

CONE NOZZLE SYNTAL



HARDI CONE NOZZLE 1553 series:

- 4 different swirl plates give 3 hollow cone and 1 full cone nozzle
- Solid stream for liquid fertilizer
- Hollow cones with flow from 0.20 - 10.96 l/min
- Application rates from 55 - 850 l/ha at 5 bar and 7 km/h (hollow cone)
- SYNTAL - Precision moulded thermoplastic: precise, resistant and durable



HARDI 1553 Cone nozzles are used with out swirl plates for solid stream and with swirl plates for hollow cone and full cone spraying.

Use the solid stream for liquid fertilizer on boom sprayers.

Use the hollow cone and full cone for pesticide spraying with boom sprayers, mistblowers or knapsack sprayers.

Recommended for use at working pressure ranging from 4 bar to 10 bar



CONE NOZZLES

Boom spraying

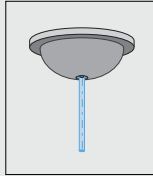
FORMULAS

Pressure adjustment

$$\left(\frac{\text{New output (l/min)}}{\text{Known output (l/min)}} \right)^2 \times \text{Known pressure (bar)} = \text{New pressure (bar)}$$

Nozzle output

$$\frac{\text{Nozzle spacing (m)} \times \text{l/ha} \times \text{km/h}}{600} = \text{l/min (per nozzle)}$$

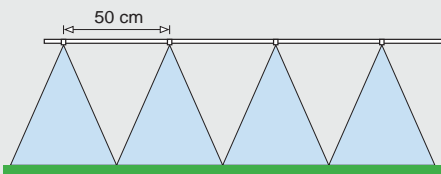


Speed check

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

Application volume

$$\frac{600 \times \text{l/min (per nozzle)}}{\text{Nozzle spacing (m)} \times \text{km/h}} = \text{l/ha}$$



Spray angle increases with higher pressure – requiring lower boom height. Correct boom height: cones meet at top of crop.

Knapsack spraying

Calibration

Method 1.

Need:

- Stop watch – Measuring tape – Calibration 2 litre graduated container – Pocket calculator.

1. Measure the width of the spray pattern. This can be done by spraying water on a dry, flat surface at the chosen nozzle height and operating pressure.
2. Mark out a line at least 100 m.
3. With comfortable walking speed and while spraying correctly, measure distance walked in 1 minute = speed (m/min)
4. Spray into measuring jug and measure volume of spray emitted for 1 minute.
5. Now use the following formula.

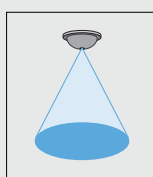
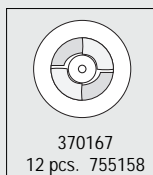
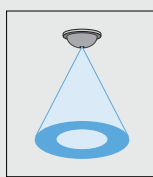
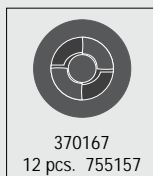
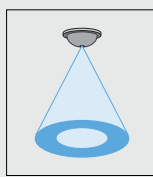
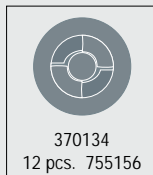
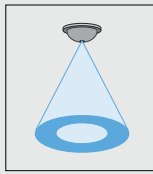
$$\frac{\text{Volume (l/min.)}}{\text{Swath (m)} \times \text{speed (m/min)}} = \text{l/m}^2$$

$$\text{l/m}^2 \times 10.000 = \text{l/ha}$$



Method 2.

Use the HARDI KALIBOTTLE (See instructions on bottle)
Order No: 893212 (10 pcs.)



l/min

bar	1553-8	-10	-12	-14	-16	-18	-20	-22	-24	-30	-35	-40
1.0	0.29	0.42	0.65	0.85	1.12	1.39	1.71	2.03	2.37	3.61	5.18	7.01
1.5	0.36	0.51	0.79	1.04	1.37	1.70	2.09	2.48	2.90	4.42	6.34	8.59
2.0	0.41	0.59	0.92	1.20	1.58	1.96	2.42	2.87	3.35	5.10	7.32	9.92
3.0	0.50	0.72	1.12	1.46	1.94	2.40	2.96	3.51	4.10	6.25	8.97	12.15
5.0	0.65	0.93	1.45	1.89	2.50	3.10	3.82	4.53	5.29	8.07	11.58	15.68
6.0	0.71	1.02	1.59	2.07	2.74	3.40	4.18	4.96	5.79	8.84	12.69	17.18
10.0	0.92	1.32	2.05	2.67	3.54	4.38	5.40	6.41	7.48	11.41	16.38	22.17
15.0	1.13	1.61	2.51	3.27	4.33	5.37	6.62	7.85	9.16	13.98	20.06	27.16
25.0	1.45	2.08	3.24	4.23	5.59	6.93	8.54	10.13	11.83	18.05	25.89	35.06
Ref. 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

bar	1553-8	-10	-12	-14	-16	-18	-20	-22	-24	-30	-35	-40
2.0	0.20	0.25	0.31	0.36	0.44	0.49	0.54	0.57	0.61	0.72	0.80	0.85
3.0	0.24	0.31	0.38	0.44	0.54	0.60	0.66	0.70	0.75	0.88	0.98	1.04
5.0	0.32	0.40	0.49	0.57	0.70	0.77	0.85	0.90	0.96	1.14	1.26	1.34
6.0	0.35	0.43	0.54	0.62	0.76	0.85	0.94	0.99	1.06	1.25	1.39	1.47
8.0	0.40	0.50	0.62	0.72	0.88	0.98	1.08	1.14	1.22	1.44	1.60	1.70
10.0	0.45	0.56	0.69	0.80	0.98	1.10	1.21	1.27	1.36	1.61	1.79	1.90
15.0	0.55	0.68	0.85	0.99	1.20	1.34	1.48	1.56	1.67	1.97	2.19	2.33
20.0	0.64	0.80	0.98	1.14	1.40	1.54	1.70	1.80	1.92	2.28	2.52	2.68
25.0	0.71	0.88	1.10	1.27	1.56	1.73	1.91	2.02	2.16	2.55	2.83	3.01
Ref. 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

bar	1553-8	-10	-12	-14	-16	-18	-20	-22	-24	-30	-35	-40
2.0	0.40	0.52	0.67	0.85	1.04	1.17	1.34	1.43	1.60	1.88	2.15	2.35
3.0	0.49	0.64	0.82	1.04	1.27	1.43	1.64	1.75	1.96	2.30	2.63	2.88
5.0	0.63	0.82	1.06	1.34	1.64	1.85	2.12	2.26	2.53	2.97	3.40	3.72
6.0	0.69	0.90	1.16	1.47	1.80	2.03	2.32	2.48	2.77	3.26	3.72	4.07
8.0	0.80	1.04	1.34	1.70	2.08	2.34	2.68	2.86	3.20	3.76	4.30	4.70
10.0	0.89	1.16	1.50	1.90	2.33	2.62	3.00	3.20	3.58	4.20	4.81	5.25
15.0	1.10	1.42	1.83	2.33	2.85	3.20	3.67	3.92	4.38	5.15	5.89	6.44
20.0	1.26	1.64	2.12	2.68	3.28	3.70	4.24	4.52	5.06	5.94	6.80	7.44
25.0	1.41	1.84	2.37	3.01	3.68	4.14	4.74	5.06	5.66	6.65	7.60	8.31
Ref. 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

bar	1553-8	-10	-12	-14	-16	-18	-20	-22	-24	-30	-35	-40
2.0	0.41	0.55	0.72	0.92	1.15	1.28	1.54	1.68	1.90	2.26	2.65	3.10
3.0	0.50	0.67	0.88	1.13	1.41	1.57	1.89	2.06	2.33	2.77	3.25	3.80
5.0	0.65	0.87	1.14	1.45	1.82	2.02	2.43	2.66	3.00	3.57	4.19	4.90
6.0	0.71	0.95	1.25	1.59	1.99	2.22	2.67	2.91	3.29	3.91	4.59	5.37
8.0	0.82	1.10	1.44	1.84	2.30	2.56	3.08	3.36	3.80	4.52	5.30	6.20
10.0	0.92	1.23	1.61	2.06	2.57	2.86	3.44	3.76	4.25	5.05	5.93	6.93
15.0	1.12	1.51	1.97	2.52	3.15	3.51	4.22	4.60	5.20	6.19	7.26	8.49
20.0	1.30	1.74	2.28	2.90	3.64	4.04	4.86	5.32	6.00	7.14	8.38	9.80
25.0	1.45	1.94	2.55	3.25	4.07	4.53	5.44	5.94	6.72	7.99	9.37	10.96
Ref. No.	370016	370027	370031	370042	370053	370064	370075	370086	370097	370101	370112	370123
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bar	1553-8	-10	-12	-14	-16	-18	-20	-22	-24	-30
2.0	0.41	0.60	0.89	1.24	1.56	2.16	2.33	2.58	2.90	3.45
3.0	0.50	0.73	1.09	1.52	1.91	2.65	2.85	3.16	3.55	4.23
4.0	0.58	0.84	1.26	1.78	2.20	3.06	3.30	3.64	4.10	4.88
5.0	0.65	0.95	1.41	1.96	2.47	3.42	3.68	4.08	4.59	5.45
6.0	0.71	1.04	1.54	2.15	2.70	3.74	4.04	4.47	5.02	5.98
8.0	0.82	1.20	1.78	2.48	3.12	4.32	4.66	5.16	5.80	6.90
10.0	0.92	1.34	1.99	2.77	3.49	4.83	5.21	5.77	6.48	7.71
12.0	1.00	1.46	2.18	3.04	3.82	5.30	5.70	6.32	7.10	8.46
15.0	1.12	1.64	2.44	3.40	4.27	5.92	6.38	7.07	7.94	9.45
Ref. No.	370016	370027	370031	370042	370053	370064	370075	370086	370097	370101
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