

# BasePump Design Data

## BasePump and BasePump with Valve

### Stepper Motor

Stepper Motor Step Size and Winding Data

Note: Minimum Stepper Motor Driver requirement is a BiPolar Chopper at 24 VDC, 350 mA phase or equivalent.

Resistance, each winding	9.1 OHMS
Inductance, each winding	16.7 mH
Degrees per step	7.5

### Stepper Motor Drive Sequence

LEAD STEP	RED	GRAY	YELLOW	BLACK
1	+	-	+	-
2	+	-	-	+
3	-	+	-	+
4	-	+	+	-
1	+	-	+	-



**CW**



**CCW**

### DC Valve Motor

The valve drive motor is a DC gear motor with a 3-pole commutator and carbon brushes.

### Electrical Characteristics

Nominal Voltage	12 VDC
Voltage Range	7-15 VDC
No-Load Current (at nominal voltage)	<=0.90 mA
Max. Load Current (at nominal voltage)	290 mA

### Electrical Connections

BasePump (without valve)

For mating connector, use AMP 746286-4 or equivalent.

Refer to the "Schematic Diagram" for pinouts.

BasePump (with valve)

For mating connectors, use AMP 746286-4 or equivalent.

Refer to the "Schematic Diagram" for pinouts.

### Opto-Interrupters

Absolute Maximum Ratings - 25°C

Infrared Emitting Diode - Emitter

Power Dissipation	100 mW (derate 1.33 mW/°C above 25°C)
Forward Current (continuous)	60 mA
Forward Current (peak)	
PW <1 ms, PRR <300/s	3 A
Reverse Voltage	6 V

## Individual Electrical Characteristics (25°C)

Emitter	
Reverse Breakdown Voltage at 10 mA	6 V
Forward Voltage at 60 mA	1.7 V
Reverse Current at 5 V	100 mA
Capacitance	30 pF

## Coupled Electrical Characteristics (25°C)

I C-E (on), I =mA, V C-E =5 V	0.3 mA, min.
I C-E (on), I =20 mA, V C-E =5 V	2.0 mA, min.
I C-E (on), I =30 mA, V C-E =5 V	3.0 mA, min.
V C-E (sat), I =30 mA, I C =1.8 mA	0.40 V, max.
t on, VCC =5 V, I =30 mA, R =2.5 K	8 μs, typ.
t off, VCC =5 V, I =30 mA, R =2.5 K	50 μs, typ.

## Detector

Breakdown Voltage at 1 mA (collector current)	30 V, min.
Breakdown Voltage at 100 mA (emitter current)	6 V, min.
Collector Dark Current at 25 C-E	100 mA, max.
Capacitance at 5 V C-E	3.3-5 pF

## Phototransistor (Detector)

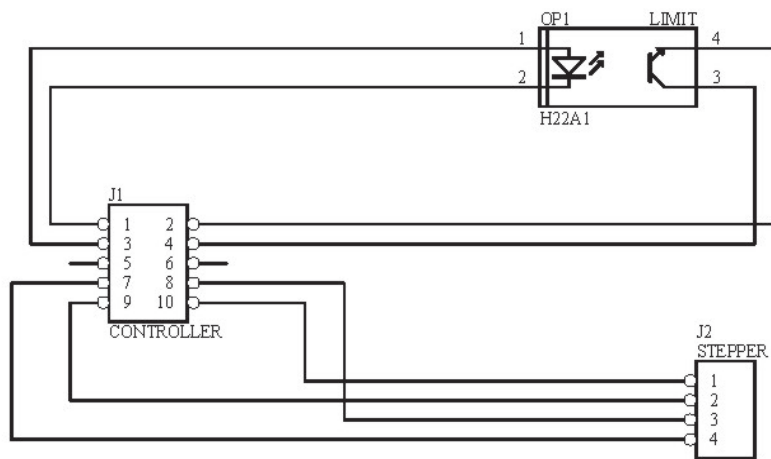
Power Dissipation	15 mW (derate 2.0 mW/°C above 25°C)
Collector Current (continuous)	100 mW
Collector -Emitter Voltage	30 V
Emitter -Collector Voltage	6 V

TriContinent

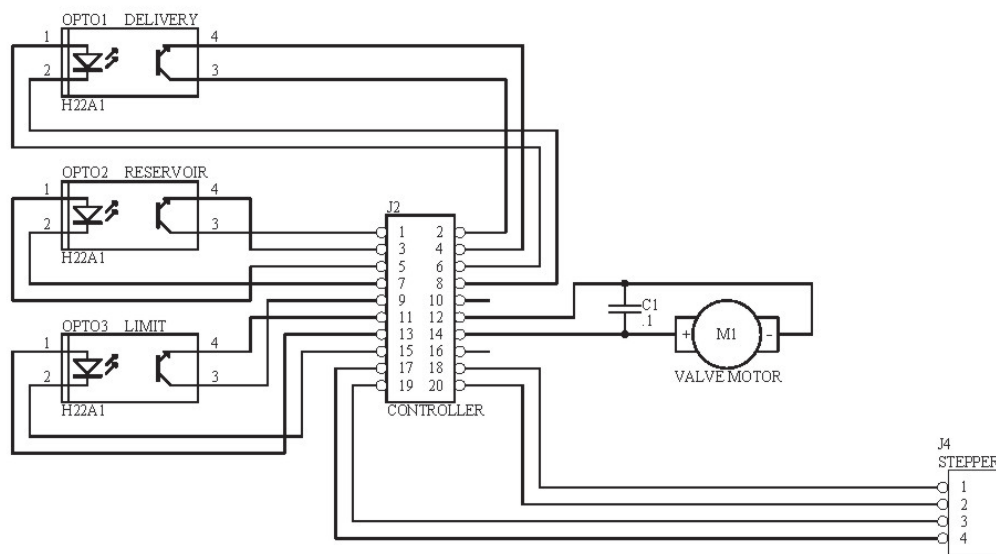
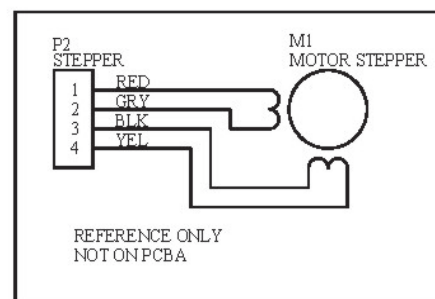
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Schematic  
PCBA, Opto



Schematic  
PCBA, Opto with Valve

