FOAM PROPORTIONING AND DELIVERY EQUIPMENT

Learning Objective:

Explaining the various components of foam delivery systems and application techniques.

Prerequisites:

Students should have knowledge of

- Fire Behavior and Extinguishment
- Foam Concentrate Technology

Instructional Format:

Students will be shown techniques and procedures on the proper choice, use, and application to be used involving various methods of delivery equipment. This will be done through lecture and practical evolutions.

Materials and Equipment:

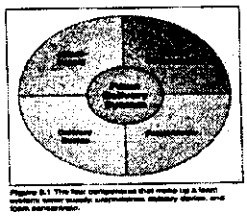
Student handouts, slides and equipment.

Student Goal:

Upon completion of this course, students should be able to demonstrate proper foam selection and application techniques.

FIRE FIGHTING FOAM CONCENTRATES

- Can be delivered through
  - Water supply under pressure
  - Proportioner
  - Delivery device
  - Foam concentrate source



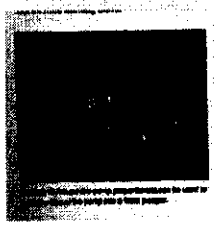
FOAM DELIVERY SYSTEM

There are four components that make up a foam system. (Fig 3.1)

FOAM PROPORTIONING DEVICES

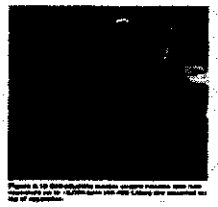
These devices operate on one of two basic principles

- Injection
- Induction



PORTABLE FOAM EDUCTORS

- In-line foam eductors (Fig 3.2)
- Self-educting hand line foam nozzles (Fig. 3.9)
- Self-educting master stream foam nozzles (Fig 3.10)
- Portable around the pump proportioners (Fig. 3.13)



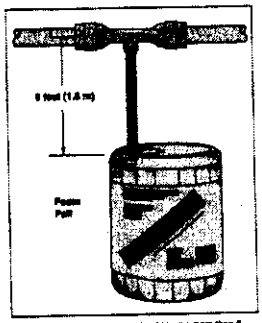
Denote advantages, disadvantages in application as well as proper ratios of each and things to be aware of in use

Venturi Process

Explain these.

Rated Flow (Fig. 3.3)

Concentrate Lift Restrictions (Fig. 3.4)

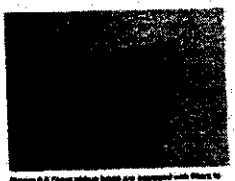


Check Valve

Filter (Fig. 3.5)

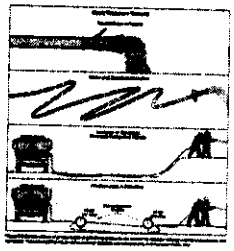
Concentrate Ratio

Proportioning Accuracy



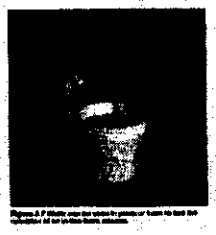
Back Pressure (Fig. 3.6)

Nozzles

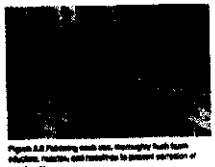


Transit Time

Eductor Testing



Care and Maintenance

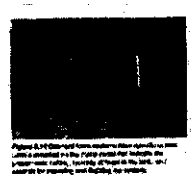


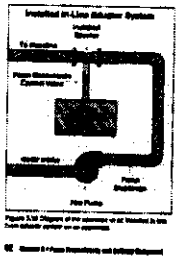
APPARATUS MOUNTED AND FIXED SYSTEM PROPORTIONERS

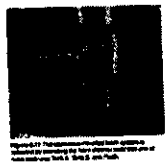
These devices include

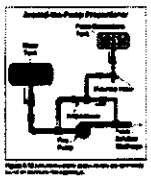
- installed in-line eductors
- around the pump proportioner
- bypass type balanced pressure proportioner
- variable flow-demand type balanced pressure proportioner
- bladder tank balanced pressure proportioner

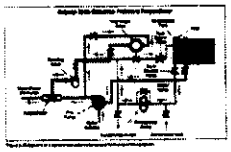
Explain Each

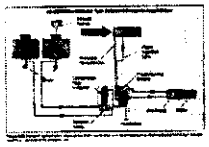








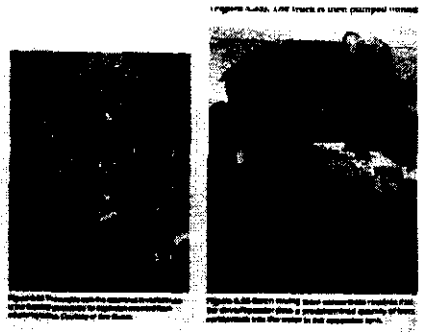




Batch Mixing

- What is batch mixing
- Proper techniques & Method
- Proper mixing proportions

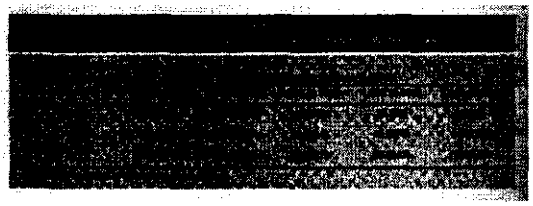
Discuss proper techniques
Problems that may arise



Premixing

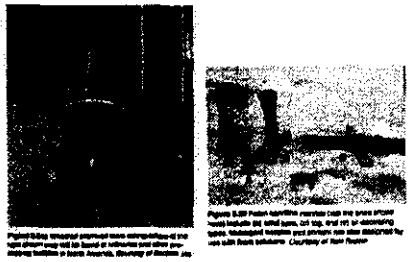
- Fire extinguishing equipment that uses stored pressure for discharge energy

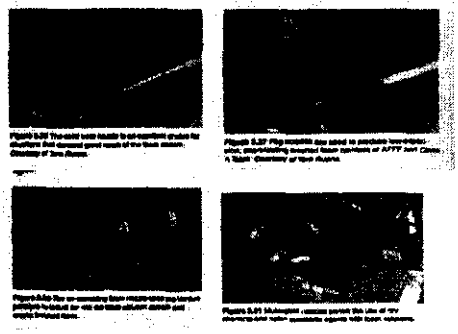
Explain



Portable Foam Application Devices

- types to be found & usage
  - Hand line Nozzles
    - Solid bore nozzles
    - Fog nozzles
    - Air-aspirating foam nozzles
    - Multi-agent nozzles





Master Stream foam Appliances

- Used for large -scale flammable & combustible liquid emergencies beyond the scope of those that can be handled using hand lines.
  - Manning foam monitors
  - Automatic oscillating foam monitors
  - Remote controlled monitors

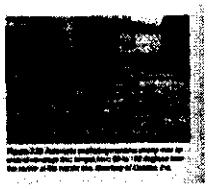
Medium and High-Expansion Foam Generating Devices

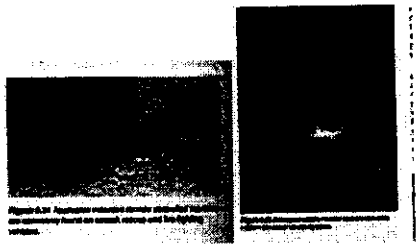
- Where are they found and purpose

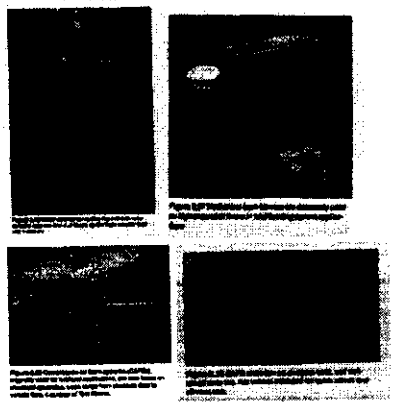
High-Energy Foam Generating Systems

- Definition- introduction of compressed air into the foam solution before discharge into hose line
- Tactical advantages

Notes







Summation

To effectively use the foam concentrate, fire and emergency services personnel must learn the characteristics of the proportioner and nozzle that they employ and practice using them during simulated fore and liquid spill situations

References:

Principles of foam fire fighting, 2nd edition
Essentials of fire fighting, 4th edition
Hazardous Materials- managing the incident
Fire Stream Management Handbook, Fire Engineering