

FOREST SERVICE

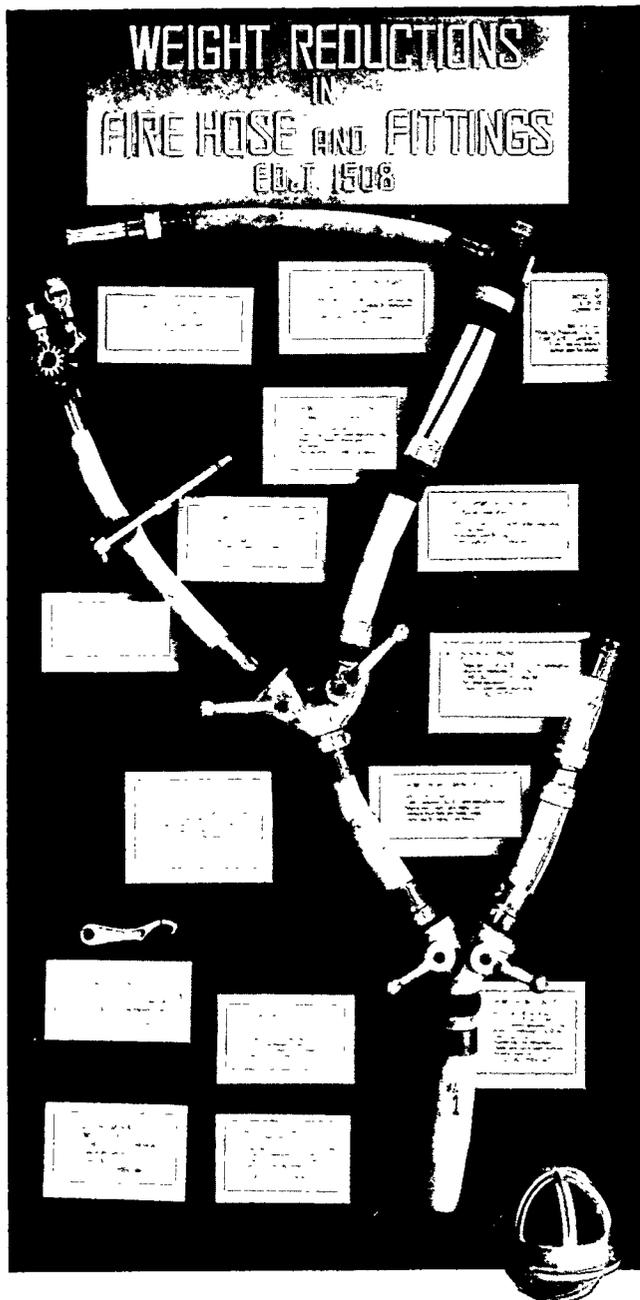
U. S. DEPARTMENT OF AGRICULTURE

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EQUIPMENT DEVELOPMENT CENTER

444 E. Bonita Avenue, San Dimas, California 91773

WEIGHT REDUCTIONS IN FIRE HOSE, FITTINGS, AND PACKBOARDS



Minimizing the weight of forestry fire hose and related fittings has never been a simple matter, but the appearance of new synthetic fabrics and lightweight alloys has produced some dramatic changes. In place of the heavier all-cotton weaves, a cotton synthetic single-jacket lined hose is now available. Brass, once the standard metal for fire hose fittings, is giving way to aluminum.

Wye valves which weighed over 10 pounds a decade ago have been reduced to 3-3/4 pounds. In trial evaluations, 6-ounce couplings have given comparable service to the customary forged brass sets weighing 2 pounds or more.

Tees, nozzles, hose shutoff clamps, suction strainers, spanners, and thread conversion adapters are all currently available in lightweight materials.

LIGHTWEIGHT FIRE HOSE

Cotton-synthetic hose has good abrasion characteristics and is lighter than all-cotton. It is costlier and may be more subject to heat damage. Handling characteristics are good. Grade A lining is optional and is ozone resistant. Cotton-synthetic hose is also available from one manufacturer (Goodall Rubber Company) in an exceptionally light jacket weighing 19 pounds per 100 feet. Charged with water, this type weighs slightly more than unlined linen. A lightweight Ferex coupling was installed on one shipment of this hose for evaluation purposes. This 6-1/2 ounce coupling set is not reusable; the matching of hose dimensions is extremely critical and should be done by a fire equipment manufacturer. No coupling failures were reported in a 2-year evaluation period.

Linen working pressures are specified at 300 pounds. Dry linen hose is lighter than any other jacket in use. The charged wetted surface offers protection on fires. Abrasion resistance and friction loss are both high. Once charged, the stiff jackets can be awkward to handle and may require considerable cleaning. Information on all-cotton fire hose is included for comparative purposes.

1-1/2 INCH LIGHTWEIGHT SINGLE JACKET AND LINEN FIRE HOSE

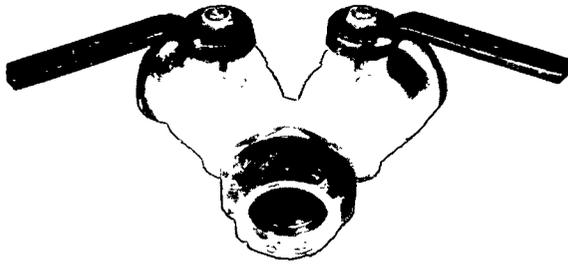
	Working Pressure (PSI)	Max. Wt. (Uncoupled) lbs/100 ft.	Couplings (Type)	FSS Catalog* Number	Cost Coupled	FS Spec.
Cotton-Synthetic Single jacket lined Grade A	450	26	Forged or extruded brass (F)	4210-777-1592	\$48.50/100 ft.	5100-00186
Cotton-Synthetic** single jacket lined	450	19	Ferex lightweight	Open market purchase	63.20/100 ft. (uncoupled)	none
Linen (unlined) mildew resistant	300	14-1/2	Cast brass (usually)	4210-973-9559	37.00/100 ft.	183a
All cotton single-jacket, rubber-lined (standard hose for comparative purposes)	300	33	Cast brass (type S)	4210-892-5494	18.50/50 ft.	182

*See current GSA catalog for prices, diameters, and coupling thread details.

**A "Super-Forest King" Goodall product included in evaluation. An open-market purchase (Goodall Rubber Company, Trenton, N. J.).

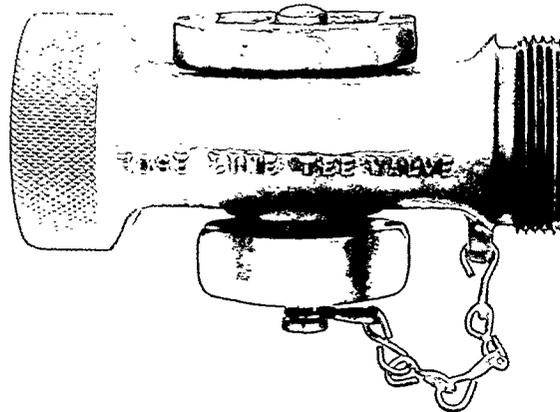
LIGHTWEIGHT FITTINGS

SPANNER WRENCH. A 2-1/2 ounce Tenzaloy spanner for slotted pin or rocker lug couplings from 3/4" to 1-1/2" size. Length 5-3/4". Available from Western Fire Equipment Company (#2A910).

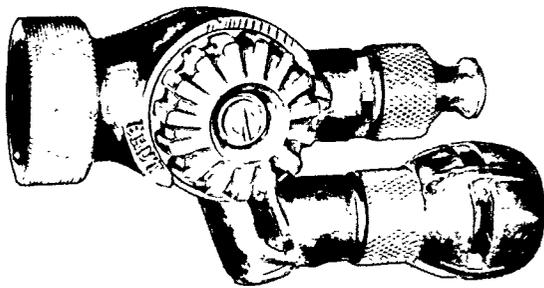


WYE VALVE. Divides a main hose line into two lines. Each branch can be controlled by independent valves. Corrosion resistant; capable of 600 psi. FS Specification 380a established a weight limit of 5-1/2 pounds, but one qualified product (Akron) weighs 3-3/4 pounds which permits packboard use.

HOSE LINE TEE VALVE. Placed in a 1-1/2 inch main line to offer a 1-inch (PIP thread) valved male branch outlet. The valve is slotted to accept a standard spanner. Weight in unpolished brass—2-1/2 pounds; in aluminum—17 ounces. Available from Western Fire Equipment Company (#14x561).



COMBINATION FOG-STREAM SHUTOFF NOZZLE. Controlled by a single valve lever which rotates through 120 degrees to select fog, stream, or shutoff settings. Nozzle base inlet 1" PIP threads. The fog and straight-stream tips have garden hose threads. Ordinarily furnished with two stream tips 3/16- and 3/8-inch and two fog tips, 3 and 6 gpm. Designed for working pressures up to 350 psi. Brushed aluminum finish; weight 2-1/3 pounds. GSA stock item.

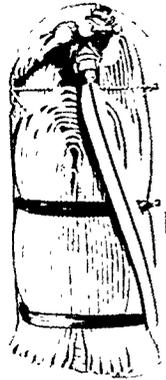


HOSE SHUTOFF CLAMP. A 24-ounce, pocket-size tool which will shut off 3/4" to 2" lines operating up to 200 psi. The 10-inch clamp is designed for single jacket and linen lines. GSA stock item #5120-767-7123.

SUCTION STRAINER. Globe shaped low velocity type, cast aluminum strainer with female fire hose thread. Dimensions about 8 inches overall; weight 2-1/2 pounds. FS Specification 5100-00105; GSA stock item.

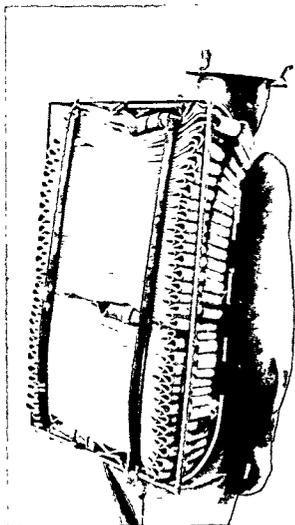
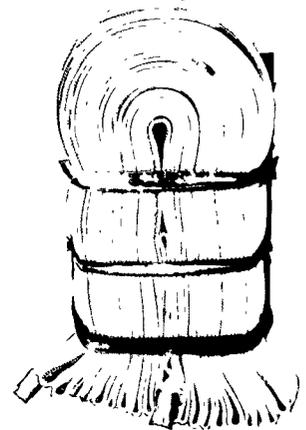
LUGLESS STANDARDIZATION ADAPTER. Screws over epoxied PIP threads (1-1/2" — 11-1/2 NPSH) to convert to NST (1-1/2" — 9 NH). A square key wrench is used to set the adapter. Weight in aluminum—2-1/2 ounces. Available from Western Fire Equipment Company (#3A852A).

FIRE HOSE PACKBOARDS AND FRAMES



The Cleveland NF (R-5) is using a flat plywood board 18" x 36" equipped with carrying straps. Three large hooks are spaced down each side. Two layers of accordion-folded hose are held in place by bungee cord and/tire tube bands. Hose pays out from bottom-center. Capacity 150 to 200 feet of 1-1/2" cotton-synthetic lined hose. Approximate weight—65 pounds.

The San Bernardino NF (R-5) system is similar to the above. Several different military surplus or Clack packboards are in use. A double layer of hose is held in place to feed out consistently under tire tube bands or web straps. Approximate weight—65 pounds.



The Ely Service Center, R-9, has the "All Purpose Pack Frame." The equipment measures 30" x 20" x 6" and weighs 7 pounds empty. The rigid frame is built from 1/2" OD #20 wall seamless metal tubing. This frame capacity is 400 feet of 1-1/2" linen or 600 of 1". A hose folding jig frame is used to fold and pack this unit. Total weight—72 to 75 pounds. (See Fire Control Notes; Oct. 1940, p. 201, "Improvements in Backpacking the Portable Pumper Equipment" and Jan. 1940, p. 10, "Hose Folding Jig.")

The California Division of Forestry has adopted the doughnut roll in most districts. The twin-axis feature of this harness serves as a horizontal pin. The pin is outside the center hose loop so the hose falls away when the center of the roll is reached. The male coupling section is exposed and the entire roll is held intact by one or more tire tube bands.

