NOTES:

1) THE COOLANT SYSTEM WILL BE FILLED WITH A 50% ETHELYNE GLYCOL / 50% DISTILLED WATER MIXTURE.

2) A 50-MESH (300 MICRON) OR FINER STRAINER IS REQUIRED FOR THE SEAKEEPER STABILIZATION SYSTEM.

3) DC POWERED SEAWATER PUMP MUST BE PURCHASED FROM SEAKEEPER (ITEM 1) OR CUSTOMER SUPPLIED (W/ COMPARABLE SPECIFICATIONS). SEAKEEPER DC POWERED SEAWATER PUMP REQUIRES STRAINER (PROVIDED) ON INLET SIDE. SEAWATER FLOW REQUIREMENT THROUGH HEAT EXCHANGER IS 4 GPM (15.1 LPM) MINIMUM AND 8 GPM (30.3 LPM) MAXIMUM UNDER ALL OPERATING CONDITIONS OF THE BOAT. MAXIMUM SEAWATER PRESSURE TO BE 20 PSI (1.4 BAR). WHEN SIZING SEAWATER PUMP, INSTALLER SHOULD FACTOR IN LOSSES FOR RAW WATER PLUMBING. IN ADDITION TO INITIAL OPERATION AT DOCK, NEW SEAKEEPER INSTALLATIONS SHOULD BE CHECKED FOR MINIMUM 4 GPM (15.1 LPM) AND 8 GPM (30.3 LPM) MAXIMUM FLOW WHILE VESSEL IS AT SPEED AND WHEN BACKING DOWN.

4) WATER CONNECTIONS FOR SEAWATER INLET / OUTLET ON SEAKEEPER DC POWERED SEAWATER PUMP AND ON HEAT EXCHANGER ARE 3/4 INCH (19 mm) DIAMETER HOSE BARBS. 3/4 INCH HOSE BARB ADAPTERS ARE PROVIDED WITH SEAKEEPER DC POWERED SEAWATER PUMP.

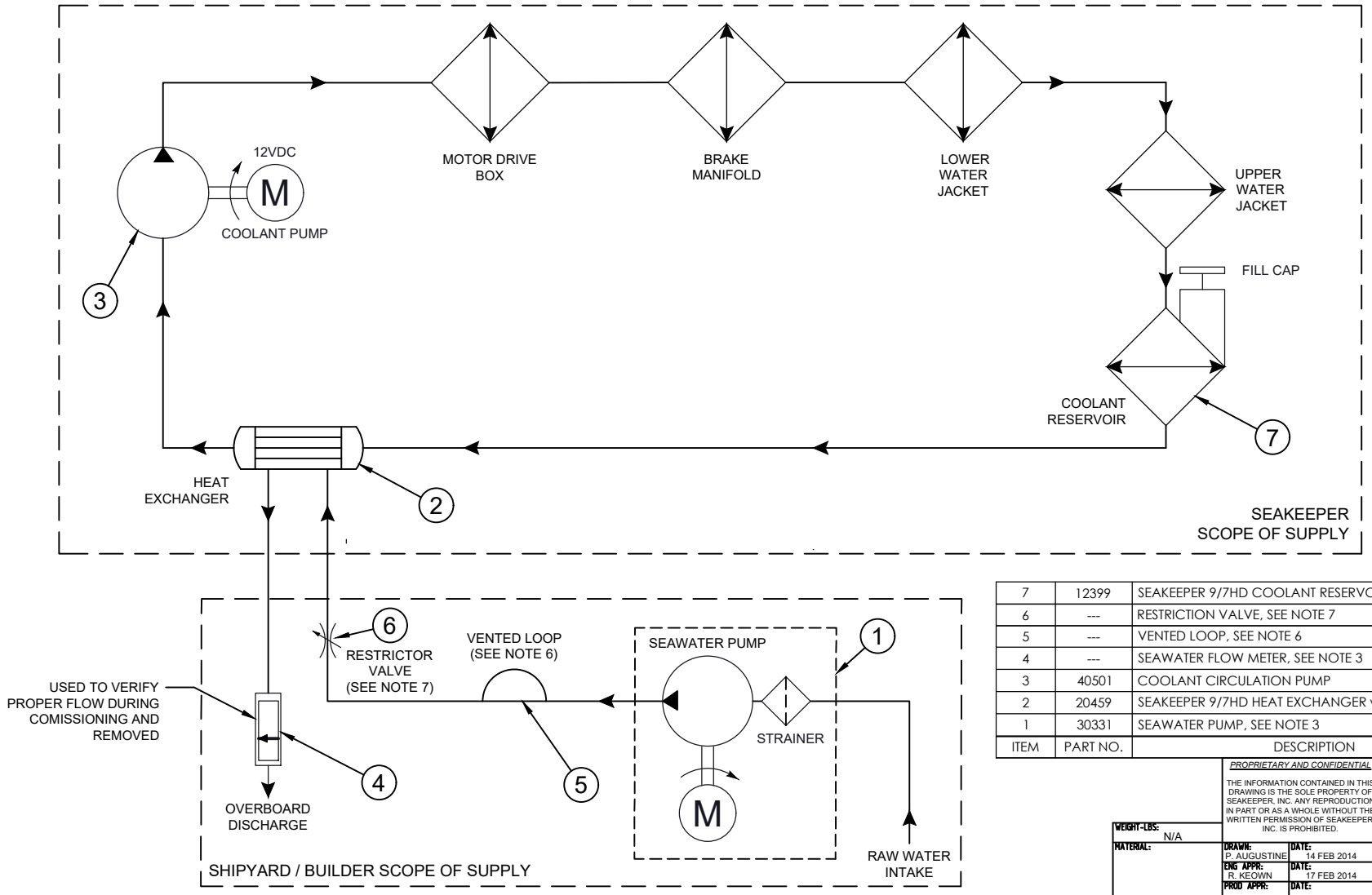
5) THE SEAKEEPER 24V DC SEAWATER PUMP, ITEM 1, IS INTENDED FOR 24V OPERATION. IF A CUSTOMER SUPPLIED PUMP IS USED IT SHOULD DRAW 10 AMPS MAXIMUM. ELECTRICAL CONNECTION IS TE CONNECTIVITY DEUTSCH DT-SERIES 2-WAY RECEPTACLE. REFER TO *SEAKEEPER* 9 CABLE BLOCK DIAGRAM (90257).

6) A VENTED LOOP IS RECOMMENDED TO BE INSTALLED IN AN APPROPRIATE LOCATION TO ALLOW AIR PURGING IN THE SEAWATER SUPPLY LINE. INSTALL A FORESPAR MARELON VENTED LOOP P/N 161810 OR SIMILAR, ABOVE THE WATER LINE.

7) IF SEA WATER FLOW RATE FROM DEDICATED PUMP OR CENTRAL SYSTEM IS HIGHER THAN MAXIMUM RECOMMENDED VALUE, AN APPROPRIATE RESTRICTOR VALVE SHOULD BE INSTALLED BETWEEN THE PUMP AND THE HEAT EXCHANGER TO DECREASE THE FLOW RATE.

REVISIONS

REV	ECN NO.	ZONE	DESCRIPTION	DATE	APPROVED
1			1. RELEASED FOR PRODUCTION.	17 FEB 14	RSK
2	612		1. ADDED MODEL 5HD.	08 DEC 16	BRD
3	846		1. CHANGED HEAT EXCHANGER AND ADDED SEPARATE RESERVOIR. 2. CHANGED SEAWATER PUMP & NOTE AND SPECIFIED STRAINER BEFORE PUMP. 3. ADDED INSTRUCTION FOR RESTRICTION VALVE, IF REQUIRED.	22 JAN 21	D. FRORIEP



ITEM	PART NO.	DESCRIPTION	SUPPLIED BY
7	12399	SEAKEEPER 9/7HD COOLANT RESERVOIR	SEAKEEPER
6	---	RESTRICTION VALVE, SEE NOTE 7	INSTALLER
5	---	VENTED LOOP, SEE NOTE 6	INSTALLER
4	---	SEAWATER FLOW METER, SEE NOTE 3	INSTALLER
3	40501	COOLANT CIRCULATION PUMP	SEAKEEPER
2	20459	SEAKEEPER 9/7HD HEAT EXCHANGER w/o THERMOSTAT	SEAKEEPER
1	30331	SEAWATER PUMP, SEE NOTE 3	INSTALLER

WEIGHT-LBS: N/A
MATERIAL:

DRAWN:	P. AUGUSTINE	DATE: 14 FEB 2014
ENG APPR:	R. KEOWN	DATE: 17 FEB 2014
PROD APPR:		DATE:

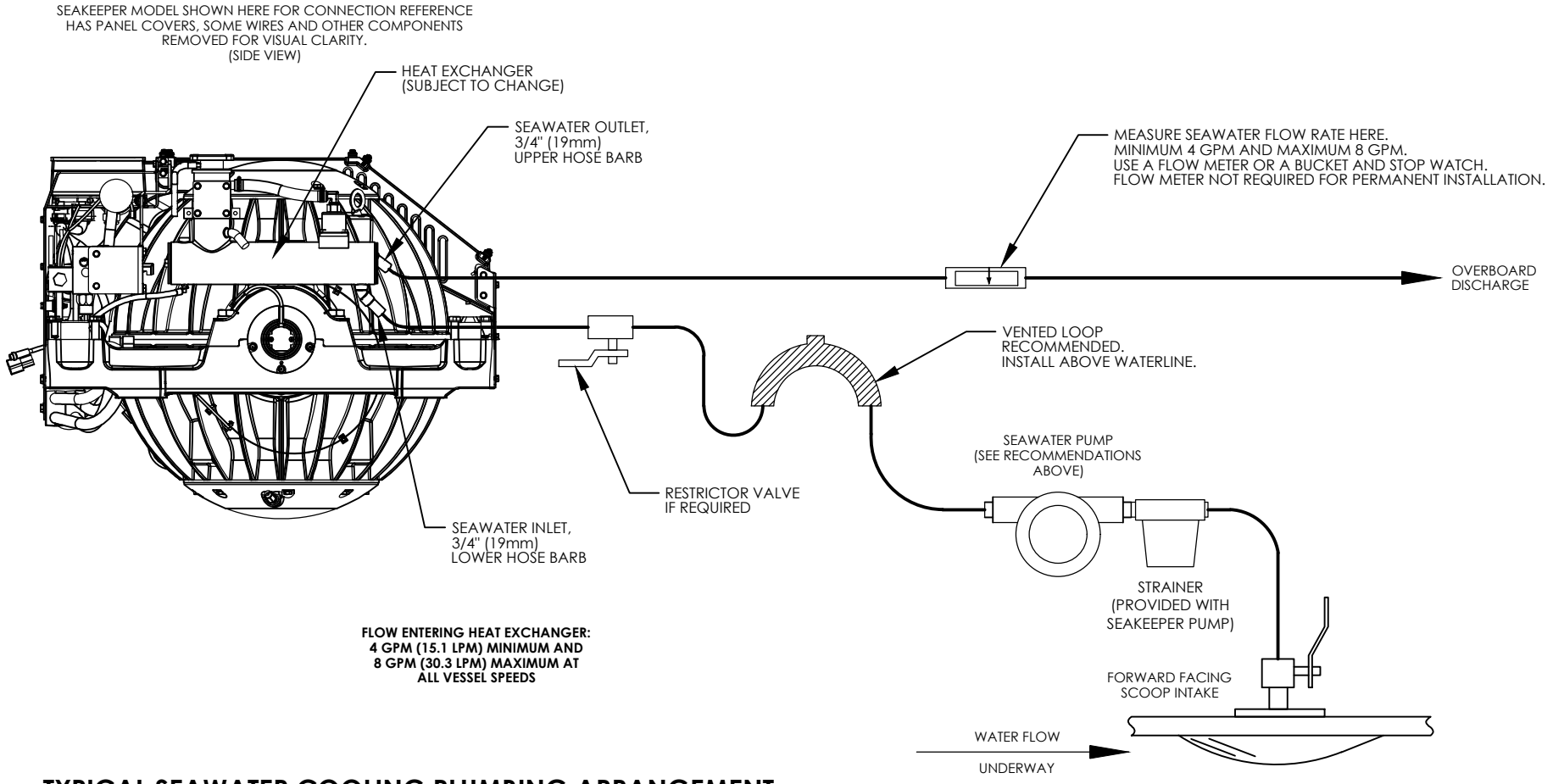
SEAKEEPER
45310 ABELL HOUSE LANE, SUITE 350, CALIFORNIA, MD 20619

TITLE
SEAKEEPER 9/7HD COOLING WATER SCHEMATIC

DWG NUMBER 90251 | REV 3 | SHEET NO 1 OF 2

GENERAL RECOMMENDATIONS FOR SEAKEEPER COOLING CIRCUITS:

- HIGH SPEED VESSELS AND VESSELS THAT EXPERIENCE MOMENTARY 'AIR TIME' MAY NEED TO BE EQUIPPED WITH A SELF PRIMING PUMP. A SELF PRIMING PUMP IS NOT A REQUIREMENT IF THE LOCATION OF THE INSTALLED PUMP IS BELOW THE VESSEL WATERLINE IN ALL RUNNING CONDITIONS.
- SEAWATER PUMP SHOULD BE APPROPRIATELY SIZED TO ACCOUNT FOR PLUMBING LOSSES BETWEEN PICK-UP AND OVERBOARD DISCHARGE.
- THE PUMP MUST NOT BE AT A LOCAL HIGH POINT THAT CAN TRAP AIR AND PREVENT PROPER OPERATION.
- THE DISCHARGE HOSE OF THE PUMP SHOULD BE ROUTED CONTINUOUSLY UPHILL AS MUCH AS PRACTICAL TO ALLOW PUMP TO MAINTAIN PRIME SHOULD A SMALL AMOUNT OF AIR ENTER THE PLUMBING.
- SEAWATER PUMP SHOULD BE RATED FOR SAME MAXIMUM AMBIENT AIR TEMPERATURE (60 °C) AS GYRO.
- FOR MULTIPLE SEAKEEPER INSTALLATIONS, ONE SEAWATER PUMP PER INSTALLED SEAKEEPER IS RECOMMENDED.
- SEAWATER SCOOP INTAKE SHOULD FACE FORWARD AND BE LOCATED IN THE AFT PORTION OF THE WATER PLANE AREA TO ENSURE THE INTAKE IS SUBMERGED IN ALL RUNNING CONDITIONS. SEAWATER SCOOP INTAKE SHOULD NOT BE LOCATED NEAR PROPELLERS OR BEHIND HULL PROTRUSIONS THAT WILL DISTURB FLOW.
- IF SEAWATER COOLING FLOW IS BEING PROVIDED FROM A MULTI-PURPOSE PUMP/CIRCUIT TO A SEAKEEPER SYSTEM, AN AUTOMATIC SHUT-OFF VALVE SHOULD BE INSTALLED TO PREVENT FLOW THROUGH SEAKEEPER'S HEAT EXCHANGER WHEN THE SEAKEEPER IS NOT IN USE.
- IF MEASURED FLOW FROM DEDICATED OR CENTRAL SEAWATER PUMP IS ABOVE RECOMMENDED LIMITS, A RESTRICTOR VALVE SHOULD BE INSTALLED BETWEEN PUMP AND SEAKEEPER'S HEAT EXCHANGER TO LIMIT FLOW RATE AND ENSURE DESIGNED OPERATING LIFE OF THE HEAT EXCHANGER.
- SEE SEAKEEPER INSTALLATION DETAILS DRAWINGS #90225 OR #90226 FOR RECOMMENDED SEAWATER HOSE ROUTING TO SEAKEEPER STABILIZATION SYSTEM.



**FLOW ENTERING HEAT EXCHANGER:
4 GPM (15.1 LPM) MINIMUM AND
8 GPM (30.3 LPM) MAXIMUM AT
ALL VESSEL SPEEDS**

TYPICAL SEAWATER COOLING PLUMBING ARRANGEMENT

WEIGHT-LBS: N/A		
MATERIAL:		
DRAWN: P. AUGUSTINE	DATE: 14 FEB 2014	
ENG APPR: R. KEOWN	DATE: 17 FEB 2014	
PROD APPR:	DATE:	

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TITLE			
SEAKEEPER 9/7HD COOLING WATER SCHEMATIC			
DWG NUMBER	REV	SHEET NO.	
90251	3	2 OF 2	