BILL OF MATERIALS

REQ'D	ASSEMBLY	SIZE	DESCRIPTION	CERT'D MTR'L	RQ'D NO.	VENDOR	DATE SHIP'D
1	2	10½" x 14-4½" x 11'-1" O.	RUDDER STOCK AB GR 2 ROUND SHAFT STL	215			
2	2	8⅝" x 8⅝" x 1'-1" O.	RUDDER STOCK AB GR 2 TUBING 24LG. STL	274			
3	2	69.00 O.D. x 18.00 I.D.	RUDDER TUBE FLANGE - MEGA PLATE STL	274			
4	2	69.00 O.D. x 12.00 I.D.	PACKING GLAND FLANGE - MEGA PACKING GLAND STL	215			
5	2	69.00 O.D. x 12.00 I.D.	PACKING GLAND FLANGE - MEGA PACKING GLAND STL	215			
6	8	¾" x ¾" x 10" LG.	STUDS - 36 REQ'D				
7	2	11.875 O.D. x 10.000 I.D.	PACKING RING - BRONZE - SEE DET.				
8	2	21.00 O.D. x 12.25 I.D.	INSERT PLATE - 1" PLATE	215			
9	2	SEE DETAIL	NYLON BEARING 12.00 O.D. x 10.724 I.D. x 15 LG.	274			
10	2	SEE DETAIL	UPPER BEARING RETAINER	274			
11	2	12.00 O.D. x 10.996 I.D. x 14⅝" LG.	MECH. TUBING - SEAMLESS	274			
12	2	16.500 O.D. x 12.000 I.D. x 10¼" LG.	FLG. ¾" PL STL UPPER BRG. BRONZE	275			
13							
14	6	⅛"	GREASE FITTINGS - 90 ZERK				
15	2	22" DIA.	KEEPER PLATE 1½" PLATE STL				
16	2	22.00 O.D. x 12.00 I.D.	BEARING WASHER - 3" BRONZE PLATE - CUT FROM	275			
17	12	1" DIA. x 2½" LG.	STAINLESS STL. HEX HD. MACHINE SCREW				
18							
19	2	PLATE	RUDDER BLADE 1" STL	274			
20	250	AS REQ'D	½" PL STL (BOLTS)				
21	2	2'-7½" x 6'-8"	PLATE STEEL	274			
22	10	6½" x 3½" x ⅝" L	ANGLE STL	274			
23	2	2'-2"	S.S. LINER - BUILT UP IN 2 SHELLS WITH CORE				
24	2	24½" LG.	KEY STOCK - 1¼" X 1¼" DEEP				
25	2	AS REQ'D	PACKING FLAX SQUARE				
26	2	3"	SPLIT RING - STOP				
27	40 FT.	½"	FLAT BAR 6" x ½" THK.				
28	6	¾"-16 UNC x 1½" LG.	S.S. SET SCREW CONE POINT	275			
29	2		BEARING RETAINER RING	274			
30	2	½"	ROUND ACCESS PLATE STL.	215			
31	2		SALT WATER FLUSH CONNECTION				
32	45	¾"	STAINLESS STL. FLAT WASHER FOR MACHINE SCREW				
33	45	¾"	HEX NUT - STAINLESS STL.				
34	2		NEOPRENE GASKET 30" O.D. x 28" I.D.				
35	16 FT.	¾" x ½"	RUBBER STRIP	275			
36	2		PLATE STL.	274			
37	16 FT.	¾" x 2"	RUBBER STRIP	275			

* FINISHED DIM. GIVEN

ABS RUDDER CALCULATION

V_1 = 10.6
A_1 = 1564.44
S_1 = 26.00
A_2 = 1564.44
S_2 = 26.00
A_3 = 818.75
S_3 = 9.625

$SM = \frac{V_1^2}{12} + 2.2\%$

$D^3 = \frac{SM \times 38 + 2.5\%}{12}$

$D = \sqrt[3]{\frac{109.410 \times 38}{12}}$

$D = 10.3498$"

USE: 10.50"

NO.	DESCRIPTION	DATE	BY
	REVISIONS		
4	ADDED GASKET & LOWER DECK SEAL DELETED PACKING GLAND & PACKING RING	5/15/78	REB
3	REV. RUDDER STOCK KEYWAY	3/4/78	REB
2	REV. LINER DIA., REV. NYLON BEARING I.D. REV. PACKING GLAND I.D. & PACKING RING I.D.	3/4/78	REB
1	REV. TILLER ARM & KEYWAY - NEW SHEET	3/15/78	REB
	ADDED SHAFT END CLEARANCE		

APPROVALS
ABS: 8-1 ▲ 5-25-78
USCG:
USPHS:

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U.S. NAVAL SHIP SYSTEMS COMMAND
WASHINGTON D.C. 20360

OCEANOGRAPHIC RESEARCH SHIP
AGOR (UTILITY) CLASS

HALTER MARINE SERVICES, INC.
P.O. BOX 29266 NEW ORLEANS, LA. 70129

RUDDER ASSEMBLY & DETAILS

SCALE:	NOTED	DATE	1-23-78
DRAWN BY:	[illegible]	CK'D BY	[illegible]
HALTER HULL NO.	375	HALTER JOB NO.	216 & 218
DAVISHIPS NO.	AGOR 24-5.19-001		

HALTER DWG. NO. M-2
REV. 4

00023

GYRE135

PLAN VIEW
DECK & REMOVED FOR CLARITY
1"=1'-0"

PLAN - LIFEFRAME MOUNTS
HULL STATION 3½
3/16"=1'-0"

PLAN - LIFEFRAME MOUNTS
HULL STATION 16
3/16"=1'-0"

RUDDER TUBE
1½" = 1'-0"

RUDDER STOCK DETAIL
1"=1'-0"

SECTION THRU RUDDER
SEC "AA"
1"=1'-0"

ASSEMBLY DETAIL
1½" BOTTOM
SCALE 1"=1'-0"

SHAFT END
1"=1'-0"

RUDDER ACCESS PLATE (29)

S.S. LINER
1½"=1'-0"

UPPER BEARING RETAINER (10)
1½"=1'-0"

UPPER BEARING
1½"=1'-0"

PACKING GLAND (4)
1½"=1'-0"

PACKING RING (ER2) (7)
1½"=1'-0"

RUDDER TUBE (2)
1½"=1'-0"

NYLON BEARING (9)
1½"=1'-0"

TILLER KEY
1½"=1'-0"

BEARING WASHER (16)
(BRONZE)

KEEPER PLATE (15)
1½"=1'-0"