Use a VP of 0.14536 to get a total pressure drop across the standard square 90 fitting that has a C value of 1.15 as the air flows through it.

1.15 × 0.14536 = 0.167164

Use a VP of 0.011362 to get a total pressure drop across the standard square 90 fitting that has a C value of 1.15 as the air flows through it.

1.15 × 0.011362 = 0.0130663

Use a VP of 0.359 to get a total pressure drop across the 90 fitting as the air flows through it for the standard square 90 with a C value of 1.15. For the Standard Square 90 the pressure drop would be:

1.15 × 0.359 = 0.41285

Note: 0.41285 is called the loss item in *Manual Q.* It is added to the other loss items to get a total loss for the whole duct run/system

Using the loss item totals from Figure 23 on page 52 values for the two shown 90O Ls, find the total loss difference between the two Ls, and which is the more efficient L?

0.0748 – 0.00539 = 0.0694 difference in pressure loss for the two fittings. The smooth radius 3 vain Elbow is by “far and away” the more efficient choice for the duct system.

Looking at Table 12 on Page 46 of the *Guide & Workbook*:

For Zone 1 how would blower motor size be changed due to changing the pressure drop from 0.4 to 0.5 ESP?

The motor size would increase.

For example at 1,750 CFM system with an ESP of 0.40 would require a motor with approximately 0.39 Bhp and at 0.50 it would be 0.57 Bhp

Field Notes:

Whenever a duct design is done it is important to make sure the fittings were installed as designed. Often, when a duct system is too small the problem can be resolved by replacing a few standard duct fittings with some higher efficiency ones. It may be as easy as adding some turning vanes to the existing 90s. Redesigning and replacing an entire duct system is a lot more expensive than replacing four or five fittings.