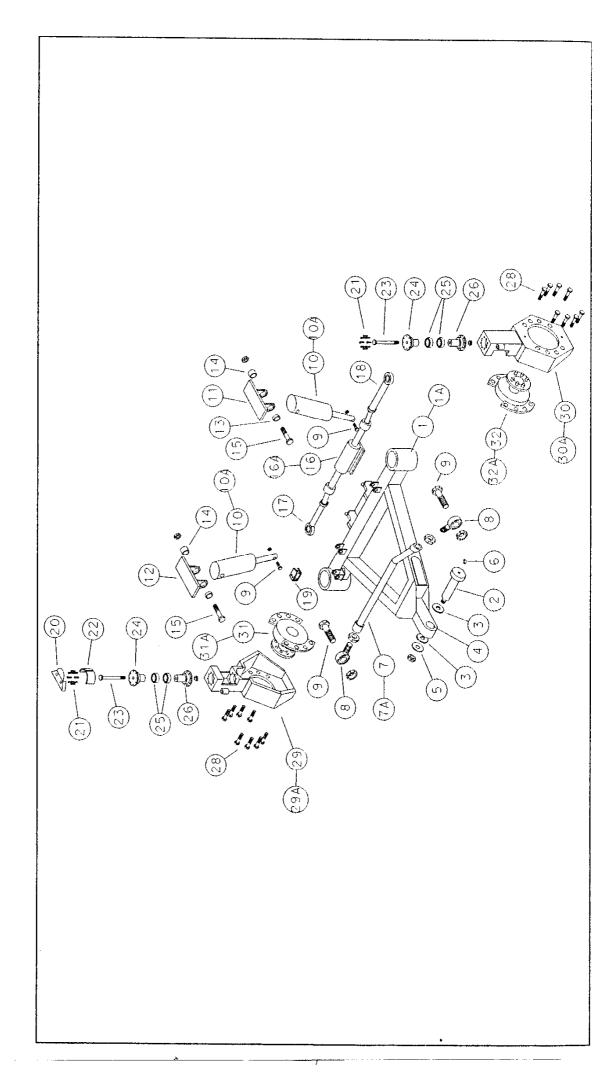




,---

REAR AXLE

ITEM	PART No.	QTY.	DESCRIPTION
1	BMF816	1	Rear axle - 72"
IA	BMF817	1	Rear axle - 60"
2	BMF850	2	Rear axle pivot pin
3	BMF849	2	Pivot pin washer
4	M20LN	2	M20 locknut
5	BMF848	4	Thrust washer
6		2	Grease nipple
7		2	Rear suspension cylinder
7A		2	Rear suspension cylinder seal kit
8L	BMF826L	1	Rear suspension ram support
8R	BMF826R	1	Rear suspension ram support
9	M20X120HB	2	Bolt & locknut
10	BMF722A	1	Small micro switch bracket
11	BMF723	1	Micro switch top cover
12	M10X30SCS	32	M10 socket cap screws
13	BMF724	1	Micro switch trip bracket
14	M24X290HB	2	Bolt, nut & half nut
15	BMF825	2	Upper portal leg king pin
16		4	King pin bearing
17	BMF824	2	Lower portal leg king pin
18	7/8"UNFX21/2"HB	16	Bolt & locknut
19	BMF820	1	O.S.R. portal leg
20	BMF821	1	N.S.R. portal leg
21		1	O.S.R. wheel motor
22		1	N.S.R. wheel motor
23		1	N.S.R. trackrod 72"
23A		1	N.S.R. trackrod 60"
24		1	O.S.R. trackrod 72"
24A		1	O.S.R. trackrod 60"
25		1	Steering ram
25A		1	Steering ram seal kit
ک &			



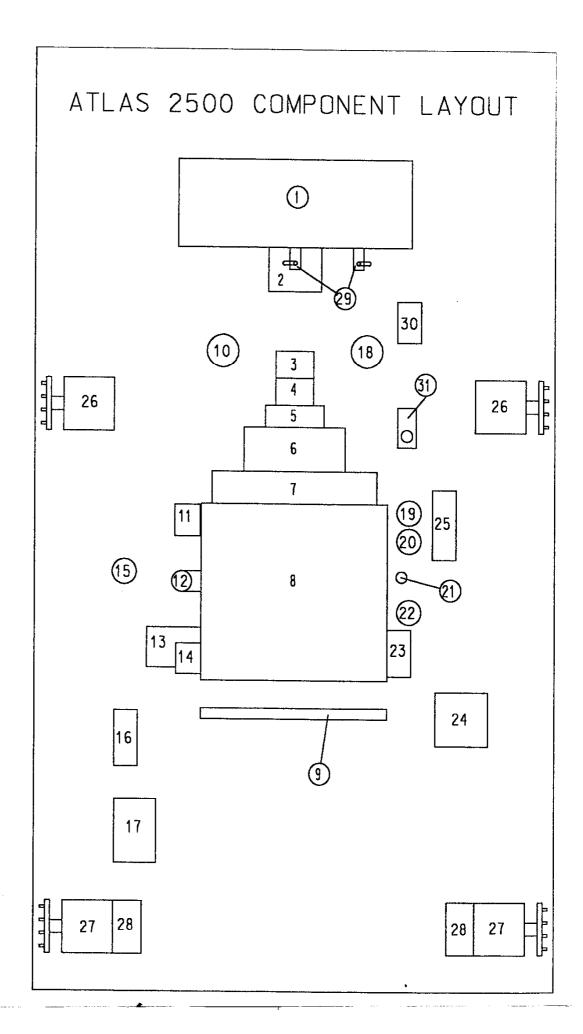
FRONT AXLE

ITEM	PART No.	QTY.	DESCRIPTION
1	BMF812	1	Front axle - 72"
1A	BMF813	1	Front axle - 60"
2	BMF851	1	Pivot pin and locknut
3	BMF847	2	Bearing spacer
4		1	Bearing insert c.w. circlip
5	BMF849	1	Pivot pin washer
6		1	Grease nipple
7	BMF849	1	72" front axle cross link
7A	BMF815	4	60" front axle cross link
8	BR1072	4	30mm spherical bearing rod end
9	M30X110HB	2	Bolt and locknut
10		2	Front suspension cylinder
10A		1	Front suspension cylinder seal kit
11	BMF845R	1	O.S.F. suspension top mount
12	BMF845L		N.S.F. suspension top mount
13	BMF846S	2	Front suspension short spacer
14	BMF846L	2	Front suspension long spacer
15	M30X100HB	2	Bolt and locknut
16	RM5537	1	Front steering ram - 72"
16A	RM5537-1	1	Front steering ram - 60"
	RSK5537	1	Front steering ram seal kit
17		1	N.S.F. track rod - 72"
17A	74.1	1	N.S.F. track rod - 60"
18		1	O.S.F. track rod - 72"
18A		1	O.S.F. track rod - 60"
19	BMF722A	1	Micro switch bracket
20	BMF723	1	Micro switch top cover
21	M10X30S.C.S.	32	M10 socket cap screws
22	BMF724	1	Micro switch trip bracket
23	M24X290HB	2	Bolt, nut and half nut
24	BMF825	2	Upper portal leg king pin

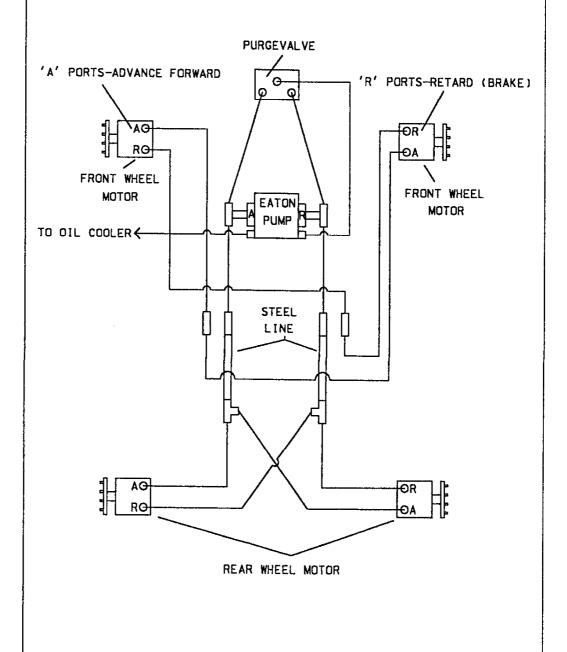
25	BR1075	4	King pin bearing
26	BMF824	2	Lower portal leg king pin
28	7/8"UNFX21/2"HB	16	Bolt and locknut
29	BMF820	1	N.S.F. portal leg - ms11
29A	BMF818	1	N.S.F. portal leg - ms08
30	BMF821	1	O.S.F. portal leg - msl 1
30A	BMF819	1	O.S.F. portal leg - ms08
31	HY4028	1	N.S.F. wheel motor - ms11
31A	HY4040	1	N.S.F. wheel motor - ms08
32	HY4030	1	O.S.F. wheel motor - ms11
32A	HY4040	1	O.S.F. wheel motor - ms08

KEY TO COMPONENT LAYOUT

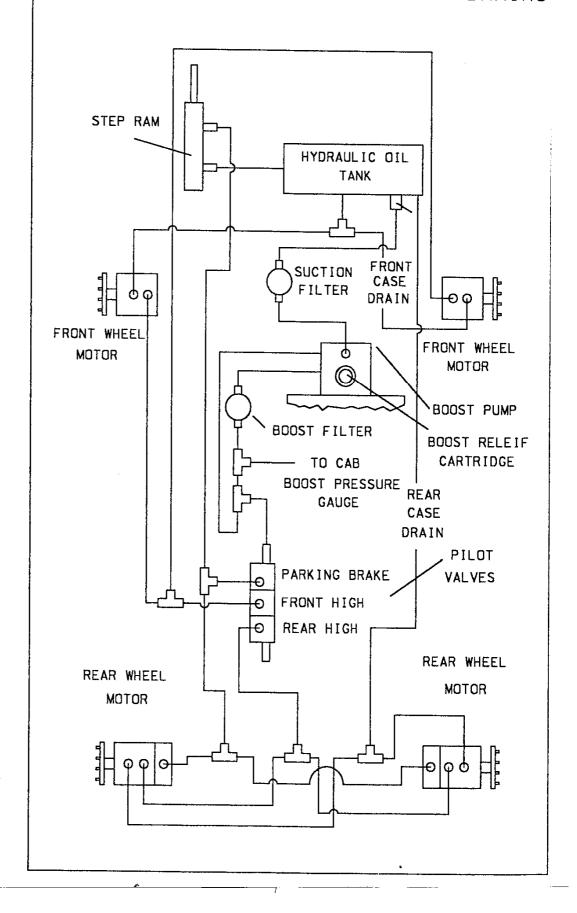
- 1 Hydraulic tank
- 2 Purge valve
- 3 Steering/auxillary pump
- 4 P.T.O. pump
- 5 Boost pump
- 6 Eaton transmission pump
- 7 'Centa Flex' drive coupling
- 8 Perkins 1,000 series engine
- 9 Radiator
- 10 Suction filter
- 11 Starter motor
- 12 Lift pump
- 13 Air conditioning compressor
- 14 Alternator
- 15 Boost filter
- 16 'Pilot' valve block
- 17 Electrohydraulic spool block
- 18 Return filter
- 19 Fuel filter
- 20 Sediment trap
- 21 Engine oil dipstick
- 22 Engine oil filter
- 23 Fuel injection pump
- 24 Hydraulic oil header tank
- 25 Oil cooler
- 26 Front wheel motor
- 27 Rear wheel motor
- 28 Multi disc parking brake
- 29 Oil tank shut off valve
- 30 Manual spool valve
- 31 Flow divider



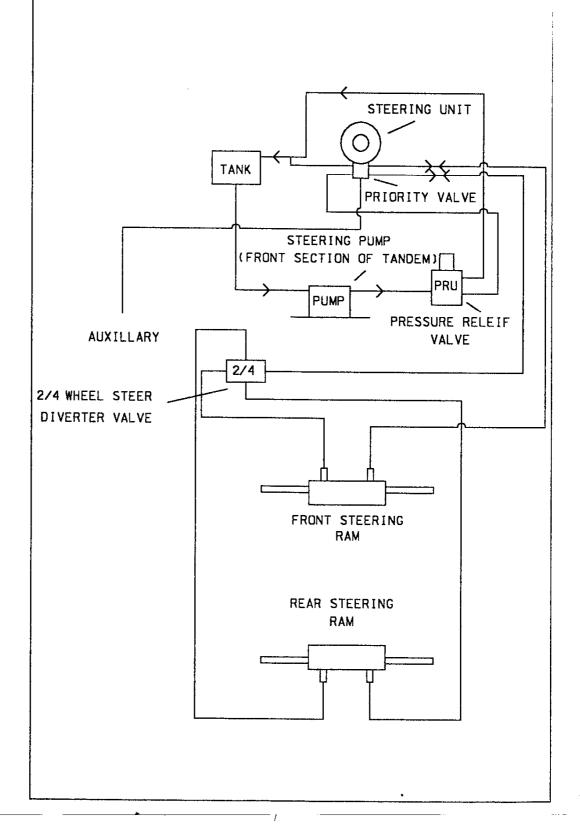
ATLAS 2500 HIGH PRESSURE-CLOSED LOOP CIRCUIT



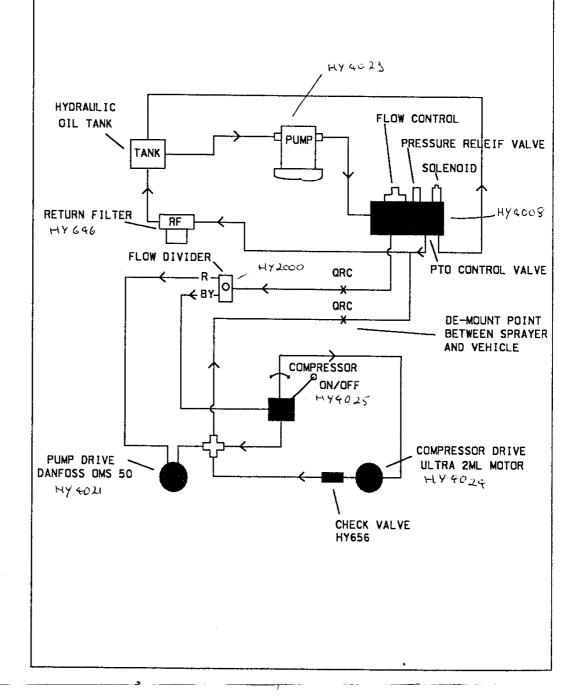
ATLAS 2500 'BOOST' CIRCUIT/CASE DRAINS

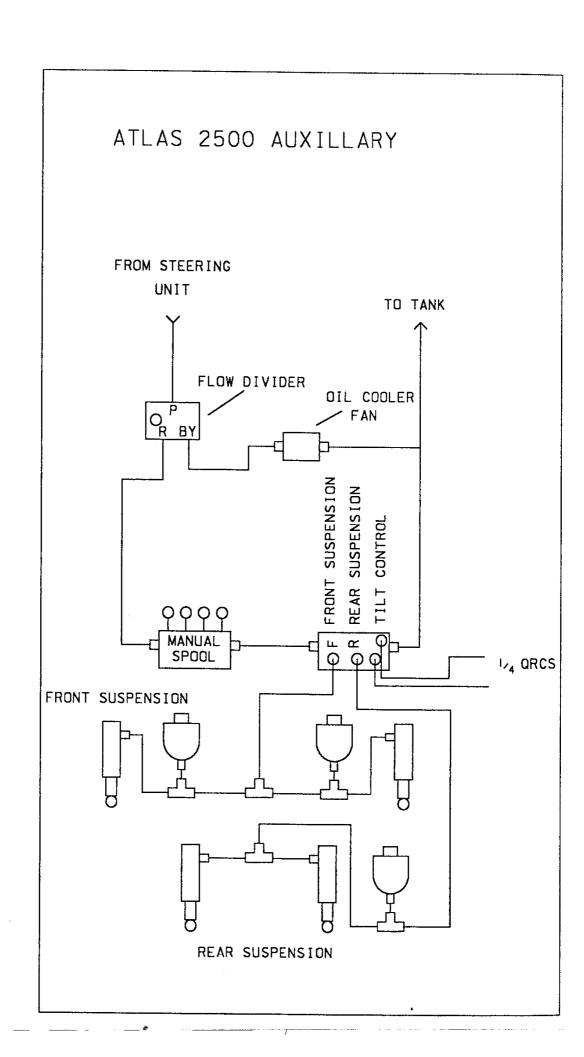


ATLAS 2500 STEERING

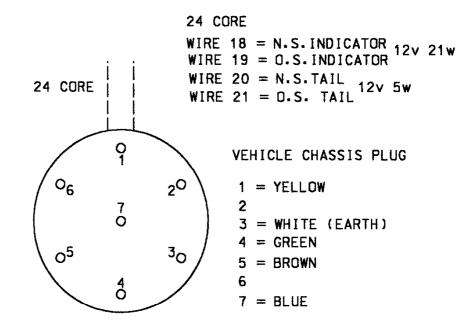


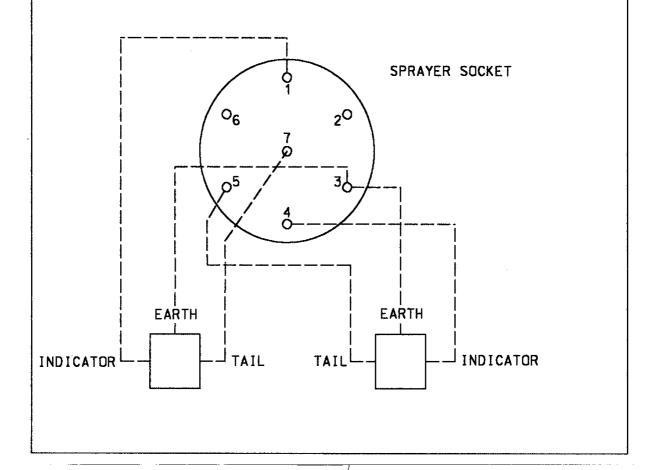
ATLAS 2500 'P.T.O.' CIRCUIT



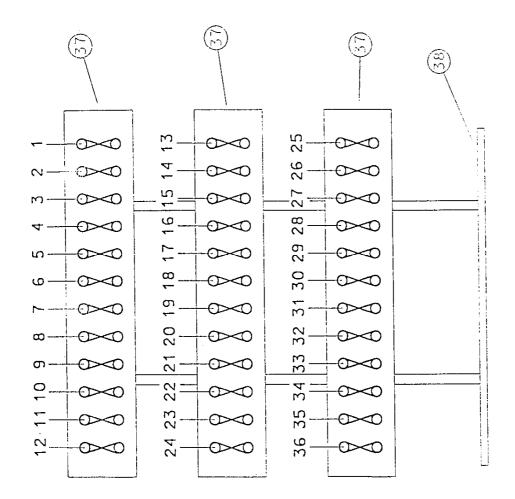


SPV REAR LIGHTING





FUSE BOX LAYOUT



. ____

FUSE No.	RATING	FUNCTION	WIRE No
1	25A	IGNITION SW TERM 1	14
2	5A	WARNIG LIGHTS	16
3	16A	INJECTOR PUMP	17
4	5A	TEMP GAUGE/REV. COUNTER	18
5	8A	BRAKE SW	71
6	8A	MASTER SPRAY SW	62
7	8A.	BALL VALVES	B6
8	5A	AUTO STEER/PTO/RDS SWS	79
9	5A	FRONT & REAR HI SWS & FRONT WHEEL ALIGN LIGHT	82
10	5A	K8 RELAY	53
11	5A	HYD OIL TEMP	152
12	5A	REAR WHEEL ALIGN & 4 WHEEL STEER FOOT SW	A23 /85
13	16A	LIGHT SW	44
14	5A	H/LAMP FLASHER	36
15	16A	DIP/MAIN RELAYS	37
16	8A	BEACON	109
17	8A	HORN RELAY	50
18	8A	WASHER RELAY	32
19	8A	WIPE/WASH/HORN	33
20	8A	E/HYD. SWS	68/69
21	16A	BOUT MARKER SW	145
22	8A	HAZARD/IND	94
23	16A	WORKLIGHTS FRONT	llZ.
24	16A	WORKLIGHTS REAR	114
25	5A	FRONT SUSP SENSOR	Aq
26	5A	REAR SUSP SENSOR	AIZ
27	5A	TRANS RELAY TERM 5	76
28	5A	TRANS RELAY TERMS 1 & 11	77
29			
30			·
31	5A	INT. LIGHT SW	117
32	16A	STARTER RELAY	23
33	16A	A/C - HEATER RELAY	55
34	16A	COLD START RELAY	29
35	35A	HYD. OIL RELAY	150
36			

,

ITEM	PART No.	QTY.	DESCRIPTION
37	EM3427	3	FUSE BOX
38		1	FUSE BOX BRACKET

CLEANACRES MACHINERY LTD

HAZLETON CHELTENHAM GLOS GL54 4DX Tel. 01451 860721 Fax. 01451 860139

DE-MOUNT SPRAYERS To fit ATLAS 2000 - 2500 - 3000

OPERATORS MANUAL

<u> 1999</u>

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

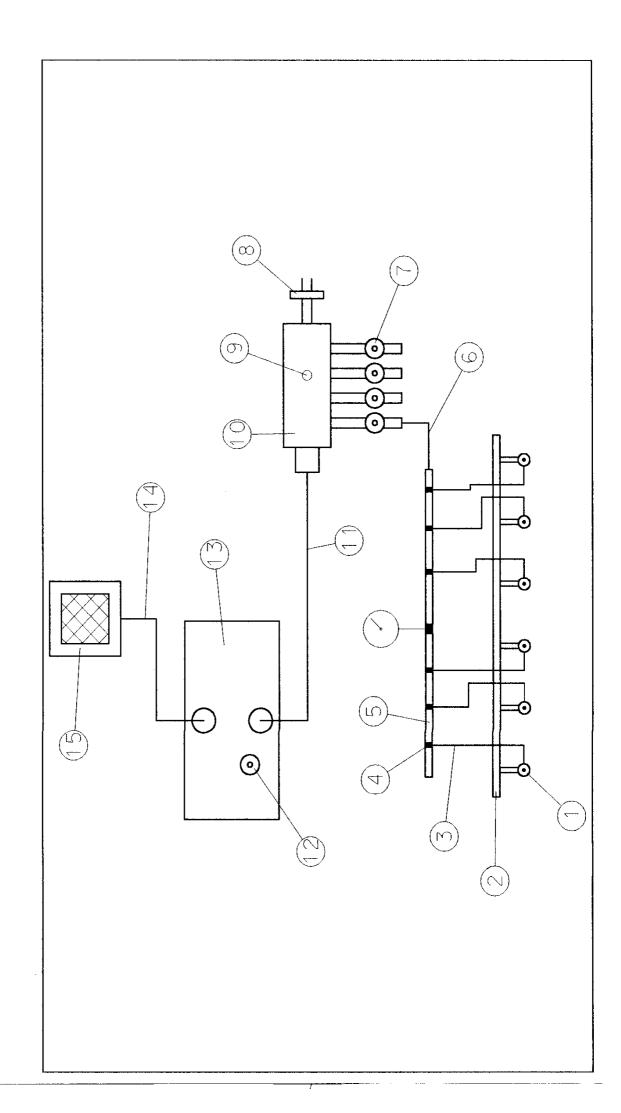
Liquid is drawn from the tank, through a suction filter, to the diaphragm pump. On the pressure side of the pump the liquid is pumped through a flushing pressure filter and into the liquid distribution manifold, on which are mounted the individual boom section ball valves.

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

Airtec nozzle
Spray line
1/4" air delivery pipe
1" band clamp
1" air line
3/4" flexible hose
Air section control valve
Air pressure control valve
Port for air pressure sensor
Air distribution manifold
1 1/2" air delivery hose
Pressure relief valve
Air compressor
1 1/2 air suction hose
Air intake filter
Air pressure gauge



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.

After Spraying 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.

Sprayline rinsing and C.R.S.

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

ACAUTION

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

<u>APPLICATION</u>

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)

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 multisite 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.

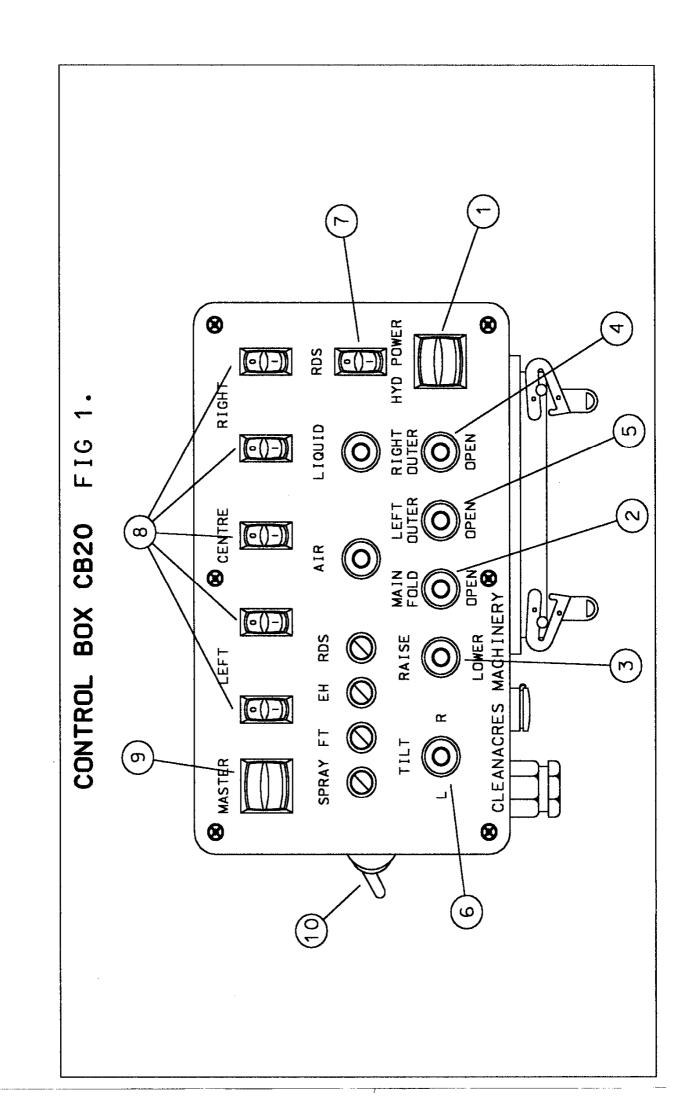
HYDRAULIC CONTROLS

- 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.
- 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.
- 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.



PROCEDURE FOR FOLDING AND UNFOLDING

FROM TRANSPORT POSITION

- 1. Fully raise boom.
- Unfold inner sections (12 metre working width).
- 3. Fully lower boom.
- 4. Unfold outer sections to either 18 or 24 metre working width.
- 5. Raise boom to correct working height.

FROM WORKING POSITION

- 1. Fully lower boom.
- Fold outer section to 12 metre working width.
- 3. Fully raise boom.
- 4. Fold inner sections.
- 5. Lower boom into the transport rest.

NOTE:

- 1. Never drive with the boom partly folded or unfolded.
- 2. Left hand and right hand outers can be folded at the same time.
- 3. Outer sections can only be folded or unfolded with the boom fully lowered.
- 4. When folding the boom it is more than 4 metres high. Beware of any over head obstructions such as cables and trees.

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.

SEE ADDITIONAL SHEET

MARNING

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.).

MARNING

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.

ACAUTION

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.

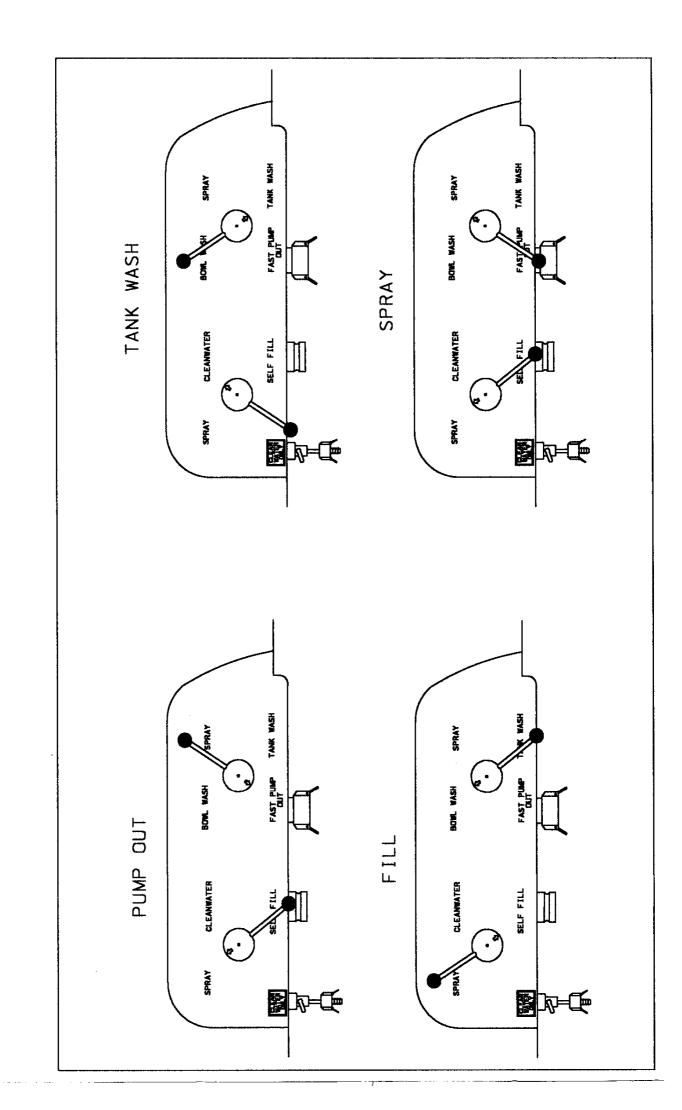
SUCTION FILTRATION

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.



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.

ACAUTION

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

ACAUTION

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).
- 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
		1

WARNING

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

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

ACAUTION

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	Pump	Check oil is not overflowing from cap.
Checks with sprayer		See Caution. Check oil for
running with water in		discolouration or loss.
tank	1	

ACAUTION

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

ACAUTION

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

During spraying	Nozzie 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

ACAUTION

Consult your agronomist if in doubt about spray quality range.

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

ACAUTION

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	Clean and spray with a water
	connections	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	Annually or every 5,000 hectares
Pressure set diaphragm & gaskets	which ever is sooner.
Polo mint washers	
Filter 'O' rings	
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	Lift from water source Reduce lift	
filling slowly	too long, (over 3.7 m.)	
	Suction valve not set to	Set to self fill
	self fill	
	Blocked filter on self fill	Clean
	hose	
	Blocked suction filter	Clean
	Suction filter/self fill	Tighten, check seals,
	hose drawing in	replace diaphragms
	air/faulty or worn pump	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	Set to spray
	self fill	
	Blocked suction filter	Clean
	Air leak around suction	Check filter bowl is
	filter	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 Clear obstruction			
	tank lid			
No spray pressure	Blockage in suction pipe	If machine will self fill		
	pump not turning	with water, blockage is in		
		suction pipe from tank		
Cannot attain required	Worn or wrong jets	Fit new or correct jets		
nozzle output	P.T.O. not running at	check speed		
	540 R.P.M.			
	Application rate or	Contact dealer		
	pressure excessive for			
	pump			
Spray pressure not	Faulty diaphragm in	Replace diaphragm		
constant	pump (diaphragm			
	pumps only)			
Spray pressure too high	Faulty pressure	Contact dealer		
	regulation valve			
	Isolation valve in off	Re-set valve		
	position			
Sudden pressure loss	No liquid in tank	Check sight gauge		
	Liquid pipe burst	Check for leaks		
	Blocked breather hole in	Clean obstruction		
	tank			
Cannot stop spraying	Electrical fault on	Stop P.T.O., effect repair		
	master ON/OFF spray	if possible		
	switch or valves			
Nozzle drip when spray	Worn or faulty	Replace		
switched off	diaphragm check valves			
	on nozzle body			
	Blocked C.R.S. debris	Clean		
	in units			
Spray pattern incorrect	Incorrect boom height	Check height		
	for jets selected			
	Worn flood tips	Replace		

Frequent blocked jets	Damaged or incorrectly Replace fitted pressure filter		
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	Check operation inspect
	flow control	for debris, replace
Booms will not raise	Hydraulic pipe not	Connect with spool valve
	connected	
	Hydraulic connections	Check and fully tighten
	not fully inserted or	clean
	blocked restrictors	
Boom will not open	Blocked restrictors	Check
		clean
	Hydraulic pipe trapped	Check
Booms will not close	Hydraulic pipe trapped	Check
	Restrictor on hydraulics	Check and clean, raise to
	blocked, booms not	maximum height
	raised sufficiently	

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

FAULT FINDING ON DRAINING

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

FAULT FINDING ON AIR SYSTEM

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

CLEANACRES MACHINERY LTD

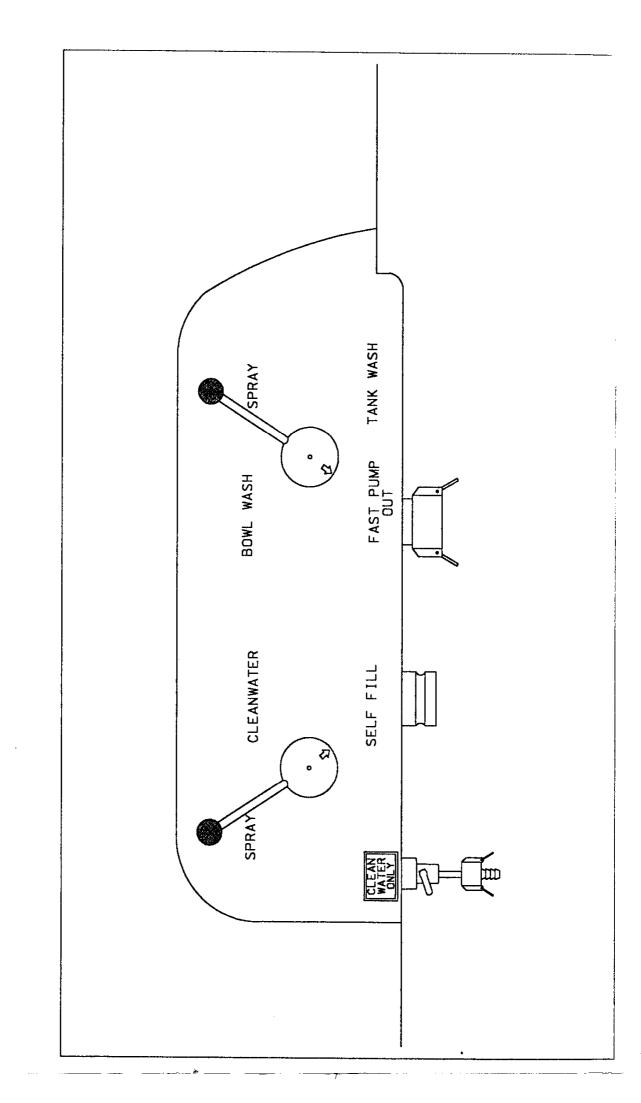
HAZLETON CHELTENHAM GLOS GL54 4DX Tel. 01451 860721 Fax. 01451 860139

DE-MOUNT

DE-MOUNT SPRAYERS
To fit ATLAS 2000 – 2500 - 3000

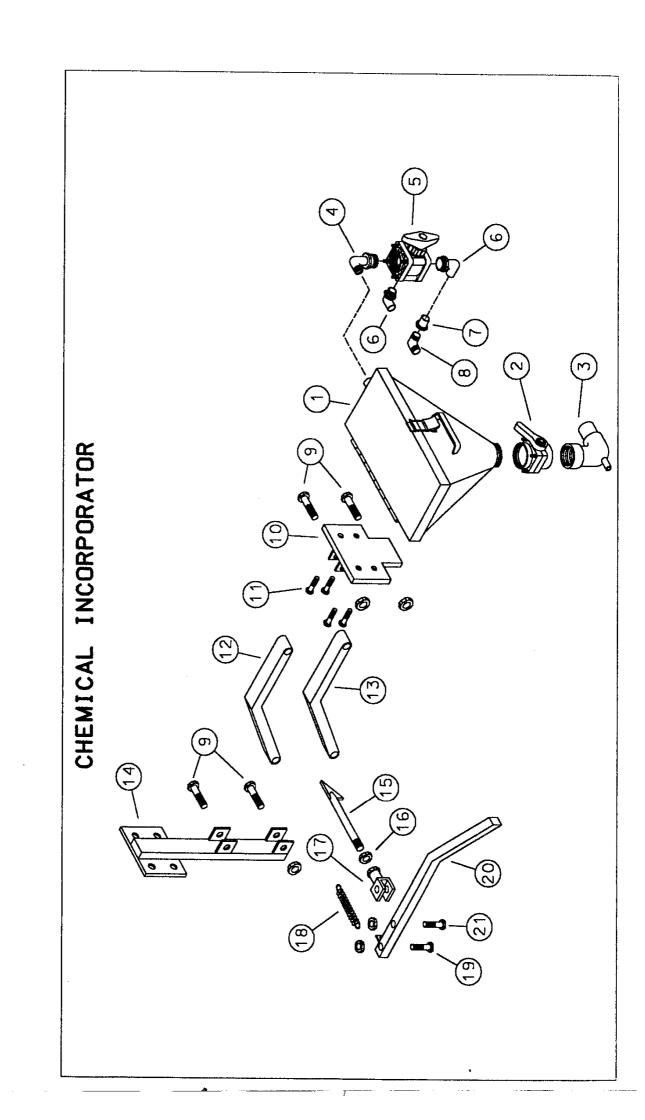
PARTS MANUAL

<u>1999</u>



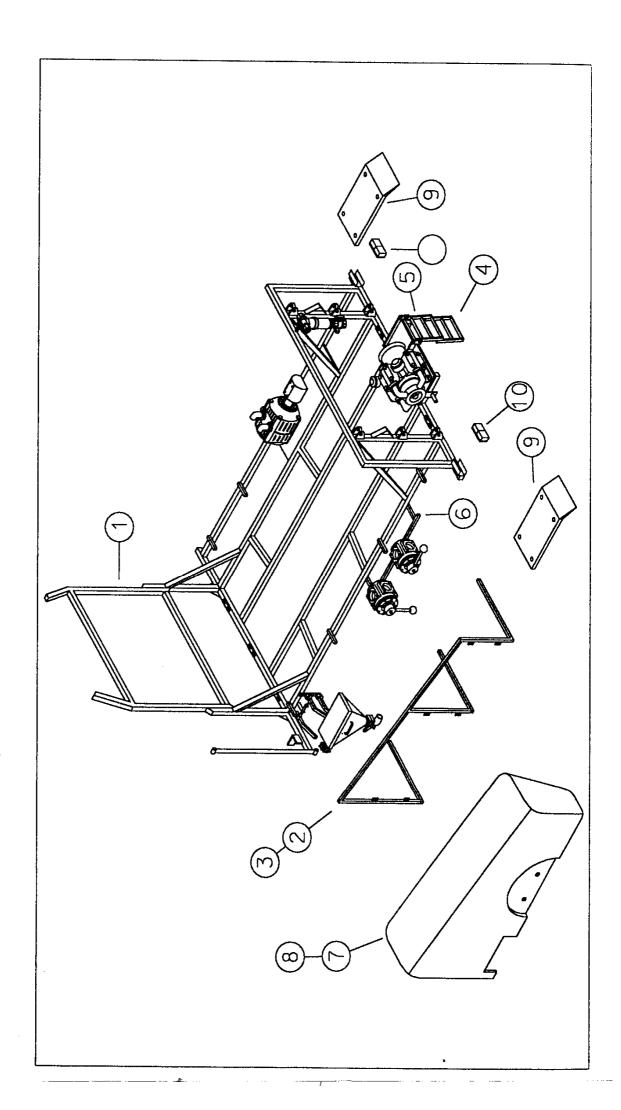
PRESSURE GAUGE'S

ITEM	PART No.	QTY.	DESCRIPTION
1	BMF	1	Gauge bracket
2	AF4000	1	0 - 6 Bar liquid pressure gauge
3	AF4001	1	0 - 2 Bar air pressure gauge
4	AF153	1	3/8" x 1/4" hose tail
5	AF146	1	1/4" x 1/4" hose tail
6	AF131	1	3/8" x 3/8" reducing bush
7	AF134	1	1/8" elbow
8	AF111	1	1/8" 2 way tap
9	AF137	1	1/8" x 1/4" hose tail



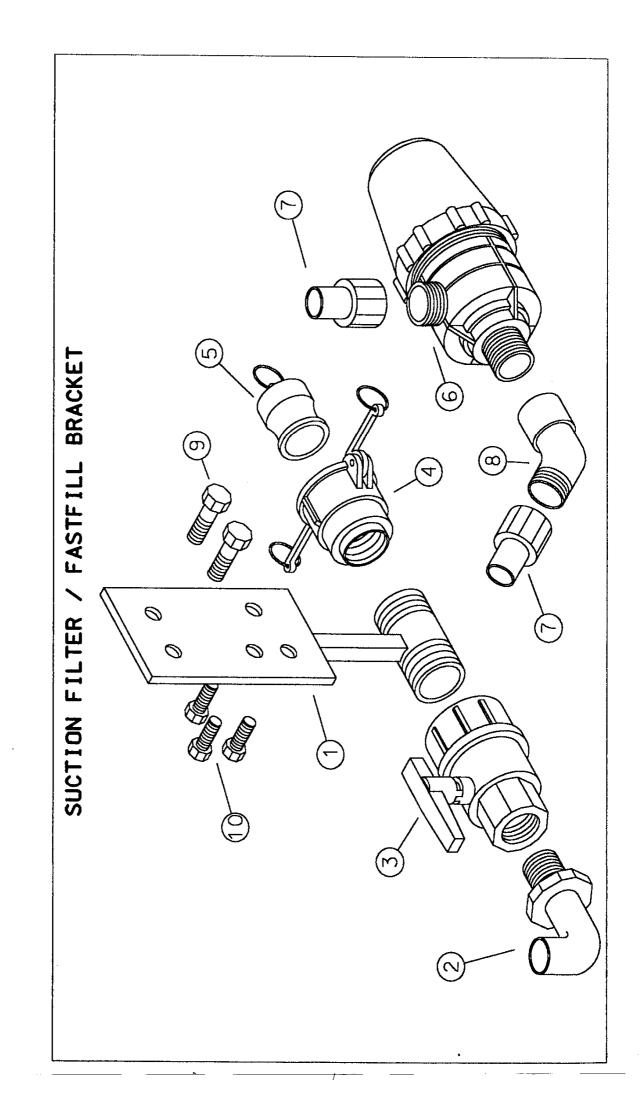
CHEMICAL INCORPATOR

ITEM	PART No.	QTY.	DESCRIPTION
1	ACC107	1	25L chemical incorporator
2	VE200	1	2" banjo stubby valve
3	ACC1077	1	Venturi
4	NFWSE12	1	1/2" street elbow
5	VS3W12	1	1/2" 3 way tap
6	NFWEL1212	2	1/2" elbow hose tail
7	NFWA1212	1	1/2" hose tail
8	PF050TT90	1	1/2" elbow
9	M12X65HB	4	Bolt & lock nut
10	BMF606	1	Chemical incorporator mounting plate
11	M8X25	4	Bolt
12	BMF607A	1	Upper incorporator support arm
13	BMF607B	1	Lower incorporator support arm
14	BMF634	1	Incorporator mounting bracket
15	BMF608	1	Incorporator latch
16	M16LN	1	Lock nut
17	BMF609	1	Latch pivot
18	SP13613	1	Spring
19	M12X50HB	1	Bolt & lock nut
20	BMF610	1	Latch release arm
21	M12X55HB	1	Bolt & lock nut



SPRAYER CHASSIS

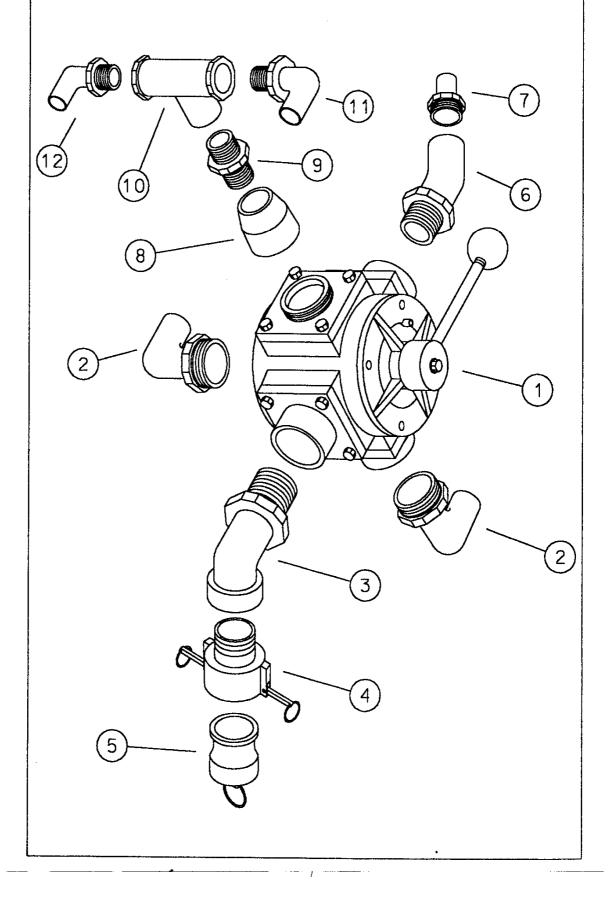
ITEM	PART No.	QTY.	DESCRIPTION
1	BMF605	1	Tank frame
2	BMF635	1	N/S pannel support
3	BMF636	1	O/S pannel support
4	BMF612	1	Lower ladder
5	BMF611	1	Upper ladder
6	BMF613	1	Polmac support
7	SPV005		N/S pannel
8	SPV008	1	O/S pannel
9	ACC110	2	Mud gaurds
10	EM901		Light units



SUCTION FILTER / FASTFILL BRACKET

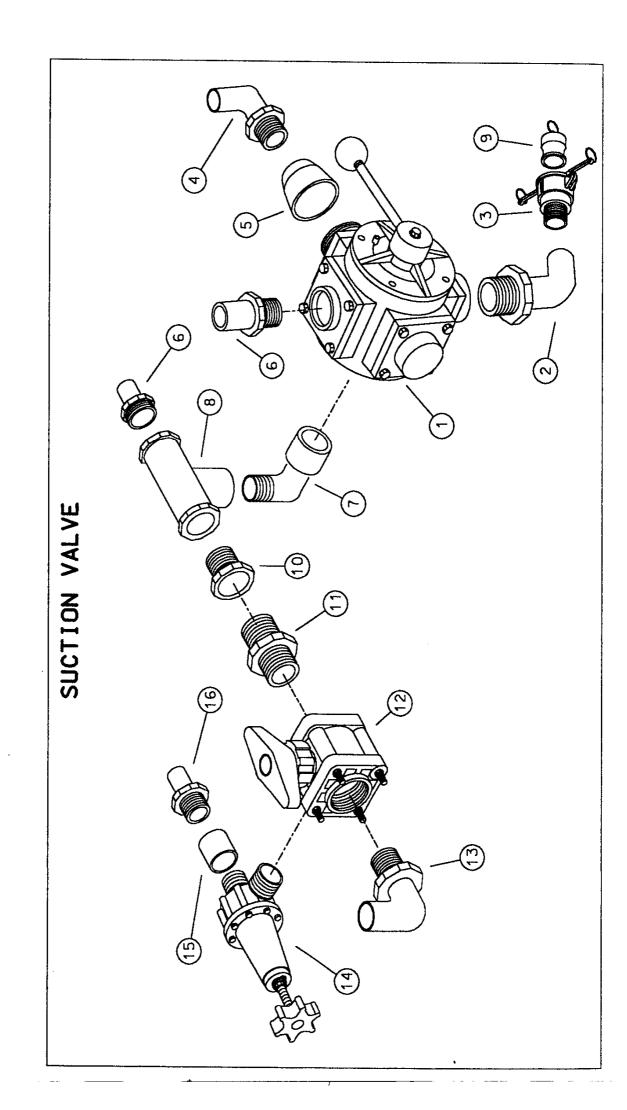
ITEM	PART No.	QTY.	DESCRIPTION
1	BMF624	1	Suction filter / fastfill bracket
2	NFWEL200	1	2" hose tail
3	VE2	1	2" 2 way tap
4	CL200AM	1	2" cam lock
5	CL200CAP	1	2" cam lock cap
6	FS200-50	1	2" suction filter
7	PF200F	1	2" hose tail
8	NFWSE200-45	1	2" 45 street elbow
9	М10Х30НВ	2	Bolt
10	М8Х20НВ	3	Bolt

PRESSURE VALVE



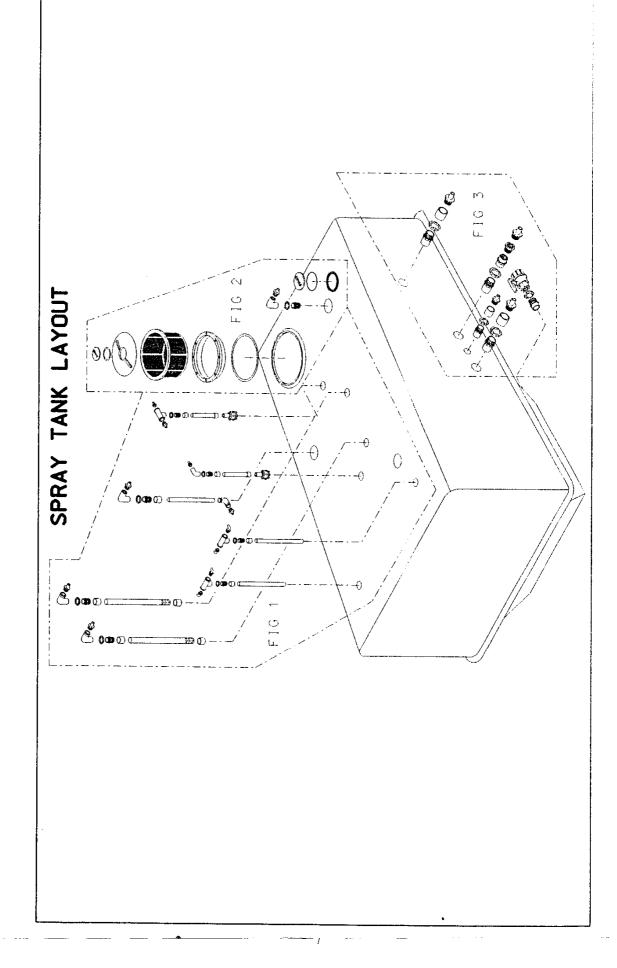
PRESSURE VALVE

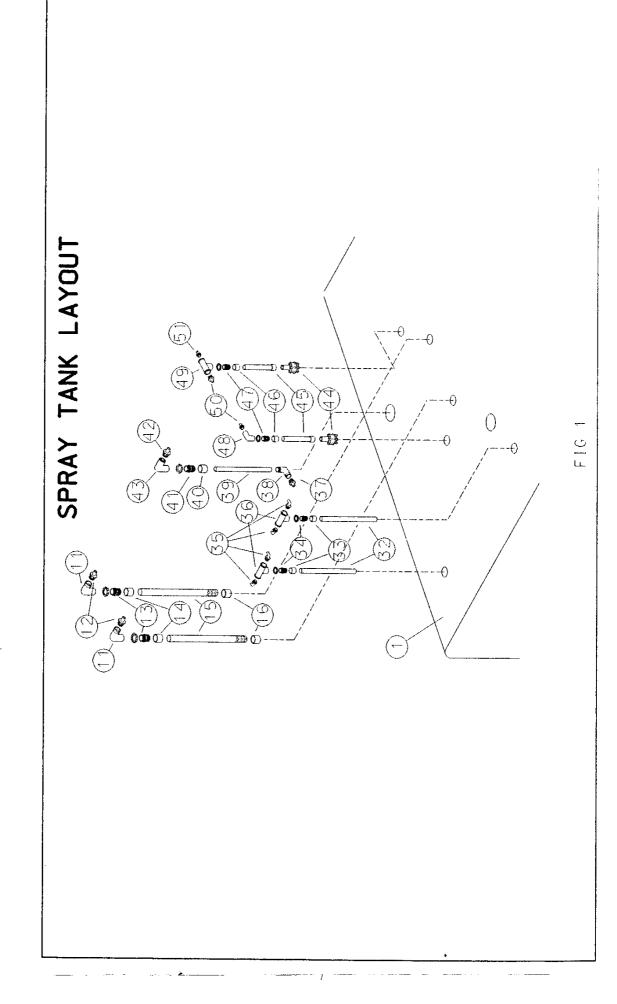
ITEM	PART No.	QTY.	DESCRIPTION
1	PV5W	1	2" polmac valve
2	NFWEL112	2	11/2" elbow hose tail
3	NFWSE200-45	1	2" street elbow
4	CL200CM	1	2" cam lock
5	CL200AP	1	2" cam lock plug
6	NFWSE114-45	1	11/4" street elbow
7	NFWA1141	1	11/4" x 1" hose tail
8	NFWRB2001	1	2" x 1" reducing bush
9	NFWM1034	1	1" x 3/4" reducing nipple
10	NFWTT34	1	3/4" tee
11	NFWEL3434	1	3/4" elbow hose tail
12	NFWEL3412	1	3/4" x 1/2" elbow hose tail



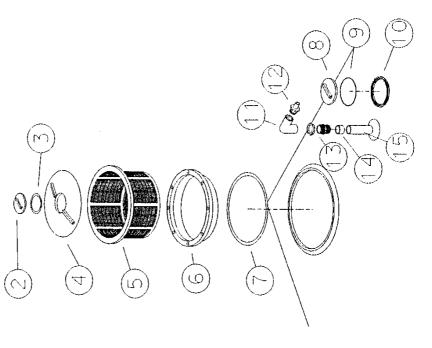
SUCTION VALVE

ITEM	PART No.	QTY.	DESCRIPTION
1	PV5W	1	2" polmac valve
2	NFWSE200-45	1	2" street elbow
3	CL200AM	1	2" cam lock
4	NFWEL114	1	11/4" hose tail elbow
5	NFWRB200-114	1	2" × 11/4" reducing bush
6	NFWA200	2	2" hose tail
7	NFWSE200	1	2" street elbow
8	NFWTT200	1	2" tee
9	CL200CAP	1	2" cap
10	NFWRB200112	1	2" x 11/2" reducing bush
11	NFWM112114	1	11/2" x 11/4" reducing nipple
12	VCT3W114	1	11/4" 3 way valve
13	NFWEL1141	1	11/4" x 1" elbow hose tail
14	PVIPR	1	Pressure regulating valve
15	PF100STT	1	1" socket
16	NFWA1034	1	1" x 3/4" hose tail





SPRAY TANK LAYOUT



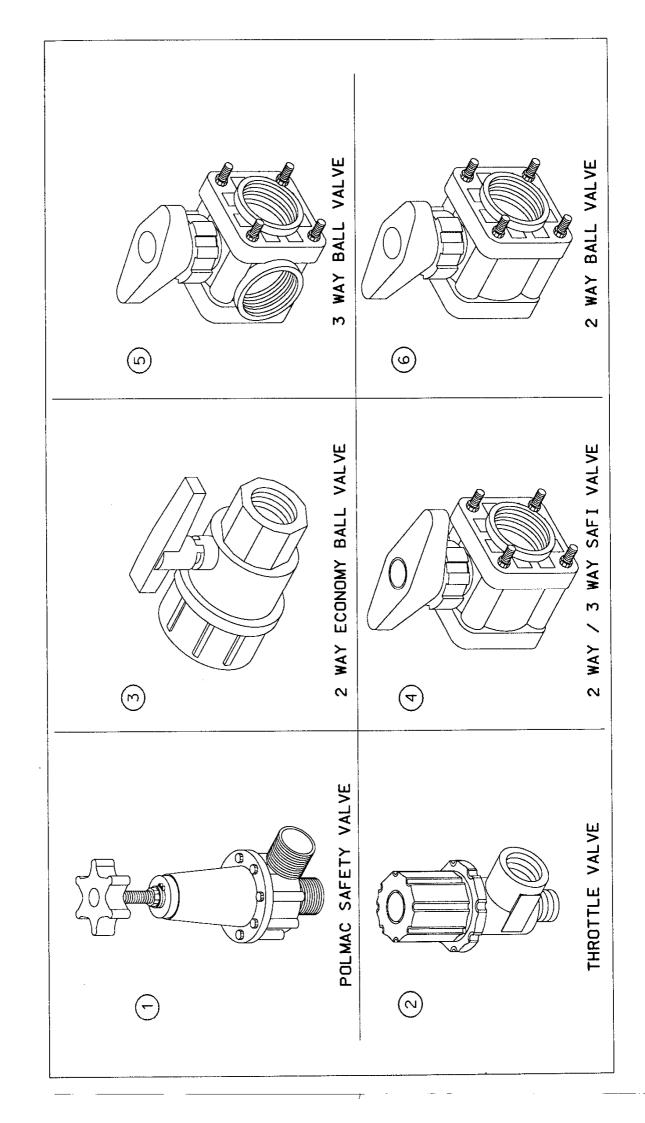
F1G 2

F16 3

ATLAS SPRAY TANK

ITEM	PART No.	QTY.	DESCRIPTION
1	TA2500SP	1	2500ltr. tank
	TA3000SPV	1	3000ltr. Tank
	TA4000SPV	1	4000ltr. Tank
2	TL063-059	1	Vent
3	TL01352000-020	1	Vent seal
4	TL063-058	1	Lid
5	TF-5300A649	1	Basket
6	TL063-052	1	Rim
7	TL063-037	1	Gasket
8	TL063-059	1	Tank lid vent
9	TL01352000-020	1	Tank lid vent seal
10	TL01350401	1	Neck ring
11	PF125TT90	3	11/4" elbow
12	NFWA114	3	11/4" hose tail
13	PF125TU	3	11/4" tank entry
14	PF125SPP	3	11/4" socket
15	PHT125	3	11/4" pvc pipe
16	PF125CP	2	11/4"cap
17	PF050TU	1	1/2" tank union
18	PF050STT	1	1/2" socket
19	NFWA1212	1	1/2" hose tail
20	NFWA112	1	1/2" hose tail
21	NFWRB200-112	1	2" - 11/2" reducing bush
22	PF200STT	1	2" pvc threaded socket
23	PF200TU	1	2" tank union
24	VE1	1	I" 2 way tap
25	PF100TU	1	1" tank union
26	NFWA1010	1	1" hose tail
27	PF100STT	1	I" pvc threaded socket
28	PF100STT	1	l" tank union
29	PF200TU	11	2" tank union

			
30	PF200STT	1	2" pvc threaded socket
31	NFWA200	1	2" hose tail
32	PHT050	2	1/2" pvc pipe
33	PF050SPP	2	1/2" socket
34	PF050TU	2	1/2" tank union
35	NFWEL1214	4	1/2" - 1/4" elbow hose tail
36	NFWTT12	2	1/2" tee
37	NFWA1010	1	1" hose tail
38	PF100PT90	1	1" elbow
39	PHT100	1	1" pvc pipe
40	PF100SPP	1	1" socket
41	PF100TU	1	1" tank union
42	NFWA1010	1	1" hose tail
43	PF100TT90	1	l" elbow
44	LUTSI	2	Tank wash nozzle
45	PHT075	2	3/4" pvc pipe
46	PF075SPP	2	3/4" socket
47	PF075TU	2	3/4" tank union
48	PF075TT90	1	3/4" elbow
49	NFWTT34	1	3/4" tee
50	NFWA3434	2	3/4" hose tail
51	NFWA3410	1	3/4" - 1" hose tail



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	I 1/4" Valve
	VCT2W112	1	1 1/2" Valve

3 WAY BALL VALVE

ITEM	PART No.	QTY.	DESCRIPTION
5	VCT3W12	ı	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

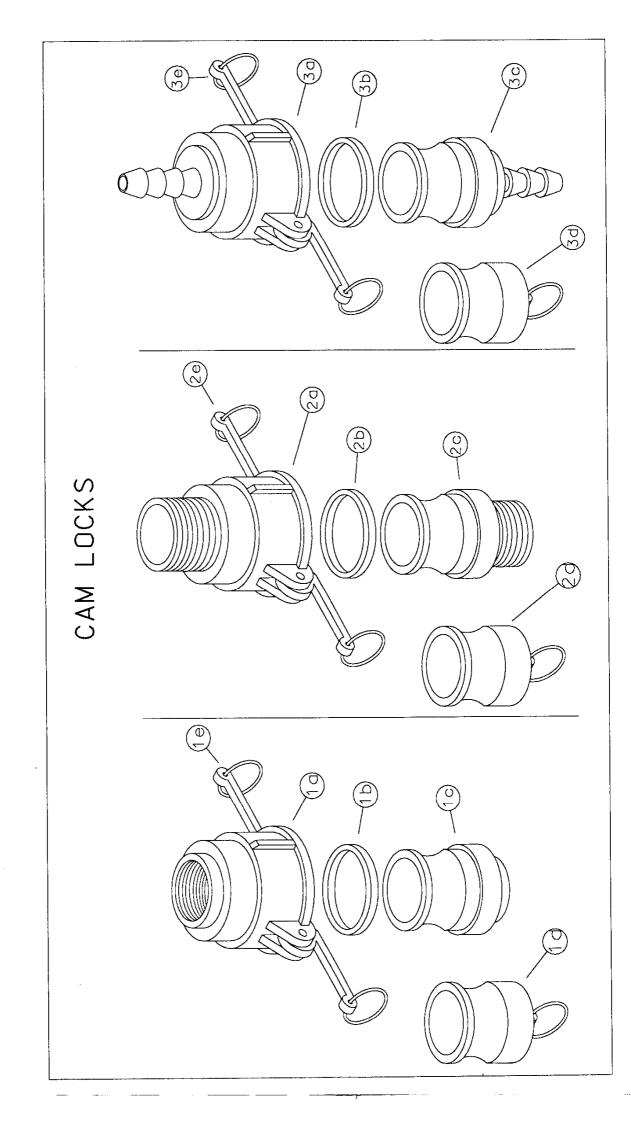
ITEM	PART No.	QTY.	DESCRIPTION
4	VS2W12	1	1/2" Valve
	VS2W34	1	3/4" Valve
	VS2W1	1	1" Valve
	VS2W114	1	1 1/4" Valve
	VS2112	1	1 1/2" Valve
	VS2W2	1	2" Valve

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	l 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	11	3/4" Valve
	VE12	1	i" 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)



2" CAM LOCK

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

2a	CL200CM	1	2" coupler male
2b	CL200S	i	2" cam lock seal
2c	CL200AM	l	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	l	2" coupler handle

11/2" CAM LOCK

ITEM	PART No.	QTY.	DESCRIPTION
la	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
le	CL150H	1	11/2" coupler handle
2a	CL150CM	1	11/2" coupler male

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	i 1/2" 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
la	CL125CF	1	11/4" coupler female
lb	CL125S	1	11/4" cam lock seal
1c	CL125AF	i	11/4" female adaptor
lđ	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_1_	11/4" coupler handle

1" CAM LOCK

ITEM	PART No.	QTY.	DESCRIPTION
la	CL100CF	1	1" coupler female
lb	CL100S	1	I" cam lock seal
lc	CL100AF	1	I" female adaptor
1d	CL100AP	1	1" adaptor plug
le	CL100H	1	1" coupler handle

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

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

3/4" CAM LOCK

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

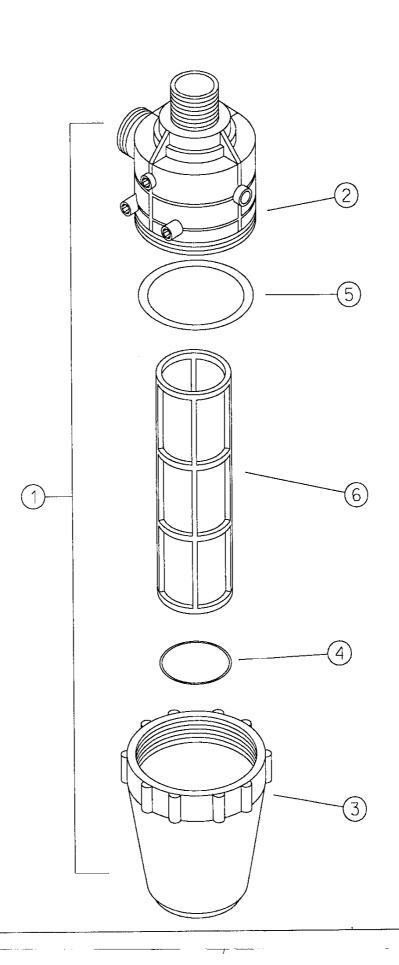
2a	CL075CM	1	3/4" coupler male
2b	CL075S	1	3/4" cam lock seal
2c	CL075AM	1	3/4" adaptor male
2d	CL075AP	1	3/4" adaptor plug
2e	CL075H	1	3/4" coupler handle

3a	CL075CH	ı	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
la	CL050CF	1	1/2" female cam lock
lb	CL050S	1	1/2" cam lock seal
1 c	CL050AF	1	1/2" female adaptor
1 d	CL050AP	ì	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	11	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

SUCTION FILTER



SUCTION FILTER 1 1/4"

ITEM	PART No.	QTY.	DESCRIPTION
ı	FS125/50	1	Complete unit
2	FS125FH	11	Filter hood
3	FS125FB	1	Filter bowl
4	FS125RR	1	Retaining ring
5	FS125OR	1	Bowl seal
6	FS125EW30	1	Filter mesh

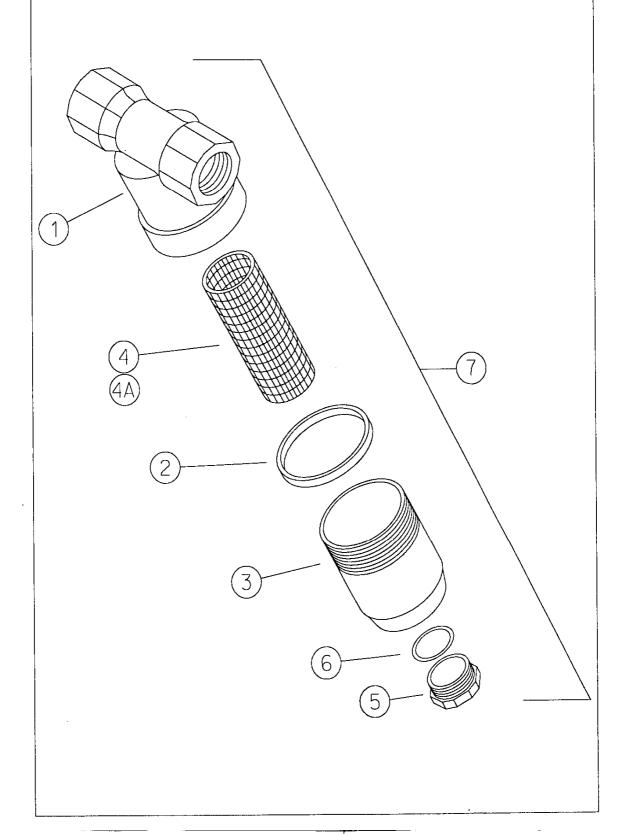
SUCTION FILTER 1 1/2"

1	FS150/50	1	Complete unit
2	FS150FH	1	Filter hood
		 	
3	FS150FB		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

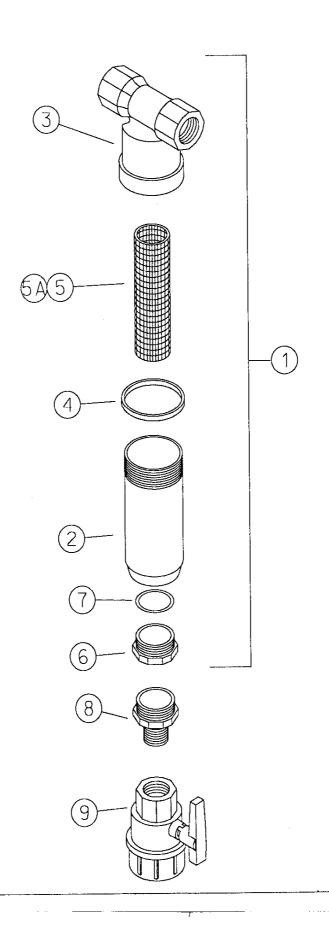
'Y' LINE STRAINER



"Y" LINE STRAINER

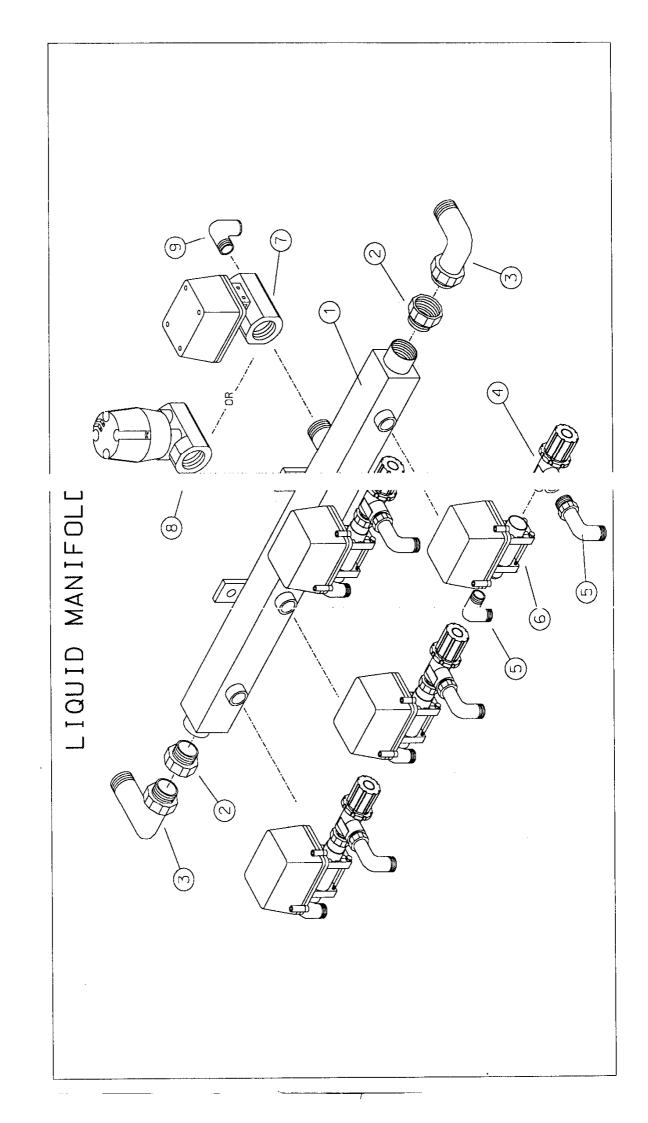
ITEM	PART No.	QTY.	DESCRIPTION
1	BF200NH	1	Body
2	BF150SEAL	1	Gasket
3	BF200NB	1	Bowl
4	BF200-50FL	1	50 mesh screen
4A	BF200-80FL	1	80 mesh screen
5	BF200NP	1	Plug
6	BF200BG	1	Gasket
7	BF200-50	ı	Complete unit

PRESSURE FILTER



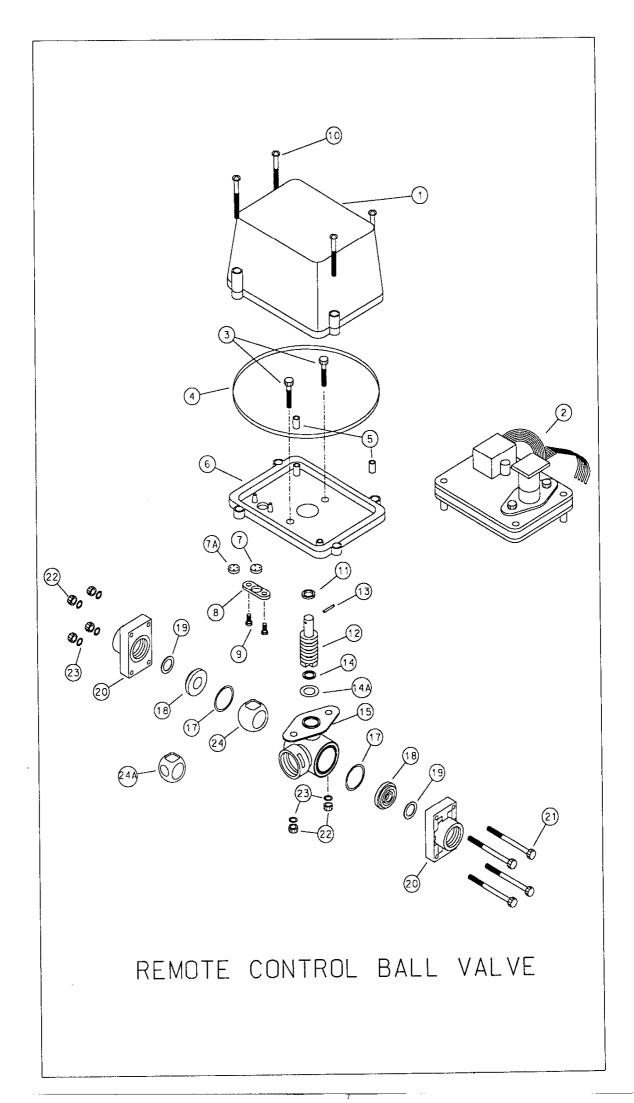
PRESSURE FILTER

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	11	30 mesh screen
6	NFWF1000	1	Plug
7	FL7717-2/VI	1	Plug seal
FLUSHIN	IG OPTION		
8	NFWM1034	i	Reducing nipple
9	VE34	1	Valve



LIQUID MANIFOLD

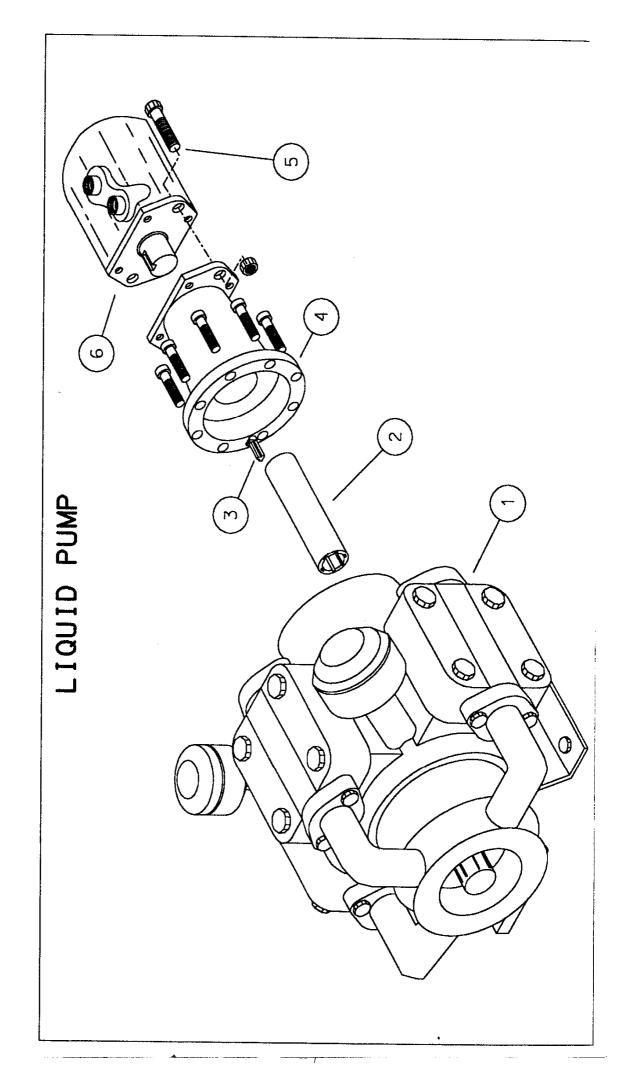
ITEM	PART No.	QTY.	DESCRIPTION
1	MASS003	1	800mm ss. Manifold
2	NFWRB112-114	1	1 1/2" - 1 1/4" reducer
3	NFWEL114	1	1 1/4" elbow
4	VT34	11	3/4" throttle valve
5	NFW3434	2	3/4" elbow
6	V344EC	1	3/4" electrical ball valve (4 wires)
7	RDS018	1	1" pressure control valve
8	VBT100	l	1" butterfly valve
9	NFWEL1010	1	1" elbow



REMOTE CONTROL BALL VALVE

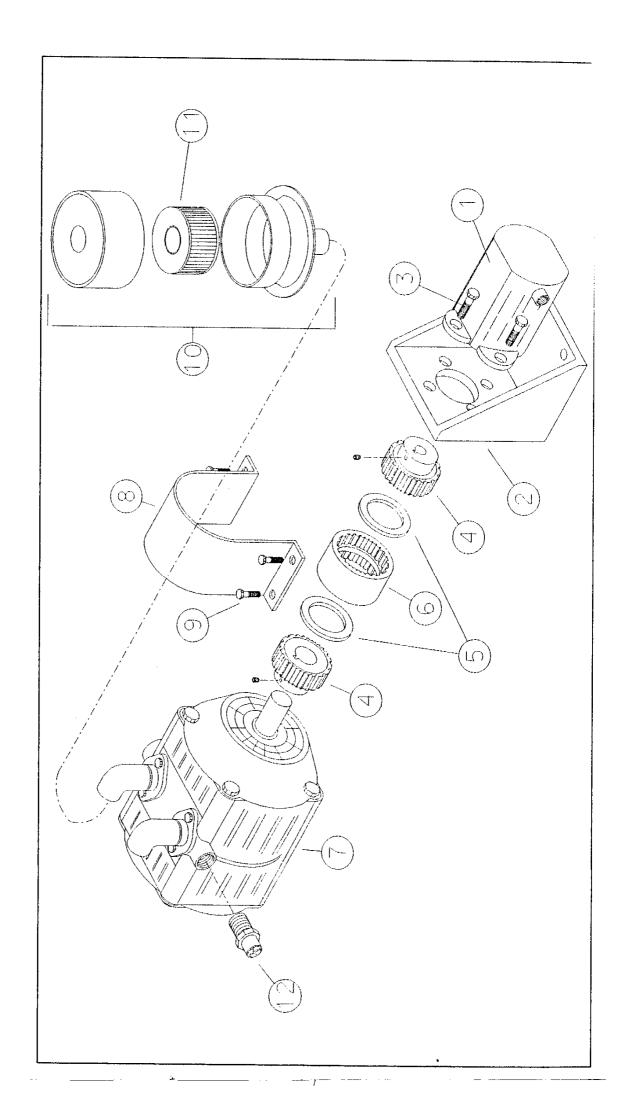
	ITEM	PART No.	QTY.	DESCRIPTION
	1	CP20113-PPB	1	Cover, polypropylene (black)
	2	20122-3-SS	1	Motor sub-assembly for //344AE-(three wire)
	3	CP20127-SS	2	Self-clinching stud, stainless steel
	4	CP7717-2-155/40-EPR	1	O' ring, EPDM rubber
	5	CP20124-NEO	2	Motor mount, neoprene
	6	CP20111-NYB	1	Mounting 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-VITE	1	O' ring, viton, teflon coated
	15	CP20101-NYB	1	Body, nylon (black) for //344AE & AEC-2
ļ	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-2SS
*	19	CP7717-2/213-V1	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

	24	CP20106-PP	<u> </u>	Ball, polypropylene for //344AE & AEC-2		
	24	CP19926-SS	1	Ball, stainless steel for //344AE-2SS		
2	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)		
ļ	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						



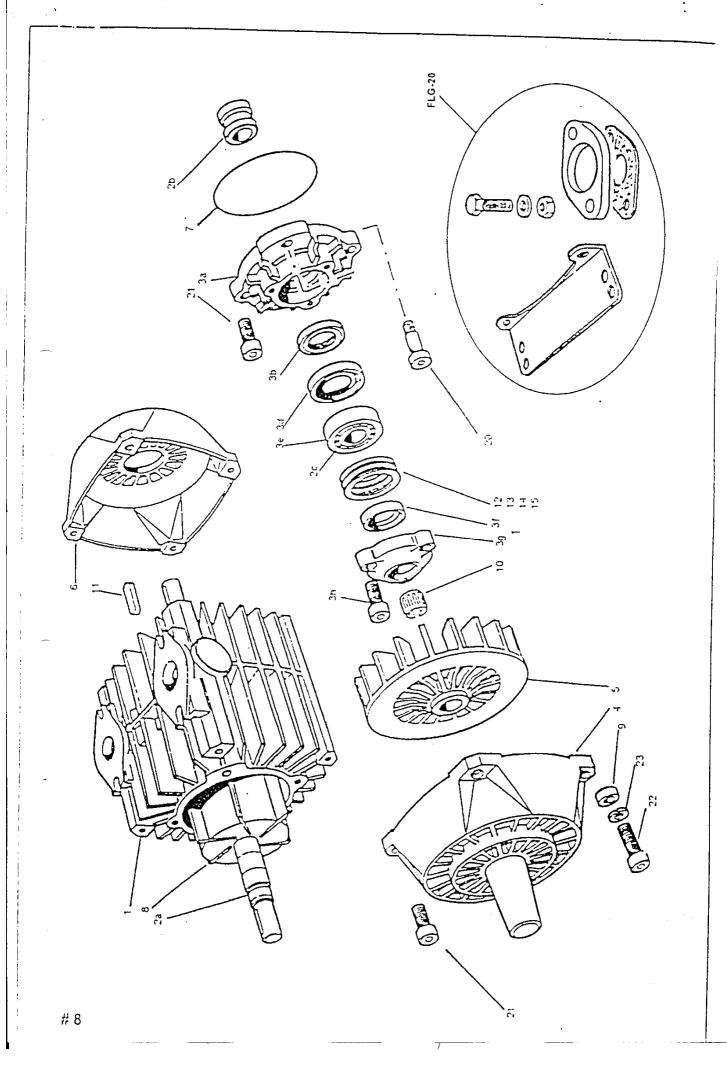
LIQUID PUMP

ITEM	PART No.	QTY.	DESCRIPTION
1	P37ARA230	1	6 dia. Liquid pump
2			
3		1	key
4	P47KT1570	1	Hydraulic coupling
5	M12X65HB		Bolt & locknut
6	HY4021	1	Hydraulic motor



COMPRESSOR ASSEMBLY

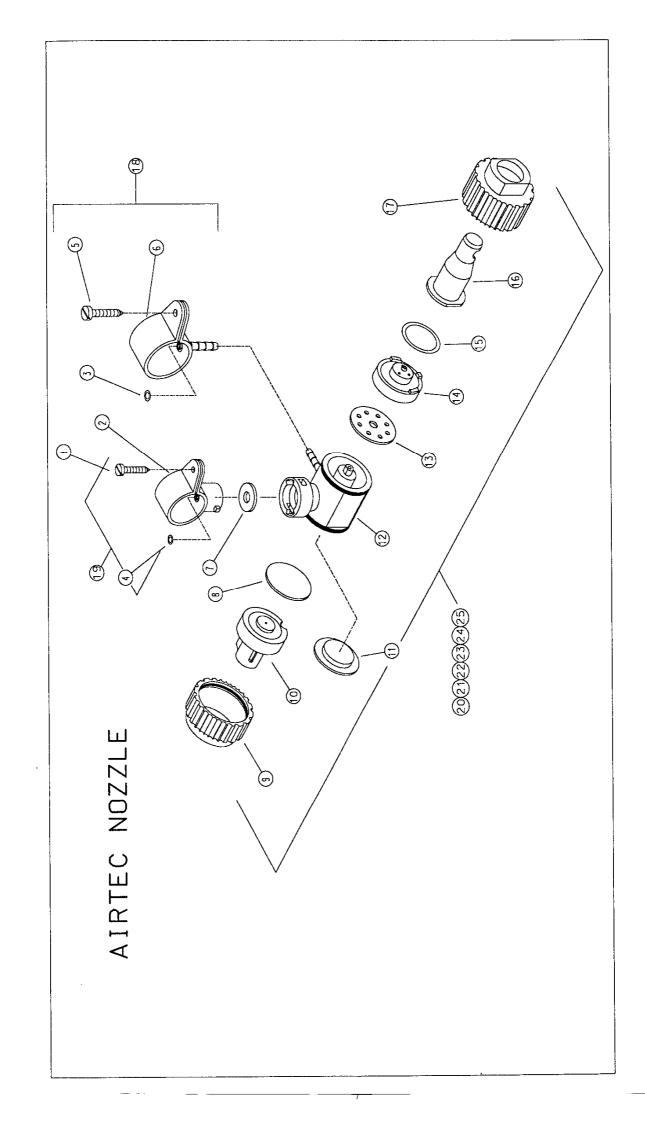
ITEM	PART No.	QTY.	DESCRIPTION
1	HY4024	1	Hydraulic motor
2	BMF 620	1	Compressor drive motor bracket
3			
4	DC42M35	2	35mm hub
5	DC42W	2	seal 68mm O/D - 48mm I/D
6	DC425	I	Flex coupling
7	DRJ100	1	Drum compressor
8	BMF621	1	Compressor drive coupling gaurde
9			
10	DR100AF	1	Complete drum air filter assembly
11	F-808	1	Drum air filter
12	DRV200-D36	1	Pressure release valve



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.

	ltem	Description	Part No	Qty	Item	Description	Part No	Qt
	1	BODY	3050316461-2	1	13	SHIM (0.075)	7711100635-2	2
	2	ROTORASSEMBLY	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	3770115061-2	2	16	SEALING DISC	7200300470-2	4
	2¢	BEARING INNER RACE	6037000850-2	2	17	DRUMNAMEPLATE	6711000451-2	1
	3	SIDEPLATEASSEMBLY	SC 348-0	2	18	GREASE (AEROSHELLING 5)	6581400000-2	5 0(
1	3a .	SIDEPLATE	3831816469-2	2	19	AVSEALPLUG	6950900841-2	
	35	AIR SEAL	3730700835-2	1	20	SHOULDERSCREW	7050400059-2	_
	3c	CIRCLIP362	M140620000-8	1	21	CAP SCREW M10 X 20	M450107020-9	6
	3d	OIL SEAL-SINGLE LIP	7154500855-2	1	22	DRIVE SCREW 23 X 6	M510038006-2	4
	3e	BEARING OUTER RACE	6037100850-2	1	23	CAP SCREW M10 X 35	M450107035-2	8
	¥	OIL SEAL-DOUBLE LIP	7150700333-2	1	24	RELIEF VALVE	V200-D∞	1
	3ე	BEARING HSG CAP	3150116455-2	1	25	FLANGEPACK	FLG-20	1
	3ከ	CAP SCREW M10 X 20	M450107020-9	3	25a	NUTM10	M250107000-2	4
	4	FAN	3301016450-2	2	255	M10 X 35 SET SOREW	M470107035-2	4
	5	COWL-NON DRIVE END	3210316634-2	1	25c	M10 WASHER PLAIN	M500100000-2	1
	6	COWL-DRIVE END	3210416634-2	1	25d	OVAL GASKET	3350416871-2	•
	7	'O' RING ©147	6758300600-2	2	25e	MOUNTINGBRACKET	3950116543-2	2
	8	BLADE	3090216760-2	6	251	SECURINGFLANGE	6297316240-2	2
	9	MOUNTING BUSH	3131216848-2	3	26	WARNING LABEL	6717616451-2	1
	10	STARTOLRING	M750280015-7	2	27	LUBRICATIONLABEL	6714100451-2	.1
	11	KEY	M200307040-4	1	30	LABEL (ROTARROW)	6710300451-2	1
	12	SHIM (0.050)	7701100635-2	2				
	1							



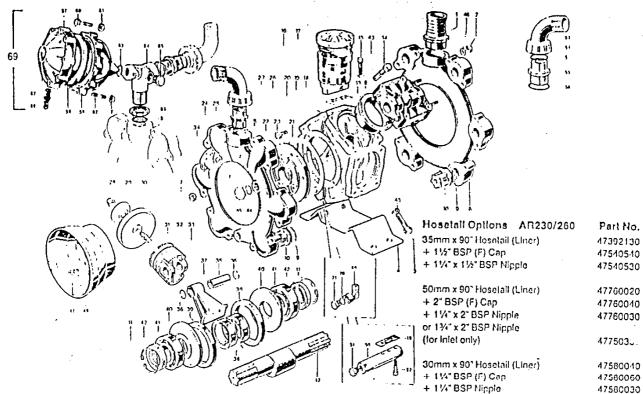
AIRTEC NOZZLE

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	11	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	ı	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	11	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

45	_				•						
□	A	53 54 55 58 57			!	В		•			\
									17 4 4		
拉	- 1								[[ال		
 	ľ		> 33				27 25	24 20 19	ľ	10/10	12
		, O	<u>\</u>								
101		51 7	•							多数多	ノ人"
## ##		20 29 30 1 1 1		•	,						
		9			۲۰ (۲)
A) 71 27					8			
3				الرا		1					
I	- @	AT PR	(6)3) j		Нова	tall Options AR15	_	,	,
2	('		€E 04				30mm	×90° Hosetall (Liner) SP (F) Cap	U	Part No. 47580040	
3.52	/			THE PARTY	19/10)	174.8	SP Nipple		47580060 47580030	
3							+ 5.8	90° Hosetall (Uner) SP (F) Cap x 2° BSP Nipple		47760020 47760040	
N		0					35mm	x 90° Hosetall (Liner)		47760030 47392130	
3	+ - te	ame to Winter Overlyng					+ 11/2*	BSP (F) Cap x 11/2" BSP Nipple		47540540 47540530	
3		ems in Winter Overhaul	Kit + 47	KIT150				f. Description	Oty	Part No.	
	_	f. Description	Oty	Part No.			32 33	Piston Ring Piston	4	47500260	
3	B 1	50mm 90° Flosetall Hosetail Nut	1	47760020			34	Outlet Manifold	4 1	47750120	
1	3	'O' Ring	1	47760040			35	Piston Spindle 48 x 8	4	47760070 47160700	
3	4	Hoxagon Nipplo	i	47620210 47760030			36	Circlip 18mm	8	47160691	
	5	'O' Ring	2	47250310			37	Con Rod (price each)	1	47760140	
1	6	Inlet Manifold	1	47760220			38	Noodle Bearing	2	47750090	
	7	Nut 8MA	16	47380240			39 40	Spacer Fling	2	47750130	
I	8	Cylinder Head	4	47750100			41	Spacer Bearing	2	47540040	
1,24	~+ 9 + 10	'O' Ring	8	47680070			42	Scal	2	47230350	
٠.4	★ 10 11	Valvo	8	47759050			43	Circlip 62mm	2	47230380	
13	12	Bolt 12MA x 70 % BSP Plug	1	47750070			44	Punip Base	2	47200390 47760200	
***	13	Piston Sleave	1	47030171			45	Shaft	1	47750170	-
3	14	Boll 12MA x 65	12	47750110 47750060					•	17750170	
	15	Screw	2	47680350			47	Washer	2	47380241	
73	16	'O' Ring	1	47580230	•		48	Washer	4	47250141	
	17	Oil Reservoir Cap	1	47750050			49 50	Washer	16	47390311	
3	18	Oil Reservoir	1	47750030			59	Bung	2	47330170	
	19	Gasket	1	47750040			60	P.T.O. Guard Scrow 8M8 x 15	1	47540660	
3	20	Body	1	47760010				OCION 01/10 X 15	3	47180431	
الدن	21 22	Body Gaskel Body Plato	1	47680250			A 5	'O' Ring	4	170000	
7	23	Bolt 10MA x.25	1	47680020			7	Nul BMA	1 2	47390290	
4	24	Hoxagon Nipple	6	47160670			51	Slud 8MA x 40	2	47380240 47390670	
,58	25	'O' Ring	1	47540530			52	Diaphragm	1	47550190	
1	26	Hoselall Nut	1	47250310			53	'O' Ring	i	47650542	
	27	35mm 90° Hosetall	1	47540540 47392130			54	Air Vaive	1	47180020	
1	28	Diaph, Retaining Nut	4	47550131			55	Upper Air Chamber	1	47620230	
_	29	Diaph, Retaining Plate	4	47580090				Scrow BMA x 45	8	47380250	
1	* 30	Dlaphragm	4	47550085			57 50	Nut 8MA	8	47390270	
49	31	Stud	4	47550270			58 50	Lower Air Chamber	1	47680180	
1							99	Air Receiver Assy	1	37ARARA1	

ÄR230bp/ÄR260bp

40KfT230



				701117230
	Dat	Dagaslattass	~ .	40KIT260
		Description	Oty	Part No.
	1	50nun Hosetail	1	47750160
	1 2	60mm Hosetail	1	47750150
	3	'O' Ring Bolt 12MA x 70	1	47030281
	4		4	47750070
	5	Pump Base 'O' Ring	1	47750200
	6	Inlet Manifold	1	47620210
	7	Nut 8MA		47750220
	8	Cylinder Head	24	47380240
*	9	'O' Ring	6	47750100
,	10	Valve	12	47680070
^	11	Circlip 62mm	12 2	47759050
	12	Shalt (AR2308P)	1	47200390
	12	Shalt (AR260BP)	1	47750170
	13	Piston Sleeve (AR230B		47750171
	13	Distan Classe (AD2000	P) 6 .	47750111
	14	Piston Sleeve (AR260B Boll 12MA x 65		47750112
		·	20	477500G0
	15	Bolt 8MA x 35	2	47680350
	16	'O' fling	1	47500230
	17	Cnp (ΔΠ180)	1	47750051
	17	Oil Reservoir Cap	1	47750050
	18.	Oil Neservolr	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	Hoselail Nut	1	47540540
	27	35mm 90° Hosetall	1	47392130
	28	Diaph, Retaining Nut	6	47550131
	29	Diaph, Retaining Plate	6	47580000
*	30	Diaphragm	. 6	47550065
	31	Stud	6	47550270
	32	Piston Ring	6	47500260

* = Items in Winter Overhaul Kit

	+ 174 B3P mpf	2163	
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	Noedle Bearing	2	47750090
39	Spacer Ring	2	47750130
40	Spacer	2	47540040
41	Bearing	2	47230350
42	Seaf	2	47230380
43	Nut 8MA	2	47380241
45	Washer	4	47250141
45	Washer	2.1	47390311
47	Screw	3	47180430
48	PTO Guard	1	47540660
50	Oil Outlet	1	47750230
51	Bung	1	47030171
52	Scrow	2	47540290
53	Flosetall	ĭ	47760020
54	Hoselall Nut	1	47760040
55	Milpple	· 1	47750330
50	O' Ning	ſ	47030281
57	Upper Air Chamber	1	47620230
58	Dlaphragm	1	47550190
59	Lower Air Chamber	1	47580180
60	Screw Bolt 8MA 45	8	47380250
61	Nut BMA H65	8	47330270
62	Stud	2	47390670
63	'O' Filng	1	47390290
64	Elbow	1	47760300
65	Bung	2	47330170
66	Nut	1	47760310
67	'O' Ring	1	47650540
63	Air Valve	1	47180020
69	Air Receiver Assy	1	37ARARA1

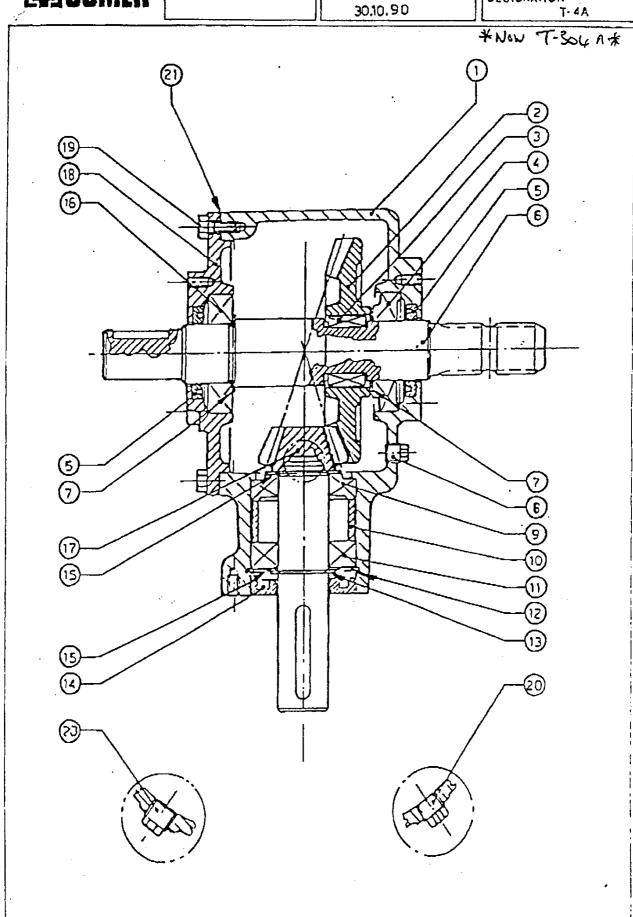
Market Committee and American Committee Commit

CODE No

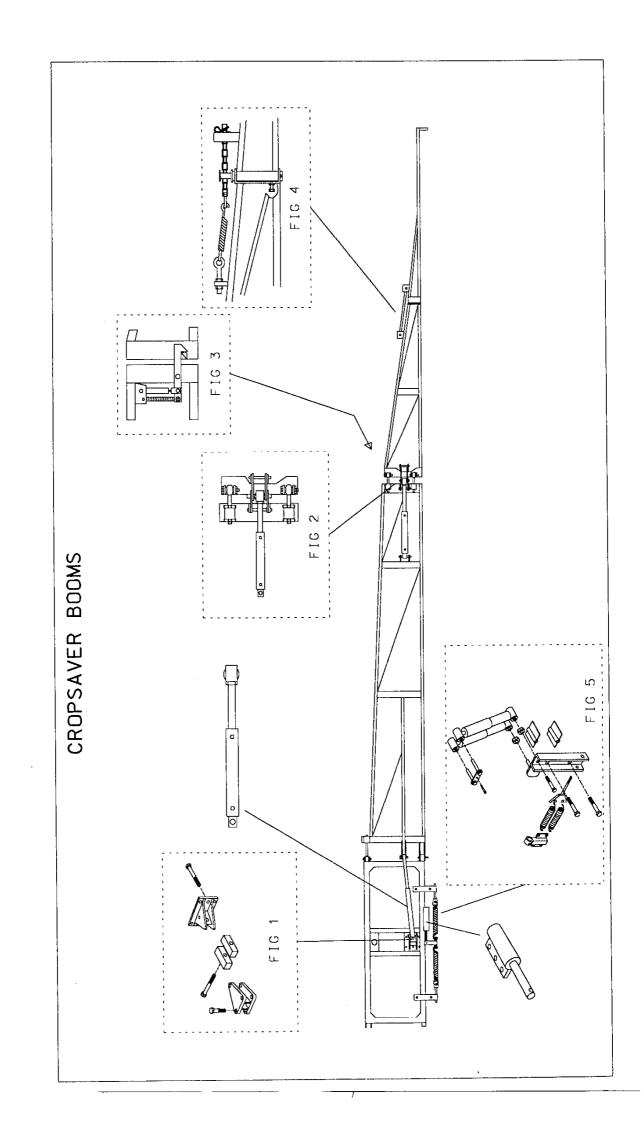
244.373.00/e

DESIGNATION

T- 4A



COMER S.p.A. - 42046 Villanova di Reggiolo (RE) Italia - Tel. 0522/973121 (9 linee) - Telefax 0522/973249 - Telex 530252 COMEX I



..-

BOOM SECTIONS

LOW INCLINE

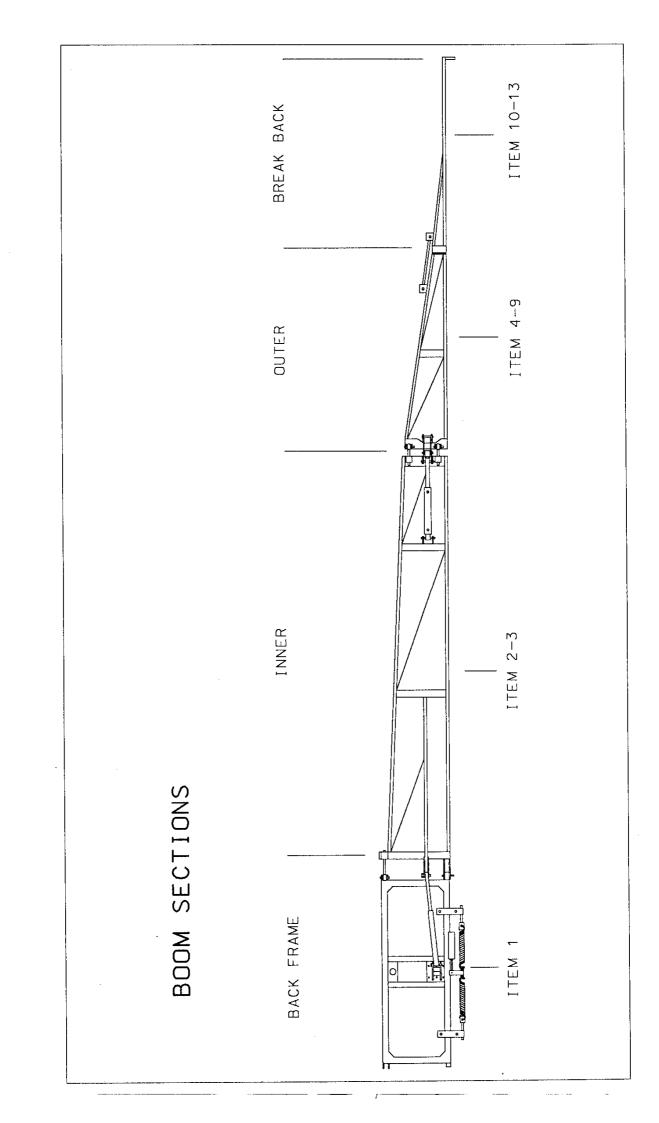
ITEM	PART No.	QTY.	DESCRIPTION
1	BMF356	1	Outer back frame low incline
2	BMF352	1	Left hand inner
3	BMF351	1	Right hand inner
4	BMF337	1	18m left hand outer
5	BMF336	1	18m right hand outer
6	BMF321	1	20m & 21m left hand outer
7	BMF320	1	20m & 21m right hand outer
8	BMF354	1	24m left hand outer
9	BMF353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

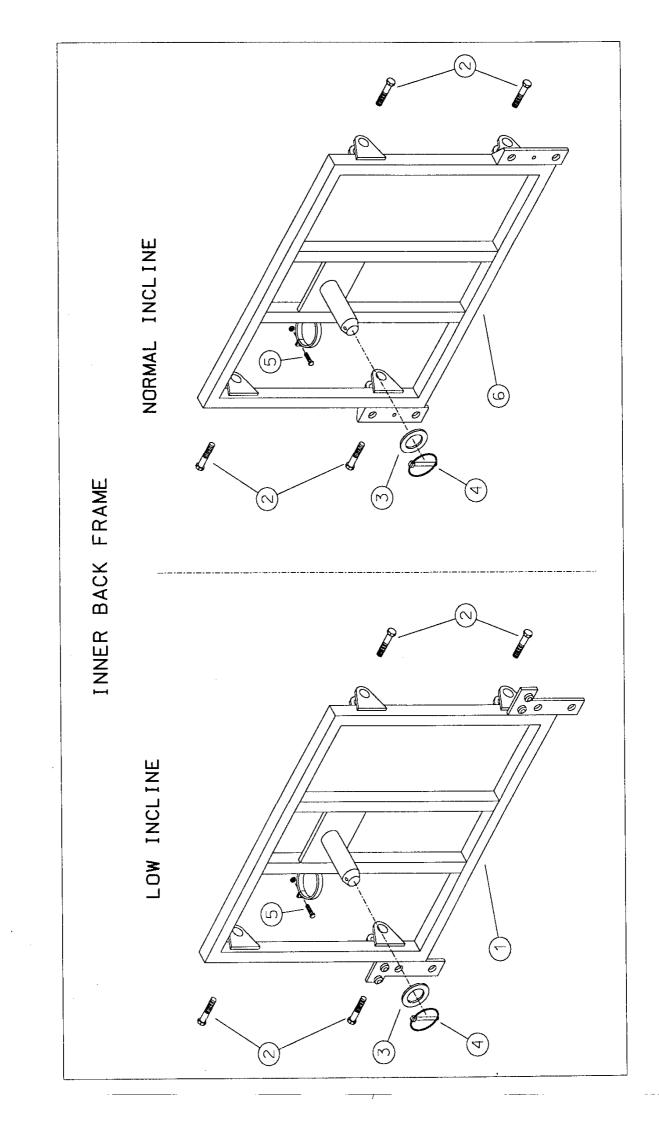
NORMAL INCLINE

b()==

bOW

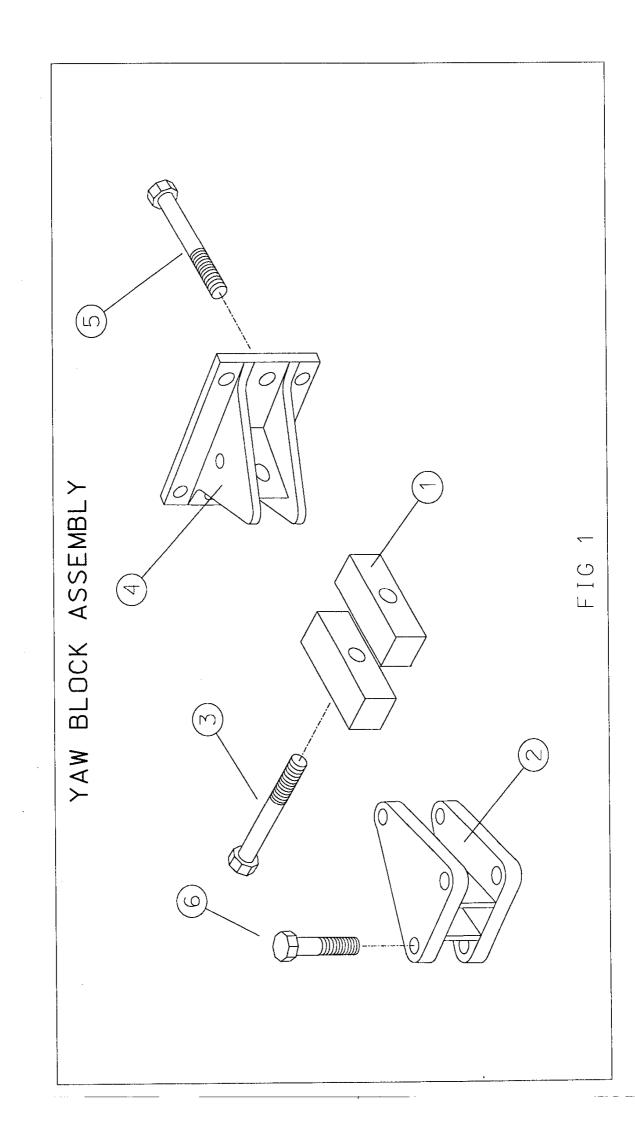
ITEM	PART No.	QTY.	DESCRIPTION
1	BMF312	1	Outer back frame normal incline
2	BMF319	1	Left hand inner
3	BMF318	11	Right hand inner
4	BMF321	1	20m & 21m left hand outer
5	BMF320	1	20m & 21m right hand outer
6	BMF337	1	18m left hand outer
7	BMF336	1	18m right hand outer
10	BMF323	1	Standard left hand break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

ITEM	PART No.	QTY.	DESCRIPTION
1	BMF355	11	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



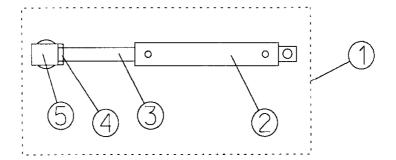
YAW BLOCK ASSEMBLY

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

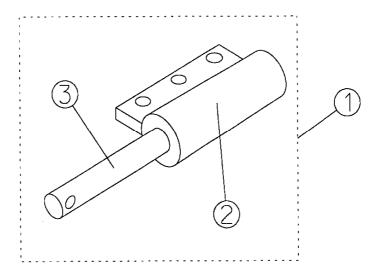
TILT MECHANISM

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

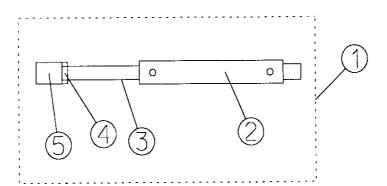
MAIN FOLD RAM



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

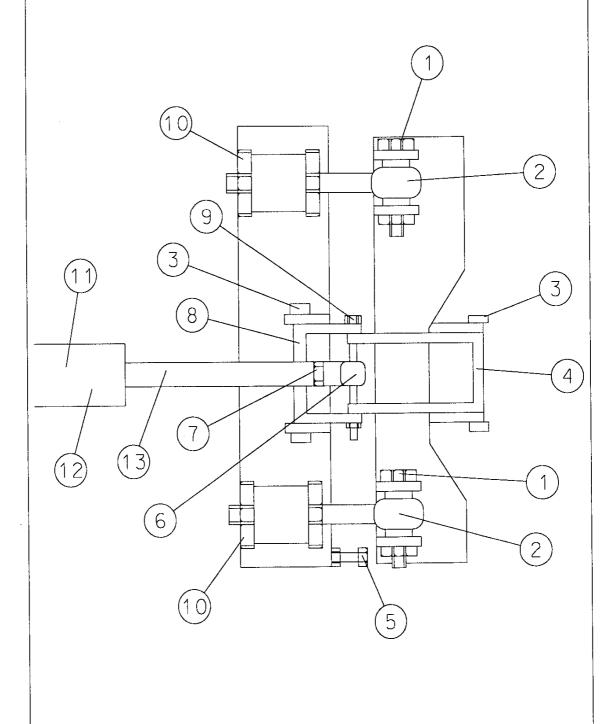


FIG 2

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

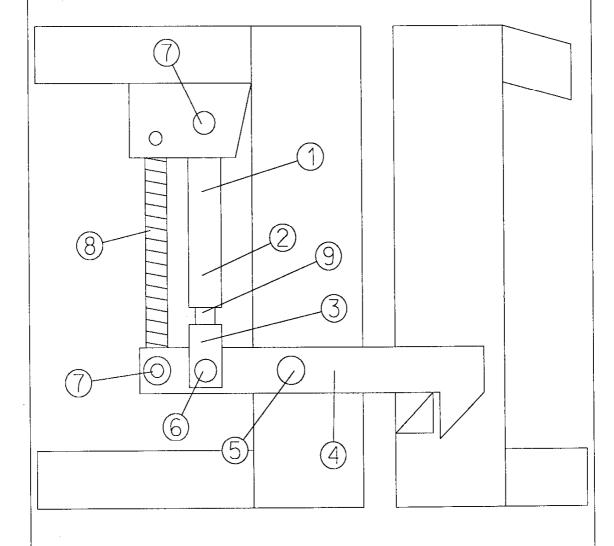
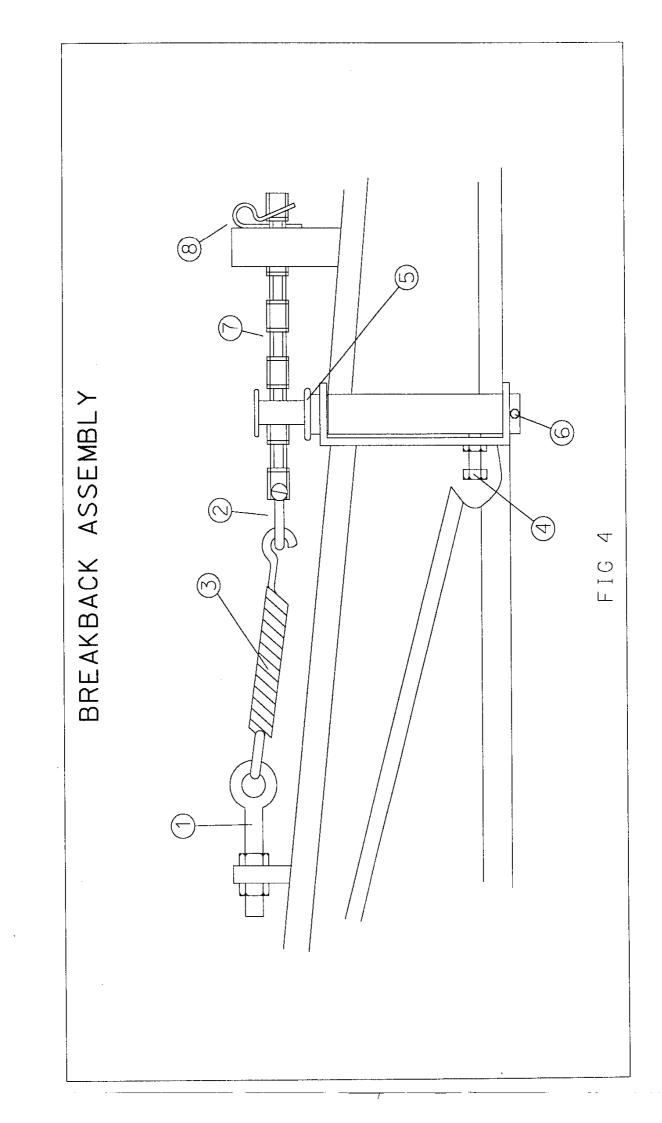


FIG 3

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

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	М6Х40НВ	2	Pin retaining bolt
7	BR1037	2	400mm roller chain
8	S14	2	R' clip

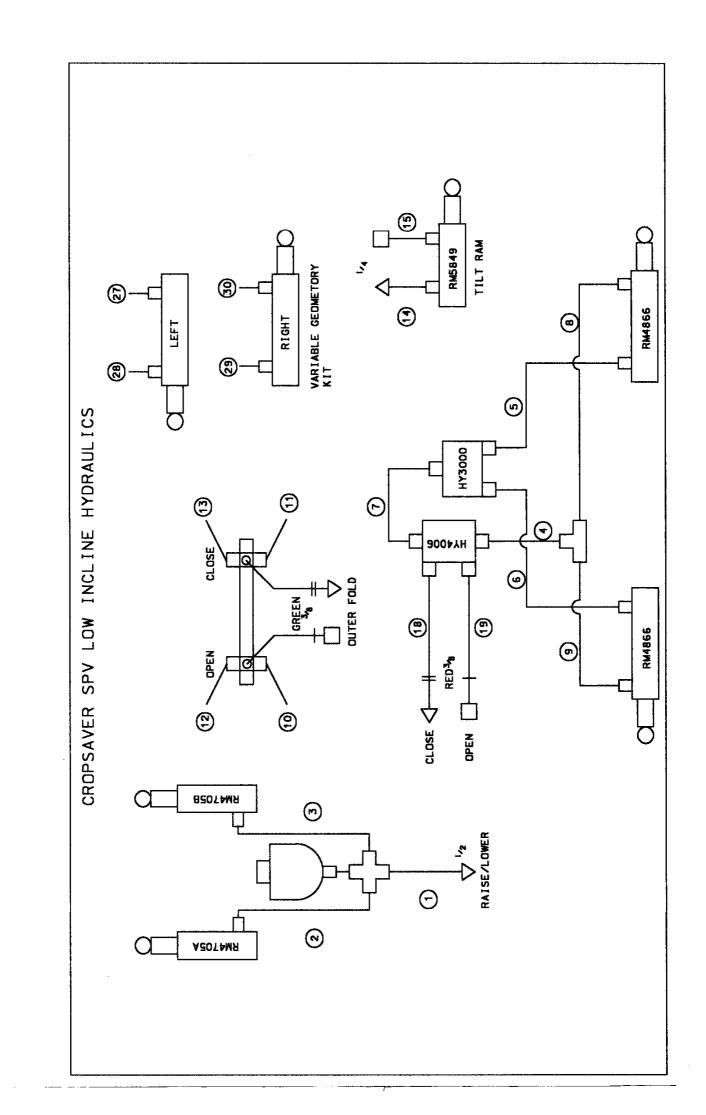
CROPSAVER SPRAYLINE / AIRLINE

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

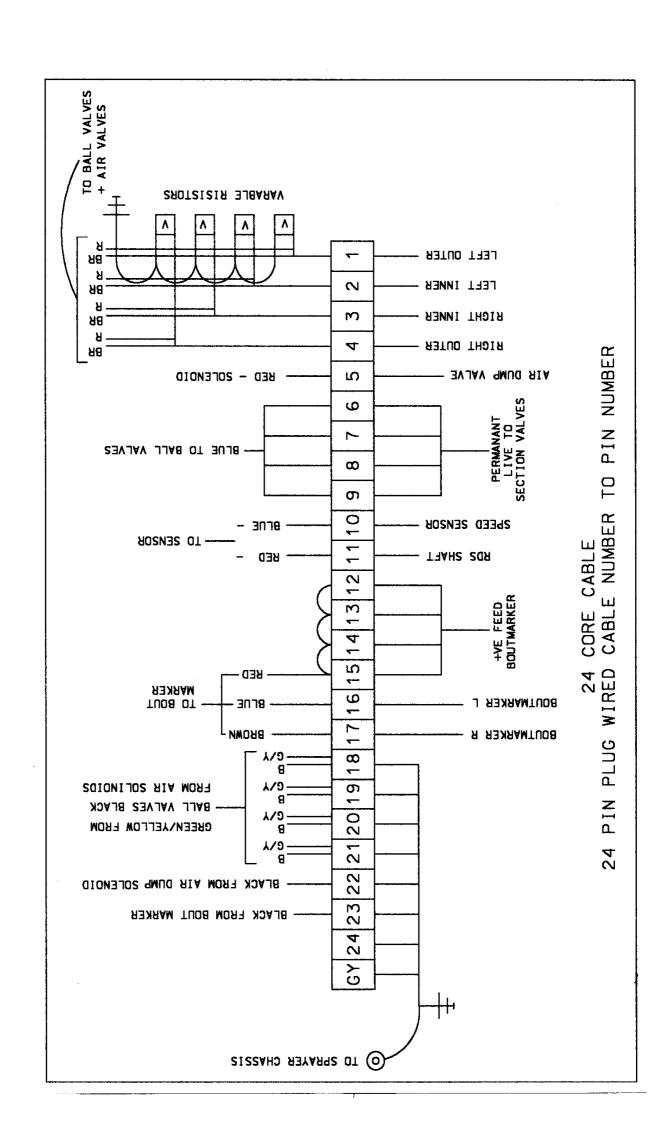
Suffix No.	:
PVC sprayline	
Conventional	Airtec
P12C	P12A
Stainless spray	<u>v line</u>
Stainless spray	
Conventional	Airtec
Conventional	Airtec
Conventional	Airtec

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

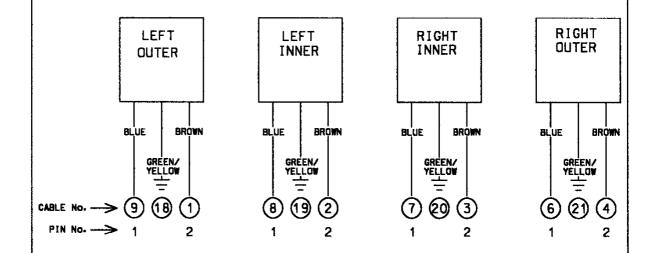
BMF352 P12A Part No. Suffix No.



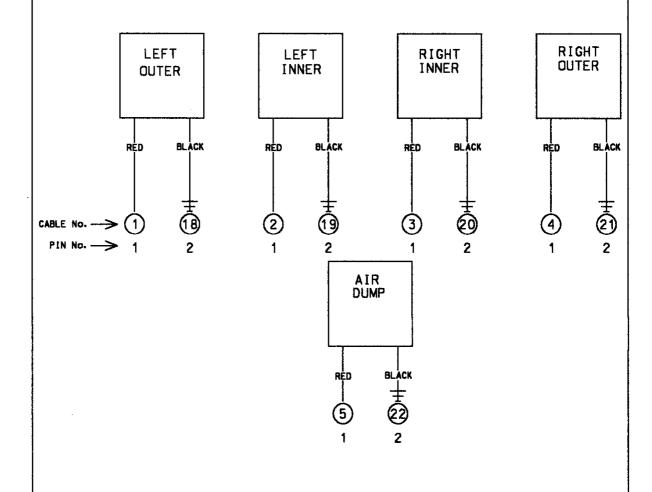
SPV PUMP - HYDRAULIC FITTINGS HY405 HY416 HY405 HY416 HY416 ----HY411 5 HY820 HY820 (2) HY411 HY405 [HY413 HY416 ——— HY416 PUMP OMR50



LIQUID MANIFOLD.



AIR MANIFOLD



ATLAS SERVICE RECORD

	<u>50</u>	<u>EVERY</u>	EVERY
	HOURS	<u>250</u>	<u>500</u>
Change boost filter	-	✓	
Change return filter	√	√	
Change suction filter	√	√	
Take oil sample	-	✓	
Check charge pressure	·	√	
Record charge @ 1,000 r.p.m.		✓	
Record charge @ 2,000 r.p.m.		1	
Check oil level	*	*	
Change hydraulic oil	As c	il sample deno	tes
Record neutral/drive differential @ 1,000 r.p.m.		*	
Check pump returns – neutral		✓	
Check condition of hydraulic hoses and ends		✓	
Check security of all bolt fixings	✓		
Check security of battery	···	√	
Check security of steering rams	√	✓	

Check security of exhaust pipe		✓	
Check security of steering wheel			
Check security of steering column	-		-
Check security of wheel nuts	+	· · · · · · · · · · · · · · · · · · ·	
Check security of motor housing bolts	· · · · · · · · · · · · · · · · · · ·	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	
Check security of axle pivot pin			
Check security of tyres and pressures			
Check/adjust play on leg king pins			
Grease all points			
Check operation of engine speed lever	·	· · · · · · · · · · · · · · · · · · ·	
Check operation of forward/reverse lever	· ·	**************************************	<u> </u>
Check cab door seal	· · · · · · · · · · · · · · · · · · ·		,
			V
Check operation of seat Check condition of E.A.S. sensors			<u> </u>
		· · · · · ·	
Check condition of leads	,	· · · · · · · · · · · · · · · · · · ·	
Check condition of control box		· · · · · ·	
Check for oil leaks	Y	~	
Record engine idle speed			/
Record engine maximum speed			✓
Change engine diesel filter	√	√	
Change engine oil and filter	~	√	
Check cylinder head torque's	✓		✓
Check valve clearance, adjust if necessary	✓	✓	
Change engine air filter			V
Clean engine diesel sediment bowl	✓	V	
Check engine air filter	V	√	
Check fan belt – replace every 2,000 hours	1	✓	
Check operation of wiper	·	✓	
Check operation of washers	/	~	
Check operation of horn	*	✓	
Check operation of work lights	~	√	
Check operation of interior light	√	✓	
Check operation of radio	✓	*	
Check operation of tacho	✓	~	
Check operation of indicators	→	✓	
Check operation of side lights	✓	✓	
Check operation of dip lights	√	V	
Check operation of main beam	√	~	
1	1		1

Check operation of air conditioning	✓	✓	
Check operation of heater	~	✓	
Check operation of engine oil light	· ·	✓	
Check operation of battery charge light	√	✓	
Check condition of cab mounts	✓	✓	
Check condition of battery leads		✓	
Check condition of wiring looms		✓	
Check condition of forward/reverse cable	✓	✓	
Check condition of engine speed cable	✓	✓	
Check chassis for cracks		✓	
Change cab carbon filter			1

SERVICE HOURS	ACTUAL HOURS	DATE	COMPANY SEAL
50 hour service			
Comments		<u>,</u>	
			A CONTRACT OF THE CONTRACT OF
		······································	
· · · · · · · · · · · · · · · · · · ·			
	· · · · · · · · · · · · · · · · · · ·		

SERVICE HOURS	ACTUAL HOURS	DATE	COMPANY SEAL
250 hour service			
Comments	1		

SERVICE HOURS	ACTUAL HOURS	DATE	COMPANY SEAL
500 hour service			
Comments	I.		

SERVICE HOURS	ACTUAL HOURS	DATE	COMPANY SEAL
SERVICE HOURS	ACTUAL FIGURS	DATE	CONFANT SEAL
750 hour service			
Comments		1	
			THE STATE OF THE S
SERVICE HOURS	ACTUAL HOURS	DATE	COMPANY SEAL
SERVICE HOURS	ACTUAL HOURS	DATE	COMPANY SEAL
1,000 hour service			
Comments	<u> </u>		
		**************************************	and the second of the second o

SERVICE HOURS	ACTUAL HOURS	DATE	COMPANY SEAL
1,250 hour service			
Comments	1	1 .	
		······	
	, , , , , , , , , , , , , , , , , , , ,	Andrew Control of the	\(\text{\$\left(\text{\text{\$\left(\text{\$\eft(\text{\$\left(\text{\$\left(\text{\$\left(\text{\$\left(\text{\$\eft(\text{\$\left(\text{\$\left(\text{\$\left(\text{\$\left(\text{\$\eft(\text{\$\left(\text{\$\left(\text{\$\left(\text{\$\left(\text{\$\eft(\text{\$\left(\text{\$\left(\text{\$\left(\text{\$\left(\text{\$\eft(\text{\$\left(\text{\$\left(\text{\$\left(\text{\$\left(\text{\$\eft(\text{\$\left(\text{\$\left(\text{\$\left(\text{\$\left(\text{\$\eft(\text{\$\left(\text{\$\left(\text{\$\left(\text{\$\left(\text{\$\eft(\text{\$\left(\text{\$\left(\text{\$\left(\text{\$\left(\text{\$\eft(\text{\$\left(\text{\$\left(\text{\$\left(\text{\$\left(\text{\$\eft(\text{\$\left(\text{\$\left(\text{\$\left(\text{\$\left(\text{\$\eft(\text{\$\left(\text{\$\left(\text{\$\left(\text{\$\left(\text{\$\eft(\text{\$\left(\text{\$\left(\text{\$\left(\text{\$\left(\text{\$\eft(\text{\$\left(\text{\$\left(\text{\$\left(\text{\$\left(\text{\$\eft(\text{\$\left(\text{\$\left(\text{\$\left(\text{\$\left(\text{\$\eft(\text{\$\left(\text{\$\left(\text{\$\left(\text{\$\left(\text{\$\eftitt{\$\left(\text{\$\left(\text{\$\left(\text{\$\left(\text{\$\left(\text{\$\left(\text{\$\left(\text{\$\left(\text{\$\left(\text{\$\left(\text{\$\left(\text{\$\left(\text{\$\left(\text{\$\left(\text{\$\le
SERVICE HOURS	ACTUAL HOURS	DATE	COMPANY SEAL
1,500 hour service			
Comments	<u> </u>		
	1	·· · ·······	Tabiana
SERVICE HOURS	ACTUAL HOURS	DATE	COMPANY SEAL
1,750 hour service			
Comments	J		
			Action to the second se
			4.
-			

	ACTUAL HOURS	DATE	COMPANY SEAL
2,000 hour service			
2,000 Hour out 100			
Comments			
· · · · · · · · · · · · · · · · · · ·			
· · · · · · · · · · · · · · · · · · ·			
		· · · · · · · · · · · · · · · · · · ·	
SERVICE HOURS	ACTUAL HOURS	DATE	COMPANY SEAL
SERVICE HOURS	ACTUAL HOURS	DATE	COMPANY SEAL
2,250 hour service			
Comments	***************************************		
	Trade of the state		
SERVICE HOURS	ACTUAL HOURS	DATE	COMPANY SFAI
SERVICE HOURS	ACTUAL HOURS	DATE	COMPANY SEAL
SERVICE HOURS 2,500 hour service	ACTUAL HOURS	DATE	COMPANY SEAL
2,500 hour service	ACTUAL HOURS	DATE	COMPANY SEAL
2,500 hour service	ACTUAL HOURS	DATE	COMPANY SEAL
2,500 hour service	ACTUAL HOURS	DATE	COMPANY SEAL
**************************************	ACTUAL HOURS	DATE	COMPANY SEAL

SERVICE HOURS	ACTUAL HOURS	DATE	COMPANY SEAL
2,750 hour service			
Comments			

			North delication of the design
SERVICE HOURS	ACTUAL HOURS	DATE	COMPANY SEAL
3,000 hour service			
Comments			<u> </u>
	·		
SERVICE HOURS	ACTUAL HOURS	DATE	COMPANY SEAL
	ACTUAL HOURS	DATE	COMPANY SEAL
3,250 hour service	ACTUAL HOURS	DATE	COMPANY SEAL
SERVICE HOURS 3,250 hour service Comments	ACTUAL HOURS	DATE	COMPANY SEAL
3,250 hour service	ACTUAL HOURS	DATE	COMPANY SEAL

SERVICE HOURS	ACTUAL HOURS	DATE	COMPANY SEAL
3,500 hour service			
Comments			
SERVICE HOURS	ACTUAL HOURS	DATE	COMPANY SEAL
3,750 hour service			
Comments	<u> </u>		
	4.4.		
			
SERVICE HOURS	ACTUAL HOURS	DATE	COMPANY SEAL
4,000 hour service			
Comments			
	,		<u> </u>

PERKINS 4 / 6 CYLINDER ATLAS 2500

50 HOUR SERVICE KITS

	PERKINS 4 CYLINDER		PERKINS 6 CYLINDER		PERKINS 6 CYLINDER	-
ENGINE FUEL FILTERS	BLUE ENGINE		BLUE ENGINE		GREEN ENGINE	
PRIMARY	E02050 0445		55.00.00.00.00.00.00.00.00.00.00.00.00.0			
	EP2656 0145	X 1	EP2656 0145	X 1	EP26561118	X1
SECONDARY	EP2656 0143	X 1	EP2656 0143	X 1	EP26561118	X1
ENGINE OIL FILTERS	EP2654 407	X 1	EP2654 403	X2	EP2654 403	X2
SUCTION FILTER	HY 645	X 1	HY 645	X 1	HY 645	, X1
RETURN FILTER	HY 645	X 1	HY 645	X 1	HY 645	X1
BOOST FILTER	HY 63 6	X 1	HY 63 6	X 1	HY 6 36	X1
BOOST O'RING	HY 636 A	X 1	HY 636 A	X 1	HY 636 A	X1
OIL SAMPLE KIT	OIL-S-KIT	X 1	OIL-S-KIT	X1	OIL-S-KIT	X1
AIR COMPRESSOR FILTERS						
CL-90	F-810	X1	F-810	X1	N/A	
DRUM	F-808	X1	F-808	X1	F-808	X1

METRIC CALIBRATION CHART PLASTIC BODY SIZE 50 PLASTIC RESTRICTOR



Pressure	Settings	Spray	Air Flow	Flow Rate				App	olicatio	on Raf	es			
AIR	LIQUID	Quality	Litres	MIs/Min				Ltrs	per H	A at K	PH			
Bar	Bar		Per Nozzle	per Nozzle	6	7	8	9	10	11	12	13	15	16
0.69	1.03	Medium	6	-										
1.03	1.38	Medium	8.5	600	120	103	90	80	72	65	60	55	48	45
1.38	1.72	Medium	9											
0.69	1.17	Medium	5.5											
1.03	1.59	Medium	6	766	153	131	115	102	92	84	77	71	61	57
1.38	1.93	Medium	8											
0.69	1.31	Coarse	4.5											
1.03	1.66	Medium	5	833	167	143	125	111	100	91	83	77	67	62
1.38	2.00	Medium	7.5											
0.69	1.52	Coarse	3.5											
1.03	1.79	Medium	4	926	185	159	139	123	111	101	93	85	74	69
1.38	2.21	Fine	6											
0.69	1.66	Medium	2.5											
1.03	1.93	Med/Coarse	4	986	197	169	148	131	118	108	99	91	79	74
1.38	2.34	Medium	5											
0.69	1.72	Coarse	2											
1.03	2.07	Coarse	3.5	1073	215	184	161	143	129	117	107	99	86	80
1.38	2.48	Medium	4.5											
0.69	1.93	Coarse	1.5											
1.03	2.28	Coarse	2.5	1173	235	201	176	156	141	128	117	108	94	88
1.38	2.69	Medium	3.5											
0.69	2.14	Coarse	1											
1.03	2.48	Coarse	2.5	1240	248	213	186	165	149	135	124	114	99	93
1.38	2.76	Medium	3.5					,						
1.03	2.83	Coarse	1.5											
1.38	3.17	Coarse	2.5	1400	280	240	210	187	168	153	140	129	112	105
1.72	3.52	Medium	3.5											
1.03	3.24	Coarse	1	,										
1.38	3.52	Coarse	2	1526	305	262	229	203	183	166	153	141	122	114
1.72	3.86	Medium	3											
1.03	3.45	Coarse	0.5	4040	000	004	امیما	امیما	467	4=6	464	454	464	465
1.38	3.90	Coarse	1	1640	328	281	246	219	197	179	164	151	131	123
1.72	4.14	Medium	2											

METRIC CALIBRATION CHART PLASTIC BODY SIZE 40 PLASTIC RESTRICTOR



Pressure	Settings	Spray	Air Flow	Flow Rate					olicatio					
AIR	LIQUID	Quality	Litres	Mis/Min				Ltrs	per H	A at Ki	PH			
Bar	Bar		Per Nozzie	per Nozzie	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			ļ								
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					L.,						
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											1
2 07	2.76	Very Fine	13.5			ļ		<u> </u>		Щ.				
0.69	1.59	Coarse	5											
1.03	1.93	Medium	7.5			l								
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		454	45-								[
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		4=4		400	,,_	460					.
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					<u> </u>						
1.03	3.10	Coarse	3.5											
1.38	3.52	Coarse	5		465		ابيدا	455	المدا	4.5-				
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	4000					455	ا ا	ا 🚛 ا			
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											

RT PLASTIC BODY SIZE 35 PLASTIC RESTRICTOR



E	***************************************														
ı	Pressure	Settings	Spray	Air Flow	Liquid Flow				Арр	licatio	n Rate	es			
ı	AIR	LIQUID	Quality	Litres	Mls/Min				Ltrs	per H	A at K	PH			
	Bar	Bar		Per Nozzle	per Nozzle	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				ļ							
ı	1.72	2.14	Very Fine	15											
ı	0.69	1.17	Medium	6											
ı	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	1.72	2.34	Very Fine	13.5											
ı	0.69	1.31	Medium	5.5											
ı	1.03	1.66	Medium	7	420	84	72	63	56	50	46	42	39	34	32
1	1.38	2.00	Fine	10											
	1.72	2.48	Very Fine	13											
٠	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						i				:	
	1.72	2.62	Very Fine	12											
1	0.69	1.66	Medium	4											
ı	1.03	1.93	Medium	6.5	500	100	86	75	67	60	55	50	46	40	38
ı	1.38	2.34	Fine	7											
ı	1.72	2.69	Very Fine	11.5											
ı	0.69	1.72	Medium	3.7											
Į	1.03	2.07	Medium	5.5	525	105	90	79	70	63	57	53	48	42	39
Ì	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							_				<u> </u>
	0.69	2.14	Coarse	2.7	}									ٔ . ا	
	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			<u> </u>				<u> </u>	<u> </u>	<u> </u>		
	1.03	2.83	Coarse	3.7			l l				l	ا	ا	٠. ا	ا ہے ا
	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											ļ
	1.03	3.24	Coarse	3	1						 	l			_
	1.38	3.52	Coarse	4	740	148	127	111	99	89	81	74	68	59	56
	1.72	3.86	Medium	5							ļ				
	1.03	3.45	Coarse	2.5			l '				<u>.</u>				<u> </u>
	1.38	3.90	Coarse	3.5	790	158	135	119	105	95	86	79	73	63	59
	1.72	4.14	Medium	7	<u> </u>								<u> </u>		

CLEANACRES • MACHINERY LTD

AGROCO UMBRELLA NOZZLE



CAP	.		LIQUID	FLOW	APPLICATION RATE						
COLOUR	COLOUR	BAR	PSI	Mis/Min		Ltrs per H	A at KPH				
					8	10	12	14			
		2.	20	005	147	114	100	7 (84)			
		2.5	NA	1070	180.5	1284	107.0	JH7			
	ORANGE	1 3	43.4	.1200 .1230	1800	1440 1473	120.0 120.0	102.0			
		3.5	20.78	1800	1950	177.0	100	1054 1054			
				Winner to Ashabition							
			14	1920	288.0	230.4	. 192.0	104,8			
	BLUE	. 1.5	21.75	2430	364.5	201.6	249.0	2003			
		2 25	29 36.25	2840 3048	426.0 456.8	340.8 385.4	284.0 204.5	243.4 281.0			
			10,0420								
		•	14.5	1910	288.5	229.2	1914	140.7			
		1.5	21.75	2485	369.8	205.6	246.5	2113			
	BLUE	2	29	2815	422.3 457.5	337,8 386,0	201.5 2050	241.3 261.4			
	Hart Hall	2.5 () 3	36,25 43.5	3050 3300	495.0	395.0	330.0	201.4			
		3.5	50.75	3535	530.3	424.2	353.5	304.0			
		4	-58	3735	580.3	448.2	373.5	320.1			
		1	14.5	2675	401.3	321.0	267.5	229.3			
	YELLOW	1.5	21.75	3465	519.8	415.8	346.5	297.0			
1		2	29	3910	586.5	469.2	391.0	335.1			
		1	14.5	2500	375.0	300.0	250.0	214.2			
	YELLOW	1.5	21.75	3000	450.0	360.0	300.0	257.1			
		2	29	3500	525.0	420.0	525.0	300.0			
		1	14.5	4600	690.0	552.0	460.0	394.3			
	WHITE	1.5	21.75	5300	79 5.0	636.0	530.0	454.3			
	Į.	2	29	6320	984.0	758.4	632.0	541.7			
		3	43	8640	1296.0	1036.0	864.0	740.0			

CLEANACRES MACHINERY TTD - Hardenon Cheltenham Cho - GFSF4DX Telephone 44 (0) 1451 860721 Tacsimile - 44 (0) 1451 860139 Website (www.cleanacres.co.uk - canad into a cleanacres.co.u

CLEANACRES MACHINERY LTD

AGROCO UMBRELLA NOZZLE



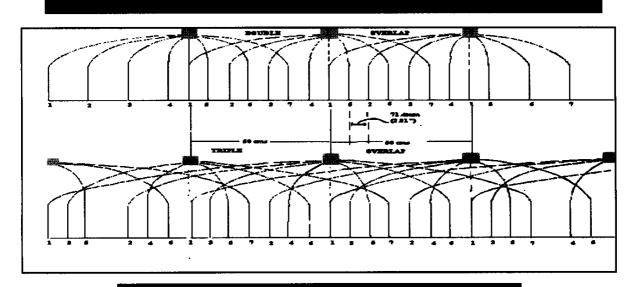


Fig 1

Fig 2

Agroco Liquid Fertiliser Nozzles are:-

SIMPLE & ROBUST

WILL FIT MOST SPRAYERS

ACCURATE

WIDE RANGE OF APPLICATION

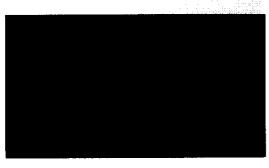
LESS VULNERABLE

SNAP FIT

50 CM SPACING

REDUCES SCORCH

This chart should be used as a guide only. The flow rates used are based on cleanwater at a temperature of 55 - 65 degrees F. We strongly recommend that sprayers should be jug tested before applying liquid fertiliser to establish the pressure required for the desired application rate. Random jug tests should be carried out throughout the season to ensure that the calibration has not changed





It is very important that the correct overlap should be maintained at all times. The minimum overlap should be as shown in Fig 1. We suggest that if you wish to use very low volumes (flow rates less than 1 Litre Per Minute per nozzle) that you dilute your fertiliser to enable a good pattern to be maintained.

To determine the pressure required to achieve the same flow rates with liquid Fertiliser as stated on the chart, multiply the pressure shown on the chart by the specific gravity of your liquid fertiliser. Specific gravity can be established by weighing a litre. If the weight is 1.3 Kgs the specific gravity is 1.3.

Please ensure that your sprayer plumbing and pump capacity are adequate for the application rates and speeds intended. Cleanacres machinery will give advice in this area if required. As a rule of thumb, deduct 30% of your sprayer pumps nominal output to determine maximum pump output available to you.

CLEANACRES MACHENERY 1 1D Thatleion Chefresham Grow Ghora 4DX Felephone : 44 (0) 1451 860721 Facsimile : 44 (0) 1451 860139 Website: www.eleanacres.co.uk = e-mail: info a cleanacres.co.uk

APPENDIX 1

MISCELLANEOUS CONVERSION FACTORS

One gallon per acre = 11.23 litres per hectare

One mile = 5,280 feet = 1610 metres = 1.61 kilometres

One gallon = 4.55 litres

One pound per square inch (p.s.i.) = 0.07 bars = 6.895 kilopascal

One bar = 14.5 p.s.i.

PONY FLOW - WATER METER

The Pony Flow consists of a small turbine encased in a polyurethane tube.

The turbine is a cast alloy type with a stainless steel through shaft running in ceramic bearings at each end.

The metering unit plugs into the turbine body. This counts one litre for so many times the blades pass by the pick on the bottom on the head unit. Important - Pony Flow meters are a very accurate instrument and should be treated with the utmost care. The meter will not read accurately if it has aerated water passing through it.

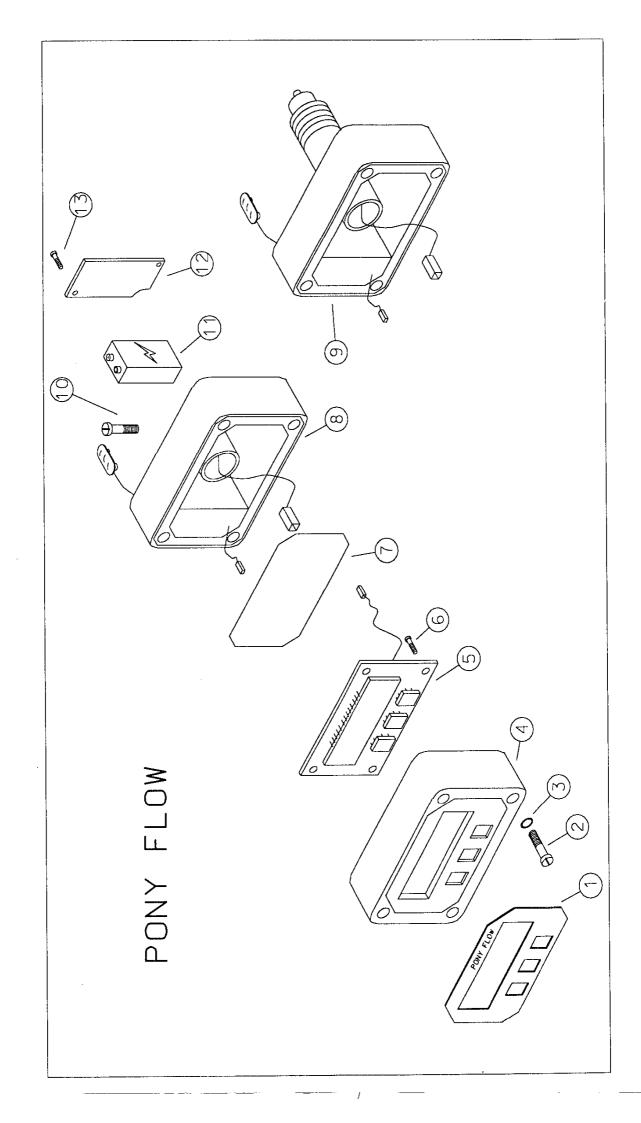
Please ensure all your hose couplings have good seals that will not allow air to be drawn in.

The head unit runs off a 9V battery which has a life of about a year. Once the battery has gone flat the head unit will lose it's calibration figure. Please note this figure so it can be re-entered after a new battery is fitted. CALIBRATION - This can be set by posting the unit to us at the factory. It will be calibrated and tested on our test bench. Or when one of our service engineers is in your area he can check it with his master meter. On using this calculation.

OPERATION

The first button labelled CAL on the red square, pressed once will activate the unit. Press and hold this button will set you into the mode which allows you to alter the calibration figure. Enter decimal point as required. With cal figure set to zero, press cal button causing each zero to flash in turn. When the last one is reached a decimal point will be added to the display. A cal figure can now be entered. To do this you press this button again to move you to the digit you wish to change. To change the digit you press either the negative or positive button. The positive button is also labelled START/STOP and the negative button labelled TOTAL/FLOW. If you wish to stop the meter from counting while liquid is still flowing through it press the STOP/START button. The TOTAL/FLOW button gives you the ability to use the meter to count the total amount of liquid that has passed through it. Or display the

volume per minute through it. To zero the meter hold the CAL button and press the TOTAL/FLOW button once.



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	ı	9 VOLT BATTERY
	12	01300832	l	BATTERY HOUSING COVER
	13	86466425	2	STAINLESS STEEL SCREW 2.2 x 9.5

XR Teefet® Extended range (tal spray lips

ip No (strain	er screen size)	Liquid Pressure	Capacity 1 Nozzle										
80° Series	110° Series	(Bar)	(Umin)	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									
	Tto Genes	1.0	0 23	92 0	69.0	55 2	45 O	39.4	34,5				14 km/
		1.5	0 28	1120	840	67.2	560	49.0	42.0	30 7	27.6	23.0	19.7
ORANGE -	ORANGE XR11001VS	20	0.32	1280	960	76.8	64.0	548	48.0	373	33.6	28.0	24.0
(100 mesh)	(100 mesh)	3.0	0 39	1560	117.0	93 6	78.0	668	585	42.7 52.0	38.4	32.0	27.4
į		4.0	0.46	184.0	138.0	1104	92.0	78.8	69.0		45.8	39 C	33,4
		1.0	0.34	136 0	102.0	81.6	68.0	58.3	51.0	61.3 45.3	55 2	450	39.4
		15	0.42	168.0	126.0	100 8	84.0	72 0	63.0	40 3 56 0	40.8 50.4	340	29.1
GREEN (R80015VS	GREEN XR110015VP	2.0	0.48	1920	144.0	1152	96.0	823	72.0	6-1.0	57.6	42.0	36.0
(100 mesh)	(100 mesh)	30	0.59	2360	177.0	141.6	118.0	101.1	83 5	78,5	70.8	48 0	41.1
		4.0	0.68	272.0	204.0	163 2	136 0	1166	102.0	90 6	816	59.0	50 6
		10	0 45	1840	138 0	110 4	92 0	78 B	69.0	613	55 2	68.0	58.3
		1.5	0.56	2240	168.0	1344	112.0	960	84.0	74.6	67,2	450	39.4
YELLOW (R8002VS	YELLOW XR11002VP	20	0.64	256.0	192 0	153 6	128 0	109 7	56.0	85 3	76 B	560	48 0
(50 mesh)	(50 mesh)	3.0	0.79	3160	237.0	189 6	158 0	135 4	1185	105.3	948	640	54.8
		40	0.91	364 0	273.0	218 4	182.0	1560	136.5	121.3	109.2	790	67.7
		10	0.63	2720	2040	163.2	136.0	1166	102.0	90.6	816	910	780
		15	0.84	3360	252.0	2016	168 0	1440	126.0	1120	100.6	6-3 O 8-4 O	583
BLUE (BLUE XR11003VP	20	0.97	388.0	2910	232.8	194.0	105.3	145.5	129 3	115 4	97.0	720
(50 mesh)	(50 mesh)	30	1 18	472.0	35-10	203 2	2360	202 3	177.0	157.3	141,6		83 1
		40	137	540.0	4110	328 8	2740	2348	205 5	182.6	164.4	1180	1011
		10	0.91	364.0	2730	218 4	182 0	150.0	136.5	121.3	109.2	9:0	
		15	1 12	4490	3360	263.8	2240	192.0	168.0	149.3	134.4		78.0
RED XR800-IVS	RE0 XR1100-NP	20	1 2 3	5160	307.0	309 5	25/10	221 1	1935			1120	95.0
(50 mesh)	(50 mesh)	30	1 50	635.0	474.0	379 2	3160	270 8	237.0	1720	1548	1290	1100
		40	1 82	7280	546.0	4368	364 0	3119	273.0	242.6		158 0	135 4
		10	1 14	450.0	3-(2.0	273 6	228 0	195.4	171.0	152 0	136 8	182 0	155 0
		1.5	1 40	560 0	420.0	3360	280 0	2420	2100	186 6	158 0	1140	97.7
BROWN XR8005VS	BROWN XR11005VP	20	1.61	6440	483.0	386 4	,322 0	2750	241.5	2146	193.2	1400	120 0
(SO mesh)	(50 mesh)	30	197	ס מפל	5910	472.8		337.7	296.5			151 0	130 0
		40	2 20	9120	6040	547.2	456.0	337 f		252 6	236 4	1970	158.8
		1.0	1 37	543.0	4110				342.0	303.9	273 6	229.0	195 4
		15			_	328 8	274.0	23-4 B	205.\$	182.6	1644	1370	117 4
GREY	GREY		1 67	668 O	501.0	400 8	\$340	200 2	250 5	222.6	200.4	157 0	143 1
(RAQOSVS (50 mesh)	XR11005VP ((50 mash)	2.0	1.93	7720	5790	463 2	3435 0	330 8	269 5	2573	231.6	1930	195 4
	٠	30	2 37	9480	7110	568 8	474.0	409 2	355.5	3159	284.4	237.0	203 1
. <u></u>		4.0	2 74	1995 0	822.0	657.6	548 0	459 5	411.0	365 2	3238	2740	234.6
		1.0	1.82	728 0	5460	4368	364 0	3119	273.0	242.6	218.4	182 0	1560
		1.5	2 23	8 35 0	eco 0	535 2	4460	3/3/2 2	334.5	207.3	257.6	2230	1911
XR8006VS (50 mesh)	XR11006VP (50 mesh)	2.0	2 58	1032 0	7740	6192	5160	442.2	387,0	343 9	309 6	258.0	221.1
(3.3.1.1.3.1.)	(4	30	3 16	1254.0	948.0	758 4	632 Q	5416	474.0	421.2	379 2	3150	270 6
		40	3 65	14600	1005 0	876 0	730 0	625.5	547,5	489.5	438.0	365.0	3126
		10	2 28	912.0	68-4 0								-
						547.2	456 0	399.3	342 0	303 9	273 6	228 0	195 4
XR8010SS	XR110105\$	1.5	2 79	11160	837.0	600 E	558 0	4762	4185	371 9	3348	2790	230 1
(50 mesh)	(50 mesh)	2.0	3 22	1288 0	906.0	7728	6440	5519	493 0	429.2	386.4	333 0	276
		30	3.95	1580.0	1185.0	9480	790.0	· 677 C	592 5	526 5	474.0	395.0	338
		40	4 56	18240	1368 0	10044	9120	7816	£84 0	607.8	547.2	456.0	390
		1.0	3 42	1368.0	1026 0	820 8	CH34 0	5002	5130	455 9	410 4	342.0	293
		15	4 19	16760	1257.0	1005 6	838 0	7102	628 5	558 5	502.8	4190	359
xทองเรรธ	XR11015SS (50 mesh)	20	4 83	1932.0	14490	1159 2	956 0	8279	724 5	6438	5796	4830	413
	1.00/10/05/10			l						0-10	2130	-010	~
(Sp mesh)	, ,	30	592	23030	17760	1420 8	11840	10147	843 0	780 1	710.4	592.0	507