Nozzles which is the best?

A nozzle allows us to control the pattern and size of the water jet or stream. We now have a range of nozzles that we can use on the fire ground but which is best for the fire we are trying to suppress?

The main nozzles that are use in the RFS are straight nozzle, controllable jet/spray (Dial a jet, AWG), foam making branch and pistol grip fog nozzles. Each nozzle has an optimal working range and needs to be matched to the water supply and pressure to operate affectedly. Correct nozzle selection can improve fire suppression, reduce operator fatigue and reduce water consumption.

The following table is a guide, consult the RFS Pocket Book or a manufactures guide for further details.

Nozzle	Operating Pressure	Discharge (l/min)	Water available from a Cat 1(mins)	Uses
Dial a jet 3mm to 8mm	550kpa	12 to 86	291 to 40	Fire Suppression
AWG 38mm	500kpa	86	40	Fire Suppression
AWG 65mm	500kpa	335	10	Fire Suppression
Pistol Grip Fog Nozzle (Manual)	700kpa	250 * (38mm Hose)	14	Fire Suppression, especially suited to Village type incidents
Pistol Grip Fog Nozzle (Manual)	700kpa	475 * (65mm Hose)	7	Fire Suppression, especially suited to Village type incidents

*Note- this value could increase for an automatic type nozzle.

Friction Loss
Friction loss is an important factor when selecting pump operating pressure, the loss along one length of 30m hose is 100kpa.

The pressure drop through a hose reel and 60 metre x 20 mm I.D. PVC hose for a flow of 75 litres/minute (8 mm jet on the Dial-a-jet nozzle) is approximately 600 - 700 kPa. The pressure drop through a hose reel and 50 metre x 25 mm I.D. PVC hose for a flow of 75 litres/minute (8 mm jet on the Dial-a-jet nozzle) is approximately 250 - 300 kPa.

Examples

Pump pressure for a Pistol Grip Fog Nozzle on 3 lengths of 38mm hose would be 700+100+100+100 = **1000kpa.**

Pump pressure for a Pistol Grip Fog Nozzle on 50 metre x 25 mm I.D. PVC hose would be 700+300 = **1000kpa.** (the PVC hose may not be able to deliver a suitable flow rate of water)

We should all take the time to be familiar with the equipment we carry on our vehicles so we are able to match the item to the task. Correct nozzle selection and usage will assist us during fire suppression by more effective and efficient use of water or foam.

Further Information on the topic can be found in the following

- RFS Pocket Book
- AF/5 (2005) Operate Pumps
- Village Firefighter Manual
- Nozzles Manufactures Manuals