# UNIVERSAL APPLICATION RATE CHART FOR 10" TIP SPACING

| TIP CAPACITY | LIQUID PRESSURE IN PSI | CAPACITY ONE TIP IN GPM | CAPACITY ONE TIP IN OZ/MIN | GALLONS PER ACRE – 10" SPRAY TIP SPACING | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 4 MPH | 5 MPH | 6 MPH | 7 MPH | 8 MPH | 10 MPH | 12 MPH | 14 MPH | 16 MPH | 18 MPH | 20 MPH | 22 MPH |
| 01 | 15 | 0.061 | 7.8 | 9.1 | 7.2 | 6.0 | 5.2 | 4.5 | 3.6 | 3.0 | 2.6 | 2.3 | 2.0 | 1.8 | 1.6 |
| | 20 | 0.071 | 9.1 | 10.5 | 8.4 | 7.0 | 6.0 | 5.3 | 4.2 | 3.5 | 3.0 | 2.6 | 2.3 | 2.1 | 1.9 |
| | 30 | 0.087 | 11 | 12.9 | 10.3 | 8.6 | 7.4 | 6.5 | 5.2 | 4.3 | 3.7 | 3.2 | 2.9 | 2.6 | 2.3 |
| | 40 | 0.10 | 13 | 14.9 | 11.9 | 9.9 | 8.5 | 7.4 | 5.9 | 5.0 | 4.2 | 3.7 | 3.3 | 3.0 | 2.7 |
| | 50 | 0.11 | 14 | 16.3 | 13.1 | 10.9 | 9.3 | 8.2 | 6.5 | 5.4 | 4.7 | 4.1 | 3.6 | 3.3 | 3.0 |
| | 60 | 0.12 | 15 | 17.8 | 14.3 | 11.9 | 10.2 | 8.9 | 7.1 | 5.9 | 5.1 | 4.5 | 4.0 | 3.6 | 3.2 |
| | 75 | 0.14 | 18 | 21 | 16.6 | 13.9 | 11.9 | 10.4 | 8.3 | 6.9 | 5.9 | 5.2 | 4.6 | 4.2 | 3.8 |
| | 90 | 0.15 | 19 | 22 | 17.8 | 14.9 | 12.7 | 11.1 | 8.9 | 7.4 | 6.4 | 5.6 | 5.0 | 4.5 | 4.1 |
| 015 | 15 | 0.092 | 12 | 13.7 | 10.9 | 9.1 | 7.8 | 6.8 | 5.5 | 4.6 | 3.9 | 3.4 | 3.0 | 2.7 | 2.5 |
| | 20 | 0.11 | 14 | 16.3 | 13.1 | 10.9 | 9.3 | 8.2 | 6.5 | 5.4 | 4.7 | 4.1 | 3.6 | 3.3 | 3.0 |
| | 30 | 0.13 | 17 | 19.3 | 15.4 | 12.9 | 11.0 | 9.7 | 7.7 | 6.4 | 5.5 | 4.8 | 4.3 | 3.9 | 3.5 |
| | 40 | 0.15 | 19 | 22 | 17.8 | 14.9 | 12.7 | 11.1 | 8.9 | 7.4 | 6.4 | 5.6 | 5.0 | 4.5 | 4.1 |
| | 50 | 0.17 | 22 | 25 | 20 | 16.8 | 14.4 | 12.6 | 10.1 | 8.4 | 7.2 | 6.3 | 5.6 | 5.0 | 4.6 |
| | 60 | 0.18 | 23 | 27 | 21 | 17.8 | 15.3 | 13.4 | 10.7 | 8.9 | 7.6 | 6.7 | 5.9 | 5.3 | 4.9 |
| | 75 | 0.21 | 27 | 31 | 25 | 21 | 17.8 | 15.6 | 12.5 | 10.4 | 8.9 | 7.8 | 6.9 | 6.2 | 5.7 |
| | 90 | 0.23 | 29 | 34 | 27 | 23 | 19.5 | 17.1 | 13.7 | 11.4 | 9.8 | 8.5 | 7.6 | 6.8 | 6.2 |
| 02 | 15 | 0.12 | 15 | 17.8 | 14.3 | 11.9 | 10.2 | 8.9 | 7.1 | 5.9 | 5.1 | 4.5 | 4.0 | 3.6 | 3.2 |
| | 20 | 0.14 | 18 | 21 | 16.6 | 13.9 | 11.9 | 10.4 | 8.3 | 6.9 | 5.9 | 5.2 | 4.6 | 4.2 | 3.8 |
| | 30 | 0.17 | 22 | 25 | 20 | 16.8 | 14.4 | 12.6 | 10.1 | 8.4 | 7.2 | 6.3 | 5.6 | 5.0 | 4.6 |
| | 40 | 0.20 | 26 | 30 | 24 | 19.8 | 17.0 | 14.9 | 11.9 | 9.9 | 8.5 | 7.4 | 6.6 | 5.9 | 5.4 |
| | 50 | 0.22 | 28 | 33 | 26 | 22 | 18.7 | 16.3 | 13.1 | 10.9 | 9.3 | 8.2 | 7.3 | 6.5 | 5.9 |
| | 60 | 0.24 | 31 | 36 | 29 | 24 | 20 | 17.8 | 14.3 | 11.9 | 10.2 | 8.9 | 7.9 | 7.1 | 6.5 |
| | 75 | 0.27 | 35 | 40 | 32 | 27 | 23 | 20 | 16.0 | 13.4 | 11.5 | 10.0 | 8.9 | 8.0 | 7.3 |
| | 90 | 0.30 | 38 | 45 | 36 | 30 | 25 | 22 | 17.8 | 14.9 | 12.7 | 11.1 | 9.9 | 8.9 | 8.1 |
| 025 | 15 | 0.15 | 19 | 22 | 17.8 | 14.9 | 12.7 | 11.1 | 8.9 | 7.4 | 6.4 | 5.6 | 5.0 | 4.5 | 4.1 |
| | 20 | 0.18 | 23 | 27 | 21 | 17.8 | 15.3 | 13.4 | 10.7 | 8.9 | 7.6 | 6.7 | 5.9 | 5.3 | 4.9 |
| | 30 | 0.22 | 28 | 33 | 26 | 22 | 18.7 | 16.3 | 13.1 | 10.9 | 9.3 | 8.2 | 7.3 | 6.5 | 5.9 |
| | 40 | 0.25 | 32 | 37 | 30 | 25 | 21 | 18.6 | 14.9 | 12.4 | 10.6 | 9.3 | 8.3 | 7.4 | 6.8 |
| | 50 | 0.28 | 36 | 42 | 33 | 28 | 24 | 21 | 16.6 | 13.9 | 11.9 | 10.4 | 9.2 | 8.3 | 7.6 |
| | 60 | 0.31 | 40 | 46 | 37 | 31 | 26 | 23 | 18.4 | 15.3 | 13.2 | 11.5 | 10.2 | 9.2 | 8.4 |
| | 75 | 0.34 | 44 | 50 | 40 | 34 | 29 | 25 | 20 | 16.8 | 14.4 | 12.6 | 11.2 | 10.1 | 9.2 |
| | 90 | 0.38 | 49 | 56 | 45 | 38 | 32 | 28 | 23 | 18.8 | 16.1 | 14.1 | 12.5 | 11.3 | 10.3 |
| 03 | 15 | 0.18 | 23 | 27 | 21 | 17.8 | 15.3 | 13.4 | 10.7 | 8.9 | 7.6 | 6.7 | 5.9 | 5.3 | 4.9 |
| | 20 | 0.21 | 27 | 31 | 25 | 21 | 17.8 | 15.6 | 12.5 | 10.4 | 8.9 | 7.8 | 6.9 | 6.2 | 5.7 |
| | 30 | 0.26 | 33 | 39 | 31 | 26 | 22 | 19.3 | 15.4 | 12.9 | 11.0 | 9.7 | 8.6 | 7.7 | 7.0 |
| | 40 | 0.30 | 38 | 45 | 36 | 30 | 25 | 22 | 17.8 | 14.9 | 12.7 | 11.1 | 9.9 | 8.9 | 8.1 |
| | 50 | 0.34 | 44 | 50 | 40 | 34 | 29 | 25 | 20 | 16.8 | 14.4 | 12.6 | 11.2 | 10.1 | 9.2 |
| | 60 | 0.37 | 47 | 55 | 44 | 37 | 31 | 27 | 22 | 18.3 | 15.7 | 13.7 | 12.2 | 11.0 | 10.0 |
| | 75 | 0.41 | 52 | 61 | 49 | 41 | 35 | 30 | 24 | 20 | 17.4 | 15.2 | 13.5 | 12.2 | 11.1 |
| | 90 | 0.45 | 58 | 67 | 53 | 45 | 38 | 33 | 27 | 22 | 19.1 | 16.7 | 14.9 | 13.4 | 12.2 |
| 035 | 15 | 0.21 | 27 | 31 | 25 | 21 | 17.8 | 15.6 | 12.5 | 10.4 | 8.9 | 7.8 | 6.9 | 6.2 | 5.7 |
| | 20 | 0.25 | 32 | 37 | 30 | 25 | 21 | 18.6 | 14.9 | 12.4 | 10.6 | 9.3 | 8.3 | 7.4 | 6.8 |
| | 30 | 0.30 | 38 | 45 | 36 | 30 | 25 | 22 | 17.8 | 14.9 | 12.7 | 11.1 | 9.9 | 8.9 | 8.1 |
| | 40 | 0.35 | 45 | 52 | 42 | 35 | 30 | 26 | 21 | 17.3 | 14.9 | 13.0 | 11.6 | 10.4 | 9.5 |
| | 50 | 0.39 | 50 | 58 | 46 | 39 | 33 | 29 | 23 | 19.3 | 16.5 | 14.5 | 12.9 | 11.6 | 10.5 |
| | 60 | 0.43 | 55 | 64 | 51 | 43 | 36 | 32 | 26 | 21 | 18.2 | 16.0 | 14.2 | 12.8 | 11.6 |
| | 75 | 0.48 | 61 | 71 | 57 | 48 | 41 | 36 | 29 | 24 | 20 | 17.8 | 15.8 | 14.3 | 13.0 |
| | 90 | 0.53 | 68 | 79 | 63 | 52 | 45 | 39 | 31 | 26 | 22 | 19.7 | 17.5 | 15.7 | 14.3 |
| 04 | 15 | 0.24 | 31 | 36 | 29 | 24 | 20 | 17.8 | 14.3 | 11.9 | 10.2 | 8.9 | 7.9 | 7.1 | 6.5 |
| | 20 | 0.28 | 36 | 42 | 33 | 28 | 24 | 21 | 16.6 | 13.9 | 11.9 | 10.4 | 9.2 | 8.3 | 7.6 |
| | 30 | 0.35 | 45 | 52 | 42 | 35 | 30 | 26 | 21 | 17.3 | 14.9 | 13.0 | 11.6 | 10.4 | 9.5 |
| | 40 | 0.40 | 51 | 59 | 48 | 40 | 34 | 30 | 24 | 19.8 | 17.0 | 14.9 | 13.2 | 11.9 | 10.8 |
| | 50 | 0.45 | 58 | 67 | 53 | 45 | 38 | 33 | 27 | 22 | 19.1 | 16.7 | 14.9 | 13.4 | 12.2 |
| | 60 | 0.49 | 63 | 73 | 58 | 49 | 42 | 36 | 29 | 24 | 21 | 18.2 | 16.2 | 14.6 | 13.2 |
| | 75 | 0.55 | 70 | 82 | 65 | 54 | 47 | 41 | 33 | 27 | 23 | 20 | 18.2 | 16.3 | 14.9 |
| | 90 | 0.60 | 77 | 89 | 71 | 59 | 51 | 45 | 36 | 30 | 25 | 22 | 19.8 | 17.8 | 16.2 |
| 05 | 15 | 0.31 | 40 | 46 | 37 | 31 | 26 | 23 | 18.4 | 15.3 | 13.2 | 11.5 | 10.2 | 9.2 | 8.4 |
| | 20 | 0.35 | 45 | 52 | 42 | 35 | 30 | 26 | 21 | 17.3 | 14.9 | 13.0 | 11.6 | 10.4 | 9.5 |
| | 30 | 0.43 | 55 | 64 | 51 | 43 | 36 | 32 | 26 | 21 | 18.2 | 16.0 | 14.2 | 12.8 | 11.6 |
| | 40 | 0.50 | 64 | 74 | 59 | 50 | 42 | 37 | 30 | 25 | 21 | 18.6 | 16.5 | 14.9 | 13.5 |
| | 50 | 0.56 | 72 | 83 | 67 | 55 | 48 | 42 | 33 | 28 | 24 | 21 | 18.5 | 16.6 | 15.1 |
| | 60 | 0.61 | 78 | 91 | 72 | 60 | 52 | 45 | 36 | 30 | 26 | 23 | 20 | 18.1 | 16.5 |
| | 75 | 0.68 | 87 | 101 | 81 | 67 | 58 | 50 | 40 | 34 | 29 | 25 | 22 | 20 | 18.4 |
| | 90 | 0.75 | 96 | 111 | 89 | 74 | 64 | 56 | 45 | 37 | 32 | 28 | 25 | 22 | 20 |
| 06 | 15 | 0.37 | 47 | 55 | 44 | 37 | 31 | 27 | 22 | 18.3 | 15.7 | 13.7 | 12.2 | 11.0 | 10.0 |
| | 20 | 0.42 | 54 | 62 | 50 | 42 | 36 | 31 | 25 | 21 | 17.8 | 15.6 | 13.9 | 12.5 | 11.3 |
| | 30 | 0.52 | 67 | 77 | 62 | 51 | 44 | 39 | 31 | 26 | 22 | 19.3 | 17.2 | 15.4 | 14.0 |
| | 40 | 0.60 | 77 | 89 | 71 | 59 | 51 | 45 | 36 | 30 | 25 | 22 | 19.8 | 17.8 | 16.2 |
| | 50 | 0.67 | 86 | 99 | 80 | 66 | 57 | 50 | 40 | 33 | 28 | 25 | 22 | 19.9 | 18.1 |
| | 60 | 0.73 | 93 | 108 | 87 | 72 | 62 | 54 | 43 | 36 | 31 | 27 | 24 | 22 | 19.7 |
| | 75 | 0.82 | 105 | 122 | 97 | 81 | 70 | 61 | 49 | 41 | 35 | 30 | 27 | 24 | 22 |
| | 90 | 0.90 | 115 | 134 | 107 | 89 | 76 | 67 | 53 | 45 | 38 | 33 | 30 | 27 | 24 |
| 08 | 15 | 0.49 | 63 | 73 | 58 | 49 | 42 | 36 | 29 | 24 | 21 | 18.2 | 16.2 | 14.6 | 13.2 |
| | 20 | 0.57 | 73 | 85 | 68 | 56 | 48 | 42 | 34 | 28 | 24 | 21 | 18.8 | 16.9 | 15.4 |
| | 30 | 0.69 | 88 | 102 | 82 | 68 | 59 | 51 | 41 | 34 | 29 | 26 | 23 | 20 | 18.6 |
| | 40 | 0.80 | 102 | 119 | 95 | 79 | 68 | 59 | 48 | 40 | 34 | 30 | 26 | 24 | 22 |
| | 50 | 0.89 | 114 | 132 | 106 | 88 | 76 | 66 | 53 | 44 | 38 | 33 | 29 | 26 | 24 |
| | 60 | 0.98 | 125 | 146 | 116 | 97 | 83 | 73 | 58 | 49 | 42 | 36 | 32 | 29 | 26 |
| | 75 | 1.10 | 141 | 163 | 131 | 109 | 93 | 82 | 65 | 54 | 47 | 41 | 36 | 33 | 30 |
| | 90 | 1.20 | 154 | 178 | 143 | 119 | 102 | 89 | 71 | 59 | 51 | 45 | 40 | 36 | 32 |
| 10 | 15 | 0.61 | 78 | 91 | 72 | 60 | 52 | 45 | 36 | 30 | 26 | 23 | 20 | 18.1 | 16.5 |
| | 20 | 0.71 | 91 | 105 | 84 | 70 | 60 | 53 | 42 | 35 | 30 | 26 | 23 | 21 | 19.2 |
| | 30 | 0.87 | 111 | 129 | 103 | 86 | 74 | 65 | 52 | 43 | 37 | 32 | 29 | 26 | 23 |
| | 40 | 1.00 | 128 | 149 | 119 | 99 | 85 | 74 | 59 | 50 | 42 | 37 | 33 | 30 | 27 |
| | 50 | 1.12 | 143 | 166 | 133 | 111 | 95 | 83 | 67 | 55 | 48 | 42 | 37 | 33 | 30 |
| | 60 | 1.22 | 156 | 181 | 145 | 121 | 104 | 91 | 72 | 60 | 52 | 45 | 40 | 36 | 33 |
| | 75 | 1.37 | 175 | 203 | 163 | 136 | 116 | 102 | 81 | 68 | 58 | 51 | 45 | 41 | 37 |
| | 90 | 1.50 | 192 | 223 | 178 | 149 | 127 | 111 | 89 | 74 | 64 | 56 | 50 | 45 | 41 |
| 12 | 15 | 0.73 | 93 | 108 | 87 | 72 | 62 | 54 | 43 | 36 | 31 | 27 | 24 | 22 | 19.7 |
| | 20 | 0.85 | 109 | 126 | 101 | 84 | 72 | 63 | 50 | 42 | 36 | 32 | 28 | 25 | 23 |
| | 30 | 1.04 | 133 | 154 | 124 | 103 | 88 | 77 | 62 | 51 | 44 | 39 | 34 | 31 | 28 |
| | 40 | 1.20 | 154 | 178 | 143 | 119 | 102 | 89 | 71 | 59 | 51 | 45 | 40 | 36 | 32 |
| | 50 | 1.34 | 172 | 199 | 159 | 133 | 114 | 99 | 80 | 66 | 57 | 50 | 44 | 40 | 36 |
| | 60 | 1.47 | 188 | 218 | 175 | 146 | 125 | 109 | 87 | 73 | 62 | 55 | 49 | 44 | 40 |
| | 75 | 1.64 | 210 | 244 | 195 | 162 | 139 | 122 | 97 | 81 | 70 | 61 | 54 | 49 | 44 |
| | 90 | 1.80 | 230 | 267 | 214 | 178 | 153 | 134 | 107 | 89 | 76 | 67 | 59 | 53 | 49 |
| 15 | 15 | 0.92 | 118 | 137 | 109 | 91 | 78 | 68 | 55 | 46 | 39 | 34 | 30 | 27 | 25 |
| | 20 | 1.06 | 136 | 157 | 126 | 105 | 90 | 79 | 63 | 52 | 45 | 39 | 35 | 31 | 29 |
| | 30 | 1.30 | 166 | 193 | 154 | 129 | 110 | 97 | 77 | 64 | 55 | 48 | 43 | 39 | 35 |
| | 40 | 1.50 | 192 | 223 | 178 | 149 | 127 | 111 | 89 | 74 | 64 | 56 | 50 | 45 | 41 |
| | 50 | 1.68 | 215 | 249 | 200 | 166 | 143 | 125 | 100 | 83 | 71 | 62 | 55 | 50 | 45 |
| | 60 | 1.84 | 236 | 273 | 219 | 182 | 156 | 137 | 109 | 91 | 78 | 68 | 61 | 55 | 50 |
| | 75 | 2.05 | 262 | 304 | 244 | 203 | 174 | 152 | 122 | 101 | 87 | 76 | 68 | 61 | 55 |
| | 90 | 2.25 | 288 | 334 | 267 | 223 | 191 | 167 | 134 | 111 | 95 | 84 | 74 | 67 | 61 |
| 20 | 15 | 1.22 | 156 | 181 | 145 | 121 | 104 | 91 | 72 | 60 | 52 | 45 | 40 | 36 | 33 |
| | 20 | 1.41 | 180 | 209 | 168 | 140 | 120 | 105 | 84 | 70 | 60 | 52 | 47 | 42 | 38 |
| | 30 | 1.73 | 221 | 257 | 206 | 171 | 147 | 128 | 103 | 86 | 73 | 64 | 57 | 51 | 47 |
| | 40 | 2.00 | 256 | 297 | 238 | 198 | 170 | 149 | 119 | 99 | 85 | 74 | 66 | 59 | 54 |
| | 50 | 2.24 | 287 | 333 | 266 | 222 | 190 | 166 | 133 | 111 | 95 | 83 | 74 | 67 | 60 |
| | 60 | 2.45 | 314 | 364 | 291 | 243 | 208 | 182 | 146 | 121 | 104 | 91 | 81 | 73 | 66 |
| | 75 | 2.74 | 351 | 407 | 326 | 271 | 233 | 203 | 163 | 136 | 116 | 102 | 90 | 81 | 74 |
| | 90 | 3.00 | 384 | 446 | 356 | 297 | 255 | 223 | 178 | 149 | 127 | 111 | 99 | 89 | 81 |

**Note:** Always double check your application rates. Tabulations are based on spraying water at 70°F.

# UNIVERSAL APPLICATION RATE CHART FOR 15" TIP SPACING

| TIP CAPACITY | LIQUID PRESSURE IN PSI | CAPACITY ONE TIP IN GPM | CAPACITY ONE TIP IN OZ/MIN | GALLONS PER ACRE – 15" SPRAY TIP SPACING | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 4 MPH | 5 MPH | 6 MPH | 7 MPH | 8 MPH | 10 MPH | 12 MPH | 14 MPH | 16 MPH | 18 MPH | 20 MPH | 22 MPH |
| 01 | 15 | 0.061 | 7.8 | 6.0 | 4.8 | 4.0 | 3.5 | 3.0 | 2.4 | 2.0 | 1.7 | 1.5 | 1.3 | 1.2 | 1.1 |
| | 20 | 0.071 | 9.1 | 7.0 | 5.6 | 4.7 | 4.0 | 3.5 | 2.8 | 2.3 | 2.0 | 1.8 | 1.6 | 1.4 | 1.3 |
| | 30 | 0.087 | 11 | 8.6 | 6.9 | 5.7 | 4.9 | 4.3 | 3.4 | 2.9 | 2.5 | 2.2 | 1.9 | 1.7 | 1.6 |
| | 40 | 0.10 | 13 | 9.9 | 7.9 | 6.6 | 5.7 | 5.0 | 4.0 | 3.3 | 2.8 | 2.5 | 2.2 | 2.0 | 1.8 |
| | 50 | 0.11 | 14 | 10.9 | 8.7 | 7.3 | 6.2 | 5.4 | 4.4 | 3.6 | 3.1 | 2.7 | 2.4 | 2.2 | 2.0 |
| | 60 | 0.12 | 15 | 11.9 | 9.5 | 7.9 | 6.8 | 5.9 | 4.8 | 4.0 | 3.4 | 3.0 | 2.6 | 2.4 | 2.2 |
| | 75 | 0.14 | 18 | 13.9 | 11.1 | 9.2 | 7.9 | 6.9 | 5.5 | 4.6 | 4.0 | 3.5 | 3.1 | 2.8 | 2.5 |
| | 90 | 0.15 | 19 | 14.9 | 11.9 | 9.9 | 8.5 | 7.4 | 5.9 | 5.0 | 4.2 | 3.7 | 3.3 | 3.0 | 2.7 |
| 015 | 15 | 0.092 | 12 | 9.1 | 7.3 | 6.1 | 5.2 | 4.6 | 3.6 | 3.0 | 2.6 | 2.3 | 2.0 | 1.8 | 1.7 |
| | 20 | 0.11 | 14 | 10.9 | 8.7 | 7.3 | 6.2 | 5.4 | 4.4 | 3.6 | 3.1 | 2.7 | 2.4 | 2.2 | 2.0 |
| | 30 | 0.13 | 17 | 12.9 | 10.3 | 8.6 | 7.4 | 6.4 | 5.1 | 4.3 | 3.7 | 3.2 | 2.9 | 2.6 | 2.3 |
| | 40 | 0.15 | 19 | 14.9 | 11.9 | 9.9 | 8.5 | 7.4 | 5.9 | 5.0 | 4.2 | 3.7 | 3.3 | 3.0 | 2.7 |
| | 50 | 0.17 | 22 | 16.8 | 13.5 | 11.2 | 9.6 | 8.4 | 6.7 | 5.6 | 4.8 | 4.2 | 3.7 | 3.4 | 3.1 |
| | 60 | 0.18 | 23 | 17.8 | 14.3 | 11.9 | 10.2 | 8.9 | 7.1 | 5.9 | 5.1 | 4.5 | 4.0 | 3.6 | 3.2 |
| | 75 | 0.21 | 27 | 21 | 16.6 | 13.9 | 11.9 | 10.4 | 8.3 | 6.9 | 5.9 | 5.2 | 4.6 | 4.2 | 3.8 |
| | 90 | 0.23 | 29 | 23 | 18.2 | 15.2 | 13.0 | 11.4 | 9.1 | 7.6 | 6.5 | 5.7 | 5.1 | 4.6 | 4.1 |
| 02 | 15 | 0.12 | 15 | 11.9 | 9.5 | 7.9 | 6.8 | 5.9 | 4.8 | 4.0 | 3.4 | 3.0 | 2.6 | 2.4 | 2.2 |
| | 20 | 0.14 | 18 | 13.9 | 11.1 | 9.2 | 7.9 | 6.9 | 5.5 | 4.6 | 4.0 | 3.5 | 3.1 | 2.8 | 2.5 |
| | 30 | 0.17 | 22 | 16.8 | 13.5 | 11.2 | 9.6 | 8.4 | 6.7 | 5.6 | 4.8 | 4.2 | 3.7 | 3.4 | 3.1 |
| | 40 | 0.20 | 26 | 19.8 | 15.8 | 13.2 | 11.3 | 9.9 | 7.9 | 6.6 | 5.7 | 5.0 | 4.4 | 4.0 | 3.6 |
| | 50 | 0.22 | 28 | 22 | 17.4 | 14.5 | 12.4 | 10.9 | 8.7 | 7.3 | 6.2 | 5.4 | 4.8 | 4.4 | 4.0 |
| | 60 | 0.24 | 31 | 24 | 19.0 | 15.8 | 13.6 | 11.9 | 9.5 | 7.9 | 6.8 | 5.9 | 5.3 | 4.8 | 4.3 |
| | 75 | 0.27 | 35 | 27 | 21 | 17.8 | 15.3 | 13.4 | 10.7 | 8.9 | 7.6 | 6.7 | 5.9 | 5.3 | 4.9 |
| | 90 | 0.30 | 38 | 30 | 24 | 19.8 | 17.0 | 14.9 | 11.9 | 9.9 | 8.5 | 7.4 | 6.6 | 5.9 | 5.4 |
| 025 | 15 | 0.15 | 19 | 14.9 | 11.9 | 9.9 | 8.5 | 7.4 | 5.9 | 5.0 | 4.2 | 3.7 | 3.3 | 3.0 | 2.7 |
| | 20 | 0.18 | 23 | 17.8 | 14.3 | 11.9 | 10.2 | 8.9 | 7.1 | 5.9 | 5.1 | 4.5 | 4.0 | 3.6 | 3.2 |
| | 30 | 0.22 | 28 | 22 | 17.4 | 14.5 | 12.4 | 10.9 | 8.7 | 7.3 | 6.2 | 5.4 | 4.8 | 4.4 | 4.0 |
| | 40 | 0.25 | 32 | 25 | 19.8 | 16.5 | 14.1 | 12.4 | 9.9 | 8.3 | 7.1 | 6.2 | 5.5 | 5.0 | 4.5 |
| | 50 | 0.28 | 36 | 28 | 22 | 18.5 | 15.8 | 13.9 | 11.1 | 9.2 | 7.9 | 6.9 | 6.2 | 5.5 | 5.0 |
| | 60 | 0.31 | 40 | 31 | 25 | 20 | 17.5 | 15.3 | 12.3 | 10.2 | 8.8 | 7.7 | 6.8 | 6.1 | 5.6 |
| | 75 | 0.34 | 44 | 34 | 27 | 22 | 19.2 | 16.8 | 13.5 | 11.2 | 9.6 | 8.4 | 7.5 | 6.7 | 6.1 |
| | 90 | 0.38 | 49 | 38 | 30 | 25 | 21 | 18.8 | 15.0 | 12.5 | 10.7 | 9.4 | 8.4 | 7.5 | 6.8 |
| 03 | 15 | 0.18 | 23 | 17.8 | 14.3 | 11.9 | 10.2 | 8.9 | 7.1 | 5.9 | 5.1 | 4.5 | 4.0 | 3.6 | 3.2 |
| | 20 | 0.21 | 27 | 21 | 16.6 | 13.9 | 11.9 | 10.4 | 8.3 | 6.9 | 5.9 | 5.2 | 4.6 | 4.2 | 3.8 |
| | 30 | 0.26 | 33 | 26 | 21 | 17.2 | 14.7 | 12.9 | 10.3 | 8.6 | 7.4 | 6.4 | 5.7 | 5.1 | 4.7 |
| | 40 | 0.30 | 38 | 30 | 24 | 19.8 | 17.0 | 14.9 | 11.9 | 9.9 | 8.5 | 7.4 | 6.6 | 5.9 | 5.4 |
| | 50 | 0.34 | 44 | 34 | 27 | 22 | 19.2 | 16.8 | 13.5 | 11.2 | 9.6 | 8.4 | 7.5 | 6.7 | 6.1 |
| | 60 | 0.37 | 47 | 37 | 29 | 24 | 21 | 18.3 | 14.7 | 12.2 | 10.5 | 9.2 | 8.1 | 7.3 | 6.7 |
| | 75 | 0.41 | 52 | 41 | 32 | 27 | 23 | 20 | 16.2 | 13.5 | 11.6 | 10.1 | 9.0 | 8.1 | 7.4 |
| | 90 | 0.45 | 58 | 45 | 36 | 30 | 25 | 22 | 17.8 | 14.9 | 12.7 | 11.1 | 9.9 | 8.9 | 8.1 |
| 035 | 15 | 0.21 | 27 | 21 | 16.6 | 13.9 | 11.9 | 10.4 | 8.3 | 6.9 | 5.9 | 5.2 | 4.6 | 4.2 | 3.8 |
| | 20 | 0.25 | 32 | 25 | 19.8 | 16.5 | 14.1 | 12.4 | 9.9 | 8.3 | 7.1 | 6.2 | 5.5 | 5.0 | 4.5 |
| | 30 | 0.30 | 38 | 30 | 24 | 19.8 | 17.0 | 14.9 | 11.9 | 9.9 | 8.5 | 7.4 | 6.6 | 5.9 | 5.4 |
| | 40 | 0.35 | 45 | 35 | 28 | 23 | 19.8 | 17.3 | 13.9 | 11.6 | 9.9 | 8.7 | 7.7 | 6.9 | 6.3 |
| | 50 | 0.39 | 50 | 39 | 31 | 26 | 22 | 19.3 | 15.4 | 12.9 | 11.0 | 9.7 | 8.6 | 7.7 | 7.0 |
| | 60 | 0.43 | 55 | 43 | 34 | 28 | 24 | 21 | 17.0 | 14.2 | 12.2 | 10.6 | 9.5 | 8.5 | 7.7 |
| | 75 | 0.48 | 61 | 48 | 38 | 32 | 27 | 24 | 19.0 | 15.8 | 13.6 | 11.9 | 10.6 | 9.5 | 8.6 |
| | 90 | 0.53 | 68 | 52 | 42 | 35 | 30 | 26 | 21 | 17.5 | 15.0 | 13.1 | 11.7 | 10.5 | 9.5 |
| 04 | 15 | 0.24 | 31 | 24 | 19.0 | 15.8 | 13.6 | 11.9 | 9.5 | 7.9 | 6.8 | 5.9 | 5.3 | 4.8 | 4.3 |
| | 20 | 0.28 | 36 | 28 | 22 | 18.5 | 15.8 | 13.9 | 11.1 | 9.2 | 7.9 | 6.9 | 6.2 | 5.5 | 5.0 |
| | 30 | 0.35 | 45 | 35 | 28 | 23 | 19.8 | 17.3 | 13.9 | 11.6 | 9.9 | 8.7 | 7.7 | 6.9 | 6.3 |
| | 40 | 0.40 | 51 | 40 | 32 | 26 | 23 | 19.8 | 15.8 | 13.2 | 11.3 | 9.9 | 8.8 | 7.9 | 7.2 |
| | 50 | 0.45 | 58 | 45 | 36 | 30 | 25 | 22 | 17.8 | 14.9 | 12.7 | 11.1 | 9.9 | 8.9 | 8.1 |
| | 60 | 0.49 | 63 | 49 | 39 | 32 | 28 | 24 | 19.4 | 16.2 | 13.9 | 12.1 | 10.8 | 9.7 | 8.8 |
| | 75 | 0.55 | 70 | 54 | 44 | 36 | 31 | 27 | 22 | 18.2 | 15.6 | 13.6 | 12.1 | 10.9 | 9.9 |
| | 90 | 0.60 | 77 | 59 | 48 | 40 | 34 | 30 | 24 | 19.8 | 17.0 | 14.9 | 13.2 | 11.9 | 10.8 |
| 05 | 15 | 0.31 | 40 | 31 | 25 | 20 | 17.5 | 15.3 | 12.3 | 10.2 | 8.8 | 7.7 | 6.8 | 6.1 | 5.6 |
| | 20 | 0.35 | 45 | 35 | 28 | 23 | 19.8 | 17.3 | 13.9 | 11.6 | 9.9 | 8.7 | 7.7 | 6.9 | 6.3 |
| | 30 | 0.43 | 55 | 43 | 34 | 28 | 24 | 21 | 17.0 | 14.2 | 12.2 | 10.6 | 9.5 | 8.5 | 7.7 |
| | 40 | 0.50 | 64 | 50 | 40 | 33 | 28 | 25 | 19.8 | 16.5 | 14.1 | 12.4 | 11.0 | 9.9 | 9.0 |
| | 50 | 0.56 | 72 | 55 | 44 | 37 | 32 | 28 | 22 | 18.5 | 15.8 | 13.9 | 12.3 | 11.1 | 10.1 |
| | 60 | 0.61 | 78 | 60 | 48 | 40 | 35 | 30 | 24 | 20 | 17.3 | 15.1 | 13.4 | 12.1 | 11.0 |
| | 75 | 0.68 | 87 | 67 | 54 | 45 | 38 | 34 | 27 | 22 | 19.2 | 16.8 | 15.0 | 13.5 | 12.2 |
| | 90 | 0.75 | 96 | 74 | 59 | 50 | 42 | 37 | 30 | 25 | 21 | 18.6 | 16.5 | 14.9 | 13.5 |
| 06 | 15 | 0.37 | 47 | 37 | 29 | 24 | 21 | 18.3 | 14.7 | 12.2 | 10.5 | 9.2 | 8.1 | 7.3 | 6.7 |
| | 20 | 0.42 | 54 | 42 | 33 | 28 | 24 | 21 | 16.6 | 13.9 | 11.9 | 10.4 | 9.2 | 8.3 | 7.6 |
| | 30 | 0.52 | 67 | 51 | 41 | 34 | 29 | 26 | 21 | 17.2 | 14.7 | 12.9 | 11.4 | 10.3 | 9.4 |
| | 40 | 0.60 | 77 | 59 | 48 | 40 | 34 | 30 | 24 | 19.8 | 17.0 | 14.9 | 13.2 | 11.9 | 10.8 |
| | 50 | 0.67 | 86 | 66 | 53 | 44 | 38 | 33 | 27 | 22 | 19.0 | 16.6 | 14.7 | 13.3 | 12.1 |
| | 60 | 0.73 | 93 | 72 | 58 | 48 | 41 | 36 | 29 | 24 | 21 | 18.1 | 16.1 | 14.5 | 13.1 |
| | 75 | 0.82 | 105 | 81 | 65 | 54 | 46 | 41 | 32 | 27 | 23 | 20 | 18.0 | 16.2 | 14.8 |
| | 90 | 0.90 | 115 | 89 | 71 | 59 | 51 | 45 | 36 | 30 | 25 | 22 | 19.8 | 17.8 | 16.2 |
| 08 | 15 | 0.49 | 63 | 49 | 39 | 32 | 28 | 24 | 19.4 | 16.2 | 13.9 | 12.1 | 10.8 | 9.7 | 8.8 |
| | 20 | 0.57 | 73 | 56 | 45 | 38 | 32 | 28 | 23 | 18.8 | 16.1 | 14.1 | 12.5 | 11.3 | 10.3 |
| | 30 | 0.69 | 88 | 68 | 55 | 46 | 39 | 34 | 27 | 23 | 19.5 | 17.1 | 15.2 | 13.7 | 12.4 |
| | 40 | 0.80 | 102 | 79 | 63 | 53 | 45 | 40 | 32 | 26 | 23 | 19.8 | 17.6 | 15.8 | 14.4 |
| | 50 | 0.89 | 114 | 88 | 70 | 59 | 50 | 44 | 35 | 29 | 25 | 22 | 19.6 | 17.6 | 16.0 |
| | 60 | 0.98 | 125 | 97 | 78 | 65 | 55 | 49 | 39 | 32 | 28 | 24 | 22 | 19.4 | 17.6 |
| | 75 | 1.10 | 141 | 109 | 87 | 73 | 62 | 54 | 44 | 36 | 31 | 27 | 24 | 22 | 19.8 |
| | 90 | 1.20 | 154 | 119 | 95 | 79 | 68 | 59 | 48 | 40 | 34 | 30 | 26 | 24 | 22 |
| 10 | 15 | 0.61 | 78 | 60 | 48 | 40 | 35 | 30 | 24 | 20 | 17.3 | 15.1 | 13.4 | 12.1 | 11.0 |
| | 20 | 0.71 | 91 | 70 | 56 | 47 | 40 | 35 | 28 | 23 | 20 | 17.6 | 15.6 | 14.1 | 12.8 |
| | 30 | 0.87 | 111 | 86 | 69 | 57 | 49 | 43 | 34 | 29 | 25 | 22 | 19.1 | 17.2 | 15.7 |
| | 40 | 1.00 | 128 | 99 | 79 | 66 | 57 | 50 | 40 | 33 | 28 | 25 | 22 | 19.8 | 18.0 |
| | 50 | 1.12 | 143 | 111 | 89 | 74 | 63 | 55 | 44 | 37 | 32 | 28 | 25 | 22 | 20 |
| | 60 | 1.22 | 156 | 121 | 97 | 81 | 69 | 60 | 48 | 40 | 35 | 30 | 27 | 24 | 22 |
| | 75 | 1.37 | 175 | 136 | 109 | 90 | 78 | 68 | 54 | 45 | 39 | 34 | 30 | 27 | 25 |
| | 90 | 1.50 | 192 | 149 | 119 | 99 | 85 | 74 | 59 | 50 | 42 | 37 | 33 | 30 | 27 |
| 12 | 15 | 0.73 | 93 | 72 | 58 | 48 | 41 | 36 | 29 | 24 | 21 | 18.1 | 16.1 | 14.5 | 13.1 |
| | 20 | 0.85 | 109 | 84 | 67 | 56 | 48 | 42 | 34 | 28 | 24 | 21 | 18.7 | 16.8 | 15.3 |
| | 30 | 1.04 | 133 | 103 | 82 | 69 | 59 | 51 | 41 | 34 | 29 | 26 | 23 | 21 | 18.7 |
| | 40 | 1.20 | 154 | 119 | 95 | 79 | 68 | 59 | 48 | 40 | 34 | 30 | 26 | 24 | 22 |
| | 50 | 1.34 | 172 | 133 | 106 | 88 | 76 | 66 | 53 | 44 | 38 | 33 | 29 | 27 | 24 |
| | 60 | 1.47 | 188 | 146 | 116 | 97 | 83 | 73 | 58 | 49 | 42 | 36 | 32 | 29 | 26 |
| | 75 | 1.64 | 210 | 162 | 130 | 108 | 93 | 81 | 65 | 54 | 46 | 41 | 36 | 32 | 30 |
| | 90 | 1.80 | 230 | 178 | 143 | 119 | 102 | 89 | 71 | 59 | 51 | 45 | 40 | 36 | 32 |
| 15 | 15 | 0.92 | 118 | 91 | 73 | 61 | 52 | 46 | 36 | 30 | 26 | 23 | 20 | 18.2 | 16.6 |
| | 20 | 1.06 | 136 | 105 | 84 | 70 | 60 | 52 | 42 | 35 | 30 | 26 | 23 | 21 | 19.1 |
| | 30 | 1.30 | 166 | 129 | 103 | 86 | 74 | 64 | 51 | 43 | 37 | 32 | 29 | 26 | 23 |
| | 40 | 1.50 | 192 | 149 | 119 | 99 | 85 | 74 | 59 | 50 | 42 | 37 | 33 | 30 | 27 |
| | 50 | 1.68 | 215 | 166 | 133 | 111 | 95 | 83 | 67 | 55 | 48 | 42 | 37 | 33 | 30 |
| | 60 | 1.84 | 236 | 182 | 146 | 121 | 104 | 91 | 73 | 61 | 52 | 46 | 40 | 36 | 33 |
| | 75 | 2.05 | 262 | 203 | 162 | 135 | 116 | 101 | 81 | 68 | 58 | 51 | 45 | 41 | 37 |
| | 90 | 2.25 | 288 | 223 | 178 | 149 | 127 | 111 | 89 | 74 | 64 | 56 | 50 | 45 | 41 |
| 20 | 15 | 1.22 | 156 | 121 | 97 | 81 | 69 | 60 | 48 | 40 | 35 | 30 | 27 | 24 | 22 |
| | 20 | 1.41 | 180 | 140 | 112 | 93 | 80 | 70 | 56 | 47 | 40 | 35 | 31 | 28 | 25 |
| | 30 | 1.73 | 221 | 171 | 137 | 114 | 98 | 86 | 69 | 57 | 49 | 43 | 38 | 34 | 31 |
| | 40 | 2.00 | 256 | 198 | 158 | 132 | 113 | 99 | 79 | 66 | 57 | 50 | 44 | 40 | 36 |
| | 50 | 2.24 | 287 | 222 | 177 | 148 | 127 | 111 | 89 | 74 | 63 | 55 | 49 | 44 | 40 |
| | 60 | 2.45 | 314 | 243 | 194 | 162 | 139 | 121 | 97 | 81 | 69 | 61 | 54 | 49 | 44 |
| | 75 | 2.74 | 351 | 271 | 217 | 181 | 155 | 136 | 109 | 90 | 78 | 68 | 60 | 54 | 49 |
| | 90 | 3.00 | 384 | 297 | 238 | 198 | 170 | 149 | 119 | 99 | 85 | 74 | 66 | 59 | 54 |

**Note:** Always double check your application rates. Tabulations are based on spraying water at 70°F.

# UNIVERSAL APPLICATION RATE CHART FOR 20" TIP SPACING

| TIP CAPACITY | LIQUID PRESSURE IN PSI | CAPACITY ONE TIP IN GPM | CAPACITY ONE TIP IN OZ/MIN | GALLONS PER ACRE – 20" SPRAY TIP SPACING | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 4 MPH | 5 MPH | 6 MPH | 7 MPH | 8 MPH | 10 MPH | 12 MPH | 14 MPH | 16 MPH | 18 MPH | 20 MPH | 22 MPH |
| 01 | 15 | 0.061 | 7.8 | 4.5 | 3.6 | 3.0 | 2.6 | 2.3 | 1.8 | 1.5 | 1.3 | 1.1 | 1.0 | 0.91 | 0.82 |
| | 20 | 0.071 | 9.1 | 5.3 | 4.2 | 3.5 | 3.0 | 2.6 | 2.1 | 1.8 | 1.5 | 1.3 | 1.2 | 1.1 | 0.96 |
| | 30 | 0.087 | 11 | 6.5 | 5.2 | 4.3 | 3.7 | 3.2 | 2.6 | 2.2 | 1.8 | 1.6 | 1.4 | 1.3 | 1.2 |
| | 40 | 0.10 | 13 | 7.4 | 5.9 | 5.0 | 4.2 | 3.7 | 3.0 | 2.5 | 2.1 | 1.9 | 1.7 | 1.5 | 1.4 |
| | 50 | 0.11 | 14 | 8.2 | 6.5 | 5.4 | 4.7 | 4.1 | 3.3 | 2.7 | 2.3 | 2.0 | 1.8 | 1.6 | 1.5 |
| | 60 | 0.12 | 15 | 8.9 | 7.1 | 5.9 | 5.1 | 4.5 | 3.6 | 3.0 | 2.5 | 2.2 | 2.0 | 1.8 | 1.6 |
| | 75 | 0.14 | 18 | 10.4 | 8.3 | 6.9 | 5.9 | 5.2 | 4.2 | 3.5 | 3.0 | 2.6 | 2.3 | 2.1 | 1.9 |
| | 90 | 0.15 | 19 | 11.1 | 8.9 | 7.4 | 6.4 | 5.6 | 4.5 | 3.7 | 3.2 | 2.8 | 2.5 | 2.2 | 2.0 |
| 015 | 15 | 0.092 | 12 | 6.8 | 5.5 | 4.6 | 3.9 | 3.4 | 2.7 | 2.3 | 2.0 | 1.7 | 1.5 | 1.4 | 1.2 |
| | 20 | 0.11 | 14 | 8.2 | 6.5 | 5.4 | 4.7 | 4.1 | 3.3 | 2.7 | 2.3 | 2.0 | 1.8 | 1.6 | 1.5 |
| | 30 | 0.13 | 17 | 9.7 | 7.7 | 6.4 | 5.5 | 4.8 | 3.9 | 3.2 | 2.8 | 2.4 | 2.1 | 1.9 | 1.8 |
| | 40 | 0.15 | 19 | 11.1 | 8.9 | 7.4 | 6.4 | 5.6 | 4.5 | 3.7 | 3.2 | 2.8 | 2.5 | 2.2 | 2.0 |
| | 50 | 0.17 | 22 | 12.6 | 10.1 | 8.4 | 7.2 | 6.3 | 5.0 | 4.2 | 3.6 | 3.2 | 2.8 | 2.5 | 2.3 |
| | 60 | 0.18 | 23 | 13.4 | 10.7 | 8.9 | 7.6 | 6.7 | 5.3 | 4.5 | 3.8 | 3.3 | 3.0 | 2.7 | 2.4 |
| | 75 | 0.21 | 27 | 15.6 | 12.5 | 10.4 | 8.9 | 7.8 | 6.2 | 5.2 | 4.5 | 3.9 | 3.5 | 3.1 | 2.8 |
| | 90 | 0.23 | 29 | 17.1 | 13.7 | 11.4 | 9.8 | 8.5 | 6.8 | 5.7 | 4.9 | 4.3 | 3.8 | 3.4 | 3.1 |
| 02 | 15 | 0.12 | 15 | 8.9 | 7.1 | 5.9 | 5.1 | 4.5 | 3.6 | 3.0 | 2.5 | 2.2 | 2.0 | 1.8 | 1.6 |
| | 20 | 0.14 | 18 | 10.4 | 8.3 | 6.9 | 5.9 | 5.2 | 4.2 | 3.5 | 3.0 | 2.6 | 2.3 | 2.1 | 1.9 |
| | 30 | 0.17 | 22 | 12.6 | 10.1 | 8.4 | 7.2 | 6.3 | 5.0 | 4.2 | 3.6 | 3.2 | 2.8 | 2.5 | 2.3 |
| | 40 | 0.20 | 26 | 14.9 | 11.9 | 9.9 | 8.5 | 7.4 | 5.9 | 5.0 | 4.2 | 3.7 | 3.3 | 3.0 | 2.7 |
| | 50 | 0.22 | 28 | 16.3 | 13.1 | 10.9 | 9.3 | 8.2 | 6.5 | 5.4 | 4.7 | 4.1 | 3.6 | 3.3 | 3.0 |
| | 60 | 0.24 | 31 | 17.8 | 14.3 | 11.9 | 10.2 | 8.9 | 7.1 | 5.9 | 5.1 | 4.5 | 4.0 | 3.6 | 3.2 |
| | 75 | 0.27 | 35 | 20 | 16.0 | 13.4 | 11.5 | 10.0 | 8.0 | 6.7 | 5.7 | 5.0 | 4.5 | 4.0 | 3.6 |
| | 90 | 0.30 | 38 | 22 | 17.8 | 14.9 | 12.7 | 11.1 | 8.9 | 7.4 | 6.4 | 5.6 | 5.0 | 4.5 | 4.1 |
| 025 | 15 | 0.15 | 19 | 11.1 | 8.9 | 7.4 | 6.4 | 5.6 | 4.5 | 3.7 | 3.2 | 2.8 | 2.5 | 2.2 | 2.0 |
| | 20 | 0.18 | 23 | 13.4 | 10.7 | 8.9 | 7.6 | 6.7 | 5.3 | 4.5 | 3.8 | 3.3 | 3.0 | 2.7 | 2.4 |
| | 30 | 0.22 | 28 | 16.3 | 13.1 | 10.9 | 9.3 | 8.2 | 6.5 | 5.4 | 4.7 | 4.1 | 3.6 | 3.3 | 3.0 |
| | 40 | 0.25 | 32 | 18.6 | 14.9 | 12.4 | 10.6 | 9.3 | 7.4 | 6.2 | 5.3 | 4.6 | 4.1 | 3.7 | 3.4 |
| | 50 | 0.28 | 36 | 21 | 16.6 | 13.9 | 11.9 | 10.4 | 8.3 | 6.9 | 5.9 | 5.2 | 4.6 | 4.2 | 3.8 |
| | 60 | 0.31 | 40 | 23 | 18.4 | 15.3 | 13.2 | 11.5 | 9.2 | 7.7 | 6.6 | 5.8 | 5.1 | 4.6 | 4.2 |
| | 75 | 0.34 | 44 | 25 | 20 | 16.8 | 14.4 | 12.6 | 10.1 | 8.4 | 7.2 | 6.3 | 5.6 | 5.0 | 4.6 |
| | 90 | 0.38 | 49 | 28 | 23 | 18.8 | 16.1 | 14.1 | 11.3 | 9.4 | 8.1 | 7.1 | 6.3 | 5.6 | 5.1 |
| 03 | 15 | 0.18 | 23 | 13.4 | 10.7 | 8.9 | 7.6 | 6.7 | 5.3 | 4.5 | 3.8 | 3.3 | 3.0 | 2.7 | 2.4 |
| | 20 | 0.21 | 27 | 15.6 | 12.5 | 10.4 | 8.9 | 7.8 | 6.2 | 5.2 | 4.5 | 3.9 | 3.5 | 3.1 | 2.8 |
| | 30 | 0.26 | 33 | 19.3 | 15.4 | 12.9 | 11.0 | 9.7 | 7.7 | 6.4 | 5.5 | 4.8 | 4.3 | 3.9 | 3.5 |
| | 40 | 0.30 | 38 | 22 | 17.8 | 14.9 | 12.7 | 11.1 | 8.9 | 7.4 | 6.4 | 5.6 | 5.0 | 4.5 | 4.1 |
| | 50 | 0.34 | 44 | 25 | 20 | 16.8 | 14.4 | 12.6 | 10.1 | 8.4 | 7.2 | 6.3 | 5.6 | 5.0 | 4.6 |
| | 60 | 0.37 | 47 | 27 | 22 | 18.3 | 15.7 | 13.7 | 11.0 | 9.2 | 7.8 | 6.9 | 6.1 | 5.5 | 5.0 |
| | 75 | 0.41 | 52 | 30 | 24 | 20 | 17.4 | 15.2 | 12.2 | 10.1 | 8.7 | 7.6 | 6.8 | 6.1 | 5.5 |
| | 90 | 0.45 | 58 | 33 | 27 | 22 | 19.1 | 16.7 | 13.4 | 11.1 | 9.5 | 8.4 | 7.4 | 6.7 | 6.1 |
| 035 | 15 | 0.21 | 27 | 15.6 | 12.5 | 10.4 | 8.9 | 7.8 | 6.2 | 5.2 | 4.5 | 3.9 | 3.5 | 3.1 | 2.8 |
| | 20 | 0.25 | 32 | 18.6 | 14.9 | 12.4 | 10.6 | 9.3 | 7.4 | 6.2 | 5.3 | 4.6 | 4.1 | 3.7 | 3.4 |
| | 30 | 0.30 | 38 | 22 | 17.8 | 14.9 | 12.7 | 11.1 | 8.9 | 7.4 | 6.4 | 5.6 | 5.0 | 4.5 | 4.1 |
| | 40 | 0.35 | 45 | 26 | 21 | 17.3 | 14.9 | 13.0 | 10.4 | 8.7 | 7.4 | 6.5 | 5.8 | 5.2 | 4.7 |
| | 50 | 0.39 | 50 | 29 | 23 | 19.3 | 16.5 | 14.5 | 11.6 | 9.7 | 8.3 | 7.2 | 6.4 | 5.8 | 5.3 |
| | 60 | 0.43 | 55 | 32 | 26 | 21 | 18.2 | 16.0 | 12.8 | 10.6 | 9.1 | 8.0 | 7.1 | 6.4 | 5.8 |
| | 75 | 0.48 | 61 | 36 | 29 | 24 | 20 | 17.8 | 14.3 | 11.9 | 10.2 | 8.9 | 7.9 | 7.1 | 6.5 |
| | 90 | 0.53 | 68 | 39 | 31 | 26 | 22 | 19.7 | 15.7 | 13.1 | 11.2 | 9.8 | 8.7 | 7.9 | 7.2 |
| 04 | 15 | 0.24 | 31 | 17.8 | 14.3 | 11.9 | 10.2 | 8.9 | 7.1 | 5.9 | 5.1 | 4.5 | 4.0 | 3.6 | 3.2 |
| | 20 | 0.28 | 36 | 21 | 16.6 | 13.9 | 11.9 | 10.4 | 8.3 | 6.9 | 5.9 | 5.2 | 4.6 | 4.2 | 3.8 |
| | 30 | 0.35 | 45 | 26 | 21 | 17.3 | 14.9 | 13.0 | 10.4 | 8.7 | 7.4 | 6.5 | 5.8 | 5.2 | 4.7 |
| | 40 | 0.40 | 51 | 30 | 24 | 19.8 | 17.0 | 14.9 | 11.9 | 9.9 | 8.5 | 7.4 | 6.6 | 5.9 | 5.4 |
| | 50 | 0.45 | 58 | 33 | 27 | 22 | 19.1 | 16.7 | 13.4 | 11.1 | 9.5 | 8.4 | 7.4 | 6.7 | 6.1 |
| | 60 | 0.49 | 63 | 36 | 29 | 24 | 21 | 18.2 | 14.6 | 12.1 | 10.4 | 9.1 | 8.1 | 7.3 | 6.6 |
| | 75 | 0.55 | 70 | 41 | 33 | 27 | 23 | 20 | 16.3 | 13.6 | 11.7 | 10.2 | 9.1 | 8.2 | 7.4 |
| | 90 | 0.60 | 77 | 45 | 36 | 30 | 25 | 22 | 17.8 | 14.9 | 12.7 | 11.1 | 9.9 | 8.9 | 8.1 |
| 05 | 15 | 0.31 | 40 | 23 | 18.4 | 15.3 | 13.2 | 11.5 | 9.2 | 7.7 | 6.6 | 5.8 | 5.1 | 4.6 | 4.2 |
| | 20 | 0.35 | 45 | 26 | 21 | 17.3 | 14.9 | 13.0 | 10.4 | 8.7 | 7.4 | 6.5 | 5.8 | 5.2 | 4.7 |
| | 30 | 0.43 | 55 | 32 | 26 | 21 | 18.2 | 16.0 | 12.8 | 10.6 | 9.1 | 8.0 | 7.1 | 6.4 | 5.8 |
| | 40 | 0.50 | 64 | 37 | 30 | 25 | 21 | 18.6 | 14.9 | 12.4 | 10.6 | 9.3 | 8.3 | 7.4 | 6.8 |
| | 50 | 0.56 | 72 | 42 | 33 | 28 | 24 | 21 | 16.6 | 13.9 | 11.9 | 10.4 | 9.2 | 8.3 | 7.6 |
| | 60 | 0.61 | 78 | 45 | 36 | 30 | 26 | 23 | 18.1 | 15.1 | 12.9 | 11.3 | 10.1 | 9.1 | 8.2 |
| | 75 | 0.68 | 87 | 50 | 40 | 34 | 29 | 25 | 20 | 16.8 | 14.4 | 12.6 | 11.2 | 10.1 | 9.2 |
| | 90 | 0.75 | 96 | 56 | 45 | 37 | 32 | 28 | 22 | 18.6 | 15.9 | 13.9 | 12.4 | 11.1 | 10.1 |
| 06 | 15 | 0.37 | 47 | 27 | 22 | 18.3 | 15.7 | 13.7 | 11.0 | 9.2 | 7.8 | 6.9 | 6.1 | 5.5 | 5.0 |
| | 20 | 0.42 | 54 | 31 | 25 | 21 | 17.8 | 15.6 | 12.5 | 10.4 | 8.9 | 7.8 | 6.9 | 6.2 | 5.7 |
| | 30 | 0.52 | 67 | 39 | 31 | 26 | 22 | 19.3 | 15.4 | 12.9 | 11.0 | 9.7 | 8.6 | 7.7 | 7.0 |
| | 40 | 0.60 | 77 | 45 | 36 | 30 | 25 | 22 | 17.8 | 14.9 | 12.7 | 11.1 | 9.9 | 8.9 | 8.1 |
| | 50 | 0.67 | 86 | 50 | 40 | 33 | 28 | 25 | 19.9 | 16.6 | 14.2 | 12.4 | 11.1 | 9.9 | 9.0 |
| | 60 | 0.73 | 93 | 54 | 43 | 36 | 31 | 27 | 22 | 18.1 | 15.5 | 13.6 | 12.0 | 10.8 | 9.9 |
| | 75 | 0.82 | 105 | 61 | 49 | 41 | 35 | 30 | 24 | 20 | 17.4 | 15.2 | 13.5 | 12.2 | 11.1 |
| | 90 | 0.90 | 115 | 67 | 53 | 45 | 38 | 33 | 27 | 22 | 19.1 | 16.7 | 14.9 | 13.4 | 12.2 |
| 08 | 15 | 0.49 | 63 | 36 | 29 | 24 | 21 | 18.2 | 14.6 | 12.1 | 10.4 | 9.1 | 8.1 | 7.3 | 6.6 |
| | 20 | 0.57 | 73 | 42 | 34 | 28 | 24 | 21 | 16.9 | 14.1 | 12.1 | 10.6 | 9.4 | 8.5 | 7.7 |
| | 30 | 0.69 | 88 | 51 | 41 | 34 | 29 | 26 | 20 | 17.1 | 14.6 | 12.8 | 11.4 | 10.2 | 9.3 |
| | 40 | 0.80 | 102 | 59 | 48 | 40 | 34 | 30 | 24 | 19.8 | 17.0 | 14.9 | 13.2 | 11.9 | 10.8 |
| | 50 | 0.89 | 114 | 66 | 53 | 44 | 38 | 33 | 26 | 22 | 18.9 | 16.5 | 14.7 | 13.2 | 12.0 |
| | 60 | 0.98 | 125 | 73 | 58 | 49 | 42 | 36 | 29 | 24 | 21 | 18.2 | 16.2 | 14.6 | 13.2 |
| | 75 | 1.10 | 141 | 82 | 65 | 54 | 47 | 41 | 33 | 27 | 23 | 20 | 18.2 | 16.3 | 14.9 |
| | 90 | 1.20 | 154 | 89 | 71 | 59 | 51 | 45 | 36 | 30 | 25 | 22 | 19.8 | 17.8 | 16.2 |
| 10 | 15 | 0.61 | 78 | 45 | 36 | 30 | 26 | 23 | 18.1 | 15.1 | 12.9 | 11.3 | 10.1 | 9.1 | 8.2 |
| | 20 | 0.71 | 91 | 53 | 42 | 35 | 30 | 26 | 21 | 17.6 | 15.1 | 13.2 | 11.7 | 10.5 | 9.6 |
| | 30 | 0.87 | 111 | 65 | 52 | 43 | 37 | 32 | 26 | 22 | 18.5 | 16.1 | 14.4 | 12.9 | 11.7 |
| | 40 | 1.00 | 128 | 74 | 59 | 50 | 42 | 37 | 30 | 25 | 21 | 18.6 | 16.5 | 14.9 | 13.5 |
| | 50 | 1.12 | 143 | 83 | 67 | 55 | 48 | 42 | 33 | 28 | 24 | 21 | 18.5 | 16.6 | 15.1 |
| | 60 | 1.22 | 156 | 91 | 72 | 60 | 52 | 45 | 36 | 30 | 26 | 23 | 20 | 18.1 | 16.5 |
| | 75 | 1.37 | 175 | 102 | 81 | 68 | 58 | 51 | 41 | 34 | 29 | 25 | 23 | 20 | 18.5 |
| | 90 | 1.50 | 192 | 111 | 89 | 74 | 64 | 56 | 45 | 37 | 32 | 28 | 25 | 22 | 20 |
| 12 | 15 | 0.73 | 93 | 54 | 43 | 36 | 31 | 27 | 22 | 18.1 | 15.5 | 13.6 | 12.0 | 10.8 | 9.9 |
| | 20 | 0.85 | 109 | 63 | 50 | 42 | 36 | 32 | 25 | 21 | 18.0 | 15.8 | 14.0 | 12.6 | 11.5 |
| | 30 | 1.04 | 133 | 77 | 62 | 51 | 44 | 39 | 31 | 26 | 22 | 19.3 | 17.2 | 15.4 | 14.0 |
| | 40 | 1.20 | 154 | 89 | 71 | 59 | 51 | 45 | 36 | 30 | 25 | 22 | 19.8 | 17.8 | 16.2 |
| | 50 | 1.34 | 172 | 99 | 80 | 66 | 57 | 50 | 40 | 33 | 28 | 25 | 22 | 19.9 | 18.1 |
| | 60 | 1.47 | 188 | 109 | 87 | 73 | 62 | 55 | 44 | 36 | 31 | 27 | 24 | 22 | 19.8 |
| | 75 | 1.64 | 210 | 122 | 97 | 81 | 70 | 61 | 49 | 41 | 35 | 30 | 27 | 24 | 22 |
| | 90 | 1.80 | 230 | 134 | 107 | 89 | 76 | 67 | 53 | 45 | 38 | 33 | 30 | 27 | 24 |
| 15 | 15 | 0.92 | 118 | 68 | 55 | 46 | 39 | 34 | 27 | 23 | 19.5 | 17.1 | 15.2 | 13.7 | 12.4 |
| | 20 | 1.06 | 136 | 79 | 63 | 52 | 45 | 39 | 31 | 26 | 22 | 19.7 | 17.5 | 15.7 | 14.3 |
| | 30 | 1.30 | 166 | 97 | 77 | 64 | 55 | 48 | 39 | 32 | 28 | 24 | 21 | 19.3 | 17.6 |
| | 40 | 1.50 | 192 | 111 | 89 | 74 | 64 | 56 | 45 | 37 | 32 | 28 | 25 | 22 | 20 |
| | 50 | 1.68 | 215 | 125 | 100 | 83 | 71 | 62 | 50 | 42 | 36 | 31 | 28 | 25 | 23 |
| | 60 | 1.84 | 236 | 137 | 109 | 91 | 78 | 68 | 55 | 46 | 39 | 34 | 30 | 27 | 25 |
| | 75 | 2.05 | 262 | 152 | 122 | 101 | 87 | 76 | 61 | 51 | 43 | 38 | 34 | 30 | 28 |
| | 90 | 2.25 | 288 | 167 | 134 | 111 | 95 | 84 | 67 | 56 | 48 | 42 | 37 | 33 | 30 |
| 20 | 15 | 1.22 | 156 | 91 | 72 | 60 | 52 | 45 | 36 | 30 | 26 | 23 | 20 | 18.1 | 16.5 |
| | 20 | 1.41 | 180 | 105 | 84 | 70 | 60 | 52 | 42 | 35 | 30 | 26 | 23 | 21 | 19.0 |
| | 30 | 1.73 | 221 | 128 | 103 | 86 | 73 | 64 | 51 | 43 | 37 | 32 | 29 | 26 | 23 |
| | 40 | 2.00 | 256 | 149 | 119 | 99 | 85 | 74 | 59 | 50 | 42 | 37 | 33 | 30 | 27 |
| | 50 | 2.24 | 287 | 166 | 133 | 111 | 95 | 83 | 67 | 55 | 48 | 42 | 37 | 33 | 30 |
| | 60 | 2.45 | 314 | 182 | 146 | 121 | 104 | 91 | 73 | 61 | 52 | 45 | 40 | 36 | 33 |
| | 75 | 2.74 | 351 | 203 | 163 | 136 | 116 | 102 | 81 | 68 | 58 | 51 | 45 | 41 | 37 |
| | 90 | 3.00 | 384 | 223 | 178 | 149 | 127 | 111 | 89 | 74 | 64 | 56 | 50 | 45 | 41 |

**Note:** Always double check your application rates. Tabulations are based on spraying water at 70°F.

# UNIVERSAL APPLICATION RATE CHART FOR 30" TIP SPACING

| TIP CAPACITY | LIQUID PRESSURE IN PSI | CAPACITY ONE TIP IN GPM | CAPACITY ONE TIP IN OZ/MIN | GALLONS PER ACRE – 30" SPRAY TIP SPACING | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 4 MPH | 5 MPH | 6 MPH | 7 MPH | 8 MPH | 10 MPH | 12 MPH | 14 MPH | 16 MPH | 18 MPH | 20 MPH | 22 MPH |
| 01 | 15 | 0.061 | 7.8 | 3.0 | 2.4 | 2.0 | 1.7 | 1.5 | 1.2 | 1.0 | 0.86 | 0.75 | 0.67 | 0.60 | 0.55 |
| | 20 | 0.071 | 9.1 | 3.5 | 2.8 | 2.3 | 2.0 | 1.8 | 1.4 | 1.2 | 1.0 | 0.88 | 0.78 | 0.70 | 0.64 |
| | 30 | 0.087 | 11 | 4.3 | 3.4 | 2.9 | 2.5 | 2.2 | 1.7 | 1.4 | 1.2 | 1.1 | 0.96 | 0.86 | 0.78 |
| | 40 | 0.10 | 13 | 5.0 | 4.0 | 3.3 | 2.8 | 2.5 | 2.0 | 1.7 | 1.4 | 1.2 | 1.1 | 0.99 | 0.90 |
| | 50 | 0.11 | 14 | 5.4 | 4.4 | 3.6 | 3.1 | 2.7 | 2.2 | 1.8 | 1.6 | 1.4 | 1.2 | 1.1 | 0.99 |
| | 60 | 0.12 | 15 | 5.9 | 4.8 | 4.0 | 3.4 | 3.0 | 2.4 | 2.0 | 1.7 | 1.5 | 1.3 | 1.2 | 1.1 |
| | 75 | 0.14 | 18 | 6.9 | 5.5 | 4.6 | 4.0 | 3.5 | 2.8 | 2.3 | 2.0 | 1.7 | 1.5 | 1.4 | 1.3 |
| | 90 | 0.15 | 19 | 7.4 | 5.9 | 5.0 | 4.2 | 3.7 | 3.0 | 2.5 | 2.1 | 1.9 | 1.7 | 1.5 | 1.4 |
| 015 | 15 | 0.092 | 12 | 4.6 | 3.6 | 3.0 | 2.6 | 2.3 | 1.8 | 1.5 | 1.3 | 1.1 | 1.0 | 0.9 | 0.8 |
| | 20 | 0.11 | 14 | 5.4 | 4.4 | 3.6 | 3.1 | 2.7 | 2.2 | 1.8 | 1.6 | 1.4 | 1.2 | 1.1 | 1.0 |
| | 30 | 0.13 | 17 | 6.4 | 5.1 | 4.3 | 3.7 | 3.2 | 2.6 | 2.1 | 1.8 | 1.6 | 1.4 | 1.3 | 1.2 |
| | 40 | 0.15 | 19 | 7.4 | 5.9 | 5.0 | 4.2 | 3.7 | 3.0 | 2.5 | 2.1 | 1.9 | 1.7 | 1.5 | 1.4 |
| | 50 | 0.17 | 22 | 8.4 | 6.7 | 5.6 | 4.8 | 4.2 | 3.4 | 2.8 | 2.4 | 2.1 | 1.9 | 1.7 | 1.5 |
| | 60 | 0.18 | 23 | 8.9 | 7.1 | 5.9 | 5.1 | 4.5 | 3.6 | 3.0 | 2.5 | 2.2 | 2.0 | 1.8 | 1.6 |
| | 75 | 0.21 | 27 | 10.4 | 8.3 | 6.9 | 5.9 | 5.2 | 4.2 | 3.5 | 3.0 | 2.6 | 2.3 | 2.1 | 1.9 |
| | 90 | 0.23 | 29 | 11.4 | 9.1 | 7.6 | 6.5 | 5.7 | 4.6 | 3.8 | 3.3 | 2.8 | 2.5 | 2.3 | 2.1 |
| 02 | 15 | 0.12 | 15 | 5.9 | 4.8 | 4.0 | 3.4 | 3.0 | 2.4 | 2.0 | 1.7 | 1.5 | 1.3 | 1.2 | 1.1 |
| | 20 | 0.14 | 18 | 6.9 | 5.5 | 4.6 | 4.0 | 3.5 | 2.8 | 2.3 | 2.0 | 1.7 | 1.5 | 1.4 | 1.3 |
| | 30 | 0.17 | 22 | 8.4 | 6.7 | 5.6 | 4.8 | 4.2 | 3.4 | 2.8 | 2.4 | 2.1 | 1.9 | 1.7 | 1.5 |
| | 40 | 0.20 | 26 | 9.9 | 7.9 | 6.6 | 5.7 | 5.0 | 4.0 | 3.3 | 2.8 | 2.5 | 2.2 | 2.0 | 1.8 |
| | 50 | 0.22 | 28 | 10.9 | 8.7 | 7.3 | 6.2 | 5.4 | 4.4 | 3.6 | 3.1 | 2.7 | 2.4 | 2.2 | 2.0 |
| | 60 | 0.24 | 31 | 11.9 | 9.5 | 7.9 | 6.8 | 5.9 | 4.8 | 4.0 | 3.4 | 3.0 | 2.6 | 2.4 | 2.2 |
| | 75 | 0.27 | 35 | 13.4 | 10.7 | 8.9 | 7.6 | 6.7 | 5.3 | 4.5 | 3.8 | 3.3 | 3.0 | 2.7 | 2.4 |
| | 90 | 0.30 | 38 | 14.9 | 11.9 | 9.9 | 8.5 | 7.4 | 5.9 | 5.0 | 4.2 | 3.7 | 3.3 | 3.0 | 2.7 |
| 025 | 15 | 0.15 | 19 | 7.4 | 5.9 | 5.0 | 4.2 | 3.7 | 3.0 | 2.5 | 2.1 | 1.9 | 1.7 | 1.5 | 1.4 |
| | 20 | 0.18 | 23 | 8.9 | 7.1 | 5.9 | 5.1 | 4.5 | 3.6 | 3.0 | 2.5 | 2.2 | 2.0 | 1.8 | 1.6 |
| | 30 | 0.22 | 28 | 10.9 | 8.7 | 7.3 | 6.2 | 5.4 | 4.4 | 3.6 | 3.1 | 2.7 | 2.4 | 2.2 | 2.0 |
| | 40 | 0.25 | 32 | 12.4 | 9.9 | 8.3 | 7.1 | 6.2 | 5.0 | 4.1 | 3.5 | 3.1 | 2.8 | 2.5 | 2.3 |
| | 50 | 0.28 | 36 | 13.9 | 11.1 | 9.2 | 7.9 | 6.9 | 5.5 | 4.6 | 4.0 | 3.5 | 3.1 | 2.8 | 2.5 |
| | 60 | 0.31 | 40 | 15.3 | 12.3 | 10.2 | 8.8 | 7.7 | 6.1 | 5.1 | 4.4 | 3.8 | 3.4 | 3.1 | 2.8 |
| | 75 | 0.34 | 44 | 16.8 | 13.5 | 11.2 | 9.6 | 8.4 | 6.7 | 5.6 | 4.8 | 4.2 | 3.7 | 3.4 | 3.1 |
| | 90 | 0.38 | 49 | 18.8 | 15.0 | 12.5 | 10.7 | 9.4 | 7.5 | 6.3 | 5.4 | 4.7 | 4.2 | 3.8 | 3.4 |
| 03 | 15 | 0.18 | 23 | 8.9 | 7.1 | 5.9 | 5.1 | 4.5 | 3.6 | 3.0 | 2.5 | 2.2 | 2.0 | 1.8 | 1.6 |
| | 20 | 0.21 | 27 | 10.4 | 8.3 | 6.9 | 5.9 | 5.2 | 4.2 | 3.5 | 3.0 | 2.6 | 2.3 | 2.1 | 1.9 |
| | 30 | 0.26 | 33 | 12.9 | 10.3 | 8.6 | 7.4 | 6.4 | 5.1 | 4.3 | 3.7 | 3.2 | 2.9 | 2.6 | 2.3 |
| | 40 | 0.30 | 38 | 14.9 | 11.9 | 9.9 | 8.5 | 7.4 | 5.9 | 5.0 | 4.2 | 3.7 | 3.3 | 3.0 | 2.7 |
| | 50 | 0.34 | 44 | 16.8 | 13.5 | 11.2 | 9.6 | 8.4 | 6.7 | 5.6 | 4.8 | 4.2 | 3.7 | 3.4 | 3.1 |
| | 60 | 0.37 | 47 | 18.3 | 14.7 | 12.2 | 10.5 | 9.2 | 7.3 | 6.1 | 5.2 | 4.6 | 4.1 | 3.7 | 3.3 |
| | 75 | 0.41 | 52 | 20 | 16.2 | 13.5 | 11.6 | 10.1 | 8.1 | 6.8 | 5.8 | 5.1 | 4.5 | 4.1 | 3.7 |
| | 90 | 0.45 | 58 | 22 | 17.8 | 14.9 | 12.7 | 11.1 | 8.9 | 7.4 | 6.4 | 5.6 | 5.0 | 4.5 | 4.1 |
| 035 | 15 | 0.21 | 27 | 10.4 | 8.3 | 6.9 | 5.9 | 5.2 | 4.2 | 3.5 | 3.0 | 2.6 | 2.3 | 2.1 | 1.9 |
| | 20 | 0.25 | 32 | 12.4 | 9.9 | 8.3 | 7.1 | 6.2 | 5.0 | 4.1 | 3.5 | 3.1 | 2.8 | 2.5 | 2.3 |
| | 30 | 0.30 | 38 | 14.9 | 11.9 | 9.9 | 8.5 | 7.4 | 5.9 | 5.0 | 4.2 | 3.7 | 3.3 | 3.0 | 2.7 |
| | 40 | 0.35 | 45 | 17.3 | 13.9 | 11.6 | 9.9 | 8.7 | 6.9 | 5.8 | 5.0 | 4.3 | 3.9 | 3.5 | 3.2 |
| | 50 | 0.39 | 50 | 19.3 | 15.4 | 12.9 | 11.0 | 9.7 | 7.7 | 6.4 | 5.5 | 4.8 | 4.3 | 3.9 | 3.5 |
| | 60 | 0.43 | 55 | 21 | 17.0 | 14.2 | 12.2 | 10.6 | 8.5 | 7.1 | 6.1 | 5.3 | 4.7 | 4.3 | 3.9 |
| | 75 | 0.48 | 61 | 24 | 19.0 | 15.8 | 13.6 | 11.9 | 9.5 | 7.9 | 6.8 | 5.9 | 5.3 | 4.8 | 4.3 |
| | 90 | 0.53 | 68 | 26 | 21 | 17.5 | 15.0 | 13.1 | 10.5 | 8.7 | 7.5 | 6.6 | 5.8 | 5.2 | 4.8 |
| 04 | 15 | 0.24 | 31 | 11.9 | 9.5 | 7.9 | 6.8 | 5.9 | 4.8 | 4.0 | 3.4 | 3.0 | 2.6 | 2.4 | 2.2 |
| | 20 | 0.28 | 36 | 13.9 | 11.1 | 9.2 | 7.9 | 6.9 | 5.5 | 4.6 | 4.0 | 3.5 | 3.1 | 2.8 | 2.5 |
| | 30 | 0.35 | 45 | 17.3 | 13.9 | 11.6 | 9.9 | 8.7 | 6.9 | 5.8 | 5.0 | 4.3 | 3.9 | 3.5 | 3.2 |
| | 40 | 0.40 | 51 | 19.8 | 15.8 | 13.2 | 11.3 | 9.9 | 7.9 | 6.6 | 5.7 | 5.0 | 4.4 | 4.0 | 3.6 |
| | 50 | 0.45 | 58 | 22 | 17.8 | 14.9 | 12.7 | 11.1 | 8.9 | 7.4 | 6.4 | 5.6 | 5.0 | 4.5 | 4.1 |
| | 60 | 0.49 | 63 | 24 | 19.4 | 16.2 | 13.9 | 12.1 | 9.7 | 8.1 | 6.9 | 6.1 | 5.4 | 4.9 | 4.4 |
| | 75 | 0.55 | 70 | 27 | 22 | 18.2 | 15.6 | 13.6 | 10.9 | 9.1 | 7.8 | 6.8 | 6.1 | 5.4 | 5.0 |
| | 90 | 0.60 | 77 | 30 | 24 | 19.8 | 17.0 | 14.9 | 11.9 | 9.9 | 8.5 | 7.4 | 6.6 | 5.9 | 5.4 |
| 05 | 15 | 0.31 | 40 | 15.3 | 12.3 | 10.2 | 8.8 | 7.7 | 6.1 | 5.1 | 4.4 | 3.8 | 3.4 | 3.1 | 2.8 |
| | 20 | 0.35 | 45 | 17.3 | 13.9 | 11.6 | 9.9 | 8.7 | 6.9 | 5.8 | 5.0 | 4.3 | 3.9 | 3.5 | 3.2 |
| | 30 | 0.43 | 55 | 21 | 17.0 | 14.2 | 12.2 | 10.6 | 8.5 | 7.1 | 6.1 | 5.3 | 4.7 | 4.3 | 3.9 |
| | 40 | 0.50 | 64 | 25 | 19.8 | 16.5 | 14.1 | 12.4 | 9.9 | 8.3 | 7.1 | 6.2 | 5.5 | 5.0 | 4.5 |
| | 50 | 0.56 | 72 | 28 | 22 | 18.5 | 15.8 | 13.9 | 11.1 | 9.2 | 7.9 | 6.9 | 6.2 | 5.5 | 5.0 |
| | 60 | 0.61 | 78 | 30 | 24 | 20 | 17.3 | 15.1 | 12.1 | 10.1 | 8.6 | 7.5 | 6.7 | 6.0 | 5.5 |
| | 75 | 0.68 | 87 | 34 | 27 | 22 | 19.2 | 16.8 | 13.5 | 11.2 | 9.6 | 8.4 | 7.5 | 6.7 | 6.1 |
| | 90 | 0.75 | 96 | 37 | 30 | 25 | 21 | 18.6 | 14.9 | 12.4 | 10.6 | 9.3 | 8.3 | 7.4 | 6.8 |
| 06 | 15 | 0.37 | 47 | 18.3 | 14.7 | 12.2 | 10.5 | 9.2 | 7.3 | 6.1 | 5.2 | 4.6 | 4.1 | 3.7 | 3.3 |
| | 20 | 0.42 | 54 | 21 | 16.6 | 13.9 | 11.9 | 10.4 | 8.3 | 6.9 | 5.9 | 5.2 | 4.6 | 4.2 | 3.8 |
| | 30 | 0.52 | 67 | 26 | 21 | 17.2 | 14.7 | 12.9 | 10.3 | 8.6 | 7.4 | 6.4 | 5.7 | 5.1 | 4.7 |
| | 40 | 0.60 | 77 | 30 | 24 | 19.8 | 17.0 | 14.9 | 11.9 | 9.9 | 8.5 | 7.4 | 6.6 | 5.9 | 5.4 |
| | 50 | 0.67 | 86 | 33 | 27 | 22 | 19.0 | 16.6 | 13.3 | 11.1 | 9.5 | 8.3 | 7.4 | 6.6 | 6.0 |
| | 60 | 0.73 | 93 | 36 | 29 | 24 | 21 | 18.1 | 14.5 | 12.0 | 10.3 | 9.0 | 8.0 | 7.2 | 6.6 |
| | 75 | 0.82 | 105 | 41 | 32 | 27 | 23 | 20 | 16.2 | 13.5 | 11.6 | 10.1 | 9.0 | 8.1 | 7.4 |
| | 90 | 0.90 | 115 | 45 | 36 | 30 | 25 | 22 | 17.8 | 14.9 | 12.7 | 11.1 | 9.9 | 8.9 | 8.1 |
| 08 | 15 | 0.49 | 63 | 24 | 19.4 | 16.2 | 13.9 | 12.1 | 9.7 | 8.1 | 6.9 | 6.1 | 5.4 | 4.9 | 4.4 |
| | 20 | 0.57 | 73 | 28 | 23 | 18.8 | 16.1 | 14.1 | 11.3 | 9.4 | 8.1 | 7.1 | 6.3 | 5.6 | 5.1 |
| | 30 | 0.69 | 88 | 34 | 27 | 23 | 19.5 | 17.1 | 13.7 | 11.4 | 9.8 | 8.5 | 7.6 | 6.8 | 6.2 |
| | 40 | 0.80 | 102 | 40 | 32 | 26 | 23 | 19.8 | 15.8 | 13.2 | 11.3 | 9.9 | 8.8 | 7.9 | 7.2 |
| | 50 | 0.89 | 114 | 44 | 35 | 29 | 25 | 22 | 17.6 | 14.7 | 12.6 | 11.0 | 9.8 | 8.8 | 8.0 |
| | 60 | 0.98 | 125 | 49 | 39 | 32 | 28 | 24 | 19.4 | 16.2 | 13.9 | 12.1 | 10.8 | 9.7 | 8.8 |
| | 75 | 1.10 | 141 | 54 | 44 | 36 | 31 | 27 | 22 | 18.2 | 15.6 | 13.6 | 12.1 | 10.9 | 9.9 |
| | 90 | 1.20 | 154 | 59 | 48 | 40 | 34 | 30 | 24 | 19.8 | 17.0 | 14.9 | 13.2 | 11.9 | 10.8 |
| 10 | 15 | 0.61 | 78 | 30 | 24 | 20 | 17.3 | 15.1 | 12.1 | 10.1 | 8.6 | 7.5 | 6.7 | 6.0 | 5.5 |
| | 20 | 0.71 | 91 | 35 | 28 | 23 | 20 | 17.6 | 14.1 | 11.7 | 10.0 | 8.8 | 7.8 | 7.0 | 6.4 |
| | 30 | 0.87 | 111 | 43 | 34 | 29 | 25 | 22 | 17.2 | 14.4 | 12.3 | 10.8 | 9.6 | 8.6 | 7.8 |
| | 40 | 1.00 | 128 | 50 | 40 | 33 | 28 | 25 | 19.8 | 16.5 | 14.1 | 12.4 | 11.0 | 9.9 | 9.0 |
| | 50 | 1.12 | 143 | 55 | 44 | 37 | 32 | 28 | 22 | 18.5 | 15.8 | 13.9 | 12.3 | 11.1 | 10.1 |
| | 60 | 1.22 | 156 | 60 | 48 | 40 | 35 | 30 | 24 | 20 | 17.3 | 15.1 | 13.4 | 12.1 | 11.0 |
| | 75 | 1.37 | 175 | 68 | 54 | 45 | 39 | 34 | 27 | 23 | 19.4 | 17.0 | 15.1 | 13.6 | 12.3 |
| | 90 | 1.50 | 192 | 74 | 59 | 50 | 42 | 37 | 30 | 25 | 21 | 18.6 | 16.5 | 14.9 | 13.5 |
| 12 | 15 | 0.73 | 93 | 36 | 29 | 24 | 21 | 18.1 | 14.5 | 12.0 | 10.3 | 9.0 | 8.0 | 7.2 | 6.6 |
| | 20 | 0.85 | 109 | 42 | 34 | 28 | 24 | 21 | 16.8 | 14.0 | 12.0 | 10.5 | 9.4 | 8.4 | 7.7 |
| | 30 | 1.04 | 133 | 51 | 41 | 34 | 29 | 26 | 21 | 17.2 | 14.7 | 12.9 | 11.4 | 10.3 | 9.4 |
| | 40 | 1.20 | 154 | 59 | 48 | 40 | 34 | 30 | 24 | 19.8 | 17.0 | 14.9 | 13.2 | 11.9 | 10.8 |
| | 50 | 1.34 | 172 | 66 | 53 | 44 | 38 | 33 | 27 | 22 | 19.0 | 16.6 | 14.7 | 13.3 | 12.1 |
| | 60 | 1.47 | 188 | 73 | 58 | 49 | 42 | 36 | 29 | 24 | 21 | 18.2 | 16.2 | 14.6 | 13.2 |
| | 75 | 1.64 | 210 | 81 | 65 | 54 | 46 | 41 | 32 | 27 | 23 | 20 | 18.0 | 16.2 | 14.8 |
| | 90 | 1.80 | 230 | 89 | 71 | 59 | 51 | 45 | 36 | 30 | 25 | 22 | 19.8 | 17.8 | 16.2 |
| 15 | 15 | 0.92 | 118 | 46 | 36 | 30 | 26 | 23 | 18.2 | 15.2 | 13.0 | 11.4 | 10.1 | 9.1 | 8.3 |
| | 20 | 1.06 | 136 | 52 | 42 | 35 | 30 | 26 | 21 | 17.5 | 15.0 | 13.1 | 11.7 | 10.5 | 9.5 |
| | 30 | 1.30 | 166 | 64 | 51 | 43 | 37 | 32 | 26 | 21 | 18.4 | 16.1 | 14.3 | 12.9 | 11.7 |
| | 40 | 1.50 | 192 | 74 | 59 | 50 | 42 | 37 | 30 | 25 | 21 | 18.6 | 16.5 | 14.9 | 13.5 |
| | 50 | 1.68 | 215 | 83 | 67 | 55 | 48 | 42 | 33 | 28 | 24 | 21 | 18.5 | 16.6 | 15.1 |
| | 60 | 1.84 | 236 | 91 | 73 | 61 | 52 | 46 | 36 | 30 | 26 | 23 | 20 | 18.2 | 16.6 |
| | 75 | 2.05 | 262 | 101 | 81 | 68 | 58 | 51 | 41 | 34 | 29 | 25 | 23 | 20 | 18.5 |
| | 90 | 2.25 | 288 | 111 | 89 | 74 | 64 | 56 | 45 | 37 | 32 | 28 | 25 | 22 | 20 |
| 20 | 15 | 1.22 | 156 | 60 | 48 | 40 | 35 | 30 | 24 | 20 | 17.3 | 15.1 | 13.4 | 12.1 | 11.0 |
| | 20 | 1.41 | 180 | 70 | 56 | 47 | 40 | 35 | 28 | 23 | 19.9 | 17.4 | 15.5 | 14.0 | 12.7 |
| | 30 | 1.73 | 221 | 86 | 69 | 57 | 49 | 43 | 34 | 29 | 24 | 21 | 19.0 | 17.1 | 15.6 |
| | 40 | 2.00 | 256 | 99 | 79 | 66 | 57 | 50 | 40 | 33 | 28 | 25 | 22 | 19.8 | 18.0 |
| | 50 | 2.24 | 287 | 111 | 89 | 74 | 63 | 55 | 44 | 37 | 32 | 28 | 25 | 22 | 20 |
| | 60 | 2.45 | 314 | 121 | 97 | 81 | 69 | 61 | 49 | 40 | 35 | 30 | 27 | 24 | 22 |
| | 75 | 2.74 | 351 | 136 | 109 | 90 | 78 | 68 | 54 | 45 | 39 | 34 | 30 | 27 | 25 |
| | 90 | 3.00 | 384 | 149 | 119 | 99 | 85 | 74 | 59 | 50 | 42 | 37 | 33 | 30 | 27 |

**Note:** Always double check your application rates. Tabulations are based on spraying water at 70°F.

## WATER SENSITIVE PAPER

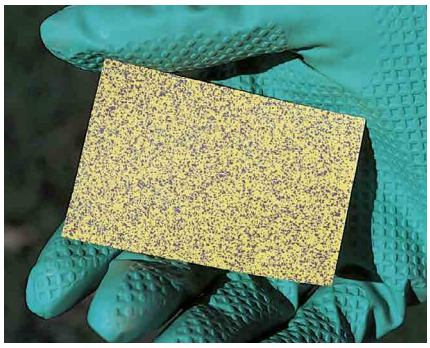
These specially coated papers are used for evaluating spray distributions, swath widths, droplet densities and penetration of spray. Water sensitive paper is yellow and is stained blue by exposure to aqueous spray droplets. For more information on water sensitive paper see Data Sheet 20301.

Water sensitive paper sold by TeeJet Technologies is manufactured by Syngenta Crop Protection AG.

| PART NUMBER | PAPER SIZE (IN) | QTY/PKG |
|---|---|---|
| 20301-1N | 3 x 1 | 50 Cards |
| 20301-2N | 3 x 2 | 50 Cards |
| 20301-3N | 20 x 1 | 25 Strips |

### HOW TO ORDER

2 0 3 0 1 - 1 N



## TEEJET TIP CLEANING BRUSH

### HOW TO ORDER

C P 2 0 0 1 6 - N Y

## TEEJET CALIBRATION CONTAINER

The TeeJet Calibration Container features a 68 oz capacity and a raised dual scale in both U.S. and metric graduations. The container is molded of polypropylene for excellent chemical resistance and durability.

### HOW TO ORDER

C P 2 4 0 3 4 A - P P


## USEFUL FORMULAS

$$\text{GPM (per nozzle)} = \frac{\text{GPA x MPH x W}}{5{,}940}$$

$$\text{GPM (per nozzle)} = \frac{\text{GAL/1000 ft}^2 \text{ x MPH x W}}{136}$$

$$\text{GPA} = \frac{5{,}940 \text{ x GPM (per nozzle)}}{\text{MPH x W}}$$

$$\text{GAL/1000 ft}^2 = \frac{136 \text{ x GPM (per nozzle)}}{\text{MPH x W}}$$

GPM – Gallons per minute

GPA – Gallons per acre

GAL/1000 ft² – Gallons per 1000 square feet

MPH – Miles per hour

W – Nozzle spacing (in inches) for broadcast spraying
– Spray width (in inches) for single nozzle, band spraying or boomless spraying
– Row spacing (in inches) divided by the number of nozzles per row for directed spraying

## USEFUL FORMULAS FOR ROADWAY APPLICATIONS

$$\text{GPLM} = \frac{60 \text{ x GPM}}{\text{MPH}} \qquad \text{GPM} = \frac{\text{GPLM x MPH}}{60}$$

GPLM = Gallons per lane mile

**Note:** GPLM is not a normal volume per unit area measurement. It is a volume per distance measurement. Increases or decreases in lane width (swath width) are not accommodated by these formulas.

## MEASURING TRAVEL SPEED

Measure a test course in the area to be sprayed or in an area with similar surface conditions. Minimum lengths of 100 and 200 feet are recommended for measuring speeds up to 5 and 10 MPH, respectively. Determine the time required to travel the test course. To help ensure accuracy, conduct the speed check with a partially loaded (about half full) sprayer and select the engine throttle setting and gear that will be used when spraying. Repeat the above process and average the times that were measured. Use the following equation or the table at right to determine ground speed.

$$\text{Speed (MPH)} = \frac{\text{Distance (FT) x 60}}{\text{Time (seconds) x 88}}$$

## SPEEDS

| SPEED IN MPH | TIME REQUIRED IN SECONDS TO TRAVEL A DISTANCE OF: | | |
|---|---|---|---|
| | 100 FT | 200 FT | 300 FT |
| 1.0 | 68 | 136 | 205 |
| 1.5 | 45 | 91 | 136 |
| 2.0 | 34 | 68 | 102 |
| 2.5 | 27 | 55 | 82 |
| 3.0 | 23 | 45 | 68 |
| 3.5 | 19 | 39 | 58 |
| 4.0 | 17 | 34 | 51 |
| 4.5 | 15 | 30 | 45 |
| 5.0 | 14 | 27 | 41 |
| 5.5 | — | 25 | 37 |
| 6.0 | — | 23 | 34 |
| 6.5 | — | 21 | 31 |
| 7.0 | — | 19 | 29 |
| 7.5 | — | 18 | 27 |
| 8.0 | — | 17 | 26 |
| 8.5 | — | 16 | 24 |
| 9.0 | — | 15 | 23 |

## NOZZLE SPACING

If the nozzle spacing on your boom is different than those tabulated, multiply the tabulated GPA coverages by one of the following factors. Different application rate charts for different spacing can be found on pages 179–182.

| 20" SPACING | |
|---|---|
| OTHER SPACING (IN) | CONVERSION FACTOR |
| 8 | 2.5 |
| 10 | 2 |
| 12 | 1.67 |
| 14 | 1.43 |
| 16 | 1.25 |
| 18 | 1.11 |
| 22 | 0.83 |
| 24 | 0.71 |
| 30 | 0.66 |

| 30" SPACING | |
|---|---|
| OTHER SPACING (IN) | CONVERSION FACTOR |
| 26 | 1.15 |
| 28 | 1.07 |
| 32 | 0.94 |
| 34 | 0.88 |
| 36 | 0.83 |
| 38 | 0.79 |
| 40 | 0.75 |
| 42 | 0.71 |
| 44 | 0.68 |

| 40" SPACING | |
|---|---|
| OTHER SPACING (IN) | CONVERSION FACTOR |
| 28 | 1.43 |
| 30 | 1.33 |
| 32 | 1.25 |
| 34 | 1.18 |
| 36 | 1.11 |
| 38 | 1.05 |
| 42 | 0.95 |
| 44 | 0.91 |
| 48 | 0.83 |

## MISCELLANEOUS CONVERSION FACTORS

| | | |
|---|---|---|
| 1 Acre | = | 43,560 square feet |
| | = | 43.56 1000 ft² Blocks |
| | = | 0.405 Hectare |
| 1 Hectare | = | 2.471 Acres |
| 1 GPA | = | 2.9 fl oz per 1000 ft² |
| | = | 9.35 L/ha |
| 1 GAL per 1000 ft² | = | 43.56 GPA |
| 1 Mile | = | 5,280 ft; 1,610 m |
| | = | 1.61 Kilometers |
| 1 Gallon | = | 128 fl oz; 8 Pints |
| | = | 4 Quarts; 3.79 Liters |
| | = | 0.83 Imperial Gallon |
| 1 PSI | = | 0.069 bar |
| | = | 6.896 kilopascals |
| 1 MPH | = | 1.609 KPH |

## SUGGESTED MINIMUM SPRAY HEIGHTS

The nozzle height suggestions in the table below are based on the minimum overlap required to obtain uniform distribution. However, in many cases, typical height adjustments are based on a 1:1 nozzle spacing to height ratio. For example, 110° flat spray tips spaced 20" apart are commonly set 20" above the target.

| TIP MODEL | ANGLE | HEIGHT (INCHES) | | |
|---|---|---|---|---|
| | | 20" SPACING | 30" SPACING | 40" SPACING |
| TP, TJ | 65° | 22–24 | 33–35 | NR* |
| TP, XR, TX, DG, TJ, AI, XRC | 80° | 17–19 | 26–28 | NR* |
| TP, XR, DG, TT, TTI, TJ, DGTJ, AI, AIXR, AIC, XRC, TTJ, AITTJ, TTI60, APTJ | 110° | 16–18 | 20–22 | NR* |
| FullJet® | 120° | 10–18** | 14–18** | 14–18** |
| FloodJet® TK, TF, K, QCK, QCTF, 1/4TTJ | 120° | 14–16*** | 15–17*** | 18–20*** |

* Not recommended.

** Nozzle height based on 30°–45° angle of orientation.

*** Wide angle spray tip height is influenced by nozzle orientation. The critical factor is to achieve a double spray pattern overlap.

## SPRAYING LIQUIDS WITH A DENSITY OTHER THAN WATER

Since all the tabulations in this catalog are based on spraying water, which weighs 8.34 lbs per USA gallon, conversion factors must be used when spraying liquids that are heavier or lighter than water. To determine the proper size nozzle for the liquid to be sprayed, first multiply the desired GPM or GPA of liquid by the water rate conversion factor. Then use the new converted GPM or GPA rate to select the proper size nozzle.

**Example:**

Desired application rate is 20 GPA of 28% N. Determine the correct nozzle size as follows:

GPA (liquid other than water) x Conversion factor = GPA (from table in catalog)

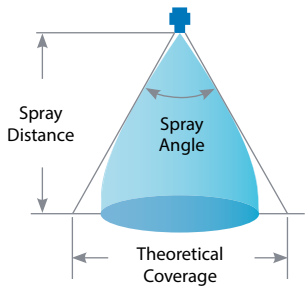
20 GPA (28%) x 1.13 = 22.6 GPA (Water)

The applicator should choose a nozzle size that will supply 22.6 GPA of water at the desired pressure.

| WEIGHT OF SOLUTION | SPECIFIC GRAVITY | CONVERSION FACTOR |
|---|---|---|
| 7.0 lbs/gal | 0.84 | 0.92 |
| 8.0 lbs/gal | 0.96 | 0.98 |
| 8.34 lbs/gal | 1.00–Water | 1.00 |
| 9.0 lbs/gal | 1.08 | 1.04 |
| 10.0 lbs/gal | 1.20 | 1.10 |
| 10.65 lbs/gal | 1.28–28% Nitrogen | 1.13 |
| 11.0 lbs/gal | 1.32 | 1.15 |
| 12.0 lbs/gal | 1.44 | 1.20 |
| 14.0 lbs/gal | 1.68 | 1.30 |

## SPRAY COVERAGE INFORMATION

This table lists the theoretical coverage of spray patterns as calculated from the included spray angle of the spray and the distance from the nozzle orifice. These values are based on the assumption that the spray angle remains the same throughout the entire spray distance. In actual practice, the tabulated spray angle does not hold for long spray distances.

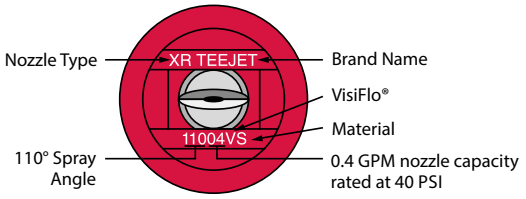



| INCLUDED SPRAY ANGLE | THEORETICAL COVERAGE AT VARIOUS SPRAY HEIGHTS | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 8" | 10" | 12" | 15" | 18" | 24" | 30" | 36" |
| 15° | 2.1 | 2.6 | 3.2 | 3.9 | 4.7 | 6.3 | 7.9 | 9.5 |
| 20° | 2.8 | 3.5 | 4.2 | 5.3 | 6.4 | 8.5 | 10.6 | 12.7 |
| 25° | 3.5 | 4.4 | 5.3 | 6.6 | 8.0 | 10.6 | 13.3 | 15.9 |
| 30° | 4.3 | 5.4 | 6.4 | 8.1 | 9.7 | 12.8 | 16.1 | 19.3 |
| 35° | 5.0 | 6.3 | 7.6 | 9.5 | 11.3 | 15.5 | 18.9 | 22.7 |
| 40° | 5.8 | 7.3 | 8.7 | 10.9 | 13.1 | 17.5 | 21.8 | 26.2 |
| 45° | 6.6 | 8.3 | 9.9 | 12.4 | 14.9 | 19.9 | 24.8 | 29.8 |
| 50° | 7.5 | 9.3 | 11.2 | 14.0 | 16.8 | 22.4 | 28.0 | 33.6 |
| 55° | 8.3 | 10.3 | 12.5 | 15.6 | 18.7 | 25.0 | 31.2 | 37.5 |
| 60° | 9.2 | 11.5 | 13.8 | 17.3 | 20.6 | 27.7 | 34.6 | 41.6 |
| 65° | 10.2 | 12.7 | 15.3 | 19.2 | 22.9 | 30.5 | 38.2 | 45.8 |
| 73° | 11.8 | 14.8 | 17.8 | 22.0 | 27.0 | 36.0 | 44.0 | 53.0 |
| 80° | 13.4 | 16.8 | 20.2 | 25.2 | 30.3 | 40.3 | 50.4 | 60.4 |
| 85° | 14.7 | 18.3 | 22.0 | 27.5 | 33.0 | 44.0 | 55.4 | 66.4 |
| 90° | 16.0 | 20.0 | 24.0 | 30.0 | 36.0 | 48.0 | 60.0 | 72.0 |
| 95° | 17.5 | 21.8 | 26.2 | 32.8 | 40.3 | 52.4 | 65.5 | 78.6 |
| 100° | 19.1 | 23.8 | 28.6 | 35.8 | 43.0 | 57.2 | 71.6 | 85.9 |
| 110° | 22.8 | 28.5 | 34.3 | 42.8 | 51.4 | 68.5 | 85.6 | 103 |
| 120° | 27.7 | 34.6 | 41.6 | 52.0 | 62.4 | 83.2 | 104 | |
| 130° | 34.3 | 42.9 | 51.5 | 64.4 | 77.3 | 103 | | |
| 140° | 43.8 | 54.8 | 65.7 | 82.2 | 98.6 | | | |
| 150° | 59.6 | 74.5 | 89.5 | | | | | |

## NOZZLE NOMENCLATURE

There are many types of nozzles available, with each providing different flow rates, spray angles, droplet sizes and patterns. Some of these spray tip characteristics are indicated by the tip number.

**Remember, when replacing tips, be sure to purchase the same tip type, angle, and capacity, thereby ensuring your sprayer remains properly calibrated.**



# INFORMATION ABOUT SPRAY PRESSURE

## FLOW RATE

Nozzle flow rate varies with spraying pressure. In general, the relationship between GPM and pressure is as follows:

$$\frac{GPM_1}{GPM_2} = \frac{\sqrt{PSI_1}}{\sqrt{PSI_2}}$$

This equation is explained by the illustration to the right. Simply stated, in order to double the flow through a nozzle, the pressure must be increased four times.

Higher pressure not only increases the flow rate through a nozzle, but it also influences the droplet size, spray angle, and the rate of orifice wear. As pressure is increased, the droplet size decreases and the rate of orifice wear increases.

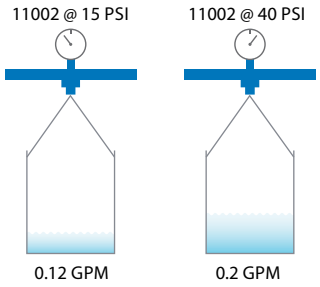
The values given in the tabulation sections of this catalog indicate the most commonly used pressure ranges for the associated spray tips. When information on the performance of spray tips outside of the pressure range given in this catalog is required, contact TeeJet Technologies or your local rep.

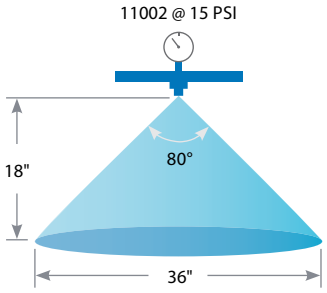
## SPRAY ANGLE & COVERAGE

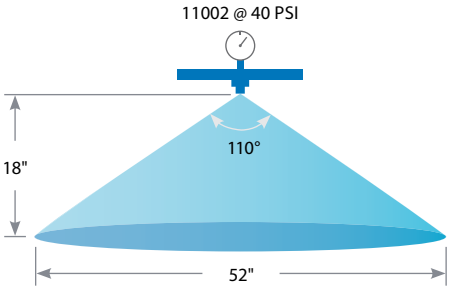
Depending on the nozzle type and size, the operating pressure can have a significant effect on spray angle and quality of spray distribution. As shown here for an 11002 flat spray tip, lowering the pressure results in a smaller spray angle and a significant reduction in spray coverage.

Tabulations for spray tips in this catalog are based on spraying water. Generally, liquids more viscous than water produce relatively smaller spray angles, while liquids with surface tensions lower than water will produce wider spray angles. In situations where the uniformity of spray distribution is important, be careful to operate your spray tips within the proper pressure range.

**Note:** Suggested minimum spray heights for broadcast spraying are based upon nozzles spraying water at the rated spray angle.



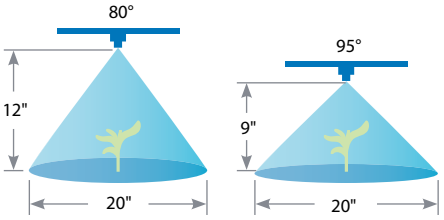

## PRESSURE DROP THROUGH VARIOUS HOSE SIZES

| FLOW IN GPM | PRESSURE DROP IN PSI (10' LENGTH WITHOUT COUPLINGS) | | | | |
|---|---|---|---|---|---|
| | ¼" I.D. | 3/8" I.D. | ½" I.D. | ¾" I.D. | 1" I.D. |
| 0.5 | 1.4 | .2 | | | |
| 1.0 | | .7 | | | |
| 1.5 | | 1.4 | .4 | | |
| 2.0 | | 2.4 | .6 | | |
| 2.5 | | 3.4 | .9 | | |
| 3.0 | | | 1.2 | | |
| 4.0 | | | 2.0 | | |
| 5.0 | | | 2.9 | .4 | |
| 6.0 | | | 4.0 | .6 | |
| 8.0 | | | | .9 | .3 |
| 10.0 | | | | 1.4 | .4 |

## HELPFUL REMINDERS FOR BAND SPRAYING

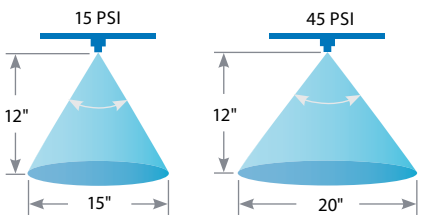
Wider angle spray tips allow the spray height to be lowered to minimize drift.

**Example:** Even Flat Spray




The spray angle of the nozzle and the resulting band width are directly influenced by the spraying pressure.

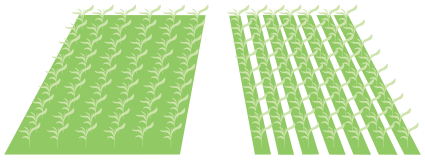
**Example:** 8002E Even Flat Spray




**Use Care When Calculating:**
Field Acres/Hectares vs. Treated Acres/Hectares

$$\text{Field Acres/Hectares} = \text{Total Acres/Hectares of Planted Cropland}$$

$$\text{Treated Acres/Hectares} = \text{Field Acres/Hectares} \times \frac{\text{Band Width}}{\text{Row Spacing}}$$



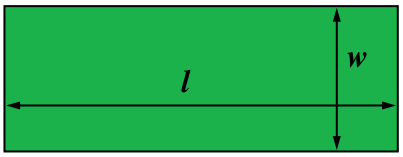
# PRESSURE DROP THROUGH SPRAYER COMPONENTS

| COMPONENT NUMBER | TYPICAL PRESSURE DROP (PSI) AT VARIOUS FLOW RATES (GPM) | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0.5 GPM | 1.0 GPM | 2.0 GPM | 3.0 GPM | 4.0 GPM | 5.0 GPM | 6.0 GPM | 7.0 GPM | 8.0 GPM | 9.0 GPM | 10 GPM | 15 GPM | 18 GPM | 24 GPM | 32 GPM | 48 GPM | 64 GPM | 75 GPM | 100 GPM | 125 GPM | 150 GPM | 200 GPM |
| **AA2 GunJet** | | 0.2 | 0.9 | 2.0 | 3.4 | 5.3 | 7.3 | 10.0 | 13.0 | 16.0 | | | | | | | | | | | | |
| **AA18 GunJet** | | 0.6 | 2.2 | 5.0 | 8.3 | 13.0 | 18.4 | 25.0 | 33.0 | 40.0 | | | | | | | | | | | | |
| **AA30L GunJet** | | 0.6 | 2.2 | 5.0 | 9.0 | 14.0 | 20.2 | 27.5 | | | | | | | | | | | | | | |
| **AA43 GunJet** | | | | 0.4 | 0.6 | 1.0 | 1.5 | 2.0 | 2.6 | 3.3 | 4.1 | 9.2 | 13.2 | | | | | | | | | |
| **AA143 GunJet** | | | | 0.3 | 0.6 | 0.9 | 1.3 | 1.7 | 2.2 | 2.8 | 3.5 | 7.9 | 11.3 | | | | | | | | | |
| **AA6B Valve** | | | | 0.3 | 0.6 | 0.9 | 1.3 | 1.7 | 2.2 | 2.8 | 3.5 | 7.8 | 11.3 | 20.0 | | | | | | | | |
| **AA17 Valve** | | | 0.2 | 0.5 | 0.8 | 1.3 | 1.8 | 2.5 | 3.2 | 4.1 | 5.0 | 11.3 | 16.2 | 28.8 | | | | | | | | |
| **AA144A/144P Valve** | | | 0.2 | 0.5 | 0.8 | 1.3 | 1.8 | 2.5 | 3.2 | 4.1 | 5.0 | 11.3 | 16.2 | 28.8 | | | | | | | | |
| **AA144A-1-3/AA144P-1-3 Valve** | | | 0.3 | 0.7 | 1.3 | 2.0 | 2.8 | 3.8 | 5.0 | 6.3 | 7.8 | 17.6 | 25.3 | | | | | | | | | |
| **AA145H Valve** | | | | 0.2 | 0.4 | 0.6 | 0.8 | 1.1 | 1.4 | 1.8 | 2.2 | 5.0 | 7.2 | 12.8 | 22.8 | | | | | | | |
| **344 2-way Valve** | | | | | | | | 0.2 | 0.3 | 0.4 | 0.5 | 1.1 | 1.6 | 2.8 | 5.0 | 11.3 | 20.0 | 27.5 | | | | |
| **344 3-way Valve** | | | | | | 0.2 | 0.3 | 0.4 | 0.6 | 0.7 | 0.9 | 2.0 | 2.8 | 5.0 | 8.9 | 20.0 | 35.6 | | | | | |
| **346 2-way Valve** | | | | | | | | | | | | 0.1 | 0.2 | 0.3 | 0.5 | 1.2 | 2.0 | 2.8 | 5.0 | 7.8 | 11.3 | 20.0 |
| **346 3-way Valve** | | | | | | | | | | | | 0.3 | 0.4 | 0.7 | 1.3 | 2.8 | 5.0 | 6.9 | 12.2 | 19.1 | 27.5 | |
| **356 Valve** | | | | | | | | | | | | 0.1 | 0.2 | 0.3 | 0.5 | 1.2 | 2.0 | 2.8 | 5.0 | 7.8 | 11.3 | 20.0 |
| **430 2-way* Manifold** | | | 0.1 | 0.3 | 0.6 | 0.9 | 1.3 | 1.8 | 2.3 | 3.0 | 3.7 | 8.2 | 11.8 | 21.0 | | | | | | | | |
| **430 3-way* Manifold** | | | 0.1 | 0.3 | 0.6 | 0.9 | 1.3 | 1.8 | 2.3 | 3.0 | 3.7 | 8.2 | 11.8 | 21.0 | | | | | | | | |
| **430 FB* Manifold** | | | 0.2 | 0.5 | 0.9 | 1.5 | 2.1 | 2.9 | 3.8 | 4.8 | 5.9 | 13.3 | 19.1 | | | | | | | | | |
| **440* Manifold** | | | | | | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 1.7 | 2.4 | 4.3 | 7.6 | 17.0 | 30.3 | | | | | |
| **450* Manifold** | | | | | | 0.1 | 0.2 | 0.2 | 0.3 | 0.4 | 0.5 | 1.1 | 1.6 | 2.8 | 5.0 | 11.3 | 20.0 | 27.5 | | | | |
| **450 FB* Manifold** | | | | | | 0.1 | 0.2 | 0.2 | 0.3 | 0.4 | 0.5 | 1.1 | 1.6 | 2.8 | 5.0 | 11.3 | 20.0 | 27.5 | | | | |
| **460 2-way* Manifold** | | | | | | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.8 | 1.8 | 2.6 | 4.6 | 8.2 | 18.4 | 32.8 | | | | | |
| **460 3-way* Manifold** | | | | | | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.8 | 1.8 | 2.6 | 4.6 | 8.2 | 18.4 | 32.8 | | | | | |
| **460 FB* Manifold** | | | | | | 0.2 | 0.3 | 0.4 | 0.6 | 0.7 | 0.9 | 2.0 | 2.8 | 5.0 | 8.9 | 20.0 | 35.6 | | | | | |
| **490* Manifold** | | | | | | | | | | | | 0.1 | 0.2 | 0.3 | 0.5 | 1.2 | 2.0 | 2.8 | 5.0 | 7.8 | 11.3 | 20.0 |
| **530A 2-Way Manual & Electric Manifold*** | | | 0.2 | 0.3 | 0.6 | 0.9 | 1.4 | 1.9 | 2.4 | 3.1 | 3.8 | 8.5 | 12.2 | 21.8 | 38.7 | | | | | | | |
| **530A 3-Way Manual & Electric Manifold*** | | | 0.3 | 0.7 | 1.3 | 2.0 | 2.8 | 3.8 | 5.0 | 6.3 | 7.8 | 17.6 | 25.3 | | | | | | | | | |
| **530A FB Electric Manifold*** | | | 0.4 | 0.9 | 1.6 | 2.6 | 3.7 | 5.0 | 6.5 | 8.3 | 10.2 | 23.0 | 33.1 | | | | | | | | | |
| **540* Manifold** | | | | | | 0.2 | 0.2 | 0.3 | 0.4 | 0.6 | 0.7 | 1.5 | 2.2 | 4.0 | 7.0 | 15.8 | 28.1 | | | | | |
| **QJ300 Nozzle Body** | 0.1 | 0.4 | 1.6 | 3.7 | 6.5 | 10.2 | 14.7 | 20.0 | | | | | | | | | | | | | | |
| **QJ360C Nozzle Body** | 0.2 | 1.0 | 4.0 | 8.9 | 15.8 | 24.7 | | | | | | | | | | | | | | | | |
| **QJ360E Nozzle Body** | 0.6 | 2.2 | 8.9 | 20.0 | 35.6 | | | | | | | | | | | | | | | | | |
| **QJ360F Nozzle Body** | 0.1 | 0.4 | 1.7 | 3.9 | 6.9 | 10.8 | 15.6 | 21.2 | 27.7 | 35.0 | | | | | | | | | | | | |
| **QJ373** | 0.2 | 0.7 | 3.0 | 6.7 | 11.8 | 18.5 | 26.6 | 36.2 | | | | | | | | | | | | | | |
| **QJ375** | 0.2 | 0.9 | 3.5 | 7.8 | 13.9 | 21.7 | 31.3 | | | | | | | | | | | | | | | |
| **QJ380 Nozzle Body** | 0.1 | 0.6 | 2.2 | 5.0 | 8.9 | 13.9 | 20.0 | 27.2 | 35.6 | | | | | | | | | | | | | |
| **QJ380F Nozzle Body** | 0.1 | 0.2 | 1.0 | 2.2 | 4.0 | 6.2 | 8.9 | 12.1 | 15.8 | 20.0 | 24.7 | | | | | | | | | | | |
| **24230A/24216A Nozzle Body** | 0.5 | 2.0 | 7.8 | 17.6 | 31.3 | | | | | | | | | | | | | | | | | |
| **QJ17560A Nozzle Body** | 0.2 | 1.0 | 4.0 | 8.9 | 15.8 | 24.7 | | | | | | | | | | | | | | | | |
| **AA122-1/2 Line Strainer** | | | | 0.3 | 0.6 | 0.9 | 1.3 | 1.7 | 2.2 | 2.8 | 3.5 | 7.8 | 11.3 | 20.0 | | | | | | | | |
| **AA122-3/4 Line Strainer** | | | | 0.2 | 0.3 | 0.5 | 0.7 | 1.0 | 1.3 | 1.6 | 2.0 | 4.4 | 6.3 | 11.3 | 20.0 | | | | | | | |
| **AA122-QC Line Strainer** | | | | 0.1 | 0.2 | 0.4 | 0.6 | 0.8 | 1.0 | 1.3 | 1.5 | 3.5 | 5.0 | 8.9 | 15.8 | 35.6 | | | | | | |
| **AA126-3 Line Strainer** | | | | | | 0.2 | 0.3 | 0.5 | 0.6 | 0.8 | 0.9 | 2.1 | 3.1 | 5.4 | 9.7 | 21.8 | | | | | | |
| **AA126-4/F50/M50 Line Strainer** | | | | | | | | 0.2 | 0.3 | 0.3 | 0.4 | 0.9 | 1.3 | 2.4 | 4.2 | 9.4 | 16.7 | 23.0 | | | | |
| **AA126-5 Line Strainer** | | | | | | | | | | | | 0.3 | 0.5 | 0.8 | 1.5 | 3.3 | 5.9 | 8.1 | 14.4 | 22.4 | | |
| **AA126-6/F75 Line Strainer** | | | | | | | | | | | | 0.2 | 0.3 | 0.5 | 0.9 | 1.9 | 3.5 | 4.7 | 8.4 | 13.2 | 19.0 | |

*Manifold pressure drop data based on a single valve. Quantity of valves, inlet fitting size and inlet feed setup may affect pressure drop rating. Please contact your local TeeJet sale representative for additional information.

It is essential to know the amount of area that you intend to cover when applying a pesticide or fertilizer. Turf areas such as home lawns and golf course greens, tees and fairways should be measured in square feet or acres, depending upon the units needed.

## RECTANGULAR AREAS




Area = Length (*l*) x Width (*w*)

### EXAMPLE

What is the area of a lawn that is 300 feet long and 150 feet wide?

Area = 300 feet x 150 feet = 45,000 square feet

By using the following equation, it is possible to determine the area in acres.

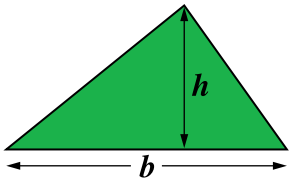
$$\text{Area in acres} = \frac{\text{Area in square feet}}{\text{43,560 sq ft per acre}}$$

(There are 43,560 square feet in an acre.)

### EXAMPLE

$$\text{Area in acres} = \frac{\text{45,000 sq ft}}{\text{43,560 sq ft per acre}} = \text{1.03 acres}$$

## TRIANGULAR AREAS




$$\text{Area} = \frac{\text{Base } (b) \text{ x Height } (h)}{2}$$

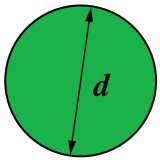
### EXAMPLE

The base of a corner lot is 250 feet while the height is 50 feet. What is the area of the lot?

$$\text{Area} = \frac{\text{250 feet x 50 feet}}{2} = \text{6,250 square feet}$$

$$\text{Area in acres} = \frac{\text{6,250 square feet}}{\text{43,560 sq ft per acre}} = \text{0.14 acre}$$

## CIRCULAR AREAS




$$\text{Area} = \frac{\pi \text{ x Diameter}^2 (d)}{4}$$

$$\pi = 3.14159$$

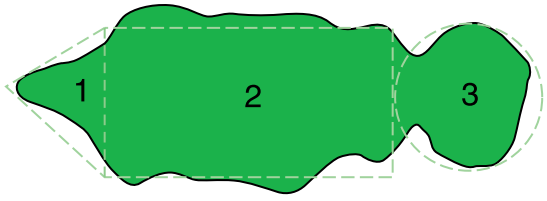
### EXAMPLE

What is the area of a green that has a diameter of 45 feet?

$$\text{Area} = \frac{\pi \text{ x (45 feet)}^2}{4} = \frac{\text{3.14 x 2025}}{4} = \text{1,590 square feet}$$

$$\text{Area in acres} = \frac{\text{1,590 square feet}}{\text{43,560 sq ft per acre}} = \text{0.04 acre}$$

## IRREGULAR AREAS




Any irregularly shaped turf area can usually be reduced to one or more geometric figures. The area of each figure is calculated and the areas are then added together to obtain the total area.

### EXAMPLE

What is the total area of the Par-3 hole illustrated above?

The area can be broken into a triangle (area 1), a rectangle (area 2) and a circle (area 3). Then use the previously mentioned equations for determining areas to find the total area.

$$\text{Area 1} = \frac{\text{25 feet x 30 feet}}{2} = \text{375 square feet}$$

$$\text{Area 2} = \text{25 feet x 475 feet} = \text{11,875 square feet}$$

$$\text{Area 3} = \frac{\text{3.14 x (45 feet)}^2}{4} = \text{1,590 square feet}$$

$$\text{Total Area} = \text{375 + 11,875 + 1,590} = \text{13,840 square feet}$$

$$= \frac{\text{13,840 square feet}}{\text{43,560 sq ft per acre}} = \text{0.32 acre}$$

## BROADCAST APPLICATION

Sprayer calibration (1) readies your sprayer for operation and (2) diagnoses tip wear. This will give you optimum performance of your TeeJet tips.

**Equipment Needed:**

- TeeJet Calibration Container
- Calculator
- TeeJet Cleaning Brush
- One new TeeJet Spray Tip matched to the tips on your sprayer
- Stopwatch or wristwatch with second hand

## STEP NUMBER 1

### Check Your Tractor/Sprayer Speed!

Knowing your real sprayer speed is an essential part of accurate spraying. Speedometer readings and some electronic measurement devices can be inaccurate because of wheel slippage. Check the time required to move over a 100- or 200-foot strip on your field. Fence posts can serve as permanent markers. The starting post should be far enough away to permit your tractor/sprayer to reach desired spraying speed. Hold that speed as you travel between the "start" and "end" markers. Most accurate measurement will be obtained with the spray tank half full. Refer to the table on page 184 to calculate your real speed. When the correct throttle and gear settings are identified, mark your tachometer or speedometer to help you control this vital part of accurate chemical application.

## STEP NUMBER 2

### $A=\frac{B+C}{D}$ The Inputs

| **Before spraying, record the following:** | **EXAMPLE:** |
|---|---|
| Spray tip type on your sprayer (All tips must be identical) | TT11004 Flat Spray Tip |
| Recommended application volume. (From manufacturer's label) | 20 GPA |
| Measured sprayer speed | 6 MPH |
| Tip spacing | 20 inches |


## STEP NUMBER 3

### Calculating Required Nozzle Output

Determine GPM tip output from formula.

**FORMULA:** $GPM = \frac{GPA \times MPH \times W}{5{,}940 \text{ (constant)}}$

**EXAMPLE:** $GPM = \frac{20 \times 6 \times 20}{5{,}940} = \frac{2{,}400}{5{,}940}$

**ANSWER:** 0.404 GPM

## STEP NUMBER 4

### Setting the Correct Pressure

Turn on your sprayer and check for leaks or blockage. Inspect and clean, if necessary, all tips and strainers with TeeJet brush. Replace one tip and strainer with an identical new tip and strainer on sprayer boom.

Check appropriate tip selection table and determine the pressure required to deliver the tip output calculated from the formula in Step 3 for your new tip. Since all of the tabulations are based on spraying water, conversion factors must be used when spraying solutions that are heavier or lighter than water (see page 185).

**EXAMPLE:** (Using above inputs) refer to TeeJet table on page 17 for TT11004 flat spray tip. The table shows that this spray tip delivers 0.40 GPM at 40 PSI.

Turn on your sprayer and adjust pressure. Collect and measure the volume of the spray from the new tip for one minute in the collection jar. Fine tune the pressure until you collect 0.40 GPM.

You have now adjusted your sprayer to the proper pressure. It will properly deliver the application rate specified by the chemical manufacturer at your measured sprayer speed.

## STEP NUMBER 5

### Checking Your System

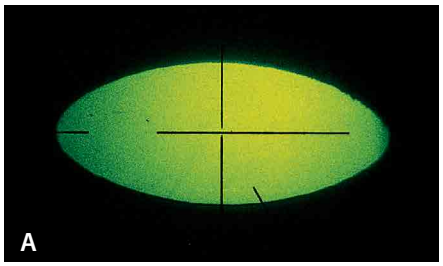
**PROBLEM DIAGNOSIS:** Now, check the flow rate of a few tips on each boom section. If the flow rate of any tip is 10% greater or less than that of the newly installed spray tip, recheck the output of that tip. If only one tip is faulty, replace with new tip and strainer and your system is ready for spraying. However, if a second tip is defective, replace all tips on the entire boom. This may sound unrealistic, but two worn tips on a boom are ample indication of tip wear problems. Replacing only a couple of worn tips invites potentially serious application problems.

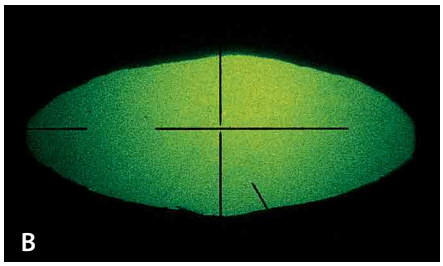
### Banding and Directed Applications

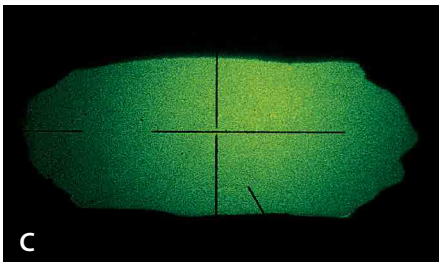
The only difference between the above procedure and calibrating for banding or directed applications is the input value used for "W" in the formula in Step 3.

For single tip banding or boomless applications:
W = Sprayed band width or swath width (in inches).

For multiple nozzle directed applications:
W = Row spacing (in inches) divided by the number of tips per row.




## TIPS DON'T LAST FOREVER!

There is sufficient evidence that spray tips may be the most neglected component in today's farming. Even in countries with obligatory sprayer testing, spray tips are the most significant failure. On the other hand, they are among the most critical of items in proper application of valuable agricultural chemicals.

Using slightly worn tips is very costly. Water, pesticides, and labor are wasted and pesticide application quality can be compromised.

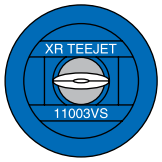
## AN INSIDE LOOK AT NOZZLE ORIFICE WEAR AND DAMAGE

While wear may not be detected when visually inspecting a tip, it can be seen when viewed through an optical comparator. The edges of the worn tip (B) appear more rounded than the edges of the new tip (A). Damage to tip (C) was caused by improper cleaning. The spraying results from these tips can be seen in the illustrations below.

## DETERMINING TIP WEAR

The best way to determine if a spray tip is excessively worn is to compare the flow rate from the used tip to the flow rate of a new tip of the same size and type. Charts in this catalog indicate the flow rates for new tips. Check the flow of each tip by using an accurate graduated collection container, a timing device and an accurate pressure gauge mounted at the nozzle body tip. Compare the flow rate of the old tip to that of the new one. Spray tips are considered excessively worn and should be replaced when their flow exceeds the flow of a new tip by 10%. Reference page 189 for more information.

## SPRAY TIP CARE IS THE FIRST STEP TO SUCCESSFUL APPLICATION

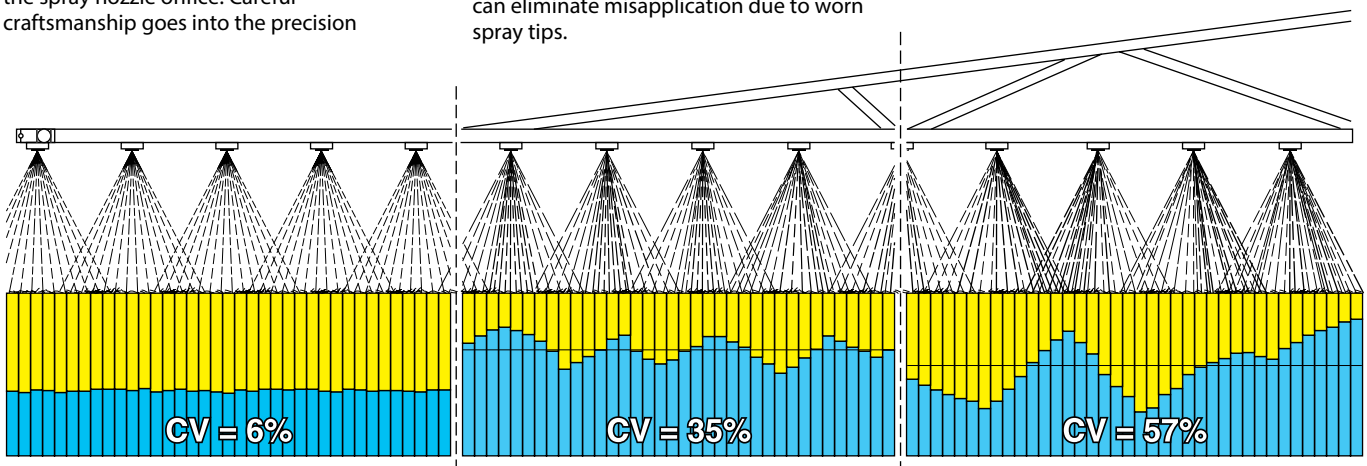



The successful performance of a crop protection product is highly dependent on its proper application as recommended by the product manufacturer. Proper selection and operation of spray nozzles are very important steps in accurate product application. The volume of spray passing through each nozzle plus the droplet size and spray distribution on the target can influence pest control.

Critical in controlling these three factors is the spray nozzle orifice. Careful craftsmanship goes into the precision manufacturing of each nozzle orifice. ISO standards and European standards require very small flow tolerances of new nozzles (+/-5%) of nominal flow. Many TeeJet spray tip types and sizes are already JKI-approved, which confirms the high quality standard designed into TeeJet nozzles. To maintain the quality in practical spraying as long as possible, the operator's job is the proper maintenance of those spray tips.

The illustration below compares the spraying results obtained from well-maintained vs. poorly-maintained spray tips. Poor spray distribution can be prevented. Selection of longer wearing tip materials or frequent replacement of tips from softer materials can eliminate misapplication due to worn spray tips.

Careful cleaning of a clogged spray tip can mean the difference between a clean field and one with weed streaks. Flat spray tips have finely crafted thin edges around the orifice to control the spray. Even the slightest damage from improper cleaning can cause both an increased flow rate and poor spray distribution. Be sure to use adequate strainers in your spray system to minimize clogging. If a tip does clog, only use a soft bristled brush to clean it—never use a metal object. Use extreme care with soft tip materials such as plastic. Experience has shown that even a wooden toothpick can distort the orifice.




**NEW SPRAY TIPS**
Produce a uniform distribution when properly overlapped.

**WORN SPRAY TIPS**
Have a higher output with more spray concentrated under each tip.

**DAMAGED SPRAY TIPS**
Have a very erratic output – overapplying and underapplying.

# SPRAY DISTRIBUTION QUALITY

One of the most overlooked factors that can dramatically influence the effectiveness of a given crop production product is spray distribution. The uniformity of the spray distribution across the boom or within the spray swath is an essential component of achieving maximum product effectiveness with minimal cost and minimal non-target contamination. It is critical that carrier and product rates are applied at the recommended minimum rate. There are many other factors influencing a crop production product's effectiveness, such as weather, application timing, active ingredient rates, pest infestation, etc. However, an operator must become aware of spray distribution quality if maximum efficiency is expected.

## MEASUREMENT TECHNIQUES

Spray distribution can be measured in different ways. TeeJet Technologies and some sprayer manufacturers, as well as other research and testing stations, have patternators (spray tables) that collect the spray from tips on a standardized or real boom. These patternators have several channels aligned perpendicular to the spray tip, according to the standard ISO 5682-1.

The channels carry the spray liquid into vessels for measuring and analysis (see photo with TeeJet patternator). Under controlled conditions, very accurate distribution measurements can be made for tip evaluation and development. Distribution measurements can also take place on an actual farm sprayer. For static measurements along with the sprayer boom, a patternator equal or very similar to the one described earlier is placed under the boom in a stationary position or as a small patternator unit scanning the whole boom up to a width of 164'. Any system of patternator measures electronically the quantity of water in each channel and calculates the values. A distribution quality test gives the applicator important information about the state of the tips on the boom. When much more detailed information about spray quality and coverage is required, a dynamic system—spraying a tracer (dye)—can be used. The same is true if the distribution within the swath on a boom must be measured.

Most of the distribution measuring devices result in data points representing the sprayer's boom swath uniformity. These data points can be very revealing just through visual observation. However, for comparison reasons, a statistical method is widely accepted. This method is Coefficient of Variation (CV). The CV compiles all the patternator data points and summarizes them into a simple percentage, indicating the amount of variation within a given distribution. For extremely uniform distributions under accurate conditions, the calculated CV shall not exceed 10%, according to the ISO 16122-2. As some European countries have stricter CV (e.a. JKI requires a CV lower than 7%) and may require the sprayer's distribution to be tested for uniformity after a certain time. These types of stipulations emphasize the great importance of distribution quality and its effect on crop protection products effectiveness.

TeeJet precisely produces spray tips that match up with the most restrictive requirements in these European countries.

## FACTORS AFFECTING DISTRIBUTION

There are a number of factors contributing to the distribution quality of a spray boom or resulting CV percentage. During a static measurement, the following factors can significantly affect the distribution.

- Spray Tips
  - type
  - pressure
  - spacing
  - spray angle
  - offset angle
  - spray pattern quality
  - flow rate
  - overlap
- Boom Height
- Worn Tips
- Pressure Losses
- Plugged Strainers
- Plugged Tips
- Plumbing Factors Influencing Liquid Turbulence at the Tip

Additionally, in the field during the spraying application or during a dynamic distribution test, the following can influence the distribution quality:

- Boom Stability
  - vertical movement (pitch)
  - horizontal movement (yaw)
- Environmental Conditions
  - wind velocity
  - wind direction
- Pressure Losses (sprayer plumbing)
- Sprayer Speed and Resulting Turbulence

The effect of distribution uniformity on the efficiency of a crop protection product can vary under different circumstances. The crop protection product itself can have a dramatic influence over its efficiency.

Consult the manufacturer's product label or recommendation before spraying.

# DROPLET SIZE & DRIFT INFORMATION

A spray tip pattern is made up of numerous spray droplets of varying sizes. Droplet size refers to the diameter of an individual spray droplet. Droplet sizes are usually measured in microns (micrometers - µm). One micron equals 0.00003937 inches; there are 25,400 microns in one inch. The micron is a useful unit of measurement because it is small enough that whole numbers can be used in droplet size measurement.

Since most tips provide a range of droplet sizes (otherwise known as droplet size distribution), it is useful to summarize this with statistical analysis. Advanced droplet size measuring devices are automated, using computers and high-speed illumination sources such as lasers to analyze thousands of droplets in a few seconds. TeeJet Technologies uses the most innovative laser measuring instrumentation to characterize sprays, obtaining droplet size and other important information, such as $DV_{0.1}$, $DV_{0.5}$ (or VMD), $DV_{0.9}$, percentage of driftable fines, and relative span which are used to classify droplet size and the quality of droplets produced by a given spray tip.

Since the smaller droplets have a greater tendency to move off-target, it makes sense to determine what the percentage of small droplets is for a particular spray tip to minimize it when drift is a concern. Droplets below 150 microns are considered potential drift contributors.

The table to the right shows several tips and their percentage of driftable fines.

## DRIFTABLE FINES

| NOZZLE TYPE (0.5 GPM CAPACITY) | APPROXIMATE PERCENTAGE OF SPRAY VOLUME LESS THAN 150 MICRONS | |
|---|---|---|
| | 20 PSI | 40 PSI |
| XR – Extended Range TeeJet® (110°) | 18% | 29% |
| TTJ60 – Turbo TwinJet® (110°) | 8% | 14% |
| TT – Turbo TeeJet® (110°) | 7% | 16% |
| TF – Turbo FloodJet® | 5% | 9% |
| AIXR – Air Induction XR TeeJet® (110°) | 4% | 9% |
| AITTJ60 – Air Induction Turbo TwinJet® (110°) | 2% | 3% |
| AI – Air Induction TeeJet® (110°) | 5% (@ 30 PSI) | 7% |
| TTI60 – Turbo TeeJet® Induction TwinJet® (110°) | 2% | 4% |
| TTI – Turbo TeeJet® Induction (110°) | <1% | 2% |
| APTJ – AccuPulse® TwinJet® (110°) | <1% | 1% |

Data obtained from Oxford VisiSizer system, spraying water at 70°F under laboratory conditions.

**Figure 1.** This is not what crop protection should look like!

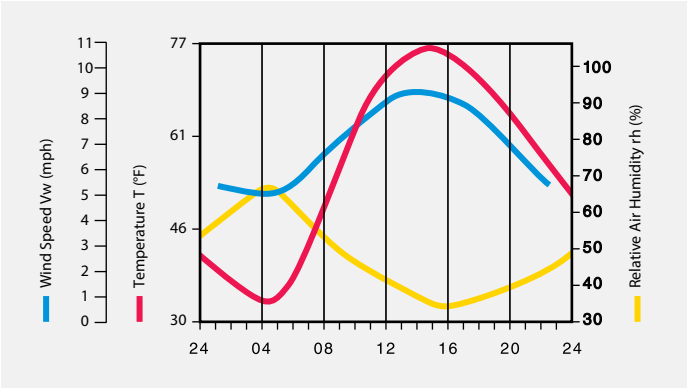



**Figure 2.**
Development of wind speed, air temperature and relative air humidity (example).
From: Malberg

When applying crop protection products, spray drift is defined as the movement and deposition of spray particles through the air to non-target locations. The two forms of spray drift are particle drift and vapor drift. Particle drift can occur during or after a crop protection product application, which results from droplets physically moving to non-target locations via air currents. It is more related to the application technology choices, such as spray tip selection and sprayer calibration. Vapor drift of the active ingredient occurs right after the crop protection product application and the crop protection product vapor reaches non-target locations. It is dependent on the crop protection product physicochemical characteristics when it has a greater trend to volatilize. Weather conditions, such as low relative humidity and high temperatures directly impact vapor drift.

The smaller the droplet, the greater the drift potential. Droplets most prone to drift are those with a diameter that is less than 150 µm and easily move off the target area by wind or other climatic conditions. Drift can cause crop protection products to be deposited in undesirable areas with serious consequences, such as:

- Damage to sensitive adjoining crops.
- Surface water contamination.
- Health risks for animals and people.
- Possible contamination to the target area and adjacent areas or possible overapplication within the target area.

## CAUSES OF SPRAY DRIFT

Several variables contribute to spray drift; these are predominantly due to the spray equipment system and meteorological factors.

- **DROPLET SIZE**

  Within the spray equipment system, droplet size is the most influential factor related to drift.

  When a liquid solution is sprayed under pressure it is atomized into droplets of varying sizes: **The smaller the spray tip size and the greater the spray pressure, the smaller the droplets and therefore the greater the proportion of driftable droplets.**

- **SPRAY HEIGHT**

  As the distance between the spray tip and the target area increases, the greater impact wind speed can have on drift. The influence of wind can increase the proportion of smaller droplets being carried off target and considered drift.

  Do not spray at greater heights than those recommended by the spray tip manufacturer, while taking care not to spray below the minimum recommended heights.

- **OPERATING SPEED**

  Increased operating speeds can cause the spray to be diverted back into upward wind currents and vortexes behind the sprayer, which traps small droplets and can contribute to drift.

  **Apply crop protection products according to good, professional practices at maximum operating speeds of 6 to 10 MPH (up to 10 MPH). As wind velocities increase, reduce operating speed. ***

  * Liquid fertilizer applications using the TeeJet® tips with very coarse droplets can be performed at higher operating speeds.

- **WIND SPEED**

  Among the meteorological factors affecting drift, wind speed has the greatest impact. Increased wind speeds cause increased spray drift. It is common knowledge that in most parts of the world the wind speed is variable throughout the day (see Figure 2). Therefore, it is important for spraying to take place during the relatively calm hours of the day. The early morning and early evening are usually the calmest. However, wind speed below 3 MPH can be an indicator of air instability, such as temperature inversion, resulting in drift. Ideally, winds should be in the range of 3 to 9 MPH, and crop protection products should not be sprayed when winds exceed 10 MPH. Check the product label for more information.

  Wind measurements should be taken throughout the spraying operation with a wind meter or anemometer. As the risk of spray drift increases, selecting tips designed to produce coarser droplets that are less prone to drift is extremely important, such as spray tips with air induction AIXR, AITTJ60, AI, TTI60, and TTI.

- **AIR TEMPERATURE AND RELATIVE HUMIDITY**

  Air temperature and relative humidity directly influence droplet evaporation. Finer droplets are also more vulnerable to high temperatures and low relative humidity conditions, and when compared to coarser droplets, they are less likely to reach the target.

  **High temperature during the spraying application may necessitate system changes, such as tips that produce a coarser droplet or suspending spraying.**

- **CROP PROTECTION PRODUCTS AND CARRIER VOLUME**

  Before applying crop protection products, the applicator should read and follow all instructions provided by the manufacturer.

  Since extremely low carrier volume usually necessitates the use of small tip sizes, the drift potential is increased. As high a carrier volume as practical is recommended.

## SPRAY TIPS FOR DRIFT REDUCTION

Drift potential can be minimized even when it is necessary to use small tip capacities by selecting tip types that produce larger droplets (bigger Volume Median Diameter (VMD) and a lower percentage of small droplets.

Figure 3 is an example showing VMD's produced by tips of identical flow rates (05 capacity) at the optimum pressure ranges for the individual tips. Within the presented tips, XR produces the smaller droplets followed by TTJ60/TT, AIXR, AITTJ60, AI, TTI60/TTI, and APTJ. TTI, TTI60, and APTJ tips produce the coarsest droplet size spectrum of this group and provide the maximum drift control, producing less than 2% of driftable fines.

Looking at individual spray tips, the greater the operational pressure, the smaller the formed droplet, and the greater the drift potential. Understanding this concept, it is possible to affirm that for all tips is possible to reduce drift at lower pressure and achieve better coverage at higher pressures. However, if just by reducing the operating pressure the droplet size and the percentage of driftable fines are still above the limit for a safe application, the user must select a spray tip that produces coarser droplets.

For example, a self-propelled sprayer operating with a ground speed of 10 MPH, tip spacing of 20", and an application rate of 15 GPA would need a tip with a capacity of 0.5 GPM, which all tips presented on Figure 3 would be able to apply at 40 PSI. However, the VMD increases significantly from the XR to the TTI/TTI60/APTJ, from fine to ultra coarse droplet size. For a contact fungicide application, a TTJ60 would be a good fit while an AIXR or AITTJ60 would be a better fit for an herbicide application. Therefore, for applicators to select the correct spray tip size it is necessary to consider the droplet size and spray pressure at which a crop protection product is most effective according to the label.

With this, they simply must reduce pressure and ground speed to reduce spray drift or even comply with statutory buffer zone requirements.

While the classic XR TeeJet orifice provides two functions; metering the volume flow rate and distributing and creating the droplets, all other spray tip types discussed above use a pre-orifice for metering while droplet creation and distribution take place at the exit orifice (Figure 4). Both functions and devices relate to each other with respect to geometry and spacing and interact with respect to the droplet size produced. The TT, TTJ60, AITTJ60, TTI60, and TTI tips force the liquid to change direction after it has passed the pre-orifice, forcing it into a horizontal chamber and to change direction again into the nearly vertical passage in the orifice itself. The AIXR, AI, AITTJ60, TTI60, and TTI air induction tips operate on the Venturi principle, where the pre-orifice generates a higher-velocity stream, aspirating air through the side holes. This specific air/liquid mix creates more coarse droplets that are filled with air, depending on the crop protection product used.

APTJ is a non-air induction tip, that produced highly drift-resistant droplet due do its patent-pending recirculating design.

## SUMMARY

Successful drift management centers on sound knowledge about drift contributing factors and the use of drift control TeeJet spray tips. To strike a sound balance between successful crop protection products application and environmental protection, applicators should use approved broadcast TeeJet spray tips that are classified as drift control and operate these within the pressure ranges that ensure product effectiveness (i.e., set spray tips to 50% drift control or less).

The following list shows all the relevant factors that need to be considered, optimized, or applied to achieve effective drift control:

- Low-Drift TeeJet spray tips
- Spraying pressure and droplet size
- Application rate and tip size
- Spraying height
- Forward speed
- Wind speed
- Ambient temperature and relative humidity
- Buffer zones (or apply options that allow reducing the width of buffer strips)
- Compliance with manufacturer instructions

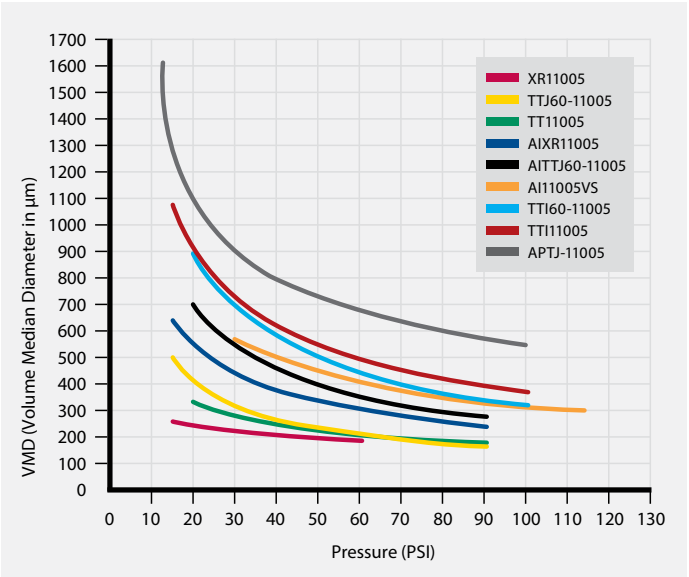



**Figure 3.** Volumetric droplet diameters of XR, TT, TTJ60, AIXR, AI, AITTJ60, TTI60, TTI, and APTJ spray tips relative to pressure.

**Measurement Conditions:**
- Continuous Oxford Laser measurement across the full width of the flat spray
- Water temperature 70°F under laboratory conditions

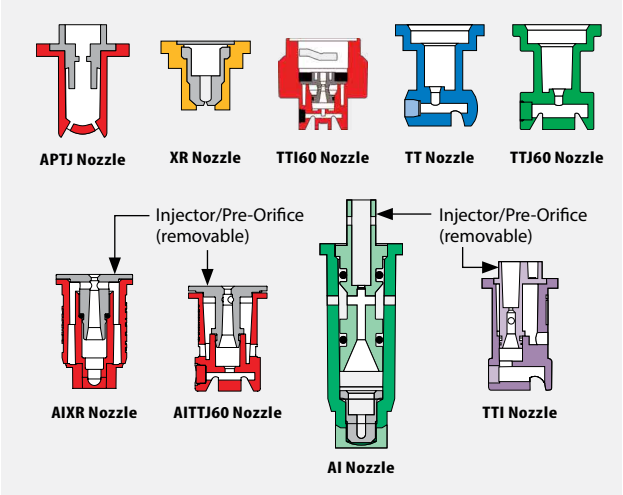



**Figure 4.** APTJ, XR, TT, TTJ60, AIXR, AITTJ60, AI, TTI60, and TTI spray tips cross-section view.

# DRIFT CONTROL ASSESSMENT SYSTEMS IN EUROPE

## ASSESSMENT OF NOZZLE DRIFT CONTROL IN EUROPE

In times of hard discussions regarding environmental protection, the drift control of the spray tips and spray systems became a very important topic in most of the European countries and mandatory in the Nord, West, and Middle Europe. Ones with the implementation of the European Green Deal, it's expected that the South and East parts of Europe will align at the same standards.

Drift reduction is not a new topic. Preliminary assessment criteria for drift control during by crop protection products applications were first defined in the 1980's and 1990's. With the XR TeeJet® spray tips and the first generation of drift control spray tips (DG TeeJet®), TeeJet achieved significant advances in crop protection technology at that time. However, stricter rules for buffer zones to protect sensitive areas have led to the development of a program that assesses spray tip drift reduction, as well as innovative spray tip designs (AI TeeJet) producing larger droplet sizes by maintaining perfect coverage.

The testing institutes from Germany, the United Kingdom, France, and the Netherlands have different standardized assessments for measuring drift reduction. The Julius Kühn Institute-Federal Research Institute (JKI) standards and results are accepted by most of the European countries in the national approval process.

The countries mentioned above have compiled corresponding percentage drift control categories, which vary from one to another in some areas. While in Germany and Netherlands drift control is categorized as 50% / 75% / 90% / 95%, in the United Kingdom they are categorized as 2 star**, 3 star ***, and 4 star****, and 66% in France. Furthermore, the same spray tip type and size operated at the same pressure can have a different category of drift reduction in different countries that use different assessments to evaluate drift control.

Drift reduction ratings are currently mandatory in some countries like Germany, Netherlands, France, Belgium, Denmark, and the United Kingdom, while in other countries the drift reduction is only a recommendation to assist farmers in selecting a tip that is more suitable for their applications.

As TeeJet Technologies is present in all European countries, all new spray tips are tested and have them assessed in each of these countries to verify the effectiveness of the technical advances so farmers can use our company products without fearing conflict with the government.

## THE SYSTEM IN GERMANY

In Germany, the Julius Kühn Institute-Federal Research Institute for Cultivated Plants (JKI), is responsible for testing nozzles for agricultural use. Drift measurements are taken for standard spray tips (110–120°, symmetric pattern, 50 cm spacing) in the wind tunnel, using vertical collectors and the "DIX model" (Drift Potential Index), which gives values that express the percentage of drift reduction categories. For narrow-angle spray tips, asymmetric or 25 cm spacing, the measurements take place in the field under standardized conditions for temperature, wind direction, wind speed, and forward speed.

## THE SYSTEM IN THE UNITED KINGDOM (UK)

The UK agency for the equipment certification is the Local Environmental Risk Assessments for Pesticides (LERAP). Spray application systems that have been tested regarding drift reduction in the SILSOE wind tunnel will get a "LERAP-Low Drift Star Rating" which are: 2 star **, 3 star ***, and 4 star ****, which roughly corresponds to 50%, 75%, and 90% of drift reduction respectively.

In contrast to the JKI, the UK wind tunnel methodology records the droplets landed on horizontal collectors.

## THE SYSTEM IN THE NETHERLANDS

The local authority in NL for the spray equipment approvals is the Technical Assessment Committee (TCT), and the results of spray tips that reduce drift by 50%, 75%, 90%, and 95% are published on the DRD list. Instead of using wind tunnel systems as used at JKI and LERAP, the Wageningen University (WUR) uses a Phase Doppler Particle Analyzer (PDPA laser) to investigate droplet velocity and some parameters such as $Dv_{0.1}$, VMD, $Dv_{0.9}$, and volume fraction <100µm. The data collected is then fed into the IDEFICS model.

## THE SYSTEM IN FRANCE

In France, the tested spray tips and spray equipment are published on the official list of the Ministry of Agriculture and Food, after consulting the National Research Institute for Agriculture, Food and the Environment (INRAE). Up to now, the drift reduction requirement is 66% for applications that take place close to sensitive areas.

## BENEFITS & OPTIONS FOR USERS

The use of low drift spray tips brings significant benefits to users around the world. Depending on the location of the fields from environmentally sensitive areas such as surface water and field boundaries, applicators can reduce the width of buffer zones, as stipulated by the relevant restrictions in association with the approval of the pesticide (e.g. 20-meter no-spray buffer zone) and the national legislation. In general, for successful crop protection, it is only necessary to select spray tips with a high percentage classification for drift control in those situations where statutory buffer zone requirements apply. Otherwise, it is preferable to use nozzles at a spray pressure achieving a 50% drift control or less, depending on the application.

For further information about the low-drift categories of TeeJet spray tips, contact your TeeJet representative or go to www.teejet.com.

# DROP SIZE CLASSIFICATION

The droplet size classification follows a strict and concise parameter, which was first created in 1985 in England by the British Crop Protection Council (BCPC). This classification system established a series of droplet size classes.

In 1999, the American Society of Agricultural and Biological Engineers (ASABE) developed a new standard for droplet size classification—ASABE S572, in which the droplet size boundaries were set by a series of defined TeeJet reference spray tips and operating pressures (ASABE, 2009). The ASABE S572 original standard established six droplet size classes (VF, F, M, C, VC, and XC), with 5 reference nozzles establishing the boundaries between them. Two additional droplet size classes were added in the same year on the review of the standard—ASABE S572.1, totaling eight classes (XF, VF, F, M, C, VC, XC, and UC).

The International Organization for Standardization (ISO) worked on the development of an international droplet size classification standard and, in 2018, the ISO 25358 standard was published (ISO, 2018), which carried out the update of some droplets size classification ranges to better distribute the classification boundaries. Only the C/VC, VC/XC, and XC/UC boundaries have changed. The new droplet size data in catalog 52 are based on this new classification standard. The ASABE has updated the standard to match with the ISO 25358 as ASABE S572.3.

Spray tip type selection is often based upon droplet size. The droplet size from a tip becomes very important when the efficacy of a particular crop protection product is dependent on coverage, or the prevention of spray drift is a priority. Most of the spray tips used in agriculture produce droplet sizes in the range of very fine to ultra coarse droplets.

Spray tips that produce droplets in the fine to the medium range are usually recommended for post-emergence contact applications, such as fungicides and insecticides, which require excellent coverage on the intended target area. Spray tips producing medium to very coarse droplets, in general, are more recommended for systemic insecticides and contact herbicides. Spray tips producing droplets from the medium to the ultra coarse provide significantly improved drift control while offering less thorough target coverage. These spray tips are commonly used for soil applied and systemic herbicides.

It is important to remember that a given spray tip produces different droplet sizes when operating at different pressures. For example, an AIXR 11003 produces a very coarse droplet size at 30 PSI and a medium droplet size at 60 PSI.

Care must be taken when comparing the droplet size of different tips, as different droplet size standards can bias the comparison and measuring techniques.

| CATEGORY | COLOR CODE |
|---|---|
| Extremely Fine | XF |
| Very Fine | VF |
| Fine | F |
| Medium | M |
| Coarse | C |
| Very Coarse | VC |
| Extremely Coarse | XC |
| Ultra Coarse | UC |

Droplet size classifications are in accordance with ISO Standard 25358 at the date of printing, and its standard classification is subject to change.

For the latest accurate information about spray tips and their droplet size, please contact your nearest TeeJet representative.

Droplet size classes are shown in the following tables to assist in choosing an appropriate spray tip.

## AI TEEJET® (AI EVEN)

| TIP PART NO. | PSI | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 115 |
| AI95015E | XC | XC | VC | VC | VC | C | C | C | |
| AI6502E | UC | XC | XC | VC | VC | VC | VC | C | C |
| AI9502E | XC | XC | VC | VC | VC | C | C | C | |
| AI65025E | UC | XC | XC | VC | VC | VC | VC | VC | C |
| AI95025E | XC | XC | VC | VC | VC | C | C | C | |
| AI6503E | UC | XC | XC | VC | VC | VC | VC | VC | C |
| AI9503E | XC | XC | VC | VC | VC | C | C | C | |
| AI6504E | UC | XC | XC | VC | VC | VC | C | C | C |
| AI9504E | XC | XC | VC | VC | VC | C | C | C | |
| AI6505E | UC | XC | XC | XC | VC | VC | VC | VC | VC |
| AI9505E | XC | XC | VC | VC | VC | VC | C | C | |
| AI6506E | UC | XC | XC | XC | XC | VC | VC | VC | VC |
| AI9506E | UC | XC | XC | VC | VC | VC | VC | C | |
| AI9508E | UC | XC | XC | VC | VC | VC | VC | C | |

## AI3070 TEEJET® (AI3070)

| TIP PART NO. | PSI | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 20 | 25 | 30 | 35 | 40 | 50 | 60 | 70 | 80 | 90 |
| AI3070-015 | XC | VC | VC | VC | VC | C | C | M | M | M |
| AI3070-02 | XC | VC | VC | VC | VC | C | C | M | M | M |
| AI3070-025 | XC | VC | VC | VC | VC | C | C | C | M | M |
| AI3070-03 | XC | XC | VC | VC | VC | VC | C | C | C | M |
| AI3070-04 | XC | XC | XC | VC | VC | VC | C | C | C | C |
| AI3070-05 | UC | XC | XC | XC | VC | VC | VC | C | C | C |

## AI TEEJET® (AI)

| TIP PART NO. | PSI | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |
| AI80015 | XC | XC | VC | VC | VC | C | C | C |
| AI110015 | XC | XC | VC | VC | C | C | C | C |
| AI8002 | XC | XC | VC | VC | VC | VC | C | C |
| AI11002 | XC | XC | VC | VC | C | C | C | C |
| AI80025 | XC | XC | VC | VC | VC | VC | C | C |
| AI11002 | XC | XC | VC | VC | C | C | C | C |
| AI8003 | XC | XC | VC | VC | VC | VC | C | C |
| AI11003 | XC | XC | VC | VC | C | C | C | C |
| AI8004 | XC | XC | VC | VC | VC | VC | C | C |
| AI11004 | XC | XC | VC | VC | C | C | C | C |
| AI8005 | XC | XC | VC | VC | VC | VC | C | C |
| AI11005 | XC | XC | VC | VC | VC | VC | C | C |
| AI8006 | XC | XC | XC | VC | VC | VC | VC | VC |
| AI11006 | XC | XC | VC | VC | VC | VC | C | C |
| AI11008 | XC | XC | VC | VC | VC | VC | VC | C |

# DROP SIZE CLASSIFICATION

## AIC TEEJET® (AIC)

| TIP PART NO. | PSI | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |
| AIC110015-VS | XC | XC | VC | VC | VC | C | C | C |
| AIC11002-VS | XC | XC | VC | VC | VC | C | C | C |
| AIC110025-VS | XC | XC | VC | VC | VC | C | C | C |
| AIC11003-VS | XC | XC | VC | VC | VC | C | C | C |
| AIC11004-VS | XC | XC | VC | VC | VC | C | C | C |
| AIC11005-VS | XC | XC | VC | VC | VC | VC | C | C |
| AIC11006-VS | XC | XC | VC | VC | VC | VC | C | C |
| AIC11008-VS | XC | XC | XC | VC | VC | VC | VC | VC |
| AIC11010-VS | UC | XC | XC | XC | VC | VC | VC | VC |
| AIC11015-VS | UC | XC | XC | XC | VC | VC | VC | VC |

## ACCUPULSE® TWINJET® (APTJ)

| TIP PART NO. | PSI | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 20 | 25 | 30 | 35 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |
| APTJ-110015 | UC | UC | UC | UC | UC | UC | XC | XC | XC | XC | XC |
| APTJ-11002 | UC | UC | UC | UC | UC | UC | UC | XC | XC | XC | XC |
| APTJ-110025 | UC | UC | UC | UC | UC | UC | UC | XC | XC | XC | XC |
| APTJ-11003 | UC | UC | UC | UC | UC | UC | UC | XC | XC | XC | XC |
| APTJ-11004 | UC | UC | UC | UC | UC | UC | UC | XC | XC | XC | XC |
| APTJ-11005 | UC | UC | UC | UC | UC | UC | UC | XC | XC | XC | XC |
| APTJ-11006 | UC | UC | UC | UC | UC | UC | UC | XC | XC | XC | XC |
| APTJ-11008 | UC | UC | UC | UC | UC | UC | UC | XC | XC | XC | XC |
| APTJ-11010 | UC | UC | UC | UC | UC | UC | UC | XC | XC | XC | XC |
| APTJ-11012 | UC | UC | UC | UC | UC | XC | XC | XC | XC | XC | XC |

## AIR INDUCTION TURBO TWINJET® (AITTJ60)

| TIP PART NO. | PSI | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 |
| AITTJ60-11002 | XC | VC | VC | C | C | C | C | M |
| AITTJ60-110025 | XC | VC | VC | VC | C | C | C | C |
| AITTJ60-11003 | XC | XC | VC | VC | C | C | C | C |
| AITTJ60-11004 | XC | XC | VC | VC | C | C | C | C |
| AITTJ60-11005 | UC | XC | VC | VC | VC | C | C | C |
| AITTJ60-11006 | UC | XC | VC | VC | VC | C | C | C |
| AITTJ60-11008 | UC | XC | XC | XC | VC | VC | VC | VC |
| AITTJ60-11010 | UC | XC | XC | XC | VC | VC | VC | VC |
| AITTJ60-11015 | UC | XC | XC | XC | VC | VC | VC | VC |

## AITX CONEJET® (AITXA & AITXB)

| TIP PART NO. | PSI | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 60 | 70 | 80 | 90 | 100 | 120 | 140 | 160 | 180 | 200 | 220 | 240 | 260 | 280 | 300 |
| AITX01 | XC | VC | VC | VC | VC | C | C | M | M | M | F | F | F | F | F |
| AITX015 | XC | VC | VC | VC | VC | C | C | M | M | M | F | F | F | F | F |
| AITX02 | XC | VC | VC | VC | VC | C | C | C | C | M | M | M | M | F | F |
| AITX025 | XC | XC | XC | XC | VC | VC | VC | VC | C | M | M | M | M | F | F |
| AITX03 | XC | XC | XC | XC | VC | VC | VC | VC | C | M | M | M | M | F | F |
| AITX04 | UC | UC | XC | XC | VC | VC | VC | VC | C | C | M | M | M | M | M |

## AIUB TEEJET® (AIUB)

| TIP PART NO. | PSI | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 30 | 35 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |
| AIUB8502 | UC | XC | XC | XC | VC | VC | VC | C | C |
| AIUB85025 | XC | XC | XC | VC | VC | VC | C | C | C |
| AIUB8503 | XC | XC | XC | VC | VC | VC | C | C | C |
| AIUB8504 | XC | XC | XC | VC | VC | VC | C | C | C |

## AIXR TEEJET® (AIXR)

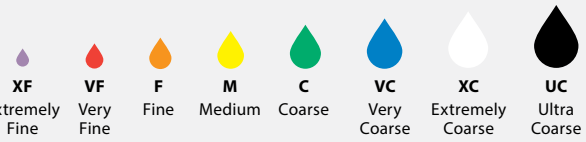
| TIP PART NO. | PSI | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 15 | 20 | 25 | 30 | 35 | 40 | 50 | 60 | 70 | 80 | 90 |
| AIXR110015 | VC | VC | C | C | C | C | M | M | M | M | M |
| AIXR11002 | XC | VC | VC | VC | C | C | M | M | M | M | M |
| AIXR110025 | XC | VC | VC | VC | C | C | M | M | M | M | M |
| AIX11003 | XC | VC | VC | VC | C | C | C | M | M | M | M |
| AIXR11004 | XC | VC | VC | VC | VC | C | C | C | M | M | M |
| AIXR11005 | XC | XC | VC | VC | VC | VC | C | C | C | M | M |
| AIXR11006 | XC | XC | XC | VC | VC | VC | VC | C | C | C | C |
| AIXR11008 | UC | XC | XC | XC | VC | VC | VC | VC | C | C | C |
| AIXR11010 | UC | UC | XC | XC | XC | VC | VC | VC | VC | C | C |

## DG TEEJET® (DG)

| TIP PART NO. | PSI | | | | |
|---|---|---|---|---|---|
| | 30 | 35 | 40 | 50 | 60 |
| DG80015 | M | M | F | F | F |
| DG110015 | M | M | M | M | F |
| DG8002 | C | M | M | M | M |
| DG11002 | C | C | M | M | M |
| DG8003 | C | M | M | M | M |
| DG11003 | C | C | M | M | M |
| DG8004 | C | M | M | M | M |
| DG11004 | C | C | M | M | M |
| DG8005 | C | C | C | M | M |
| DG11005 | C | C | C | M | M |

# DROP SIZE CLASSIFICATION

## DROPLET SIZE CLASSIFICATION



| XF | VF | F | M | C | VC | XC | UC |
|---|---|---|---|---|---|---|---|
| Extremely Fine | Very Fine | Fine | Medium | Coarse | Very Coarse | Extremely Coarse | Ultra Coarse |

## DG TEEJET® (DG E)

| TIP PART NO. | PSI | | | | |
|---|---|---|---|---|---|
| | 30 | 35 | 40 | 50 | 60 |
| DG95015E | M | M | M | F | F |
| DG9502E | M | M | M | M | M |
| DG9503E | M | M | M | M | M |
| DG9504E | C | M | M | M | M |
| DG9505E | C | C | C | M | M |

## DG TWINJET® (DGTJ60)

| TIP PART NO. | PSI | | | | |
|---|---|---|---|---|---|
| | 30 | 35 | 40 | 50 | 60 |
| DGTJ60-110015 | M | M | F | F | F |
| DGTJ60-11002 | M | M | M | M | M |
| DGTJ60-11003 | M | M | M | M | M |
| DGTJ60-11004 | C | C | C | M | M |
| DGTJ60-11006 | C | C | C | M | M |
| DGTJ60-11008 | C | C | C | M | M |

## TEEJET® (TP)

| TIP PART NO. | PSI | | | | |
|---|---|---|---|---|---|
| | 30 | 35 | 40 | 50 | 60 |
| TP80005 | F | F | F | VF | VF |
| TP110005 | VF | VF | VF | VF | VF |
| TP800067 | F | F | F | VF | VF |
| TP1100067 | F | VF | VF | VF | VF |
| TP8001 | F | F | F | F | VF |
| TP11001 | F | F | F | VF | VF |
| TP8002 | M | F | F | F | F |
| TP11002 | F | F | F | F | F |
| TP8003 | M | M | M | F | F |
| TP11003 | M | F | F | F | F |
| TP8004 | M | M | M | M | F |
| TP11004 | M | M | F | F | F |
| TP8005 | M | M | M | M | M |
| TP11005 | M | M | M | M | M |
| TP8006 | C | C | M | M | M |
| TP11006 | M | M | M | M | M |
| TP8008 | C | C | C | M | M |
| TP11008 | M | M | M | M | M |
| TP8010 | C | C | C | M | M |
| TP11010 | M | M | M | M | M |
| TP8015 | VC | C | C | C | C |
| TP11015 | C | C | C | M | M |
| TP8020 | VC | C | C | C | C |
| TP11020 | VC | VC | C | C | C |

## TEEJET (TP E)

| TIP PART NO. | PSI | | | | |
|---|---|---|---|---|---|
| | 30 | 35 | 40 | 50 | 60 |
| TP8001E | F | F | F | F | VF |
| TP80015E | F | F | F | F | F |
| TP8002E | F | F | F | F | F |
| TP8003E | M | M | F | F | F |
| TP8004E | M | M | M | M | F |
| TP8005E | M | M | M | M | M |
| TP8006E | C | M | M | M | M |
| TP8008E | C | C | C | M | M |
| TP8010E | C | C | C | M | M |
| TP8015E | VC | C | C | C | C |
| TP8020E | VC | VC | VC | C | C |

## TK FLOODJET® (TK)

| TIP PART NO. | PSI | | | | | | |
|---|---|---|---|---|---|---|---|
| | 10 | 15 | 20 | 25 | 30 | 35 | 40 |
| TK-1 | M | M | M | M | M | F | F |
| TK-1.5 | M | M | M | M | M | M | F |
| TK-2 | C | M | M | M | M | M | M |
| TK-2.5 | C | M | M | M | M | M | M |
| TK-3 | C | M | M | M | M | M | M |
| TK-4 | C | C | C | M | M | M | M |
| TK-5 | C | C | C | C | M | M | M |
| TK-7.5 | VC | VC | C | C | C | C | M |
| TK-10 | VC | VC | VC | C | C | C | C |

## TURBO TEEJET® (TT)

| TIP PART NO. | PSI | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 15 | 20 | 25 | 30 | 35 | 40 | 50 | 60 | 70 | 80 | 90 |
| TT11001 | VC | C | C | M | M | M | M | M | F | F | F |
| TT110015 | VC | VC | C | C | C | M | M | M | M | F | F |
| TT11002 | VC | VC | C | C | C | M | M | M | M | F | F |
| TT110025 | VC | VC | C | C | C | M | M | M | M | F | F |
| TT11003 | XC | VC | VC | C | C | M | M | M | M | F | F |
| TT11004 | XC | VC | VC | C | C | M | M | M | M | F | F |
| TT11005 | XC | VC | VC | C | C | M | M | M | M | F | F |
| TT11006 | XC | VC | VC | C | C | M | M | M | M | F | F |
| TT11008 | XC | VC | VC | VC | C | M | M | M | M | M | F |
| TT11010 | UC | XC | XC | VC | VC | VC | C | C | C | M | M |
| TT11012 | UC | XC | XC | XC | VC | VC | VC | VC | C | C | C |

# DROP SIZE CLASSIFICATION

## TURBO TEEJET® INDUCTION (TTI)

| TIP PART NO. | PSI | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 15 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |
| TTI11001 | UC | UC | UC | XC | XC | VC | VC | VC | VC | C |
| TTI110015 | UC | UC | UC | XC | XC | XC | VC | VC | VC | VC |
| TTI11002 | UC | UC | UC | XC | XC | XC | VC | VC | VC | VC |
| TTI110025 | UC | UC | UC | XC | XC | XC | VC | VC | VC | VC |
| TTI11003 | UC | UC | UC | XC | XC | XC | VC | VC | VC | VC |
| TTI11004 | UC | UC | UC | XC | XC | XC | VC | VC | VC | VC |
| TTI11005 | UC | UC | UC | XC | XC | XC | VC | VC | VC | VC |
| TTI11006 | UC | UC | UC | XC | XC | VC | VC | VC | VC | C |
| TTI11008 | UC | UC | UC | XC | XC | VC | VC | VC | VC | C |
| TTI11010 | UC | UC | UC | XC | XC | VC | VC | VC | VC | C |

## TTI TWINJET® (TTI60)

| TIP PART NO. | PSI | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 20 | 25 | 30 | 35 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |
| TTI60-11002 | UC | XC | XC | XC | XC | VC | VC | VC | C | C | C |
| TTI60-110025 | UC | XC | XC | XC | XC | VC | VC | VC | C | C | C |
| TTI60-11003 | UC | UC | XC | XC | XC | XC | XC | VC | VC | VC | VC |
| TTI60-11004 | UC | UC | UC | XC | XC | XC | XC | VC | VC | VC | VC |
| TTI60-11005 | UC | UC | UC | XC | XC | XC | XC | VC | VC | VC | VC |
| TTI60-11006 | UC | UC | UC | UC | XC | XC | XC | VC | VC | VC | VC |
| TTI60-11008 | UC | UC | UC | UC | XC | XC | XC | VC | VC | VC | VC |

## TURFJET (TTJ)

| TIP PART NO. | PSI | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 25 | 30 | 35 | 40 | 50 | 60 | 70 | 75 |
| 1/4TTJ02 | UC | XC | XC | XC | VC | VC | VC | VC |
| 1/4TTJ04 | UC | UC | UC | UC | UC | UC | UC | UC |
| 1/4TTJ05 | UC | UC | UC | UC | UC | UC | UC | UC |
| 1/4TTJ06 | UC | UC | UC | UC | UC | UC | UC | UC |
| 1/4TTJ08 | UC | UC | UC | UC | UC | UC | UC | UC |
| 1/4TTJ10 | UC | UC | UC | UC | UC | UC | UC | UC |
| 1/4TTJ15 | UC | UC | UC | UC | UC | UC | UC | UC |

## TURBO TWINJET® (TTJ60)

| TIP PART NO. | PSI | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 80 | 90 |
| TTJ60-11002 | C | C | M | M | M | M | M | M | M | M |
| TTJ60-110025 | VC | C | M | M | M | M | M | M | M | M |
| TTJ60-11003 | VC | C | C | M | M | M | M | M | M | M |
| TTJ60-11004 | VC | C | C | M | M | M | M | M | M | M |
| TTJ60-11005 | VC | C | C | M | M | M | M | M | M | M |
| TTJ60-11006 | VC | C | C | M | M | M | M | M | M | M |
| TTJ60-11008 | VC | C | C | M | M | M | M | M | M | M |
| TTJ60-110010 | VC | C | C | C | M | M | M | M | M | M |

## TURBO FLOODJET® (TF-VP)

| TIP PART NO. | PSI | | | | | | |
|---|---|---|---|---|---|---|---|
| | 10 | 15 | 20 | 25 | 30 | 35 | 40 |
| TF-VP2 | UC | XC | XC | VC | VC | VC | C |
| TF-VP2.5 | UC | XC | XC | VC | VC | VC | C |
| TF-VP3 | UC | XC | XC | XC | VC | VC | VC |
| TF-VP4 | UC | UC | UC | XC | XC | VC | VC |
| TF-VP5 | UC | UC | UC | XC | XC | VC | VC |
| TF-VP7.5 | UC | UC | UC | XC | XC | VC | VC |
| TF-VP10 | UC | UC | UC | XC | XC | VC | VC |

## TURBO FLOODJET (TF-VS)

| TIP PART NO. | PSI | | | | | | |
|---|---|---|---|---|---|---|---|
| | 10 | 15 | 20 | 25 | 30 | 35 | 40 |
| TF-VS2 | UC | UC | XC | XC | VC | VC | VC |
| TF-VS2.5 | UC | UC | XC | XC | VC | VC | VC |
| TF-VS3 | UC | UC | XC | XC | XC | XC | VC |
| TF-VS4 | UC | UC | UC | XC | XC | XC | VC |
| TF-VS5 | UC | UC | UC | XC | XC | XC | VC |
| TF-VS7.5 | UC | UC | UC | XC | XC | XC | VC |
| TF-VS10 | UC | UC | UC | XC | XC | XC | VC |

## TX CONEJET® (TX)

| TIP PART NO. | PSI | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 120 |
| TX-1 | VF | VF | VF | VF | VF | VF | VF | VF | VF |
| TX-2 | VF | VF | VF | VF | VF | VF | VF | VF | VF |
| TX-3 | VF | VF | VF | VF | VF | VF | VF | VF | VF |
| TX-4 | VF | VF | VF | VF | VF | VF | VF | VF | VF |
| TX-6 | VF | VF | VF | VF | VF | VF | VF | VF | VF |
| TX-8 | VF | VF | VF | VF | VF | VF | VF | VF | VF |
| TX-10 | F | VF | VF | VF | VF | VF | VF | VF | VF |
| TX-12 | F | F | VF | VF | VF | VF | VF | VF | VF |
| TX-18 | F | F | F | VF | VF | VF | VF | VF | VF |
| TX-26 | F | F | F | F | VF | VF | VF | VF | VF |

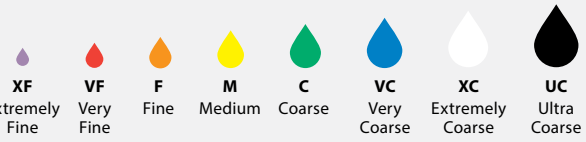
## TX CONEJET® (TXA & TXB)

| TIP PART NO. | PSI | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |
| TX*800050 | VF | VF | VF | VF | VF | VF | VF | VF |
| TX*800067 | VF | VF | VF | VF | VF | VF | VF | VF |
| TX*8001 | F | VF | VF | VF | VF | VF | VF | VF |
| TX*80015 | F | VF | VF | VF | VF | VF | VF | VF |
| TX*80020 | F | F | VF | VF | VF | VF | VF | VF |
| TX*80030 | F | F | F | VF | VF | VF | VF | VF |
| TX*8004 | F | F | F | VF | VF | VF | VF | VF |

*- Specify A or B

# DROP SIZE CLASSIFICATION

## DROPLET SIZE CLASSIFICATION



| XF | VF | F | M | C | VC | XC | UC |
|---|---|---|---|---|---|---|---|
| Extremely Fine | Very Fine | Fine | Medium | Coarse | Very Coarse | Extremely Coarse | Ultra Coarse |

## TXR CONEJET® (TXR)

| TIP PART NO. | PSI | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |
| TXR8000553 | VF | VF | VF | VF | VF | VF | VF | VF |
| TXR800071 | VF | VF | VF | VF | VF | VF | VF | VF |
| TXR8001 | VF | VF | VF | VF | VF | VF | VF | VF |
| TXR80013 | VF | VF | VF | VF | VF | VF | VF | VF |
| TXR80015 | F | VF | VF | VF | VF | VF | VF | VF |
| TXR80017 | F | VF | VF | VF | VF | VF | VF | VF |
| TXR80020 | F | F | VF | VF | VF | VF | VF | VF |
| TXR80028 | F | F | F | VF | VF | VF | VF | VF |
| TXR80030 | F | F | F | VF | VF | VF | VF | VF |
| TXR80036 | F | F | F | VF | VF | VF | VF | VF |
| TXR8004 | F | F | F | VF | VF | VF | VF | VF |
| TXR80049 | F | F | F | F | F | F | VF | VF |

## TWINJET® (TJ60)

| TIP PART NO. | PSI | | | | |
|---|---|---|---|---|---|
| | 30 | 35 | 40 | 50 | 60 |
| TJ60-8001 | F | F | F | VF | VF |
| TJ60-8002 | F | F | F | F | F |
| TJ60-11002 | F | F | F | F | F |
| TJ60-8003 | F | F | F | F | F |
| TJ60-11003 | F | F | F | F | F |
| TJ60-8004 | F | F | F | F | F |
| TJ60-11004 | F | F | F | F | F |
| TJ60-8005 | M | M | M | M | F |
| TJ60-11005 | M | M | M | M | F |
| TJ60-8006 | M | M | M | M | M |
| TJ60-11006 | M | M | M | M | M |
| TJ60-8008 | M | M | M | M | M |
| TJ60-11008 | M | M | M | M | M |
| TJ60-8010 | M | M | M | M | M |
| TJ60-11010 | M | M | M | M | M |

## XR TEEJET® (XR)

| TIP PART NO. | PSI | | | | | |
|---|---|---|---|---|---|---|
| | 15 | 20 | 30 | 40 | 50 | 60 |
| XR8001 | F | F | F | F | F | F |
| XR11001 | F | F | F | F | F | VF |
| XR80015 | M | F | F | F | F | F |
| XR110015 | M | F | F | F | F | F |
| XR8002 | M | M | F | F | F | F |
| XR11002 | M | M | F | F | F | F |
| XR80025 | M | M | M | F | F | F |
| XR110025 | M | M | M | F | F | F |
| XR8003 | M | M | M | F | F | F |
| XR11003 | M | M | M | F | F | F |
| XR80035 | M | M | M | M | F | F |
| XR8004 | M | M | M | M | F | F |
| XR11004 | M | M | M | M | F | F |
| XR8005 | C | M | M | M | F | F |
| XR11005 | M | M | M | M | M | F |
| XR8006 | C | C | M | M | M | M |
| XR11006 | C | M | M | M | M | M |
| XR8008 | VC | C | C | M | M | M |
| XR11008 | C | M | M | M | M | M |
| XR8010 | VC | C | C | M | M | M |
| XR11010 | C | C | C | M | M | M |
| XR8015 | XC | VC | VC | C | C | M |
| XR11015 | VC | VC | C | C | C | M |
| XR11020 | XC | VC | VC | C | C | C |

## TWINJET® (TJ60 E)

| TIP PART NO. | PSI | | | | |
|---|---|---|---|---|---|
| | 30 | 35 | 40 | 50 | 60 |
| TJ60-8002E | F | F | F | F | F |
| TJ60-8003E | F | F | F | F | F |
| TJ60-8004E | F | F | F | F | F |
| TJ60-8006E | M | M | M | F | F |

## XRC TEEJET® (XRC)

| TIP PART NO. | PSI | | | | | |
|---|---|---|---|---|---|---|
| | 15 | 20 | 30 | 40 | 50 | 60 |
| XRC8001 | F | F | F | F | F | F |
| XRC11001 | F | F | F | F | F | VF |
| XRC80015 | M | F | F | F | F | F |
| XRC110015 | M | F | F | F | F | F |
| XRC8002 | M | M | F | F | F | F |
| XRC11002 | M | M | F | F | F | F |
| XRC80025 | M | M | M | F | F | F |
| XRC110025 | M | M | M | F | F | F |
| XRC8003 | M | M | M | F | F | F |
| XRC11003 | M | M | M | F | F | F |
| XRC80035 | M | M | M | M | F | F |
| XRC8004 | M | M | M | M | F | F |
| XRC11004 | M | M | M | M | F | F |
| XRC8005 | C | M | M | M | F | F |
| XRC11005 | M | M | M | M | M | F |
| XRC8006 | C | C | M | M | M | M |
| XRC11006 | C | M | M | M | M | M |
| XRC8008 | VC | C | C | M | M | M |
| XRC11008 | C | M | M | M | M | M |
| XRC8010 | VC | C | C | M | M | M |
| XRC11010 | C | C | C | M | M | M |
| XRC8015 | XC | VC | VC | C | C | M |
| XRC11015 | VC | VC | C | C | C | M |
| XRC11020 | XC | VC | VC | C | C | C |

## XE TEEJET® (XE)

| TIP PART NO. | PSI | | | | | | |
|---|---|---|---|---|---|---|---|
| | 10 | 15 | 20 | 30 | 40 | 50 | 60 |
| XE15002 | UC | UC | XC | XC | VC | VC | VC |
| XE15004 | UC | UC | XC | XC | VC | VC | VC |
| XE15006 | UC | UC | UC | XC | VC | VC | C |
| XE15008 | UC | UC | UC | XC | VC | C | C |

## XP BOOMJET® (XP)

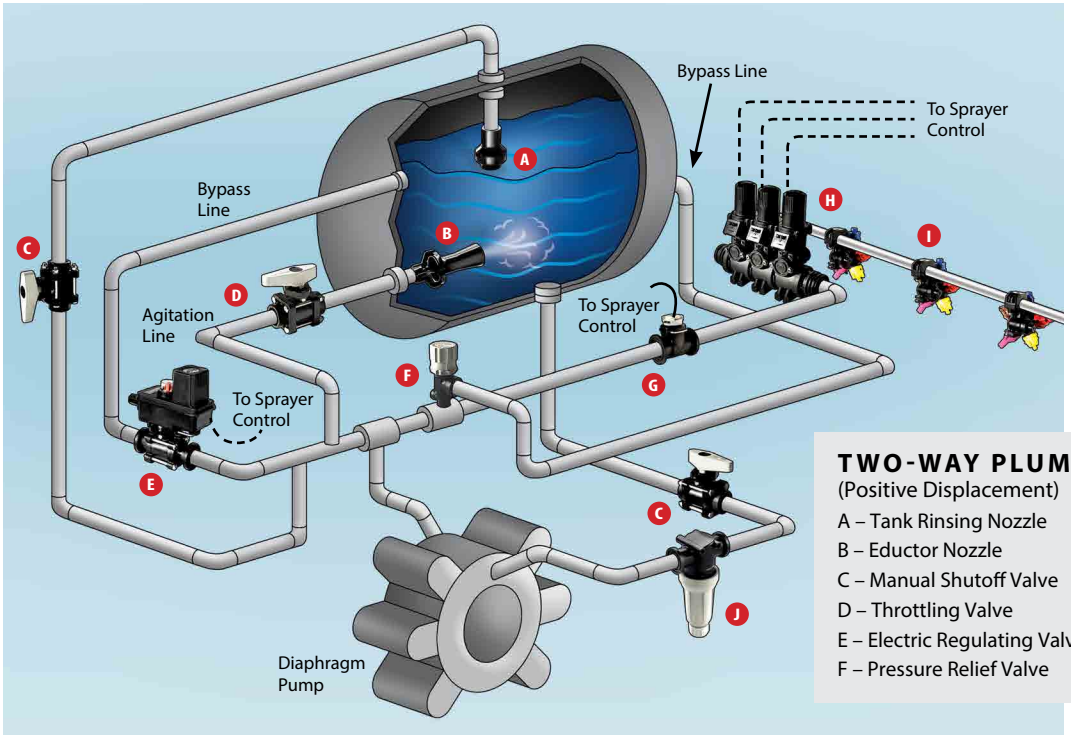
| TIP PART NO. | PSI | | | | |
|---|---|---|---|---|---|
| | 20 | 30 | 40 | 50 | 60 |
| 1/4XP10* | UC | UC | XC | XC | XC |
| 1/4XP20* | UC | UC | UC | XC | XC |
| 1/4XP25* | UC | UC | UC | XC | XC |
| 1/2XP40* | UC | UC | UC | UC | UC |
| 1/2XP80* | UC | UC | UC | UC | UC |

*Specify L or R

The following diagrams have been developed to serve as a guideline for plumbing agricultural sprayers. Similar manual valves may be substituted for electric valves. However, the sequence in which these valves occur should remain the same. Note that one of the most common causes of premature valve failure is improper installation.

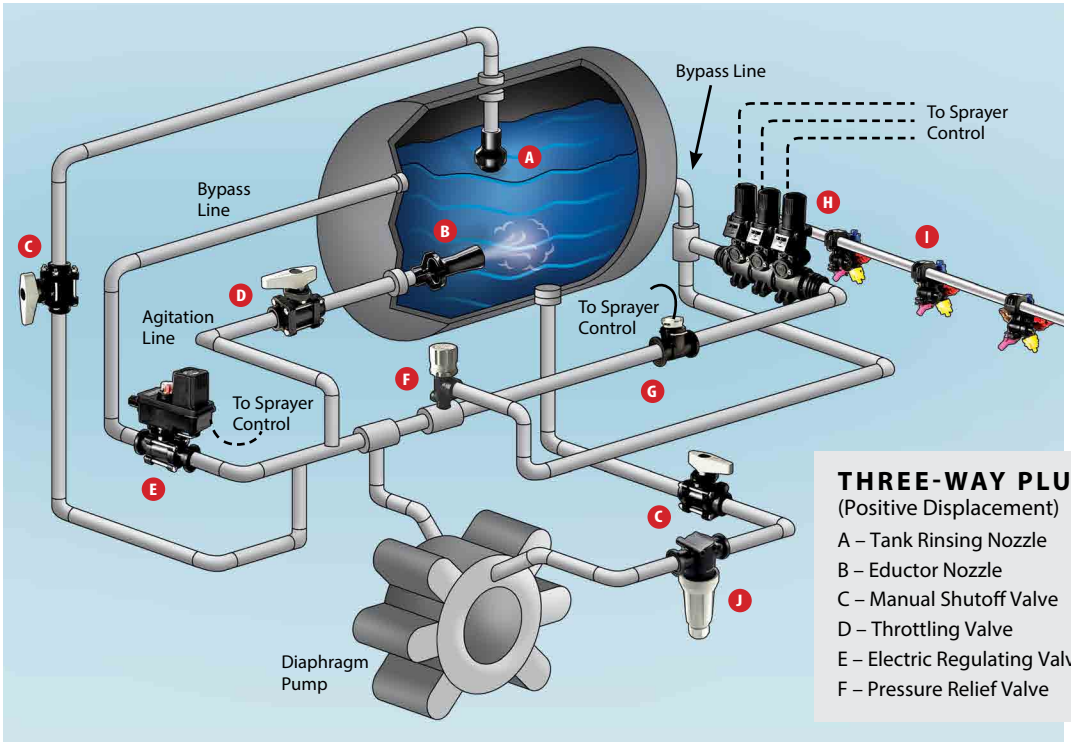
## POSITIVE DISPLACEMENT PUMP

Piston, roller and diaphragm pumps are all types of positive displacement pumps. This means that pump output is proportional to speed and virtually independent of pressure. A key component in a positive displacement system is the pressure relief valve. Proper placement and sizing of the pressure relief valve is essential for safe and accurate operation of a positive displacement pump.




### TWO-WAY PLUMBING DIAGRAM
(Positive Displacement)

A – Tank Rinsing Nozzle
B – Eductor Nozzle
C – Manual Shutoff Valve
D – Throttling Valve
E – Electric Regulating Valve
F – Pressure Relief Valve
G – Flowmeter
H – 2-Way Boom Control Manifold
I – Nozzle Bodies & Spray Tips
J – Line Strainer

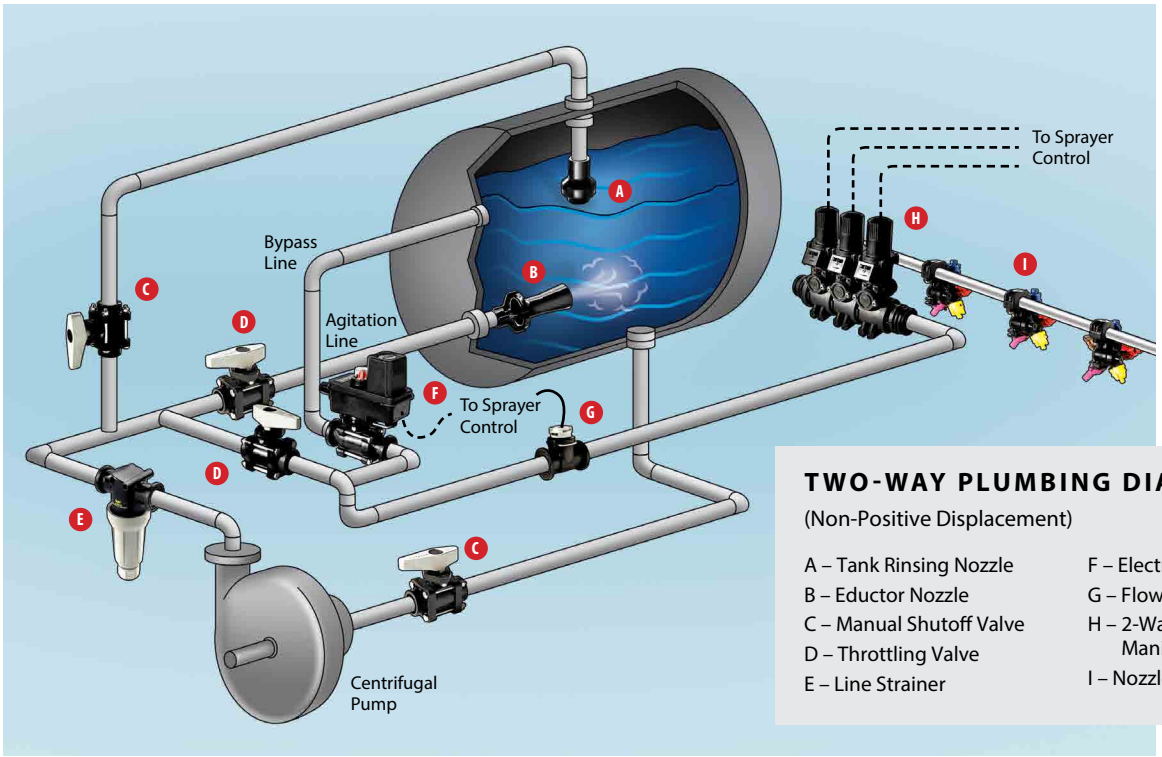



### THREE-WAY PLUMBING DIAGRAM
(Positive Displacement)

A – Tank Rinsing Nozzle
B – Eductor Nozzle
C – Manual Shutoff Valve
D – Throttling Valve
E – Electric Regulating Valve
F – Pressure Relief Valve
G – Flowmeter
H – 3-Way Boom Control Manifold
I – Nozzle Bodies & Spray Tips
J – Line Strainer

## NON-POSITIVE DISPLACEMENT PUMP

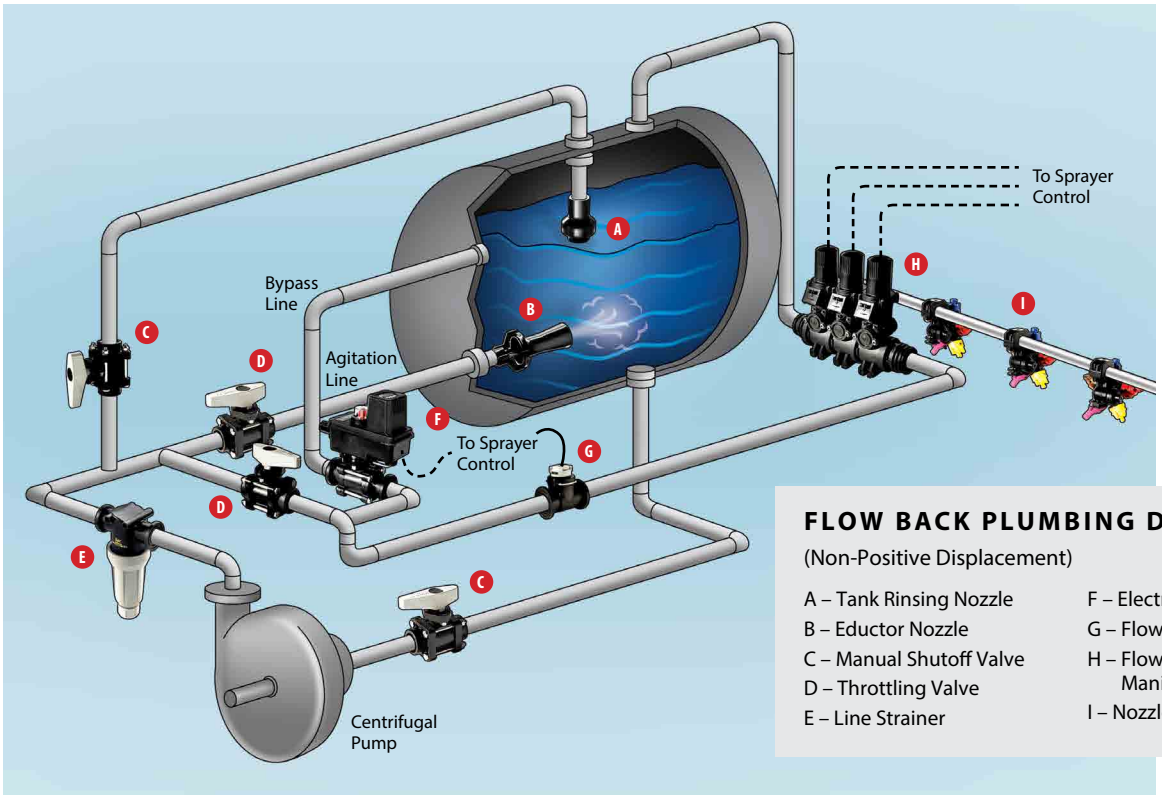
The centrifugal pump is the most common non-positive displacement pump. The output from this type of pump is influenced by pressure. This pump is ideal for delivering large volumes of liquid at low pressures. A key component of the centrifugal pump is the throttling valve. A manual throttling valve on the main output line is essential for the accurate operation of the centrifugal pump.




### TWO-WAY PLUMBING DIAGRAM

(Non-Positive Displacement)

A – Tank Rinsing Nozzle
B – Eductor Nozzle
C – Manual Shutoff Valve
D – Throttling Valve
E – Line Strainer
F – Electric Regulating Valve
G – Flowmeter
H – 2-Way Boom Control Manifold
I – Nozzle Bodies & Spray Tips




### FLOW BACK PLUMBING DIAGRAM

(Non-Positive Displacement)

A – Tank Rinsing Nozzle
B – Eductor Nozzle
C – Manual Shutoff Valve
D – Throttling Valve
E – Line Strainer
F – Electric Regulating Valve
G – Flowmeter
H – Flow Back Boom Control Manifold
I – Nozzle Bodies & Spray Tips