

OPTIMA SPRAYING EQUIPMENT BUYERS' GUIDE

EFFECTIVE JANUARY 2019

www.croplands.co.nz

CROPLANDS
OPTIMA™



**COMPREHENSIVE
COMPONENTS
GUIDE AVAILABLE**
CROPLANDS.CO.NZ



**1000
LINKAGE**



CR7

AGR-XT500C



NEW FOR 2019

**300
RETRASPRAY
TRAYMOUNT**



GENERAL MANAGER'S WELCOME

Dear Customer

The 2019 OPTIMA Buyers' Guide is designed to assist you in the purchase of your new sprayer, or spare parts and accessories for your existing one.

As always, we are listening to our customers' needs, and as a result we have an exciting new range of skid mount, ute mount and ATV mount spot spraying units ready for release this year. With a new design tank and frame, fitted with trusted Croplands components we are sure your spot spraying jobs will be made much easier, faster, and safer with the Croplands new skid mount range. You will also find some 'HOT' new HYPRO pricing for all your centrifugal and 12-volt pump needs.

We have expanded our Nozzle Selection and Spraying Guide significantly with updated nozzle selection charts and loads of information of how to maximise your spray quality and minimise spray drift.

You can find more of our components in the Components Buyers' Guide which is available to download from the Croplands website. You can also search the product code via our website for products that carry the Parts Breakdown symbol.

I would like to take this opportunity to thank you for considering the Croplands OPTIMA range of spray equipment for your application needs.



Sean Mulvaney
General Manager
Croplands



This stewardship program is a Nufarm initiative to deliver best practise spraying and drift management techniques. SprayWise has been instrumental in raising awareness amongst the farming community about important spray application parameters. SprayWise consolidates various tools, research results and training courses into one program to assist farmers better manage their spraying activities.



LIQUID FERTILISER READY

'LFR' means that this Croplands product has a pump and plumbing system specifically designed to handle liquid fertiliser through the appropriate nozzles to suit the application.



QR CODES

Croplands uses QR codes to link you to videos for more information about our products. Here's how to use them:

1. Download a QR Scanner from your app store
2. Hover your device over the code to scan it
3. It will take you directly to the link



PARTS BREAKDOWN AVAILABLE

Parts breakdowns are available at www.croplands.com.au or www.croplands.co.nz for products where you see this sign.



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CROPLANDS ARE COMMITTED TO CUSTOMER SERVICE



Australian Sales and Technical Support team
(Gary, Clarry, David, Chris, Kierran, Steve and Kieran)

Our Sales Support teams are dedicated to providing our customers expert advice and support in finding a solution to your spraying needs.



New Zealand Sales Support team (Kris, Ash, John)



Attendees of the 2017 One Nufarm Conference

ONE NUFARM

Croplands is a subsidiary of agricultural chemical company, Nufarm Ltd., along with agricultural seed company, Nuseed.

Nufarm has been a trusted brand for farmers for over 60 years and has worked alongside growers to provide a wide range of top quality crop protection products.

Nufarm has an extensive team of agricultural and horticultural specialists who offer local know how and support that assists in delivering the results farmers demand for their long-term sustainability.

Nufarm is the largest manufacturer of crop protection products in Australia with an extensive network of Regional Service Centres. Various acquisitions and solid organic growth have seen the

business rapidly expand. Nufarm is now ranked the 9th largest crop protection company in the world, with a clear leadership position in Australia and substantial operations in North and South America, Europe, New Zealand and Asia.

With Croplands, Nufarm and Nuseed together under the One Nufarm banner, they offer growers a very unique portfolio. Pulling together their products and people for SprayWise events and the like, they can not only demonstrate application equipment, but provide information on the best chemical mixes and tips on effective application. The One Nufarm group of companies hold strength in the knowledge they share with one another and their customers.

For information on these products, please feel free to call us on:

Australia

Freecall 1800 999 162, or

Email sales@croplands.com.au

New Zealand

Freecall 0800 106 898, or

Email sales@croplands.co.nz



KEY SUPPLIERS



CROPLANDS VISION

To create innovative application equipment for sustainable agriculture



CROPLANDS RANGE OF SPRAY EQUIPMENT BUYERS' GUIDES

HORTICULTURE



Croplands range of Horticultural Buyers' Guides comprises of Tree Crop, Vineyard and Vegetable.

The proven axial fan head technology of the Quantum Mist has single, two or three row capabilities for vineyards and the Tower and Ultra Tower sprayers are perfect for tree crops. Vegetable crops are covered by the Quantum Mist's horizon boom model, as well as Bargam trailed and self propelled sprayers. The Cropliner is well suited to tree crops with its powerful range of air blast fans.

BROADACRE



Croplands has broadacre trailed sprayers to suit a range of property sizes. The compact Pinto 3000 and 4000 litre trailed sprayers suits smaller operations, while the robust Pegasus 5000 and 6000 are practical options for medium sized broadacre properties. The NEW Pegasus 7000 Plus with its versatile 1500 litres of extra tank capacity and the 8000 litre Pegasus trailed sprayers will handle those big acres with ease.

WEEDit



Croplands WEEDit Optical Spot Sprayers are the market leading solution for combatting herbicide resistance in fallow spraying situations. Available in the traditional 4000 or 6000 litre models. For a dual line/dual tank option consider the 7000 litre WEEDit, allowing blanket spraying while simultaneously spot spraying hard to kill weeds. For smaller broadacre and irrigation the WEEDit Toolbar Kit may be the best option. Now available with the 12 metre Toolbar is the PhantomDrive add-on platform to allow for driverless, autonomous spot spraying.

ROGATOR



Croplands RoGator self propelled sprayers are tailored for the professional farmer or contract sprayer.

Just recently released is the new C Series RoGator – the RG1100C and RG1300C. These powerful performers have a revolutionary AWD SmartDrive package and intuitive Accuterminal controls and monitor, making them so easy to operate – even the beginner can apply like a pro! The RG1300 is also available with optional 48.5 metre aluminium Pommier boom for spraying those big acres.

The lightweight champion of the RoGator range is the RG700B – it travels smoothly over uneven terrain, with less soil compaction.



JEREMY DECK
South VIC Territory
Manager/OPTIMA
Product Lead

With Croplands since 2011
Learnt to build, plumb and test
units in the Croplands factory
during the school holidays.
Worked in Croplands
customer service for 2 years.



STEVE ROSS
VIC Territory Manager

With Croplands since 2016
18 years in the agricultural
spraying industry. 2 years
in tractor and machinery
retail sales.



DAVID HAMILTON
South NSW/VIC
Territory Manager

With Croplands since 2006
Advanced Diploma of
Viticultural Management.
Certificate 3 in Engineering
(Fabrication). Automotive
apprenticeship and
experience in the spare
parts industry.



ANDREW GERMEIN
SA/TAS Territory Manager/
Horticulture Product Lead

With Croplands since 2018
21 years in agricultural
dealership machinery
sales and management,
specialising in the horticulture
product portfolio.



JOHN GRIFFITHS
Regional Manager (West)

With Croplands since 1997
Grew up on a grain and
livestock property in south
west WA. One of Croplands
longest serving staff members.
Croplands Self-propelled
specialist in the west.



GAVIN MERRITT
WA Territory Manager

With Croplands since 2011
Grew up on family sheep
cattle and grain farms.
Involved in the spraying
industry since 1992.



JEREMY RENNICK
Regional Manager (North)

With Croplands since 2005
Experience with Croplands
products since 1999. Worked
with Croplands parent
company, Nufarm for three
years. Actively involved
in Nufarm's stewardship
program, SprayWise.



DAVE FARMER
Central NSW Territory
Manager/Bargam
Product Lead

With Croplands since 2001
Experience managing a
mixed farming operation.
16 years experience working
throughout NSW and Canada
in agriculture. Advanced
Certificate in Agriculture.



ROB GRAHAM
Coastal QLD/NT
Territory Manager

With Croplands since 2011
Grew up on the family farm
in northern NSW. Spent 10
years in the cotton farming
industry. Previous sales
roles in the agricultural
machinery industry.



CRAIG BLACKETT
South QLD/North NSW
Territory Manager

With Croplands since 2017
Over 30 years experience
working in the Agricultural
industry working as a
reseller agronomist and as
a sales rep for a leading
Ag Chem company.





ROB MARSHALL

**Regional Manager and
NZ Upper South Island
Territory Manager**

With Croplands since 2002
Previous sales roles in the
automotive and engineering
industry. Currently studying
part time towards a Diploma
in Business.



VIC BARLOW

**NZ Lower North Island
Territory Manager**

With Croplands since 2011
Diploma in Horticulture.
Experience as a Field
Consultant for 11 years.
Orchard Manager for
almost 20 years.



GREG SMALL

**NZ Waikato, Counties
Territory Manager**

With Croplands since 2011
29 years in the spray
equipment industry. Diverse
scope of experience from
build and design of sprayers
to sales and management.



CHRIS WAITES

**NZ Upper North Island
(excluding Waikato/Counties),
Central Otago, Southland
Territory Manager**

With Croplands since 2010
12 years in the horticultural and
agricultural industry. Previous
sales roles in horticultural
supplies. Croplands NZ
customer service and logistics
for 6 years.



STACEY JAMES

Sales Support Manager

With Croplands since 2016
Extensive Customer Service
Management and Sales
Support experience across a
range of industries. Bachelor
of Management (Marketing).



SEAN MULVANEY

General Manager

With Croplands since 1997
Started as a Territory
Manager, progressed to
Sales Manager, and later
General Manager. Diploma
in Horticulture.



MICHAEL CLARKE

**Central QLD
Territory Manager**

With Croplands since 2018
Grew up on and worked on
the land for many years –
starting with livestock
and moving into grains
and fibre. Over 30 years
experience in a range of
agricultural industries.



SCOTT RICHARDSON

SA Territory Manager

With Croplands since 2018
5 years experience in large
agricultural machinery
retail sales and branch sale
management and 20 years
experience in a mixed
farming operation.



NEILL MOREY

**Commercial Manager/
Regional Manager (South)**

With Croplands since 2016
Previously worked in farm
machinery dealership
management. Bachelor
Degree in Commerce.



STEVE NORTON

Portfolio Manager

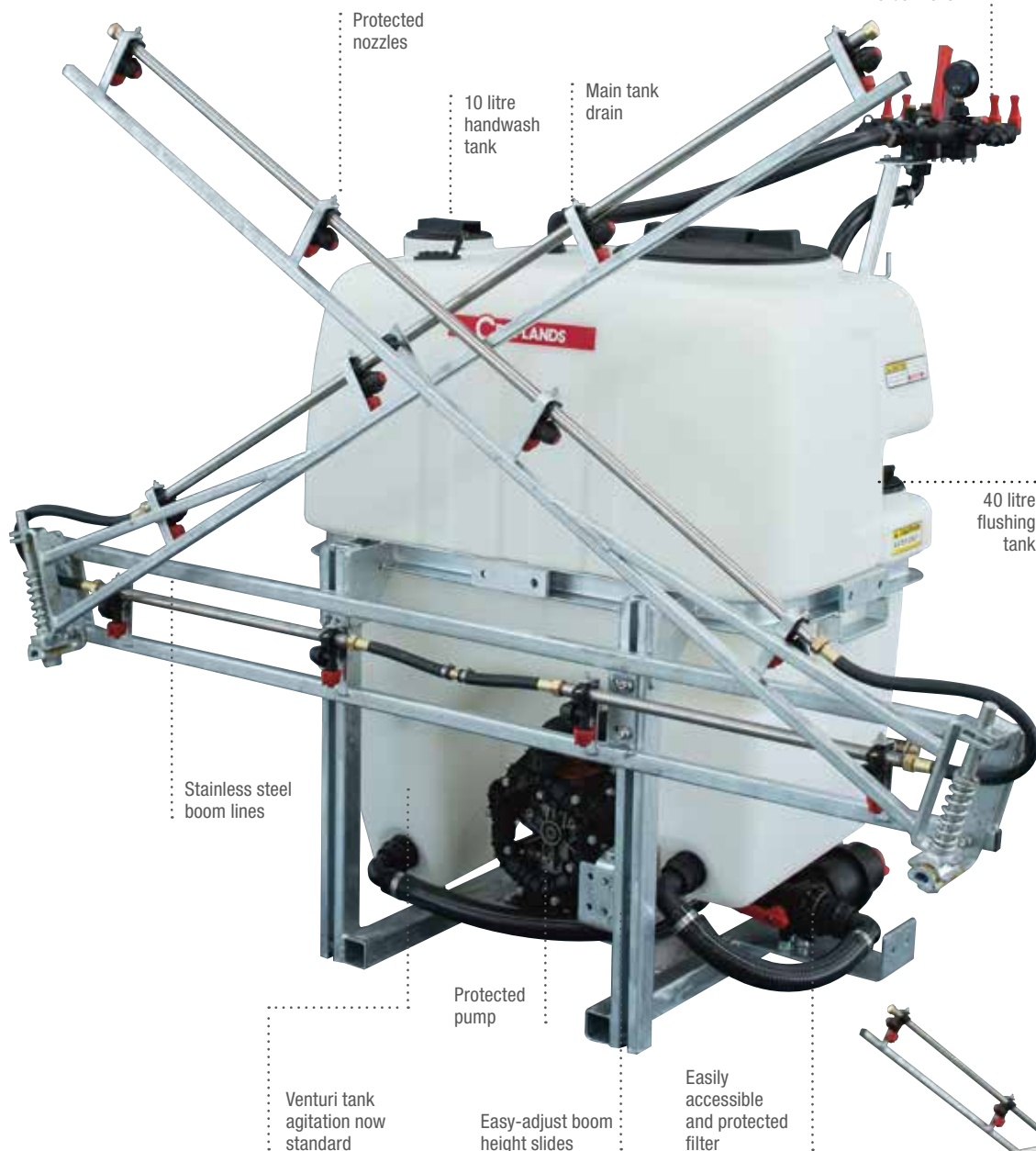
With Croplands since 2013
Over 30 years in the
agricultural spraying industry
both in Australia and
America. 6 years in tractor
and machinery sales.

300 AGRIPAK LINKAGE

300 litre with optional 6 metre boom shown



All Croplands booms fitted with AirMix® low drift air-induction nozzles as standard.



UNIT	WIDTH	LENGTH	HEIGHT	WEIGHT
LA300	1200mm	900mm	1420mm	160kg

Disclaimer: dimensional and weight information supplied is for base model only with no options. This information is subject to change without notice.



**FOR MORE
OPTIONS SEE PAGE
18 AND 19**



FEATURES AND OPTIONS INCLUDE

1. Spring-loaded boom breakaways to protect from impacts
2. Large basket strainer to ensure clean water to the tank
3. Standard positive displacement triple diaphragm pump for smooth operation, high flow and wide pressure range
4. Optional hose reel with spray lance

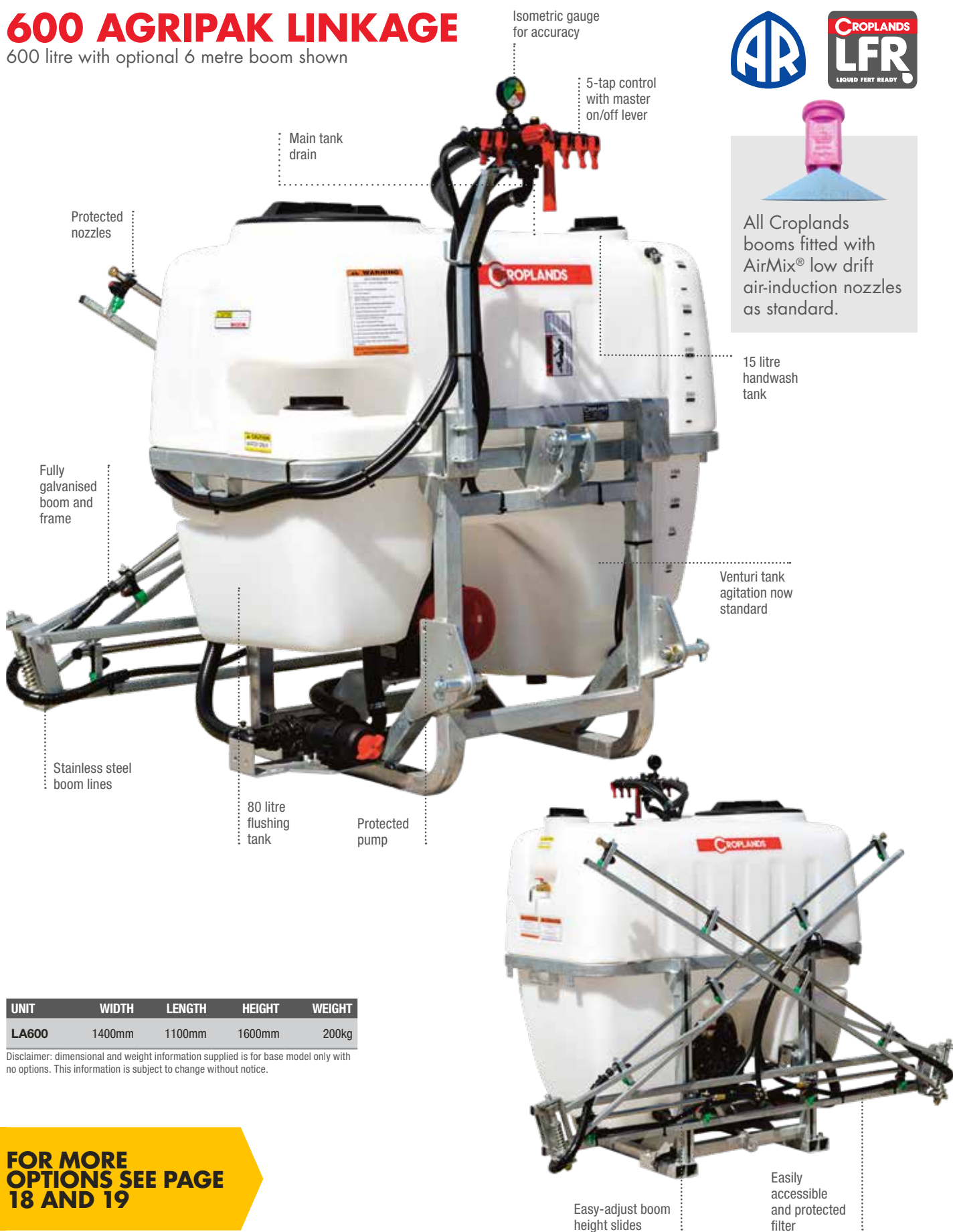


ORDER CODE	DESCRIPTION	\$ (EX. GST)	PROD. CAT.
LA300	300 litre AgriPak linkage sprayer with AR80* liquid fertiliser-ready pump, UCM 5-way controller fitted (no hose reel or boom – see options)	3,152.63	X
LA300/MBX04	As above with 4 metre MBX series boom fitted	4,205.26	X
LA300/MBX06	As above with 6 metre MBX series boom fitted	4,684.21	X
LA300/MSCL-2	As above with double-sided covered boom fitted	5,367.37	X
LA300/XTKIT	As above with XT boom kit fitted c/with X Tender boom jets. Standard X Tender nozzles fitted are # 24, which gives coverage of up to 8 metres width depending on height the XT boom kit is mounted. An Ideal choice for hill country or liquid fertiliser applications	3,750.00	X
LA300/MVB5-5	300 litre AgriPak linkage sprayer with AR30* 0–40 Bar pressure pump, ARG140 2-way manual pressure controller and 5 nozzle per-side Vertiboom fitted. (No hose reel fitted. Not an option on this model)	4,394.74	X

*The AR80 pump is the market leading Annovi Reverberi triple diaphragm positive displacement pump with poly heads and manifolds. This pump is rated from 0–20 Bar pressure and 80 litres per minute (open-flow). For more information see page 50. The AR30 pump is an Annovi Reverberi twin diaphragm pump rated from 0–40 Bar pressure and 32 litres per minute (open-flow). PTO shaft supplied with all AgriPak linkage models.

600 AGRIPAK LINKAGE

600 litre with optional 6 metre boom shown



UNIT	WIDTH	LENGTH	HEIGHT	WEIGHT
LA600	1400mm	1100mm	1600mm	200kg

Disclaimer: dimensional and weight information supplied is for base model only with no options. This information is subject to change without notice.

**FOR MORE
OPTIONS SEE PAGE
18 AND 19**



FEATURES AND OPTIONS INCLUDE

1. Hand wash tank fitted standard – ideal for hand washing or in-field filter clean
2. Every Croplands AgriPak has important safety information on the tank
3. A 3-way tap is located by the filter to allow tank selection – it is recommended to use the fresh water flush tank to flush the system in the field after spraying
4. Optional heavy duty hose reel with Turbo400 spray gun
5. Easy-adjust boom slides make boom height adjustment a breeze



ORDER CODE	DESCRIPTION	\$ (EX. GST)	PROD. CAT.
LA600	600 litre AgriPak linkage sprayer with flushing tank, hand-wash tank, AR80* liquid fertiliser-ready pump, UCM 5-way controller (no hose reel or boom – see options)	4,547.37	X
LA600/MBX06	As above with 6 metre MBX series boom fitted	5,678.95	X
LA600/MAX08	As above with 8 metre MAX series boom fitted – no self-leveller	6,826.32	X
LA600/MAX08L	As above with 8 metre MAX series boom fitted and with self-leveller	7,700.00	X
LA600/MAX10	As above with 10 metre MAX series boom fitted – no self-leveller	7,284.21	X
LA600/MAX10L	As above with 10 metre MAX series boom fitted and with self-leveller	7,968.42	X

*The AR80 pump is the market leading Annovi Reverberi triple diaphragm positive displacement pump with poly heads and manifolds. This pump is rated from 0–20 Bar pressure and 80 litres per minute (open-flow). For more information see page 50. PTO shaft supplied with all AgriPak linkage models.

800 AGRIPAK LINKAGE

800 litre with optional 12 metre boom shown



All Croplands booms fitted with AirMix® low drift air-induction nozzles as standard.



UNIT	WIDTH	LENGTH	HEIGHT	WEIGHT
LA800	1400mm	1000mm	1850mm	200kg

Disclaimer: dimensional and weight information supplied is for base model only with no options. This information is subject to change without notice.

**FOR MORE
OPTIONS SEE PAGE
18 AND 19**



800 LITRE AGRIPAK LINKAGE SPRAYER WITH 8 METRE MAX MANUAL FOLD BOOM



QUICK GUIDE

- » Calibrated tank with clear volume markings
- » Rear mounted pump to protect from damage and allow PTO more overlap
- » Large lid with strainer
- » Translucent white UV-stabilised tank – see level at a glance
- » Easy access drain for complete clean out
- » Handwash tank standard for safety
- » Large fresh water flush tank standard for in-field clean out
- » Quick-adjust boom slide mounts
- » Pictured with over-top support and hydraulic height adjuster fitted
- » Slide-out rear park legs for stability when parked with larger booms fitted
- » Venturi agitator standard – with on/off control tap on PRV control
- » Optional MAX 12 metre boom with self-leveller pictured

FEATURES AND OPTIONS INCLUDE

1. In-cab electric controls (wireless and standard available)
2. Easy-adjust boom slides make boom height adjustment a breeze
3. Hand wash tank fitted standard – ideal for hand washing or in-field filter clean
4. Venturi agitator fitted to all Croplands AgriPak linkage models



ORDER CODE	DESCRIPTION	\$ (EX. GST)	PROD. CAT.
LA800	800 litre AgriPak linkage sprayer with flushing tank, hand-wash tank, AR80* liquid fertiliser-ready pump, UCM 5-way controller (no hose reel or boom – see options)	5,110.53	X
LA800/MAX08	As above with 8 metre MAX series boom fitted – no self-leveller	7,167.37	X
LA800/MAX08L	As above with 8 metre MAX series boom fitted and with self-leveller	7,851.57	X
LA800/MAX10	As above with 10 metre MAX series boom fitted – no self-leveller	7,847.37	X
LA800/MAX10L	As above with 10 metre MAX series boom fitted and with self-leveller	8,531.57	X

*The AR80 pump is the market leading Annovi Reverberi triple diaphragm positive displacement pump with poly heads and manifolds. This pump is rated from 0–20 Bar pressure and 80 litres per minute (open-flow). For more information see page 50. PTO shaft supplied with all AgriPak linkage models.



1000 AGRIPAK LINKAGE

LAC1000 linkage with 12 metre manual fold boom



All Croplands booms fitted with AirMix® low drift air-induction nozzles as standard.



UNIT	WIDTH	LENGTH	HEIGHT	WEIGHT
LAC1000	1420mm	1100mm	1800mm	450kg

Disclaimer: dimensional and weight information supplied is for base model only with no options. This information is subject to change without notice.

**FOR MORE
OPTIONS SEE PAGE
18 AND 19**





QUICK GUIDE

- » Calibrated tank with clear volume markings
- » Height adjustable control mount
- » Rear mounted pump to protect from damage and allow PTO more overlap
- » Large lid with strainer
- » Translucent white UV-stabilised tank – see level at a glance
- » Easy access drain for complete clean out
- » Forklift points on bottom frame for safe loading/unloading
- » Handwash tank standard for safety
- » Large fresh water flush tank standard for in-field clean out
- » Quick-adjust boom slide mounts
- » Fold-up step standard
- » Over-top support standard for added strength
- » Four dedicated tie-down points for transport

FEATURES AND OPTIONS INCLUDE

1. Easy access slide-out parking legs for safe parking
2. Optional chemical suction probe
3. Optional 30 or 60 litre chemical mixer
4. Easy access suction filter



ORDER CODE	DESCRIPTION	\$ (EX. GST)	PROD. CAT.
LAC1000	1000 litre AgriPak linkage sprayer, AR80* pump, UCM 5-way controller (base model, no hose reel or boom), Venturi agitation fitted standard	7,315.78	X
LAC1000/8M	As above with 8 metre MAX manual fold boom – 3 sections	10,167.36	X
LAC1000/8ML	As above with 8 metre MAX manual fold boom with self-leveller fitted – 3 sections	10,851.58	X
LAC1000/10M	As above with 10 metre MAX manual fold boom – 3 sections	10,626.31	X
LAC1000/10ML	As above with 10 metre MAX manual fold boom with self-leveller fitted – 3 sections	11,310.53	X
LAC1000/12ML	As above with 12 metre MAX manual fold boom with self-leveller fitted – 3 sections	12,505.26	X
LAC1000/MHL12	As above with 12 metre hydraulic fold boom with self-leveller – 3 sections	18,778.94	X
LAC1000/MHL15	As above with 15 metre hydraulic fold boom with self-leveller – 3 sections	19,410.52	X

*The AR80 pump is the market-leading Annovi Reverberi triple diaphragm positive displacement pump with poly heads and minifolds. This pump is rated from 0–20 Bar pressure and 80 litres per minute (open flow). For more information see page 50. All Croplands AgriPak linkage models are supplied with a PTO shaft.

1300 | 1600 LINKAGE



LPMEC1600/160/MHL15

QUICK GUIDE

- » Calibrated and UV stabilised poly tank with sight tube and litres marked
- » Stabiliser legs fitted to the frame to keep unit safe from tipping when parked
- » Protected pump mounted beneath the tank for excellent suction and safety
- » Protected large suction filter with shut-off valve for easy cleaning
- » Large filling lid with strainer
- » Nozzles are protected on all booms to avoid damage
- » Stainless steel boom tubing with non-drip nozzle bodies
- » Easy access drain system for quick draining and clean out
- » Forklift points on bottom frame rails to assist with loading/unloading from a vehicle
- » Integrated 1,000mm hydraulic lift device
- » Integrated handwash tank standard
- » Integrated 170 litre flushing tank standard
- » 30 litre chemical mixer/induction unit standard
- » Clothing and glove locker
- » Folding access step for safety
- » 160 L/min pump standard
- » All Croplands booms fitted with AirMix® air-induction nozzles as standard



**FOR MORE
OPTIONS SEE PAGE
18 AND 19**



FEATURES AND OPTIONS INCLUDE

1. Easy-access suction filter and tank selector
2. All functions easily accessed from the workstation
3. Tank rinsing standard
4. Dual venturi agitation and bypass agitation
5. 160 litre per minute pump standard



ORDER CODE	DESCRIPTION – BASE MODELS (NO BOOM)	\$ (EX. GST)	PROD. CAT.
LPMEC1300/160	1300 litre linkage base unit with AR160 PTO-drive diaphragm pump. In-cab electric 3-section control unit, flushing and hand wash tank. 1,000mm integrated hydraulic height adjuster. 30 litre chemical mixer fitted. Choose a boom option from page 18, or for standard hydraulic fold 12 and 15 metres booms, see below	14,942.10	W
LPMEC1600/160	1600 litre linkage base unit with AR160 PTO-drive diaphragm pump. In-cab electric 3-section control unit, flushing and hand wash tank. 1,000mm integrated hydraulic height adjuster. 30 litre chemical mixer fitted. Choose a boom option from page 18, or for standard hydraulic fold 12 and 15 metres booms, see below	16,052.63	W
LPMEC1300/MHL12	1300 litre linkage base unit with AR160 PTO-drive diaphragm pump. In-cab electric 3-section control unit, flushing and hand wash tank. 1,000mm integrated hydraulic height adjuster. 30 litre chemical mixer fitted. 12 metre hydraulic fold MHL boom fitted with individual left/right fold	24,200.00	W
LPMEC1300/MHL15	1300 litre linkage base unit with AR160 PTO-drive diaphragm pump. In-cab electric 3-section control unit, flushing and hand wash tank. 1,000mm integrated hydraulic height adjuster. 30 litre chemical mixer fitted. 15 metre hydraulic fold MHL boom fitted with individual left/right fold	24,831.57	W
LPMEC1600/MHL12	1600 litre linkage base unit with AR160 PTO-drive diaphragm pump. In-cab electric 3-section control unit, flushing and hand wash tank. 1,000mm integrated hydraulic height adjuster. 30 litre chemical mixer fitted. 12 metre hydraulic fold MHL boom fitted with individual left/right fold	25,310.52	W
LPMEC1600/MHL15	1600 litre linkage base unit with AR160 PTO-drive diaphragm pump. In-cab electric 3-section control unit, flushing and hand wash tank. 1,000mm integrated hydraulic height adjuster. 30 litre chemical mixer fitted. 15 metre hydraulic fold MHL boom fitted with individual left/right fold	25,942.10	W

For all other available options such as hose reels, manual fold booms, boom suspension, auto rate controllers etc, see pages 18 and 19.

LINKAGE OPTIONS

To add options to the base linkage sprayers listed on page 8–17, choose from those applicable below and next page.

Use base unit discount rate for options.

	ORDER CODE	DESCRIPTION	SEE MORE	CAN BE FITTED TO	\$ (EX. GST)
HOSE REEL OPTIONS					
 L-R2412	L-R2412	Heavy duty steel hose reel with 30 metres hose and Turbo gun	page 46	300, 600, 800, 1000, 1300, 1600 litre	714.74
	L-R3000	Manual spring-loaded retractable reel, 16 metres hose and spray lance	page 46	300, 600 litre	409.47
BOOMS					
 MAX08	MSCL-2	Adjustable-width covered boom	page 23	300, 600 litre	1,893.68
	MBX04	4 metre MBX series manual cross-fold boom	page 20	300, 600 litre	946.32
	MBX06	6 metre MBX series manual cross-fold boom	page 20	300, 600 litre	1,421.05
	MAX08	8 metre MAX series manual cross-fold boom	page 21	600, 800, 1000 litre	2,851.58
	MAX08L	8 metre MAX series manual cross-fold boom with self-levelling device	page 21	600, 800, 1000 litre	3,535.79
	MAX10	10 metre MAX series manual cross-fold boom	page 21	600, 800, 1000 litre	3,310.53
	MAX10L	10 metre MAX series manual cross-fold boom with self-levelling device	page 21	600, 800, 1000 litre	3,994.74
	MAX12L	12 metre MAX series manual cross-fold boom with self-levelling device	page 21	600, 800, 1000, 1300, 1600 litre	5,189.47
	GEX06H	6 metre GEX series hydraulic cross-fold boom	page 23	300, 600, 800, 1000 litre	6,626.31
	GEX08H	8 metre GEX series hydraulic cross-fold boom	page 23	600, 800, 1000 litre	8,225.26
	GEX10H	10 metre GEX series hydraulic cross-fold boom	page 23	600, 800, 1000, 1300, 1600 litre	8,468.42
	MHL12	12 metre Hydralink series hydraulic cross-fold boom with self-levelling device	page 22	1000, 1300, 1600 litre	11,463.16
	MHL15	15 metre Hydralink series hydraulic cross-fold boom with self-levelling device	page 22	1000, 1300, 1600 litre	12,094.74
BOOM EXTRAS					
 BTEF-TEEJET  BOFLS	MHL12-2-KIT	Second set of hydraulic hoses to allow individual left and right fold of MHL boom (note – ensure your tractor has sufficient hyd remotes)	Not pictured	800, 1000, 1300, 1600 litre	731.57
	GEX-2-KIT	Second set of hydraulic hoses to allow individual left and right fold of GEX boom (note – ensure your tractor has sufficient hyd remotes)	Not pictured	300, 600, 800, 1000, 1300, 1600 litre	731.57
	BOFLS	Adjustable boom-end nozzle with manual tap for fence line spraying. (Not for use with MSCL-2)	Pictured left	300, 600, 800, 1000, 1300, 1600 litre	162.11
	BTEF-TEEJET	Electric fence line kit to clamp around boom tube – right hand side. Must have electric or auto-rate control fitted for this option	Pictured left	300, 600, 800, 1000, 1300, 1600 litre	436.84
	BTEF-TEEJETLH	Electric fence line kit to clamp around boom tube – left hand side. Must have electric or auto-rate control fitted for this option	Not pictured	300, 600, 800, 1000, 1300, 1600 litre	436.84
BOOMLESS NOZZLE KITS					
 LT-XTBOOMKIT	LT-XTBOOMKIT	Kit to mount Croplands XT boomless nozzle kit to your sprayer. Kit includes 2 x #10 XT nozzles on adjustable swivel nozzle bodies, steel bracket and 2 x clamps for mounting. Hose and fittings to your pump are not supplied	page 44	300, 600, 800, 1000 litre	415.78
	LT-5880-KIT	Brass 5800-3/4-2T0C20 BoomJet for high volume applications (other sizes available, talk to Croplands)	Not pictured	600, 800, 1000, 1300, 1600 litre	1,047.36
HYDRAULIC BOOM LIFT DEVICES					
	LP060-LIFT	1000mm hydraulic boom-lift with hydraulic hose kit to tractor (requires 1 set hyd tractor remotes)	page 11	600 and 800 litre	2,942.10
	LT-GB360589000V	1200mm hydraulic boom-lift with hydraulic hose kit to tractor (requires 1 set hyd tractor remotes)	Not pictured	1000 litre	3,152.63
BOOM SUSPENSION OPTIONS					
 LT-GB383899000V	LT-GB383899000V	Airbag parallelogram suspension device to protect booms – ideal if a boom-lift device is not fitted or a nitrogen accumulator is not practical	Pictured left	1000, 1300, 1600 litre	3,152.63



LINKAGE OPTIONS

	ORDER CODE	DESCRIPTION	SEE MORE	CAN BE FITTED TO	\$ (EX. GST)
CHEMICAL MIXING and INDUCTION HOPPERS					
	A5033301-KIT	35 litre chemical mixing and induction hopper fitted at fixed height at the side of the linkage sprayer. Fully enclosed for safe mixing, with container rinse function	page 42	300, 600, 800, 1000 litre	1,994.73
	L-H9351A-KIT	60 litre chemical mixing and induction hopper fitted at fixed height at the side of the linkage sprayer. Fully enclosed for safe mixing, with container rinse function	page 42	800, 1000 litre	2,310.52
PUMP AND PUMP DRIVE UPGRADES					
	LT-140-C	AR140LFP liquid fertiliser-ready pump in lieu of standard 80 litre pump. (133 L/min rated at 0-pressure, 0–15 Bar)	page 50	600, 800, 1000 litre	626.31
	LP-HYD	Hydraulic pump drive in lieu of PTO shaft-drive. Includes hyd hoses to tractor. Tractor model must be specified. Note – ensure your tractor has sufficient oil supply	Not pictured	600, 800, 1000, 1300, 1600 litre	626.31
ELECTRIC AND AUTO-SPRAY RATE CONTROL OPTIONS					
 LT-BA5000-GE05	LT-LA-IE2012	ARAG single switch electric control kit fitted for boom shut-off using in-cab switchbox. (Boom section control is manually done using taps) (Arag option available on request)	page 68	300, 600, 800, 1000 litre	894.73
	LT-LA-IE2032A	ARAG 3-section electric control kit for individual on/off of 3 boom sections. Includes master on/off and electric pressure adjustment from in-cab switchbox. (Arag option available on request)	page 68	300, 600, 800, 1000 litre	2,100.00
	LT-IE2052A	ARAG electric in-cab controller with switchbox. 5-section electric valves for individual section shut off, electric pressure regulating valve and a master on/off can all be operated from the switchbox in the cab or vehicle. Requires a reliable 12-volt power supply. (Arag option available on request)	–	300, 600, 800, 1000, 1300, 1600 litre	2,847.36
	LT-BA5000-GE03	Croplands 3-section fully auto spray-rate control of spraying application. Dual screen display, 3 boom section control, auto spray-rate adjustment	page 69	All models	3,994.73
	LT-BA5000-GE05	Croplands 5-section fully auto spray-rate control of spraying application. Dual screen display, 5 boom section control, auto spray-rate adjustment	page 69	600, 800, 1000, 1300, 1600 litre	4,415.78
 LT-BRAVO180-ARAG5	LT-BRAVO180-ARAG5	Bravo180 5-section fully auto spray-rate control of spraying application. Dual screen display, 5 boom section control, auto spray-rate adjustment	page 69	600, 800, 1000, 1300, 1600 litre	6,205.26
GUIDANCE AND FOAM MARKERS					
 RV117-2295-001	A5200052	Double-sided foam marker with in-cab left/right control	page 44	All models	1,630.53
	RV117-2295-001	Raven CR7 system with a 7" field computer with customisable in-job layouts, ISO universal terminal and task controller capabilities, optional external GPS, compatible with direct injection, multi-product control including variable rate liquid, dry, and NH3 applications, slingshot – ready for file transfer, remote support, and OTA software updates	page 70	All models	4,144.27
	MATRIX430	Matrix 430 GPS mapping system complete with patch antenna (antenna upgrade available, see page 70)	page 70	All models	2,831.57
 HT-PROBE	HT-PROBE	Optional suction probe fitted	page 15	600, 800, 1000 litre	481.05

MBX MANUAL FOLD BOOMS

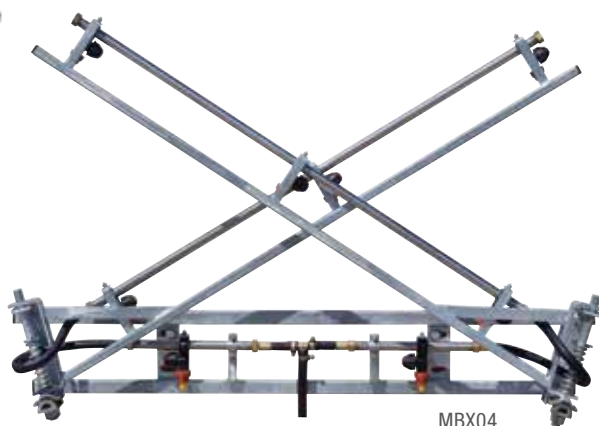


QUICK GUIDE

- » Rugged, galvanised steel construction
- » Nozzles are protected being placed above the boom rail
- » Stainless steel boom tubes for added strength and durability
- » Non-drip nozzles bodies with AirMix® low-drift nozzles fitted
- » Adjustable tension spring breakaway for each boom arm to ensure the arm returns to position
- » Folds neatly behind the sprayer or vehicle (not the MB02 which is fixed)



MBX06



MBX04



MBX03

NEW QUICK FITTING FEATURES



1



2



3



ORDER CODE	DESCRIPTION	\$ (EX. GST)	PROD. CAT.
MB02	One piece 2 metre boom with 4 non-drip nozzles at 500mm spacings	367.37	X
MBX03	3 metre galvanised boom; 6 non-drip nozzles at 500mm spacings. 1.2 metres folded width. Ideal for RTVs, small sprayers and utes	841.05	X
MBX04	4 metre galvanised boom; 8 non-drip nozzles at 500mm spacings. 1.2 metres folded width. Ideal for RTVs, small sprayers and utes	946.32	X
MBX06	6 metre galvanised boom; 12 non-drip nozzles at 500mm spacing. Suitable for linkage sprayers, vehicles and traymount sprayers	1,421.05	X
ATVBOOMKIT	Mounting kit to allow fitting of the MBX booms to vehicle trays and RTVs	220.00	X



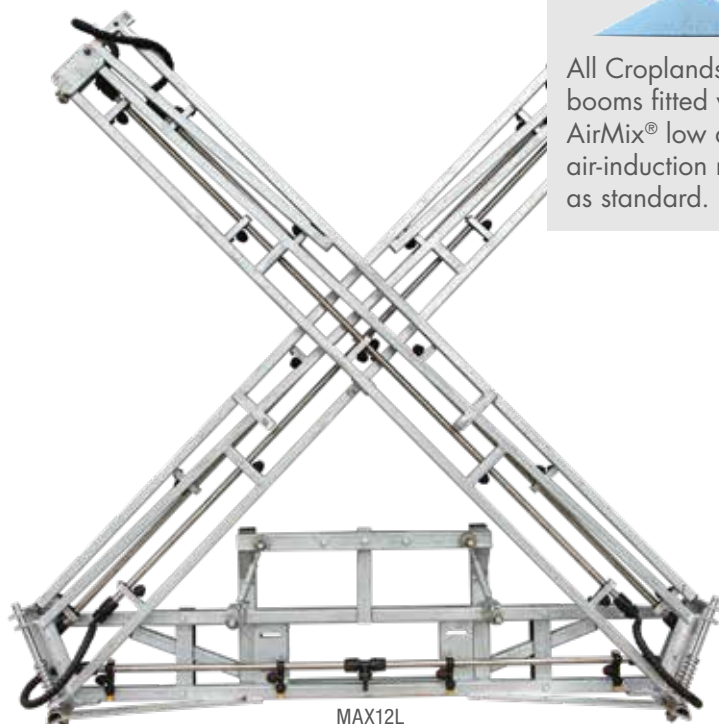
MAX BOOMS



All Croplands booms fitted with AirMix® low drift air-induction nozzles as standard.

QUICK GUIDE

- » Hot-dipped galvanised finish
- » Available in 8, 10 and 12 metre boom widths
- » Can be plumbed in 3 sections
- » Stainless steel boom tubing
- » Non-drip nozzle bodies fitted with industry-leading AirMix® anti drift nozzles
- » Nozzle bodies fully protected
- » Self-returning breakaway on boom arms to protect against collision damage
- » Self-levelling device standard on 12 metre boom; optional on 8 and 10 metre boom. Self-leveller can be locked if required
- » Quick fitting features allowing to detach hose easier and quicker



MAX12L



MAX08



MAX10L

ORDER CODE	DESCRIPTION	\$ (EX. GST)	PROD. CAT.
MAX08	8 metre MAX series cross-fold boom, without self-leveller	2,851.58	X
MAX08L	8 metre MAX series cross-fold boom, with self-leveller	3,535.79	X
MAX10	10 metre MAX series cross-fold boom, without self-leveller	3,310.53	X
MAX10L	10 metre MAX series cross-fold boom, with self-leveller	3,994.74	X
MAX12L	12 metre MAX series boom with self-leveller (not available without self-leveller)	5,189.47	X

HYDRAULIC FOLD HYDRALINK BOOMS



QUICK GUIDE

- » Heavy duty galvanised steel construction
- » Nozzles and nozzle bodies mounted behind boom to protect from damage
- » Stainless steel boom tubes with non-drip nozzle bodies and AirMix® low-drift nozzles fitted
- » Adjustable tension breakaway on outer sections
- » Self-levelling centre section standard
- » Boom folds sequentially in a cross-fold style for transport – using the left/right hydraulic kit option, each side can be lifted independently which also automatically locks the self-levelling system. Ideal for lifting over fences at the headland or irrigation sprinklers
- » Ideal boom for small row-cropping, vegetables or undulating farm country

MHL15 boom shown folded and open



AirMix® low drift air-induction nozzles with nozzle protection as standard.

ORDER CODE	DESCRIPTION	\$ (EX. GST)	PROD. CAT.
MHL12	Heavy duty galvanised 12 metre hydraulic folding boom with 24 nozzles, twin ram with auto folding tips, hydraulically plumbed to fold both sides together. Central self-locking self-leveller standard	11,463.16	X
MHL15	Heavy duty galvanised 15 metre hydraulic folding boom with 30 nozzles, twin ram with auto folding tips, hydraulically plumbed to fold both sides together. Central self-locking self-leveller standard	12,094.74	X
MHL12-2-KIT	Second set of hydraulic hoses to allow left/right individual fold of MHL boom (text on your order)	731.57	W

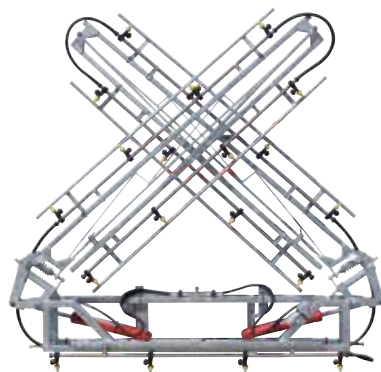
Booms shown on sprayers for illustration purposes only. Prices are for booms only.



HYDRAULIC FOLD GEX BOOMS



AirMix® low drift air-induction nozzles with nozzle protection as standard.



GEX10H boom shown folded (right) and open (above)



QUICK GUIDE

- » Galvanised steel construction
- » Nozzles protection fitted on outer sections
- » Stainless steel boom tubes with non-drip nozzles bodies and AirMix® low-drift nozzles fitted
- » Adjustable tension spring breakaway for each boom arm
- » Boom folds hydraulically in a cross-fold style. Note: the 8 and 10 metre models have a manual flip-over outer section which needs to be manually secured in the folded position prior to folding the boom for transport
- » Ideal boom for small row-cropping situations or vegetables



ORDER CODE	DESCRIPTION	\$ (EX. GST)	PROD. CAT.
GEX06H	6 metre galvanised hydraulic folding boom; 12 non-drip nozzle bodies, 2 rams for folding, hydraulically plumbed to fold together. Weight = 87kg	6,626.31	X
GEX08H	8 metre galvanised hydraulic folding boom; 16 non-drip nozzle bodies, 2 rams for folding, hydraulically plumbed to fold together. 1 metre of each end is manually unfolded to make the boom 8 metres. Weight = 93kg	8,225.26	X
GEX10H	10 metre galvanised hydraulic folding boom; 20 non-drip nozzle bodies, 2 rams for folding, hydraulically plumbed to fold together. 2 metres of each end is manually unfolded to make the boom 10 metres. Weight = 96kg	8,468.42	X
MHL12-2-KIT	Second set of hydraulic hoses to allow left/right individual fold of GEX boom (text on your order)	731.57	W

FIREBREAK, UNDER TREE AND COVERED BOOMS



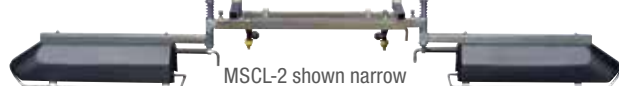
MC6 Firebreak boom shown fitted to tray



MVB5-5

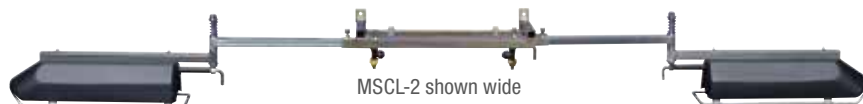


MSO



MSCL-2 shown narrow

2.3 metres



MSCL-2 shown wide

3 metres

QUICK GUIDE

Firebreak boom:

- » Ideal for the back of utes or small trailing sprayers
- » 1.5 metre wide with offset nozzles on adjustable swivel nozzle bodies on each end for additional 1.5 metre spray each side
- » For spraying firebreaks, farm tracks, contours, ditches and fence lines

Under-tree boom:

- » Galvanised boom with breakaway – extendable outer section with two nozzles, can be lifted up for transport
- » Perfect for spraying under trees or hedgerows

Shrouded booms:

- » Single or double sided options for sensitive areas
- » For spraying under sensitive crops such as grapes, trellis tomatoes and the like



ORDER CODE	DESCRIPTION	\$ (EX. GST)	PROD. CAT.
MC6	1.5 metre wide Firebreak boom	630.53	X
MSO	Treeline boom with breakaway and 2 nozzles with manual-tap shut-off	798.95	X
MSCL	Single sided light covered boom with breakaway and 2 nozzles under spray shield	672.84	X
MSCL-2	Double sided light covered boom with left/right shielded booms with breakaways, adjustable width, and a 600mm wide uncovered centre section with 2 nozzles	1,893.68	X
MVB5-5	5 nozzles per side Vertiboom. Ideal for small horticultural growers	683.16	X

CROPAIR 300 | 600

Brass roll-over nozzle bodies. One set ceramic nozzles supplied, second set optional

Single speed 500mm fan with adjustable pitch blades and 5 nozzles per side

15 litre hand-wash tank for operator safety

Flushing tank

Heavy duty, galvanised frame

UNIT	WIDTH	LENGTH	HEIGHT	WEIGHT
GB300/500	1000mm	1300mm	1100mm	230kg

Disclaimer: Dimensional and weight information supplied is for base model only with no options. This information is subject to change without notice.



Cropair Linkage 300

Large filling lid

Two speed 800mm fan for different air output requirements with adjustable pitch blades and 6 nozzles per side

15 litre hand-wash tank for operator safety

Flushing tank

Brass roll-over nozzle bodies. One set ceramic nozzles supplied, second set optional

Heavy duty, galvanised frame



Cropair Linkage 600

UNIT	WIDTH	LENGTH	HEIGHT	WEIGHT
GB600/800	1550mm	1470mm	1560mm	390kg

Disclaimer: Dimensional and weight information supplied is for base model only with no options. This information is subject to change without notice.





Cropair Linkage 600 litre



FAN

On the 600 litre Cropair with 800mm fan fitted, there is an option to blank off the air to outlets not being used – for example in vine crops. This allows more air to be distributed through the remaining outlets and to use low-gear fan speed to reduce the power required to drive the fan – especially useful with smaller tractors.



NOZZLES

On both the 300 and 600 Cropair models, each nozzle body is made of brass, with a non-drip diaphragm to avoid dripping when the main tap is shut off. A selection of two nozzle sizes can be fitted so when the nozzle body is 'rolled over', the nozzle required is easily selected. In the halfway position, the nozzle is shut off.



MANUAL-TAP CONTROL AND ISOMETRIC GAUGE

Each Cropair comes standard with manual-tap control for left/right shut off of the spray-ring on each side. A master on/off lever is also provided, along with a rotational pressure control (PRV) and isometric gauge to accurately set the spraying pressure. For electric controls, see more information on page 68.



For nozzle selection, refer to page 95.

ORDER CODE	DESCRIPTION	\$ (EX. GST)	PROD. CAT.
GB600/800	600 litre Cropair with 800mm fan	11,573.68	X
GB300/500	300 litre Cropair with 500mm fan	7,363.16	X
HT-IS4021	Electric left/right 2-section on/off solenoids, electric pressure adjustment with integrated pressure filter and master switch with dump solenoid	2,942.10	X

300 LITRE TRAILED SPRAYER



QUICK GUIDE

- » Translucent UV-stabilised tank with large sump and graduated markings
- » 12-volt models standard with NEW hose reel, with 10 metres of 10mm hose and spray lance
- » Large, easy access lid with filling strainer
- » 12-volt, 20 litre per minute (open-flow) pump to enable use with booms to 6 metres
- » Easy access suction filter and regulator for pressure and flow adjustment
- » Safety hitch for safe towing
- » Flotation tyres on sturdy axle
- » Rugged, one-piece chassis
- » Handy parking stand

On models with boom fitted:

- » AirMix® air-induction low drift nozzles fitted standard
- » Fully protected non-drip nozzle bodies on stainless steel boom tubes
- » Spring loaded breakaways top protect boom arms from accidental impact damage

Above: UA300B Trailing sprayer with 4 metre boom and new 10m hose reel.

UNIT	WIDTH	LENGTH	HEIGHT	WEIGHT
UA300B	2000mm	1200mm	1200mm	120kg

Disclaimer: dimensional and weight information supplied is for base model only with no options. This information is subject to change without notice.



All Croplands booms fitted with AirMix® low drift air-induction nozzles as standard.

BOOM OPTIONS

Options for booms to fit the UA300B are many and varied. On the next page you will see prices and options for the UA300B models. Two useful additions are:

- » Vertiboom – pictured right. This 5-nozzle per side vertical boom is ideal for small vineyards, nurseries and berryfruit plantings
- » Covered MSCL-2 boom – pictured below. This option can be used in sensitive areas for herbicide applications



MSCL-2



Above: UA300B/303/MVB5 pictured in grapes.



Croplands trailed 300 litre sprayers are a very popular option for block-holders and smaller farms all over Australia and New Zealand.



UA300B fitted with new NBX06 boom – model UA300B/20S/6BX.

POWERED by HONDA™

UA300B Trailing sprayer with 30 metres of hose, 25 litre per minute Honda-powered pump and spray gun – ideal for nurseries and greenhouses where hand-gun spraying is needed.



UA300B/20/HR30G



XT Boom Kit in action. For areas where a boom is not practical, consider the XT boom kit model – ideal for undulating conditions, firebreaks, contours and forestry work.

ORDER CODE	DESCRIPTION	\$ (EX. GST)	PROD. CAT.	ACCESSORIES PAGE REF
UA300B	Trailer with hitch and 300 litre tank only – no pump, boom or gun	2,521.05	X	38, 39
UA300B/20.1S	Trailing 300 litre sprayer, 20 L/min 12-volt pump, regulator kit, 10 metres of 10mm hose on handy hose reel with spray lance – ideal spot sprayer	3,226.32	X	38, 39
UA300B/20S/4BX	Trailing 300 litre sprayer, 20 L/min 12-volt pump, regulator kit, 10 metres of 10mm hose on handy hose reel with spray lance and 4 metre boom	4,420.00	X	38, 39
UA300B/20S/6BX	Trailing 300 litre sprayer, 20 L/min 12-volt pump, regulator kit, 10 metres of 10mm hose on handy hose reel with spray lance and 6 metre boom	4,873.68	X	38, 39
UA300B/20S/XTKI	Trailing 300 litre sprayer, 20 L/min 12-volt pump, regulator kit, 10 metres of 10mm hose on handy hose reel with spray lance and NEW XT boom kit fitted	3,994.74	X	38, 39
UA300B/20/HR20G	Honda powered AR252 pump fitted to the UA300B trailing sprayer with 20 metres of 10mm hose on hose reel with RL10 spray lance	5,089.47	X	–
UA300B/20/HR30G	Honda powered AR252 pump fitted to the UA300B trailing sprayer with 30 metres of 10mm hose on heavy-duty steel hose reel with RL10 spray lance	5,415.79	X	–
UA300B/20/100RC	Honda powered AR252 pump fitted to the UA300B trailing sprayer auto-rewind remote control RetraSpray reel fitted	9,468.42	X	–
UA300B/303/MVB5	Honda powered AR303 pump fitted to the UA300B trailing sprayer with 5 nozzle per side Vertiboom fitted. Ideal for small horticultural growers	5,889.47	X	–



RETRASPRAY

Croplands RetraSpray 12-volt retractable reel will take all the work out of gun spraying. The time and effort saved is well worth the investment – up to 40% more productivity can be expected with the operator not having to lug a heavy hose around or to rewind over 100 kilos of hose up by hand when making a move to a new area. The Supa-slip hose on the reel will slip around rocks, tree stumps, posts and any other obstacle without snagging. Do yourself a favour and invest now.

RETRASPRAY REEL

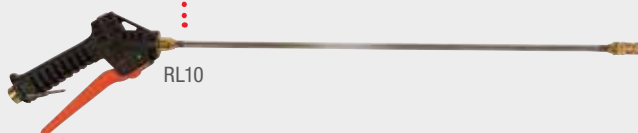


RSRL2-100RC



B26.901.165MK2

Choose your gun and add to your order



RL10

QUICK GUIDE

12-volt Retractable Reels

- » 12-volt 1/2HP low rev motor directly coupled to the reel
- » Push button hose retraction standard, remote control for rewinding is optional
- » Spray gun not included, select from gun options below or supply your own from your existing rig
- » Connect to 12-volt DC power source using heavy duty power cable supplied
- » Remote control option includes roller guides for hose and remote wireless control for rewinding

ORDER CODE	DESCRIPTION	\$ (EX. GST)	PROD. CAT.
RSRL2-100RC	RetraSpray single reel with 100 metre hose and remote control	3,678.95	W
B26.901.165MK2	Turbo400 with metal grip and protected lever, 50 Bar (725 psi)	200.00	Y
RL10	RL10 gun with 500mm steel lance, adjustable nozzle, suits 100 model	93.68	Y

Note: guns sold separately.

CAN BE FITTED TO

LINKAGE SPRAYERS



LA600/100RC

TRAYMOUNT SPRAYERS



US200C/252/100RC



View the Traymount Sprayer in action



TRAYMOUNT SPRAYERS



500 RETRASPRAY TRAYMOUNT



US500/40/100RCT

QUICK GUIDE

- » Heavy duty hot-dip galvanised frame with carry handles
- » UV-stabilised tank with level markings
- » Large filling lid with basket strainer
- » Large sump for total emptying and easy draining and clean out
- » Genuine Honda motor to power the reliable AR diaphragm pump
- » 12-volt remote rewind reel option for effortless spraying and high productivity (RSRL100RC models)
- » For weed spraying, sheep jetting, fire fighting, water carting and pest control

UNIT	WIDTH	LENGTH	HEIGHT	WEIGHT
US200C/252/100RC	1360mm	990mm	805mm	134kg
US300C/30/100RC	1360mm	990mm	805mm	148kg
US500/30/100RC	1700mm	1200mm	1200mm	220kg
US500/40/100RCT	1700mm	1200mm	1200mm	250kg
US600C/30/100RC	1255mm	1575mm	990mm	199kg
US600C/40/100RCT	1300mm	1575mm	990mm	239kg

Disclaimer: dimensional and weight information supplied is for base model only with no options. This information is subject to change without notice.

200 RETRASPRAY TRAYMOUNT



US200C/252/100RC

300 RETRASPRAY TRAYMOUNT



US300C/30/100RC

ORDER CODE	DESCRIPTION	\$ (EX. GST)	PROD. CAT.
US200C/252/100RC	NEW 200 litre traymount sprayer with galvanised frame, Honda powered 25 L/min pump, 12-volt auto retractable RetraSpray reel with 100m of non kink spray hose and Turbo Gun. 6 litre hand wash tank	8,860.42	W
US300C/30/100RC	NEW 300 litre traymount sprayer with galvanised frame, Honda powered 35 L/min pump, 12-volt auto retractable RetraSpray reel with 100m of non kink spray hose and Turbo Gun. 6 litre hand wash tank	9,160.42	W
US500/30/100RC	500 litre traymount sprayer with galvanised frame, Honda powered 35 L/min pump, 12-volt auto retractable RetraSpray reel with 100m of non kink spray hose and Turbo Gun	9,468.42	W
US500/40/100RCT	500 litre traymount sprayer with galvanised frame, Honda powered 46.3 L/min pump, Twin 12-volt auto retractable RetraSpray reels with 100m of non kink spray hose and Turbo Guns	13,147.36	W
US600C/30/100RC	NEW 600 litre traymount sprayer with galvanised frame, Honda powered 35 L/min pump, 12-volt auto retractable RetraSpray reel with 100m of non kink spray hose and Turbo Gun. 6 litre hand wash tank	9,968.42	W
US600C/40/100RCT	NEW 600 litre traymount sprayer with galvanised frame, Honda powered 46.3 L/min pump, Twin 12-volt auto retractable RetraSpray reels with 100m of non kink spray hose and Turbo Guns. 6 litre hand wash tank	13,647.36	W

Photos are for illustrative purposes only. Prices and specifications are subject to change without notice. Prices effective January 2019. For indicative freight prices, see page 103.

NEW

200/300/600 MANUAL REEL TRAYMOUNT



US300C/30/HR30TG



US200C/252/HR30TG

QUICK GUIDE

- » Heavy duty hot-dip galvanised frame with carry handles
- » UV-stabilised tank with level markings
- » Large filling lid with basket strainer
- » Large sump for total emptying and easy draining and clean out
- » Genuine Honda motor to power the reliable AR diaphragm pump
- » Steel hose reel with galvanised mount, 30 metres of high quality hose and Turbo400 gun
- » For weed spraying, sheep jetting, firefighting, water carting and pest control

UNIT	WIDTH	LENGTH	HEIGHT	WEIGHT
US200C/252/HR30TG	1275mm	1015mm	725mm	112kg
US300C/30/HR30TG	1275mm	1015mm	725mm	117kg
US600C/30/HR30TG	1255mm	1575mm	990mm	199kg
US600C/40/TWIN	1220mm	1475mm	990mm	239kg

Disclaimer: dimensional and weight information supplied is for base model only with no options. This information is subject to change without notice.

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ORDER CODE	DESCRIPTION	\$ (EX. GST)	PROD. CAT.
US200C/252/HR30TG	NEW 200 litre traymount sprayer with galvanised frame, Honda powered 25 L/min AR pump. Manual two tap controls, 30 metre hose reel and Turbo Gun. 6 litre hand wash tank	5,057.89	X
US300C/30/HR30TG	NEW 300 litre traymount sprayer with galvanised frame, Honda powered 35 L/min AR pump. Manual two tap controls, 30 metre hose reel and Turbo Gun. 6 litre hand wash tank	5,357.89	X
US600C/30/HR30TG	NEW 600 litre traymount sprayer with galvanised frame, Honda powered 35 L/min AR pump. Manual two tap controls, 30 metre hose reel and Turbo Gun. 6 litre hand wash tank	6,600.00	X
US600C/40/TWIN	NEW 600 litre traymount sprayer with galvanised frame, Honda powered 46.3 L/min AR pump. Manual two tap controls, Twin 30 metre hose reels and Turbo Guns. 6 litre hand wash tank	7,542.11	X



500 LITRE TRAYMOUNT MANUAL REEL

(with frame)



US500/30/HR30TG

QUICK GUIDE

- » Heavy duty hot-dip galvanised frame with carry handles
- » UV-stabilised tank with level markings
- » Large filling lid with basket strainer
- » Large sump for total emptying and easy draining and clean out
- » Genuine Honda motor to power the reliable AR diaphragm pump
- » Steel hose reel with galvanised mount, 30 metres of high quality hose and Turbo400 gun
- » For weed spraying, sheep jetting, firefighting, water carting and pest control

UNIT	WIDTH	LENGTH	HEIGHT	WEIGHT
US500/30/HR30TG	1700mm	1200mm	1200mm	220kg

Disclaimer: dimensional and weight information supplied is for base model only with no options. This information is subject to change without notice.

POWERED by
HONDA™



US500/40/TWIN

ORDER CODE	DESCRIPTION	\$ (EX. GST)	PROD. CAT.
US500/30/HR30TG	CropPak 500 litre, AR30 pump, reel with 30 metre hose and Turbo Gun, galvanised skid-frame	6,100.00	X
US500/70/HR30TG	CropPak 500 litre, AR70 pump, reel with 30 metre hose and Turbo Gun, galvanised skid-frame. AR70 pump is ideal for use with a range of booms (see page 20 and 21)	6,100.00	X
US500/40/TWIN	CropPak 500 litre, AR40 pump, twin reel both with 30 metre hose and Turbo Gun, galvanised skid frame	7,042.11	X

1100 | 1500 PONY TRAILED SPRAYERS

BT1100 Pony trailed base unit with PTO-drive pump and optional 3-section electric controls.

A cost effective sprayer for pasture spraying, small cropping areas and dairy farms.

Sprung axle protects unit in rougher conditions.



QUICK GUIDE

- » Remote tank drain valve, for safe tank draining
- » Huge sump to ensure all tank liquid can be utilised
- » Large, easy access filling lid with filling strainer
- » Easy access suction filter with shut-off to allow cleaning in-field if needed
- » Fully galvanised chassis
- » Sprung axle fitted to protect chassis and boom from premature wear
- » 11.5/80 x 15.3 tubeless agricultural tyres on steel rims
- » Adjustable height swivel towing eye
- » Large side step for easy tank access
- » Liquid fertiliser ready Poly 3-diaphragm pump fitted standard (PTO shaft supplied)
- » See options listed on the next page



BT-1100 shown with MAX boom and electric controller option



ORDER CODE	DESCRIPTION	\$ (EX. GST)	PROD. CAT.
BT-1100	Base model 1100 litre trailed sprayer with galvanised chassis, leaf-spring single axle, PTO-drive 80 L/min AR triple-diaphragm pump (0–20 Bar rated), ARUCM 5-manual tap control unit, 20 litre handwash tank and jockey wheel. No boom or reel fitted – add from options next page. PTO supplied	9,989.47	W
BT-1500	Base model 1500 litre trailed sprayer with galvanised chassis, leaf-spring single axle, PTO-drive 80 L/min AR triple-diaphragm pump (0–20 Bar rated), ARUCM 5-manual tap control unit, 20 litre handwash tank and jockey wheel. No boom or reel fitted – add from options next page. PTO supplied	10,421.05	W

Note: ensure your vehicle is approved for the laden or trailed weight of the sprayer you have chosen.



OPTIONS FOR 1100 | 1500 PONY TRAILED

BOOM OPTIONS

For the Pony trailed sprayers. Ensure the folded width does not exceed your State specifications for transport if you plan to take these sprayers on public roads.

ORDER CODE	DESCRIPTION	\$ (EX. GST)	PROD. CAT	SEE MORE
BT-MAX08L	8 metre MAX series manual cross-fold boom with self-leveller fitted at fixed height (can be adjusted by unbolting and refitting). Folded width = 2,055mm	3,535.79	W	21
BT-MAX10L	10 metre MAX series manual cross-fold boom fitted. Specifications as per MAX08L above	3,994.74	W	21
BT-MAX12L	12 metre MAX series manual cross-fold boom fitted. Specifications as per MAX08L above	5,189.47	W	21
LT-GB383899000V	Parallelogram airbag suspension system for booms	4,011.47	W	18



MAX10L 10 metre MAX boom with self-leveller



LT-GB383899000V airbag suspension

PUMP OPTIONS – TRAILED

ORDER CODE	DESCRIPTION	\$ (EX. GST)	PROD. CAT	SEE MORE
LT-140-C	140 L/min PTO pump in lieu of standard 80 L/min model	626.31	W	50
BT-AR70-5H	AR70 Honda-powered motorised pump in lieu of PTO drive AR80	1,257.89	W	–



LT-140-C poly pump

ELECTRIC AND AUTO SPRAY-RATE CONTROLLERS (IF BOOM IS FITTED)

ORDER CODE	DESCRIPTION	\$ (EX. GST)	PROD. CAT	SEE MORE
LT-LA-IE2032A	3-section control of 3 boom sections and pressure control	2,100.00	W	68
BA5000-GEO3	3-section auto-rate spray controller for fully automatic spray rate control	3,994.74	W	69

FOAM MARKER AND GPS OPTION

ORDER CODE	DESCRIPTION	\$ (EX. GST)	PROD. CAT	SEE MORE
A5200052	Double sided foam marker fitted	1,630.53	W	44
MATRIX430	Basic GPS mapping system in lieu of a foam marker. Ideal for knowing where you have applied	2,831.57	W	70



A5200052 foam marker



MATRIX430

30 | 60 | 100 CROPPAK



Features – standard models



US100A/15

FEATURE	BENEFIT
1 3-stage filtration	Large filling screen under lid; large suction filter; pressure filter in lance handle
2 Lance clips onto lid	Ensures neat storage and avoids lance dragging on the ground
2 Large filling lid	Helps prevent spillage when filling
3 Metal lance with adjustable nozzle	Superior to plastic, higher strength. Many accessories available to fit the lance – page 38
4 Large carry handles	Easy handling and for storing hose neatly
5 6 metre hose	6 metres of high quality 20 Bar rated spray hose fitted
6 Large drain	Easy-to-use, large 'boat plug' drain for quick clean-out
7 Large suction filter, easy access	Very large filtering area with easy-clean filter screen. Simple and quick to access
8 Cavity mounted pump	Total protection against the elements and damage. Low pump position ensures excellent priming
9 Quick-clip power connection	High quality electrical connector to the pump with waterproof plug for quick hook up and reliability
10 Translucent tank	Easy to see liquid level in the tank
10 Rugged design, locally made	Rotomolded tank has uniform thickness and can take high impact force
10 UV stabilised tank	Excellent UV resistance. Many imported models have no UV inhibitor in the material
Heavy duty power cable	Long, heavy duty 12-volt power lead with rocker-switch for easy hook-up to your battery

UNIT	WIDTH	LENGTH	HEIGHT	WEIGHT
US30S	280mm	640mm	380mm	9kg
US60S	440mm	760mm	440mm	11kg
US100S	460mm	1000mm	460mm	14kg

Disclaimer: dimensional and weight information supplied is for base model only with no options. This information is subject to change without notice.



US30S

US60S

US100S

On page 38 and 39 you will find a wide range of accessories available for use with the standard lance to make your purchase of a Croplands CropPak a worthwhile investment. Please ensure your vehicle's load rating can carry the sprayer you want before making your purchase.

ORDER CODE	DESCRIPTION	\$ (EX. GST)	PROD. CAT.	ACCESSORIES PAGE REF
US30S	30 litre CropPak, on-demand 6.8 L/min open-flow pump, 6 metres of spray hose, spray lance and electrical power lead with on/off switch	525.26	X	38, 39
US60S	60 litre CropPak, on-demand 6.8 L/min open-flow pump, 6 metres of spray hose, spray lance and electrical power lead with on/off switch	630.53	X	38, 39
US100S	100 litre CropPak, on-demand 6.8 L/min open-flow pump, 6 metres of spray hose, spray lance and electrical power lead with on/off switch	735.79	X	38, 39
US100A/15	100 litre CropPak, on-demand 15 L/min open-flow pump, pressure regulator and gauge, 6 metres of spray hose, spray lance and electrical power lead with on/off switch	946.32	X	38, 39



200 | 400 CROPPAK

200 and 400 litre CropPaks – these flat-based 200/400 litre units are a great choice for a higher capacity utility sprayer. They will sit on a ute tray, RTV tray, tractor tray or trailer. The clever design includes cutaways in the tank to provide baffles to avoid sudden liquid movement – a must if being used on sloping country.



US200/15

UNIT	WIDTH	LENGTH	HEIGHT	WEIGHT
US200	600mm	1190mm	600mm	35kg
US200/15	600mm	1190mm	600mm	40kg
US400/15	750mm	1490mm	750mm	80kg

Disclaimer: dimensional and weight information supplied is for base model only with no options. This information is subject to change without notice.

FEATURE	BENEFIT
1 Metal lance with adjustable nozzle	Superior to plastic, higher strength. Many accessories available to fit the lance – page 38 and 39
2 Handy suction filter, easy access	Easy-clean filter screen. Simple and quick to access
3 Lance clips onto lid	Ensures neat storage and avoids lance dragging on the ground
3 Large filling lid	Helps prevent spillage when filling
4 3-stage filtration	Large filling screen under lid; suction filter; pressure filter in lance handle
5 Graduated, translucent tank	Easy to see liquid level in the tank with level marks
5 Rugged design, locally made	Rotomolded tank has uniform thickness and can take high impact force

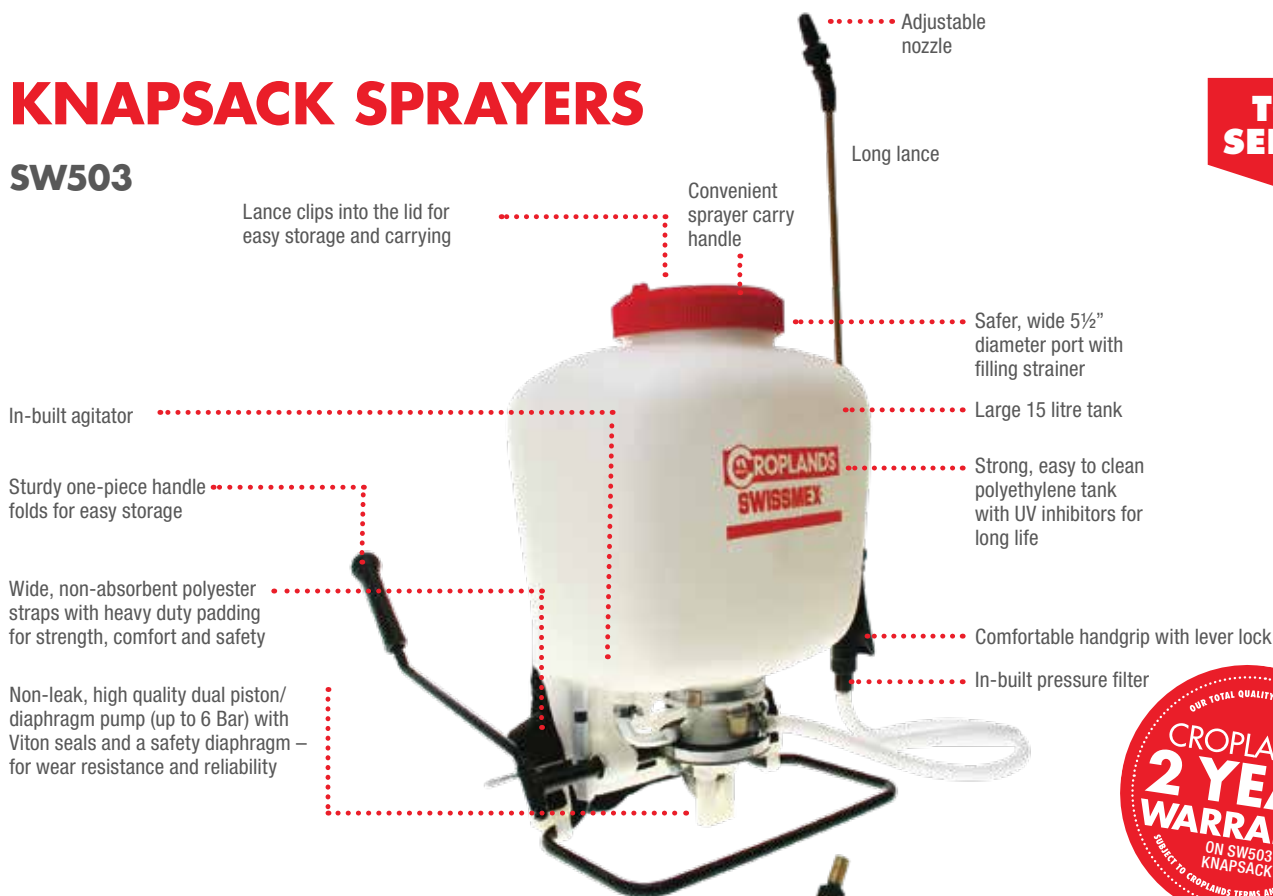
FEATURE	BENEFIT
5 UV stabilised tank	Excellent UV resistance. Many imported models have no UV inhibitor in the material
6 Carry handles	Ensures safe handling
7 Baffled tank	Integrated baffles to avoid sudden liquid movement
8 6 metre hose	6 metres of high quality 20 Bar rated spray hose fitted
9 Hose holders mounted on tank	To wrap hose around to avoid tangles and dragging hose
Heavy duty power cable	Long, heavy duty 12-volt power lead with rocker-switch for easy hook-up to your battery
Quick-clip power connection	High quality electrical connector to the pump with waterproof plug for quick hook up and reliability

ORDER CODE	DESCRIPTION	\$ (EX. GST)	PROD. CAT.	ACCESSORIES PAGE REF
US200	200 litre CropPak, on-demand 6.8 L/min open-flow pump, 6 metres of spray hose, spray lance and electrical power lead with on/off switch	1,220.00	X	38, 39
US200/15	200 litre CropPak, on-demand 15 L/min open-flow pump, pressure regulator and gauge. 3-way valve enables connection to a boom. 6 metres of spray hose standard with spray lance. Power lead with on/off switch provided	1,577.89	X	38, 39
US400/15	(Not pictured) 400 litre CropPak, 12-volt 15 L/min Triplex pump with pressure adjusting regulator fitted, 6 metres hose and adjustable spray lance. Accessories available such as small booms	2,122.11	X	38, 39

KNAPSACK SPRAYERS

SW503

**TOP
SELLER**



SW540R



INDUSTRIAL RANGE



SW189C

Heavy duty 15 litre knapsack designed for industrial use (diesel compatible); wide filling neck, rugged shut-off gun, adjustable nozzle, in-built pressure filter, brass lance. Lance clips into the handle for storage and transport.

See page 38 for a full range of accessories to suit.



SW322-315

High quality heavy duty 9 litre compression sprayer for use with selected solvents and diesel; wide filling neck, rugged shut-off gun, adjustable nozzle, pressure relief valve, in-built pressure filter, brass lance. Lance clips into the handle for storage and transport.

See page 38 for a full range of accessories to suit.



PAKMAN (FITTED TO SPRAYER)

Chemical resistant foam back protector, designed to significantly increase comfort for prolonged spraying needs. Fits SW503 15 litre knapsack sprayers. A must for making spraying much more comfortable.



SW320-310

The Acid Sprayer resists hydrochloric muriatic and phosphoric acids. Ideal for staining and etching concrete, and dissolving of rust on metal surfaces.



AGRICULTURAL RANGE



SW319

High quality heavy duty 5 litre compression sprayer; wide filling neck, rugged shut-off gun, adjustable nozzle, pressure relief valve, in-built pressure filter, brass lance. Lance clips into the handle for storage and transport.

See page 38 for a full range of accessories to suit.



SW320

High quality heavy duty 7 litre compression sprayer; wide filling neck, rugged shut-off gun, adjustable nozzle, pressure relief valve, in-built pressure filter, brass lance. Lance clips into the handle for storage and transport.

See page 38 for a full range of accessories to suit.



AIRMIX® ANVIL TYPE AIR-INDUCTION FLAT FAN NOZZLE

Designed for use predominantly for knapsack sprayers, the TDAM-AN-04 nozzle has a spray pattern of approximately 120°, perfect for turf applications especially as it has the same Venturi air-induction system as the standard AirMix® flat fan nozzle range. Available in the ISO red size 04.

At around 500–550mm off the ground (standard height for most knapsack spray lances) the sprayed width is around 120cm – ideal for spraying turf or larger weed areas such as stockyards etc. Now you can spray much more safely with this air-induction breakthrough.



ORDER CODE	DESCRIPTION	\$ (EX. GST)	PROD. CAT.
SW319	Compression sprayer 5 litre	104.21	X
SW320	Compression sprayer 7 litre	114.74	X
SW322-315	Compression sprayer 9 litre – solvent model	152.63	X
SW503	Knapsack 15 litre piston/diaphragm	220.00	X
SW540R	Knapsack 15 litre piston pump with safety chamber and gauge on lance	236.84	X
SW189C	Knapsack sprayer 15 litre (diesel)	220.00	X
PAKMAN	Back protector for SW503	93.68	X
SW320-310	Acid knapsack sprayer 7 litre	114.74	X
TDAM-AN-04	AirMix® anvil type air-induction flat fan nozzle	18.84	Z

CROPPAK AND SWISSMEX ACCESSORIES

Croplands spray lances, pictured below, are fitted to our range of CropPak sprayers, knapsack sprayers and compression sprayers. They can be used for a wide range of spraying applications up to 10 Bar pressure. See below for information on the great range of booms, spray guards, extensions and other accessories that fit these lances.

Learn more about spray lances, scan the QR code



SPRAY LANCES



ORDER CODE	DESCRIPTION	\$ (EX. GST)	PROD. CAT.
SW-LANCE-ASSY	Complete spray gun with brass lance, adjustable nozzle and hose connector fitted (in-built pressure filter)	75.79	Y
SW-LANCE-ADJ-AS	Complete spray gun with extendable fibreglass lance, adjustable nozzle and hose connector fitted (in-built pressure filter)	95.79	Y

SPRAY BOOMS TO FIT THE LANCE ASSEMBLY



ORDER CODE	DESCRIPTION	\$ (EX. GST)	PROD. CAT.
SW219-147C	2-nozzle boom, narrow (pictured above right)	24.84	Y
SW219-140C	2-nozzle boom, 500mm (above)	28.95	Y
SW219-148C	2-nozzle boom, 750mm (above)	34.00	Y
SW219-138C	3-nozzle boom, 1,000mm (above)	40.11	Y
SW219-151C	3-nozzle boom, 1,500mm (above)	57.58	Y
SW219-282C	4-nozzle boom, 1,500mm (not pictured)	63.16	Y

EXTENSION LANCES AND NOZZLES



Learn more about extension lances, scan the QR code

ORDER CODE	DESCRIPTION	\$ (EX. GST)	PROD. CAT.
SW219-142C	1,000mm spray lance extension to fit Swissmex trigger assembly, with nozzle	26.32	Y
SW219-143C	1,500mm spray lance extension to fit Swissmex trigger assembly, with nozzle	33.68	Y
SW219-146C	2,000mm spray lance extension to fit Swissmex trigger assembly, with nozzle	41.05	Y
SW803-085	Brass spray lance, 520mm (standard lance), nozzle not included	32.95	Y
SW219-236C	Telescopic lance (to 940mm), with nozzle	25.26	Y
SW803-262C	Plastic adjustable nozzle complete with cap and gasket	8.21	Y
SW219-089C	Brass adjustable nozzle complete with cap and gasket	29.47	Y
XR8003-VK	80° flat fan nozzle for use with spray guard or lance	13.16	Z





DID YOU KNOW?

Did you know that Croplands range of CropPak sprayers use the Swissmex lance, so all the useful accessories on these two pages are suitable for use with the 12-volt CropPaks on page 34.

SPRAY GUARDS TO PROTECT SENSITIVE PLANTS. CONSTANT FLOW VALVE.



Learn more about spray guards, scan the QR code



SW219-099



SW219-117



SW219-852



Learn more about constant flow valves, scan the QR code

DID YOU KNOW?

Did you know by fitting a constant flow valve to your lance (left), you can reduce pumping by up to 30% and have constant pressure at the nozzle.

ORDER CODE	DESCRIPTION	\$ (EX. GST)	PROD. CAT.
SW219-099	Herbicide spray guard, 400mm, large (above left)	14.53	Y
SW219-117	Herbicide spray guard, 220mm, small (above centre)	10.84	Y
SW219-852	Constant flow valve, 1 Bar to 3 Bar pressure. *1 = 1 Bar, 2 = 1.5 Bar, 3 = 2 Bar, 4 = 3 Bar	74.95	Y

COMMON REPLACEMENT COMPONENTS AND KITS



Trigger, SW808-073C



Tail for trigger assembly, SW808-014



Elbow from tank, SW502-191



Tank lid, SW502-001C



Lid strainer, SW501-004



Lid seal, SW501-002



Diaphragm, SW503-031



Repair service kit, SWRPK120



Repair service kit, SWRPK503



Repair Service kit, SWRPK189

To make repairs to your Croplands Swissmex knapsack or compression sprayer, see the options below.

ORDER CODE	DESCRIPTION	\$ (EX. GST)	PROD. CAT.
SW808-073C	Complete trigger assembly (pictured above)	30.32	Y
SWRPK120	Repair/service kit for SW319 and SW320 (pictured above)	29.37	Y
SWRPK189	Repair/service kit for SW189	27.05	Y
SWRPK189C	Repair/service kit for SW189C	58.84	Y
SWRPK503	Repair/service kit for SW503 (diaphragm not included in kit – not pictured)	30.84	Y
SW503-031	Diaphragm to suit SW503 Knapsack (pictured above)	18.21	Y
SW502-024C	Pump module for SW502 (not pictured)	76.42	Y
SW502-191	Elbow connector 90° – outlet to hose from tank (pictured above)	18.21	Y
SW808-014	Hose tail to fit 3/8" (10mm) hose – attached to back of trigger assembly (pictured above)	8.21	Y
SW502-001C	Red tank lid – suits all models (pictured above)	25.05	Y
SW501-002	Lid seal (pictured above)	8.53	Y
SW501-004	Lid strainer (pictured above)	14.84	Y

apex

A range of handy sprayers for use in non-commercial situations. The compression sprayer range includes 1.5 litre, 5 litre and 10 litre models. The 15 litre model is a piston-type with shoulder straps and built in accumulator to hold pressure whilst in use.

The rechargeable and battery operated 12-volt units have additional features with the added benefit of not requiring manual pumping, allowing the operator to concentrate solely on the application at hand. Specifications and features are listed by each model.

COMPRESSION SPRAYERS



ASNS-1.5A



ASFM-5A



ASFM-10A

GRANULAR APPLICATOR



ASGS-10

QUICK GUIDE

- » Clear lid to see what product is left
- » Adjustable application rate
- » Enclosed lubricated gearbox
- » Spreading width approximately up to 5 metres (depending on material being spread)

16 LITRE APEX BATTERY-POWERED KNAPSACK SPRAYER



ASBBS-16

QUICK GUIDE

- » Rechargeable 12-volt sealed lead/acid battery; voltmeter to see charge level at a glance
- » Large battery gives longer spraying time – approximately 4 hours continuous use from full charge
- » Large filling lid
- » 12-volt diaphragm pump for positive spraying pressure

30 LITRE APEX TROLLEY SPRAYER



ASAT-30M3

QUICK GUIDE

- » 3 L/min (open flow) 12-volt diaphragm pump powered by a large lead/acid rechargeable battery (charger included)
- » Large filling lid
- » Large drain for emptying and complete clean out
- » Spray lance with adjustable nozzle
- » 10 metres of hose on handy rear-mounted reel
- » Sturdy steel frame

ORDER CODE	DESCRIPTION	\$ (EX. GST)	PROD. CAT.
ASBBS-16	16 litre 12-volt rechargeable knapsack sprayer	262.11	X
ASAT-30M3	30 litre trolley sprayer with 3 L/min pump (open-flow), 10 metre hose and reel	626.32	X
ASNS-1.5A	1.5 litre hand-held compression sprayer. Suction strainer on the inlet tube. Nickel-coated nozzle for longer life. Excellent sealing for better compression and spraying quality	11.53	X
ASFM-5A	5 litre compression sprayer with lance. Pressure relief valve to avoid over-pressurisation and to relieve pressure prior to emptying. Trigger gun with 450mm lance and adjustable nozzle. 1.2 metre hose length. Lance is vertically stored. Positive pump action. Light weight (1.4kg empty). 100mm filling neck with splash-shield rim	35.74	X
ASFM-10A	10 litre compression sprayer with lance. Pressure relief valve to avoid over-pressurisation and to relieve pressure prior to emptying. Trigger gun with 450mm lance and adjustable nozzle. 1.2 metre hose length. Lance is vertically stored. Positive pump action. Light weight (1.8kg empty). 125mm filling neck with splash-shield rim	48.37	X
ASGS-10	10 litre granular applicator. Granular applicator for spreading granulated formulations and fertilisers. Clear lid to see what product is left. Adjustable for application rate and direction. Fully enclosed and lubricated gearbox. Spreading width approximately up to 5 metres (depending on material being spread)	93.68	X



BATCH MASTER 1200 STAND ALONE BATCHING SYSTEM

Dual lids for simultaneous overhead filling while introducing chemicals for mixing

1200 litre poly tank

Internal knife system to quickly and safely puncture containers and bags (pictured below)

3" inlet and outlet ports

Honda-powered ultra-high flow centrifugal pump for rapid mixing and transfer

Heavy-duty hot-dipped galvanised frame

Safe, fold-out working platform

UNIT	WIDTH	LENGTH	HEIGHT
L-H9800	1600mm	2000mm	1400mm

Disclaimer: dimensional and weight information supplied is for base model only with no options. This information is subject to change without notice.



Above: Stainless steel knife to puncture containers combined with rinsing function.

QUICK GUIDE

- » 1200 litre capacity
- » 6.5HP Honda GX 200 powered 3 inch Banjo pump, 1100 litres per minute open flow capacity for rapid mixing and filling
- » 3" (80mm) external filling port for fresh water
- » High-flow venturi for rapid liquid chemical induction from a shuttle source
- » Stainless steel knife inside tank lid for rapid container or bag puncture to speed up mixing
- » Huge mixing nozzles to completely mix contents quickly and efficiently
- » Large Banjo taps for easy control of mixing, filling and batching processes
- » Safe operating platform
- » Forklift points
- » Hot-dipped galvanised frame
- » Extra lid for overhead tank-filling if needed

ORDER CODE	DESCRIPTION	\$ (EX. GST)	PROD. CAT.
L-H9800	Batch Master 1200 batching system complete	10,942.11	W

CHEMICAL MIXING AND TRANSFER

30 LITRE CHEMICAL MIXER



A5033301

30 LITRE QUICK GUIDE

- » Can handle liquids, powders and granulated products
- » Venturi suction system with integrated drain valve
- » Three venturi options to adapt to the pump type being used
- » Easy to understand tap controls for chemical mixing, mixer rinse and container cleaning system
- » Integrated lifting handle
- » Simple mounting system to ensure easy fit up to existing sprayers
- » Optional suction probe

60 LITRE CHEMICAL MIXER



L-H9351A

60 LITRE QUICK GUIDE

- » Large access lid, fully sealed for safety
- » External and internal level markings
- » Dual filling and product agitation jets for rapid mixing
- » Container rinse nozzle capable of rinsing up to 20 litre containers
- » Mixer rinsing nozzle mounted directly under the lid for complete cleaning
- » Large taps for easy operation
- » Venturi with shut off valve
- » Sturdy handle and mount
- » Optional drop-down bracket available
- » Simple to follow guidelines using Croplands QR code
- » High flow capacity via large venturi

STAND ALONE 60 LITRE MIXER



L-H9353B

STAND ALONE 60 LITRE QUICK GUIDE

- » Trolley mounted Croplands chemical mixer for stand-alone mixing operations
- » Same features as itemised at left unit without pump requires a pressurised water source to allow mixing, filling and venturi to operate correctly – the pump on the sprayer could be used
- » Unit with 240-volt pump best used where a water tank and power is available but no existing pressurised water source is available

*Pentair Venturi



See how to use Croplands Chemical Mixers, scan the QR code

ORDER CODE	DESCRIPTION	\$ (EX. GST)	PROD. CAT.
A5033301	30 litre chemical mixer and transfer hopper for use with smaller trailed sprayers, linkage sprayers and traymount units. Includes universal mount, 3-tap control bank, container rinse and venturi options to match to the pump size and type being used	1,823.68	X
L-H9351A	Croplands 60 litre chemical mixer and transfer hopper for use with larger trailed sprayers, linkage sprayers and traymount units. Includes universal mount, taps for mixing, container rinse and system cleaning. Cleaning nozzle mounted directly under lid for complete clean out. Internal and external markings	2,205.26	X
L-H9353B	Croplands 60 litre chemical mixer as described above on a handy trolley frame. Ideal for use at a chemical mixing station where an external pressurised water supply is available using an existing filling pump or similar	3,347.36	X
L-H9353C	Croplands 60 litre chemical mixer as described above on a handy trolley frame with 240-volt centrifugal pump fitted. Ideal for use at a chemical mixing station where an external water tank is available along with mains power to power the pump	4,789.47	X
L-H9355A	Optional spring-loaded drop down mount for Croplands 60 litre mixer model L-H9351A. Ideal where operator height is an issue	1,402.11	X



EASYFLOW

CLOSED TRANSFER SYSTEM FOR CROP PROTECTION PRODUCTS

The EasyFlow closed transfer system is designed as a fully closed system for introducing crop protection, herbicides or pest control products into a spray tank or chemical mixer in total safety.

A clever locking system prevents any chance of coming into contact with the product being introduced. The mounting system is simple to install.



View the EasyFlow system in action, scan the QR code



QUICK GUIDE

- » Fully closed system for introducing chemicals to your spray tank or mixer
- » Kit includes components needed to install the system, instructions for installation and three chemical container adaptors
- » For use with containers up to 10 litres capacity with 63mm neck threads
- » Fully sealed for total safety
- » External fresh water source is needed for rinsing
- » Completely simple to install and use

ORDER CODE	DESCRIPTION	\$ (EX. GST)	PROD. CAT.
AT16077	EasyFlow tank adaptor kit – includes tank adaptor and 5 x container (jug) adaptors	868.94	W
AT16071	Wedge plate kit (2 plates and seals) – allows for fitting the tank adaptor to angled surfaces	24.00	W

MIXING JUGS



ORDER CODE	DESCRIPTION	\$ (EX. GST)	PROD. CAT.
L-H9001	Croplands calibrated 1 litre measuring jug	17.79	X
L-H9003	Croplands calibrated 3 litre measuring jug	27.26	X
L-H9005	Croplands calibrated 5 litre measuring jug	35.79	X
L-H9025	Croplands heavy duty 25 litre calibrated mixing bucket with pouring spout	72.63	X

CHEMICAL TRANSFER



QUICK GUIDE

- » Easy and accurate chemical transfer is achieved with the AgRunner chemical transfer unit
- » Pump has nylon housing with Viton seals to ensure maximum performance for today's agricultural chemicals
- » A multiple pump-chamber design ensures long life and durability

ORDER CODE	DESCRIPTION	\$ (EX. GST)	PROD. CAT.
SHUSF-1105PTS	The AgRunner portable mini bulk transfer system uses a 12-volt SHURflo chemical transfer pump for pumping liquid agricultural chemicals from bulk containers into chemical mixers or spray tanks. The unit has a handy carry frame to protect the pump unit, pump-mounted flow indicator, 6 metres of power cable, shut-off gun, 4 metres discharge hose, and a camlock inlet fitting with shut-off and 4 metres inlet hose	2,757.89	W
SHUSF-1105	12-volt SHURflo pump unit only, Viton valves, Santoprene diaphragms with internal bypass and 6 metre power cable. On/off switch on the pump. 29 L/min output at 15 psi pressure. Draws 14 amps	1,977.89	X
SHUFM-1100I	Pump-mounted electronic flowmeter with LCD display and long-life lithium battery	596.84	W
L-H9562A	3 pin Envirodrum male coupling	904.21	X
L-H9556	3 pin Envirodrum rinsing socket (must be connected to fresh water source)	334.74	X

CROPLANDS XT BOOM KIT

The Croplands XT boomless nozzle kit enables your spray application to be targeted into places a conventional boom may not reach. This kit delivers a uniform spray pattern over a distance of up to 6.5 metres (a wider swath may be possible if the kit is mounted higher than the 90cm as stated in the table below).

Ideal uses would be forestry – spraying under trees; farm tracks and undulating pasture land.

Other useful features and uses include:

- » Under trees in orchards
- » Golf courses and turf applications
- » Hedge rows and fencelines
- » Firebreaks
- » Large droplets for reduced drift risk and to assist with coverage on woody weeds
- » Spraying around obstacles where a conventional boom is not able to be used

Standard set up is with #10 nozzles as per the chart below*.



XTNOZZLEKIT



XT Boom Kit in action

Nozzle size	Pressure (Bar)	Flow (L/min) 2 nozzles	Application rate L/ha – at swath width shown km/hr							Approx. swath width @ 90cm height (XT 2-nozzle kit)
			4 km/hr	5 km/hr	6 km/hr	7 km/hr	8 km/hr	10 km/hr	12 km/hr	
10	2	6.4	166	132	110	95	83	66	55	5.8
	3	7.8	202	161	134	115	101	81	67	6.5

*Disclaimer: all values are calculated application rates in L/ha based on the swath width in the far right column and assuming the pressure and flow can be achieved using the pump on your sprayer. 90cm height from the spray target is recommended using Croplands UA300B trailed sprayers but may vary depending on the sprayer being fitted to, the available mounting height, and the vehicle the XT kit is being fitted to. If the height is adjusted upwards the application rate will be lower; if the kit is adjusted to spray wider than the table suggests, the application rate will be lower. The reverse will be true if the height and/or width is reduced.

Larger nozzle sizes are available on request. Ensure your pump has adequate flow to achieve the desired spray rate and sprayed width. For more information visit hypro.pentair.com and search on XT X Tender nozzles.

XT BOOMKIT

ORDER CODE	DESCRIPTION	\$ (EX. GST)	PROD. CAT.
XTBOOMKIT	Kit to mount Croplands XT boomless nozzle kit to your sprayer. Kit includes 2 x #10 XT nozzles on adjustable swivel nozzle bodies, steel bracket and 2 x clamps for mounting. Hose and fittings to your pump are not supplied	398.95	X
XTNOZZLEKIT	XT boomless nozzle kit, includes 2 x #10 XT nozzles on adjustable swivel nozzle bodies, no bracket, clamps or hoses supplied	346.31	X

PRESSURE REGULATOR KIT



UOPRK

ORDER CODE	DESCRIPTION	\$ (EX. GST)	PROD. CAT.
UOPRK	Pressure regulator kit for use with most 12-volt pumps such as FloJet and SHURflo. Ideal for regulating pressure and flow when a small spray boom is being used	142.63	X

FOAM MARKER AND FOAM CONCENTRATE



A5200052
(kit includes
foam droppers)

ORDER CODE	DESCRIPTION	\$ (EX. GST)	PROD. CAT.
A5200052	Double-sided foam marker kit with in-cab switchbox for use on booms up to approximately 18 metres (depending on speed of travel)	1,630.53	X



SPRAY TANKS



All tanks are supplied with a lid and outlet. All prices are ex-store. Dimensions may change without notice.

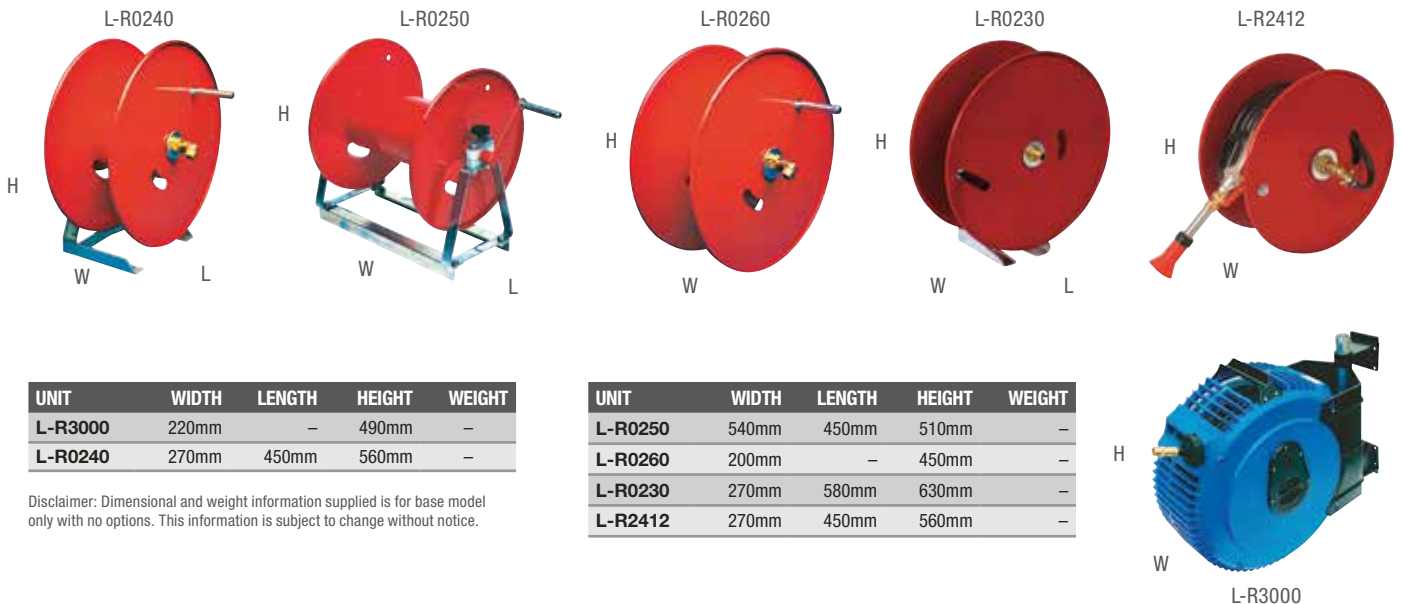
ORDER CODE	POSITION	LITRE CAPACITY	DIMENSIONS (MM)			STRAINER	FREESTANDING	\$ (EX. GST)	PROD. CAT.
			L	W	H				
P20	(not shown)	20	300	300	400	No	No	247.36	X
P30B	A	30	625	300	333	Yes	Yes	309.47	X
P50	B	50	450	410	400	Yes	No	279.68	X
P60B	C	60	740	380	380	Yes	Yes	339.37	X
P60L	D	60	440	440	545	No	Yes	288.53	X
P100L	E	100	440	440	810	No	Yes	317.26	X
P100	F	100	975	400	425	Yes	Yes	381.37	X
P120	G	120	610	470	600	Yes	No	363.68	X
P125L	H	125	440	440	960	No	Yes	369.47	X
P200	I	200	900	600	600	Yes	No	462.00	X
P200B	J	200	1,160	580	539	Yes	Yes	882.00	X
P300	K	300	1,100	550	550	Yes	No	560.42	X
P300B	L	300	1,269	750	753	Yes	No	1,402.63	X
P400	M	400	1,490	627	760	Yes	Yes	1,657.89	X
P400C	N	400	1,190	760	650	Yes	No	814.63	X
P450	O	450	1,070	750	580	Yes	No	733.89	X
P500C	P	500	1,190	760	825	Yes	No	882.00	X
P500	Q	500	1,200	600	1,100	Yes	No	859.89	X
P700	(not shown)	700	1,350	640	1,200	Yes	No	1,012.42	X
P800	R	800	1,740	1,000	770	Yes	Yes	2,822.84	X
P1000L	S	1,000	1,350	800	1,500	Yes	No	1,767.37	X
P1100A	T	1,100	1,400	1,279	890	Yes	Yes	1,959.68	X
P1500A	U	1,500	1,400	1,430	1,150	Yes	No	2,659.26	X
P2000	V	2,000	2,200	1,300	1,030	Yes	No	2,511.16	X
P3000	W	3,000	2,200	1,300	1,300	Yes	No	3,626.42	X
P4000A	X	4,000	2,200	1,300	1,670	Yes	No	4,255.26	X

Dimensions may vary from tank to tank.

HOSE REELS

Croplands range of manual hose reels include nine models listed below that are made of steel. A steel reel, complete with high quality fittings, that will last years and is a good investment for that reason. The steel on the reel itself is sand-blasted and powder coated for high corrosion resistance. A galvanised base on the larger base-mount models is heavy duty and hot dip zinc plated. The smaller L-R0150 reel has a clever swivel-base design and locking pin.

All Croplands spray hoses are specifically made for Croplands – the pressure hose in particular has added longitudinal nylon fibres to ensure the hose will not stretch, along with added nitrile compound internally so it will not break down and de-laminate like cheaper hoses often do. Being black in colour our hose resists sun damage for many years longer than coloured hose.



UNIT	WIDTH	LENGTH	HEIGHT	WEIGHT
L-R3000	220mm	–	490mm	–
L-R0240	270mm	450mm	560mm	–

UNIT	WIDTH	LENGTH	HEIGHT	WEIGHT
L-R0250	540mm	450mm	510mm	–
L-R0260	200mm	–	450mm	–
L-R0230	270mm	580mm	630mm	–
L-R2412	270mm	450mm	560mm	–

*All bare capacities are for 10mm spray hose. L=length, W=width, H=height; dimensions may change without notice and do not include side-bracket on side-mount reels.

ORDER CODE	DESCRIPTION	\$ (EX. GST)	PROD. CAT.
L-R0240	Base mount model, 50 metre capacity* (bare reel)	620.00	X
L-R1412	Base mount model comes with 30 metres of 10mm spray hose and Turbo400 spray gun	841.05	X
L-R0260	Side-mount (with bracket), 50 metre capacity* (bare reel)	457.89	X
L-R2412	Side-mount (with bracket), comes with 30 metres of 10mm spray hose and Turbo400 spray gun	714.74	X
L-R2412HP	Replacement reel for US500/30/HR30TG high pressure (40 Bar)	1,051.58	X
L-R0250	Large base mount model, 100 metre capacity* (bare reel)	763.16	X
L-R0230	Slim-line steel hose reel, galvanised base mount model, 100 metre capacity* (bare reel)	409.47	X
L-R3000	High-impact poly reel, spring retractable; 15 metres of 10mm spray hose and threaded end-fitting (no gun fitted)	362.68	X

PRESSURE GAUGES

Glycerine-filled gauges in 63mm and 100mm sizes.



ORDER CODE	DESCRIPTION	MAX PRESS BAR	MAX PRESS KPA	MAX PRESS PSI	\$ (EX. GST)	PROD. CAT.
A908006	Pressure gauge, 40mm, 0–600 kPa	6	600	90	40.00	Y
L-G1426	Isometric pressure gauge, 63mm, 1/4" bottom-entry	25	2,500	360	40.00	Y
L-G1425	Pressure gauge, 63mm, 1/4" bottom-entry	25	2,500	360	40.00	Y
L-G1430	Pressure gauge, 63mm, 1/4" bottom-entry	40	4,000	580	40.00	Y
L-G1432	Pressure gauge, 63mm, 1/4" bottom-entry	60	6,000	870	40.00	Y
L-G1602	Pressure gauge, 100mm, 1/4" bottom-entry	25	2,500	360	100.00	Y
L-G1611	Pressure gauge, 100mm, 3/8" bottom-entry	16	1,600	230	100.00	Y
L-G1612	Pressure gauge, 100mm, 3/8" bottom-entry	25	2,500	360	100.00	Y
L-G1660	Pressure gauge, 100mm, 3/8" bottom-entry	60	6,000	870	100.00	Y
L-G1626	Isometric pressure gauge, 100mm, 3/8" bottom-entry	25	2,500	360	100.00	Y



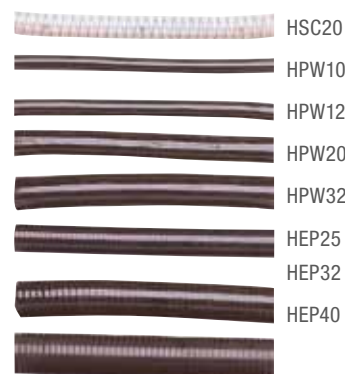


SPRAY GUNS AND LANCES

ORDER CODE	#	DESCRIPTION	\$ (EX. GST)	PROD. CAT.
SW-LANCE-ASSY	1	Swissmex gun and lance	75.79	Y
SW-LANCE-ADJ-AS	2	Swissmex gun and extendable lance	95.79	Y
RL10	3	RL10 gun with 500mm steel lance, adjustable nozzle	93.68	Y
AA30L-PP	4	TeeJet GunJet poly spray gun, 10 Bar (150 psi)	125.26	V
AA30L-¼	5	TeeJet GunJet drip-free spray gun, 17 Bar (250 psi)	156.84	V
AA31	6	TeeJet forged brass trigger gun, 35 Bar (500 psi)	177.89	V
AA43HA-8	7	TeeJet heavy duty high pressure gun, 55 Bar (800 psi)	346.32	V
AA43LA-8	8	TeeJet heavy duty medium pressure gun, 14 Bar (200 psi)	346.32	V
B26.901.165MK2	9	Turbo400 with metal grip and protected lever, 50 Bar (725 psi)	200.00	Y
B46.901.46RG	10	Turbo400RG gun with ergonomic grip and positive-notch droplet selection, 40 Bar (580 psi)	274.74	Y
B7.901.10	11	Evolution turbine gun, 60 Bar (850 psi)	358.95	Y
B35.901.16	12	Spot spray gun, pistol type, 40 Bar (580 psi)	146.32	Y

HOSES

ORDER CODE	DESCRIPTION	\$ (EX. GST)	PROD. CAT.
HCVT20	Hose 20mm vinyl clear	6.84	Y
HSC20	Clear wire spiral hose, 20mm	17.16	Y
HEP25	Hose 25mm suction (black)	13.16	Y
HEP32	Hose 32mm suction (black)	19.16	Y
HEP40	Hose 40mm suction (black)	18.53	Y
HPW10	Hose 10mm 20 Bar for pesticide and herbicide	3.89	Y
HPW10/40	Hose 10mm 40 Bar for pesticide and herbicide	9.05	Y
HPW10-30	Hose 10mm 20 Bar for pesticide and herbicide (30 metres)	115.79	Y
HPW10-100	Hose 10mm 20 Bar for pesticide and herbicide (100 metres)	356.84	Y
HPW12	Hose 12mm 20 Bar for pesticide and herbicide	4.84	Y
HPW12/40	Hose 12mm 40 Bar for pesticide and herbicide	11.47	Y
HPW12-30	Hose 12mm 20 Bar for pesticide and herbicide (30 metres)	136.84	Y
HPW12-100	Hose 12mm 20 Bar for pesticide and herbicide (100 metres)	447.37	Y
HPW20	Hose 20mm 20 Bar for pesticide and herbicide	14.21	Y
HPW20-50	Hose 20mm 20 Bar for pesticide and herbicide (50 metres)	759.26	Y
HPW25	Hose 25mm 20 Bar for pesticide and herbicide	18.37	Y
HPW32	Hose 32mm 20 Bar for pesticide and herbicide	28.89	Y



CLAMPS

ORDER CODE	DESCRIPTION	\$ (EX. GST)	PROD. CAT.
COBRAC13/8	Cobra clamp for 8mm hose	1.37	Z
COBRAC15/8	Cobra clamp for 10mm hose	1.47	Z
COBRAC18-19/8	Cobra clamp for 12mm hose	1.58	Z
COBRAC24/8	Cobra clamp for 20mm hose	1.68	Z
TR38HC	Hose clamp 10mm steel band worm drive	2.95	Z
TR12HC	Hose clamp 12mm steel band worm drive	3.37	Z
TR34HC	Hose clamp 20mm steel band worm drive	4.42	Z
TR1HC	Hose clamp 25mm steel band worm drive	3.47	Z
TR114HC	Hose clamp 32mm steel band worm drive	4.63	Z
TR112HC	Hose clamp 40mm steel band worm drive	4.95	Z
TR2HC	Hose clamp 50mm steel band worm drive	5.26	Z
TR3HC	Hose clamp 75mm steel band worm drive	5.26	Z



FIREFIGHTERS



US500/FF1 – 500 litre traymount firefighter on galvanised steel skid



SHUMB25LK MiniBlaze firefighter kit



SHUB55H firefighter pump



BT1500/FF2 – heavy duty 1500 litre trailed firefighter on galvanised chassis – hook up and go at a moment's notice when the need arises

ORDER CODE	DESCRIPTION	\$ (EX. GST)	PROD. CAT.
SHUMB25LK	MiniBlaze firefighter kit, 2.5HP petrol motor. Quick fill priming port, 1" discharge, 5 metres of 20mm hose with nozzle, 2.5 metres suction hose with filter. Tool kit supplied. Flow rate 50–150 L/min	682.50	X
SHUB55H	Honda GX160-powered Onga firefighter pump. Industrial grade nylon impeller, alloy housing, 3-way discharge outlets and carry handle. 1 1/2" priming port. Flow range 100–500 L/min in the 2–5 Bar pressure range. Price is for pump only	1,299.00	W
US500/FF1	Traymount 500 litre firefighter. Galvanised frame, SHUB55H pump, heavy duty steel hose reel with 30 metres of 20mm delivery hose, adjustable nozzle and 3 metre suction kit with filter	4,495.00	W
BT1100/FF	Trailed 1100 litre firefighter with sprung axle, galvanised chassis, eye-hitch, ag-tyres, SHUB55H pump, heavy duty steel hose reel with 30 metres of 20mm delivery hose, adjustable nozzle and 3 metre suction kit with filter. Ideal for farm use (not pictured)	7,795.00	W
BT1500/FF	Trailed 1500 litre firefighter with sprung axle, galvanised chassis, eye-hitch, ag-tyres, SHUB55H pump, heavy duty steel hose reel with 30 metres of 20mm delivery hose, adjustable nozzle and 3 metre suction kit with filter. Ideal for farm use (not pictured)	9,047.36	W
BT1500/FF2	Pro-series trailed 1500 litre firefighter with sprung axle, galvanised chassis with mudguards, tow-hitch, brakes, lights, Landcruiser wheels, SHUB55H pump, heavy duty steel hose reel with 30 metres of 20mm delivery hose, adjustable nozzle and 3 metre suction kit with filter	14,210.00	W

Please note: trailed firefighters are not legal for road use.

DID YOU KNOW?

All Croplands firefighters are powered by genuine Honda motors. The Honda motor uses an advanced electronic ignition with automatic compression release providing effortless starts in all weather and conditions.



DECK MOUNT TURF SPRAYERS



QUICK GUIDE

- » 400 and 600 litre capacities
- » AR115 PTO drive pump supplied with 6-spine shaft (other drive options available)
- » 15 litre handwash tank
- » Adjustable de-mount legs
- » 6, 8 or 10 metre hydraulic fold GEX series booms as options
- » Standard with one double-acting hydraulic service with manual diverter to select left/right and simultaneous fold – requires a set of hydraulic ports – more options available including electric control
- » Electric or fully auto spray-rate control options
- » Available by indent only – talk to your Croplands Territory Manager

ENVIROSAFE COVERED BOOMS



EnviroSafe boom shown fitted to linkage unit.

QUICK GUIDE

- » 4.5 or 5.5 metre EnviroSafe fully covered booms to suit linkage, deck-mount or trailed sprayers
- » Manual or hydraulic fold options
- » Forward tilt ram supplied standard to allow boom to be inclined forwards to access nozzles and for parking
- » Pivoting wheels to allow boom to follow ground contours and stay at the perfect spraying height
- » Available by indent only – talk to your Croplands Territory Manager

ORDER CODE	DESCRIPTION	\$ (EX. GST)	PROD. CAT.
DECKMOUNT	400 or 600 litre deck mount sprayers for a range of turf vehicles such as Kubota, Toro Diesel, Jacobsen, Cushman and John Deere. A wide range of options available for indenting the right machine for your requirements. Contact Croplands for further information	POA	W
ENVIROSAFE	4.5 or 5.5 metre EnviroSafe booms with various options for boom control, nozzle selection and to fit linkage or turf vehicles. Contact Croplands for further information	POA	W

LOW PRESSURE DIAPHRAGM PUMPS

NEW POLY PUMP RANGE FOR A WIDER RANGE OF APPLICATIONS

Annovi Reverberi (AR) has developed a new range of diaphragm pumps to suit the changing demands of agriculture. The heads and manifolds of this new range are made from reinforced polypropylene or nylon to allow use with a wider range of products including liquid fertilisers.

For information on controllers to suit our pumps, refer to page 55.



AR80LFP

Ideal for booms up to 12 metres

Open flow	76 L/min
Max pressure	20 Bar
Max RPM	550
Weight	14kg
HP required	3.4

Triple diaphragm, reinforced poly heads and manifolds

Available with **C**



AR140LFP

Ideal for booms up to 18 metres

Open flow	132 L/min
Max pressure	15 Bar
Max RPM	550
Weight	16kg
HP required	5.2

Triple diaphragm, reinforced nylon heads and manifolds

Available with **C**



AR160LFP

Ideal for booms up to 21–24 metres

Open flow	166 L/min
Max pressure	15 Bar
Max RPM	550
Weight	25kg
HP required	6.8

Four diaphragm, reinforced nylon heads and manifolds

Available with **CF25**



AR185LFP

Ideal for booms up to 24 metres

Open flow	182 L/min
Max pressure	15 Bar
Max RPM	550
Weight	25kg
HP required	7.4

Four diaphragm, reinforced nylon heads and manifolds

Available with **CF25**



AR245LFP

Ideal for booms from 28 metres to 36 metres

Open flow	242 L/min
Max pressure	15 Bar
Max RPM	550
Weight	45kg
HP required	9

Triple diaphragm, reinforced nylon heads and manifolds

Available with **CF32**



AR275LFP

Ideal for booms up to 36 metres

Open flow	273 L/min
Max pressure	15 Bar
Max RPM	550
Weight	45kg
HP required	10.7

Triple diaphragm, reinforced nylon heads and manifolds

Available with **CF32**



AR330LFP

Ideal for booms from 36 metres to 52 metres

Open flow	318 L/min
Max pressure	15 Bar
Max RPM	550
Weight	58kg
HP required	11.6

Four diaphragm, reinforced nylon heads and manifolds

Available with **CF32**



AR410LFP

Ideal for booms from 36 metres to 52 metres

Open flow	401 L/min
Max pressure	15 Bar
Max RPM	550
Weight	75.5kg
HP required	14.9

Six diaphragm, reinforced nylon heads and manifolds

Available with **CF32**



C Cardan shaft – pump is fitted with a 1 3/8" male 6-spline shaft



CF25 Female input for direct hydraulic motor fitting. 6-spline male shaft on one side
CF32



For more information on hydraulic motors and kits to suit CF25/32 models contact Croplands.

Note: All flow information is at zero pressure, open flow.

MODEL			\$ (EX. GST)	PROD. CAT.
AR80LFP	C	AR80 LFP series triple diaphragm polypropylene pump with 6-spline male shaft	1,301.00	Y
AR140LFP	C	AR140 LFP series triple diaphragm reinforced nylon pump with 6-spline male shaft	2,021.00	Y
AR160LFP	CF25	AR160 LFP series four diaphragm reinforced nylon pump with 6-spline male shaft one side, 25mm keyed female input on the other	2,940.00	Y
AR185LFP	CF25	AR185 LFP series four diaphragm reinforced nylon pump with 6-spline male shaft one side, 25mm keyed female input on the other	3,086.00	Y
AR245LFP	CF32	AR245 LFP series triple diaphragm reinforced nylon pump with 6-spline male shaft one side, 32mm keyed female input on the other	3,974.00	Y
AR275LFP	CF32	AR275 LFP series triple diaphragm reinforced nylon pump with 6-spline male shaft one side, 32mm keyed female input on the other	4,064.00	Y
AR330LFP	CF32	AR330 LFP series four diaphragm reinforced nylon pump with 6-spline male shaft one side, 32mm keyed female input on the other	5,129.00	Y
AR410LFP	CF32	AR410 LFP series six diaphragm reinforced nylon pump with 6-spline male shaft one side, 32mm keyed female input on the other	7,586.00	Y



LOW PRESSURE DIAPHRAGM PUMPS

ALLOY PUMPS WITH ANODISED OR COATED HEADS AND MANIFOLDS

The Annovi Reverberi (AR) range of diaphragm pumps have been industry leaders for more than 60 years. Croplands have been fitting AR pumps to their entire sprayer range for 40 years, and supplying farmers and growers with these high quality pumps for the same duration. Rugged, reliable and robust, an AR pump will give years of good service if looked after and maintained.



AR252

Open flow	25 L/min
Max pressure	25 Bar
Max RPM	650
Weight	4kg
HP required	1.45
Twin diaphragm pump	
Ideal for small boom sprayers	



Available with **C** **T**
SP **CRGI**

AR70 Bp

Open flow	72 L/min
Max pressure	20 Bar
Max RPM	550
Weight	11.8kg
HP required	3.4
Twin diaphragm pump	
Ideal for booms up to 12 metres	



Available with **C** **T**
SP **CR**

AR115 Bp

Open flow	114 L/min
Max pressure	20 Bar
Max RPM	550
Weight	15.5kg
HP required	5.5
Triple diaphragm pump	
Ideal for booms up to 15 metres	



Available with **C**

AR135 Bp

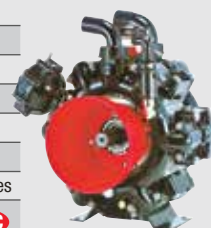
Open flow	132 L/min
Max pressure	20 Bar
Max RPM	550
Weight	15.5kg
HP required	6.8
Triple diaphragm pump	
Ideal for booms up to 18 metres	



Available with **C** **T**
SP **CR**

AR250 Bp

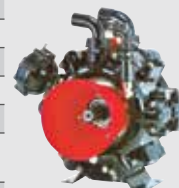
Open flow	254 L/min
Max pressure	20 Bar
Max RPM	550
Weight	38.5kg
HP required	11.4
6-diaphragm pump	
Ideal for booms up to 36 metres	



Available with **CF25** **APCC**

AR280 Bp

Open flow	282 L/min
Max pressure	20 Bar
Max RPM	550
Weight	38.5kg
HP required	12.9
6-diaphragm pump	
Ideal for booms to 36 metres or more	



Available with **CF25**

Note: All flow information is at zero pressure, open flow

MODEL	C \$ (EX. GST)	CR \$ (EX. GST)	CRGI \$ (EX. GST)	SP \$ (EX. GST)	T \$ (EX. GST)	APCC CF25 CF32 \$ (EX. GST)	PROD. CAT.
AR252	915.78		1468.42	750.52	1170.52		Y
AR70	1369.47	1967.36		1,232.63	1545.26		Y
AR115	1822.10	2,541.05		1,755.78	2,094.73		Y
AR135	1932.63	2553.68		1884.21	2,260.00		Y
AR250						3735.78	Y
AR280						4101.05	Y

DRIVE OPTIONS FOR AR PUMPS

C Cardan shaft – pump is fitted with a 1 1/8" male 6-spline shaft



APCC Cardan shaft – 1 1/8" 6-spline shaft both sides of pump

CF25 **CF32** Female input for direct hydraulic motor fitting. 6-spline male shaft on one side.



T Tractor kit – to connect pump directly to tractor PTO shaft



SP Bare shaft – models to suit various kits and applications



CR Gearbox fitted to pump but without PRV fitted



CRGI Gearbox and PRV fitted to pump

For petrol and electric drive models, see following pages along with spare parts information.



For common parts such as diaphragms, valves, o-rings and repair kits visit croplands.co.nz and access the Croplands OPTIMA Components Guide.

MEDIUM AND HIGH PRESSURE DIAPHRAGM PUMPS

AR medium pressure pumps are rated up to 40 Bar pressure. This range is ideal for hand gun spraying where flow and pressure are important – particularly for spraying brush weeds. The high pressure pumps are typically used for Airblast sprayers in tree crops. The brass models are particularly good at resisting copper compounds.

For information on controllers to suit our pumps, refer to page 55.



AR303

Open flow	35 L/min
Max pressure	40 Bar
Max RPM	550
Weight	9kg
HP required	3
Triple diaphragm pump	
Ideal for spot spraying units	

Available with **C CR**

See table on page 51 for more information



AR30

Open flow	35 L/min
Max pressure	40 Bar
Max RPM	550
Weight	9.3kg
HP required	2.9
Twin diaphragm pump	
Ideal for spot spraying units	

Available with **C T SP CRGI**

See table on page 51 for more information



AR40

Open flow	46.3 L/min
Max pressure	40 Bar
Max RPM	550
Weight	9.5kg
HP required	3.5
Twin diaphragm pump	
Ideal for spot spraying units	

Available with **CRGI**

See table on page 51 for more information



AR503

Open flow	54 L/min
Max pressure	40 Bar
Max RPM	550
Weight	11.5kg
HP required	5.6
Triple diaphragm pump	
Ideal for spot spraying units	

Available with **C T SP CR CRGI CSP**

See table on page 51 for more information

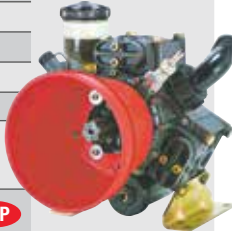


AR813

Open flow	80 L/min
Max pressure	50 Bar
Max RPM	550
Weight	20.5kg
HP required	8.8
Triple diaphragm pump	
Ideal for high pressure spot spraying units and small airblast sprayers	

Available with **APCC CSP**

See table on page 51 for more information



AR1064

Open flow	105 L/min
Max pressure	50 Bar
Max RPM	550
Weight	23.5kg
HP required	13.1
4 diaphragm pump	
Ideal for high pressure spot spraying units and small airblast sprayers	

Available with **APCC**

See table on page 51 for more information



ARBHS170

Open flow	163 L/min
Max pressure	50 Bar
Max RPM	550
Weight	65kg
HP required	19.3
4 diaphragm pump	
Ideal for high pressure airblast sprayers	

Available with **APCC**

See table on page 51 for more information



ARBHS200

Open flow	194 L/min
Max pressure	50 Bar
Max RPM	550
Weight	65kg
HP required	22.1
4 diaphragm pump	
Ideal for high pressure airblast sprayers	

Available with **APCC**

See table on page 51 for more information



AR1604

Open flow	153 L/min
Max pressure	50 Bar
Max RPM	550
Weight	40kg
HP required	18
4 diaphragm pump	
Ideal for high pressure airblast sprayers	

Available with **APCC**

See table on page 51 for more information



Note: All flow information is at zero pressure, open flow.

MODEL	C \$ (EX. GST)	CR \$ (EX. GST)	CRGI \$ (EX. GST)	SP \$ (EX. GST)	T \$ (EX. GST)	CSP APC APCC \$ (EX. GST)	PROD. CAT.
AR30	1258.94		1,999.00	1170.52	1546.31		Y
AR40						2094.73	Y
AR303	1170.52	1844.21				2364.21	Y
AR503	1,470.81	2149.47	2492.63	1391.57	1763.15	3216.84	Y
AR813						4592.63	Y
AR1064						5742.10	Y
AR1604						2,746.41	Y
ARBHS170						4,466.98	Y
ARBHS200						4,585.64	Y



AR MOTORISED POSITIVE DISPLACEMENT PUMPS

Croplands have a great range of petrol and electric drive pumps for spraying and semi-industrial applications. Powered by genuine Honda engines, the petrol powered models are bullet proof and will run day in, day out. A full range of spare parts are available for our range, and Honda dealers throughout New Zealand and Australia can supply engine parts and service when needed.



AR303-6H

POWERED by
HONDA



AR252-EM



AR252-4H

To petrol drive larger AR pumps, please contact Croplands for options and pricing. Note, to fit electric start on the AR petrol-driven motorised pumps on this page, please add the following code and price to your order.

ORDER CODE	DESCRIPTION	\$ (EX. GST)	\$ (INC. GST)	PROD. CAT.
AR-ES	Electric start kit for Honda	668.90	743.20	X

AR252-4H	<ul style="list-style-type: none"> » AR252 dual diaphragm pump fitted with gearbox, genuine Honda motor and ARGR30 pressure regulator » Ideal for smaller hand-gun or boom spraying applications and on small trailed and RTV sprayers » Maximum pressure 25 Bar, open-flow 25 L/min
AR252-EM	<ul style="list-style-type: none"> » AR252 pump with single-phase electric motor and ARGR30 pressure regulator » Very popular positive displacement pump for use in agriculture for fertiliser injection systems » Maximum pressure 25 Bar, open-flow 25 L/min
AR30-EM	<ul style="list-style-type: none"> » AR30 with single-phase electric motor and ARG140 pressure regulator » A larger positive displacement pump for use with fertiliser or chemical injection and industrial applications » Maximum pressure 40 Bar, open-flow 32 L/min
AR30-ET	<ul style="list-style-type: none"> » The ET version of the AR30 with 3-phase motor fitted has the same specifications as the EM model » Available for indent only for agricultural or industrial applications » Maximum pressure 40 Bar, open-flow 32 L/min
AR30-5H	<ul style="list-style-type: none"> » AR30 dual diaphragm pump with gearbox, genuine Honda motor and ARG140 pressure regulator » Ideal for gun spraying in glasshouses, nurseries and on utility-mounted sprayers units » Very reliable for higher pressure applications where hand-guns are used » Maximum pressure 40 Bar, open-flow 32 L/min
AR303-6H	<ul style="list-style-type: none"> » AR303 triple diaphragm pump with gearbox, genuine Honda motor and ARG140 pressure regulator » Ideal for gun spraying in glasshouses, nurseries and on utility-mounted sprayers units » Smooth running for higher pressure applications where hand-guns are used » Maximum pressure 40 Bar, open-flow 35 L/min
AR40-6H	<ul style="list-style-type: none"> » AR40 dual diaphragm pump with gearbox, genuine Honda motor and ARG140 pressure regulator » Ideal for gun spraying in glasshouses, nurseries and on utility-mounted sprayer units » Very reliable for higher pressure applications where hand guns are used » Maximum pressure 40 bar, open flow 46.3 L/min
AR70-5H	<ul style="list-style-type: none"> » AR70 dual diaphragm pump with gearbox, genuine Honda motor and ARECM-2 pressure regulator » Suited to boom spraying applications where spraying pressure required is under 10 Bar » Can also be used in spot spraying applications » Maximum pressure 20 Bar, open-flow 72 L/min
AR135-6H	<ul style="list-style-type: none"> » AR135 triple diaphragm pump with gearbox, genuine Honda motor and ARECM-2 pressure regulator » Suited to boom spraying applications where spraying pressure required is under 10 Bar » Ideal for booms up to around 18 metres in width mounted on utes or vehicles » Maximum pressure 20 Bar, open-flow 132 L/min

PETROL AND ELECTRIC DRIVE MODEL

ORDER CODE	DESCRIPTION	\$ (EX. GST)	PROD. CAT.
AR252-4H	AR252 pump powered by Honda GX200QX Engine, rated at 4.1 kW. Pressure Regulator supplied and fitted to the pump	2,505.26	X
AR252-EM	AR252 pump powered by single phase electric motor. Installation required by a registered electrician. Pressure regulator supplied and fitted to the pump	1,767.37	X
AR30-EM	AR30 pump powered by single phase electric motor. Installation required by a registered electrician. Pressure regulator supplied and fitted to the pump	3,491.58	X
AR30-ET	AR30 pump powered by three-phase electric motor. Installation required by a registered electrician. Pressure regulator supplied and fitted to the pump	3,227.37	X
AR30-5H	AR30 pump powered by Honda GX200QX Engine, rated at 4.1 kW. Pressure regulator supplied and fitted to the pump	3,126.32	X
AR40-6H	AR40 pump powered by Honda GX200QX Engine, rated at 4.1 kW. Pressure regulator supplied and fitted to the pump	3,265.00	X
AR303-6H	AR303 pump powered by Honda GX200QX Engine, rated at 4.1 kW. Pressure regulator supplied and fitted to the pump	2,791.58	X
AR70-5H	AR70 pump powered by Honda GX200QX Engine, rated at 4.1 kW. Pressure regulator supplied and fitted to the pump	3,717.89	X
AR115-5H	AR115 pump powered by Honda GX200QX Engine, rated at 4.1 kW. Pressure regulator supplied and fitted to the pump	4,205.26	X
AR135-6.5H	AR135 pump powered by Honda GX200QX Engine, rated at 4.1 kW. Pressure regulator supplied and fitted to the pump	4,376.84	X

PARTS AND ACCESSORIES

DIAPHRAGMS

ORDER CODE	DIAPHRAGMS FOR PUMP MODELS	MATERIAL	\$ (EX. GST)	PROD. CAT.
AR1040083	AR80LFP-C	BLUEFLEX	47.16	Y
AR550086	AR70, 115, 125, 135, 145, 160, 185, 250, 280, 370, 500 (20 Bar max), AR140FLP-C	HPDS	68.84	Y
AR620080	AR30 (40 Bar max), AR503 (50 Bar max)	GOMMA	41.89	Y
AR800086	AR19 and 252 (20 Bar max)	HPDS	34.84	Y
AR1040081	AR813, 1064 (50 Bar max), AR80LFP-C	GOMMA	47.79	Y
AR2240080	ARBHA140, BHS140, BHS160/170, BHS200 (50 Bar max)	GOMMA	59.89	Y



HPDS diaphragms – AR550086

VALVES

CODE	VALVES FOR PUMP MODELS	\$ (EX. GST)	PROD. CAT.
AR759051	AR70, 115, 125, 135, 145, 160, 185, 250, 280, 370, 500 (20 Bar max). ARBHA140, BHS140, BHS160/170, AR2HS200 (50 Bar max)	61.79	Y
AR1409050	AR30 (40 Bar max). AR503, 813, 1064 (50 Bar max)	43.16	Y
AR809060	AR252 (25 Bar max)	26.42	Y
AR2429050	AR80LFP-C, AR140FLP-C	56.81	Y



Valves – AR759051

VALVE O-RINGS

CODE	VALVE O-RINGS FOR PUMP MODELS	\$ (EX. GST)	PROD. CAT.
AR680070	AR125, 145, 160, 185, 250, 280, 370, 500 (20 Bar max). ARBHA140, BHS140, BHS160/170, BHS200 (50 Bar max)	3.68	Y
AR320030	AR70, 115, 135 (20 Bar max)	3.37	Y
AR620030	AR30 (40 Bar max). AR503, 813, 1064 (50 Bar max)	2.11	Y
AR880830	AR252 (25 Bar max)	0.95	Y
AR3460240	AR80LFP-C, AR140FLP-C	25.20	Y



AR110121

DISCS

CODE	DISC FOR ARG140 REGULATOR	\$ (EX. GST)	PROD CAT
AR110121	Vulkulan disc	13.58	Y
AR1922	5 pack of Vulkulan discs	43.44	Y

REPAIR KITS

CODE	COMMON REPAIR KITS	\$ (EX. GST)	PROD CAT
PR66	2 X AR550086 for AR70 pump	141.79	Y
PR67	4 valves and O-rings for AR70	264.00	Y
AR2374	Kit (8 x 680070 and 8 x 759051) for 4-diaphragm pumps	466.84	Y
AR1917	Valve and O-rings kit for AR30	245.16	Y
AR1925	Kit reg overhaul (GI40) for ARG140 regulator	77.26	Y



AR1434

SAFETY RELIEF VALVES

CODE	SAFETY RELIEF VALVES	\$ (EX. GST)	PROD CAT
AR1432	Valve safety (20 Bar) – safety relief valve with reset	78.84	Y
AR1433	Valve safety (40 Bar) – safety relief valve with reset	81.89	Y
AR1434	Valve safety (50 Bar) – safety relief valve with reset	81.89	Y



AR pump with gearbox fitted

GEAR BOXES





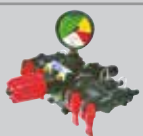



CODE	COMMONLY USED GEARBOXES FOR AR PUMPS	\$ (EX. GST)	PROD CAT
AR1613	Gearbox (AR19/202/252 1:4.3)	571.89	Y
AR1636	Gearbox (AR30 1:5.9)	1,035.26	Y
AR1639	Gearbox (AR50/503/703 and 904 1:5.9)	1,134.74	Y
AR1671	Gearbox (AR70/115/120 1:5.9)	1,316.11	Y



For more information, refer to Croplands Components Guide online visit www.croplands.co.nz



MANUAL CONTROL VALVES AND REGULATORS

	ORDER CODE	DESCRIPTION	\$ (EX. GST)	PROD. CAT.
	ARGR30	Controller for AR252 pump, max flow 40 L/min, maximum operating pressure 25 Bar (360 psi). Mounting kit not included. (*See AR892 for remote mount kit.)	164.21	Y
	AR892	Remote mount kit for ARGR30, includes mount plate and bolts, extra tap, hoesetails and inlet/outlet fitting	103.47	Y
	ARGI40	3-outlet (2-taps supplied) manual controller suited to the AR30 pump. Can be pump mounted or remote mounted*. (*See AR980 for remote mount kit). Max flow 80 L/min, maximum pressure 40 Bar (580 psi)	248.42	Y
	AR980	Remote mount kit for ARG140, includes mount plate and bolts, extra tap, hoesetail and inlet/outlet fitting	128.63	Y
	ARRM40I	Two-way controller to suit AR503 pump. Can be pump mounted or remote mounted*. (*See AR985 for remote mount kit.) Max flow 90 L/min, maximum pressure 40 Bar (580 psi)	278.95	Y
	AR985	Remote mount kit for ARRM40I, includes mount plate and bolts, extra tap, hoesetails and inlet/outlet fitting	125.79	Y
	ARVDR50	Two-way controller to suit AR813 or AR1064 pump. Can be pump mounted or remote mounted*. (*See AR998 for remote mount kit.) Max flow 130 L/min, maximum pressure 50 Bar (725 psi)	522.11	Y
	AR998	Remote mount kit for ARVDR50, includes mount plate and bolts, extra tap, hoesetails and inlet/outlet fitting	149.26	Y
	ARECM-4	Remote mount 4-way controller suitable for most 20 Bar rated diaphragm pumps. 4 individual shut-off taps and gauge fitted. Comes with remote mount plate fitted. Max flow 150 L/min, maximum pressure 20 Bar (290 psi). 2-tap version also available	441.05	Y
	ARUCM-5	Remote mount 5-way controller suitable for most 20 Bar rated diaphragm pumps. 5 individual shut-off taps, master shut-off lever and gauge fitted. Comes with remote mount plate fitted. Max flow 150 L/min, maximum pressure 20 Bar (290 psi). 2-tap and 6-tap version also available. Fitted as standard on all AgriPak linkages	783.16	Y
	ARIDROM-4	Remote mount pressure compensating 4-way controller suitable for most 20 Bar rated diaphragm pumps. Bypass taps on each section can be adjusted for pressure compensation of +/- 15%. 4 individual shut-off taps, master shut-off lever and gauge fitted. Comes with remote mount plate fitted. Max flow 150 L/min, maximum pressure 20 Bar (290 psi). 2-tap and 6-tap version also available	1,051.58	Y
	ARBMH50	Two-outlet manual controller suited to high pressure 50 Bar rated diaphragm pumps. Rotary selector lever controls individual left and right shut-off or master shut-off with either pressure bypass or non-pressure bypass. Can be pump mounted or remote mounted*. (*See AR996 for remote mount kit.) Max flow 200 L/min, maximum pressure 50 Bar (725 psi)	650.53	Y
	AR996	Remote mounting kit for ARBMH50 controller includes mount plate and bolts, hoesetails and inlet/outlet fitting	67.26	Y

HYPRO PUMPS

NEW TECHNOLOGY

LIFE GUARD SILICON CARBIDE PUMP SEALS

Croplands stocks a good range of Hypro pumps for agricultural sprayers – mostly with Life Guard seals fitted. Stocking pumps with this seal material helps our customers with a pump that will last longer and help resist seal failure.

Typically, the standard seal will fail quite quickly if the pump is run dry for long. Life Guard seals dramatically improve the dry-run survivability of the seal in the case where a pump is run dry for any reason.

The Life Guard seal is much more resistant to abrasive products as well, improving the working life of the pump.



9310 SERIES FORCEFIELD CENTRIFUGAL PUMPS

ForceField Technology is a superior wet seal technology that provides the ultimate protection for the mechanical seal and avoids costly downtime.

It protects the mechanical seal against common failures related to dry run and chemical bonding by using a barrier fluid to keep it cool and lubricated

ForceField Centrifugal Pumps actively maintain a pressure differential between the barrier fluid and the pumping solution, which results in longer life and worry free operation.






HYPRO CENTRIFUGAL PUMP MODELS

ORDER CODE	SPECIFICATIONS	OUTPUT AND INPUT INFORMATION	\$ (EX. GST)	PROD. CAT.
9203C-B	<ul style="list-style-type: none"> 9203C series pedestal-mount centrifugal pump Equipped with Life Guard seals for longer seal life Cast iron housing with nylon impeller Shaft rotation: counter clockwise when looking at the shaft-end Port sizes: 1-½" NPT inlet; 1-¼" NPT outlet Input shaft size: 5/8" (15.9mm) solid shaft Weight: 8.6kg Fitted to a number of OEM sprayers 	<ul style="list-style-type: none"> Max fluid temp: 60° C Max pressure: 11.7 Bar (170 psi) Max L/min flow: 530 Max RPM: 6000 435 L/min flow at 2.8 Bar pressure and 4200 RPM 	1,036.84	X
9203C-BR	<ul style="list-style-type: none"> As for the model 9203C-B but with clockwise rotation Preferred pump for many OEM sprayers Suits 4000 series Spra-Coupe models 	<ul style="list-style-type: none"> As for model 9203C-B 	1,036.84	X
9303C-HM1C-B	<ul style="list-style-type: none"> 9303C series pedestal-mount centrifugal pump with hydraulic motor fitted (for open centre, closed centre and load-sensing systems) Equipped with Life Guard seals for longer seal life Cast iron housing with nylon impeller Liquid Port sizes: 1-½" NPT inlet; 1-¼" NPT outlet Hydraulic motor: internal gear gerotor; max motor psi = 3000 Hydraulic ports: ½" NPT inlet, ¾" NPT outlet Hydraulic motor seal: double-lip Teflon Weight: 11.8kg Fitted to a number of OEM sprayers Fitted standard to Croplands 4000 and 6000 litre WEEDit sprayers 	<ul style="list-style-type: none"> Max fluid temp: 60° C Max pressure: 9 Bar (130 psi) Max L/min flow: 432 Max hyd flow required: 49.2 L/min 397 L/min flow at 3.4 Bar pressure and 45.4 L/min hydraulic flow 	1,947.37	X
9313C-M08	<ul style="list-style-type: none"> ForceField-equipped upgrade option for 9303C-HM1C (and B) pump models – see above 	<ul style="list-style-type: none"> Max pressure: 9.4 Bar (137 psi) Max L/min flow: 712 Max hyd flow required: 49.2 L/min 	3,736.84	X





ORDER CODE	SPECIFICATIONS	OUTPUT AND INPUT INFORMATION	\$ (EX. GST)	PROD. CAT.
9303C-HM5C-B 	<ul style="list-style-type: none"> 9303C series pedestal-mount centrifugal pump with hydraulic motor fitted (for open centre, closed centre and load-sensing systems) Equipped with Life Guard seals for longer seal life Cast iron housing with nylon impeller Liquid port sizes: 1–½" NPT inlet; 1–¾" NPT outlet Hydraulic motor: internal gear gerotor; max motor psi = 3000 Hydraulic ports: ½" NPT inlet, ¾" NPT outlet Hydraulic motor seal: double-lip Teflon Weight: 11.8kg Fitted to a number of OEM sprayers 	<ul style="list-style-type: none"> Max fluid temp: 60° C Max pressure: 10 Bar (145 psi) Max L/min flow: 556 Max hyd flow required: 60.6 L/min 450 L/min flow at 4.1 Bar pressure and 56.8 L/min hydraulic flow 	2,036.84	X
9303C-HM5C-B-SP 	<ul style="list-style-type: none"> 9303C series pedestal-mount self-priming centrifugal pump with hydraulic motor fitted (for open centre, closed centre and load-sensing systems) Equipped with Life Guard seals for longer seal life Cast iron housing with nylon impeller Liquid port sizes: 1–½" NPT inlet; 1–¾" NPT outlet Hydraulic motor: internal gear gerotor; max motor psi = 3000 Hydraulic ports: ½" NPT inlet, ¾" NPT outlet Hydraulic motor seal: double-lip Teflon Weight: 17.3kg Fitted to a number of OEM sprayers 	<ul style="list-style-type: none"> Max fluid temp: 60° C Max pressure: 9.7 Bar (140 psi) Max L/min flow: 530 Max hyd flow required: 60.5 L/min 356 L/min flow at 3.4 Bar pressure and 53 L/min hydraulic flow 	2,705.26	X
9303S-HM5C 	<ul style="list-style-type: none"> 9303S stainless steel series pedestal-mount centrifugal pump with hydraulic motor fitted (for open centre, closed centre and load-sensing systems) Equipped with Life Guard seals for longer seal life Stainless steel housing with polypropylene impeller Liquid port sizes: 1–½" NPT inlet; 1–¾" NPT outlet Hydraulic motor: internal gear gerotor; max motor psi = 3000 Hydraulic ports: ½" NPT inlet, ¾" NPT outlet Hydraulic motor seal: double-lip Teflon Weight: 11.8kg Preferred pump for many OEM sprayers 	<ul style="list-style-type: none"> Max fluid temp: 60° C Max pressure: 10 Bar (145 psi) Max L/min flow: 556 Max hyd flow required: 49.2 L/min 450 L/min flow at 4.1 Bar pressure and 56.8 L/min hydraulic flow 	3,666.26	X
9306C-HM5C-B 	<ul style="list-style-type: none"> 9306C series pedestal-mount centrifugal pump with hydraulic motor fitted (for open centre, closed centre and load-sensing systems) Equipped with Life Guard seals for longer seal life Cast iron housing with nylon impeller Liquid port sizes: 2" NPT inlet; 1–½" NPT outlet Hydraulic motor: internal gear gerotor; max motor psi = 3000 Hydraulic ports: ½" NPT inlet, ¾" NPT outlet Hydraulic motor seal: double-lip Teflon Weight: 15kg Fitted to a number of OEM sprayers Suits RG series RoGator sprayer models – replaces part number AC579304D1 	<ul style="list-style-type: none"> Max fluid temp: 60° C Max pressure: 9.6 Bar (140 psi) Max L/min flow: 803 Max hyd flow required: 64.4 L/min 803 L/min flow at 4.1 Bar pressure and 60.6 L/min hydraulic flow Internal threaded 	2,352.63	X
9306S-HM5C-3U 	<ul style="list-style-type: none"> 9360S series centrifugal pump with hydraulic motor fitted (for open centre, closed centre and load-sensing systems) Equipped with Life Guard seals for longer seal life Stainless steel housing with nylon impeller Liquid port sizes: 300 x 220 (3U) universal flange Hydraulic motor: internal gear gerotor; max motor psi = 3000 Hydraulic ports: ½" NPT inlet, ¾" NPT outlet Hydraulic motor seal: double-lip Teflon Weight: 15kg Fitted to a number of OEM sprayers 	<ul style="list-style-type: none"> Max fluid temp: 60° C Max pressure: 9.6 Bar (140 psi) Max L/min flow: 1181 Max hyd flow required: 64.4 L/min 1018 L/min flow at 3.4 Bar pressure and 60.6 L/min hydraulic flow 	4,315.78	X

HYPRO PUMPS

ORDER CODE	SPECIFICATIONS	OUTPUT AND INPUT INFORMATION	\$ (EX. GST)	PROD. CAT.
9306C-HM5C-3U	 <ul style="list-style-type: none"> 9306C series centrifugal pump with hydraulic motor fitted (for open centre, closed centre and load-sensing systems) Equipped with Life Guard seals for longer seal life Cast iron housing with nylon impeller Liquid port sizes: 300 x 220 (3U) universal flange Hydraulic motor: internal gear gerotor; max motor psi = 3000 Hydraulic ports: ½" NPT inlet, ¾" NPT outlet Hydraulic motor seal: double-lip Teflon Weight: 15kg Fitted to a number of OEM sprayers 	<ul style="list-style-type: none"> Max fluid temp: 60° C Max pressure: 9.6 Bar (140 psi) Max L/min flow: 1181 Max hyd flow required: 64.4 L/min 1018 L/min flow at 3.4 Bar pressure and 60.6 L/min hydraulic flow 	2,601.05	X
9316C3U-M10	 <ul style="list-style-type: none"> ForceField equipped upgrade option for 9306C-HM5C-3U pump 	<ul style="list-style-type: none"> Suits WEEDit Sprayers 	4,156.84	X
9306S-HM5C	 <ul style="list-style-type: none"> 9306S series pedestal-mount stainless steel centrifugal pump with hydraulic motor fitted (for open centre, closed centre and load-sensing systems) Equipped with Life Guard seals for longer seal life Stainless steel housing with polypropylene impeller Liquid port sizes: 2" NPT Inlet; 1-½" NPT outlet Hydraulic motor: internal gear gerotor; max motor psi = 3000 Hydraulic ports: ½" NPT inlet, ¾" NPT outlet Hydraulic motor seal: double-lip Teflon Weight: 15kg Fitted to a number of OEM sprayers Optional stainless steel pump for Croplands WEEDit 7000 litre sprayer (replaces cast iron 9306C-HM5C-BU – 2 pumps fitted standard) Suits RG series RoGator sprayer models as a stainless steel option – replaces part number AC579304D1 	<ul style="list-style-type: none"> Max fluid temp: 60° C Max pressure: 9.6 Bar (140 psi) Max L/min flow: 803 Max hyd flow required: 64.4 L/min 803 L/min flow at 4.1 Bar pressure and 60.6 L/min hydraulic flow 	4,531.57	X

POLY TRANSFER PUMPS

ORDER CODE	SPECIFICATIONS	OUTPUT AND INPUT INFORMATION	\$ (EX. GST)	PROD. CAT.
9342P-HM5C-5SP	 <ul style="list-style-type: none"> Poly transfer pump, 2" with hydraulic motor drive Polypropylene housing Suction lift 7.62 metres 5-vane impeller 2" NPT inlet and 2" NPT outlet ports Hydraulic ports: ½" NPT inlet, ¾" NPT outlet Optional for Croplands 4000 and 6000 litre WEEDit® sprayers as a filling pump 	<ul style="list-style-type: none"> Max pressure: 4 Bar (58 psi) Max L/min flow: 757 Max hyd flow required: 42 L/min 	1,780.00	X
9343P-GM10-SP	 <ul style="list-style-type: none"> Poly transfer pump, 3" with hydraulic motor drive Polypropylene housing Suction lift 7.62 metres Poly impeller with stainless steel insert 3" NPT inlet and 3" NPT outlet ports Hydraulic ports: ½" NPT inlet, ¾" NPT outlet Optional for Croplands RoGator sprayers as a filling pump 	<ul style="list-style-type: none"> Max pressure: 3 Bar (44 psi) Max L/min flow: 1730 Max hyd flow required: 60 L/min 	2,505.26	X

Hypro pumps are fitted standard to Croplands RoGator self-propelled sprayers. For information on which models suit the various models of RoGators, contact Croplands or your local Croplands self-propelled dealer.



SHURflo

The Croplands range of 12-volt pumps includes popular models from SHURflo – the leading supplier of diaphragm pumps for agriculture and turf applications. These 12-volt models are commonly used on spot sprayers and small multi-tip boom sprayers.

We have included two heavier duty pumps to accommodate the needs of customers using their pumps in more demanding conditions. The higher flow 5059 series allows for continuous spraying for small booms up to approximately 6 metres – ideal for use in RTV and ATV vehicles, the back of utility vehicles, and small trailed sprayers. This pump model will perform very well in these situations and would be an ideal replacement if you have had failures with your existing set-up in the past.

We also have the fin-cooled high flow SHU2088-313-145 pump. It can handle tough going and is already proving very popular in the hot climates of Northern Australia on planters and in small boom situations. For really tough conditions, consider this model.

PUMP MODEL	DESCRIPTION	MAX L/MIN (OPEN FLOW)	MAX PRESSURE PSI	MAX PRESSURE BAR	PORT SIZE	MAX AMPS	PRESSURE SWITCH	INTERNAL BYPASS	\$ (EX. GST)	PROD. CAT.
SHU8000-547-189	 <ul style="list-style-type: none"> • SHURflo 12-volt DC bypass diaphragm pump • Santoprene diaphragm; Viton valves • 12-volt sealed motor • Self-priming to 2.4 metres • Proven pump head design • Internal bypass for smooth flow operation • Ag-chemical resistant materials 	6.8	107	7.4	½"M	7.3	✓	✓	209.47	X
SHU2088-343-135	 <ul style="list-style-type: none"> • SHURflo 12-volt DC auto-demand diaphragm pump • Santoprene diaphragm; Viton valves • Self-priming to 3.7 metres • Can run dry without damage • Built in check valve • Ag-chemical resistant materials 	11.4	40	2.8	½"M	9.5	✓	×	388.42	X
SHU2088-313-544	 <ul style="list-style-type: none"> • SHURflo 12-volt DC bypass diaphragm pump • Santoprene diaphragm; Viton valves • 12-volt sealed motor • Self-priming to 2.4 metres • Proven pump head design • Internal bypass for smooth flow operation • Ag-chemical resistant materials 	15.1	45	2.5	½"M	13	✓	✓	242.85	X
SHU50593611D011	 <ul style="list-style-type: none"> • SHURflo 12-volt DC bypass diaphragm pump • Santoprene diaphragm; Viton valves • 12-volt sealed motor • Self-priming to 2.4 metres • Proven pump head design • Internal bypass for smooth flow-operation 	20.1	90	6.2	½"M	20.9	×	✓	609.47	X
SHU255-613	 <ul style="list-style-type: none"> • SHURflo bowl strainer • 50 mesh screen • ½" male inlet, ½" female outlet • Viton o-ring 								25.89	Y

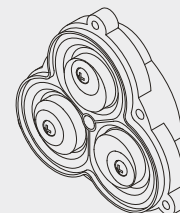
SHURFLO PUMP ACCESSORIES AND PARTS

ORDER CODE	DESCRIPTION
SHU234-2926	½" NPT – 14 female x 12mm (½") straight swivel barb (polypropylene)
SHU234-2916	½" NPT – 14 female x 10mm (⅜") straight swivel barb (polypropylene)
SHU244-5286	½" NPT – 14 male x ⅜" coupling/adaptor (polypropylene)
SHU234-3926	½" NPT – 14 female x 12mm (½") elbow swivel barb (polypropylene)
SHU234-3916	½" NPT – 14 female x 10mm (⅜") elbow swivel barb (polypropylene)
SHU234-KIT	2 of each part numbers SHU234-2926, SHU234-2916, SHU244-5286, SHU234-3926, SHU234-3916



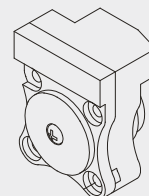
DIAPHRAGM/DRIVE ASSEMBLY KIT

PUMP MODEL	PART ORDER CODE
SHU8000-547-189	SHU94-385-32
SHU2088-343-135	SHU94-238-03
SHU5059-1311-D011	SHU94-910-04



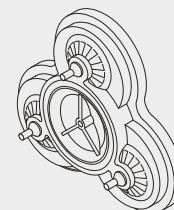
PRESSURE SWITCH KIT

PUMP MODEL	PART ORDER CODE
SHU8000-547-189	SHU94-229-08
SHU2088-343-135	SHU94-230-36
SHU5059-1311-D011	SHU94-910-02



VALVE ASSEMBLY KIT

PUMP MODEL	PART ORDER CODE
SHU8000-547-189	SHU94-391-46
SHU2088-343-135	SHU94-232-05
SHU5059-1311-D011	SHU94-910-05



CHECK VALVE KIT

PUMP MODEL	PART ORDER CODE
SHU8000-547-189	SHU94-374-08
SHU2088-343-135	SHU94-237-05
SHU5059-1311-D011	SHU94-910-03

SHURflo

TYPICAL SET UP OF SHURFLO PUMP



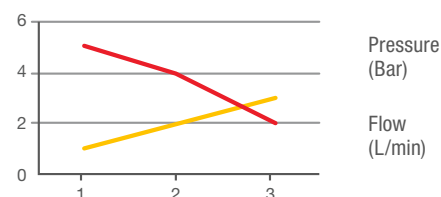
5059 series pumps fitted to Croplands UA300B/20S/4BX model (as pictured above).



FLOJET PUMPS

The FloJet range of 12-volt pumps is designed for small spot spraying and boom spraying operations. FloJet pumps perform well if used correctly and flushed out after use.

Note that FloJet pumps are rated for intermittent use. Also, all flow ratings in the information below are described as open-flow at zero pressure. The graph at right – for the FL3501-506 model – shows that when pressure is demanded from a FloJet pump, flow decreases. This should be taken into account when planning which pump is suitable for your application.



TRIPLEX AND PENTAFLEX MODELS

3501 Triplex Pump

FL3501-506

- Fully sealed motor for corrosion resistance
- Pressure switch for spot spraying and an internal bypass to ensure pump does not pulsate with small nozzle sizes
- Low pulsation and noise
- Superior pump head sealing
- Excellent priming
- Compact size
- 3/8" threaded ports for use with hositails or threaded nipples

Ideal for small boom or spot spraying and some other agricultural uses.



3521 Triplex Pump

FL3521-139

- Maximum flow of 15.1 L/min (open-flow)
- Internal bypass gives this model superior, smooth liquid delivery for multiple nozzles
- Plug-in bayonet connections (1/2") with quick release clips

Suited for small booms and high volume spot spraying. Triplex design makes it an excellent priming option.



PUMP MODEL	WITH PRESS. SWITCH	MAX L/MIN (OPEN FLOW)	VOLTS	MAX PRESS. (BAR)	INLET AND OUTLET	INTERNAL BYPASS	DIAPHRAGM MATERIAL	VALVE MATERIAL	AMPS	PUMP \$ (EX. GST)	PROD. CAT.
FL3501-506	Yes	7.8	12V DC	3.4	3/8" hosebarb	Yes	S	S	8	314.74	Y
FL3521-139	Yes	15.1	12V DC	4	Plug-in bayonet and 1/2" hosebarb	Yes	S	V	9	420.00	Y

Note: All FloJet diaphragm pumps are rated for intermittent use.

DIAPHRAGMS

PUMP MODEL	PART NO.
FL3501-506	FL20419-012
FL3521-139	FL20419-015

PRESSURE SWITCHES

PUMP MODEL	PART NO.
FL3811-133	FL02091-150
FL3501-506	FL02091-060
FL3521-139	FL02091-060

VALVES

PUMP MODEL	PART NO.
FL3811-133	FL20407-022
FL3501-506	FL20407-033
FL3521-139	FL20407-021



Diaphragm



Pressure switch



Valve

NEW

500 AND 300 FERTILISER AND SEED SPREADER



QUICK GUIDE

AGR-XT300C and AGR-XT500C include:

- » Spun steel hopper, epoxy coated for maximum corrosion resistance
- » Ideal for spreading in pastures, crops, turf areas and fields
- » Ruggedly built – made of STEEL
- » Sealed gearbox rated for the towing load
- » Stainless steel spinner and vanes fitted as standard equipment
- » Clevis hitch standard, ball-coupling optional at extra cost
- » Agitator optional at extra cost
- » AGR-XT300C
 - » Standard with easy to reach shutter control lever – ideal for use with your ATV 4-wheeler
 - » 250 litre capacity, maximum payload 300kg
 - » Dry weight: 111kg
- » AGR-XT500C
 - » Standard with remote-mount manual shutter control – perfect for use with your RTV
 - » 350 litre capacity, maximum payload 400kg
 - » Dry weight: 115kg



AGR-XT500C

DID YOU KNOW?

Croplands range of spreaders are fully tested using the industry standard salt-spray test to ensure corrosion resistance from new.

ACCESSORIES

MECHANICAL REMOTE CONTROL



AGR-COM1000V27

AGITATOR FOR USE WITH SOME FERTILISER PRODUCTS



AGR-PA251400

DOUBLE-SIDED CONVEYOR



Conveyor shown fitted to the XA500 spreader for illustration purposes only.

AGR-CON8000V02

ORDER CODE	DESCRIPTION	\$ (EX. GST)	PROD. CAT.
AGR-XT500C	350 litre trailed fertiliser spreader complete	3,156.84	W
AGR-XT300C	250 litre trailed fertiliser spreader complete	2,735.78	W
AGR-COM1000V27	Remote control for 350 litre 3-PTL linkage spreader	725.26	W
AGR-CON8000V02	Double-sided conveyor	831.57	W
AGR-PA251400	Agitator for hopper on 350 litre 3-PTL linkage spreader	104.21	W
AGR-XA500T	Hopper cover to suit XA500 spreader	209.47	W



TRAILED 150 FERTILISER AND SEED SPREADER

The AGR-SP150C trailed spreader has a 150 litre capacity hopper capable of carrying up to approximately 180kg of fertiliser, depending on the material you are spreading. This unit is ideal for small holdings, turf areas, sports grounds and lifestyle farms for use with a ride-on mower, ATV 4-wheel motorcycle or RTV vehicle. It is not suitable on hill country but ideal on flat or gently undulating areas. If kept clean, the 150 trailed spreader should give years of use.



AGR-SP150C

QUICK GUIDE

- » Spun steel hopper with epoxy coated hopper for excellent resistance to corrosion
- » Pressed, epoxy coated tubular frame for strength and long life
- » Aluminium-cased gearbox with sealed bearings
- » 15 x 6.00 pneumatic 2-ply turf tyres
- » Adjustable height drawbar with 5 height settings
- » 5-position adjustment for output utilising a simple lever and preset locking nut
- » Length = 1,520mm
- » Height = 1,110mm
- » Width = 830mm
- » Weight (empty) = 41kg
- » Max Load = 180kg

FERTILISER TYPE	TYPICAL SPEED RANGE (KM/HR)	APPROX SPREADING WIDTH* (METRES)
Coarse Grain Fertiliser	8-12	6-8
Medium Grain Fertiliser	8-12	5-7
Fine Grain Fertiliser	8-12	5-6
Medium Grain Crystalline Fertilisers	8-12	4-5
Ammonium Sulphate	8-12	6-8

DID YOU KNOW?

Croplands range of spreaders are fully tested using the industry standard salt-spray test to ensure corrosion resistance from new.

ACCESSORIES

MECHANICAL REMOTE CONTROL



AGR-COM1000V27

TRAILER HITCH COUPLING



AGR-10330001

AGITATOR



AGR-SPA001V30

ORDER CODE	DESCRIPTION	\$ (EX. GST)	PROD. CAT.
AGR-SP150C	150 litre trailed fertiliser spreader complete	1,421.05	W
AGR-COM1000V27	Remote control for 150 litre trailed spreader	725.26	W
AGR-SPA001V30	Agitator for hopper on 150 litre trailed spreader	104.21	W

3 POINT LINKAGE 500 FERTILISER AND SEED SPREADER



The AGR-XA500C 3-point linkage spreader utilises a PTO (power take-off) drive system via a driveshaft which is supplied with the spreader. This turns the stainless steel spinner for spreading fertiliser or seed. Ruggedly built with a spun-steel epoxy coated hopper, this unit is ideal for small tractors capable of carrying up to around 400kg on the linkage with a 540RPM PTO-spline drive to operate the spreader. This unit will be ideal for small farms, grasslands, cropping areas, turf areas and pasture. For row crops, there is an optional double sided conveyor available.



Croplands AGR-XA500C is fitted with a stainless steel spinner – as pictured right.

QUICK GUIDE

- » Spun steel hopper with epoxy coating for excellent resistance to corrosion
- » Pressed, epoxy coated tubular frame for strength and long life
- » Aluminium-cased gearbox with sealed bearings
- » Stainless steel spinner with adjustable stainless steel vanes
- » Filtering grid in the hopper
- » Optional articulated agitator, remote control, double sided conveyor and filtering grid for the hopper
- » Easy-to-reach 5-position adjustment for output utilising a simple lever and preset locking nut
- » Length = 1,230mm
- » Height = 1,140mm
- » Width = 1,190mm
- » Weight (empty) = 63.5kg
- » Max Load = 400kg
- » Capacity = 350 litres

FERTILISER TYPE	TYPICAL SPEED RANGE (KM/HR)	APPROX SPREADING WIDTH* (METRES)
Coarse Grain Fertiliser	4–16	15–18
Medium Grain Fertiliser	4–16	14–16
Fine Grain Fertiliser	4–16	10–12
Medium Grain Crystalline Fertilisers	4–16	6–8
Ammonium Sulphate	4–16	8–10

ACCESSORIES

MECHANICAL REMOTE CONTROL



AGR-COM1000V27

AGITATOR FOR USE WITH SOME FERTILISER PRODUCTS



AGR-PA251400

DOUBLE-SIDED CONVEYOR



Conveyor shown fitted to the XA500 spreader for illustration purposes only.

AGR-CON8000V02

ORDER CODE	DESCRIPTION	\$ (EX. GST)	PROD. CAT.
AGR-XA500C	350 litre 3-PTL linkage spreader	1,257.89	W
AGR-COM1000V27	Remote control for 350 litre 3-PTL linkage spreader	725.26	W
AGR-CON8000V02	Double-sided conveyor	831.57	W
AGR-PA251400	Agitator for hopper on 350 litre 3-PTL linkage spreader	104.21	W
AGR-XA500T	Hopper cover to suit XA500 spreader	209.47	W



TANK AND EQUIPMENT CLEANER, SPRAYSUITS AND GLOVES

ORDER CODE	DESCRIPTION	\$ (EX. GST)	PROD. CAT.
L-H9704	Spraymate tank and equipment cleaner, 600g	27.79	X
L-H230*	Disposable protective suit. Suitable for single or limited repeat use for protection against dust while mixing chemicals. Not rainfast. *Denotes size as follows: 1 = Medium; 2 = Large; 4 = XL; 5 = XXL	23.37	X
L-H700*	Nitrile protective spray gloves, 330mm. *Denotes size as follows: 3 = size 10; 5 = size 11	10.95	X
L-H710*	Nitrile protective spray gloves, long, 460mm. *Denotes size as follows: 2 = size 9; 3 = size 10; 4 = size 11	28.84	X

TANK CLEANER

- » Thoroughly clean your sprayer when changing from one pesticide to another with Spraymate™ tank and equipment cleaner
- » Powerful detergents remove residues from inaccessible areas in the tank and spray lines
- » It also removes rust and hard water scale and leaves a protective film to prevent corrosion during storage, prolonging the life of your sprayer



L-H9704

COVERALLS

- » Tyvek® Barrier Man Coveralls are disposable coveralls designed to protect workers from hazardous materials, or sensitive products and processes from contamination by people. Available in white, sizes medium to XXL
- » Please specify size



L-H230

GLOVES

- » Offers resistance to solvents and oils with good flexibility and dexterity. Excellent abrasion and puncture resistance
- » Sizes: 9–11. Please specify size





L-H700

RESPIRATORS AND PROTECTIVE MASKS

ORDER CODE	DESCRIPTION	\$ (EX. GST)	PROD. CAT.
L-H3016	K80-T9R respirator complete with helmet, blower unit and belt, single filter and 12-volt cable-charger for connection to a continuous 12-volt power source such as a tractor or vehicle. This unit will operate for approximately 30 minutes without the 12-volt power source from a small battery in the blower unit. Optional 240-volt charger available to charge the battery for 30 minutes of use if required as a stand-alone function. Designed to be continuously powered while in use. Agricultural use only	1,573.68	W
L-H3017	K80-T5 respirator complete with helmet, blower unit and belt, single filter and rechargeable battery pack – also carried on the belt. Designed to be charged overnight and powered by the battery pack during use. Approximately 6 hours operating time for 1 overnight charge. This will diminish as batteries degrade. For agricultural use only. Unit not pictured	1,573.68	W

KASCO FILTER GUIDE

ORDER CODE	DESCRIPTION	CLASS	COLOUR ON CARTRIDGE	PROTECTION AGAINST	\$ (EX. GST)	PROD. CAT.
KASCO-0601/19	ZA2P3 Filter	P3R		Particles, liquid and solid aerosols, organic vapours and gases	117.89	X
KASCO-0601/25	ZA2B2P3 Filter	A2P3R		Particles, liquid and solid aerosols, organic vapours and gases, inorganic vapours and gases. Suitable for HiCane use	117.89	X



L-H3300

Please note: once opened replace after 6 months



KASCO-0601/19



L-H3016

ORDER CODE	DESCRIPTION	\$ (EX. GST)	PROD. CAT.
L-H3300	SR100 silicone mask for superior face seal. Double anti-clog exhaust valves, filter not included	169.47	X
L-H3500	Particle filter P3 (210/310) particles, wet and dry dust, aerosols, mould, bacteria, viruses, smoke, mist and fumes	53.89	X
L-H3501	Pre-filter 221-1 (pack of 10)	15.47	X
L-H3502	Gas filter A1 (217) organic vapour such as solvents – regular capacity	65.26	X
L-H3503	Gas filter A2 (218) organic vapour such as solvents – high capacity	69.05	X
L-H3505	Gas filter ABEK1 (297) organic vapour such as solvents and inorganic vapour, acid gas and ammonia	77.37	X

ELECTRIC CONTROLS AND VALVES



ELECTRIC CONTROL MANIFOLDS AND SWITCHBOXES

ORDER CODE	DESCRIPTION	\$ (EX. GST)	PROD. CAT.
A871CCR005	Control manifold for auto-rate controllers, for pumps up to 180 L/min, manual PRV, electric bypass (7 sec), dump valve, 80-mesh flushing filter, ARAG Wolf flowmeter, mounting brackets (boom shut-off valves not included)	1,510.53	X
A873CCR002	Control manifold for auto-rate controllers, for pumps up to 280 L/min, manual PRV, electric bypass (7 sec), dump valve, 80-mesh flushing filter, ARAG Wolf flowmeter, mounting brackets (boom shut-off valves not included)	1,544.21	X
G8380C0002	Control manifold for auto rate controllers, for pumps up to 180 L/min, manual PRV, electric by pass (7 section), dump valve, 80-mesh flushing filter, Geoline flowmeter, mounting brackets. (Boom shut off valves not included)	1,516.84	X
G8376088	Control manifold for basic electric control systems. Max flow 180 L/min, 20 Bar rated. Kit includes manual PRV, Regulating valve, dump valve, pressure filter and 3 proportional electric boom shut-off valves	1,584.21	X
G8376077	Control manifold for basic electric control systems. Max flow 180 L/min, 20 Bar rated. Kit includes manual PRV, Regulating valve, dump valve, pressure filter and 5 proportional electric boom shut-off valves	2,090.53	X
A4628707	Highly accurate programmable flowmeter with LCD display and sapphire bearing paddle turbine. 40–800 L/min reading of actual flow, or you can view litres pumped. 2 separately resettable counters. 2 x AA batteries required. Will require T7 male fittings (A249177)	1,377.89	Y
G8406008	3 section electric switch box and tractor cables. Requires GC00900009 valve cable to connect control manifold. Suitable for G8376088 control manifold	385.26	X
GC00900009	3 section 5 metre valve cable. Requires G8406008 electric switch box. Suitable for G8376088 control manifold	195.68	U
G8406010	5 section electric switch box and tractor cables. Requires GC00900011 valve cable to connect control manifold. Suitable for G8376077 control manifold	437.89	X
GC00900011	5 section 5 metre valve cable. Requires G8406010 electric switch box. Suitable for G8376077 control manifold	235.47	U

CONTROL MANIFOLD COMPONENTS

Valves, filters and flowmeters to repair/update your control manifold.

PART REF	ORDER CODE	DESCRIPTION	MAX PRESS	MAX FLOW	PORTS/ BYPASS	\$ (EX. GST)	PROD. CAT.
1	A8710502	Dump valve/PRV/inlet assembly	20 Bar	180 L/min	32mm	474.74	X
2	A8630024S	Electric bypass valve, 7 second open/close	20 Bar	150 L/min	25mm	347.37	U
3	A32621135	80-mesh flushing filter with manifold flanges	20 Bar	150 L/min	40mm	132.84	V
4	A46264A0	Wolf Flow Meter 10/200L	20 Bar	200 L/min		689.47	Y
5	A8730001	Dump valve, hi-flow, 0.6 sec	20 Bar	120 L/min	32mm	526.11	U
6	A8730020S	Electric bypass valve, hi-flow, 7 second open/close	20 Bar	150 L/min	25mm	490.74	U
7	A465522	Manual PRV	20 Bar	200 L/min	32mm	157.89	X
8	A4626000.300	Sensor for Wolf Paddle Flow Meter	–	–	–	401.26	U
–	UP-402	Proximity sensor BA and HV4000	–	–	–	268.42	Y
9	A4626000.503	Paddle assembly for Wolf Flow Meter	–	–	–	256.54	U
10	G8370025	Manual main valve 3 wire				411.16	V
11	G8386006	Servo valve (7 section)				293.68	X
12	G8386004	Electric bypass valve, 28 second open/close				308.42	X
13	GS02000020	Flow sensor square wave				177.89	Y
14	GF01001000	Flow meter 10–100				552.63	Y
15	G8125013	Filter flange self clean				76.84	U



ELECTRIC AND MANUAL VALVE KITS

GEOLINE



G8372071
G8388002 G8388005

ARAG



A463051



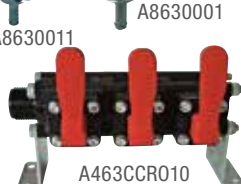
A463CCR009



A8630011



A8630001



A463CCR010



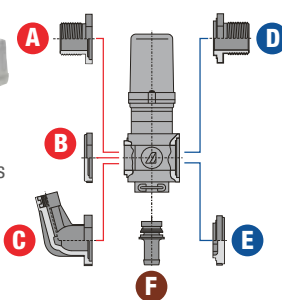
A863CCR006



A863CCR005



Valve mounting kits



Valve adaptors

VALVE MOUNTING KITS

To make up your own bank of 2-wire or 3-wire motor valves (see below for valve options), order the correct kit for bolts, nuts and O-rings as shown. For end-caps and inlet/outlet fittings, see the valve adaptors section below.

ORDER CODE	DESCRIPTION	\$ (EX. GST)	PROD. CAT.
A463000.920	Kit for 2 valves, 150mm	42.74	U
A463000.930	Kit for 3 valves, 207mm	48.84	U
A463000.940	Kit for 4 valves, 264mm	56.00	U
A463000.950	Kit for 5 valves, 321mm	64.84	U
A463000.970	Kit for 7 valves, 436mm	84.11	U

VALVE ADAPTORS

On the inlet and outlet of each motor valve there is a range of adaptors and fittings commonly used to go with the mounting kit (above). Use the valve adaptors diagram above to choose the adaptors/fittings you require.

ORDER CODE	DESCRIPTION	\$ (EX. GST)	PROD. CAT.
A463000.130	Male adaptor (A) 3/4" (BSP)	10.42	U
A463000.140	Male adaptor (A) 1" (BSP)	10.42	U
A463011.120	End cap (B)	3.16	U
A463011.130	Pressure gauge adaptor (C) 1/4" (BSP)	22.00	U
A463000.030	Male adaptor (D) 3/4" (BSP)	9.16	U
A463000.040	Male adaptor (D) 1" (BSP)	9.16	U
A463000.050	Male adaptor (D) 1 1/4" (BSP)	9.16	U
A463011.110	End cap (E)	4.42	U
A463001.113	Hosetail (F) 13mm	8.42	U
A463001.116	Hosetail (F) 16mm	8.42	U
A463001.119	Hosetail (F) 19mm	8.42	U
A463001.125M	Hosetail (F) 25mm	9.16	U
AG10071V	O-ring to suit 863 flanges (Viton)	7.63	U

ELECTRIC AND MANUAL VALVES

If you are updating your spraying control system, Croplands has a wide range of valves and valve kits to suit your application.

ORDER CODE	DESCRIPTION	\$ (EX. GST)	PROD. CAT.
A8630011	Single electric boom shut-off valve, 3-wire for use with auto-rate controllers or basic electric controls, with bypass (suitable for 2 and 3-wire applications)	483.16	U
A8630001	Single electric boom shut-off valve, 3-wire for use with auto-rate controllers or basic electric controls (suitable for 2 and 3-wire applications)	453.68	U
A8730001	Electric boom shut-off valve, high flow (120 L/min), 3-wire for use with auto-rate controllers	526.11	U
A863CCRO05	Electric valve bank, 3-section complete with flushing tap, gauge port and mounting brackets	1,269.47	X
A863CCRO06	Electric valve bank, 5-section complete with flushing tap, gauge port and mounting brackets	2,045.26	X
A463CCRO09	2-bank manual valves complete with mounting brackets, 20 Bar	188.42	U
A463CCRO10	3-bank manual valves complete with mounting brackets, 20 Bar	209.47	U
A463051	Manual shut-off valve, 13mm tail, 20 Bar	70.63	V
A463050	Blank ARAG valves	45.16	V
G8372071	Electric valve bank, 5 section complete with gauge port and mounting brackets.	1,341.05	X
G8531032	Electric valve bank, 3 section complete with gauge port and mounting brackets. (Not pictured)	801.05	X
G8388005	Single electric boom shut off valve, 3 wire for use with auto rate controllers or basic electric controls, with bypass. (Suitable for 2 and 3 wire applications)	237.89	X
G8388002	Single electric boom shut off valve, 3 wire for use with auto rate controllers or basic electric controls (suitable for 2 and 3 wire applications)	248.42	X

ELECTRIC CONTROL KITS

If you need to upgrade your sprayer to control your boom or air-assisted sprayer, Croplands has the right range of electric controls to suit all applications. Options include 20 Bar rated systems for broadacre and low pressure air-assisted sprayers and 40 Bar rated systems for high pressure sprayers.

Also fitted as options to Croplands Linkage sprayers – see page 19.



I-E2032



I-E2012

ELECTRIC CONTROL KITS UP TO 20 BAR PRESSURE

(To suit linkage and boom sprayers; low-pressure air sprayers)

ORDER CODE	DESCRIPTION	\$ (EX. GST)	PROD. CAT.
I-E2012	Entry level electric in-cab control with switchbox. One electric on/off valve shuts off the complete boom from the cab. 3 manual taps on the control manifold can be used for each boom section. A manual pressure regulator with gauge is supplied to allow working pressure to be set for the system	894.74	X
I-E2032	Electric in-cab controller with switchbox. 3-section electric valves for individual section shut off, electric pressure regulating valve and a master on/off can all be operated from the switchbox in the cab or vehicle. Requires a reliable 12-volt power supply	2,100.00	X
I-E2052	As above for 5-section control	2,847.36	X



I-S4021

ELECTRIC CONTROL KITS UP TO 40 BAR PRESSURE

(To suit high pressure orchard sprayers to 40 Bar)

ORDER CODE	DESCRIPTION	\$ (EX. GST)	PROD. CAT.
I-S4020	Electric in-cab controller with switchbox. 2-section high-pressure electric valves for individual left/right shut off and a master on/off can all be operated from the switchbox in the cab. Requires a reliable 12-volt power supply	1,678.95	X
I-S4021	Electric in-cab controller with switchbox. 2-section high-pressure electric valves for individual left/right shut off, electric pressure regulating valve and a master on/off can all be operated from the switchbox in the cab or vehicle. Requires a reliable 12-volt power supply	2,942.11	X



SPRAY MONITORS AND AUTO SPRAY-RATE CONTROLLERS

To know your application rate, a spray monitor is a useful option to see speed, flow rate and spray application rate. For fully automatic spray rate control, Croplands has a number of excellent options to choose from to help your farming enterprise become more efficient.



A4670610-HA



A4670610-SR100

SPRAY MONITORS

ORDER CODE	DESCRIPTION	\$ (EX. GST)	PROD. CAT.
A4670610-HA	The Visio Hectare meter is a handy viewer to hook up to a vehicle or tractor to measure area, distance and speed. Supplied in the kit is the Visio multi-function display, mounting bracket and a speed-sensor that will need to be mounted to read the rotation of a wheel or PTO shaft	716.84	K
A4670610-SR100	The Visio spray monitor comes in a kit to fit up to a boom or orchard sprayer to measure spray application rate, litres used, area, distance and speed. Supplied in the kit is the Visio multi-function display, mounting bracket, speed-sensor that will need to be mounted to read the rotation of a wheel or PTO shaft, a 5–100 L/min flowmeter and all necessary cables. The kit will require some extra fittings to fit to an existing sprayer – consult your Croplands Dealer or service agent	1,367.37	K
A4670610-SR200	As above but with a higher flow rated flowmeter (10–200 L/min)	1,367.37	K



BRAVO180-ARAG3



BA5000-GEO3



HV2400-BRAG2

AUTO SPRAY-RATE CONTROLLERS

ORDER CODE	DESCRIPTION	\$ (EX. GST)	PROD. CAT.
BA5000-GEO3	Croplands fully auto spray-rate controller for use on linkage sprayers. Optional as a fit-up to any new Croplands sprayer or as an upgrade to an existing sprayer. Features include: <ul style="list-style-type: none"> • Display of two functions on screen • Large back-lit display • Heavy duty switches • Up to 10 pre-set application rates • Fully programmable • Alarm settings and integrated diagnostics Kit includes: spray manifold with flowmeter, 3-section valve bank, looms, mount and operating instructions. The kit will require some extra fittings to fit to an existing sprayer – consult your Croplands Dealer or service agent Note: if you require a kit for a trailed broadacre sprayer, contact Croplands to ensure the correct length looms are supplied	3,994.74	K
BA5000-GEO5	As above but with 5 sections Note: if you require a kit for a trailed broadacre sprayer, contact Croplands to ensure the correct length looms are supplied	4,415.79	K
HV2400-BRAG2	Croplands fully auto spray-rate controller for use on horticultural sprayers. Has the same features as the BA5000 (specifications listed above) with the added option on Litres per 100 metres for application. Kit includes: spray manifold with flowmeter, 2-section high pressure valve bank, looms, mount and operating instructions. The kit will require some extra fittings to fit to an existing sprayer – consult your Croplands Dealer or service agent	4,789.47	K
HV2400-BRAG4	As above for horticulture but with 4 high pressure section valves	5,105.26	K
BRAVO180-ARAG3	ARAG Bravo180S fully auto spray-rate controller for use on linkage sprayers. Optional as a fit-up to any new Croplands sprayer or as an upgrade to an existing sprayer. Features include: <ul style="list-style-type: none"> • Display of two functions on screen • Large back-lit display • Heavy duty switches • Up to 10 pre-set application rates • Fully programmable • Visual and sound alarm settings • Programmable units of measure • GPS input for speed Kit includes: spray manifold with flowmeter, 3-section valve bank, looms, mount and operating instructions. The kit will require some extra fittings to fit to an existing sprayer – consult your Croplands Dealer or service agent Note: if you require a kit for a trailed broadacre sprayer, contact Croplands to ensure the correct length looms are supplied	5,578.95	K
BRAVO180-ARAG5	Same specifications as above with a 5-section valve bank	6,205.26	K

For more comprehensive information on auto-rate controllers, contact Croplands.

GPS GUIDANCE SYSTEMS



RV117-2295-001 – CR7



GD430-GLO-P-L – MATRIX 430



RXA-30

ORDER CODE	DESCRIPTION	\$ (EX. GST)	PROD. CAT.
GD430-GLO-P-L	Portable, simple guidance Matrix 430 system for use in agriculture. 110mm (4.3") full colour, high-contrast touch-screen with on-screen numerical prompts. Minimal set up needed – guidance options include straight A-B, curved A-B, circle pivot and last pass. Handy return-to-point and boundary functions standard. Area counter displays applied area during operation and elapsed time counter measures current job-time. Standard with patch antenna for use where satellite reception is good. Optional RXA-30 antenna (listed below)	2,831.58	W
RXA-30	Upgrade antenna for Matrix 430 to improve GPS reception in areas where signal is weak. Enhances performance of the Matrix 430	1,132.63	W
RV117-2295-001	Raven CR7 system with a 7" field computer with customisable in-job layouts, ISO universal terminal and task controller capabilities, optional external GPS, compatible with direct injection, multi-product control including variable rate liquid, dry, and NH3 applications, slingshot – ready for file transfer, remote support, and OTA software updates. Simple to set up and operate, you'll be running confidently in minutes	4,144.27	Y

TOOLS FOR ACCURATE SPRAYING

Croplands have a great range of extremely useful tools for checking or upgrading the performance of your sprayer. We provide advice and equipment to test and maintain your sprayer – to ensure your application is optimised. In the nozzle section to follow, on page 71 to 100, you will find some excellent information for determining your application options in broadacre and horticulture. Below you will find tools to make calibration and maintenance of your nozzles much easier.

ELECTRONIC SPRAY TIP PRESSURE TESTER

- » Can measure pressure in psi, kPa and Bar
- » Accurate to within +/- 1 psi, 0.07 Bar or 7kPa
- » 5 year battery life* (*depending on how much use)
- » Quick cap connector – easy fit up to the nozzle body
- » LCD display shows nozzle pressure and unit of measure
- » For test gauge use only – not for continuous use
- » Reads from 3 to 160 psi (11 Bar)
- » Absolutely foolproof



L-H9210

SPOT-ON CALIBRATOR

- » Waterproof design, no moving parts
- » Easy one-hand operation, electronic display
- » Reads in GPM or litres per minute
- » Accurate to 0.01 L/min
- » Battery life approx two years (has battery warning indicator)
- » Clear design allows for easy cleaning. Warning: only test your nozzles with water, not with mixed chemicals. Damage to the unit may occur



L-H9200

NOZZLE CLEANER AND NOZZLE CAP MULTI TOOL IN A HANDY PACK

- » Air-blast nozzle cleaner – simply charge it with air and it will blow out any grit or residue blocking your nozzle
- » Multi tool with brush, plastic pick for removing a pre-orifice or residue, spanner wrench to make undoing nozzles so much easier and a utility hook for removing nozzle filters and the like. A must for all farmers



L-H9220

WINDMATE™ HAND HELD WEATHER METER

- » Eight functions including temperature, wet bulb temperature, wind speed and direction, dewpoint, relative humidity, Delta T and comfort index. For more information see page 88 in the nozzle section
- » You simply cannot do without a WindMate™ to be sure you are spraying when conditions are right



L-H6001

ORDER CODE	DESCRIPTION	\$ (EX. GST)	PROD. CAT.
L-H9210	Electronic pressure testing gauge	310.53	X
L-H9220	Nozzle cleaner and nozzle multi tool kit	114.74	X
L-H9200	Spot-on nozzle calibrator	394.74	X
L-H6001	WindMate™ hand held weathermeter	301.79	X



NOZZLE SELECTION AND SPRAYING



Spraying is a job that most farmers and growers do on a regular basis – whether it is for pest or disease control, selective or broadcast weed control, fertiliser applications or soil additives.

The key aspects of this part of farming are covered in the following sections:

BROADACRE SECTION

SprayWise Stewardship Program	71
Nozzle – Cereal Segment Guide	72–73
Nozzle Application Chart	74–75
Spray Quality Comparison Chart	76–77
Agrotop Nozzle Selection	78
ALBUZ Nozzle Selection	79
Hypro Nozzle Selection	80
TeeJet Nozzle Selection	81
Nozzle Caps	82
Nozzle Bodies and Filters	83
Tips For Selecting Nozzles – Broadacre	84–89
Wide Angle Flat Spray Nozzle	90
Fertiliser Nozzles	90

HORTICULTURAL SECTION

Specialised Nozzles – Off-centre, TurfJet, BoomJet, FloodJet	91
Orchard and Vineyard Nozzle Selection Guide	92–94
Ceramic Cone Nozzles for Tree and Vine Crops	95
Nozzle Bodies and Caps for Horticulture	96
Turbodrop® Narrow Angle Air-Induction Nozzles	97
Ceramic Disc and Core Nozzles with Application Chart	98
Spray Coverage in Horticulture	99

SPRAYWISE STEWARDSHIP PROGRAM

This stewardship program is a Nufarm initiative to encourage best practise spraying and drift management techniques. Since its introduction, SprayWise has been instrumental in raising awareness amongst the farming community about important spray application parameters. SprayWise consolidates various tools, research results and training courses into one program to assist farmers better manage their spraying activities.



AVAILABLE NOW – SPRAYWISE BROADACRE APPLICATION HANDBOOK

Used widely by most specialist application consultants and supplied with all Croplands Broadacre sprayers.

ORDER CODE	DESCRIPTION	\$ (EX. GST)	PROD. CAT.
SPRAYWISEBK	SprayWise Broadacre Application Handbook	22.73	W
SPRAYWISELOG	SprayWise Logbook	31.82	W
SPRAYWISEHK	SprayWise Horticulture Application Handbook	23.64	W



SprayWise Broadacre Application Handbook



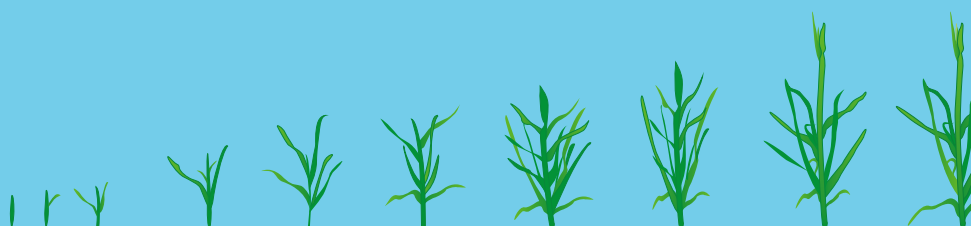
SprayWise Logbook



SprayWise Horticulture Application Handbook

NOZZLE – CEREAL SEGMENT GUIDE

PRODUCT RECOMMENDATION FOR
CEREAL CROPPING PROGRAM.



Growth Stage

Pre-plant

Emergence













Tillering

Stem Elongation

Pre-emergent Nozzles

Pre-orifice Nozzles

Low Pressure Air-induction Nozzles

Pre-emergent Nozzles		Pre-orifice Nozzles		Low Pressure Air-induction Nozzles	
TURBODROP XL (D)	TTI TURBO TEEJET INDUCTION FLAT FAN TIP	GAT	ALBUZ ADI	TDAM	CVI
					
PRESSURE RANGE  1-8 BAR	PRESSURE RANGE  1-7 BAR	PRESSURE RANGE  2-6 BAR	PRESSURE RANGE  2-4 BAR	PRESSURE RANGE  1-7 BAR	PRESSURE RANGE  1-4 BAR
<ul style="list-style-type: none"> • Ideal pressure range: 2-4 Bar • Uses: weed control, plant health and liquid fertilisers • Up to 90% drift reduction 	<ul style="list-style-type: none"> • Ideal pressure range: 3-4 Bar • Uses: weed control and plant health, both contact and systemic 	<ul style="list-style-type: none"> • Ideal pressure range: 2-3 Bar 	<ul style="list-style-type: none"> • Ideal pressure range: 2-3 Bar • Uses: weed control and plant health 	<ul style="list-style-type: none"> • Ideal pressure range: 3-4 Bar • Uses: weed control and plant health 	<ul style="list-style-type: none"> • Ideal pressure range: 1.5-3 Bar • Uses: weed control and plant health
<ul style="list-style-type: none"> ✓ Variable droplet spectra from coarse to fine as pressure increases ✓ Excellent drift reduction at lower pressures ✓ Two-piece for easy disassembly ✓ Fast cap fitting 	<ul style="list-style-type: none"> ✓ Standard in Polymer ✓ High-pressure air-induction nozzle ✓ Two-piece with pre-orifice 	<ul style="list-style-type: none"> ✓ Two 110° air-induction flat fan nozzles directed at 30°, one forward one back ✓ Improves coverage on upright targets and soil clods ✓ New style fast-cap that suits Hypro, Arag and TeeJet nozzle holders 	<ul style="list-style-type: none"> ✓ Pink ceramic orifice for excellent wear and spray precision ✓ Compact design, easy to dismantle and clean ✓ Excellent coverage potential for selected use and the right spraying conditions 	<ul style="list-style-type: none"> ✓ Excellent value, proven performer ✓ Predominantly coarse-medium droplets for good coverage ✓ Compact design ✓ Protected air inlets to avoid blockage ✓ Two-piece for easy cleaning, no seals ✓ Also available as an off-centre nozzle 	<ul style="list-style-type: none"> ✓ Pink ceramic orifice for long life and precise spray quality ✓ Predominantly Very Coarse to Coarse ✓ Available in 80° and 110° ✓ Anti-clogging design and protected double air-intake orifice ✓ Compact design ✓ Also available as an off-centre nozzle





Heading

Ripening

Harvest

Fallow

Fungicide Nozzles

Pre-emergent Nozzles

CVI – TWIN

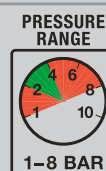


- Ideal pressure range: 2 Bar
- Uses: contact and systemic products

- ✓ Pink ceramic orifice for long life and precise spray quality
- ✓ The inclination of the jets improves the penetration into the vegetation
- ✓ Air-induction nozzle
- ✓ Angle between the jets 65°

See pages 82–85 for spray quality data, flow rates and caps

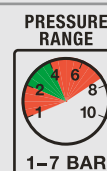
TURBODROP XL (D)



- Ideal pressure range: 2–4 Bar
- Uses: weed control, plant health and liquid fertilisers
- Up to 90% drift reduction

- ✓ Variable droplet spectra from coarse to fine as pressure increases
- ✓ Excellent drift reduction at lower pressures
- ✓ Two-piece for easy disassembly
- ✓ Fast cap fitting

TTI TURBO TEEJET INDUCTION FLAT FAN TIP



- Ideal pressure range: 3–4 Bar
- Uses: weed control and plant health, both contact and systemic

- ✓ Standard in Polymer
- ✓ High-pressure air-induction nozzle
- ✓ Two-piece with pre-orifice

NOZZLE SELECTION AND SPRAYING

MODEL	NOZZLE SIZE	BAR	DUAL ANGLE NOZZLES		LOW PRESSURE AIR-INDUCTION				
			ALBUZ	HYPRO	AGROTOP	ALBUZ	HYPRO	HYPRO	TEEJET
			CVI-TWIN	Guardian Air Twin	AirMix®	CVI	Guardian Air	ULD-120	AIXR
									
01	1.5				M				
	2.0				M				
	3.0				F				
	4.0		Not available in this size	Not available in this size	F	Not available in this size	Not available in this size	Not available in this size	Not available in this size
	5.0				F				
	6.0								
	7.0								
	8.0								
015	1.5		VC			VC	UC	UC	VC
	2.0		VC		XC	VC	XC	XC	C
	3.0		VC		C	VC	C	VC	C
	4.0			Not available in this size	C		M	C	M
	5.0				C		M	C	M
	6.0				C		M	M	M
	7.0				M		M	M	
	8.0						M		
02	1.5		VC			VC	XC	UC	VC
	2.0		VC	C	C	VC	VC	XC	VC
	3.0		C	M	C	C	M	C	C
	4.0			M	M		M	C	M
	5.0			M	M		M	M	M
	6.0			M	M		M	M	M
	7.0			F			M		
	8.0			F			M		
025	1.5		VC			VC	XC	XC	XC
	2.0		VC	UC	VC	VC	VC	XC	VC
	3.0		C	VC	C	C	C	C	VC
	4.0			M	C		M	C	C
	5.0			M	M		M	M	C
	6.0			M	M		M	M	M
	7.0			M			M		
	8.0			M			M		
03	1.5		VC			VC	UC	XC	XC
	2.0		VC	VC	VC	VC	XC	XC	VC
	3.0		C	C	C	C	VC	C	VC
	4.0			M	C		C	C	C
	5.0			M	C		M	M	C
	6.0			M	M		M	M	M
	7.0			M			M		
	8.0			M			M		
04	1.5		VC			VC	XC	UC	XC
	2.0		C	VC	VC	C	VC	UC	XC
	3.0		C	C	C	C	C	UC	VC
	4.0			M	C		M	XC	VC
	5.0			M	C		M	XC	C
	6.0			M	M		M	VC	C
	7.0			M			M	C	
	8.0			M			C		
05	1.5		VC			VC	XC	UC	XC
	2.0		C		VC	C	VC	UC	XC
	3.0		C		C	C	C	XC	VC
	4.0			Not available in this size	C		C	XC	VC
	5.0				M		C	VC	C
	6.0				M		M	VC	C
	7.0						M	C	
	8.0						C		

NOTE: SPRAY QUALITY DATA may appear finer than previous versions of this chart as manufacturers undertake new testing requirements. All data has been sourced from the manufacturer's websites as at May 2017 (date catalogue sourced from was published is listed in the chart), except for Agrotop TurboDrop TD (iso exit) and AirMix® which were sourced from Nufarm SprayWise Publications, published 2012. ? = data not published. Always check current spray quality information according to ASABE 572.1 or BCPC for older data. Compiled and updated by bill.gordon@au.nufarm.com 0418 794 514



MODEL	NOZZLE SIZE	BAR	HIGH PRESSURE AIR-INDUCTION					PRE-ORIFICE		INCLINED FLAT FAN
			ALBUZ	AGROTOP	AGROTOP	TEEJET	TEEJET	ALBUZ	TEEJET	HYPRO
			AVI	TD-XL D	TurboDrop TD	TTI	AITTJ60 TwinJet	ADI-110	DG-110	FC-3D100
										
01	1.5									
	2.0							M		
	3.0	VC						M		
	4.0	C	Not available in this size	Data not available	Not available in this size	Not available in this size		F	Not available in this size	Not available in this size
	5.0	C								
	6.0	C								
	7.0	C								
	8.0	C								
015	1.5					UC				C
	2.0					UC		M	M	M
	3.0	VC				UC		M	F	M
	4.0	C	Not available in this size	C		XC	Not available in this size	M	F	F
	5.0	C		C		XC				F
	6.0	C		C		XC				F
	7.0	C		C		VC				F
	8.0	C		C						
02	1.5			UC		UC	XC			C
	2.0			UC		UC	VC	M	M	M
	3.0	VC		XC		UC	C	M	M	M
	4.0	C		XC	C	UC	C	M	M	F
	5.0	C		XC	C	XC	M			F
	6.0	C		VC	C	XC	M			F
	7.0	C			C	VC	M			F
	8.0	C			C					
025	1.5			UC		UC	XC			C
	2.0			UC		UC	VC	M		C
	3.0	VC		XC		UC	C	M		M
	4.0	C		XC	VC	UC	C		Not available in this size	M
	5.0	C		XC	VC	XC	M			M
	6.0	C		VC	VC	XC	M			F
	7.0	C			VC	XC	M			F
	8.0	C			VC					
03	1.5			UC		UC	UC			VC
	2.0			UC		UC	XC	C	C	C
	3.0	XC		UC		UC	VC	M	M	M
	4.0	VC		XC	VC	UC	C	M	M	M
	5.0	C		XC	C	UC	C			M
	6.0	C		XC	C	XC	M			F
	7.0	C			C	XC	M			F
	8.0	C			C					
04	1.5			UC		UC	UC			VC
	2.0			UC		UC	XC	VC	C	VC
	3.0	XC		UC		UC	VC	C	M	C
	4.0	VC		XC	VC	UC	C	M	M	M
	5.0	VC		XC	VC	XC	C			M
	6.0	VC		XC	VC	XC	M			M
	7.0	VC			C	XC	M			M
	8.0	VC			C					
05	1.5			UC		UC	UC			VC
	2.0			UC		UC	XC		C	VC
	3.0	XC		UC		UC	VC		C	C
	4.0	XC		UC		UC	VC		M	C
	5.0	VC		UC	Data not available	UC	C	Data not available		M
	6.0	VC		XC		XC	M			M
	7.0	VC				XC	M			M
	8.0									





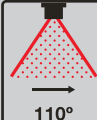
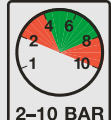
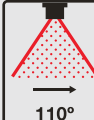

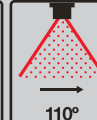
NOTE: SPRAY QUALITY DATA may appear finer than previous versions of this chart as manufacturers undertake new testing requirements. All data has been sourced from the manufacturer's websites as at May 2017 (date catalogue sourced from was published is listed in the chart), except for Agrotop TurboDrop TD (iso exit) and AirMix® which were sourced from Nufarm SprayWise Publications, published 2012. ? = data not published. Always check current spray quality information according to ASABE 572.1 or BCPC for older data. Compiled and updated by bill.gordon@au.nufarm.com 0418 794 514

		L/HA AT VARIOUS SPEEDS (KM/HR) BASED ON A 50CM NOZZLE SPACING														
		BAR	L/min/nozzle	4	6	8	10	11	12	13	14	15	16	17	18	19
NOTE: COLOUR CODING FOR NOZZLE SIZES ARE NOT RELATED TO COLOUR CODING FOR SPRAY QUALITIES	01 Orange	1.5	0.28	84	56	42	33	30	28	26	24	22	21	20	19	18
		2.0	0.32	97	64	48	39	35	32	30	28	26	24	23	21	20
		3.0	0.40	119	79	59	47	43	40	36	34	32	30	28	26	25
		4.0	0.46	137	91	68	55	50	46	42	39	36	34	32	30	29
		5.0	0.51	153	102	77	61	56	51	47	44	41	38	36	34	32
		6.0	0.56	167	112	84	67	61	56	52	48	45	42	39	37	35
		7.0	0.60	181	121	90	72	66	60	56	52	48	45	43	40	38
		8.0	0.65	194	129	97	77	70	65	60	55	52	48	46	43	41
	015 Green	1.5	0.42	126	84	63	50	46	42	39	36	34	32	30	28	27
		2.0	0.48	145	97	72	58	53	48	45	41	39	36	34	32	31
		3.0	0.59	178	118	89	71	65	59	55	51	47	44	42	39	37
		4.0	0.68	205	137	103	82	75	68	63	59	55	51	48	46	43
		5.0	0.76	229	153	115	92	83	76	71	65	61	57	54	51	48
		6.0	0.84	251	167	126	100	91	84	77	72	67	63	59	56	53
		7.0	0.91	272	181	136	109	99	91	84	78	72	68	64	60	57
		8.0	0.96	287	191	144	115	104	96	88	82	77	72	68	64	60
	02 Yellow	1.5	0.56	167	112	84	67	61	56	52	48	45	42	39	37	35
		2.0	0.65	194	129	97	77	70	65	60	55	52	48	46	43	41
		3.0	0.79	237	158	119	95	86	79	73	68	63	59	56	53	50
		4.0	0.91	274	182	137	109	100	91	84	78	73	68	64	61	58
		5.0	1.02	306	204	153	122	111	102	94	87	82	76	72	68	64
		6.0	1.12	335	223	168	134	122	112	103	96	89	84	79	74	71
		7.0	1.21	362	241	181	145	132	121	111	103	96	90	85	80	76
		8.0	1.29	387	258	193	155	141	129	119	110	103	97	91	86	81
	025 Lilac	1.5	0.70	209	140	105	84	76	70	64	60	56	52	49	47	44
		2.0	0.81	242	161	121	97	88	81	74	69	64	60	57	54	51
		3.0	0.99	296	197	148	118	108	99	91	85	79	74	70	66	62
		4.0	1.14	342	228	171	137	124	114	105	98	91	86	80	76	72
		5.0	1.27	382	255	191	153	139	127	118	109	102	96	90	85	80
		6.0	1.40	419	279	209	168	152	140	129	120	112	105	99	93	88
		7.0	1.51	452	302	226	181	165	151	139	129	121	113	106	101	95
		8.0	1.61	484	322	242	193	176	161	149	138	129	121	114	107	102
	03 Blue	1.5	0.84	251	167	126	100	91	84	77	72	67	63	59	56	53
		2.0	0.97	290	193	145	116	105	97	89	83	77	73	68	64	61
		3.0	1.18	355	237	178	142	129	118	109	101	95	89	84	79	75
		4.0	1.37	410	273	205	164	149	137	126	117	109	103	96	91	86
		5.0	1.53	459	306	229	183	167	153	141	131	122	115	108	102	97
		6.0	1.68	503	335	251	201	183	168	155	144	134	126	118	112	106
		7.0	1.81	543	362	271	217	197	181	167	155	145	136	128	121	114
		8.0	1.93	580	387	290	232	211	193	179	166	155	145	137	129	122
	04 Red	1.5	1.12	335	223	168	134	122	112	103	96	89	84	79	74	71
		2.0	1.29	387	258	193	155	141	129	119	110	103	97	91	86	81
		3.0	1.58	474	316	237	189	172	158	146	135	126	118	111	105	100
		4.0	1.82	547	365	273	219	199	182	168	156	146	137	129	122	115
		5.0	2.04	612	408	306	245	222	204	188	175	163	153	144	136	129
		6.0	2.23	670	447	335	268	244	223	206	191	179	167	158	149	141
		7.0	2.41	724	482	362	289	263	241	223	207	193	181	170	161	152
		8.0	2.58	774	516	387	309	281	258	238	221	206	193	182	172	163
	05 Brown	1.5	1.40	419	279	209	168	152	140	129	120	112	105	99	93	88
		2.0	1.61	484	322	242	193	176	161	149	138	129	121	114	107	102
		3.0	1.97	592	395	296	237	215	197	182	169	158	148	139	132	125
		4.0	2.28	684	456	342	273	249	228	210	195	182	171	161	152	144
		5.0	2.55	764	510	382	306	278	255	235	218	204	191	180	170	161
		6.0	2.79	837	558	419	335	304	279	258	239	223	209	197	186	176
		7.0	3.02	905	603	452	362	329	302	278	258	241	226	213	201	190
		8.0	3.22	967	645	483	387	352	322	298	276	258	242	228	215	204







		L/HA AT VARIOUS SPEEDS (KM/HR) BASED ON A 50CM NOZZLE SPACING																	
		BAR	L/min/nozzle	20	21	22	23	24	25	26	27	28	29	30	32	34	36	38	40
NOTE: COLOUR CODING FOR NOZZLE SIZES ARE NOT RELATED TO COLOUR CODING FOR SPRAY QUALITIES	01 Orange	1.5	0.28	17	16	15	15	14	13	13	12	12	12	11	10	10	9	9	8
		2.0	0.32	19	18	18	17	16	15	15	14	14	13	13	12	11	11	10	10
		3.0	0.40	24	23	22	21	20	19	18	18	17	16	16	15	14	13	12	12
		4.0	0.46	27	26	25	24	23	22	21	20	20	19	18	17	16	15	14	14
		5.0	0.51	31	29	28	27	26	24	24	23	22	21	20	19	18	17	16	15
		6.0	0.56	33	32	30	29	28	27	26	25	24	23	22	21	20	19	18	17
		7.0	0.60	36	34	33	31	30	29	28	27	26	25	24	23	21	20	19	18
		8.0	0.65	39	37	35	34	32	31	30	29	28	27	26	24	23	22	20	19
	015 Green	1.5	0.42	25	24	23	22	21	20	19	19	18	17	17	16	15	14	13	13
		2.0	0.48	29	28	26	25	24	23	22	21	21	20	19	18	17	16	15	14
		3.0	0.59	36	34	32	31	30	28	27	26	25	24	24	22	21	20	19	18
		4.0	0.68	41	39	37	36	34	33	32	30	29	28	27	26	24	23	22	21
		5.0	0.76	46	44	42	40	38	37	35	34	33	32	31	29	27	25	24	23
		6.0	0.84	50	48	46	44	42	40	39	37	36	35	33	31	30	28	26	25
		7.0	0.91	54	52	49	47	45	43	42	40	39	37	36	34	32	30	29	27
		8.0	0.96	57	55	52	50	48	46	44	43	41	40	38	36	34	32	30	29
	02 Yellow	1.5	0.56	33	32	30	29	28	27	26	25	24	23	22	21	20	19	18	17
		2.0	0.65	39	37	35	34	32	31	30	29	28	27	26	24	23	22	20	19
		3.0	0.79	47	45	43	41	40	38	36	35	34	33	32	30	28	26	25	24
		4.0	0.91	55	52	50	48	46	44	42	41	39	38	36	34	32	30	29	27
		5.0	1.02	61	58	56	53	51	49	47	45	44	42	41	38	36	34	32	31
		6.0	1.12	67	64	61	58	56	54	52	50	48	46	45	42	39	37	35	34
		7.0	1.21	72	69	66	63	60	58	56	54	52	50	48	45	43	40	38	36
		8.0	1.29	77	74	70	67	64	62	59	57	55	53	52	48	45	43	41	39
	025 Lilac	1.5	0.70	42	40	38	36	35	34	32	31	30	29	28	26	25	23	22	21
		2.0	0.81	48	46	44	42	40	39	37	36	35	33	32	30	28	27	25	24
		3.0	0.99	59	56	54	51	49	47	46	44	42	41	39	37	35	33	31	30
		4.0	1.14	68	65	62	59	57	55	53	51	49	47	46	43	40	38	36	34
		5.0	1.27	76	73	69	66	64	61	59	57	55	53	51	48	45	42	40	38
		6.0	1.40	84	80	76	73	70	67	64	62	60	58	56	52	49	47	44	42
		7.0	1.51	90	86	82	79	75	72	70	67	65	62	60	57	53	50	48	45
		8.0	1.61	97	92	88	84	81	77	74	72	69	67	64	60	57	54	51	48
	03 Blue	1.5	0.84	50	48	46	44	42	40	39	37	36	35	33	31	30	28	26	25
		2.0	0.97	58	55	53	50	48	46	45	43	41	40	39	36	34	32	31	29
		3.0	1.18	71	68	65	62	59	57	55	53	51	49	47	44	42	39	37	36
		4.0	1.37	82	78	75	71	68	66	63	61	59	57	55	51	48	46	43	41
		5.0	1.53	92	87	83	80	76	73	71	68	66	63	61	57	54	51	48	46
		6.0	1.68	101	96	91	87	84	80	77	74	72	69	67	63	59	56	53	50
		7.0	1.81	109	103	99	94	90	87	83	80	78	75	72	68	64	60	57	54
		8.0	1.93	116	111	105	101	97	93	89	86	83	80	77	73	68	64	61	58
	04 Red	1.5	1.12	67	64	61	58	56	54	52	50	48	46	45	42	39	37	35	34
		2.0	1.29	77	74	70	67	64	62	59	57	55	53	52	48	45	43	41	39
		3.0	1.58	95	90	86	82	79	76	73	70	68	65	63	59	56	53	50	47
		4.0	1.82	109	104	99	95	91	88	84	81	78	75	73	68	64	61	58	55
		5.0	2.04	122	117	111	106	102	98	94	91	87	84	82	76	72	68	64	61
		6.0	2.23	134	128	122	117	112	107	103	99	96	92	89	84	79	74	71	67
		7.0	2.41	145	138	132	126	121	116	111	107	103	100	96	90	85	80	76	72
		8.0	2.58	155	147	141	135	129	124	119	115	111	107	103	97	91	86	81	77
	05 Brown	1.5	1.40	84	80	76	73	70	67	64	62	60	58	56	52	49	47	44	42
		2.0	1.61	97	92	88	84	81	77	74	72	69	67	64	60	57	54	51	48
		3.0	1.97	118	113	108	103	99	95	91	88	85	82	79	74	70	66	62	59
		4.0	2.28	137	130	124	119	114	109	105	101	98	94	91	85	80	76	72	68
		5.0	2.55	153	146	139	133	127	122	118	113	109	105	102	96	90	85	80	76
		6.0	2.79	167	159	152	146	140	134	129	124	120	115	112	105	99	93	88	84
		7.0	3.02	181	172	164	157	151	145	139	134	129	125	121	113	106	101	95	90
		8.0	3.22	193	184	176	168	161	155	149	143	138	133	129	121	114	107	102	97

AGROTOP NOZZLE SELECTION





LOW PRESSURE AIR-INDUCTION NOZZLES		LOW PRESSURE NOZZLES	
AIRMIX®		TURBODROP CERAMIC	TURBODROP XL (D)
NOZZLE OPTIONS	<div><div>NO. 1 SELLER</div></div>		
KEY INFORMATION	<div><div><div>PRESSURE RANGE</div></div><div><div>SPRAY PATTERN</div></div></div> <div><ul style="list-style-type: none">• Ideal pressure range: 1–6 Bar• Uses: weed control and plant health• Up to 90% drift reduction</div>	<div><div><div>PRESSURE RANGE</div></div><div><div>SPRAY PATTERN</div></div></div> <div><ul style="list-style-type: none">• Ideal pressure range: 4–8 Bar• Uses: weed control, plant health and liquid fertilisers• Up to 95% drift reduction</div>	<div><div><div>PRESSURE RANGE</div></div><div><div>SPRAY PATTERN</div></div></div> <div><ul style="list-style-type: none">• Ideal pressure range: 2–4 Bar• Uses: weed control, plant health and liquid fertilisers• Up to 90% drift reduction</div>
KEY BENEFITS	<div><ul style="list-style-type: none">✓ Excellent value✓ Proven performer✓ Predominantly Coarse-Medium droplets for good coverage✓ Compact design✓ Protected air inlets to avoid blockage✓ Two-piece for easy cleaning, no seals✓ Also available as an off-centre nozzle</div>	<div><ul style="list-style-type: none">✓ Ceramic injector orifice and exit nozzle✓ Small droplet size variation over pressure range✓ Up to three times the life of polyacetal nozzles✓ Two-piece for easy disassembly✓ Excellent penetration using high pressure</div>	<div><ul style="list-style-type: none">✓ Variable droplet spectra from coarse to fine as pressure increases✓ Excellent drift reduction at lower pressures✓ Two-piece for easy disassembly</div>
SPRAY QUALITY	See pages 76–77		
AVAILABLE SIZES	01 to 06	01 to 10	01 to 08
ORDER CODE	TDAM-110***	TDCFFC1100***	TD-XLD***
*** Denotes nozzle size (i.e. 015, 02, 025, 03 etc)			
SINGLE NOZZLE PRICE	\$ (EX. GST) 12.58	\$ (EX. GST) 27.26	\$ (EX. GST) 23.75
PROD. CAT.	Z	Y	Y
10 PACK AirMix® nozzles – sizes 015 to 04	\$ (EX. GST) 115.79	NA	NA
ORDER CODE	PR**-TDAM		
** Denotes size: 10 = 015, 11 = 02, 12 = 03, 13 = 04, 14 = 025			
100 PACK AirMix® nozzles – sizes 015 to 04	\$ (EX. GST) 1105.26		
ORDER CODE	PR**-TDAM100		
** Denotes size: 10 = 015, 11 = 02, 12 = 03, 13 = 04, 14 = 025			



ALBUZ NOZZLE SELECTION

	LOW PRESSURE AIR-INDUCTION NOZZLES	LOW PRESSURE NOZZLES	PRE-ORIFICE NOZZLE	DUAL ANGLE NOZZLE
	CVI	AVI	ADI	CVI-TWIN
NOZZLE OPTIONS				
KEY INFORMATION	<p>PRESSURE RANGE 1-4 BAR</p> <p>SPRAY PATTERN 80° & 110°</p> <ul style="list-style-type: none"> • Ideal pressure range: 1.5-3 Bar • Uses: weed control and plant health • Up to 90% drift reduction 	<p>PRESSURE RANGE 3-5 BAR</p> <p>SPRAY PATTERN 80° & 110°</p> <ul style="list-style-type: none"> • Ideal pressure range: 3-3.5 Bar • Uses: weed control, plant health and liquid fertilisers • Up to 95% drift reduction 	<p>PRESSURE RANGE 2-4 BAR</p> <p>SPRAY PATTERN 110°</p> <ul style="list-style-type: none"> • Ideal pressure range: 2-3 Bar • Uses: weed control and plant health • Reduces fine droplets by 50% 	<p>PRESSURE RANGE 1-4 BAR</p> <p>SPRAY PATTERN 110°</p> <ul style="list-style-type: none"> • Ideal pressure range: 2 Bar • Uses: contact and systemic products
KEY BENEFITS	<ul style="list-style-type: none"> ✓ Pink ceramic orifice for long life and precise spray quality ✓ Predominantly Very Coarse to Coarse ✓ Available in 80° and 110° ✓ Anti-clogging design and protected double air-intake orifice ✓ Compact design ✓ Also available as an off-centre nozzle 	<ul style="list-style-type: none"> ✓ Pink ceramic orifice for excellent wear and spray precision ✓ Anti-clogging design and double air-intake orifice ✓ Available in 80° and 110° ✓ Also available as an off-centre nozzle and as a twin nozzle 	<ul style="list-style-type: none"> ✓ Pink ceramic orifice for excellent wear and spray precision ✓ Compact design, easy to dismantle and clean ✓ Excellent coverage potential for selected use and the right spraying conditions 	<ul style="list-style-type: none"> ✓ Pink ceramic orifice for long life and precise spray quality ✓ The inclination of the jets improves the penetration into the vegetation ✓ Air-induction nozzle ✓ Angle between the jets 65°
SPRAY QUALITY	See pages 76-77			
AVAILABLE SIZES	015 to 05	01 to 10	01 to 04	015 to 05
ORDER CODE	AZ-CVI-110*** (110°) AZ-CVI-80*** (80°)	AZ-AVI-***-110C (110°) AZ-AVI-***-80C (80°)	AZ-ADI-***-110C	AZ-CVIT-110***
*** Denotes nozzle size (i.e. 015, 02, 025, 03 etc)				
SINGLE NOZZLE PRICE	\$ (EX. GST) 26.21	\$ (EX. GST) 27.26	\$ (EX. GST) 13.47	\$ (EX. GST) 29.90
PROD. CAT.	Z	Z	Z	Z

HYPRO NOZZLE SELECTION

	HERBICIDE NOZZLES		POST-EMERGENT PLANT HEALTH NOZZLES	
	ULTRA LO-DRIFT	GUARDIAN AIR	3D	GUARDIAN AIR TWIN
NOZZLE OPTIONS				
KEY INFORMATION	<p>PRESSURE RANGE 1-8 BAR</p> <p>SPRAY PATTERN 120°</p> <p>DRIFT REDUCING, DUAL AIR-INDUCTION</p> <ul style="list-style-type: none"> • Ideal for systemic herbicide applications where drift control is crucial – ideal for 2,4-D applications • Wide, three dimensional pattern creates multiple angles for the spray to cover the target • Ideal for pre and post-emerge applications of systemic herbicides • Designed to eliminate driftable droplets, without sacrificing coverage 	<p>PRESSURE RANGE 1-6 BAR</p> <p>SPRAY PATTERN 110°</p> <p>ENHANCED COVERAGE AIR-INDUCTION</p> <ul style="list-style-type: none"> • Ideal for contact herbicide applications due to exceptional coverage through air-induction • Speed optimised inclined pattern provides superior droplet deposition and retention on targets • Ideal for high-coverage application of contact herbicides • Industry leading coverage among air-induced spray nozzles 	<p>PRESSURE RANGE 1-6 BAR</p> <p>SPRAY PATTERN 100°</p> <p>INCLINED ENHANCED COVERAGE</p> <ul style="list-style-type: none"> • Alternative incline, all-purpose nozzle for optimum spray coverage – PWM system compatible • Optimised spray angle and incline for coverage and uniformity across the boom • Ideal for post-emerge health protectants. Also good for high coverage herbicide applications • Droplet spectrum optimised for coverage, fewer droplets bounce off or drift away 	<p>PRESSURE RANGE 2-8 BAR</p> <p>SPRAY PATTERN 110°</p> <p>TWIN ENHANCED COVERAGE, AIR-INDUCTION</p> <ul style="list-style-type: none"> • Capable of balancing speed and efficiency, with twin patterns to cover front and back of targets • Air-induced, twin pattern provides more uniform coverage over a wide operating range • Ideal for high-coverage application of post-emerge plant health protectants • Provides better coverage with more drops per litre compared to other air-induced twin sprays
SPRAY QUALITY	See pages 76-77			
AVAILABLE SIZES	015 to 08 (polyacetal)	015 to 05 (polyacetal)	015 to 08 (polyacetal)	02 to 08 (polyacetal)
ORDER CODE	FC-ULD120-***	FC-GA110-***	FC-3D100-***	FC-GAT110-***
*** Denotes nozzle size (i.e. 015, 02, 025, 03 etc)				
SINGLE NOZZLE PRICE	\$ (EX. GST) 26.20	\$ (EX. GST) 20.95	\$ (EX. GST) 22.00	\$ (EX. GST) 22.50
PROD. CAT.	X	X	X	X



TEEJET NOZZLE SELECTION

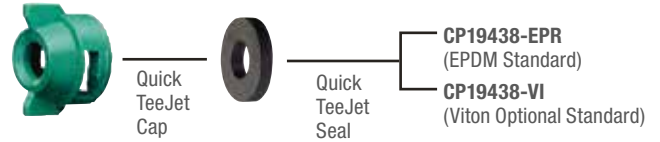
	PRE-ORIFICE	LOW PRESSURE AIR-INDUCTION NOZZLES	HIGH PRESSURE AIR-INDUCTION NOZZLES	
	DG DRIFT GUARD FLAT FAN TIP	AIXR AIR-INDUCTION FLAT FAN TIP	AITT J60 AIR-INDUCTION TURBO TWINJET TWIN FLAT FAN TIP	TTI TURBO TEEJET INDUCTION FLAT FAN TIP
NOZZLE OPTIONS				
KEY INFORMATION	<p>PRESSURE RANGE 1-5 BAR</p> <p>SPRAY PATTERN 80° & 110°</p> <ul style="list-style-type: none"> ✓ Standard in polymer ✓ Pre-orifice plate ✓ Reduces drift-prone ✓ small droplets ✓ (Also available in Visi-stain-less steel in some sizes in 80°) 	<p>PRESSURE RANGE 1-6 BAR</p> <p>SPRAY PATTERN 110°</p> <ul style="list-style-type: none"> ✓ Standard in polymer ✓ Low-pressure air-induction nozzle ✓ Two-piece with pre-orifice 	<p>PRESSURE RANGE 1.5-6 BAR</p> <p>SPRAY PATTERN 110°</p> <ul style="list-style-type: none"> ✓ Standard in polymer ✓ Dual outlet design ✓ Air-induction nozzle ✓ 60° angle between forward and back spray pattern 	<p>PRESSURE RANGE 1-7 BAR</p> <p>SPRAY PATTERN 110°</p> <ul style="list-style-type: none"> ✓ Standard in polymer ✓ High-pressure air-induction nozzle ✓ Two-piece with pre-orifice
SPRAY QUALITY	See pages 76-77			
AVAILABLE SIZES	015 to 05	015 to 06	02 to 08 (some larger sizes on request)	015 to 06
ORDER CODE	DG110***-VP	AIXR110***-VP	AITTJ60-110***VP	TTI110***-VP
*** Denotes nozzle size (i.e. 015, 02, 025, 03 etc)				
SINGLE NOZZLE PRICE	\$ (EX. GST) 14.00	\$ (EX. GST) 16.32	\$ (EX. GST) 20.65	\$ (EX. GST) 26.00
25 PACK	\$ (EX. GST) 342.10	\$ (EX. GST) 394.75	NA	\$ (EX. GST) 636.85
ORDER CODE	PR**-DG **10 = size 015, 11 = 02, 12 = 03, 13 = 04	PR**-AIXR **10 = size 015, 11 = 02, 12 = 03, 13 = 04, 14 = 025		PR**-TTI **10 = size 015, 11 = 02, 12 = 03, 13 = 04, 14 = 025
PROD. CAT.	V	V	V	V



Photos are for illustrative purposes only. Prices and specifications are subject to change without notice. Prices effective January 2019. For indicative freight prices, see page 103.

NOZZLE CAPS

CAP COLOUR OPTIONS












1	2	3	4	5	6	7	8	10
Black	White	Red	Blue	Green	Yellow	Brown	Orange	Lilac

CAP	NOZZLES/SEALS TO SUIT CAPS	ORDER CODE <small>*Denotes colour code as shown above – not all colours may be available.</small>	DESCRIPTION	\$ (EX. GST)	PROD. CAT.
	<ul style="list-style-type: none"> AirMix® TeeJet XR, DG, TT, AIXR (smaller capacities to size 08) ALBUZ AXI, ADI, CVI, CVI TWIN, CVI 80 	114441-* - CELR	Cap and seat gasket set	2.62	V
		PR20-*	Pack of 10 caps and seats	25.79	
	<ul style="list-style-type: none"> Seal for use with nozzle caps 	CP19438-EPR	Seal for nozzle caps, EPDM	1.58	V
		PR60	Pack of 10 seals for nozzle caps	15.47	
	<ul style="list-style-type: none"> Seal for use with nozzle caps 	CP19438-VI	Seal for nozzle caps, Viton	6.84	V
	<ul style="list-style-type: none"> TeeJet XR, DG, TT and AIXR flat spray tips (for sizes 10 to 20) 	25610-* - NYR	Cap and seat gasket set	2.95	V
	<ul style="list-style-type: none"> TeeJet flat spray tips (smaller capacities) – see above. Tips can be positioned in choice of 2 spray plane directions: parallel or perpendicular to wings of Quick TeeJet cap 	25596-* - NYR	Cap and seat gasket set	2.95	V
	<ul style="list-style-type: none"> TJ TwinJet / TJ60-Spray Tip / ALBUZ AVI, AVI TWIN, ESI, EXA, AIUB TeeJet / TTI Air-induction Turbo TeeJet SJ3 StreamJet 	114443-* - CELR	Cap and seat gasket set	2.95	V
	<ul style="list-style-type: none"> TF-VS Turbo FloodJet / TK-VS FloodJet 	25600-* - NYR	Cap and seat gasket set	2.95	V
	<ul style="list-style-type: none"> TK FloodJet / FL FullJet / TX ConeJet / TG Full Cone 	114445-* - CELR	Cap and seat gasket set	2.95	V
	<ul style="list-style-type: none"> Ceramic Disc-Core/TXB ConeJet ALBUZ TVI, ATR 	26278-1 - NYR	Cap and seat gasket set	3.28	V
	<ul style="list-style-type: none"> For use with Hardi nozzle bodies TeeJet flat fan spray tips Turbo TeeJet spray tips AirMix® nozzles 	23306H-1 - CELR	Cap and seat gasket for Hardi retro-fit cap to suit Hardi spray bodies. Available in black only	3.09	V
	<ul style="list-style-type: none"> For use with Hardi nozzle bodies TJ TwinJet AI TeeJet, AIUB TeeJet spray tips flat TTI Air-induction Turbo TeeJet 	21398H-1 - CELR	Cap and seat gasket for Hardi retro-fit cap to suit Hardi spray bodies. Available in black only	3.09	V







	ORDER CODE	DESCRIPTION	\$ (EX. GST)	PROD. CAT.
	CP1325	TeeJet® brass 11/16" threaded cap	4.42	V
	CP8027-NYB	TeeJet® nylon 11/16" threaded cap	2.42	V
	CP8027-1-NYB	TeeJet® nylon 11/16" threaded cap, extra long	3.05	V
	CP3942	TeeJet® brass blanking plug	1.47	V
	19843-NYR	Blanking cap with seal, black only	6.00	V
	QJ90-2-NYR	Twin-cap quick adaptor with seal	11.89	V
	QJ4676-1/4-NYR	QJ adaptor cap comes with gasket and 1/4" female thread	5.37	V
	QJ4676-90-1/4-N	QJ adaptor cap, 90°, comes with gasket and 1/4" female thread	11.89	V



NOZZLE BODIES

ORDER CODE	DESCRIPTION	REPLACES	FEATURES	\$ (EX. GST)	PROD. CAT.
4221N-B122 4221N-B123	PROFLO ½" single drop nozzle body for wet boom	TeeJet: QJ17560A-1/2-NYB ARAG: 402745	<ul style="list-style-type: none"> Low pressure drop at any given flow rate Unique check valve design reduces restrictions – supports faster field speeds and direct fertiliser applications 	10.47	V
	PROFLO ¾" single drop nozzle body for wet boom	TeeJet: QJ17560A-3/4-NYB ARAG: 402755	<ul style="list-style-type: none"> Bayonet attachment for correct flat fan nozzle alignment Compact design – less interference with boom structures 10mm nib 20 Bar rated 	10.47	V
4243N-B322 4243N-B323 4243N-B324	PROFLO ½" triple drop nozzle body for wet boom	TeeJet: QJ363C-1/2-NYB	<ul style="list-style-type: none"> Tab for boom clamp provided Low pressure drop at any given flow rate Unique check valve design reduces restrictions – supports faster field speeds and direct fertiliser applications 	41.68	V
	PROFLO ¾" triple drop nozzle body for wet boom	TeeJet: QJ363C-3/4-NYB	<ul style="list-style-type: none"> Turret-indexing design eliminates seizing issues common on other types Bayonet attachment for correct flat fan nozzle alignment 	52.11	V
	PROFLO 1" triple drop nozzle body for wet boom	TeeJet: QJ363C-1-NYB	<ul style="list-style-type: none"> Compact design 10mm nib 20 Bar rated 	52.11	V
24216-1/2-NYB	Compact triple nozzle body for wet booms – ½"		<ul style="list-style-type: none"> Vertical turret for use in situations where space is an issue 	55.68	V
	Compact triple nozzle body for wet booms – ¾"		<ul style="list-style-type: none"> Vertical turret for use in situations where space is an issue. (Also available in 1") 	55.68	V
24216-3/4-NYB	Compact triple nozzle body for wet booms – ¾"				
					
A402735	Single drop nozzle body for wet boom – 7mm nib		<ul style="list-style-type: none"> Hinged clamp single nozzle body with diaphragm check valve for quick connect caps with 7mm nib – suits MBX and MAX series manual fold booms 	10.53	Y
					
QJ39685-2-500-N	Dry boom nozzle body – ½" tee type		<ul style="list-style-type: none"> Dry boom nozzle body with diaphragm check valve for quick connect caps – tee type 	16.74	V
					
QJ39685-1L-500N	Dry boom nozzle body – ½" left elbow		<ul style="list-style-type: none"> Dry boom nozzle body with diaphragm check valve for quick connect caps – left elbow for boom end 	16.74	V
					
QJ39685-1R-500N	Dry boom nozzle body – ½" right elbow		<ul style="list-style-type: none"> Dry boom nozzle body with diaphragm check valve for quick connect caps – right elbow for boom end 	16.74	V
					
B716.617.2	Brass roll-over nozzle body		<ul style="list-style-type: none"> High pressure roll-over nozzle body with non-drip diaphragm check valve – comes with 2 caps (no nozzles supplied). For more information on horticultural nozzle holders, see page 96 	51.58	Y
					

NOZZLE FILTERS

	ORDER CODE	DESCRIPTION	\$ (EX. GST)	PROD. CAT.
	8079-PP-*	TeeJet® polypropylene strainer, *50, *80 or *100 mesh screen	3.58	V
	PR51	Pack of 10 x 8079-PP-50 strainers	34.32	V
	PR52	Pack of 10 x 8079-PP-100 strainers	34.32	V
	4193A-PP-5-*SS	TeeJet® polypropylene strainer with check valve for 5 psi, *50 or *100 mesh screen	10.74	V
	4193A-5-*SS	TeeJet® brass strainer with check valve for 5 psi, *50 or *100 mesh screen	14.84	V
	4067-SS-*	TeeJet® cup strainer, *50 or *100 mesh screen	4.53	V
	4514-NY-*	TeeJet® nylon slotted strainer, for suspended solids, *10, *20 and *32	3.79	V

TIPS FOR SELECTING NOZZLES – BROADACRE

Often a single nozzle will not be able to do all of the spray tasks that the operator may require, however with at least two well chosen nozzles most operations should be able to be completed.

It is useful for applicators to consider the range of jobs they may do throughout the season, and group similar jobs by application volume and spray quality required. The diagram below summarises this for either high or low volume applications, with either a coarse or larger spray quality or a medium spray quality.

SUGGESTED SPRAY QUALITY AND APPLICATION VOLUMES FOR A RANGE OF SPRAYING SITUATIONS

TYPICAL APPLICATION VOLUME	MEDIUM SPRAY QUALITY (LOWER DRIFT RISK AREAS)	COARSE SPRAY QUALITY	EXTREMELY COARSE SPRAY QUALITY (HIGHER DRIFT RISK AREAS)
LOWER RANGE 50–60 L/ha (low stubble load) to 70–80 L/ha (high stubble load)	*Only where permitted on label Fully translocated herbicides Small to medium sized targets	Fallow spraying with fully translocated herbicides such as Glyphosate and Group I products, 2,4-D and other group/products	Fully translocated herbicides Medium sized targets, water soluble pre-emergent herbicides Very sensitive areas or NIGHT SPRAYING
HIGHER RANGE 70–80 L/ha (low stubble load) to 100 + L/ha (high stubble load/dense crop canopy)	*Only where permitted on label Contact type products. Small, vertical targets In crop spraying of fungicides and insecticides Retention and coverage on large cereal crops and hard to wet leaf surfaces Requires good conditions for spraying and reasonable buffers to mitigate spray drift risk Penetration and coverage in large and broadleaf crops	Good stubble penetration Pre-emergents Fully Translocated herbicides Contact herbicides onto moderate sized targets Translocated products onto hard to wet surfaces at the higher application volumes Penetration through large cereal crops. Reasonable retention on large, easy to wet broadleaf crops	Pre-emergents Medium sized targets with fully translocated summer fallow herbicides Very sensitive areas or NIGHT SPRAYING (no inversion)

In the above example a low pressure air-induction, such as an AirMix® nozzle, may do jobs indicated by the BLUE arrow, whereas a high pressure air-induction may be required, such as a TurboDrop or TeeJet TTI, to complete jobs indicated by the RED arrows.

APPLICATORS SHOULD ALWAYS REFER TO THE LABEL TO CONFIRM THE SPRAY QUALITY AND APPLICATION VOLUME REQUIREMENTS FOR EACH.



SPRAYING IN STUBBLE

Stubble retention is an important strategy for conserving soil moisture. When combined with narrower row spacings or increased harvest heights, the remaining stubble can present a challenge to gaining effective spray coverage onto the soil or onto weeds in fallow and in crop.

To optimise spray coverage in the lower parts of the stubble and onto the soil it may be useful for the applicator to use water sensitive paper (WSP) to determine where the droplets are landing.

Spray coverage can be assessed by measuring the percentage of the WSP that is covered by using the SNAPCARD APP which is free to download.



The SNAPCARD APP allows the cards to be photographed and coverage to be measured.

SPRAYING SMALL TARGETS

In broadacre spraying the applicator can adjust the spray coverage by changing droplet size and/or the water volume. The ability to hit small targets can be increased with higher water volumes or by producing more droplets, such as a medium spray quality versus a coarse (where permitted on label). If only few droplets hit a target, then using robust product rates increase the likelihood of delivering the lethal dose. In general, if coverage on small targets critical for the mode of action, such as contact herbicides, then increasing the water rate is more efficient than using smaller droplets.

To optimise application when targeting small grasses it is advisable to increase water rates, regardless of the spray quality or chemistry.

If the water rate used is too low (50–70 L/ha) a MEDIUM spray quality is likely to be more successful than a COARSE spray quality – but only under ideal conditions. Adverse weather conditions, such as inappropriate wind speeds or heat, smaller droplets may reduce the overall level of control compared to that of a COARSE spray quality.

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70cm high, 'stripper front', 4.7 t/ha residue



<10cm high, <2.2 t/ha residue

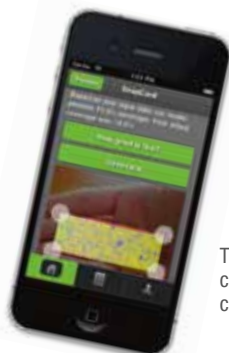
AgroTop AirMix® 02 nozzle 3 Bar, 16km/hr 50 L/ha	AgroTop AirMix® 03 nozzle 4 Bar, 16km/hr 100 L/ha	AgroTop AirMix® 04 nozzle 5 Bar, 16km/hr 150 L/ha
STRIPPER FRONT STUBBLE		
9.9%	10.3%	16.7%
BALED STUBBLE		
13.6%	26.2%	35.0%

Table 1. Spray card analysis for stripper and baled stubble treatments, medium droplet size.

Information from the Hart field side group, trials on stubble penetration and pre-emergent efficacy (S.A. 2015–2016, funded by SAGIT) images by Dr Sarah Noack.

TOP TIPS

- Increase product rate
- Increase water volume
- Use a COARSE spray quality or larger
- Reduce spraying speeds
- Decrease fan angle in erected stubble
- Increase spray height in erected stubble (only with minimum COARSE spray quality)
- Consider 25cm nozzle spacings if your boom has this facility
- Consider using slower spraying speeds



The SNAPCARD APP allows the cards to be photographed and coverage to be measured.

Most robust results on small targets are generally achieved with water rates above 80 L/ha. Many trials over recent years indicate that control of even small grass targets, when using these water rates, is at least as reliable with a COARSE spray quality as it is with a FINE/MEDIUM spray quality.



THE FOLLOWING DIAGRAM INDICATES SUITABLE CONDITIONS FOR SPRAYING, BASED ON A 24 HOUR CYCLE.



Windspeeds must be **above 4 km/h** and **less than 15-20 km/h** (refer to label) blowing away from sensitive areas

Medium spray quality: Delta T: 2-10

Coarse spray quality: Delta T: 2-12

To start spraying, the sun should be about 20 degrees above the horizon, and wind speed and direction consistent for 30-40 minutes



Windspeed should be **above 4-5km/h** after Sunrise to start spraying



Likely to be the best conditions for spraying



***EXTREME CAUTION REQUIRED**
High inversion risk
Dangerous air movement

Plan NOT TO SPRAY during this period



Spraying can only occur if the operator can be certain that a surface temperature inversion is not present.

The safest option is not to spray during this period.



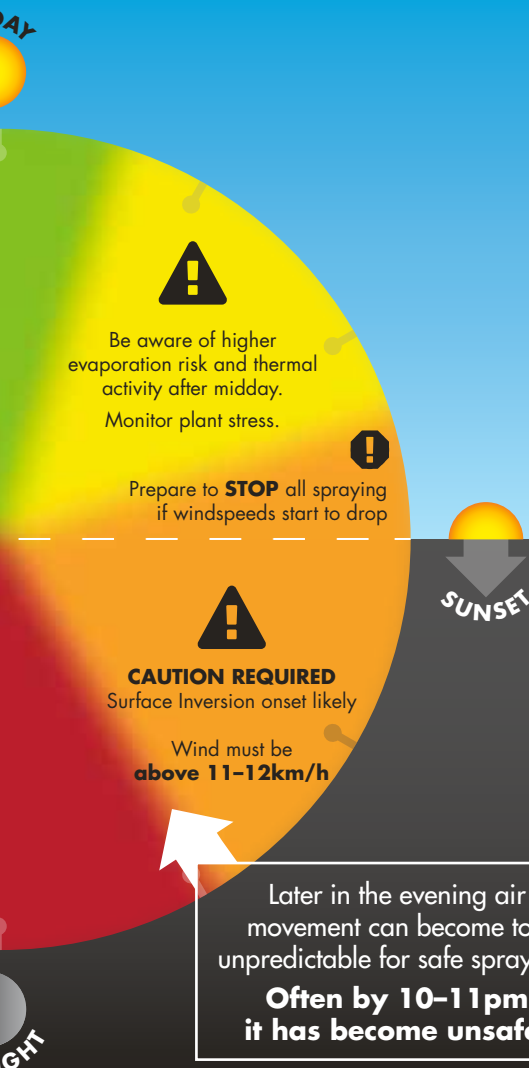
MANAGING AND MINIMISING THE POTENTIAL FOR SPRAY DRIFT TO OCCUR.

Spray drift is a major concern in all agricultural areas. The presence of sensitive areas located within close proximity to the spray target area introduces the possibility of off-target deposition. It is more important than ever that the agricultural industry demonstrates responsible chemical usage to reduce the need for severe application restrictions. For further information on chemical application or involvement in a SprayWise training course, please contact your local Nufarm or Croplands Territory Manager.

How the sprayer is set up and operated will determine how much of the applied product remains in the air, The conditions at the time of spraying and immediately afterwards will determine where the airborne product may move.

THE MAIN FACTORS THAT INFLUENCE THE RISK OF SPRAY DRIFT OCCURRING ARE:

- ✓ Conditions at the time of spraying
- ✓ Spray quality/nozzle choice
- ✓ Sensitivity of the target
- ✓ Product choice and rate (including water volume)
- ✓ Adjuvant choice
- ✓ Boom height
- ✓ Spraying speed



Monitor conditions closely

Consider using larger spray quality, higher water rates and managing evaporation with suitable adjuvants (ie. Collide, Activator)

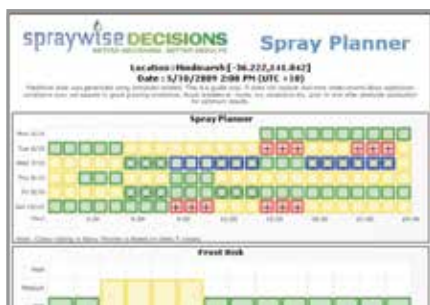


Often spraying into the early evening is possible in summer when air movement has continued to mix the air and prevent a surface temperature inversion forming.



Pay very close attention to changes in wind speed and wind direction throughout the evening.

Only use XC or UC spray quality, reduce spraying speed and boom height to minimise risk of droplets remaining airborne.



PLAN

- Utilise tools such as spraywisedecisions.com.au to plan the most appropriate application windows
- Spraying in a cotton area? Check cottonmap.com.au for neighbouring fields prior to application

- Read the product label
- Communicate with neighbours
- Upskill yourself by attending a Nufarm SprayWise training course or one run by specialist application consultants



BOOM HEIGHT/FALSE TARGET

- Boom height needs to be adjusted to the height of the false target (stubble height) or the height of the target – whichever is greater
- Keep boom height to a minimum (i.e. 500mm above target/false target for 110° nozzles at 500mm nozzle spacing)
- Increasing the boom height from 500mm to 700mm may double the amount of driftable fines and a boom height increase from 500mm to 1,000mm multiplies them up to four times



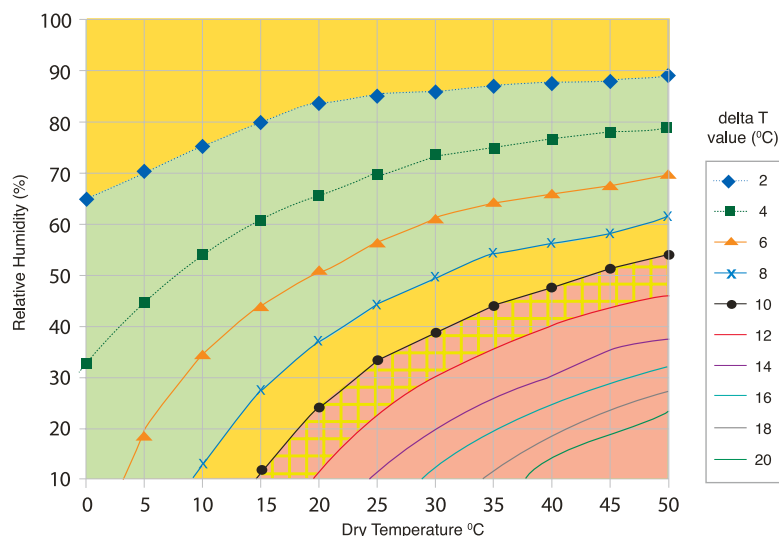
SPRAY QUALITY

- A COARSE spray quality or larger must be used when applying Group I products – EXTREMELY COARSE may be warranted if night spraying
- Choose the nozzle producing the coarsest spray quality without compromising efficacy
- If needed, include drift-reducing adjuvants such as Collide 700, Activator or Bonza
- Use nozzles at appropriate pressure: conventional nozzles 1.5–3 Bar, pre-orifice nozzles 2–4 Bar, low pressure air-induction nozzles 3–5 Bar, high pressure air-induction nozzles 4–8 Bar

SELECTING THE RIGHT DELTA T CONDITIONS FOR SPRAYING

- preferred delta T conditions for spraying
- delta T conditions marginal
- delta T conditions unsuitable for spraying
- Conditions are marginal for 'COARSE' or greater spray quality and unsuitable for 'MEDIUM' or finer spray quality.

NEVER SPRAY DURING A LOW-LEVEL INVERSION



CHEMICAL AND TARGET INTERACTION				
SAMPLES OF DROPLETS ON WATER SENSITIVE PAPER	SPRAY QUALITY CLASSIFICATION	NOZZLE TYPE	APPLICATION	TEEJET OPTIONS
	ULTRA COARSE UC	High Flow (HF)	Soil applied pre-emergent herbicides (typically pre-sowing) and fertiliser applications	
	EXTREMELY COARSE XC	Ultra-Lo-Drift (ULD)	Some soil applied herbicides and some translocated herbicides (use if drift control is paramount over efficacy)	Turbo TeeJet Induction
	VERY COARSE VC	TurboDrop (TD)	Translocated herbicides (large targets) and soil applied herbicides (heavy stubble loads)	AI and AIC TeeJet
	COARSE C	Guardian Air (GA), AirMix® (TDAM)	Translocated herbicides, soil applied herbicides, some contact herbicides (use with higher water rates) and some fungicides	AIXR TeeJet and Turbo TwinJet
	MEDIUM M	Guardian Air (GA), AirMix® (TDAM), ALBUZ ADI	Contact herbicides, fungicides and insecticides	Turbo TeeJet
	FINE F	Guardian (GD) (smaller sizes)	Some fungicides, contact herbicides and insecticides	XR and XRC TeeJet
	VERY FINE VF	CAUTION: LARGE AMOUNTS OF DRIFTABLE FINES		

Droplet size classifications are based on BCPC specification and are in accordance with ASAE Standard S-572.



SPRAY QUALITY

Systems of nozzle classification (BCPC, ASAE, and ASABE 572.1) have been developed around the world to unify and simplify the description of droplet size ranges that different nozzles produce. Accordingly nozzles can be classified as producing ULTRA COARSE, EXTREMELY COARSE, VERY COARSE, COARSE, MEDIUM, FINE and VERY FINE and ULTRA FINE spray qualities.

Applicators should be aware that spray quality information using ASABE S572.1 includes an adjuvant in the spray solution to better reflect actual tank mixes, other standards use water alone.

The spray quality a nozzle produces is very important. Generally, a MEDIUM spray quality will increase potential for coverage, but small droplets are very


prone to drift and environmental loss (evaporation) especially in warm conditions. On the other hand, COARSE spray quality with larger droplets, particularly using pre-orifice or air-induction nozzles, will greatly reduce drift potential but may compromise coverage – especially on small targets using low spray application volume. Choosing the coarsest spray quality without compromising efficacy is the trick.

Refer to the information provided by the chemical manufacturer on their product label, or consult the Nufarm SprayWise Boom Spray Application Guide – available from Nufarm or Croplands. Croplands and Nufarm have selected the best nozzles from around the globe to help our farmers and growers maximise their results when spraying is necessary.



WIDE ANGLE FLAT SPRAY NOZZLE

Thanks to the exceptional wear resistance of ALBUZ® pink ceramic, these nozzles can be used to spray suspension fertilisers. Flat jet (30° to 165° angle) providing coarse droplets without drift.

NOZZLE	USE AND FEATURES	ORDER CODE	\$ (EX. GST)	PROD. CAT.
	<ul style="list-style-type: none"> Wide angle flat fan Flood Jet for use with suspension fertilisers and some herbicides Commonly used in sugar cane and other row crops Ideal for soil-applied products in particular Exceptional wear resistance using pink ceramic surfaces Recommended pressure range 0.5 to 2 Bar 	AZ-MSI-***	16.00	Z


*** Denotes sizes as follows:


AZ-MSI-025 = Lillac, AZ-MSI-03 = Blue, AZ-MSI-04 = Red, AZ-MSI-05 = Brown, AZ-MSI-06 = Grey, AZ-MSI-08 = White, AZ-MSI-10 = Light Blue, AZ-MSI-15 = Light Green

BAR	FLOW RATE							
	Lillac	Blue	Red	Brown	Grey	White	Light Blue	Light Green
0.5	0.42	0.51	0.68	0.85	1.02	1.35	1.69	2.54
1	0.59	0.71	0.94	1.18	1.42	1.89	2.36	3.54
1.5	0.72	0.86	1.15	1.43	1.72	2.29	2.87	4.3
2	0.82	0.99	1.32	1.65	1.98	2.63	3.29	4.94
2.5	0.92	1.1	1.47	1.83	2.2	2.93	3.66	5.5
3	1	1.2	1.6	2	2.4	3.2	4	6
3.5	1.08	1.29	1.72	2.15	2.58	3.45	4.31	6.46
4	1.15	1.38	1.84	2.3	2.76	3.67	4.59	6.89
BAR	ANGLE							
1	96	96	96	104	108	117	133	150
1.5	103	103	104	110	114	122	140	154
2	107	108	111	114	118	127	142	156
3	112	113	116	116	124	132	144	160
4	116	116	121	122	128	135	147	162

FERTILISER NOZZLES

The timely and accurate application of fertiliser can make an enormous difference to crop yields. Liquid application is becoming more and more popular to improve response and to provide increased accuracy, especially where the risk of applying dry fertiliser by conventional spinner-type applicators could mean unwanted nutrient contaminating waterways. Typically uptake of liquid fertiliser is rapid and can provide the right boost to your crop at the right time.

NOZZLE	SIZES	TYPE, SPECIFICATION AND USE	FEATURES	\$ (EX. GST)	PROD. CAT.	SIZE/ORDER CODE	FLOW RATE (L/MIN)							
							PRESSURE (BAR)							
							ALBUZ ESI	1	1.5	2	2.5	3	3.5	4
	015 to 06	<ul style="list-style-type: none">Specifically designed for fertiliser applicationPink ceramic calibrated pre-orificePressure range: 1–4 BarUses: predominant use in ground crops	<ul style="list-style-type: none">6 streams provide very coarse droplets for excellent distributionLong wear lifeAllows a wide range of applications at varying speedsISO colour coded. Tip only (caps and seal extra)Fits standard 50cm nozzle body spacings110° pattern	13.05	Z	AZ-ESI-015	0.37	0.44	0.50	0.55	0.60	0.64	0.68	
						AZ-ESI-02	0.52	0.61	0.68	0.74	0.80	0.85	0.90	
						AZ-ESI-025	0.64	0.76	0.85	0.93	1.00	1.06	1.10	
						AZ-ESI-03	0.77	0.91	1.02	1.12	1.20	1.28	1.35	
						AZ-ESI-04	1.03	1.21	1.36	1.49	1.60	1.70	1.80	
						AZ-ESI-05	1.35	1.56	1.73	1.87	2.00	2.11	2.22	

							PRESSURE (BAR)							
							HYPRO ESI	1	1.5	2	2.5	3	4	
	015 to 20	<ul style="list-style-type: none">Specifically designed for fertiliser applicationPink ceramic calibrated pre-orificePressure range: 1–4 BarUses: soil seeded crops	<ul style="list-style-type: none">6 streams provide very coarse droplets for excellent distributionLong wear lifeAllows a wide range of applications at varying speedsIncludes cap and sealFits standard 50cm nozzle body spacings110° pattern	25.70	Z	FC-ESI-110015	0.35	0.42	0.49	0.55	0.60	0.69		
						FC-ESI-11002	0.46	0.57	0.65	0.73	0.80	0.92		
						FC-ESI-110025	0.58	0.71	0.82	0.91	1.00	1.15		
						FC-ESI-11003	0.69	0.85	0.98	1.10	1.20	1.39		
						FC-ESI-11004	0.92	1.13	1.31	1.46	1.60	1.85		
						FC-ESI-11005	1.15	1.41	1.63	1.83	2.00	2.31		



NOZZLES – SPECIALISED APPLICATION

(BANDING, OFF-CENTRE, TURF, FLOOD AND BOOMJET)

NOZZLE	TYPE AND DESCRIPTION	SAMPLE ORDER CODE	SIZE RANGE, MATERIAL SPRAY ANGLE	\$ (EX. GST)	PROD. CAT.
	ALBUZ OCI <ul style="list-style-type: none"> • Ceramic • Off centre 	AZ-OCI-02-80C	<ul style="list-style-type: none"> • 02, 03 and 04 sizes • Pink ceramic • 80° 	36.74	Z
	ALBUZ AVI <ul style="list-style-type: none"> • Air-induction • Off centre 	AZ-AVIOC-8002	<ul style="list-style-type: none"> • 01 to 04 sizes • Pink ceramic • 80° 	41.05	Z
	Turbo TurfJet <ul style="list-style-type: none"> • Wide angle flat spray pattern • Extremely coarse droplets • Designed for turf applications • 1.5–5 Bar pressure range 	¼TTJ05-VP	<ul style="list-style-type: none"> • 02 to 15 polymer 	21.55	V
		¼TTJ05-VS	<ul style="list-style-type: none"> • 02 to 15 stainless steel 	41.79	
	Turbo FloodJet <ul style="list-style-type: none"> • Wide angle flat spray pattern • Extremely coarse droplets • Precise distribution pattern • 1–3 Bar pressure range 	TF-VP4	<ul style="list-style-type: none"> • 2 to 10 polymer 	7.26	V
		TF-VS4	<ul style="list-style-type: none"> • 2 to 10 steel 	32.21	
	FloodJet <ul style="list-style-type: none"> • Wide angle flat spray pattern • 1–3 Bar pressure range 	TK-VS3	<ul style="list-style-type: none"> • 2 to 10 stainless steel tip, polymer body 	29.05	V
	BoomJet <ul style="list-style-type: none"> • Large capacity boomless nozzle • Extra-wide flat spray projection • Ideal for difficult access areas when spraying • Useful for liquid fertiliser applications 	5880-¾-2TOC20	<ul style="list-style-type: none"> • 10 to 40 brass 	634.21	V
	XP BoomJet <ul style="list-style-type: none"> • Boomless flat spray nozzles • Useful for roadside, end-row, orchard or forestry applications • Extra-wide spray pattern • Left and right options • 1–4 Bar pressure range • Excellent distribution 	B¼XP20L-VP B¼XP20R-VP	<ul style="list-style-type: none"> • 10, 20 and 25¼" acetal left and right options 	122.10	V
		B½XP40L-VP B½XP40R-VP	<ul style="list-style-type: none"> • 40 and 80 ½" acetal left and right options 	145.90	

SPRAYWISE ORCHARD/VINEYARD NOZZLE SELECTION

STEP 1.

Work out the dilute L/100m rate from the SprayWise Dilute table per row (page 93).

For example, a 1.5 metre grape VSP canopy has a dilute volume of 30 L/100m row (1.5 x 20 L).

Use table 1 (page 94) to sanity check what this L/100m rate represents in L/ha. Select your row spacing and follow the column down until you reach 30 or the nearest number. If you follow the row to the left the table will give you the per ha volume. Or you can work reverse from the per ha rate to find the L/100m rate.

1

	Row Spacing (m)									
	1.6	1.8	2	2.1	2.4	2.5	2.7	2.8		
100	1.6	1.8	2	2.1	2.4	2.5	2.7	2.8		
150	2.4	2.7	3	3.1	3.6	3.8	4	4.2		
200	3.2	3.6	4	4.2	4.8	5	5.4	5.6		
250	4	4.5	5	5.2	6	6.3	6.7	7		
700	11.2	12.6	14	15	17	17.5	18.9	19.6		
750	12	13.5	15	16	18	18.8	20	21		
800	12.8	14.4	16	17	19	20	22	22		
900	14.4	16.2	18	19	21	23	24	25		
1000	16	18	20	21	24	25	27	28		
1100	17.6	19.8	22	23	26	28	30	31		
1200	19.2	22	24	25	29	30	32	34		
1300	21	23	26	27	31	33	35	36		
1400	22	25	28	29	33	35	38	39		

STEP 2.

Work out the total flowrate of your pump per minute/row by matching the per 100m rate with your speed.

For example, you want to drive 8 km/hr. Find 8 km/hr on the top of table 2 and follow the column down until you reach 30 or the nearest number. If you follow the row to the right the table will give you the total flowrate you need per row to put out 30 L/100m at 8 km/hr. The flowrate is 40 L/min per row.

2

	L/100 m ↔ L/min									
	Travel Speed (km/h)									
	1	1.5	2	2.5	3	3.5	4	4.5	5	5.5
2	12	8	6	4.8	4	3.4	3	2.7	2.4	2.2
3	18	12	9	7.2	6	5.1	4.5	4	3.6	3.3
4	24	16	12	9.6	8	6.9	6	5.3	4.8	4.4
5	30	20	15	12	10	8.6	7.5	6.7	6	5.5
6	36	24	18	14.4	12	10.2	9	8	7.2	6.6
7	42	28	21	16.8	14	12.2	10.8	9.6	8.4	7.7
8	48	32	24	19.2	16	13.8	12	10.8	9.6	8.8
9	54	36	27	21.6	18	15.4	13.5	12	10.8	10
10	60	40	30	24	20	17	15	13.5	12	11
11	66	44	33	26.4	22	18.7	16.5	14.8	13.2	12.2
12	72	48	36	28.8	24	20.4	18	16.2	14.4	13.4
13	78	52	39	31.2	26	22.1	19.5	17.7	15.6	14.6
14	84	56	42	33.6	28	23.8	21	19.2	17.2	16
15	90	60	45	36	30	25.5	22.5	20.7	18.6	17.4
16	96	64	48	38.4	32	27.2	24	22.2	20	18.8
17	102	68	51	40.8	34	28.9	25.5	23.7	21.6	20
18	108	72	54	43.2	36	30.6	27	25.2	23.2	21.6
19	114	76	57	45.6	38	32.3	28.5	26.7	24.8	23
20	120	80	60	48	40	34	30	28.2	26.4	24
21	126	84	63	50.4	42	35.7	31.5	29.7	28	25
22	132	88	66	52.8	44	37.4	33	31.2	29.6	26
23	138	92	69	55.2	46	39.1	34.5	32.7	30.4	27
24	144	96	72	57.6	48	40.8	36	34.2	32	28
25	150	100	75	60	50	42.5	37.5	35.7	33.6	29
26	156	104	78	62.4	52	44.2	39	37.2	35.2	30
27	162	108	81	64.8	54	45.9	40.5	38.7	36.8	31
28	168	112	84	67.2	56	47.6	42	40.2	38.4	32
29	174	116	87	69.6	58	49.3	43.5	41.7	40	33
30	180	120	90	72	60	51	45	43.2	42	34
31	186	124	93	74.4	62	52.7	46.5	44.7	43.6	35
32	192	128	96	76.8	64	54.4	48	46.2	45.2	36
33	198	132	99	79.2	66	56.1	49.5	47.7	46.8	37
34	204	136	102	81.6	68	57.8	51	49.2	48.4	38
35	210	140	105	84	70	59.5	52.5	50.7	49.6	39
36	216	144	108	86.4	72	61.2	54	52.2	51.2	40
37	222	148	111	88.8	74	62.9	55.5	53.7	52.8	41
38	228	152	114	91.2	76	64.6	57	55.2	54.4	42
39	234	156	117	93.6	78	66.3	58.5	56.7	56	43
40	240	160	120	96	80	68	60	58.2	57.6	44
41	246	164	123	98.4	82	69.7	61.5	59.7	59.2	45
42	252	168	126	100.8	84	71.4	63	61.2	60.8	46
43	258	172	129	103.2	86	73.1	64.5	62.7	62.4	47
44	264	176	132	105.6	88	74.8	66	64.2	64	48
45	270	180	135	108	90	76.5	67.5	65.7	65.6	49
46	276	184	138	110.4	92	78.2	69	67.2	67.2	50
47	282	188	141	112.8	94	79.9	70.5	68.7	68.8	51
48	288	192	144	115.2	96	81.6	72	70.2	70.4	52

Formula: $L/100\text{ m} = L/\text{min} \times 6 \div \text{speed}$ $L/\text{min} = L/100\text{ m} \times \text{speed} \div 6$

STEP 3.

Work out the individual flow rate for each nozzle. If all nozzle are the same size you can simply divide the total flow rate per row by the number of nozzles per row.

For example, we have 24 nozzles per row and needed a total flow rate of 40 L/min. Each nozzle needs to put out 1.66 L/min (40/24). If several nozzle sizes are preferred the volume needs to be split. For example, rather than looking at all 24 nozzles putting out the same you could look at 12 nozzles putting out 25 L/min and 12 nozzles putting out 15 L/min.

STEP 4.

Match up pressure and nozzles size to achieve these outputs in table on page 95.

ATR HOLLOW CONE FLOWRATE CHART

4

	PRESSURE	Yellow	Orange	Red	Grey
BAR	5	0.73	0.99	1.38	1.5
	6	0.8	1.08	1.51	1.63
	7	0.86	1.17	1.62	1.76
	8	0.92	1.24	1.73	1.87
	9	0.97	1.32	1.83	1.98
	10	1.03	1.39	1.92	2.08
	11	1.07	1.45	2.01	2.17
	12	1.12	1.51	2.09	2.26
	13	1.17	1.57	2.17	2.35
	14	1.21	1.63	2.25	2.43



Spraywise Dilute

General Guideline to Dilute Volume in Orchards and Vineyards



L/100 m per m Canopy Height

		20	25	30	35	40	45	50	...	70
	Fungicides									
	some Miticides, PGRs									
	Fungicides									
	some Miticides									
	Fungicides									
	some Miticides									
	Insecticides, some Oils									
	some Oils, PGRs									
	Fungicides	VSP	Sprawl							
	some PGRs		VSP	Sprawl						
	Fungicides									
	some Miticides									
	Fungicides									
	some Insect./Miticides									
	Insecticides									
	Fungicides									
	some Insect./Miticides									
	Fungicides	Trellis								
	some Insect./Miticides									

= indicates Dilute Volume, sprayed to the point of run-off

= indicates light Flood Volume, above the point of run-off (some miticides, insecticides and PGRs may benefit)

Example: A 3m high apple canopy should need a dilute rate between 60 and 75 L/100 m (3 x 20 or 3 x 25). As a sanity check, at a row spacing of 4 m that converts to 1500 to 1900 L/ha (see table next page). If not sure which way to go, as a sophisticated guess, the middle should be close, e.g. 70 L/100 m.

IMPORTANT:

- Volumes are given for full canopy.
- Volumes may vary according to canopy type, e.g. VSP vs Sprawl, shape and density. Use the lower end of the spectrum for easier to cover targets, e.g. in grapes use 20–25 for VSP and 25–30 for Sprawl.
- Height considers canopy height only - excluding the trunk.
- Guidelines assume that the sprayer is set up to cover the canopy height. In early season grapevine applications the minimum sprayer width becomes the canopy height! For example, a QM head covers 1 m. It can not be reduced to cover 10 cm shoots only. Therefore the dilute volume has to operate on the minimum width the equipment can produce.

Rate for Early Season Applications in Deciduous Tree/Vine Crops (in L/100 m per m Canopy Height)

Budburst	1st Spray BB + 10 days	2nd Spray BB+20 days	3rd Spray BB+30 days
14L (70 % of 20 L)	16L (80 % of 20 L)	18L (90 % of 20 L)	Full rate

1



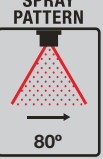
1		L/ha ↔ L/100 m																												Table unit L/100 m	
		Row Spacing (m)																													
		1.6	1.8	2	2.1	2.4	2.5	2.7	2.8	2.9	3	3.1	3.2	3.3	3.5	3.6	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	9	10			
L/ha	100	1.6	1.8	2	2.1	2.4	2.5	2.7	2.8	2.9	3	3.1	3.2	3.3	3.5	3.6	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5	9	10			
	150	2.4	2.7	3	3.1	3.6	3.8	4	4.2	4.4	4.5	4.7	4.8	5	5.3	5.4	6	6.8	7.5	8.3	9	9.8	10.5	11.3	12	12.8	13.5	15			
	200	3.2	3.6	4	4.2	4.8	5	5.4	5.6	5.8	6	6.2	6.4	6.7	7	7.2	8	9	10	11	12	13	14	15	16	17	18	20			
	250	4	4.5	5	5.2	6	6.3	6.7	7	7.3	7.5	7.8	8	8.3	8.8	9	10	11.3	12.5	13.8	15	16.3	17.5	18.8	20	21	23	25			
	300	4.8	5.4	6	6.3	7.1	7.5	8.1	8.4	8.7	9	9.3	9.6	10	10.5	10.8	12	13.5	15	16.5	18	19.5	21	23	24	26	27	30			
	350	5.6	6.3	7	7.3	8.3	8.8	9.4	9.8	10.2	10.5	10.9	11.2	11.7	12.3	12.6	14	15.8	17.5	19.3	21	23	25	26	28	30	32	35			
	400	6.4	7.2	8	8.3	9.5	10	10.8	11.2	11.6	12	12.4	12.8	13.3	14	14.4	16	18	20	22	24	26	28	30	32	34	36	40			
	450	7.2	8.1	9	9.4	11	11.3	12.1	12.6	13.1	13.5	14	14.4	15	15.8	16.2	18	20	23	25	27	29	32	34	36	38	41	45			
	500	8	9	10	10	12	12.5	13.5	14	14.5	15	15.5	16	16.7	17.5	18	20	23	25	28	30	33	35	38	40	43	45	50			
	600	9.6	10.8	12	13	14	15	16.2	16.8	17.4	18	18.6	19.2	20	21	22	24	27	30	33	36	39	42	45	48	51	54	60			
	700	11.2	12.6	14	15	17	17.5	18.9	19.6	20	21	22	22	23	25	25	28	32	35	39	42	46	49	53	56	60	63	70			
	750	12	13.5	15	16	18	18.8	20	21	22	23	23	24	25	26	27	30	34	38	41	45	49	53	56	60	64	68	75			
	800	12.8	14.4	16	17	19	20	22	22	23	24	25	26	27	28	29	32	36	40	44	48	52	56	60	64	68	72	80			
	900	14.4	16.2	18	19	21	23	24	25	26	27	28	29	30	32	32	36	41	45	50	54	59	63	68	72	77	81	90			
	1000	16	18	20	21	24	25	27	28	29	30	31	32	33	35	36	40	45	50	55	60	65	70	75	80	85	90	100			
	1100	17.6	19.8	22	23	26	28	30	31	32	33	34	35	37	39	40	44	50	55	61	66	72	77	83	88	94	99	110			
	1200	19.2	22	24	25	29	30	32	34	35	36	37	38	40	42	43	48	54	60	66	72	78	84	90	96	102	108	120			
1300	21	23	26	27	31	33	35	36	38	39	40	42	43	46	47	52	59	65	72	78	85	91	98	104	111	117	130				
1400	22	25	28	29	33	35	38	39	41	42	43	45	47	49	50	56	63	70	77	84	91	98	105	112	119	126	140				
1500	24	27	30	31	36	38	40	42	44	45	47	48	50	53	54	60	68	75	83	90	98	105	113	120	128	135	150				
1600	26	29	32	33	38	40	43	45	46	48	50	51	53	56	58	64	72	80	88	96	104	112	120	128	136	144	160				
1700	27	31	34	35	40	43	46	48	49	51	53	54	57	60	61	68	77	85	94	102	111	119	128	136	145	153	170				
1800	29	32	36	38	43	45	49	50	52	54	56	58	60	63	65	72	81	90	99	108	117	126	135	144	153	162	180				
1900	30	34	38	40	45	48	51	53	55	57	59	61	63	67	68	76	86	95	105	114	124	133	143	152	162	171	190				
2000	32	36	40	42	48	50	54	56	58	60	62	64	67	70	72	80	90	100	110	120	130	140	150	160	170	180	200				
2500	40	45	50	52	60	63	67	70	73	75	78	80	83	88	90	100	113	125	138	150	163	175	188	200	213	225	250				
3000	48	54	60	63	71	75	81	84	87	90	93	96	100	105	108	120	135	150	165	180	195	210	225	240	255	270	300				
4000	64	72	80	83	95	100	108	112	116	120	124	128	133	140	144	160	180	200	220	240	260	280	300	320	340	360	400				
5000	80	90	100	104	119	125	135	140	145	150	155	160	167	175	180	200	225	250	275	300	325	350	375	400	425	450	500				
6000	96	108	120	125	143	150	162	168	174	180	186	192	200	210	216	240	270	300	330	360	390	420	450	480	510	540	600				
7000	112	126	140	146	167	175	189	196	203	210	217	224	233	245	252	280	315	350	385	420	455	490	525	560	595	630	700				
8000	128	144	160	167	190	200	216	224	232	240	248	256	266	280	288	320	360	400	440	480	520	560	600	640	680	720	800				
9000	144	162	180	188	214	225	243	252	261	270	279	288	300	315	324	360	405	450	495	540	585	630	675	720	765	810	900				
10000	160	180	200	208	238	250	270	280	290	300	310	320	333	350	360	400	450	500	550	600	650	700	750	800	850	900	1000				
Conversion Factor		62.5	55.5	50	47.6	41.7	40	37.0	35.7	34.5	33.3	32.3	31.3	30.3	28.6	27.8	25	22.2	20	18.2	16.7	15.4	14.3	13.3	12.5	11.8	11.1	10			
Formula		L/100 m = L/ha ÷ 100 x rowspacing (m)														L/ha = L/100 m x 100 ÷ rowspacing (m)															

2



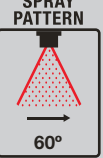
		L/100 m ↔ L/min																				Table unit = L/100 m																			
		Travel Speed (km/h)										Travel Speed (km/h)										Travel Speed (km/h)																			
Total Flow Rate of All Nozzles (L/min)	2	12	8	6	4.8	4	3.4	3	2.7	2.4	2.2	2	1.8	1.7	1.5	1.3	1.2	60	360	240	180	144	120	103	90	80	72	65	60	55	51	45	40	36							
	3	18	12	9	7.2	6	5.1	4.5	4	3.6	3.3	3	2.8	2.6	2.3	2	1.8	62	372	248	186	149	124	106	93	83	74	68	62	57	53	47	41	37							
	4	24	16	12	9.6	8	6.9	6	5.3	4.8	4.4	4	3.7	3.4	3	2.7	2.4	64	384	256	192	154	128	110	96	85	77	70	64	59	55	48	43	38							
	5	30	20	15	12	10	8.6	7.5	6.7	6	5.5	5	4.6	4.3	3.8	3.3	3	66	396	264	198	158	132	113	99	88	79	72	66	61	57	50	44	40							
	6	36	24	18	14.4	12	10.3	9	8	7.2	6.5	6	5.5	5.1	4.5	4	3.6	68	408	272	204	163	136	117	102	91	82	74	68	63	58	51	45	41							
	7	42	28	21	16.8	14	12	10.5	9.3	8.4	7.6	7	6.5	6	5.3	4.7	4.2	70	420	280	210	168	140	120	105	93	84	76	70	65	60	53	47	42							
	8	48	32	24	19.2	16	13.7	12	10.7	9.6	8.7	8	7.4	6.9	6	5.3	4.8	72	432	288	216	173	144	123	108	96	86	79	72	66	62	54	48	43							
	9	54	36	27	22	18	15.4	13.5	12	10.8	9.8	9	8.3	7.7	6.8	6	5.4	74	444	296	222	178	148	127	111	99	89	81	74	68	63	56	49	44							
	10	60	40	30	24	20	17.1	15	13.3	12	10.9	10	9.2	8.6	7.5	6.7	6	76	456	304	228	182	152	130	114	101	91	83	76	70	65	57	51	46							
	11	66	44	33	26	22	19	17	14.7	13.2	12	11	10.2	9.4	8.3	7.3	6.6	78	468	312	234	187	156	134	117	104	94	85	78	72	67	59	52	47							
	12	72	48	36	29	24	21	18	16	14.4	13.1	12	11.1	10.3	9	8	7.2	80	480	320	240	192	160	137	120	107	96	87	80	74	69	60	53	48							
	13	78	52	39	31	26	22	20	17.3	15.6	14.2	13	12	11.1	9.8	8.7	7.8	85	510	340	255	204	170	146	128	113	102	93	85	78	73	64	57	51							
	14	84	56	42	34	28	24	21	18.7	16.8	15.3	14	12.9	12	10.5	9.3	8.4	90	540	360	270	216	180	154	135	120	108	98	90	83	77	68	60	54							
	15	90	60	45	36	30	26	23	20	18	16.4	15	13.8	12.9	11.3	10	9	95	570	380	285	228	190	163	143	127	114	104	95	88	81	71	63	57							
	16	96	64	48	38	32	27	24	21	19.2	17.5	16	14.8	13.7	12	10.7	9.6	100	600	400	300	240	200	171	150	133	120	109	100	92	86	75	67	60							
	17	102	68	51	41	34	29	26	23	20	18.5	17	15.7	14.6	12.8	11.3	10.2	110	660	440	330	264	220	189	165	147	132	120	110	102	94	83	73	66							
	18	108	72	54	43	36	31	27	24	22	19.6	18	16.6	15.4	13.5	12	10.8	120	720	480	360	288	240	206	180	160	144	131	120	111	103	90	80	72							
	19	114	76	57	46	38	33	29	25	23	21	19	17.5	16.3	14.3	12.7	11.4	130	780	520	390	312	260	223	195	173	156	142	130	120	111	98	87	78							
20	120 <td>80<td>60<td>48<td>40<td>34<td>30<td>27<td>24<td>22<td>20<td>18.5</td><td>17.1<td>15<td>13.3</td><td>12</td><td>140<td>840<td>560<td>420<td>336<td>280<td>240<td>210<td>187<td>168<td>153<td>140<td>129<td>120<td>105<td>93<td>84</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	80 <td>60<td>48<td>40<td>34<td>30<td>27<td>24<td>22<td>20<td>18.5</td><td>17.1<td>15<td>13.3</td><td>12</td><td>140<td>840<td>560<td>420<td>336<td>280<td>240<td>210<td>187<td>168<td>153<td>140<td>129<td>120<td>105<td>93<td>84</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	60 <td>48<td>40<td>34<td>30<td>27<td>24<td>22<td>20<td>18.5</td><td>17.1<td>15<td>13.3</td><td>12</td><td>140<td>840<td>560<td>420<td>336<td>280<td>240<td>210<td>187<td>168<td>153<td>140<td>129<td>120<td>105<td>93<td>84</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	48 <td>40<td>34<td>30<td>27<td>24<td>22<td>20<td>18.5</td><td>17.1<td>15<td>13.3</td><td>12</td><td>140<td>840<td>560<td>420<td>336<td>280<td>240<td>210<td>187<td>168<td>153<td>140<td>129<td>120<td>105<td>93<td>84</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	40 <td>34<td>30<td>27<td>24<td>22<td>20<td>18.5</td><td>17.1<td>15<td>13.3</td><td>12</td><td>140<td>840<td>560<td>420<td>336<td>280<td>240<td>210<td>187<td>168<td>153<td>140<td>129<td>120<td>105<td>93<td>84</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	34 <td>30<td>27<td>24<td>22<td>20<td>18.5</td><td>17.1<td>15<td>13.3</td><td>12</td><td>140<td>840<td>560<td>420<td>336<td>280<td>240<td>210<td>187<td>168<td>153<td>140<td>129<td>120<td>105<td>93<td>84</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	30 <td>27<td>24<td>22<td>20<td>18.5</td><td>17.1<td>15<td>13.3</td><td>12</td><td>140<td>840<td>560<td>420<td>336<td>280<td>240<td>210<td>187<td>168<td>153<td>140<td>129<td>120<td>105<td>93<td>84</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	27 <td>24<td>22<td>20<td>18.5</td><td>17.1<td>15<td>13.3</td><td>12</td><td>140<td>840<td>560<td>420<td>336<td>280<td>240<td>210<td>187<td>168<td>153<td>140<td>129<td>120<td>105<td>93<td>84</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	24 <td>22<td>20<td>18.5</td><td>17.1<td>15<td>13.3</td><td>12</td><td>140<td>840<td>560<td>420<td>336<td>280<td>240<td>210<td>187<td>168<td>153<td>140<td>129<td>120<td>105<td>93<td>84</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	22 <td>20<td>18.5</td><td>17.1<td>15<td>13.3</td><td>12</td><td>140<td>840<td>560<td>420<td>336<td>280<td>240<td>210<td>187<td>168<td>153<td>140<td>129<td>120<td>105<td>93<td>84</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	20 <td>18.5</td> <td>17.1<td>15<td>13.3</td><td>12</td><td>140<td>840<td>560<td>420<td>336<td>280<td>240<td>210<td>187<td>168<td>153<td>140<td>129<td>120<td>105<td>93<td>84</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	18.5	17.1 <td>15<td>13.3</td><td>12</td><td>140<td>840<td>560<td>420<td>336<td>280<td>240<td>210<td>187<td>168<td>153<td>140<td>129<td>120<td>105<td>93<td>84</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	15 <td>13.3</td> <td>12</td> <td>140<td>840<td>560<td>420<td>336<td>280<td>240<td>210<td>187<td>168<td>153<td>140<td>129<td>120<td>105<td>93<td>84</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	13.3	12	140 <td>840<td>560<td>420<td>336<td>280<td>240<td>210<td>187<td>168<td>153<td>140<td>129<td>120<td>105<td>93<td>84</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	840 <td>560<td>420<td>336<td>280<td>240<td>210<td>187<td>168<td>153<td>140<td>129<td>120<td>105<td>93<td>84</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	560 <td>420<td>336<td>280<td>240<td>210<td>187<td>168<td>153<td>140<td>129<td>120<td>105<td>93<td>84</td></td></td></td></td></td></td></td></td></td></td></td></td></td>	420 <td>336<td>280<td>240<td>210<td>187<td>168<td>153<td>140<td>129<td>120<td>105<td>93<td>84</td></td></td></td></td></td></td></td></td></td></td></td></td>	336 <td>280<td>240<td>210<td>187<td>168<td>153<td>140<td>129<td>120<td>105<td>93<td>84</td></td></td></td></td></td></td></td></td></td></td></td>	280 <td>240<td>210<td>187<td>168<td>153<td>140<td>129<td>120<td>105<td>93<td>84</td></td></td></td></td></td></td></td></td></td></td>	240 <td>210<td>187<td>168<td>153<td>140<td>129<td>120<td>105<td>93<td>84</td></td></td></td></td></td></td></td></td></td>	210 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21	126 <td>88<td>66<td>53<td>44<td>38<td>33<td>29<td>26<td>24<td>22<td>20<td>18.9<td>16.5<td>14.7<td>13.2</td><td>150<td>900<td>600<td>450<td>360<td>300<td>257<td>225<td>200<td>186<td>164<td>150<td>138<td>129<td>113<td>100<td>90</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	88 <td>66<td>53<td>44<td>38<td>33<td>29<td>26<td>24<td>22<td>20<td>18.9<td>16.5<td>14.7<td>13.2</td><td>150<td>900<td>600<td>450<td>360<td>300<td>257<td>225<td>200<td>186<td>164<td>150<td>138<td>129<td>113<td>100<td>90</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	66 <td>53<td>44<td>38<td>33<td>29<td>26<td>24<td>22<td>20<td>18.9<td>16.5<td>14.7<td>13.2</td><td>150<td>900<td>600<td>450<td>360<td>300<td>257<td>225<td>200<td>186<td>164<td>150<td>138<td>129<td>113<td>100<td>90</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	53 <td>44<td>38<td>33<td>29<td>26<td>24<td>22<td>20<td>18.9<td>16.5<td>14.7<td>13.2</td><td>150<td>900<td>600<td>450<td>360<td>300<td>257<td>225<td>200<td>186<td>164<td>150<td>138<td>129<td>113<td>100<td>90</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	44 <td>38<td>33<td>29<td>26<td>24<td>22<td>20<td>18.9<td>16.5<td>14.7<td>13.2</td><td>150<td>900<td>600<td>450<td>360<td>300<td>257<td>225<td>200<td>186<td>164<td>150<td>138<td>129<td>113<td>100<td>90</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	38 <td>33<td>29<td>26<td>24<td>22<td>20<td>18.9<td>16.5<td>14.7<td>13.2</td><td>150<td>900<td>600<td>450<td>360<td>300<td>257<td>225<td>200<td>186<td>164<td>150<td>138<td>129<td>113<td>100<td>90</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	33 <td>29<td>26<td>24<td>22<td>20<td>18.9<td>16.5<td>14.7<td>13.2</td><td>150<td>900<td>600<td>450<td>360<td>300<td>257<td>225<td>200<td>186<td>164<td>150<td>138<td>129<td>113<td>100<td>90</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	29 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<td>20<td>18.9<td>16.5<td>14.7<td>13.2</td><td>150<td>900<td>600<td>450<td>360<td>300<td>257<td>225<td>200<td>186<td>164<td>150<td>138<td>129<td>113<td>100<td>90</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	20 <td>18.9<td>16.5<td>14.7<td>13.2</td><td>150<td>900<td>600<td>450<td>360<td>300<td>257<td>225<td>200<td>186<td>164<td>150<td>138<td>129<td>113<td>100<td>90</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	18.9 <td>16.5<td>14.7<td>13.2</td><td>150<td>900<td>600<td>450<td>360<td>300<td>257<td>225<td>200<td>186<td>164<td>150<td>138<td>129<td>113<td>100<td>90</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	16.5 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<td>164<td>150<td>138<td>129<td>113<td>100<td>90</td></td></td></td></td></td></td>	164 <td>150<td>138<td>129<td>113<td>100<td>90</td></td></td></td></td></td>	150 <td>138<td>129<td>113<td>100<td>90</td></td></td></td></td>	138 <td>129<td>113<td>100<td>90</td></td></td></td>	129 <td>113<td>100<td>90</td></td></td>	113 <td>100<td>90</td></td>	100 <td>90</td>	90								
22	132 <td>96<td>72<td>58<td>48<td>41<td>36<td>32<td>29<td>26<td>24<td>22<td>21<td>18<td>16<td>14.4</td><td>160<td>960<td>640<td>480<td>384<td>320<td>274<td>240<td>213<td>192<td>175<td>160<td>148<td>137<td>120<td>107<td>96</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	96 <td>72<td>58<td>48<td>41<td>36<td>32<td>29<td>26<td>24<td>22<td>21<td>18<td>16<td>14.4</td><td>160<td>960<td>640<td>480<td>384<td>320<td>274<td>240<td>213<td>192<td>175<td>160<td>148<td>137<td>120<td>107<td>96</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	72 <td>58<td>48<td>41<td>36<td>32<td>29<td>26<td>24<td>22<td>21<td>18<td>16<td>14.4</td><td>160<td>960<td>640<td>480<td>384<td>320<td>274<td>240<td>213<td>192<td>175<td>160<td>148<td>137<td>120<td>107<td>96</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	58 <td>48<td>41<td>36<td>32<td>29<td>26<td>24<td>22<td>21<td>18<td>16<td>14.4</td><td>160<td>960<td>640<td>480<td>384<td>320<td>274<td>240<td>213<td>192<td>175<td>160<td>148<td>137<td>120<td>107<td>96</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	48 <td>41<td>36<td>32<td>29<td>26<td>24<td>22<td>21<td>18<td>16<td>14.4</td><td>160<td>960<td>640<td>480<td>384<td>320<td>274<td>240<td>213<td>192<td>175<td>160<td>148<td>137<td>120<td>107<td>96</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	41 <td>36<td>32<td>29<td>26<td>24<td>22<td>21<td>18<td>16<td>14.4</td><td>160<td>960<td>640<td>480<td>384<td>320<td>274<td>240<td>213<td>192<td>175<td>160<td>148<td>137<td>120<td>107<td>96</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	36 <td>32<td>29<td>26<td>24<td>22<td>21<td>18<td>16<td>14.4</td><td>160<td>960<td>640<td>480<td>384<td>320<td>274<td>240<td>213<td>192<td>175<td>160<td>148<td>137<td>120<td>107<td>96</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	32 <td>29<td>26<td>24<td>22<td>21<td>18<td>16<td>14.4</td><td>160<td>960<td>640<td>480<td>384<td>320<td>274<td>240<td>213<td>192<td>175<td>160<td>148<td>137<td>120<td>107<td>96</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	29 <td>26<td>24<td>22<td>21<td>18<td>16<td>14.4</td><td>160<td>960<td>640<td>480<td>384<td>320<td>274<td>240<td>213<td>192<td>175<td>160<td>148<td>137<td>120<td>107<td>96</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	26 <td>24<td>22<td>21<td>18<td>16<td>14.4</td><td>160<td>960<td>640<td>480<td>384<td>320<td>274<td>240<td>213<td>192<td>175<td>160<td>148<td>137<td>120<td>107<td>96</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	24 <td>22<td>21<td>18<td>16<td>14.4</td><td>160<td>960<td>640<td>480<td>384<td>320<td>274<td>240<td>213<td>192<td>175<td>160<td>148<td>137<td>120<td>107<td>96</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	22 <td>21<td>18<td>16<td>14.4</td><td>160<td>960<td>640<td>480<td>384<td>320<td>274<td>240<td>213<td>192<td>175<td>160<td>148<td>137<td>120<td>107<td>96</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	21 <td>18<td>16<td>14.4</td><td>160<td>960<td>640<td>480<td>384<td>320<td>274<td>240<td>213<td>192<td>175<td>160<td>148<td>137<td>120<td>107<td>96</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	18 <td>16<td>14.4</td><td>160<td>960<td>640<td>480<td>384<td>320<td>274<td>240<td>213<td>192<td>175<td>160<td>148<td>137<td>120<td>107<td>96</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	16 <td>14.4</td> <td>160<td>960<td>640<td>480<td>384<td>320<td>274<td>240<td>213<td>192<td>175<td>160<td>148<td>137<td>120<td>107<td>96</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	14.4	160 <td>960<td>640<td>480<td>384<td>320<td>274<td>240<td>213<td>192<td>175<td>160<td>148<td>137<td>120<td>107<td>96</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	960 <td>640<td>480<td>384<td>320<td>274<td>240<td>213<td>192<td>175<td>160<td>148<td>137<td>120<td>107<td>96</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	640 <td>480<td>384<td>320<td>274<td>240<td>213<td>192<td>175<td>160<td>148<td>137<td>120<td>107<td>96</td></td></td></td></td></td></td></td></td></td></td></td></td></td>	480 <td>384<td>320<td>274<td>240<td>213<td>192<td>175<td>160<td>148<td>137<td>120<td>107<td>96</td></td></td></td></td></td></td></td></td></td></td></td></td>	384 <td>320<td>274<td>240<td>213<td>192<td>175<td>160<td>148<td>137<td>120<td>107<td>96</td></td></td></td></td></td></td></td></td></td></td></td>	320 <td>274<td>240<td>213<td>192<td>175<td>160<td>148<td>137<td>120<td>107<td>96</td></td></td></td></td></td></td></td></td></td></td>	274 <td>240<td>213<td>192<td>175<td>160<td>148<td>137<td>120<td>107<td>96</td></td></td></td></td></td></td></td></td></td>	240 <td>213<td>192<td>175<td>160<td>148<td>137<td>120<td>107<td>96</td></td></td></td></td></td></td></td></td>	213 <td>192<td>175<td>160<td>148<td>137<td>120<td>107<td>96</td></td></td></td></td></td></td></td>	192 <td>175<td>160<td>148<td>137<td>120<td>107<td>96</td></td></td></td></td></td></td>	175 <td>160<td>148<td>137<td>120<td>107<td>96</td></td></td></td></td></td>	160 <td>148<td>137<td>120<td>107<td>96</td></td></td></td></td>	148 <td>137<td>120<td>107<td>96</td></td></td></td>	137 <td>120<td>107<td>96</td></td></td>	120 <td>107<td>96</td></td>	107 <td>96</td>	96								
23	138 <td>104<td>78<td>62<td>52<td>45<td>39<td>35<td>31<td>28<td>26<td>24<td>22<td>19.5<td>17.3</td><td>15.6</td><td>170<td>1020<td>680<td>510<td>408<td>340<td>291<td>255<td>227<td>204<td>185<td>170<td>157<td>146<td>128<td>113<td>102</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	104 <td>78<td>62<td>52<td>45<td>39<td>35<td>31<td>28<td>26<td>24<td>22<td>19.5<td>17.3</td><td>15.6</td><td>170<td>1020<td>680<td>510<td>408<td>340<td>291<td>255<td>227<td>204<td>185<td>170<td>157<td>146<td>128<td>113<td>102</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	78 <td>62<td>52<td>45<td>39<td>35<td>31<td>28<td>26<td>24<td>22<td>19.5<td>17.3</td><td>15.6</td><td>170<td>1020<td>680<td>510<td>408<td>340<td>291<td>255<td>227<td>204<td>185<td>170<td>157<td>146<td>128<td>113<td>102</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	62 <td>52<td>45<td>39<td>35<td>31<td>28<td>26<td>24<td>22<td>19.5<td>17.3</td><td>15.6</td><td>170<td>1020<td>680<td>510<td>408<td>340<td>291<td>255<td>227<td>204<td>185<td>170<td>157<td>146<td>128<td>113<td>102</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	52 <td>45<td>39<td>35<td>31<td>28<td>26<td>24<td>22<td>19.5<td>17.3</td><td>15.6</td><td>170<td>1020<td>680<td>510<td>408<td>340<td>291<td>255<td>227<td>204<td>185<td>170<td>157<td>146<td>128<td>113<td>102</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	45 <td>39<td>35<td>31<td>28<td>26<td>24<td>22<td>19.5<td>17.3</td><td>15.6</td><td>170<td>1020<td>680<td>510<td>408<td>340<td>291<td>255<td>227<td>204<td>185<td>170<td>157<td>146<td>128<td>113<td>102</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	39 <td>35<td>31<td>28<td>26<td>24<td>22<td>19.5<td>17.3</td><td>15.6</td><td>170<td>1020<td>680<td>510<td>408<td>340<td>291<td>255<td>227<td>204<td>185<td>170<td>157<td>146<td>128<td>113<td>102</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	35 <td>31<td>28<td>26<td>24<td>22<td>19.5<td>17.3</td><td>15.6</td><td>170<td>1020<td>680<td>510<td>408<td>340<td>291<td>255<td>227<td>204<td>185<td>170<td>157<td>146<td>128<td>113<td>102</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	31 <td>28<td>26<td>24<td>22<td>19.5<td>17.3</td><td>15.6</td><td>170<td>1020<td>680<td>510<td>408<td>340<td>291<td>255<td>227<td>204<td>185<td>170<td>157<td>146<td>128<td>113<td>102</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	28 <td>26<td>24<td>22<td>19.5<td>17.3</td><td>15.6</td><td>170<td>1020<td>680<td>510<td>408<td>340<td>291<td>255<td>227<td>204<td>185<td>170<td>157<td>146<td>128<td>113<td>102</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	26 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<td>102</td>	102								
24	144 <td>112<td>84<td>67<td>56<td>48</td><td>42<td>37<td>34<td>31<td>28<td>26<td>24</td><td>21<td>18.7<td>16.8</td><td>180<td>1080<td>720<td>540</td><td>432<td>360<td>309<td>270<td>240<td>216<td>196<td>180<td>166<td>154<td>135<td>120<td>108</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	112 <td>84<td>67<td>56<td>48</td><td>42<td>37<td>34<td>31<td>28<td>26<td>24</td><td>21<td>18.7<td>16.8</td><td>180<td>1080<td>720<td>540</td><td>432<td>360<td>309<td>270<td>240<td>216<td>196<td>180<td>166<td>154<td>135<td>120<td>108</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	84 <td>67<td>56<td>48</td><td>42<td>37<td>34<td>31<td>28<td>26<td>24</td><td>21<td>18.7<td>16.8</td><td>180<td>1080<td>720<td>540</td><td>432<td>360<td>309<td>270<td>240<td>216<td>196<td>180<td>166<td>154<td>135<td>120<td>108</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	67 <td>56<td>48</td><td>42<td>37<td>34<td>31<td>28<td>26<td>24</td><td>21<td>18.7<td>16.8</td><td>180<td>1080<td>720<td>540</td><td>432<td>360<td>309<td>270<td>240<td>216<td>196<td>180<td>166<td>154<td>135<td>120<td>108</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	56 <td>48</td> 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<td>31<td>28<td>26<td>24</td><td>21<td>18.7<td>16.8</td><td>180<td>1080<td>720<td>540</td><td>432<td>360<td>309<td>270<td>240<td>216<td>196<td>180<td>166<td>154<td>135<td>120<td>108</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	31 <td>28<td>26<td>24</td><td>21<td>18.7<td>16.8</td><td>180<td>1080<td>720<td>540</td><td>432<td>360<td>309<td>270<td>240<td>216<td>196<td>180<td>166<td>154<td>135<td>120<td>108</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	28 <td>26<td>24</td><td>21<td>18.7<td>16.8</td><td>180<td>1080<td>720<td>540</td><td>432<td>360<td>309<td>270<td>240<td>216<td>196<td>180<td>166<td>154<td>135<td>120<td>108</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	26 <td>24</td> <td>21<td>18.7<td>16.8</td><td>180<td>1080<td>720<td>540</td><td>432<td>360<td>309<td>270<td>240<td>216<td>196<td>180<td>166<td>154<td>135<td>120<td>108</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	24	21 <td>18.7<td>16.8</td><td>180<td>1080<td>720<td>540</td><td>432<td>360<td>309<td>270<td>240<td>216<td>196<td>180<td>166<td>154<td>135<td>120<td>108</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	18.7 <td>16.8</td> <td>180<td>1080<td>720<td>540</td><td>432<td>360<td>309<td>270<td>240<td>216<td>196<td>180<td>166<td>154<td>135<td>120<td>108</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	16.8	180 <td>1080<td>720<td>540</td><td>432<td>360<td>309<td>270<td>240<td>216<td>196<td>180<td>166<td>154<td>135<td>120<td>108</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	1080 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<td>196<td>180<td>166<td>154<td>135<td>120<td>108</td></td></td></td></td></td></td>	196 <td>180<td>166<td>154<td>135<td>120<td>108</td></td></td></td></td></td>	180 <td>166<td>154<td>135<td>120<td>108</td></td></td></td></td>	166 <td>154<td>135<td>120<td>108</td></td></td></td>	154 <td>135<td>120<td>108</td></td></td>	135 <td>120<td>108</td></td>	120 <td>108</td>	108								
25	150 <td>120<td>90<td>72<td>60<td>51<td>45<td>40<td>36<td>33<td>30<td>28<td>26<td>23<td>20<td>18</td><td>190<td>1140<td>760<td>570<td>456<td>380<td>326<td>285<td>253<td>228<td>207<td>190<td>175<td>163<td>143<td>127<td>114</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	120 <td>90<td>72<td>60<td>51<td>45<td>40<td>36<td>33<td>30<td>28<td>26<td>23<td>20<td>18</td><td>190<td>1140<td>760<td>570<td>456<td>380<td>326<td>285<td>253<td>228<td>207<td>190<td>175<td>163<td>143<td>127<td>114</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	90 <td>72<td>60<td>51<td>45<td>40<td>36<td>33<td>30<td>28<td>26<td>23<td>20<td>18</td><td>190<td>1140<td>760<td>570<td>456<td>380<td>326<td>285<td>253<td>228<td>207<td>190<td>175<td>163<td>143<td>127<td>114</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	72 <td>60<td>51<td>45<td>40<td>36<td>33<td>30<td>28<td>26<td>23<td>20<td>18</td><td>190<td>1140<td>760<td>570<td>456<td>380<td>326<td>285<td>253<td>228<td>207<td>190<td>175<td>163<td>143<td>127<td>114</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	60 <td>51<td>45<td>40<td>36<td>33<td>30<td>28<td>26<td>23<td>20<td>18</td><td>190<td>1140<td>760<td>570<td>456<td>380<td>326<td>285<td>253<td>228<td>207<td>190<td>175<td>163<td>143<td>127<td>114</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	51 <td>45<td>40<td>36<td>33<td>30<td>28<td>26<td>23<td>20<td>18</td><td>190<td>1140<td>760<td>570<td>456<td>380<td>326<td>285<td>253<td>228<td>207<td>190<td>175<td>163<td>143<td>127<td>114</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	45 <td>40<td>36<td>33<td>30<td>28<td>26<td>23<td>20<td>18</td><td>190<td>1140<td>760<td>570<td>456<td>380<td>326<td>285<td>253<td>228<td>207<td>190<td>175<td>163<td>143<td>127<td>114</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	40 <td>36<td>33<td>30<td>28<td>26<td>23<td>20<td>18</td><td>190<td>1140<td>760<td>570<td>456<td>380<td>326<td>285<td>253<td>228<td>207<td>190<td>175<td>163<td>143<td>127<td>114</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	36 <td>33<td>30<td>28<td>26<td>23<td>20<td>18</td><td>190<td>1140<td>760<td>570<td>456<td>380<td>326<td>285<td>253<td>228<td>207<td>190<td>175<td>163<td>143<td>127<td>114</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	33 <td>30<td>28<td>26<td>23<td>20<td>18</td><td>190<td>1140<td>760<td>570<td>456<td>380<td>326<td>285<td>253<td>228<td>207<td>190<td>175<td>163<td>143<td>127<td>114</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	30 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<td>380<td>326<td>285<td>253<td>228<td>207<td>190<td>175<td>163<td>143<td>127<td>114</td></td></td></td></td></td></td></td></td></td></td></td>	380 <td>326<td>285<td>253<td>228<td>207<td>190<td>175<td>163<td>143<td>127<td>114</td></td></td></td></td></td></td></td></td></td></td>	326 <td>285<td>253<td>228<td>207<td>190<td>175<td>163<td>143<td>127<td>114</td></td></td></td></td></td></td></td></td></td>	285 <td>253<td>228<td>207<td>190<td>175<td>163<td>143<td>127<td>114</td></td></td></td></td></td></td></td></td>	253 <td>228<td>207<td>190<td>175<td>163<td>143<td>127<td>114</td></td></td></td></td></td></td></td>	228 <td>207<td>190<td>175<td>163<td>143<td>127<td>114</td></td></td></td></td></td></td>	207 <td>190<td>175<td>163<td>143<td>127<td>114</td></td></td></td></td></td>	190 <td>175<td>163<td>143<td>127<td>114</td></td></td></td></td>	175 <td>163<td>143<td>127<td>114</td></td></td></td>	163 <td>143<td>127<td>114</td></td></td>	143 <td>127<td>114</td></td>	127 <td>114</td>	114								
26	156 <td>128<td>96<td>77<td>64<td>55<td>48<td>43<td>38<td>35<td>32<td>30<td>27<td>24</td><td>21</td><td>19.2</td><td>200<td>1200<td>800<td>600<td>480<td>400<td>343<td>300<td>267<td>240<td>218<td>200<td>185<td>171<td>150<td>133<td>120</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	128 <td>96<td>77<td>64<td>55<td>48<td>43<td>38<td>35<td>32<td>30<td>27<td>24</td><td>21</td><td>19.2</td><td>200<td>1200<td>800<td>600<td>480<td>400<td>343<td>300<td>267<td>240<td>218<td>200<td>185<td>171<td>150<td>133<td>120</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	96 <td>77<td>64<td>55<td>48<td>43<td>38<td>35<td>32<td>30<td>27<td>24</td><td>21</td><td>19.2</td><td>200<td>1200<td>800<td>600<td>480<td>400<td>343<td>300<td>267<td>240<td>218<td>200<td>185<td>171<td>150<td>133<td>120</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	77 <td>64<td>55<td>48<td>43<td>38<td>35<td>32<td>30<td>27<td>24</td><td>21</td><td>19.2</td><td>200<td>1200<td>800<td>600<td>480<td>400<td>343<td>300<td>267<td>240<td>218<td>200<td>185<td>171<td>150<td>133<td>120</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	64 <td>55<td>48<td>43<td>38<td>35<td>32<td>30<td>27<td>24</td><td>21</td><td>19.2</td><td>200<td>1200<td>800<td>600<td>480<td>400<td>343<td>300<td>267<td>240<td>218<td>200<td>185<td>171<td>150<td>133<td>120</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	55 <td>48<td>43<td>38<td>35<td>32<td>30<td>27<td>24</td><td>21</td><td>19.2</td><td>200<td>1200<td>800<td>600<td>480<td>400<td>343<td>300<td>267<td>240<td>218<td>200<td>185<td>171<td>150<td>133<td>120</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	48 <td>43<td>38<td>35<td>32<td>30<td>27<td>24</td><td>21</td><td>19.2</td><td>200<td>1200<td>800<td>600<td>480<td>400<td>343<td>300<td>267<td>240<td>218<td>200<td>185<td>171<td>150<td>133<td>120</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	43 <td>38<td>35<td>32<td>30<td>27<td>24</td><td>21</td><td>19.2</td><td>200<td>1200<td>800<td>600<td>480<td>400<td>343<td>300<td>267<td>240<td>218<td>200<td>185<td>171<td>150<td>133<td>120</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	38 <td>35<td>32<td>30<td>27<td>24</td><td>21</td><td>19.2</td><td>200<td>1200<td>800<td>600<td>480<td>400<td>343<td>300<td>267<td>240<td>218<td>200<td>185<td>171<td>150<td>133<td>120</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	35 <td>32<td>30<td>27<td>24</td><td>21</td><td>19.2</td><td>200<td>1200<td>800<td>600<td>480<td>400<td>343<td>300<td>267<td>240<td>218<td>200<td>185<td>171<td>150<td>133<td>120</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	32 <td>30<td>27<td>24</td><td>21</td><td>19.2</td><td>200<td>1200<td>800<td>600<td>480<td>400<td>343<td>300<td>267<td>240<td>218<td>200<td>185<td>171<td>150<td>133<td>120</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	30 <td>27<td>24</td><td>21</td><td>19.2</td><td>200<td>1200<td>800<td>600<td>480<td>400<td>343<td>300<td>267<td>240<td>218<td>200<td>185<td>171<td>150<td>133<td>120</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	27 <td>24</td> <td>21</td> <td>19.2</td> <td>200<td>1200<td>800<td>600<td>480<td>400<td>343<td>300<td>267<td>240<td>218<td>200<td>185<td>171<td>150<td>133<td>120</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	24	21	19.2	200 <td>1200<td>800<td>600<td>480<td>400<td>343<td>300<td>267<td>240<td>218<td>200<td>185<td>171<td>150<td>133<td>120</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	1200 <td>800<td>600<td>480<td>400<td>343<td>300<td>267<td>240<td>218<td>200<td>185<td>171<td>150<td>133<td>120</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	800 <td>600<td>480<td>400<td>343<td>300<td>267<td>240<td>218<td>200<td>185<td>171<td>150<td>133<td>120</td></td></td></td></td></td></td></td></td></td></td></td></td></td>	600 <td>480<td>400<td>343<td>300<td>267<td>240<td>218<td>200<td>185<td>171<td>150<td>133<td>120</td></td></td></td></td></td></td></td></td></td></td></td></td>	480 <td>400<td>343<td>300<td>267<td>240<td>218<td>200<td>185<td>171<td>150<td>133<td>120</td></td></td></td></td></td></td></td></td></td></td></td>	400 <td>343<td>300<td>267<td>240<td>218<td>200<td>185<td>171<td>150<td>133<td>120</td></td></td></td></td></td></td></td></td></td></td>	343 <td>300<td>267<td>240<td>218<td>200<td>185<td>171<td>150<td>133<td>120</td></td></td></td></td></td></td></td></td></td>	300 <td>267<td>240<td>218<td>200<td>185<td>171<td>150<td>133<td>120</td></td></td></td></td></td></td></td></td>	267 <td>240<td>218<td>200<td>185<td>171<td>150<td>133<td>120</td></td></td></td></td></td></td></td>	240 <td>218<td>200<td>185<td>171<td>150<td>133<td>120</td></td></td></td></td></td></td>	218 <td>200<td>185<td>171<td>150<td>133<td>120</td></td></td></td></td></td>	200 <td>185<td>171<td>150<td>133<td>120</td></td></td></td></td>	185 <td>171<td>150<td>133<td>120</td></td></td></td>	171 <td>150<td>133<td>120</td></td></td>	150 <td>133<td>120</td></td>	133 <td>120</td>	120								
27	162 <td>136<td>102<td>82<td>68<td>58<td>51<td>45<td>41<td>37<td>34<td>31<td>29<td>26<td>23<td>20</td><td>220<td>1320<td>880<td>660<td>528<td>440<td>377<td>330<td>293<td>264<td>240<td>220<td>203<td>189<td>165<td>147<td>132</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	136 <td>102<td>82<td>68<td>58<td>51<td>45<td>41<td>37<td>34<td>31<td>29<td>26<td>23<td>20</td><td>220<td>1320<td>880<td>660<td>528<td>440<td>377<td>330<td>293<td>264<td>240<td>220<td>203<td>189<td>165<td>147<td>132</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	102 <td>82<td>68<td>58<td>51<td>45<td>41<td>37<td>34<td>31<td>29<td>26<td>23<td>20</td><td>220<td>1320<td>880<td>660<td>528<td>440<td>377<td>330<td>293<td>264<td>240<td>220<td>203<td>189<td>165<td>147<td>132</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	82 <td>68<td>58<td>51<td>45<td>41<td>37<td>34<td>31<td>29<td>26<td>23<td>20</td><td>220<td>1320<td>880<td>660<td>528<td>440<td>377<td>330<td>293<td>264<td>240<td>220<td>203<td>189<td>165<td>147<td>132</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	68 <td>58<td>51<td>45<td>41<td>37<td>34<td>31<td>29<td>26<td>23<td>20</td><td>220<td>1320<td>880<td>660<td>528<td>440<td>377<td>330<td>293<td>264<td>240<td>220<td>203<td>189<td>165<td>147<td>132</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	58 <td>51<td>45<td>41<td>37<td>34<td>31<td>29<td>26<td>23<td>20</td><td>220<td>1320<td>880<td>660<td>528<td>440<td>377<td>330<td>293<td>264<td>240<td>220<td>203<td>189<td>165<td>147<td>132</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	51 <td>45<td>41<td>37<td>34<td>31<td>29<td>26<td>23<td>20</td><td>220<td>1320<td>880<td>660<td>528<td>440<td>377<td>330<td>293<td>264<td>240<td>220<td>203<td>189<td>165<td>147<td>132</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	45 <td>41<td>37<td>34<td>31<td>29<td>26<td>23<td>20</td><td>220<td>1320<td>880<td>660<td>528<td>440<td>377<td>330<td>293<td>264<td>240<td>220<td>203<td>189<td>165<td>147<td>132</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	41 <td>37<td>34<td>31<td>29<td>26<td>23<td>20</td><td>220<td>1320<td>880<td>660<td>528<td>440<td>377<td>330<td>293<td>264<td>240<td>220<td>203<td>189<td>165<td>147<td>132</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	37 <td>34<td>31<td>29<td>26<td>23<td>20</td><td>220<td>1320<td>880<td>660<td>528<td>440<td>377<td>330<td>293<td>264<td>240<td>220<td>203<td>189<td>165<td>147<td>132</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	34 <td>31<td>29<td>26<td>23<td>20</td><td>220<td>1320<td>880<td>660<td>528<td>440<td>377<td>330<td>293<td>264<td>240<td>220<td>203<td>189<td>165<td>147<td>132</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	31 <td>29<td>26<td>23<td>20</td><td>220<td>1320<td>880<td>660<td>528<td>440<td>377<td>330<td>293<td>264<td>240<td>220<td>203<td>189<td>165<td>147<td>132</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	29 <td>26<td>23<td>20</td><td>220<td>1320<td>880<td>660<td>528<td>440<td>377<td>330<td>293<td>264<td>240<td>220<td>203<td>189<td>165<td>147<td>132</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	26 <td>23<td>20</td><td>220<td>1320<td>880<td>660<td>528<td>440<td>377<td>330<td>293<td>264<td>240<td>220<td>203<td>189<td>165<td>147<td>132</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	23 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<td>132</td>	132								
28	168 <td>144<td>108<td>86<td>72<td>62<td>54<td>48<td>43<td>39<td>36<td>33<td>31<td>27<td>24</td><td>22</td><td>240<td>1440<td>960<td>720<td>576<td>480<td>411<td>360<td>320<td>288<td>262<td>240<td>222<td>206<td>180<td>160<td>144</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	144 <td>108<td>86<td>72<td>62<td>54<td>48<td>43<td>39<td>36<td>33<td>31<td>27<td>24</td><td>22</td><td>240<td>1440<td>960<td>720<td>576<td>480<td>411<td>360<td>320<td>288<td>262<td>240<td>222<td>206<td>180<td>160<td>144</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	108 <td>86<td>72<td>62<td>54<td>48<td>43<td>39<td>36<td>33<td>31<td>27<td>24</td><td>22</td><td>240<td>1440<td>960<td>720<td>576<td>480<td>411<td>360<td>320<td>288<td>262<td>240<td>222<td>206<td>180<td>160<td>144</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	86 <td>72<td>62<td>54<td>48<td>43<td>39<td>36<td>33<td>31<td>27<td>24</td><td>22</td><td>240<td>1440<td>960<td>720<td>576<td>480<td>411<td>360<td>320<td>288<td>262<td>240<td>222<td>206<td>180<td>160<td>144</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	72 <td>62<td>54<td>48<td>43<td>39<td>36<td>33<td>31<td>27<td>24</td><td>22</td><td>240<td>1440<td>960<td>720<td>576<td>480<td>411<td>360<td>320<td>288<td>262<td>240<td>222<td>206<td>180<td>160<td>144</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	62 <td>54<td>48<td>43<td>39<td>36<td>33<td>31<td>27<td>24</td><td>22</td><td>240<td>1440<td>960<td>720<td>576<td>480<td>411<td>360<td>320<td>288<td>262<td>240<td>222<td>206<td>180<td>160<td>144</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	54 <td>48<td>43<td>39<td>36<td>33<td>31<td>27<td>24</td><td>22</td><td>240<td>1440<td>960<td>720<td>576<td>480<td>411<td>360<td>320<td>288<td>262<td>240<td>222<td>206<td>180<td>160<td>144</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	48 <td>43<td>39<td>36<td>33<td>31<td>27<td>24</td><td>22</td><td>240<td>1440<td>960<td>720<td>576<td>480<td>411<td>360<td>320<td>288<td>262<td>240<td>222<td>206<td>180<td>160<td>144</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	43 <td>39<td>36<td>33<td>31<td>27<td>24</td><td>22</td><td>240<td>1440<td>960<td>720<td>576<td>480<td>411<td>360<td>320<td>288<td>262<td>240<td>222<td>206<td>180<td>160<td>144</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	39 <td>36<td>33<td>31<td>27<td>24</td><td>22</td><td>240<td>1440<td>960<td>720<td>576<td>480<td>411<td>360<td>320<td>288<td>262<td>240<td>222<td>206<td>180<td>160<td>144</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	36 <td>33<td>31<td>27<td>24</td><td>22</td><td>240<td>1440<td>960<td>720<td>576<td>480<td>411<td>360<td>320<td>288<td>262<td>240<td>222<td>206<td>180<td>160<td>144</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	33 <td>31<td>27<td>24</td><td>22</td><td>240<td>1440<td>960<td>720<td>576<td>480<td>411<td>360<td>320<td>288<td>262<td>240<td>222<td>206<td>180<td>160<td>144</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	31 <td>27<td>24</td><td>22</td><td>240<td>1440<td>960<td>720<td>576<td>480<td>411<td>360<td>320<td>288<td>262<td>240<td>222<td>206<td>180<td>160<td>144</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	27 <td>24</td> <td>22</td> <td>240<td>1440<td>960<td>720<td>576<td>480<td>411<td>360<td>320<td>288<td>262<td>240<td>222<td>206<td>180<td>160<td>144</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	24	22	240 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29	174 <td>152<td>114<td>91<td>76<td>65<td>57<td>51<td>46<td>41<td>38<td>35<td>33</td><td>29</td><td>25</td><td>23</td><td>260<td>1560<td>1040<td>780<td>624<td>520<td>446<td>390<td>347<td>312<td>284<td>260<td>240<td>223<td>195<td>173<td>156</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	152 <td>114<td>91<td>76<td>65<td>57<td>51<td>46<td>41<td>38<td>35<td>33</td><td>29</td><td>25</td><td>23</td><td>260<td>1560<td>1040<td>780<td>624<td>520<td>446<td>390<td>347<td>312<td>284<td>260<td>240<td>223<td>195<td>173<td>156</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	114 <td>91<td>76<td>65<td>57<td>51<td>46<td>41<td>38<td>35<td>33</td><td>29</td><td>25</td><td>23</td><td>260<td>1560<td>1040<td>780<td>624<td>520<td>446<td>390<td>347<td>312<td>284<td>260<td>240<td>223<td>195<td>173<td>156</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	91 <td>76<td>65<td>57<td>51<td>46<td>41<td>38<td>35<td>33</td><td>29</td><td>25</td><td>23</td><td>260<td>1560<td>1040<td>780<td>624<td>520<td>446<td>390<td>347<td>312<td>284<td>260<td>240<td>223<td>195<td>173<td>156</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	76 <td>65<td>57<td>51<td>46<td>41<td>38<td>35<td>33</td><td>29</td><td>25</td><td>23</td><td>260<td>1560<td>1040<td>780<td>624<td>520<td>446<td>390<td>347<td>312<td>284<td>260<td>240<td>223<td>195<td>173<td>156</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	65 <td>57<td>51<td>46<td>41<td>38<td>35<td>33</td><td>29</td><td>25</td><td>23</td><td>260<td>1560<td>1040<td>780<td>624<td>520<td>446<td>390<td>347<td>312<td>284<td>260<td>240<td>223<td>195<td>173<td>156</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	57 <td>51<td>46<td>41<td>38<td>35<td>33</td><td>29</td><td>25</td><td>23</td><td>260<td>1560<td>1040<td>780<td>624<td>520<td>446<td>390<td>347<td>312<td>284<td>260<td>240<td>223<td>195<td>173<td>156</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	51 <td>46<td>41<td>38<td>35<td>33</td><td>29</td><td>25</td><td>23</td><td>260<td>1560<td>1040<td>780<td>624<td>520<td>446<td>390<td>347<td>312<td>284<td>260<td>240<td>223<td>195<td>173<td>156</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	46 <td>41<td>38<td>35<td>33</td><td>29</td><td>25</td><td>23</td><td>260<td>1560<td>1040<td>780<td>624<td>520<td>446<td>390<td>347<td>312<td>284<td>260<td>240<td>223<td>195<td>173<td>156</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	41 <td>38<td>35<td>33</td><td>29</td><td>25</td><td>23</td><td>260<td>1560<td>1040<td>780<td>624<td>520<td>446<td>390<td>347<td>312<td>284<td>260<td>240<td>223<td>195<td>173<td>156</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	38 <td>35<td>33</td><td>29</td><td>25</td><td>23</td><td>260<td>1560<td>1040<td>780<td>624<td>520<td>446<td>390<td>347<td>312<td>284<td>260<td>240<td>223<td>195<td>173<td>156</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	35 <td>33</td> <td>29</td> <td>25</td> <td>23</td> <td>260<td>1560<td>1040<td>780<td>624<td>520<td>446<td>390<td>347<td>312<td>284<td>260<td>240<td>223<td>195<td>173<td>156</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	33	29	25	23	260 <td>1560<td>1040<td>780<td>624<td>520<td>446<td>390<td>347<td>312<td>284<td>260<td>240<td>223<td>195<td>173<td>156</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	1560 <td>1040<td>780<td>624<td>520<td>446<td>390<td>347<td>312<td>284<td>260<td>240<td>223<td>195<td>173<td>156</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	1040 <td>780<td>624<td>520<td>446<td>390<td>347<td>312<td>284<td>260<td>240<td>223<td>195<td>173<td>156</td></td></td></td></td></td></td></td></td></td></td></td></td></td>	780 <td>624<td>520<td>446<td>390<td>347<td>312<td>284<td>260<td>240<td>223<td>195<td>173<td>156</td></td></td></td></td></td></td></td></td></td></td></td></td>	624 <td>520<td>446<td>390<td>347<td>312<td>284<td>260<td>240<td>223<td>195<td>173<td>156</td></td></td></td></td></td></td></td></td></td></td></td>	520 <td>446<td>390<td>347<td>312<td>284<td>260<td>240<td>223<td>195<td>173<td>156</td></td></td></td></td></td></td></td></td></td></td>	446 <td>390<td>347<td>312<td>284<td>260<td>240<td>223<td>195<td>173<td>156</td></td></td></td></td></td></td></td></td></td>	390 <td>347<td>312<td>284<td>260<td>240<td>223<td>195<td>173<td>156</td></td></td></td></td></td></td></td></td>	347 <td>312<td>284<td>260<td>240<td>223<td>195<td>173<td>156</td></td></td></td></td></td></td></td>	312 <td>284<td>260<td>240<td>223<td>195<td>173<td>156</td></td></td></td></td></td></td>	284 <td>260<td>240<td>223<td>195<td>173<td>156</td></td></td></td></td></td>	260 <td>240<td>223<td>195<td>173<td>156</td></td></td></td></td>	240 <td>223<td>195<td>173<td>156</td></td></td></td>	223 <td>195<td>173<td>156</td></td></td>	195 <td>173<td>156</td></td>	173 <td>156</td>	156								
30	180 <td>160<td>120<td>96<td>80<td>69<td>60<td>53<td>48<td>44<td>40<td>37<td>34<td>30<td>27<td>24</td><td>280<td>1680<td>1120<td>840<td>672<td>560<td>480<td>420<td>373<td>336<td>305<td>280<td>258<td>240<td>210<td>187<td>168</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	160 <td>120<td>96<td>80<td>69<td>60<td>53<td>48<td>44<td>40<td>37<td>34<td>30<td>27<td>24</td><td>280<td>1680<td>1120<td>840<td>672<td>560<td>480<td>420<td>373<td>336<td>305<td>280<td>258<td>240<td>210<td>187<td>168</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	120 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<td>69<td>60<td>53<td>48<td>44<td>40<td>37<td>34<td>30<td>27<td>24</td><td>280<td>1680<td>1120<td>840<td>672<td>560<td>480<td>420<td>373<td>336<td>305<td>280<td>258<td>240<td>210<td>187<td>168</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	69 <td>60<td>53<td>48<td>44<td>40<td>37<td>34<td>30<td>27<td>24</td><td>280<td>1680<td>1120<td>840<td>672<td>560<td>480<td>420<td>373<td>336<td>305<td>280<td>258<td>240<td>210<td>187<td>168</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	60 <td>53<td>48<td>44<td>40<td>37<td>34<td>30<td>27<td>24</td><td>280<td>1680<td>1120<td>840<td>672<td>560<td>480<td>420<td>373<td>336<td>305<td>280<td>258<td>240<td>210<td>187<td>168</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	53 <td>48<td>44<td>40<td>37<td>34<td>30<td>27<td>24</td><td>280<td>1680<td>1120<td>840<td>672<td>560<td>480<td>420<td>373<td>336<td>305<td>280<td>258<td>240<td>210<td>187<td>168</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	48 <td>44<td>40<td>37<td>34<td>30<td>27<td>24</td><td>280<td>1680<td>1120<td>840<td>672<td>560<td>480<td>420<td>373<td>336<td>305<td>280<td>258<td>240<td>210<td>187<td>168</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	44 <td>40<td>37<td>34<td>30<td>27<td>24</td><td>280<td>1680<td>1120<td>840<td>672<td>560<td>480<td>420<td>373<td>336<td>305<td>280<td>258<td>240<td>210<td>187<td>168</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	40 <td>37<td>34<td>30<td>27<td>24</td><td>280<td>1680<td>1120<td>840<td>672<td>560<td>480<td>420<td>373<td>336<td>305<td>280<td>258<td>240<td>210<td>187<td>168</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	37 <td>34<td>30<td>27<td>24</td><td>280<td>1680<td>1120<td>840<td>672<td>560<td>480<td>420<td>373<td>336<td>305<td>280<td>258<td>240<td>210<td>187<td>168</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	34 <td>30<td>27<td>24</td><td>280<td>1680<td>1120<td>840<td>672<td>560<td>480<td>420<td>373<td>336<td>305<td>280<td>258<td>240<td>210<td>187<td>168</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	30 <td>27<td>24</td><td>280<td>1680<td>1120<td>840<td>672<td>560<td>480<td>420<td>373<td>336<td>305<td>280<td>258<td>240<td>210<td>187<td>168</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	27 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<td>168</td>	168								
31	186 <td>168<td>126<td>101<td>84<td>72<td>63<td>56<td>50<td>46<td>42<td>39<td>36<td>32<td>28<td>25</td><td>300<td>1800<td>1200<td>900<td>720<td>600<td>514<td>450<td>400<td>360<td>327<td>300<td>277<td>257<td>225<td>200<td>180</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	168 <td>126<td>101<td>84<td>72<td>63<td>56<td>50<td>46<td>42<td>39<td>36<td>32<td>28<td>25</td><td>300<td>1800<td>1200<td>900<td>720<td>600<td>514<td>450<td>400<td>360<td>327<td>300<td>277<td>257<td>225<td>200<td>180</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	126 <td>101<td>84<td>72<td>63<td>56<td>50<td>46<td>42<td>39<td>36<td>32<td>28<td>25</td><td>300<td>1800<td>1200<td>900<td>720<td>600<td>514<td>450<td>400<td>360<td>327<td>300<td>277<td>257<td>225<td>200<td>180</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	101 <td>84<td>72<td>63<td>56<td>50<td>46<td>42<td>39<td>36<td>32<td>28<td>25</td><td>300<td>1800<td>1200<td>900<td>720<td>600<td>514<td>450<td>400<td>360<td>327<td>300<td>277<td>257<td>225<td>200<td>180</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	84 <td>72<td>63<td>56<td>50<td>46<td>42<td>39<td>36<td>32<td>28<td>25</td><td>300<td>1800<td>1200<td>900<td>720<td>600<td>514<td>450<td>400<td>360<td>327<td>300<td>277<td>257<td>225<td>200<td>180</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	72 <td>63<td>56<td>50<td>46<td>42<td>39<td>36<td>32<td>28<td>25</td><td>300<td>1800<td>1200<td>900<td>720<td>600<td>514<td>450<td>400<td>360<td>327<td>300<td>277<td>257<td>225<td>200<td>180</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	63 <td>56<td>50<td>46<td>42<td>39<td>36<td>32<td>28<td>25</td><td>300<td>1800<td>1200<td>900<td>720<td>600<td>514<td>450<td>400<td>360<td>327<td>300<td>277<td>257<td>225<td>200<td>180</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	56 <td>50<td>46<td>42<td>39<td>36<td>32<td>28<td>25</td><td>300<td>1800<td>1200<td>900<td>720<td>600<td>514<td>450<td>400<td>360<td>327<td>300<td>277<td>257<td>225<td>200<td>180</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	50 <td>46<td>42<td>39<td>36<td>32<td>28<td>25</td><td>300<td>1800<td>1200<td>900<td>720<td>600<td>514<td>450<td>400<td>360<td>327<td>300<td>277<td>257<td>225<td>200<td>180</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	46 <td>42<td>39<td>36<td>32<td>28<td>25</td><td>300<td>1800<td>1200<td>900<td>720<td>600<td>514<td>450<td>400<td>360<td>327<td>300<td>277<td>257<td>225<td>200<td>180</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	42 <td>39<td>36<td>32<td>28<td>25</td><td>300<td>1800<td>1200<td>900<td>720<td>600<td>514<td>450<td>400<td>360<td>327<td>300<td>277<td>257<td>225<td>200<td>180</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	39 <td>36<td>32<td>28<td>25</td><td>300<td>1800<td>1200<td>900<td>720<td>600<td>514<td>450<td>400<td>360<td>327<td>300<td>277<td>257<td>225<td>200<td>180</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	36 <td>32<td>28<td>25</td><td>300<td>1800<td>1200<td>900<td>720<td>600<td>514<td>450<td>400<td>360<td>327<td>300<td>277<td>257<td>225<td>200<td>180</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	32 <td>28<td>25</td><td>300<td>1800<td>1200<td>900<td>720<td>600<td>514<td>450<td>400<td>360<td>327<td>300<td>277<td>257<td>225<td>200<td>180</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	28 <td>25</td> <td>300<td>1800<td>1200<td>900<td>720<td>600<td>514<td>450<td>400<td>360<td>327<td>300<td>277<td>257<td>225<td>200<td>180</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	25	300 <td>1800<td>1200<td>900<td>720<td>600<td>514<td>450<td>400<td>360<td>327<td>300<td>277<td>257<td>225<td>200<td>180</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	1800 <td>1200<td>900<td>720<td>600<td>514<td>450<td>400<td>360<td>327<td>300<td>277<td>257<td>225<td>200<td>180</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	1200 <td>900<td>720<td>600<td>514<td>450<td>400<td>360<td>327<td>300<td>277<td>257<td>225<td>200<td>180</td></td></td></td></td></td></td></td></td></td></td></td></td></td>	900 <td>720<td>600<td>514<td>450<td>400<td>360<td>327<td>300<td>277<td>257<td>225<td>200<td>180</td></td></td></td></td></td></td></td></td></td></td></td></td>	720 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<td>180</td>	180								
32	192 <td>176<td>132<td>106<td>88<td>75<td>66<td>59<td>53<td>48<td>44<td>41<td>38<td>33</td><td>29</td><td>26</td><td>320<td>2100<td>1400<td>1050<td>840<td>700<td>600<td>525<td>467<td>420<td>382<td>350<td>323<td>300<td>263<td>233<td>210</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	176 <td>132<td>106<td>88<td>75<td>66<td>59<td>53<td>48<td>44<td>41<td>38<td>33</td><td>29</td><td>26</td><td>320<td>2100<td>1400<td>1050<td>840<td>700<td>600<td>525<td>467<td>420<td>382<td>350<td>323<td>300<td>263<td>233<td>210</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	132 <td>106<td>88<td>75<td>66<td>59<td>53<td>48<td>44<td>41<td>38<td>33</td><td>29</td><td>26</td><td>320<td>2100<td>1400<td>1050<td>840<td>700<td>600<td>525<td>467<td>420<td>382<td>350<td>323<td>300<td>263<td>233<td>210</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	106 <td>88<td>75<td>66<td>59<td>53<td>48<td>44<td>41<td>38<td>33</td><td>29</td><td>26</td><td>320<td>2100<td>1400<td>1050<td>840<td>700<td>600<td>525<td>467<td>420<td>382<td>350<td>323<td>300<td>263<td>233<td>210</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	88 <td>75<td>66<td>59<td>53<td>48<td>44<td>41<td>38<td>33</td><td>29</td><td>26</td><td>320<td>2100<td>1400<td>1050<td>840<td>700<td>600<td>525<td>467<td>420<td>382<td>350<td>323<td>300<td>263<td>233<td>210</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	75 <td>66<td>59<td>53<td>48<td>44<td>41<td>38<td>33</td><td>29</td><td>26</td><td>320<td>2100<td>1400<td>1050<td>840<td>700<td>600<td>525<td>467<td>420<td>382<td>350<td>323<td>300<td>263<td>233<td>210</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	66 <td>59<td>53<td>48<td>44<td>41<td>38<td>33</td><td>29</td><td>26</td><td>320<td>2100<td>1400<td>1050<td>840<td>700<td>600<td>525<td>467<td>420<td>382<td>350<td>323<td>300<td>263<td>233<td>210</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	59 <td>53<td>48<td>44<td>41<td>38<td>33</td><td>29</td><td>26</td><td>320<td>2100<td>1400<td>1050<td>840<td>700<td>600<td>525<td>467<td>420<td>382<td>350<td>323<td>300<td>263<td>233<td>210</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	53 <td>48<td>44<td>41<td>38<td>33</td><td>29</td><td>26</td><td>320<td>2100<td>1400<td>1050<td>840<td>700<td>600<td>525<td>467<td>420<td>382<td>350<td>323<td>300<td>263<td>233<td>210</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	48 <td>44<td>41<td>38<td>33</td><td>29</td><td>26</td><td>320<td>2100<td>1400<td>1050<td>840<td>700<td>600<td>525<td>467<td>420<td>382<td>350<td>323<td>300<td>263<td>233<td>210</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	44 <td>41<td>38<td>33</td><td>29</td><td>26</td><td>320<td>2100<td>1400<td>1050<td>840<td>700<td>600<td>525<td>467<td>420<td>382<td>350<td>323<td>300<td>263<td>233<td>210</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	41 <td>38<td>33</td><td>29</td><td>26</td><td>320<td>2100<td>1400<td>1050<td>840<td>700<td>600<td>525<td>467<td>420<td>382<td>350<td>323<td>300<td>263<td>233<td>210</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	38 <td>33</td> <td>29</td> <td>26</td> <td>320<td>2100<td>1400<td>1050<td>840<td>700<td>600<td>525<td>467<td>420<td>382<td>350<td>323<td>300<td>263<td>233<td>210</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	33	29	26	320 <td>2100<td>1400<td>1050<td>840<td>700<td>600<td>525<td>467<td>420<td>382<td>350<td>323<td>300<td>263<td>233<td>210</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	2100 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33	198 <td>184<td>138<td>110<td>92<td>79<td>69<td>61<td>55<td>50<td>46<td>42<td>39<td>35</td><td>31</td><td>28</td><td>400<td>2400<td>1600<td>1200<td>960<td>800<td>686<td>600<td>533<td>480<td>436<td>400<td>369<td>343<td>300<td>267<td>240</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	184 <td>138<td>110<td>92<td>79<td>69<td>61<td>55<td>50<td>46<td>42<td>39<td>35</td><td>31</td><td>28</td><td>400<td>2400<td>1600<td>1200<td>960<td>800<td>686<td>600<td>533<td>480<td>436<td>400<td>369<td>343<td>300<td>267<td>240</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	138 <td>110<td>92<td>79<td>69<td>61<td>55<td>50<td>46<td>42<td>39<td>35</td><td>31</td><td>28</td><td>400<td>2400<td>1600<td>1200<td>960<td>800<td>686<td>600<td>533<td>480<td>436<td>400<td>369<td>343<td>300<td>267<td>240</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	110 <td>92<td>79<td>69<td>61<td>55<td>50<td>46<td>42<td>39<td>35</td><td>31</td><td>28</td><td>400<td>2400<td>1600<td>1200<td>960<td>800<td>686<td>600<td>533<td>480<td>436<td>400<td>369<td>343<td>300<td>267<td>240</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	92 <td>79<td>69<td>61<td>55<td>50<td>46<td>42<td>39<td>35</td><td>31</td><td>28</td><td>400<td>2400<td>1600<td>1200<td>960<td>800<td>686<td>600<td>533<td>480<td>436<td>400<td>369<td>343<td>300<td>267<td>240</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	79 <td>69<td>61<td>55<td>50<td>46<td>42<td>39<td>35</td><td>31</td><td>28</td><td>400<td>2400<td>1600<td>1200<td>960<td>800<td>686<td>600<td>533<td>480<td>436<td>400<td>369<td>343<td>300<td>267<td>240</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	69 <td>61<td>55<td>50<td>46<td>42<td>39<td>35</td><td>31</td><td>28</td><td>400<td>2400<td>1600<td>1200<td>960<td>800<td>686<td>600<td>533<td>480<td>436<td>400<td>369<td>343<td>300<td>267<td>240</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	61 <td>55<td>50<td>46<td>42<td>39<td>35</td><td>31</td><td>28</td><td>400<td>2400<td>1600<td>1200<td>960<td>800<td>686<td>600<td>533<td>480<td>436<td>400<td>369<td>343<td>300<td>267<td>240</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	55 <td>50<td>46<td>42<td>39<td>35</td><td>31</td><td>28</td><td>400<td>2400<td>1600<td>1200<td>960<td>800<td>686<td>600<td>533<td>480<td>436<td>400<td>369<td>343<td>300<td>267<td>240</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	50 <td>46<td>42<td>39<td>35</td><td>31</td><td>28</td><td>400<td>2400<td>1600<td>1200<td>960<td>800<td>686<td>600<td>533<td>480<td>436<td>400<td>369<td>343<td>300<td>267<td>240</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	46 <td>42<td>39<td>35</td><td>31</td><td>28</td><td>400<td>2400<td>1600<td>1200<td>960<td>800<td>686<td>600<td>533<td>480<td>436<td>400<td>369<td>343<td>300<td>267<td>240</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	42 <td>39<td>35</td><td>31</td><td>28</td><td>400<td>2400<td>1600<td>1200<td>960<td>800<td>686<td>600<td>533<td>480<td>436<td>400<td>369<td>343<td>300<td>267<td>240</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	39 <td>35</td> <td>31</td> <td>28</td> <td>400<td>2400<td>1600<td>1200<td>960<td>800<td>686<td>600<td>533<td>480<td>436<td>400<td>369<td>343<td>300<td>267<td>240</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	35	31	28	400 <td>2400<td>1600<td>1200<td>960<td>800<td>686<td>600<td>533<td>480<td>436<td>400<td>369<td>343<td>300<td>267<td>240</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	2400 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34	204 <td>188<td>144<td>115<td>96<td>82<td>72<td>64<td>58<td>52<td>48<td>44<td>41<td>36<td>32</td><td>29</td><td>450<td>2700<td>1800<td>1350<td>1080<td>900<td>771<td>675<td>600<td>540</td><td>491<td>450<td>415<td>386<td>338<td>300<td>270</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	188 <td>144<td>115<td>96<td>82<td>72<td>64<td>58<td>52<td>48<td>44<td>41<td>36<td>32</td><td>29</td><td>450<td>2700<td>1800<td>1350<td>1080<td>900<td>771<td>675<td>600<td>540</td><td>491<td>450<td>415<td>386<td>338<td>300<td>270</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	144 <td>115<td>96<td>82<td>72<td>64<td>58<td>52<td>48<td>44<td>41<td>36<td>32</td><td>29</td><td>450<td>2700<td>1800<td>1350<td>1080<td>900<td>771<td>675<td>600<td>540</td><td>491<td>450<td>415<td>386<td>338<td>300<td>270</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	115 <td>96<td>82<td>72<td>64<td>58<td>52<td>48<td>44<td>41<td>36<td>32</td><td>29</td><td>450<td>2700<td>1800<td>1350<td>1080<td>900<td>771<td>675<td>600<td>540</td><td>491<td>450<td>415<td>386<td>338<td>300<td>270</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	96 <td>82<td>72<td>64<td>58<td>52<td>48<td>44<td>41<td>36<td>32</td><td>29</td><td>450<td>2700<td>1800<td>1350<td>1080<td>900<td>771<td>675<td>600<td>540</td><td>491<td>450<td>415<td>386<td>338<td>300<td>270</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	82 <td>72<td>64<td>58<td>52<td>48<td>44<td>41<td>36<td>32</td><td>29</td><td>450<td>2700<td>1800<td>1350<td>1080<td>900<td>771<td>675<td>600<td>540</td><td>491<td>450<td>415<td>386<td>338<td>300<td>270</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	72 <td>64<td>58<td>52<td>48<td>44<td>41<td>36<td>32</td><td>29</td><td>450<td>2700<td>1800<td>1350<td>1080<td>900<td>771<td>675<td>600<td>540</td><td>491<td>450<td>415<td>386<td>338<td>300<td>270</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	64 <td>58<td>52<td>48<td>44<td>41<td>36<td>32</td><td>29</td><td>450<td>2700<td>1800<td>1350<td>1080<td>900<td>771<td>675<td>600<td>540</td><td>491<td>450<td>415<td>386<td>338<td>300<td>270</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	58 <td>52<td>48<td>44<td>41<td>36<td>32</td><td>29</td><td>450<td>2700<td>1800<td>1350<td>1080<td>900<td>771<td>675<td>600<td>540</td><td>491<td>450<td>415<td>386<td>338<td>300<td>270</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	52 <td>48<td>44<td>41<td>36<td>32</td><td>29</td><td>450<td>2700<td>1800<td>1350<td>1080<td>900<td>771<td>675<td>600<td>540</td><td>491<td>450<td>415<td>386<td>338<td>300<td>270</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	48 <td>44<td>41<td>36<td>32</td><td>29</td><td>450<td>2700<td>1800<td>1350<td>1080<td>900<td>771<td>675<td>600<td>540</td><td>491<td>450<td>415<td>386<td>338<td>300<td>270</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	44 <td>41<td>36<td>32</td><td>29</td><td>450<td>2700<td>1800<td>1350<td>1080<td>900<td>771<td>675<td>600<td>540</td><td>491<td>450<td>415<td>386<td>338<td>300<td>270</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	41 <td>36<td>32</td><td>29</td><td>450<td>2700<td>1800<td>1350<td>1080<td>900<td>771<td>675<td>600<td>540</td><td>491<td>450<td>415<td>386<td>338<td>300<td>270</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	36 <td>32</td> <td>29</td> 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35	210 <td>192<td>148<td>118<td>98<td>84<td>74<td>66<td>60<td>54<td>50<td>46<td>43<td>38<td>33</td><td>30</td><td>500<td>3000<td>2000<td>1500<td>1200<td>1000<td>857<td>750<td>667<td>600<td>545<td>500<td>462<td>429<td>375<td>333<td>300</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	192 <td>148<td>118<td>98<td>84<td>74<td>66<td>60<td>54<td>50<td>46<td>43<td>38<td>33</td><td>30</td><td>500<td>3000<td>2000<td>1500<td>1200<td>1000<td>857<td>750<td>667<td>600<td>545<td>500<td>462<td>429<td>375<td>333<td>300</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	148 <td>118<td>98<td>84<td>74<td>66<td>60<td>54<td>50<td>46<td>43<td>38<td>33</td><td>30</td><td>500<td>3000<td>2000<td>1500<td>1200<td>1000<td>857<td>750<td>667<td>600<td>545<td>500<td>462<td>429<td>375<td>333<td>300</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	118 <td>98<td>84<td>74<td>66<td>60<td>54<td>50<td>46<td>43<td>38<td>33</td><td>30</td><td>500<td>3000<td>2000<td>1500<td>1200<td>1000<td>857<td>750<td>667<td>600<td>545<td>500<td>462<td>429<td>375<td>333<td>300</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	98 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36	216 <td>200<td>152<td>120<td>100<td>88<td>78<td>69<td>62<td>57<td>52<td>48<td>45<td>39<td>35</td><td>31</td><td>600<td>3600<td>2400<td>1800<td>1440<td>1200<td>1029<td>900<td>800<td>720<td>655<td>600<td>554<td>514<td>450<td>400<td>360</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	200 <td>152<td>120<td>100<td>88<td>78<td>69<td>62<td>57<td>52<td>48<td>45<td>39<td>35</td><td>31</td><td>600<td>3600<td>2400<td>1800<td>1440<td>1200<td>1029<td>900<td>800<td>720<td>655<td>600<td>554<td>514<td>450<td>400<td>360</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	152 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37	222 <td>216<td>162<td>130<td>108<td>93<td>81<td>72<td>65<td>59<td>54<td>50<td>46<td>41<td>36</td><td>32</td><td>700<td>4200<td>2800<td>2100<td>1680<td>1400<td>1200<td>1050<td>933<td>840<td>764<td>700<td>646<td>600<td>525<td>467<td>420</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	216 <td>162<td>130<td>108<td>93<td>81<td>72<td>65<td>59<td>54<td>50<td>46<td>41<td>36</td><td>32</td><td>700<td>4200<td>2800<td>2100<td>1680<td>1400<td>1200<td>1050<td>933<td>840<td>764<td>700<td>646<td>600<td>525<td>467<td>420</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	162 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<td>50<td>46<td>41<td>36</td><td>32</td><td>700<td>4200<td>2800<td>2100<td>1680<td>1400<td>1200<td>1050<td>933<td>840<td>764<td>700<td>646<td>600<td>525<td>467<td>420</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	50 <td>46<td>41<td>36</td><td>32</td><td>700<td>4200<td>2800<td>2100<td>1680<td>1400<td>1200<td>1050<td>933<td>840<td>764<td>700<td>646<td>600<td>525<td>467<td>420</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	46 <td>41<td>36</td><td>32</td><td>700<td>4200<td>2800<td>2100<td>1680<td>1400<td>1200<td>1050<td>933<td>840<td>764<td>700<td>646<td>600<td>525<td>467<td>420</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	41 <td>36</td> <td>32</td> <td>700<td>4200<td>2800<td>2100<td>1680<td>1400<td>1200<td>1050<td>933<td>840<td>764<td>700<td>646<td>600<td>525<td>467<td>420</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	36	32	700 <td>4200<td>2800<td>2100<td>1680<td>1400<td>1200<td>1050<td>933<td>840<td>764<td>700<td>646<td>600<td>525<td>467<td>420</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	4200 <td>2800<td>2100<td>1680<td>1400<td>1200<td>1050<td>933<td>840<td>764<td>700<td>646<td>600<td>525<td>467<td>420</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	2800 <td>2100<td>1680<td>1400<td>1200<td>1050<td>933<td>840<td>764<td>700<td>646<td>600<td>525<td>467<td>420</td></td></td></td></td></td></td></td></td></td></td></td></td></td>	2100 <td>1680<td>1400<td>1200<td>1050<td>933<td>840<td>764<td>700<td>646<td>600<td>525<td>467<td>420</td></td></td></td></td></td></td></td></td></td></td></td></td>	1680 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<td>420</td>	420								
38	228 <td>224<td>168<td>134<td>112<td>96<td>84<td>75<td>67<td>61<td>56<td>52<td>48<td>42<td>37<td>34</td><td>800<td>4800<td>3200<td>2400<td>1920<td>1600<td>1371<td>1200<td>1067<td>960<td>873<td>800<td>738<td>686<td>600<td>533<td>480</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	224 <td>168<td>134<td>112<td>96<td>84<td>75<td>67<td>61<td>56<td>52<td>48<td>42<td>37<td>34</td><td>800<td>4800<td>3200<td>2400<td>1920<td>1600<td>1371<td>1200<td>1067<td>960<td>873<td>800<td>738<td>686<td>600<td>533<td>480</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	168 <td>134<td>112<td>96<td>84<td>75<td>67<td>61<td>56<td>52<td>48<td>42<td>37<td>34</td><td>800<td>4800<td>3200<td>2400<td>1920<td>1600<td>1371<td>1200<td>1067<td>960<td>873<td>800<td>738<td>686<td>600<td>533<td>480</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	134 <td>112<td>96<td>84<td>75<td>67<td>61<td>56<td>52<td>48<td>42<td>37<td>34</td><td>800<td>4800<td>3200<td>2400<td>1920<td>1600<td>1371<td>1200<td>1067<td>960<td>873<td>800<td>738<td>686<td>600<td>533<td>480</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	112 <td>96<td>84<td>75<td>67<td>61<td>56<td>52<td>48<td>42<td>37<td>34</td><td>800<td>4800<td>3200<td>2400<td>1920<td>1600<td>1371<td>1200<td>1067<td>960<td>873<td>800<td>738<td>686<td>600<td>533<td>480</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	96 <td>84<td>75<td>67<td>61<td>56<td>52<td>48<td>42<td>37<td>34</td><td>800<td>4800<td>3200<td>2400<td>1920<td>1600<td>1371<td>1200<td>1067<td>960<td>873<td>800<td>738<td>686<td>600<td>533<td>480</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	84 <td>75<td>67<td>61<td>56<td>52<td>48<td>42<td>37<td>34</td><td>800<td>4800<td>3200<td>2400<td>1920<td>1600<td>1371<td>1200<td>1067<td>960<td>873<td>800<td>738<td>686<td>600<td>533<td>480</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	75 <td>67<td>61<td>56<td>52<td>48<td>42<td>37<td>34</td><td>800<td>4800<td>3200<td>2400<td>1920<td>1600<td>1371<td>1200<td>1067<td>960<td>873<td>800<td>738<td>686<td>600<td>533<td>480</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	67 <td>61<td>56<td>52<td>48<td>42<td>37<td>34</td><td>800<td>4800<td>3200<td>2400<td>1920<td>1600<td>1371<td>1200<td>1067<td>960<td>873<td>800<td>738<td>686<td>600<td>533<td>480</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	61 <td>56<td>52<td>48<td>42<td>37<td>34</td><td>800<td>4800<td>3200<td>2400<td>1920<td>1600<td>1371<td>1200<td>1067<td>960<td>873<td>800<td>738<td>686<td>600<td>533<td>480</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	56 <td>52<td>48<td>42<td>37<td>34</td><td>800<td>4800<td>3200<td>2400<td>1920<td>1600<td>1371<td>1200<td>1067<td>960<td>873<td>800<td>738<td>686<td>600<td>533<td>480</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	52 <td>48<td>42<td>37<td>34</td><td>800<td>4800<td>3200<td>2400<td>1920<td>1600<td>1371<td>1200<td>1067<td>960<td>873<td>800<td>738<td>686<td>600<td>533<td>480</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	48 <td>42<td>37<td>34</td><td>800<td>4800<td>3200<td>2400<td>1920<td>1600<td>1371<td>1200<td>1067<td>960<td>873<td>800<td>738<td>686<td>600<td>533<td>480</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	42 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39	234 <td>232<td>174<td>139<td>116<td>99<td>87<td>77<td>70<td>63<td>58<td>54<td>50<td>44<td>39<td>35</td><td>900<td>5400<td>3600<td>2700<td>2160<td>1800<td>1543<td>1350<td>1200<td>1080<td>982<td>900<td>831<td>771<td>675<td>600<td>540</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	232 <td>174<td>139<td>116<td>99<td>87<td>77<td>70<td>63<td>58<td>54<td>50<td>44<td>39<td>35</td><td>900<td>5400<td>3600<td>2700<td>2160<td>1800<td>1543<td>1350<td>1200<td>1080<td>982<td>900<td>831<td>771<td>675<td>600<td>540</td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td></td>	174 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Formula		L/100 m = L/min x 36 ÷ speed																		L/min = L/100 m x speed ÷ 36																					

NOZZLES FOR HORTICULTURE – TREE AND VINE

CERAMIC CONE NOZZLES FOR HORTICULTURE – TREE AND VINE CROPS

NOZZLE TYPE	ORDER CODE	\$ (EX. GST)	PROD. CAT.
ALBUZ ATR 80°			
	AZ-ATR-**-80C ** denotes colour, e.g. YW	13.50	Z
FEATURES AND SPECIFICATIONS <ul style="list-style-type: none"> ✓ Hollow cone 80° ✓ Precision polished pink ceramic surfaces for long life ✓ Easily dismantled for cleaning ✓ Perfect sealing of swirl chamber for precise flow rate ✓ Pressure range 0–25 Bar (optimum 8–15 Bar) ✓ For tree, vine and trellis crops ✓ Ideal for fungicides and insecticides ✓ Fine to very fine drops for excellent spray coverage ✓ European colour coded (see chart below for pressure, flow rates and colours) 			
		PRESSURE RANGE  5–25 BAR	SPRAY PATTERN  80°



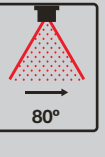
**Colour codes: WE = white, LC = lilac, BN = brown, YW = yellow, OE = orange, RD = red, GY = grey, GN = green, BK = black, BE = blue, PE = purple

NOZZLE TYPE	ORDER CODE	\$ (EX. GST)	PROD. CAT.
ALBUZ ATR 60°			
	AZ-ATR-**-60C ** denotes colour, e.g. YW	13.50	Z
FEATURES AND SPECIFICATIONS <ul style="list-style-type: none"> ✓ Hollow cone 60° (note – white and purple only available in 80°) ✓ Precision polished pink ceramic surfaces for long life ✓ Easily dismantled for cleaning ✓ Perfect sealing of swirl chamber for precise flow rate ✓ Pressure range 0–25 Bar (optimum 8–15 Bar) ✓ For tree, vine and trellis crops ✓ Ideal for fungicides and insecticides ✓ European colour coded 			
		PRESSURE RANGE  5–25 BAR	SPRAY PATTERN  60°

**Colour codes: WE = white, LC = lilac, BN = brown, YW = yellow, OE = orange, RD = red, GY = grey, GN = green, BK = black, BE = blue, PE = purple

ALBUZ 60° AND 80° ATR HOLLOW CONE NOZZLE CHART

BAR	L/MIN										
	White	Lilac	Brown	Yellow	Orange	Red	Grey	Green	Black	Blue	Purple
5	0.27	0.36	0.48	0.73	0.99	1.38	1.5	1.78	2	2.45	3.05
6	0.29	0.39	0.52	0.8	1.08	1.51	1.63	1.94	2.18	2.67	3.32
7	0.32	0.42	0.56	0.86	1.17	1.62	1.76	2.09	2.35	2.87	3.57
8	0.34	0.45	0.6	0.92	1.24	1.73	1.87	2.22	2.5	3.06	3.81
9	0.36	0.48	0.64	0.97	1.32	1.83	1.98	2.35	2.64	3.24	4.03
10	0.38	0.50	0.67	1.03	1.39	1.92	2.08	2.47	2.78	3.4	4.23
11	0.39	0.52	0.7	1.07	1.45	2.01	2.17	2.58	2.9	3.56	4.43
12	0.41	0.55	0.73	1.12	1.51	2.09	2.26	2.69	3.03	3.71	4.61
13	0.43	0.57	0.76	1.17	1.57	2.17	2.35	2.79	3.14	3.85	4.79
14	0.44	0.59	0.79	1.21	1.63	2.25	2.43	2.89	3.26	3.99	4.96
15	0.46	0.61	0.81	1.25	1.69	2.33	2.51	2.99	3.36	4.12	5.12
16	0.47	0.63	0.84	1.29	1.74	2.4	2.59	3.08	3.47	4.25	5.28
17	0.48	0.64	0.86	1.33	1.79	2.47	2.67	3.17	3.57	4.37	5.43
18	0.50	0.66	0.89	1.37	1.84	2.54	2.74	3.25	3.67	4.49	5.58
19	0.51	0.68	0.91	1.4	1.89	2.6	2.81	3.34	3.76	4.61	5.73
20	0.52	0.70	0.93	1.44	1.94	2.67	2.88	3.42	3.85	4.72	5.87

NOZZLE TYPE	ORDER CODE	\$ (EX. GST)	PROD. CAT.
ALBUZ TVI			
	AZ-TVI-****-80C **** denotes size, see table below	30.95	Z
FEATURES AND SPECIFICATIONS <ul style="list-style-type: none"> ✓ Air-induction hollow cone nozzle (venture system) ✓ Large drops filled with air for drift control ✓ Precision polished pink ceramic surfaces ✓ Compact length (19mm) ✓ Perfect sealing of swirl chamber for precise flow rate ✓ Ideal for fungicides and insecticides ✓ Coarse to ultra-coarse droplets for drift control ✓ ISO colour coding (see chart below) 			
		PRESSURE RANGE  5–25 BAR	SPRAY PATTERN  80°

SPRAY QUALITY INFORMATION FOR TVI NOZZLES

BAR	TVI 80°							
	Purple 80-0050	Pink 80-0075	Orange 80-001	Green 80-015	Yellow 80-02	Lilac 80-025	Blue 80-03	Red 80-04
5			UC	UC	UC	UC	UC	UC
7	UC	VC	UC	UC	UC	UC	UC	UC
10	XC	VC	XC	XC	XC	XC	UC	UC
15	VC	C	VC	VC	VC	XC	UC	UC

ALBUZ 80° TVI HOLLOW CONE NOZZLE CHART

BAR	L/MIN							
	Purple 80-0050	Pink 80-0075	Orange 80-001	Green 80-015	Yellow 80-02	Lilac 80-025	Blue 80-03	Red 80-04
5	-	0.39	0.52	0.77	1.03	1.29	1.55	2.07
6	-	0.42	0.57	0.85	1.13	1.41	1.70	2.26
7	0.31	0.46	0.61	0.92	1.22	1.53	1.83	2.44
8	0.33	0.49	0.65	0.98	1.31	1.63	1.96	2.61
9	0.35	0.52	0.69	1.04	1.39	1.73	2.08	2.77
10	0.37	0.55	0.73	1.10	1.46	1.83	2.19	2.92
11	0.38	0.57	0.77	1.15	1.53	1.91	2.30	3.06
12	0.40	0.60	0.80	1.2	1.6	2.00	2.40	3.20
13	0.42	0.62	0.83	1.25	1.67	2.08	2.50	3.33
14	0.43	0.65	0.86	1.30	1.73	2.16	2.59	3.46
15	0.45	0.67	0.89	1.34	1.79	2.24	2.68	3.58
16	0.46	0.69	0.92	1.39	1.85	2.31	2.77	3.70
17	0.48	0.71	0.95	1.43	1.90	2.38	2.86	3.81
18	0.49	0.73	0.98	1.47	1.96	2.45	2.94	3.92
19	0.50	0.75	1.01	1.51	2.01	2.52	3.02	4.03
20	0.52	0.77	1.03	1.55	2.07	2.58	3.10	4.13
21	0.53	0.79	1.06	1.59	2.12	2.65	3.17	4.23
22	0.54	0.81	1.08	1.62	2.17	2.71	3.25	4.33
23	0.55	0.83	1.11	1.66	2.22	2.77	3.32	4.43
24	0.57	0.85	1.13	1.70	2.26	2.83	3.39	4.53
25	0.58	0.87	1.15	1.73	2.31	2.89	3.46	4.62













NOZZLE BODIES AND CAPS FOR HORTICULTURE

- Caps for use with TurboDrop® AI nozzles in horticultural applications
- Nozzle bodies and o-rings used on Croplands sprayers for horticulture

Note – the complete nozzle body, when ordered from Croplands, comes with a cap/caps to suit. When ordering caps and o-rings to suit TurboDrop® AI nozzles, use the codes on the right-hand side of the table below.

- » Choose the correct cap to suit the nozzle body on your sprayer
- » The TurboDrop® uni narrow angle nozzles click together and remain in the cap once assembled. They cannot be disassembled – so choose the cap you need
- » Suitable o-rings are required for a complete seal – see table below




NOZZLE BODY	FITTED TO	CAP AND O-RING TO ORDER	DESCRIPTION	ORDER CODE	\$ (EX. GST)	PROD. CAT.
 B716.617.2 (standard type)	Croplands Cropliner® sprayers, Silvan models and other brands	 B716.605.3	Brass cap	B716.605.3	2.77	Y
 B73.610.105 (organic type)	Croplands Cropliner® sprayers for organic spraying	 B716.605.3	Brass cap	B716.605.3	2.77	Y
	Croplands Cropliner® and Cropliner SP® front entry fan models	 B75.605.46	Brass cap	B75.605.46	2.77	Y
 B75.617.6E (standard type)	Croplands Cropliner® and Cropliner SP® front entry fan models	 B75.605.46	Brass cap	B75.605.46	2.77	Y
 B264.612.172	Croplands Quantum Mist® sprayers	 B256.605.7	Nickel plated cap	B256.605.7	2.62	V
 B67.617.67	Croplands Quantum Mist® tower sprayers	 B256.605.7	Nickel plated cap	B256.605.7	2.62	Y
O-rings to seal the caps on all listed nozzle bodies above	Croplands Quantum Mist® sprayers	 B73.602.22	O-ring, 16mm O.D. x 10.8 I.D	B73.602.22	0.62	Y

PRICING FOR NOZZLE BODIES SHOWN IN TABLE ABOVE

ORDER CODE	DESCRIPTION	\$ (EX. GST)	PROD. CAT.
B716.617.2	Standard swing-over nozzle body, suits Croplands Cropliner sprayers.	51.58	Y
B73.610.105	Organic model swing-over nozzle body, suits Croplands Cropliner sprayers for organic applications.	48.42	Y
B75.617.6E	Swing-over nozzle body for Croplands front-entry fan models	51.58	Y
B264.612.172	Single swivel nozzle body for Croplands Quantum Mist® sprayers	15.79	Y
B67.617.67	Non-drip body with shut off for Croplands Quantum Mist® sprayers	51.58	Y



TURBODROP® NARROW ANGLE AI NOZZLES

DESCRIPTION	HOW TO ORDER	\$ (EX. GST)	PROD. CAT.
 <ul style="list-style-type: none"> ✓ High pressure air-induction nozzle ✓ 20, 40 and 60° options ✓ Fully ceramic injector and exit tip ✓ Pressure range 6–25 Bar ✓ Modular construction 	<p>Size i.e. 04</p> <p>TDCFFC6004UNI</p> <p>Angle i.e. 60°</p>	38.95	Y

For choosing the right cap to suit the TurboDrop® narrow angle AI nozzles and nozzle body, see previous page.

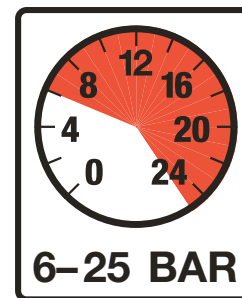
KEY FEATURES

- Narrow angle horticultural flat fan venturi nozzle designed specifically for horticultural applications
- All wearing components made from high quality ceramic material – ideal for reducing wear when using abrasive powders and granulated formulations in suspension
- ISO colour coded for easy identification
- Coarse to extra coarse droplet for effective drift reduction, even at high pressure
- High droplet speed for good projection and excellent penetration over a wide pressure range
- European JKI approved for up to 90% drift reduction

USES

- Axial-type air-blast fans for specific applications (i.e. HiCane application in kiwifruit)
- Top nozzles on airblast fans to reduce drift in upper canopies
- Croplands Quantum Mist sprayers for early season spray applications to reduce drift and improve coverage on tree branches, buds and vine cordons


PRESSURE RANGE



BAR	NOZZLE SIZE (ISO COLOUR CODED) AND OUTPUT IN L/MIN							
	01	15	02	025	03	04	05	06
6	0.57	0.85	1.13	1.41	1.70	2.26	2.83	3.39
7	0.61	0.92	1.22	1.53	1.83	2.44	3.05	3.67
8	0.65	0.98	1.31	1.63	1.96	2.61	3.26	3.92
9	0.69	1.04	1.39	1.73	2.08	2.77	3.46	4.16
10	0.73	1.09	1.46	1.82	2.19	2.92	3.65	4.38
12	0.80	1.20	1.60	2.00	2.40	3.20	4.00	4.80
14	0.86	1.29	1.73	2.16	2.59	3.46	4.32	5.19
16	0.92	1.38	1.85	2.31	2.77	3.70	4.62	5.54
18	0.98	1.47	1.96	2.45	2.94	3.92	4.90	5.88
20	1.03	1.55	2.07	2.58	3.10	4.13	5.16	6.20
22	1.08	1.62	2.17	2.71	3.25	4.33	5.41	6.50
24	1.13	1.70	2.26	2.83	3.39	4.53	5.65	6.79
25	1.15	1.73	2.31	2.89	3.47	4.62	5.77	6.93

NOZZLES FOR HORTICULTURE

NOZZLES – DISCS AND CORES

NOZZLE	TYPE AND DESCRIPTION	SAMPLE ORDER CODE	TYPE	SIZE RANGE, MATERIAL	\$ (EX. GST)	PROD. CAT.
	Disc and Core Jets: • Full and hollow cone spray patterns • Medium to fine droplets for use in air assisted situations • 5–20 Bar recommended range	AZ-AD4	Disc	• 1 to 7 • Pink ceramic	13.50	Z
		AZ-AC35	Core	• 13 to 56 • Pink ceramic	13.50	Z

DISC AND CORE ALBUZ CERAMIC – FLOWRATES

	DISC SIZE	CORE SIZE	ORIFICES DIAMETER	L/MIN							ANGLES	
				3 BAR	4 BAR	5 BAR	6 BAR	10 BAR	15 BAR	20 BAR	10 BAR	20 BAR
HOLLOW CONE	AD 1	AC 3	0,8	0,24	0,27	0,3	0,33	0,41	0,49	0,56	70°	79°
	AD 2	AC 13	1,02	0,31	0,35	0,39	0,42	0,53	0,64	0,73	87°	97°
	AD 3	AC 13	1,2	0,36	0,41	0,45	0,49	0,61	0,74	0,84	89°	98°
	AD 4	AC 13	1,56	0,45	0,52	0,57	0,62	0,78	0,93	1,06	99°	103°
	AD 5	AC 13	2	0,55	0,62	0,69	0,75	0,94	1,13	1,29	102°	105°
	AD 1	AC 23	0,8	0,28	0,32	0,35	0,38	0,48	0,57	0,65	66°	74°
	AD 2	AC 23	1,02	0,37	0,43	0,47	0,51	0,64	0,77	0,88	83°	93°
	AD 3	AC 23	1,2	0,44	0,51	0,56	0,61	0,76	0,92	1,04	84°	92°
	AD 4	AC 23	1,56	0,56	0,64	0,71	0,77	0,97	1,16	1,32	92°	98°
	AD 5	AC 23	2	0,72	0,82	0,91	0,99	1,24	1,49	1,7	96°	99°
	AD 6	AC 23	2,4	0,85	0,97	1,07	1,16	1,46	1,75	2	99°	101°
	AD 1	AC 25	0,8	0,41	0,46	0,51	0,55	0,7	0,84	0,95	50°	60°
	AD 2	AC 25	1,02	0,59	0,67	0,74	0,8	1,01	1,21	1,38	57°	66°
	AD 3	AC 25	1,2	0,72	0,81	0,9	0,98	1,23	1,48	1,68	63°	69°
	AD 4	AC 25	1,56	1,02	1,16	1,28	1,39	1,75	2,1	2,39	75°	80°
	AD 5	AC 25	2	1,41	1,6	1,77	1,92	2,42	2,9	3,3	77°	80°
	AD 6	AC 25	2,4	1,73	1,97	2,18	2,37	2,98	3,57	4,07	82°	85°
	AD 7	AC 25	2,8	2,07	2,36	2,61	2,83	3,57	4,28	4,87	88°	91°
	AD 1	AC 45	0,8	0,48	0,55	0,61	0,66	0,83	1	1,14	32°	39°
	AD 2	AC 45	1,02	0,73	0,83	0,92	1	1,26	1,51	1,72	46°	53°
	AD 3	AC 45	1,2	0,92	1,05	1,16	1,26	1,58	1,9	2,16	48°	52°
	AD 4	AC 45	1,56	1,35	1,54	1,7	1,85	2,32	2,79	3,17	59°	60°
	AD 5	AC 45	2	1,92	2,19	2,42	2,63	3,31	3,97	4,52	68°	70°
	AD 6	AC 45	2,4	2,46	2,79	3,09	3,35	4,22	5,07	5,77	72°	75°
	AD 7	AC 45	2,8	3,01	3,43	3,79	4,11	5,18	6,21	7,07	79°	80°
	AD 1	AC 46	0,8	0,55	0,62	0,69	0,75	0,94	1,13	1,29	23°	27°
	AD 2	AC 46	1,02	0,92	1,05	1,16	1,26	1,58	1,9	2,16	26°	30°
	AD 3	AC 46	1,2	1,2	1,37	1,51	1,64	2,06	2,48	2,82	30°	30°
	AD 4	AC 46	1,56	2,03	2,32	2,56	2,78	3,5	4,2	4,78	35°	35°
	AD 5	AC 46	2	3,11	3,54	3,91	4,24	5,34	6,41	7,3	40°	42°
	AD 6	AC 46	2,4	4,12	4,69	5,18	5,62	7,08	8,49	9,67	45°	46°
	AD 7	AC 46	3,230	5,49	6,40	7,10	7,84	10,16	12,43	14,33	55°	53°
FULL CONE	AD 1	AC 31	0,8	0,53	0,61	0,67	0,73	0,92	1,1	1,25	39°	39°
	AD 2	AC 31	1,02	0,82	0,93	1,03	1,12	1,41	1,69	1,92	87°	95°
	AD 3	AC 31	1,2	0,87	0,99	1,1	1,19	1,5	1,8	2,05	65°	62°
	AD 1	AC 35	0,8	0,53	0,61	0,67	0,73	0,92	1,1	1,25	34°	40°
	AD 2	AC 35	1,02	0,92	1,05	1,16	1,26	1,58	1,9	2,16	39°	39°
	AD 3	AC 35	1,2	1,28	1,46	1,61	1,75	2,2	2,64	3	44°	42°
	AD 4	AC 35	1,56	2,08	2,37	2,62	2,84	3,58	4,3	4,89	77°	72°
	AD 5	AC 35	2	2,62	2,98	3,3	3,58	4,51	5,41	6,16	37°	34°
	AD 2	AC 56	1,02	0,88	1	1,11	1,2	1,52	1,82	20,7	21°	20°
	AD 3	AC 56	1,2	1,19	1,36	1,5	1,63	2,05	2,46	2,8	28°	32°
	AD 4	AC 56	1,56	2,05	2,33	2,58	2,8	3,52	4,23	4,81	35°	38°
	AD 5	AC 56	2	3,46	3,94	4,36	4,73	5,96	7,15	8,14	43°	40°
	AD 6	AC 56	2,1	5,11	5,82	6,43	6,98	8,78	10,54	12	56°	49°
	AD 7	AC 56	2,3	6,87	7,81	8,64	9,38	11,8	14,17	16,12	68°	64°



CHECKING SPRAY COVERAGE

The appearance of a spray cloud interacting with the canopy does not provide accurate indications about coverage achieved in the canopy. More often than not the perception of the human eye is not even close to the real coverage achieved. For example, the plumes of high volume applications will generally look reassuringly better than the hardly visible plumes from low volume applications. Yet, coverage with the lower volume is often equivalent or even better.

Hard to cover surfaces may not allow deposition and what looks superficially like an effective plume may not translate into actual coverage. Therefore, for any realistic assessment of spray coverage it becomes imperative to create some unbiased standard with the help of spray indicators.

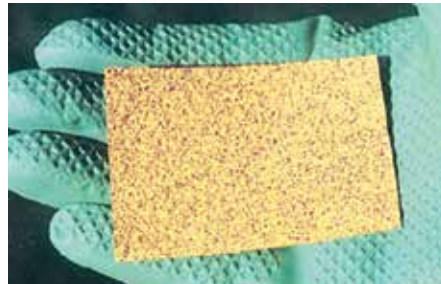


CLAY MARKERS

Their main use pattern is to protect fruits and leaves from sun burn. By far the most visible residues are produced by Surround which makes it an excellent product for the assessment of coverage. Spraying with Surround provides the advantage to see coverage over the entire canopy as a whole as well as in detail. Uneven banding or shading in the canopy can be picked up very effectively. Surround is the best method to demonstrate excessive run-off.

An assessment can be carried out soon after application, once the clay marker has dried. The sprayer can be modified according to shortcomings. This continuous workflow makes working on the set-up very effective.

A good visual spray indicator rate is 1.25kg/100 litre dilute volume. If a concentrate spray volume is used the x-factor rules must be applied.



The SNAPCARD APP allows the cards to be photographed and coverage to be measured.

WATER SENSITIVE PAPER

Water sensitive paper has the advantage that it is very easy to handle (but watch out for moisture) and store (used and unused) which make it an ideal tool for documentation. It can be assessed straight after the application and like clay, it is excellent to be incorporated into the work flow of the set-up.

It provides only a small snapshot of the canopy target and great care needs to be taken to produce a representative standard when placing the papers into the canopy. As a rule of thumb, if three out of ten papers show inadequate coverage the set-up needs improvement.



FLUORESCENT DYE

The glow of fluorescent dye in the light of a fluorescent torch under dark conditions can be quite spectacular. Even the tiniest droplets show up. The observer needs a fluorescent torch. Assessments are normally carried out in the night which makes it difficult to change set-ups on the go. Alternatively, leaves and fruits can be picked after application and observed in a darkroom during the day.

ORDER CODE	DESCRIPTION	\$ (EX. GST)	PROD. CAT.
L-M1111	1 litre fluoro dye	146.32	X
L-M1115	4 litre fluoro dye	521.05	X
20301-1	Water sensitive paper 76 x 26mm (3" x 1") pack 50	109.47	X
20301-2	Water sensitive paper 76 x 52mm (3" x 2") pack 50	193.47	X

NOZZLE MATERIAL AND WEAR

Nozzle orifices are produced with different materials, the most durable of them being ceramic, followed by steel and various polymers. Nozzles with brass orifices are made from the least durable material.

Worn or damaged nozzles will produce an uneven spray pattern with serious implications for efficacy. Worn or damaged nozzles in spray units without an automatic rate controller will increase the output, spoil calibration, and may create unnecessary extra costs due to over application.

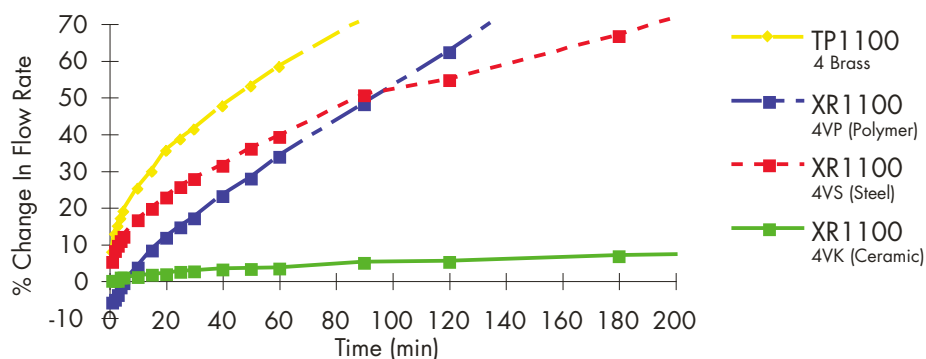
Most new sprayers have rate controllers that will compensate by measuring liquid flow and adjust

accordingly. However, they will cause under supply to the rest of the nozzles to adjust for the extra output of the worn nozzles. Again, this may result in an uneven spray pattern.

Nozzles should be checked for wear at least once per season. As a rule of thumb, nozzles made from durable plastic will need replacement every two years, nozzles with steel orifices should be replaced every three years and nozzles with ceramic tips should be replaced every four to five years.

These time frames will decrease with heavy use, especially when spraying abrasive chemicals.

EFFECT OF NOZZLE MATERIAL ON NOZZLE WEAR: ACCELERATED WEAR TEST



Source: TeeJet

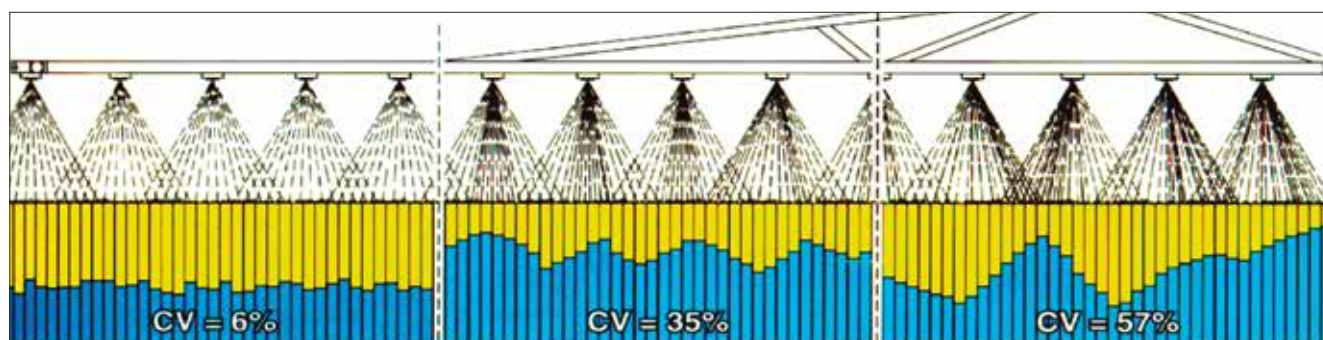
UNIFORMITY OF SPRAY

Uniformity of spray is affected by:

» Worn or damaged nozzles

» Nozzle type, spacing and height
» Boom movement, stability

» Liquid properties (adjuvants can have an uniforming effect, e.g. LI 700)



Source: TeeJet

NEW SPRAY TIPS

Produce a uniform distribution when properly overlapped.

WORN SPRAY TIPS

Have a higher output with more spray concentrated under each tip.

DAMAGED SPRAY TIPS

Have a very erratic output – over applying and under applying.

FLOW RATE

$$\text{L/min/nozzle} = \frac{\text{L/ha} \times \text{km/h} \times \text{W(m)}}{600}$$

For example, a farmer wants to spray 70 L/ha, drive with a speed of 18 km/h and his boom has a nozzle spacing of 50 cm:

$$\text{L/min} = \frac{70 \text{ L/ha} \times 18 \text{ km/h} \times 0.5 \text{ m}}{600} = 1.05 \text{ L/min}$$

To do so he needs to use a nozzle that delivers 1.05 L/min. He has several options, for example, he could use an 025 nozzle size at 3.5 bar or an 02 size at 5.5 bar (see table).

L/min/nozzle = nozzle flow rate in litre per minute
L/ha = water application rate per hectare
km/h = driving speed
W = width of nozzle spacing in metres
600 = constant

TRAVEL SPEED

$$\text{Speed (km/h)} = \frac{\text{Distance (m)} \times 3.6}{\text{Time (sec)}}$$

For accurate application it is important to calibrate the speed of the tractor. An easy way to do so is to drive in the gear the application will be done in, measure the time it takes to travel 100 metre and apply this simple formula. For example, it takes the farmer 20 sec to drive 100 metre. His application speed is 18 km/h.

$$\text{Speed (km/h)} = \frac{100 \text{ m} \times 3.6}{20 \text{ sec}} = 18 \text{ km/h}$$

APPLICATION RATE

$$\text{Application rate (L/ha)} = \frac{\text{L/min/nozzle} \times 600}{\text{km/h} \times \text{W}}$$

PRESSURE

1 bar (bar) =
» 100 kilopascal (kPa)
» 14.5 pounds per square inch (PSI)
1 pound per square inch (PSI) =
» 6.89 kilopascal (kPa)
» 0.0689 bar (bar)

As a rule of thumb, to double the flow through a nozzle, the pressure must be increased four times. Higher pressures increase drift (less so for AI nozzles) and increase the rate of orifice wear.

SPOT/BAND SPRAYING

For spot and band spraying, the same formula can be used but W (nozzle spacing) becomes the spray width divided by the number of directed nozzles.

For example, a grower directs 3 nozzles over a 1 metre strip:

$$W = \frac{1 \text{ m}}{3 \text{ nozzles}} = 0.33 \text{ m}$$



TERMS AND CONDITIONS OF SALE

The following terms of trade, as amended from time to time (Terms of Trade) shall be incorporated into and form a part of every Contract (together, the Agreement) between the person named as the Buyer (Buyer) in the Contract and the Company for the supply by the Company of Goods and/or Services, (together, Products) unless specifically excluded in writing and signed by both Parties. Any instructions received by the Company from the Buyer for the supply of Products shall constitute acceptance of these Terms of Trade.

1. INTERPRETATION

- 1.1 Defined Terms: In the Agreement, unless the context otherwise requires, the following words have the following meanings:
 - (a) Contract means each contract (which includes either a faxed, mailed or emailed copy of the customer purchase order) between the Parties which specifies the Products the Buyer will purchase from the Company.
 - (b) Goods means the goods supplied from time to time by the Company to the Buyer as specified in a Contract.
 - (c) GST means goods and services tax payable at the applicable rate in accordance with the Goods and Services Tax Act 1985.
 - (d) Notice means:
 - (i) for a change/s to the Company's price list, one month prior written notice to the Buyer; and
 - (ii) for a change to an individual Product, two days prior written notice.
 - (e) Parties mean the Company and the Buyer.
 - (f) PPSA means the Personal Property Securities Act 1999 including the Regulations unless the context otherwise requires.
 - (g) Services means the services to be provided by the Company to the Buyer as specified in the Contract.
- 1.2 PPSA Terminology: Words in these Terms of Trade which are defined in the PPSA, have the same meanings as in the PPSA and the Regulations unless the context otherwise requires.

2. PAYMENT

- 2.1 Date: Payment for the Products is to be made in full, by the Buyer, and without deduction, counterclaim or set-off as follows:
 - (a) for Goods, by the 20th of the month following delivery; and
 - (b) for Services by the 20th of the month following the invoice date for the Services; in each case time being strictly of the essence, unless otherwise agreed in writing.
- 2.2 Payments: All payments by the Buyer to the Company for the supply of Products must be paid to the Company in cleared funds. Part payment will not compromise the Company's rights to recover the balance owing nor will it constitute a discharge or partial discharge of the Company's security interest in any Goods.
- 2.3 Returns: The Buyer may not return Goods supplied by the Company unless the Company agrees in writing.
- 2.4 Failure to Pay: If the Buyer fails to make payment by the due date, the Company, without prejudice to its other rights or remedies, shall be entitled to charge the Buyer interest from the due date at a rate of 5% per annum above the current overdraft rate charged by the Company's bankers, compounding monthly on the unpaid balance owing on the first day of each month until payment in full is received by the Company, such interest to accrue after as well as before judgment. Further, any expenses, disbursements and legal costs incurred by the Company in enforcing any rights in the Agreement shall be paid by the Buyer, including any reasonable solicitor's fees or debt collection agency fees.
- 2.5 Credit Arrangement can be Terminated: The Company has the absolute right to terminate any credit arrangements with the Buyer and to substitute cash-on-delivery payment terms at any time, without prior notice or reason being given.
- 2.6 Immediate Payment: Notwithstanding anything contained in the Agreement, all payments (whether due or not), shall become immediately due to the Company if:
 - (a) the Buyer fails to comply with the terms of the Agreement; or
 - (b) the Buyer commits an act of bankruptcy; or
 - (c) the Buyer enters into an arrangement or composition with its creditors;
 - (d) if the Buyer is a company:
 - (i) the Buyer does anything that would make it liable to be put into liquidation;
 - (ii) a resolution is passed or an application is made for the liquidation of the Buyer;
 - (iii) a receiver or statutory or official manager, or a person in a similar position, is appointed over all or part of the Buyer's assets and undertaking; or
 - (iv) any act of insolvency is committed.
3. PRICE
- 3.1 Prices: Prices are subject to alteration:
 - (a) if Goods, on Notice from the Company and all Goods shall be charged at prices ruling at time of despatch.
 - (b) if Services, upon two days prior written notice from the Company and all Services shall be charged at the rates specified in the Contract.
- 3.2 Change in Price: Any change in price arising from imposition of or change in Government duties, levies, fees and taxes of

any type whatsoever shall be for the Buyer's account, shall be invoiced accordingly and shall be deemed to be part of the purchase price.

- 3.3 GST: All prices listed are exclusive of GST.

4. COMPETING SECURITY INTERESTS

- 4.1 Competing Security Interests: If any other person has a security interest in collateral which includes the Goods supplied by the Company, the Company may, as a condition of supplying the Goods, require the Buyer to procure the signing of a deed (even if the Company has previously supplied Goods to the Buyer without requiring this) which:
 - (a) confers rights on the Company to recover all amounts which the Buyer is or becomes liable to pay, or to indemnify, or reimburse the Company in accordance with the Agreement in priority to all other secured parties; and
 - (b) acknowledges the Company's priority rights:
 - (i) in relation to all Goods in which the Company has a security interest; and
 - (ii) over payments received by the Company (including electronic funds transfer pursuant to a direct debit authority executed by the Buyer in the Company's favour); and
 - (c) includes provisions acceptable to the Company as to the exercise of enforcement rights in relation to Goods; and
 - (d) is otherwise acceptable to the Company in its discretion.

5. DEFAULT AND ENFORCEMENT RIGHTS

- 5.1 Default Event: If the Buyer fails to pay any amount owing on the due date or commits any other default under the Agreement and any such default continues for seven days, or any of the events set out in clause 2.6 occur or the Company in its absolute discretion forms the opinion that the Buyer cannot or will not be able to pay its debts to the Company as they fall due (each of such to be a Default Event), then:
 - (a) the Company shall be entitled to refuse to provide any further Goods and/or Services to the Buyer;
 - (b) the Company may exercise any or all of its rights pursuant to any security interest it has;
 - (c) the Company may require the Buyer, at its expense, to promptly return to the Company all Goods supplied by the Company which have not been fully paid for; and
 - (d) the Company may by written notice to the Buyer cancel the Agreement; and any rights exercised by the Company pursuant to this clause shall not in any way limit the Buyer's liabilities under the Agreement including without limitation the Buyer's obligations and liabilities pursuant to the indemnities contained in the Agreement and/or to pay damages for any breach nor preclude the Company from exercising any other right or remedy (in equity or in law) that may be available to it.
- 5.2 Exercise of Rights: The following provisions apply to the exercise of the Company's rights under the Agreement:
 - (a) the Company may exercise a right under the Agreement alone, or at the same time as exercising any other rights, powers or remedies available to the Company.
 - (b) the Company does not need to notify the Buyer or any other person first before the Company exercises any rights (unless provided otherwise in the Agreement or by law).
 - (c) any delay by the Company in exercising any of its rights will not affect the subsequent exercise of any other rights.
 - (d) the Company will not be liable or accountable to the Buyer or any other person for any loss caused by:
 - (i) the exercise or attempted exercise of any of the Company's rights; or
 - (ii) a failure by the Company to exercise, or any delay in exercising, any of the Company's rights; or
 - (iii) the manner in which the Company exercises any of its rights; whether or not resulting from a mistake or error of judgment.

6. DELIVERY AND RISK IN GOODS

- 6.1 Delivery:
 - (a) Delivery to the Buyer shall be deemed to take place when the Goods leave the company's premises.
 - (b) Goods are deemed to leave the Company's premises when the Buyer or the Buyer's agent signs a receipt acknowledging the delivery of a quantity of Goods. If the Buyer pays for the freight of the Goods, the freight carrier is deemed to be the Buyer's agent.
- 6.2 Risk: The risk in the Goods shall pass to the Buyer when the Goods leave the Company's premises.
- 6.3 Freight: The Company will pay freight charges on consignments where individual orders exceed a minimum value of \$2,000.00 (excluding GST). Where an individual order fails to reach this value freight will be charged at the Company's standard commercial rates. The minimum freight charge is \$4.50.
- 6.4 Order Size: All orders are to be of such size and composition as are normally sold by the Company. Minimum order value is \$50.00 + GST.
- 6.5 Acceptance of Order: All orders by the Buyer for Goods are deemed to be an offer to purchase the items specified in the order. The Company reserves the right to accept, in whole or in part, any order submitted by the Buyer. The supply of any Goods by the Company constitutes acceptance of the order only for the Goods for which an invoice is issued. An order may be cancelled

by the Buyer only before delivery and with the Company's prior written consent.

- 6.6 Possession: The Buyer does not have the right to possess the Goods until delivery.
- 6.7 Delivery date or time: Any time or date for delivery given by the Company is only an estimate and the Company shall not be liable for the direct or indirect consequences of a delay however arising. The Buyer acknowledges that the Company will not accept any liability for any claims or losses (direct or indirect) arising from its failure to meet the delivery date (if any).
- 6.8 Instalment Delivery: The Company reserves the right to make deliveries in instalments, in which event each instalment will be a separate contract on these terms.
- 6.9 Surcharge: Where the Goods are delivered on Company-owned pallets, a surcharge may apply. A credit will be given when the pallet is returned in a satisfactory condition to the Company's issuing premises.
- 6.10 Delivered Quantity: All deliveries shall be deemed to have been delivered without shortage, in quantity unless the Buyer notifies the Company of such shortage, if in writing, within 14 days and if verbally, within seven days after delivery of the Goods to the Buyer, provided that in each case a receipt signed by the Buyer and given to the carrier acknowledging delivery of a quantity of Goods shall be conclusive evidence of the quantity delivered to the Buyer by the Company.
- 6.11 Receiving Goods: The Buyer must ensure that it is ready and capable to accept delivery on the delivery date and that adequate facilities exist to accept and properly store the Goods. If the Goods are unable to be promptly discharged or delivered, the Buyer shall compensate the Company for any costs incurred by the Company as a result of any delay encountered.
- 6.12 Insurance by the Buyer: The Buyer shall insure the Goods, from time to time, in the joint names of the Company and the Buyer and shall have the following statement noted on such insurance cover: "Loss if any shall be payable to the Company whose receipt shall be a sufficient discharge", unless otherwise agreed by the Company in writing. The Buyer shall, if required by the Company, provide the Company with evidence that the Goods are fully insured in respect of any loss of or damage to the Goods.
7. PERSONAL PROPERTY SECURITIES ACT 1999
- 7.1 Security Interest: The Buyer grants the Company a security interest in the Goods and their proceeds (in whatever form those proceeds take) to secure the obligations and liabilities of the Buyer under the Agreement. If any of the Goods and/or their proceeds are not readily identifiable and/or traceable, the Buyer grants the Company a security interest in all of the Customer's property of which the Goods form part.
- 7.2 Ordinary Course of Business: Unless otherwise notified in writing to the Buyer by the Company, the Buyer is authorised to sell the Goods in the ordinary course of business, provided that the proceeds of any Goods sold shall be kept in a separate account and shall not be mixed with any other moneys, including funds of the Buyer.
- 7.3 Fiduciary Bailee: Property and ownership in the Goods remains with the Company and will not pass to the Buyer until the Company receives payment in full of the invoice relating to the Goods. Until property passes to the Buyer, the Buyer shall hold the Goods as fiduciary bailee for the Company. The Buyer shall store the Goods separately and in a manner to enable them to be identified and cross referenced to particular invoices.
- 7.4 Assistance: As and when required by the Company, the Buyer will, at its own expense, provide all reasonable assistance and all relevant information to enable the Company to register its security interest, maintain such registration, and enforce its rights pursuant to its security interest.
- 7.5 Change of Name: The Buyer will not change its name without giving the Company 7 days prior written notice.
- 7.6 Access to Premises: The Buyer irrevocably authorises the Company, its agents and employees, to search for and remove the Goods (and if any Goods are wholly or partially attached to or incorporated in any other goods, sever or disconnect the Goods from those other goods) and for that purpose to enter into any premises where they may be found using such force as is necessary. The Buyer will indemnify the Company against any costs and liabilities that may arise directly or indirectly as a result of the entry by the Company, its agents or employees into any premises or the seizure by the Company of any Goods (or the severing or disconnection of such Goods from other goods) under this clause.
- 7.7 Contracting Out: The Buyer waives its right to:
 - (a) receive a statement of account pursuant to s116 of the PPSA;
 - (b) receive notice of the Company's proposal to retain collateral under s120(2) of the PPSA and to object to that proposal under s121 of the PPSA;
 - (c) receive notice from the Company under s114(1)(a) of the PPSA that the Company intends to sell certain goods in which it has a security interest;
 - (d) not have goods damaged if the Company removes an accession under s125 of the PPSA;
 - (e) to receive notice of the removal of an accession under s129 of the PPSA;

- (f) to apply to the Court of an order concerning the removal of an accession under s131 of the PPSA; and
- (g) to reinstate a security agreement under s133 and/or 134 of the PPSA.
- 7.8 Release of Security Interest: The Company will not be obliged to discharge its security interest or register any financing change statement under the PPSA unless:
- (a) all obligations and liabilities of the Buyer under the Agreement have been performed in full, including payment of all moneys owing under the Agreement; and
 - (b) any costs incurred in doing so have first been paid by the Buyer; and
 - (c) the Company is satisfied that any amounts paid by the Buyer to the Company or received prior to that release are not at risk of subsequently being set aside by the operation of any law, or of any claim to priority over the Company's security interest in such amount; and
 - (d) if any payment to the Company is avoided or otherwise becomes payable to the Buyer or to any other person, to the extent possible the relevant release will have no effect, and the signing by the Company of any release or the registration of a financing change statement discharging the Company's security interest in relation to any Goods will not prevent the Company from registering another financing statement or otherwise recovering any amount which is due to the Company in such manner as it may be entitled to do.

1. SAFETY

- 8.1 The Buyer shall take all practicable steps to prevent accident or injury to persons at any place of work under the Buyer's control.
- 8.2 In particular the Buyer shall:
- (a) take all reasonable and prudent measures to keep any Goods secure and in a safe place (whether in use or not);
 - (b) handle the Goods or permit them to be handled only by properly skilled and experienced persons who are not under the influence of alcohol or drugs and in accordance with the requirements of any label or instruction on the Goods, and applicable laws on safe handling;
 - (c) ensure that the Goods are sold solely for the purposes intended by the manufacturer having regard to their capabilities and limitations;
 - (d) ensure that, at all times, the Buyer, its employees, subcontractors or agents will comply with all applicable laws including, but not limited to, the Health and Safety in Employment Act 1992 and the Hazardous Substances and New Organisms Act 1996.

2. PERFORMANCE OF SERVICES

- 9.1 Standard: The Services will be provided with due skill and care, in a competent and professional manner and in compliance with all relevant laws in New Zealand.
- 9.2 Access to premises: In providing the Services, the Company may require assistance from the Buyer and access to the Buyer's premises. The Buyer will:
- (a) promptly provide the Company any required material, data, or other information;
 - (b) perform any tasks the Company reasonably requests the Buyer to carry out;
 - (c) allow the Company access to the Buyer's premises; and
 - (d) comply with any reasonable instructions from the Company.
- If the Buyer fails to provide or carry out any of the above requirements, the Company will not be liable for any failure or delay in providing the Services and the Company may charge, and the Buyer will pay, any costs relating from such failure.

3. AUTHORISATIONS

- 10.1 Authorisation: It is the Buyer's risk and responsibility to obtain every necessary or prudent authorisation (including licences, permits and consents) to buy, possess, use, export, import or resell any Products and to ensure that the Products are purchased by an authorised person.
- 10.2 Buyer Indemnities: The Buyer shall indemnify the Company from any liability that may arise for any breach by, or on behalf of the Buyer, to obtain every necessary authorisation.
- 10.3 Notify: The Buyer shall notify to the Company in writing of the names of its personnel authorised to place orders on the Buyer's behalf and must advise in writing if any such authority is later withdrawn. The Buyer shall be solely responsible for supervising the use of the account and absent specific written advice of authorised personnel, the Company has no obligation to enquire into the authority of any person placing orders on any account in the name of the Buyer. Any orders made by an authorised person prior to the Company receiving written notice from the Buyer withdrawing that person's authority, shall be paid for by the Buyer.

4. PURCHASES OF PRODUCTS FOR BUSINESS PURPOSES – LIMITATION OF LIABILITY

- 11.1 If the Buyer acquires the Products from the Company for the purposes of a business in any way, or the Buyer holds itself out as acquiring the Products for the purposes of a business in any way, the Buyer agrees to the following terms;
- (a) the conditions, warranties and guarantees, representations and descriptions in the Sale of Goods Act 1908 and the Consumer Guarantees Act 1993 ("CGA") or implied by law, trade or custom will not apply and are excluded from the Agreement; and
 - (b) no claims for alleged defective Goods will be recognised unless made in writing and received by the Company within 14 days after delivery; and
 - (c) the Buyer may not claim any of the remedies in the CGA from the Company or from any contract or to the Company or manufacturer of the Goods or from any manufacturer of any components or parts in the Goods; and
 - (d) the only warranties, representations, conditions and agreements in respect of the Products are those which are contained in the Agreement or expressly authorised or confirmed in writing by the Company; and
 - (e) the Company's liability in respect of all claims for loss, damage or injury arising from the breach of its obligations under the Agreement or in connection with the Products, from failure to perform the Company's warranty obligations or from negligence on the part of the Company, its employees, agents or contractors, shall be limited (at the Company's option) to repair or replacement of the Goods or Services or re-performance of the Services or credit, and shall not in aggregate exceed in value the price invoiced to the Buyer for those Goods;
 - (f) the Buyer shall use its best endeavours to minimise loss and damage arising from any alleged defect; and
 - (g) neither the Company, its employees, agents or contractors will be liable to the Buyer, its employees, agents or contractors for any consequential loss or damage howsoever caused. This exclusion of liability includes, but is not limited to, consequential loss or damage arising from suspension of performance of the Agreement pursuant to clause 5, delays in manufacturing, negligence, delivery and the costs incurred in returning any Goods to the Company or any manufacturer. This exclusion applies whether the consequential loss is incurred by the Buyer or a third party.

5. BUYER WARRANTIES AND INDEMNITIES

- 12.1 Warranties: The Buyer warrants that if it purchased any Goods from the Company for resupply as, or incorporates any Goods into, goods ordinarily acquired for personal household or domestic use (Consumer Goods), it will supply the Consumer Goods on the following conditions:
- (a) If it supplies the Consumer Goods for resupply by its customer, it will ensure that its terms and conditions of supply require its customer and each person in the distribution chain to include in its supply agreements or conditions of sale obligations requiring its customer to exclude liability for any claims under the CGA, but only where the end user/consumer acquires the Consumer Goods for business purposes;
 - (b) If it supplies the Consumer Goods directly to an end user/consumer, it will do so using terms and conditions of supply which exclude liability for any claims under the CGA, but only where the end user/consumer acquires the Consumer Goods for business purposes.
- 12.2 Indemnities: The Buyer agrees to fully indemnify the Company for, and on demand pay the Company, all costs (including costs calculated on a lawyer and own client basis), losses, damages, expenses and claims incurred or which the Company is or becomes liable for as a consequence of or in connection with:
- (a) the Buyer's failing to comply with or breach any of its obligations under the Agreement; and
 - (b) any claim or legal proceedings the Buyer or any other person brings against the Company or any person acting as the Company's agent in the exercise of the Company's rights under the Agreement; and
 - (c) anything done or not done in good faith in the exercise or attempted exercise by the Company of its rights under the Agreement; and
 - (d) any amount that the Buyer fails to pay on the due date for payment; and
 - (e) the exercise, enforcement, preservation or attempted exercise, enforcement or preservation of any of the Company's rights under the Agreement, or in suing for and recovering any moneys that the Buyer owes or is liable to pay to the Company or indemnify the Company for; and
 - (f) taking any actions or doing any things (including paying or incurring liabilities to pay any moneys) to protect or preserve

the Company's rights under the Agreement, including the security interest granted to the Company pursuant to the Agreement;

- (g) any failure by the Buyer, its customers or any person in the distribution chain to properly contract out of liability to business end users/consumers under the CGA.

in all cases on a full indemnity basis.

6. PRIVACY ACT 1993

- 13.1 The Company will hold any personal information received from the Buyer for marketing, product development, account administration and credit purposes. The Company may disclose personal information about the Buyer to any person the Buyer names as a credit referee or to any person for the purpose of securing the Company's security interest granted pursuant to the Agreement. Failure by the Buyer to supply personal information for these purposes entitles the Company to withdraw or refuse credit to the Buyer and to repossess any Goods in the possession or control of the Buyer.

7. INTELLECTUAL PROPERTY

- 14.1 The sale of any Products by the Company to the Buyer does not give the Buyer the right to use, sell, disseminate or duplicate any of the Company's trademarks, copyrights, designs or other intellectual property rights (unless agreed otherwise by the Company in writing).

8. GENERAL

- 15.1 Severance: If any clause or part of a clause of these Terms of Trade and each Contract is held to be invalid or unenforceable for whatever reason, to the extent not inconsistent with that invalid clause, the remaining provisions shall remain in full force and effect.
- 15.2 Entire Agreement: The Agreement constitutes the entire agreement of the Parties in respect of the Products and replaces any previous agreements and understandings. The terms and conditions of the Agreement, will prevail over any existing or subsequent terms and conditions set out in any document (including any Buyer purchase order), unless agreed otherwise in writing by the Company.
- 15.3 Waiver: No waiver of any breach of, or failure to enforce any provision of, the Agreement at any time by any party will in any way limit the right of such party thereafter to enforce and compel strict compliance with the provisions of the Agreement.
- 15.4 Force Majeure: The Company shall not be liable for any delay in performing its obligations under the Agreement to the Buyer in whole or in part by force majeure which shall include (but not be limited to) an act of God, weather conditions, natural disasters, strikes, lockouts, fire, war, suit, civil commotion, inability to obtain Goods, Services or supplies including the imposition of any export or import bans or any other cause beyond the reasonable control of the Company.
- 15.5 Variation:
- (a) This Agreement (these Terms of Trade and the Contract for the Products) shall not be modified unless agreed in writing by the Parties.
 - (b) The Company may amend the Terms of Trade, from time to time, by notice to the Buyer. Any instructions received by the Company from the Buyer for the supply of Products shall thereafter constitute acceptance of these Terms of Trade.
- 15.6 Assignment: The Buyer is not entitled to assign, transfer or otherwise dispose of any of its rights or obligations under the Agreement to anyone else without the Company's prior written consent. The Company shall be entitled to assign, transfer or dispose of any or all of its rights and obligations under the Agreement to any other person without the prior consent of the Buyer.
- 15.7 Notice: Unless agreed otherwise in writing, all notices under the Agreement shall be served in writing to the registered offices of the Parties.
- 15.8 Errors and Omissions: Errors and omissions of a clerical nature in quotations, invoices or statements shall be subject to correction.
- 15.9 Legislation: a reference to any legislation or to any provision of any legislation (including regulations and orders) includes that legislation or provision as from time to time amended, re-enacted or substituted and any statutory instruments, regulations and orders issued under any such legislation or provision.
- 15.10 Governing Law: The Agreement shall be governed by, and construed in accordance with, the law of New Zealand.

Updated December 2015

CROPLANDS WARRANTY POLICY

Please be advised that until the Croplands Warranty Registration Card sent with each sprayer is completed by the purchaser of a Croplands unit, the sprayer is deemed to be void of any warranty. This warranty registration is to be completed and returned immediately to: Croplands Equipment Pty Ltd, PO Box 2441, Dry Creek, South Australia 5094, and marked attention of Service Manager. It is highly recommended that as part of the sales process, the warranty policy is read and discussed with the customer to ensure there is no confusion as to what is, and what is not, covered by warranty. The Warranty Registration Card requires a signed declaration that the purchaser understands the warranty policy of Croplands. This is in your best interest as an agent for Croplands and will better serve your customer in the long term.



All orders over \$3,000 retail value excluding GST will be sent freight free throughout New Zealand with the following exceptions:

- » **Any capital products specifically imported** or indented where freight charges will be negotiated at the time of the sale process (e.g. Self-Propelled sprayers and large Broadcast units coming from Europe or USA).
- » **Tanks** » **Fertiliser spreaders**
- » **Booms** » **AgriPak linkage sprayers**

TABLE 1: WHOLEGOODS – SENT BY ROAD FREIGHT OR COURIERS

Most “X” and some “Y” product category items are only suitable for road freight. All freight prices include any applicable fuel surcharges and remote area surcharges.

ITEM	FREIGHT \$(EX. GST)
Linkage sprayers (P8–19)	
LA300 and LA600 – all models up to 6m boom	POA
LA800 – bare or with 6m boom	POA
LA600/MAX08, LA800/MAX08 with 8m boom	POA
LA800/MAX10L with 10m boom	POA
LA1000, LA1000/80 bare unit (no boom)	POA
LA1000/80/8M, 10M and 12ML models with 8, 10 and 12m booms	POA
LA1000/MHL12 or MHL15 – 100 litre with 12/15m hyd fold booms	POA
MEC1100/1300/1600 with boom attached	POA
Cropair 300 and 600 litre fan sprayers (P24–25)	POA
Spray booms (P20–23)	
MSO,MSE, MCL, MB02, MBX03, MBX04 booms	\$44.44
MW02 wheely boom	\$44.44
MC6, MBX06, MCL-2, MVB5-5 booms	\$55.56
MAX08 – flat pack only	\$55.56
MAX10 – flat pack only	\$55.56
MAX10L, MAX12L and GEX series booms – flat pack only	\$55.56
MHL 12 and 15 metres booms; BDU18 boom only – flat pack only	\$166.67
Trailed 300 sprayers (P26–27)	
UA300B trailing sprayer (all models) and UA300B motorised nursery sprayers	\$166.67
RetraSpray and Traymount sprayers; Pony trailed sprayer (P28–33)	
RSRL2-100RC RetraSpray reel	\$55.56
All RetraSpray traymount complete units with tank	\$166.67
US200B traymount units (without boom)	\$88.89
US200B traymount units with booms to 6 metres	\$111.11
US500/30/HR30TG, US500/30/TWIN traymount units	\$166.67
1100 and 1500 litre trailed pony sprayers	\$500.00
CropPak 12-volt sprayers, Knapsack sprayers and Apex sprayers (P34–40)	
US30A CropPak sprayer, ASATV-10 Apex 12-volt sprayer	\$27.78
US60, US100A, US100/15 12-volt CropPaks, Apex ASAT-30M3 trolley sprayer, Apex mistblower	\$33.33
US400, US400/15 CropPak 12-volt CropPaks	\$88.89
UM70, UM70/13, UM70/3B, 4B	\$55.56
ASNS-1.5A small hand held Apex sprayer x 1 unit	\$11.11
ASNS-1.5A small hand held Apex sprayer x 10 unit	\$55.56
Swissmex SW319 and SW320; Apex 5 and 10 litre units; ASGS-10 spreader x 1 unit	\$27.78
Swissmex SW319 and SW320; Apex 5 and 10 litre units; ASGS-10 spreader x 10 units	\$111.11
SW503, SW189C, ASBBS-16, ASBBS-10 and ASNS-15FB x 1 unit	\$27.78
SW503, SW189C, ASBBS-16, ASBBS-10 and ASNS-15FB x 10 units	\$88.89
PAKMAN back protector, all Swissmex spray booms	\$13.33
Spray guards	\$13.33
Chemical mixing and batching units; Mixing jugs and Chemical transfer units (P41–43)	
Batchmaster 1200 litre chemical batching unit	POA – ask for quote
L-H9351A 60 litre mixer	\$33.33
L-H9351A with L-H9355A dropdown bracket	\$38.89
L-H9353A, L-9353C 60 litre mixers with trolley	\$50.00
L-H9003 and 9005 measuring jugs, 10 each	\$27.78

- » For all orders under the retail value of \$3,000 + GST, **the table below sets out the freight that will be charged** on individual items
- » For orders that combine multiple products that fall under the \$3,000 threshold, the most cost effective freight cost will be sought by our customer service and despatch team to minimise the freight cost. Alternatively you can specify a carrier under your own freight forwarding arrangements.

ITEM	FREIGHT \$(EX. GST)
L-H9003 and 9005 measuring jugs, up to 5 each	\$13.33
L-H9025 25 litre buckets (each)	\$13.33
L-H9025 25 litre buckets (x 3)	\$22.22
SHUSF-1105PTSI AgRunner transfer unit	\$33.33
Boomless nozzle kits, Foam, Foam markers (P44–45)	
Boomless nozzle kits	\$13.33
Foam markers	\$33.33
L-M9020 20 litre foam (each)	\$22.22
L-M9020 20 litre foam (x 4)	\$44.44
Spray tanks (P44)	POA – ask for quote
Hose reels, Hose, Spray guns (P46–47)	
30 metre rolls spray hose	\$27.78
All hose reels and 100 metre rolls hose	\$33.33
All spray guns x 1	\$13.33
All spray guns x 10	\$55.56
Firefighters and Turf sprayers (P48–49)	
500 litre traymount firefighter	\$166.67
Trailed firefighters 1100/1500 litre models	\$500.00
Firefighting pumps	\$33.33
Trailed and traymount turf sprayers	\$500.00
UW50/2B greens sprayer	\$55.56
Spray pumps (P50–61)	
AR pumps with gearboxes – models AR303, AR30, AR503, AR813	\$44.44
AR pump models AR30, AR70, AR80, AR252, AR503	\$44.44
AR pump models AR140, AR160, AR185, AR245 and 250, AR275 and 280, ARBHA140, ARBHS170, ARBHS200	\$55.56
AR pumps models AR330 and AR410	\$55.56
Hypro centrifugal pumps	\$44.44
FloJet and Shurflo 12-volt pumps x 1 unit	\$16.67
FloJet and Shurflo 12-volt pumps x 10 unit	\$44.44
Fertiliser spreaders (P62–64)	
AGR-SP150 trailed 150 spreader	\$122.22
AGR-XA500 3-PTL spreader	\$122.22
Respirators, Spray manifolds, Spray controller kits and GPS units (P65–70)	
Kasco respirators	\$27.78
All control manifolds and I-E2021, 2032, 2052, I-E4020, 4021	\$27.78
All controller kits and GPS units (BA5000-GE03 etc)	\$27.78

TABLE 2: COMPONENTS, SMALL PUMPS AND SPARE PARTS – SENT BY COURIER

SPARE PARTS AND COMPONENTS ANY VALUE	SHIPPED BY	SIZE (MM)	\$(EX. GST)
Small parts, fittings, nuts/tails, nozzles,	Courier bag E11	225 x 115	\$6.67
Small filters, pump diaphragms, valves	Courier bag E20	260 x 190	\$8.33
Small lids, large filters, solenoids, ball valves	Courier bag E40	325 x 235	\$10.56
Large lids, large filters, spray guards	Courier bag E50	415 x 360	\$13.33

LARGER SPARE PARTS	SHIPPED BY	SIZE (MM)	\$(EX. GST)
Axles, hubs, sprayer hardware, frames	Suitable transport	N/A	Charged at our freight cost

NATIONAL SALES AND SUPPORT

REGIONAL MANAGER

Rob Marshall 0272 486 822

TERRITORY MANAGERS

WAIKATO, COUNTIES

Greg Small 0276 879 010

LOWER NORTH ISLAND

Vic Barlow 0274 752 322

UPPER SOUTH ISLAND

Rob Marshall 0272 486 822

UPPER NORTH ISLAND

(excluding Waikato/Counties),

CENTRAL OTAGO, SOUTHLAND

Chris Waites 0277 260 330

CROPLANDS NEW ZEALAND

Contact your local dealer or...

Croplands New Zealand

Freecall 0800 106 898

Freefax 0800 117 711

sales@croplands.co.nz

CROPLANDS HEAD OFFICE

50 Cavan Road Dry Creek SA 5094

Phone +61 8 8359 9300

Fax +61 8 8349 6175



www.facebook.com/croplands



www.twitter.com/Croplands

Technical Service +61 8 8359 9333

NATIONAL DISTRIBUTORS

PGG Wrightson Stores – Nationwide, contact your local store



Fruitfed Supplies Stores – Nationwide, contact your local store



NORTH ISLAND

Albany	Norwood Farm Machinery Centre	09 414 0017
Auckland	Landscape and Grower Supplies	09 573 3007
Dargaville	Norwood Farm Machinery Centre	09 439 3266
Gisborne	Norwood Farm Machinery Centre	06 867 9865
Hamilton	Waikato Tractors	07 843 7237
Hastings	Calnan's Spray Quip Services	06 879 5720
Hastings	Norwood Farm Machinery Centre	06 873 7300
Hauraki	Norwood Farm Machinery Centre	07 889 8505
Hawera	Norwood Farm Machinery Centre	06 278 6159
Kumeu	M.E. & A.L. Mannington	027 471 5920
Masteron	Norwood Farm Machinery Centre	06 377 3184
Matamata	Norwood Farm Machinery Centre	027 442 8056
Morrinsville	Norwood Farm Machinery Centre	07 889 8505
New Plymouth	Norwood Farm Machinery Centre	06 757 5582
North Shore	Norwood Farm Machinery Centre	027 443 0780
Northland	Norwood Farm Machinery Centre	09 438 4719
Opotiki	Opotiki Engineering & Hardware	07 315 6285
Palmerston North	Norwood Farm Machinery Centre	06 356 4920
Pukekohe	Norwood Farm Machinery Centre	09 237 0104
Rotorua	Plako Tractors	07 345 8560
Stratford	Norwood Farm Machinery Centre	06 765 6139
Tauranga	The Equipment Centre	07 548 0194
Te Awamutu	Norwood Farm Machinery Centre	07 872 0232
Te Puke	Splash Direct	07 573 6138
Wellington	Spraying Equipment Specialist	04 478 2258
Whakatane	Jacks Machinery	07 308 7299
Whangarei	Norwood Farm Machinery Centre	09 438 4719

SOUTH ISLAND

Alexandra	Fruitfed Supplies	03 440 2350
Ashburton	Johnson Gluyas Tractors	03 307 8330
Christchurch	Noble Adams Machinery	03 349 7862
Christchurch	Norwood Farm Machinery Centre	03 349 5089
Cromwell	Fruitfed Supplies	03 445 3730
Gore	Advance Agriculture	03 203 9100
Invercargill	JJ's	03 211 0013
Mosgiel	Agrispray & Equipment	03 489 6268
Mosgiel	JJ's	03 489 8199
Mosgiel	Norwood Farm Machinery Centre	03 742 7123
Oamaru	Johnson Gluyas Tractors	03 437 2007
Riwaka	N.S. Rogers	03 528 9212
Renwick	AgriVit Ltd.	03 572 8787
Richmond	Fruitfed Supplies	03 544 6115
Timaru	Johnson Gluyas Tractors	03 688 1133
West Coast	Norwood Farm Machinery Centre	03 788 9050

YOUR CROPLANDS DEALER



Croplands Fan Sprayers available exclusively through Fruitfed Supplies and PGG Wrightson nationwide.



See pages 24–25 of this guide for the Croplands Cropair range.