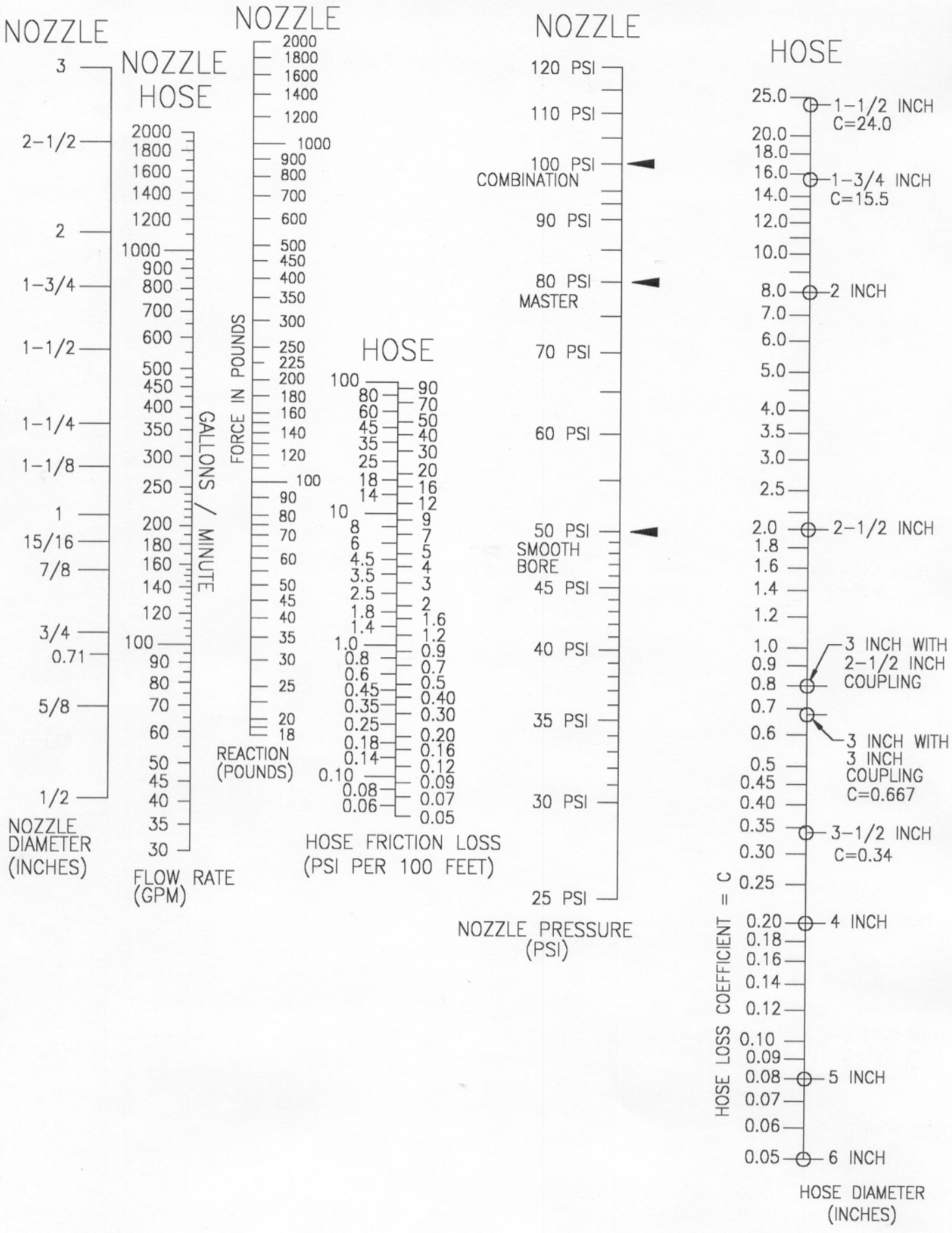
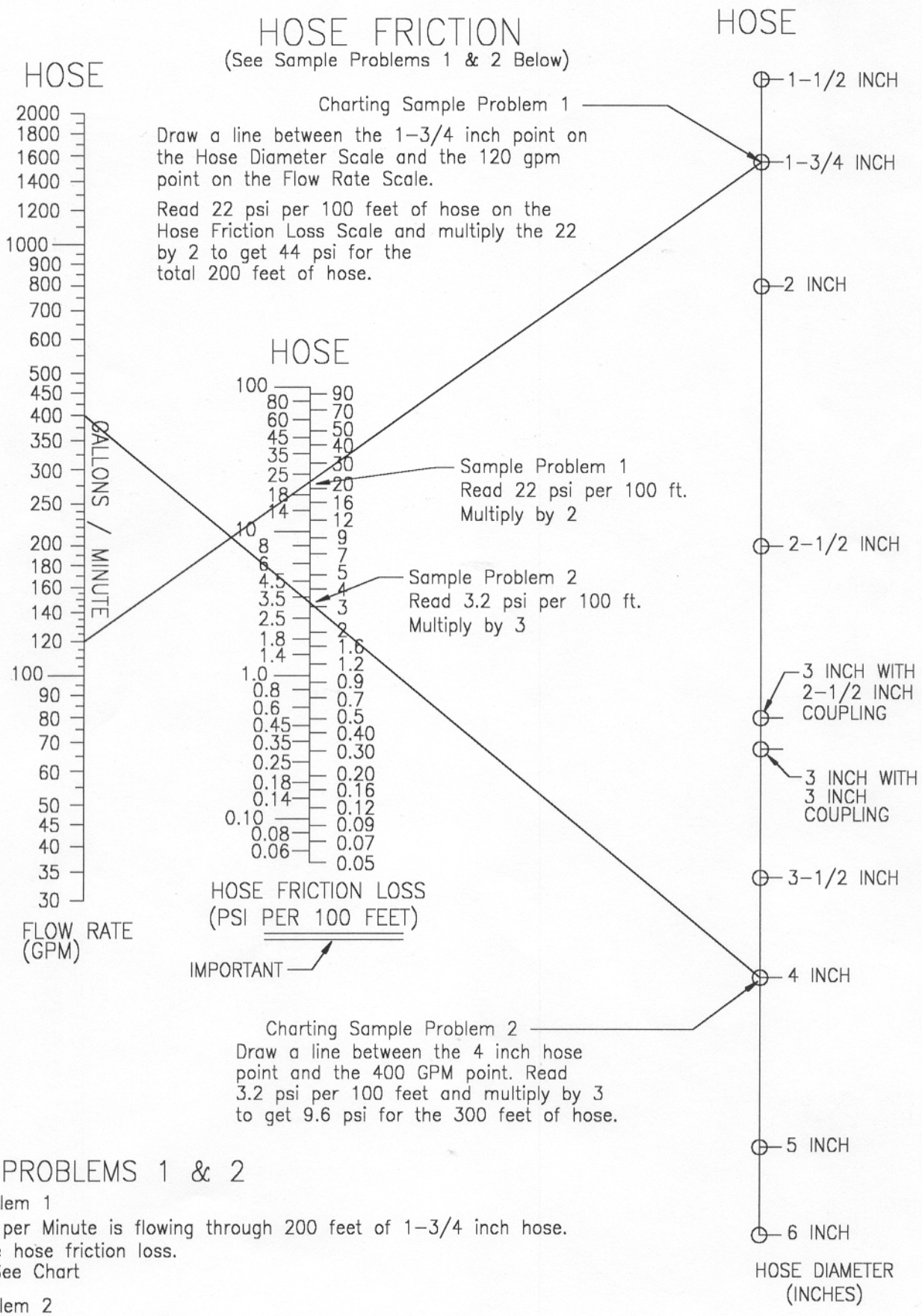


FRICTION LOSS AND NOZZLE FLOW CALCULATOR

HOSE FRICTION

(See Sample Problems 1 & 2 Below)



SAMPLE PROBLEMS 1 & 2

Sample Problem 1

120 Gallons per Minute is flowing through 200 feet of 1-3/4 inch hose.
Calculate the hose friction loss.
Solution – See Chart

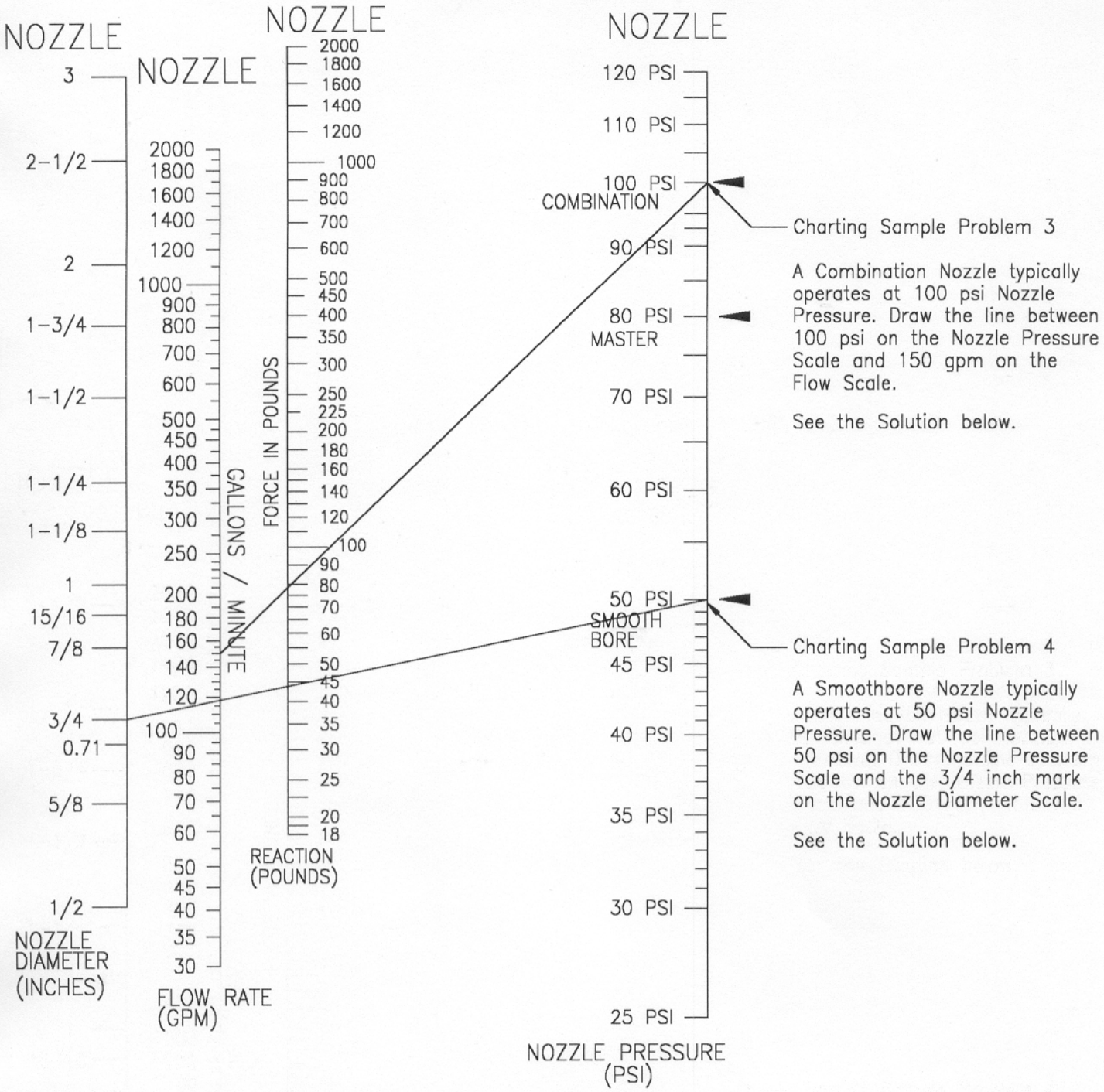
Sample Problem 2

400 Gallons per Minute is flowing through 300 feet of 4 inch hose.
Calculate the hose friction loss.
Solution – See Chart

FRICTION LOSS AND NOZZLE FLOW CALCULATOR

hose-h12

FLOW AND REACTION (See Sample Problems 3 & 4 Below)



Charting Sample Problem 3

A Combination Nozzle typically operates at 100 psi Nozzle Pressure. Draw the line between 100 psi on the Nozzle Pressure Scale and 150 gpm on the Flow Scale.

See the Solution below.

Charting Sample Problem 4

A Smoothbore Nozzle typically operates at 50 psi Nozzle Pressure. Draw the line between 50 psi on the Nozzle Pressure Scale and the 3/4 inch mark on the Nozzle Diameter Scale.

See the Solution below.

SAMPLE PROBLEMS 3 & 4

Sample Problem 3
A combination nozzle is rated to flow 150 gpm at 100 psi Nozzle Pressure. Calculate the Reaction Force.

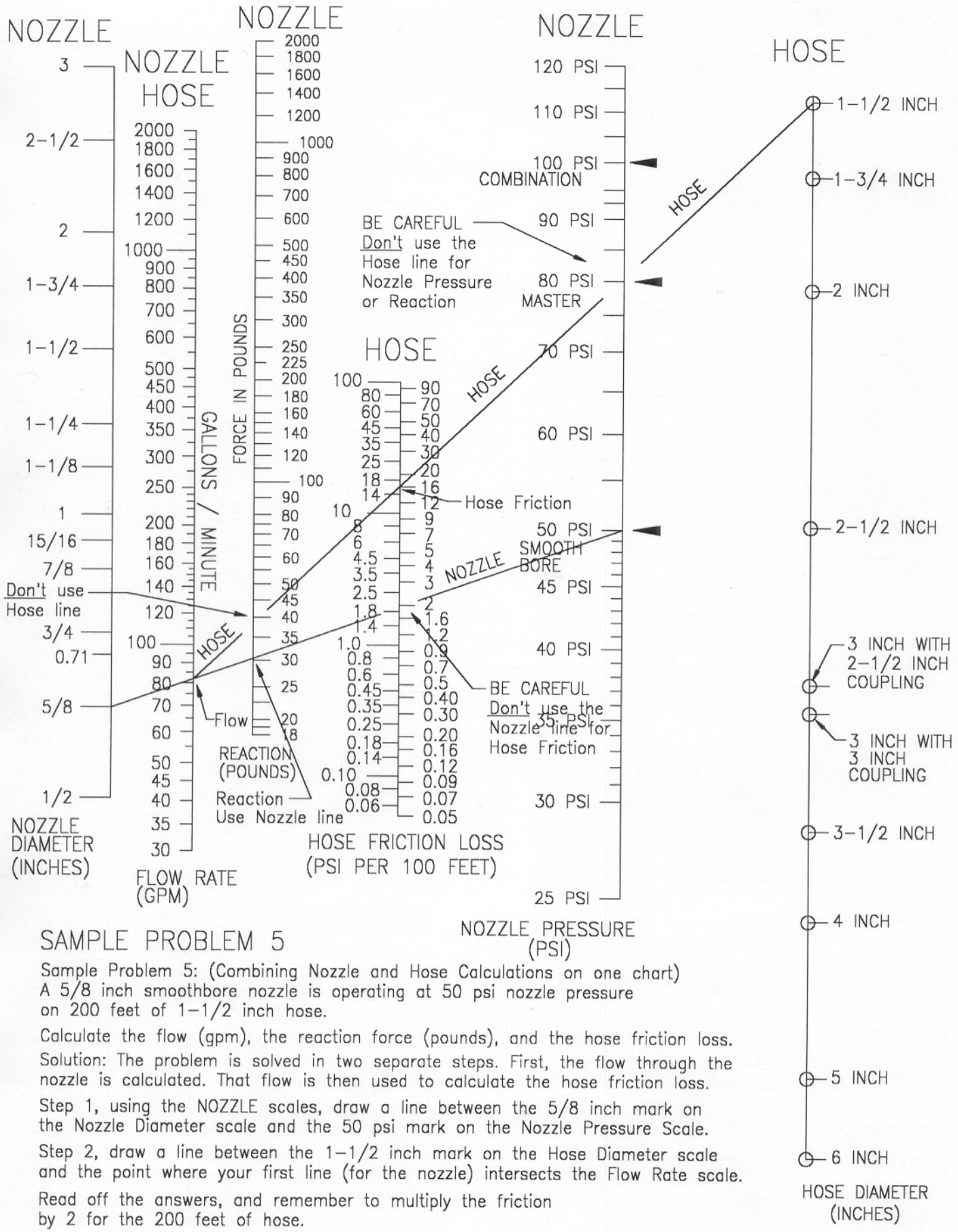
Solution: Draw a straight line between the points 150 gpm Flow Rate and 100 psi Nozzle Pressure. Then read the reaction force as approximately 78 pounds. (The flow rate was given.)

Sample Problem 4
A 3/4 inch smoothbore nozzle is operated at 50 psi Nozzle Pressure. Calculate the Flow through the nozzle and the Reaction Force.

Solution: Draw a straight line between the points 3/4 inch Nozzle Diameter and 50 psi Nozzle Pressure. Then read the flow rate as 118 gpm and the reaction force as 44 pounds.

FRICTION LOSS AND NOZZLE FLOW CALCULATOR

COMBINING LOSS, FLOW, AND REACTION (See Sample Problem 5 Below)



SAMPLE PROBLEM 5

Sample Problem 5: (Combining Nozzle and Hose Calculations on one chart)
A 5/8 inch smoothbore nozzle is operating at 50 psi nozzle pressure on 200 feet of 1-1/2 inch hose.

Calculate the flow (gpm), the reaction force (pounds), and the hose friction loss.

Solution: The problem is solved in two separate steps. First, the flow through the nozzle is calculated. That flow is then used to calculate the hose friction loss.

Step 1, using the NOZZLE scales, draw a line between the 5/8 inch mark on the Nozzle Diameter scale and the 50 psi mark on the Nozzle Pressure Scale.

Step 2, draw a line between the 1-1/2 inch mark on the Hose Diameter scale and the point where your first line (for the nozzle) intersects the Flow Rate scale.

Read off the answers, and remember to multiply the friction by 2 for the 200 feet of hose.

Answers: Flow 82 gpm, Reaction 30.5 pounds,
Friction Loss 16.5 psi per 100 ft * 2 = 33 psi

FRICTION LOSS AND NOZZLE FLOW CALCULATOR

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1. How he wrote his music (disclosed for the first time ever)
2. The relationship between Bach's Music and the attacks
3. Examples of Bach's keyboard music, as he heard it
4. Sheet Music

Beethoven, too (What's he doing here?)

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1. How Joyce Kilmer came up with "Trees" (and you aren't going to guess)

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1. Calculating friction loss, flow, and nozzle reaction in the fire service
2. Solving Water Flow problems using Electric Circuit Theory
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