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## Pneumatic Systems Requirements:

### Air Quality:

Should you decide to purchase your Knelson Concentrator with any one of our pneumatic type automated control packages including; **ICS, ICSjr or automated piping** you will require a reliable source of clean, dry, oil-free compressed air.

Failure to provide an adequate supply of compressed air can result in erratic operation of your Knelson Concentrator and can cause premature failure of pneumatic components and unscheduled interruptions to operation of the unit(s).

### ICS & Automated Piping:

For the **ICS** control package (including the automated piping only option) this air supply must be of *instrument quality air* defined as follows:

- |                |  |
|----------------|--|
| Moisture:      | In outdoor installations, the dew point at line pressure should be at least 10°C (18°F) below the minimum local recorded ambient temperature at the plant site. For, indoor installations, the dew point at line pressure should be at least 10°C (18°F) below the minimum temperature to which any part of the instrument air system is exposed at any season of the year. In all cases the dew point at line pressure should never exceed 2°C (35°F) |
| Particle Size: | The maximum particle size in the instrument air stream should be 3µm (0.0001")   |
| Oil Content:   | The maximum oil content should be as close to zero as possible but should never exceed 1 ppm weight/weight or volume/volume under normal operating conditions.   |

If you have a source of *instrument quality air* available, it can be affixed directly to the pneumatic connection on the **ICS** control system. If you have a good supply of non-instrument quality compressed air, you can choose to include a Knelson **Instrument Air Upgrade Kit** with your order. This kit includes a **high efficiency coalescing air filter** coupled with a **ceramic desiccant dryer** and will provide an *instrument quality air* source to supply your Knelson **ICS** control system.

**Air Requirements:**

For all of the Knelson centre discharge (CD) and extended duty (XD) series concentrators, a minimum air supply of 3 ft<sup>3</sup>/min | 5.1 m<sup>3</sup>/hr within a pressure range of 90 psig | 6.2 bar (minimum) and 120 psig | 8.3 bar (maximum) is required at the connection tee of the concentrator air filter regulator.

For the Knelson continuous variable discharge concentrators (CVD), the minimum air supply requirements for each unit are listed in the table below.

**Knelson CVD Minimum Air Supply Requirements**

Unit	CVD6	CVD20 - 1 ring	CVD32 - 2 rings	CVD42 - 1 ring	CVD42 - 2 ring
Typical Air Supply (ft <sup>3</sup> /min)	3.5	6	11	9.5	12
(m <sup>3</sup> /hr)	5.9	10.2	18.7	16.1	20.4

The air supply pressure should be between 90 psig | 6.2 bar (minimum) and 120 psig | 8.3 bar (maximum) for the CVD pneumatic system to operate accurately.

**ICSir:**

Should you choose to include an **ICSjr** control system with your order, you will **not** require an **instrument quality air** supply. For this system, a reliable supply of clean, relatively dry plant quality air is adequate. It is recommended however, that **any pneumatically operated** Knelson control system should be fitted with an optional coalescing filter as this is a relatively inexpensive item will help to protect against damage and/or premature failure of the pneumatic components.

**Air Compressors:**

All pneumatically equipped Knelson control systems will require a reliable supply of clean, dry, oil free compressed air. Many plants employ numerous pneumatic-type process components and therefore have a plant-wide compressed air system available. However in some instances these existing systems are in a state of disrepair or are taxed beyond their original design parameters. In other cases, compressed air is simply not available in the plant.

To address any of the above situations, Knelson can provide a suitable size and type of air compressor to meet the requirements of the control system selected. These are generally small free-standing self contained units that can be easily located in close proximity to the Knelson Concentrator. In cases of multiple unit installations, these are generally slightly larger more industrial units however in either case, choosing to included a dedicated Knelson compressor is the best way to ensure that you will get the most reliable performance and maximum productivity from your automated Knelson Concentrator.