What About Using A Larger 4-Way Valve On A Compressor?

One of the best ways to ensure the best performance from an LPG transfer compressor system is to minimize the system pressure loss. The system pressure loss consists of friction losses due to the flow of the LPG and the head due to the elevation difference between the two vessels. Once a site is chosen, little can be done about the elevation difference. However, proper design of the piping system can have a big impact on the friction losses.

System friction losses fall into 4 major categories:

1) Losses through the tank's excess flow valve.
2) Losses through the liquid piping and valves.
3) Losses through the vapor piping and valves.
4) Losses through the compressor piping, 4-way valve, trap, and strainer.

Of these factors, 1 & 2 will have the biggest impact, 3 has some impact, and 4 has a relatively small impact.

Excess flow valves have considerable pressure drop by their very nature. Unfortunately, a larger valve may not be used as its flow rate at closure may be too great for the system.

Pressure losses in the liquid piping and valves can be reduced by increasing the diameter, reducing the length, and eliminating unnecessary elbows, valves and other fittings. Properly sized liquid piping, fittings, and valves is very important.

Pressure losses in the vapor side of the system can also be reduced by increasing the diameter, reducing the length, and eliminating unnecessary elbows, valves and other fittings. However, changes in the vapor side will have much less effect than similar changes on the liquid side.

The compressor, 4-way valve, trap and strainer are actually part of the vapor side of the system. However, in terms of 'equivalent feet of piping' it is a small portion. Increasing the size of the 4-way valve and piping will have very little impact on the compressor's performance and is generally not worth the extra cost.

Typical Pipe / Valve Sizes Suggested For Various Compressor Models

	Vapor	Liquid
LB161	1 in. (25 mm)	2 in. (50 mm)
LB361	1.25 - 2 in. (31 - 50 mm)	3 in. (75 mm)
LB601	3 in. (75 mm)	4 in. (100 mm)
LB942	Consult Factory	Consult Factory

The pipe sizes listed are for typical installations with piping lengths up to about 100 ft. (35 meters) maximum.

To sum up: we believe that properly designed piping systems and valves will ensure the highest system performance. Spending extra money for larger 4-way valves will not result in a corresponding performance increase.