FIRE HOSE

• Use
  o Transport water from one place to another or in order to put out a fire. It must withstand high pressures, be flexible, and have limited friction loss.

• Couplings
  o Purpose: Provide a way to connect and extend the hose
  o Made of aluminum alloy- pyrolite.
  o Male end with exposed national standard threads
    s
  o Female end recessed threads and a shank.
  o Rocker lugs on M & F ends
  o Hig-bee indicator is a notch that is cut into one of the rocker lugs.
    Where threads start- hig-bee cut
  o Hig-bee cut: 45 degree cut at the beginning of the threads on both male and female coupling.
  o 3 gaskets
    Rubber swivel gasket in female that allows for watertight connection.
    2 expansion ring gaskets where the coupling attaches to the hose
  o 5 methods of attaching hose to couplings
    Expansion rings
    Screw-in expanders
    Collars
    Tension rings
    Banding
  o Made from three processes:
    Casting
    Extruding
    Dropped force (strongest)
  o Classifications of construction:
    Woven-jacket hose (1 ½ , 1 ¾ , 2 ½ )
    Rubber-covered hose (4”)
    Braided hose (Booster & extinguisher, 1”)
      Rubber liner is covered with several alternating layers of braided yarn and rubber, then vulcanized to produce a hose.
      Wrapped hose (Hard suction)
        Wrapping several layers of diagonally cut fabric around an extruded rubber tube. A rubber compound is applied to hold them in place. To prevent collapsing a heavy gauge (copper or galvanized) wire is coiled between the layers.
  o Types
    Attack hose
    Supply hose
- Intake hose
- Extinguisher hose

**Hose**
- 1-100’, 16.32 gal held
- 1 ½ - 50’, 22 lbs, 12.24 gal held, 95 gpm
- 1 ¾ - 50’, 26 lbs, 14.28 gal held, 150 gpm
- 2 ½ - 50’, 40 lbs, 20.4 gal held, 250 gpm
  - 2 jackets synthetic nylon and synthetic polyester
  - Wrap woven and filler weave
    - Wrap yarns- lengthwise
    - Filler yarns- circumference stress
    - Referred to as circular loom construction
  - Rubber tube made of synthetic rubber called butol, made by extrusion from rubber block.
    - Resists oils, ozone, and fuels
  - Extruded rubber tube is lubed and slid into the hose jacket.
  - Vulcanization process runs hot steam through the hose turns the lube into glue which seats the hose jacket to the rubber tube.
  - Filler strands cause water to move clockwise
- Cotton (No cotton in RFD)
  - Advantage: absorbs heat and good for abrasions
  - Disadvantage: mildews easily
- Nylon
  - Advantage: Highly resistant to abrasion and kinking
  - Disadvantage: Expensive
- 1 (100 ft sticks) & 1 ½ some
  - Same as above but one jacket
- 4-100’, 78 lbs, 65.2 gal held, 1,000 gpm
  - 3 ply synthetic material
    - Outer layer: Duristaflex- Lightweight, highly flexible and ribbed for added resistance to wear and abrasion.
    - Center layer: Polyester- high tensile, add strength and minimal expansion and non absorption.
    - Inner layer: Polyurethane- High tensile strength and minimal weight and bulk, resists aging.
- Identification
  - ID # stenciled in black 18 inches from couplings on both ends and opposite side of manufacturers writing (97103-02)
    - 1 st two #s year purchased 1997
    - 2 nd three #s is # of that hose purchased in that hose type of that year. 103 third stick of hose purchased
    - Last 2 station hose belongs to.
- Tested
  - Annually by each station
    - Reverse of month
• Station 14 in January, Station 13 in Feb, etc.
  • Connect hose to pump (300 max), nozzle, Pump at 250 psi, 5 min, masking tape on coupling indication year of test, might shift 1/16 to 1/8 inch during 1st test, after that none.

**Damaged Hose**
- Clean hose
- Drain the hose
- Dry the hose
- Roll out of service (male coupling on outside)

Tag Hose with:
- Date of damage
- Hose size
- Length
- Hose ID #
- Location of the problem

Notify Station 10
- Send to Station 10 when they call for the hose.

**Care and Maintenance**

**Types of Hose Damage**
- Mechanical Damage
  - Abrasions, cuts, tears
  - Try to avoid sharp objects
- Environmental/ thermal damage
  - Heat- charring, melting, and weakening
  - Cold- freezing, tightening of couplings
    - Avoid by circulating water at all times
- Organic Damage
  - Mildew weakens the hose while fungus consumes the fibers
- Chemical Damage
  - Burns, holes, breakdown of inner liner
Care and Maintenance continued
- Hose is inspected every four months and reloaded.
  - January, May, and September
- If soiled use mild soap and water with brush
- If chemicals use baking soda and follow manufactures instructions.
- May be loaded wet
  - It will mildew but will not rot and ruin the hose
- Cotton
  - Mild soap
  - Dry before reloading
  - In emergency can stay wet on engine for 24 hours
  - Should not be left on hose rack more than 7 days
- Synthetic/ Rubber coated hose
  - Use mild soap and water
  - Can reload wet
  - Clean couplings in a bucket with mild soap and water and rise

NFPA Requirements
- Suction hose
  - Minimum of 15’ of soft suction or 20’ of hard suction.
- Fire Hose and Nozzles
  - 800’ of 2 ½ or larger fire hose
  - 400’ of 1 ½, 1 ¾ , or 2” fire hose
  - One combo nozzle, 200 gpm minimum
  - Two combo nozzles, 95 gpm
  - One play pipe with shutoff and 1, 1 1/8 , and 1 ¼ tips.
- Important Standards
  - NPFA 1961- Standard for Fire hose
  - NFPA 1962 Standard for the Care, Use, and Maintenance of Fire Hose, including Connections and Nozzles
  - NFPA 1963 Standard for Screw Threads and Gaskets for Fire Hose Connections

Extra Info
- Engine can still be in service after 300’ of 2.5” hose and one 1 ½ inch of 200’ pre-connect is pulled