Relay Ladder Logic Control

Logic control is used with relatively simple ON/OFF systems - like pneumatics.

Normally Open Schematics

Limit Switch

Momentary Contact Pushbutton

Pressure Switch

Manual Switch

Contacts

Normally Closed Schematics

Limit Switch

Momentary Contact Pushbutton

Pressure Switch

Manual Switch

Contacts

Output Schematics

Solenoid Coil

Control Relay Coil

Lamp

Annunciator (Horn)

Control Relay - Not Activated

Control Relay - Activated

No current thru CR
Why is it called "Logic Control?"

**IF** (PB-1 is pressed) **AND** (LS-2 is activated) **THEN** (SOL-2 will be turned on)

"OR" Example

**IF** (PB-1 is NOT pressed) **OR** (LS-1 is activated) **THEN** (CR-6 will be turned on)

"One Shot" - Single Stroke

► Pressing the pushbutton PB-1 will cause the cylinder to extend and retract one time

"One Shot" - Step #1

► Pressing the momentary contact pushbutton PB-1 energizes the control relay CR-1

"One Shot" - Step #2

► After control relay CR-1 energizes, normally open contacts CR-1A and CR-1B activate

"One Shot" - Step #3

► Control relay CR-1 is now energized by a 2nd path, solenoid SOL-A also activates
"One Shot" - Step #4
► PB-1 is released, but control relay CR-1 is still energized by the 2nd path ("hold" circuit)

"One Shot" - Step #5
► Solenoid A shifts the valve spool to the right, and the cylinder begins to extend

"One Shot" - Step #6
► Cylinder activates the normally closed limit switch LS-1, which "kills" the hold circuit for control relay CR-1

"One Shot" - Step #7
► With control relay CR-1 de-activated, the contacts CR-1A and CR-1B return to their normally open state

"One Shot" - Step #8
► CR-1B is now open, SOL-A is de-activated, spring returns valve to default state

"One Shot" - Step #9
► Cylinder begins to retract, and "rolls off" of LS-1, which returns to its N.C. state