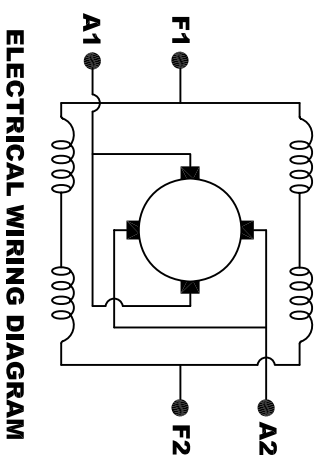
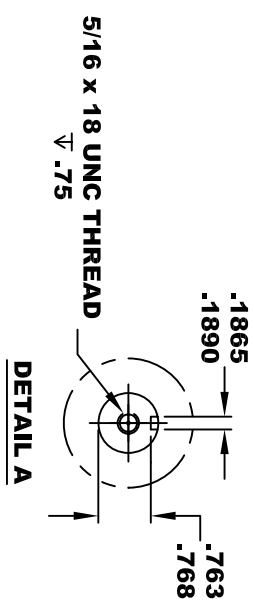
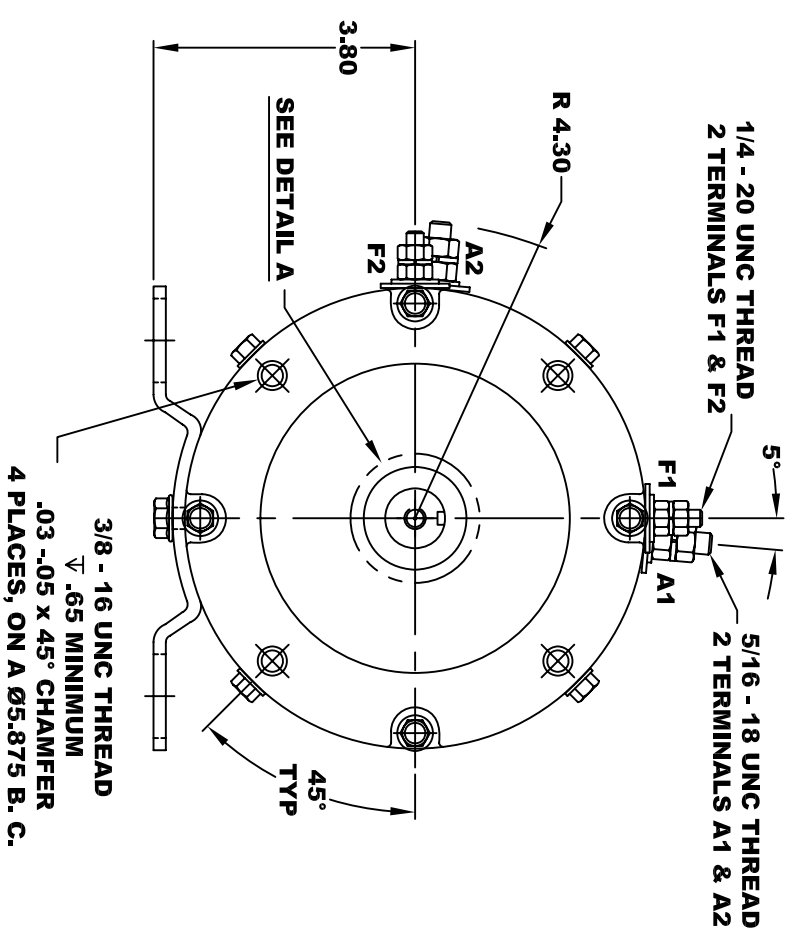


<b>A2</b>		<b>A1</b>	
PRECISIONRAILROADPRODUCTS.COM			
Phoenix AZ			
Model # ES-93D-33			
<b>F2</b>	Mfg. Date	Serial #	Rating
	XXXX/XX	XXXX	CLASS - H
Peak HP	16.3 HP	Peak Torque	900 / 25
		Amps	RPM
		55 Tl / 15e	1550
		MADE IN U.S.A.	

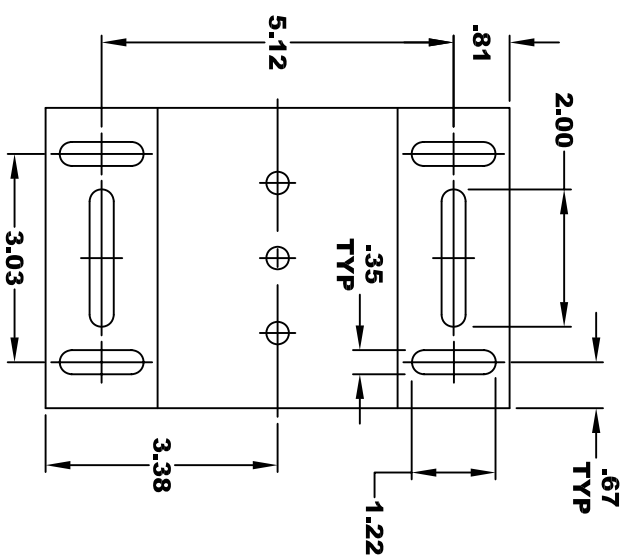
**SPEED SENSOR ELECTRICAL SPECIFICATION:**  
-4.5V TO 24V OPERATING VOLTAGE  
-20°C TO 85°C OPERATING TEMPERATURE  
-CURRENT SINKING UP TO 25mA  
-AN EXTERNAL OUTPUT PULL UP RESISTOR IS REQUIRED  
-SENSOR IS DESIGNED TO OPERATE WITH 4 N/S POLEPAIRS  
-THE OPERATIONAL DISTANCE BETWEEN THE MAGNET  
AND THE HOUSING, INCLUDING ANY RUNOUT  
SHOULD NOT EXCEED .030 INCHES



**MOTOR WIRING CONNECTIONS:**  
**CW ROTATION DRIVE END**  
CONNECT A1 & F1 TO ONE BATTERY TERMINAL  
CONNECT A2 & F2 TO OTHER BATTERY TERMINAL  
**CCW ROTATION DRIVE END**  
SWITCH F1 & F2 CONNECTIONS



**TORQUE SPECIFICATION FOR POWER CABLE SECURING TOP NUTS**  
5/16-18 UNC (A1 / A2) - 110 IN / LBS MAX  
1/4-20 UNC (F1 / F2) - 50 IN / LBS MAX



**MOTOR WEIGHT: 51 LBS**  
**CLASS "H" INSULATION**  
**PERFORMANCE SPEC: 33**

THIS PRINT IS THE PROPERTY OF D&D MOTOR SYSTEMS INC.  
DO NOT SCALE  
WORK TO DIMENSIONS  
TOLERANCES UNLESS OTHERWISE SPECIFIED ARE AS FOLLOWS  
.XX \_\_\_\_\_ .01  
.XXX \_\_\_\_\_ .005  
.XX ROUGH CASTING \_\_\_\_\_ .03  
HOLES \_\_\_\_\_ -.001 / +.006  
ANGLES \_\_\_\_\_ 0°30"

**D & D MOTOR SYSTEMS INC**

**MOTOR OUTLINE**

SIZE	DRAWN DATE	RELEASE DATE	DWG NO. / PART NO.	REV
B	5-5-14		ES-93D-33	R1
SCALE	STF	DRAWN BY	MJG	REV DATE
				5-13-14