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APPLICATION NOTE NO. 22

March 1991

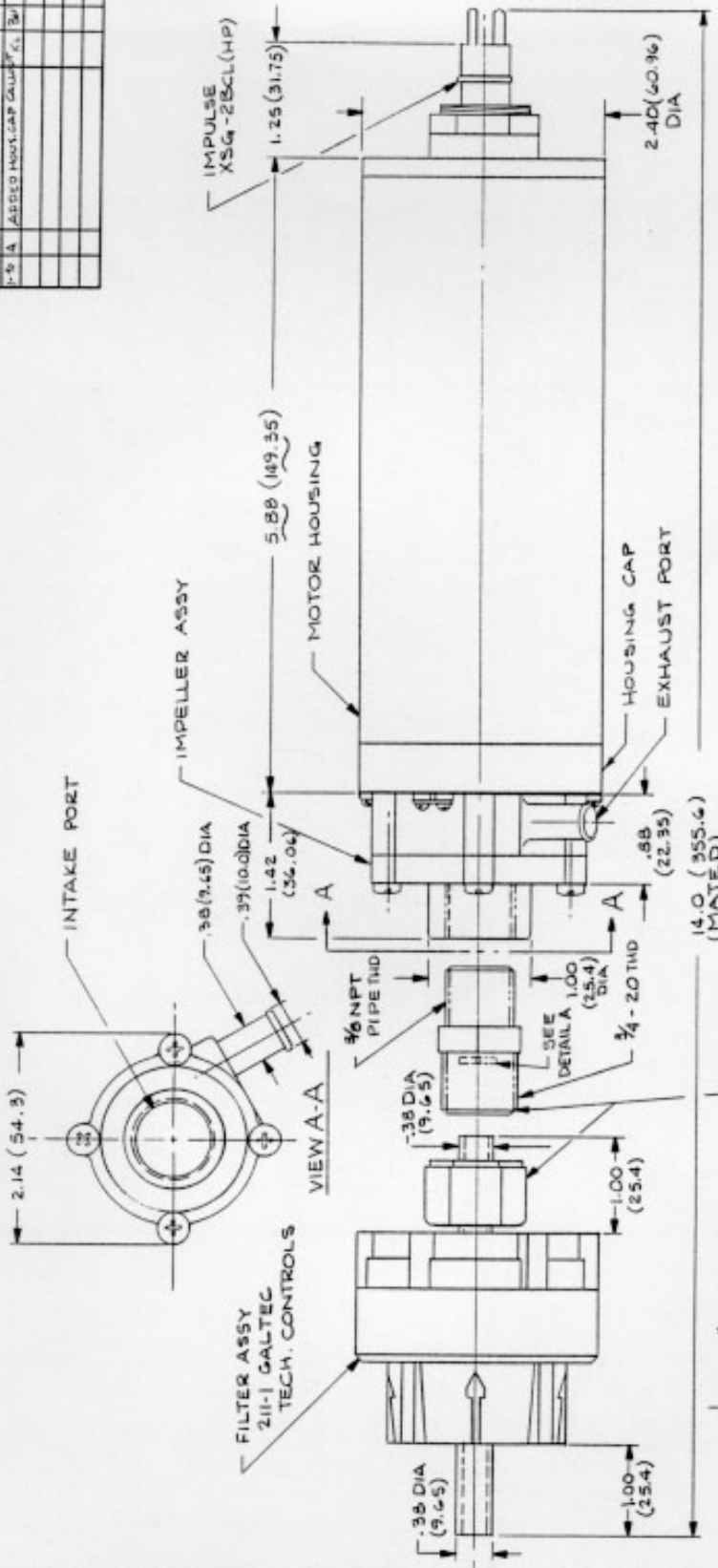
Pump Speed Adjustment Instructions

The pump housing must be disassembled. Referring to drawings 40065 and 40020:

1. Remove the 4 screws holding the **housing cap** to the **motor housing** (2-56 UNC X 3/4).
2. Pull the **housing cap** out of the **motor housing**, using a rotating motion. It is not necessary to unsolder the wires leading to the underwater connector.
3. Most Sea-Bird SBE 5 Submersible Pumps with serial numbers below 125 have Cannon motors (round, brass-colored casing), while most with serial numbers above 125 have Pittman motors (rectangular, black-colored casing marked 'elcom'). Remove the four M3X8 (metric) screws holding the motor to the **housing cap** (Pittman motors will be mounted with only 2 screws).
4. Supply 12 - 15 volts DC power at the 2-pin bulkhead connector (small pin +; large pin -), and use an ammeter (0 - 300 milliamperes range or greater) to measure the pump current.
- 5a. **Speed adjustment, Cannon motor.** Refer to schematic 30161. Use a counter to monitor the frequency at Pin 10 (brown motor wire); connect the counter ground to pump power supply (-). Motor speed in RPM is 5 times the frequency in Hz measured at Pin 10. Adjust the frequency with the 2K potentiometer (R1). **Do not adjust the other pot (R2)!** For 3000 RPM the frequency would be 600 Hz, however the Cannon motor cannot run faster than about 2700 RPM. Load the motor (using light thumb and finger pressure on the rotating magnet) to increase the current to about 300 milliamperes. If the measured frequency changes by more than about 2 Hz, set a lower speed and try again.
- 5b. **Speed adjustment, Pittman motor.** Refer to schematic 30392. Use a counter to monitor the frequency at the blue motor wire (some units have a turret to which the counter can be connected); connect the counter ground to pump power supply (-). The motor speed in RPM will be 30 times the frequency in Hz. If the desired speed cannot be set, change R9 to 2.21K and R16 to 453 ohms (R16 is on the underside of the printed board, which will have to be unbolted from the motor for access; apply LockTite to the printed board mounting screws when re-mounting the board to the motor). Adjust the potentiometer to give the desired speed (for example, 100 Hz at the test point for 3000 RPM). Load the motor (using light thumb and finger pressure on the rotating magnet) to increase the current to about 300 milliamperes. If the measured frequency changes by more than about 0.5 Hz, set a lower speed and try again. **Note: pumps marked 'WDG #4' or 'WDG #5' may not be adjustable to the speed desired; contact Sea-Bird for further information.**
6. Disconnect the counter and power supply. Reassemble the pump, reversing steps 1, 2, & 3. **Be sure the O-ring and O-ring surfaces are clean and lightly greased before inserting the housing cap into the main housing.**

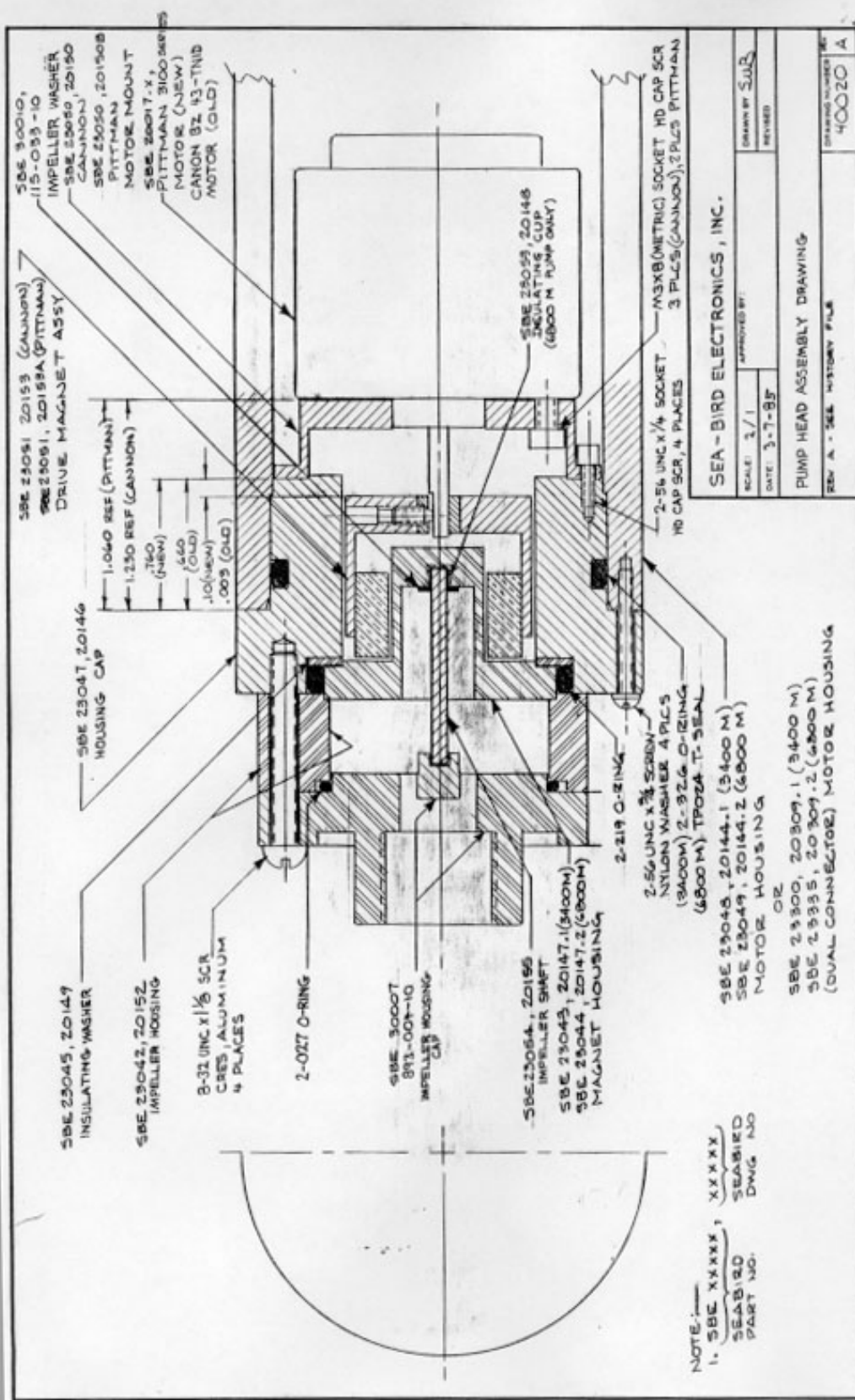
drawings 40065, 40020, 30161, 30392, 40092 attached

REV	BY	REVISION RECORD	AUTH	DR	CK
1-5	4	ADDED HOUSING CAP	KL	BP	



COUPLER ORIFICE
HOLDER NGMCG
FAST N TITE

TOLERANCES UNLESS NOTED	SEA-BIRD ELECTRONICS, INC.
DECIMAL	SCALE 1 X 1
FRACTIONAL	DESIGNED BY
ANGULAR	APPROVED BY
TITLE	SBE-5 SUBMERSIBLE PUMP
DATE	2-22-56
DRAWING NUMBER	40065
REV	A

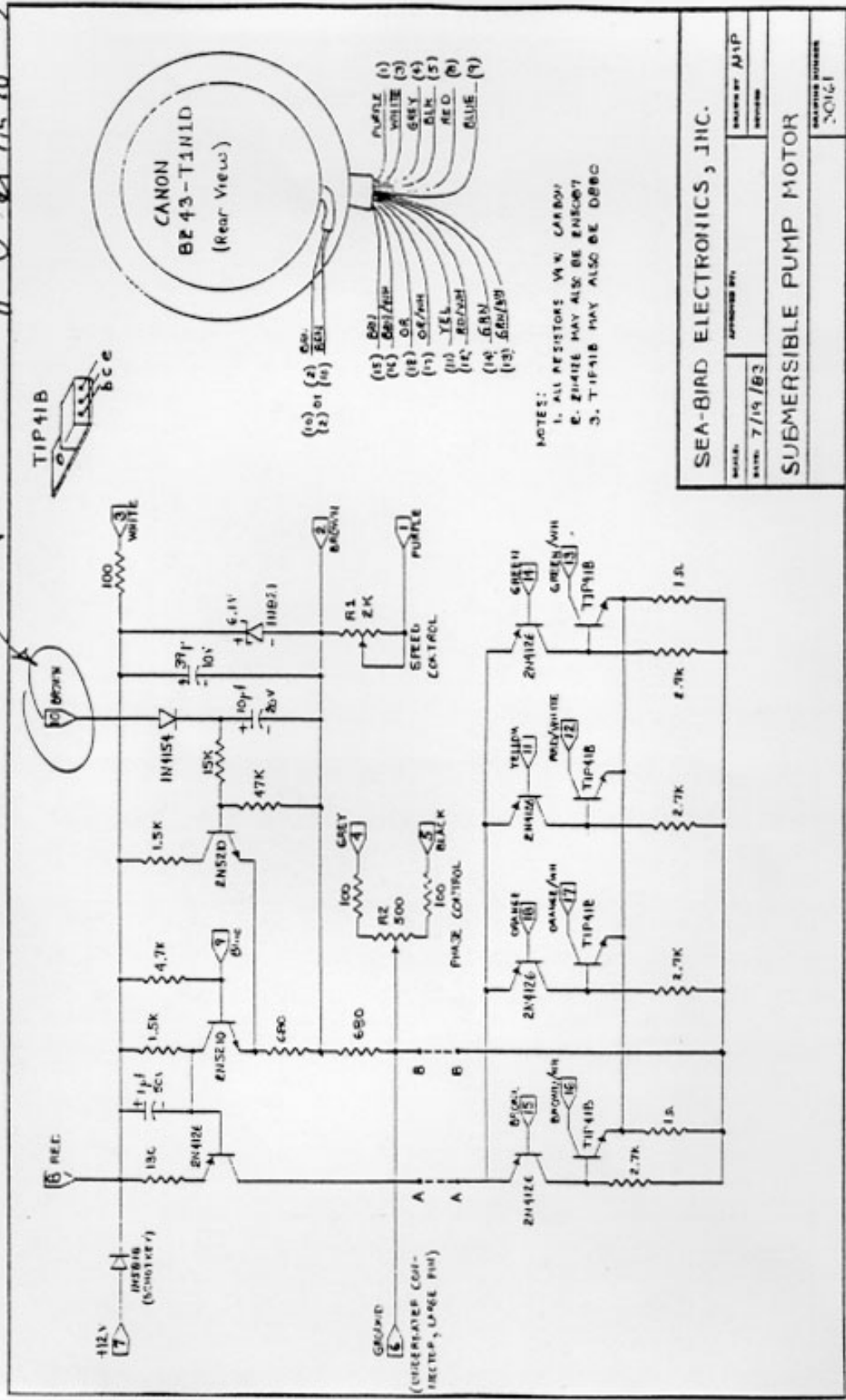


NOTE: 1. SBE XXXX, XXXX SEABIRD PART NO. DWG NO.

SEA-BIRD ELECTRONICS, INC.	
SCALE: 3/1	APPROVED BY: <u> </u>
DATE: 3-7-85	DESIGNED BY: <u> </u>
PUMP HEAD ASSEMBLY DRAWING	
REV. A - SEE HISTORY FILE	DRAWING NUMBER: <u>40020</u>
	REV. <u>A</u>

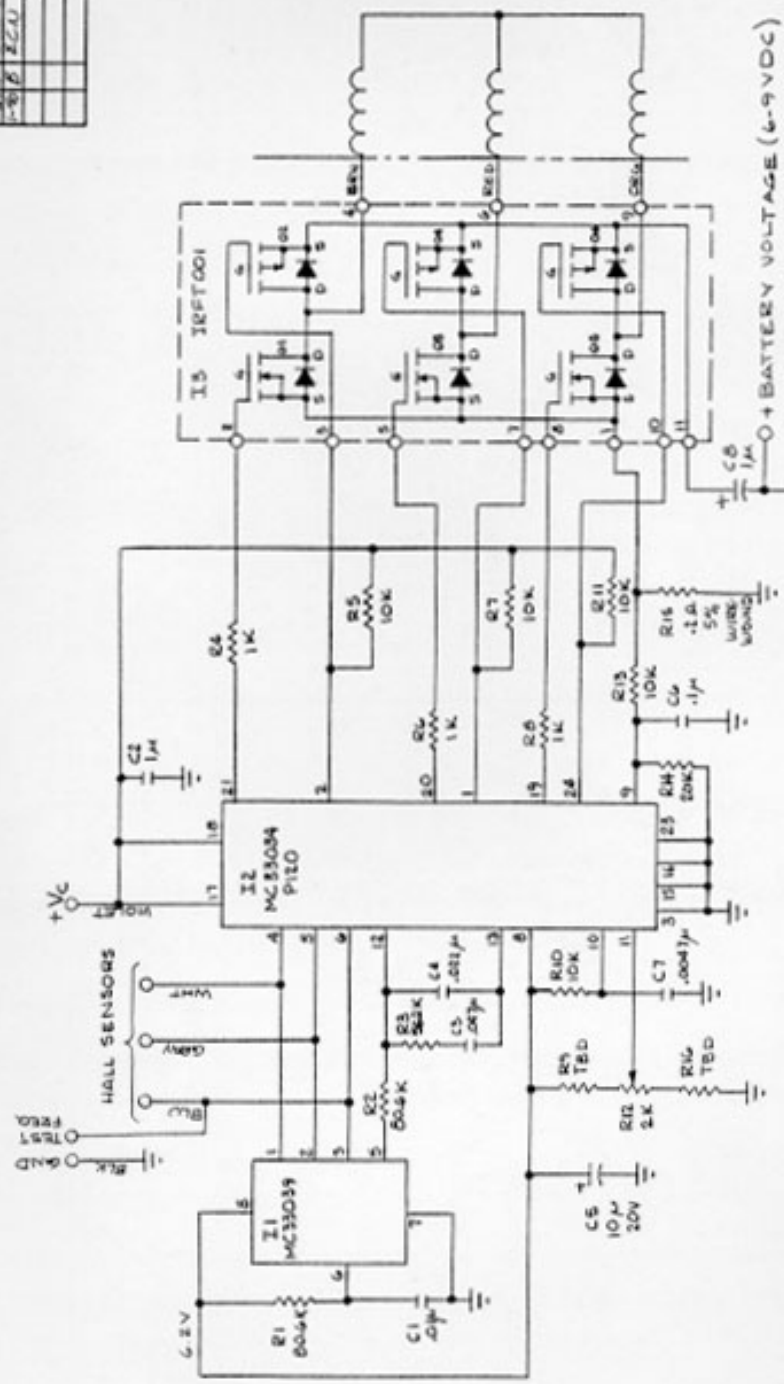
Pump S/N 96 (Canon Motor)

Pump RPM = (5) X frequency in Hz measured at P₁, P₂



SEA-BIRD ELECTRONICS, JHC.	
DATE: 7/19/83	APPROVED BY:
DESIGNED BY: MJP	REVIEWED:
SUBMERSIBLE PUMP MOTOR	
DRAWING NUMBER: 20061	

DATE	BY	REVISION REQUIRED	DATE	BY	CHK
10/18/84	ELU	E34	10/18/84	ELU	
10/18/84	ELU	E34	10/18/84	ELU	
10/18/84	ELU	E34	10/18/84	ELU	



SEA-BIRD ELECTRONICS, INC.	
TOLERANCES UNLESS OTHERWISE SPECIFIED	PRECISION
ORIGINAL	PCB ASSY - 40092
1	PCB 10014A
2	WIRING
3	WIRING NUMBER
4	DATE
5	REV

MOTOR TYPE	EPM RANGE	R7	R16
WDG 5 PITTMAN 3111B505	1000 - 2000	9.09K	1K
WDG 4 PITTMAN 3111B245	2000 - 3000	6.75K	2.21K
WDG 3 PITTMAN 3111B260	3000 - 4500	4.75K	2.74K

NOTES:

30392	B
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