

TECHNICAL DATA



SMOOTH BORE DISCHARGE

DISCHARGE OF SMOOTH BORE NOZZLES/TIPS

| Nozzle Pressure in psi* | Nozzle Diameter In Inches | | | | | | | | | | | | | | | | | | | | | |
|-------------------------------|---------------------------|------|-------|------|------|------|------|--------|-----|--------|---------|--------|--------|--------|--------|--------|--------|------|--------|--------|------|--|
| | 1/4" | 3/8" | 7/16" | 1/2" | 5/8" | 3/4" | 7/8" | 15/16" | 1" | 1 1/8" | 1 3/16" | 1 1/4" | 1 3/8" | 1 1/2" | 1 5/8" | 1 3/4" | 1 7/8" | 2" | 2 1/4" | 2 1/2" | 3" | |
| | Gallons Per Minute | | | | | | | | | | | | | | | | | | | | | |
| 20 | 8 | 19 | 25 | 33 | 52 | 75 | 102 | 117 | 133 | 168 | 187 | 208 | 251 | 299 | 351 | 407 | 467 | 531 | 672 | 830 | 1195 | |
| 22 | 9 | 20 | 27 | 35 | 54 | 78 | 107 | 122 | 139 | 176 | 196 | 218 | 263 | 313 | 368 | 427 | 490 | 557 | 705 | 871 | 1254 | |
| 24 | 9 | 20 | 28 | 36 | 57 | 82 | 111 | 128 | 145 | 184 | 205 | 227 | 275 | 327 | 384 | 446 | 512 | 582 | 737 | 909 | 1309 | |
| 26 | 9 | 21 | 29 | 38 | 59 | 85 | 116 | 133 | 151 | 192 | 214 | 237 | 286 | 341 | 400 | 464 | 532 | 606 | 767 | 947 | 1363 | |
| 28 | 10 | 22 | 30 | 39 | 61 | 88 | 120 | 138 | 157 | 199 | 222 | 246 | 297 | 354 | 415 | 481 | 553 | 629 | 796 | 982 | 1414 | |
| 30 | 10 | 23 | 31 | 41 | 64 | 92 | 125 | 143 | 163 | 206 | 229 | 254 | 308 | 366 | 430 | 498 | 572 | 651 | 824 | 1017 | 1464 | |
| 32 | 11 | 24 | 32 | 42 | 66 | 95 | 129 | 148 | 168 | 213 | 237 | 263 | 318 | 378 | 444 | 515 | 591 | 672 | 851 | 1050 | 1512 | |
| 34 | 11 | 24 | 33 | 43 | 68 | 97 | 133 | 152 | 173 | 219 | 244 | 271 | 327 | 390 | 457 | 530 | 609 | 693 | 877 | 1082 | 1559 | |
| 36 | 11 | 25 | 34 | 45 | 70 | 100 | 136 | 157 | 178 | 226 | 251 | 278 | 337 | 401 | 471 | 546 | 626 | 713 | 902 | 1114 | 1604 | |
| 38 | 11 | 26 | 35 | 46 | 72 | 103 | 140 | 161 | 183 | 232 | 258 | 286 | 346 | 412 | 483 | 561 | 644 | 732 | 927 | 1144 | 1648 | |
| 40 | 12 | 26 | 36 | 47 | 73 | 106 | 144 | 165 | 188 | 238 | 265 | 293 | 355 | 423 | 496 | 575 | 660 | 751 | 951 | 1174 | 1691 | |
| 42 | 12 | 27 | 37 | 48 | 75 | 108 | 147 | 169 | 192 | 244 | 271 | 301 | 364 | 433 | 508 | 589 | 677 | 770 | 974 | 1203 | 1732 | |
| 44 | 12 | 28 | 38 | 49 | 77 | 111 | 151 | 173 | 197 | 249 | 278 | 308 | 372 | 443 | 520 | 603 | 693 | 788 | 997 | 1231 | 1773 | |
| 46 | 13 | 28 | 39 | 50 | 79 | 113 | 154 | 177 | 201 | 255 | 284 | 315 | 381 | 453 | 532 | 617 | 708 | 806 | 1020 | 1259 | 1813 | |
| 48 | 13 | 29 | 39 | 51 | 80 | 116 | 158 | 181 | 206 | 260 | 290 | 322 | 389 | 463 | 543 | 630 | 723 | 823 | 1042 | 1286 | 1852 | |
| 50 | 13 | 30 | 40 | 53 | 82 | 118 | 161 | 185 | 210 | 266 | 296 | 328 | 397 | 473 | 555 | 643 | 738 | 840 | 1063 | 1313 | 1890 | |
| 52 | 13 | 30 | 41 | 54 | 84 | 120 | 164 | 188 | 214 | 271 | 302 | 335 | 405 | 482 | 566 | 656 | 753 | 857 | 1084 | 1339 | 1928 | |
| 54 | 14 | 31 | 42 | 55 | 85 | 123 | 167 | 192 | 218 | 276 | 308 | 341 | 413 | 491 | 576 | 668 | 767 | 873 | 1105 | 1364 | 1964 | |
| 56 | 14 | 31 | 43 | 56 | 87 | 125 | 170 | 195 | 222 | 281 | 313 | 347 | 420 | 500 | 587 | 681 | 781 | 889 | 1125 | 1389 | 2000 | |
| 58 | 14 | 32 | 43 | 57 | 88 | 127 | 173 | 199 | 226 | 286 | 319 | 353 | 428 | 509 | 597 | 693 | 795 | 905 | 1145 | 1414 | 2036 | |
| 60 | 14 | 32 | 44 | 58 | 90 | 129 | 176 | 202 | 230 | 291 | 324 | 359 | 435 | 518 | 607 | 705 | 809 | 920 | 1165 | 1438 | 2070 | |
| 62 | 15 | 33 | 45 | 58 | 91 | 132 | 179 | 206 | 234 | 296 | 330 | 365 | 442 | 526 | 618 | 716 | 822 | 935 | 1184 | 1462 | 2105 | |
| 64 | 15 | 33 | 45 | 59 | 93 | 134 | 182 | 209 | 238 | 301 | 335 | 371 | 449 | 535 | 627 | 728 | 835 | 950 | 1203 | 1485 | 2138 | |
| 66 | 15 | 34 | 46 | 60 | 94 | 136 | 185 | 212 | 241 | 305 | 340 | 377 | 456 | 543 | 637 | 739 | 848 | 965 | 1221 | 1508 | 2172 | |
| 68 | 15 | 34 | 47 | 61 | 96 | 138 | 188 | 215 | 245 | 310 | 345 | 383 | 463 | 551 | 647 | 750 | 861 | 980 | 1240 | 1531 | 2204 | |
| 70 | 16 | 35 | 48 | 62 | 97 | 140 | 190 | 218 | 248 | 314 | 350 | 388 | 470 | 559 | 656 | 761 | 874 | 994 | 1258 | 1553 | 2236 | |
| 72 | 16 | 35 | 48 | 63 | 98 | 142 | 193 | 221 | 252 | 319 | 355 | 394 | 476 | 567 | 665 | 772 | 886 | 1008 | 1276 | 1575 | 2268 | |
| 74 | 16 | 36 | 49 | 64 | 100 | 144 | 196 | 225 | 255 | 323 | 360 | 399 | 483 | 575 | 675 | 782 | 898 | 1022 | 1293 | 1597 | 2299 | |
| 76 | 16 | 36 | 50 | 65 | 101 | 146 | 198 | 228 | 259 | 328 | 365 | 405 | 490 | 583 | 684 | 793 | 910 | 1036 | 1311 | 1618 | 2330 | |
| 78 | 16 | 37 | 50 | 66 | 102 | 148 | 201 | 231 | 262 | 332 | 370 | 410 | 496 | 590 | 693 | 803 | 922 | 1049 | 1328 | 1639 | 2361 | |
| 80 | 17 | 37 | 51 | 66 | 104 | 149 | 203 | 233 | 266 | 336 | 375 | 415 | 502 | 598 | 701 | 814 | 934 | 1063 | 1345 | 1660 | 2391 | |
| 82 | 17 | 38 | 51 | 67 | 105 | 151 | 206 | 236 | 269 | 340 | 379 | 420 | 508 | 605 | 710 | 824 | 946 | 1076 | 1362 | 1681 | 2421 | |
| 84 | 17 | 38 | 52 | 68 | 106 | 153 | 208 | 239 | 272 | 345 | 384 | 425 | 515 | 612 | 719 | 834 | 957 | 1089 | 1378 | 1701 | 2450 | |
| 86 | 17 | 39 | 53 | 69 | 108 | 155 | 211 | 242 | 275 | 349 | 388 | 430 | 521 | 620 | 727 | 843 | 968 | 1102 | 1394 | 1721 | 2479 | |
| 88 | 17 | 39 | 53 | 70 | 109 | 157 | 213 | 245 | 279 | 353 | 393 | 435 | 527 | 627 | 736 | 853 | 979 | 1114 | 1410 | 1741 | 2507 | |
| 90 | 18 | 40 | 54 | 70 | 110 | 158 | 216 | 248 | 282 | 357 | 397 | 440 | 533 | 634 | 744 | 863 | 991 | 1127 | 1426 | 1761 | 2536 | |
| 92 | 18 | 40 | 55 | 71 | 111 | 160 | 218 | 250 | 285 | 361 | 402 | 445 | 539 | 641 | 752 | 872 | 1002 | 1139 | 1442 | 1780 | 2564 | |
| 94 | 18 | 40 | 55 | 72 | 112 | 162 | 220 | 253 | 288 | 364 | 406 | 450 | 544 | 648 | 760 | 882 | 1012 | 1152 | 1458 | 1800 | 2592 | |
| 96 | 18 | 41 | 56 | 73 | 114 | 164 | 223 | 256 | 291 | 368 | 410 | 455 | 550 | 655 | 768 | 891 | 1023 | 1164 | 1473 | 1819 | 2619 | |
| 98 | 18 | 41 | 56 | 74 | 115 | 165 | 225 | 258 | 294 | 372 | 415 | 459 | 556 | 662 | 776 | 900 | 1034 | 1176 | 1488 | 1838 | 2646 | |
| 100 | 19 | 42 | 57 | 74 | 116 | 167 | 227 | 261 | 297 | 376 | 419 | 464 | 562 | 668 | 784 | 910 | 1044 | 1188 | 1504 | 1856 | 2673 | |
| 105 | 19 | 43 | 58 | 76 | 119 | 171 | 233 | 267 | 304 | 385 | 429 | 476 | 575 | 685 | 804 | 932 | 1070 | 1217 | 1541 | 1902 | 2739 | |
| 110 | 19 | 44 | 60 | 78 | 122 | 175 | 238 | 274 | 311 | 394 | 439 | 487 | 589 | 701 | 823 | 954 | 1095 | 1246 | 1577 | 1947 | 2803 | |
| 115 | 20 | 45 | 61 | 80 | 124 | 179 | 244 | 280 | 318 | 403 | 449 | 498 | 602 | 717 | 841 | 975 | 1120 | 1274 | 1612 | 1991 | 2866 | |
| 120 | 20 | 46 | 62 | 81 | 127 | 183 | 249 | 286 | 325 | 412 | 459 | 508 | 615 | 732 | 859 | 996 | 1144 | 1301 | 1647 | 2033 | 2928 | |
| 125 | 21 | 47 | 64 | 83 | 130 | 187 | 254 | 292 | 332 | 420 | 468 | 519 | 628 | 747 | 877 | 1017 | 1167 | 1328 | 1681 | 2075 | 2989 | |
| 130 | 21 | 48 | 65 | 85 | 132 | 190 | 259 | 298 | 339 | 429 | 478 | 529 | 640 | 762 | 894 | 1037 | 1191 | 1355 | 1714 | 2116 | 3048 | |
| 135 | 22 | 49 | 66 | 86 | 135 | 194 | 264 | 303 | 345 | 437 | 487 | 539 | 652 | 776 | 911 | 1057 | 1213 | 1380 | 1747 | 2157 | 3106 | |
| 140 | 22 | 49 | 67 | 88 | 137 | 198 | 269 | 309 | 351 | 445 | 496 | 549 | 664 | 791 | 928 | 1076 | 1235 | 1406 | 1779 | 2196 | 3163 | |
| 145 | 22 | 50 | 68 | 89 | 140 | 201 | 274 | 314 | 358 | 453 | 504 | 559 | 676 | 805 | 944 | 1095 | 1257 | 1431 | 1811 | 2235 | 3219 | |
| 150 | 23 | 51 | 70 | 91 | 142 | 205 | 278 | 320 | 364 | 460 | 513 | 568 | 688 | 818 | 961 | 1114 | 1279 | 1455 | 1841 | 2273 | 3274 | |
| 175 | 25 | 55 | 75 | 98 | 153 | 221 | 301 | 345 | 393 | 497 | 554 | 614 | 743 | 884 | 1037 | 1203 | 1381 | 1572 | 1989 | 2456 | 3536 | |
| 200 | 26 | 59 | 80 | 105 | 164 | 236 | 322 | 369 | 420 | 532 | 592 | 656 | 794 | 945 | 1109 | 1286 | 1477 | 1680 | 2126 | 2625 | 3780 | |

* Nozzle pressure measured by pitot tube and gauge.

FORMULA FOR DISCHARGE OF SMOOTH BORE NOZZLES:

$$\text{GPM} = 29.71 d^2 \sqrt{\text{NP}}$$

GPM = Gallons per minute

29.71 = Constant

d = Diameter of nozzle orifice (inches)

NP = Nozzle pressure (psi) measured by pitot tube and gauge