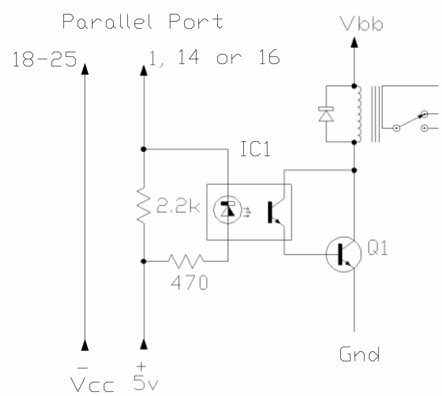
Relay Circuits for Homebrew CNC Machines
By Cletus Berkeley

Here are two simple ways to switch loads such as Spindles, Solenoid Valves, Vacuums, Etc.

DC RELAY DRIVER



IC1 4N25
Q1 TIP132
DIODE 1N4148

A DC solenoid valve of appropriate voltage may be substituted for the relay above.

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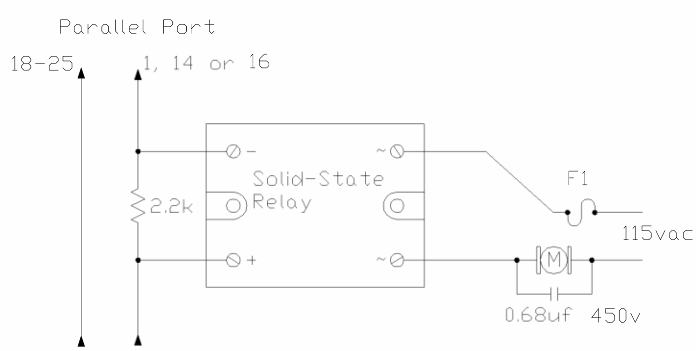
AC SOLID-STATE RELAY:



Note: +5v is supplied from test pad on HobbyCNC Driver board
See notes for wiring and Post Processor setup (using Vectric PP)

Solid-State Relay KD20C40AX Kyoto (or equiv.) (Good to 40Amps)
F1 Fuse appropriately to load used.

WARNING
These circuits may have LINE VOLTAGE PRESENT. If you are not experienced and/or comfortable working with mains potential, seek assistance from someone qualified to do so. The author assumes no responsibility for injury or death resulting from the above projects.

PRESENTED FOR INFORMATION PURPOSES ONLY

WIRING AND POST PROCESSOR NOTES

Wire connections on mine are:
+5vdc; Red wire soldered to test pad on driver board.
Spindle output1; Green wire soldered to Pin 14 on board.

Mach3 Set-up:
Ports and Pins tab:
Output1: Port1, Pin#14, ActiveLow (Green Tick)

Spindle set-up tab;
Relay Control:
Uncheck Disable Spindle Relays
Clockwise(M3) Output# 1
CCW(M4) Output# 1

Cut2d PP:
I use Mach3 Arcs Inch
Added M5 to Footer:

```
begin HEADER

"( [TP_FILENAME] )"
"( File created: [DATE] - [TIME])"
"( for Mach2/3 from Vectric )"
"( Material Size)"
"( X= [XLENGTH], Y= [YLENGTH], Z= [ZLENGTH])"
"([FILE_NOTES])"
"(Toolpaths used in this file:)"
"([TOOLPATHS_OUTPUT])"
"(Tools used in this file: )"
"([TOOLS_USED])"
"[N]G00G20G17G90G40G49G80"
"[N]G70G91.1"
"[N]T[T]M06"
"[N] ([TOOLNAME])"
"[N]G00G43[ZH]H[T]"
"[N][S]M03"
"[N](Toolpath:- [TOOLPATH_NAME])"
"[N]([TOOLPATH_NOTES])"
"[N]G94"
"[N][XH][YH][F]"



begin FOOTER

"[N]G00[ZH]"
"[N]G00[XH][YH]"
"[N]M09"
"[N]M05"
"[N]M30"
%
```

Pin 14 Here

+ 5v Connection Here

2.2K Resistor across input of SSR