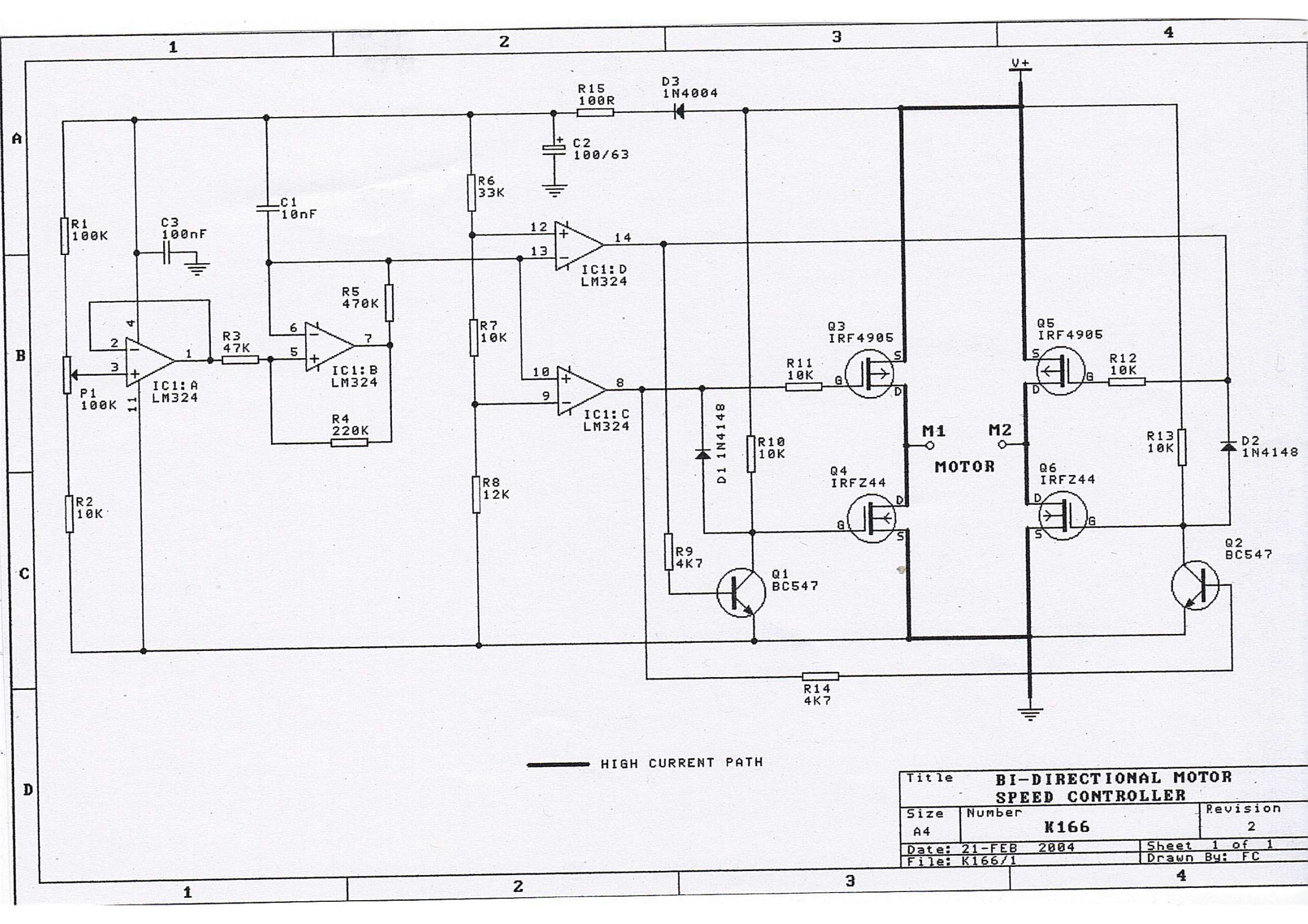
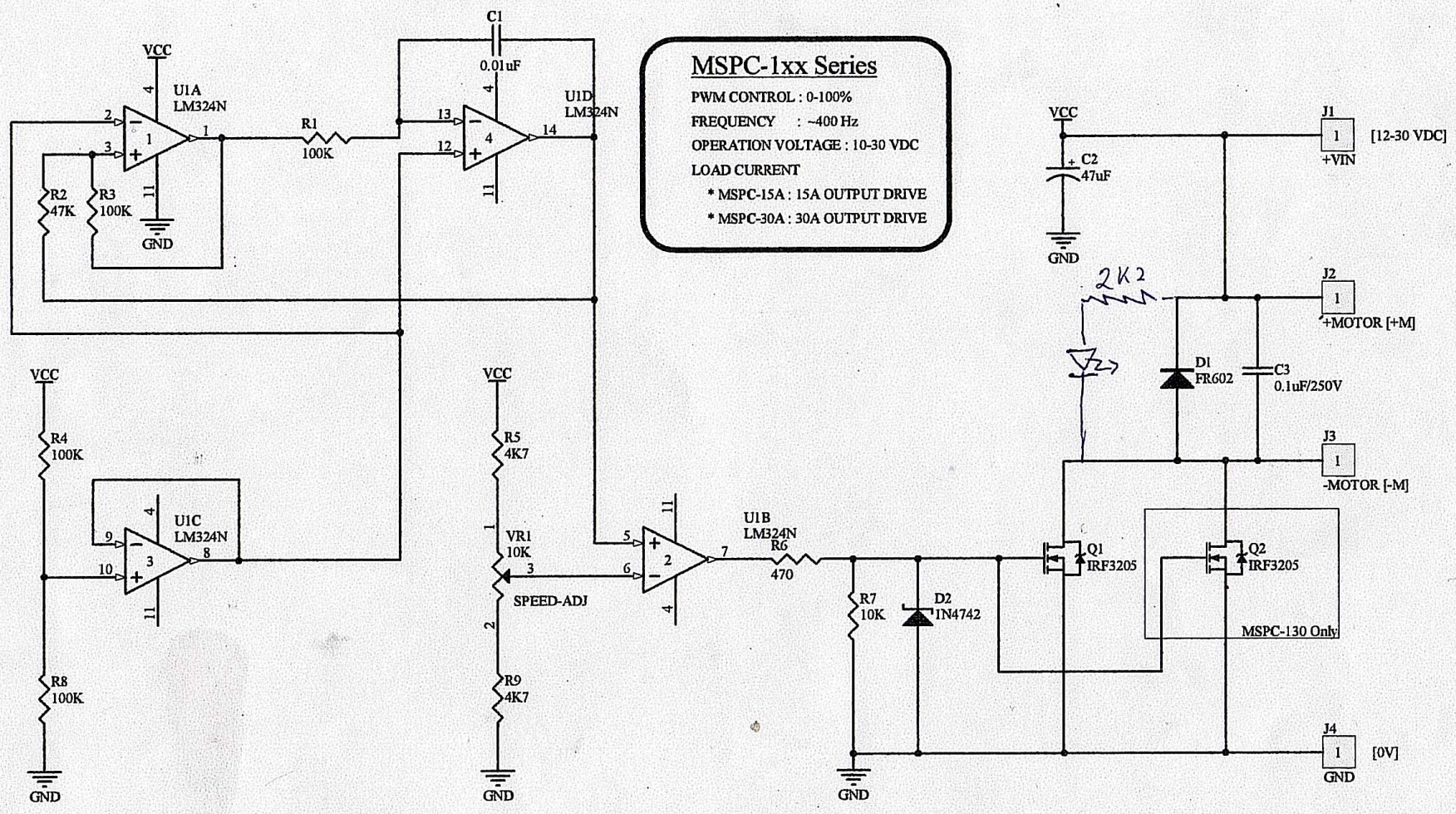
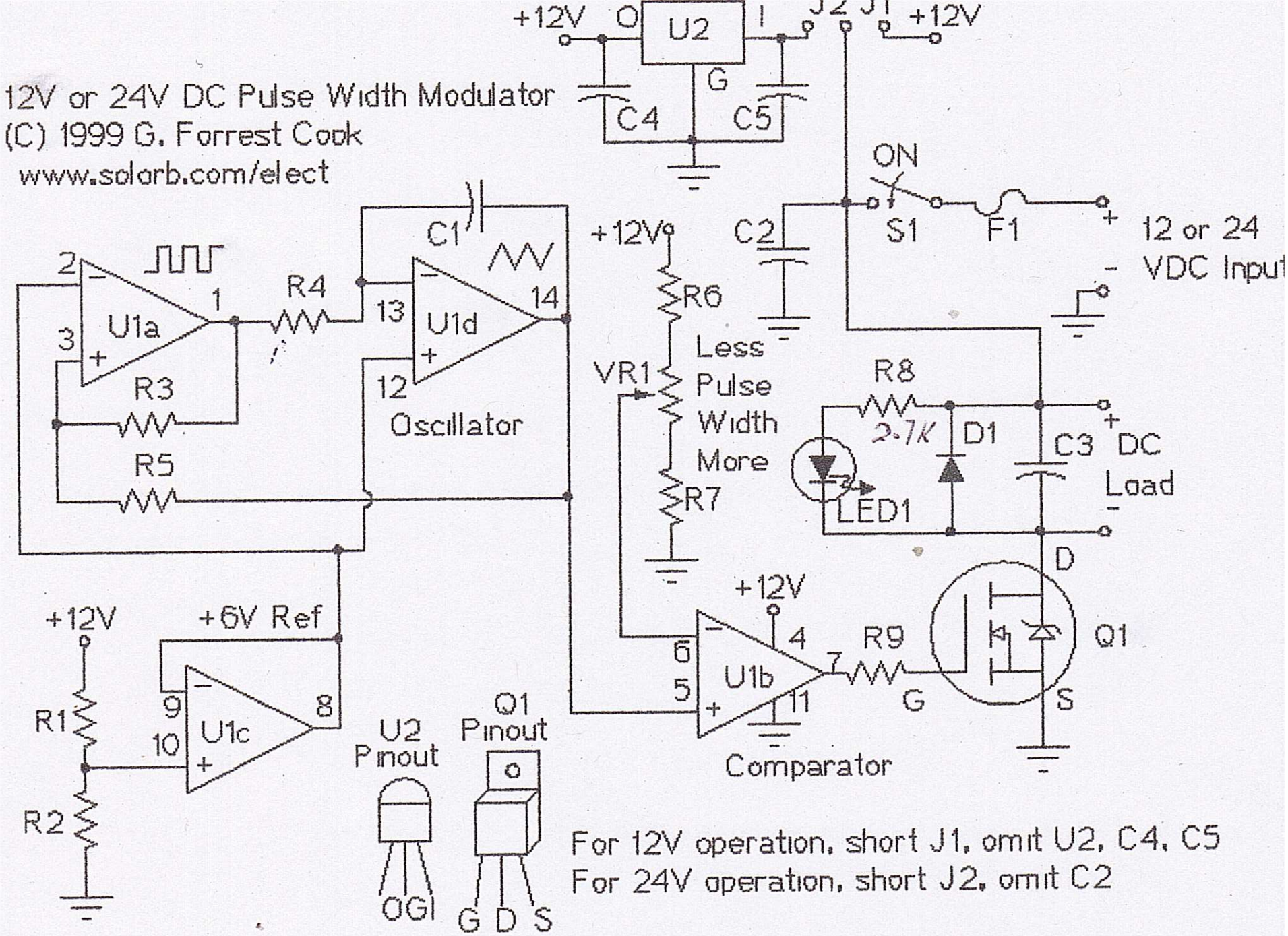
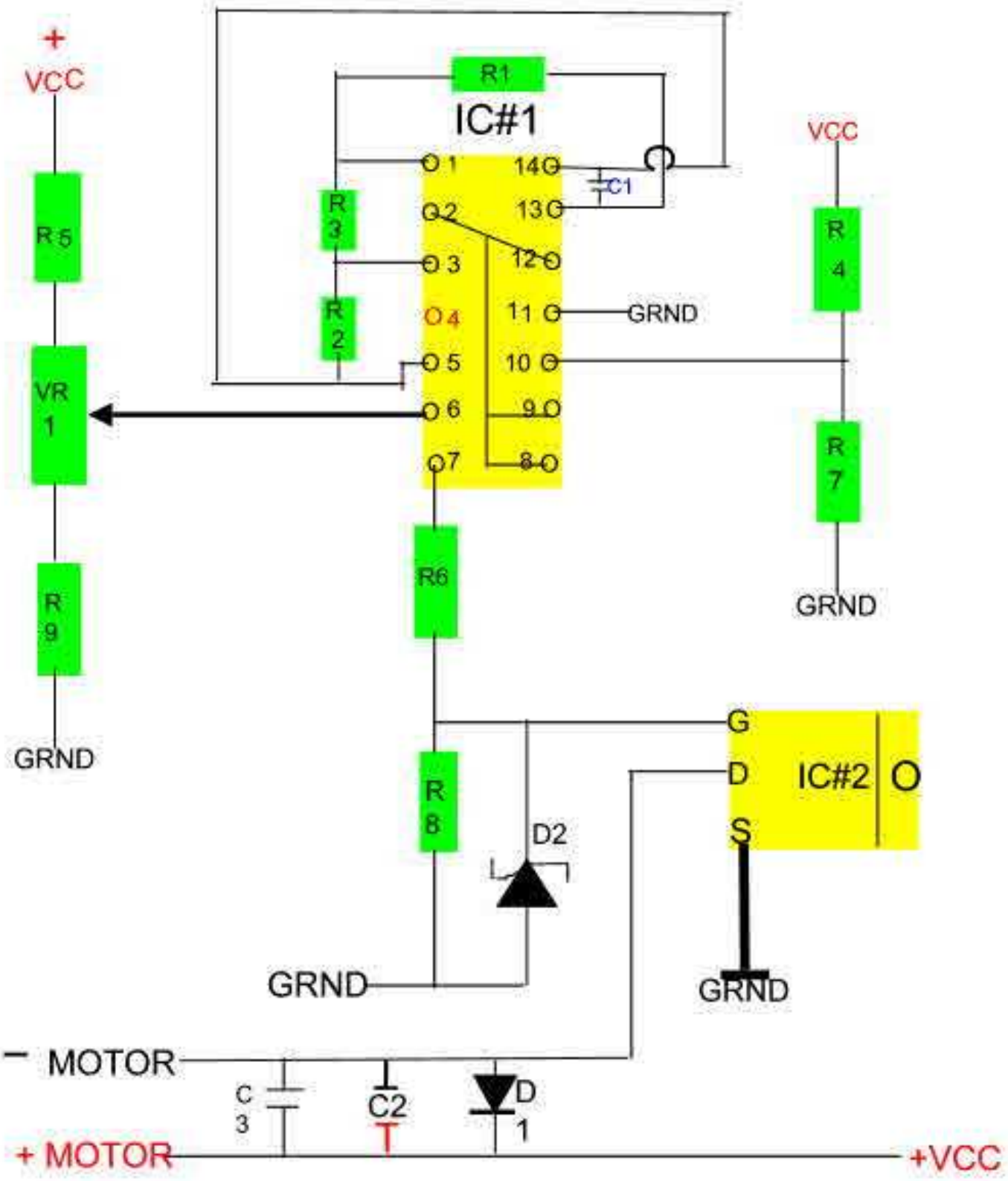

1
2
3
4
A
B
C
D
V+
R15
100R
D3
1N4004
C2
100/63
R6
33K
C1
10nF
R1
100K
C3
100nF
R5
470K
R7
10K
12
13
14
IC1:D
LM324
Q3
IRF4905
Q5
IRF4905
R11
10K
R12
10K
R3
47K
6
5
7
IC1:B
LM324
2
3
1
4
11
P1
100K
IC1:A
LM324
10
9
8
IC1:C
LM324
R4
220K
D1 1N4148
R10
10K
M1
M2
MOTOR
R13
10K
D2
1N4148
Q4
IRFZ44
Q6
IRFZ44
R2
10K
R8
12K
R9
4K7
Q1
BC547
Q2
BC547
R14
4K7
HIGH CURRENT PATH
Title
BI-DIRECTIONAL MOTOR
SPEED CONTROLLER
Size
A4
Number
K166
Revision
2
Date: 21-FEB 2004
Sheet 1 of 1
File: K166/1
Drawn By: FC




MSPC-1xx Series : PWM Motor Speed Control
Mikro-Kits Product




**Pulse Width Modulator for 12 and 24 Volt applications**




PWM-MOTOR-SPEED-CONTROL

# PWM COMPONENTS-LIST

## RESISTORS

RV1-10K-LINEAR POTENTIOMETER

R1,R3,R4 &R7=100K

R2=47K

R5 & R9=4K7

R6=470 ohms

R8=10K

## DIODES

D1=FR602 (or equivalent)

D2=IN4742 Zener

## CAPACITORS

C1=0.01uF Ceramic disc

C2= 47uF Electolytic

C3=0.1uF Ceramic disc

## ICs

Q1=LM324N

Q2=IRFZ48N

A LED is optional,& can be fitted between the motor + and motor - with a suitable resistor in series with the LED (suggest Red LED and 2K2 Resistor)

## CAUTION !

A Suitable heat-sink MUST be fitted to the Mosfet , (even for testing) & bear in mind that the DRAIN is connected to the case of the mosfet,and should never be grounded.

# ASSEMBLY

The pwm can be populated on a piece of strip-board,(approx,6x2 inches)
The only part that will need beefing up,is the Mosfet source & drain tracks

It is also an advantage to fit a 14 pin socket for Q1, this prevents any damage when soldering and makes it easy for replacement.

The schematic shown is the usual configuration for 15amps

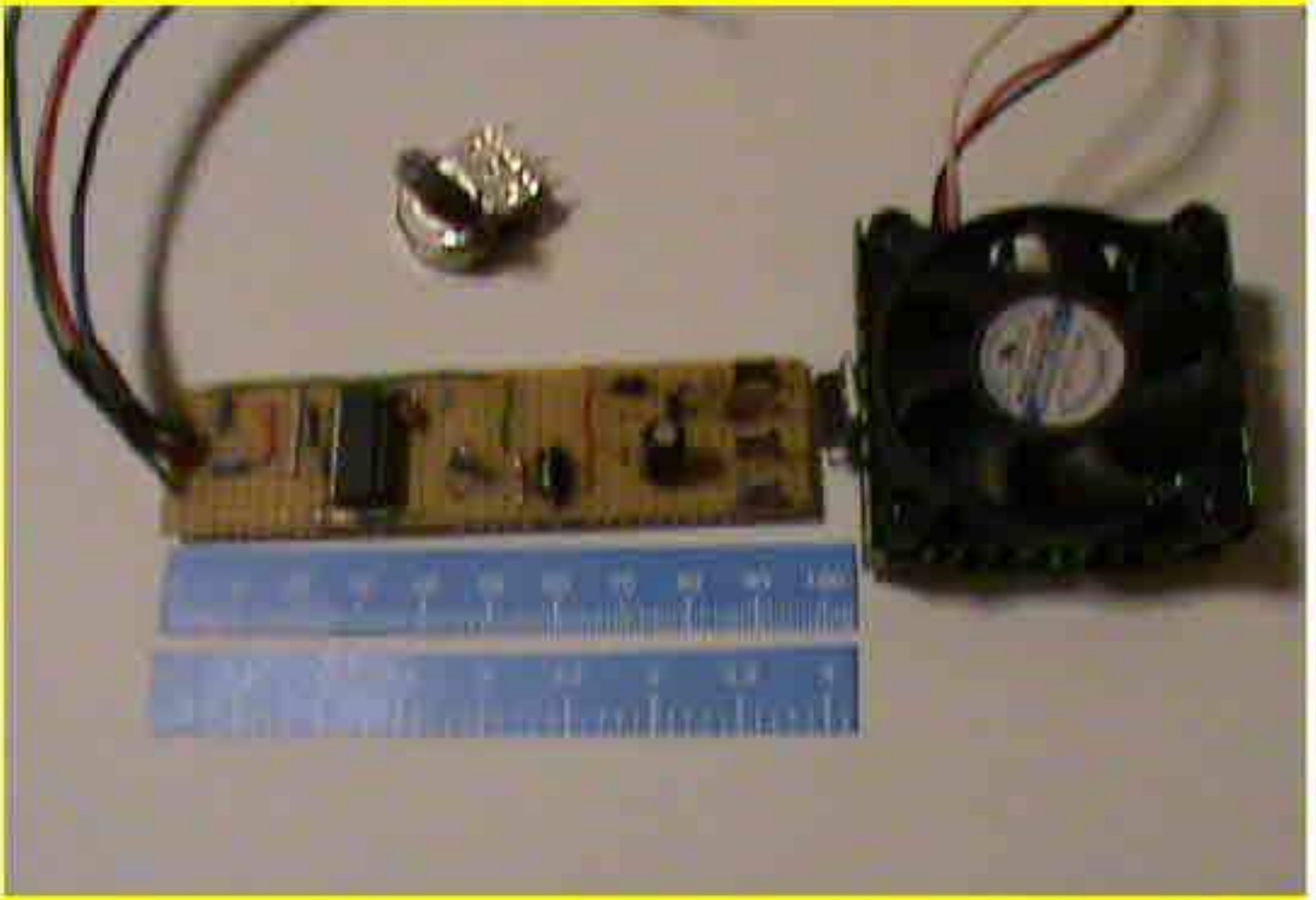
If it is required that it should be used for higher current,then simply add another mosfet, or substitute the existing one for one of a higher rating.

From past experience,it is best to over spec the unit,because the option to draw more current is always available & it will survive longer.

The important thing is cooling,and a fan as well as a heatsink,should be considered

This is a simple circuit,and when used with an ammeter,wil give control from zero to maximum

The driver assembly was populated on a
piece of strip-board,100mm x 35mm.
The Mosfet was mounted on 50mm x 50mm
heat-sink (with incorporated fan.
The unit was operated by a remote "Pot"

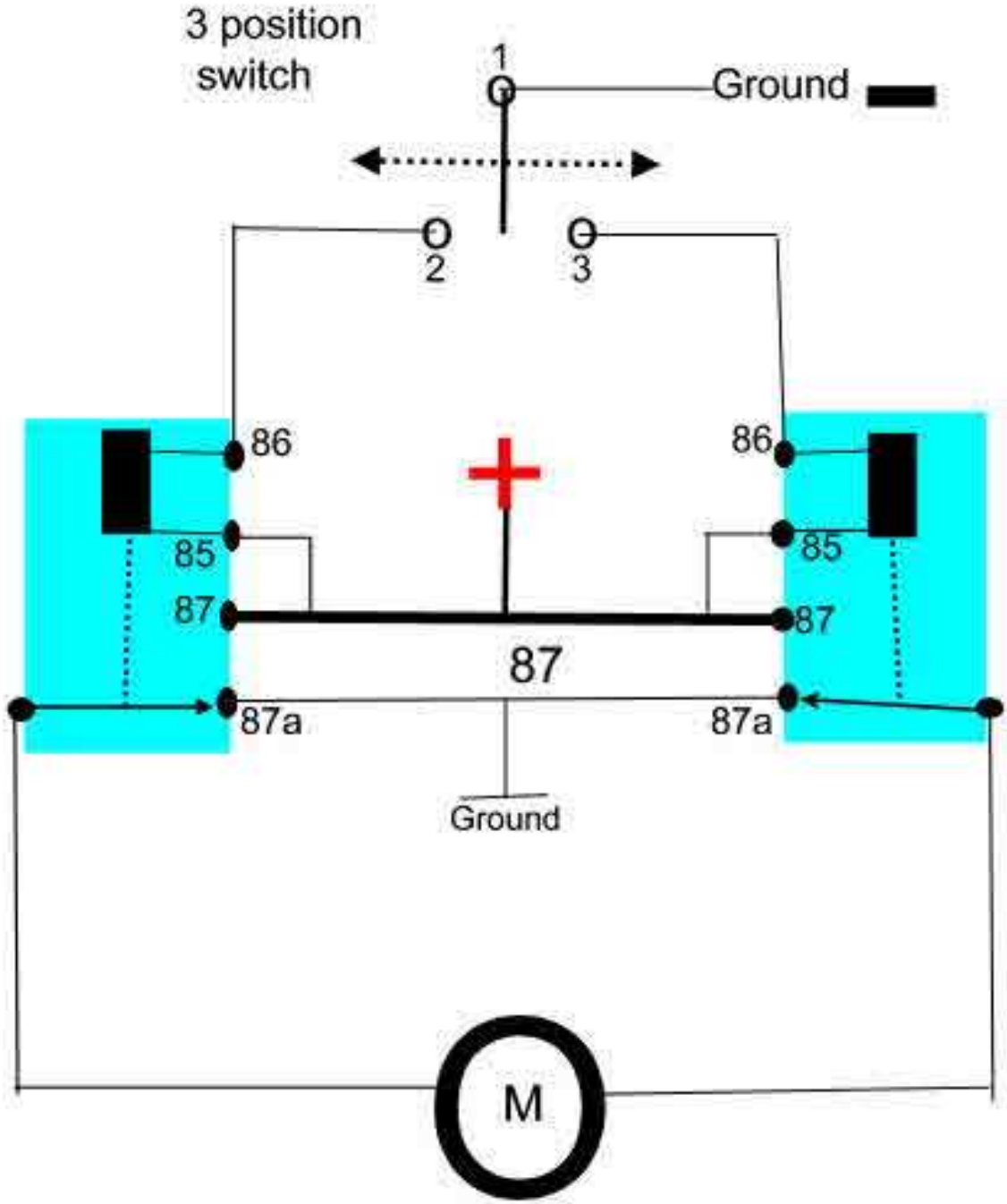


# ERROR

ERROR ON NEXT PAGE

The suggestion to use a 5 pin revering switch,as a substitute for a 3 position switch,is Wrong. while the switch will function, it will have to be permanently pressed,as the switch is spring loaded.

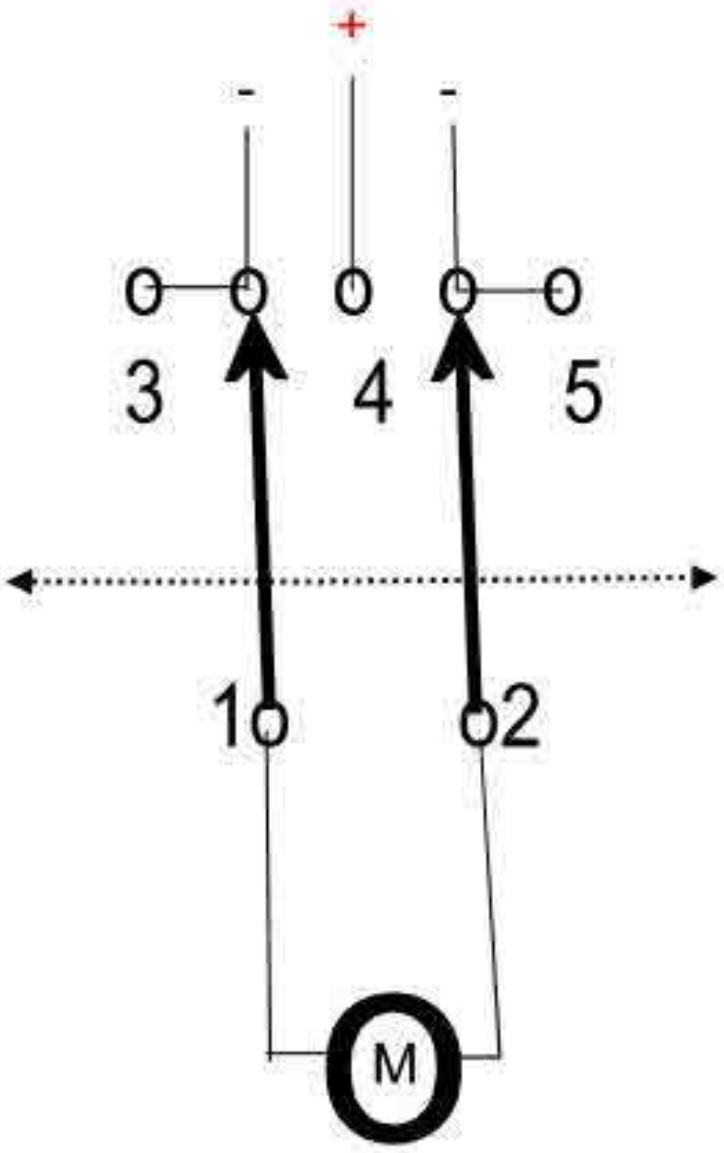
# POLARITY REVERSING WITH RELAYS



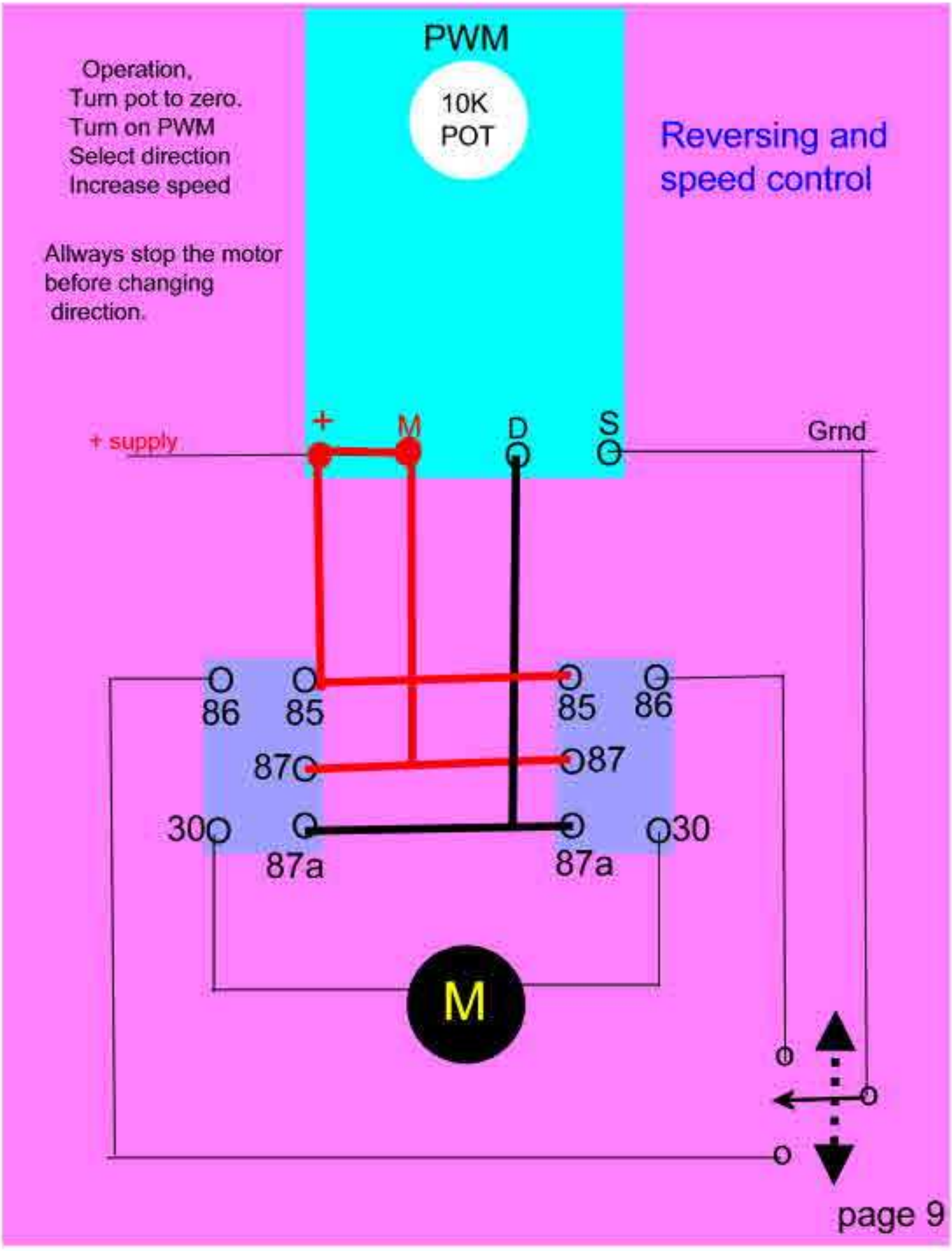

If a 3 position switch is not available
A 5 pin reversing switch can be used
By using pins# 1,2 &4 (pins 3&5 are N/C)

# POLARITY REVERSING CIRCUIT
## REVERSING SWITCHES

Switch contacts will NOT cope with high current




When motor is at rest.both terminals are grounded.


PWM
10K
POT
Operation,
Turn pot to zero.
Turn on PWM
Select direction
Increase speed
Allways stop the motor
before changing
direction.
Reversing and
speed control
+ supply
+
M
D
S
Grnd
86
85
85
86
87
87
30
87a
87a
30
M