



OWNER'S MANUAL
FOR THE



PRESSURE NOZZLE

BOOM KIT

C-Dax Systems Ltd
P O Box 1010, 145 Harts Road
Tiritea, Palmerston North
Ph: +64 6 354 6060
Fax: +64 6 355 3199
E-Mail: sales@c-dax.co.nz
www.c-dax.com

SAFETY PRECAUTIONS

PRESSURE NOZZLE SPRAY BOOMS

AN IMPORTANT MESSAGE FOR OWNERS & OPERATORS OF C-DAX ATTACHMENTS AND ACCESSORIES

Be warned of the dangers of loading your ATV or other vehicle in excess of its carrying capacity. It is important to understand that any loads or attachments whether fastened to or placed on a vehicle or ATV will alter the stability or handling characteristics of that vehicle or ATV. Spray tanks or other equipment must be filled only to a level where the gross weight is within the load limit of the ATV or other vehicle.

Safety is a primary concern in the design, manufacture, sale, and use of spray tanks and other equipment. As manufacturers of spray tanks and other equipment we want to confirm to you, our customers, our concern for safety. We take this opportunity to remind you about the simple, basic and common sense rules of safety when using spray tanks and other equipment. Failure to follow these rules can result in severe injury or death to operators and bystanders.

It is essential that everyone involved in the assembly, operation, transport, maintenance and storage of this equipment be aware, concerned, prudent and properly trained in safety.

This also applies to equipment that is loaned or rented to someone who has not read the owner's manual and is not familiar with the operation of application equipment.

- NEVER EXCEED THE LOAD LIMIT CAPACITY OF THE ATV OR OTHER VEHICLE.
- PLEASE NOTE THAT FILLING THE SPRAY TANK OR OTHER EQUIPMENT COMPLETELY AND OR THE ATTACHMENT OF ADDITIONAL EQUIPMENT TO THE ATV MAY EXCEED THE ATV'S MAXIMUM LOAD CAPACITY, AND ADVERSELY AFFECT THE STABILITY OR THE ATV OR OTHER VEHICLE.
- CARGO SHOULD BE PROPERLY DISTRIBUTED AND SECURELY ATTACHED.
- REDUCE SPEED WHEN CARRYING CARGO OR PULLING A TRAILER OR TRAILED APPLICATION EQUIPMENT AND ALLOW GREATER DISTANCE FOR BRAKING.
- NEVER ALLOW ANYONE TO RIDE ON YOUR SPRAYER OR OTHER EQUIPMENT.
- ALWAYS FOLLOW THE INSTRUCTIONS IN THE OWNER'S VEHICLE MANUAL FOR CARRYING CARGO OR PULLING A TRAILER.
- PROPER MAINTENANCE IN LINE WITH MANUFACTURER'S RECOMMENDED MAINTENANCE PROCEDURES IS ESSENTIAL.
- BEFORE APPLYING CHEMICALS, READ THE LABEL OF THE CHEMICAL MANUFACTURER OR SUPPLIER FOR PERSONAL PROTECTIVE EQUIPMENT AND OPERATE AS RECOMMENDED.
- THE SAFETY OF ALL CHEMICALS USED IN AGRICULTURE IS UNDER THE JURISDICTION OF A GOVERNMENT AGENCY, IE N.Z. MINISTRY FOR THE ENVIRONMENT; USA ENVIRONMENTAL PROTECTION AGENCY. FURTHER LOCAL GOVERNMENT OR STATE LAWS MAY APPLY.

COVER:

Boom model shown; QSV300

SAFETY

Before attempting to install or operate the equipment, read and understand the manual thoroughly. Failure to comply with this instruction constitutes improper use and will invalidate the warranty.

Before using your pesticide, STOP, Read The Label

Mixing pesticides is a most dangerous time as it involves handling the concentrated material. For toxic compounds, use protective clothing such as overalls, hat, gloves, boots and respirator.

When using concentrated sprays, full protection is necessary.

When using diluted sprays, wear a hat, long-sleeved cotton overalls, and boots. If you use pesticides regularly it is a good idea to always wear a respirator to avoid cumulative effect.

Other protection may be required. Check the label. It may have specific directions for the particular chemical.

Protective clothing should be properly cared for. Rinse heavily contaminated clothes in the open before washing in the laundry.

Wash and dry protective clothing every day but keep them separate from other washing.

Respirators need special care. Clean your respirator after spraying. Use soapy water then rinse and allow drying completely before storing in a clean plastic bag. Replace canisters in respirator after eight hours use.

PRESSURE NOZZLE BOOM KITS

OWNERS MANUAL

(Pt.No 90024 Issue 3 Dated 25 October 2005)

TABLE OF CONTENTS

	Page
Introduction	
Safety	2
Contents	4
Introduction	
Description	
Warranty	
Liability	5
Boom Installation	
Quick Smart Mounted Booms Only	
Boom Height	
Plumbing (12V Pump)	
Plumbing (PTO or Engine Driven)	
Theory of Operation	6
Operation	
Calibrating your Pressure Nozzle Boom	7
Calibration Chart	
Select Tip Size	8
Spray Tip Selection Table	
Operating Hints	9
Maintenance	
After Use	
Routinely	
Annually	
Filters	10
Performance Data Chart	11
Parts Diagrams	
V300 Boom Assembly	12
Nozzle Body Assembly	13
C-DaxOil	14

INTRODUCTION

Congratulations on the purchase of your new C-Dax pressure nozzle spray boom. You join the many thousands of farmer's worldwide who have recognised the remarkable usefulness of this unique equipment.

DESCRIPTION

The C-DAX Pressure Nozzle Spray Booms are a high strength series of spray booms manufactured of non-corrosive materials designed for mounting on front or rear ATV carriers. All units come complete with mountings non-drip nozzle bodies, nozzle filters, and high quality spray tips.

WARRANTY

C-DAX Systems LTD warrants to the original purchaser that the equipment is sold free from defects in materials and workmanship for a period of 12 months from date of retail sale (6 Months from date of retail sale for all equipment sold in the U.K.).

Accordingly, C-DAX Systems undertakes to repair the equipment, or at our option replace, without cost to the original purchaser either for materials, parts or labour, any part which within the specified warranty period from time of delivery is found to be defective. PROVIDED that the equipment has been used for normal purposes in accordance with the instructions, and has not been subject to neglect, misuse or accident, and has not been repaired, serviced or dismantled by any person other than a service agent or person authorised by C-DAX Systems.

The warranty does not extend to cover: consequential damage; repair or replacement of parts due to fair wear and tear; or damage resulting from neglect, misuse, accident or hireage. SPECIFICALLY the warranty excludes battery damage, damage arising from chemical attack, and units built to customers specifications.

All goods returned to C-DAX Systems are freight paid by the sender and if subject to a warranty claim, must be accompanied by a completed warranty claim form. Warranty claim forms are available from C-DAX dealers.

LIABILITY

The maximum liability, which is accepted by C-DAX Systems, is limited to replacement of faulty goods only. Every care has been taken in the manufacture of our goods but because use of the goods is outside the control of the manufacturer, the end user assumes all responsibility for the use. Neither the manufacturer nor retailer shall be liable for loss or damage resulting from use.

Any advice or recommendations given by C-DAX Systems, its agents, or employees is given in good faith and based on the best information available to us. No liability or responsibility is accepted or implied as a result of any information or advice tendered by C-DAX Systems, its agents or employees. The end user accepts all responsibility arising from that advice.

BOOM INSTALLATION

Quick Smart Mounted Booms Only

For booms without Quicksmart™, bolt the boom to an appropriate surface using the boom mounting holes.

With QSA Frame;

Fit QS upright bars to centre frame of sprayer using M10x30 bolts and nuts supplied. Fit with mounting lugs facing inwards.

Fit sprayer to Quicksmart™ frame and unfold arms.

With QS Frame;

Install the Quicksmart™ frame as detailed in the mounting instructions.

Fit sprayer to Quicksmart™ frame and unfold arms.

Set boom to required spraying height by fitting the QS mount bars on the high or low position, and/or adjusting the position of the mount bars on the centre frame of the sprayer.

NOTE

The QS upright bars can be adjusted in 50mm increments on the sprayer centre frame.

Boom Height

Minimum recommended boom height above the **target** is 50cm for 110° nozzles (standard) and 60cm for 80° nozzles (optional).

Test the evenness of distribution by spraying an area of dry concrete with clean water. The surface must dry evenly. If the target is above ground level, raise the boom height accordingly.

Plumbing (12V Pump)

Cut the sprayer output line from the pump in an easily accessible position, and install the quick release valve with the 8.5mm hose shank.

Connect the delivery hose to the boom, cut the hose to a length so that it can be connected to the quick release valve using the 10mm male hose shank connector.

Connect the remainder of the sprayer output line to the spray gun, to the remaining 8.5mm male hose shank connector.

Plumbing (PTO or Engine Driven Pump)

Single Section Spraying:

Connect the boom delivery line to a spare outlet port on the sprayer pressure regulator, secure with hose clamps provided.

Multi Section Spraying:

Connect each spraying section boom delivery line to a spare outlet port on the sprayer pressure regulator, secure with hose clamps provided. Extra regulator outlet ports are available (depending on specification).

THEORY OF OPERATION

Spray fluid is placed in the tank where it is drawn through a suction filter and pumped to a control valve. The excess flow from the valve is returned to the tank via the bypass hose. Fluid at a nominal pressure of 1-4 bar (nominally) is pumped to the spray tips via nozzle tip strainers.

At the spray tip, fluid is atomized at the spraying pressure and the fluid is propelled toward the target at the tip angle (80° or 110° nominally).

Droplet size is controlled by the spraying pressure.

OPERATION

With water in the spray tank;
 Fold the boom out.
 Turn on the pump,
 -12V sprayers; Switch labeled 'PUMP' on the switch box
 Ensure hoses and lines are free of kinks and blockages.
 Allow time for the air to be expelled from the hoses and lines.
 Water should flow evenly out of the spray tips.
 Droplets will be formed by the nozzles, thus creating the spray.
 Drive forward at the required operating speed across target area.

CALIBRATING YOUR PRESSURE NOZZLE BOOM

Metric Version (litres, metres, kph)
 (*Standard nozzle spacing 0.5 metres)

You will need to calibrate your sprayer to ensure the accurate application of chemical or liquid fertilizer. If too much chemical or liquid fertilizer is applied you will be wasting money! If too little is applied you may need to repeat the spraying, which will be wasting your money and time!

Chemicals are expensive. Repeat calibration frequently during the seasons to avoid disappointment.

To calibrate your sprayer you will need:

- a) nozzle calibrator or an accurate measuring flask
- b) watch or clock with seconds, or a stopwatch
- c) tape-measure
- d) calculator

NOTE: "Chemical" also refers to liquid fertilizers.

1. Measure time taken to travel 100m at the speed used for spraying

NOTE:
 Maximum Recommended Spraying Speed is 12 Kph.

2. Run Sprayer and record output from each nozzle (in mls) for the same time it took to travel 100m.

Calculate average flow per nozzle.

Ie. Add individual nozzle output and divide by number of nozzles.

NOTE:
 Check any nozzle tip that is out by ± 5%
 Discard any nozzle tip that is out by ± 10%

3. Litres/ha = $\frac{\text{Average Nozzle output (ml/nozzle)}}{500} \times 100$

4. Chemical to add to tank

$$\frac{\text{Litres of Chemical}}{\text{L/ha (application Rate)}} = \frac{\text{Water in Tank (L)}}{\text{L/ha (application Rate)}} \times \text{Label chemical rate/ha}$$

HINT: If you want to spray one hectare, but a tank load covers two, then simply put in half the amount of chemical and water in the tank. Similarly if you want to spray half a hectare and a tank load covers two, then quarter the amount of chemical and water in the tank, and so on.

For future reference either your sprayer details in the following calibration table.

Spray Tip Selection Table

Tip Ref Code	Pressure	Flow	Litres/Hectare at				
	Bar	lit/min	6km/h	8km/h	10km/h	12km/h	14km/h
110-UF-01 Orange	1.0	0.23	46	35	28	23	20
	1.5	0.28	57	43	33	28	24
	2.0	0.33	66	50	40	33	28
	2.5	0.37	74	56	44	37	32
	3.0	0.40	80	60	48	40	34
	3.5	0.43	86	65	52	43	37
	4.0	0.46	92	69	55	46	39
110-UF-015 Green	1.0	0.35	70	53	42	35	30
	1.5	0.42	84	63	50	42	36
	2.0	0.49	98	74	59	49	42
	2.5	0.55	110	83	66	55	47
	3.0	0.60	120	90	72	60	51
	3.5	0.65	130	98	78	65	56
	4.0	0.69	138	104	83	69	59
110-UF-02 Yellow	1.0	0.46	92	69	55	46	39
	1.5	0.56	112	84	67	56	48
	2.0	0.65	130	98	78	65	56
	2.5	0.73	146	110	88	73	63
	3.0	0.80	160	120	96	80	69
	3.5	0.86	172	129	103	86	74
	4.0	0.92	184	138	110	92	79
110-UF-03 Blue	1.0	0.69	138	104	83	69	59
	1.5	0.85	170	128	102	85	73
	2.0	0.98	196	147	118	98	84
	2.5	1.10	220	165	132	110	94
	3.0	1.20	240	180	144	120	103
	3.5	1.30	260	195	156	130	111
	4.0	1.39	278	209	167	139	119

Operating Hints

C-DAX stocks Spray Tips from Sprays International.
The Tips are all high quality and colour coded for easy use.

Spray Tips are available in packs of 10 as follows:

- * Standard Fan
- * Ultra Fan (low pressure)
- * Evenfan
- * Deflector
- * Hollow Cone
- * Enviroguard (low Drift)
- * Pneujet XL (air induction nozzle)

MAINTENANCE

After Use

At the end of spraying, flush the system three times with fresh water. Finish with a final rinse using C-DAX Neutralise rinsing solution.

Remove the strainer basket under the lid of the sprayer, rinse and refit.

Remove the main filter element, clean and replace, ensuring that the filter bowl 'O' ring is in place, and the bowl nut is tight.

Clean the outside of the sprayer to remove any spray residue.

Remove and rinse the nozzle tip filters.

Routinely

Check the spray tip patterns for wear, replace if necessary.

Calibrate the boom (every 100Ha)

Lubricate any moving boom parts.

Check spray hoses for kinks or damage, replace if necessary.

Annually

Replace spray tips

Lubricate the break away joints with good quality grease.

Filters

Your Pressure nozzle boom sprayer is fitted with three stage filtration consisting of:

- a) filter basket at the tank inlet,
- b) suction filter between the tank and pump, and
- c) nozzle tip filters.

Check all filters after the first four hours of use, then at the end of each spraying session, more regularly depending on the water supply and chemicals used.

PERFORMANCE DATA CHART (NOMINAL)

Performance Data (Nominal)

C-DAX Unit Model	Flow Rate to Boom (lit/min)	Nozzle Designation	Flow Rate per Nozzle (lit/min)	Application Rate at Each Forward Speed (lit/ha at km/hour)			Range of Tank (hectares at km/hour)						Time to Empty Tank (mins)	
				8	10	12	SR50			SR80			50 litre	80 litre
							8	10	12	8	10	12		
WB200	3.60	110UF03	0.90	135	108	88	0.37	0.46	0.57	0.59	0.74	0.90	13.9	22.2
	3.80		0.95	142	114	93	0.35	0.44	0.54	0.56	0.68	0.86	13.1	21.0
	4.00		1.00	150	120	98	0.33	0.41	0.51	0.53	0.66	0.81	12.5	20.0
	4.20		1.05	157	126	103	0.32	0.39	0.48	0.51	0.63	0.77	11.9	19.0
WB300 V300	3.60	110UF02	0.60	90	72	59	0.55	0.69	0.85	0.88	1.10	1.35	13.9	22.2
	3.90		0.65	97	78	64	0.51	0.64	0.78	0.82	1.02	1.25	12.8	20.5
	4.20		0.70	105	84	69	0.47	0.59	0.72	0.76	0.95	1.15	11.9	19.0
	4.50		0.75	112	90	74	0.45	0.55	0.67	0.71	0.88	1.08	11.1	17.8
V400, 4A (8002 pump)	4.20	110UF02	0.53	80	64	50	0.62	0.78	1.0	1.0	1.25	1.6	11.9	19.0
V400, 4A (8003 pump)	4.70	110UF02	0.59	90	71	59	0.55	0.70	0.85	0.88	1.08	1.35	10.6	17.0

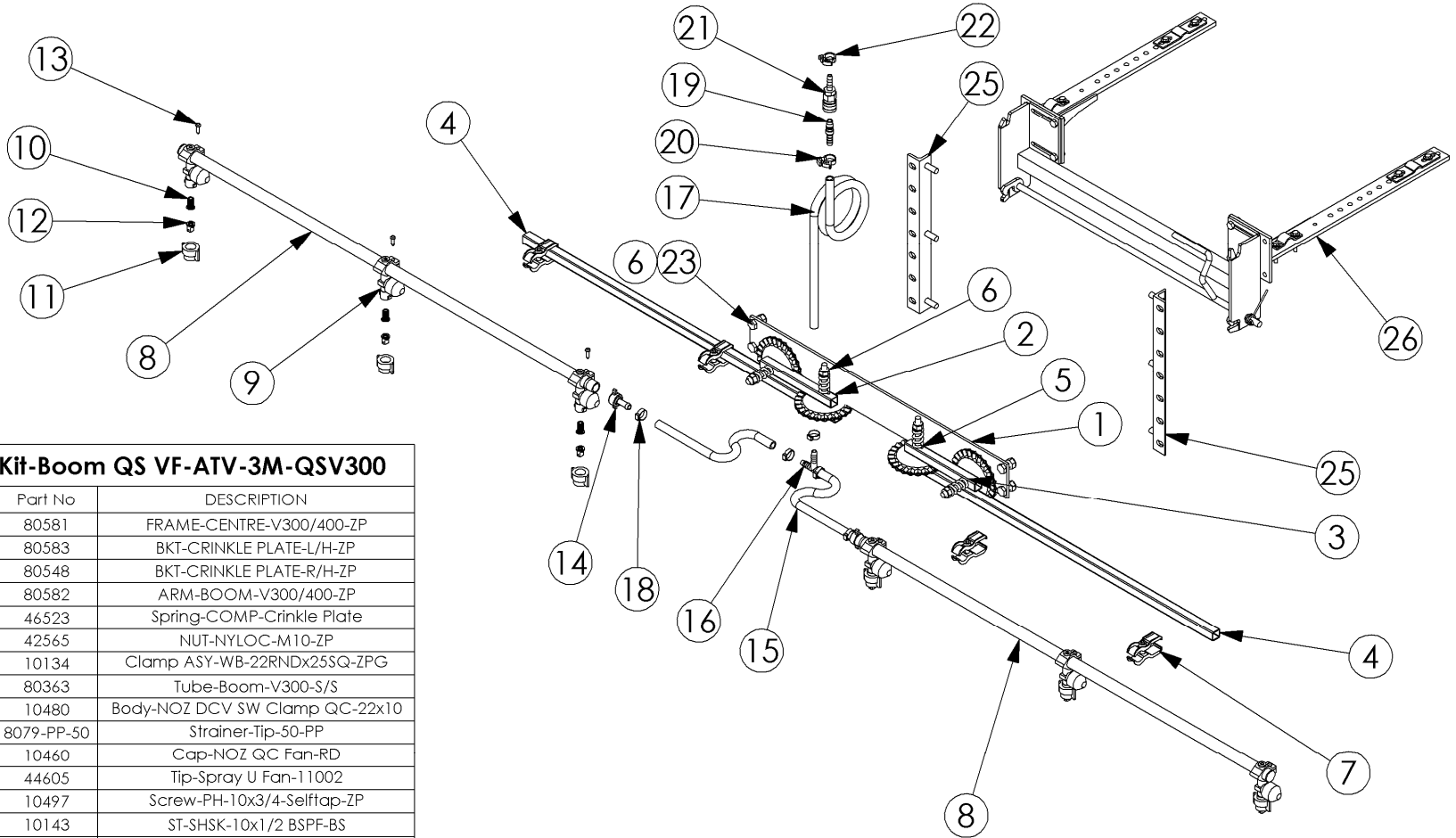
NOTE: “TOTAL FLOW RATE TO BOOM” is pre-determined by nozzles supplied and each pumps performance. Calibrate (*check flow form*) nozzles to determine your application rate at each of the above forward speeds. Calibrate nozzles frequently to check application rate.

Chemical for tank - multiply range of tank (*hectares*) by chemical rate per hectare. eg, if flow from nozzles (*with ATV at operating rpm*) on WB200 boom is 0.85 litres/minute each, travel speed is 12 km/hour, and chemical rate is 2 litre/hectare then put $2 \times 0.53 = 1.06$ litres of active ingredient in the tank.

SUGGESTED operating height for nozzles; 0.5 metres above the target.

81132 - Kit-Boom QS VF-ATV-3M-QSV300

ITEM NO.	QTY.	Part No	DESCRIPTION
1	1	80581	FRAME-CENTRE-V300/400-ZP
2	1	80583	BKT-CRINKLE PLATE-L/H-ZP
3	1	80548	BKT-CRINKLE PLATE-R/H-ZP
4	2	80582	ARM-BOOM-V300/400-ZP
5	4	46523	Spring-COMP-Crinkle Plate
6	8	42565	NUT-NYLOC-M10-ZP
7	4	10134	Clamp ASY-WB-22RNDx25SQ-ZPG
8	2	80363	Tube-Boom-V300-S/S
9	6	10480	Body-NOZ DCV SW Clamp QC-22x10
10	6	8079-PP-50	Strainer-Tip-50-PP
11	6	10460	Cap-NOZ QC Fan-RD
12	6	44605	Tip-Spray U Fan-11002
13	6	10497	Screw-PH-10x3/4-Selftap-ZP
14	2	10143	ST-SHSK-10x1/2 BSPF-BS
15	2	11201	Hose-DLVY-40 Bar-10-600LG
16	1	13611	TEE-HSK-10-NY
17	1	11201	Hose-DLVY-40 Bar-10
18	5	12139	CLAMP-HOSE-OETIKER 1 Ear-185
19	1	24301	ST-QR NL HSK-10-Brass
20	1	15506	Clamp-Hose-F-NY-BK
21	1	24338	Valve-QR NL HSK-8.5-Brass
22	1	15510	Clamp-Hose-E-NY-BK
23	4	42527	Screw-HH-M10x25-ZP
24	1	65501	Label-Serial No-Metal
25	1	81779	Kit-QSA
26	1	83261	Kit-QS-ATV-G2

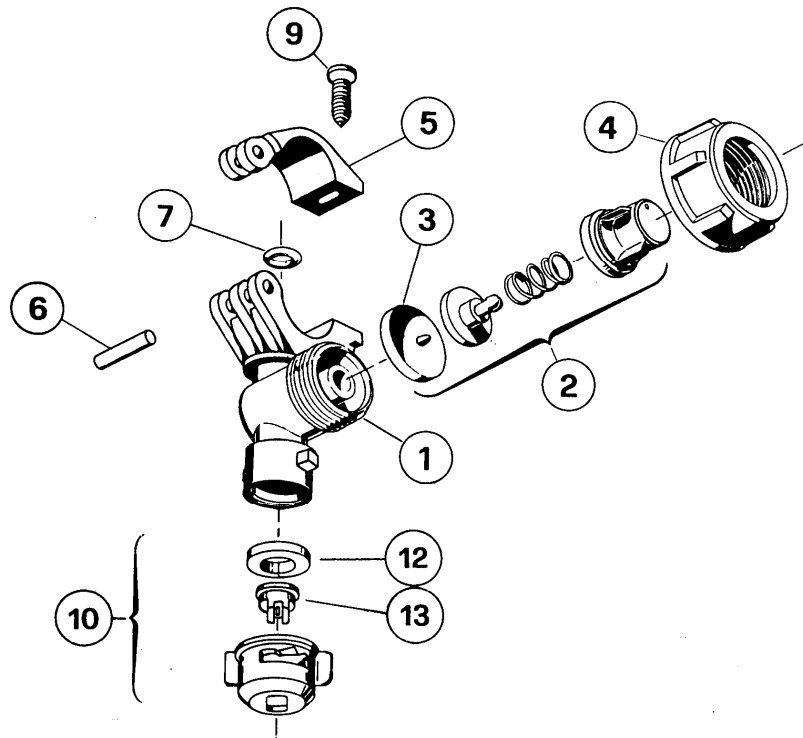


The following parts are replacements for C-Dax spray booms.
Please order by part number:

Item:	Part number:
1- Noz body (Incl 'O'ring & DCV, No cap, tip or gasket)	10480
2- Piston and diaphragm	10492
3- Diaphragm only	10493
4- Fly nut 3/4"	10343
5- Swivel clamp	Part of 10480
6- Swivel clamp pin	Part of 10480
7- 'O' Ring	10299
9- Swivel clamp screw	10497
10- Cap and gasket (No tip)	10710
12- Nozzle gasket	13630
13- Nozzle cap	Refer nozzle chart listing
Nozzle body complete (with 110°03 tip)	80509-03
Nozzle filter	8079-PP-50

Nozzle Body Assembly

WB22 DCV QC with Swivel Clamp



C-DAXOIL - Pure Emulsified Vegetable Oil

- Wraps the chemical in a protective fluid capsule, even when emulsified in water. It is also bio-degradable.
- Reduces alkaline hydrolysis. Incompatibility between 'hard water' and 'acid' pesticides can neutralise the active ingredient.
- Non-phytotoxic - based on a refined natural vegetable oil that has an affinity with plant and pest tissue.
- Is a spreader, thus an oil encapsulated chemical will cover an area up to 16 times greater than a comparable water droplet. Spray now with lower water rates!
- Will penetrate to convey chemical through the waxy cutical surface of plants and insects. Less run-off.
- Assists droplet formation, and reduces droplet evaporation. Keeps droplets intact during trajectory.
- It's rainfast and assists adhesion to hairy surfaces.
- provides a barrier against decomposition of some chemicals by sunlight or atmosphere.
- Significantly reduces drift, assisting droplet formation and uniformity.
- Can be used with most agri-chemicals and with all sprayers. It has been used successfully in N.Z. since 1984, and for over 10 years in the U.S.A.

Why C-DAXOIL Works

C-DAXOIL wraps up the chemical in an emulsifiable natural vegetable oil. This encapsulation is advantageous throughout the whole spraying process - from droplet formation to maximum on target efficiency.

C-DAXOIL is 93% vegetable oil, which has a natural affinity with plant products. The other 7% is a specially blended, stabilised and inert emulsifier. C-DAXOIL can be used as a carrier instead of water (ULV spraying) or as an emulsified suspension in water. The chemical active ingredient is protected by a fluid capsule of C-DAXOIL, rather than be thrown 'naked' into the environment. C-DAXOIL assists mechanically and biologically. Improves tank mixing, droplet formation, droplet stability. Maximises spread, retention in target tissue. Minimises evaporation and rain wash-off. Optimises the efficacy of most chemicals. Because C-DAXOIL offers this efficiency, improved application rates may be realised.

Application Rates

C-DAXOIL is mixed at a rate of up to one part C-DAXOIL to two parts of chemical. As a general guide, the following applies:

Boom spraying, Pressure Nozzle; 1.5 - 2.0 lit / ha