# Straight Bore Discharge Data

| *FK* Nozzle PSI In lbs./ Sq. In. | *FK* Nozzle Tip Size in Inches | | | |
|---|---|---|---|---|
| | 3" | 3-1/2" | 4" | 4-1/2" |
| | Gallons Per Minute | | | |
| 10 | 760 | 1040 | 1360 | 1720 |
| 12 | 840 | 1140 | 1490 | 1880 |
| 14 | 900 | 1230 | 1610 | 2030 |
| 16 | 970 | 1320 | 1720 | 2180 |
| 18 | 1030 | 1400 | 1820 | 2310 |
| 20 | 1080 | 1470 | 1920 | 2430 |
| 22 | 1130 | 1540 | 2020 | 2550 |
| 24 | 1180 | 1610 | 2110 | 2660 |
| 26 | 1230 | 1680 | 2190 | 2770 |
| 28 | 1280 | 1740 | 2270 | 2880 |
| 30 | 1320 | 1800 | 2350 | 2980 |
| 32 | 1370 | 1860 | 2430 | 3080 |
| 34 | 1410 | 1920 | 2510 | 3170 |
| 36 | 1450 | 1970 | 2580 | 3260 |
| 38 | 1490 | 2030 | 2650 | 3350 |
| 40 | 1530 | 2080 | 2720 | 3440 |
| 42 | 1570 | 2130 | 2780 | 3520 |
| 44 | 1600 | 2180 | 2850 | 3610 |
| 46 | 1640 | 2230 | 2910 | 3690 |
| 48 | 1670 | 2280 | 2980 | 3770 |
| 50 | 1710 | 2330 | 3040 | 3850 |
| 52 | 1740 | 2370 | 3100 | 3920 |
| 54 | 1780 | 2420 | 3160 | 4000 |
| 56 | 1810 | 2460 | 3220 | 4070 |
| 58 | 1840 | 2510 | 3270 | 4140 |
| 60 | 1870 | 2550 | 3330 | 4210 |
| 62 | 1900 | 2590 | 3380 | 4280 |
| 64 | 1930 | 2630 | 3440 | 4350 |
| 66 | 1960 | 2670 | 3490 | 4420 |
| 68 | 1990 | 2710 | 3540 | 4480 |
| 70 | 2020 | 2750 | 3600 | 4550 |
| 72 | 2050 | 2790 | 3650 | 4610 |
| 74 | 2080 | 2830 | 3700 | 4680 |
| 76 | 2110 | 2870 | 3750 | 4740 |
| 78 | 2130 | 2910 | 3790 | 4800 |
| 80 | 2160 | 2940 | 3840 | 4860 |
| 82 | 2190 | 2980 | 3890 | 4920 |
| 84 | 2220 | 3020 | 3940 | 4980 |
| 86 | 2240 | 3050 | 3980 | 5040 |
| 88 | 2270 | 3090 | 4030 | 5100 |
| 90 | 2290 | 3120 | 4080 | 5160 |
| 92 | 2320 | 3160 | 4120 | 5220 |
| 94 | 2340 | 3190 | 4170 | 5270 |
| 96 | 2370 | 3220 | 4210 | 5330 |
| 98 | 2390 | 3260 | 4250 | 5380 |
| 100 | 2420 | 3290 | 4300 | 5440 |
| 105 | 2480 | 3370 | 4400 | 5570 |
| 110 | 2540 | 3450 | 4510 | 5700 |
| 115 | 2590 | 3530 | 4610 | 5830 |
| 120 | 2650 | 3600 | 4710 | 5960 |
| 125 | 2700 | 3680 | 4800 | 6080 |
| 130 | 2760 | 3750 | 4900 | 6200 |
| 135 | 2810 | 3820 | 4990 | 6320 |
| 140 | 2860 | 3890 | 5080 | 6430 |

## BASIC PRINCIPLE OF OPERATION

The Apparatus Flow Test Kit uses the pitot method to measure water flow. This is where flow is the direct function of the stream velocity (pressure) through a nozzle tip of known diameter.

One way to read nozzle tip pressure, accurately, is to place the pitot tube tip securely in the center of the nozzle tip a distance equal to one-half the nozzle tip diameter in the center of the tip diameter and parallel to the direction of the water flow. The pitot simply measures the static water pressure at the point of pick up and is read in PSI on the pressure gauge. The enclosed Akron Brass Straight Bore Discharge Data chart converts the PSI reading to the actual flow in GPM.

**HOW TO USE:** Flush the system, totally, prior to testing. Attach the Apparatus Flow Test Kit to a deluge set that has the proper hose layouts connected to it. Attach the appropriate tip size you wish to start testing with. Bring your apparatus up to the proper engine RPM as per the UL Test Plate mounted on the pump panel; and the corrected Test Gauge reading as figured per the instructions on the other side of this table. Bleed all entrapped air from pitot blade and gauge using the bleeder valve. The pitot reading in PSI and its correlation to the corresponding "Straight Bore Discharge Data" chart will give you the flow in gallons per minute of your apparatus at that RPM. After use, open bleeder valve to drain pitot tube and gauge, this is especially necessary in freezing weather.

If by chance the pitot turns while testing, or is removed from the Apparatus Flow Test Kit for any reason, REALIGNMENT is required. To realign, loosen the set screw that retains the pitot and install the 2" tip. Center the pitot tip in the middle of the tip bore and adjust the tip of the pitot 1" (half the diameter of the tip size) from the end of the tip.

The gauge has an accuracy of plus or minus 1%. If it is dropped or abused in any way it will need to be replaced. Recalibration of a liquid filled gauge can only be done by the original manufacturer.

**RECOMMENDATIONS:** (1) Always follow the most current NFPA 1911 Standard for "Service Tests of Pumps on Fire Department Apparatus" when testing; (2) Direct flow away from any possible hazards, preferably to an open area; (3) Flush the device to be tested prior to attachment of the flow test kit; (4) Check all connections prior to flowing water; (5) Never interchange nozzle tips while the flow test kit is in operation; (6) Water flow must be straightened for a minimum of three feet ahead of the flow test kit; (7) All reducers and/or adapters connected to the flow test kit must have a minimum of a 2-1/2" waterway; (8) Nozzle tips should be screwed on, hand tight, so the gasket is not expanded into the waterway. There is no need for spanner tightening.

**MAINTENANCE and INSPECTION:** (1) Inspect the internal surface of the nozzle tips before and after each use for any nicks or gouges, this may effect the readings. All nozzle tips should be smooth bore; (2) Inspect the pitot waterway to ensure that no obstructions are present; (3) Lubricate all gaskets with a good general purpose O-Ring lubricant; (4) Check pitot gauge against a calibrated master gauge, frequently; (5) Check distance from pitot blade inlet to the nozzle tip, regardless which nozzle tip is installed, the distance must be 1/2 the diameter of the nozzle tip. Note: Distance from pitot blade to nozzle tip may be due to gasket wear and replacement of the nozzle tip gasket may be required; (6) Check pitot blade to make certain it is in the center of the waterway, as this may effect the reading; (7) In the event the pitot blade becomes damaged, a new blade can be ordered from your local distributor.

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