



PRODUCT GUIDE
HARDI ISO NOZZLES



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HARDI nozzle supremacy

Precise, dependable and accountable

HARDI has produced sprayers since 1957 - meeting the needs of all farmers and crops worldwide - a key goal that has demanded the world's best nozzles.

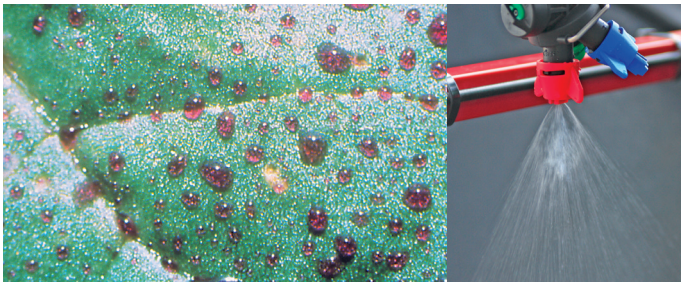
Today the same basic HARDI philosophy promotes the efficient, effective and responsible plant care that ensures quality food production.

The nozzle can dominate the sprayer performance.

All of the sprayer components are important for safe and effective use, but it is the nozzle that can have the major influence on the performance of the crop protection product that it will apply.

The nozzle controls:

- The throughput [and therefore the dose]
- Quality of distribution
- Drop spectrum and coverage
- Distribution over the target
- Drop retention or reflection
- The degree of drift and downwind fall-out



All these functions are considered by HARDI to ensure that the spray liquid is deposited exactly where it is needed, in its most effective form, and is not wasted.

HARDI has combined both design and material selection to produce a range of nozzles that suit the broad demands of both crops and the vast array of agrochemical products available today. This has been the basis for HARDI's worldwide success.

Close co-operation between farmers, advisers, chemical companies, independent and regulatory bodies with HARDI's agronomists has been the backbone of this continuing success.

Quality in production ensures optimal field performance.

HARDI's modern production facilities and technical abilities have resulted in the



superior precision and durability of HARDI nozzles.

Quality control includes not just laboratory measurements but the use of HARDI nozzles in the field under commercial conditions. Every drop of spray needs to be both accounted for - and documented - in order to ensure the quality of food delivered onto the dining table, and it meets the demands of the public today.

HARDI quality nozzles meet these increasing demands with world leading research and development.

The application of plant protection products to crops involves issues now, which go beyond traditional considerations such as economy and efficiency. Now nozzle choice and performance also relate to broad issues of drift such as airborne losses, downwind fall-out and deposits on non-target surfaces within the treated area itself. All of these issues need to be carefully considered.

HARDI is world leading in the understanding of concept of spray accountability and it is this knowledge that underpins its world leadership in today's spraying. Today, HARDI has developed the world's largest ISO nozzle programs for agriculture, horticulture [including most vegetables], viticulture as well as many more specialist needs. This nozzle guide will help you select the best nozzle for your needs, consider environmental aspects, and help you calibrate it for optimal use to ensure that you meet all of today's needs when using crop protection products.



HARDI North America - Davenport, IA



Nozzle technology

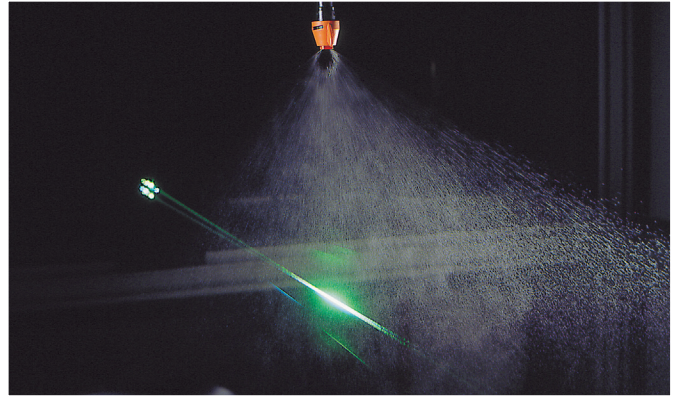
Fundamental research with nozzles by “HARDI agro-scientists” is conducted in their own dedicated laboratories and those of independent Research Centers at many key institutions throughout the world. Sites where field research is conducted are very diverse - ranging from the temperate conditions of Northern Europe to the tropical crops of Australia.

Instrumentation used in HARDI's laboratories is at the leading edge in drop size analysis studies. It is this broad, but intensive approach, which, when combined with state of the art manufacturing techniques and computerized quality control programs, guarantees that HARDI nozzles will meet the demands of better crop protection.

Measuring droplet sizes

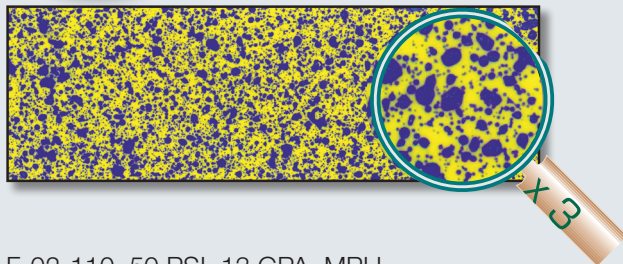
The droplet spectrum is characterized by the average

droplet size based on volume (VMD) and the range that indicates the uniformity of the atomization. A laser Phase Doppler Particle



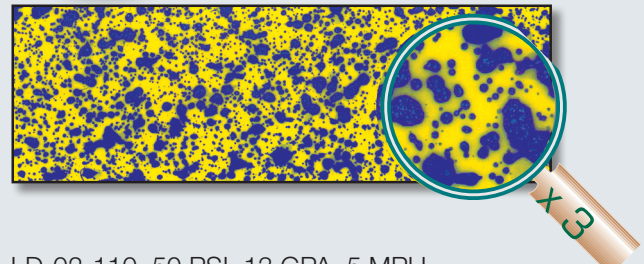
Analyser (Aerometrics, PDPA) supplies this information instantaneously and is used to constantly monitor the spray quality of our nozzles in our laboratory.

HARDI Flat fan nozzles



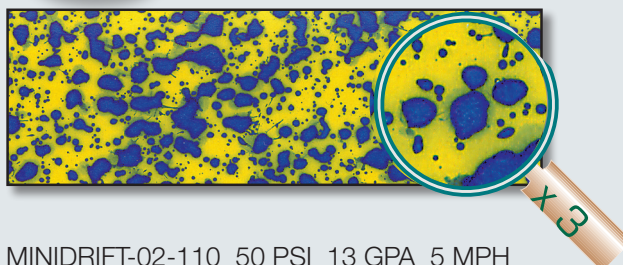
F-02-110 50 PSI 13 GPA MPH

HARDI LowDrift nozzles



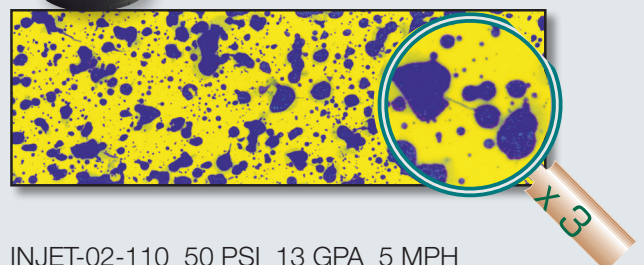
LD-02-110 50 PSI 13 GPA 5 MPH

HARDI MINIDRIFT nozzles



MINIDRIFT-02-110 50 PSI 13 GPA 5 MPH

HARDI INJET nozzles

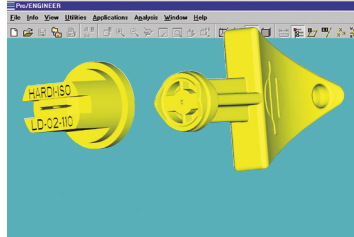


INJET-02-110 50 PSI 13 GPA 5 MPH

Nozzle technology

Nozzle development

Changes in cropping practices, regulatory restraints and the introduction of new agrochemicals are just some of the forces that ensure new nozzle developments will continue to take place at HARDI. This activity closely involves our agronomists, engineers and specialist tool makers. Farmer's needs are recognized and met with HARDI nozzles designed to provide the precision he demands today.



Quality control

Samples of all HARDI nozzles are constantly monitored by Quality Control using devices such as this state of the art nozzle distribution table.



for all HARDI nozzles. This leads to approvals as drift reducing equipment for buffer zones in many countries.

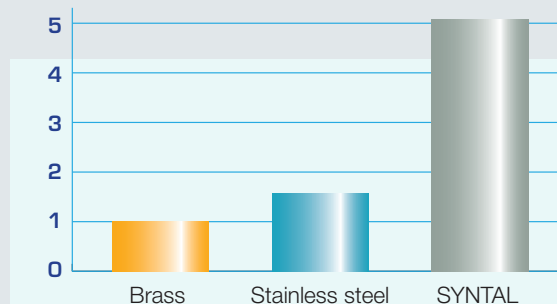
High Quality Materials



that ensures both precision and durability. Where highly abrasive compounds are to be sprayed, the selection of HARDI CERAMIC nozzles will maintain this same level of superior durability.

Wind Tunnel Studies

Airborne drift and downwind fallout are tested and documented in the controlled conditions of a wind tunnel



Durability relative to brass flat spray nozzle at the manufacturer's recommended pressure

(Kim Sintorn, Swedish University).

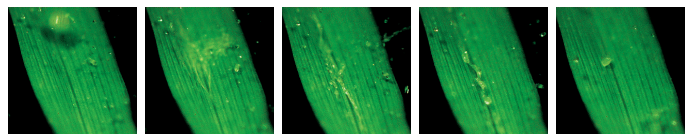
Together with field research this has given the HARDI nozzle range approvals in the UK, Holland and Germany to be used closer to waterways than previously allowed with traditional nozzles.

High Speed Video

Modern high-speed video techniques are used to investigate the droplets' behavior on their way to the target and when impacting on a leaf. These tests are done with clean water and with motion to simulate in-field spraying.

Deposit tests

Fluorescent dye is used to test the exact amount of liquid that



stays on the leaf after spraying. This is the key factor for the biological efficacy of the plant protection products.

Efficacy trials

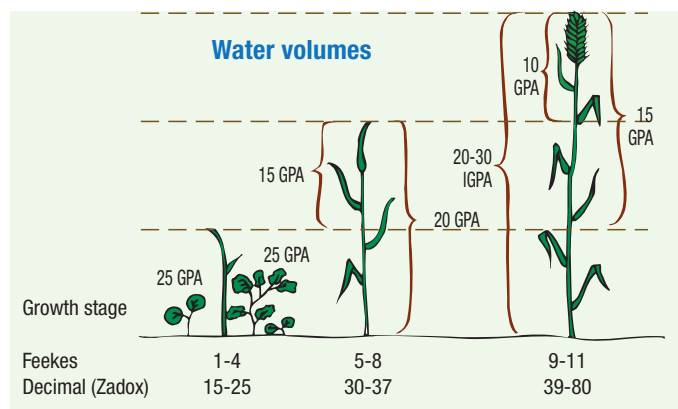
Specialized field equipment is used at the Danish Weed Research Institute to test the efficacy of herbicide performance when using HARDI nozzles.

Choosing nozzles

A nozzle for every spray job

Choice of nozzle type and size may have to balance the need to ensure optimal biological effect with a consideration for wind drift, sprayer capacity – that influences field work rates – as well as forward speed.

Small droplets from STANDARD Flat Fan nozzles may offer an unsurpassed liquid distribution and an effective coverage of the target surface. HARDI TWIN sprayers can safely use these small standard nozzles even when weather conditions are not optimal.



The reduced number of very small droplets produced by LowDrift nozzles makes them less sensitive to wind. Therefore, they can be used on conventional sprayers under sub-optimal conditions. In particular, they are used when spraying lower water volumes. MINIDRIFT and INJET nozzles mix air with the spray liquid to coarsen the atomization. Drift is substantially reduced with these nozzles so that field delays due to high wind speeds are minimized and timing is improved. The biological advantage gained through this better field timing may mask the use of coarser sprays. Their use has become critical to conventional spraying practice which has to try and meet both environmental needs without risking the effectiveness of the product to be applied.

Water volume rate has a big influence

Your working capacity will largely depend on the water volume rate. Why? Low volume rates mean that less filling time and transport are required. In fact a volume rate reduction of 25% increases your capacity by more than 10%. A big difference even in the short term! You do, however, need to pick the right nozzle and speed for the job. Lower spray pressure alone will mean that both coverage and deposit are reduced. Note that the application rate of a nozzle should be approximately +/-40% of the medium flow at 47 PSI.

Classification category	Symbol	Color code	Approximate VMD
Very fine	VF		<140
Fine	F		140-210
Medium	M		210-320
Coarse	C		320-380
Very coarse	VC		380-460
Extremely coarse	XC		460-620
Ultra coarse	UC		>620

What about droplet size?

Droplet size is important, and your need will differ according to conditions and type of crop. HARDI nozzles follow BCPC/ASAE specifications with regard to droplet size classification. There are 7 size classifications but for most types of farming only "fine", "medium", "coarse" and "very coarse" are relevant. The challenge is that no nozzle will give you all spraying options and that is why you sometimes have to compromise.

The VMD data is belonging to the measuring equipment that was

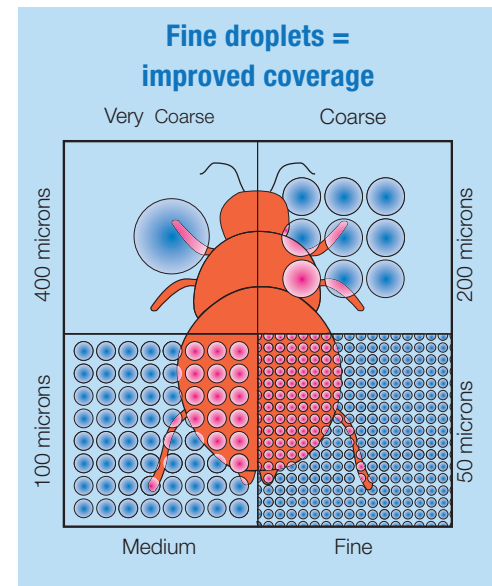
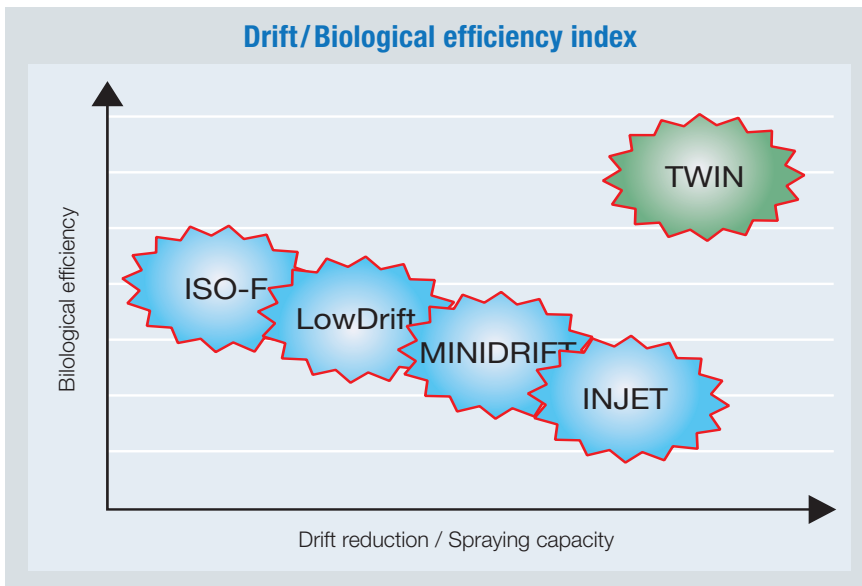
025-Lilac	20	0.177	M	10.5	8.8	7.5	6.6	5.8	5.3	4.8	4.4
	30	0.217	M	12.9	10.7	9.2	8.0	7.1	6.4	5.8	5.4
	40	0.250	M	14.9	12.4	10.6	9.3	8.3	7.4	6.8	6.2
	50	0.280	M	16.6	13.8	11.9	10.4	9.2	8.3	7.5	6.9
	60	0.306	F	18.2	15.2	13.0	11.4	10.1	9.1	8.3	7.6
	70	0.331	F	19.6	16.4	14.0	12.3	10.9	9.8	8.9	8.2
				SYNTAL-CT 371950 (12 pcs. 750626)				SYNTAL-S 371946 (12 pcs. 750628)			

used. So the VMD data is only an estimate. The borders between the different categories are defined by a certain nozzle which is standardized in the ISO 25358. HARDI will only give the categories as the VMD as a single measurement is not useful for farmers as a decision tool. On the nozzle flow tables in this product guide is a separate column to indicate the spray quality.

Make sure you have drift reduction nozzles

The new directives from around the world are stating that a sprayer must be equipped with drift reduction nozzles. So if you have not already considered a MINIDRIFT nozzle, maybe now is the time. Standard equipment on a sprayer will soon be required anyway. Drift reduction nozzles work with very coarse droplets; this is the only way to reach a high drift reduction level.

Choosing nozzles



Choosing nozzles

The tables on the next page can be used when choosing the right nozzle for a spray job. Important precondition for the tables:

- Always follow label recommendation for spray quality and volume rate – if nothing is stated, the tables on the next page can be used as a guideline.
- To minimize wind drift and maintain even liquid distribution, spraying pressure between 20 to 70 PSI is recommended (INJET: 40 to 120 PSI). Higher pressures with TWIN air assistance are also acceptable.
- Spraying against grass weeds or on other vertical targets – it is important to use a relative fine spray for a good coverage.
- Small dicot weeds need good coverage either through fine droplets or – if using a coarser spray – by compensating with a higher volume rate.
- Contact action mode needs finer droplets.
- Use medium sized droplets for chemicals that are transported in the plants.
- For large dicot weeds – coarse atomization can be used.
- Fungicide treatments are often less sensitive to spray quality; medium drops can be recommended. Remember that the volume rate must be adjusted to crop density and needs for penetration to more basal parts.
- Generally the water rate for conventional spraying should not be less than 15 GPA and for TWIN not less than 8.5-10.5 GPA for optimum efficacy at lower chemical doses.
- When mixing products or using products with more than one mode of action, adjust to the most demanding component of that product mix.

HARDI® ISO F-110
Standard flat fan nozzles

ISO size/color	PSI	20	30	40	50	60	70
0075-Pink	0.053	0.065	0.075	0.084	0.092	0.099	
01-Orange	0.071	0.087	0.100	0.112	0.122	0.132	
015-Green	0.106	0.130	0.150	0.168	0.184	0.198	
02-Yellow	0.141	0.173	0.200	0.224	0.245	0.265	
025-Lilac	0.177	0.217	0.250	0.280	0.306	0.331	
03-Blue	0.212	0.260	0.300	0.335	0.367	0.397	
04-Red	0.283	0.346	0.400	0.447	0.490	0.529	
05-Brown	0.354	0.433	0.500	0.559	0.612	0.661	
06-Grey	0.424	0.520	0.600	0.671	0.735	0.794	
08-White	0.566	0.693	0.800	0.894	0.980	1.058	
10-Light blue	0.707	0.866	1.000	1.118	1.225	1.323	

HARDI® ISO LD-110
LowDrift nozzles

ISO size/color	PSI	20	30	40	50	60	70
01-Orange	0.071	0.087	0.100	0.112	0.122	0.132	
015-Green	0.106	0.130	0.150	0.168	0.184	0.198	
02-Yellow	0.141	0.173	0.200	0.224	0.245	0.265	
025-Lilac	0.177	0.217	0.250	0.280	0.306	0.331	
03-Blue	0.212	0.260	0.300	0.335	0.367	0.397	
04-Red	0.283	0.346	0.400	0.447	0.490	0.529	
05-Brown	0.354	0.433	0.500	0.559	0.612	0.661	

HARDI® ISO MINIDRIFT
Air inclusion nozzles

ISO size/color	PSI	20	30	40	50	60	70
015-Green	0.106	0.130	0.150	0.168	0.184	0.198	
02-Yellow	0.141	0.173	0.200	0.224	0.245	0.265	
025-Lilac	0.177	0.217	0.250	0.280	0.306	0.331	
03-Blue	0.212	0.260	0.300	0.335	0.367	0.397	
04-Red	0.283	0.346	0.400	0.447	0.490	0.529	
05-Brown	0.354	0.433	0.500	0.559	0.612	0.661	

HARDI® ISO INJET
Air inclusion nozzles

ISO size/color	PSI	40	60	70	80	100	120
01-Orange	0.100	0.122	0.132	0.141	0.158	0.173	
015-Green	0.150	0.184	0.198	0.212	0.237	0.260	
02-Yellow	0.200	0.245	0.265	0.283	0.316	0.346	
025-Lilac	0.250	0.306	0.331	0.354	0.395	0.433	
03-Blue	0.300	0.367	0.397	0.424	0.474	0.520	
04-Red	0.400	0.490	0.529	0.566	0.632	0.693	
05-Brown	0.500	0.612	0.661	0.707	0.791	0.866	
06-Grey	0.600	0.735	0.794	0.849	0.949	1.039	
08-White	0.800	0.980	1.058	1.131	1.265	1.386	

Spray quality:

Fine	Coarse
Medium	Very coarse



Choosing nozzles

Conventional sprayers

	Normal spraying conditions - forward speed 3.5-5 MPH						Normal spraying conditions - forward speed 5-6.25 MPH						Windy, but cannot postpone - forward speed 3-3.5 MPH					
	Standard ISO F-110		LowDrift ISO LD-110		MD/ INJET		Standard ISO F-110		LowDrift ISO LD-110		MD/ INJET		Standard ISO F-110		LowDrift ISO LD-110		MD/ INJET	
Spray quality	F	M	C	M	C	VC	F	M	C	M	C	VC	M	C	M	C	VC	
Herbicides - soil applied		 10-20 GPA	 20 GPA	 10-20 GPA	 10-20 GPA	 10-20 GPA					 15-20 GPA	 10-20 GPA				 18-20 GPA	 10-20 GPA	
- grass weeds		 15-20 GPA		 15-20 GPA														
- broadleaf weeds up to .75": across		 15-20 GPA		 15-20 GPA					 20-25 GPA		 18-25 GPA					 18-25 GPA		
- broadleaf weeds more than .75" across		 15-20 GPA		 15-20 GPA					 20-25 GPA		 15-25 GPA	 20-25 GPA				 18-20 GPA	 20-25 GPA	
- Glyphosate		 10-15 GPA		 10-15 GPA							 15-20 GPA	 15-20 GPA				 18-20 GPA	 15-20 GPA	
Fungicides - contact		 15-30 GPA		 15-30 GPA														
- systemic		 15-30 GPA		 15-30 GPA					 20-30 GPA		 18-25 GPA					 18-30 GPA		
Insecticides - contact		 15-25 GPA		 15-25 GPA														
- systemic		 10-20 GPA		 10-20 GPA					 20-25 GPA		 18-25 GPA					 18-25 GPA		



TWIN air assisted sprayers

	Normal spraying conditions - forward speed 5-6 MPH						Normal spraying conditions - forward speed 7.5-9 MPH						Windy spraying conditions - forward speed 6.5-7.5 MPH					
	Standard ISO F-110			LowDrift ISO LD-110		MD/ INJET	Standard ISO F-110			LowDrift ISO LD-110		MD/ INJET	Standard ISO F-110		LowDrift ISO LD-110		MD/ INJET	
Spray quality	F	M	C	M	C	VC	F	M	C	M	C	VC	M	C	M	C	VC	
Herbicides - soil applied																		
- grass weeds																		
- broadleaf weeds up to .75" across																		
- broadleaf weeds more than .75" across																		
- Glyphosate																		
Fungicides - contact																		
- systemic																		
Insecticides - contact																		
- systemic																		

Best choice

Useful alternative

Under optimum spraying conditions when fine atomization can be used with no drift hazard

INJET The very coarse atomization from INJET nozzles often requires higher water volume rates to compensate for poor coverage

Spray quality:

Fine

Coarse

Medium

Very coarse

Calibration of field crop sprayers

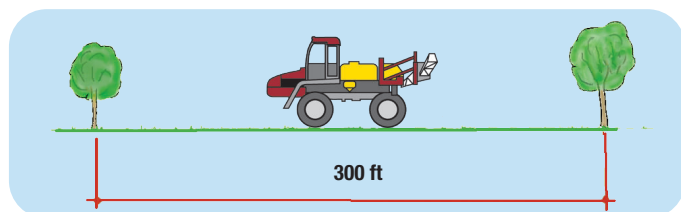
Precise, safe applications in the field demand that the sprayer is effectively calibrated. Calibration must always be done with clean water and before the use of any crop protection product. Follow these three steps to calibrate your sprayer:

1 Check driving speed

Half-fill the spray tank with water.

Mark out 300 ft – note time to drive the distance.

For easy selection of nozzles and pressure, use the HARDI calibration disk (order No. 285721).



Example

If it takes 24 seconds to drive 300 feet, the spraying speed is 8.5 miles per hour.

Driving speed formula

$$\frac{\text{distance driven (ft)} \times 0.68}{\text{time (sec.)}} = \text{MPH}$$

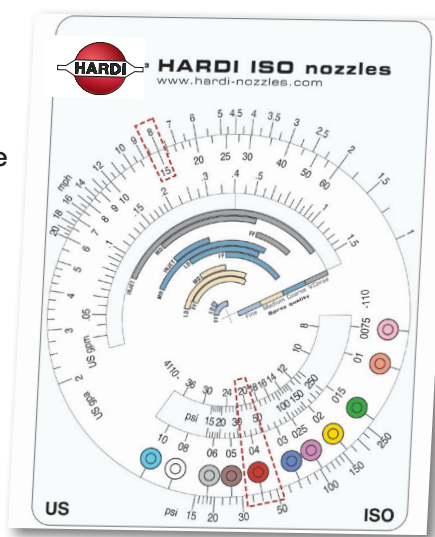
2 Select volume rate, nozzle and pressure

equal to desired output:

Readjust pressure.

(alternatively, change nozzle or driving speed).

- If output has increased more than 10% from table value, change all nozzles.



Example

Volume rate 15 GPA
Driving speed 8 MPH
Nozzle ISO F-04-110

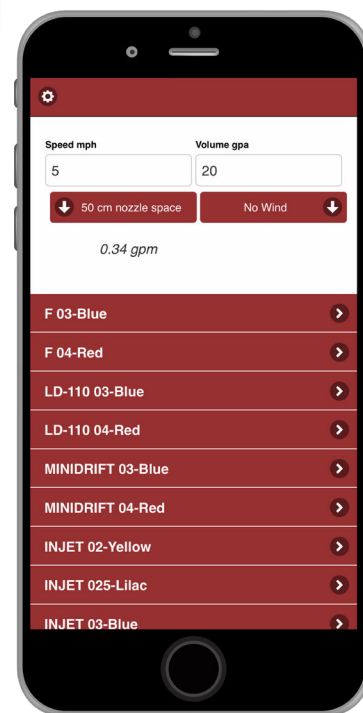
Pressure 40 PSI
Nozzle flow 0.40 GPM

3 Check nozzle output

- If actual output is not



Mobile App for iPhone or Android



Calibration formulas

When calibrating, it is the perfect time to check the spray distribution across your boom. Here you have clean water in the whole system and a great opportunity to inspect your sprayer for any leaks, blockages, etc.

Speed check

$$\frac{\text{distance (ft.)} \times 0.68}{\text{Time (s)}} = \text{MPH}$$



Nozzle output

$$\frac{\text{nozzle spacing (in.)} \times \text{GPA} \times \text{MPH}}{5940} = \text{GPM (per nozzle)}$$



Pressure adjustment

$$\left(\frac{\text{new output (GPA)}}{\text{known output (GPA)}} \right)^2 \times \text{known pressure (PSI)} = \text{new pressure (PSI)}$$



Application volume

$$\frac{5940 \times \text{GPM (per nozzle)}}{\text{nozzle spacing (in.)} \times \text{MPH}} = \text{GPA}$$



Calibration of field crop sprayers

Cleaning of nozzles

An even distribution across your boom is critical to the performance of the product you are applying. Dirty and/or blocked nozzles are the most frequently reported problem affecting distribution. Cleaning nozzles is best done using water and a soft brush such as a toothbrush.

Never use tools like screwdrivers or nails - they will certainly damage the nozzle and its ability to evenly distribute the sprayed liquid.

A soft brush for nozzle cleaning is included as a part of the HARDI calibration set (81624503).



Liquid fertilizer

Liquid fertilizers may be of a higher liquid density than water and almost all normal spray solutions. The density correction table below states the increased pressure that will be needed to reach the required output with such liquids.

Example

The nozzle has an output of 0.5 GPM at 40 PSI. If the density of the liquid fertilizer is 10.65 lbs/gal you have to multiply the calibration pressure - found when checking the nozzle flow with water - with the density factor. This gives an adjusted pressure of 45 PSI. The value can be found in the table at 40 PSI (calibrated pressure) and a density of 10.65 lbs/gal.

PSI	Density (lbs/gal)				
	9.00	10.00	10.65	11.00	12.00
	Adjusted pressure (PSI)				
20	21	22	23	23	24
30	31	33	34	35	36
40	42	44	45	46	48
50	52	55	57	58	60
60	62	66	68	69	72

When did you last check the output from your nozzles?

1. After every week of spraying, check minimum 2 nozzles per boom section.
2. If the flow from one or more of these nozzles has increased more than 10% compared to a new nozzle, change all nozzles.

Water sensitive paper

An important tool to check the spray quality and deposition in the field. Buy it at your HARDI dealer.

1" x 3"
50 pcs. no: 893211



Nozzle flow

If your water volume rate and spraying speed are known then use this table to identify the flow rate that will be required by the nozzle. The nozzle flow rate [GPM] selected from this table, can then be used together with the nozzle tables on the following pages, to identify a suitable nozzle.

MPH	GPA															
	3	5	7	10	15	20	25	30	35	40	45	50	55	60	65	70
2				0.067	0.101	0.135	0.168	0.202	0.236	0.269	0.303	0.337	0.370	0.404	0.438	0.471
4		0.067	0.094	0.135	0.202	0.269	0.337	0.404	0.471	0.539	0.606	0.673	0.741	0.808	0.875	0.943
5	0.051	0.084	0.118	0.168	0.253	0.337	0.421	0.505	0.589	0.673	0.758	0.842	0.926	1.010	1.094	1.178
6	0.061	0.101	0.141	0.202	0.303	0.404	0.505	0.606	0.707	0.808	0.909	1.010	1.111	1.212	1.313	1.414
7	0.071	0.118	0.165	0.236	0.354	0.471	0.589	0.707	0.825	0.943	1.061	1.178	1.296	1.414		
8	0.081	0.135	0.189	0.269	0.404	0.539	0.673	0.808	0.943	1.077	1.212	1.347				
9	0.091	0.152	0.212	0.303	0.455	0.606	0.758	0.909	1.061	1.212	1.364					
10	0.101	0.168	0.236	0.337	0.505	0.673	0.842	1.010	1.178	1.347						
12	0.121	0.202	0.283	0.404	0.606	0.808	1.010	1.212	1.414							
14	0.141	0.236	0.330	0.471	0.707	0.943	1.178	1.414								
16	0.162	0.269	0.377	0.539	0.808	1.077	1.347									

HARDI ISO F-110 - Standard flat fan nozzles



All-around use, flat fan nozzle. Recommended for all types of pesticide application where optimum coverage is demanded. This nozzle will give you excellent and uniform liquid distribution at boom heights from 14" to 28" (20" recommended to take care of uneven terrain or boom movements).

- ISO – flow, color and outer dimensions
- Working pressure – 20 to 70 PSI
- Recommended for TWIN sprayers
- SYNTAL – precision molded thermoplastic
- CERAMIC – extremely high durability
- COLOR TIPS – for safe and easy handling

				GPA at MPH							
PSI	GPA	6		7	8	10	12	15	20	25	
03-Blue	20	0.212	M	10.5	9.0	7.9	6.3	5.3	4.5	3.9	3.5
	30	0.260	M	12.9	11.0	9.6	7.7	6.4	5.5	4.8	4.3
	40	0.300	M	14.9	12.7	11.1	8.9	7.4	6.4	5.6	5.0
	50	0.335	M	16.6	14.2	12.5	10.0	8.3	7.1	6.2	5.5
	60	0.367	M	18.2	15.6	13.6	10.9	9.1	7.8	6.8	6.1
	70	0.397	M	19.6	16.8	14.7	11.8	9.8	8.4	7.4	6.5
				SYNTAL-CT 371767 (12 pcs. 755630) CERAMIC-CT 371774 (12 pcs. 755637)				SYNTAL-S 371709 (12 pcs. 755652) CERAMIC-S 371740 (12 pcs. 755673)			

04-Red	20	0.283	M	14.0	12.0	10.5	8.4	7.0	6.0	5.3	4.7
	30	0.346	M	17.1	14.7	12.9	10.3	8.6	7.3	6.4	5.7
	40	0.400	M	19.8	17.0	14.9	11.9	9.9	8.5	7.4	6.6
	50	0.447	M	22.1	19.0	16.6	13.3	11.1	9.5	8.3	7.4
	60	0.490	M	24.2	20.8	18.2	14.5	12.1	10.4	9.1	8.1
	70	0.529	M	26.2	22.5	19.6	15.7	13.1	11.2	9.8	8.7
					SYNTAL-CT 371768 (12 pcs. 755631)				SYNTAL-S 371710 (12 pcs. 755655)		
				CERAMIC-CT 371775 (12 pcs. 755638)				CERAMIC-S 371741 (12 pcs. 755676)			

05-Brown	20	0.354	C	17.5	15.0	13.1	10.5	8.8	7.5	6.6	5.8
	30	0.433	C	21.4	18.4	16.1	12.9	10.7	9.2	8.0	7.1
	40	0.500	M	24.8	21.2	18.6	14.9	12.4	10.6	9.3	8.3
	50	0.559	M	27.7	23.7	20.8	16.6	13.8	11.9	10.4	9.2
	60	0.612	M	30.3	26.0	22.7	18.2	15.2	13.0	11.4	10.1
	70	0.661	M	32.7	28.1	24.6	19.6	16.4	14.0	12.3	10.9
					SYNTAL-CT 371769 (12 pcs. 755632)				SYNTAL-S 371711 (12 pcs. 755658)		
				CERAMIC-CT 371776 (12 pcs. 755639)				CERAMIC-S 371742 (12 pcs. 755679)			

06-Grey	20	0.424	C	21.0	18.0	15.8	12.6	10.5	9.0	7.9	7.0
	30	0.520	C	25.7	22.0	19.3	15.4	12.9	11.0	9.6	8.6
	40	0.600	C	29.7	25.5	22.3	17.8	14.9	12.7	11.1	9.9
	50	0.671	C	33.2	28.5	24.9	19.9	16.6	14.2	12.5	11.1
	60	0.735	C	36.4	31.2	27.3	21.8	18.2	15.6	13.6	12.1
	70	0.794	C	39.3	33.7	29.5	23.6	19.6	16.8	14.7	13.1
					SYNTAL-CT 371770 (12 pcs. 755633)				SYNTAL-S 371712 (12 pcs. 755661)		
				CERAMIC-CT 371777 (12 pcs. 755640)				CERAMIC-S 371743 (12 pcs. 755682)			

08-White	20	0.566	VC	28.0	24.0	21.0	16.8	14.0	12.0	10.5	9.3
	30	0.693	C	34.3	29.4	25.7	20.6	17.1	14.7	12.9	11.4
	40	0.800	C	39.6	33.9	29.7	23.8	19.8	17.0	14.9	13.2
	50	0.894	C	44.3	37.9	33.2	26.6	22.1	19.0	16.6	14.8
	60	0.980	C	48.5	41.6	36.4	29.1	24.2	20.8	18.2	16.2
	70	1.058	C	52.4	44.9	39.3	31.4	26.2	22.5	19.6	17.5
					SYNTAL-CT 371771 (12 pcs. 755634)				SYNTAL-S 371713 (12 pcs. 755664)		

10-Light blue	20	0.707	VC	35.0	30.0	26.3	21.0	17.5	15.0	13.1	11.7
	30	0.866	VC	42.9	36.7	32.2	25.7	21.4	18.4	16.1	14.3
	40	1.000	VC	49.5	42.4	37.1	29.7	24.8	21.2	18.6	16.5
	50	1.118	VC	55.3	47.4	41.5	33.2	27.7	23.7	20.8	18.4
	60	1.225	C	60.6	52.0	45.5	36.4	30.3	26.0	22.7	20.2
	70	1.323	C	65.5	56.1	49.1	39.3	32.7	28.1	24.6	21.8
					SYNTAL-CT 371970 (12 pcs. 750636)				SYNTAL-S 371966 (12 pcs. 750638)		

	PSI	GPM		GPA at MPH							
				6	7	8	10	12	14	16	18
0075-Pink	20	0.053	F	2.6	2.3	2.0	1.6	1.3	1.1	1.0	0.9
	30	0.065	F	3.2	2.8	2.4	1.9	1.6	1.4	1.2	1.1
	40	0.075	F	3.7	3.2	2.8	2.2	1.9	1.6	1.4	1.2
	50	0.084	F	4.2	3.6	3.1	2.5	2.1	1.8	1.6	1.4
	60	0.092	F	4.5	3.9	3.4	2.7	2.3	1.9	1.7	1.5
	70	0.099	F	4.9	4.2	3.7	2.9	2.5	2.1	1.8	1.6
					SYNTAL-CT 371964 (12 pcs. 750634)				SYNTAL-S 371963 (12 pcs. 750635)		

01-Orange	20	0.071	F	3.5	3.0	2.6	2.1	1.8	1.5	1.3	1.2
	30	0.087	F	4.3	3.7	3.2	2.6	2.1	1.8	1.6	1.4
	40	0.100	F	5.0	4.2	3.7	3.0	2.5	2.1	1.9	1.7
	50	0.112	F	5.5	4.7	4.2	3.3	2.8	2.4	2.1	1.8
	60	0.122	F	6.1	5.2	4.5	3.6	3.0	2.6	2.3	2.0
	70	0.132	F	6.5	5.6	4.9	3.9	3.3	2.8	2.5	2.2
					SYNTAL-CT 371764 (12 pcs. 755627)				SYNTAL-S 371706 (12 pcs. 755643)		

015-Green	20	0.106	M	5.3	4.5	3.9	3.2	2.6	2.3	2.0	1.8
	30	0.130	F	6.4	5.5	4.8	3.9	3.2	2.8	2.4	2.1
	40	0.150	F	7.4	6.4	5.6	4.5	3.7	3.2	2.8	2.5
	50	0.168	F	8.3	7.1	6.2	5.0	4.2	3.6	3.1	2.8
	60	0.184	F	9.1	7.8	6.8	5.5	4.5	3.9	3.4	3.0
	70	0.198	F	9.8	8.4	7.4	5.9	4.9	4.2	3.7	3.3
				SYNTAL-CT 371765 (12 pcs. 755628)					SYNTAL-S 371707 (12 pcs. 755646)		
			CERAMIC-CT 371772 (12 pcs. 755635)					CERAMIC-S 371738 (12 pcs. 755667)			

02-Yellow	20	0.144	M	7.0	6.0	5.3	4.2	3.5	3.0	2.6	2.3
	30	0.173	M	8.6	7.3	6.4	5.1	4.3	3.7	3.2	2.9
	40	0.200	F	9.9	8.5	7.4	5.9	5.0	4.2	3.7	3.3
	50	0.224	F	11.1	9.5	8.3	6.6	5.5	4.7	4.2	3.7
	60	0.245	F	12.1	10.4	9.1	7.3	6.1	5.2	4.5	4.0
	70	0.265	F	13.1	11.2	9.8	7.9	6.5	5.6	4.9	4.4
					SYNTAL-CT 371766 (12 pcs. 755629)				SYNTAL-S 371708 (12 pcs. 755649)		
				CERAMIC-CT 371773 (12 pcs. 755636)				CERAMIC-S 371739 (12 pcs. 755670)			

025-Lilac	20	0.177	M	8.8	7.5	6.6	5.3	4.4	3.8	3.3	2.9
	30	0.217	M	10.7	9.2	8.0	6.4	5.4	4.6	4.0	3.6
	40	0.250	M	12.4	10.6	9.3	7.4	6.2	5.3	4.6	4.1
	50	0.280	M	13.8	11.9	10.4	8.3	6.9	5.9	5.2	4.6
	60	0.306	F	15.2	13.0	11.4	9.1	7.6	6.5	5.7	5.1
	70	0.331	F	16.4	14.0	12.3	9.8	8.2	7.0	6.1	5.5
					SYNTAL-CT 371950 (12 pcs. 750626)				SYNTAL-S 371946 (12 pcs. 750628)		



= Spray quality:

■ Fine (F), ■ Medium (M), ■ Coarse (C), ■ Very Coarse (VC).

The nozzles are available both as single nozzles (S) and as COLOR TIPS (CT), where the nozzle is integrated in the SNAP-FIT.

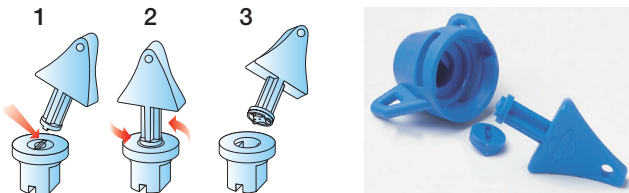


HARDI ISO LD-110 - LowDrift nozzles



LowDrift nozzles are recommended when optimum spraying conditions cannot be achieved (risk of drift) and spraying cannot be postponed.

- ISO – Flow, color and outer dimensions
- Working pressure – 20 to 70 PSI
- Restrictor designed for minimum chemical residues
- SYNTAL – precision molded thermoplastic
- CERAMIC – extremely high durability
- COLOR TIPS – for safe and easy handling



Turn-&-Clean with the HARDI key – easily removable restrictor.

	PSI	GPM	Spray quality	GPA at MPH							
				6	7	8	10	12	14	16	18
01-Orange	20	0.071	M	3.5	3.0	2.6	2.1	1.8	1.5	1.3	1.2
	30	0.087	M	4.3	3.7	3.2	2.6	2.1	1.8	1.6	1.4
	40	0.100	M	5.0	4.2	3.7	3.0	2.5	2.1	1.9	1.7
	50	0.112	M	5.5	4.7	4.2	3.3	2.8	2.4	2.1	1.8
	60	0.122	M	6.1	5.2	4.5	3.6	3.0	2.6	2.3	2.0
	70	0.132	F	6.5	5.6	4.9	3.9	3.3	2.8	2.5	2.2
	SYNTAL-CT 371837 (12 pcs. 755708) SYNTAL-S 371817 (12 pcs. 755698) CERAMIC-CT 371842 (12 pcs. 755713) CERAMIC-S 371822 (12 pcs. 755703)										

	PSI	GPM	Spray quality	GPA at MPH							
				6	7	8	10	12	14	16	18
015-Green	20	0.106	M	5.3	4.5	3.9	3.2	2.6	2.3	2.0	1.8
	30	0.130	M	6.4	5.5	4.8	3.9	3.2	2.8	2.4	2.1
	40	0.150	M	7.4	6.4	5.6	4.5	3.7	3.2	2.8	2.5
	50	0.168	M	8.3	7.1	6.2	5.0	4.2	3.6	3.1	2.8
	60	0.184	M	9.1	7.8	6.8	5.5	4.5	3.9	3.4	3.0
	70	0.198	M	9.8	8.4	7.4	5.9	4.9	4.2	3.7	3.3
	SYNTAL-CT 371838 (12 pcs. 755709) SYNTAL-S 371818 (12 pcs. 755699) CERAMIC-CT 371843 (12 pcs. 755714) CERAMIC-S 371823 (12 pcs. 755704)										

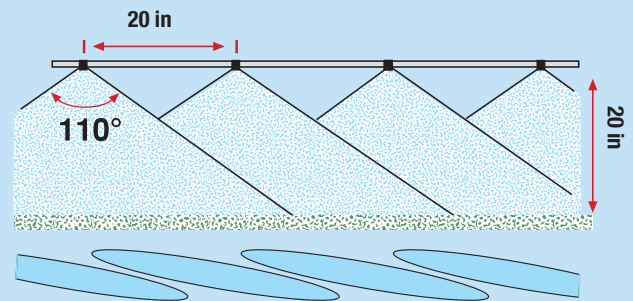
	PSI	GPM	Spray quality	GPA at MPH							
				6	7	8	10	12	14	16	18
02-Yellow	20	0.144	M	7.0	6.0	5.3	4.2	3.5	3.0	2.6	2.3
	30	0.173	M	8.6	7.3	6.4	5.1	4.3	3.7	3.2	2.9
	40	0.200	M	9.9	8.5	7.4	5.9	5.0	4.2	3.7	3.3
	50	0.224	M	11.1	9.5	8.3	6.6	5.5	4.7	4.2	3.7
	60	0.245	M	12.1	10.4	9.1	7.3	6.1	5.2	4.5	4.0
	70	0.265	M	13.1	11.2	9.8	7.9	6.5	5.6	4.9	4.4
	SYNTAL-CT 371839 (12 pcs. 755710) SYNTAL-S 371819 (12 pcs. 755700) CERAMIC-CT 371844 (12 pcs. 755715) CERAMIC-S 371824 (12 pcs. 755705)										

	PSI	GPM	Spray quality	GPA at MPH							
				6	7	8	10	12	14	16	18
025-Lilac	20	0.177	C	8.8	7.5	6.6	5.3	4.4	3.8	3.3	2.9
	30	0.217	C	10.7	9.2	8.0	6.4	5.4	4.6	4.0	3.6
	40	0.250	M	12.4	10.6	9.3	7.4	6.2	5.3	4.6	4.1
	50	0.280	M	13.8	11.9	10.4	8.3	6.9	5.9	5.2	4.6
	60	0.306	M	15.2	13.0	11.4	9.1	7.6	6.5	5.7	5.1
	70	0.331	M	16.4	14.0	12.3	9.8	8.2	7.0	6.1	5.5
	SYNTAL-CT 371958 (12 pcs. 750630) SYNTAL-S 371957 (12 pcs. 750632)										

= Spray quality:
 Fine (F), Medium (M), Coarse (C), Very Coarse (VC).

This nozzle will give you excellent and uniform liquid distribution at boom heights from 14" to 28" (20" recommended to take care of uneven terrain or boom movements).

To ensure that the boom distribution is not disturbed by interference, the nozzles are set at an angle of 8° to the boom. This feature is built into all HARDI COLOR TIP and SNAP-FIT caps. This angle has to be set manually if single nozzles are used.



	PSI	GPM	Spray quality	GPA at MPH							
				6	7	8	10	12	14	16	18
03-Blue	20	0.212	C	10.5	9.0	7.9	6.3	5.3	4.5	3.9	3.5
	30	0.260	C	12.9	11.0	9.6	7.7	6.4	5.5	4.8	4.3
	40	0.300	C	14.9	12.7	11.1	8.9	7.4	6.4	5.6	5.0
	50	0.335	C	16.6	14.2	12.5	10.0	8.3	7.1	6.2	5.5
	60	0.367	M	18.2	15.6	13.6	10.9	9.1	7.8	6.8	6.1
	70	0.397	M	19.6	16.8	14.7	11.8	9.8	8.4	7.4	6.5
	SYNTAL-CT 371840 (12 pcs. 755711) SYNTAL-S 371820 (12 pcs. 755701) CERAMIC-CT 371845 (12 pcs. 755716) CERAMIC-S 371825 (12 pcs. 755706)										

	PSI	GPM	Spray quality	GPA at MPH							
				6	7	8	10	12	14	16	18
04-Red	20	0.283	C	14.0	12.0	10.5	8.4	7.0	6.0	5.3	4.7
	30	0.346	C	17.1	14.7	12.9	10.3	8.6	7.3	6.4	5.7
	40	0.400	C	19.8	17.0	14.9	11.9	9.9	8.5	7.4	6.6
	50	0.447	C	22.1	19.0	16.6	13.3	11.1	9.5	8.3	7.4
	60	0.490	C	24.2	20.8	18.2	14.5	12.1	10.4	9.1	8.1
	70	0.529	M	26.2	22.5	19.6	15.7	13.1	11.2	9.8	8.7
	SYNTAL-CT 371841 (12 pcs. 755712) SYNTAL-S 371821 (12 pcs. 755702) CERAMIC-CT 371846 (12 pcs. 755717) CERAMIC-S 371826 (12 pcs. 755707)										

	PSI	GPM	Spray quality	GPA at MPH							
				6	7	8	10	12	14	16	18
05-Brown	20	0.354	C	17.5	15.0	13.1	10.5	8.8	7.5	6.6	5.8
	30	0.433	C	21.4	18.4	16.1	12.9	10.7	9.2	8.0	7.1
	40	0.500	C	24.8	21.2	18.6	14.9	12.4	10.6	9.3	8.3
	50	0.559	C	27.7	23.7	20.8	16.6	13.8	11.9	10.4	9.2
	60	0.612	C	30.3	26.0	22.7	18.2	15.2	13.0	11.4	10.1
	70	0.661	C	32.7	28.1	24.6	19.6	16.4	14.0	12.3	10.9
	SYNTAL-CT 371894 (12 pcs. 755815) SYNTAL-S 371893 (12 pcs. 755817) CERAMIC-CT 371897 (12 pcs. 755816) CERAMIC-S 371896 (12 pcs. 755818)										

The nozzles are available both as single nozzles (S) and as COLOR TIPS (CT), where the nozzle is integrated in the SNAP-FIT.

HARDI ISO MINIDRIFT air inclusion nozzles



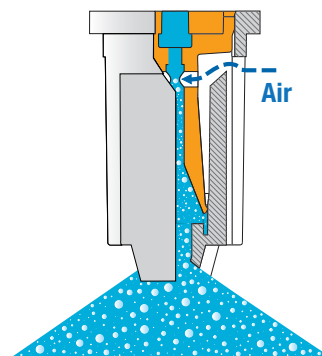
The HARDI MINIDRIFT nozzles can be used for spraying at sub-optimal weather conditions, when spraying cannot be postponed. The MINIDRIFT nozzle will at low pressures reduce drift to a minimum.

- Air inclusion nozzle
- Working pressure – 20 to 80 PSI
- ISO – flow, colors, sizes and nomenclature
- Application rates from 6 to 40 GPA (at 5 MPH)
- SYNTAL – precision molded thermoplastic

This nozzle will give you excellent and uniform liquid distribution at boom heights from 16" to 35".

The droplet spectrum is coarse to very coarse; safe for drift control but without risking poor coverage and deposition on leaves. The venturi can easily be removed for cleaning the nozzle.

Spray liquid



Two big air inlets reduce the risk of clogging.

Compact design reduces impact damage.

Meets full ISO specifications.

	PSI	GPM		GPA at MPH							
				6	7	8	10	12	14	16	18
015-Green	20	0.106	C	5.3	4.5	3.9	3.2	2.6	2.3	2.0	1.8
	30	0.130	C	6.4	5.5	4.8	3.9	3.2	2.8	2.4	2.1
	40	0.150	C	7.4	6.4	5.6	4.5	3.7	3.2	2.8	2.5
	50	0.168	C	8.3	7.1	6.2	5.0	4.2	3.6	3.1	2.8
	60	0.184	M	9.1	7.8	6.8	5.5	4.5	3.9	3.4	3.0
	70	0.198	M	9.8	8.4	7.4	5.9	4.9	4.2	3.7	3.3
	80	0.212	M	10.5	9.1	7.9	6.3	5.2	4.5	3.9	3.5
	SYNTAL-CT 372121 (12 pcs. 75083100) SYNTAL-S 372111 (12 pcs. 75082100)										

	PSI	GPM		GPA at MPH							
				6	7	8	10	12	14	16	18
03-Blue	20	0.212	VC	10.5	9.0	7.9	6.3	5.3	4.5	3.9	3.5
	30	0.260	VC	12.9	11.0	9.6	7.7	6.4	5.5	4.8	4.3
	40	0.300	VC	14.9	12.7	11.1	8.9	7.4	6.4	5.6	5.0
	50	0.335	C	16.6	14.2	12.5	10.0	8.3	7.1	6.2	5.5
	60	0.367	C	18.2	15.6	13.6	10.9	9.1	7.8	6.8	6.1
	70	0.397	C	19.6	16.8	14.7	11.8	9.8	8.4	7.4	6.5
	80	0.424	M	21.1	18.0	15.8	12.6	10.5	9.0	7.9	7.0
	SYNTAL-CT 372124 (12 pcs. 75083400) SYNTAL-S 372114 (12 pcs. 75082400)										

	PSI	GPM		GPA at MPH							
				6	7	8	10	12	14	16	18
02-Yellow	20	0.144	VC	7.0	6.0	5.3	4.2	3.5	3.0	2.6	2.3
	30	0.173	C	8.6	7.3	6.4	5.1	4.3	3.7	3.2	2.9
	40	0.200	C	9.9	8.5	7.4	5.9	5.0	4.2	3.7	3.3
	50	0.224	C	11.1	9.5	8.3	6.6	5.5	4.7	4.2	3.7
	60	0.245	C	12.1	10.4	9.1	7.3	6.1	5.2	4.5	4.0
	70	0.265	M	13.1	11.2	9.8	7.9	6.5	5.6	4.9	4.4
	80	0.282	M	14.1	12.1	10.5	8.4	7.1	6.1	5.2	4.5
	SYNTAL-CT 372122 (12 pcs. 75083200) SYNTAL-S 372112 (12 pcs. 75082200)										

	PSI	GPM		GPA at MPH							
				6	7	8	10	12	14	16	18
04-Red	10	0.201	VC	9.9	8.5	7.5	6	5	4.3	3.7	3.3
	20	0.283	VC	14.0	12.0	10.5	8.4	7.0	6.0	5.3	4.7
	30	0.346	VC	17.1	14.7	12.9	10.3	8.6	7.3	6.4	5.7
	40	0.400	VC	19.8	17.0	14.9	11.9	9.9	8.5	7.4	6.6
	50	0.447	VC	22.1	19.0	16.6	13.3	11.1	9.5	8.3	7.4
	60	0.490	C	24.2	20.8	18.2	14.5	12.1	10.4	9.1	8.1
	70	0.529	C	26.2	22.5	19.6	15.7	13.1	11.2	9.8	8.7
	80	0.566	C	28.0	24.0	21.0	16.8	14.0	12.0	10.5	9.3
	SYNTAL-CT 372125 (12 pcs. 75083500) SYNTAL-S 372115 (12 pcs. 75082500)										

	PSI	GPM		GPA at MPH							
				6	7	8	10	12	14	16	18
025-Lilac	20	0.177	VC	8.8	7.5	6.6	5.3	4.4	3.8	3.3	2.9
	30	0.217	VC	10.7	9.2	8.0	6.4	5.4	4.6	4.0	3.6
	40	0.250	C	12.4	10.6	9.3	7.4	6.2	5.3	4.6	4.1
	50	0.280	C	13.8	11.9	10.4	8.3	6.9	5.9	5.2	4.6
	60	0.306	C	15.2	13.0	11.4	9.1	7.6	6.5	5.7	5.1
	70	0.331	M	16.4	14.0	12.3	9.8	8.2	7.0	6.1	5.5
	80	0.354	M	17.5	12.4	13.1	10.5	8.8	7.5	6.6	5.8
	SYNTAL-CT 372123 (12 pcs. 75083300) SYNTAL-S 372113 (12 pcs. 75082300)										

	PSI	GPM		GPA at MPH							
				6	7	8	10	12	14	16	18
05-Brown	10	0.25	VC	12.4	10.6	9.3	7.4	6.2	5.3	4.6	4.1
	20	0.354	VC	17.5	15.0	13.1	10.5	8.8	7.5	6.6	5.8
	30	0.433	VC	21.4	18.4	16.1	12.9	10.7	9.2	8.0	7.1
	40	0.500	VC	24.8	21.2	18.6	14.9	12.4	10.6	9.3	8.3
	50	0.559	VC	27.7	23.7	20.8	16.6	13.8	11.9	10.4	9.2
	60	0.612	C	30.3	26.0	22.7	18.2	15.2	13.0	11.4	10.1
	70	0.661	C	32.7	28.1	24.6	19.6	16.4	14.0	12.3	10.9
	80	0.707	C	35.1	30.1	26.2	21.1	17.5	15.1	13.1	11.7
	SYNTAL-CT 372126 (12 pcs. 75083600) SYNTAL-S 372116 (12 pcs. 75082600)										

= Spray quality:
 Fine (F), Medium (M), Coarse (C), Very Coarse (VC).

The nozzles are available both as single nozzles (S) and as COLOR TIPS (CT), where the nozzle is integrated in the SNAP-FIT.

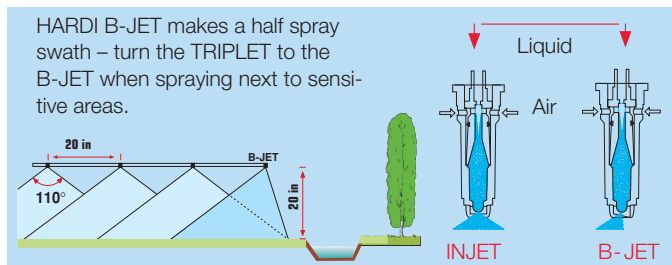
HARDI ISO INJET air inclusion nozzles



The HARDI INJET nozzles can be used for spraying at sub-optimal weather conditions, or when spraying cannot be postponed. The HARDI INJET nozzles are recommended for most pesticide applications where reduced risk of drift is demanded.

- Air inclusion nozzles with greater drift reduction
- ISO flow, colors and nomenclature
- Application rates from 3 to 40 GPA (at 10 MPH)
- Pressure range – 40 to 120 PSI
- B-Jet border nozzle for precise application near sensitive areas
- SYNTAL - precision molded thermoplastic

The HARDI INJET & B-JET nozzles can be mounted using the 334083 ISO/INJET cap.



	PSI	GPM		GPA at MPH							
				6	7	8	10	12	14	16	18
03-Blue	40	0.300	VC	14.9	12.7	11.1	8.9	7.4	6.4	5.6	5.0
	60	0.367	VC	18.2	15.6	13.6	10.9	9.1	7.8	6.8	6.1
	70	0.397	VC	19.6	16.8	14.7	11.8	9.8	8.4	7.4	6.5
	80	0.424	VC	21.0	18.0	15.8	12.6	10.5	9.0	7.9	7.0
	100	0.474	VC	23.5	20.1	17.6	14.1	11.7	10.1	8.8	7.8
	120	0.520	VC	25.7	22.0	19.3	15.4	12.9	11.0	9.6	8.6
SYNTAL-S				371875 (12 pcs. 75081800)				SYNTAL-S B-JET 371870 (2 pcs. 755799)			

	PSI	GPM		GPA at MPH							
				6	7	8	10	12	14	16	18
01-Orange	40	0.100	VC	5.0	4.2	3.7	3.0	2.5	2.1	1.9	1.7
	60	0.122	VC	6.1	5.2	4.5	3.6	3.0	2.6	2.3	2.0
	70	0.132	VC	6.5	5.6	4.9	3.9	3.6	2.8	2.5	2.2
	80	0.141	C	7.0	6.0	5.3	4.2	3.5	3.0	2.6	2.3
	100	0.158	C	7.8	6.7	5.9	4.7	3.9	3.4	2.9	2.6
	120	0.173	C	8.6	7.3	6.4	5.1	4.3	3.7	3.2	2.9
SYNTAL-S371926 (12 pcs. 75078800)											

04-Red	40	0.400	VC	19.8	17.0	14.9	11.9	9.9	8.5	7.4	6.6
	60	0.490	VC	24.2	20.8	18.2	14.5	12.1	10.4	9.1	8.1
	70	0.529	VC	26.2	22.5	19.6	15.7	13.1	11.2	9.8	8.7
	80	0.566	VC	28.0	24.0	21.0	16.8	14.0	12.0	10.5	9.3
	100	0.632	VC	31.3	26.8	23.5	18.8	15.7	13.4	11.7	10.4
	120	0.693	VC	34.3	29.4	25.7	20.6	17.1	14.7	12.9	11.4
SYNTAL-S				371876 (12 pcs. 75081900)				SYNTAL-S B-JET 371871 (2 pcs. 755800)			

015-Green	40	0.150	VC	7.4	6.4	5.6	4.5	3.7	3.2	2.8	2.5
	60	0.184	VC	9.1	7.8	6.8	5.5	4.5	3.9	3.4	3.0
	70	0.198	VC	9.8	8.4	7.4	5.9	4.9	4.2	3.7	3.3
	80	0.212	VC	10.5	9.0	7.9	6.3	5.3	4.5	3.9	3.5
	100	0.237	VC	11.7	10.1	8.8	7.0	5.9	5.0	4.4	3.9
	120	0.260	VC	12.9	11.0	9.6	7.7	6.4	5.5	4.8	4.3
SYNTAL-S				371872 (12 pcs. 75081500)							

05-Brown	40	0.500	VC	24.8	21.2	18.6	14.9	12.4	10.6	9.3	8.3
	60	0.612	VC	30.3	26.0	22.7	18.2	15.2	13.0	11.4	10.1
	70	0.661	VC	32.7	28.1	24.6	19.6	16.4	14.0	12.3	10.9
	80	0.707	VC	35.0	30.0	26.3	21.0	17.5	15.0	13.1	11.7
	100	0.791	VC	39.1	33.5	29.3	23.5	19.6	16.8	14.7	13.0
	120	0.866	VC	42.9	36.7	32.2	25.7	21.4	18.4	16.1	14.3
SYNTAL-S				371927 (12 pcs. 75078900)							

02-Yellow	40	0.200	VC	9.9	8.5	7.4	5.9	5.0	4.2	3.7	3.3
	60	0.245	VC	12.1	10.4	9.1	7.3	6.1	5.2	4.5	4.0
	70	0.265	VC	13.1	11.2	9.8	7.9	6.5	5.6	4.9	4.4
	80	0.283	VC	14.0	12.0	10.5	8.4	7.0	6.0	5.3	4.7
	100	0.316	VC	15.7	13.4	11.7	9.4	7.8	6.7	5.9	5.2
	120	0.346	VC	17.1	14.7	12.9	10.3	8.6	7.3	6.4	5.7
SYNTAL-S				371873 (12 pcs. 75081600)				SYNTAL-S B-JET 371930 (2 pcs. 750620)			

06-Grey	40	0.600	VC	29.7	25.5	22.3	17.8	14.9	12.7	11.1	9.9
	60	0.735	VC	36.4	31.2	27.3	21.8	18.2	15.6	13.6	12.1
	70	0.794	VC	39.3	33.7	29.5	23.6	19.6	16.8	14.7	13.1
	80	0.849	VC	42.0	36.0	31.5	25.2	21.0	18.0	15.8	14.0
	100	0.949	VC	47.0	40.3	35.2	28.2	23.5	20.1	17.6	15.7
	120	1.039	VC	51.4	44.1	38.6	30.9	25.7	22.0	19.3	17.1
SYNTAL-S				371928 (12 pcs. 7507900)							

025-Lilac	40	0.250	VC	12.4	10.6	9.3	7.4	6.2	5.3	4.6	4.1
	60	0.306	VC	15.2	13.0	11.4	9.1	7.6	6.5	5.7	5.1
	70	0.331	VC	16.4	14.0	12.3	9.8	8.2	7.0	6.1	5.5
	80	0.354	VC	17.5	15.0	13.1	10.5	8.8	7.5	6.6	5.8
	100	0.395	VC	19.6	16.8	14.7	11.7	9.8	8.4	7.3	6.5
	120	0.433	VC	21.4	18.4	16.1	12.9	10.7	9.2	8.0	7.1
SYNTAL-S				371874 (12 pcs. 75081700)				SYNTAL-S B-JET 371877 (2 pcs. 755806)			

08-White	40	0.800	VC	39.6	33.9	29.7	23.8	19.8	17.0	14.9	13.2
	60	0.980	VC	48.5	41.6	36.4	29.1	24.2	20.8	18.2	16.2
	70	1.058	VC	52.4	44.9	39.3	31.4	26.2	22.5	19.6	17.5
	80	1.131	VC	56.0	48.0	42.0	33.6	28.0	24.0	21.0	18.7
	100	1.265	VC	62.6	53.7	47.0	37.6	31.3	26.8	23.5	20.9
	120	1.386	VC	68.6	58.8	51.4	41.2	34.3	29.4	25.7	22.9
SYNTAL-S				371929 (12 pcs. 75079100)							

 = Spray quality:
 Fine (F),  Medium (M),  Coarse (C),  Very Coarse (VC).

The nozzles are available both as single nozzles (S) and as COLOR TIPS (CT), where the nozzle is integrated in the SNAP-FIT.



HARDI ISO MINIDRIFT DUO air inclusion nozzles

The HARDI MINIDRIFT DUO nozzle can be used for spraying at sub-optimal weather conditions, when spraying cannot be postponed. The MINIDRIFT DUO nozzle will at low pressures reduce drift to a minimum.

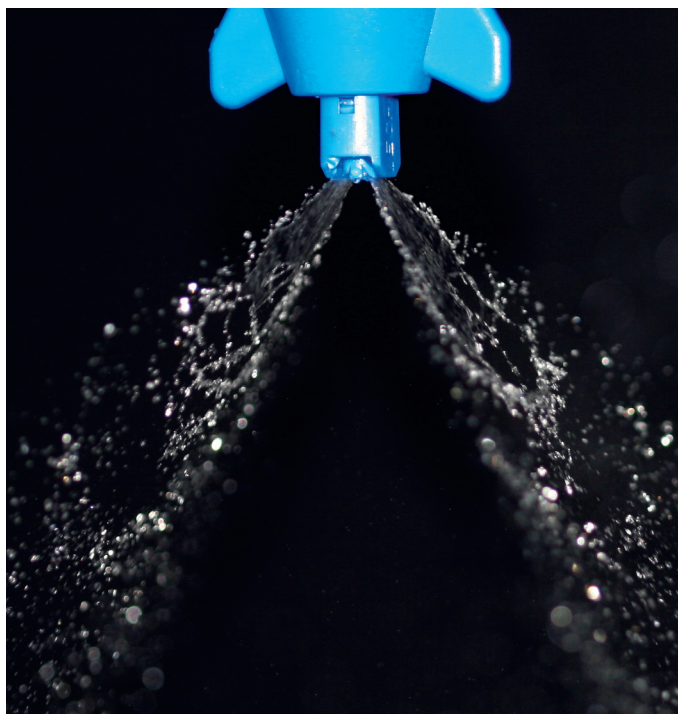
Air inclusion nozzle

- Working pressure – 20 to 80 psi
- ISO flow, colors, sizes and nomenclature
- 30° forward and backward angle
- Application rates from 7 to 35 GPA (at 6 MPH)
- SYNTAL – precision molded thermoplastic

This compact flat spray air injector nozzle offers droplet spectrum from medium to very coarse; safe for drift control but without risking poor coverage and deposition on leaves. The two angled fans increase the number of droplets and impacts on target compared to normal air injector nozzles.

A good coverage on dense foliage and vertical targets. The injector can easily be removed for cleaning the nozzle.

The HARDI MINIDRIFT DUO nozzles can be mounted using the 334083 ISO cap.



	PSI	GPM		GPA at MPH							
				6	7	8	10	12	14	16	18
02-Yellow	20	0.144	VC	7.0	6.0	5.3	4.2	3.5	3.0	2.6	2.3
	30	0.173	C	8.6	7.3	6.4	5.1	4.3	3.7	3.2	2.9
	40	0.200	C	9.9	8.5	7.4	5.9	5.0	4.2	3.7	3.3
	50	0.224	C	11.1	9.5	8.3	6.6	5.5	4.7	4.2	3.7
	60	0.245	C	12.1	10.4	9.1	7.3	6.1	5.2	4.5	4.0
	70	0.265	M	13.1	11.2	9.8	7.9	6.5	5.6	4.9	4.4
	80	0.282	M	14.1	12.1	10.5	8.4	7.1	6.1	5.2	4.5
				SYNTAL-S 37218400							

025-Lilac	20	0.177	VC	8.8	7.5	6.6	5.3	4.4	3.8	3.3	2.9
	30	0.217	VC	10.7	9.2	8.0	6.4	5.4	4.6	4.0	3.6
	40	0.250	C	12.4	10.6	9.3	7.4	6.2	5.3	4.6	4.1
	50	0.280	C	13.8	11.9	10.4	8.3	6.9	5.9	5.2	4.6
	60	0.306	C	15.2	13.0	11.4	9.1	7.6	6.5	5.7	5.1
	70	0.331	M	16.4	14.0	12.3	9.8	8.2	7.0	6.1	5.5
	80	0.354	M	17.5	12.4	13.1	10.5	8.8	7.5	6.6	5.8
				SYNTAL-S 37218500							

03-Blue	20	0.212	VC	10.5	9.0	7.9	6.3	5.3	4.5	3.9	3.5
	30	0.260	VC	12.9	11.0	9.6	7.7	6.4	5.5	4.8	4.3
	40	0.300	C	14.9	12.7	11.1	8.9	7.4	6.4	5.6	5.0
	50	0.335	C	16.6	14.2	12.5	10.0	8.3	7.1	6.2	5.5
	60	0.367	M	18.2	15.6	13.6	10.9	9.1	7.8	6.8	6.1
	70	0.397	M	19.6	16.8	14.7	11.8	9.8	8.4	7.4	6.5
	80	0.424	M	21.1	18.0	15.8	12.6	10.5	9.0	7.9	7.0
				SYNTAL-S 37218100							

04-Red	20	0.283	VC	14.0	12.0	10.5	8.4	7.0	6.0	5.3	4.7
	30	0.346	C	17.1	14.7	12.9	10.3	8.6	7.3	6.4	5.7
	40	0.400	C	19.8	17.0	14.9	11.9	9.9	8.5	7.4	6.6
	50	0.447	C	22.1	19.0	16.6	13.3	11.1	9.5	8.3	7.4
	60	0.490	M	24.2	20.8	18.2	14.5	12.1	10.4	9.1	8.1
	70	0.529	M	26.2	22.5	19.6	15.7	13.1	11.2	9.8	8.7
	80	0.566	M	28.0	24.0	21.0	16.8	14.0	12.0	10.5	9.3
				SYNTAL-S 37218200							

05-Brown	20	0.354	VC	17.5	15.0	13.1	10.5	8.8	7.5	6.6	5.8
	30	0.433	C	21.4	18.4	16.1	12.9	10.7	9.2	8.0	7.1
	40	0.500	C	24.8	21.2	18.6	14.9	12.4	10.6	9.3	8.3
	50	0.559	C	27.7	23.7	20.8	16.6	13.8	11.9	10.4	9.2
	60	0.612	M	30.3	26.0	22.7	18.2	15.2	13.0	11.4	10.1
	70	0.661	M	32.7	28.1	24.6	19.6	16.4	14.0	12.3	10.9
	80	0.707	M	35.1	30.1	26.2	21.1	17.5	15.1	13.1	11.7
				SYNTAL-S 37218300							

= Spray quality:
■ Fine (F), ■ Medium (M), ■ Coarse (C), ■ Very Coarse (VC).



HARDI DUOCAP

Double-up your application

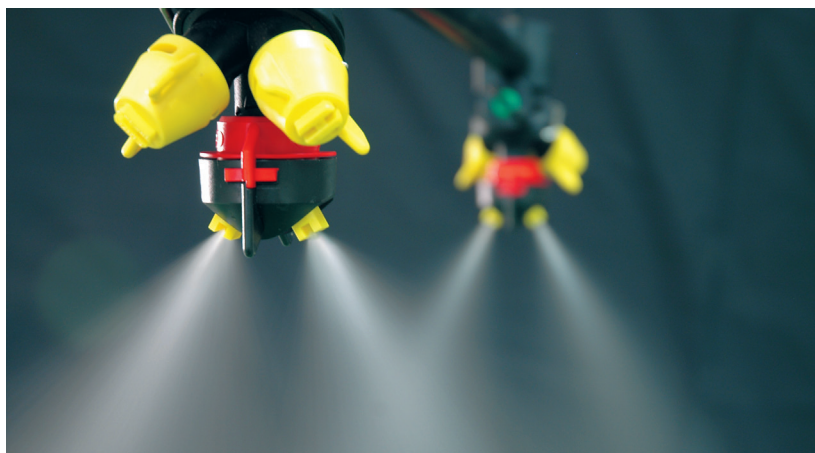
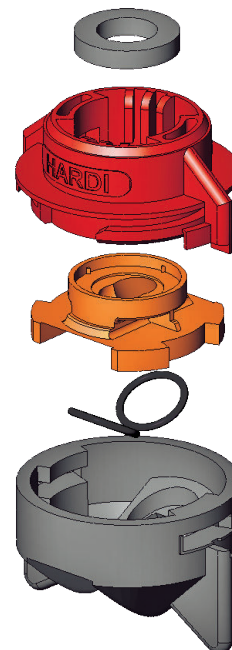
- Improved coverage
- Angled spray ensures penetration in dense crops
- Can hold all ISO nozzles
- 30° forward and backward angle

HARDI DUOCAP gives you higher volume rate while still maintaining proper droplet size.

Fitted with two FF or LD nozzles HARDI DUOCAP will give Fine to Medium spray, suitable for fungicide spraying.

Two different nozzles can be used. A Standard and a MINIDRIFT nozzle will give you the dual benefit of having Fine droplets, ensuring good coverage in the top of the crop and Coarse droplets, penetrating to the lower and more dense areas.

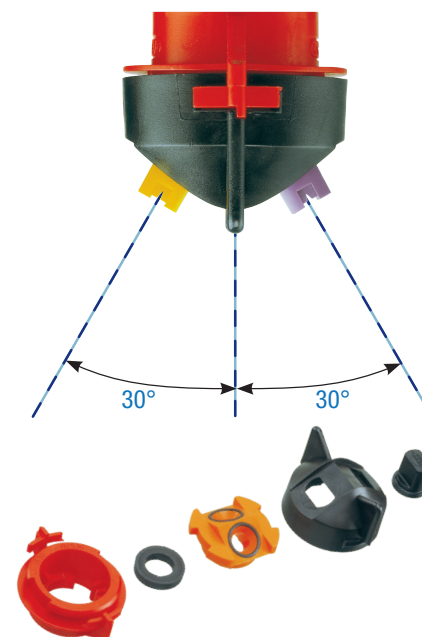
HARDI DUOCAP fitted with two MINIDRIFT nozzles will give superior penetration into dense crops like Potatoes and Soybeans.



Calibration

If two ISO nozzles of the same size are used, they will apply the same volume as one ISO nozzle of the double size (use the application table of the double sized nozzle). If two nozzles of different sizes are used, the GPM at the chosen pressure for both nozzles must be added together, and the table below can be used to find the application volume.

GPM (2 nozzles)	GPA at MPH							
	6	7	8	10	12	14	16	18
0.20	9.85	8.44	7.39	5.91	4.93	4.22	3.69	3.28
0.26	13.07	11.20	9.80	7.84	6.53	5.60	4.90	4.36
0.33	16.34	14.00	12.25	9.80	8.17	7.00	6.13	5.45
0.40	19.60	16.80	14.70	11.76	9.80	8.40	7.35	6.53
0.46	22.87	19.60	17.15	13.72	11.43	9.80	8.58	7.62
0.53	26.14	22.40	19.60	15.68	13.07	11.20	9.80	8.71
0.59	29.40	25.20	22.05	17.64	14.70	12.60	11.03	9.80
0.66	32.67	28.00	24.50	19.60	16.34	14.00	12.25	10.89
0.73	35.94	30.80	26.95	21.56	17.97	15.40	13.48	11.98
0.79	39.25	33.65	29.44	23.55	19.63	16.82	14.72	13.08
0.86	42.52	36.45	31.89	25.51	21.26	18.22	15.95	14.17
0.92	45.69	39.16	34.27	27.41	22.84	19.58	17.13	15.23
0.98	48.36	41.45	36.27	29.02	24.18	20.73	18.14	16.12
1.06	52.32	44.85	39.24	31.39	26.16	22.42	19.62	17.44
1.12	55.59	47.65	41.69	33.35	27.79	23.82	20.85	18.53
1.19	58.86	50.45	44.14	35.31	29.43	25.22	22.07	19.62
1.26	62.12	53.25	46.59	37.27	31.06	26.62	23.30	20.71
1.32	65.39	56.05	49.04	39.23	32.69	28.02	24.52	21.80
1.39	68.66	58.85	51.49	41.19	34.33	29.42	25.75	22.89
1.45	71.92	61.65	53.94	43.15	35.96	30.82	26.97	23.97
1.52	75.19	64.45	56.39	45.11	37.60	32.22	28.20	25.06
1.59	78.46	67.25	58.84	47.07	39.23	33.62	29.42	26.15



The HARDI DUOCAP is delivered complete with 3 O-rings, and 3 plastic parts (note: nozzles are not included). (Cap #28032503).

HARDI ISO F-80 – Flat fan nozzles



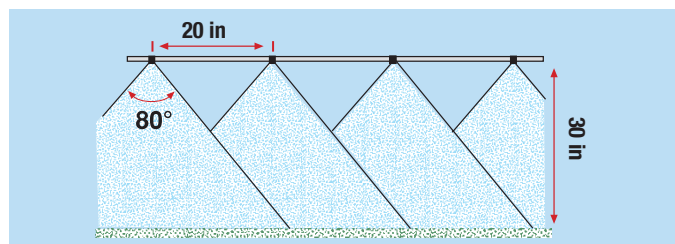
This nozzle has an 80° spray angle. On boom sizes from 80 ft to 132 ft the boom height is often higher than 20" above the target. 80° nozzles provide good coverage with reduced drift risk at these higher boom heights and are also adaptable to band spraying.

- ISO – flow, color and outer dimensions
- Spray angle – 80°
- Working pressure – 20 to 70 PSI
- SYNTAL – precision molded thermoplastic
- CERAMIC – extremely high durability

The 80° nozzle is suitable for big booms or row crop / band spraying with either low boom or nozzles at droplegs.

For use in cotton, sugar cane, sugar beets etc.

The 80° nozzles can be fitted on HARDI sprayers using the 334083 ISO/INJET cap.



				GPA at MPH							
PSI	GPM	6		7	8	10	12	14	16	18	
01-Orange	20	0.071	-	3.5	3.0	2.6	2.1	1.8	1.5	1.3	1.2
	30	0.087	-	4.3	3.7	3.2	2.6	2.1	1.8	1.6	1.4
	40	0.100	-	5.0	4.2	3.7	3.0	2.5	2.1	1.9	1.7
	50	0.112	-	5.5	4.7	4.2	3.3	2.8	2.4	2.1	1.8
	60	0.122	-	6.1	5.2	4.5	3.6	3.0	2.6	2.3	2.0
	70	0.132	-	6.5	5.6	4.9	3.9	3.3	2.8	2.5	2.2
				SYNTAL-S 371931 (12 pcs. 750640)							

				GPA at MPH							
bar	l/min	6		7	8	10	12	14	16	18	
02-Yellow	20	0.144	-	7.0	6.0	5.3	4.2	3.5	3.0	2.6	2.3
	30	0.173	-	8.6	7.3	6.4	5.1	4.3	3.7	3.2	2.9
	40	0.200	-	9.9	8.5	7.4	5.9	5.0	4.2	3.7	3.3
	50	0.224	-	11.1	9.5	8.3	6.6	5.5	4.7	4.2	3.7
	60	0.245	-	12.1	10.4	9.1	7.3	6.1	5.2	4.5	4.0
	70	0.265	-	13.1	11.2	9.8	7.9	6.5	5.6	4.9	4.4
				SYNTAL-S 371933 (12 pcs. 750642)					CERAMIC-CT 371921 (12 pcs. 750603)		
			CERAMIC-S 371907 (12 pcs. 750610)								

015-Green	20	0.106	-	5.3	4.5	3.9	3.2	2.6	2.3	2.0	1.8
	30	0.130	-	6.4	5.5	4.8	3.9	3.2	2.8	2.4	2.1
	40	0.150	-	7.4	6.4	5.6	4.5	3.7	3.2	2.8	2.5
	50	0.168	-	8.3	7.1	6.2	5.0	4.2	3.6	3.1	2.8
	60	0.184	-	9.1	7.8	6.8	5.5	4.5	3.9	3.4	3.0
	70	0.198	-	9.8	8.4	7.4	5.9	4.9	4.2	3.7	3.3
				SYNTAL-S 371932 (12 pcs. 750641)				CERAMIC-CT 371920 (12 pcs. 750602)			
				CERAMIC-S 371906 (12 pcs. 750609)							

03-Blue	20	0.212	-	10.5	9.0	7.9	6.3	5.3	4.5	3.9	3.5
	30	0.260	-	12.9	11.0	9.6	7.7	6.4	5.5	4.8	4.3
	40	0.300	-	14.9	12.7	11.1	8.9	7.4	6.4	5.6	5.0
	50	0.335	-	16.6	14.2	12.5	10.0	8.3	7.1	6.2	5.5
	60	0.367	-	18.2	15.6	13.6	10.9	9.1	7.8	6.8	6.1
	70	0.397	-	19.6	16.8	14.7	11.8	9.8	8.4	7.4	6.5
				SYNTAL-S 371934 (12 pcs. 750643)				CERAMIC-CT 371922 (12 pcs. 750604)			
				CERAMIC-S 371908 (12 pcs. 750611)							



= Spray quality:

Fine (F), Medium (M), Coarse (C), Very Coarse (VC).

The nozzles are available both as single nozzles (S) and as COLOR TIPS (CT), where the nozzle is integrated in the SNAP-FIT.



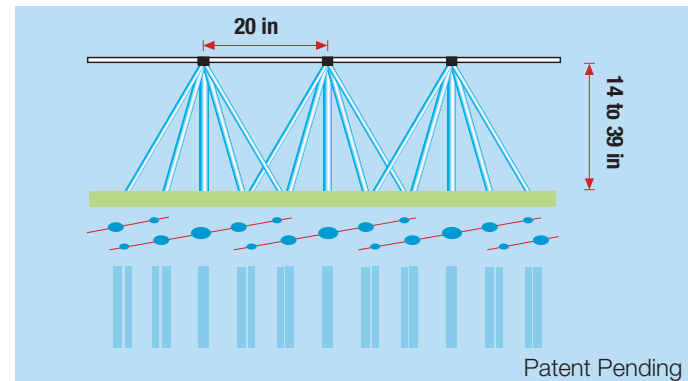


HARDI QUINTASTREAM nozzles

Five [5] streams of liquid are distributed at different angles and flows by each Quintastream nozzle. Highest flow is from the middle stream and lowest in the outer, overlapping streams. HARDI QUINTASTREAM can be mounted using the Filter casing #727737. (includes gasket but no screen) (O-ring #10423503)

- The fastest way to convert your sprayer into a high precision fertilizer applicator
- 5 solid streams that minimize crop scorching
- Particularly important for wide booms at fast speeds
- ISO standard for easy calibration
- Turn and Clean key for restrictor removal
- Boom height 14" to 39"

Uniquely, this - patent pending - system allows for boom movements that do not influence distribution.



	PSI	GPM		GPA at MPH							
				6	7	8	10	12	14	16	18
015-Green	20	0.106	-	5.3	4.5	3.9	3.2	2.6	2.3	2.0	1.8
	30	0.130	-	6.4	5.5	4.8	3.9	3.2	2.8	2.4	2.1
	40	0.150	-	7.4	6.4	5.6	4.5	3.7	3.2	2.8	2.5
	50	0.168	-	8.3	7.1	6.2	5.0	4.2	3.6	3.1	2.8
	60	0.184	-	9.1	7.8	6.8	5.5	4.5	3.9	3.4	3.0
	70	0.198	-	9.8	8.4	7.4	5.9	4.9	4.2	3.7	3.3
	COLORTIP 372011 (6 pcs. 750680) SINGLE 372002 (6 pcs. 750671)										

02-Yellow	20	0.144	-	7.0	6.0	5.3	4.2	3.5	3.0	2.6	2.3
	30	0.173	-	8.6	7.3	6.4	5.1	4.3	3.7	3.2	2.9
	40	0.200	-	9.9	8.5	7.4	5.9	5.0	4.2	3.7	3.3
	50	0.224	-	11.1	9.5	8.3	6.6	5.5	4.7	4.2	3.7
	60	0.245	-	12.1	10.4	9.1	7.3	6.1	5.2	4.5	4.0
	70	0.265	-	13.1	11.2	9.8	7.9	6.5	5.6	4.9	4.4
	COLORTIP 372012 (6 pcs. 750681) SINGLE 372003 (6 pcs. 750672)										

03-Blue	20	0.212	-	10.5	9.0	7.9	6.3	5.3	4.5	3.9	3.5
	30	0.260	-	12.9	11.0	9.6	7.7	6.4	5.5	4.8	4.3
	40	0.300	-	14.9	12.7	11.1	8.9	7.4	6.4	5.6	5.0
	50	0.335	-	16.6	14.2	12.5	10.0	8.3	7.1	6.2	5.5
	60	0.367	-	18.2	15.6	13.6	10.9	9.1	7.8	6.8	6.1
	70	0.397	-	19.6	16.8	14.7	11.8	9.8	8.4	7.4	6.5
	COLORTIP 372013 (6 pcs. 750682) SINGLE 372004 (6 pcs. 750673)										

04-Red	20	0.283	-	14.0	12.0	10.5	8.4	7.0	6.0	5.3	4.7
	30	0.346	-	17.1	14.7	12.9	10.3	8.6	7.3	6.4	5.7
	40	0.400	-	19.8	17.0	14.9	11.9	9.9	8.5	7.4	6.6
	50	0.447	-	22.1	19.0	16.6	13.3	11.1	9.5	8.3	7.4
	60	0.490	-	24.2	20.8	18.2	14.5	12.1	10.4	9.1	8.1
	70	0.529	-	26.2	22.5	19.6	15.7	13.1	11.2	9.8	8.7
	COLORTIP 372014 (6 pcs. 750683) SINGLE 372005 (6 pcs. 750674)										

05-Brown	20	0.354	-	17.5	15.0	13.1	10.5	8.8	7.5	6.6	5.8
	30	0.433	-	21.4	18.4	16.1	12.9	10.7	9.2	8.0	7.1
	40	0.500	-	24.8	21.2	18.6	14.9	12.4	10.6	9.3	8.3
	50	0.559	-	27.7	23.7	20.8	16.6	13.8	11.9	10.4	9.2
	60	0.612	-	30.3	26.0	22.7	18.2	15.2	13.0	11.4	10.1
	70	0.661	-	32.7	28.1	24.6	19.6	16.4	14.0	12.3	10.9
	COLORTIP 372015 (6 pcs. 750684) SINGLE 372006 (6 pcs. 750675)										

06-Grey	20	0.424	-	21.0	18.0	15.8	12.6	10.5	9.0	7.9	7.0
	30	0.520	-	25.7	22.0	19.3	15.4	12.9	11.0	9.6	8.6
	40	0.600	-	29.7	25.5	22.3	17.8	14.9	12.7	11.1	9.9
	50	0.671	-	33.2	28.5	24.9	19.9	16.6	14.2	12.5	11.1
	60	0.735	-	36.4	31.2	27.3	21.8	18.2	15.6	13.6	12.1
	70	0.794	-	39.3	33.7	29.5	23.6	19.6	16.8	14.7	13.1
	COLORTIP 372016 (6 pcs. 750685) SINGLE 372007 (6 pcs. 750676)										

08-White	20	0.566	-	28.0	24.0	21.0	16.8	14.0	12.0	10.5	9.3
	30	0.693	-	34.3	29.4	25.7	20.6	17.1	14.7	12.9	11.4
	40	0.800	-	39.6	33.9	29.7	23.8	19.8	17.0	14.9	13.2
	50	0.894	-	44.3	37.9	33.2	26.6	22.1	19.0	16.6	14.8
	60	0.980	-	48.5	41.6	36.4	29.1	24.2	20.8	18.2	16.2
	70	1.058	-	52.4	44.9	39.3	31.4	26.2	22.5	19.6	17.5
	COLORTIP 372017 (6 pcs. 750686) SINGLE 372008 (6 pcs. 750677)										

10-Light blue	20	0.707	-	35.0	30.0	26.3	21.0	17.5	15.0	13.1	11.7
	30	0.866	-	42.9	36.7	32.2	25.7	21.4	18.4	16.1	14.3
	40	1.000	-	49.5	42.4	37.1	29.7	24.8	21.2	18.6	16.5
	50	1.118	-	55.3	47.4	41.5	33.2	27.7	23.7	20.8	18.4
	60	1.225	-	60.6	52.0	45.5	36.4	30.3	26.0	22.7	20.2
	70	1.323	-	65.5	56.1	49.1	39.3	32.7	28.1	24.6	21.8
	COLORTIP 372018 (6 pcs. 750687) SINGLE 372009 (6 pcs. 750678)										

15-Light green	20	1.061	-	52.5	45.0	39.4	31.5	26.3	22.5	19.7	17.5
	30	1.299	-	64.3	55.1	48.2	38.6	32.2	27.6	24.1	21.4
	40	1.500	-	74.3	63.6	55.7	44.6	37.1	31.8	27.8	24.8
	50	1.677	-	83.0	71.2	62.3	49.8	41.5	35.6	31.1	27.7
	60	1.837	-	90.9	78.0	68.2	54.6	45.5	39.0	34.1	30.3
	70	1.984	-	98.2	84.2	73.7	58.9	49.1	42.1	36.8	32.7
	COLORTIP 372019 (6 pcs. 750688) SINGLE 372010 (6 pcs. 750679)										

NOTE: Remember to adjust the pressure according to the density of the liquid fertilizer. See page 10.

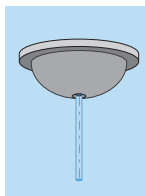
Liquid fertilizer

1553 Solid stream nozzle

HARDI 1553 Cone nozzles are used without swirl plates for solid stream (with swirl plates for hollow cone and full cone spraying - please see page 23). Use the solid stream for liquid fertilizer on boom sprayers.



- For application of liquid fertilizer at 10" nozzle spacing, with a minimum risk of scorching
- Flow rates from 0.077
– 8.27 GPM (at 15 –360 PSI)
- SYNTAL – precision molded thermoplastic: precise, resistant and durable



PSI	1553-8	-10	-12	-14	-16	GPM	-20	-22	-24	-30	-35	-40
15	0.077	0.115	0.171	0.224	0.305	0.367	0.489	0.588	0.682	1.047	1.386	1.688
20	0.089	0.133	0.197	0.259	0.352	0.423	0.565	0.678	0.787	1.209	1.600	1.949
30	0.109	0.163	0.241	0.317	0.431	0.518	0.692	0.831	0.964	1.480	1.960	2.387
50	0.140	0.210	0.312	0.409	0.557	0.669	0.893	1.073	1.245	1.911	2.530	3.081
70	0.166	0.249	0.369	0.484	0.659	0.792	1.056	1.269	1.473	2.261	2.993	3.646
90	0.188	0.282	0.418	0.549	0.747	0.898	1.198	1.439	1.670	2.564	3.394	4.134
150	0.243	0.364	0.540	0.708	0.964	1.159	1.546	1.858	2.156	3.310	4.382	5.336
220	0.294	0.441	0.654	0.858	1.168	1.404	1.873	2.250	2.611	4.009	5.307	6.463
360	0.376	0.564	0.836	1.097	1.494	1.796	2.396	2.879	3.340	5.128	6.788	8.267
No.	370016	370027	370031	370042	370053	370064	370075	370086	370097	370101	370112	370123
12 pcs.	750256	755031	755382	755064	755385	755065	755097	755066	755123	750257	755067	755068

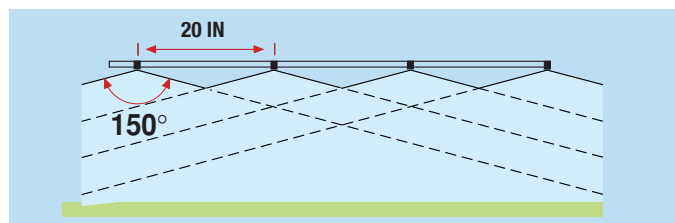
Large drop flat spray nozzle

HARDI foam nozzles are excellent for application of liquid fertilizers. Choose foam nozzles for broad leaf application - the large air inclusion bubbles will be reflected on the leaves and minimize crop damage.



The nozzle is used in combination with the 1553 Solid Stream nozzle.

- Spray angle up to 150°
- Extremely coarse droplet spectrum
- Superior distribution
- Can work at nozzle spacing up to 40"



		GPA at MPH									
PSI	GPM	5	6	7	8	9	10	12	14	16	
20	0.262	15.5	13.0	11.1	9.7	8.6	7.8	6.5	5.6	4.9	
25	0.293	17.4	14.5	12.4	10.9	9.7	8.7	7.2	6.2	5.4	
30	0.321	19.0	15.9	13.6	11.9	10.6	9.5	7.9	6.8	5.9	
40	0.370	22.0	18.3	15.7	13.7	12.2	11.0	9.2	7.9	6.9	
50	0.414	24.6	20.5	17.6	15.4	13.7	12.3	10.2	8.8	7.7	
70	0.490	29.1	24.2	20.8	18.2	16.2	14.5	12.1	10.4	9.1	
Large drop flat spray nozzle (371551) + 1553-14 Grey (370042)											

		GPA at MPH									
PSI	GPM	5	6	7	8	9	10	12	14	16	
20	0.358	21.3	17.7	15.2	13.3	11.8	10.6	8.9	7.6	6.6	
25	0.400	23.8	19.8	17.0	14.9	13.2	11.9	9.9	8.5	7.4	
30	0.439	26.0	21.7	18.6	16.3	14.5	13.0	10.9	9.3	8.1	
40	0.506	30.1	25.1	21.5	18.8	16.7	15.0	12.5	10.7	9.4	
50	0.566	33.6	28.0	24.0	21.0	18.7	16.8	14.0	12.0	10.5	
70	0.670	39.8	33.2	28.4	24.9	22.1	19.9	16.6	14.2	12.4	
Large drop flat spray nozzle (371551) + 1553-16 Grey (370053)											

		GPA at MPH									
PSI	GPM	5	6	7	8	9	10	12	14	16	
20	0.429	25.5	21.3	18.2	15.9	14.2	12.8	10.6	9.1	8.0	
25	0.480	28.5	23.8	20.4	17.8	15.8	14.3	11.9	10.2	8.9	
30	0.526	31.2	26.0	22.3	19.5	17.4	15.6	13.0	11.2	9.8	
40	0.607	36.1	30.1	25.8	22.5	20.0	18.0	15.0	12.9	11.3	
50	0.679	40.3	33.6	28.8	25.2	22.4	20.2	16.8	14.4	12.6	
70	0.803	47.7	39.8	34.1	29.8	26.5	23.9	19.9	17.0	14.9	
Large drop flat spray nozzle (371551) + 1553-18 Grey (370064)											

		GPA at MPH									
PSI	GPM	5	6	7	8	9	10	12	14	16	
20	0.577	34.3	28.5	24.5	21.4	19.0	17.1	14.3	12.2	10.7	
25	0.645	38.3	31.9	27.4	23.9	21.3	19.1	16.0	13.7	12.0	
30	0.706	41.9	35.0	30.0	26.2	23.3	21.0	17.5	15.0	13.1	
40	0.815	48.4	40.4	34.6	30.3	26.9	24.2	20.2	17.3	15.1	
50	0.912	54.2	45.1	38.7	33.8	30.1	27.1	22.6	19.3	16.9	
70	1.079	64.1	53.4	45.8	40.0	35.6	32.0	26.7	22.9	20.0	
Large drop flat spray nozzle (371551) + 1553-20 Grey (370075)											

		GPA at MPH									
PSI	GPM	5	6	7	8	9	10	12	14	16	
20	0.691	41.0	34.2	29.3	25.6	22.8	20.5	17.1	14.7	12.8	
25	0.772	45.9	38.2	32.8	28.7	25.5	22.9	19.1	16.4	14.3	
30	0.846	50.2	41.9	35.9	31.4	27.9	25.1	20.9	17.9	15.7	
40	0.977	58.0	48.4	41.4	36.3	32.2	29.0	24.2	20.7	18.1	
50	1.092	64.9	54.1	46.3	40.5	36.0	32.4	27.0	23.2	20.3	
70	1.292	76.8	64.0	54.8	48.0	42.6	38.4	32.0	27.4	24.0	
Large drop flat spray nozzle (371551) + 1553-22 Grey (370086)											

		GPA at MPH									
PSI	GPM	5	6	7	8	9	10	12	14	16	
20	0.807	47.9	40.0	34.2	30.0	26.6	24.0	20.0	17.1	15.0	
25	0.902	53.6	44.7	38.3	33.5	29.8	26.8	22.3	19.1	16.8	
30	0.989	58.7	48.9	41.9	36.7	32.6	29.4	24.5	21.0	18.3	
40	1.141	67.8	56.5	48.4	42.4	37.7	33.9	28.3	24.2	21.2	
50	1.276	75.8	63.2	54.1	47.4	42.1	37.9	31.6	27.1	23.7	
70	1.510	89.7	74.7	64.1	56.1	49.8	44.8	37.4	32.0	28.0	
Large drop flat spray nozzle (371551) + 1553-24 Grey (370097)											

NOTE: Remember to adjust the pressure according to the density of the liquid fertilizer. See page 10.

HARDI 1299 Hollow cone nozzles



These nozzles are superior in fine droplet delivery for optimal coverage of plant protection compounds. The high durability of the ceramic material makes this nozzle extensively used in vineyard and orchard mistblower applications at high working pressure or when applying abrasive materials.

- High efficiency nozzles
- Best choice for orchard applications
- Flow rates from 0.05 to 1.14 GPM (at 40 – 220 PSI)
- Working pressure from 40 - 220 PSI
- CERAMIC – superior durability at high working pressure

Useful on droplegs for under leaf spraying where turbulence is required for good coverage. Also used on hand-held sprayers for insecticide and fungicide application and for band spraying.

PSI		GPM
1299-06 White 371507		
40	VF	0.054
70	VF	0.070
90	VF	0.079
120	VF	0.090
140	VF	0.096
220	VF	0.119

PSI		GPM
1299-12 Yellow 371510		
40	F	0.141
70	VF	0.182
90	VF	0.204
120	VF	0.233
140	VF	0.250
220	VF	0.308

PSI		GPM
1299-17 Grey 371972		
40	F	0.301
70	F	0.390
90	F	0.438
120	F	0.500
140	VF	0.536
220	VF	0.660

PSI		GPM
1299-08 Lilac 371508		
40	VF	0.072
70	VF	0.093
90	VF	0.104
120	VF	0.119
140	VF	0.128
220	VF	0.157

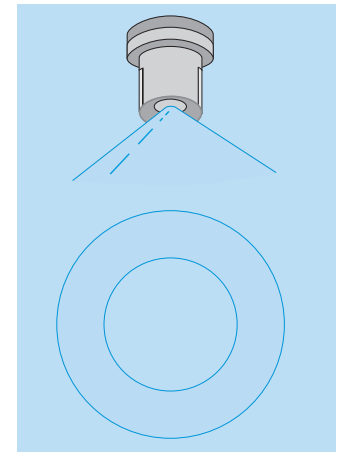
PSI		GPM
1299-14 Orange 371511		
40	F	0.188
70	VF	0.243
90	VF	0.273
120	VF	0.311
140	VF	0.334
220	VF	0.412

PSI		GPM
1299-18 Green 371513		
40	F	0.353
70	F	0.456
90	F	0.512
120	F	0.584
140	VF	0.627
220	VF	0.772

PSI		GPM
1299-10 Brown 371509		
40	VF	0.094
70	VF	0.121
90	VF	0.136
120	VF	0.155
140	VF	0.166
220	VF	0.205

PSI		GPM
1299-16 Red 371512		
40	F	0.274
70	F	0.355
90	F	0.399
120	VF	0.455
140	VF	0.488
220	VF	0.601

PSI		GPM
1299-19 Black 371973		
40	F	0.402
70	F	0.520
90	F	0.584
120	F	0.666
140	F	0.715
220	VF	0.881



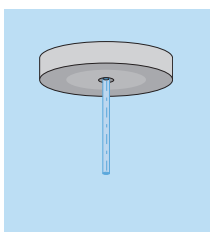
PSI		GPM
1299-20 Blue 371514		
40	M	0.518
70	M	0.670
90	F	0.752
120	F	0.859
140	F	0.922
220	F	1.135

= Spray quality:
 Very fine (VF), Fine (F), Medium (M), Coarse (C), Very Coarse (VC).

1099 Solid stream nozzles - CERAMIC

This nozzle disperses the spray liquid in a concentrated stream. Its main use is calibration of flows, often in connection with other nozzle components.

The capacity can be changed by placing the nozzle with or against the direction of flow.



1099	1099-8		1099-10		1099-12		1099-15		1099-18		1099-20		1099-23		1099-30		
PSI	GPM																
																	
	30	0.15	0.12	0.25	0.17	0.31	0.25	0.51	0.38	0.68	0.53	0.83	0.66	1.07	0.85	1.73	1.39
	70	0.22	0.18	0.36	0.26	0.46	0.38	0.75	0.58	1.05	0.81	1.26	1.02	1.66	1.31	2.72	2.19
	100	0.25	0.21	0.42	0.31	0.55	0.46	0.88	0.69	1.25	0.97	1.50	1.22	2.00	1.56	3.30	2.66
	150	0.31	0.26	0.51	0.38	0.67	0.56	1.07	0.85	1.53	1.19	1.84	1.50	2.46	1.91	4.07	3.29
	200	0.35	0.30	0.58	0.44	0.78	0.64	1.23	0.98	1.77	1.37	2.12	1.74	2.85	2.21	4.72	3.82
	300	0.43	0.36	0.70	0.54	0.95	0.78	1.48	1.19	2.17	1.68	2.59	2.14	3.53	2.70	5.88	4.76
	450	0.52	0.44	0.83	0.66	1.15	0.96	1.79	1.46	2.65	2.06	3.17	2.63	4.35	3.31	7.29	5.91
700	0.63	0.54	1.02	0.81	1.43	1.19	2.19	1.81	3.31	2.57	3.94	3.29	5.48	4.13	9.24	7.50	
No	371309		371310		371311		371312		371313		371314		371315		371884		

1553 cone nozzles

HARDI 1553 Cone nozzles are used with one of the four available swirl plates for hollow cone and full cone spraying. The hollow cone nozzle can be used for pesticide application on boom sprayers, mistblowers or backpack sprayers. The HARDI 1553 cone nozzle can also be used without swirl plates for solid stream application (see page 20).

Drop sizes

The difference between the 4 swirl plates is the drop-let size. The blue swirl plate has a very fine (VF) droplet spectrum, the grey a fine (F) droplet spectrum and the black swirl plate a medium (M) droplet spectrum. The white swirl plate has a medium (M) droplet spectrum and is giving a full cone spray.



Large drop adaptor

A large drop adaptor (371077) is available for the grey swirl plate.

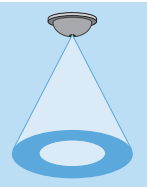
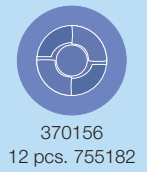


This adaptor changes the drop-let spectrum to very large (VL) droplets.

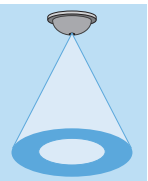


Drop Nozzle:
83428103 Box of 5
83427803 1 pcs

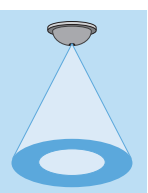
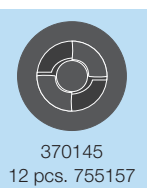
1553	-8	-10	-12	-14	-16	-18	-20	-22	-24	-30	-35	-40
PSI	GPM											
30	0.06	0.08	0.09	0.10	0.12	0.13	0.14	0.15	0.16	0.19	0.21	0.23
35	0.06	0.08	0.10	0.11	0.13	0.14	0.15	0.17	0.18	0.21	0.22	0.25
40	0.07	0.09	0.10	0.12	0.14	0.15	0.17	0.18	0.19	0.22	0.24	0.27
50	0.08	0.10	0.12	0.13	0.15	0.17	0.18	0.20	0.21	0.25	0.27	0.30
60	0.08	0.11	0.13	0.15	0.17	0.19	0.20	0.22	0.23	0.27	0.29	0.33
70	0.09	0.11	0.14	0.16	0.18	0.20	0.22	0.23	0.25	0.29	0.32	0.35
90	0.10	0.13	0.16	0.18	0.21	0.23	0.25	0.27	0.28	0.33	0.36	0.40
120	0.12	0.15	0.18	0.21	0.24	0.26	0.29	0.31	0.33	0.38	0.42	0.46
150	0.13	0.17	0.20	0.23	0.27	0.29	0.32	0.34	0.37	0.43	0.46	0.52
No.	370016	370027	370031	370042	370053	370064	370075	370086	370097	370101	370112	370123
12 pcs.	750256	755031	755382	755064	755385	755065	755097	755066	755123	750257	755067	755068



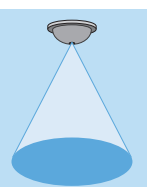
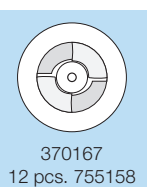
1553	-8	-10	-12	-14	-16	-18	-20	-22	-24	-30	-35	-40
PSI	GPM											
30	0.11	0.13	0.18	0.22	0.26	0.30	0.34	0.38	0.41	0.52	0.60	0.67
35	0.11	0.15	0.19	0.23	0.28	0.32	0.37	0.41	0.44	0.57	0.65	0.73
40	0.12	0.16	0.20	0.25	0.30	0.34	0.39	0.43	0.47	0.61	0.70	0.78
50	0.14	0.17	0.23	0.28	0.33	0.38	0.44	0.49	0.53	0.68	0.78	0.87
60	0.15	0.19	0.25	0.30	0.36	0.42	0.48	0.53	0.58	0.74	0.85	0.95
70	0.16	0.21	0.27	0.33	0.39	0.45	0.52	0.57	0.63	0.80	0.92	1.03
90	0.18	0.23	0.31	0.37	0.45	0.51	0.59	0.65	0.71	0.91	1.04	1.17
120	0.21	0.27	0.35	0.43	0.52	0.59	0.68	0.75	0.82	1.05	1.20	1.35
150	0.24	0.30	0.39	0.48	0.58	0.66	0.76	0.84	0.92	1.17	1.35	1.51
No.	370016	370027	370031	370042	370053	370064	370075	370086	370097	370101	370112	370123
12 pcs.	750256	755031	755382	755064	755385	755065	755097	755066	755123	750257	755067	755068



1553	-8	-10	-12	-14	-16	-18	-20	-22	-24	-30	-35	-40
PSI	GPM											
30	0.10	0.14	0.19	0.23	0.28	0.33	0.37	0.42	0.47	0.60	0.69	0.77
35	0.11	0.15	0.20	0.25	0.31	0.35	0.40	0.45	0.51	0.65	0.74	0.84
40	0.12	0.16	0.22	0.27	0.33	0.38	0.43	0.48	0.54	0.70	0.79	0.89
50	0.14	0.18	0.24	0.30	0.37	0.42	0.48	0.54	0.61	0.78	0.89	1.00
60	0.15	0.20	0.27	0.33	0.40	0.46	0.53	0.59	0.66	0.85	0.97	1.10
70	0.16	0.21	0.29	0.35	0.43	0.50	0.57	0.64	0.72	0.92	1.05	1.18
90	0.18	0.24	0.33	0.40	0.49	0.57	0.65	0.72	0.81	1.04	1.19	1.34
120	0.21	0.28	0.38	0.46	0.57	0.65	0.75	0.83	0.94	1.20	1.37	1.55
150	0.23	0.31	0.42	0.52	0.64	0.73	0.83	0.93	1.05	1.35	1.53	1.73
No.	370016	370027	370031	370042	370053	370064	370075	370086	370097	370101	370112	370123
12 pcs.	750256	755031	755382	755064	755385	755065	755097	755066	755123	750257	755067	755068



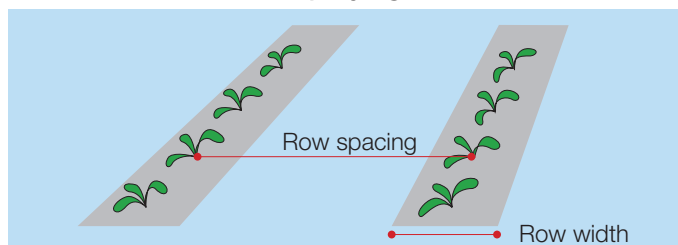
1553	-8	-10	-12	-14	-16	-18	-20	-22	-24	-30
PSI	GPM									
30	0.11	0.17	0.25	0.33	0.44	0.52	0.69	0.74	0.83	0.92
35	0.12	0.18	0.27	0.36	0.48	0.56	0.74	0.80	0.90	0.99
40	0.13	0.19	0.29	0.38	0.51	0.60	0.80	0.86	0.96	1.06
50	0.14	0.22	0.33	0.43	0.57	0.67	0.89	0.96	1.07	1.19
60	0.16	0.24	0.36	0.47	0.63	0.74	0.97	1.05	1.18	1.30
70	0.17	0.26	0.39	0.51	0.68	0.80	1.05	1.13	1.27	1.40
90	0.19	0.29	0.44	0.57	0.77	0.90	1.19	1.29	1.44	1.59
120	0.22	0.33	0.51	0.66	0.89	1.04	1.38	1.48	1.66	1.84
150	0.25	0.37	0.56	0.74	0.99	1.17	1.54	1.66	1.86	2.05
No.	370016	370027	370031	370042	370053	370064	370075	370086	370097	370101
12 pcs.	750256	755031	755382	755064	755385	755065	755097	755066	755123	750257



Band Spraying

In many crops, band spraying provides an efficient way of reducing chemical consumption. HARDI produces both conventional and air assisted special sprayers for row crops

Calibration for band spraying



- ☐ Forward speed

See page 9 – calibration of field sprayers

- ☐ GPA in band

Label recommendations usually state total GPA rates, also called broadcast rates. When band spraying we only want to apply this broadcast rate in the bands, so instead we will here call it: **GPA in band**.

- ☐ Calculation of nozzle capacity

$$\frac{\text{GPA in band} \times \text{band width (inch)} \times \text{MPH}}{5940} = \text{GPM per band}$$

If 20 GPA is to be applied at 3 MPH in a 10" wide band, the necessary output will be: 0.1 GPM/per band. If, for instance, 1 nozzle per band is used, every nozzle should apply 0.1 GPM. Nozzles and pressures can then be found in the relevant tables.

- ☐ Calculation of total required volume of spray mix

$$\frac{\text{area of field (acre)} \times \text{gpm in band} \times \text{band width (inch)}}{\text{row spacing (inch)}} = \text{spray mix (total gal/field)}$$

If the row spacing is 30"; band width 10"; field 10 acres; and GPA in band = 20 GPA – the total required volume will be:

$$\frac{10 \times 20 \times 10}{30} = 66.7 \text{ gal.}$$

- ☐ Calculation of amount of chemical per tank

$$\frac{\text{gallons of water in tank} \times \text{chemical dose desired (GPA)}}{\text{GPA in band}} = \text{gallons of chemical per tank}$$

If the tank holds 500 gallons, and 2 gallons of chemical products are required per acre when 20 GPA in band is applied, the following calculation should be used:

$$\frac{500 \times 2}{20} = 50 \text{ gallons chemical product per tank}$$

End nozzles

Off center SYNTAL spray nozzle. These nozzle types give an asymmetric spray pattern and disperse the product at a certain distance from the nozzle. If fitted to the end of a boom, they give extra spray width. They are ideal for applications such as fence line spraying. These nozzles can also be fitted on the frame of the spray tank when not using a boom for under tree spraying in vineyards and orchards.

1850 End nozzles 3/8" – SYNTAL

- Off-center spray nozzle

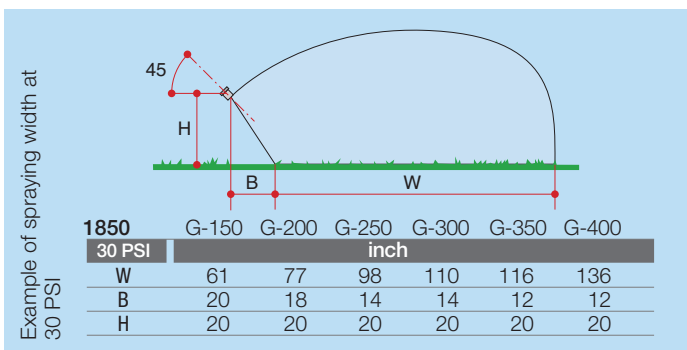


- 3/8"
- Pressure range: 30 to 90 PSI
- Spray width up to 136"
- SYNTAL precision molded thermoplastic

This nozzle is mounted on the end of the boom tube using the 72023300 mounting kit.

G - Giant end nozzles – SYNTAL

- Off center spray nozzle
- Pressure range: 20 to 70 PSI
- Spray width up to 25 ft.
- SYNTAL precision molded thermoplastic



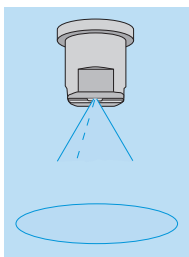
1850	G-150	G-200	G-250	G-300	G-350	G-400
PSI	GPM					
30	0.224	0.366	0.634	0.792	1.209	1.665
45	0.274	0.449	0.777	0.970	1.480	2.039
60	0.316	0.518	0.897	1.120	1.709	2.355
75	0.354	0.579	1.002	1.252	1.911	2.633
90	0.388	0.635	1.098	1.372	2.094	2.884
No.	370366	370377	370381	370392	370403	370414

HARDI can supply a range of nozzles for special applications such as tank and container cleaning. If you do not find what you need in this product guide, please contact your HARDI dealer.



4665 65° Flat spray nozzles – SYNTAL

- Recommended pressure range: 20 - 70 PSI
- Recommended boom height above target: 25" to 30".
- SYNTAL



This nozzle provides an elliptical spray pattern (Flat Fan) with a 65° angle. A uniform distribution is obtained, with correct overlap between spray patterns from adjacent nozzles. This nozzle has additional applications for industrial purposes.

4625 25°

Flat spray nozzles – SYNTAL

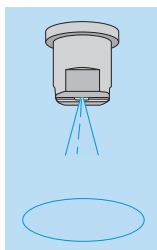
4665	4665-10	4665-12	4665-14	4665-16	4665-20	4665-24	4665-30
PSI	GPM						
20	0.08	0.12	0.16	0.21	0.28	0.37	0.53
25	0.09	0.13	0.18	0.24	0.31	0.42	0.59
30	0.10	0.15	0.20	0.26	0.34	0.46	0.64
40	0.12	0.17	0.23	0.30	0.40	0.53	0.74
50	0.13	0.19	0.26	0.34	0.44	0.59	0.83
70	0.16	0.22	0.30	0.40	0.53	0.70	0.99
No.	370285	370296	370307	370311	370322	370333	370344

- Pressure range: 35 - 350 PSI



- SYNTAL

This nozzle provides an elliptical spray pattern (flat fan) with a



25° angle. The narrow spray angle results in a high impact spray, which is well suited for cleaning as well as for spraying trees and bushes, where a long range is very useful.

5131

Misting nozzles – SYNTAL

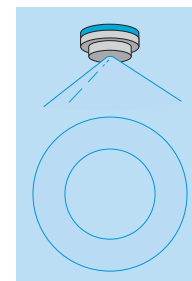
4625	4625-20	4625-24	4625-30	4625-36	4625-46	4625-54
PSI	GPM					
50	0.52	0.69	0.90	1.29	1.91	2.15
70	0.62	0.82	1.07	1.52	2.26	2.54
100	0.74	0.98	1.28	1.82	2.70	3.04
150	0.90	1.20	1.56	2.23	3.31	3.72
250	1.16	1.55	2.02	2.88	4.27	4.80
350	1.38	1.83	2.39	3.41	5.05	5.68
No.	370506	370517	370521	370532	370543	370554

- Pressure range: 20 - 70 PSI



- Hollow Cone nozzle
- Very Fine (VF) droplets
- SYNTAL

This nozzle consists of a synthetic tip



and a blue swirl plate (370156).

The droplet spectrum is very fine.

The low capacity and extremely fine atomization make this nozzle useful for special purposes such as adjustment of air temperature and humidity in hot climates.

3600

5131	5131
PSI	GPM
30	0.055
40	0.063
50	0.071
70	0.084
No.	370963

Deflector spray nozzles – SYNTAL

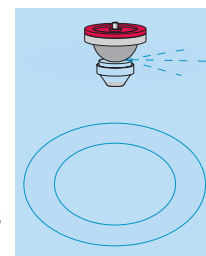
- Pressure range:



- 20 - 150 PSI
- SYNTAL

Deflector spray nozzle of

synthetic material. This nozzle type produces a round spray pattern (360°).



The speed of the droplets is low, producing a slowly dispersing cloud. The atomization and dispersion are optimal between 20 - 70 PSI. Useful for raising humidity in greenhouses etc.

3600	3600-30	3600-35	3600-40
PSI	GPM		
20	0.417	0.505	0.614
25	0.467	0.565	0.687
30	0.511	0.619	0.752
40	0.590	0.714	0.869
50	0.660	0.799	0.971
70	0.781	0.945	1.149
90	0.885	1.072	1.303
120	1.022	1.237	1.505
150	1.143	1.383	1.683
No.	703054	703065	703076

Container rinsing nozzles – SYNTAL

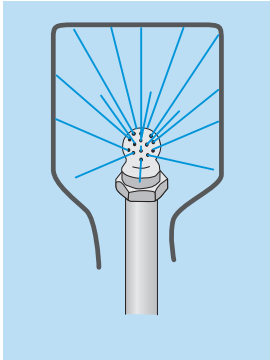


- Multi hole rinsing nozzle
- 40 solid streams
- Pressure range: 20 - 70 PSI
- Efficient container cleaning
- SYNTAL



- Rotary rinsing nozzle
- Rotary spray swaths
- Pointed top for easy foil opening
- SYNTAL

These nozzles are mainly used for washing out residues in chemical containers and bags. Can also be used for some irrigation purposes. Tests have shown that the most efficient way of cleaning chemical containers is by using these rinsing nozzles.



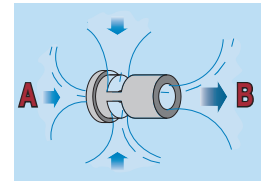
	Multi hole	Rotary
PSI	GPM	
20	3.55	–
30	4.35	–
45	5.33	–
60	6.16	–
75	6.88	–
No.	371552	72317300

5066

Agitation nozzles - SYNTAL



- Pressure range: 15 - 225 PSI
- SYNTAL



This nozzle type is used for tank agitation.

The venturi effect of the nozzle increases the agitation **B** several times in relation to the liquid passing through the calibrated part of the nozzle **A**.

Useful for a fast and continuous mixing of chemicals- pesticides for example.

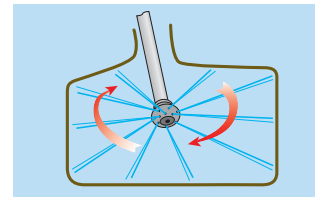
5066	5066-1.5		5066-2.0		5066-2.5		5066-3.0		
PSI	GPM								
	A	B	A	B	A	B	A	B	
	15	0.32	1.98	0.49	2.45	0.82	3.15	1.37	4.07
	22	0.39	2.39	0.60	2.97	0.99	3.82	1.66	4.92
	30	0.46	2.79	0.70	3.47	1.16	4.46	1.93	5.75
	45	0.56	3.42	0.85	4.25	1.42	5.46	2.37	7.04
	75	0.72	4.42	1.10	5.48	1.83	7.05	3.06	9.09
	90	0.79	4.84	1.21	6.00	2.00	7.73	3.35	9.96
	150	1.02	6.25	1.56	7.75	2.59	9.97	4.33	12.86
225	1.25	7.65	1.91	9.49	3.17	12.21	5.30	15.75	
No.	370462		370473		370484		370495		

Tank cleaning nozzles



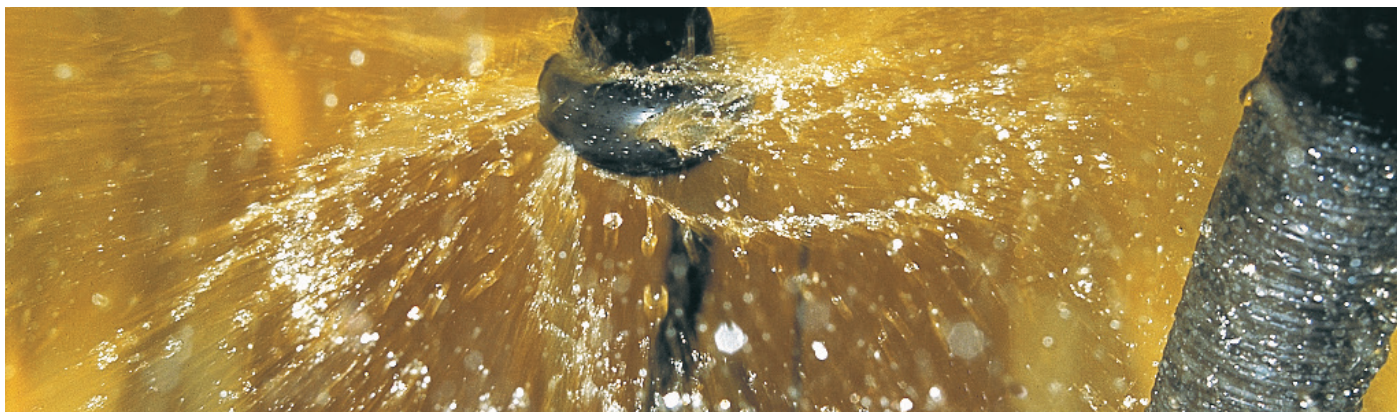
- Rotating nozzle for tank cleaning
- 8 solid streams at high velocity
- SYNTAL

This nozzle is made for cleaning the insides of sprayer tanks. The different angle of the 8 solid streams ensures excellent rinsing of the entire inside surface of the sprayer tank.



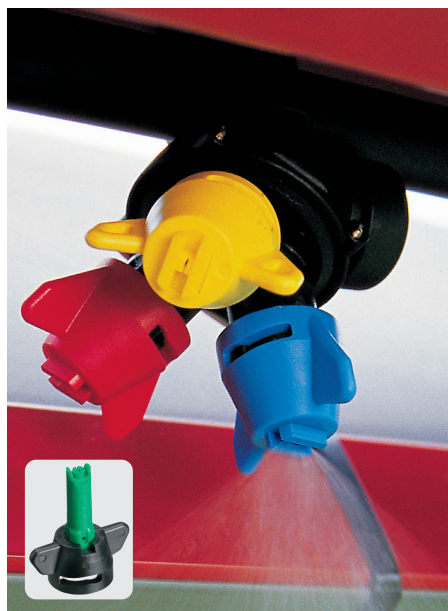
Tank cleaning nozzle	
PSI	GPM
75	22
150	31
No.	728014

HARDI recommends the use of a cleaning agent to ensure sufficient cleaning of the tank.



HARDI nozzles on all liquid systems

HARDI ISO nozzles fulfill ISO (International Standards Organization) standards regarding flow, numbers, colors and outer dimensions. This ensures that it is easy to fit HARDI ISO nozzles on all sprayer brands. You can see below the fittings, which allow you to adapt HARDI ISO nozzles to your sprayer.



On sprayers with HARDI SNAP-FIT systems, the HARDI COLOR TIPS (**CT**) are recommended for safe and easy handling. For INJET and MINIDRIIFT nozzles use the **334083** black nozzle cap.

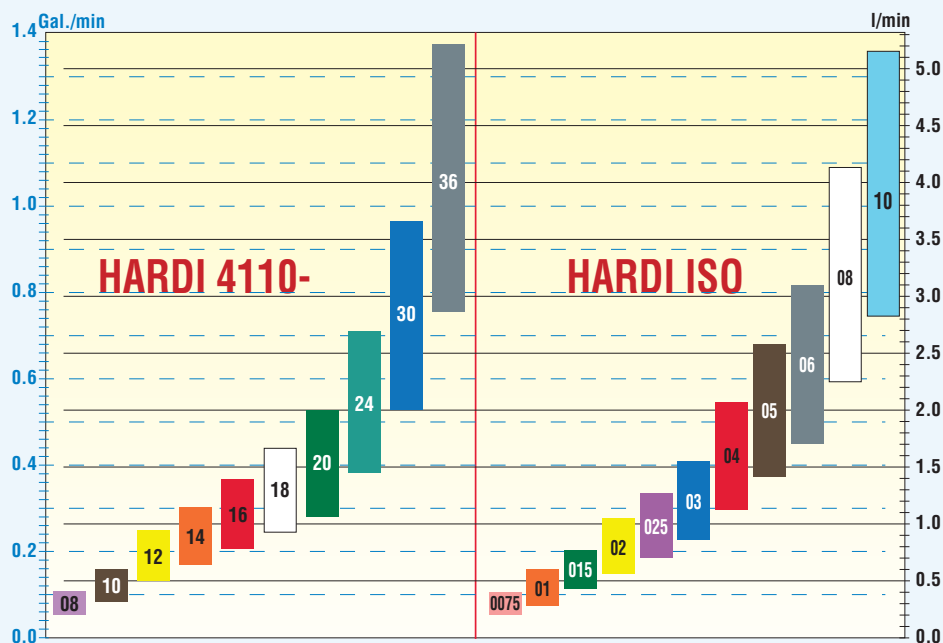


On sprayers with TeeJet or compatible systems use Single nozzles (**S**) and the 334862 black cap. The same cap is used for INJET and MINIDRIIFT nozzles. (gasket: **242222**).

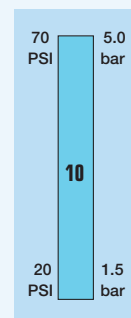


On all other systems use the ISO cap delivered with your sprayer together with Single nozzles (**S**) or INJET (INJET require a special 0.4" cap).

Conversion table for HARDI 4110 and HARDI ISO nozzles



Flows at pressure from 20 to 70 PSI (1.5 to 5 bar)



You can use these figures to check which HARDI ISO nozzles that may replace your 4110 nozzles.

Filters

The HARDI filter range ensures optimal filtration of spray liquid on its way from the tank to the nozzles. The filtration system is a 3 step (optional 4 step) process:

Filter size Mesh (*standard)	Flat spray nozzle size			
	from 0075 to 02	from 025 to 03	04 or bigger	
	100	80	50	
	100	80	50	



1 Top mounted suction or EasyClean filter with a standard size of 30 mesh.



2 Self-cleaning or Clyone-Filter. In this filter a by-pass system ensures that the filter screen is always clean. The standard size is 80 mesh.



3 In-line filters. These filters reduce nozzle filter blockages and make filter cleaning quicker.



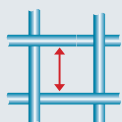
4 Nozzle filters. These filters make sure that particles that would block the nozzles are captured. With these the total filtration process is completed.

Available in 50, 80 and 100 mesh.

It is essential that the filters are chosen according to the nozzles used. In-line filter complete with housing etc. - ready to fit!



Mesh



in

Mesh	30	50	80	100
	0.033	0.020	0.013	0.010

Fittings

TRIPLET provides ease of switching between different nozzle types and sizes.

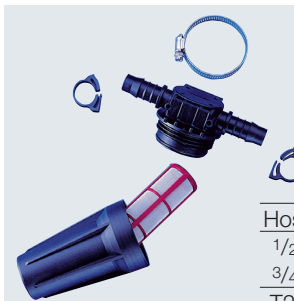
Order No:
725078

For mounting special nozzles such as the large drop flat spray nozzle and hollow cone nozzles, use the 322068 adaptor piece together with 3/8" union nuts.

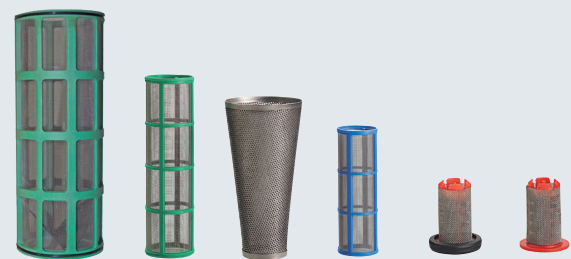
1 ISO and INJET nozzles use the white 3/8" union nut (321517)

2 Black HARDI SNAP-FIT cap (334083) (gasket: 10423503)

3 Black TeeJet cap, (334862) (gasket: 242222)



Hose	Mesh		
	50	80	100
1/2"	845205	845206	845207
3/4"	845208	845209	845210
T25	72700600		

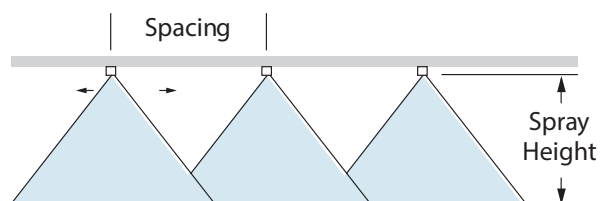
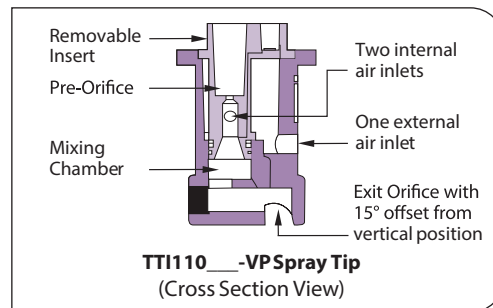


Mesh	No.					
	1 pcs	1 pcs	1 pcs	1 pcs	12 pcs	12 pcs
30	72278800	615415	-	-	-	-
50	72278900	615416	635681	615443	750229	755410
80	72279000	615417	635397	615444	750228	755215
100	-	-	635677	615445	750234	755411

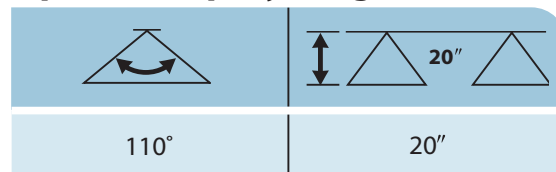
Turbo TeeJet® Induction Flat Spray Tips

Features:

- 110° wide angle, air induction, tapered flat spray tip pattern based on the patented outlet orifice design of the original Turbo TeeJet® nozzle.
- Patented orifice design provides large round passages to minimize plugging.
- Depending on the chemical, produces large air-filled drops through a Venturi air aspirator resulting in less drift.
- All polymer construction for excellent chemical and wear resistance.
- Compact size to prevent tip damage.
- Removable pre-orifice.
- Ideal for use with automatic sprayer controllers.
- Wide operating pressure range: 20-100 PSI (1.5-7 bar).
- **#33000003** Cap and Gasket required for use on HARDI nozzle bodies



Optimum Spray Height

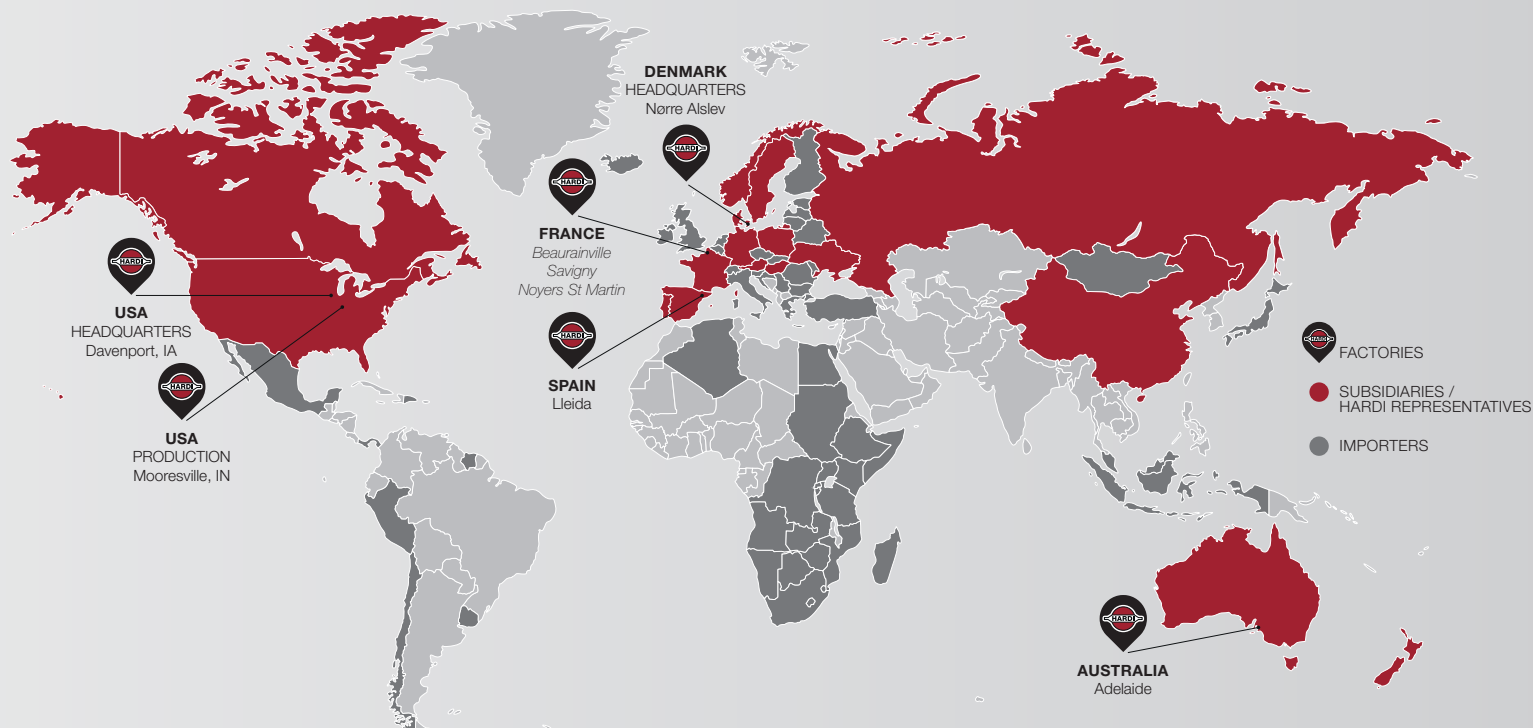


			GPA at MPH								
	PSI	GPM	4	5	6	8	10	12	15	20	
TTI 11003-VP	20	0.22	-	12.9	11.0	9.6	7.7	6.4	5.5	4.8	4.3
	30	0.26	-	14.9	12.7	11.1	8.9	7.4	6.4	5.6	5.0
	40	0.30	-	16.6	14.2	12.5	10.0	8.3	7.1	6.2	5.5
	50	0.34	-	18.2	15.6	13.6	10.9	9.1	7.8	6.8	6.1
	60	0.37	-	19.6	16.8	14.7	11.8	9.8	8.4	7.4	6.5
	70	0.40	-	30.0	24.0	19.8	14.9	11.9	9.9	7.9	5.9
	80	0.42	-	31.0	25.0	21.0	15.6	12.5	10.4	8.3	6.2
	90	0.45	-	33.0	27.0	22.0	16.7	13.4	11.1	8.9	6.7
	100	0.47	-	35.0	28.0	23.0	17.4	14.0	11.6	9.3	7.0
	Part No. 37002403										

			GPA at MPH								
	PSI	GPM	4	5	6	8	10	12	15	20	
TTI 11005-VP	20	0.35	-	26.0	21.0	17.3	13.0	10.4	8.7	6.9	5.2
	30	0.43	-	32.0	26.0	21.0	16.0	12.8	10.6	8.5	6.4
	40	0.50	-	37.0	30.0	25.0	18.6	14.9	12.4	9.9	7.4
	50	0.56	-	42.0	33.0	28.0	21.0	16.6	13.9	11.1	8.3
	60	0.61	-	45.0	36.0	30.0	23.0	18.1	15.1	12.1	9.1
	70	0.66	-	49.0	39.0	33.0	25.0	19.6	16.3	13.1	9.8
	80	0.71	-	53.0	42.0	35.0	26.0	21.0	17.6	14.1	10.5
	90	0.75	-	56.0	45.0	37.0	28.0	22.0	18.6	14.9	11.1
	100	0.79	-	59.0	47.0	39.0	29.0	23.0	19.6	15.6	11.7
	Part No. 37002603										

			GPA at MPH								
	PSI	GPM	4	5	6	8	10	12	15	20	
TTI 11004-VP	20	0.28	-	21.0	16.6	13.9	10.4	8.3	6.9	5.5	4.2
	30	0.35	-	26.0	21.0	17.3	13.0	10.4	8.7	6.9	5.2
	40	0.40	-	30.0	24.0	19.8	14.9	11.9	9.9	7.9	5.9
	50	0.45	-	33.0	27.0	22.0	16.7	13.4	11.1	8.9	6.7
	60	0.49	-	36.0	29.0	24.0	18.2	14.6	12.1	9.7	7.3
	70	0.53	-	39.0	31.0	26.0	19.7	15.7	13.1	10.5	7.9
	80	0.57	-	42.0	34.0	28.0	21.0	16.9	14.1	11.3	8.5
	90	0.60	-	45.0	36.0	30.0	22.0	17.8	14.9	11.9	8.9
	100	0.63	-	47.0	37.0	31.0	23.0	18.7	15.6	12.5	9.4
	Part No. 37002503										

			GPA at MPH								
	PSI	GPM	4	5	6	8	10	12	15	20	
TTI 11006-VP	20	0.42	-	31.0	25.0	21.0	15.6	12.5	10.4	8.3	6.2
	30	0.52	-	39.0	31.0	26.0	19.3	15.4	12.9	10.3	7.7
	40	0.60	-	45.0	36.0	30.0	22.0	17.8	14.9	11.9	8.9
	50	0.67	-	50.0	40.0	33.0	25.0	19.9	16.6	13.3	9.9
	60	0.73	-	54.0	43.0	36.0	27.0	22.0	18.1	14.5	10.8
	70	0.79	-	59.0	47.0	39.0	29.0	23.0	19.6	15.6	11.7
	80	0.85	-	63.0	50.0	42.0	32.0	25.0	21.0	16.8	12.6
	90	0.90	-	67.0	53.0	45.0	33.0	27.0	22.0	17.8	13.4
	100	0.95	-	71.0	56.0	47.0	35.0	28.0	24.0	18.8	14.1
	Part No. 37002703										



HARDI NORTH AMERICA INC.

With over 60 years' experience behind us, HARDI NORTH AMERICA remains a global trendsetter for application of crop protection products. HARDI NORTH AMERICA headquartered in Davenport IA, we are present in more than 100 countries through a network of subsidiaries, agents and importers.

HARDI NORTH AMERICA is known for the quality, design and performance of our machines. By always putting the customer at the center of our innovative solutions, we strive to shape the future in plant protection. Our increasingly intelligent products are capable of delivering exact doses and targeted applications with minimal drift and waste – to the benefit of the farmer and the environment.

We believe in a future where our products will be able to take care of plants one by one.

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HARDI NORTH AMERICA

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