

## How to Graph Fire Pump Test Results

**Example:** (Also see the attached 1.85 graph paper for details.)

**Fire Pump Rating From Pump Name Plate:** Churn 60 psi, 1000 gpm @ 50 psi, 1500 gpm @ 32 psi, RPM 1750

**Sprinkler Demand:** 100 psi @ 600 gpm

**Fire Pump Test Results:** Note all Pitots are 1.75"

Hose	Suction PSI	Discharge PSI	Pitot PSI	GPM	Total GPM	RPM	NET PSI
Churn	50	113	0	0	0	1763	63
1	45	105	44	603	603	1760	60
2	30	84	30-30	498-498	996	1753	54
3	25	59	32-30-34	514,498,530	1542	1750	34

**Step 1:** Place a dot on the 1.85 graph paper for each of the following points: 60 psi @ 0 gpm, 50 psi @ 1000 gpm, 32 psi @ 1500 gpm. Connect each dot with a line. The line represents the fire pump rating from the fire pump name plate and what it did at the factory.

**Step 2:** Place a dot on the 1.85 graph paper for each of the following points that represented the NET pressure and flows during the test: Churn: 63 psi @ 0 gpm, Hose 1: 60 psi @ 603 gpm, Hose 2: 54 psi @ 996 gpm, Hose 3: 34psi @ 1542 psi. Connect each dot with a line. The line represents the fire pump test results.

**Step 3:** The line and points in step 2 should be within 95% of the line and points in step 1. If it is, the fire pump passes the test, if not, it fails. In this example the pump test is satisfactory.

**Step 4: Combined Curve:** Place a dot on the 1.85 graph paper for each of the following points that represent the Discharge Pressure of the Fire Pump Test: Churn: 113 psi @ 0 gpm, Hose 1: 105 psi @ 603 gpm, Hose 2: 84 psi @ 996 gpm, Hose 3: 59psi @ 1542 psi. Connect each dot with a line. This represents the available water supply to the sprinkler system during a fire event. Place a dot at the Sprinkler Demand of: 100 psi @ 600 gpm.

**Step 5:** Is the water supply adequate to meet the sprinkler demand? **Yes.** If the point was above the line in Step 4, the water supply would not be adequate to meet the sprinkler demand even with the fire pump operating. Further investigation would be needed including review of the sprinkler hydraulics by a fire protection engineer.

**Step 6: Electric Driver:** Rating: Volts 460, Amps: 46.5. Service Factor: 1.15.

### Volts Amps

Hose	Volts	Volts	Volts	Amps	Amps	Amps
Churn	460	460	460	34	34	33
Hose 1	460	460	460	37	36	36
Hose 2	460	460	460	44	43	43
Hose 3	460	460	460	52	51	52

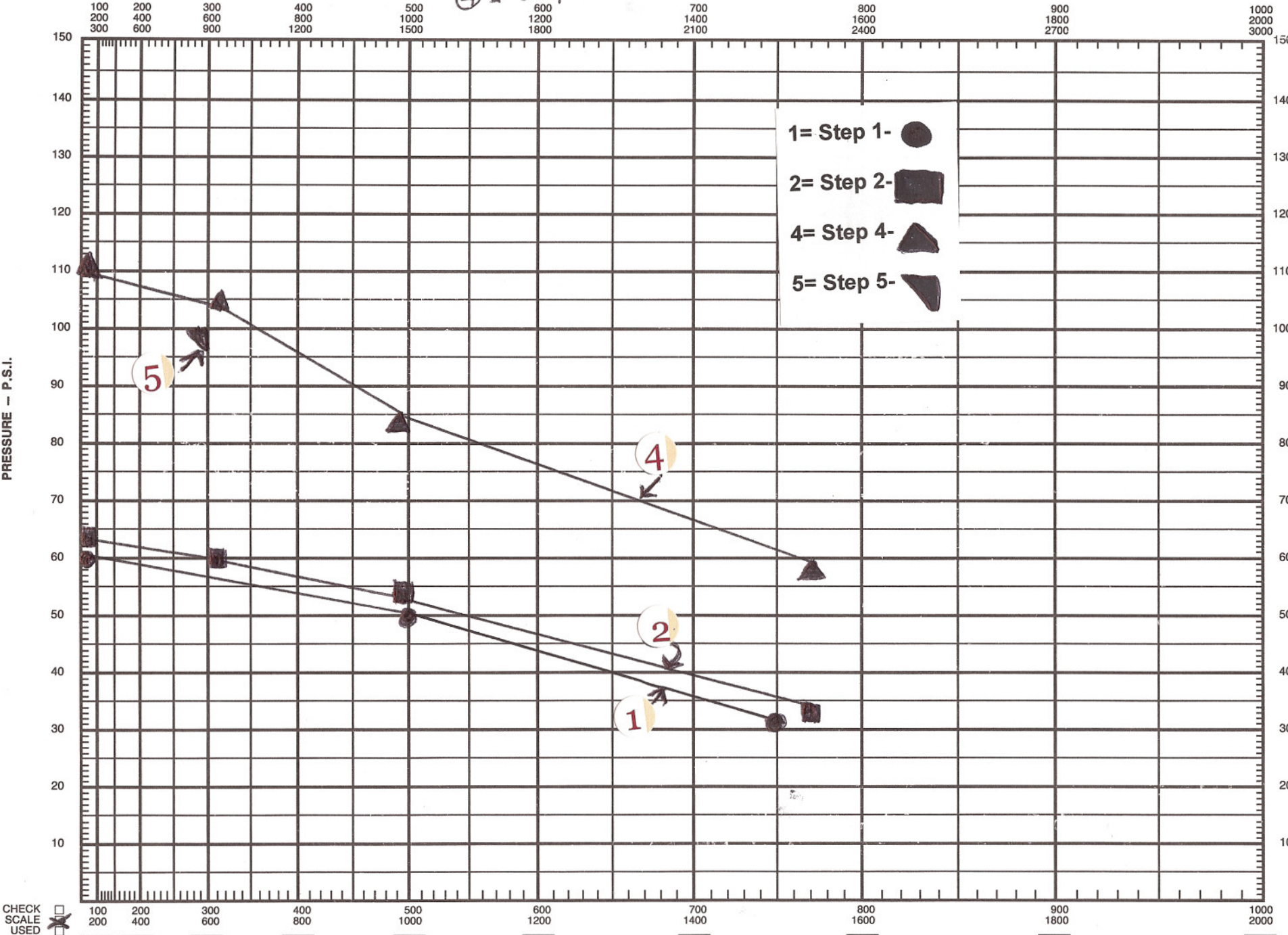
As per NFPA 25 the maximum amps is the motor amps times the Service Factor listed on the motor. Our example: 46.5 amps x 1.15 service factor = 53.47 amps. Per NFPA 25 volts can be no more than 5% below or 10% above motor name plate rating. Our example that would be a low of 437 volts and a high of 506 volts. During the test the maximum Volts is 460 and the maximum amps is 53, the volt and amp readings are acceptable.

# WATER SUPPLY GRAPH NO. N 1.85

① = Step # 1 - ●  
 ② = Step # 2 - ■  
 ④ = Step # 4 - ▲

⑤ = Step 5 - ▼

DATE	BY	LOC. #
PROPERTY OF		



CHECK SCALE USED