



STYLE AFTK-LK-KIT, AFTK-SK-KIT APPARATUS FLOW TEST KIT OPERATING INSTRUCTIONS

Straight Bore Discharge Data								
AFTK Nozzle Tip Diameter (inches)								
Nozzle Pressure (PSI)	3/4"	1"	1-1/4"	1-1/2"	1-3/4"	2"	2-1/4"	2-1/2"
	Gallons Per Minute							
40	94	166	279	399	561	745	927	1174*
42	97	172	285	408	569	764	943	1203*
44	100	177	293	417	584	784	977	1232*
46	103	182	299	430	600	805	1001	1259*
48	105	184	305	438	614	821	1023	1286*
50	107	189	311	449	626	834	1042	1313*
52	109	192	317	460	637	849	1063	1339*
54	110	195	323	466	647	862	1080	1365*
56	113	199	330	479	661	880	1106	1390*
58	115	203	335	488	670	897	1132	1414*
60	116	206	341	494	684	911	1150	1438*
62	118	209	346	501	694	923	1167	1462*
64	120	213	351	508	703	933	1180	1486*
66	122	216	357	513	719	952	1205	1509*
68	124	219	363	521	732	968	1226	1531*
70	125	221	367	529	742	978	1245	1554*
72	127	226	373	535	750	987	1259	1576*
74	129	228	377	541	759	1000	1269	1597*
76	131	231	384	551	770	1021	1290	1619*
78	132	235	388	555	782	1035	1311	1640*
80	134	237	392	564	790	1044	1326	1661*
82	136	240	396	568	797	1057	1337	1681*
84	138	242	401	574	807	1066	1347	1702*
86	140	246	406	585	817	1085	1366	1722*
88	141	248	410	591	828	1101	1378	1742*
90	142	251	414	596	838	1113	1388	1762*
92	144	254	417	601	846	1122	1399	1781*
94	146	257	423	609	852	1133	1420	1800*
96	147	259	428	617	865	1142	1436	1819*
98	149	262	432	622	874	1154	1450	1838*
100	150	265	436	627	882	1170	1461	1857*
102	151	267	440	633	889	1178	1473	1875*
104	153	269	444	637	895	1188	1484	1894*
106	154	271	448	646	905	1202	1499	1912*
108	155	275	451	655	913	1211	1563*	1930*
110	157	277	454	658	920	1222	1577*	1948*
112	159	278	456	663	925	1231	1592*	1965*
114	160	281	460	667	931	1239	1606*	1983*
116	161	283	465	673	941	1245	1620*	2000*
118	163	287	467	680	947	1260	1634*	2017*
120	165	291	470	686	957	1266	1648*	2034*

BASIC PRINCIPLE OF OPERATION

The Apparatus Flow Test Kit (AFTK) 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 discharge tip diameter and parallel to the direction of the water flow. The pitot simply measures the flowing 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 (AFTK) to a deluge set that has the recommended hose layouts connected to it. Attach the appropriate discharge 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. 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, press the bleeder button to allow the pitot tube and gauge to drain, this is especially necessary in freezing weather.

If by chance the pitot turns while testing, REALIGNMENT is required. To realign, loosen the thumb knob that retains the pitot rotationally, center the pitot tip in the middle of the discharge tip bore and tighten the knob.

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) Mount the test kit to a secured monitor or similar device; (4) Flush the device to be tested prior to attachment of the flow test kit; (5) Check all connections prior to flowing water; (6) Never interchange nozzle tips while the flow test kit is in operation; (7) Water flow shall be straightened using a style 3488 stream straightener; (8) All reducers and/or adapters connected to the flow test kit must have a minimum of a 2-1/2" waterway; (9) 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 affect the readings. Use only the nozzle smooth bore tips provided; (2) Inspect the pitot waterway to ensure that no obstructions are present; (3) Check pitot blade to make certain it is in the center of the waterway, as this may affect the reading; (4) In the event the pitot blade becomes damaged, a new blade can be ordered from your local distributor.

Preferred test range is 50 to 100 PSI

Deviating from the recommended test setup can effect values given in this chart.

Note: Flows with asterisk () are based upon theoretical discharge calculations.

*Solid Bore Discharge Formula: $29.71D^2\sqrt{NP}$, D = Bore Diameter, NP = Nozzle Pressure Measured with Pitot Gauge (PSI).

References: International Fire Service Training Association (IFSTA) Fire Protection Publications - Fire Stream Practices.

Always follow the most current NFPA 1911 when testing with the Apparatus Flow Test Kit.



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Straight Bore Discharge Data								
AFTK Nozzle Tip Diameter (inches)								
Nozzle Pressure (kPa)	3/4"	1"	1-1/4"	1-1/2"	1-3/4"	2"	2-1/4"	2-1/2"
	Liters Per Minute (Converted)							
276**	356**	628**	1056**	1510**	2123**	2820**	3509**	4444**
290**	367**	651**	1079**	1544**	2154**	2892**	3569**	4553**
303**	379**	670**	1109**	1578**	2210**	2967**	3698**	4663**
317**	390**	689**	1132**	1628**	2271**	3047**	3789**	4765**
331**	397**	696**	1154**	1658**	2324**	3107**	3872**	4868**
345**	405**	715**	1177**	1699**	2369**	3157**	3944**	4970**
359**	413**	727**	1200**	1741**	2411**	3213**	4023**	5068**
372**	416**	738**	1223**	1764**	2449**	3263**	4088**	5167**
386**	428**	753**	1249**	1813**	2502**	3331**	4186**	5261**
400**	435**	768**	1268**	1847**	2536**	3395**	4285**	5352**
414**	439**	780**	1291**	1870**	2589**	3448**	4353**	5443**
427**	447**	791**	1310**	1896**	2627**	3494**	4417**	5534**
441**	454**	806**	1329**	1923**	2661**	3531**	4466**	5625**
455**	462**	818**	1351**	1942**	2721**	3603**	4561**	5712**
469**	469**	829**	1374**	1972**	2771**	3664**	4640**	5795**
483**	473**	836**	1389**	2002**	2808**	3702**	4712**	5882**
496**	481**	855**	1412**	2025**	2839**	3736**	4765**	5965**
510**	488**	863**	1427**	2048**	2873**	3785**	4803**	6045**
524**	496**	874**	1453**	2086**	2914**	3864**	4883**	6128**
538**	500**	889**	1469**	2101**	2960**	3917**	4962**	6207**
552**	507**	897**	1484**	2135**	2990**	3952**	5019**	6287**
565**	515**	908**	1499**	2150**	3017**	4001**	5061**	6363**
579**	522**	916**	1518**	2173**	3054**	4035**	5098**	6442**
593**	530**	931**	1537**	2214**	3130**	4107**	5170**	6518**
607**	534**	939**	1552**	2237**	3134**	4167**	5216**	6593**
621**	537**	950**	1567**	2256**	3172**	4213**	5254**	6669**
634**	545**	961**	1578**	2275**	3202**	4247**	5295**	6741**
648**	553**	973**	1601**	2305**	3225**	4288**	5375**	6813**
662**	556**	980**	1620**	2335**	3274**	4322**	5435**	6885**
676**	564**	992**	1635**	2354**	3308**	4368**	5488**	6957**
690**	568**	1003**	1650**	2373**	3338**	4428**	5530**	7029**
703**	572**	1011**	1665**	2396**	3365**	4459**	5575**	7097**
717**	579**	1018**	1681**	2411**	3388**	4497**	5617**	7169**
731**	583**	1026**	1696**	2445**	3425**	4550**	5674**	7237**
745**	587**	1041**	1707**	2479**	3456**	4584**	5916**	7305**
758**	594**	1048**	1718**	2491**	3482**	4625**	5969**	7373**
772**	602**	1052**	1726**	2509**	3501**	4659**	6026**	7438**
789**	606**	1064**	1741**	2525**	3524**	4690**	6079**	7506**
800**	609**	1071**	1760**	2547**	3562**	4712**	6132**	7570**
814**	617**	1086**	1768**	2574**	3584**	4769**	6185**	7634**
827**	625**	1101**	1779**	2597**	3622**	4792**	6238**	7699**

**Note: LPM and kPa values are converted from GPM and PSI values in the previous chart

**Solid Bore Discharge formula for LPM: $42.83D^2\sqrt{NP}$, D= bore diameter(in), NP=Nozzle pressure from Pitot gage (kPa)



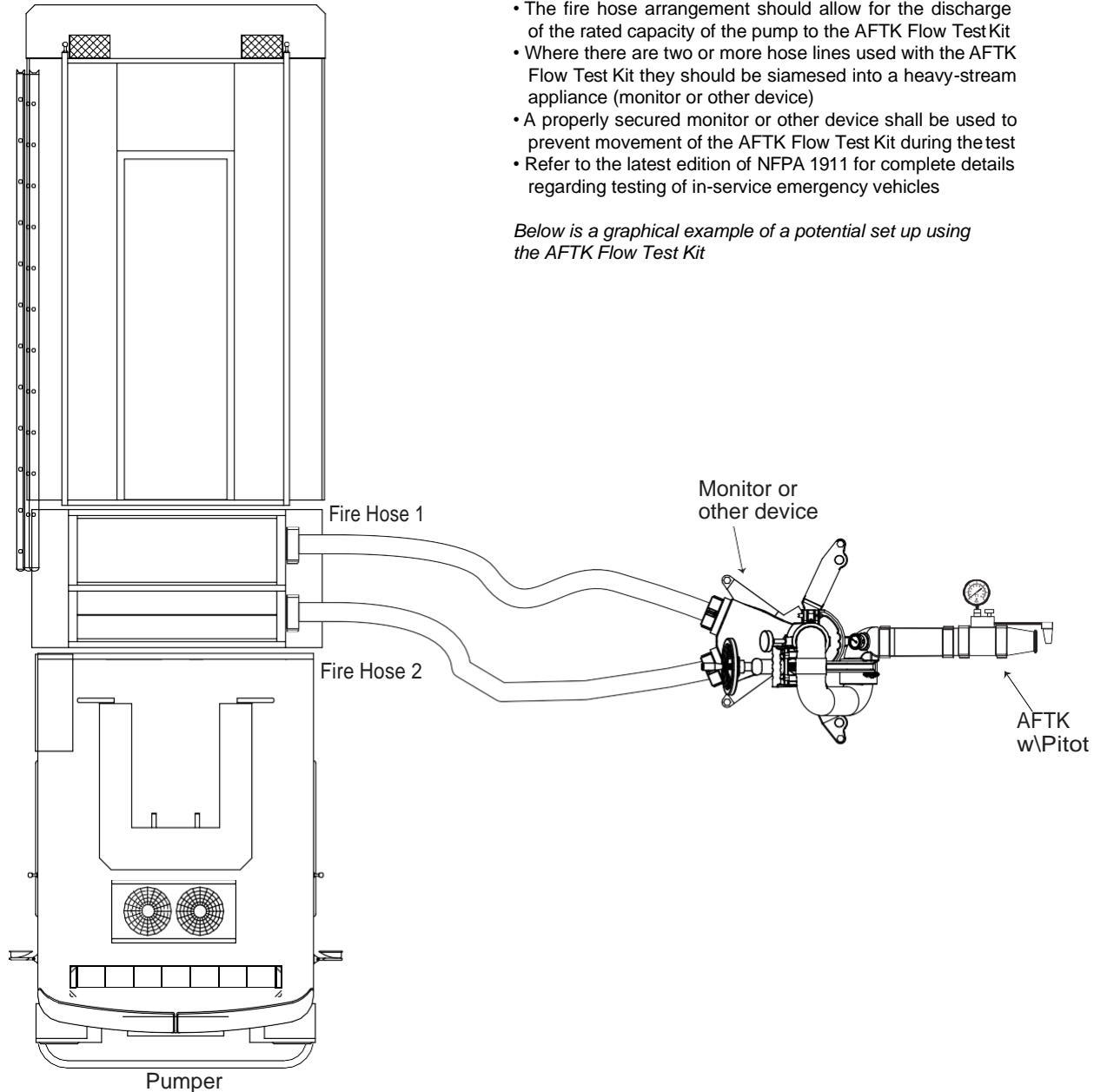
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AFTK Test Set Up

Akron Brass AFTK Flow Test Kit Set Up Recommendations for Fire Apparatus Pump Testing

- The fire hose arrangement should allow for the discharge of the rated capacity of the pump to the AFTK Flow Test Kit
- Where there are two or more hose lines used with the AFTK Flow Test Kit they should be siamesed into a heavy-stream appliance (monitor or other device)
- A properly secured monitor or other device shall be used to prevent movement of the AFTK Flow Test Kit during the test
- Refer to the latest edition of NFPA 1911 for complete details regarding testing of in-service emergency vehicles

Below is a graphical example of a potential set up using the AFTK Flow Test Kit



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