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By the authority vested in me by the Archivist of the United States, I certify on his behalf, under the authority of the National Archives of the United States, that the attached reproduction(s) is a true and correct reproduction of documents in his custody.



SIGNATURE <i>Robert E. Richardson</i>	
NAME ROBERT E. RICHARDSON	DATE 1-28-02
TITLE Director, Special Media Archives Services Div.	
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May 5, 2006

Mr. Seth Muhammad  
9896 Koford Rd.  
Oakland, CA 94603-2014

Re: Tony Bevilacqua

Dear Mr. Muhammad:

I have enclosed the revised declaration. Revisions were made based on our conversation at your home in Oakland. If the declaration is correct, please sign the declaration and return it in the enclosed self-addressed envelope

Please feel free to call me anytime at 800-440-4262, ext. 215. I will give you a call as soon as I find out information about additional Thanks you.

Very truly yours,



Barry K. Matson

Enclosures

I, Seth Muhammad, declare as follows:

I am over the age of eighteen and not a party to the action. I am a resident of the state of California. I was formerly known as Seth Bailey. I have personal knowledge of the following facts and would competently testify to these facts if called as a witness.

1. I was employed by Levin Metals Corporation, located at 1310 Canal Blvd., Richmond California, from 1969 to 1986. My progression of jobs with Levin Metals included lead person, supervisor and assistant plant manager. I worked in and supervised operations that involved the dismantling of ships and the cutting of metal that was sold for scrap. Levin Metals dismantled many ships, some of which were purchased from the U.S. Government and were old WWII ships. Levin Metals would process the scrap metal and would then resell the material. The Levin Metals facility consisted of two piers and approximately 50 acres of land.

2. Between 1971 and 1976 ships were towed to Pier Two and sometimes to Pier One. At the piers, dismantling of the ships would begin. During this period of time there were no procedures employed by Levin Metals to suppress dust that was generated in connection with the ship dismantling. Some of these ships had asbestos-containing fireproofing that had been sprayed on the bulkheads and on the underside of decking. The ships also contained fireproof decking material which consisted of an underlayment covered by linoleum, tile or non-skid material. The fireproofing and the decking material was very dusty when it was removed.

3. Between 1971 and 1976, Anthony Bevilacqua was a burner who worked throughout the plant including the preparation yard and throughout all the dismantling areas of the yard. The decks of the ships would be cut off at piers Two and One. A large crane would lift portions of the ship off and carry then those parts into the preparation areas. Metal from the preparation yard was taken to the cutting yard. In the cutting yard, large portions of the ship were cut down further. Mr. Bevilacqua dismantled metal from every ship that came through Levin Metals during the 1971 to 1976-period. This work included many ships purchased from the U.S. Department of Commerce Maritime Administration, including the following: USS Burton Island (AG-88/AGB-1); USS Calvert (APA-32); U.S.S. Cape San Diego; USS Catskill (LSV-1); U.S.S. Chemung AO-30; USS Cimarron (AO-22); S.S. Fred Morris (C1-B-70) fka USS Otus (AS-20); U.S.S. George Eastman (YAG-39); USS Guadalupe (AO-32); U.S.S. Maui; USS McKean (DD-784); U.S.S. Paricutin (AS-18); U.S.S. Pictor (AS5Y); U.S.S. Procyon (A-22/AK-19); USS Tolovana (AO-64); USS Zelima (SF-49).

4. As a burner Mr. Bevilacqua was involved with dismantling all areas of each ship, from the upper decks all the way down to the bottom of the hull. The first portions of the ship were dismantled at the piers and finally at the slip. Top portions of the ship would be lifted by locomotive or crane into the preparation yard. Once the top decking was removed, the bulkheads would be torched apart and lifted from the ship. Many of the bulkheads in and around the ship's boiler rooms and machinery rooms were covered in fireproofing which had to be burnt off. Burners used torches to burn off the fireproofing from metal bulkheads, and then to cut the metal itself. We also occasionally used scrapers to remove the fireproofing. Burning off the fireproofing from the bulkheads created visible dust which Mr. Bevilacqua and the other burners and laborers working on or near the portions of bulkheads breathed.

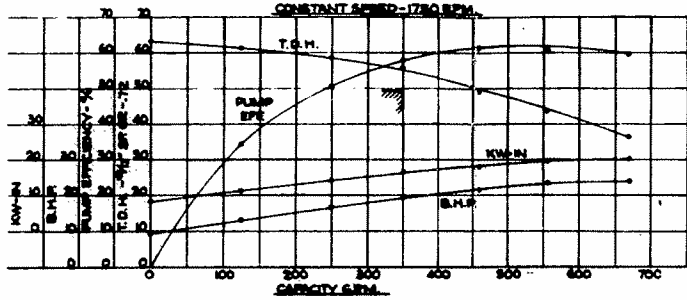
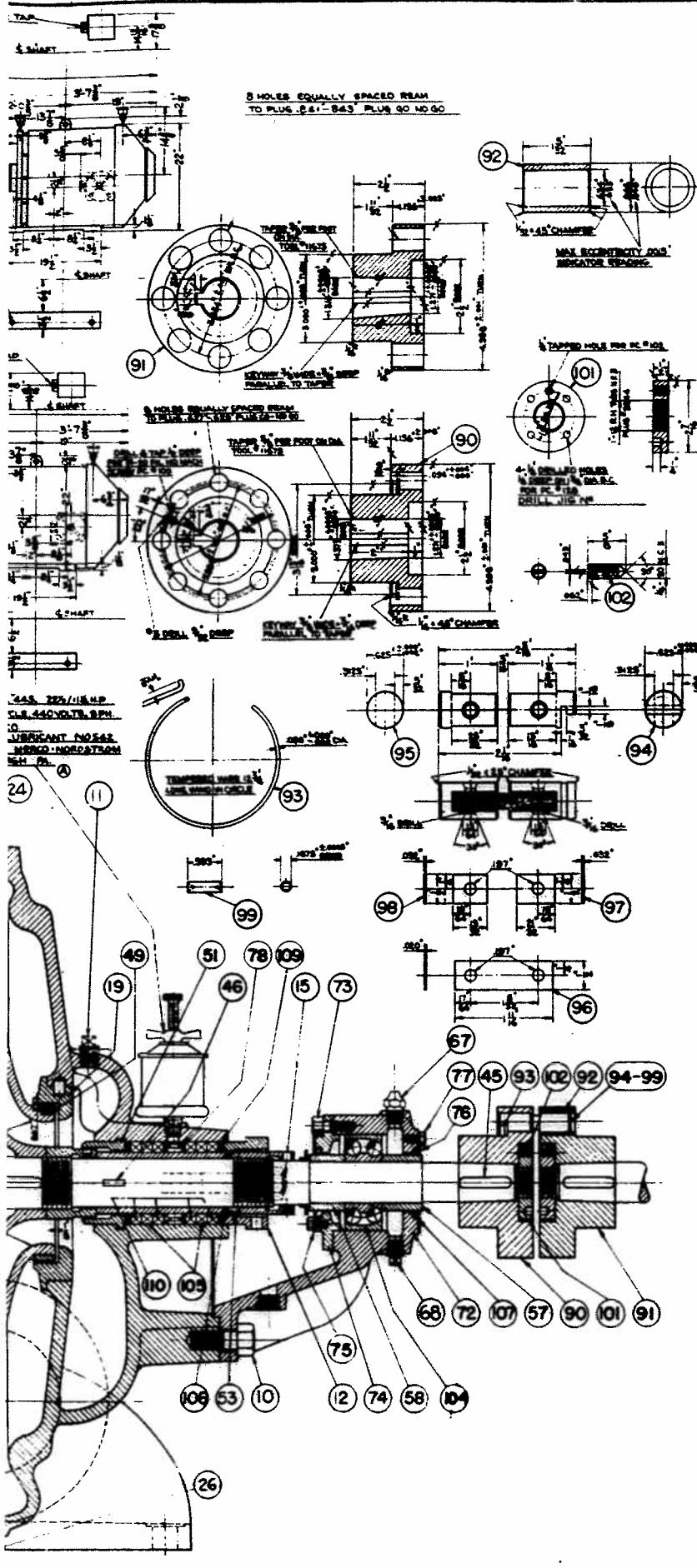
5. As a burner, Mr. Bevilacqua was also required to dismantle decking on the ships that came into the yard. When dismantling decking, Mr. Bevilacqua would first have to take an ax and cut into the decking material, breaking through the upper layer of linoleum, tiles or skid-proof material down through the underlayment material and finally to the metal deck plates.

Once Mr. Bevilaqua cut a groove into the decking and reached the metal, he could then take his torch and cut out a large section of the deck which would be lifted out by the 100 Ton Crawler and placed into transported to the stock pile. Cutting through the decking with an axe created dust which Mr. Bevilaqua breathed.

6. Mr. Bevilacqua was also required to dismantle equipment and machinery in the engine and boiler rooms of the ships. The boilers were cut free from the boiler room and lifted to an area below the slip where Mr. Bevilaqua and other burners would torch through the boiler's outer metal skin. Mr. Bevilaqua would then peel back the outer metal casing and knock off the interior block insulation, firebrick and cement. The fire bricks were then thrown into bins. This work was extremely dirty and dusty. The insulation, firebrick and cement created a ton of dust when being torn out and removed. Mr. Bevilacqua breathed this dust.

I declare under penalty of perjury under the laws of the state of California that the foregoing is true and correct and that this declaration was executed in Oakland, California.

Dated: \_\_\_\_\_



REFERENCE PLANS		
TITLE	NO.	REV.
SECTION, ELEVATION & DETAILS	SL-5267	481881
CASING & DETAILS	SL-5268	481882
IMPELLER, SHAFT & DETAILS	SL-5269	481883
LOUIS-ALLIS MOTOR	38901	481878
CL CONTROLLER	5821	481884

OPERATING CONDITIONS	
CAPACITY	360 G.P.M.
DRCH PRESSURE	80 PSI
SURGEANCE	3 FT
TOTAL DYN HD	187.8 FT
SPRNG	1788 R.P.M.
SPK CAPACITY	0.77
EFFICIENCY	81%
BRAKE H.P.	13.25

NOTE 1 - PURCHASE FROM LINKENHEIMER CO. CINCINNATI, OHIO.  
 NOTE 2 - SPECIAL BRONZE OF THE FOLLOWING PROPERTIES SUBSTITUTED: COPPER 98.72%, TIN 0.78%, GRAPHITE 1.5% AFTER BRONZES ARE COMPRESSED THEY ARE PUT INTO A HOT WAX BATH THEREBY ADDING 10% TO 15% MAX. COMPRESSION STRENGTH 30,000 PSI MANUFACTURED BY JOHN WALDRON CORP NEW BRUNSWICK N.J.  
 NOTE 3 - PURCHASE FROM CRANE CO. BIRNEY CITY, N.J.  
 NOTE 4 - PURCHASE FROM FINEKINS ENGINEERING CORP. CRAWFORD, N.J. (ORDER NUMBER AS SH. HOUSE-22-2081)  
 NOTE 5 - PURCHASE FROM PACKING SUPPLIERS CORP. CRAWFORD, N.J.  
 NOTE 6 - FOR P-233720, VALVE BRONZE WILL BE USED INSTEAD OF 6LM METAL.

LIST OF MATERIAL										
QUANTITY FOR ONE UNIT-2 UNITS PER SHIP										
ITEM NO.	NAME OF PART	NO. REQ'D	MATERIAL	MATERIAL SPECIFICATION	PART NO.	PATT. NO.	REMARKS	DRAWING NUMBER	UNIT WEIGHT	UNIT
1	CASING-UPPER HALF	1	BRONZE	48 MS	254675	UH-425-P	SEE NOTE #6	SL-5268		
2	CASING-LOWER HALF	1	BRONZE	48 MS	254676	UH-421-H	SEE NOTE #6			
10	HEX NUT	8	BRONZE	2111			HALF HARD-TYPE I			
11	1/2" PIPE PLUG	2	BRONZE	2111						
18	FLAND (S VALVE)	2	BRONZE	2111						
19	FLAND SWING BOLT	4	BRONZE	2111						
20	HEX NUT	18	BRONZE	2111			HALF HARD-TYPE I			
19	CASING WEARING RING	2	BRONZE	4689	170314	UC-F150				
20	PIN 3/8"	2	BRONZE	4689	170314	UC-F150				
21	1/2" EDGE WAVE (P. 100)	4	BRONZE	2111			HALF HARD-TYPE I			
24	1/2" CLOSE NIPPLE	1	BRASS	44 P 12	33187		SEE NOTE #5			
25	1/2" CLOSE VALVE (P. 100)	2	BRASS	44 P 12	33187		SEE NOTE #5			
26	1/2" CLOSE NIPPLE	2	BRASS	44 P 12	33201		GRADE 'B'			
43	SHAFT	1	CRS 7	48 88	254677					
44	IMPELLER KEY	1	CRS 7	48 88						
45	COUPLER KEY	1	CRS 7	48 88						
46	IMPELLER KEY	2	CRS 7	48 88						
47	IMPELLER	1	BRONZE	48 MS	254678	UH-3420	SEE NOTE #6			
48	IMPELLER WEAR RING	2	BRONZE	48 MS	170315	UC-5250-E	SEE NOTE #6			
49	1/2" X 1/2" VEE SET SCR	6	ST	48 88			TYPE 'E'			
50	IMPELLER NUT	2	CRS 7	48 88						
51	THRUST BUSHING	2	BRONZE	48 MS	170316	UH-3260	SEE NOTE #6			
52	SHAFT SLEEVE	2	CRS 7	48 88	258269					
53	SHAFT SLEEVE GLAND	2	CRS 7	48 88						
54	SHAFT NUT	2	CRS 7	48 88						
55	1/2" X 1/2" VEE SET SCR	3	ST	48 88	18480		TYPE 'G'			
56	WATER SHIELD	2	CRS 7	48 88	254677A					
57	LINE BRG BUSHING	1	CL. B. ST.	49 82						
58	SHAFT COLLAR	2	CL. B. ST.	49 82						
59	BALL BEARING NUT	1	CL. B. ST.	49 82	170315L					
63	IMPELLER BRG HOUSING	1	BRONZE	48 MS	H-17400	UH-1894	SEE NOTE #6			AVP-41
64	HEX HD TAP BOLT	6	BRONZE	2111			HALF HARD-TYPE I			AVP-40
67	IMPELLER FITTING NUT	2	BRONZE	2111			CONNL. TYPE I			AVP-39
68	1/2" PIPE PLUG	1	BRONZE	2111	15455					AVP-38
69	IMPELLER WEAR RING	1	BRONZE	48 MS	254678	UH-3420	SEE NOTE #6			AVP-37
70	COVER PLATE	1	CL. B. ST.	49 82	170315H					AVP-36
71	IMPELLER NUT	1	CL. B. ST.	49 82						AVP-35
72	IMPELLER BRG HOUSING	1	BRONZE	48 MS	254678	UH-1894	SEE NOTE #6			AVP-34
73	IMPELLER BRG HOUSING	1	BRONZE	48 MS	254678	UH-1894	SEE NOTE #6			AVP-33
74	IMPELLER BRG HOUSING	1	BRONZE	48 MS	254678	UH-1894	SEE NOTE #6			AVP-32
75	IMPELLER BRG HOUSING	1	BRONZE	48 MS	254678	UH-1894	SEE NOTE #6			AVP-31
76	COVER PLATE	1	CL. B. ST.	49 82						AVP-30
77	IMPELLER NUT	1	CL. B. ST.	49 82						AVP-29
78	IMPELLER BRG HOUSING	1	BRONZE	48 MS	254678	UH-1894	SEE NOTE #6			AVP-28
66	REDUCING BUSH	2	BRONZE	2111	32961					AVP-27
90	COUPLER (PUMP HALF)	1	CL. B. ST.	49 82				SL-5267		
91	COUPLER (MOTOR HALF)	1	CL. B. ST.	49 82						
92	COUPLER BUSHING	2	CL. B. ST.	49 82			SEE NOTE #8			
93	SPRING RETAINER RING	1	CL. B. ST.	49 82						
94	WELD REEPER	2	CL. B. ST.	49 82						
95	SLIDING KEYS	2	CL. B. ST.	49 82						
96	LONG SCREW	2	CL. B. ST.	49 82						
97	SHORT SCREW	16	CL. B. ST.	49 82						
98	SHORT SCREW	16	CL. B. ST.	49 82						
99	KEEPER PIN	16	CL. B. ST.	49 82						
100	1/2" X 1/2" VEE SET SCR	1	ST	48 88						
101	IMPELLER NUT	2	CL. B. ST.	49 82	TYR38PV					
102	IMPELLER BRG HOUSING	2	CL. B. ST.	49 82			TYPE 'F'			
103	IMPELLER BRG HOUSING	2	CL. B. ST.	49 82			TYPE 'G'			
104	IMPELLER BRG HOUSING	2	CL. B. ST.	49 82			TYPE 'H'			
105	IMPELLER BRG HOUSING	2	CL. B. ST.	49 82			TYPE 'I'			
106	IMPELLER BRG HOUSING	2	CL. B. ST.	49 82			TYPE 'J'			
107	IMPELLER BRG HOUSING	2	CL. B. ST.	49 82			TYPE 'K'			
108	IMPELLER BRG HOUSING	2	CL. B. ST.	49 82			TYPE 'L'			
109	IMPELLER BRG HOUSING	2	CL. B. ST.	49 82			TYPE 'M'			
110	IMPELLER BRG HOUSING	2	CL. B. ST.	49 82			TYPE 'N'			
30	CASING WEARING RING	2	BRONZE	4689	170314	UC-5150		SL-5268		

TOOLS PER SHIP			
127	FACE SPANNER #424	1	COMM'L.
128	PIN SPANNER #457	1	COMM'L.
129	PIN SPANNER #459	1	COMM'L.

WEIGHTS	
1	1.60
2	3.20
3	4.80
4	6.40
5	8.00
6	9.60
7	11.20
8	12.80
9	14.40
10	16.00
11	17.60
12	19.20
13	20.80
14	22.40
15	24.00
16	25.60
17	27.20
18	28.80
19	30.40
20	32.00

NO.	DESCRIPTION	DATE	BY

LAKE WASHINGTON SHIPYARDS  
 CONTRACT NUMBER NO. 634  
 P.O. AVP-KI-58

LAKE WASHINGTON SHIPYARDS  
 CONTRACT NUMBER NO. 634  
 P.O. AVP-2-62

CON. PLAN  
 SL-5267

WORTHINGTON PUMP & MACHINERY CORP.  
 HARRISON, N.J.

SCALE 1/4" = 1" - 1/2" DRWN BY LITHO. DATE 10-17-41

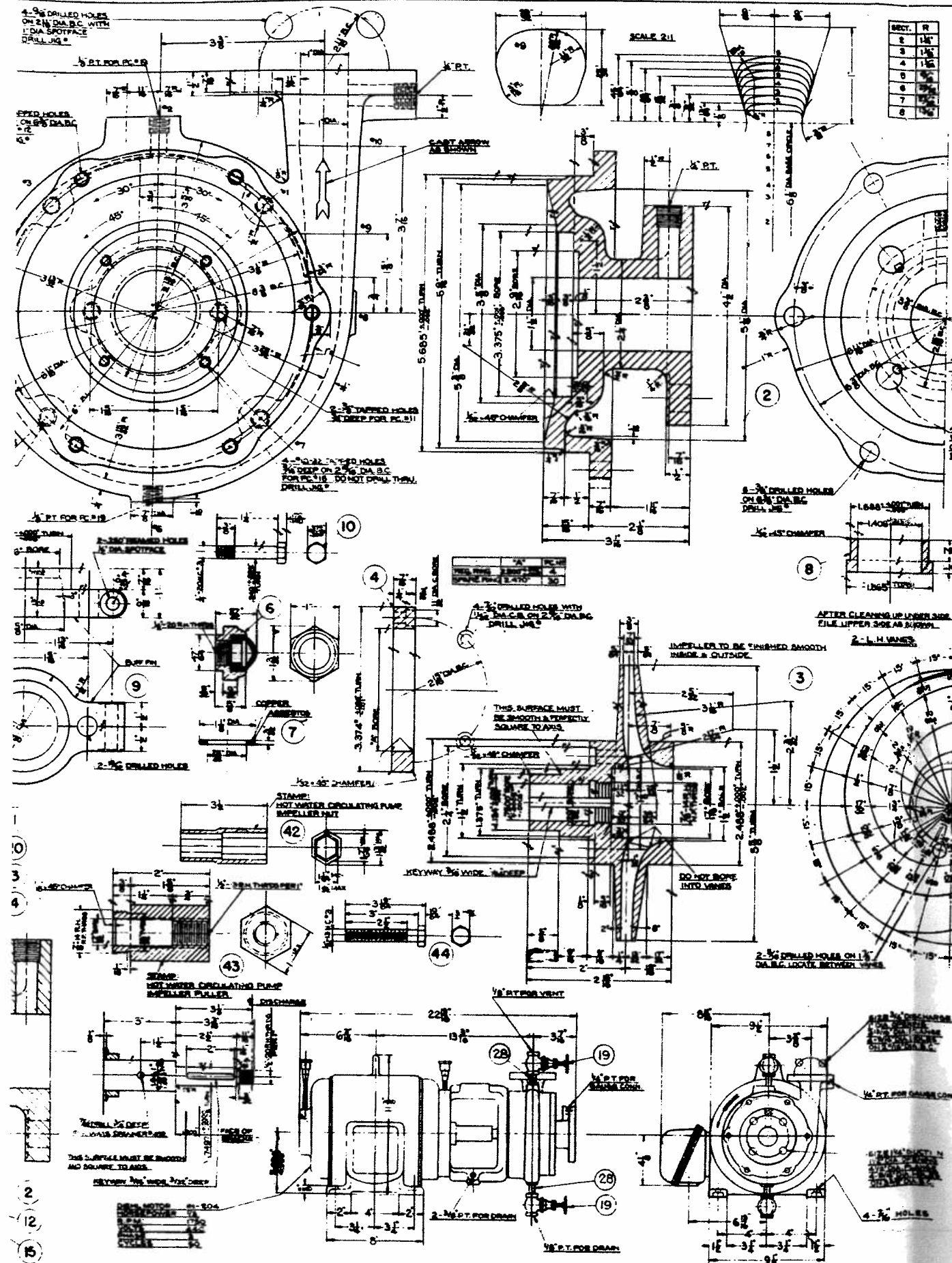
TRACED BY J.P. CHECKED BY A.A. CHIEF DRAFTSMAN

FORWARDED TO BUREAU LETTER NO. APPROVED DATE

Supervisor of Engineering, U.S. Navy  
 REF SUP SHIP LET.

PLAN EXAMINED & FOUND CORRECT  
 DATE 1/15/42

GASOLINE PUMP  
 1-R.H. & 1-L.H. PUMP REQUIRED PER SHIP  
 SECTION, ELEVATION & DETAILS  
 P-233720 P-233720  
 BUREAU OF SHIPS BASIC NUMBER  
 481851 ΔIT



**LIST OF MATERIAL**  
QUANTITY FOR ONE UNIT - 1 UNIT PER SHIP

PIECE NO.	NAME OF PIECE	QTY PER SHIP	MATERIAL	SPECIFICATION	PART NO.	PATT. NO.	REMARKS	DRAWING NUMBERS	UNIT
								DATE/ACTA BUREAU	WEIGHT
1	CASING	1	GUN METAL	40-M-6	25398-1	UH-1C43-B	SEE NOTE 5		
2	SUCTION HEAD	1	GUN METAL	40-M-6	25398-2	DZ-1057-F	SEE NOTE 5		
3	IMPELLER (L.H. VANES)	1	GUN METAL	40-M-6	25398-3	UB-3433-10	SEE NOTE 5		
4	CASING WEARING RING	2	BRASS	40-B-6	25398-4	UC-4688-5			
5	SHAFT SLEEVE	1	BRASS	40-B-6	25398-5				
6	IMPELLER NUT	1	BRASS	40-B-6	25398-6		SEE NOTE #1-G		
7	IMPELLER NUT WASHER	1	BRASS	16100			COMM'L		
8	TYROFT BUSHING	1	BRASS	35-Q-8	45879		FRETS		
9	GLAND (SP. 1)	1	BRASS	40-B-6	25398-8		HALF HARD-TYPE I		
10	1/2" FITTED GLAND BOLT	2	STEEL	40-B-6	15665-C	UF-508	SEE NOTE 5		
11	3/8" GLAND STUD	2	STEEL	40-B-6			HALF HARD-TYPE I		
12	3/8" STUD	6	STEEL	40-B-6			HALF HARD-TYPE I		
13	3/8" STUD	4	CL. B. S.M.	43-B-11			HALF HARD-TYPE I		
14	3/8" HEX. NUT	4	CL. B. S.M.	43-B-11					
15	3/8" HEX. NUT	6	STEEL	43-B-11			HALF HARD-TYPE I		
16	3/8" HEX. NUT	8	STEEL	43-B-11			TYPE - V		
17	3/8" HEX. NUT	2	STEEL	43-B-11			HALF HARD-TYPE I		
18	3/8" HEX. NUT	2	STEEL	43-B-11			HALF HARD-TYPE I		
19	1/2" CLOSURE GLEVE (PALM)	2	BRASS	40-B-6			HALF HARD-TYPE I		
20	1/2" GASKET (FL. OR. SP. 1)	2	BRASS	40-B-6			SEE NOTE 4		
21	WATER PULVER	1	BRASS	33-P-13	18943		SYMBOL 2/50		
22	1/2" SAFETY SET SCR.	1	STEEL	40-B-6	25324-3		HALF HARD-TYPE I		
23	1/2" SQUARE PACKING (1 1/2")	1	STEEL	42-S-5	15460		TYPE - 6		
24	NAME PLATE	1	BRASS	33-P-25			SYMBOL 1423		
25	3/8" B. BOTTOM HD SCR.	4	BRASS	40-B-6			COMM'L TYPE - D		
26	SHAFT	1	STEEL	40-B-6			COMM'L TYPE - E		
27	IMPELLER KEY	1	STEEL	40-B-6			SEE NOTE #2 & 7		
28	1/2" DIA. NIPPLE	2	BRASS	44-P-12			GRADE - B		
29	CASING WEARING RING	2	BRASS	40-B-6	25398-7	UC-4688-5			

**TOOLS PER SHIP (SEE NOTE #3)**

41	PIN SPANNER W/MS #2	1	STEEL				COMM'L		
42	IMP. NUT WRENCH	1	STEEL		15101		COMM'L		
43	IMPELLER PULLER	1	CL. B. ST.	40-B-6	254931-C				
44	1/2" HEX. BOLT FOR #48	1	CL. B. S.M.	43-B-11					

NOTE 1: MINIMUM HARDNESS 285 BRINELL  
 NOTE 2: SHAFT & IMPELLER KEY & SPARE SHAFT & IMPELLER KEY FURNISHED BY MOTOR MANUFACTURER  
 NOTE 3: EACH SPARE PART, WRENCH OR TOOL SHALL HAVE A METAL TAG GIVING PIECE NO.  
 NOTE 4: PURCHASED FROM CRANE CO. JERSEY CITY, N.J.  
 NOTE 5: FOR P-23372, USE 1/2" DIA. NIPPLE INSTEAD OF GUN METAL.  
 NOTE 6: FOR P-23372, USE ALUM. THRU BRONZE INSTEAD OF NICKEL ALLOY PURCHASED FROM JAMES CLYDE CO. OF DENVER, COLO.  
 NOTE 7: FOR P-23372, STEEL SHIFTS AND STEEL KEYS ARE FURNISHED.

**WORTHINGTON**

SHIP \_\_\_\_\_ CONTRACT \_\_\_\_\_

HOT WATER CIRCULATING PUMP

PUMP NO. \_\_\_\_\_ YEAR \_\_\_\_\_

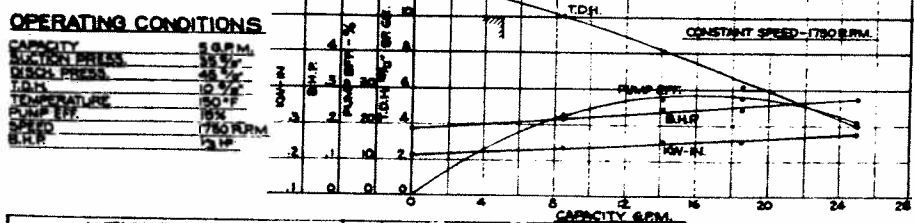
SPEED R.P.M. \_\_\_\_\_ SUCTION DIA. \_\_\_\_\_

HEAD IN LBS. \_\_\_\_\_ DISCHARGE DIA. \_\_\_\_\_

CAPACITY G.P.M. \_\_\_\_\_ IMPELLER DIA. \_\_\_\_\_

HORSE POWER \_\_\_\_\_ TEST PRESSURE \_\_\_\_\_

WORTHINGTON PUMP & MACHINERY CORPORATION



**WEIGHT - ONE UNIT**

UNIT COMPLETE	238#
PUMP	68#
MOTOR & CONTROL	170#
PUMP SPARES	20#
PUMP TOOLS & WRENCHES	2#
MOTOR & CONTROL - SPARES	85#

TOLERANCE

ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SPECIFIED. DIMENSIONS IN PARENTHESES ARE FOR INFORMATION ONLY. DIMENSIONS IN BRACKETS ARE FOR INFORMATION ONLY. DIMENSIONS IN DASHES ARE FOR INFORMATION ONLY. DIMENSIONS IN SLASHES ARE FOR INFORMATION ONLY. DIMENSIONS IN UNDERLINES ARE FOR INFORMATION ONLY.

AVP-41  
AVP-40  
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AVP-5  
AVP-4  
AVP-3  
AVP-2  
AVP-1

LAKE WASHINGTON SHIPYARDS  
CONTRACT NUMBER NO. 634  
NO. AVP-17-58

LAKE WASHINGTON SHIPYARDS  
CONTRACT NUMBER NO. 634  
NO. AVP-1-62

**CORRECTED PLAN**  
See this plan index for the location of  
Approval of the Plan to Any Vessel

**WORTHINGTON PUMP & MACHINERY CORP.**  
HARRISON, N.J.

**SL-5398**

SCALE 3/8" = 1" - 1/2" LET DRAWN BY F.L.B. DATE 10-28-41  
TRACED BY F.L.B. CHECKED BY A.A. CHIEF DRAFTSMAN

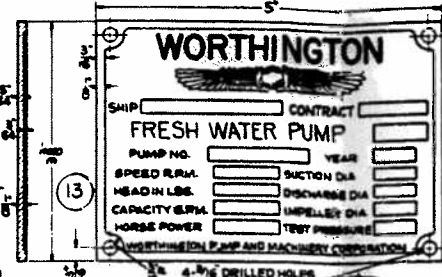
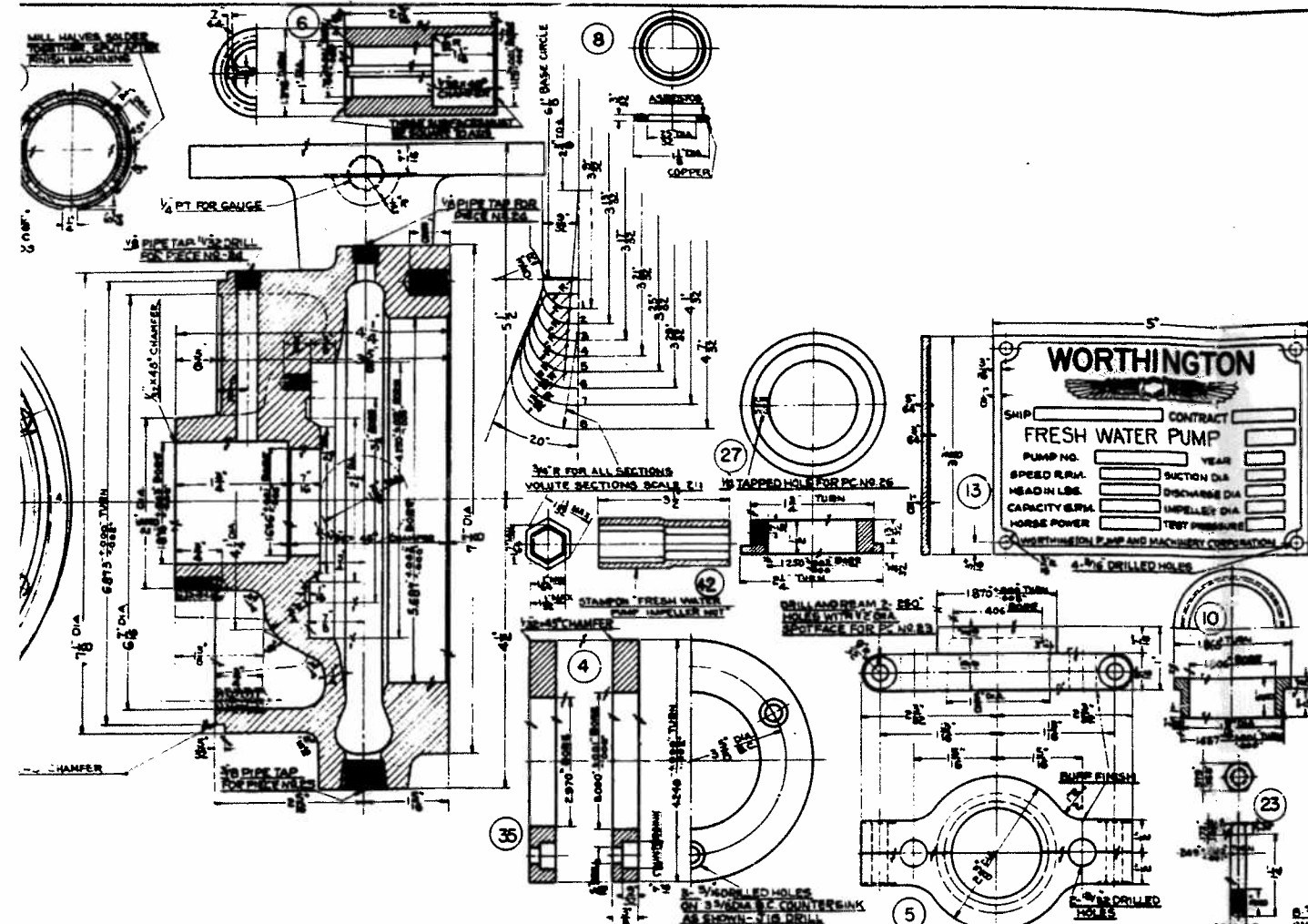
FORWARDED TO BUREAU LETTER NO. \_\_\_\_\_ APPROVED DATE \_\_\_\_\_  
LETTER NO. \_\_\_\_\_ DATE \_\_\_\_\_

PLAN  
EXAMINED & FOUND CORRECT  
DATE \_\_\_\_\_

**HOT WATER CIRCULATING PUMP**  
1 PUMP REQUIRED PER SHIP  
SECTION, ELEVATION & DETAILS

P-229697 P-233722  
BUREAU OF SHIPS BASIC NUMBER  
418101 ALT





**LIST OF MATERIAL**

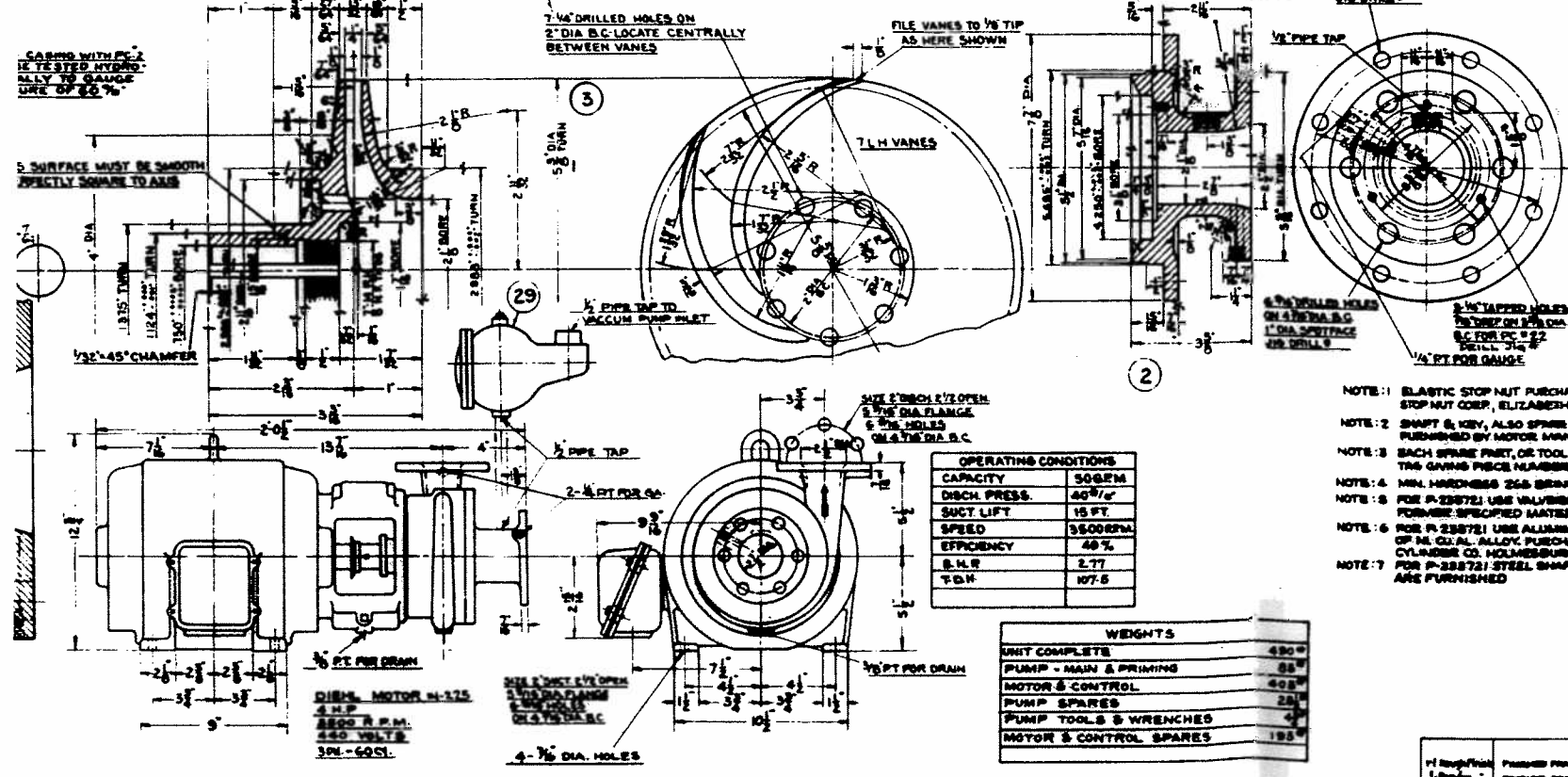
QTY	NAME OF PIECE	NO. REQ'D	MATERIAL SPECIFICATION	PART NO.	DATE NO.	REMARKS	QUANTITY FOR ONE UNIT - 2 UNITS PER SHIP	
							DRAWING NUMBER	UNIT WEIGHT
1	CASING	1	46 M6	255270	18-6-44	SEE NOTE 3		
2	SUCTION HEAD	1	46 M6	254678	02-12-47	SEE NOTE 5		
3	IMPELLER (L.H. VANES)	1	46 M1	255270-1	18-6-44	SEE NOTE 5		
4	CASING WEARING RING	2	46 B9	166588-4	18-6-44			
5	BLAND (SPLIT)	1	46 M6	166588-5	18-6-44	SEE NOTE 5		
6	SHAFT SLEEVE	1	46 N5	167030-6		SEE NOTE 11 & 12		
7	IMPELLER NUT	1	BRASS	18100		SEE NOTE 11		
8	IMPELLER NUT WRENCH	1	STEEL	45579		TYPE 'A'		
9	WATER SEAL CASE (SPLIT)	1	46 M6	166588-3	18-6-44	SEE NOTE 5		
10	THROAT BUSHING	1	46 B6	172625-9		HALF HARD-TYPE I		
11	SHAFT	1	46 N7			SEE NOTE 11 & 12		
12	IMPELLER KEY	1	46 N7			SEE NOTE 11 & 12		
13	NAMEPLATE (CAST)	1	BRASS	42 N2		COMM'L. TYPE-D		
14	BUTINOL MOUNTING	4	BRASS	42 N2	15784	COMM'L.		
15	STUD 1/2" X 1/2"	8	HAVER	28 1/2		HALF HARD-TYPE I		
16	STUD 3/8" X 1/2"	4	CLC BM	43 B 11				
17	BLAND STUD 1/2" X 1/2"	2	HAVER	28 1/2		HALF HARD-TYPE I		
18	HEX NUT 1/2"	10	CLC BM	43 B 11		HALF HARD-TYPE I		
19	IMPELLER FORCING BOLT	6	BRASS	46 B 9		COMM'L.		
20	SAFETY SET SCREW 1/4" X 1/4"	1	STEEL	42 B 3	15603	TYPE 'G'		
21	IMPELLER NUT WRENCH	1	STEEL	45579		TYPE 'A'		
22	WATER FLINGER	1	46 B6	167321-H		HALF HARD-TYPE I		
23	WATER FLINGER	1	46 B6	167321-H		HALF HARD-TYPE I		
24	WATER FLINGER	1	46 B6	167321-H		HALF HARD-TYPE I		
25	WATER FLINGER	1	46 B6	167321-H		HALF HARD-TYPE I		
26	WATER FLINGER	1	46 B6	167321-H		HALF HARD-TYPE I		
27	WATER FLINGER	1	46 B6	167321-H		HALF HARD-TYPE I		
28	WATER FLINGER	1	46 B6	167321-H		HALF HARD-TYPE I		
29	WATER FLINGER	1	46 B6	167321-H		HALF HARD-TYPE I		
30	WATER FLINGER	1	46 B6	167321-H		HALF HARD-TYPE I		
35	CASING WEARING RING	2	46 B 9	166588-4	18-6-44			

**TOOLS PER SHIP (SEE NOTE 3)**

41	IMPELLER SPANNER	1	STEEL		COMM'L.
42	IMPELLER NUT WRENCH	1	STEEL	18100	COMM'L.
43	IMPELLER FORCING BOLT	1	CLC BM	43 B 11	179220

**REFERENCE DRAWING LIST**

TITLE	W.P.S. CORRESPONDING	BUREAU FILE NO.
SECTION, ELEVATION & DETAILS	SL-5270	481799
PRIMING PUMP, SECT., ELEV. & DETAILS	SL-5271	481800
DIEM. MOTOR	1-P-12	481811
DIEM. MOTOR	1-P-11	481802
C.H. CONTROLLER	4830	623534



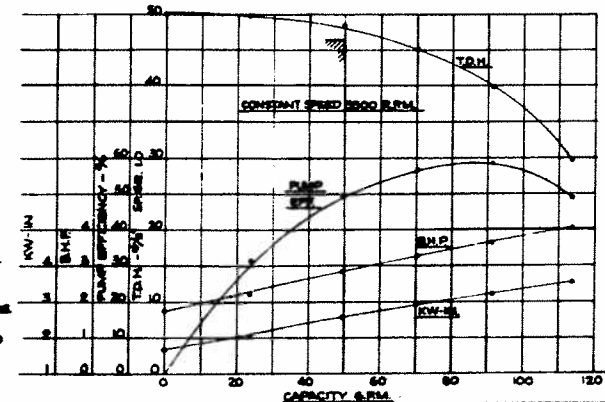
**OPERATING CONDITIONS**

CAPACITY	50 G.P.M.
DISCH. PRESS.	40 P.S.I.
SUCT. LIFT	15 FT.
SPEED	3500 R.P.M.
EFFICIENCY	40 %
B.H.P.	2.77
T.O.H.	107.5

**WEIGHTS**

UNIT COMPLETE	480
PUMP - MAIN & PRIMING	85
MOTOR & CONTROL	40
PUMP SPARES	25
PUMP TOOLS & WRENCHES	4
MOTOR & CONTROL SPARES	15

- NOTE 1: ELASTIC STOP NUT PURCHASED FROM ELASTIC STOP NUT CORP., ELIZABETH, N.J.
- NOTE 2: SHAFT & KEY, ALSO SHAFT & KEY PURCHASED BY MOTOR MANUFACTURER.
- NOTE 3: EACH SPARE PART, OR TOOL SHALL HAVE A METAL TAG GIVING PART NUMBER.
- NOTE 4: MIN. HARDNESS 255 BRINELL.
- NOTE 5: FOR P-238721 USE NYLON BRONZE, INSTEAD OF THE FORMER SPECIFIED MATERIAL.
- NOTE 6: FOR P-238721 USE ALUMINUM BRONZE, INSTEAD OF N. C. AL. ALLOY. PURCHASE FROM JANNEY CYLINDER CO., HOLMESBURG, PENN.
- NOTE 7: FOR P-238721 STEEL SHAFTS AND STEEL KEYS ARE FURNISHED.



**ALTERATION**

NO.	DESCRIPTION	APPROVED DATE	BY

AVP-41  
AVP-40  
AVP-39  
AVP-38  
AVP-37  
AVP-36  
AVP-35  
AVP-34  
AVP-33  
AVP-32  
AVP-31  
AVP-30  
AVP-29  
AVP-28  
AVP-27  
AVP-26  
AVP-25  
AVP-24  
AVP-23  
AVP-22  
AVP-21  
AVP-20  
AVP-19  
AVP-18  
AVP-17  
AVP-16  
AVP-15  
AVP-14  
AVP-13  
AVP-12  
AVP-11  
AVP-10  
AVP-9  
AVP-8  
AVP-7  
AVP-6  
AVP-5  
AVP-4  
AVP-3  
AVP-2  
AVP-1

LAKE WASHINGTON SHIPYARDS  
CONTRACT NO. 634  
R.O. AVP-X-58

LAKE WASHINGTON SHIPYARDS  
R.O. AVP-X-62  
CONTRACT NUMBER NO. 634

**CORRECTED**  
SEE SPECIFICATIONS FOR  
DETAILS OF MATERIALS

**WORTHINGTON PUMP & MACHINERY CORP.**  
HARRISON, N.J.

**SL-5270**

SCALE 3/8" = 1" FT. DRAWN BY LITHO. DATE 10-17-41  
TRACED BY J.P. CHECKED BY A.A. CHIEF DRAFTSMAN

FORWARDED TO BUREAU LETTER NO. \_\_\_\_\_ APPROVED DATE \_\_\_\_\_  
SUPERVISOR OF SHIPBUILDING WORK REF SUP SHIP LET.

EXAMINED & FOUND CORRECT  
DATE 2/22/42

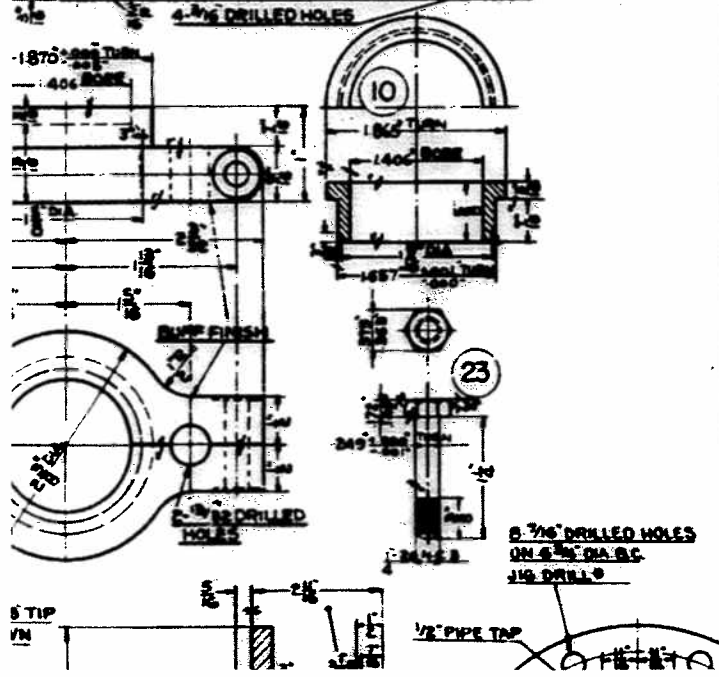
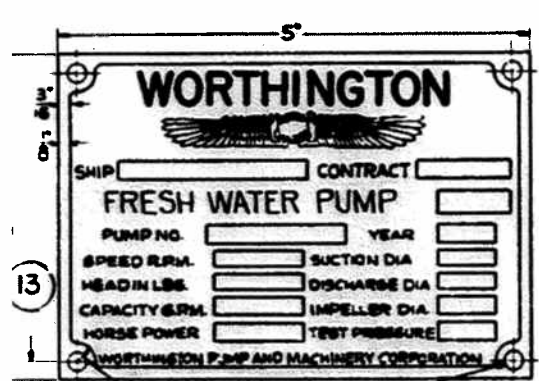
**FRESH WATER PUMP**  
2 PUMPS REQUIRED PER SHIP  
SECTION, ELEVATION & DETAILS

R-238695 P-233721  
BUREAU OF SHIPS BASIC NUMBER  
481799 AIT

**TOLERANCE:**  
FRACTIONS: FURNISHED FRACTIONS UNLESS OTHERWISE NOTED  
DECIMALS: FURNISHED DECIMALS UNLESS OTHERWISE NOTED  
WHEN CLOSE TOLERANCES ARE SHOWN, UNLESS OTHERWISE NOTED, THE CLOSE TOLERANCES SHALL BE OBSERVED

ALL DIMENSIONS ARE NATIONAL FORM CANON UNLESS OTHERWISE NOTED  
KEY END OF SHAFTS SHALL HAVE A 90° CHAMFER  
KEY END OF SHAFTS SHALL HAVE A 90° CHAMFER  
THE BOLT HEADS SHALL HAVE A 90° CHAMFER

NOTE: ALL MATERIALS TO BE IN ACCORDANCE WITH SPECIFICATIONS FOR INSPECTION OF MATERIALS UNDER PROGRAM OF SHIPBUILDING



**LIST OF MATERIAL**

QUANTITY FOR ONE UNIT-2 UNITS PER SHIP

PIECE NO.	NAME OF PIECE	NO. REQ'D	NO. OF SPINDS S.C.F.	MATERIAL	MATERIAL SPECIFICATION	PART NO.	PATT. NO.	REMARKS	DRAWING NUMBERS		UNIT WEIGHT
									CONTRACTOR	BUREAU	
1	CASING	1		BRONZE	46 M6	255270	LH-684R	SEE NOTE 3			
2	SUCTION HEAD	1		BRONZE	46 M6	254678B	DZ-1247	SEE NOTE 5			
3	IMPELLER (L.H.VANES)	1	1	BRONZE	46 N1	255270-1	UB-255B-A	SEE NOTE 5			
4	CASING WEARING RING	2	2	BRONZE	46 B9	166688-B	UC-5024-12				
5	GLAND (SPLIT)	1		BRONZE	46 M6	166688-C	UC-5024-12	SEE NOTE 5			
6	SHAFT SLEEVE	1	1	BRONZE	46 N5	167030-E		SEE NOTE #4 & 5			
7	IMPELLER NUT	1	1	BRASS		18100		SEE NOTE #11			
8	IMPELLER NUT WASHER	1	1	BRASS		45879		TYPE 'A' CLASS '3'			
9	WATER SEAL CASE (SPLIT)	1	1	BRONZE	46 M6	H-66883-D	UG-3546-12	SEE NOTE 5			
10	THROAT BUSHING	1	1	BRONZE	46 B6	172695-E		HALF HARD-TYPE I			
11	SHAFT	1	1	BRONZE	46 M7			SEE NOTE #2 & 7			
12	IMPELLER KEY	1	1	BRASS	42 N2			SEE NOTE #2 & 7			
13	NAMEPLATE (CAST)	1		BRASS	42 N2			COMM'L TYPE-D			
14	BUT. HD. MACH. SCREW	4		BRASS	42 S5	15784		COMM'L.			
15	STUD	8		BRASS	43 B11			HALF HARD-TYPE I			
16	STUD	4		BRASS	43 B11			HALF HARD-TYPE I			
17	GLAND STUD	2		BRASS	43 B11			HALF HARD-TYPE I			
18	HEX NUT	10		BRASS	43 B11			HALF HARD-TYPE I			
19	PARKER TUBING	6'		COPPER				COMM'L.			
20	GASKET	1		BRASS	33 P13	18993		SYMBOL-2130			
21	PACKING	1		BRASS	33 P25			SYMBOL-1433			
22	FL. HD. MACH. SCREW	6	12	BRASS	42 S5			TYPE 'X'			
23	FITTED BOLT	2		BRASS	42 S5			HALF HARD-TYPE I			
24	PARKER FIT. (S.F.D.X)	2		BRASS				COMM'L.			
25	PIPE PLUG	1		BRONZE	46 B9	15803					
26	SAFETY SET SCREW	1	1	STEEL	48 S5	15460		TYPE 'G'			
27	WATER FLINGER	1	1	BRONZE	46 B6	16752-H		HALF HARD-TYPE I			
28	HEX. NUT FOR PC	2		BRASS	42 S5			HALF HARD-TYPE I			
29	FLOAT VALVE, APC	1		BRASS	46 M6						
30	HEX. NUT	4		CL.B.M.	43 B11						
35	CASING WEAR RING	2		JOURNAL BRONZE	46 B9	166688-J	UC-5024-12				

**TOOLS PER SHIP (SEE NOTE # 3)**

41	WMS PIN SPINNER	1		STEEL				COMM'L.			
42	IMPELLER NUT WRENCH	1		STEEL		18101		COMM'L.			
43	IMPELLER FORCING BOLT	1		CL.B.M.	43 B11	179220					

**REFERENCE DRAWING LIST**

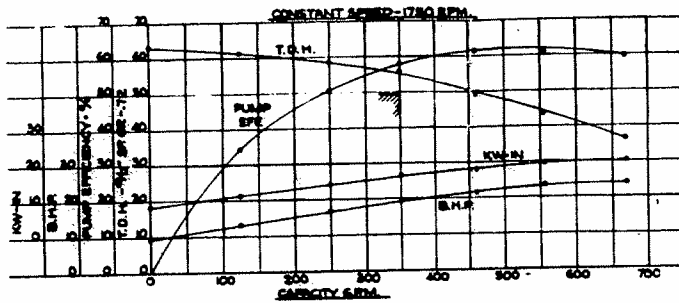
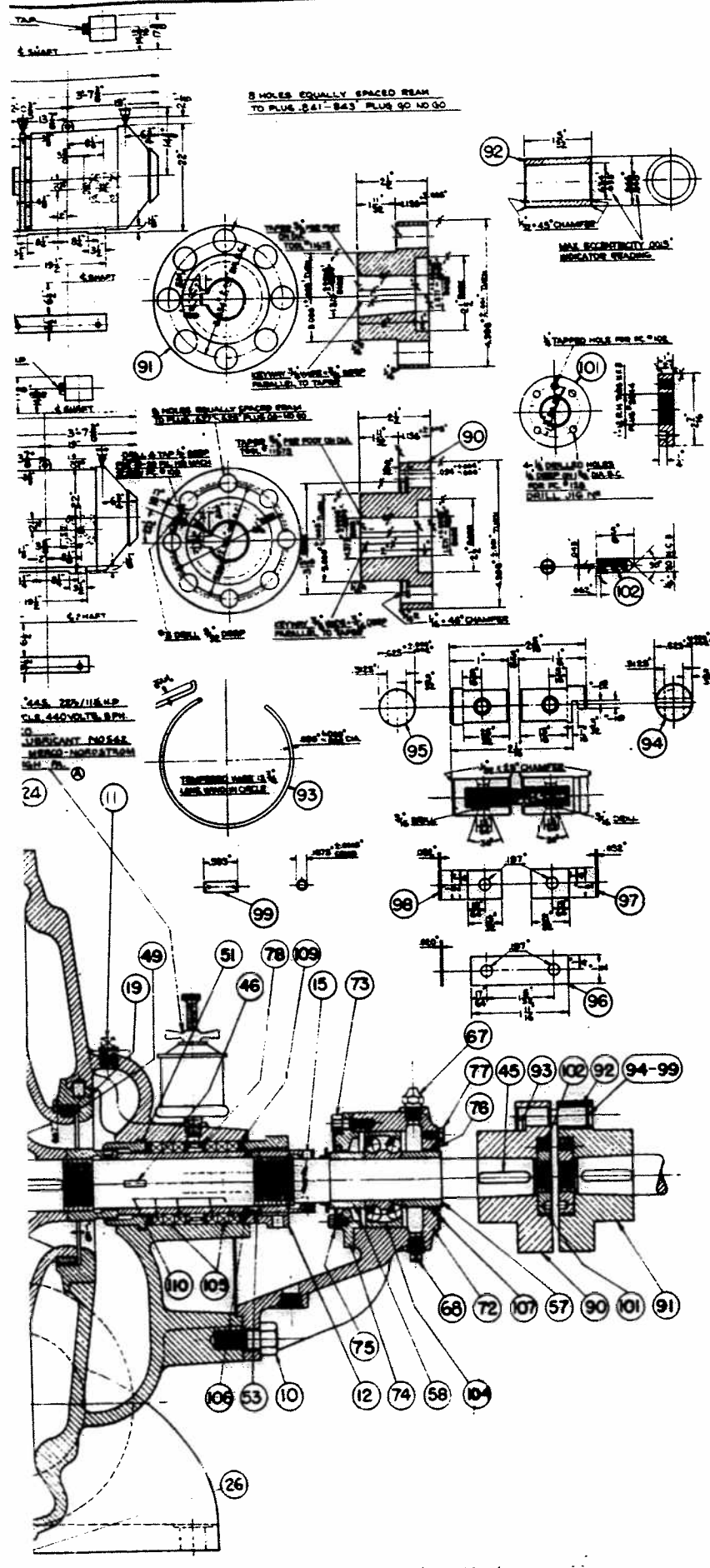
TYPE 2	TYPE 2
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- AVP-41
- AVP-40
- AVP-39
- AVP-38
- AVP-37
- AVP-36
- AVP-35
- AVP-34
- AVP-33
- AGP-9
- AGP-8
- AVP-55
- AVP-54
- AVP-53
- AVP-52
- AVP-51
- AVP-50
- AVP-49
- AVP-48

LAKE WASHINGTON SHIPYARDS  
CONTRACT NO. 634  
P.O. AVP-X-58

LAKE WASHINGTON SHIPYARDS  
P.O. AVP-X-62  
CONTRACT NUMBER NO. 634





REFERENCE PLANS		
TITLE	NO.	NO. OF SHIPS
SECTION ELEVATION & DETAILS	SL-5267	481881
CASING & DETAILS	SL-5268	481882
IMPELLER, SHAFT & DETAILS	SL-5269	481883
LOUIS-ALLIS MOTOR	38901	481876
DR. CONTROLLER	4821	481884

**OPERATING CONDITIONS**

CAPACITY	380 G.P.M.
DRIVE PRESSURE	80 P.S.I.
SUBMERGENCE	3 FT.
TOTAL DYN. HD.	177.8 FT.
SP. GR.	1.529 G.P.M.
SPEC. GRAVITY	0.78
EFFICIENCY	75%
BRAKE H.P.	18.25

- NOTE 1 - PURCHASE FROM LAMAR-HENNER CO., CINCINNATI, OHIO.  
 NOTE 2 - SPECIAL BRONZE OF THE FOLLOWING PROPERTIES SUBSTITUTED: COPPER 80.73%  
 TIN 8.78%, ZINC 1.15% AFTER BURNING ARE COMPRESSED, THEY ARE PUT  
 INTO A HOT WAX BATH, THEREBY ADDING 10% MAX. COMPRESSION  
 STRENGTH 30,000 P.S.I. MANUFACTURED BY JOHN WALDRON CORP. NEW BRUNSWICK, N.J.  
 NOTE 3 - PURCHASE FROM PACKING ENGINEERS CORP., JERSEY CITY, N.J.  
 NOTE 4 - PURCHASE FROM PACKING ENGINEERS CORP., CRANFORD, N.J.  
 (ORDER PROGRAM AS ONE UNIFORM SIZE)  
 NOTE 5 - PURCHASE FROM PACKING ENGINEERS CORP., CRANFORD, N.J.  
 NOTE 6 - FOR P. 228720, VALVE BRONZE WILL BE USED INSTEAD OF GUN METAL.

**LIST OF MATERIAL**  
 1 R.H. PUMP PER SHIP  
 1 L.H. PUMP PER SHIP

QUANTITY FOR ONE UNIT - 2 UNITS PER SHIP									
ITEM NO.	NAME OF PIECE	NO. REQ'D	MATERIAL	QUANTITY	PART NO.	DATE NO.	REMARKS	SHIPPING DIMENSIONS	UNIT WEIGHT
1	CASING-UPPER HALF	1	BRONZE	48 MS	224876	UH-422-F	SEE NOTE #6	SL-5268	
2	CASING-LOWER HALF	1	BRONZE	48 MS	224876	LH-421-H	SEE NOTE #6		
10	HEX. NUT	5	STEEL	48 MS			HALF HARD-TYPE 1		
11	PIPE PLUG	2	BRONZE	48 MS	18203				
12	BLAND (2 HALVES)	2	BRONZE	48 MS	170314	UF-423-E	SEE NOTE #6		
13	BLAND SWIRE BOLT	4	STEEL	48 MS			HALF HARD-TYPE 1		
7	WELDED NUT	10	STEEL	48 MS			HALF HARD-TYPE 1		
19	CASING WEARING RING	2	BRONZE	48 MS	170314	UC-5150			
20	PIN	2	BRONZE	48 MS	170314		HALF HARD-TYPE 1		
23	SEAL O-RING (2 PCS)	1	BRONZE	48 MS	33414		SEE NOTE #3	SL-5267	
24	CLOSE NUT	1	BRASS	44 P. 12	33167		GRADE 'B'		
25	CLOSE VALVE (2 PCS)	2	BRONZE	44 P. 12	33415		SEE NOTE #3		
26	CLOSE NUT	2	BRASS	44 P. 12	33201		GRADE 'B'		
43	SHAFT	1	CRS 7	48 MS	224877			SL-5269	
44	IMPELLER KEY	1	CRS 7	48 MS	170314				
45	IMPELLER KEY	1	CRS 7	48 MS					
46	IMPELLER KEY	2	CRS 7	48 MS	170314				
47	IMPELLER	1	BRONZE	48 MS	667161	UB-3828-B	SEE NOTE #6		
48	IMPELLER WEAR RING	2	BRONZE	48 MS	170314	UC-5250-G	SEE NOTE #6		
49	IMPELLER WEAR RING	6	BRONZE	48 MS			TYPE 'E'		
50	IMPELLER NUT	2	CRS 7	48 MS	170314				
51	THRUST BUSHING	2	BRONZE	48 MS	170314	PL-3160	SEE NOTE #6		
52	SHAFT SLEEVE	2	CRS 7	48 MS	255269				
53	SHAFT SLEEVE GLAND	2	CRS 7	48 MS	170314				
54	SHAFT NUT	2	CRS 7	48 MS					
55	SAFETY SET SCR.	2	ST.	48 MS	18460		TYPE 'G'		
56	WATER SHIELD	2	CRS 7	48 MS	224877A				
57	LINE BRG. BUSHING	1	CL. B. ST.	48 MS					
58	SHAFT COLLAR	2	CL. B. ST.	48 MS					
59	BALL BEARING NUT	1	CL. B. ST.	48 MS	170314				
60	FRONT BRG. HOUSING	1	BRONZE	48 MS	H-17400	MB-1694	SEE NOTE #6		
61	HEL. HO. TAP BOLT	6	STEEL	48 MS	39408		HALF HARD-TYPE 1		
62	WATER FITTING	2	STEEL	48 MS	13255		COMM'L. TYPE 1		
63	PIPE PLUG	1	BRONZE	48 MS					
64	IMPELLER NUT	1	CL. B. ST.	48 MS	224877	MB-3083A	SEE NOTE #6		
65	COVER PLATE	1	CL. B. ST.	48 MS	170314				
71	IMPELLER NUT	4	BRASS	42.55	13755		COMM'L. TYPE 2		
72	IMPELLER BRG. HOUSING	1	BRONZE	48 MS	224877	MB-1694	SEE NOTE #6		
73	IMPELLER TAP BOLT	4	STEEL	48 MS			HALF HARD-TYPE 1		
74	IMPELLER HOUSING COVER	1	BRONZE	48 MS	134277	MB-3083A	SEE NOTE #6		
75	COVER PLATE	1	CL. B. ST.	48 MS					
76	COVER PLATE	2	CL. B. ST.	48 MS					
77	HEL. HO. BOLTS	12	STEEL	48 MS			HALF HARD-TYPE 1		
78	IMPELLER BRG. HOUSING	2	BRONZE	48 MS	H-17400	MB-1694	SEE NOTE #6		
66	REDUCING BUSH	2	BRONZE	48 MS	32961				
89	COUPLING (PUMP HALF)	1	CL. B. ST.	48 MS				SL-5267	
91	COUPLING (MOTOR HALF)	1	CL. B. ST.	48 MS					
92	COUPLING BUSHING	2	BRONZE	48 MS			SEE NOTE #6		
93	SPRING RETAINER RING	3	STEEL	48 MS					
94	WELD WEEPER	2	CL. B. ST.	48 MS					
95	WELD WEEPER	2	CL. B. ST.	48 MS					
96	WELD WEEPER	2	CL. B. ST.	48 MS					
97	WELD WEEPER	2	CL. B. ST.	48 MS					
98	WELD WEEPER	2	CL. B. ST.	48 MS					
99	WELD WEEPER	2	CL. B. ST.	48 MS					
100	IMPELLER NUT	2	CL. B. ST.	48 MS	H-17350W		TYPE 'F'		
101	IMPELLER NUT	2	ST.	48 MS			TYPE 'G'		
102	IMPELLER NUT	2	ST.	48 MS			TYPE 'H'		
103	IMPELLER NUT	2	ST.	48 MS			TYPE 'I'		
104	LINE BRG. BUSHING	1	CL. B. ST.	48 MS					
105	IMPELLER NUT	2	CL. B. ST.	48 MS					
106	IMPELLER NUT	2	CL. B. ST.	48 MS					
107	IMPELLER NUT	2	CL. B. ST.	48 MS					
108	IMPELLER NUT	2	CL. B. ST.	48 MS					
109	IMPELLER NUT	2	CL. B. ST.	48 MS					
110	IMPELLER NUT	2	CL. B. ST.	48 MS					

WEIGHTS	
FACE SPANNER #424	680
PIN SPANNER #457	520
PIN SPANNER #459	520

NO.	DESCRIPTION	DATE	APPROVED
	ALTERATION		

LAKE WASHINGTON SHIPYARDS  
 CONTRACT NUMBER NO. 634  
 PG. AVP-XX-58

LAKE WASHINGTON SHIPYARDS  
 CONTRACT NUMBER NO. 634  
 PG. AVP-7-62

CONTRACT PLAN  
 T. SHIP

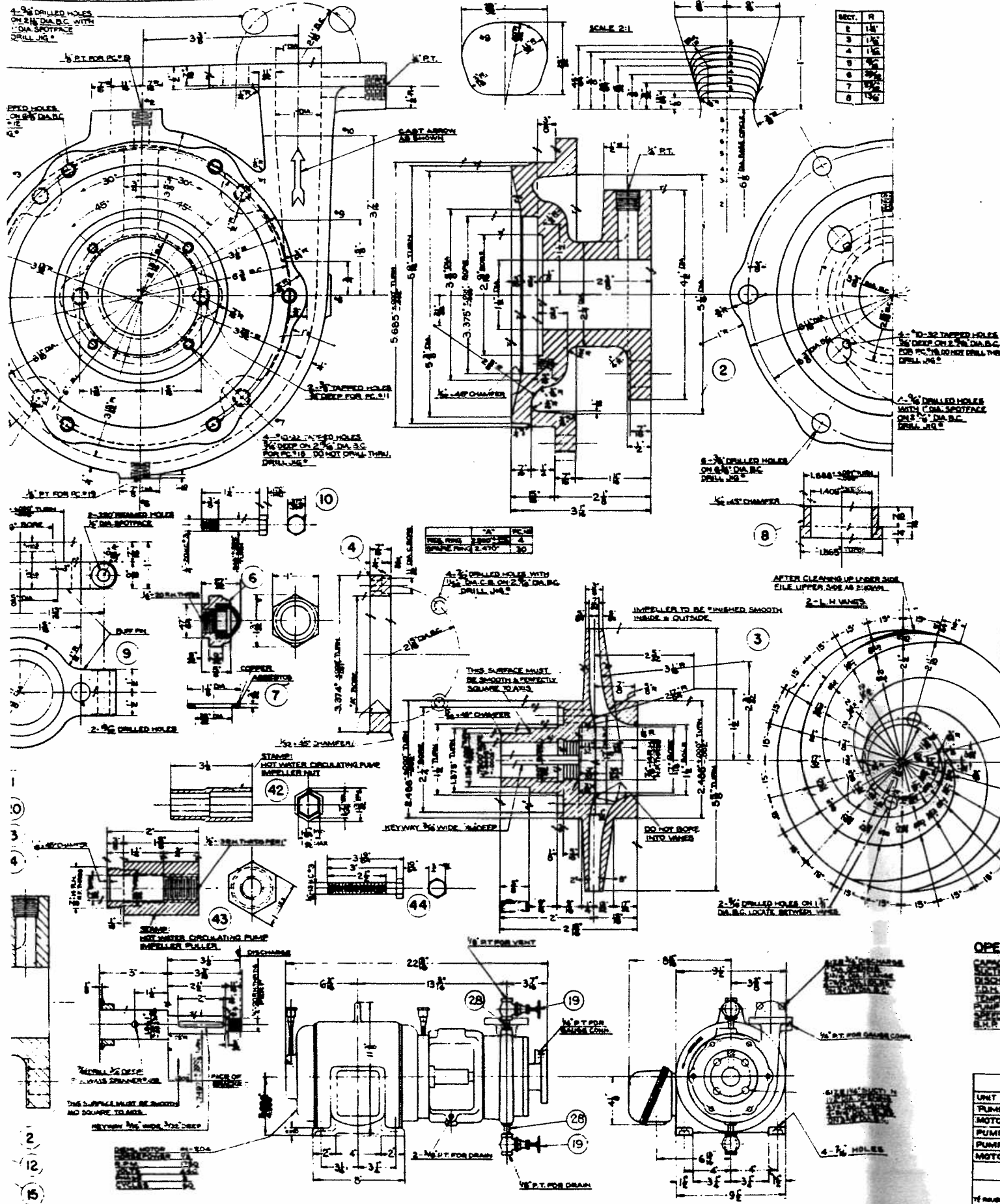
WORTHINGTON PUMP & MACHINERY CORP.  
 HARRISON, N.J.  
**SL-5267**

SCALE 1/8" = 1 1/2" IFT. DRAWN BY LITHS. DATE 10-17-41  
 TRACED BY J.P. CHECKED BY A.A. CHIEF DRAFTSMAN

FORWARDED TO BUREAU APPROVED  
 LETTER NO. DATE

EXAMINED & FOUND CORRECT  
 DATE 1/15/42

**GASOLINE PUMP**  
 1-R.H. & 1-L.H. PUMP REQUIRED PER SHIP  
 SECTION, ELEVATION & DETAILS  
 P-229695 P-233720  
 BUREAU OF SHIPS BASIC NUMBER  
**421A51 AIT**



### LIST OF MATERIAL

QUANTITY FOR ONE UNIT - 1 UNIT PER SHIP

PIECE NO.	NAME OF PIECE	NO. REQ'D	UNITS PER SHIP	MATERIAL	SPECIFICATION	PART NO.	PAT. NO.	REMARKS	DRAWING NUMBERS	UNIT WEIGHT
									EXHIBIT A BUREAU	
1	CASING	1		GUNMETAL	40-M-6	28398-1	UM-K-43-B	SEE NOTE 5		
2	SUCTION HEAD	1		GUNMETAL	40-M-6	28398-2	02-1057-P	SEE NOTE 5		
3	IMPELLER (L.H. VANES)	1		GUNMETAL	40-M-6	28398-3	UB-3433-P	SEE NOTE 5		
4	CASING WEARING RING	2		GUNMETAL	40-M-6	28398-4	UC-4688-S			
5	SHAFT SLEEVE	1		BRASS	40-M-6	28398-5		SEE NOTE 11-G		
6	IMPELLER NUT	1		BRASS		18100		COMM'L		
7	IMPELLER NUT WASHER	1		BRASS	33-G-3	48879		TYPE 'T'		
8	THROAT BUSHING	1		BRASS	40-B-0	28398-6		HALF HARD-TYPE-I		
9	GLAND (SP. 1")	1		GUNMETAL	40-M-6	56635-C	UF-639	SEE NOTE 5		
10	1/4" X 1/2" FITTED GLAND BOLT	2		STEEL	42-5-5	15460		TYPE-B		
11	3/8" X 1/2" GLAND STUD	2		STEEL	42-5-5	15460		TYPE-B		
12	1/2" X 1/2" STUD	6		STEEL	42-5-5	15460		TYPE-B		
13	1/2" X 1/2" STUD	4		CL. B. S.M.	40-B-11			HALF HARD-TYPE-I		
14	1/2" HEX. NUT	4		CL. B. S.M.	40-B-11			HALF HARD-TYPE-I		
15	1/2" HEX. NUT	6		CL. B. S.M.	40-B-11			HALF HARD-TYPE-I		
16	1/2" X 1/2" PL. HD. BOLT	16		STEEL	42-5-5	15460		TYPE-B		
17	1/2" HEX. NUT	2		CL. B. S.M.	40-B-11			HALF HARD-TYPE-I		
18	1/2" HEX. NUT	2		CL. B. S.M.	40-B-11			HALF HARD-TYPE-I		
19	1/2" CLOSE SLAVE (P.L. LEAD)	2		BRONZE	33-P-13	18993		SEE NOTE 4		
20	1/4" GASKET 7/8" OD. 5/8" ID.	1		BRASS	40-B-6	28324-3		SYMBOL 2150		
21	WRITER PLYMOR	1		BRASS	40-B-6	28324-3		HALF HARD-TYPE-I		
22	1/4" X 1/2" SAFETY SET SCR.	1		STEEL	42-5-5	15460		TYPE-B		
23	1/4" SQUARE WOODING L.F. B. SPRING	1		STEEL	42-5-5	15460		TYPE-B		
24	NAME PLATE	1		BRASS	42-M-2			SYMBOL 1433		
25	1/8" X 3/8" PL. HD. BOLT	4		BRASS	40-B-5	18784		COMM'L-TYPE-D		
26	SHAFT	1		STEEL	40-M-7			SEE NOTE 2 & 7		
27	IMPELLER KEY	1		STEEL	40-M-7			SEE NOTE 2 & 7		
28	1/8" X 1/4" NIPPLE	2		BRASS	40-P-12			GRADE-B		
29	CASING WEARING RING	2		GUNMETAL	40-B-9	28398-7	UC-4688-S			

TOOLS PER SHIP (SEE NOTE 3)

NO.	DESCRIPTION	QTY.	MATERIAL	REMARKS
41	PH. SPANNER W/MS. 1/2"	1	STEEL	COMM'L
42	IMP. NUT WRENCH	1	STEEL	COMM'L
43	IMPELLER PULLER	1	CL. B. S.M.	40-B-5-2 254931-C
44	1/2" X 3/4" BOLT FOR 40	1	CL. B. S.M.	40-B-11

NOTE 1: MINIMUM HARDNESS 285 BRINELL

NOTE 2: SHAFT & IMPELLER KEY & SPRING SHAFT & IMPELLER NUT FURNISHED BY MOTOR MANUFACTURER

NOTE 3: EACH SPRING PART WRENCH OR TOOL SHALL HAVE A METAL TAG GIVING PIECE NO.

NOTE 4: PURCHASE FROM CRANE CO. JERSEY CITY, N.J.

NOTE 5: FOR P-233722 USE VALVE BRONZE INSTEAD OF GUN METAL

NOTE 6: FOR P-233722 USE ALUMINUM BRONZE INSTEAD OF GUN METAL

NOTE 7: FOR P-233722 STEEL IMPELLER AND STEEL KEYS ARE FURNISHED

REFERENCE DRAWING LIST

TITLE	W.P.A.M. CORP. DWG. NO.	BUREAU FILE NO.
SECTION ELEVATION & DETAIL	SL-5398	481801
DIAGN. MOTOR	11-F-20	481893
CM. CONTROLLER	4831	522537

**WORTHINGTON**

SHIP \_\_\_\_\_ CONTRACT \_\_\_\_\_

HOT WATER CIRCULATING PUMP

PUMP NO. \_\_\_\_\_ YEAR \_\_\_\_\_

SPEED R.P.M. \_\_\_\_\_ SUCTION DIA. \_\_\_\_\_

HEAD IN LBS. \_\_\_\_\_ DISCHARGE DIA. \_\_\_\_\_

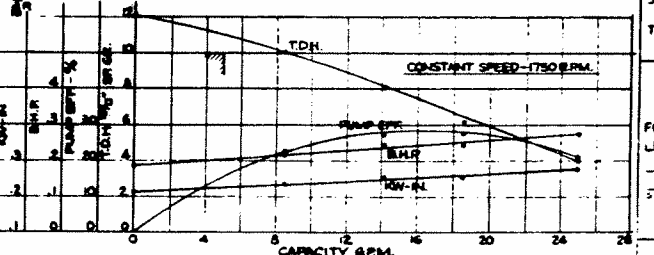
CAPACITY G.P.M. \_\_\_\_\_ IMPELLER DIA. \_\_\_\_\_

HORSE POWER \_\_\_\_\_ TEST PRESSURE \_\_\_\_\_

(WORTHINGTON PUMP & MACHINERY CORPORATION)

#### OPERATING CONDITIONS

CAPACITY	50 G.P.M.
SUCTION PRESS.	30 P.S.I.
DISCH. PRESS.	40 P.S.I.
HEAD	10 FT.
TEMPERATURE	200 F.
PUMP SPEED	1750 R.P.M.
TEST PRESSURE	150 P.S.I.



#### WEIGHT - ONE UNIT

UNIT COMPLETE	2380
PUMP	680
MOTOR & CONTROL	1700
PUMP SPARES	200
PUMP TOOLS & WRENCHES	200
MOTOR & CONTROL SPARES	850

TOLERANCE: FINISHED DIMENSIONS WHERE NO LIMITS GIVEN ± 1/32" UNLESS OTHERWISE SPECIFIED. ALL DIMENSIONS UNLESS OTHERWISE SPECIFIED. ALL MATERIAL TO BE IN ACCORDANCE WITH SPECIFICATIONS FOR INSPECTION OF MATERIALS UNDER BUREAU OF SHIPS.

AVP-41  
AVP-40  
AVP-39  
AVP-38  
AVP-37  
AVP-36  
AVP-35  
AVP-34  
AVP-33  
AVP-32  
AVP-31  
AVP-30  
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AVP-14  
AVP-13  
AVP-12  
AVP-11  
AVP-10  
AVP-9  
AVP-8  
AVP-7  
AVP-6  
AVP-5  
AVP-4  
AVP-3  
AVP-2  
AVP-1

LAKE WASHINGTON SHIPYARDS  
CONTRACT NUMBER NO. 634  
PO AVP-11-58

LAKE WASHINGTON SHIPYARDS  
CONTRACT NUMBER NO. 634  
PO AVP-12-62

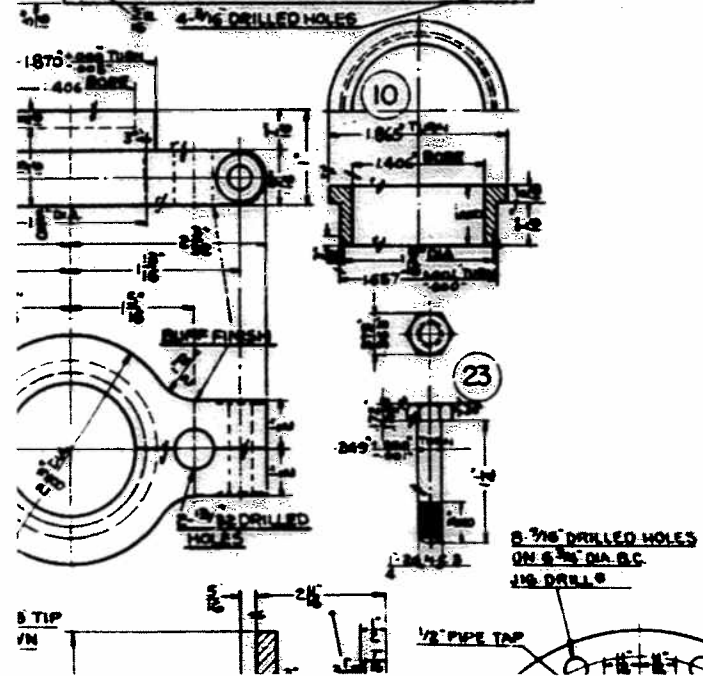
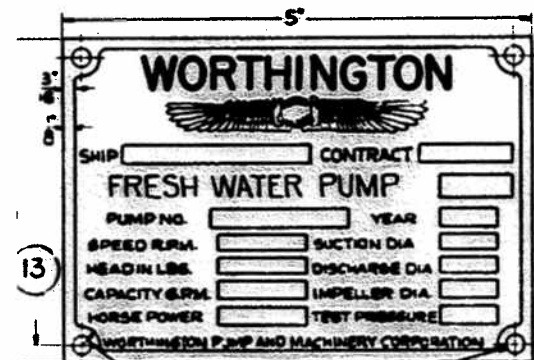
CORRECTED PLAN  
SEE PLAN INDEX FOR NUMBER OF APPROVALS OF THIS PLAN TO ANY VESSEL

WORTHINGTON PUMP & MACHINERY CORP.  
HARRISON, ILL.  
**SL-5398**

SCALE 3/8" = 1" - 1/2" LET DRAWN BY F.L.B. DATE 10-28-41  
TRACED BY F.L.B. CHECKED BY A.A. CHIEF DRAFTSMAN

FORWARDED TO BUREAU LETTER NO. \_\_\_\_\_ APPROVED DATE \_\_\_\_\_  
SUPERVISOR OF SHIPYARD WORK REF. SUP. SHEET \_\_\_\_\_

PLAN  
EXAMINED & FOUND CORRECT  
DATE \_\_\_\_\_  
**HOT WATER CIRCULATING PUMP**  
1 PUMP REQUIRED PER SHIP  
**SECTION, ELEVATION & DETAILS**  
P-23697 P-233722  
BUREAU OF SHIPS BASIC NUMBER  
481801 ALT



**LIST OF MATERIAL**

QUANTITY FOR ONE UNIT-2 UNITS PER SHIP

PIECE NO.	NAME OF PIECE	NO. REQ'D	NO. OF SPARE S.U.P.	MATERIAL	MATERIAL SPECIFICATION	PART NO.	PATT. NO.	REMARKS	DRAWING NUMBERS		UNIT WEIGHT
									CONTRACTOR	BUREAU	
1	CASING	1		NON METAL	46 M6	255270	LM-684R	SEE NOTE 5			
2	SUCTION HEAD	1		NON METAL	46 M6	254678B	OZ-1247	SEE NOTE 5			
3	IMPELLER (C.U.VINES)	1	1	NON METAL	46 M1	255270-1	UB-258A	SEE NOTE 5			
4	CASING WEARING RING	2	2	BRONZE	46 B9	166688-4	UC-5024-12				
5	GLAND (SPLIT)	1		NON METAL	46 M6	166688-C	UF-069	SEE NOTE 5			
6	SHAFT SLEEVE	1	1	NON METAL ALLOY	46 N5	187030-E		SEE NOTE #4			
7	IMPELLER NUT	1	1	BRASS		18100		SEE NOTE #1			
8	IMPELLER NUT WASHER	1	1	ASBESTOS & COPPER	33 G7	45879		TYPE 'A' CLASS 3			
9	WATER SEAL CASE (SPLIT)	1	1	NON METAL	46 M6	1468830	UG-354812	SEE NOTE 5			
10	THROAT BUSHING	1	1	NAVAL ROLLED BR	46 B6	172695-E		HALF HARD-TYPE I			
11	SHAFT	1	1	ALLOY	46 M7			SEE NOTE #2 & 7			
12	IMPELLER KEY	1	1	NON METAL ALLOY	46 M7			SEE NOTE #2 & 7			
13	NAMEPLATE (CAST)	1		BRASS	42 N2			COMM'L TYPE-D			
14	BUT. HO. MACH. SCR. 1/2\"/>										

**TOOLS PER SHIP (SEE NOTE # 3)**

41	W.M. PIN SPANNER 1/2\"/>
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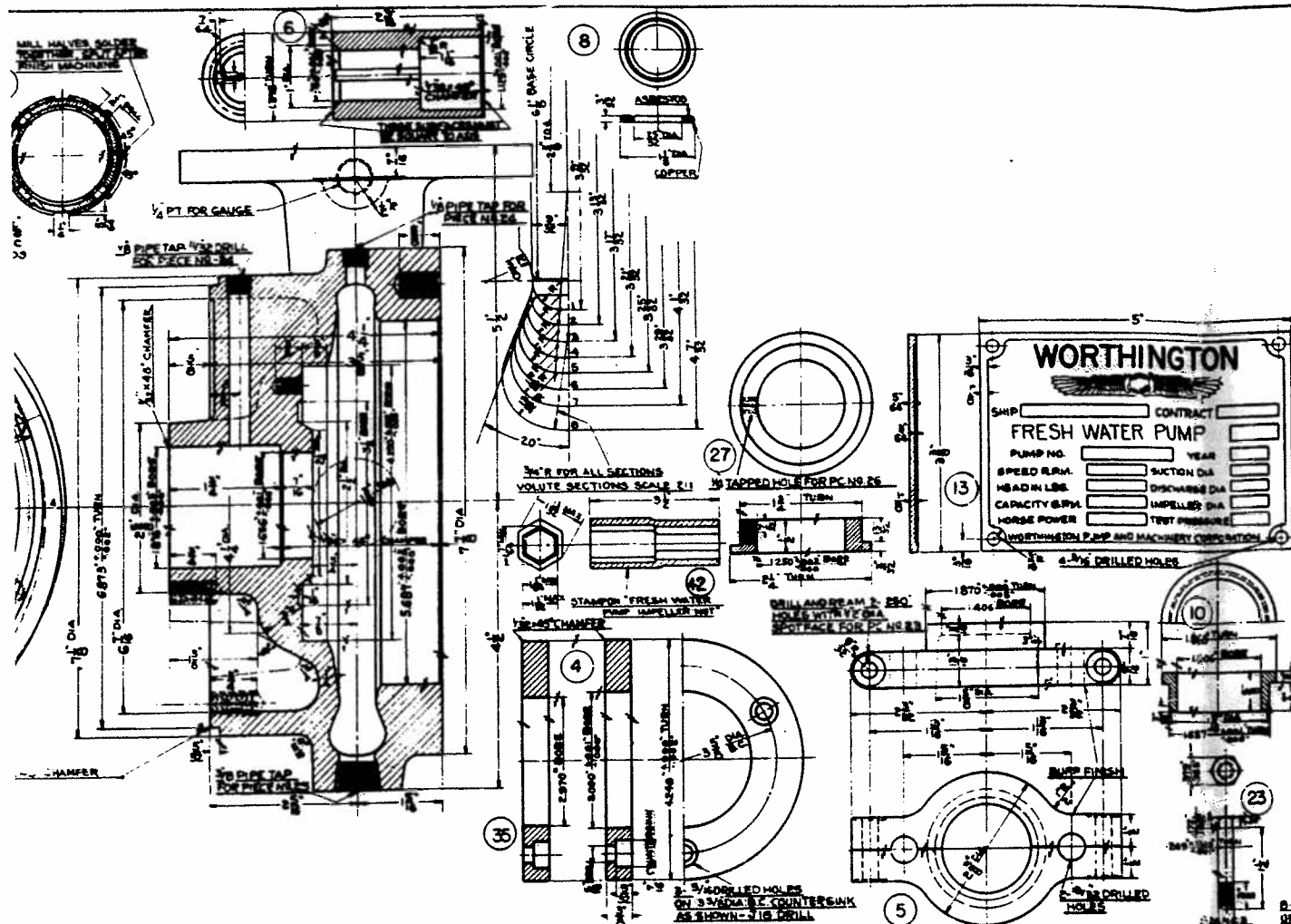
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AVP-33
AGP-9
AGP-8
AVP-55
AVP-54
AVP-53
AVP-52
AVP-51
AVP-50
AVP-49
AVP-48

LAKE WASHINGTON SHIPYARDS  
 CONTRACT NO. 634  
 P.O. AVP-XX-58

LAKE WASHINGTON SHIPYARDS  
 P.O. AVP-X-62  
 CONTRACT NUMBER NOs-634

REFERENCE DRAWING LIST





**WORTHINGTON**

SHIP CONTRACT

**FRESH WATER PUMP**

PUMP NO. \_\_\_\_\_ YEAR \_\_\_\_\_

SPEED R.P.M. \_\_\_\_\_ SUCTION DIA. \_\_\_\_\_

HEAD IN LBS. \_\_\_\_\_ DISCHARGE DIA. \_\_\_\_\_

CAPACITY G.P.M. \_\_\_\_\_ IMPELLER DIA. \_\_\_\_\_

HORSE POWER \_\_\_\_\_ TEST PRESSURE \_\_\_\_\_

WORTHINGTON PUMP AND MACHINERY CORPORATION

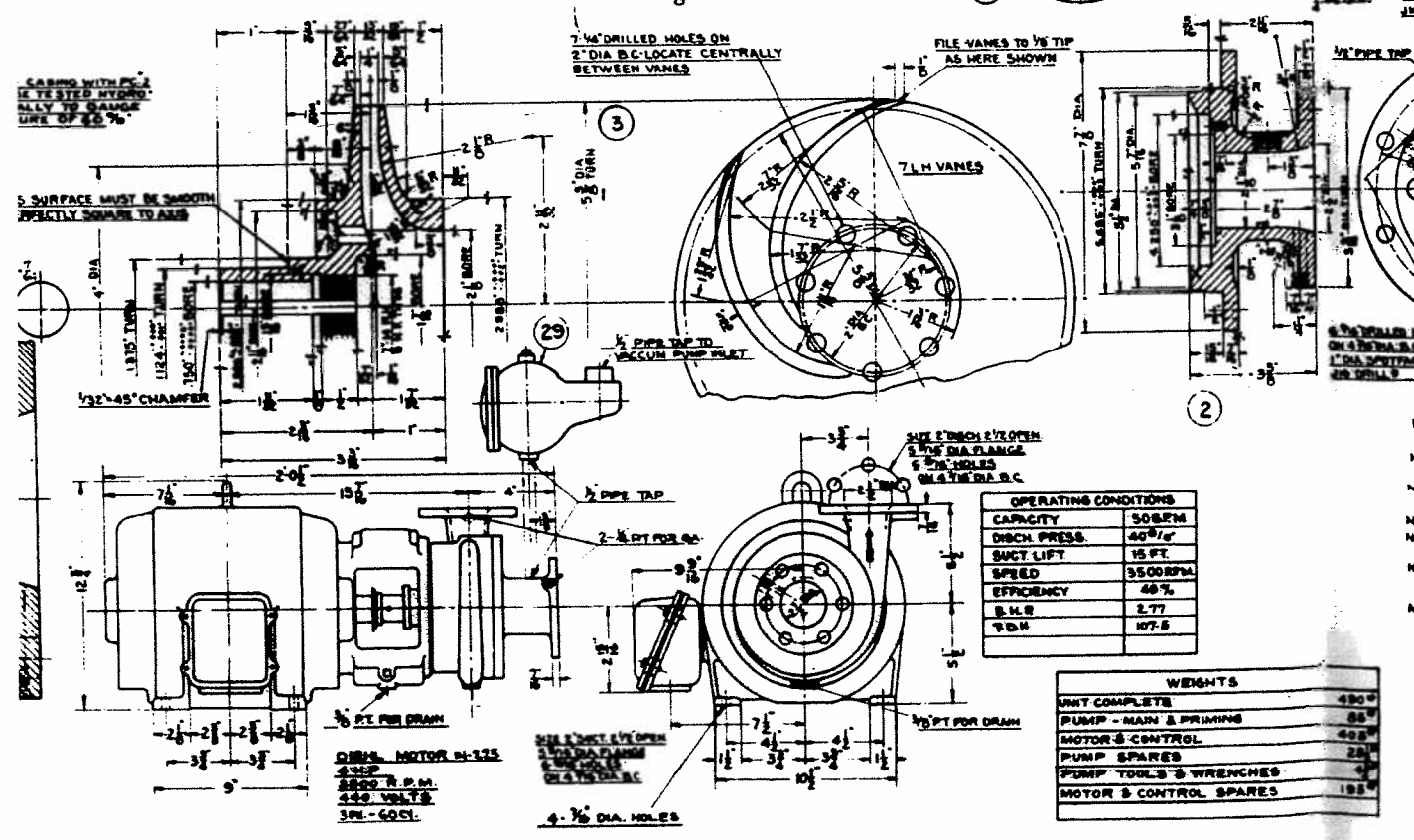
**LIST OF MATERIAL**

QUANTITY FOR ONE UNIT - 2 UNITS PER SHIP

FIG. NO.	NAME OF PIECE	NO. REQ'D.	NO. OF SHIPMENTS	MATERIAL	MATERIAL SPECIFICATION	PART NO.	PART NO.	REMARKS	DRAWING NUMBER		UNIT WEIGHT
									CONTRACTOR	BUREAU	
1	CASING	1		IRON	46 M6	255270	14-684R	SEE NOTE 3			
2	SUCTION HEAD	1		46 M6	254670	02-1847		SEE NOTE 5			
3	IMPELLER (LUMBER)	1		46 M1	255270-1	14-684R		SEE NOTE 5			
4	CASING WEARING RING	2		46 B9	166500-4	14-5004-12					
5	ISLAND (ALUM.)	1		46 M6	166500-C	14-5004-12		SEE NOTE 5			
6	SHAFT SLEEVE	1		46 N5	167000-E			SEE NOTE 4 & 6			
7	IMPELLER NUT	1		BRASS	42 N2	15100		SEE NOTE 1 & 1			
8	IMPELLER NUT WASHER	1		BRASS	42 N2	45079		TYPE 'A'			
9	WATER SEAL GASKET (GUM)	1		46 M6	166500-C	14-5004-12		SEE NOTE 5			
10	THROAT BUSHING	1		46 B9	172695-E						
11	SHAFT	1		46 N7				SEE NOTE 1 & 2 & 7			
12	IMPELLER KEY	1		46 N7				SEE NOTE 1 & 2 & 7			
13	NAMEPLATE (CAST)	1		BRASS	42 N2			COMM'L. TYPE-D			
14	BUFFING MACHINERY	4		BRASS	42 S5	15784		COMM'L.			
15	STUD	8		CLC BM	43 B11			HALF HARD-TYPE 1			
16	STUD	4		CLC BM	43 B11			HALF HARD-TYPE 1			
17	ISLAND STUD	2		CLC BM	43 B11			HALF HARD-TYPE 1			
18	HEX NUT	10		CLC BM	43 B11			HALF HARD-TYPE 1			
19	WASHER	10		COPPER	42 N2			COMM'L.			
20	SAFETY SET SCREW	1		STEEL	43 P13	18993		SYMBOL-8150			
21	SCREW	1		STEEL	43 P13	18993		SYMBOL-1433			
22	FL. NUT	8		STEEL	43 P13	18993		TYPE 'X'			
23	FITTED BOLT	2		STEEL	43 P13	18993		HALF HARD-TYPE 1			
24	WASHER	2		BRASS	42 N2			COMM'L.			
25	PIPE PLUG	1		BRASS	42 N2	15603		TYPE 'D'			
26	SAFETY SET SCREW	1		STEEL	43 P13	18993		HALF HARD-TYPE 1			
27	WATER PLUMBER	1		STEEL	43 P13	18993		HALF HARD-TYPE 1			
28	HEX NUT FOR PLUMBER	2		STEEL	43 P13	18993		HALF HARD-TYPE 1			
29	PLUG VALVE APC	1		BRASS	46 M6						
30	HEX NUT	4		CLC BM	43 B11						

TOOLS PER SHIP (SEE NOTE # 3)

41	WASHER SPANNER	1	STEEL				COMM'L.
42	IMPELLER NUT WRENCH	1	STEEL	18101			COMM'L.
43	IMPELLER FORCING BOLT	1	CLC BM	43 B11	179220		



**OPERATING CONDITIONS**

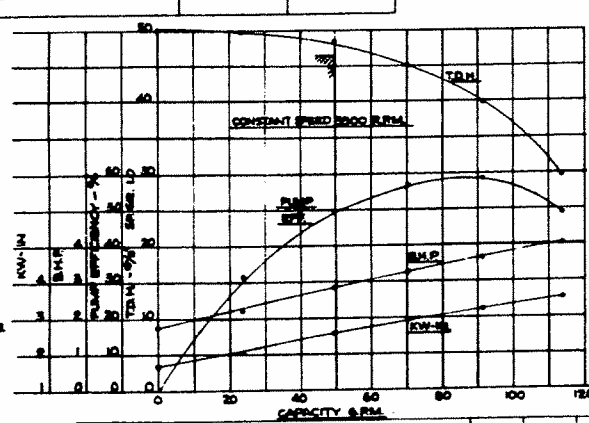
CAPACITY	50 G.P.M.
DISCH. PRESS.	40' H <sub>2</sub> O
SUCT. LIFT	15 FT.
SPEED	3500 R.P.M.
EFFICIENCY	48%
B.H.P.	2.77
T.D.H.	107.5

**WEIGHTS**

UNIT COMPLETE	430#
PUMP - MAIN & PRIMING	88#
MOTOR & CONTROL	40#
PUMP SPARES	28#
PUMP TOOLS & WRENCHES	4#
MOTOR & CONTROL SPARES	18#

**REFERENCE DRAWING LIST**

TITLE	W.P.M. CORP. DRAWING NO.	BUREAU FILE NO.
SECTION, ELEVATION & DETAILS	SL-5270	481799
PRIMING PUMP, SECT. ELEV. & DETAILS	SL-5271	481800
DIM'L. MOTOR	1-1-12	481801
DIM'L. MOTOR	1-1-11	481802
C.M. CONTROLLER	4830	523536



- NOTE 1: ELASTIC STOP NUT PURCHASED FROM ELASTIC STOP NUT CORP., ELIZABETH, N.J.
- NOTE 2: SHAFT & KEY, ALSO SPRING SHAFT & KEY FURNISHED BY MOTOR MANUFACTURER.
- NOTE 3: EACH SPARE PART, OR TOOL SHALL HAVE A METAL TAG GIVING PRICE NUMBER.
- NOTE 4: MIN. HARDNESS 255 BRINELL.
- NOTE 5: FOR P-235271 USE INVALENZANZA, INSTEAD OF THE FORMER SPECIFIED MATERIAL.
- NOTE 6: FOR P-235271 USE ALUMINUM BRONZE, INSTEAD OF THE ORIGINAL ALLOY. PURCHASE FROM JAMES CYLINDER CO. HOLMDEL, N.J.
- NOTE 7: FOR P-235271 STEEL SHAFTS AND STEEL KEYS ARE FURNISHED.

AVP-41  
AVP-40  
AVP-39  
AVP-38  
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AVP-33  
AVP-32  
AVP-31  
AVP-30  
AVP-29  
AVP-28

LAKE WASHINGTON SHIPYARDS  
CONTRACT NO. 634  
P.O. NO. 11-58

LAKE WASHINGTON SHIPYARDS  
P.O. NO. 11-62  
CONTRACT NUMBER NO. 634

CORRECTED

**WORTHINGTON PUMP & MACHINERY CORP.**  
HARRISON, N. J.

**SL-5270**

SCALE 3/8" = 1" - 11/2" DRAWN BY LITHO. DATE 12-17-41

TRACED BY J.P. CHECKED BY A.A. CHIEF DRAFTSMAN

FORWARDED TO BUREAU APPROVED  
LETTER NO. DATE

EXAMINED & FOUND CORRECT  
DATE 2/27/42

**FRESH WATER PUMP**  
2 PUMPS REQUIRED PER SHIP  
SECTION, ELEVATION & DETAILS

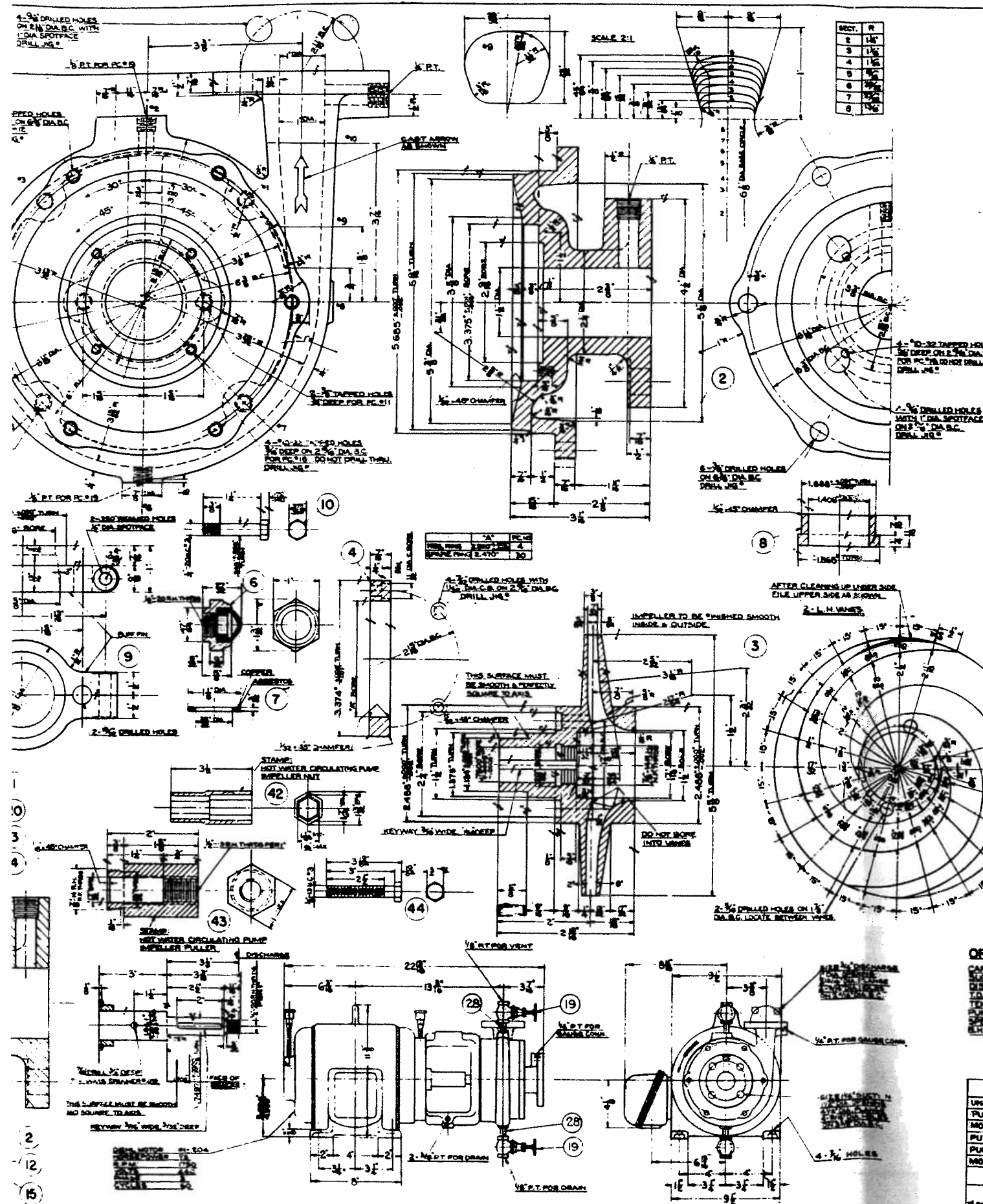
BUREAU OF SHIPS BASIC NUMBER  
421790 A17

**TOLERANCE:**  
FINISHED PRACTICAL DIMENSIONS UNDER NO LOADS SHALL BE AS FOLLOWS:  
1-1/2" & OVER: ± .005"  
1/2" - 1-1/2": ± .003"  
1/8" - 1/2": ± .002"  
UNDER NO LOADS SHALL BE AS FOLLOWS:  
1-1/2" & OVER: ± .005"  
1/2" - 1-1/2": ± .003"  
1/8" - 1/2": ± .002"

NOTE: ALL MATERIAL TO BE IN ACCORDANCE WITH SPECIFICATIONS FOR INSPECTOR'S OF MATERIALS UNDER PRESSURE OF WORKING.







### LIST OF MATERIAL

PIECE NO.	NAME OF PIECE	NO. REQ'D	QUANTITY FOR ONE UNIT - 1 UNIT PER SHIP		MATERIAL SPECIFICATION	PART NO.	PATT. NO.	REMARKS	DRAWING NUMBER	BUREAU	UNIT WEIGHT
			NO. OP. BRASS	NO. OP. BRASS							
1	CASING	1			GUN METAL 40-M-6	255398-1	UN-K43-0	SEE NOTE - 5			
2	IMPELLER (L.H. VANES)	1			GUN METAL 40-M-6	255398-2	02-1087-P	SEE NOTE - 5			
3	IMPELLER WASHING RING	1			GUN METAL 40-M-6	255398-3	UB-3413-7	SEE NOTE - 5			
4	SHAFT SLEEVE	1			BRASS 40-B-9	255398-4	UC-4685-5				
5	IMPELLER NUT	1			BRASS 40-B-9	255398-5		SEE NOTE #1-G			
6	IMPELLER NUT WASHER	1			BRASS 40-B-9	255398-6		CONPL			
7	THROAT BUSHING	1			BRASS 40-B-9	255398-7		CONPL			
8	GLAND STUD	1			GUN METAL 40-M-6	255398-8		HALF HARD - TYPE I			
9	GLAND STUD BOLT	2			GUN METAL 40-M-6	255398-9		HALF HARD - TYPE I			
10	GLAND STUD	2			BRASS 40-B-9	255398-10		HALF HARD - TYPE I			
11	GLAND STUD	2			BRASS 40-B-9	255398-11		HALF HARD - TYPE I			
12	GLAND STUD	2			BRASS 40-B-9	255398-12		HALF HARD - TYPE I			
13	GLAND STUD	2			BRASS 40-B-9	255398-13		HALF HARD - TYPE I			
14	HEX NUT	4			CL B M 40-B-11						
15	HEX NUT	4			CL B M 40-B-11						
16	HEX NUT	4			CL B M 40-B-11						
17	HEX NUT	4			CL B M 40-B-11						
18	HEX NUT	4			CL B M 40-B-11						
19	GLASS GLEYS (PISTONS)	2			BRONZE 40-B-12			SEE NOTE - 5			
20	WATER PLUNGER	1			BRASS 40-B-9	255398-14		SYMBOL 2:50			
21	SAFETY SET SCR.	1			STEEL 42-S-5	15400		TYPE - 6			
22	NAME PLATE	1			BRASS 40-B-9	255398-15		SYMBOL 4:33			
23	IMPELLER KEY	1			BRASS 40-B-9	255398-16		CONPL. TYPE - D			
24	SHAFT	1			STEEL 42-S-5	15400		CONPL. TYPE - 3			
25	IMPELLER KEY	1			BRASS 40-B-9	255398-17		SEE NOTE #2 & 7			
26	IMPELLER KEY	1			BRASS 40-B-9	255398-18		SEE NOTE #2 & 7			
27	IMPELLER KEY	1			BRASS 40-B-9	255398-19		GRADE - B			
28	IMPELLER KEY	1			BRASS 40-B-9	255398-20					
29	CASING WEARING RING	2			GUN METAL 40-M-6	255398-21	UC-4685-5				

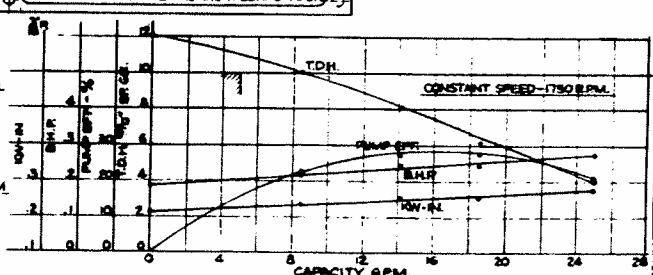
TOOLS PER SHIP (SEE NOTE #3)

NO.	DESCRIPTION	QTY	MATERIAL	REMARKS
41	PIN SPANNER W/MS 1/2"	1	STEEL	CONPL.
42	IMP NUT WRENCH	1	STEEL	15101
43	IMPELLER PULLER	1	CL B M 40-B-9	254931-C
44	1/2" HEX HD BOLT FOR 1/2"	1	CL B M 40-B-11	

NOTE 1: MINIMUM HARDNESS 205 BRINELL  
 NOTE 2: SHAFT, IMPELLER KEY & SPARE SHAFT & IMPELLER KEY FURNISHED BY MOTOR MANUFACTURER  
 NOTE 3: EACH SPARE PART, WRENCH OR TOOL SHALL HAVE A METAL TAG GIVING PIECE NO.  
 NOTE 4: PURCHASED FROM CRANE CO. TERRY CITY, N.J.  
 NOTE 5: FOR P-233722 USE VALVE BRONZE INSTEAD OF GUN METAL  
 NOTE 6: FOR P-233722 USE ALUMINUM INSTEAD OF BRASS  
 NOTE 7: FOR P-233722 STEEL IMPELLER AND IMPELLER KEY ARE FURNISHED.

REFERENCE DRAWING LIST

TITLE	W.P.M. CORP. DRAWING BUREAU FILE NO.
SECTION, ELEVATION & DETAIL	SL-5398
DIESEL MOTOR	1-F-20
CM. CONTROLLER	48-31
	622537



WEIGHT - ONE UNIT

ITEM	WEIGHT
UNIT COMPLETE	238#
PUMP	68#
MOTOR & CONTROL	170#
PUMP SPARES	20#
PUMP TOOLS & WRENCHES	2#
MOTOR & CONTROL SPARES	65#

AVP-41  
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LAKE WASHINGTON SHIPYARDS  
 CONTRACT NUMBER NO. 634  
 RD. AVP-17-58

LAKE WASHINGTON SHIPYARDS  
 CONTRACT NUMBER NO. 634  
 RD. AVP-17-62

CORRECTED PLAN  
 See this plan index for verification of  
 Approval of the Plan to any vessel

WORTHINGTON PUMP & MACHINERY CORP.  
 HARRISON, N.J.  
**SL-5398**

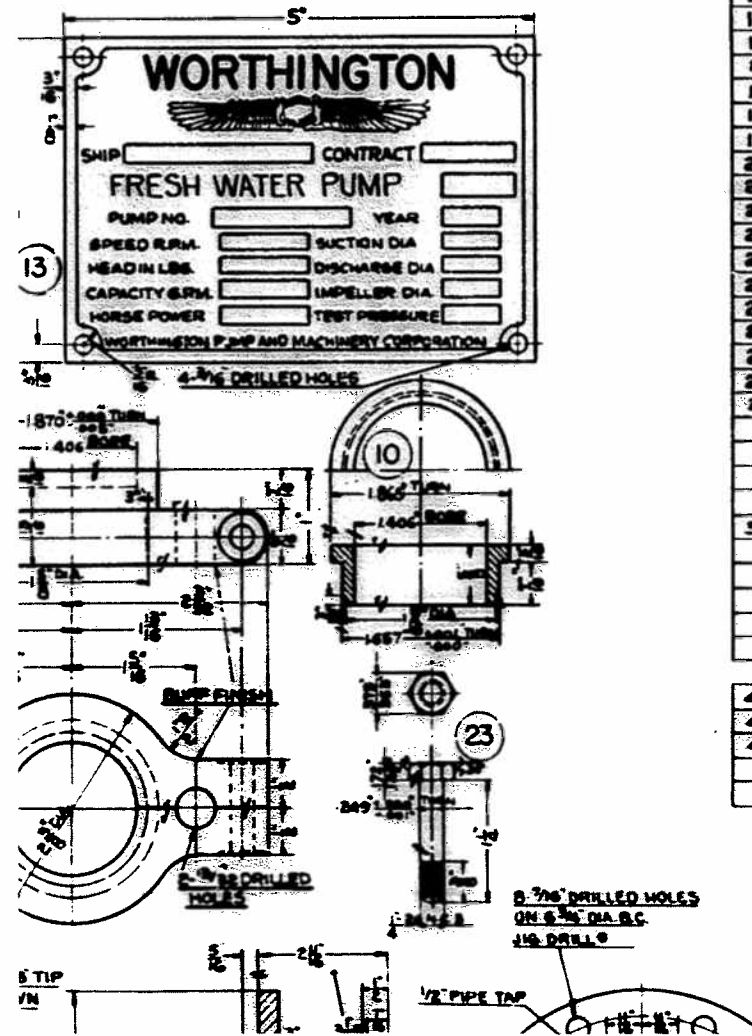
SCALE 3/8" = 1" - LET DRAWN BY E.L.S. DATE 10-28-41  
 TRACED BY E.L.S. CHECKED BY A.A. CHIEF DRAFTSMAN

FORWARDED TO BUREAU APPROVED DATE  
 LETTER NO. DATE  
 REF. SUP. SHEET

PLAN  
 EXAMINED & FOUND CORRECT  
 DATE

HOT WATER CIRCULATING PUMP  
 1 PUMP REQUIRED PER SHIP  
 SECTION, ELEVATION & DETAILS

P-229697 P-233722  
 BUREAU OF SHIPS BASIC NUMBER  
 481901 AIT



**LIST OF MATERIAL**

QUANTITY FOR ONE UNIT-2 UNITS PER SHIP

PIECE NO.	NAME OF PIECE	NO. REQ'D	NO. OF SPARE S.U.P.	MATERIAL	MATERIAL SPECIFICATION	PART NO.	PATT. NO.	REMARKS	DRAWING NUMBERS		UNIT WEIGHT
									CONTRACTOR	BUREAU	
1	CASING	1		NON METAL	46 M6	255270	UH-684R	SEE NOTE 5			
2	SUCTION HEAD	1		NON METAL	46 M6	254678B	DZ-1247	SEE NOTE 5			
3	IMPELLER (L.H. VANES)	1	1	NON METAL	46 M1	255270-1	UB-2588-A	SEE NOTE 5			
4	CASING WEARING RING	2	2	BRONZE	46 B9	166688-B	UC-5024-12				
5	GLAND (SPLIT)	1		NON METAL	46 M6	166688-C	UF-069	SEE NOTE 5			
6	SHAFT SLEEVE	1	1	NON METAL ALLOY	46 N5	167030-E		SEE NOTE 5 & 6			
7	IMPELLER NUT	1	1	BRASS		18100		SEE NOTE #1			
8	IMPELLER NUT WASHER	1	1	BRASS	23 G7	4387P		TYPE 'A' CLASS 'A'			
9	WATER SEAL CASE (SPLIT)	1	1	NON METAL	46 M6	166688-D	UG-3544-12	SEE NOTE 5			
10	THROAT BUSHING	1	1	NAVAL ROLLED BR	46 B6	172695-E		HALF HARD-TYPE I			
11	SHAFT	1	1	NON METAL ALLOY	46 M7			SEE NOTE #2 & 7			
12	IMPELLER KEY 3/8" x 3/8" x 1 1/2"	1	1	NON METAL ALLOY	46 M7			SEE NOTE #2 & 7			
13	NAMEPLATE (CAST)	1		BRASS	42 N2			COMM'L. TYPE-D			
14	BUT. HO. MACHINE SCREW 3/8" x 3/4"	4		BRASS	42 S5	15784		COMM'L.			
15	STUD 3/8" x 1 1/2"	8		NAVAL ROLLED BR	43 B11			HALF HARD-TYPE I			
16	STUD 3/8" x 1 1/2"	4		C.L.C. BR.	43 B11						
17	GLAND STUD 3/8" x 1 1/2"	2		NAVAL ROLLED BR	43 B11			HALF HARD-TYPE I			
18	HEX NUT 3/8"	10		NAVAL ROLLED BR	43 B11			HALF HARD-TYPE I			
19	PARKER TUBING 1/2" x 1/8" x 6'	6		COPPER				COMM'L.			
20	BASKET 3/8" x 7/8" x 1 1/2" ID.	1		BRASS	33 P13	18993		SYMBOL-2150			
21	PACKING 1/2" x 1 1/2" x 1 1/2" ID.	4	RG5	NON METAL	33 P25			SYMBOL-1433			
22	FL. HO. MACHINE SCREW 3/8" x 3/4"	6	12	NON METAL ALLOY	43 B11			TYPE 'X'			
23	FITTED BOLT 3/8" x 1 1/2"	2		NAVAL ROLLED BR	43 B11			HALF HARD-TYPE I			
24	PARKER FIT. (SFBX)	2		BRASS				COMM'L.			
25	3/8" PIPE PLUG	1		BRONZE	43 B11	15603					
26	SAFETY SET SCREW 3/8" x 3/4"	1	1	STEEL	42 S5	15460		TYPE 'G'			
27	WATER FLINGER	1	1	NAVAL ROLLED BR	46 B6	16732-H		HALF HARD-TYPE I			
28	3/8" HEX NUT FOR PC-23	2		NAVAL ROLLED BR	43 B11			HALF HARD-TYPE I			
29	FLOAT VALVE APC-25V	1		BRASS	46 M6						
30	3/8" HEX NUT	4		C.L.C. BR.	43 B11						
35	CASING WEAR RING	2		JOURNAL BRONZE	46 B9	166688-J	UC-5024-12				

TOOLS PER SHIP (SEE NOTE # 3)

41	WIRE PIN SPINNER 1/8"	1		STEEL				COMM'L.			
42	IMPELLER NUT WRENCH	1		STEEL		18101		COMM'L.			
43	IMPELLER FORCING BOLT	1		C.L.C. BR.	43 B11	179220					

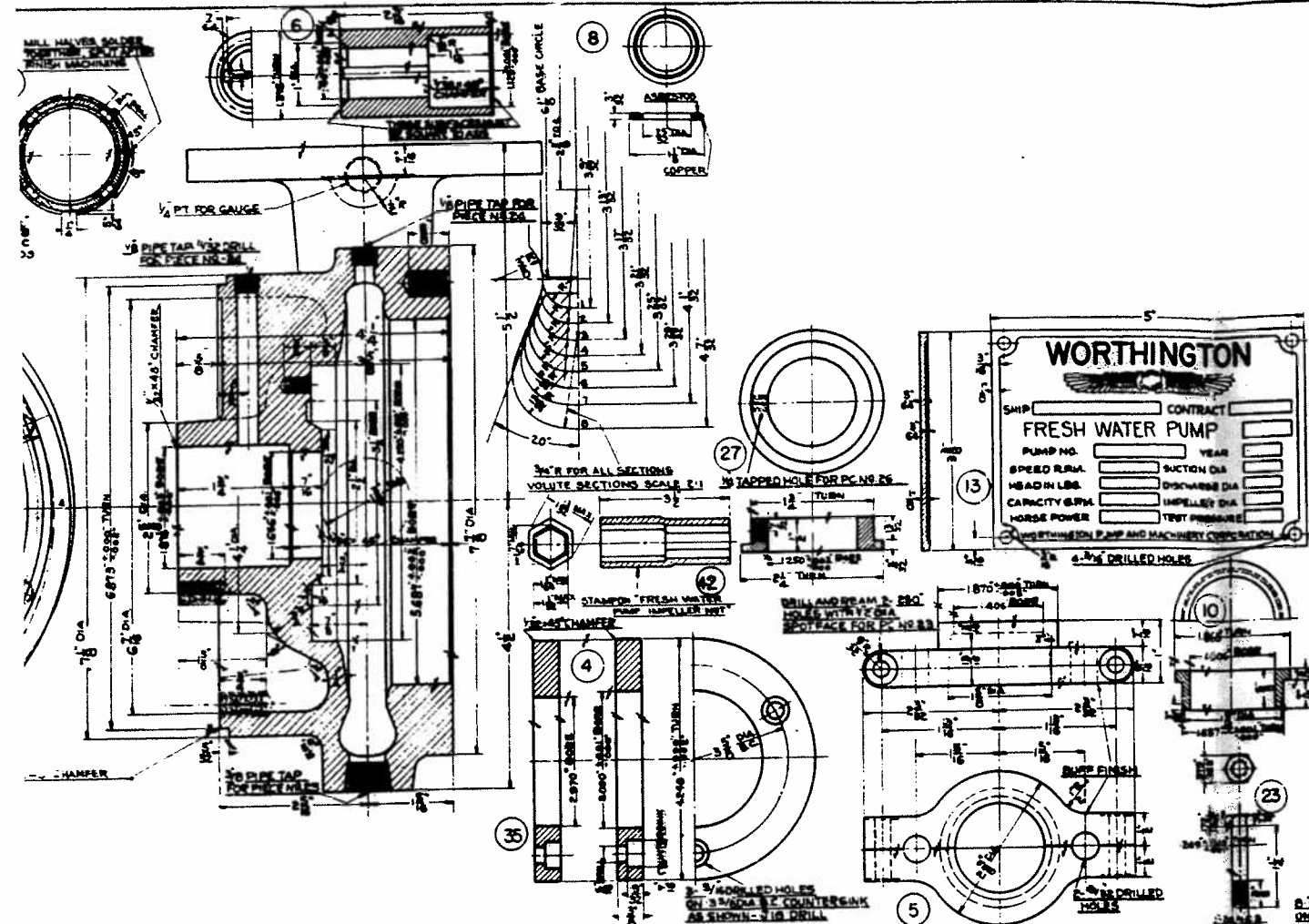
REFERENCE DRAWING LIST

TITLE	NO.	DATE	BY	CHKD.	APP'D.

AVP-41
AVP-40
AVP-39
AVP-38
AVP-37
AVP-36
AVP-35
AVP-34
AVP-33
AGP-9
AGP-8
AVP-53
AVP-54
AVP-53
AVP-52
AVP-51
AVP-50
AVP-49
AVP-48

LAKE WASHINGTON SHipyARDS  
 CONTRACT NO. 634  
 P.O. AVP-XX-58

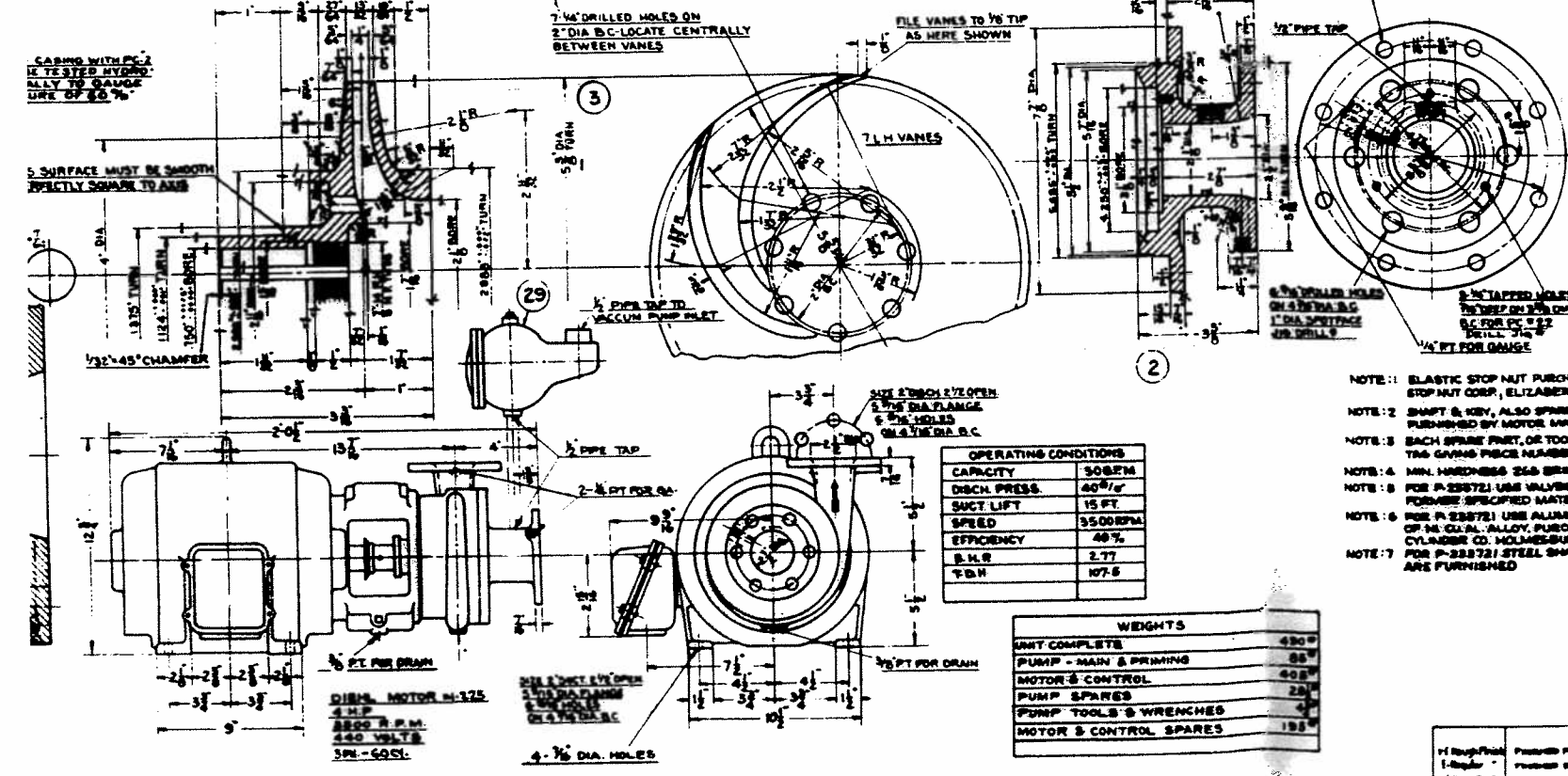
LAKE WASHINGTON SHipyARDS  
 P.O. AVP-X-62  
 CONTRACT NUMBER NOs-634



### LIST OF MATERIAL

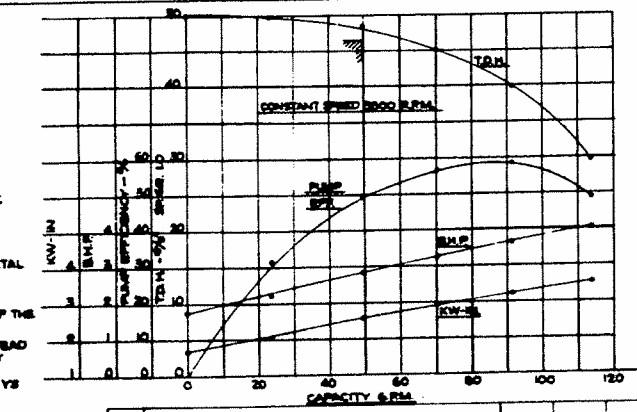
QUANTITY FOR ONE UNIT - 2 UNITS PER SHIP

PIECE NO.	NAME OF PIECE	NO. REQ'D	NO. OF SHIPS	MATERIAL	MATERIAL SPECIFICATION	PART NO.	PATT. NO.	REMARKS	DRAWING NUMBER	UNIT WEIGHT
1	CASING	1	2	CAST IRON	48 M6	255270	18-684R	SEE NOTE 3		
2	ELECTRON HEAD	1	2	CAST IRON	48 M6	254678	DZ-1247	SEE NOTE 5		
3	IMPELLER (L.H. VANS)	1	2	CAST IRON	48 M1	255270-1	UB-288A	SEE NOTE 5		
4	CASING WEARING RING	2	2	CAST IRON	48 B9	166888-C	LC-308A-B			
5	ISLAND (SPLIT)	1	2	CAST IRON	48 M6	166888-C	LF-569	SEE NOTE 5		
6	SHAFT SLEEVE	1	2	CAST IRON	48 N5	107030-E		SEE NOTE #4 & 6		
7	IMPELLER NUT	1	2	BRASS	18100			SEE NOTE #11		
8	IMPELLER NUT WASHER	1	2	BRASS	45679			TYPE 'A'		
9	WATER SEAL CASE (SPLIT)	1	2	CAST IRON	48 M6	166888-C	3F44-12	SEE NOTE 5		
10	THRUST BUSHING	1	2	CAST IRON	48 B6	172635-E		HALF HARD-TYPE I		
11	SHAFT	1	2	CAST IRON	48 M7			SEE NOTE #2 & 7		
12	IMPELLER KEY	1	2	CAST IRON	48 M7			SEE NOTE #2 & 7		
13	NAMEPLATE (CAST)	1	2	BRASS	42 N2			COMM'L. TYPE-D		
14	BUT. HO. MACH. SCREW	4	2	BRASS	42.55	15784		COMM'L.		
15	STUD	4	2	CAST IRON	48 B11			HALF HARD-TYPE I		
16	ISLAND STUD	2	2	CAST IRON	48 B11			HALF HARD-TYPE I		
17	ISLAND STUD	2	2	CAST IRON	48 B11			HALF HARD-TYPE I		
18	HEX NUT	10	2	CAST IRON	48 B11			HALF HARD-TYPE I		
19	WASHER	10	2	CAST IRON	48 B11			COMM'L.		
20	GASKET	1	2	BRASS	33 P18	18993		SYMBOL-2150		
21	PACKING	1	2	BRASS	33 P18			SYMBOL-1433		
22	FL. HO. MACH. SCREW	0	2	BRASS	42.55			TYPE 'X'		
23	FITTED BOLT	2	2	CAST IRON	48 B11			HALF HARD-TYPE I		
24	WASHER	2	2	CAST IRON	48 B11			COMM'L.		
25	PIPE PLUG	1	2	BRASS	48 B5	15603				
26	SAFETY SET SCREW	1	2	STEEL	48 B5	15460		TYPE 'D'		
27	WASHER FLUMBER	1	2	CAST IRON	48 B6	16732-H		HALF HARD-TYPE I		
28	HEX. NUT FOR PC	2	2	CAST IRON	48 B11			HALF HARD-TYPE I		
29	FLAT VALVE APC	1	2	BRASS	48 M6					
30	HEX NUT	4	2	CAST IRON	48 B11					
35	CASING WEAR RING	2	2	CAST IRON	48 B9	166888-J	UC-5024-12			



**REFERENCE DRAWING LIST**

TITLE	TR. P. IN COMP. DRG. IN BUREAU FILE NO.
SECTION, ELEVATION & DETAILS	SL-5270 481799
PRIMING PUMP, SECT. ELEV. & DETAILS	SL-5271 481800
DIAM. MOTOR	1-P-12 481811
DIAM. MOTOR	1-P-11 481892
C.H. CONTROLLER	6830 523534



AVP-41  
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AVP-7  
AVP-6  
AVP-5  
AVP-4  
AVP-3  
AVP-2  
AVP-1

LAKE WASHINGTON SHIPYARDS  
CONTRACT NO. 634  
P.O. AVP-1X-58

LAKE WASHINGTON SHIPYARDS  
P.O. AVP-1X-52  
CONTRACT NUMBER NO. 634

**WORTHINGTON PUMP & MACHINERY CORP.**  
HARRISON, N.J.  
**SL-5270**

SCALE 3/8" = 1" FT. DRAWN BY LITHO. DATE 12-17-51  
TRACED BY J.P. CHECKED BY A.A. CHIEF DRAFTSMAN

FORWARDED TO BUREAU LETTER NO. \_\_\_\_\_ APPROVED DATE \_\_\_\_\_  
 SUPERVISOR OF SHIPYARD WORKS REE SUP SHIP LET.

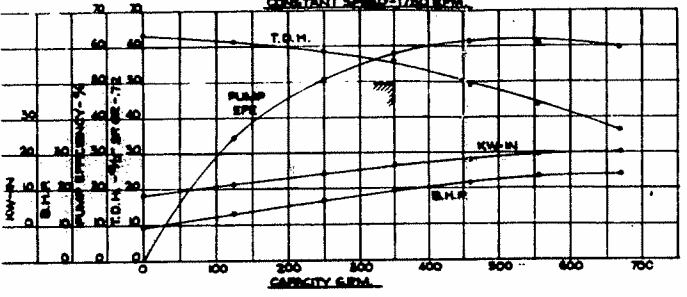
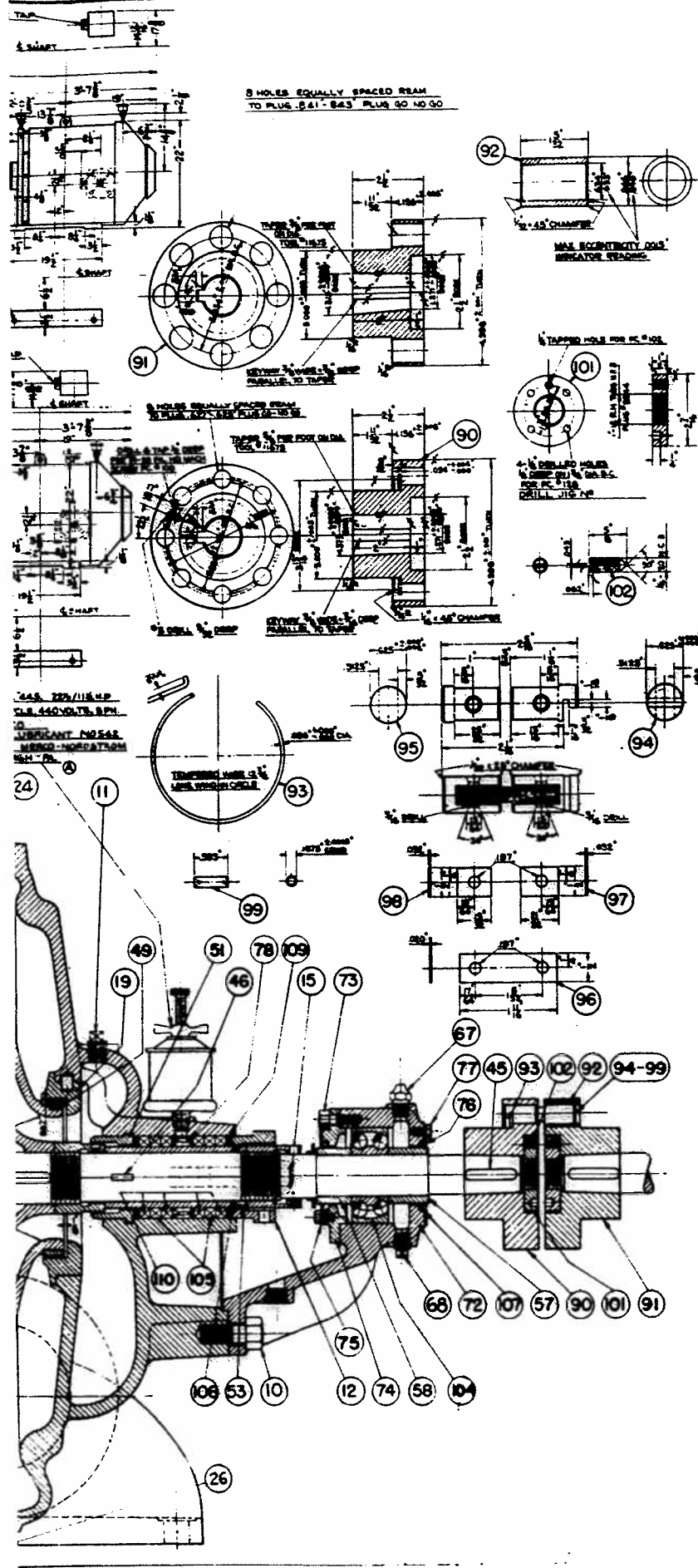
PLANNED & FOUND CORRECT  
DATE 9/22/52 FOR SHIPYARD WORKS

**FRESH WATER PUMP**  
2 PUMPS REQUIRED PER SHIP  
**SECTION, ELEVATION & DETAILS**

W-255271 P-255271  
**BUREAU OF SHIPS BASIC NUMBER**  
481790 A17

**TOLERANCE:**  
 ALL DIMENSIONS UNLESS OTHERWISE NOTED  
 FRACTIONS SHALL BE IN DECIMALS  
 ALL DIMENSIONS SHALL BE TO UNLESS OTHERWISE NOTED  
 ALL DIMENSIONS SHALL BE TO UNLESS OTHERWISE NOTED  
 ALL DIMENSIONS SHALL BE TO UNLESS OTHERWISE NOTED





REFERENCE PLANS		
TITLE	NO.	REV.
SECTION, ELEVATION & DETAILS	SL-5267	481851
CASING & DETAILS	SL-5268	481852
IMPELLER, SHAFT & DETAILS	SL-5269	481853
LOUIS-ALLIS MOTOR	38901	481876
CL CONTROLLER	4823	481877

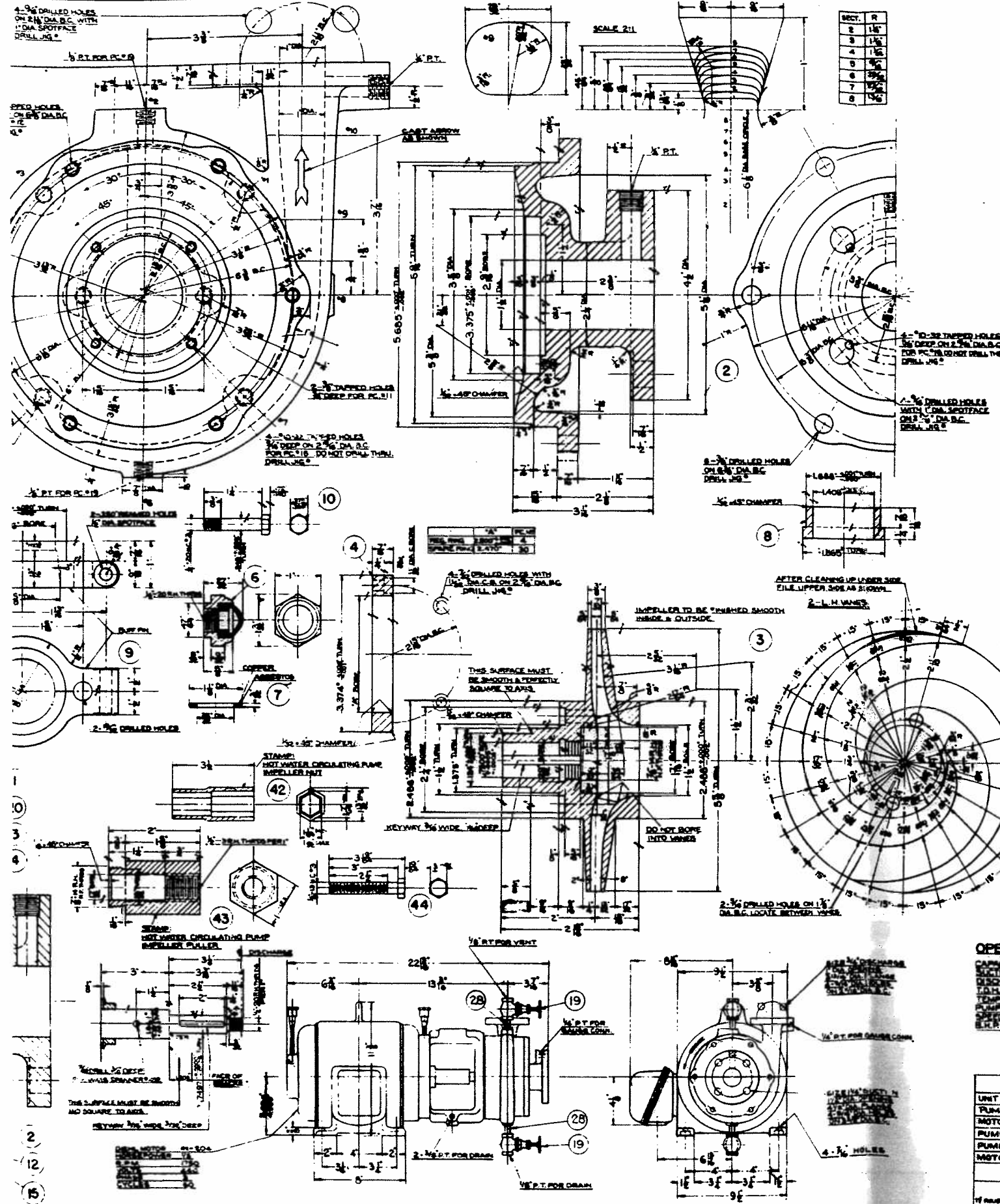
**OPERATING CONDITIONS**

CAPACITY	300 G.P.M.
DRIVE FREQUENCY	50% <sup>1</sup>
SUBMERGENCE	3 FT.
TOTAL DYN. HD.	127.5 FT.
SPEED	1750 R.P.M.
SPEC. GRVITY	0.75
EFFICIENCY	75%
BRAKE H.P.	63.5

- NOTE 1- PURCHASE FROM LUAKENHEIMER CO. CINCINNATI, OHIO  
 NOTE 2- SPECIAL BRONZE OF THE FOLLOWING PROPERTIES SUBSTITUTED: COPPER 98.73%  
 TIN 0.27%, GRAPHITE 1.5% AFTER BUSHINGS ARE COMPRESSED THEY ARE PUT  
 INTO A HOT WAX BATH THEREBY ADDING 10-15% WAX COMPRESSION  
 STRENGTH 30,000 PSI MANUFACTURED BY JOHN WALDRON CORP NEW BRUNSWICK, N.J.  
 NOTE 3- PURCHASE FROM CRANE CO. JERSEY CITY, N.J.  
 NOTE 4- PURCHASE FROM PACKING ENGINEERING CORP. GRANFORD, N.J.  
 (GENERAL PACKING OR ONE SUPPLIER THERE)  
 NOTE 5- PURCHASE FROM PACKING ENGINEERING CORP. GRANFORD, N.J.  
 NOTE 6- FOR P-233720, VALVE BEYOND WILL BE USED INSTEAD OF GUN METAL.

**LIST OF MATERIAL**

P/N	NAME OF PART	QTY	MATERIAL	MATERIAL SPECIFICATION	PART NO.	PART NO.	REMARKS	QUANTITY FOR ONE UNIT - 2 UNITS PER SHIP	
								BUREAU	UNIT
1	CASING - UPPER HALF	1	BRONZE	481851	254676	UH-452-P	SEE NOTE #6	SL-5268	
2	CASING - LOWER HALF	1	BRONZE	481852	254677	LH-452-P	SEE NOTE #6	SL-5268	
10	HEX. NUT	5	STEEL	481853	254678	UH-451-P	HALF HARD-TYPE 1		
11	PIPE PLUG	2	BRONZE	481854	18603				
12	BLANK (HALVES)	2	BRONZE	481855	170314-A	UF-453-P	SEE NOTE #6		
13	BLANK SWAGE BOLT	4	BRONZE	481856	254679	UH-451-P	HALF HARD-TYPE 1		
14	HEX. NUT	18	STEEL	481857	254680		HALF HARD-TYPE 1		
15	DRIVE WHEELS RING	2	BRONZE	481858	170314-C	UC-5150			
20	PIN	8	BRONZE	481859	170314-F		HALF HARD-TYPE 1		
23	1/4\"/>								
24	1/2\"/>								
25	3/8\"/>								
26	1/4\"/>								
43	SHAFT	1	CRS 7	481860	254677			SL-5269	
44	IMPELLER KEY	1	CRS 7	481861	170314-A				
45	IMPELLER KEY	1	CRS 7	481862	254677				
46	IMPELLER KEY	2	CRS 7	481863	170314-A				
47	IMPELLER	1	BRONZE	481864	867181	UH-3463-B	SEE NOTE #6		
48	IMPELLER WEAR RING	2	BRONZE	481865	170314-B	UC-5250-G	SEE NOTE #6		
49	IMPELLER NUT	2	STEEL	481866	254677		TYPE 1		
50	IMPELLER NUT	2	STEEL	481867	254677		TYPE 2		
51	THRUST BUSHING	2	BRONZE	481868	170314-P	UF-3260	SEE NOTE #6		
52	SHAFT SLEEVE	2	CRS 7	481869	254677				
53	SHAFT SLEEVE GLAND	2	CRS 7	481870	170314-H				
54	SHAFT NUT	2	CRS 7	481871	254677				
55	SAFETY KEY SCR.	2	ST.	481872	15460		TYPE 'G'		
56	WATER SHIELD	2	CRS 7	481873	254677A				
57	LINE BRG. BUSHING	1	CL. B. ST.	481874	254677				
58	SHAFT COLLAR	2	CL. B. ST.	481875	254677				
59	BALL BEARING NUT	1	CL. B. ST.	481876	170314-L				
60	IMPELLER KEY	1	CRS 7	481877	254677				
61	IMPELLER KEY	1	CRS 7	481878	254677				
62	IMPELLER KEY	1	CRS 7	481879	254677				
63	IMPELLER KEY	1	CRS 7	481880	254677				
64	IMPELLER KEY	1	CRS 7	481881	254677				
65	IMPELLER KEY	1	CRS 7	481882	254677				
66	IMPELLER KEY	1	CRS 7	481883	254677				
67	IMPELLER KEY	1	CRS 7	481884	254677				
68	IMPELLER KEY	1	CRS 7	481885	254677				
69	IMPELLER KEY	1	CRS 7	481886	254677				
70	IMPELLER KEY	1	CRS 7	481887	254677				
71	IMPELLER KEY	1	CRS 7	481888	254677				
72	IMPELLER KEY	1	CRS 7	481889	254677				
73	IMPELLER KEY	1	CRS 7	481890	254677				
74	IMPELLER KEY	1	CRS 7	481891	254677				
75	IMPELLER KEY	1	CRS 7	481892	254677				
76	IMPELLER KEY	1	CRS 7	481893	254677				
77	IMPELLER KEY	1	CRS 7	481894	254677				
78	IMPELLER KEY	1	CRS 7	481895	254677				
79	IMPELLER KEY	1	CRS 7	481896	254677				
80	IMPELLER KEY	1	CRS 7	481897	254677				
81	IMPELLER KEY	1	CRS 7	481898	254677				
82	IMPELLER KEY	1	CRS 7	481899	254677				
83	IMPELLER KEY	1	CRS 7	481900	254677				
84	IMPELLER KEY	1	CRS 7	481901	254677				
85	IMPELLER KEY	1	CRS 7	481902	254677				
86	IMPELLER KEY	1	CRS 7	481903	254677				
87	IMPELLER KEY	1	CRS 7	481904	254677				
88	IMPELLER KEY	1	CRS 7	481905	254677				
89	IMPELLER KEY	1	CRS 7	481906	254677				
90	IMPELLER KEY	1	CRS 7	481907	254677				
91	IMPELLER KEY	1	CRS 7	481908	254677				
92	IMPELLER KEY	1	CRS 7	481909	254677				
93	IMPELLER KEY	1	CRS 7	481910	254677				
94	IMPELLER KEY	1	CRS 7	481911	254677				
95	IMPELLER KEY	1	CRS 7	481912	254677				
96	IMPELLER KEY	1	CRS 7	481913	254677				
97	IMPELLER KEY	1	CRS 7	481914	254677				
98	IMPELLER KEY	1	CRS 7	481915	254677				
99	IMPELLER KEY	1	CRS 7	481916	254677				
100	IMPELLER KEY	1	CRS 7	481917	254677				
101	IMPELLER KEY	1	CRS 7	481918	254677				
102	IMPELLER KEY	1	CRS 7	481919	254677				
103	IMPELLER KEY	1	CRS 7	481920	254677				
104	IMPELLER KEY	1	CRS 7	481921	254677				
105	IMPELLER KEY	1	CRS 7	481922	254677				
106	IMPELLER KEY	1	CRS 7	481923	254677				
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133	IMPELLER KEY	1	CRS 7	481950	254677				
134	IMPELLER KEY	1	CRS 7	481951	254677				
135	IMPELLER KEY	1	CRS 7	481952	254677				
136	IMPELLER KEY	1	CRS 7	481953	254677				
137	IMPELLER KEY	1	CRS 7	481954	254677				
138	IMPELLER KEY	1	CRS 7	481955	254677				
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140	IMPELLER KEY	1	CRS 7	481957	254677				
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143	IMPELLER KEY	1	CRS 7	481960	254677				
144	IMPELLER KEY	1	CRS 7	481961	254677				
145	IMPELLER KEY	1	CRS 7	481962	254677				
146	IMPELLER KEY	1	CRS 7	481963	254677				
147	IMPELLER KEY	1	CRS 7	481964	254677				
148	IMPELLER KEY	1	CRS 7	481965	254677				
149	IMPELLER KEY	1	CRS 7	481966	254677				
150	IMPELLER KEY	1	CRS 7	481967	254677				
151	IMPELLER KEY	1	CRS 7	481968	254677				
152	IMPELLER KEY	1	CRS 7	481969	254677				
153	IMPELLER KEY	1	CRS 7	481970	254677				
154	IMPELLER KEY	1	CRS 7	481971	254677				
155	IMPELLER KEY	1	CRS 7	481972	254677				
156	IMPELLER KEY	1	CRS 7	481973					



### LIST OF MATERIAL

QUANTITY FOR ONE UNIT - 1 UNIT PER SHIP

PIECE NO.	NAME OF PIECE	NO. REQ'D	MATERIAL	SPECIFICATION	PART NO.	PATT. NO.	REMARKS	DRAWING NUMBER	WEIGHT
1	CASING	1	GUN METAL	40-M-8	25308-1	UH-K42-B	SEE NOTE 5		
2	SUCTION HEAD	1	GUN METAL	40-M-8	25308-2	DZ-107-F	SEE NOTE 5		
3	IMPELLER (L.H. VANES)	1	GUN METAL	40-M-8	25308-3	UH-3433-F	SEE NOTE 5		
4	CASING WEARING RING	2	BRASS	40-B-9	25308-4	UH-4688-5			
5	SHAFT	1	STEEL	40-M-7	18784		SEE NOTE 2 & 7		
6	IMPELLER NUT	1	BRASS	40-B-11	43-B-11		GRADE 8		
7	IMPELLER NUT WASHER	1	BRASS	40-B-11	43-B-11				
8	THRUST BRUSHING	1	BRASS	40-B-11	43-B-11				
9	GLAND STUD	2	STEEL	40-M-7	18784				
10	IMPELLER KEY	1	STEEL	40-M-7	18784				
11	IMPELLER STUD	2	STEEL	40-M-7	18784				
12	IMPELLER STUD	2	STEEL	40-M-7	18784				
13	IMPELLER STUD	2	STEEL	40-M-7	18784				
14	HEX NUT	4	CL B M	43-B-11					
15	HEX NUT	6	CL B M	43-B-11					
16	IMPELLER KEY	1	STEEL	40-M-7	18784				
17	IMPELLER KEY	1	STEEL	40-M-7	18784				
18	IMPELLER KEY	1	STEEL	40-M-7	18784				
19	IMPELLER KEY	1	STEEL	40-M-7	18784				
20	IMPELLER KEY	1	STEEL	40-M-7	18784				
21	IMPELLER KEY	1	STEEL	40-M-7	18784				
22	IMPELLER KEY	1	STEEL	40-M-7	18784				
23	IMPELLER KEY	1	STEEL	40-M-7	18784				
24	IMPELLER KEY	1	STEEL	40-M-7	18784				
25	IMPELLER KEY	1	STEEL	40-M-7	18784				
26	IMPELLER KEY	1	STEEL	40-M-7	18784				
27	IMPELLER KEY	1	STEEL	40-M-7	18784				
28	IMPELLER KEY	1	STEEL	40-M-7	18784				
29	IMPELLER KEY	1	STEEL	40-M-7	18784				
30	CASING WEARING RING	2	BRASS	40-B-9	25308-4	UH-4688-5			

### TOOLS PER SHIP (SEE NOTE 3)

41	PIN SPANNER W/MS 1/2"	1	STEEL				COMM.		
42	IMP NUT WRENCH	1	STEEL		1510		COMM.		
43	IMPELLER PULLER	1	CL B M	43-B-2	25493-C				
44	1/4" TREE HOOK FOR 43	1	CL B M	43-B-11					

NOTE 1: MINIMUM HARDNESS 205 BRINELL.

NOTE 2: SHAFT & IMPELLER KEY & SPARE SHAFT & IMPELLER KEY FURNISHED BY MOTOR MANUFACTURER.

NOTE 3: EACH SPARE PART WRENCH OR TOOL SHALL HAVE A METAL TAG GIVING PIECE NO.

NOTE 4: PURCHASED FROM CRANE CO. FERRY CITY, N.J.

NOTE 5: FOR P-233722 USE ALUM. INSTEAD OF GUN METAL.

NOTE 6: FOR P-233722 USE ALUM. INSTEAD OF GUN METAL.

NOTE 7: FOR P-233722 STEEL IMPELLER AND IMPELLER KEY ARE FURNISHED.

REFERENCE DRAWING LIST

TITLE	REF. NO.	SECTION ELEVATION & DETAILS	BUREAU FILE NO.
SECTION ELEVATION & DETAILS	SL-5398		481601
IMPELLER MOTOR	1-P-20		481693
CH. CONTROLLER	4831		522537

**WORTHINGTON**

SHIP \_\_\_\_\_ CONTRACT \_\_\_\_\_

**HOT WATER CIRCULATING PUMP**

PUMP NO. \_\_\_\_\_ YEAR \_\_\_\_\_

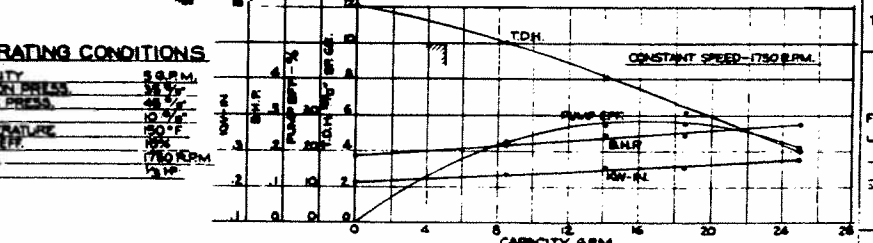
SPEED R.P.M. \_\_\_\_\_ SUCTION DIA. \_\_\_\_\_

HEAD IN LBS. \_\_\_\_\_ DISCHARGE DIA. \_\_\_\_\_

CAPACITY G.P.M. \_\_\_\_\_ IMPELLER DIA. \_\_\_\_\_

HORSE POWER \_\_\_\_\_ TEST PRESSURE \_\_\_\_\_

WORTHINGTON PUMP & MACHINERY CORPORATION



### WEIGHT - ONE UNIT

UNIT COMPLETE	2380
PUMP	680
MOTOR & CONTROL	1700
PUMP SPARES	20#
PUMP TOOLS & WRENCHES	2#
MOTOR & CONTROL SPARES	85#

TOLERANCE

ALL DIMENSIONS ARE NOMINAL, FROM COARSE TO FINEST DIMENSIONS UNLESS OTHERWISE NOTED.

WHERE DIMENSIONS ARE GIVEN IN INCHES, FRACTIONS SHALL BE IN DECIMALS OF AN INCH.

WHERE DIMENSIONS ARE GIVEN IN MILLIMETERS, FRACTIONS SHALL BE IN DECIMALS OF A MILLIMETER.

WHERE DIMENSIONS ARE GIVEN IN BOTH INCHES AND MILLIMETERS, THE MILLIMETER DIMENSION SHALL BE THE GOVERNING DIMENSION.

ALL MATERIAL TO BE IN ACCORDANCE WITH SPECIFICATIONS FOR INSPECTION OF MATERIALS UNDER BUREAU OF SHIPS CONTRACT.

AVP-41

AVP-40

AVP-39

AVP-38

AVP-37

AVP-36

AVP-35

AVP-34

AVP-33

AVP-32

AVP-31

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AVP-29

AVP-28

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AVP-25

AVP-24

AVP-23

AVP-22

AVP-21

AVP-20

AVP-19

AVP-18

AVP-17

AVP-16

AVP-15

AVP-14

AVP-13

AVP-12

AVP-11

AVP-10

AVP-9

AVP-8

AVP-7

AVP-6

AVP-5

AVP-4

AVP-3

AVP-2

AVP-1

CORRECTED PLAN

WORTHINGTON PUMP & MACHINERY CORP.  
HARRISON, N.J.

**SL-5398**

SCALE 1/8" = 1" - 1/2" LET DRAWN BY F.L.B. DATE 10-28-41

TRACED BY F.L.B. CHECKED BY A.A. CHIEF DRAFTSMAN

FORWARDED TO BUREAU LETTER NO. \_\_\_\_\_ APPROVED DATE \_\_\_\_\_

REF. SUP. SHEET \_\_\_\_\_

PLAN

EXAMINED & FOUND CORRECT DATE \_\_\_\_\_

**HOT WATER CIRCULATING PUMP**

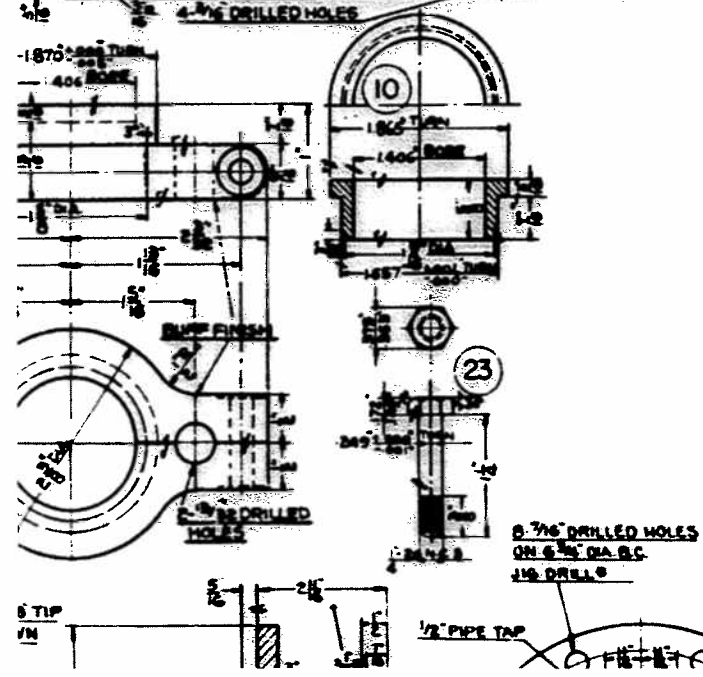
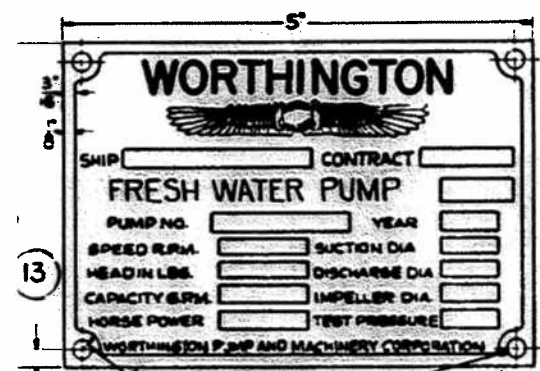
SECTION, ELEVATION & DETAILS

P-229697 P-233722

BUREAU OF SHIPS BASIC NUMBER

481601 ALT





**LIST OF MATERIAL**

QUANTITY FOR ONE UNIT-2 UNITS PER SHIP

PIECE NO.	NAME OF PIECE	NO. REQ'D	NO. OF SHIPS	MATERIAL	MATERIAL SPECIFICATION	PART NO.	PATT. NO.	REMARKS	DRAWING NUMBERS		UNIT WEIGHT
									CONTRACTOR	BUREAU	
1	CASING	1		BRONZE	46 M6	255270	LH-684R	SEE NOTE 5			
2	SUCTION HEAD	1		BRONZE	46 M6	254678B	DZ-1247	SEE NOTE 5			
3	IMPELLER (L.H. VANS)	1	1	BRONZE	46 M1	255270-1	UB-255B-4	SEE NOTE 5			
4	CASING WEARING RING	2	2	BRONZE	46 B9	166688-G	UC-5024-12				
5	BLAND (SPLIT)	1		BRONZE	46 M6	166688-C	UF-069	SEE NOTE 5			
6	SHAFT SLEEVE	1	1	BRONZE	46 N5	187030-E		SEE NOTE #4			
7	IMPELLER NUT	1	1	BRASS		18100		SEE NOTE #1			
8	IMPELLER NUT WASHER	1	1	BRASS	43 B7	45879		TYPE 'A' FLAKE			
9	WATER SEAL CASE (SPLIT)	1	1	BRONZE	46 M6	166688-D	UG-3546-12	SEE NOTE 5			
10	THROAT BUSHING	1	1	BRONZE	46 B6	172695-E		HALF HARD-TYPE I			
11	SHAFT	1	1	BRONZE	46 M7			SEE NOTE #2 & 7			
12	IMPELLER KEY 3/8 x 3/8 x 1 1/2	1	1	BRONZE	46 M7			SEE NOTE #2 & 7			
13	NAMEPLATE (CAST)	1		BRASS	42 N2			COMM'L. TYPE-D			
14	BUT. NUT WASH. SCR. 1/2 x 3/4	4		BRASS	42 S5	15784		COMM'L.			
15	STUD 3/8 x 1 1/2	4		BRASS	43 B11			HALF HARD-TYPE I			
16	STUD 3/8 x 1 1/2	4		BRASS	43 B11			HALF HARD-TYPE I			
17	GLAND STUD 3/8 x 1 1/2	2		BRASS	43 B11			HALF HARD-TYPE I			
18	HEX NUT 3/8	10		BRASS	43 B11			HALF HARD-TYPE I			
19	WASHER 1/2 x 3/4	5		COPPER				COMM'L.			
20	GASKET 1/2 x 3/4	1		BRASS	43 P18	18995		SYMBOL-2150			
21	PACKING 1/2 x 3/4	1		BRASS	33 P25			SYMBOL-1433			
22	FL. NUT WASH. SCR. 1/2 x 3/4	6	12	BRASS	42 S5			TYPE 'X'			
23	FITTED BOLT 1/2 x 1 1/2	2		BRASS	42 S5			HALF HARD-TYPE I			
24	WASHER 1/2 x 3/4	2		BRASS				COMM'L.			
25	1/2 PIPE PLUG	1		BRONZE	46 B9	15603					
26	SAFETY SET SCREW 1/2	1	1	STEEL	48 B5	15460		TYPE 'G'			
27	WATER FLINGER	1	1	BRONZE	46 B6	16732-H		HALF HARD-TYPE I			
28	1/2 HEX. NUT FOR PC-F23	2		BRASS	43 B11			HALF HARD-TYPE I			
29	FLOAT VALVE APC-23V	1		BRASS	46 M6						
30	1/2 HEX. NUT	4		CLC BM	43 B11						
35	CASING WEARING RING	2		JOURNAL BRONZE	46 B9	166688-J	UC-5024-12				
41	WASHER PIN SPINNER 1/2	1		STEEL				COMM'L.			
42	IMPELLER NUT WRENCH	1		STEEL		18101		COMM'L.			
43	IMPELLER FORCING BOL	1		CLC BM	43 B11	179220					

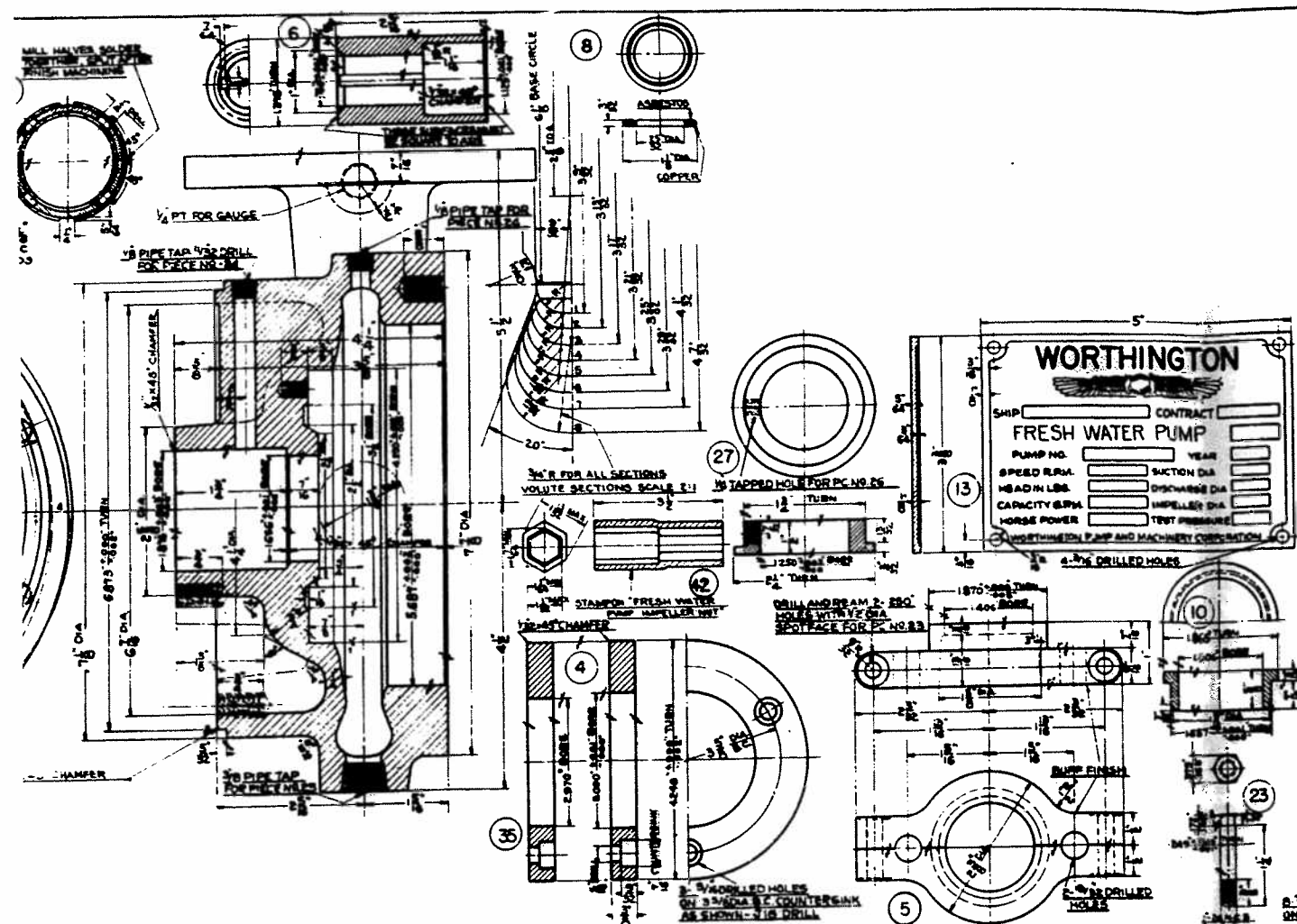
TOOLS PER SHIP (SEE NOTE # 3)

REFERENCE DRAWING LIST	
1	WORTHINGTON PUMP AND MACHINERY CORPORATION

AVP-41
AVP-40
AVP-39
AVP-38
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AVP-36
AVP-35
AVP-34
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AVP-55
AVP-54
AVP-53
AVP-52
AVP-51
AVP-50
AVP-49
AVP-48

LAKE WASHINGTON SHIPYARDS  
CONTRACT NO. 634  
P.O. AVP-XX-58

LAKE WASHINGTON SHIPYARDS  
P.O. AVP-X-62  
CONTRACT NUMBER NOs - 634



**WORTHINGTON**

SHIP CONTRACT

**FRESH WATER PUMP**

PUMP NO. \_\_\_\_\_ YEAR \_\_\_\_\_

SPEED RPM \_\_\_\_\_ SECTION DIA \_\_\_\_\_

HEAD IN LBS \_\_\_\_\_ DISCHARGE DIA \_\_\_\_\_

CAPACITY GPM \_\_\_\_\_ IMPELLER DIA \_\_\_\_\_

HORSE POWER \_\_\_\_\_ TEST PRESSURE \_\_\_\_\_

WORTHINGTON PUMP AND MACHINERY CORPORATION

**LIST OF MATERIAL**

QUANTITY FOR ONE UNIT-2 UNITS PER SHIP

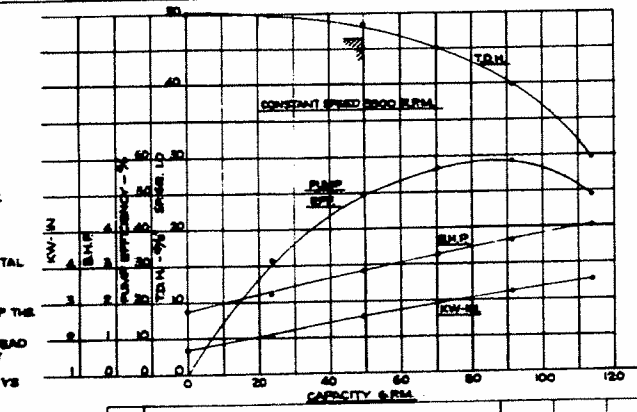
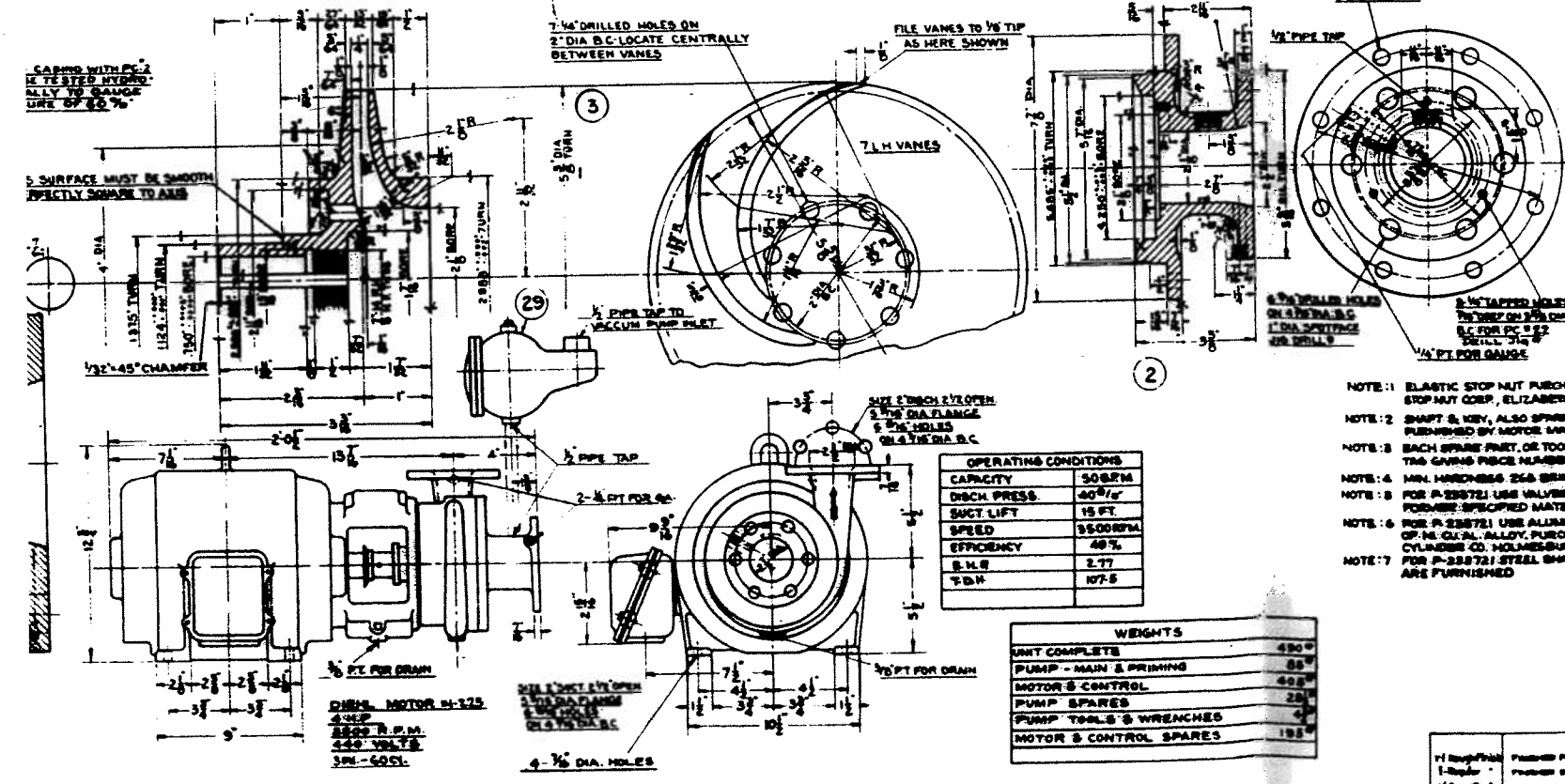
PIECE NO.	NAME OF PIECE	NO. REQ'D	MA. OF SHIP	MATERIAL SPECIFICATION	PART NO.	PATE NO.	REMARKS	DRAWING NUMBER	UNIT WEIGHT
1	CASING	1		46 M6	255270	18-6847	SEE NOTE 3		
2	SECTION HEAD	1		46 M6	254678	DZ-1247	SEE NOTE 3		
3	IMPELLER (11 VANES)	1		46 M1	255270-1	UB-2329-A	SEE NOTE 3		
4	CASING WEARING RING	2		46 B9	166288-4	UC-5024-H			
5	ISLAND (SPLIT)	1		46 M6	166288-C	UP-5649	SEE NOTE 5		
6	SHAFT SLEEVE	1		46 N5	167030-E		SEE NOTE 11 & 2		
7	IMPELLER NUT	1		BRASS	18101		SEE NOTE 11		
8	IMPELLER NUT WASHER	1		BRASS	3337	45679	TYPE 3		
9	WATER SEAL GASKET	1		46 M6	166288-D	UC-3141-E	SEE NOTE 5		
10	THROAT BUSHING	1		46 B6	172695-E		HALF HARD-TYPE I		
11	SHAFT	1		46 M7			SEE NOTE 11 & 2		
12	IMPELLER KEY	1		46 M7			SEE NOTE 11 & 2		
13	WASHER PLATE (CAST)	1		BRASS	42 N2		COMM'L. TYPE-D		
14	BUSHING (MACHINED)	4		BRASS	42-55	15764	COMM'L.		
15	STUD	8		46 B11			HALF HARD-TYPE I		
16	STUD	4		46 B11			HALF HARD-TYPE I		
17	ISLAND STUD	2		46 B11			HALF HARD-TYPE I		
18	HEX NUT	10		46 B11			COMM'L.		
19	WASHER	6		COPPER	18993		SYMBOL-1150		
20	GASKET	1		33 P25	18993		SYMBOL-1433		
21	FRAMING	1		46 B11			TYPE 3		
22	FL. WASH. SCREW	6		46 B11			HALF HARD-TYPE I		
23	FITTED BOLT	2		46 B11			COMM'L.		
24	WASHER	2		BRASS			TYPE G		
25	PIPE PLUG	1		BRASS	21 K1	15603	TYPE G		
26	SAFETY SET SCREW	1		STEEL	48 B8	15460	HALF HARD-TYPE I		
27	WATER FLINGER	1		46 B6		16732-H	HALF HARD-TYPE I		
28	HEX NUT FOR PC NO. 2	2		BRASS	46 M6		HALF HARD-TYPE I		
29	FLAT VALVE APC NO. 1	1		BRASS	46 M6				
30	HEX NUT	2		CL.C. B.M.	45 B11				
35	CASING WEAR RING	2		46 B9	166288-J	UC-5024-I2			

**TOOLS PER SHIP (SEE NOTE 3)**

41	IMPELLER SPINNER	1	STEEL	COMM'L.
42	IMPELLER NUT WRENCH	1	STEEL	18101
43	IMPELLER FORCING BOLT	1	CL.C. B.M.	45 B11 179220

**REFERENCE DRAWING LIST**

TITLE	W.P. & CORR. DRG. NO.	BUREAU FILE NO.
SECTION, ELEVATION & DETAILS	SL-5270	481799
PRIMING PUMP, SECT. ELEV. & DETAILS	SL-5271	481800
DRIVE MOTOR	1-P-12	481801
DRIVE MOTOR	1-P-11	481802
C.H. CONTROLLER	4630	512634



- NOTE 1: ELASTIC STOP NUT PURCHASED FROM ELASTIC STOP NUT CORP., ELIZABETH, N.J.
- NOTE 2: SHAFT & KEY, ALSO SPRING SHAFT & KEY PURCHASED BY MOTOR MANUFACTURER.
- NOTE 3: EACH SPARE PART OR TOOL SHALL HAVE A METAL TAG GIVING PRICE NUMBER.
- NOTE 4: MIN. HARDNESS 250 BRINELL.
- NOTE 5: FOR P-23272 USE VALVESEALERS, INSTEAD OF THE FORGING SPECIFIED MATERIAL.
- NOTE 6: FOR P-23271 USE ALUMINUM BRONZE, INSTEAD OF N. C. AL. ALLOY. PURCHASE FROM JARNEY CYLINDER CO., HOLMESBURG, PENN.
- NOTE 7: FOR P-23272 STEEL SHAFTS AND STEEL KEYS ARE FURNISHED.

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LAKE WASHINGTON SHIPYARDS  
CONTRACT NO. 634  
P.O. NO. 11-58

LAKE WASHINGTON SHIPYARDS  
P.O. NO. 11-58  
CONTRACT NUMBER NO. 634

**WORTHINGTON PUMP & MACHINERY CORP.**  
HARRISON, N. J.

**SL-5270**

SCALE 3/8" = 1" FT. DRAWN BY LITHO. DATE 12-17-51

TRACED BY J.P. CHECKED BY A.A. CHIEF DRAFTSMAN

FORWARDED TO BUREAU LETTER NO. \_\_\_\_\_ APPROVED DATE \_\_\_\_\_

**PLAN**

EXAMINED & FOUND CORRECT DATE 9/12/51

**FRESH WATER PUMP**  
2 PUMPS REQUIRED PER SHIP  
SECTION, ELEVATION & DETAILS

BUREAU OF SHIPS BASIC NUMBER  
481799 A17

**TOLERANCE:**  
FINISHED SURFACES UNLESS OTHERWISE NOTED SHALL BE TO THE FOLLOWING DIMENSIONS UNLESS OTHERWISE SPECIFIED:  
1-REGULAR  
2-EXTRA  
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