

FEATURES

- 1) Line isolation on emergency stop or gear cover open
- 2) NVR - spindle will not inadvertently run at power on
- 3) Deceleration/brake from apron lever - coast from footswitch
- 4) Utilises original control switches and wiring
- 5) Low volt LED lighting using original machine light

THEORY OF OPERATION

Incoming contactor K1 forms an NVR with the 24V coil energised via the gear/mushroom switches and the NC contacts of the internal VFD relay (see later) and the apron lever from the 24V DC/DC.

The two stopping modes rely on the fact that the Huanyang VFD braking option only applies to the STOP command, the EMERGENCY STOP feature always coasts. Therefore this installation configures the spindle apron lever on the STOP command with braking whereas the footswitch is configured on the EMERGENCY STOP for coasting.

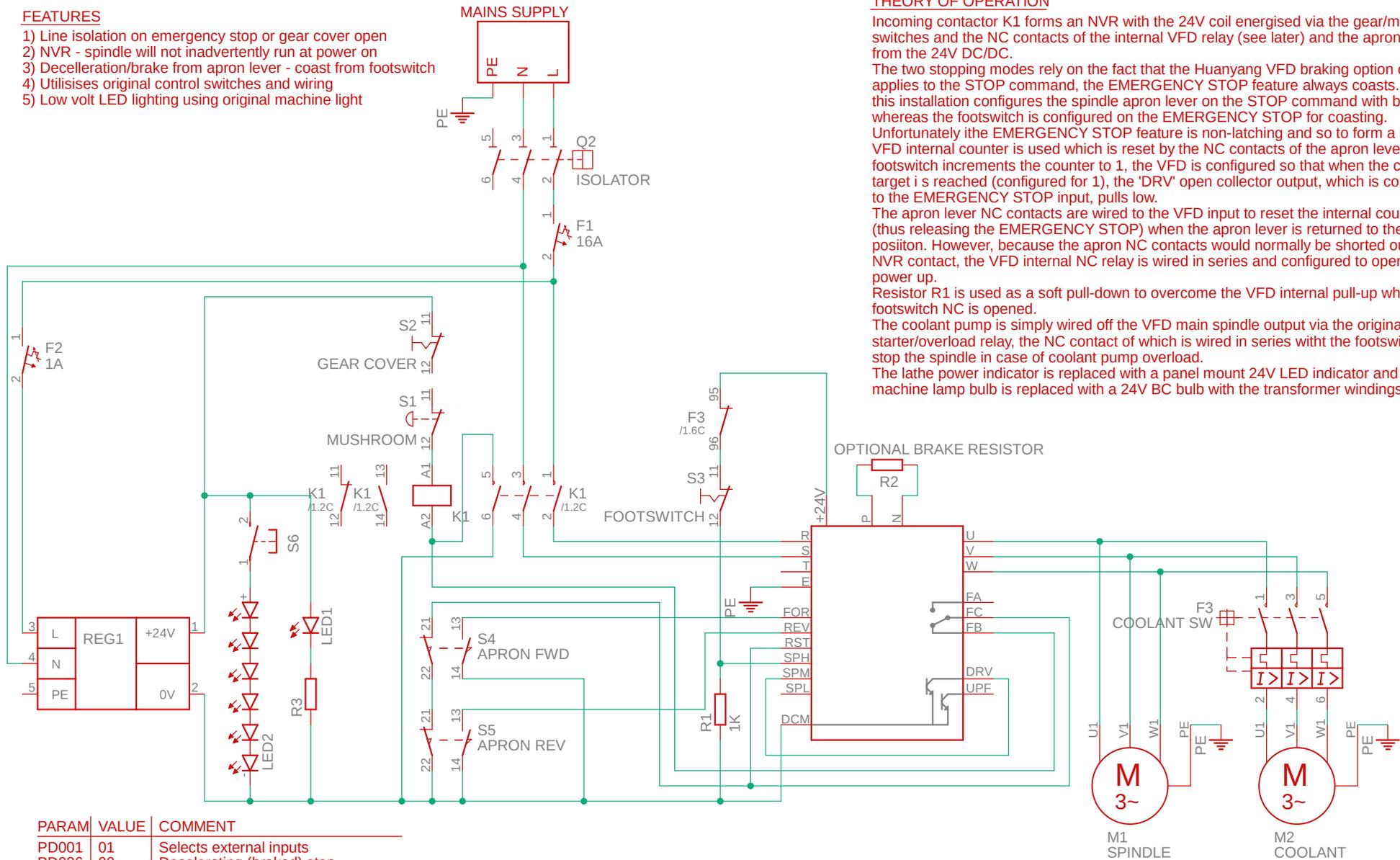
Unfortunately the EMERGENCY STOP feature is non-latching and so to form a latch the VFD internal counter is used which is reset by the NC contacts of the apron lever. So, the footswitch increments the counter to 1, the VFD is configured so that when the counter target is reached (configured for 1), the 'DRV' open collector output, which is connected to the EMERGENCY STOP input, pulls low.

The apron lever NC contacts are wired to the VFD input to reset the internal counter (thus releasing the EMERGENCY STOP) when the apron lever is returned to the off position. However, because the apron NC contacts would normally be shorted out by the NVR contact, the VFD internal NC relay is wired in series and configured to open on VFD power up.

Resistor R1 is used as a soft pull-down to overcome the VFD internal pull-up when the footswitch NC is opened.

The coolant pump is simply wired off the VFD main spindle output via the original starter/overload relay, the NC contact of which is wired in series with the footswitch to stop the spindle in case of coolant pump overload.

The lathe power indicator is replaced with a panel mount 24V LED indicator and the machine lamp bulb is replaced with a 24V BC bulb with the transformer windings bypassed.



PARAM	VALUE	COMMENT
PD001	01	Selects external inputs
PD026	00	Decelerating (braked) stop
PD044	02	I/P 'FOR' (D1) = forward direction
PD045	03	I/P 'REV' (D2) = reverse direction
PD046	32	I/P 'RST' (D3) = counter reset
PD047	31	I/P 'SPH' (D4) = counter increment
PD048	13	I/P 'SPM' (D5) = emergency stop
PD050	13	O/P 'DRV' = count limit reached
PD052	31	Internal relay energised at power on
PD065	01	Counter limit set to '1'

NOTE
Parameter table only includes settings for the basic operation, other parameters need to be set e.g.ramp/brake times, motor configuration etc

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