Model ADCC dual duct throttling unit control sequences fall into three basic categories: mixing, without mixing, and constant volume. The piping diagrams on the following pages illustrate the standard control sequences available for the Carnes dual duct terminal unit.
The accompanying air flow diagrams illustrate a typical sequence for each of the piping configurations. Many other sequences may be possible depending on air flow settings and component adjustments.

ADJUSTABLE MIXING

The cooled supply air and the heated supply air are mixed in varying proportions. One method of mixing is accomplished by field adjustment of factory supplied components.

The "adjustable mixing" sequences provide the capability of mixing air flow up to 100% or "no mixing" to the degree of having an adjustable no flow deadband. *See figure 1.*

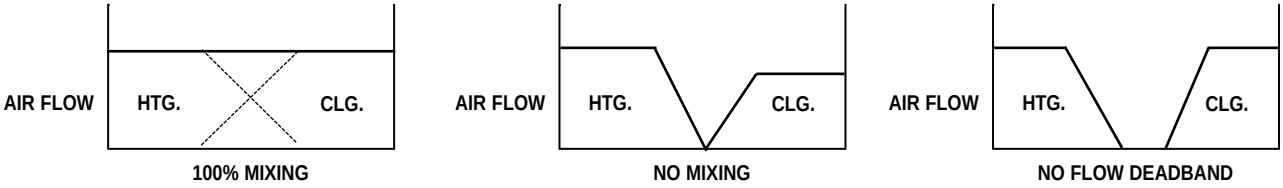


Figure 1
Some possible air flow settings from the "No-Mixing sequence options.

Using 100% mixing with the "adjustable mixing" sequence option is not recommended for constant volume applications. The controller response curves are not linear and may not provide satisfactory "constant volume" control. The "constant volume" sequence discussed later is better suited for that control.

The air flow diagrams on the following pages for "adjustable mixing show minimum CFM values calibrated to zero air flow. Minimum air flows do not have to be zero (0).

In fact, mixing can also be obtained by calibrating air flow settings to a value greater than zero. *See figure 2.*

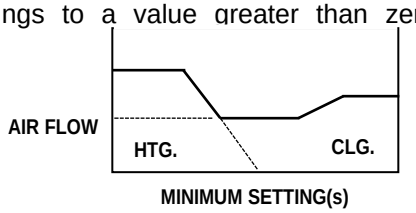


Figure 2

NO MIXING

When a "no mixing" control sequence is ordered, controls are provided so that there is no air flow mixing when the minimum settings are calibrated to zero (0). This is non-adjustable for most piping arrangements. Refer to the following pages for specific applications. Mixing can be obtained with the "no mixing" control sequence, as mentioned above, by calibrating the minimum air flow settings to a value greater than zero (0). *See figure 2.*

CONSTANT VOLUME — Model ADCD

The constant volume control sequence is a variation of the "adjustable mixing" type control options. See figure 3. The Model ADCD terminal units ordered with the "constant volume" control sequence are provided with a factory mounted differential pressure sensor downstream of the attenuator mixing section.

The cold deck of the Model ADCD dual duct unit responds to the zero thermostat for demands for more or less cooling. The discharge sensor monitors the total air flow through the dual duct unit and adjust the hot deck damper to maintain a constant air flow.

For optimum control with a "constant volume" sequence, it is important to maintain inlet static pressure levels that are fairly equal between the hot and cold decks. A severe difference would set up a disparity in the distance each decks damper would travel to maintain the desired air flow. The result could be unsatisfactory air flow swings around the constant volume setting.

A second consideration when applying constant volume dual duct units is to resist the urge to oversize the terminal units. The perceived benefits of lower noise levels and pressure drops will be at the expense of loss of control.

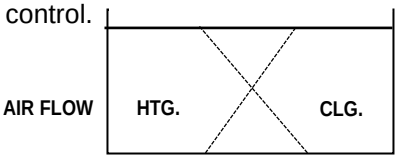
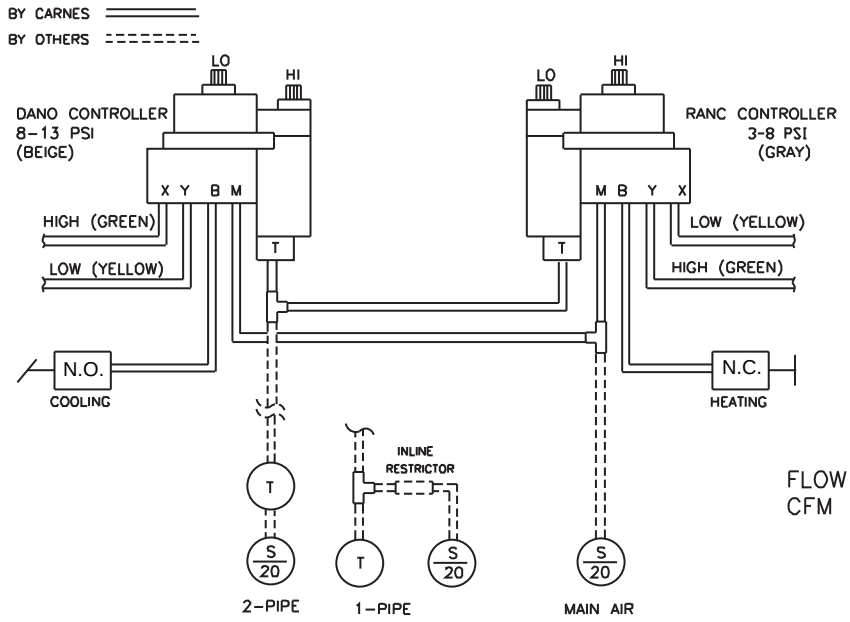
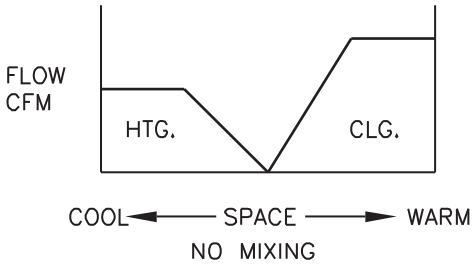


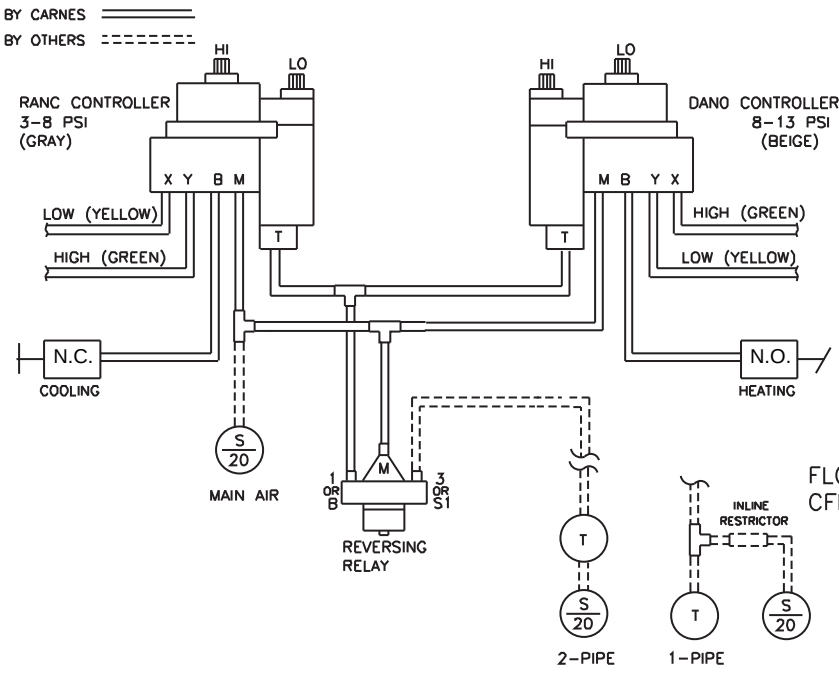
Figure 3

DUAL DUCT TERMINAL – PRESSURE INDEPENDENT NO MIXING

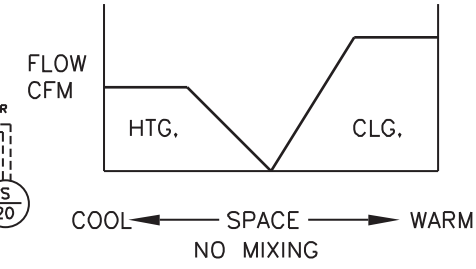


CE1C3 AND CE2C3
DIRECT ACTING
THERMOSTAT
NO – COOLING
NC – HEATING



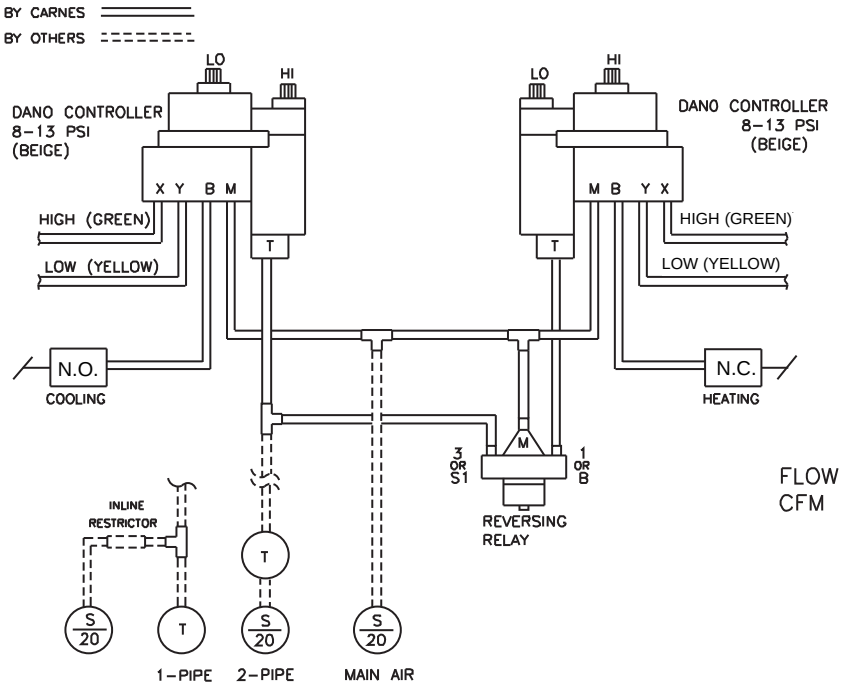


CE3C3 AND CE4C3
DIRECT ACTING
THERMOSTAT
NC – COOLING
NO – HEATING

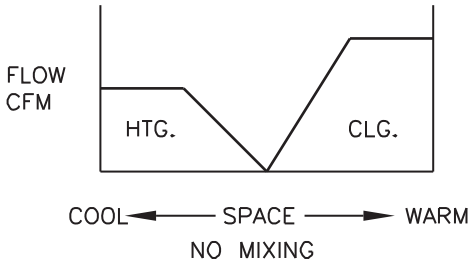


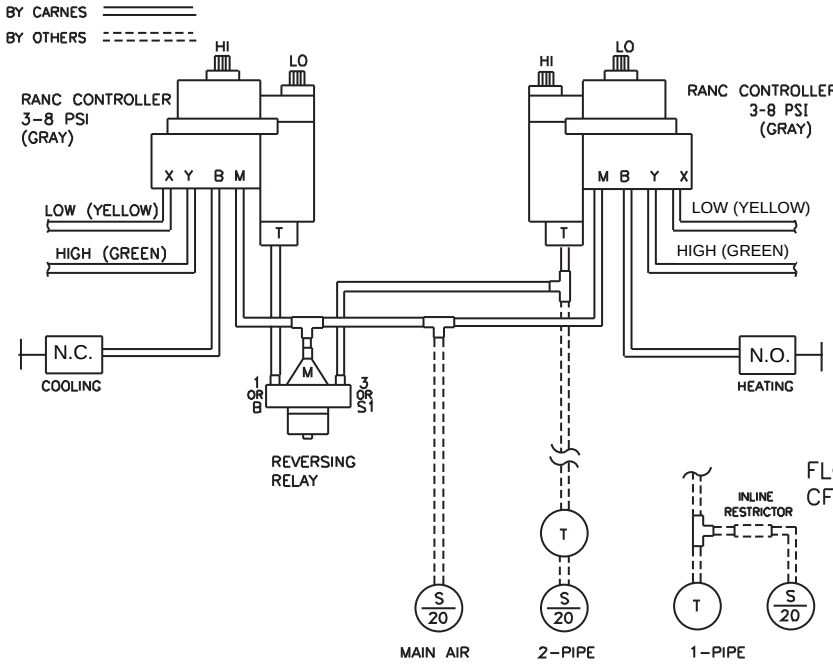
CONTACT FACTORY FOR REVERSE ACTING OR PRESSURE DEPENDENT CONTROL OPTIONS

DUAL DUCT TERMINAL – PRESSURE INDEPENDENT NO MIXING

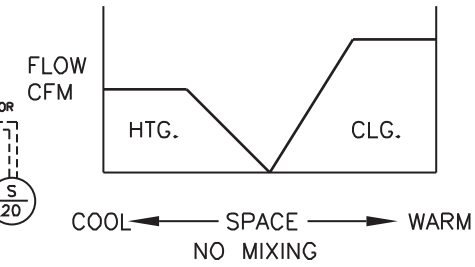


CE5C3 AND CE6C3
DIRECT ACTING
THERMOSTAT
NO – COOLING
NO – HEATING



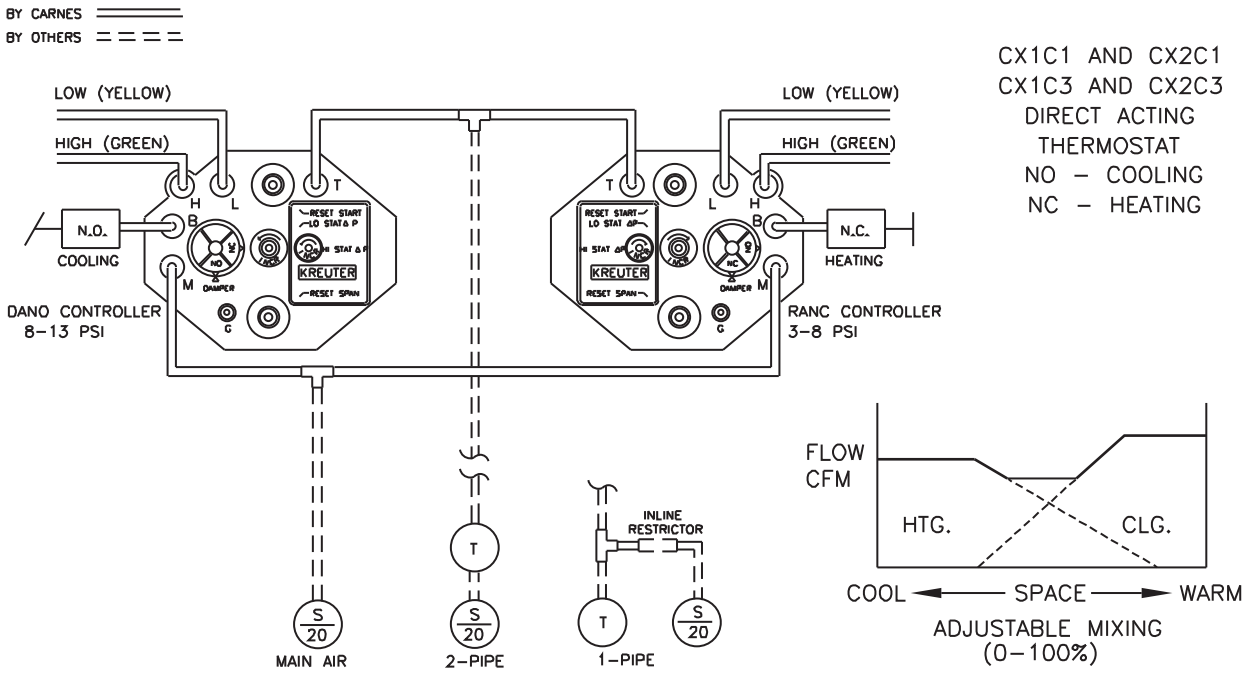


CE7C3 AND CE8C3
DIRECT ACTING
THERMOSTAT
NC – COOLING
NC – HEATING

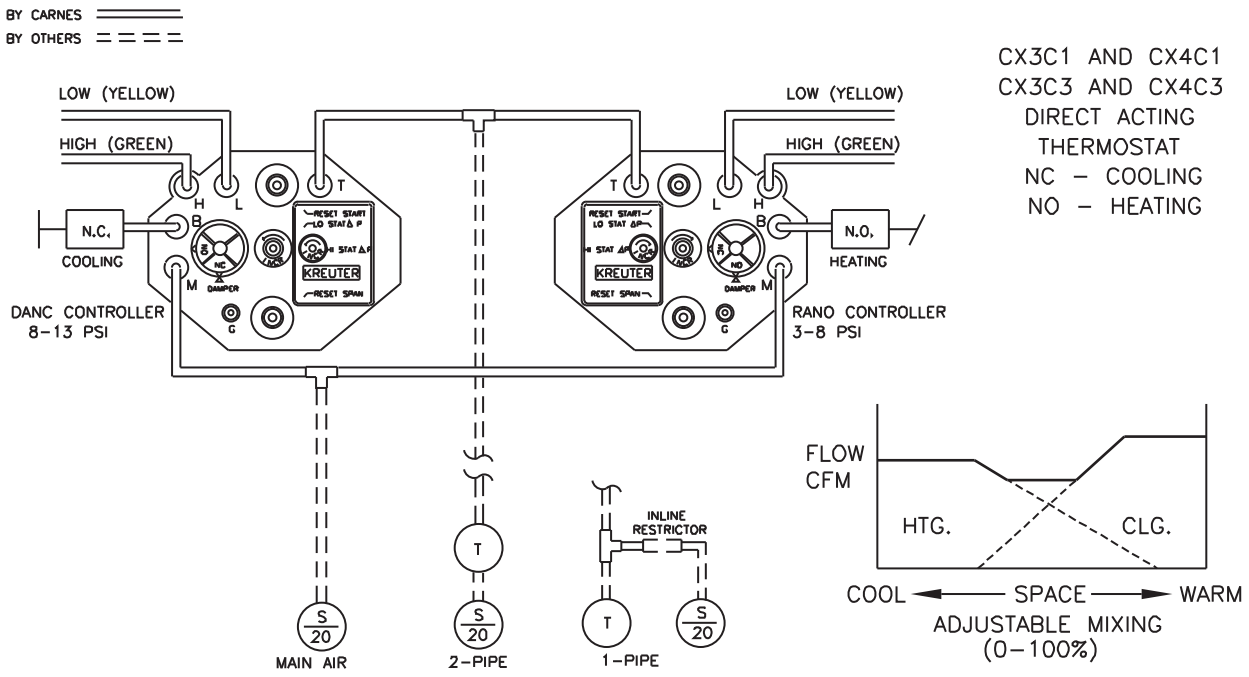


CONTACT FACTORY FOR REVERSE ACTING OR PRESSURE DEPENDENT CONTROL OPTIONS

DUAL DUCT TERMINAL – PRESSURE INDEPENDENT ADJUSTABLE MIXING



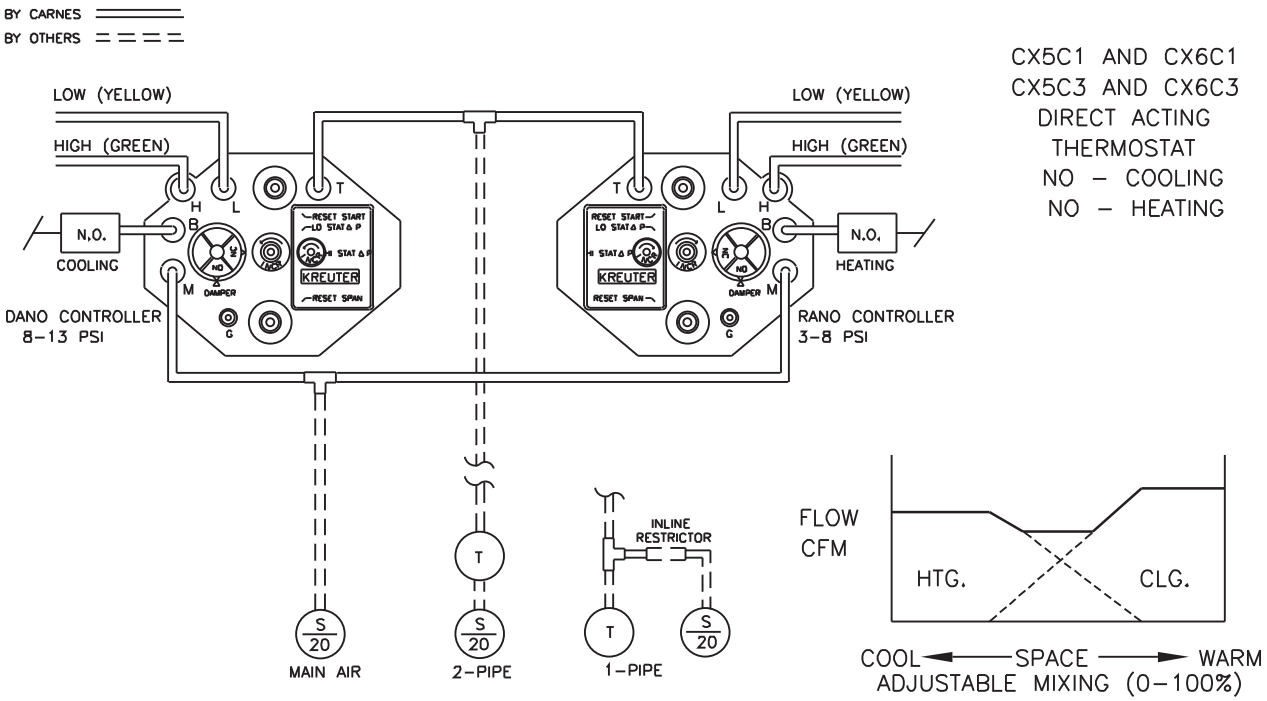
CX1C1 AND CX2C1
CX1C3 AND CX2C3
DIRECT ACTING
THERMOSTAT
NO – COOLING
NC – HEATING



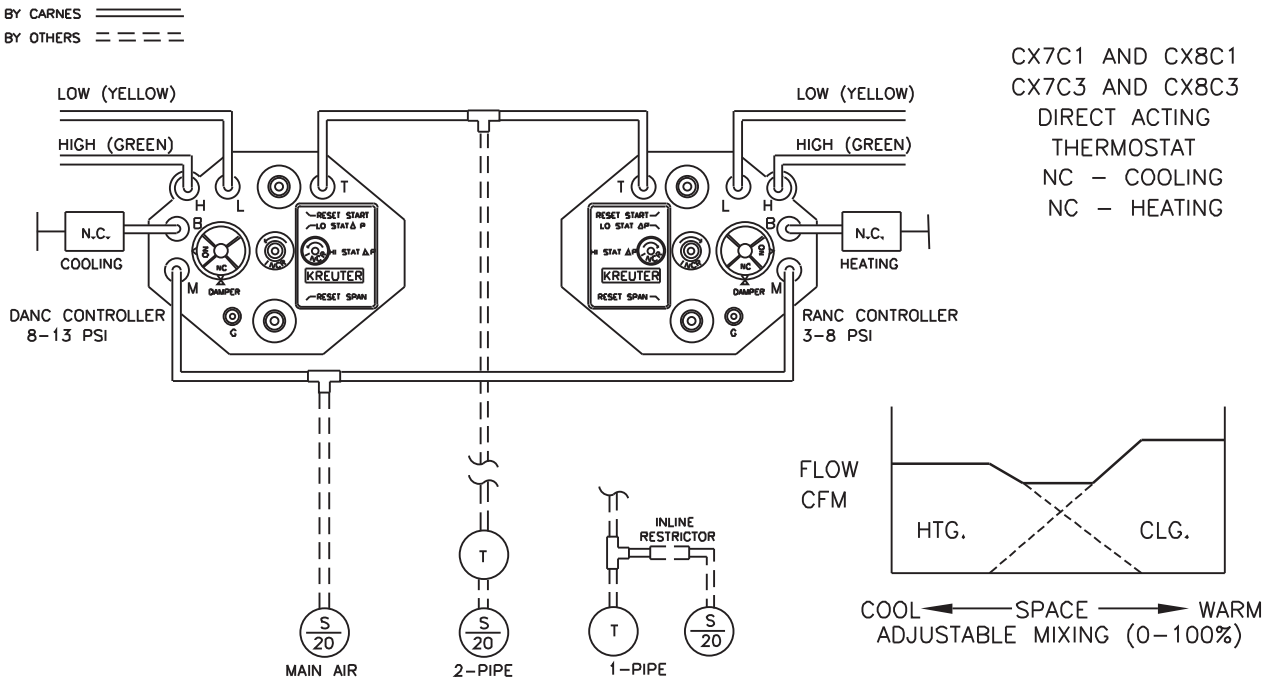
CX3C1 AND CX4C1
CX3C3 AND CX4C3
DIRECT ACTING
THERMOSTAT
NC – COOLING
NO – HEATING

CONTACT FACTORY FOR REVERSE ACTING OR PRESSURE DEPENDENT CONTROL OPTIONS

DUAL DUCT TERMINAL – PRESSURE INDEPENDENT ADJUSTABLE MIXING



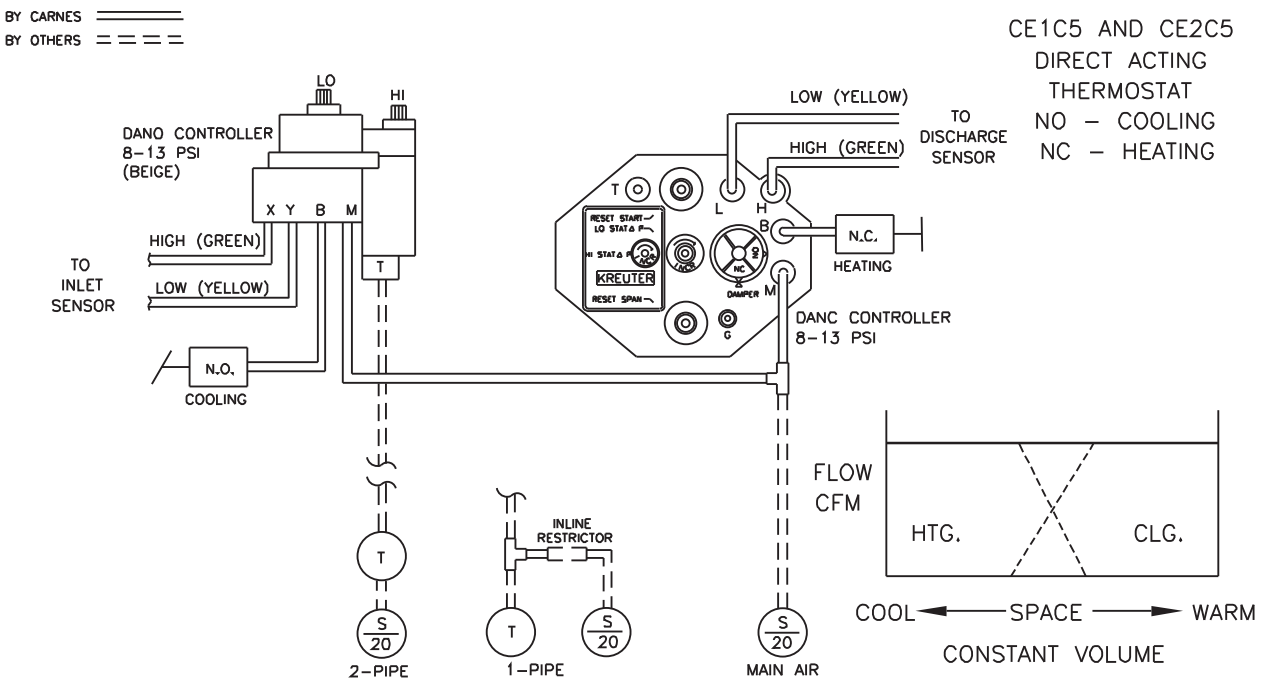
CX5C1 AND CX6C1
CX5C3 AND CX6C3
DIRECT ACTING
THERMOSTAT
NO – COOLING
NO – HEATING

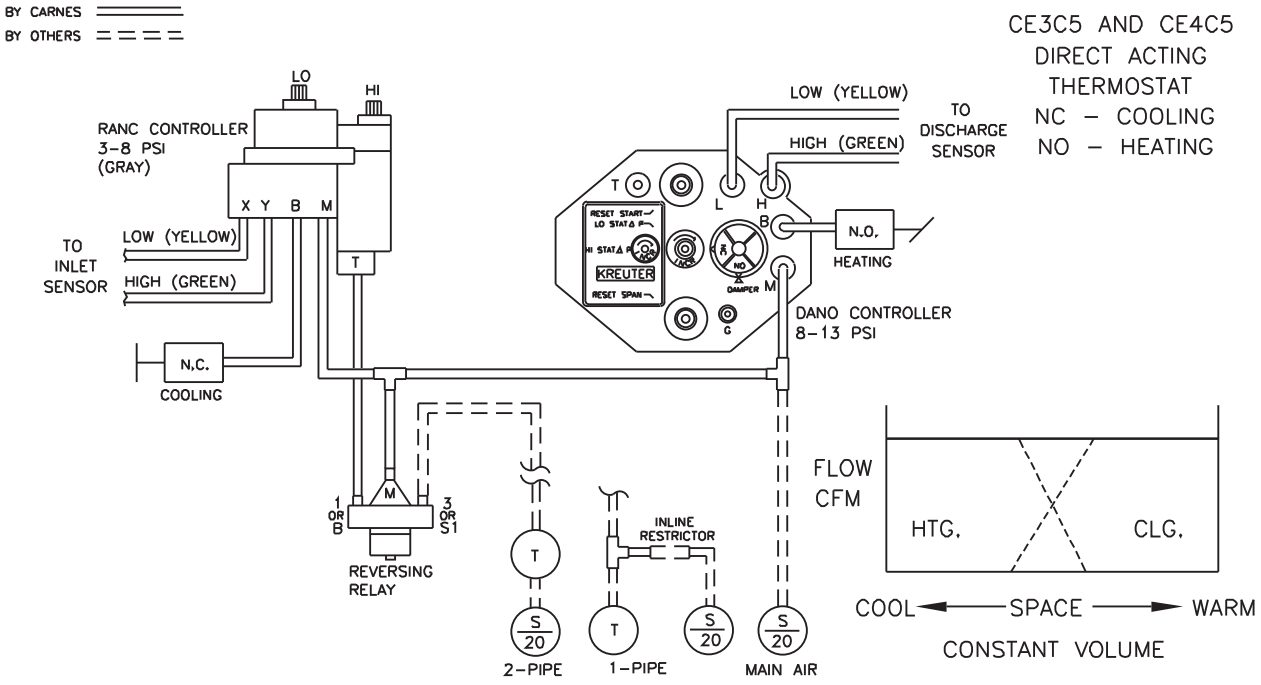


CX7C1 AND CX8C1
CX7C3 AND CX8C3
DIRECT ACTING
THERMOSTAT
NC – COOLING
NC – HEATING

CONTACT FACTORY FOR REVERSE ACTING OR PRESSURE DEPENDENT CONTROL OPTIONS

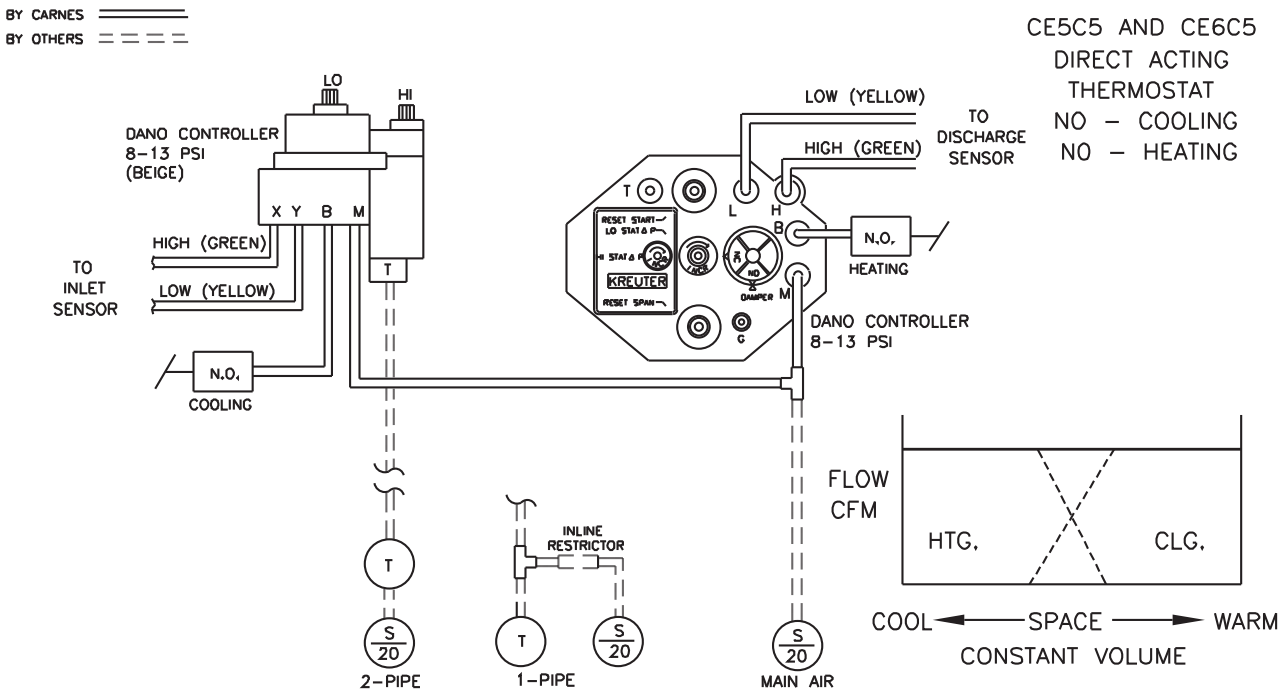
DUAL DUCT TERMINAL – PRESSURE INDEPENDENT CONSTANT VOLUME

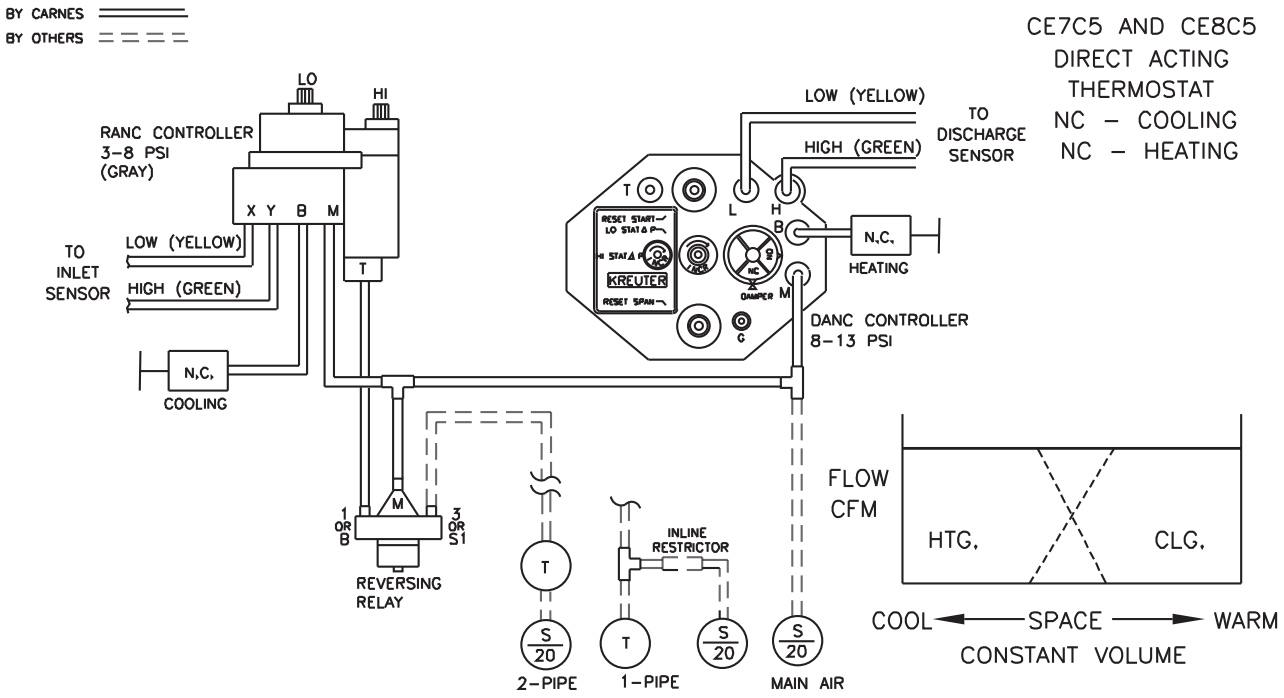




CONTACT FACTORY FOR REVERSE ACTING OR PRESSURE DEPENDENT CONTROL OPTIONS

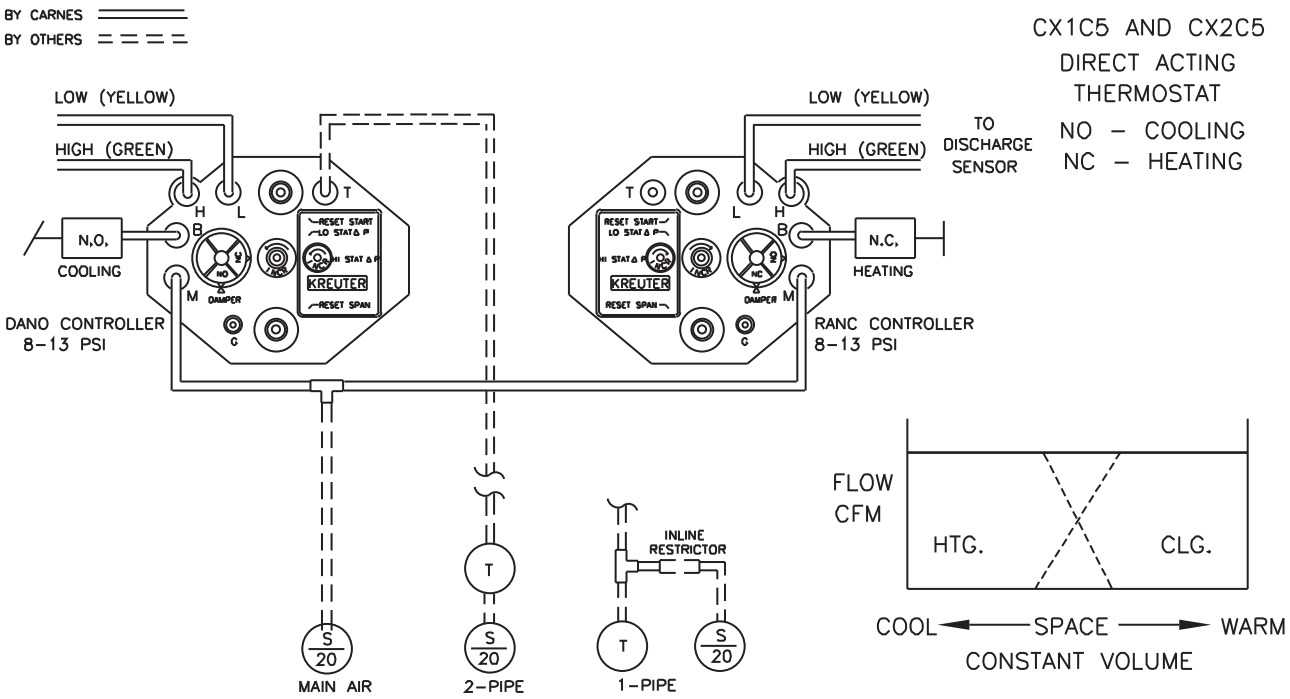
DUAL DUCT TERMINAL – PRESSURE INDEPENDENT CONSTANT VOLUME

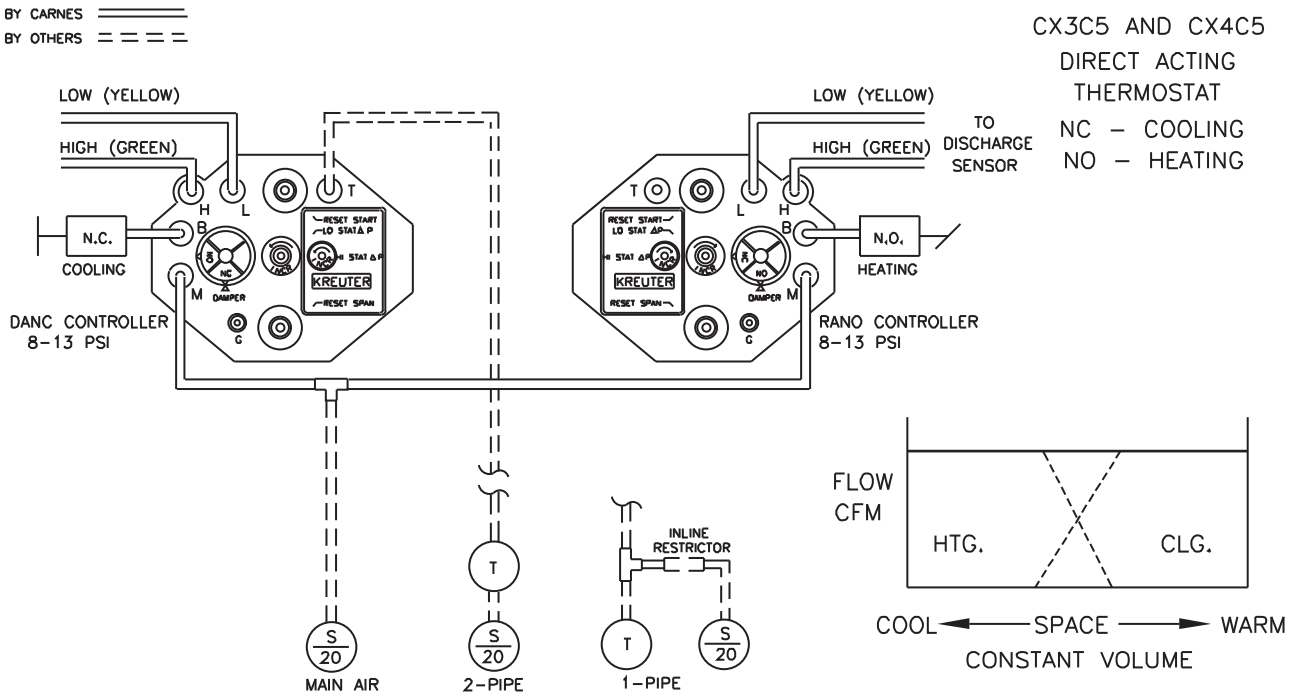




CONTACT FACTORY FOR REVERSE ACTING OR PRESSURE DEPENDENT CONTROL OPTIONS

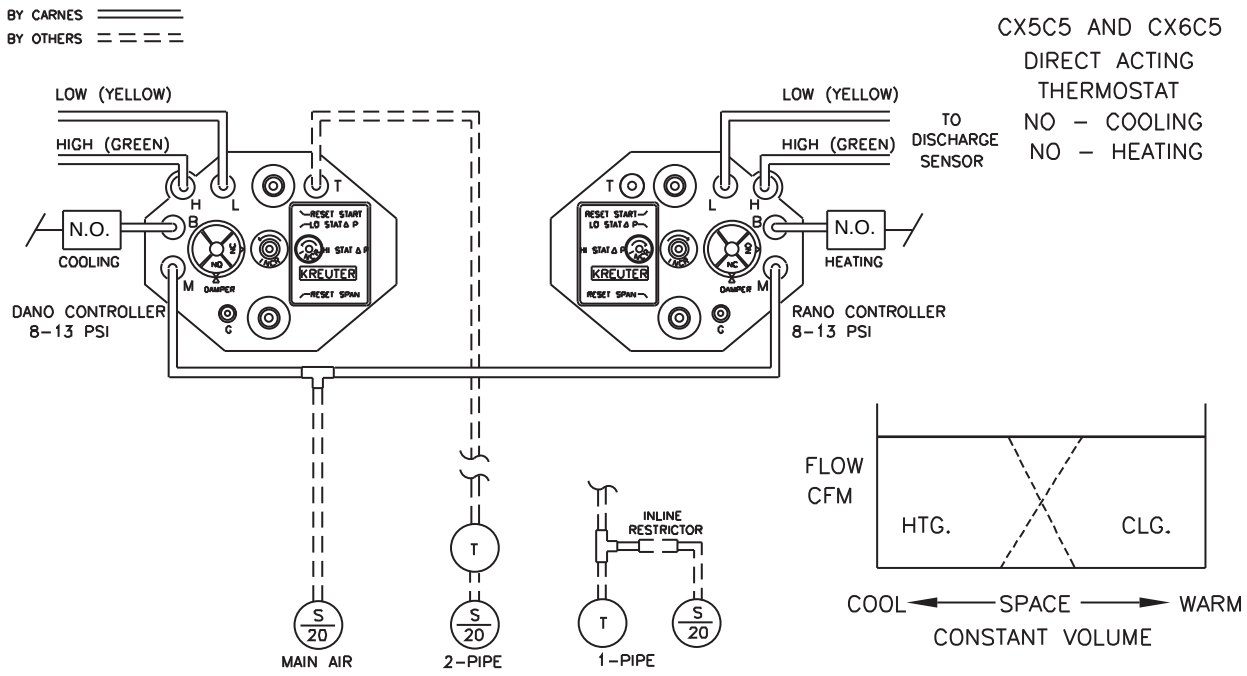
DUAL DUCT TERMINAL – PRESSURE INDEPENDENT CONSTANT VOLUME

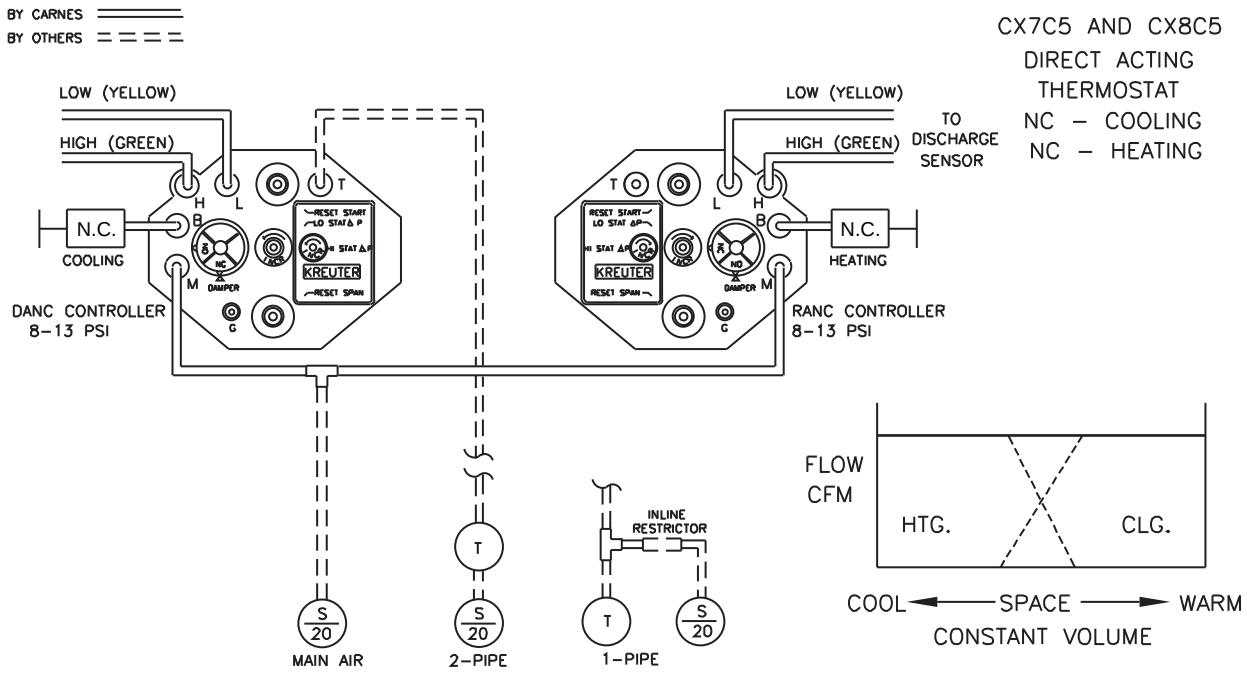




CONTACT FACTORY FOR REVERSE ACTING OR PRESSURE DEPENDENT CONTROL OPTIONS

DUAL DUCT TERMINAL – PRESSURE INDEPENDENT CONSTANT VOLUME





CONTACT FACTORY FOR REVERSE ACTING OR PRESSURE DEPENDENT CONTROL OPTIONS