

## Calibration for Dripping Nitrogen with D-Orifice Discs

Information Needed:

- gallon per acre
- speed of travel
- nozzle spacing (inches)

Formula to Calibrate Nozzle Size:

$$\text{G.P.M.} = \frac{\text{G.P.A.} \times \text{M.P.H.} \times \text{W}}{5940}$$

Key:

- P.S.I. = pounds per square inch
- G.P.M. = gallons per minute
- M.P.H. = miles per hour
- G.P.A. = gallons per acre
- W = nozzle spacing

Note: 3.3 UNITS OF NITROGEN PER GALLON

Example of Calibration:

100 units of nitrogen are divided by 3.3 = 30.3 gallons per acre. 30.3 gallons per acre x speed of 4 mph = 121.2. Now multiply 121.2 x 30" nozzle spacing. = 3636. Next divide 3636 by 5940 = .61 gallons per minute flow per nozzle. Now by checking D-Orifice chart, you will see D-5 Orifice with liquid nitrogen flows .62 gallons at 30 lb pressure.

Note: WHEN USING BALL CHECK STRAINERS, ADD 5 LB PRESSURE.

Checking Tractor Speeds:

Speed in MPH	Time required in seconds to travel a distance of	
	100 ft	200 ft
3.0	23	45
3.5	20	39
4.0	17	34
4.5	15	30
5.0	14	27
6.0	11	23
7.0	----	19
7.5	-----	18
8.0	----	17



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Liquid Pressure in P.S.I.	Capacity in G.P.M. w/water	Capacity in G.P.M. w/liquid nitrogen
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\*\*\*\* **D 2** \*\*\*\*

1	.04	.03
3	.07	.06
5	.08	.07
10	.11	.10
15	.14	.12
20	.17	.14
25	.18	.16
30	.20	.17
40	.23	.20
60	.28	.24

\*\*\*\* **D 3** \*\*\*\*

1	.05	.04
3	.09	.08
5	.11	.10
10	.15	.13
15	.18	.16
20	.21	.18
25	.24	.21
30	.26	.23
40	.30	.26
60	.36	.31

\*\*\*\* **D 4** \*\*\*\*

1	.08	.07
3	.14	.12
5	.19	.17
10	.26	.23
15	.32	.28
20	.37	.32
25	.41	.36
30	.45	.39
40	.52	.45
60	.64	.56

\*\*\*\* **D 5** \*\*\*\*

1	.13	.11
3	.27	.23
5	.29	.25
10	.41	.36
15	.50	.44
20	.58	.50
25	.65	.57
30	.71	.62
40	.82	.71
60	1.00	.87

Liquid Pressure in P.S.I.	Capacity in G.P.M. w/ water	Capacity in G.P.M. w/ liquid nitrogen
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\*\*\*\* **D 6** \*\*\*\*

1	.18	.15
3	.31	.27
5	.40	.35
10	.56	.49
15	.69	.60
20	.79	.69
25	.89	.77
30	.97	.84
40	1.10	.96
60	1.40	1.22

\*\*\*\* **D 7** \*\*\*\*

1	.24	.27
3	.41	.36
5	.53	.46
10	.74	.641
15	.91	.79
20	1.00	.87
25	1.20	1.04
30	1.30	1.13
40	1.40	1.31
60	1.80	1.57

\*\*\*\* **D 8** \*\*\*\*

1	.31	.27
3	.54	.47
5	.67	.58
10	1.10	.96
15	1.20	1.04
20	1.40	1.22
25	1.60	1.39
30	1.70	1.48
40	2.00	1.74
60	2.50	2.18

\*\*\*\* **D 10** \*\*\*\*

5	1.10	.95
10	1.60	1.39
15	1.90	1.65
20	2.20	1.91
25	2.50	2.17
30	2.70	2.34
40	3.10	2.69
60	3.80	3.30