FILE FOLDER

DESCRIPTION ON TAB:

H.P. 5186

☐ Outside/inside of actual folder did not contain hand written information

☑ Outside/inside of actual folder did contain hand written information
*Scanned as next image

Confidential Records Management, Inc.
New Bern, NC
1-888-622-4425
9/08

Contract #N62470-85-C-6305
Replace Water Wells, MEMQ
Berkeley Manor, Bldg. 5186
Camp Lejeune, NC

WELL NUMBER 5180		BY SALAS/KING			DATE 10-23-01	
AIR LINE	STATIC LEVEL	PUMPING LEVEL	DRAIN DOWN	DISCHARGE PRESSURE	GPM	START TIME
120	20	40	20	75	100	0915
		45	25	70	111	
		50	30	60	167	
			30	55	214	
			30	50	239	
			30	40	290	
			30	30	330	
		50	30	20	349+	

REMARKS D/H 88 SALAS/KING

ANUFACTURER	STAGE	S.N.	TOTAL HEAD	SIZE

DATE 7-25-00

PWSID 04-67-041

WELL # HP 5186

WELL NAME HEAD NOT POINT HP20

BLDG. HP 5186

CODE G.

AVAILABILITY P.

LOCATION BEHIND 5127 ALABAMA BM.

LATITUDE 34.71272

LONGITUDE 77.34625

WELL DIAMETER 10"

WELL DEPTH 160'

SCREEN INTERVAL

YIELD 362

STATIC LEVEL 26'

PUMPING LEVEL 50'

PUMP TYPE VERTICAL TURBINE

MOTOR HP 15

INTAKE DEPTH 65

DESIGN CAPACITY 250

ACTUAL GPM 250

SIZE OF CONCRETE SLAB 12 X 12

HEIGHT OF CASING 11"

North Carolina Department of Environment, Health, and Natural Resources
Division of Environmental Health, Public Water Supply Section

SOURCE INFORMATION
GROUND WATER

Date Form Completed: M M D D Y Y: 8/12/95

PWSID: 1307010

Owner Assigned Source Code: 186

Well Name (If purchase, name of system): HADNOT POINT 5186

Code: G (G=Ground, W=Purchase/G, Y=G w/direct influence, Z=W w/direct influence)

If Purchase, seller ID#:

Source Begin Date (M M Y Y):

Source exempt—SWTR? ☐ Y ☐ N

Direct Influence Date (M M D D Y Y):

Availability: P (P=Permanent, E=Emergency, S=Seasonal, I=Interim, O=Other)

Location of well within the system (If purchase, location of master meter): BEHIND SIZZLA ALABAMA AVE BM

Latitude (N): Deg. 34 Min. 42 Sec. 43.7

Longitude (W): Deg. 077 Min. 20 Sec. 45.4

How Determined: G (G=GPS, M=Map, S=Surveyed)

GPS Data: Q# or DOP #: 02

No. of Sats. Locked on: 3

(If purchase, use seller's primary source lat/long)

Vulnerable (VOCs) ☐ Y ☐ N

Assessment Date (M M D D Y Y):

ENTRY POINT INFORMATION

Use Code: C (C=Ground/Permanent, D=Ground/non-permanent)

Availability: P (P=Year-round, S=Seasonal, E=Emergency, I=Interim, O=Other)

Owner Assigned Entry Point Code: 186

Entry Point Name: ~~HP 5186~~ MCB HADNOT PT WTP

Location:

Well Site: Owned or controlled? Y (Y,N) Control Area (100' radius)? Y (Y,N) If no, explain:

Sources of pollution/distance: well site is wet - standing raw water

Surface water within 200'? N ☐ Y ☐ N If yes, actual distance ☐☐☐ feet If yes, bact. samples collected? — (Y,N)

Adequate slope? Y (Y,N) Flooding? N (Y,N) Maintenance: OK

Well House: Free of stored materials? Y (Y,N) Properly drained? Y (Y,N) Locked? Y (Y,N)

Condition of house: OK Type of freeze protection: Elec Heat

Well: Diameter: 10" Type: SCREENED Yield (gpm): 350 Properly sealed? Y (Y,N)

Properly vented? N (Y,N) Casing depth: 50 ft. (If unknown, put 'UNK') Well depth: 160' Meter available? Y (Y,N)

Size: 12x2

Concrete slab adequate? Y (Y,N) If no, explain:

Size of blow-off: 4" (6) Sample tap: Before treatment? Y (Y,N) After treatment? — (Y,N)

Pumps: Capacity: GPM: 250 HP: 15 Pump intake depth: 65 Auxiliary Power? Y (Y,N)

Type pump: VERTICAL TURBINE Height above floor (pump/casing): 11" / —

Storage at well site: Elev: ☐☐☐☐☐☐☐ Hydro: ☐☐☐☐ Ground: ☐☐☐☐☐☐☐

If hydroautomatic, air volume control? — (Y,N) Safety valves? — (Y,N) Coded? — (Y,N)

High service pumps: 1. — gpm — hp 2. — gpm — hp 3. — gpm — hp Auxiliary Power? — (Y,N)

Is the water treated at this well? Y ☐ Y ☐ N If yes, complete back of form.

If other wells are treated here, which ones? If treated elsewhere, where? HP20 PLANT

If purchase, retreat? ☐ Y ☐ N If yes, complete back of form.

① Pump pedestal needs silicone sealer at slab (or grout)

② Needs well vent ③ spill cont. for gen ×

④ Grade well site for drainage

DEHNR 3803 (Revised 12/93)
Public Water Supply Section (Review 12/96)

WELL NUMBER 5186		BY Stevenson & Peterson			DATE 4-4-97	
AIR LINE	STATIC LEVEL	PUMPING LEVEL	DRAIN DOWN	DISCHARGE PRESSURE	GPM	START TIME
120	20	30	10	70	100	10
		40	20	50	252	20
		42	22	40	290	30
		48	28	30	323	40
		50	30	20	362	50

REMARKS D/H 86 PSI

MANUFACTURER	STAGE	S.N.	TOTAL HEAD	SIZE

WELL NUMBER 5186		BY BROWN/STEVENSON			DATE 18 Oct 93	
AIR LINE	STATIC LEVEL	PUMPING LEVEL	DRAIN DOWN	DISCHARGE PRESSURE	GPM	START TIME
120	25	33	8	65	133	00
		40	15	55	195	10
		45	20	45	259	20
		48	23	35	305	30
		51	26	25	340	40
Left at	20 PSI	53	28	20	350	

D/H 85 PSI

REMARKS

MANUFACTURER	STAGE	S.N.	TOTAL HEAD	SIZE

WELL NUMBER 5186		BY THOMAS / GARDINAS			DATE 10-17-88	
AIR LINE	STATIC LEVEL	PUMPING LEVEL	DRAIN DOWN	DISCHARGE PRESSURE	GPM	START TIME
120	20	30	10	71	104	:50
		34	14	65	149	:00
		37	17	60	187	:10
		39	19	55	221	:20
		44	24	50	259	:30
		45	25	45	274	:45
		48	28	40	293	:00
		48	28	35	310	:15
		50	30	30	328	:30
	→	53	33	25	350	:45

REMARKS Dead head 56 PSI

MANUFACTURER	STAGE	S.N.	TOTAL HEAD	SIZE

Title

CONTRACTOR'S SUBMITTAL TRANSMITTAL

LANTDIV NORFOLK 4-4355/3 (Rev. 11-80)

CONTRACT NO	TRANSMITTAL NO	DATE

FROM CONTRACTOR

TO

PROJECT TITLE AND LOCATION

CONTRACTOR USE ONLY

**List only one specification division per form.*

List only one of the following categories on each transmittal form, and indicate which is being submitted

☐ Contractor Approved ☐ OICC Approval ☐ Deviation/Substitution For OICC Approval

REVIEWER USE ONLY

***ACTION CODES*
A-Approved
D-Disapproved
AN-Approved as noted
RA-Receipt acknowledged
C-Comments
R-Resubmit

ITEM NO.	PROJ. SPEC. SECT. & PARA. and/or PROJ. DWG. NO. *	ITEM IDENTIFICATION (Type, size, model no., Mfg. name, dwg. or brochure number)	NO. OF COPIES	ACTION CODES **	REVIEWER'S INITIALS CODE AND DATE
		5165			

CONTRACTOR'S COMMENTS

COPY TO: CONTRACTOR AND FIELD

DATE: 1-24-86

COPY OF TRANSMITTAL AND SUBMITTALS TO ROICC	CONTRACTOR REPRESENTATIVE (Signature)

DATE RECEIVED BY REVIEWER	FROM (Reviewer)	TO

☐ Submittals are returned with action indicated. Approval of an item does not include approval of any deviation from the contract requirements unless the contractor calls attention to and supports the deviation.

☐ Submittals are forwarded to LANTDIV with A-E recommendations indicated in REVIEWER USE ONLY Section and in comments below on **ONE COPY** of the transmittal form.

REVIEWER'S COMMENTS

COPIES TO ROICC (2) LANTDIV (1) A-E (1)	DATE	SIGNATURE

☆ U.S. GPO:1984-537-003/11170 Region 3-11

OICC-ROICC
JACKSONVILLE, NORTH CAROLINA AREA
MARINE CORPS BASE, CAMP LEJEUNE, NORTH CAROLINA

ROUTING SLIP
MCBCL 11000/14 (REV. 04-85)

NO.	DATE
691	14 Jan 86 sel

FROM

Onslow Utilities, Inc.

CONTRACT

85-C-6305, Replace Water Well, MEMO, Berkeley Manor

SUBJECT

Sub TL # Electric Log and Water Analysis

COMMENTS

1. X
2. Sandy

ROUTING	SEQUENCE	INITIAL	DATE	COMMENTS
JAX/10				
02	2/4	To OC	1-15	
04	3	MK	1/23	Cind Brand
05				
05A				
05B				
Z				
Y				
X	1	PK	1/24/86	Check for min well depth drilled. Is gravel screen material placed.
W				
V				
U				
T				
S				
R				
H				

Return Buck Tag to Contract Branch with correspondence unless otherwise indicated.

(919) 353-7711

ONSLOW UTILITIES, INC.
General Contractors
Post Office Box 5498
Jacksonville, North Carolina 28540

January 6, 1986

Resident Officer in Charge
of Construction
Building 1005, MCB
Camp Lejeune, NC 28542

Re: N62470-85-C-6305
Replace Water Well,
MEMQ, Berkeley Manor
MCB, Camp Lejeune, NC

Gentlemen:

We are enclosing six (6) copies of the Electric Log, and Water Analysis for your review. The test well was drilled 253 feet deep. Water samples were taken at the 105-110, 126-131, and 157 to 162 levels.

We recommend a line of .25 slot screens set at the 95 to 112, 125 to 137, 155 to 169 levels for a total of 43 VF of screens. The gravel pack recommended is a course sand. It is our best estimate that this well may yield 200-250 GPM.

Please review the data and advise if we are to proceed with developing a permanent well at this site.

Sincerely,

ONSLOW UTILITIES, INC.

Ronald R. Ellen

Ronald R. Ellen, president

RRE/ps

enclosures

CAROLINA
WELL & PUMP CO
INC

scot 2739-4
para 2.2.4

Camp Lejeune, N.C.

Berkley Manor

January 6, 1986

0 - 10	Clay	140 - 150	Sand
10 - 20	Clay	150 - 160	Sand &
20 - 30	Clay & Sand	160 - 170	Sand
30 - 40	Sand & Rock	170 - 178	Hard Clay
40 - 50	Sand	178 - 192	Sand & Clay
50 - 60	Sand	192 - 195	Shell & Sand
60 - 70	Sand	195 - 198	Clay
70 - 80	Sand, Clay & Rock	198 - 204	Shell
80 - 90	Sand	204 - 220	Sand & Clay
90 - 100	Sand	220 - 222	Hard Rock
100 - 110	Sand & Rock	222 - 226	Shell
110 - 120	Sand & Rock	226 - 238	Soft, fine sand with clay
120 - 130	Sand	238 - 272	Green clay
130 - 140	Sand		

[illegible] WATER WELLS
[illegible] VALLEY MANOR
CAMP LEJEUNE,
[illegible] 28542
ON [illegible] WELLS, IN
[illegible] P.E. N. C.
(803) 479-4639

Sec T 2734-3
para 2.2.2.

"Hello Sandy, Goodbye Worry"

WATER ANALYSIS LABORATORY
802 HAMLET HIGHWAY
BENNETTSVILLE, SOUTH CAROLINA
29512

CONSULTANTS FOR:
INDUSTRY
MUNICIPALITIES
HOME OWNERS
DEVELOPERS
IRRIGATION
OTHERS

DATE: December 27, 1984

Report To: [illegible]

Date Analyzed: [illegible]

Sample Number: [illegible]

Analysis Results--Parts Per Million

Determination		Determination	
pH	6.6	Carbon Dioxide (CO_2)	12
Iron (Fe)	[illegible]	Total Acidity ($CaCO_3$)	[illegible]
Nitrate (NO_3)	[illegible]	Calcium Hardness ($CaCO_3$)	[illegible]
Fluoride (F)	[illegible]	Magnesium Hardness ($CaCO_3$)	[illegible]
Manganese (Mn)	[illegible]	Carbonate Hardness ($CaCO_3$)	[illegible]
Total Hardness ($CaCO_3$)	[illegible]	Noncarbonate Hardness ($CaCO_3$)	[illegible]
Chlorides (Cl)	[illegible]	Alkalinity (Phenolphthalein) ($CaCO_3$)	[illegible]
Sulfate (SO_4)	[illegible]	Carbonate Alkalinity ($CaCO_3$)	[illegible]
Phosphate (PO_4)	[illegible]	Bicarbonate Alkalinity ($CaCO_3$)	[illegible]
Magnesium (Mg)	[illegible]	Total Alkalinity ($CaCO_3$)	[illegible]
Calcium (Ca)	[illegible]	Total Dissolved Solids	[illegible]
Carbonate (CO_3)	[illegible]	Specific Conductance (micromhos at 25°)	[illegible]
Bicarbonate (HCO_3)	[illegible]	Appearance When Analyzed	[illegible]
Hydroxide (OH)	[illegible]	Odor When Analyzed	[illegible]

Water Analysis Laboratory
802 Hamlet Highway
Bennettsville, South Carolina 29512

SIGNED: [illegible]
LABORATORY DIRECTOR

ANALYTICAL METHODS REFERENCES: 'STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER,' APHA, AWWA AND WPCF AND 'METHODS FOR COLLECTION AND ANALYSIS OF WATER SAMPLES,' WATER SUPPLY PAPER 1454 (1960), U. S. GEOLOGICAL SURVEY, WASHINGTON, D. C.

...ER WELLS
...RO, BERKLEY MANOR
CAMP LEJEUNE,
...ER 38-C-6305
...LOW UTILITIES, ...
...SVILLE, N. C. 2858...

(803) 479-4639

Sect 2734.3
para 2.2.2

"Hydro Analysis Goodyear Worry"

WATER ANALYSIS LABORATORY
802 HAMLET HIGHWAY
BENNETTSVILLE, SOUTH CAROLINA
29512

CONSULTANTS FOR:
INDUSTRY
MUNICIPALITIES
HOME OWNERS
DEVELOPERS
IRRIGATION
OTHERS

DATE: December 17, 1965

Report To: Carolina Well & Pump Co.
Serfend, N. C.

Date Analyzed: 12/17/65

Sample Number: Camp Lejeune
(5" Well)

Analysis Results--Parts Per Million

Determination		Determination	
pH	6.6	Carbon Dioxide (CO_2)	4
Iron (Fe)	0.1	Total Acidity ($CaCO_3$)	9
Nitrate (NO_3)	Trace	Calcium Hardness ($CaCO_3$)	132
Fluoride (F)	0.4	Magnesium Hardness ($CaCO_3$))	35
Manganese (Mn)	Trace	Carbonate Hardness ($CaCO_3$)	227
Total Hardness ($CaCO_3$)	227	Noncarbonate Hardness ($CaCO_3$)	0
Chlorides (Cl)	14	Alkalinity (Phenolphthalein) ($CaCO_3$)	0
Sulfate (SO_4)	13.6	Carbonate Alkalinity ($CaCO_3$)	0
Phosphate (PO_4)	0	Bicarbonate Alkalinity ($CaCO_3$)	227
Magnesium (Mg)	8.4	Total Alkalinity ($CaCO_3$)	227
Calcium (Ca)	76.9	Total Dissolved Solids	373
Carbonate (CO_3)	0	Specific Conductance (micromhos at 25°C)	
Bicarbonate (HCO_3)	373	Appearance When Analyzed	Clear
Hydroxide (OH)	0	Odor When Analyzed	None

The Analysis Laboratory
802 Hamlet Highway
Bennettsville, South Carolina 29512

SIGNED _____
LABORATORY DIRECTOR

ANALYTICAL METHODS REFERENCES: 'STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTE-WATER,' APHA, AWWA AND WPCF AND 'METHODS FOR COLLECTION AND ANALYSIS OF WATER SAMPLES,' WATER SUPPLY PAPER 1454 (1960), U. S. GEOLOGICAL SURVEY, WASHINGTON, D. C.

WATER ANALYSIS LABORATORY
802 HAMLET HIGHWAY
BENNETTSVILLE, SOUTH CAROLINA
29512

(803) 479-4639

CONSULTANTS FOR:
INDUSTRY
MUNICIPALITIES
HOME OWNERS
DEVELOPERS
IRRIGATION
OTHERS

sect 2734-3
para 22.2

DATE: December 17, 1985

Report To: [illegible]

[illegible]

Date Analyzed: 12/17/85

Sample Number: Grab Sample
#2 (126'-131')

Analysis Results--Parts Per Million

Determination		Determination	
pH	6.5	Carbon Dioxide (CO_2)	6
Iron (Fe)	0.15	Total Acidity ($CaCO_3$)	12
Nitrate (NO_3)	Trace	Calcium Hardness ($CaCO_3$)	156
Fluoride (F)	0.4	Magnesium Hardness ($CaCO_3$))	20
Manganese (Mn)	Trace	Carbonate Hardness ($CaCO_3$)	176
Total Hardness ($CaCO_3$)	172	Noncarbonate Hardness ($CaCO_3$)	0
Chlorides (Cl)	14	Alkalinity (Phenolphthalein) ($CaCO_3$)	0
Sulfate (SO_4)	18.2	Carbonate Alkalinity ($CaCO_3$)	0
Phosphate (PO_4)	0	Bicarbonate Alkalinity ($CaCO_3$)	176
Magnesium (Mg)	4.9	Total Alkalinity ($CaCO_3$)	176
Calcium (Ca)	62.4	Total Dissolved Solids	234
Carbonate (CO_3)	0	Specific Conductance (micromhos at 25°)	330
Bicarbonate (HCO_3)	215	Appearance When Analyzed	Clear
Hydroxide (OH)	0	Odor When Analyzed	Not Objectionable

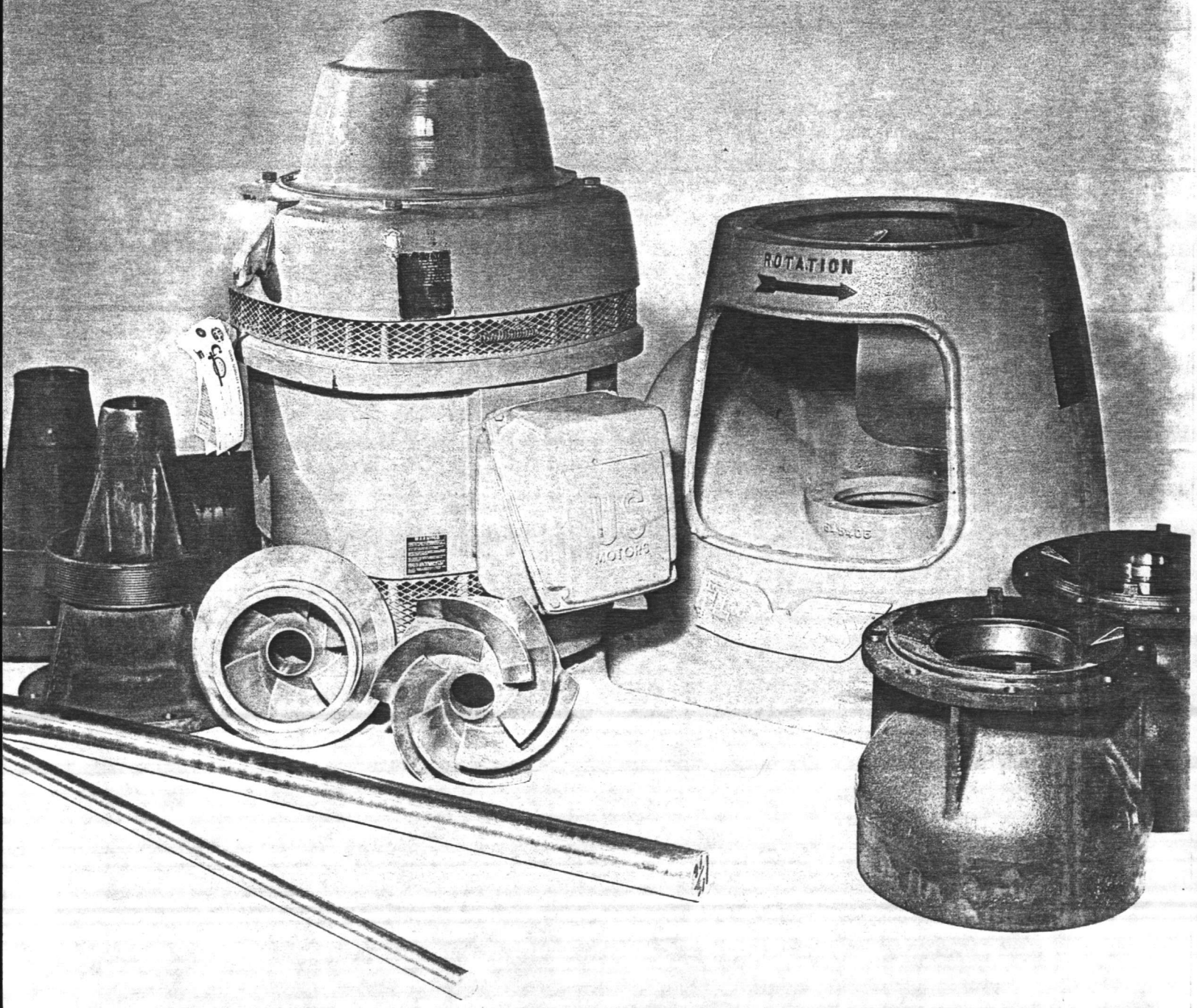
Water Analysis Laboratory
802 Hamlet Highway
Bennettsville, South Carolina 29512

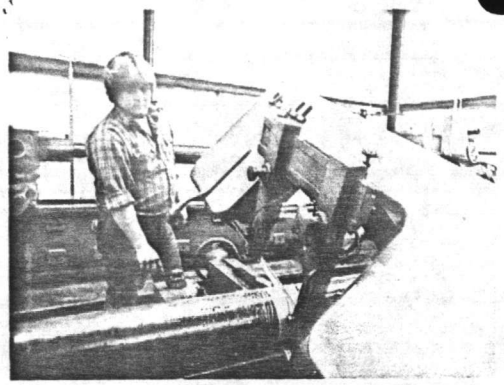
SIGNED: [illegible]
LABORATORY DIRECTOR

ANALYTICAL METHODS REFERENCES: 'STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTE-WATER,' APHA, AWWA AND WPCF AND 'METHODS FOR COLLECTION AND ANALYSIS OF WATER SAMPLES,' WATER SUPPLY PAPER 1454 (1960), U. S. GEOLOGICAL SURVEY, WASHINGTON, D. C.

It takes more than great parts to make a great pump.

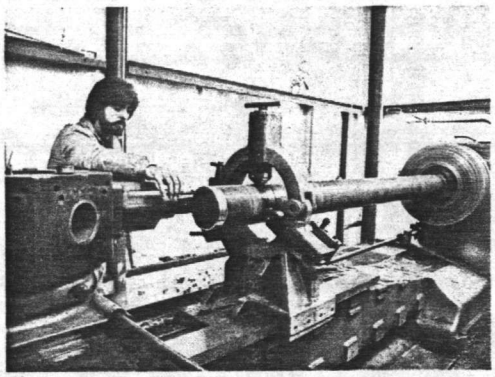
HP-5186



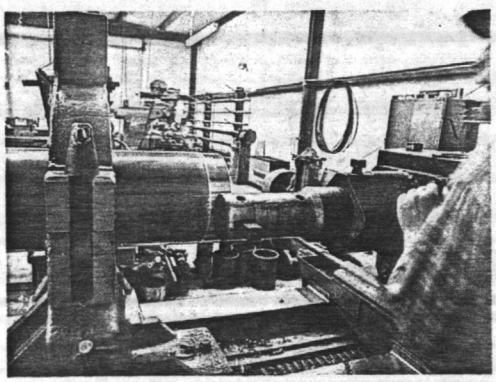


At Virginia Supply and Well Company, we start out with the best available materials. **For column pipe we use ASTM A-53 or A-120 carbon steel.**

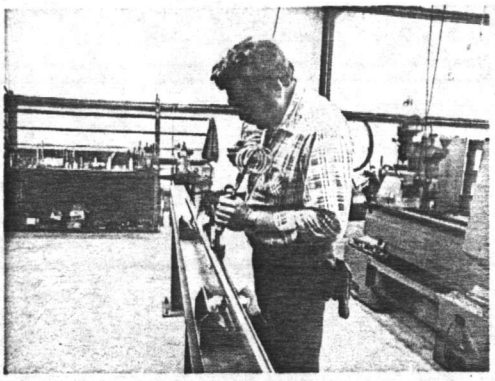
The we add precision plus! We cut our pipe to spec plus .250″. That added .250″ is then machined away in an operation that **assures a perfect round and perfectly squared butt joint.**



Standard 8V threads are added in the same operation. No moving the pipe from station to station: the metal is chucked, machined to round and threaded in the same location, thereby increasing the assurance of **absolute measurements and precise machining.** Every additional precaution we take to assure accuracy in the early stages pays off in the end result.

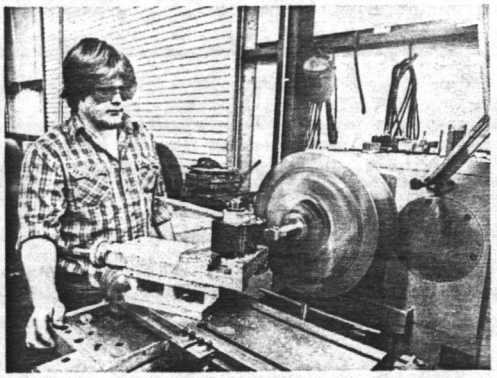


The heart of the pump is the pump bowl shaft. This is the critical part, and this is where our pumps exceed the norm. We manufacture the bowl shaft with ultimate care. We start out with **pump-quality #416 stainless steel,** ground and polished to a tolerance less than half that of commercial quality shafting, according to the American National Standards Institute.



We straighten the shaft and stress-relieve it with this air hammer which exerts 9,000 blows per minute. It is straightened to within .0015 inches over its entire length.

The result of this added care? **A true shaft that will maximize performance in the well by reducing friction and vibration, adding to the pump's long life.**



Here, threads are being cut in the shaft. **We keep a big inventory of shaft on hand,** and we machine them on the premises. This is one of the reasons we can react so quickly to our customers' needs.

As wholesalers and distributors of pumps to agriculture and industry, to municipalities and engineers, we deliver quickly from our three locations in Georgia.

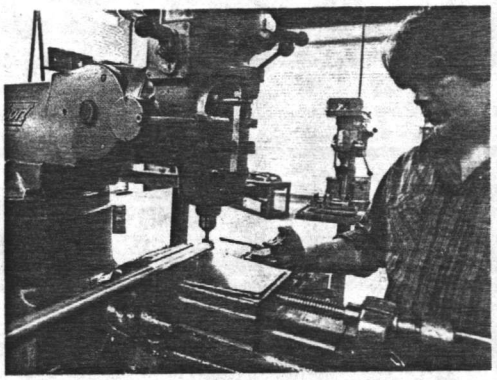
We are one of the few companies that consider **the two-piece head shaft as standard equipment.**

Easily broken down for removal of the motor, the two-piece head shaft saves time and effort and costly repairs. It is directly beneath the motor, easy to reach and uncouple before motor removal. The operator can slide the motor off the housing instead of lifting.

What this means for you is not only easier, quicker maintenance procedures, but also **you don't run the risk of bending the shaft during removal and maintenance.**

We put the same kind of planning into every operation of design and manufacturer.

In this operation, the key-way is machined into the head shaft.

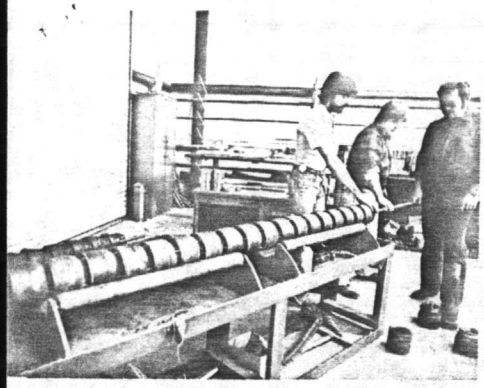


We buy only the best — the best materials, the best parts.

But we don't stop there. We test those parts — not just one in a lot, or one in a dozen, but every single part. We measure for finite accuracy, and if the part needs improving, we improve it!

Here, an impeller is undergoing **static balancing.** It will be machined until balance is precise.

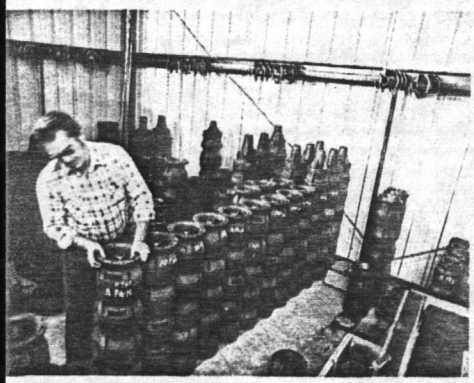
And we've got what it takes...



A set of pump bowls is being assembled in our Dublin facility. Our team works together to provide you with the best pump for your needs.

We're proud of our performance record, too. We do a good job and help you to meet your deadlines as well. We work with engineers during the planning stages and, as soon as we receive the final set of specifications, **we can be ready to finish the pump quickly and deliver it for installation.** And we service pumps with the same efficiency and timeliness.

We handle every job, from a city-sized pumping station to a quick repair job with the same desire to do the best possible job in the minimum time. One of the reasons we can react quickly is our inventory of parts — the largest in the S.E.



We maintain a large inventory of bowls from 4" to 14" in diameter, semi-open and closed impellers with flow rates from 80 GPM through 3500 GPM, motors from 40 HP to 250 HP and right angle gears from 50 HP to 300 HP to permit operation from an auxiliary power source. These are some of the ways **we can help reduce downtime,** promise quick turnaround and fast delivery.

We start with the best parts, of course — **Peabody Floway.®** But that's only the beginning. We test and machine all the parts we receive to assure fit and balance.

We design and manufacture your pump to your specifications. Our professional team of machinists and engineers know their business, and they're ready to apply their expertise to meet your needs.

We use the best materials when we manufacture, starting with the most critical part — the pump bowl shaft. To insure precision performance and long life, we use pump-quality stainless and we stress relieve it.

We make the column pipe of carbon steel and we mill it to joint with the greatest accuracy.

We stand behind our work, too. **Our testing station — the only one in the Southeastern U.S.** can provide a certified performance curve on your pump. That means we can guarantee its operation before it's in the ground. We're proud of our **Great pumps because we make them that way.**

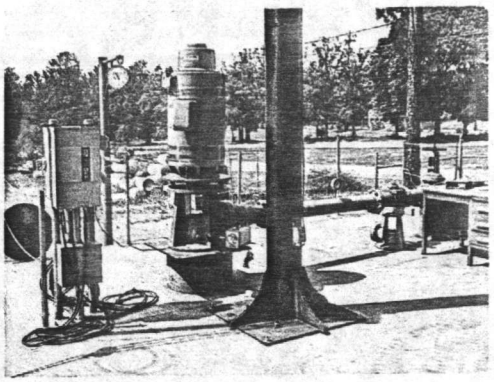
Virginia Supply & Well Company

Once we've made a great pump, we don't just stop there. We have testing facilities that guarantee that pump's operation at its manufacturing specifications.

We care about the big jobs and the small jobs, too. **We repair not only our own installations, but any other pump as well.** And we take the same pride in doing the job right.

Great pumps because we make them that way.

One of the unique additional services we can offer is a guarantee that our pump will perform according to your specifications. Ours is the only testing station in the Southeastern U.S. Here we can test your pump under simulated operating conditions and **provide you with a certified performance curve.** We make the best pump we can, and we stand behind it, even after it's in the ground.



If anything goes wrong — with our pump or yours — call on us! We stock the largest inventory of parts in the Southeastern U.S., a variety of bowls, shafts, **right angle gears and motors in all sizes.** This enables us to react quickly to your repair and replacement needs, and this means a short downtime for you. In an emergency you can count on us!

Virginia Supply & Well Company

Dublin
120 Mall Road
Dublin Georgia 31021
912-272-6181

Atlanta
1739 Cheshire Bridge Road N.E.
Atlanta Georgia 30324
404-875-0441

Albany
1509 O'Kelley Avenue
Albany Georgia 31707
912-436-9538

Printed in USA

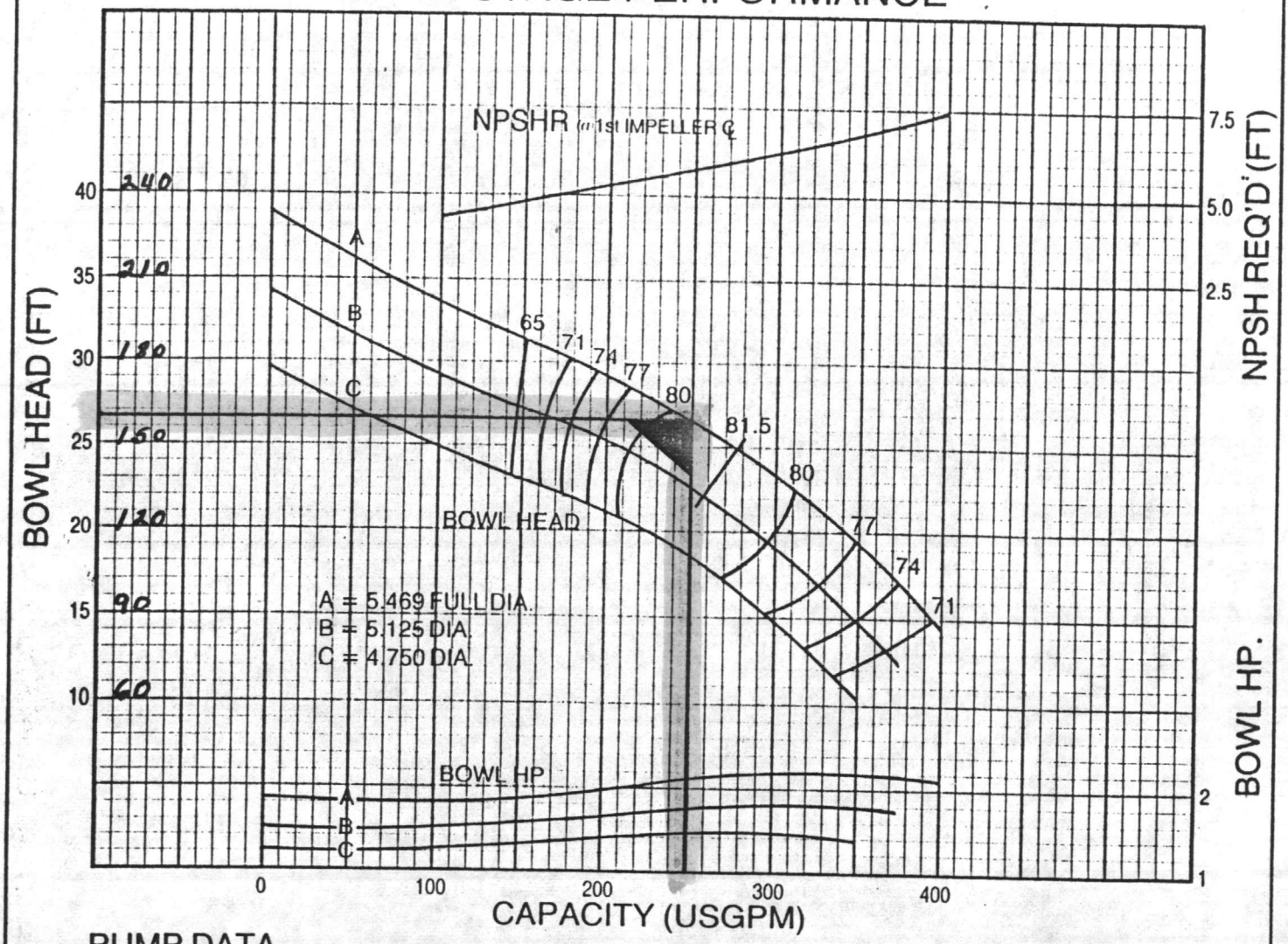
NUMBER OF STAGES	EFFICIENCY CHANGE (NO. OF POINTS)
1	– 3
2	– 1½
3	– ½

HORSEPOWER WILL BE AFFECTED BY CHANGE IN EFFICIENCY

Peabody Floway

8JKL
1760 RPM
ENCLOSED
TYPE IMPELLER

PER STAGE PERFORMANCE



PUMP DATA

THRUST CONSTANT (K):	3.9	(K) BALANCED:	0	W.R.²/STAGE (LB. FT.²):	0.210	SPECIFIC SPEED (N_S):	2580
SHAFT DIAMETER (IN):	1 3/16	MAX. SPHERE (IN):	¾	EYE AREA (IN²):	11.8	MAX. HEAD (STD. CONSTR.) (FT.):	956
MIN. SUBM. (IN):	11*	IMP. WT. (LBS):	5.2	STD. AXIAL CLEARANCE (IN):	9/16	MAX. AXIAL CLEARANCE (IN):	¾

DIMENSIONS

DIM'S	A	B	C	E	F_1	F_2	G	J	K
INCHES	7⅜	7¼	3⅛	7¾	12	16	4½	17¾	17¾

L	N	P	S	T	W	X	SD	SL	SW
8	4-5-6-8	5	4½	7¾	3⅛	5¾	8½	4⅞	7¾

NOTES

Add "B" for each additional stage.

"X" is the distance from the lip of the bell to the first impeller centerline.

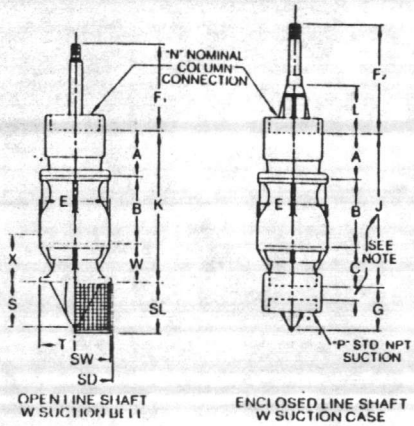
Add 2" to "J" and "C" when suction is larger or smaller than standard.

Performance indicated is based on cold water with a specific gravity of 1.0.

The performance shown is based on pump tests conducted in accordance with the Hydraulic Institute Standards with standard materials of construction.

* Minimum submergence over lip of bell to prevent vortexing.

Efficiency improvements are available in certain instances. Please contact the factory.



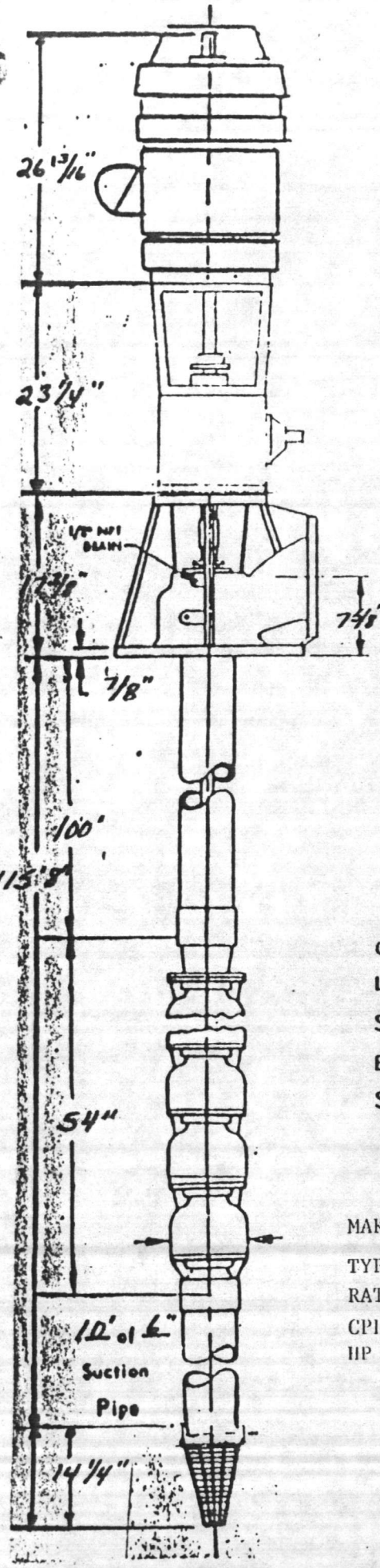
OPEN LINE SHAFT W SUCTION BELL

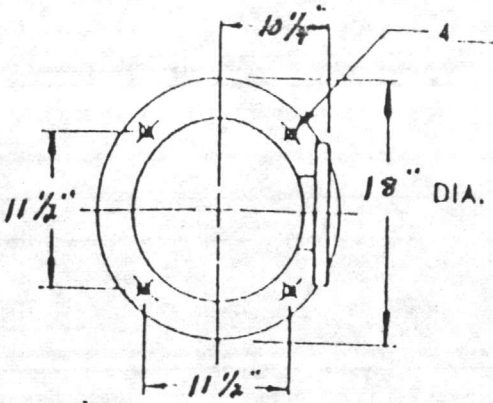
ENCLOSED LINE SHAFT W SUCTION CASE

"There's a Difference..."

VERTICAL TURBINE PUMP

TYPE 'A'





6" 125# ANSI - F.F. DISCH FLG.
8 - 7/8" DIA HOLES*
9 1/2" DIA. BOLT CIRCLE
11" DIA. FLANGE
*BOLT HOLES STRADDLE VERTICAL ℄

SOLE PLATE [yes] [no]
SIZE
4 " HOLES ON " SQUARE
MATERIAL

MOTOR

MAKE U.S.
TYPE VHS NRR [yes] [no]
HP 15 RPM 1800
PHASE 3 HERTZ 60
VOLTAGE 230/460
FRAME NO. 254 TP
TYPE COUPLING N.A.

PUMP

6 X 12 'A' C.I. DISCH HD
1" LINE SHAFT 6" COL
N.A. SHAFT TUBE
PROD LUBE X OIL LUBE —
TYPE 8 JKL STAGE 6
250 GPM 150' TDH
IMPELLER [enclosed] [enclosed]
STRAINER [yes] [no]

MATERIAL

COL PIPE GALV. SCH 40
LINE SHAFT 416 SS.
SHAFT TUBE N.A.
BOWL SHAFT 416 SS.
SHAFT PACKING ASB.

PUMP BOWL CL 30 C.I.
IMPELLER 838 Bronze
BEARINGS (BOWL) 844 Bronze
BEARINGS (LINESHAFT) Neoprene
STRAINER GALV. Steel

GEAR DRIVE

MAKE Johnson
TYPE C.H-20
RATIO 1:1
CPLG. NRR
HP 20

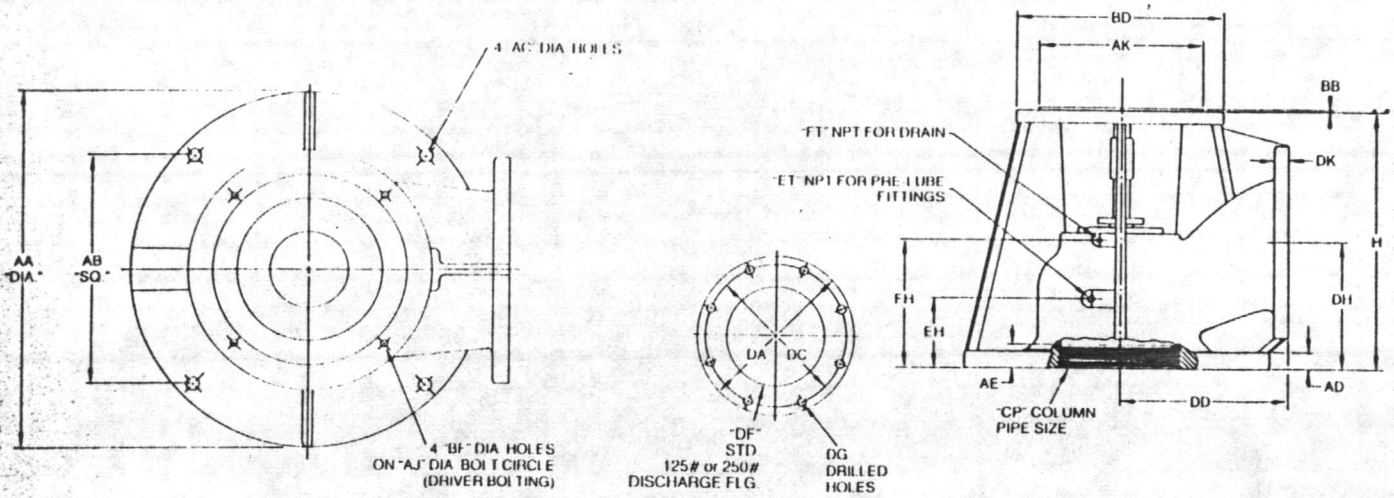
CUSTOMER Onslow Utilities, Inc.
P.O. Box 5498
Jacksonville, N.C. 28540
ORDER NO. 203
SUPPLIED Virginia Supply + Well
Dublin, GA. 31021
DWG. NO 85-5016-50
SERIAL NO 85-5016

VIRGINIA SUPPLY AND WELL CO.

NOT TO BE USED FOR CONSTRUCTION

Peabody Floway

DIMENSIONS
TYPE **A** CAST IRON DISCHARGE HEAD



HEAD	AA	AB	AC	AD	AE	AJ	AK	BB	BD	BF	CP	DH	EH	ET	FH	FT	H
4X10	16	10 1/16	1	7/8	1 5/8	9 1/8	8 1/4	1/8	10	7/16	4	5 3/8	4	3/4	6 7/8	1/2	15 5/8
6X12	18	11 1/2	7/8	7/8	1 5/8	9 1/8	8 1/4	1/8	12	7/16	6	7 5/8	4 9/16	3/4	8	1/2	17 3/8
6X16 1/2	19	12	1	1	1 5/8	14 3/4	13 1/2	1/8	16 1/2	11/16	6	7 5/8	6 1/16	3/4	9 1/2	1/2	20 1/8
8X12	18 3/4	11 3/4	7/8	1	1 7/8	9 1/8	8 1/4	1/8	12	7/16	8	8 3/4	4 1/4	3/4	9 3/16	1/2	17 3/4
8X16 1/2	21	13 1/4	1	1	1 7/8	14 3/4	13 1/2	1/8	16 1/2	11/16	8	8 3/4	4 1/4	3/4	10 1/4	1/2	20 7/8
10X16 1/2	25	16	1 1/8	1 3/8	2 1/8	14 3/4	13 1/2	1/8	16 1/2	11/16	10	10 9/16	5 3/4	3/4	10 9/16	1/2	21 1/2
12X20	29 1/2	19	1 1/8	1 7/16	2 5/8	14 3/4	13 1/2	1/8	20	11/16	12	12 1/8	6 9/16	3/4	12 13/16	1/2	24 1/4
14X20	29 1/2	19	1 1/8	1 7/16	2 3/4	14 3/4	13 1/2	1/8	20	11/16	12	13	7	3/4	13 13/16	1/2	26

125# DISCHARGE

HEAD	DA	DC	DD	DF	DG	DK
4x10	9	7 1/2	8 5/8	4	8–3/4	15/16
6x12	11	9 1/2	10 1/4	6	8–7/8	1
6x16 1/2	11	9 1/2	10 1/4	6	8–7/8	1
8x12	13 1/2	11 3/4	10 1/2	8	8–7/8	1 1/8
8x16 1/2	13 1/2	11 3/4	11 1/2	8	8–7/8	1 1/8
10x16 1/2	16	14 1/4	14	10	12–1	1 3/16
12x20	19	17	16 1/2	12	12–1	1 1/4
14x20	21	18 3/4	16 1/2	14	12–1 1/8	1 3/8

250# DISCHARGE

HEAD	DA	DC	DD	DF	DG	DK
4x10	10	7 7/8	8 15/16	4	8–7/8	1 1/4
6x16 1/2	12 1/2	10 5/8	10 11/16	6	12–7/8	1 7/16
8x16 1/2	15	13	12	8	12–1	1 5/8
10x16 1/2	17 1/2	15 1/4	14 11/16	10	16–1 1/8	1 7/8
12x20	20 1/2	17 3/4	17 1/4	12	16–1 1/4	2
14x20	23	20 1/4	17 1/4	14	20–1 1/4	2 1/8

ALL DIMENSIONS ARE APPROXIMATE AND ARE NOT TO BE USED FOR CONSTRUCTION PURPOSES

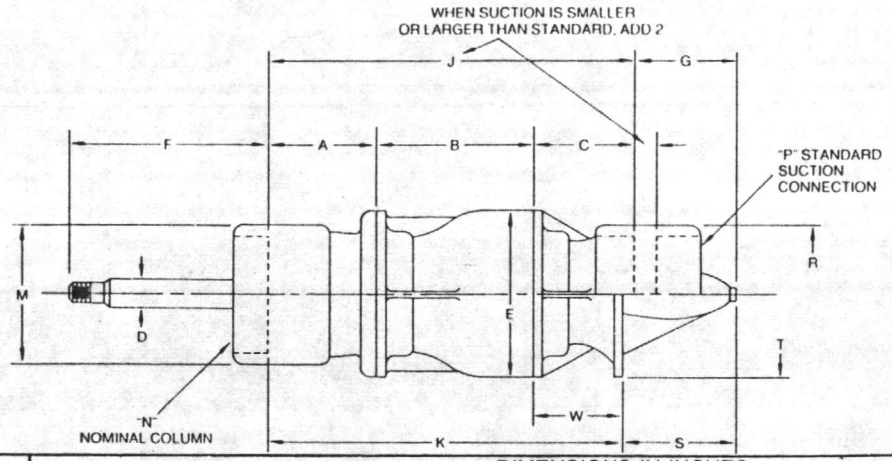
NOTE: All dimensions are in inches.

"There's a Difference..."

Peabody Floway

DIMENSIONS
4" THROUGH 20" PUMP BOWLS

Product Lubricated (Open Line Shaft)



(M) COLUMN AND SUCTION ADAPTORS	
PIPE SIZE (IN)	MAX. O.D. (IN)
3	5⅝
4	5⅝
5	6⅝
6	7⅞
8	9¾
10	12⅛
12	14⅛
14	15⅜
16	21 ⑤

SIZE PUMP	DIMENSIONS IN INCHES															
	A	B	C	D①	E	F	G	J	K	M	N	P②	R④	S	T	W
4HO	5¼	3⅜	4½	¾	3¾	4½	0	9¾	8½	3⅝-4	2½-3	2½③	3⅝	0	7	3¼
6LK	9¾	4¾	3	1	5⅝	12	2⅛	17½	17⅛		3-4-5-6	4	5¼	2½	5 13/16	2⅝
6JK-JO	8¾	5	2 13/16	1	5⅞	12	3⅜	16 9/16	16 9/16		3-4-5-6	4	5¼	3⅜	5 13/16	2 13/16
8XK	7	5	3⅝	1 3/16	7⅝	12	3 3/16	15⅝	15 1/16		3-4-5-6	4	5¼	3¾	7¾	3 1/16
8JK-JO	7⅜	7¼	3⅛	1 3/16	7¾	12	4½	17¾	17¾		4-5-6-8	5	6 5/16	4½	7¾	3⅛
8LK	7⅜	6⅛	3⅛	1 3/16	7½	12	3⅜	16⅝	16⅝		4-5-6-8	5	6 5/16	3⅜	7¾	3⅛
8FK	11½	6⅛	7 1/16	1 3/16	7¾	12	0	24 11/16	20 15/16		5-6-8	6	7 7/16	2⅞	7¾	3 5/16
10XK	7	6½	4½	1½	9⅝	12	2½	18	17½	SEE	4-5-6-8	5	6 5/16	3	9⅜	4
10LK	7	7¾	7¼	1½	10	12	3¼	22	20¼		4-5-6-8	6	7 7/16	5	9⅜	5½
10DK-DO	7	8½	8	1½	9⅜	12	5	23½	20 9/16	BOX	4-5-6-8	6	7 7/16	8	9⅜	5 1/16
10HK	10¾	10	8½	1½	9½	12	0	29¼	31¾		5-6-8-10	8	9⅝	0	11¼	11
10FK	7½	8½	6¼	1 1/16	9½	12	6⅞	22¼	24¾	ABOVE	5-6-8-10	8	9⅝	4⅜	11¼	8¾
11XK	9	7¼	6	1 1/16	10⅞	12	1⅝	22¼	20¾		6-8-10	8	9⅝	3⅛	11¼	4½
12LK	7	9⅜	5½	1 1/16	11⅝	12	5¾	21⅞	21⅜		5-6-8-10	8	9⅝	6¼	11¼	5
12DK-DO	7	10¼	7¾	1 1/16	11¼	12	7	25	23¼		5-6-8-10	8	9⅝	8¾	11¼	6
12FK	7¾	10 5/16	6¾	1 1/16	11¾	12	5⅞	24 13/16	27½		8-10-12	10	11¾	3 3/16	13 1/16	9 7/16
13XK	9¼	8⅝	6⅝	1 5/16	13 1/16	12	2¼	24½	23¼		6-8-10	8	9⅝	3⅝	13 1/16	5¼
14LK	8¼	9⅞	7	1 5/16	13¾	12	6½	25⅛	25⅛		6-8-10	8	9⅝	6½	13 1/16	7
14DK-DO	8¼	12	9½	1 5/16	13⅛	12	7½	29¾	27¼		8-10-12	10	11¾	10	13 1/16	7
14FK	8¼	13¾	8½	1 5/16	14	12	6¼	30½	29		8-10-12	10	11¾	7¾	13 1/16	7
15DK	10¼	13½	9	2¼	14⅞	12	4 5/16	32¾	30¾		10-12-14	12	14	6 5/16	15	7
16MK	12¾	13	12	2¼	15⅜	12	⅝	37¾	32¾		10-12-14	12	14	6	16¾	7
18MK	10½	12½	8½	2¼	17½	12	5½	31½	31½		10-12-14	12	14	5½	17⅜	8½
20MK	11¾	14⅝	9½	2 7/16	20	12	6	35⅞	35⅞		12-14-16	14	15¼	6	21	9½

ALL DIMENSIONS ARE APPROXIMATE AND ARE NOT TO BE USED FOR CONSTRUCTION PURPOSES

NOTES:

All dimensions are in inches.

"K" is the length of a one-stage assembly – from the lip of the bell to the column butt.

"J" is the length of a one-stage assembly – from the end of the suction case to the column butt.

① Diameter indicated is standard. Larger diameter shafts are available.

② Sizes indicated are standard. Adaptors are available as shown in column "N".

③ 2½" only is available on 4HO.

④ Diameters shown are for the standard "P" dimension. For optional sizes shown in column "N", see the "Column and Suction Adaptor Chart" on this page.

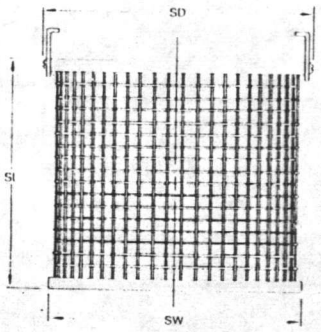
⑤ Flange diameter.

"There's a Difference..."

Peabody Floway

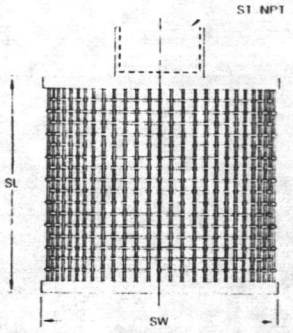
DIMENSIONS
STRAINERS

BASKET STRAINER
CLIP-ON TYPE
(Used with Suction Bell)



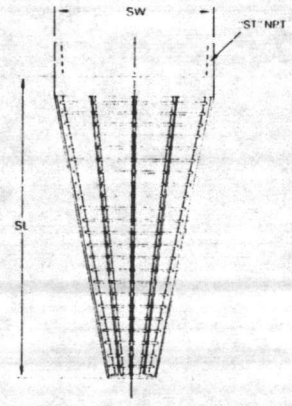
BOWL SIZE	SD	SL	SW	AREA
6LK-6JK-JO 8XK-8LK	6 9/16	3 3/4	5 13/16	46
8JK-JO-8FK 10XK-10LK-11XK	8 1/2	4 7/8	7 3/4	96
10DK-DO 10HK-10FK	10 1/8	8 7/8	9 3/8	225
12LK-12DK-DO 12FK-13XK-14LK	12 1/8	9 3/4	11 3/8	310
14DK-DO-14FK	13 7/8	10 3/4	13 1/8	425
15DK	15 3/4	10	15	448
16MK	17 1/2	10 1/8	16 3/4	560
18MK	18 1/8	10	17 3/8	585
20MK	22 1/8	11	21 1/2	675
22BK-24MK	27 1/4	12	26 1/2	920
28MK-28FK	32 3/4	12 3/4	31 3/4	1490
34DK	41 1/2	17 1/2	40 3/4	2403

BASKET STRAINER
FEMALE THREADED
(Adapts to Suction Case or Suction Pipe)



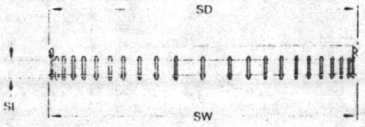
SIZE	SL	SW	AREA
2 1/2	3	6	45
3	3	6	45
4	4	8	95
5	5	10	160
6	6	10	185
8	8	12	310
10	10	18	610
12	12	18	710
14	12	20	820

CONE STRAINER
(Used on Well Pumps)



SIZE	SL	SW	AREA
2 1/2	10 3/4	3 1/2	25
3	10 7/8	4	37
4	11	5	63
5	11 5/8	6 3/8	100
6	14 1/4	7 3/8	145
8	21	9 1/2	255
10	28 1/2	11 3/4	400
12	30 1/4	14	575
14	39 1/4	16 1/2	690

FLAT STRAINER
(Used with Suction Bell)



BOWL SIZE	SD	SL	SW	AREA
4HO	7 3/8	1/4	7 3/8	40

ALL DIMENSIONS ARE APPROXIMATE AND ARE NOT TO BE USED FOR CONSTRUCTION PURPOSES

NOTES:

All dimensions are in inches.

"SD" is the maximum diameter including fasteners.

"SW" is the strainer diameter.

"AREA" is the approximate net opening area in square inches.

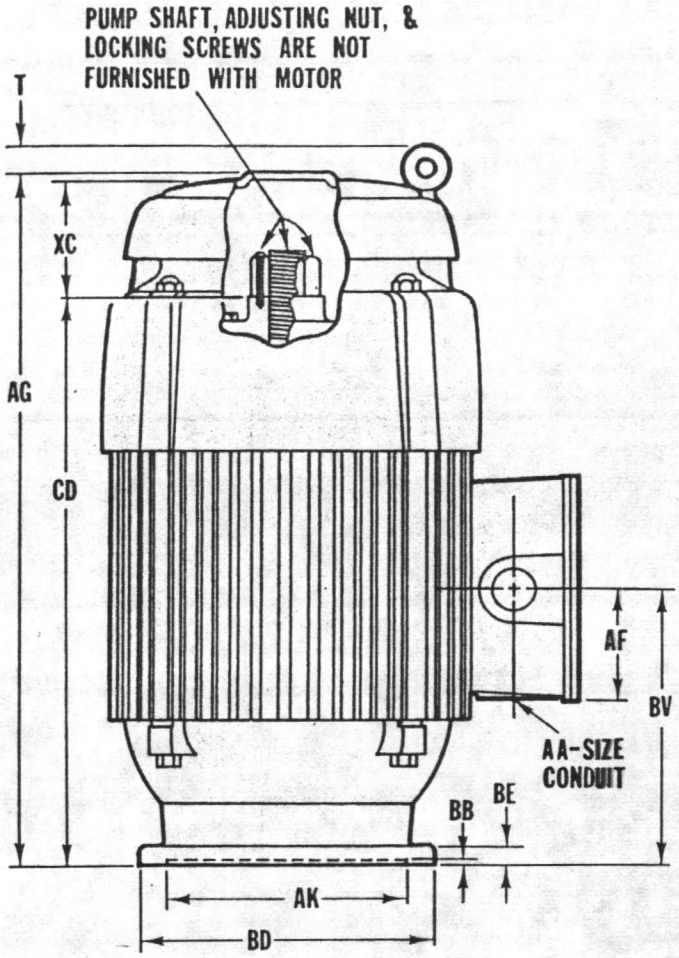
"SIZE" represents standard NPT female threads.

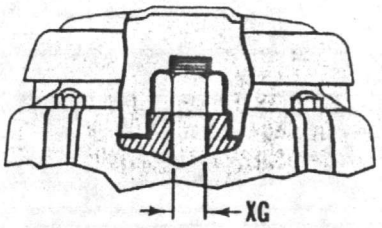
"There's a Difference..."

VERTICAL MOTORS

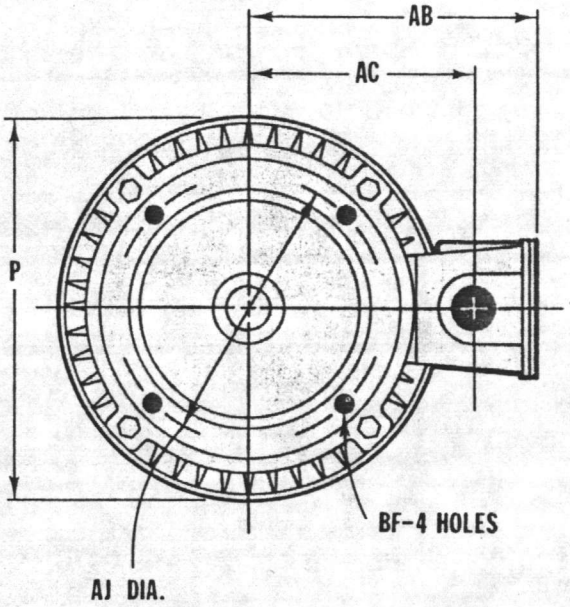
DIMENSIONS

FRAMES 182TP THRU 286TPH -- TYPE AU (DRIPPROOF) -- WEATHER PROTECTED TYPE I





HOLLOW SHAFT BORE



ALL DIMENSIONS ARE IN INCHES

BASIC FRAME	P*	T	AA	AB	AC	AF	AG	BV	CD	XC	XG
180	12-7/8	1-1/2	1	6-5/16	5-3/8	2-5/8	21-1/4	8	17-9/16	3-11/32	1-1/16
210	12-7/8	1-1/2	1	7-9/16	6-7/16	3-5/16	21-1/4	8	17-9/16	3-11/32	1-1/16
250	14	–	1-1/4	8-15/16	7-3/4	3-19/32	26-13/16	11-7/16	23-7/16	3-3/8	1-5/16
280	14	–	1-1/2	9-3/16	7-5/8	4-7/16	28-3/16	12-1/4	24-13/16	3-3/8	1-5/16

FRAME	AJ	AK +.003	BB	BD	BE	BF	BRACKET PART NO.
182, 184, 213, 215TP	9-1/8	8-1/4	3/16	10	3/4	7/16	682186
254, 256, 284, 286TP	9-1/8	8-1/4	1/4	10	15/16	7/16	347107
254, 256TPA, 284, 286TPH	14-3/4	13-1/2	1/4	16-1/2	15/16	11/16	347111
254, 256TPH, 284, 286TPA	9-1/8	8-1/4	1/4	12	15/16	7/16	347109

*Largest motor width.

All rough casting dimensions may vary by 1/4" due to casting variations.

Conduit box opening may be located in steps of 90 degrees. Standard as shown with conduit opening down.

TOLERANCES	
Face runout	.004 F.I.R.
Permissible eccentricity of mounting rabbet	.004 F.I.R.

3 PHASE 60 CYCLES
230,460,575 VOLTS
40°C. AMBIENT-C.RISE WP-1

HOLLOSHAFT & SOLIDSHAFT MOTORS

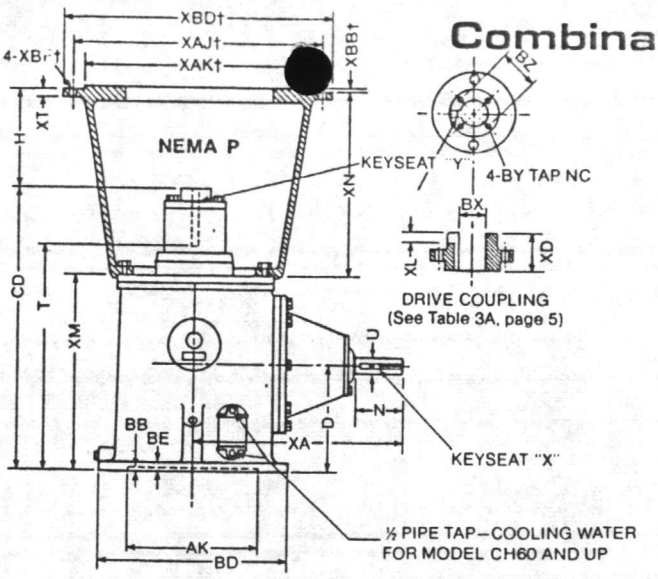
OPERATING CHARACTERISTICS

ENGINEERING DATA

HP	RPM		% EFFICIENCY			% POWER FACTOR			CURRENT IN AMPHERES 460 VOLTS		TORQUE AT FULL VOLTAGE			NEMA CODE
	NO LOAD	FULL LOAD	FULL LOAD	3/4 LOAD	1/2 LOAD	FULL LOAD	3/4 LOAD	1/2 LOAD	FULL LOAD	LOCKED (STARTING	FULL LOAD TORQUE AT FULL LOAD SPEED (LB.FT.)	LOCKED (STARTING) PERCENT OF FULL LOAD	PULL OUT (BREAKDOWN) PERCENT OF FULL LOAD	
2	900	860	75.0	74.5	70.0	68.0	60.0	47.5	3.9	18.0	12.2	130	210	J
	1800	1720	80.0	79.5	75.5	81.0	72.5	59.5	4.4	32.0	9.2	215	250	K
3	1200	1155	78.5	78.0	75.0	69.0	61.0	49.0	5.4	23.0	13.6	155	230	G
	900	860	78.5	79.0	75.5	67.5	59.0	46.0	5.8	30.5	18.3	130	205	K
	3600	3480	81.0	82.0	80.5	86.0	80.5	69.5	6.9	45.0	7.5	150	215	H
5	1800	1725	81.5	82.0	79.5	84.0	76.5	63.5	7.0	47.0	15.2	185	225	J
	1200	1160	81.0	81.0	78.0	71.0	62.5	50.0	8.5	40.0	22.6	150	215	G
	900	875	80.5	80.0	77.0	72.0	64.0	51.0	8.2	44.0	30.0	130	205	H
	3600	3460	84.0	85.0	84.0	88.0	84.0	75.5	9.8	63.0	11.4	140	200	H
7-1/2	1800	1740	83.5	84.0	82.5	84.0	80.0	71.5	10.4	63.5	22.6	175	215	H
	1200	1170	83.0	83.5	81.0	80.5	74.0	61.5	10.5	63.0	33.7	150	205	H
	900	875	80.5	80.5	77.5	71.5	63.0	50.5	12.5	63.0	45.0	125	200	K
	3600	3500	83.5	84.0	83.0	87.0	84.0	76.5	13.4	79.0	15.0	135	200	H
10	1800	1740	86.5	87.0	85.5	81.0	75.0	64.0	13.3	82.0	30.2	165	200	H
	1200	1165	82.5	82.5	80.0	78.5	70.0	57.0	14.0	80.0	45.1	150	200	H
	900	875	86.0	86.5	84.5	72.0	65.0	53.0	15.5	81.0	60.0	125	200	H
	3600	3485	85.0	86.5	86.0	88.5	87.0	82.0	19.5	112.0	22.6	130	200	G
15	1800	1765	85.5	86.5	85.0	81.0	73.5	61.5	20.5	112.0	44.5	160	200	G
	1200	1160	87.5	89.0	89.0	85.0	82.0	74.5	19.4	115.0	68.0	140	200	G
	900	870	86.0	87.5	86.5	75.5	69.5	58.5	22.5	116.0	90.6	125	200	G
	3600	3515	85.5	87.0	87.0	89.0	87.5	82.5	25.4	145.0	29.9	130	200	G
20	1800	1765	88.0	89.0	89.0	85.0	82.5	75.0	26.0	143.0	59.5	150	200	G
	1200	1160	88.0	89.5	89.0	85.0	81.5	74.0	25.8	145.0	90.5	135	200	G
	900	880	85.0	86.5	86.0	74.5	69.0	57.0	30.5	140.0	120.0	125	200	G
	3600	3510	89.0	90.0	89.0	88.5	87.0	81.0	30.4	172.0	37.4	130	200	F
25	1800	1755	88.5	90.0	89.5	83.0	78.5	68.5	32.5	180.0	74.8	150	200	G
	1200	1180	85.5	87.0	86.5	84.0	79.0	68.0	33.5	193.0	111.5	135	200	G
	900	880	86.0	88.0	87.5	77.0	72.0	61.0	36.5	175.0	150.0	125	200	G
	3600	3510	89.5	90.5	89.5	87.5	85.0	78.0	37.0	218.0	44.9	130	200	G
30	1800	1755	89.0	90.0	89.5	80.5	75.0	63.5	40.0	217.0	89.8	150	200	G
	1200	1175	86.5	88.5	89.5	86.0	84.0	78.0	38.5	215.0	134.0	135	200	G
	900	880	88.0	89.5	89.5	75.0	70.0	59.5	43.5	205.0	179.0	125	200	G
	3600	3515	90.0	91.0	90.0	86.5	83.0	75.0	48.5	310.0	59.8	125	200	G
40	1800	1770	88.0	89.5	89.0	86.0	82.0	73.0	51.0	292.5	119.0	140	200	G
	1200	1175	87.5	89.5	90.0	84.5	81.0	72.0	52.0	292.0	179.0	135	200	G
	900	875	88.0	90.0	90.0	76.0	71.5	61.0	57.5	280.0	240.0	125	200	F
	3600	3540	88.0	89.5	89.0	87.0	84.5	78.0	63.0	350.0	74.2	120	200	G
50	1800	1765	89.0	90.5	90.5	84.5	81.0	72.0	64.0	339.5	150.0	140	200	G
	1200	1170	88.0	90.5	91.0	85.0	83.0	76.5	64.0	370.0	224.5	135	200	G
	900	875	88.5	90.0	90.0	80.0	76.0	67.0	68.0	325.0	300.0	125	200	G
	3600	3540	89.5	91.0	91.0	89.0	89.0	86.0	72.5	410.0	89.0	120	200	G
60	1800	1770	90.0	91.0	91.0	86.0	83.0	75.0	75.0	454.5	178.0	140	200	G
	1200	1175	88.5	90.0	89.5	85.5	82.0	72.5	76.0	460.0	268.0	135	200	G
	900	875	89.0	90.5	90.5	80.5	77.0	68.0	80.5	410.0	360.0	125	200	G

See Page 2 for higher horsepowers and notes.

Combination Drives—Hollow Shaft



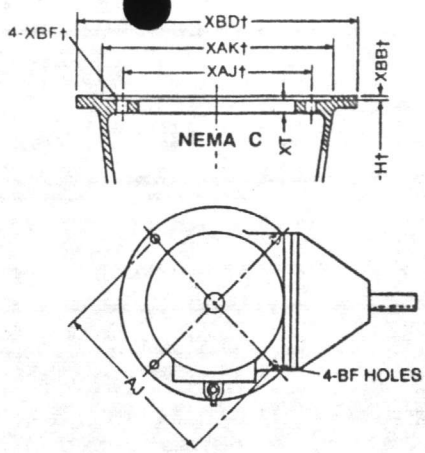


Table 4. COMBINATION DRIVE DIMENSIONS (Hollow Shaft) in inches

Model	CD	D	U	XA	N	XM	H	BE	BD	AJ	AK	BB	BF	Keyseat X
CH20	16	6⅜	1⅛	13	2¾	11¼	7¾	⅝	10	9⅛	8¼	3/16	7/16	¼ x ⅛ x 2¼
CH30	16	6⅜	1⅛	13	2¾	11¼	7¾	⅝	10	9⅛	8¼	3/16	7/16	¼ x ⅛ x 2¼
CH40 (12)	22¼	9	1½	16	3½	15¼	9	¾	12	9⅛	8¼	3/16	7/16	⅜ x 3/16 x 2¾
CH40	22¼	9	1½	16	3½	15¼	9	¾	16½	14¾	13½	3/16	1 1/16	⅜ x 3/16 x 2¾
CH60	22¼	9	1½	16	3½	15¼	9	¾	16½	14¾	13½	3/16	1 1/16	⅜ x 3/16 x 2¾
CH80	22¼	9	1⅞	16½	3½	15¼	9	¾	16½	14¾	13½	3/16	1 1/16	½ x ¼ x 2¾
CH110	26¾	11⅜	2	17½	3½	19⅝	9⅞	1	16½	14¾	13½	3/16	1 1/16	½ x ¼ x 2¾
CH125	26¾	11⅜	2	17½	3½	19⅝	9⅞	1	16½	14¾	13½	3/16	1 1/16	½ x ¼ x 2¾
CH150	31¾	13¼		20½	4¾	23⅛	10⅜	1	20	14¾	13½	3/16	1 1/16	
CH200	31¾	13¼	2 7/16	20½	4¾	23⅛	10⅜	1	20	14¾	13½	3/16	1 1/16	⅝ x 5/16 x 3¾
CH280	36	15	2¾	24	5½	26⅜	12⅜	1⅛	20	14¾	13½	3/16	1 1/16	⅝ x 5/16 x 4¾
CH350	40½	16½	2¾		5½	29⅞	13⅜	1¼	24½	22*	13½	⅜	1 5/16	⅝ x 5/16 x 4¾
CH425	41¾	16½		30	5¾	29⅞	12⅛	1¼	24½	22*	13½	⅜	1 5/16	
CH500	41¾	16½				29⅞	12⅛	1¼	24½	22*	13½	⅜	1 5/16	
CH600	45¼	16½				31⅞	10½	1¼	24½	22*	13½	⅜	1 5/16	

H as determined using masimum XN
**Also 5/8-11 Tap on 14-3/4 Bolt Circle 1" Deep*
NA—Not available

Table 4A. MAX. DRIVE COUPLING BORE SIZE AVAILABLE MOTOR STAND

Model	XD	Max. BX Fig. 1 & 4	Max. BX Fig. 2 & 3	T	MOTOR STAND XN	MOTOR STAND SPECIAL	XT	Top † Flange
CH20	1¾	1	NA	13¼	12½		10	½	
CH30	1¾	1	NA	13¼	12½		10	½	
CH40	2⅜	1½	1¼	18	16		12½	⅝	
CH60	2⅜	1½	1¼	18	16		12½	⅝	Dimensions XBD, XAJ, XAK, XBB and XBF to suit NEMA "P" or "C" electric motors.
CH80	2⅜	1½	NA	18	16		12½	⅝	
CH110	2⅜	1½	1½	23	17		—	¾	
CH125	2⅜	1½	1½	23	17		—	¾	
CH150	2⅜	1 15/16	1¾	27½	19		—	¾	
CH200	2⅜	1 15/16	1¾	27½	19		—	¾	
CH280	2⅜	2	2	31½	22		—	¾	
CH350	3⅛	2 3/16	2 3/16	35½	24		15	1	
CH425	3⅜	2 7/16	2 7/16	35¾	24		15	1	
CH500	3⅜	2 7/16	2 7/16	35¾	24		15	1	
CH600	4	2 11/16	2 11/16	38¼	24		—	1	

SPECIAL MOTOR STANDS AVAILABLE FOR MODELS LISTED. CONSULT FACTORY FOR DETAILS

Tolerances: Shaft Extensions plus .000 minus .001; Base Rabbet AK plus .002 plus .005; Coupling Bore BX plus .0005 plus .0015. The combination drive is desirable where 24-hour service is mandatory and is preferred by municipalities and waterworks corporations. Electric motor or engine may be used to drive the pump, permitting removal of either for repairs without interrupting service. As with the standard drive, combination applications are also available with solid shaft construction. See page 9.

ROTATION

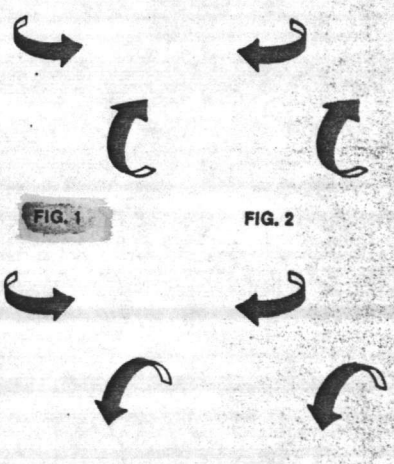


FIG. 1 FIG. 2 FIG. 3 FIG. 4

Gear drives with special rotation (Figs. 2, 3 and 4) and gear drives with speed decreasing of 7:4 or higher ratios are manufactured to order, and such orders are not subject to cancellation without charge for parts processed.

Peabody Floway

VIRGINIA SUPPLY AND WELL CO.

PAGE NO. 1
NO. of UNITS 1

QUOTE NO.: DATE: 12-13-85
QUOTED TO: Onslow Utilities ATTN. John Luciano

PROJECT NAME: Berkeley Manor CLNC
SERVICE APPLICATION: Deep Well
M.R./SALESMAN:
B.O.D. BY: Sam

LIQUID water	G.P.M.: 250
LIQUID TEMP. AMB	
WELL ID: 8"	PUMPING W.L.:
WELL/SUMP DEPTH:	HD. ABOVE IN FT.:
PUMP SETTING: 100'	FRICTION LOSSES 3,4
PUMP O.A.L.: 115'	T.D.H. 150'

PER API-610 ☐ YES ☐ NO

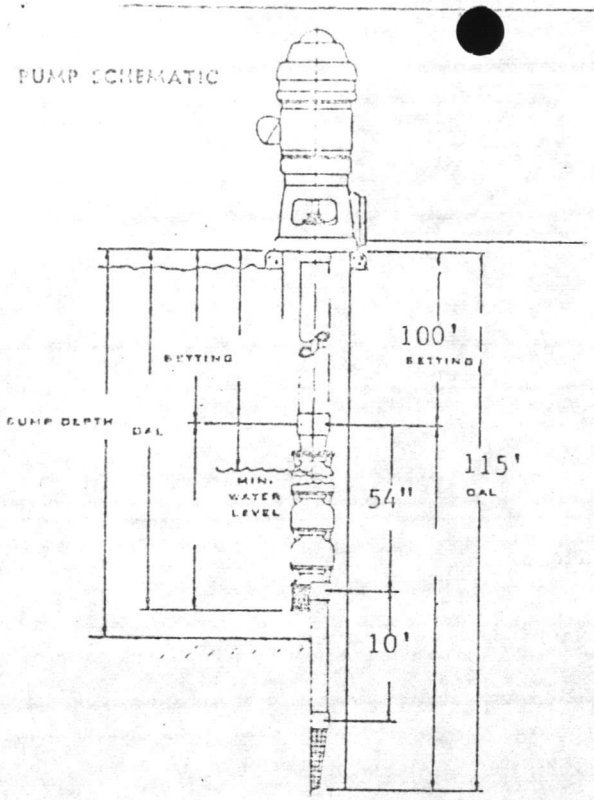
Quan.	WT.	DESCRIPTION	LIST	MULT.	NET
1		BOWL ASSY 6 STAGE 8JKL XXXX PRODUCT LUBE C.I.B.F.			
		Sect 15410 Skt C-1 2 C1 C1			
1		STRAINER SIZE: 6" TYPE Cone MAT'L: Galv.			
1		SUCTION PIPE SIZE: 6" LENGTH: 10' SCH: 40 Galv.			
100'		COLUMN ASSY 1 SHAFT: TUBE: COLUMN: 6 SCH: 40 XXXX PRODUCT LUBE DISCHARGE XXXX			
		2 - 1 X 6" X 5' W.L. Inner Column Assy. 416 SS			
		9 - 1 X 6" X 10' W.L. Inner Column Assy. 416 SS			
		2 - 6" X 5' Outer Column Assy. Galv.			
		9 - 6" X 10' Outer Column Assy. Galv.			
1		DISCH HEAD 6 X 12 TYPE: A XXXX PRODUCT LUBE			
		COMPANION FLG.			
		SHAFT GUARD			
		ASSEMBLY:			
		LAB TESTS: PERF.: N.W. WIT			
		HYDRO.: N.W. WIT.			
		NPSH: N.W. WIT.			
		SUBTOTAL			
		TOTAL WT. OF PUMP	ESC.		
1		DRIVER: 15 HP., 3 PH., 60 HTZ. 2307 460 VOLTS 1770 RPM., SF. 1.15	PUMP PRICE		
		WP-1 ENCLOSURE X VHS. STDY. BRG. VSS."AH"			
		STD THRUST BD: 12 X N.R.R., S.R.C. "U"			
		SPECIAL FEATURES: Sect 16402-C Pg 9 2.13 SUBTOTAL			
			ESC.		
		WT. OF DRIVER	DRIVER PRICE:		
1		CH-20 Johnston R.A.G.D. 1:1 Ratio			
1		20 HP pumping plant panel 460V full voltage start fuse and switch Type Nema size 3			

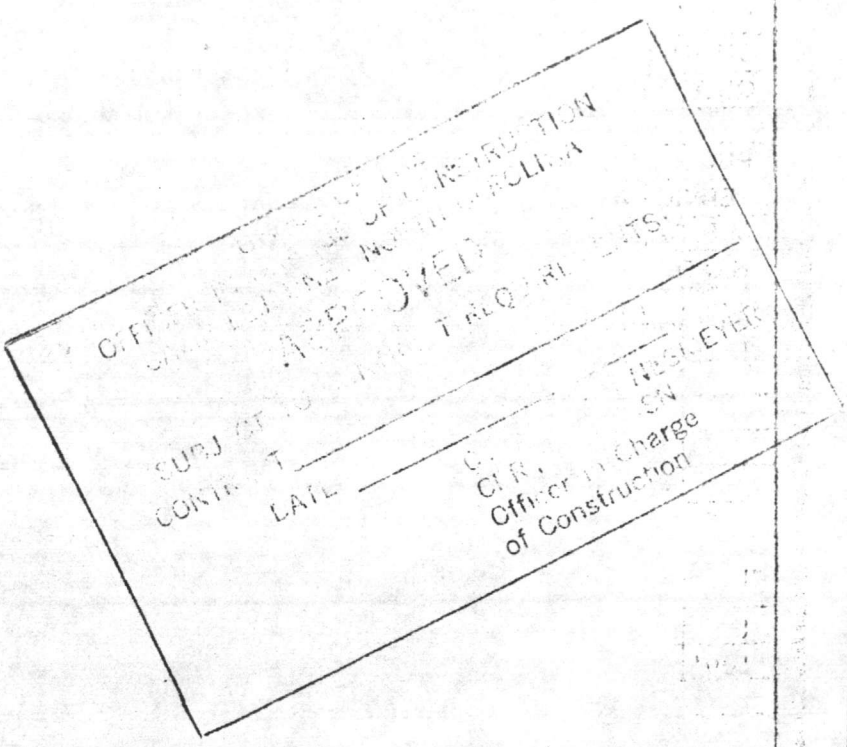
COMMENTS:

TOTAL NET
PRICE EACH
NO. OF UNITS
TOTAL PRICE

QUOTATION GOOD FOR ____ DAYS ESTIMATED SHIPMENT ____ (Destination)

1. PUMP SCHEMATIC — 6 STAGE 8 JKL BOWL ASSEMBLY





2. CALCULATIONS

A. Bowl Horse Power (BHP)

$$\frac{250}{\text{(USGPM)}} \times \frac{150}{\text{(Total Head)}} \times \frac{1}{\text{(Specific Gravity)}} \Big/ 3960 \times \frac{81\%}{\text{(Efficiency*)}} = 11.69 \text{ A.}$$

*Std Mat'l; Refer To Floway Catalogue Page E-19 For Correction Factors For Special Material Construction.

B. THRUST

$$\frac{3.9}{\text{(Thrust Factor (K*))}} \times \frac{150}{\text{(Total Head)}} \times \frac{1}{\text{(Specific Gravity)}} + \frac{2.67}{\text{(Shaft Wt.) \#/FT.}} \times \frac{100}{\text{(Total Shaft Length) in feet}} = \frac{852}{\text{THRUST}}$$

*Refer To Floway Catalogue Pages E-10 & 11

C. THRUST BEARING LOSS — (in horse power)

$$.0075 \times \frac{18}{\text{(RPM)}/100} \times \frac{852}{\text{(Thrust)}/1000} = .12 \text{ C.}$$

D. LINESHAFT MECHANICAL FRICTION LOSS — (in horsepower)

$$\frac{.53}{\text{(Shaft Loss* per 100')}} \times \frac{1}{\text{(Total Shaft Length (in feet))}/100} = .53 \text{ D.}$$

*Refer To Floway Catalogue Page E-2

E. TOTAL HORSEPOWER
SUM of A, C, & D = 12.34 H.P.
NOTE: Check Maximum Horsepower Against Driver Selection

F. FRICTION LOSSES (in feet)

$$\frac{3.3}{\text{Column Losses*}} + \frac{.1}{\text{Discharge Head Loss**}} = 3.4 \text{ FEET}$$

*Refer To Floway Catalogue Page E-4, 5, or 6
**Refer to Floway Catalogue Page E-7

G. SHAFT ELONGATION* — (in inches)

$$\frac{150}{\text{(Total Head)}} \times \frac{100}{\text{(Setting)}} \times \frac{3.9}{\text{(Thrust Factor (K)**)}} \times 12 \Big/ \frac{.78}{\text{(Shaft Area***)}} \times 29{,}000{,}000 =$$

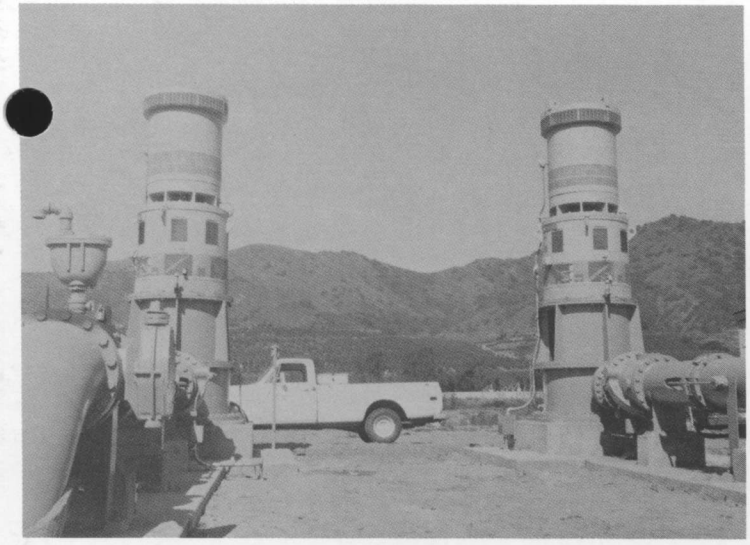
.031 ☒ AXIAL CLEARANCE OK

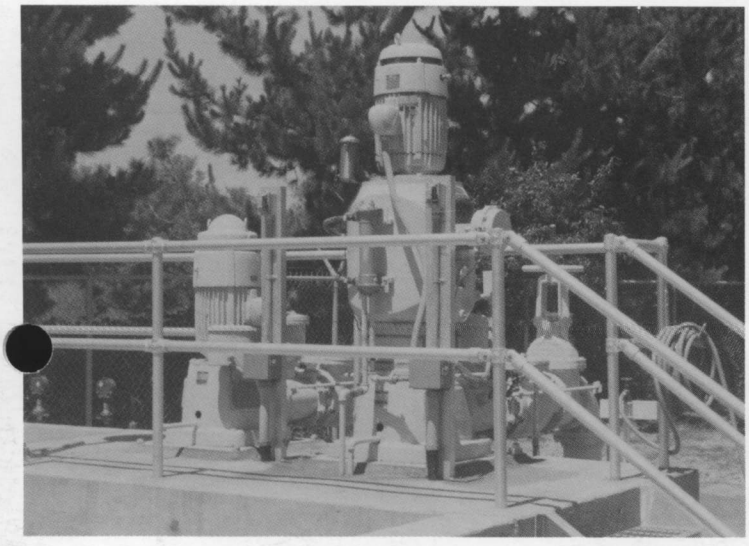
*Refer To Floway Catalogue Page E-14 & 15
**Refer To Floway Catalogue Page E-10 & 11
***Refer To Floway Catalogue Page E-14

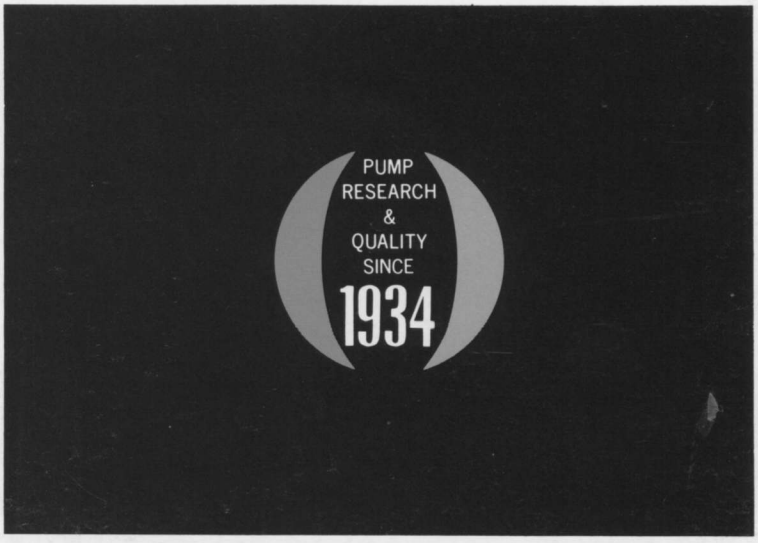
SHAFT ELONGATION MUST NOT EXCEED AXIAL CLEARANCE FOUND ON FLOWAY CATALOGUE PAGE E-10 & E-11, PLUS ALLOWANCE FOR IMPELLER ADJUSTMENT

Floway Vertical Pumps for Municipal Applications

Peabody Floway

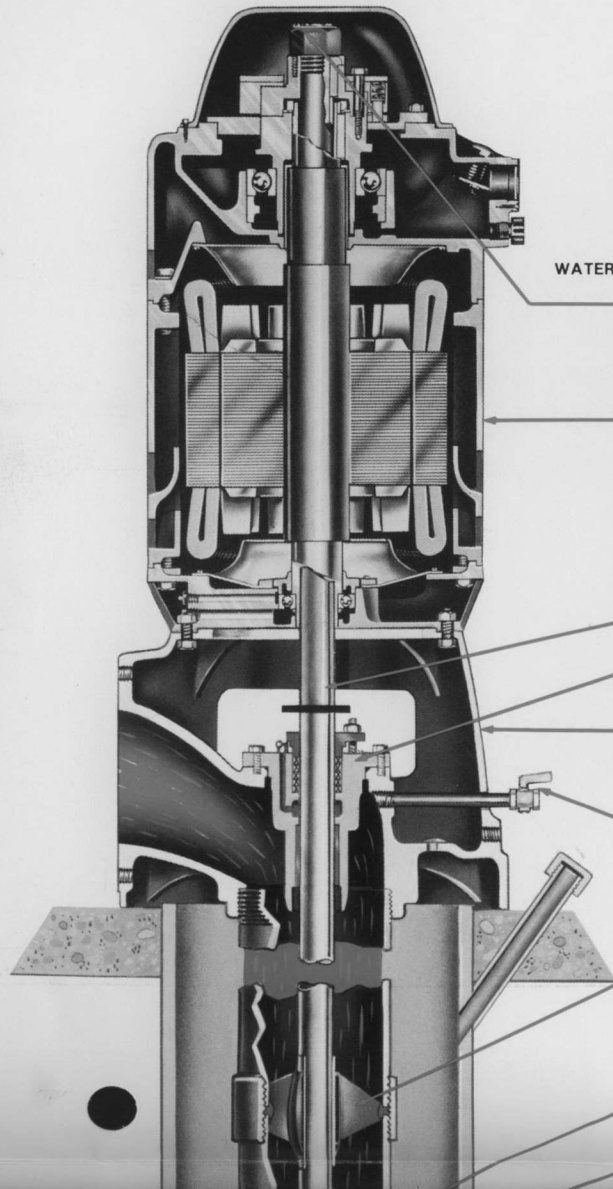






Rugged... yet Precision Performance is the built in feature of **Peabody Floway pumps.**

WATER LUBRICATED



WATER LUBRICATED PUMP COMPONENTS

HEAD SHAFT NUT
Bronze
Convenient vertical adjustment of rotating element.

Any NEMA (type P) standard hollow shaft electric motor or right angle gear drive can be used with Floway Vertical Turbine pumps. (Non-reversable ratchet for deep setting pumps — shown)

HEAD SHAFT
Stainless Steel

STUFFING BOX ASSEMBLY
Water and grease lubricated with bronze bearing .

DISCHARGE HEAD
Cast Iron
(Type "C" — shown)

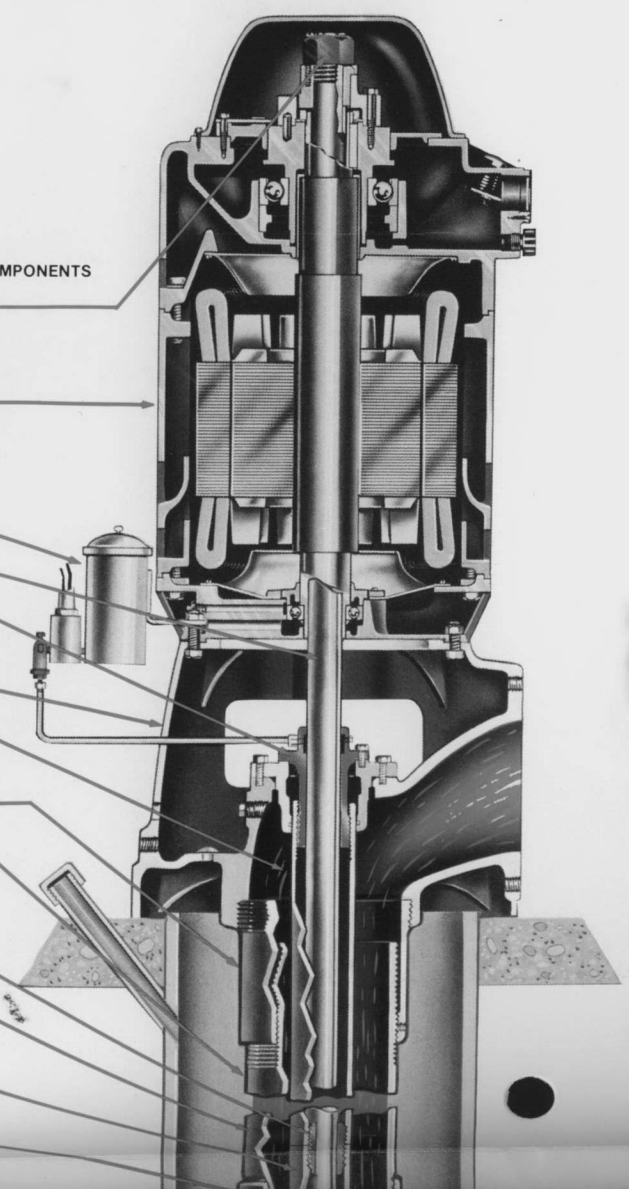
PRE-LUBE ASSEMBLY

BEARING RETAINER ASSEMBLY
Neoprene bearing, bronze retainer and stainless steel line shaft sleeve. (Spaced no more than 10 ft. apart).

LINE SHAFT
Cold drawn, stress relieved precision ground steel.

COLUMN PIPE WITH STEEL COUPLINGS
Maximum 10 foot sections

OIL LUBRICATED



OIL LUBRICATED PUMP COMPONENTS

HEAD SHAFT NUT
Bronze
Convenient vertical adjustment of rotating element.

Any NEMA (type P) standard hollow shaft electric motor or right angle gear drive can be used with Floway Vertical Turbine pumps. (Bolted or self-release coupling available)

OIL POT OR RESERVOIR ASSEMBLY

HEAD SHAFT
Steel

TENSION NUT ASSEMBLY
High strength bronze for aligning shaft enclosing tube.

DISCHARGE HEAD
Cast Iron (Type "CN" — shown)

TOP TUBE ADJUSTING NIPPLE
Extra heavy steel pipe with long running threads.

TOP COLUMN ADAPTOR
Cast Iron

ADJUSTING COLUMN NIPPLE
Steel
Long running threads allow column adjustment on deep setting pumps.

LINE SHAFT BEARING
Bronze

COLUMN PIPE WITH STEEL COUPLINGS
Maximum 20 foot sections of column.

SHAFT ENCLOSING TUBE
Extra heavy steel pipe (in 5 foot sections).

LINE SHAFT
Cold drawn, stress relieved precision ground steel.

COLUMN PIPE WITH STEEL COUPLINGS
Maximum 10 foot sections of column. All Floway pumps have 5 foot top & bottom column sections.

LINE SHAFT COUPLING
Machined from high tensile steel.

BOWL SHAFT
Stainless Steel

DISCHARGE CASE BEARING
Bronze

COLUMN ADAPTOR
Cast Iron

DISCHARGE CASE
Close-grained Cast Iron

THROTTLE BEARING
Bronze

IMPELLER (ENCLOSED)
Bronze
High efficiency design

IMPELLER COLLET
Steel (Not shown)

BOWL BEARING
Bronze
Lubricated by liquid pumped.

INTERMEDIATE BOWL
Close-grained Cast Iron
Porcelain enameled for high efficiency

SAND COLLAR
Bronze
Keeps sand out of suction bearing and combats sand erosion.

SUCTION CASE
Close-grained Cast Iron
Threaded for strainer or suction pipe. Extra large cavity for long bearing life — packed with nonsoluble grease.

SUCTION COUPLING
Steel
(NPT Threads)

SUCTION BEARING
Bronze

SUCTION PIPE
Steel

PIPE PLUG
Large cast iron plug allows easy bearing removal.

STRAINER
Galvanized Steel

LINE SHAFT
Cold drawn, stress relieved precision ground steel.

TUBE STABILIZER
Rubber
Spaced approx. 50 ft. apart

LINE SHAFT COUPLING
Machined from high tensile steel.

BOWL SHAFT
Stainless Steel

TUBE ADAPTOR BEARING
Bronze

LIP SEALS
Steel Shell and Neoprene Seals. Reduces water entering shaft enclosing tube.

COLUMN ADAPTOR
Cast Iron

DISCHARGE CASE
Close-grained Cast Iron

THROTTLE BEARING WITH "O" RING
Bronze

IMPELLER (ENCLOSED)
Bronze
High efficiency design.

IMPELLER COLLET
Steel (Not shown)

BOWL BEARING
Bronze
Lubricated by liquid pumped.

INTERMEDIATE BOWL
Close-grained Cast Iron
Porcelain enameled for high efficiency.

SAND COLLAR
Bronze
Keeps sand out of suction bearing and combats sand erosion.

SUCTION CASE
Close-grained Cast Iron
Threaded for strainer or suction pipe. Extra large cavity for long bearing life — packed with nonsoluble grease.

SUCTION COUPLING
Steel
(NPT Threads)

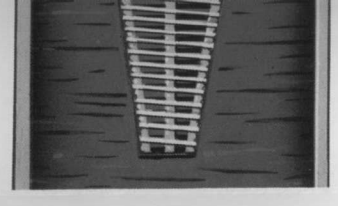
SUCTION BEARING
Bronze

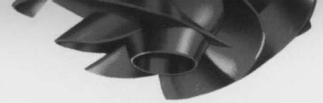
SUCTION PIPE
Steel

PIPE PLUG
Large cast iron plug allows easy bearing removal.

STRAINER
Galvanized Steel

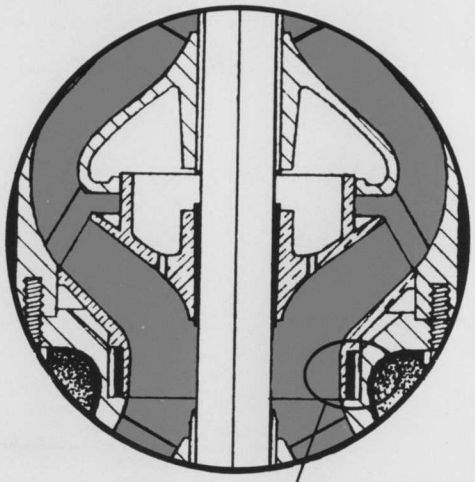
Semi-open Impeller





Semi-open Impeller

Optional Features Available



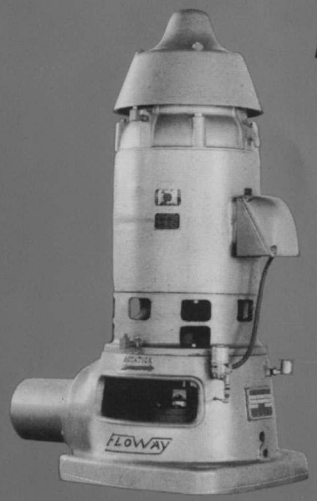
Wear Rings

- Other style discharge heads—cast iron or fabricated.
- Sole plates
- Either Semi-open or Enclosed Impellers.
- High pressure construction for extra deep settings.
- Bowl and impeller wear rings for enclosed impellers.
- Rubber bearings
- Extra lateral
- Special metalurgy and coatings.

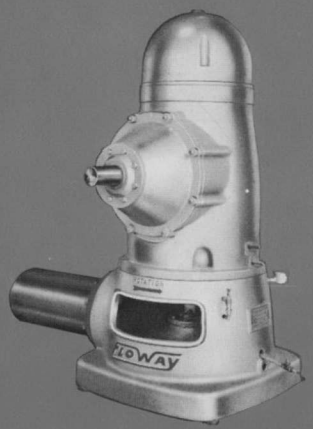
Why it pays to own Peabody Floway pumps...

- Two generations of experience in engineering and manufacturing pumps for use in the world's municipal areas stand behind every Peabody Floway pump and component.
- Peabody Floway pumps are competitively priced.
- A large stock of heads, column assemblies, bowls, impellers, etc., enable us to "customize" a pump to fit your needs.
- In our factory, at our distributors in the field, we take a personal interest in your pumping problems. When you need help you get it-whether it's when you are making an original pump purchase; considering pumping conditions that require changes in your pump; or repair service. Our business is to take care of YOU.
- Peabody Floway pumps are used world-wide, not only for municipal operations, but for handling other fluids in industrial and irrigation markets.

There's a Peabody Floway vertical pump for every need.

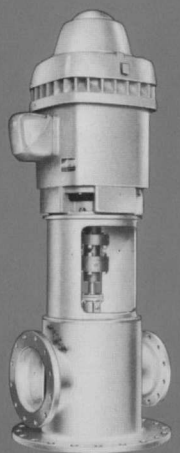


Electric Driven Direct Turbine



Gear Head Drive

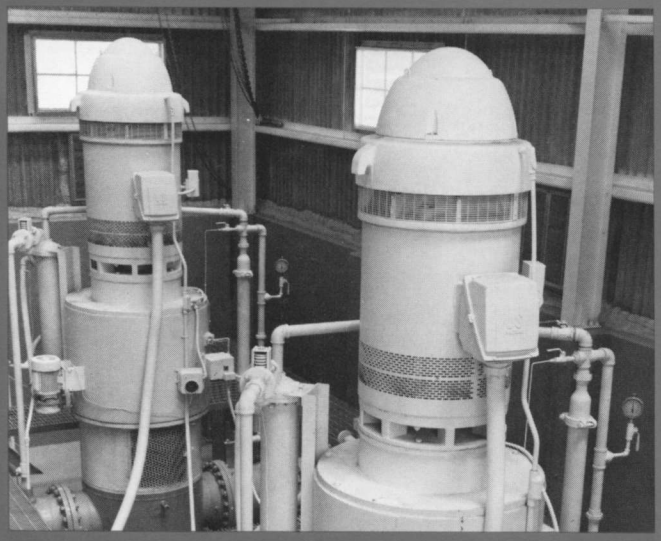
Fuel Pump

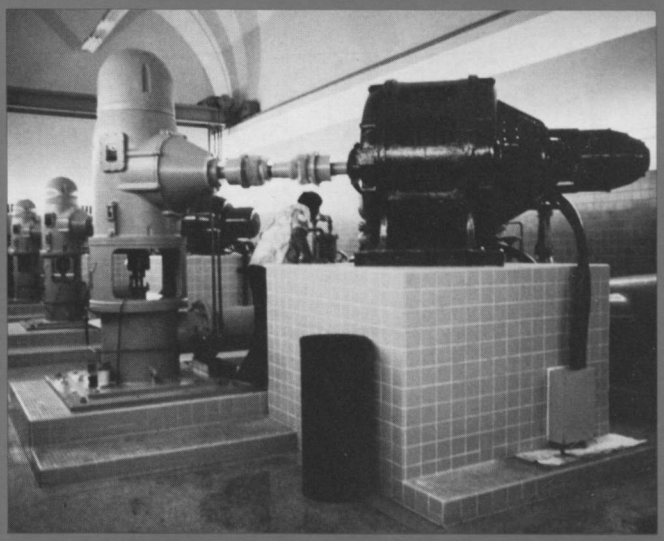


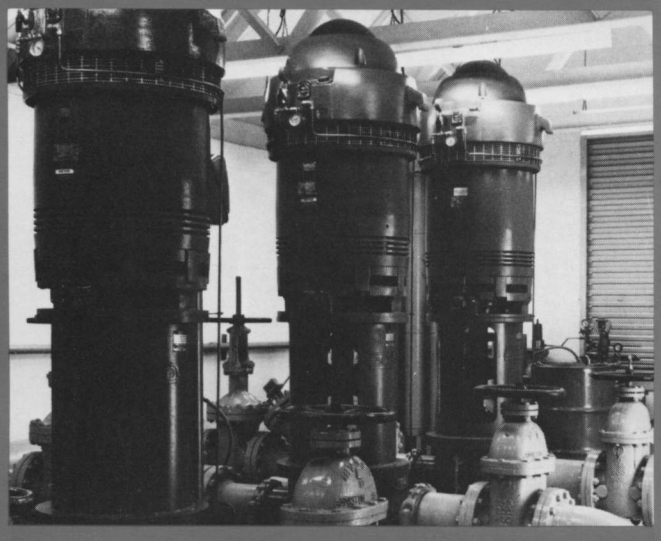
Booster Pump

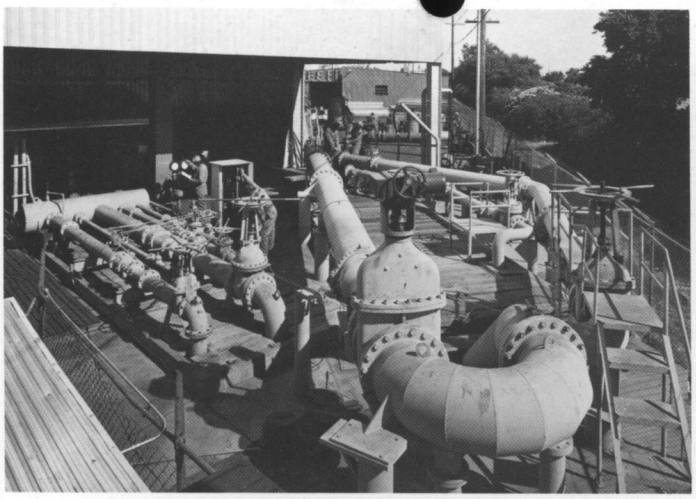
Combination Gear Head and Electric

Peabody Floway
INSTALLATIONS PROVE PERFORMANCE









The Peabody Floway "Performance Test" is your guarantee.

In keeping with the most modern of manufacturing methods the "test facility" is a key link in the Peabody Floway engineering department. This type of test research and practical design provides the quality control that insures you against pump downtime and guarantees delivery of required fluids. Peabody Floway's reputation rests on the built-in service and performance of thousands of installations pumping millions of gallons of fluids.

For nearly half a century, Peabody Floway has been manufacturing efficient, high quality vertical turbine pumps for cities and municipalities. From water supply and booster pumps to pumps for waste water and treatment plants, Floway has provided pumping excellence.

Our reputation is based on years of high efficiencies, quality materials and construction, innovative designs, reliable operation and excellent service.

At Floway you get more than just pumps. That's why people say *"There's a Difference..."* at Peabody Floway. There's a difference in our pumps, our people and our experience. The difference at Peabody Floway can make a difference in your installation.

For more information on Peabody Floway's vertical turbine pump, contact our authorized manufacturer's representative in your area, or:

Peabody Floway, Inc.
2494 S. Railroad Avenue
P.O. Box 194
Fresno, California 93707 USA
Telephone: (209) 442-4000
Telex: 355-483
Cable Address: FLOWAY

Peabody Floway *"There's a Difference..."*

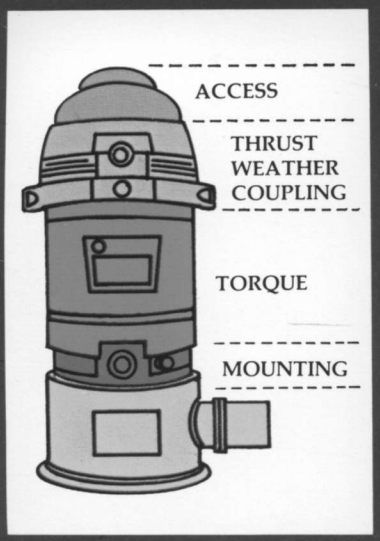
HYDRAULIC INSTITUTE 1917
MEMBER

Bulletin 34-1181

VERTICAL MOTORS AND DRIVES

U.S. High Thrust Pump Drives.

U.S. Motors was the first to recognize the special application needs of the vertical pump motor. Having patented the HOLLOSHAFT® motor in 1922, our engineers have been working ever since in the development and continual refinement of a complete line of Vertical motors.



Design Principles.

In our design concept the high thrust vertical motor is arranged into four functional zones.

1. The top zone is small and light to assure simplified access to the coupling area and inspection of the thrust bearing.

2. Below this is the coupling area and the essential elements of thrust bearings, with a large weather protected air intake to cool the motor and thrust bearing.

3. Next, the center, or winding section, develops the driving torque and houses the latest Insulife® insulation systems.

4. And below, the mounting base is compact and designed for momentary upthrust of the pump.

The benefit of this four zone design is a motor which is more easily installed and serviced and which allows operator protection and convenience.

Enclosures.

U.S. Motors enclosures provide protection against specific environmental conditions. Our motors are available in Weather Protected I and II, Totally Enclosed and Explosionproof models, ranging from 3 through 4,000 horsepower.

Weather Protected Type I.

HOLLOSHAFT
OR SOLID
SHAFT TYPE HU WPI
3-4,000 hp.

Open motors are constructed to minimize the entrance of rain, snow and airborne particles. Our enclosures exceed NEMA requirements because U.S. Motors has built in the extra protection needed for rugged outdoor applications. The ventilation system is designed to provide optimum cooling to the thrust bearing and electrical components, and is available in all motor sizes.

Weather Protected Type II.

HOLLOSHAFT
OR SOLID
SHAFT
TYPE HU WPII
250-4,000 hp.

This enclosure offers maximum protection against hostile outdoor atmospheres. The special ventilation system minimizes the entrance of high-velocity air, moisture and airborne particles into the cooling passages of the motor.

This unique design allows U.S. Motors to use standard internal components and adapt special enclosures with minimum delay.

Totally Enclosed and Explosionproof.

HOLLOSHAFT
TYPE JU TOTALLY
ENCLOSED
3-700 hp.

Totally Enclosed and Explosionproof models are available for severe atmospheres where destructive dusts, vapors and other harmful substances are found. Where Underwriters' approval is necessary, U.S. Motors' Explosionproof design is the answer. They are available in motor sizes through 700 horsepower.

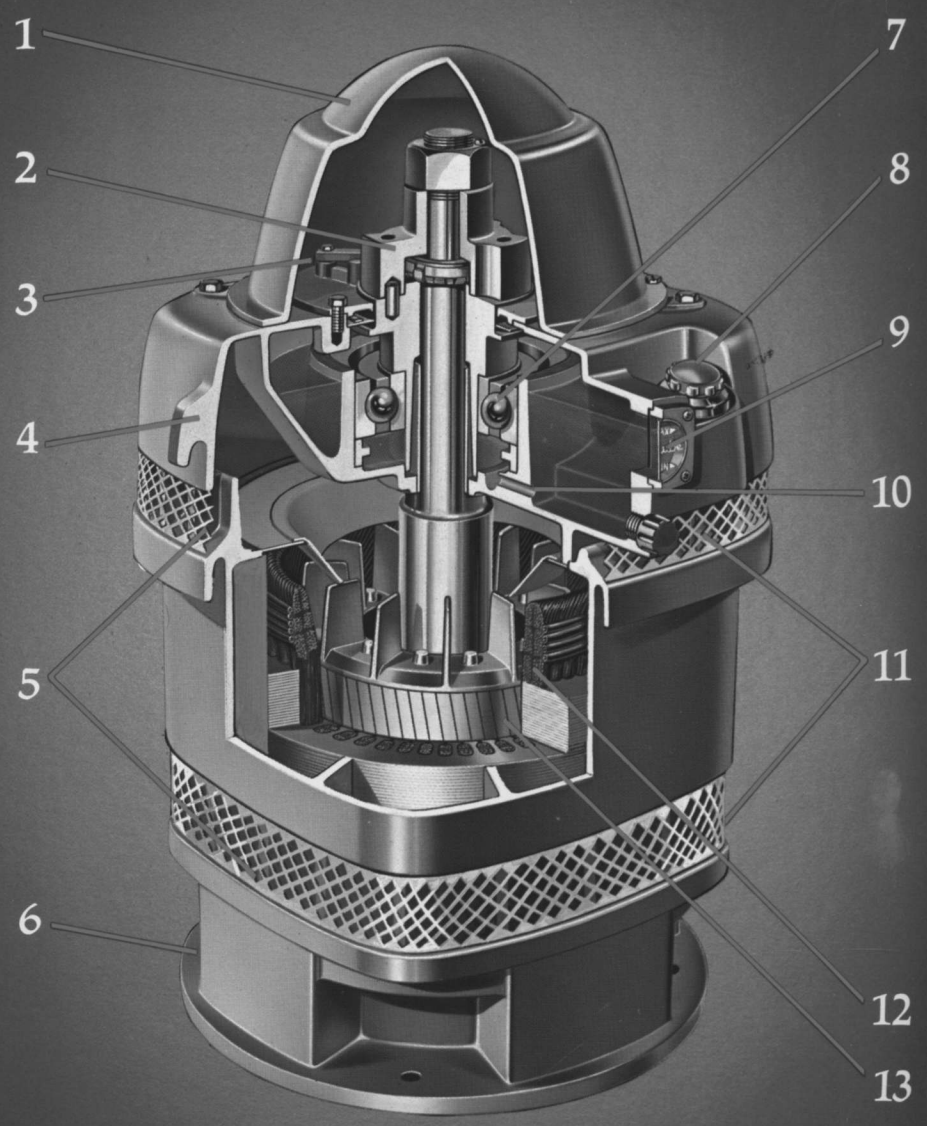
We're the Thoroughbreds.

Typical HOLLOSHAFT Construction Features.

U.S. Motors offers as standard construction a weather-protected motor that guards against a variety of environmental hazards and assures maximum protection. This design is the best solution against rigorous environments for industrial, municipal and agricultural environments. In addition, U.S. Motors offers drives with a combination of features and practical solutions for pump installations.

TYPICAL TYPE RU CONSTRUCTION.

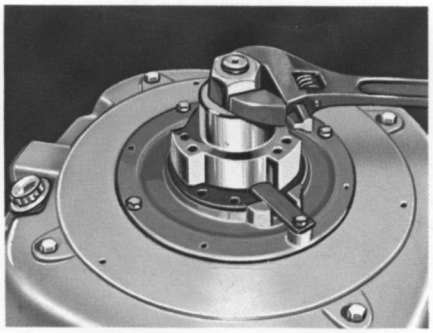
1. LIGHTWEIGHT TOP COVER
2. COUPLING readily accessible
3. LOCK BAR holds shaft during adjustments
4. LIFTING LUGS positioned for stability
5. PROTECTED AIR OPENINGS exceed NEMA Weather Protected Type I requirements
6. PRECISION MACHINED MOUNTING BASE, ample clearance for mounting bolt installation
7. RUGGED BEARING withstands heavy thrust loads
8. LARGE PLUG simplifies oil fill
9. VIS-O-LUBE® WINDOW for quick oil level reading
10. METERED OIL FLOW minimizes churning
11. DUAL AIR FLOW system for uniform cooling of motor top and bottom
12. WINDINGS PROTECTED by new, synthetic materials
13. SOLID CENTRICAST ROTOR with integral fan blades



Features and Optional Accessories.

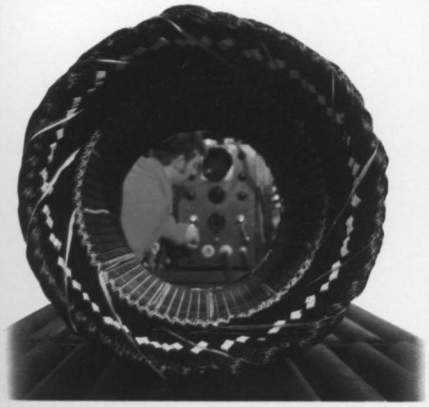
Many extra features, accessories and manufacturing steps have been incorporated into our high thrust designs to improve overall performance and greatly extend motor and pump life.

Interior Protection.



The enclosed top-end protects interior motor parts when the cover is removed. During installation or adjustment, tools, nuts, bolts and other small objects are prevented from falling into the motor.

Insulife® System.



The Insulife System combines non-hygroscopic insulating materials, bonded together with epoxy resins or multiple dips of varnish for long life. U.S. Motors also offers optional vacuum pressure impregnation insulation for frames 250 and larger.

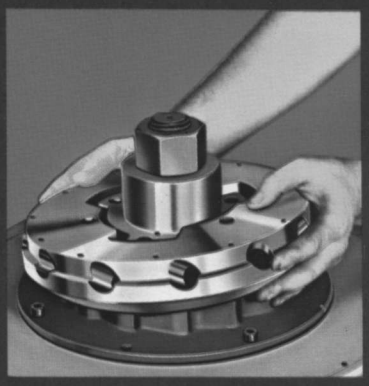
U.S. Ball-O-Matic®

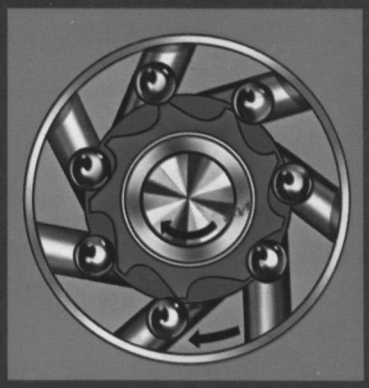
The U.S. Ball-O-Matic is clearly the finest ratchet design in the industry. When used in high thrust HOLLOSHAFT or Solid Shaft pump motors, it provides immediate protection against reversing due to phase reversals or from backspin at shutdown. The centrifugal-ball device permits the balls to rise free of the ratchet on start-up. During shutdown, the balls drop into the ratchet channels, limiting the maximum reverse-rotation to a 4½°.

On motors larger than 445 frame an energy-absorbing spring, combined with this durable ball-type ratchet, eliminates shock and provides extra protection for both motor and pump.

Balance.

All vertical motors are precision-balanced to less than one-thousandth of an inch (.001″) maximum vibration. After dynamically balancing each individual rotating component, the assembled motor is refine balanced and checked again with a precision Vibration Analyzer.





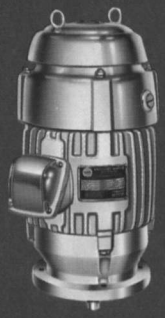
. . . IN LOCKED POSITION.

Normal Thrust Motors.

SOLID SHAFT
TYPE HV-AV
1-450 hp.

U.S. Motors designed normal thrust motors for direct connected loads in specific applications such as pumps, belt drives or applications with low thrust loads and high radial loads. Normal Thrust, Inline and CORRO-DUTY® motors are available for these operations. Open, enclosed and explosionproof features are also offered to better suit your specific application needs. Horsepower ranges from 1 through 450 horsepower.

Normal Thrust.



SOLID SHAFT
TYPE EV
3-200 hp.

Normal thrust motors are designed for use with fans, pumps and other general industrial applications. Axial thrust is normally very low with radial loads generally higher. The thrust bearing is locked for thrust in either direction. Available in open and enclosed designs, with both C and P NEMA brackets.

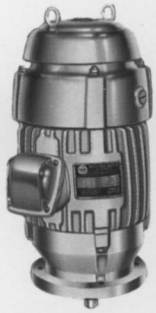
Inline Pump Motor.

The U.S. Motors Inline pump motor is specially designed and manufactured for long life in applications that involve changes in radial load due to suction variation and changes in pump capacity. These are available in enclosed and explosionproof enclosures.

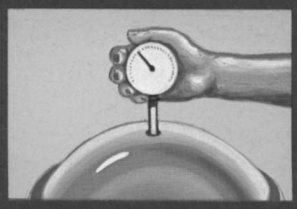
CORRO-DUTY Vertical Aerator Motor.

Special CORRO-DUTY treatment makes our motors unsurpassed for reliability in hostile environments, particularly those related to waste aeration. U.S. Motors offers the CORRO-DUTY vertical aerator to the municipal, pulp and paper, petroleum, chemical and other industries where severe applications exist.

SOLID SHAFT
TYPE TV-9
3-150 hp.



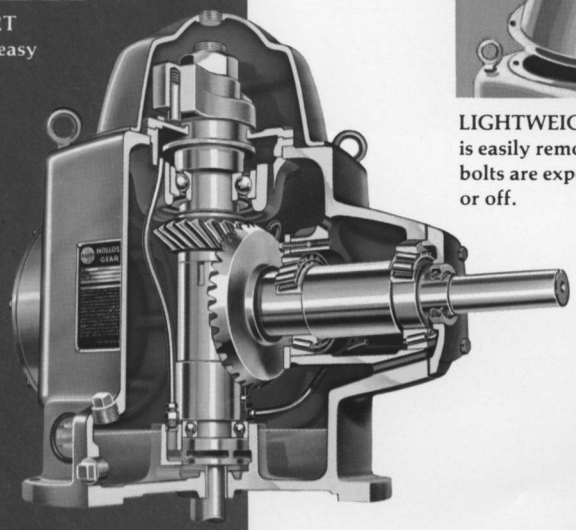
Geared Pump Right Angle Drives.



TACHOMETER PORT
is provided at top for easy check of pump rpm.

LIGHTWEIGHT TOP CAP
is easily removed; lifting eyebolts are exposed with cap on or off.

Our experience gained in the HOLLOSHAFT motor industry has been applied to gear drives used in non-electric areas or stand-by applications. Our exclusive, heavy duty, one-piece casting eliminates oil leaks and misalignment and provides longer life. All units are noise tested to insure built-in quality. Factory Mutual Approved for fire pump applications through frame size 200.



HOLLOSHAFT
TYPE GP
15-300 hp.

FLUSH STYLE
OIL GAUGE
VIS-O-LUBE window shows oil level at a glance (size 52 or larger).

Vertical Pump Motors.

The index may be used to identify and order additional literature on basic construction and application detail. Contact your nearest U.S. Motors office.

CONSTRUCTION	ENCLOSURE	HIGH THRUST				NORMAL THRUST				
		Type	Ratings (Page)	Dimensions (Page)	Description Brochures	Type	Ratings (Page)	Dimensions (Page)	Description Brochures	Installation Manual
HOLLOSHAFT	 WEATHER PROTECTED	AU RU HU	Sec. 502 Pgs. 2-11	Sec. 505 Pgs. 1-6, 11.1-11.6	BR509-4A Bulletin 509-25					Instr. 509-1
	 AUTOMOTIVE	TU	Sec. 507 Pg. 15	Sec. 505 Pgs. 9-10	BR509-4A					Instr. 509-1
	 TOTALLY ENCLOSED	TU JU	Sec. 502 Pgs. 12-20	Sec. 505 Pgs. 9.1-9.4, 13						Instr. 509-1
	EXPLOSIONPROOF	LU EU	Sec. 502 Pgs. 12-20	Sec. 505 Pgs. 9.1-9.4, 13	BR509-4A					Instr. 509-1
SOLID SHAFT with NEMA BASE	 DRIPPROOF	AV-4 RV-4 HV-4	Sec. 502 Pgs. 2-10	Sec. 505 Pgs. 37, 38.1, 39, 41, 42	BR509-10A Bulletin 509-25	AV RV HV	Sec. 502 Pgs. 2-10 Sec. 507 Pgs. 7, 8	Sec. 505 Pgs. 31-33, 52	BR509-4A	Instr. 509-1 Instr. 109-34
	 TOTALLY ENCLOSED	TV-4 LV-4 JV-4	Sec. 502 Pgs. 12-20	Sec. 505 Pgs. 38.3, 38.4		TV JV	Sec. 502 Pgs. 5-20 Sec. 507 Pgs. 9-10	Sec. 505 Pgs. 35, 36, 43	BR509-4A	Instr. 509-1 Instr. 109-34
	EXPLOSIONPROOF	EV-4	Sec. 502 Pgs. 12-20	Sec. 505 Pg. 44		LV EV	Sec. 502 Pgs. 12-20	Sec. 505 Pgs. 36.1, 36.2, 43	BR509-4A	Instr. 509-1 Instr. 109-34
	 INLINE					TV-9 LV-9	Sec. 507 Pgs. 5, 6	Sec. 505 Pgs. 65-68	BR509-5A	Instr. 109-34
	 AERATOR					TV-9	Sec. 507 Pg. 17	Sec. 505 Pg. 38.4	BR509-8A	Instr. 509-10
RIGHT ANGLE GEARED PUMP DRIVES		GP	Sec. 507 Pg. 3	Sec. 505 Pgs. 81, 82	BR409-16 BR509-32					Instr. 509-7

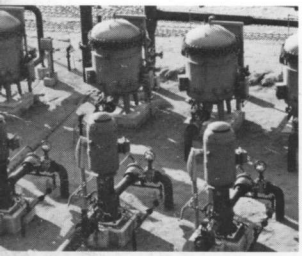
We're the Thoroughbreds.

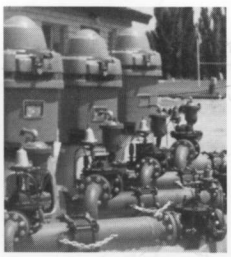
U.S. ELECTRICAL MOTORS
DIVISION OF EMERSON ELECTRIC CO.
125 OLD GATE LANE
MILFORD, CONNECTICUT 06460

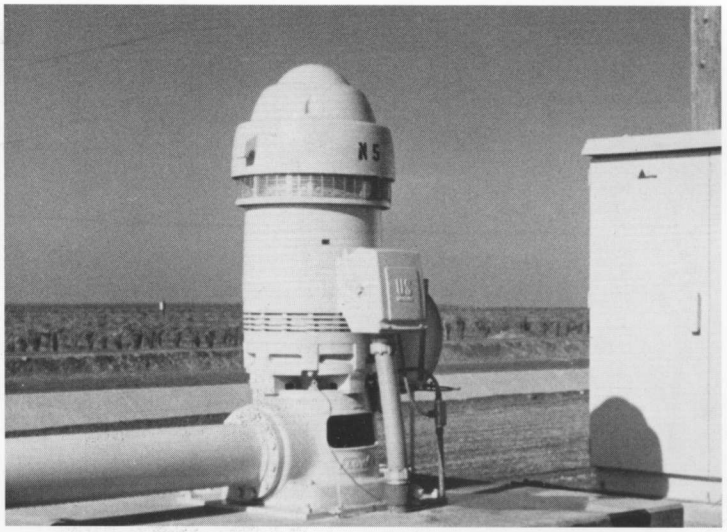
BR-509-91 4-80 Prices, construction and ratings subject to change without notice. Printed in U.S.A.

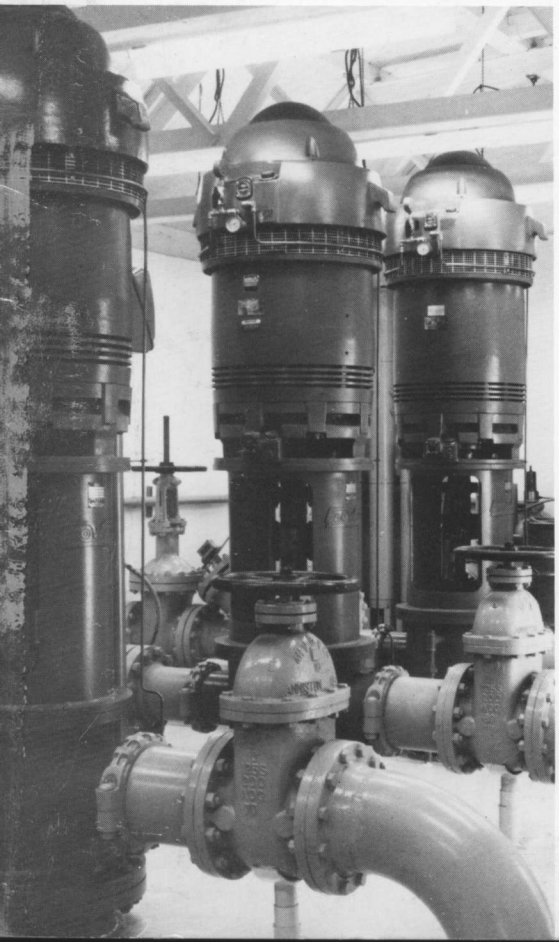
Peabody Floway *"There's a Difference..."*

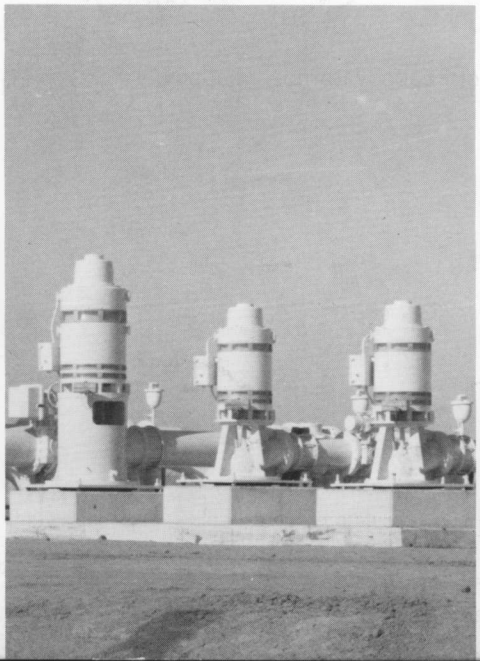
Vertical Pumps

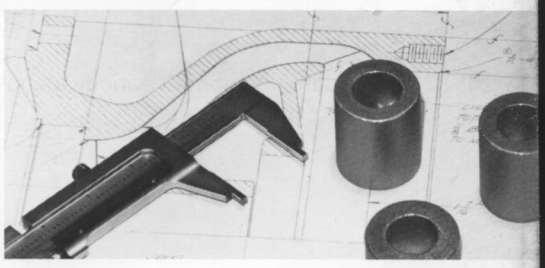




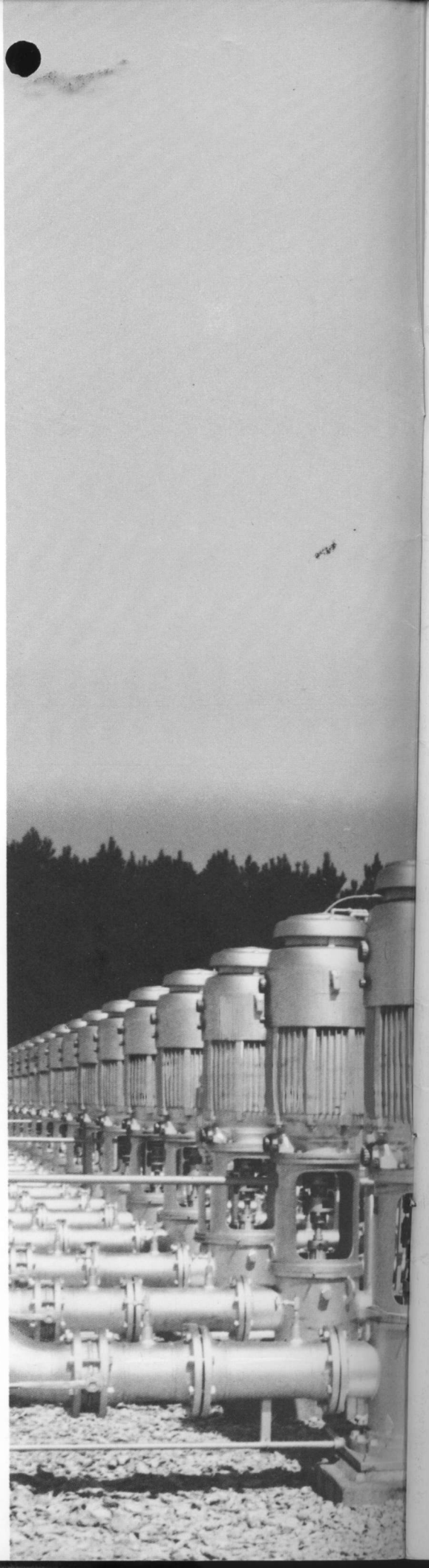








From earth to sky...



the Floway concept

Peabody Floway is a manufacturer of vertical pumps for industrial, municipal and agricultural markets. Quality and service are the company's primary concerns and best explain Floway's phenomenal growth to a position of national and international prominence in the pumping field. From the great water reservoirs beneath the earth's surface to the movement of highly sophisticated jet fuels and atomic materials, Peabody Floway pumps are there. From earth to sky . . . since 1934 a concept reflecting solid growth based on performance.

Floway's success is the result of many years of technological development and manufacturing experience. When J.T. Fiese and W.G. Firstenberger founded the company in 1934, they combined theory with practice to produce an improved line of vertical turbine pumps. Lowell Firstenberger, the current president, joined the company in 1937 and assumed active ownership and management in 1942. Under his leadership the company—know as Fiese & Firstenberger—helped develop the vertical turbine into the highly diversified industrial pump of today.

After World War II, the growing company concentrated on development and production. In 1957 they purchased the hydraulic division of the A.O. Smith Corporation and the trademark—Floway—was born.

The concept was emerging. Through progressive engineering, designing and manufacturing techniques, the vertical turbine rapidly became a more versatile pump with expanded applications for use in industrial, agricultural and municipal fields.

Fiese & Firstenberger Manufacturing, Inc. kept pace with its rapid growth by changing its name in 1965 to Floway Pumps, Inc., bringing about unity of purpose and identity.

Meeting the rising demand for moving high volumes of liquids and providing vertical pumps capable of delivering high pressures, the respected name of Floway could be seen throughout the world from water supply to jet fuel transfer systems—from mine dewatering to cooling towers—from effluent handling to refinery service.

The concept . . . from earth to sky was becoming defined.

As Floway was growing, halfway across the continent another company was emerging. It, too, had a concept: build a total environmental and energy group that will tackle pollution and safety problems in much the same manner Floway addressed itself to the pumping industry. The company, founded in Ohio, is what we know as Peabody International Corporation.

When tackling pollution and safety problems throughout the world, it is no coincidence meeting another company involved in related industries. So Peabody and Floway met. As both companies found reciprocal needs and compatible objectives, affiliation became tremendously advantageous to the companies and the environment. In 1975 affiliation became a reality. Now combined with the Peabody International Corporation, Peabody Floway continues its research, design and development as a leader in the manufacturing of vertical pumps for industrial, municipal, and agricultural applications.

The concept . . . from earth to sky is now a total reality.

Peabody Floway

A.

The excellence of Peabody Floway is a result of nearly half a century of experience in the manufacturing of vertical pumps. The company's continued growth and success reflects the attention given to the performance of its products, the facilities that produce them and the supportive services that help create and maintain them.

Facilities

Peabody Floway's main manufacturing facilities are headquartered on over twenty acres in Fresno, California, the state's geographic center. This well organized and modern manufacturing facilitiy enables Peabody Floway to produce thousands of pumping units each year. Computerized production and inventory control systems; strong, responsive management; sophisticated engineering techniques; expert craftsmen and well planned assembly methods all combine to create reliable pumping equipment.

Floway utilizes a number of facilities to achieve and maintain this highest standard of quality.

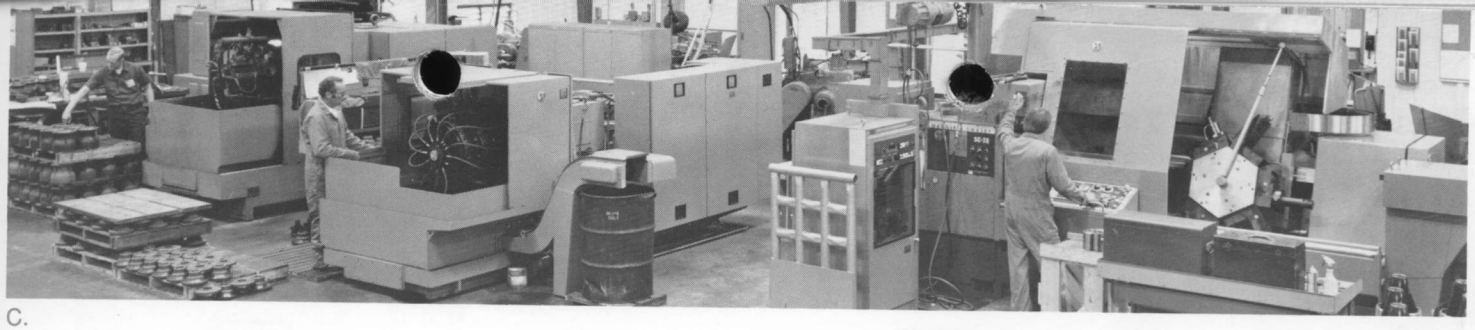
- A complete pattern shop uses a combination of modern designing skills and craftsmenship to produce and up-date the large number of patterns necessary to serve our customer's needs and to accommodate the ever changing requirements of a progressing industry.
- The manufacturing plant uses a calculated blend of modern machinery such as computer tape controlled lathes, automatic chucker lathes, vertical boring mills up to 100 inches, a sizeable number of engine and turret lathes, other special high production run machines and individualized production equipment.
- An extensive weld shop is maintained to accommodate the special fabrication necessary for industrial products and customized adaptions. This shop is staffed by A.S.M.E. Boiler Code Section IX welders utilizing both manual and semi-automatic M.I.G. and T.I.G. welding techniques.
- Modern paint facilities provide corrosive resistant protection to exposed surfaces and high quality appearance to the finished product.
- Floway's shipping techniques are quality controlled. The shipping and packaging departments carefully crate the finished pumps for safe transport.
- Floway maintains a fleet of modern long haul trucks manned by experienced company personnel for use in the delivery of bulk shipments or customized units.

In addition to the Fresno operation, Peabody Floway maintains other service and warehouse facilities in strategic locations in the United States with representatives and distributors throughout the world.

Services

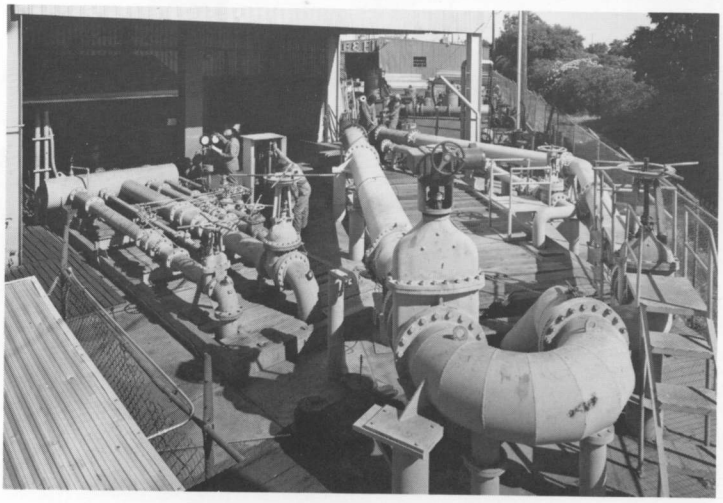
At Floway, service has been a way of life since 1934. Qualified personnel are ready and willing to assist each client before, during and after the sale. Peabody Floway has a reputation for this personalized service and stands committed to continue this outstanding aspect of its goal to provide quality pumping products.

B.



C.

D.



E.

Sales

Realizing that an understanding of the customer's needs is necessary to meet his requirements, Peabody Floway sustains an extensive network of experienced sales engineers, representatives and distributors both nationally and internationally. These qualified technicians team up with skilled application engineers in the company headquarters to assist in the proper design, selection and application of vertical pumping units capable of handling most any clear, hot or cold, volatile or non-volatile, corrosive or non-corrosive fluids.

Engineering

Peabody Floway's experienced engineering group converts the recommendations of its sales force to the manufacturing of a pump or pumps that meet the customer's demands. Peabody Floway's trained personnel specialize in providing the latest design and engineering skills necessary to insure quality performance. Floway's main goal is to produce an efficient pump with minimal hydraulic losses, vibration and noise levels. Continual effort is placed on updating and modifying existing products and developing new models consistent with industry requirements. Floway regularly complies with job specifications that contain seismic analysis. A.P.I.-610, A.S.M.E. Boiler and Pressure Vessel Codes, O.S.H.A., Hydraulic Institute, A.N.S.I. B58-1, MIL-P-13386-C, quality assurance and other industrial standards. Continuous research in pump application and an ongoing quest for materials best suited for each different pumping environment is the foundation of the engineering group. Quality control is basic to our engineering function.

Quality Assurance

In recognition that industry standards and customer requirements demands control of quality, Peabody Floway strongly supports a quality assurance system documented through a comprehensive quality assurance manual.

Quality assurance begins with the quotation phase and continues throughout the order process system, warranty period, and customer follow-up and service. This system meets quality control program requirements of A.S.M.E. Code, Section VIII, Division 1, Appendix C, MIL-I-45208A, and A.N.S.I. N45.2.

Test Laboratory

Hydraulic testing under a variety of operational conditions is another major function of Peabody Floway's engineering group. Where required, Floway's sophisticated measurement techniques insure that pumping units meet the performance, horsepower and efficiency requirements and that all pump components are operating as specified before shipment. Regular periodic tests insure all existing produce lines meet the designed performance.

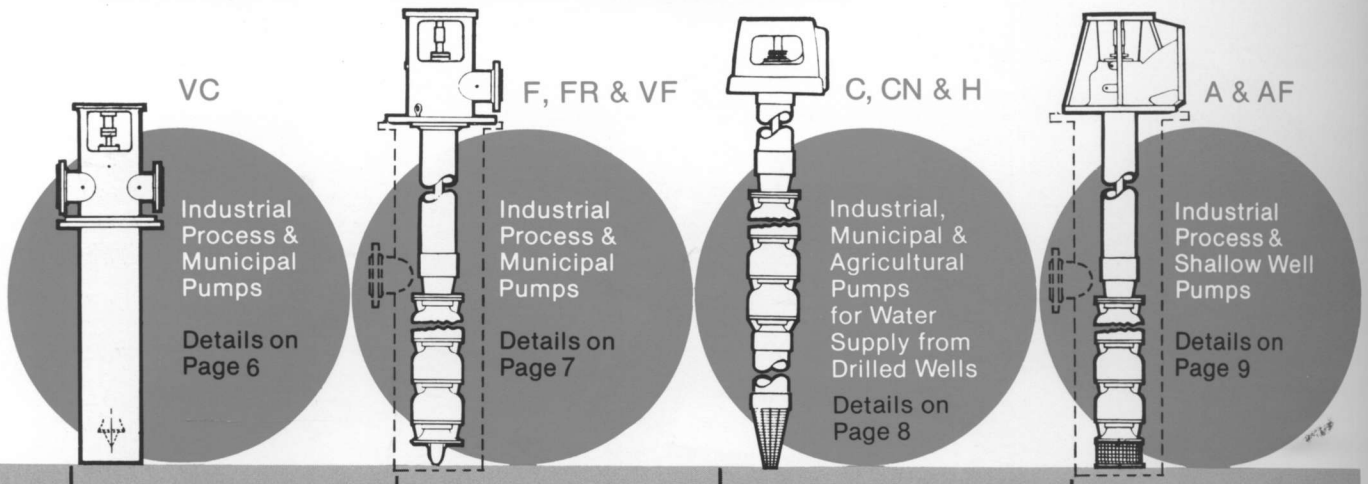
Floway's current test laboratory consists of large pits with metering lines ranging in size from 4'' to 24'' in diameter. Electrical service enables testing up to 1,250 HP and 2,300 volts.

Current testing and analysis capabilities include the following:
(1) Hydrostatic testing. (2) Performance testing. (3) NPSH testing. (4) Liquid dye penetrant testing. (5) Magnetic particle testing. (6) Noise level testing. (7) Vibration analysis.
(8) Radiographic examination of welds and castings.
(9) Ultrasonic examination of raw materials and welds.
(10) Metallurgical evaluation of materials and processes and material verification.

A. Headquarters and manufacturing plant Fresno, California.
B. Modern long haul trucks for safe and efficient deliveries of bulk or customized shipments.
C. Numerically controlled computer tape turret lathes increase accuracy and production.
D. A standardized pump service designed with the aid of Floway's experienced application engineers.
E. Modern test laboratory to insure quality pump performance.

We specialize exclusively in manufacturing

Vertical Pumps for Industrial, Municipal and Irrigation Systems



Type	Vertical Close Coupled Single or Multi-stage Turbine with Closed Suction	Vertical Close Coupled Single or Multi-stage Turbine	Vertical Line Shaft Deep Well Type Pump Oil or Product Lubrication	Vertical Close Coupled or Shallow Well, Single or Multi-stage Turbine
Rate of Flow (U.S.G.P.M.)	To 35,000 GPM	To 35,000 GPM	To 10,000 GPM	To 5,000 GPM
Pressure	To 2,500 PSI	To 1,200 PSI	To 1,500 Ft.	To 400 Ft.
Setting	To 50 Ft.	To 100 Ft.	To 1,200 Ft.	To 250 Ft.
Liquid Handled	Water, Chemical Solutions, Petroleum, Condensates, L.P.G., Hydrocarbons	Water, Chemical Solutions. (Acidic or Alkaline) Hydrocarbons	Water, Salt Water, Mine Water	Water, Chemical Solutions, Fuels, Salt Water
Temp.Range	-150°F To +450°F	-150°F To + 450°F	Ambient	-20° To +140°F
Horsepower Range	To 3,000 HP	To 3,000 HP	To 1,000 HP	To 350 HP
Drives	Electric Motors, Steam Turbines, Gear Drives, Variable Speed Drives	Electric Motors, Steam Turbines, Gear Drives, Variable Speed Drives	Electric Motors, Steam Turbines, Gear Drives, Variable Speed Drives	Electric Motors & Gear Drives
Service	Fueling Service, Refinery Service, API 610, Chemical Plants, Closed Suction Applications, Booster Service	Cooling Tower Service, Fueling Service, Refinery Service, API 610, Chemical Plants, Power Plant Service	Drilled Wells and any Surface Water Source, such as Lakes, Rivers, Reservoirs, Mine Dewatering	Cooling Tower Service, Pollution Control, Agriculture, Booster Service
Materials of Construction	Any Machinable & Weldable Alloys or Combinations Available. Cast Iron/Bronze Fitted Standard	Any Machinable & Weldable Alloys or Combinations Available. Cast Iron/Bronze Fitted Standard	Any Machinable Alloys Available for Column & Bowls. Cast Iron/Bronze Fitted Standard	Any Machinable Alloys Available for Column & Bowls. Cast Iron/Bronze Fitted Standard

Pump Drives Available:

Variable Speed Drives
Both Electrical & Hydraulic

Gear Drives
Right Angle

Combination Drives
Motor & Right Angle Gear Drives

Submersible

Municipal & Industrial Pumps

Details on Page 10

VU

Industrial Process & Municipal Pumps

Details on Page 11

CF & CG

Industrial Process & Building Trade Pumps

Details on Page 12

Mixed Flow

Industrial, Agricultural & Municipal Pumps

Details Contact Factory

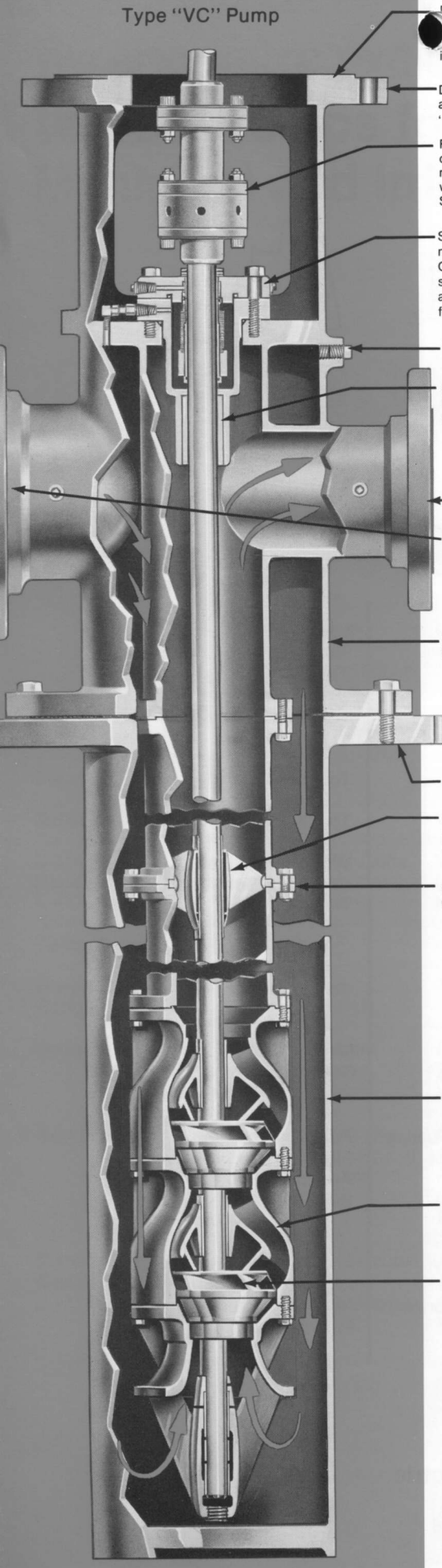
Vertical Submersible Turbine Pump	Vertical Single or Multi-stage Turbine with Below Ground Discharge	Vertical Multi-stage Turbine	Vertical Single or Two Stage Mix Flow, Oil or Product Lubrication
To 6,000 GPM	To 35,000 GPM	To 600 GPM	To 50,000 GPM
To 1,200 Ft.	To 300 Ft.	To 400 PSI	To 125 Ft.
To 1,200 Ft.	To 250 Ft.	Close Coupled	To 100 Ft.
Water	Water, Chemical Solutions, Salt Water	Water, Fuels, Hydrocarbons, Condensates	Water, Chemical Solutions, Salt Water, Treated Water
Ambient	-20°F to +200°F	-20°F To +200°F	-20°F To +200°F
To 500 HP	To 2,000 HP	To 100 HP	To 1,500 HP
Electric Motors Submersible Type 4" through 18"	Electric Motors, Gear Drives, Variable Speed Drives	Electric Motors & Variable Speed Drives	Electric Motors, Gear Drives, Variable Speed Drives
Drilled Wells, Booster Supply in Both Horizontal & Vertical Applications	Cooling Tower Service Pollution Control, Flood Control, Agriculture, Any Surface Water Source	High-rise Building & Fueling Service Booster Pumps	Pollution Control, Flood Control, Agriculture, Any Surface Water Source
Cast Iron/Bronze Fitted-Standard	Any Machinable & Weldable Alloys or Combinations Available. Cast Iron/Bronze Fitted-Standard	Any Machinable Alloys Available for Column & Bowls. Cast Iron/Bronze Fitted Standard	Any Machinable & Weldable Alloys or Combinations Available. Cast Iron/ Bronze Fitted-Standard

Vertical Electric Motor
Hollow Shaft or Solid Shaft Designs

Steam Turbine Drives

Submersible Electric Motor Drives
Both Water and Oil Filled Available

Type "VC" Pump



Registered driver mounting flange eliminates misalignment and simplifies installation.

Discharge head designed to accept any N.E.M.A. Type "P" fit drivers.

Flanged adjustable spacer coupling shown. Allows mechanical seal removal without disturbing driver. See Page 17.

Sleeve mounted mechanical seal shown. Other types of mechanical seals or stuffing boxes available. See page 16 for further selections.

Vapor vent

Separate seal housing bearing for additional shaft support

A.N.S.I. flanged discharge connection

A.N.S.I. flanged suction connection

Fabricated steel discharge head for high strength

Mounting base

Bearing center spacing designed for maximum bearing life.

Flanged column (threaded available)

Suction barrel sized to provide maximum hydraulic performance.

For bowl assembly construction features see page 14.

Enclosed impellers (semi-open available)

Low NPSH first stage impeller design available when impractical to lengthen barrel.

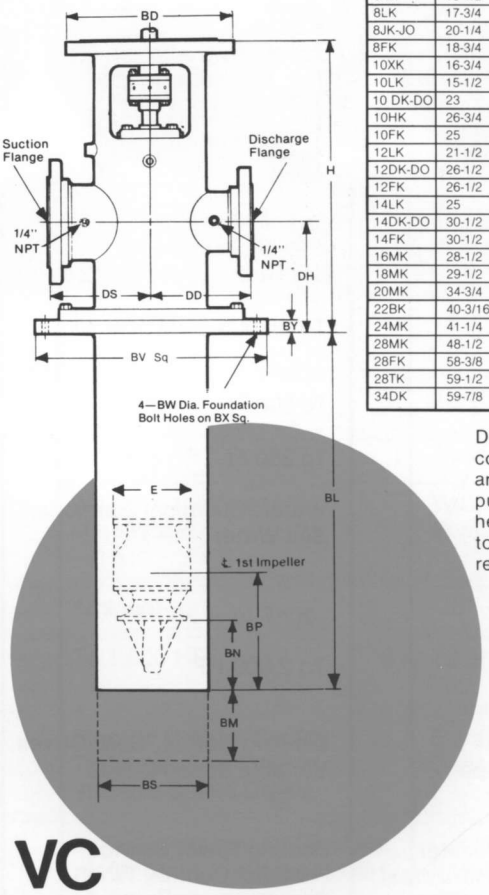
Most pumps are shipped completely assembled (except driver & barrel). This reduces on site installation.

Type "VC" Discharge Head Dimensions

Discharge X Suction XBD	BS	BV	BW	BX	BY	DD&DS	DH	H
3x4x12	6-5/8	15	3/4	13	1	9	8	33
4x6x12	8-5/8	15	3/4	13	1	10	10	36
5x6x12	10-3/4	18	3/4	16	1-1/4	10	10	36-1/4
6x8x12	12-3/4	21	7/8	18	1-1/4	11	12	39-1/4
6x8x16-1/2	14	23	7/8	20	1-1/4	12	12	39-1/4
8x10x16-1/2	16	25	7/8	22	1-1/4	14	13	44-1/4
8x10x20	18	27	7/8	24	1-1/4	15	13	44-1/4
8x10x24-1/2	20	29	7/8	26	1-1/2	16	13	44-1/2
10x12x24-1/2	24	34	1-1/8	30	1-1/2	20	15	47-1/2
12x14x24-1/2	30	40	1-3/8	36	1-1/2	21	16	53-1/2
14x16x30-1/2	36	48	1-3/8	44	1-3/4	25	17	54-3/4
16x18x30-1/2	42	56	1-5/8	52	2	29	21	64
18x20x42	48	62	1-5/8	58	2	32	22	65
20x24x42	48	62	1-5/8	58	2	32	24	68
24x30x42	54	70	1-3/4	66	2-1/4	36	28	77-1/4
30x36x42	60	78	1-7/8	73	2-1/2	40	32	84-1/2

Barrel Dimensions

Bowl Size	BL	BM	BN	BP	E
4HO	15	3-3/8	4-1/4	9-3/4	3-3/4
6LK	15	4-1/4	5-1/2	9-3/4	5-5/8
6JK-JO	15-1/4	5	5-1/2	10-1/4	5-7/8
8XK	13-1/2	5	5-3/8	9-1/8	7-5/8
8LK	17-3/4	6-1/8	5-3/4	9-1/4	7-1/2
8JK-JO	20-1/4	7-1/4	6-7/8	12-5/8	7-3/4
8FK	18-3/4	6	6	12	7-3/4
10XK	16-3/4	6-1/2	6-1/4	10-3/4	9-5/8
10LK	15-1/2	7-5/8	7-1/4	13	10
10 DK-DO	23	8-1/2	10-1/2	18-1/4	9-3/8
10HK	26-3/4	10	6	21-1/2	9-1/2
10FK	25	8-1/2	9	19-1/2	9-1/2
12LK	21-1/2	9-3/8	9-1/4	15	11-5/8
12DK-DO	26-1/2	10-1/4	11-1/4	19-1/2	11-1/4
12FK	26-1/2	10-5/16	8-1/2	19-3/4	11-3/4
14LK	25	9-7/8	9-1/2	18-1/2	13-3/4
14DK-DO	30-1/2	12	13	22-1/2	13-1/8
14FK	30-1/2	13-3/4	11	21	14
16MK	28-1/2	13	10	20	15-3/8
18MK	29-1/2	12-1/2	10	21	17-1/2
20MK	34-3/4	14-5/8	12	24-1/2	20
22BK	40-3/16	17-1/2	11-3/4	22-11/16	21
24MK	41-1/4	17	14	28-1/4	23-1/2
28MK	48-1/2	22-5/8	17-1/2	31	27-1/4
28FK	58-3/8	24-3/4	17-1/2	35-5/8	27-7/16
28TK	59-1/2	28-7/8	21	37-5/8	27-1/2
34DK	59-7/8	25-3/8	23	41	33-1/2



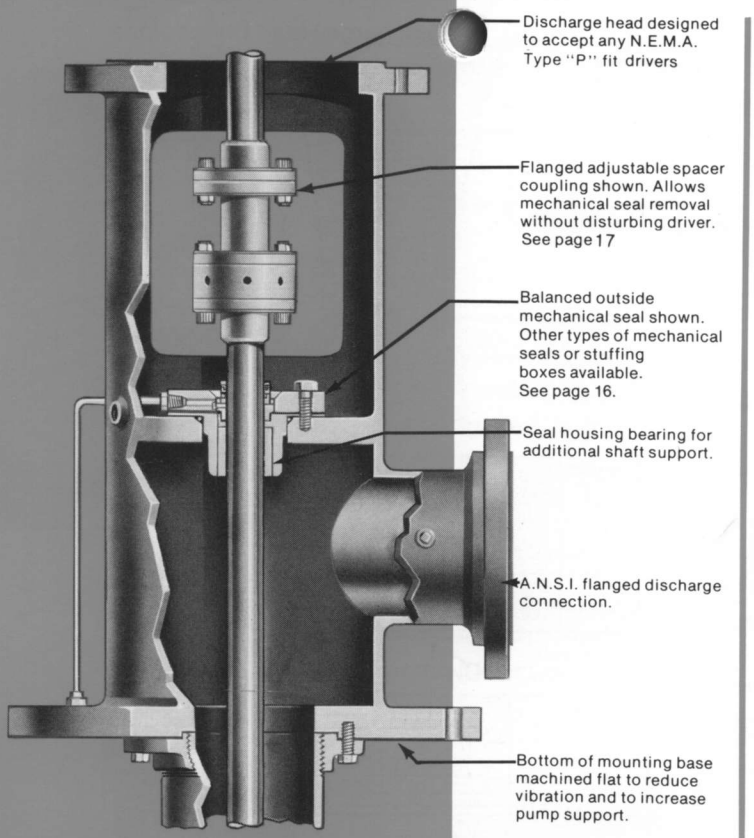
Dimensions shown are considered standard but are not for construction purposes. Discharge heads may be designed to fit most dimensional requirements.

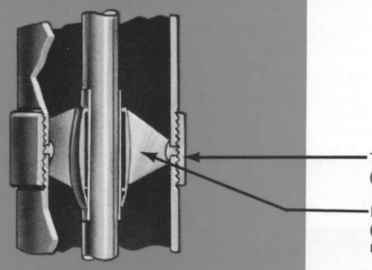
VC

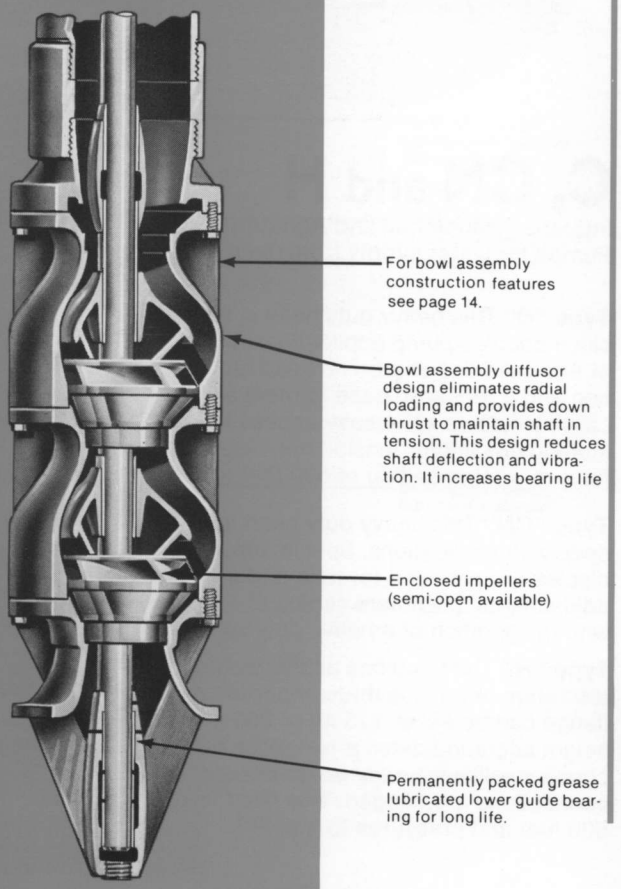
Industrial Process and Municipal Pumps

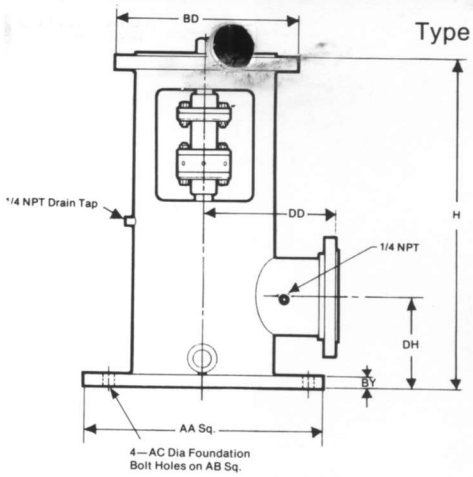
The type "VC" unit is ideally suited for booster or fluid transfer service. This unit incorporates a fabricated discharge head and barrel and can be constructed to accommodate pressures to 2,500 PSI. The pump is particularly effective in handling fluids with high vapor pressure. The NPSH requirements of the pump can always be satisfied by providing sufficient length of barrel and column to place the lowest impeller at the required elevation.

In contrast to noisy horizontal booster pumps, the "VC" unit reduces noise level because sound frequencies are dampened by the impellers being submerged in below-ground liquid. The vertical design also saves space. Submerged impellers allow the pump to be started without priming, thus lowering operating costs. Our welders are certified in accordance with A.S.M.E. code for Unfired Pressure Vessels, Section IX.





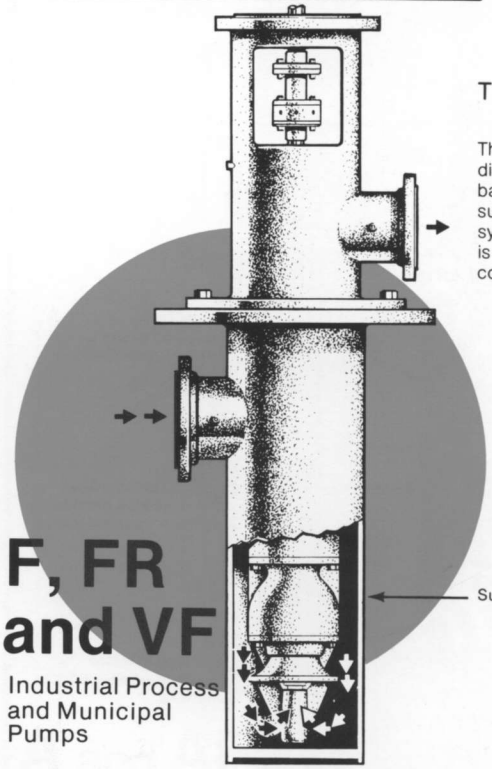




Type "F" and "FR" Discharge Head Dimensions

Dimensions shown are considered standard but are not for construction purposes. Discharge heads may be designed to fit most dimensional requirements.

Discharge Size XBD	AA	AB	AC	BY	DD	DH	H
4x12	15	13	5/8	1-1/4	9	9	29
5x12	18	15	5/8	1-1/4	11	9	30
6x16-1/2	26	23	7/8	1-1/4	13	9	32
8x16-1/2	26	23	7/8	1-1/4	13	10	33
10x20	26	23	7/8	1-1/4	14	11	38
12x24-1/2	32	28	1-1/8	1-1/2	17	14	46
14x24-1/2	32	28	1-1/8	1-1/2	17	15	48
16x30-1/2	40	35	1-1/8	1-3/4	21	15	52
18x30-1/2	40	35	1-1/8	1-3/4	21	16	54
20x30-1/2	40	35	1-1/8	1-3/4	21	18	56
24x36	44	36	1-3/8	1-3/4	24	20	60
24x42	48	42	1-3/8	1-3/4	27	20	64
30x42	56	48	1-1/2	2	30	24	68
36x55	64	56	1-5/8	2-1/4	34	28	72



Type "VF" Pump

The type "VF" pump discharge head has a flanged base suitable for sealing suction pressure in a closed system. Below base suction is a feature of the "VF" construction.

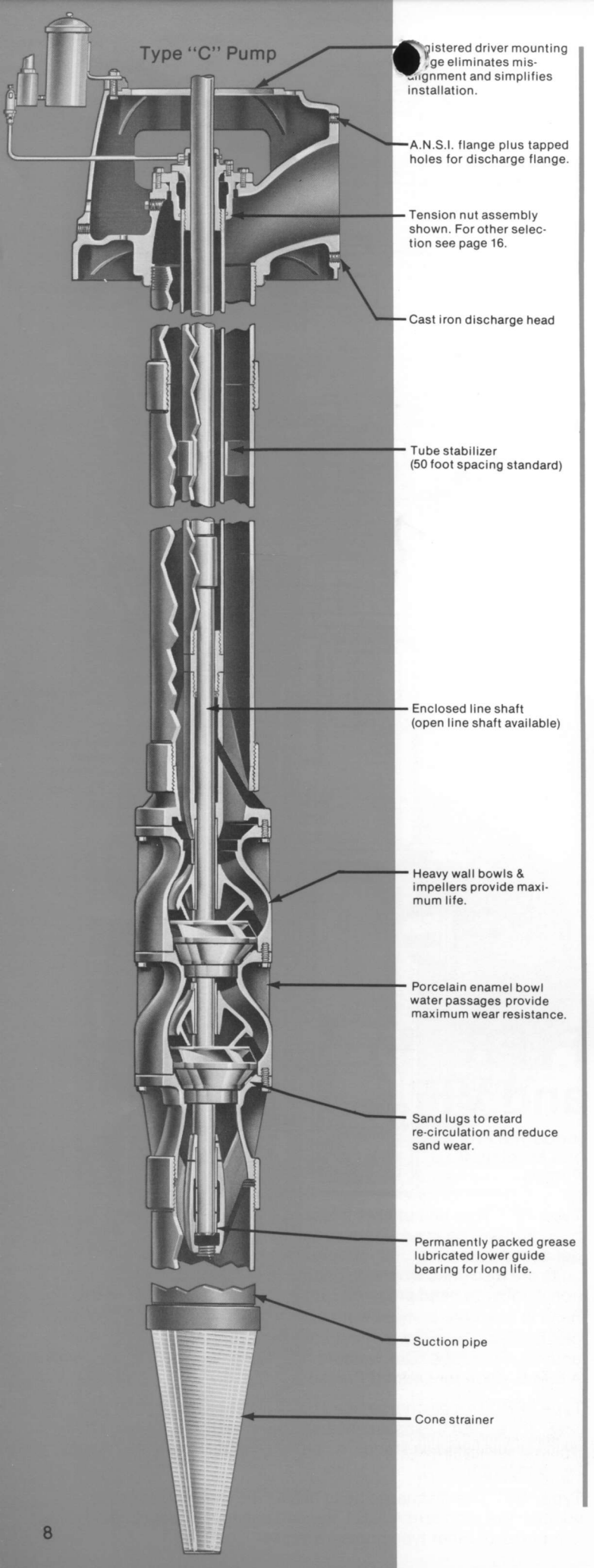
F, FR and VF

Industrial Process and Municipal Pumps

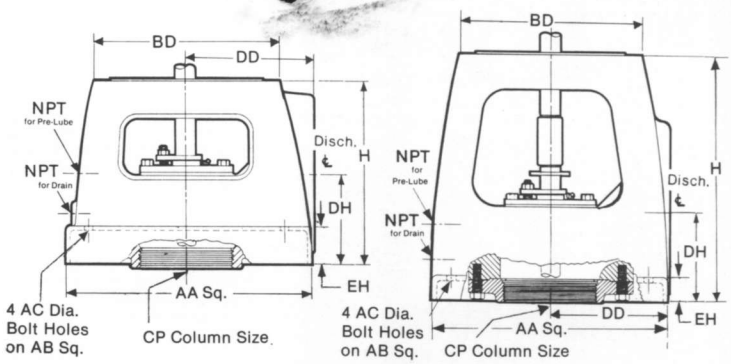
Type "F" This unit utilizes a fabricated steel discharge head and can be used where cast iron discharge heads are not acceptable; e.g., oil refinery and power plant service. These units are also used where discharge pressures exceed the cast iron discharge head pressure ratings. The type "F" discharge head is available in most weldable and machinable metals and can be manufactured to meet specifications such as A.P.I.-610 and MIL-P-13386C. Our welders are certified in accordance with A.S.M.E. code for Unfired Pressure Vessels, Section IX.

Type "FR" This discharge head has the same features as the type "F" except it uses an enclosed mitered discharge elbow which is furnished as standard construction for discharge heads 24" and larger.

Type "VF" This discharge head has all the above features in addition to a standard A.N.S.I. flanged based for direct bolting to a barrel or other type pressure vessel.



Type "C" and "H" Discharge Head Dimensions

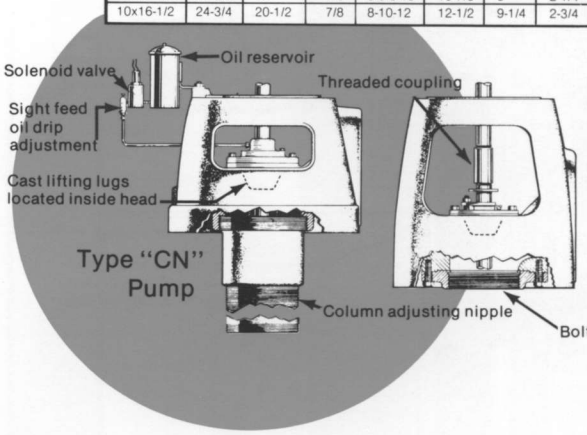


Type "C" Discharge Head Dimensions

Discharge Flange XBD	AA	AB	AC	CP	DD	DH	EH	H
4x12	16-1/2	12-1/4	3/4	4-5	8-14	6	2-1/2	12-1/2
5x12	16-1/2	12-1/4	3/4	5-6	8-1/4	5-1/2	2-1/2	12-1/2
6x16-1/2	21-1/4	16	7/8	5-6	10-3/4	6-3/4	2-7/8	14
8x16-1/2	22	16-1/2	7/8	8	11-1/4	7-3/4	3-1/4	16-1/4
8x20	25-3/8	19	1	8	12-3/4	7-1/2	3-1/4	16-1/4
10x20	26-7/8	19	1	10	13-5/8	9	3-7/8	19
12x24-1/2	32-3/4	24	1-1/4	12-14	16-1/2	11	4-5/8	23

Type "H" Discharge Head Dimensions

Discharge Flange X BD	AA	AB	AC	CP	DD	DH	EH	H
4x12	16-1/2	13-1/2	3/4	4-5-6	8-3/8	5-3/4	2-1/4	16-5/8
6x16-1/2	21-3/8	18	7/8	5-6-8-10	10-7/8	7	2-1/4	20-3/4
8x16-1/2	21-3/8	18	7/8	5-6-8-10	10-7/8	8	2-1/4	22
10x16-1/2	24-3/4	20-1/2	7/8	8-10-12	12-1/2	9-1/4	2-3/4	25



Dimensions shown are considered standard but are not for construction purposes. Discharge heads may be designed to fit most dimensional requirements.

C, CN and H

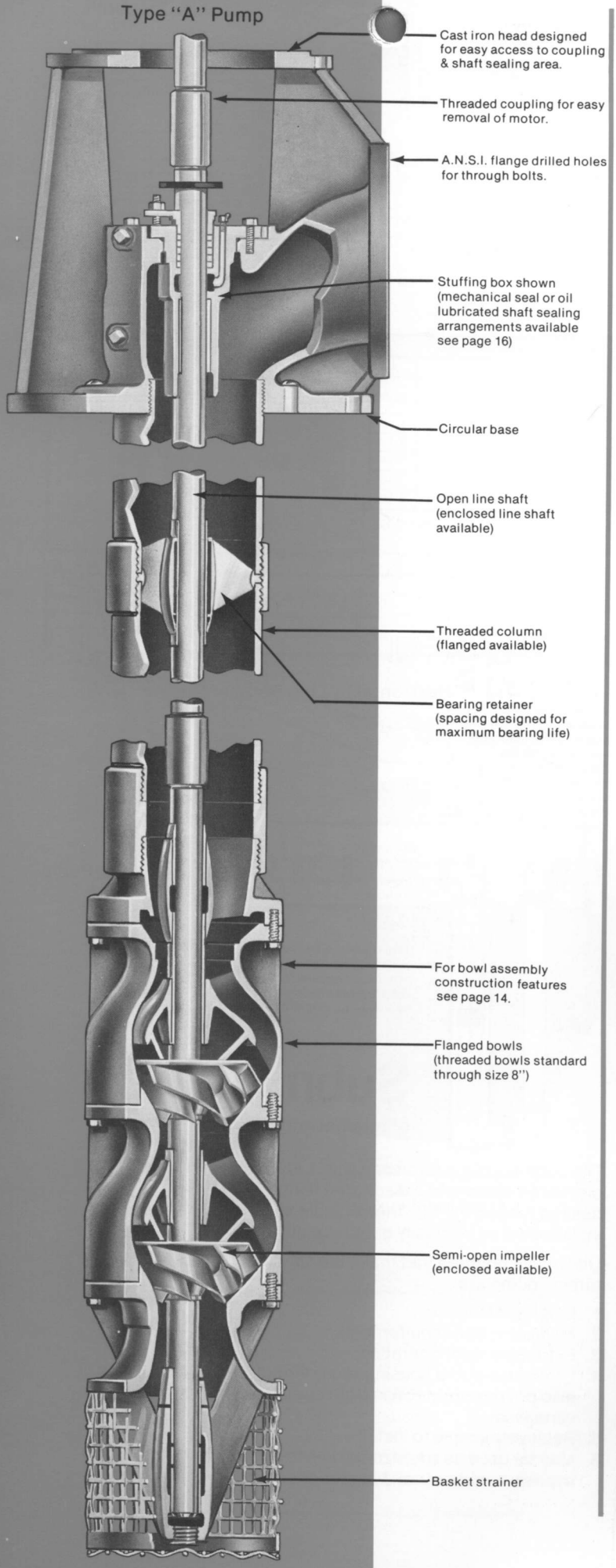
Industrial, Municipal and Agricultural
Pumps for water supply from deep wells

Type "C" This heavy duty head is used on both deep well and close coupled pump applications. It can be furnished with open or enclosed line shaft. The head has a threaded column connection and a recessed base to meet sanitary well requirements. Large windows allow easy access to the mechanical seal, stuffing box and/or tension nut assembly. This head is rated for a maximum setting of 600 feet and pressures to 175 PSI.

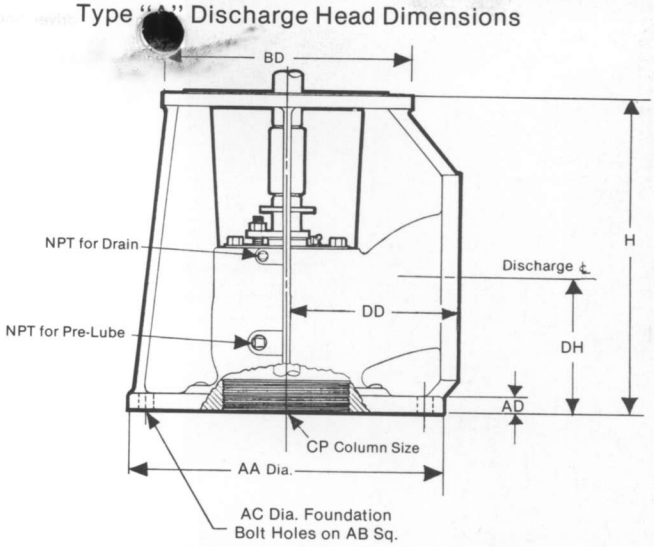
Type "CN" This heavy duty head is designed specifically for deep well applications. Special tube and column adjusting nipples are provided for tube and shaft projection and column adjustments. Maximum setting of 1,200 feet may be attained with the addition of a heavy duty sole plate.

Type "H" The head has all the features of the Type "C" discharge head plus three important advantages: 1) discharge flange can be either 125 lb. or 250 lb. drilling, 2) extra head height accommodates a two piece head shaft with threaded coupling, allowing easy driver removal and 3) top column connections are flanged. This head is suitable for settings to 600 feet and pressures to 350 PSI.

Type "A" Pump

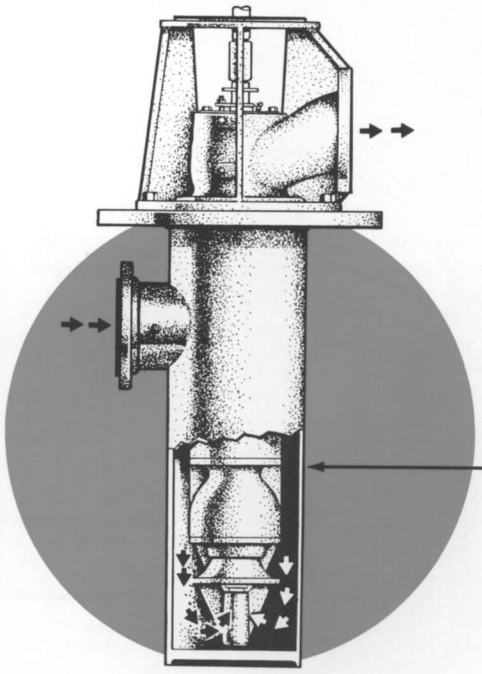


Type "A" Discharge Head Dimensions



Discharge Flange X BD	AA	AB	AC	AD	CP	DD	DH	H
4x10	16	10-1/16	7/8	7/8	4	8-5/8	5-3/8	15-5/8
6x12	18	11-1/2	7/8	7/8	6	10-1/4	7-5/8	17-3/8
8x12	18-3/4	11-3/4	7/8	1	8	10-1/2	8-3/4	17-3/4
8-16-1/2	21	13-1/4	1-1/8	1	8	11-1/2	8-3/4	20-3/4
10x16-1/2	25	16	1-1/8	1-3/8	10	14	10-9/16	21-1/2
12x20	29-1/2	19	1-1/8	1-7/16	12	16-1/2	12-1/8	24-1/4
14x20	29-1/2	19	1-1/8	1-7/16	14	16-1/2	13	26

Type "AF" Pump

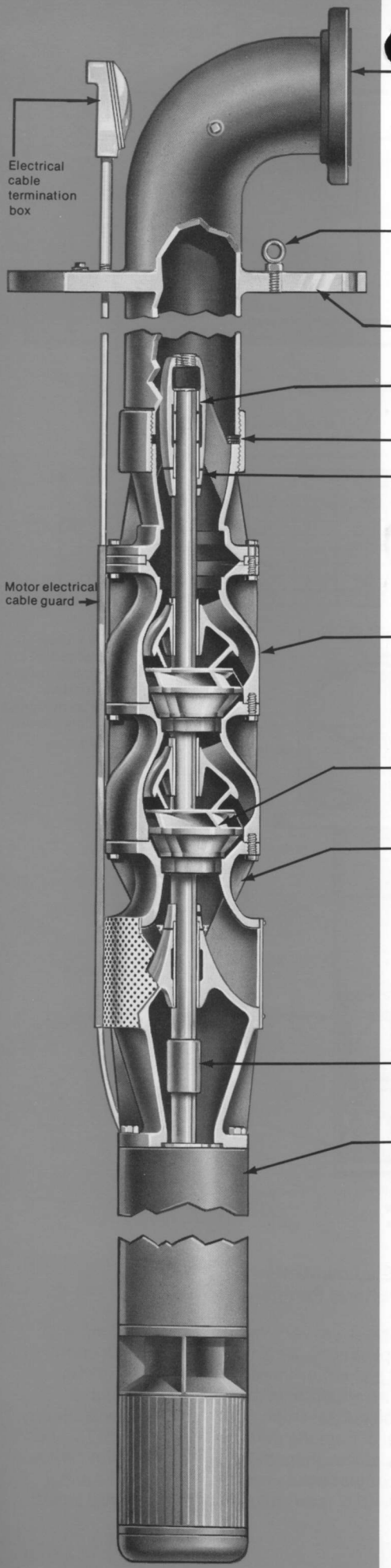


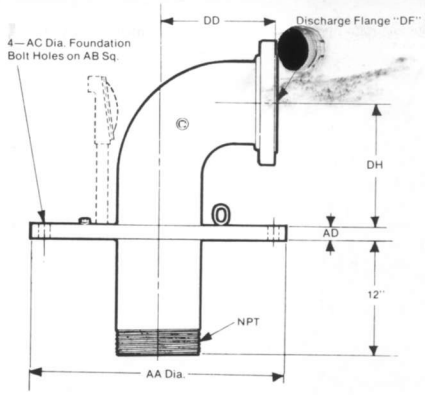
Dimensions shown are considered standard but are not for construction purposes. Suction barrels may be designed to fit most dimensional requirements.

A and AF

Industrial Process, Shallow Well, Municipal and Agricultural Pumps

The head is plain and rigid, yet very versatile for both deep well and close coupled applications. It can be furnished with open or enclosed line shaft and either threaded or flanged column connections. Sealing arrangements are available through a stuffing box or a tension nut assembly. The high body configuration facilitates the removal of both the driver and head shaft. This head is suitable for settings of less than 250 feet and pressures below 175 PSI. The head's circular base can also be converted into a flanged mounting base. It is then called a type "AF" head and is used for can pumps.

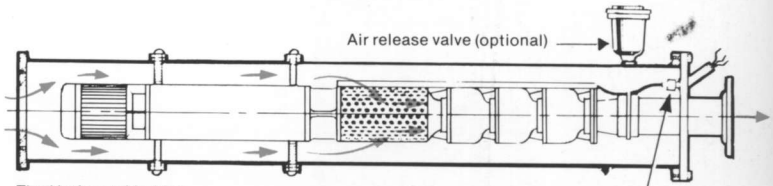




Discharge Flange		
SIZE DF	DD	DH
2-1/2	4-1/4	5-3/4
3	4-7/8	6-1/2
4	6-3/8	8
5	8	10
6	9-1/2	12
8	12-1/2	15
10	15-1/2	18
12	18-1/2	21
14	21-1/2	24

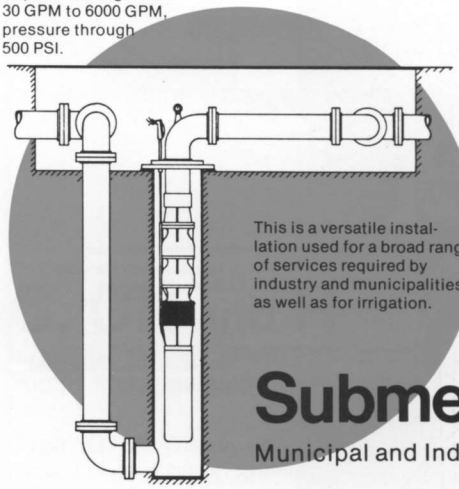
Well Casing Size	SURFACE PLATE			
	AA	AB	AC	AD
8	16	14-1/4	5/8	3/4
10	19	17	5/8	1
12	21	18-3/4	7/8	1
14	23-1/2	21-1/4	7/8	1-1/4
16	27-1/2	25	7/8	1-1/4
18	32	29-1/2	7/8	1-1/4
20	35	32	7/8	1-1/2

Dimensions shown are considered standard, but are not for construction purposes. Discharge elbows may be designed to fit most dimensional requirements.



The Horizontal In-Line Booster Pump works efficiently to provide the constant added pumping pressure that may be required in the line. Capacities range from 30 GPM to 6000 GPM, pressure through 500 PSI.

Horizontal In-Line Booster Pump



Vertical Booster Pump

This is a versatile installation used for a broad range of services required by industry and municipalities, as well as for irrigation.

Submersible

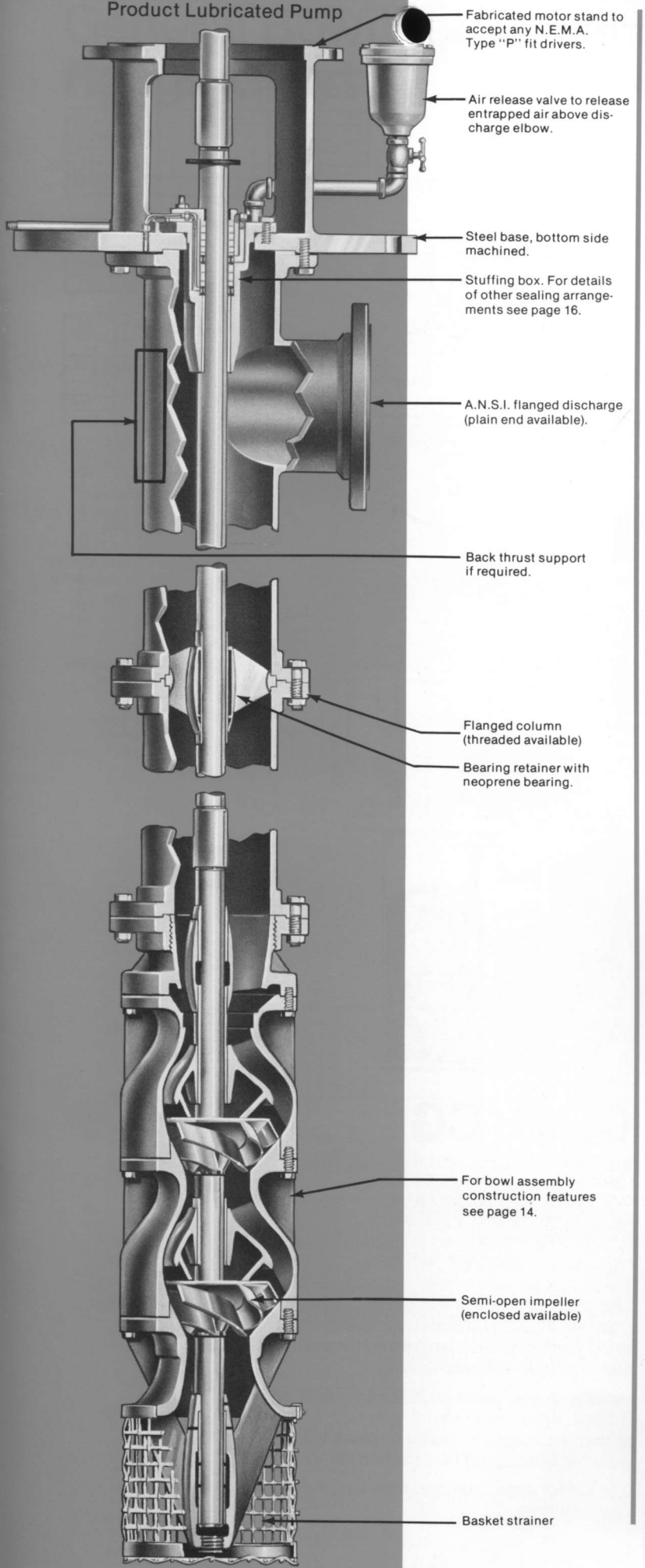
Municipal and Industrial Pumps

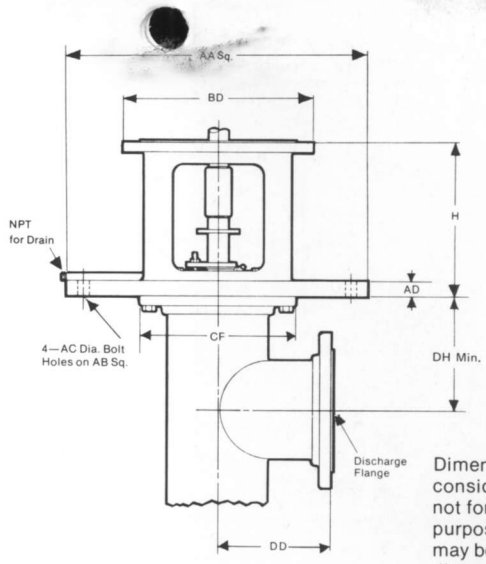
The submersible is furnished with a fabricated long sweep discharge elbow and a discharge flange selected to suit the desired pressure (PSI). The versatile submersible may be installed either vertically or horizontally.

Distinctive features that make the submersible a practical turbine pump are:

1. Low maintenance.
2. Minimal space requirements.
3. Extremely quiet operation.
4. Eliminates pump housing requirements and related costs. It also provides protection from dust, heat, moisture and vandalism.
5. Relatively simple to install.
6. May be used as a horizontal in-line booster with or without bypass, a vertical can booster or a vertical well pump.

Product Lubricated Pump

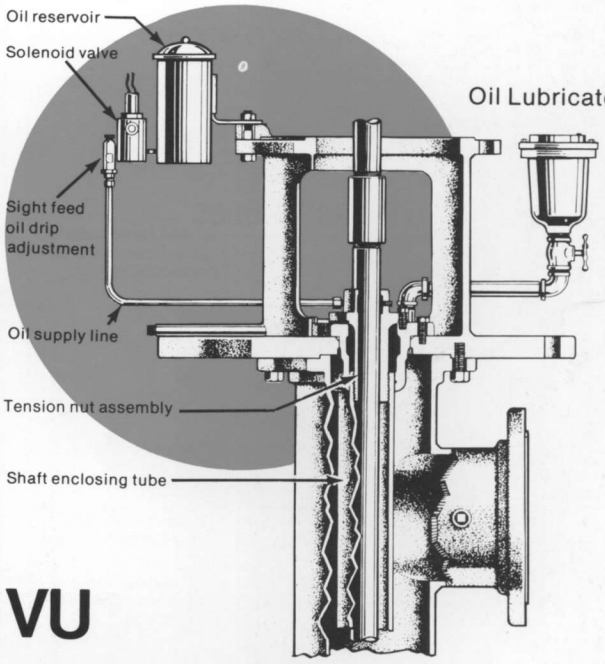




Dimensions shown are considered standard but not for construction purposes. Discharge heads may be designed to fit most dimensional requirements.

Type "VU" Discharge Head Dimensions

Column Size XBD	AA	AB	AC	AD	CF	DD	DH	H
3x10	15	13	5/8	1-1/4	7-1/2	5	7	11
4x12	15	13	5/8	1-1/4	9	6	8	11
5x12	20	17	5/8	1-1/4	10	7	8	11
6-16-1/2	20	17	3/4	1-1/4	11	8	9	13-1/2
8x16-1/2	26	23	3/4	1-1/4	13-1/2	10	10	13-1/2
10x16-1/2	26	23	3/4	1-1/2	16	11	11	13-1/2
12x20	30	27	1	1-1/2	17	13	13	13-1/2
14x20	30	27	1	1-1/2	21	14	14	13-1/2
16x24-1/2	35	30	1-1/8	1-1/2	21	14	15	15
18x24-1/2	38	34	1-1/8	1-3/4	23-1/4	16	16	15
20x30-1/2	38	34	1-1/8	1-3/4	25	17	17	17-1/2
24x36	44	36	1-3/8	2	32	19	19	20
30x42	50	42	1-1/2	2-1/4	38-3/4	22	22	22



Oil Lubricated Pump

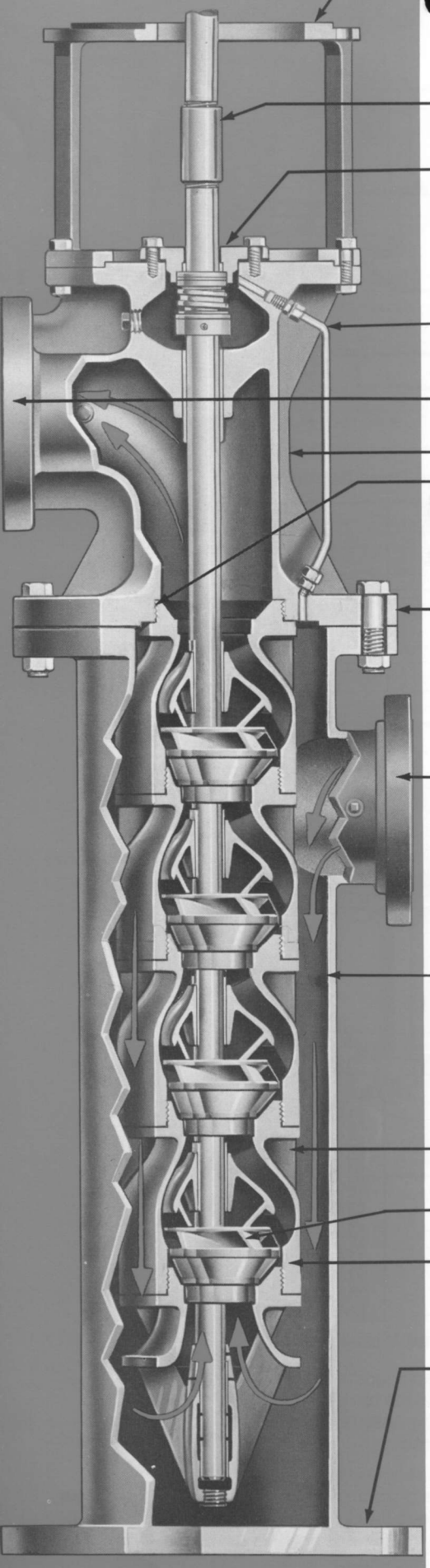
VU

Industrial Process and Municipal Pumps

The "VU" discharge arrangement provides a below base discharge elbow to suit the particular location of the discharge piping. Below base discharge is used where underground piping is required.

An air release valve is required to release entrapped air in the column pipe above the discharge outlet. This valve prevents the bearing or packing above the discharge outlet from running dry or overheating and eliminates flow fluctuation.

Type "CF" Pump



Motor stand N.E.M.A. ...e "P" fit

Threaded coupling for VHS motor

Mechanical seal assembly. For details see page 16.

Seal bypass line for cooling and pressure relief.

A.N.S.I. flanged discharge

Cast iron head

Connection of bowl to head for minimum barrel height (column is available)

A.N.S.I. flanged base

A.N.S.I. flanged suction

Suction barrel sized for hydraulic performance and mechanical rigidity

Threaded bowls

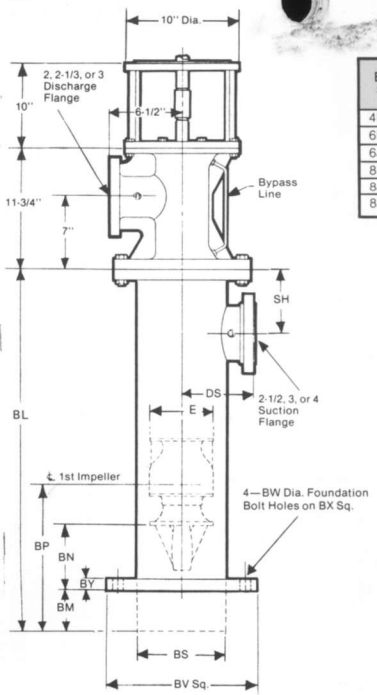
Enclosed impellers (semi-open available)

For bowl assembly construction features see page 14.

Floor mounting plate shown. For long bowl assemblies mounting above barrel base is required.

Note:
Maximum discharge head pressure 400 PSI. Maximum suction pressure 100 PSI.

Type "CF" Discharge Head Dimensions



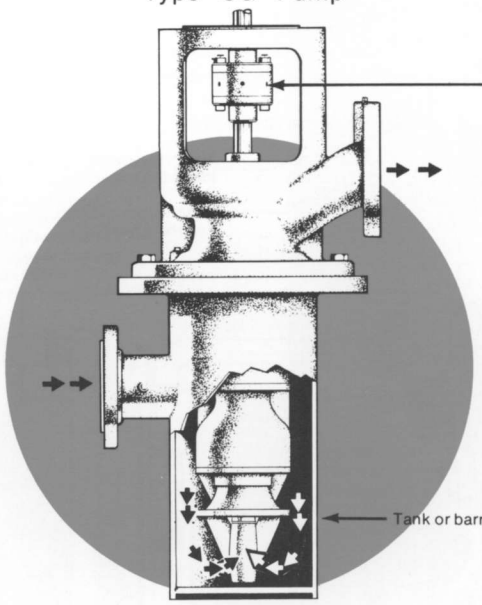
Bowl Size	One Stage BL	Ea. add'l Stage BM	BN	BP	E
4HO	12	3-3/8	4-1/4	9-3/4	3-3/4
6LK	12	4-3/4	5-1/2	9-3/4	5-5/8
6JK-HO	12-1/4	5	5-1/2	10-1/4	5-7/8
8LK	14-3/4	6-1/8	5-3/4	9-1/4	7-1/2
8JK-JO	17-1/4	7-1/4	6-7/8	12-5/8	7-3/4
8XK	14	5	5-3/8	9-1/8	7-5/8

Barrel Size	BS	BV	BX	BY	DS
6-5/8	15	3/4	13	1	8
8-5/8	15	3/4	13	1-1/4	10
10-3/4	18	3/4	16	1-1/4	10

150 lb. Suction Size	SH Min.
2	5
2-1/2	5-1/2
3	6
4	7
5	7-1/2
6	8

Dimensions shown are considered standard but are not for construction purposes. Suction barrel may be designed to fit most dimensional requirements.

Type "CG" Pump



Features flanged adjustable coupling for VSS driver

Maximum discharge pressure 350 PSI - maximum suction pressure 100 PSI

Tank or barrel mounting

CF and CG

Industrial Process and Building Trade Pumps

"CF" and "CG" discharge heads are cast iron with bases machined and drilled to match A.N.S.I. flange dimensions. Ordinarily these heads are used in constant pressure systems in high-rise buildings, primary fueling service and fuel transferring. These fuel service pumps can be manufactured to meet Military Specification MIL-P-13386C. Type "CF" and "CG" units are also used in hot well and booster applications. Mechanical seals are provided as the standard sealing arrangement, however, stuffing boxes are also available.

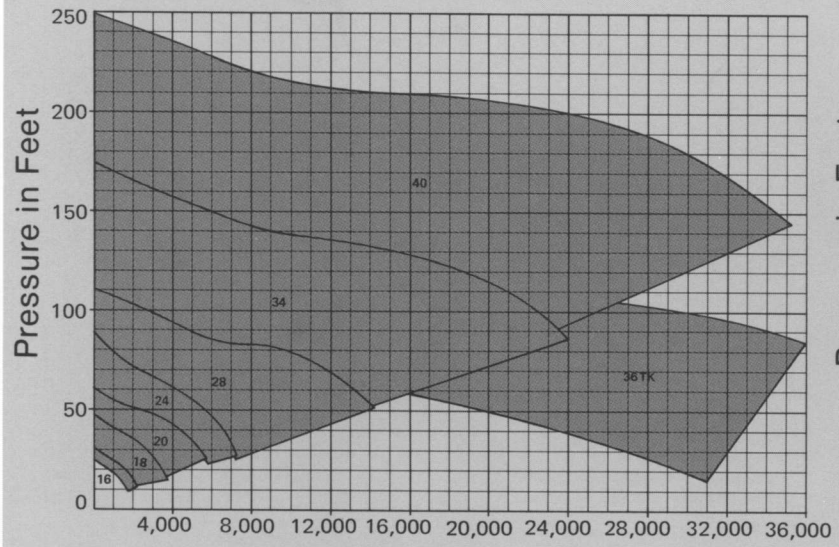
Vertical hollow shaft (VHS) and vertical solid shaft (VSS) drivers, constant or variable speed, are available. When a VHS driven is chosen, a steady bushing is furnished. A flanged adjustable coupling is furnished for VSS motor.

The barrel and column can be lengthened to meet low NPSH requirements.

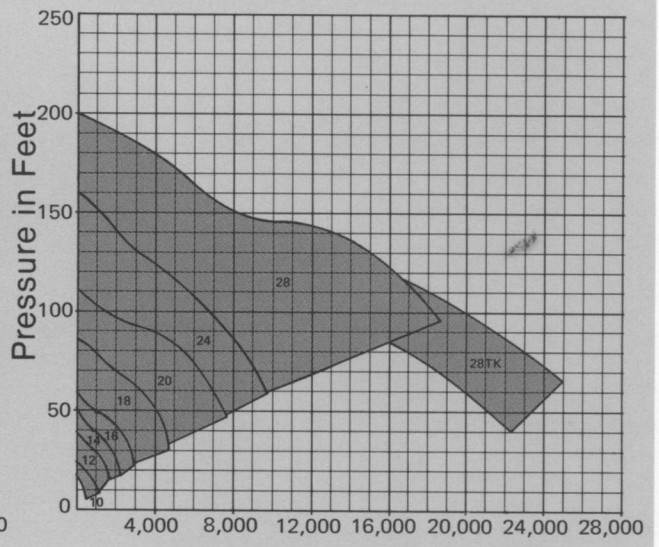
General Bowl Performance Range Chart

Single stage performance curves

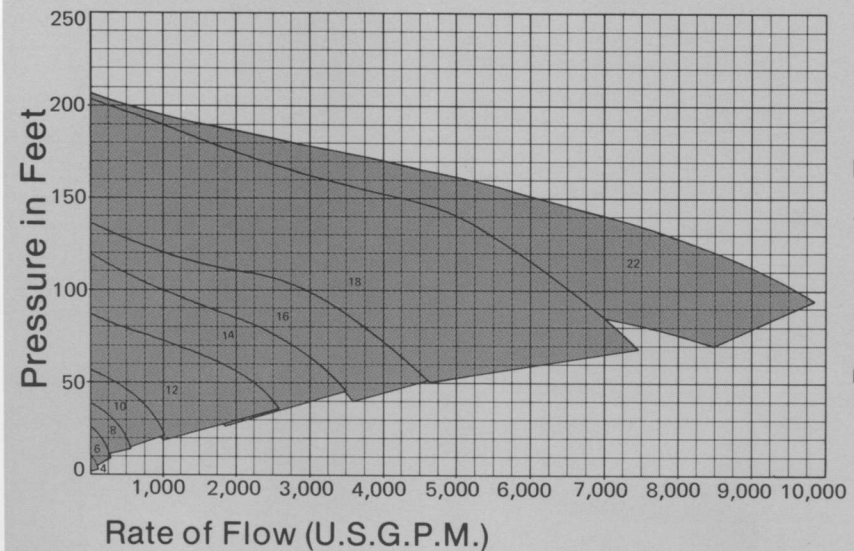
880 RPM
16 thru 40 Pumps



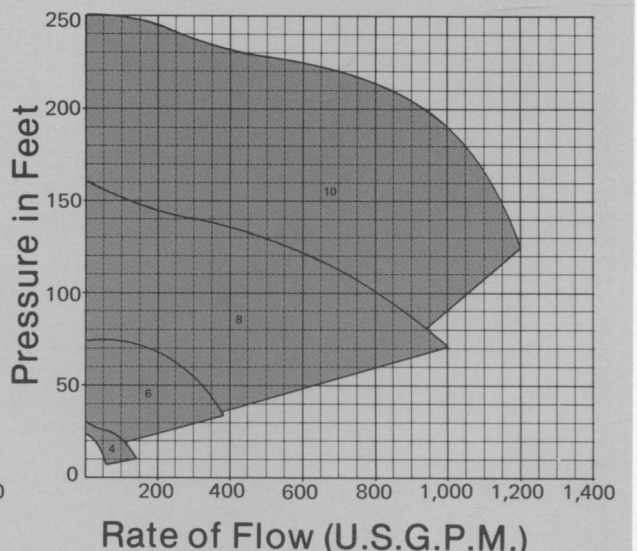
1180 RPM
10 thru 28 Pumps



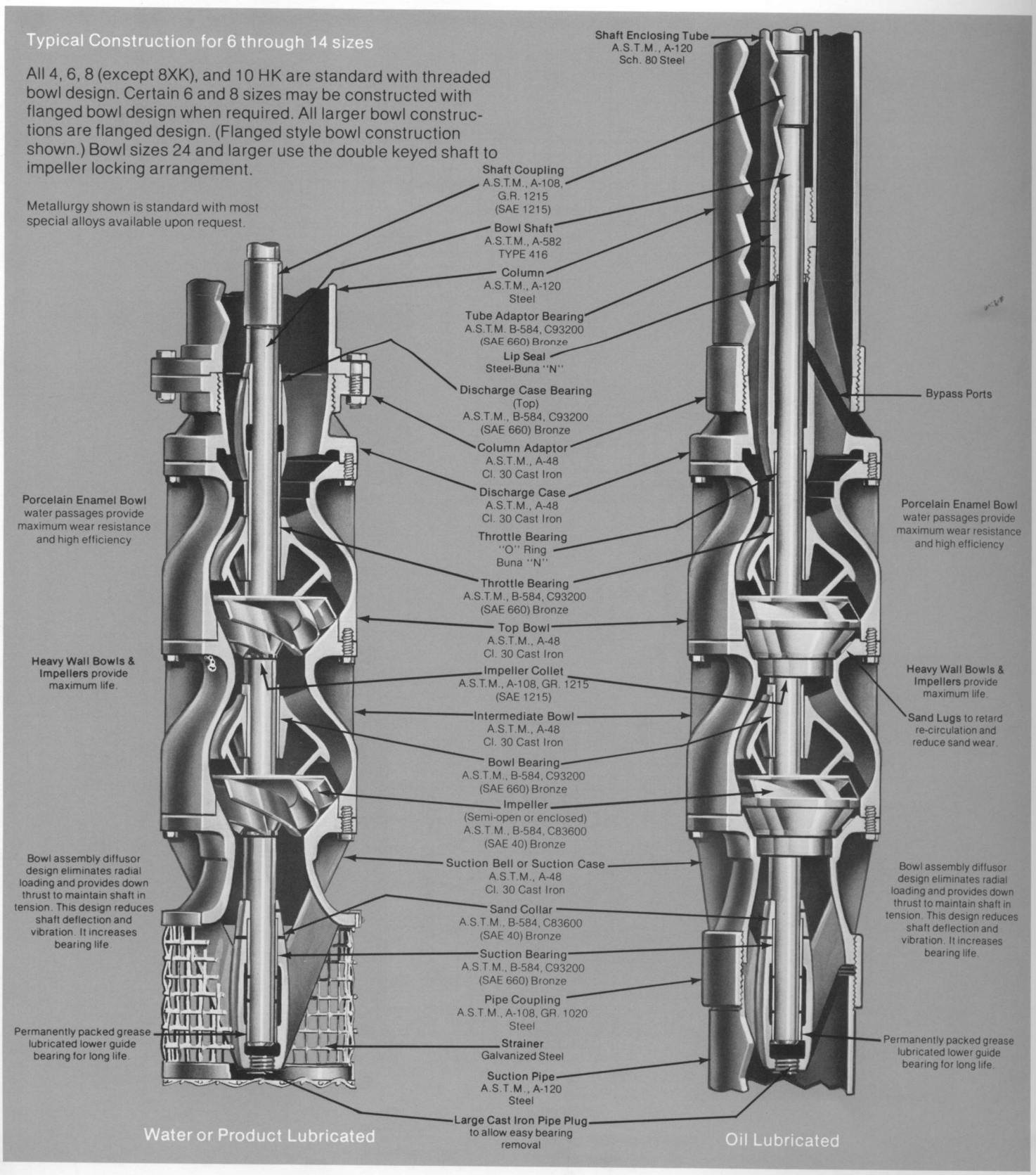
1770 RPM
4 thru 22 Pumps



3500 RPM
4 thru 10 Pumps



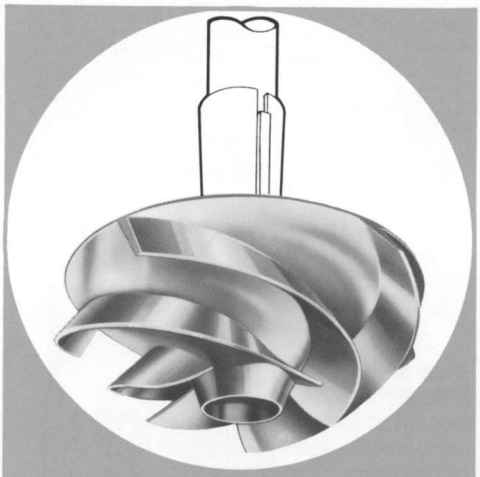
Pump Bowl Assemblies



Impellers and Column Assemblies

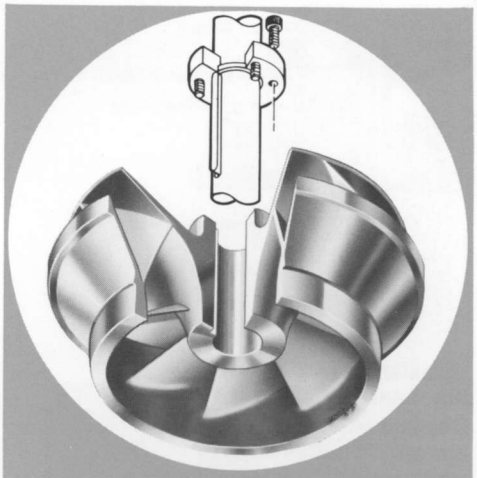
Enclosed Type Impeller with Tapered Collet Shaft Mounting

Standard construction features tapered friction drive collet furnished on pump bowls through size 20.
Features: Easy installation adjustment and low hydraulic thrust.



Semi-Open Type Impeller with Optional Keyed Collet Shaft Mounting

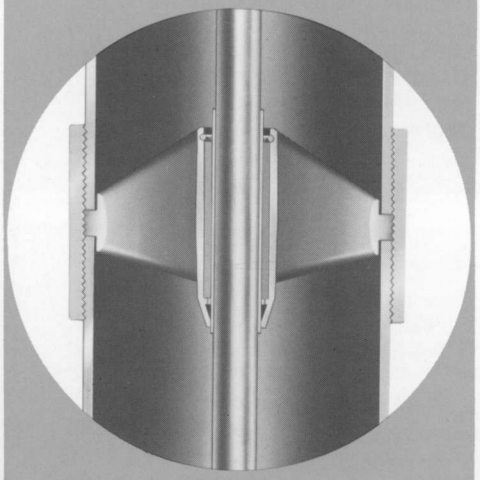
Standard construction features tapered friction drive collet. Semi-open impeller construction is available on pump bowls through size 14 and on special request, is available on larger sizes. The optional keyed type collet is available on special customer request and on applications with high starting inertia.
Features: Lateral adjustment for increasing or reducing flow rates. Reduced changes of plugging impellers with suspended particles in pumpage.



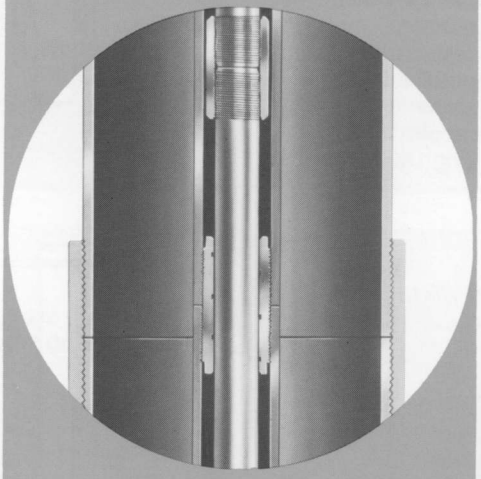
Enclosed Type Impeller with Double Keyed Shaft Mounting

The double keyed impeller shaft mounting features both an axial and radial key. This construction is standard on bowl size 24 and larger. It is also available as optional construction on bowl size 20 and smaller enclosed type impellers.

Features: Used where applications of thermal and hydraulic shock loading are prevalent.



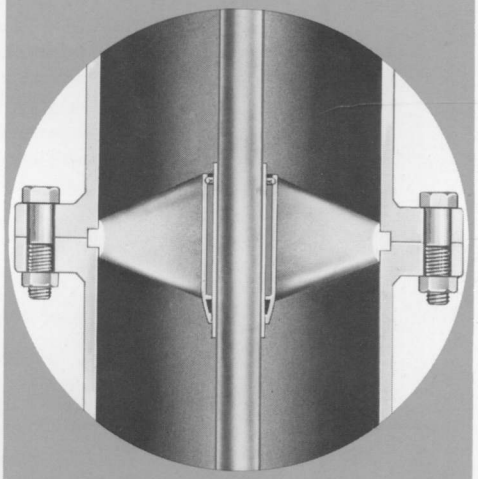
Product Lubricated Column and Shaft Assembly
Applications include:
A. Services requiring special metallurgy
B. Services for high and low temperature
C. Services for high pressure
D. Services for water and other pumpage



Oil Lubricated Column Tube and Shaft Assembly

Applications include:
A. Deep well pumps
B. Pumpages with suspended particles which require bearing protection

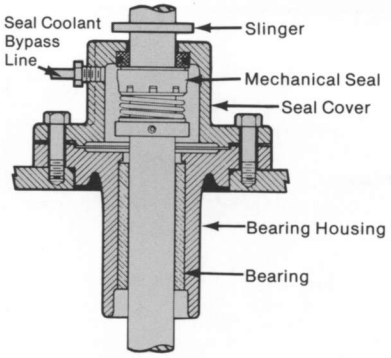
Note: Not recommended for use on high pressure short setting pumps



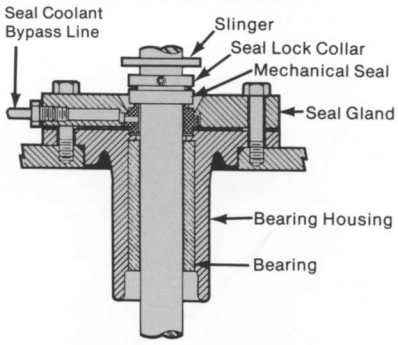
Flanged Column Assemblies

Standard construction 16" diameter and larger column pipe recommended when ease in assembly is required. Flanged column pipe can be furnished in either oil or product lubricated construction.

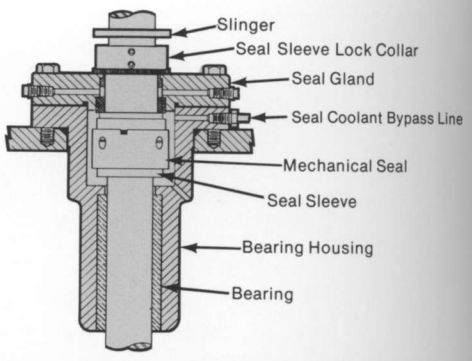
Shaft Sealing Arrangements



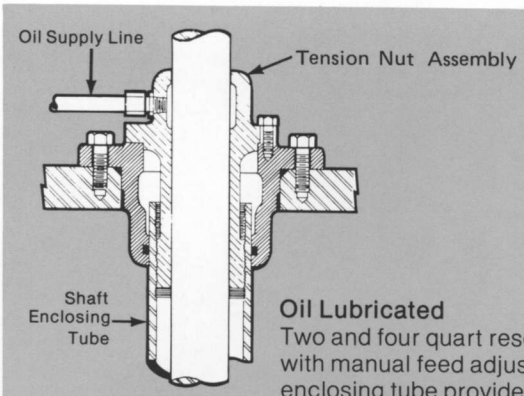
Unbalanced Inside Mounted Mechanical Seal
Designed for pressures to 200 PSI and temperatures through 180 degrees F. Generally used for water service



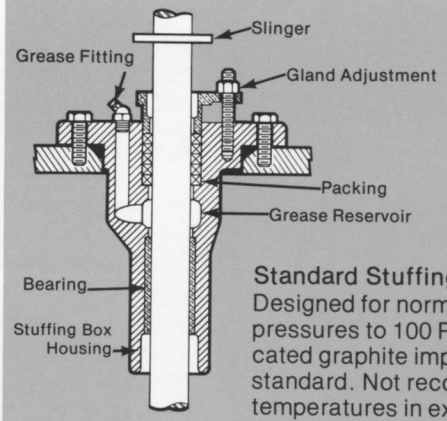
Balanced Outside Mounted Mechanical Seal
Designed for pressures to 400 PSI and temperatures to 400 degrees F. (Water temperature limited to 160 degrees F.) Effective for limited space requirements. Available for many liquids.



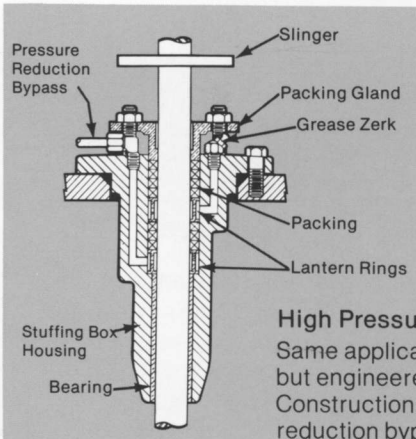
Balanced Inside Sleeve Mounted Mechanical Seal.
Designed for pressures to 1200 PSI and temperatures through 400 degrees F. Metallurgy available for use with most pumpable liquids.



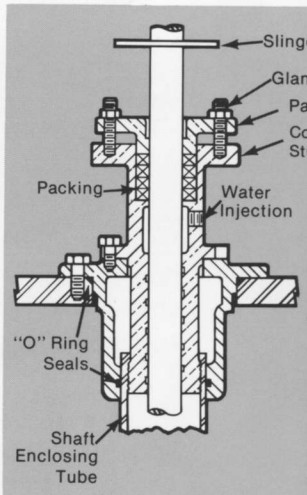
Oil Lubricated
Two and four quart reservoirs available with manual feed adjustment. Shaft enclosing tube provides bearing protection from pumpage containing suspended solids. Not recommended for use on high pressure applications or temperatures exceeding 140 degrees F.



Standard Stuffing Box
Designed for normal water use with pressures to 100 PSI. Grease lubricated graphite impregnated packing is standard. Not recommended for temperatures in excess of 160 degrees F.

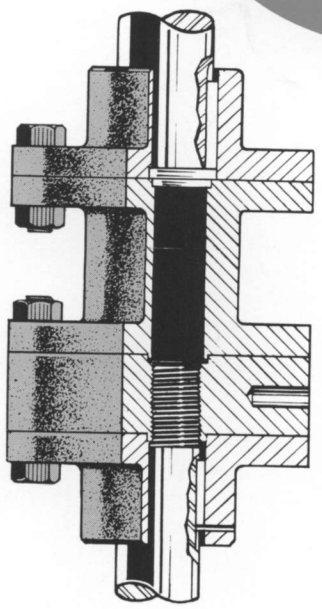


High Pressure Stuffing Box
Same application as Standard model, but engineered for 100 to 500 PSI. Construction features a pressure reduction bypass which increases packing life.



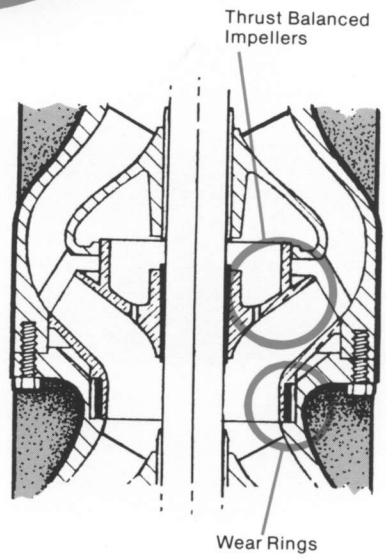
Injection Lubricated
Shaft enclosing tube provides necessary containment for liquid (usually water) to flush line shaft bearings. A source of clean water is required for injection. This construction may be used when pumpage contains suspended particles. Shaft enclosing tube prevents pumpage from contacting line shaft bearings. Recommended for use on low pressure pumping applications.

Optional Construction Features



Adjustable Spacer Coupling

Permits removal of mechanical seal without disturbing driver. Adjustable spacer couplings permit the use of vertical solid shaft drivers. This allows additional motor bearing support.

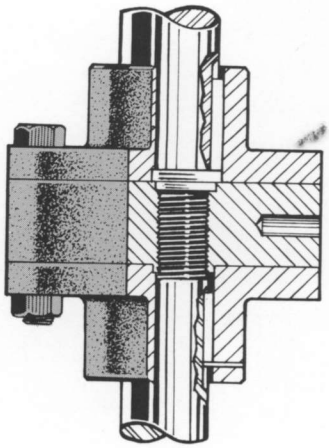


Thrust Balanced Impellers

Available to reduce axial thrust.

Wear Rings

Wear rings for both bowls and enclosed impellers are available when required.



Adjustable Coupling

Adjustable couplings permit the use of vertical solid shaft drivers. This allows additional motor bearing support.

Note:

Adjusting nuts on all sizes have drilled holes inside for inserting handle of hex wrench or round bar to facilitate impeller adjustment.

Extra Lateral
Bowl assemblies for deep well application are available with extra shaft lateral. This feature permits greater shaft elongation.

Low NPSH
Bowl assembly first stage construction available with low NPSH characteristics. Contact factory for availability.

Jacketed Stuffing Boxes
Stuffing boxes and mechanical seal housings are available with a water jacket. This feature allows cooling of packing or seal. It also allows heating when handling high freezing point or viscous liquids.

Special Metallurgy
Most metals weldable and machinable can be employed in pump construction.

Hi & Lo Temperature Service
Pumps are available with modifications to permit pumping temperatures to 600 degrees F. Metallurgy and construction are available for low temperature services below 28 degrees F.

Hardened Shaft Bearing Journals.
Industrial hard chrome plating for shaft bearing journals is available. Removable hardened sleeves for stuffing boxes and line shaft bearing are also available.

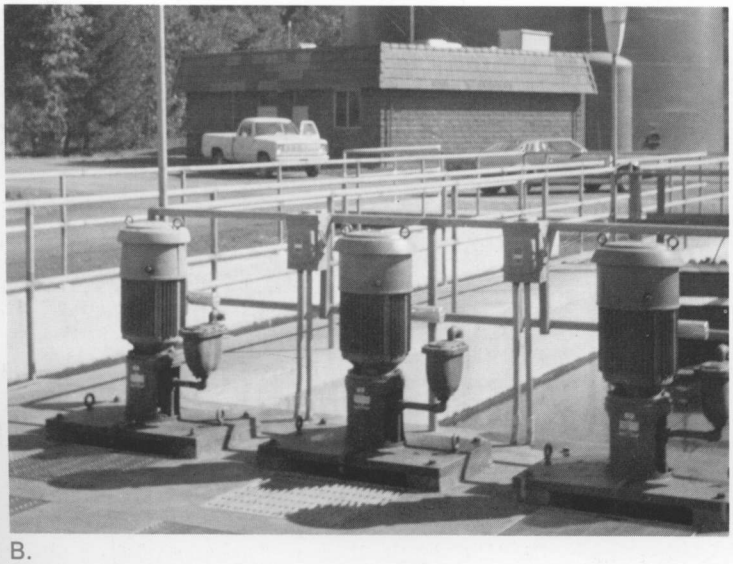
A.

Some of our installations...

A. Hawaii's largest commercial water supply booster station capable of producing 80 million gallons per day.

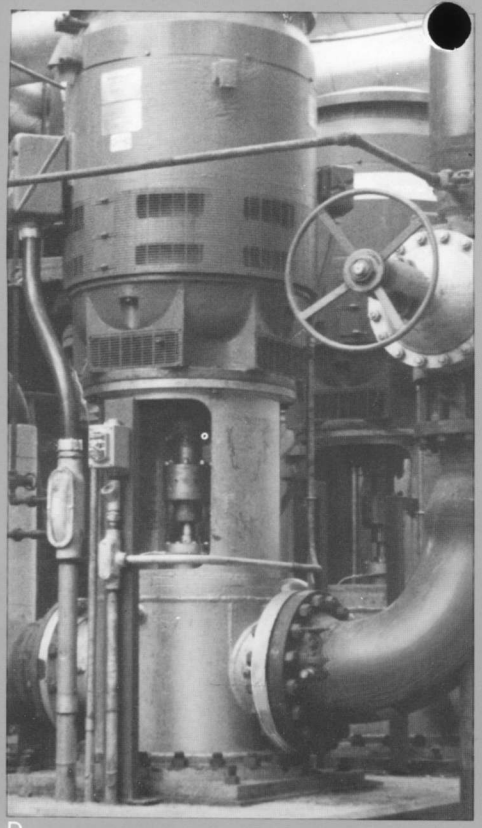
B. Transfer station in a water treatment plant pumping 3.2 million gallons per day reclaimed treated effluent into a water storage system.

C. Major oil company utilizing high pressure water flood pumps as secondary recovery method to pump oil in Oklahoma.



B.

C.



D.

E.

F.

D. Hydrocarbon pumps providing desalted crude oil in refinery service in Pennsylvania.

E. Booster station to provide water distribution to California agricultural lands.

F. Hydrant fueling pump at major airport for the purpose of providing jet fuel transfer service direct to the aircraft.

G. Deep well pump servicing overhead sprinkler irrigation system in eastern Washington.

H. Water supply distribution pumps for commercial use at Lake Tahoe resort.

I. Variable speed pumps handling oxygenated water for a major oil company refinery in Texas.

G.

H.

I.

The inside story

A. Experienced patternmakers produce our new and updated patterns.

B. Assembly and inspection are the final steps in the production of each Peabody Floway pump.

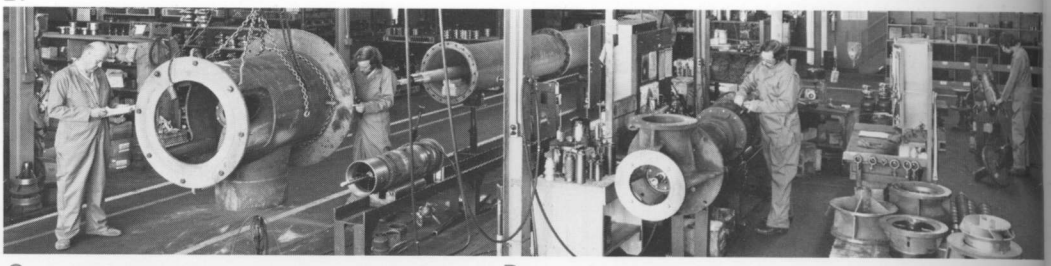
C. Fabrication shop utilizing M.I.G. and T.I.G. welders.

D. A partial view of our experienced engineering staff which insures quality pump research, design and development.

E. A portion of our manufacturing facility with both individual and high production equipment.

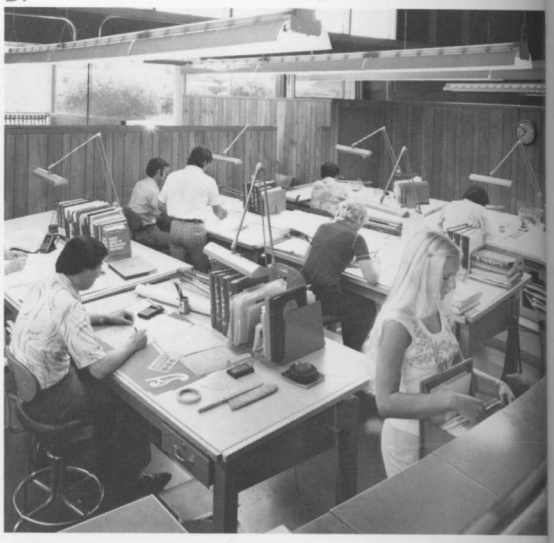
A.

B.



C.

D.



E.

Just a few of the customers we serve...

Alcoa
Anaconda Copper
Adolph Coors
Arco
American Cyanamid Co.
Allied Chemical
Arkansas Power & Light

Bethlehem Steel
Borden Chemical Co.
Bechtel Corp.
Brown & Root
Boston Edison Co.
Braniff International Airlines

Caterpillar
City of Boston, Massachusetts
City of Worchester, Massachusetts
City of Ft. Lauderdale, Florida
City of Seattle, Washington
City of Houston, Texas
City of Phoenix, Arizona
City of El Paso, Texas

City of Salt Lake
Colorado Utility Electric
Conoco
Commonwealth Edison Co., Zion, Ill.
Consolidated Coal Co.

Dow Chemical Co.
Duquesne Light & Power

Exxon
East Bay Municipal Utility District
El Paso Natural Gas

Ford Motor Co.
Fresno County Water

Getty Oil Company
Great Lakes Steel
General Electric Company
General Motors
Gulf Oil Company

Houston International Airport
Healey Power Plant, Washington
Humble Oil Company

Inspiration Consolidated Copper
I.B.M.
Island Creek Coal Company

John Deere
Johns-Manville

Kennecott Copper
Kaiser Steel & Aluminum

Los Angeles Water & Power
Lummis Company
Lockheed

Motorola
Monsanto
Mobil Oil

National Steel
National Aluminum

Standard Oil Company
Shell Oil Company
Sun Oil Company
State of Washington
Stanford Linear Accelerator Center

Stone Webster
Stauffer Chemical

T.V.A.
Texaco

U.S. Steel Corporation
Union Carbide
United Airlines
U.S. Air Force
U.S. Army
U.S. Marines
U.S. Navy
U.S. Department of Commerce
U.S. Department of the Interior
Union Pacific Railroad
Upjohn Chemical

Westinghouse Electric
Walter Reed Hospital
Wakefield Fisheries
Weirton Steel Company

Virginia Electric & Power

Peabody: the Environment | Energy Company

The name Peabody stands as a symbol of engineering and performance excellence in pollution abatement products, services and systems. In fluids movement, storage and treatment, the name Peabody stands for Peabody Barnes, Peabody Dore, Peabody Flomatcher, Peabody Floway, Peabody TecTank and Peabody Welles. Together, these six closely integrated companies supply a complementary range of products and services for fluids movement, processing and storage.

- Pumps for every conceivable market—submersible, diaphragm, mixed flow, self-priming, centrifugal and vertical turbine.
- Corrosion resistant lined piping, fittings and valves.
- Specially lined, bolted steel tanks for liquid and industrial storage.
- Equipment for solids screening and grit handling, aeration, clarification, mixing and blending, filtration and sludge digestion.

As a part of Peabody International Corporation, these companies offer many decades of experience in environmental engineering, testing, air pollution control, solids waste management, wastewater treatment, fluids handling and water purification.

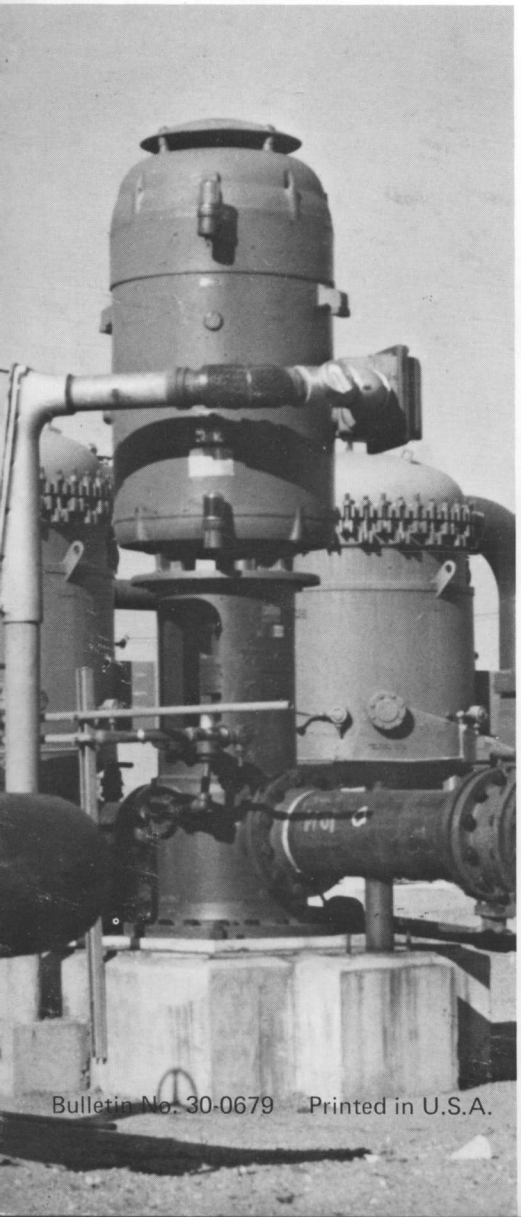
Peabody Floway

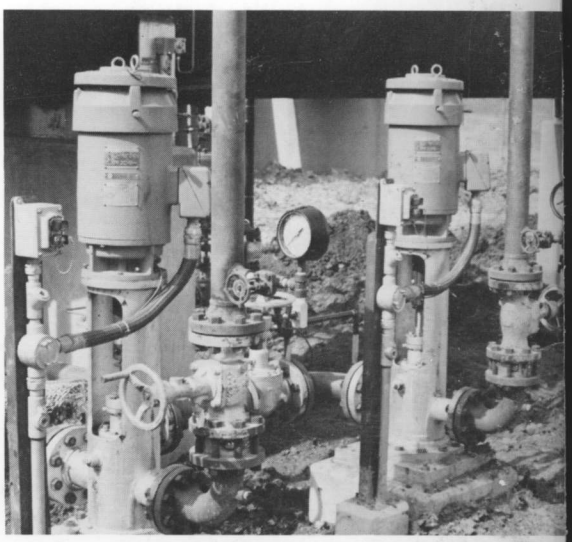
Peabody Floway, Inc. / 2494 S. Railroad Avenue / P.O. Box 164 / Fresno, California 93707 U.S.A.
Telephone 209 442-4000 / Telex 355-483 / Cable Address: Floway

Peabody Floway, Inc. 494 S. Railroad Avenue / P.O. Box 164 / Fresno, California 93707 U.S.A.
Telephone 209 442-[illegible] / Telex 355-483 / Cable Address: Floway

Peabody Floway

"There's a Difference..."





Bulletin No. 30-0679 Printed in U.S.A.

FILE FOLDER

DESCRIPTION ON TAB:

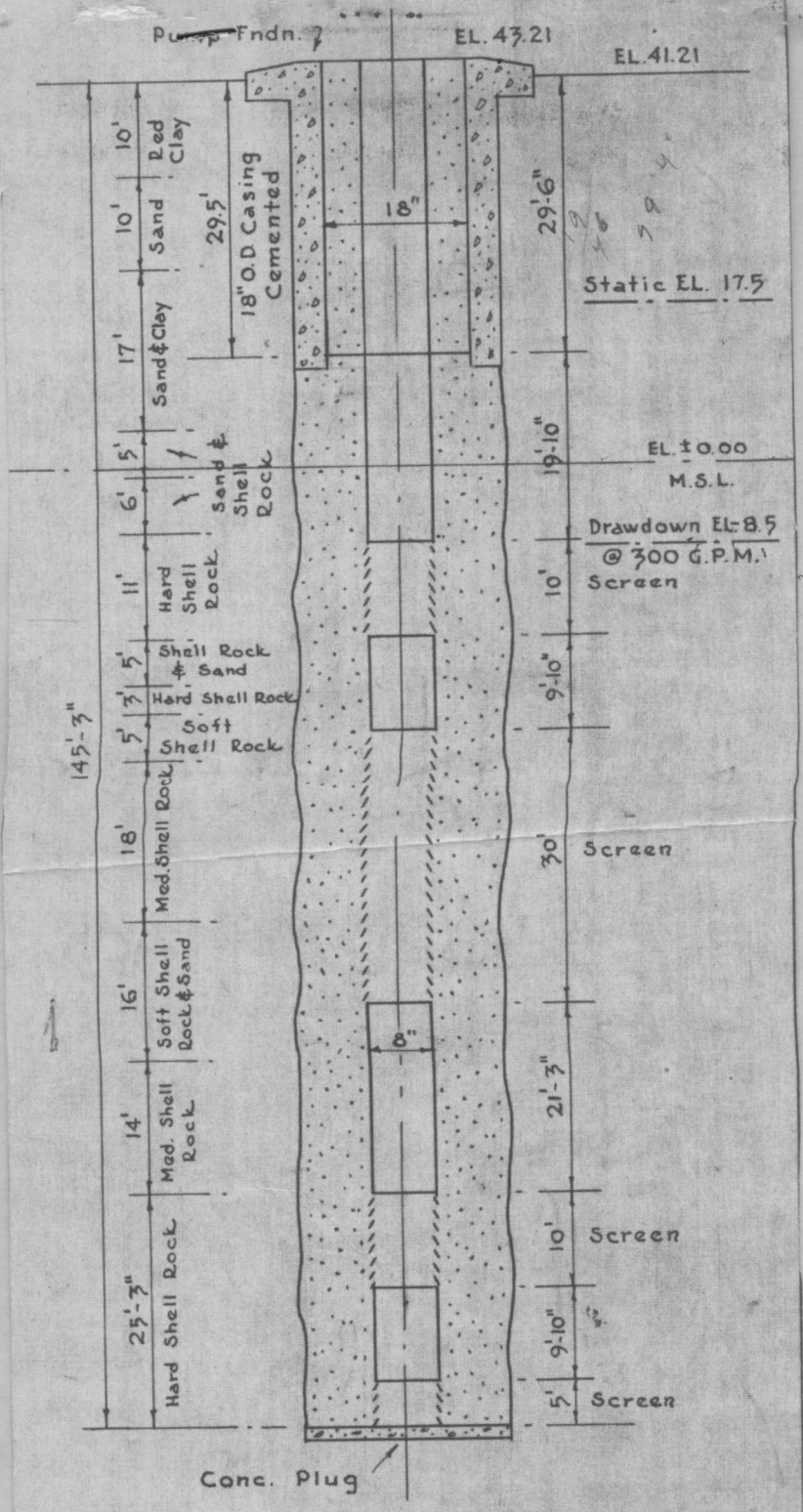
LCH-4007 Well M-2

☐ **Outside/inside of actual folder did not contain hand written information**

☑ **Outside/inside of actual folder did contain hand written information**
***Scanned as next image**

Confidential Records Management, Inc.
New Bern, NC
1-888-622-4425
9/08

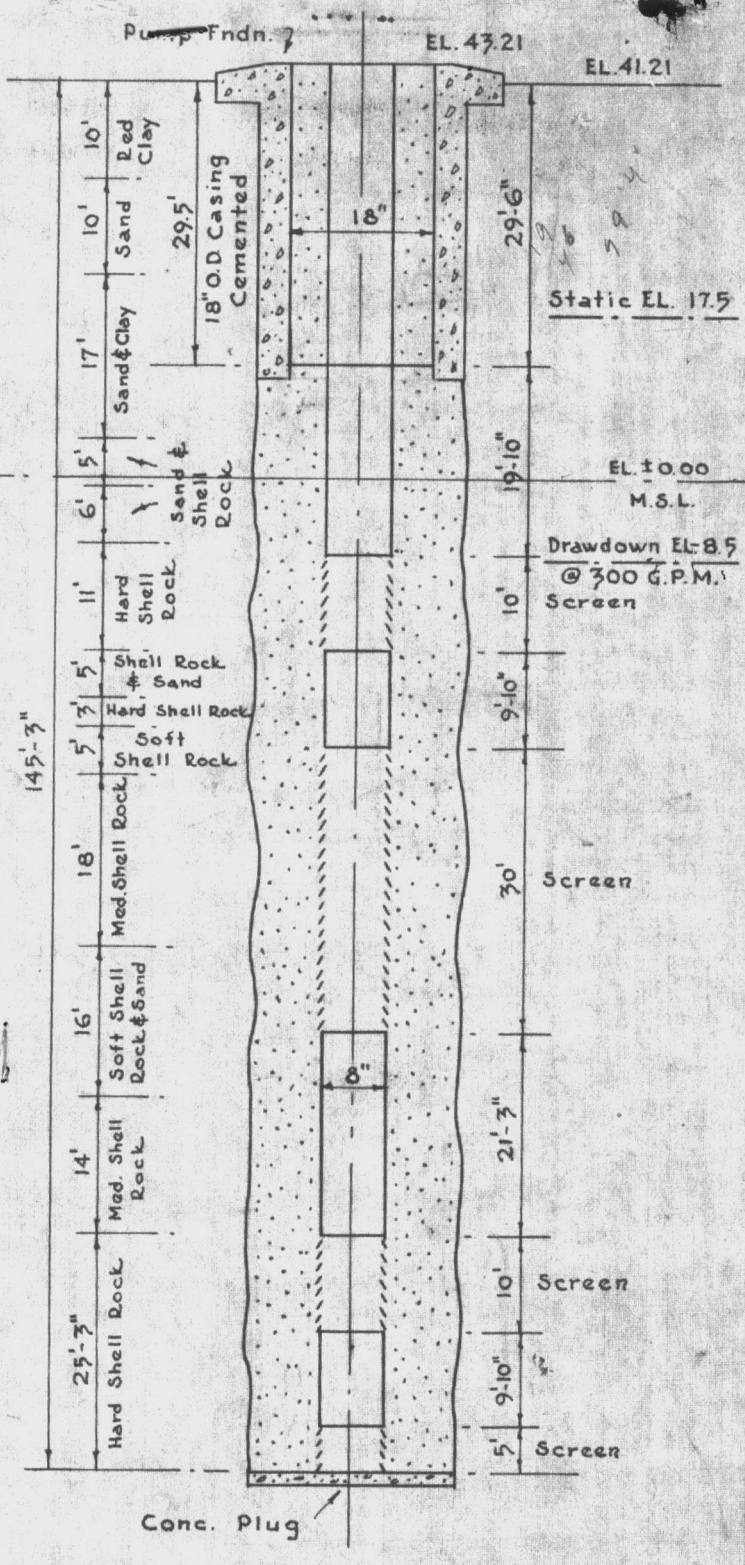
300 G.P.M. - DUAL DRIVE - 20 H.P.



LCH 4007 M2

L.C.H. WELL No. 2

300 G.P.M. – Dual Drive – 20 H.P.



LCH 4007 M2

L.C.H. WELL No. 2

North Carolina Department of Environment, Health, and [illegible]
Division of Environmental Health, Public Water Supply Section

SOURCE INFORMATION
GROUND WATER

Date Form Completed: M M D D Y Y = 01 26 95

PWSID: 1 8 0 1 7 0 4 1 0

Owner Assigned Source Code: 007

Well Name (If purchase, name of system): HADNOT POINT ~~HOBBY~~ LCH 4007

Code: G (G=Ground, W=Purchase/G, Y=G w/direct influence, Z=W w/direct influence)

If Purchase, seller ID#:

Source Begin Date (M M Y Y):

Source exempt—SWTR? ☐ Y ☐ N

Direct Influence Date (M M D D Y Y):

Availability: P (P=Permanent, E=Emergency, S=Seasonal, I=Interim, O=Other)

Location of well within the system (If purchase, location of master meter): HY-24 AND EAST ENTRANCE TO MPK

Latitude (N) Deg. Min. Sec.: 34 43 11

Longitude (W) Deg. Min. Sec.: 077 19 53

How Determined: O (G=GPS, M=Map, S=Surveyed)

GPS Data: Q# or DOP #

No. of Sats. Locked on:

(If purchase, use seller's primary source lat/long)

Vulnerable (VOCs)? ☐ Y ☐ N

Assessment Date (M M D D Y Y):

ENTRY POINT INFORMATION

Use Code: C (C=Ground/Permanent, D=Ground/non-permanent)

Availability: P (P=Year-round, S=Seasonal, E=Emergency, I=Interim, O=Other)

Owner Assigned Entry Point Code: 100

Entry Point Name: ~~LCH4007~~ MCB HADNOT RT WTP

Location:

Well Site: Owned or controlled? Y (Y,N) Control Area (100' radius)? N (Y,N) If no, explain:

Sources of pollution/distance: 60' to street 30' to R/W ditch

Surface water within 200'? N (Y,N) If yes, actual distance ___ feet If yes, bact. samples collected? ___ (Y,N)

Adequate slope? Y (Y,N) Flooding? N (Y,N) Maintenance: OK

Well House: Free of stored materials? Y (Y,N) Properly drained? Y (Y,N) Locked? Y (Y,N)

Condition of house: OK Type of freeze protection: NONE

Well: Diameter: 8" Type: SCREENED Yield (gpm): ~~100~~ 250 Properly sealed? Y (Y,N)

Properly vented? N (Y,N) Casing depth ~~[illegible]~~ ft. (If unknown, put 'UNK') Well depth: 150' Meter available? N (Y,N)

Concrete slab adequate? Y (Y,N) If no, explain: 5' Size: 10 x 10

Size of blow-off: 3" (V) Sample tap: Before treatment? Y (Y,N) After treatment? ___ (Y,N)

Pumps: Capacity: GPM: ~~250~~ 100 HP: 15 Pump intake depth: 70 Auxiliary Power? Y (Y,N)

Type pump: VERTICAL TURBINE Height above floor (pump/casing): 18" / ___

Storage at well site: Elev: ___ Hydro: ___ Ground: ___

If hydroautomatic, air volume control? ___ (Y,N) Safety valves? ___ (Y,N) Coded? ___ (Y,N)

High service pumps: 1. ___ gpm ___ hp 2. ___ gpm ___ hp 3. ___ gpm ___ hp Auxiliary Power? ___ (Y,N)

Is the water treated at this well? N (Y,N) If yes, complete back of form.

If other wells are treated here, which ones? ___ If treated elsewhere, where? HP-20 PLANT.

If purchase, retreat? ☐ Y ☐ N If yes, complete back of form.

① Remove Aux drive ~~Engine~~ motor use
② No vent
③ Leaking @ packing

WELL NUMBER LCH 4007 | BY Stevenson & Pettigrew | DATE 4-8-97

AIR LINE	STATIC LEVEL	PUMPING LEVEL	DRAIN DOWN	DISCHARGE PRESSURE	GPM	START TIME
70	35	58	23	25	100	50
		59	24	20	146	60

REMARKS D/H 34

MANUFACTURER	STAGE	S.N.	TOTAL HEAD	SIZE

WELL NUMBER	4007	BY	Stevenson & Brown			DATE	Oct 31 94
AIR LINE	STATIC LEVEL	PUMPING LEVEL	DRAIN DOWN	DISCHARGE PRESSURE		GPM	START TIME
70	46	60	14	25		100	

D/H 37 PSI

REMARKS

MANUFACTURER	STAGE	S.N.	TOTAL HEAD	SIZE

LCH

WELL NUMBER 4007 BY Thomas / Cox DATE 10-4-90

AIR LINE	STATIC LEVEL	PUMPING LEVEL	DRAIN DOWN	DISCHARGE PRESSURE	GPM	START TIME
70	46	62	16	27	110	50
		69	23	19	220	00
left stat ⇒		64	18	25	150	10

REMARKS

dead head 41

MANUFACTURER	STAGE	S.N.	TOTAL HEAD	SIZE

WELL NUMBER 4007 | BY Thomas Sanders | DATE 10-25-88

AIR LINE	STATIC LEVEL	PUMPING LEVEL	DRAIN DOWN	DISCHARGE PRESSURE	GPM	START TIME
70	31	41	10	35	100	30
	41	43	12	30	154	40
		44	13	25	183	50
		46	15	20	221	60
		48	17	15	257	10

REMARKS Dead end 46

MANUFACTURER	STAGE	S.N.	TOTAL HEAD	SIZE

4007 11-26-85

A-L	S-L	P-L	D-D	PSi	GPM.	Time
70'	29	50	24	34	100	15
		55	27	30	140	
		60	32	27	172	

WELL NUMBER	LCH 4007	B. THOMAS - BROWN			DATE 4-5-85	
AIR LINE	STATIC LEVEL	PUMPING LEVEL	DRAIN DOWN	DISCHARGE PRESSURE	GPM	START TIME 1230
70'	32'	45	13	52	104	1245
		47	15	49	122	1300
		50	18	46	143	1315
		54	22	43	172	1330
		58	26	40	199	1345
		60	28	37	224	1400

REMARKS set @ 58 PL O/D 26 Psi 40 GPM 200'

Pump set at 70' with 10' tail & strainer
air line 70'

MANUFACTURER	STAGE	S.N.	TOTAL HEAD	SIZE
Valley 6" discharge 5" Column 1" shaft	6	8HHE1A4B GNC 115	126' 300 GPM	8"
NEW MOTOR -		15 HP. - 3 Phase		
NEW GEAR DRIVE				

WELL NUMBER LCH 4007		BY THOMAS / BROWN			DATE 10-29-84	
AIR LINE	STATIC LEVEL	PUMPING LEVEL	DRAIN DOWN	DISCHARGE PRESSURE	GPM	START TIME 0800
70'	35	60	25	57	104	0810

REMARKS Left at 57 PSI & 104 gpm S/L 35 P/L 60 D/D 25 A/L 70'

Pump Pulled - 4-1-85 -
Will Install Pump from TT-53 - (Canned) (New)
Pump, Vertical Turbine, Water Lub. 300 g.p.m at (125' TDH.)
5" X 1" X 70', 10' Suction + Strainer, Right Angle Drive.

MANUFACTURER	STAGE	S.N.	TOTAL HEAD	SIZE
Speed Ratio 4:3. New Motor + Discharge Head.				

LCH 4007 #2 11-26-85

4-5-85	
A/L 70'	A-L - 70
S/L 32	S-L - 29
P/L 58	P-L - 60
D/D 26	D-D - 32
GPM 200	GPM - 172
PSI 37	PSI - 27

L Brown

WELL NUMBER Lh 4007 | BY THOMAS/BROWN | DATE 10-29-84

AIR LINE	STATIC LEVEL	PUMPING LEVEL	DRAIN DOWN	DISCHARGE PRESSURE	GPM	START TIME
70'	35	60	25	57	104	0800
						0810

REMARKS Left at 57 PSI & 104 gpm S/L 35 P/L 60 D/D 25 A/L 70'

Pump Pulled - 4-1-85 -
Will Install Pump from TT-53 - (Canned) (New)
Pump, Vertical Turbine, Water Lub. 300 g.p.m at (125' TDH.)
5" X 1" X 70', 10' Suction + Strainer, Right Angle Drive.

MANUFACTURER	STAGE	S.N.	TOTAL HEAD	SIZE
Speed Ratio 4:3. New Motor + Discharge Head.				

WELL NUMBER LCH 4007 BY THOMAS / RAYNOR DATE 10-7-83

AIR LINE	STATIC LEVEL	PUMPING LEVEL	DRAIN DOWN	DISCHARGE PRESSURE	GPM	START TIME 0845
72	36	62	56	60	104	0910

REMARKS

MANUFACTURER	STAGE	S.N.	TOTAL HEAD	SIZE

WELL # M-2

DATE	LENGTH OF AIR LINE	STATIC LEVEL	PUMPING LEVEL	DRAW DOWN	DISCHARGE PRESSURE	CAP. PER FOOT OF DRAW DOWN	TOTAL CAP.
1/1/77	72		62		45		242
			62		43		250
			62		41		
			63		39		
			64		37		
2-13-80	72'		60'		60'		180
			54'		70		104
			57'		65		128

REMARKS:

DEPTH OF WELL:

AIRLINE ELEVATION: + -

DATE INSTALLED:

4007

DATE	LENGTH OF AIR LINE	STATIC LEVEL	PUMPING LEVEL	DRAW DOWN	DISCHARGE PRESSURE	CAP. PER FOOT OF DRAW DOWN GPM	TOTAL CAP.
9,23,81	72'	45	57'	12'	68	100	
			59'	14'	65	115	
		✓	62'	17'	62	133	
			65'	20'	59	162	

REMARKS:

left setting at 62 LBS

Well LCH-2

Date	Pump Hd. ft.	GPM.	Static Gage Ft.	Pumping Level FT.	Draw Down FT.	Shut off Head Ft.	
new Layne Pump put in operation - 4-29-58. (Thomas Pump Test by Thomas - 4-29-58. Air Line 72 ft.							
4-29-58	60 LB	290	28 ft. Gage R.	30	1 H.		
"	65 LB	243	44 ft	33	11		
"	70 LB	115		37	7		
10/20/66		272	39'				SEE TEST.
7/28/69		281	39'				AIRLINE 72'
9-4-69		281	+9'	-20'	29'		
7-22-71							cleaned
4-23-58	water level - Pump Bore to water 29 ft.						

Pump Setting _____

Air Line 72 ft.

Well # T-2

Date	Line Ft.	G.P.M.	D.D. El.	Static El.	Shut off Head	D.D. Ft.
2-11-54	127					

Measured - 3-4-55
29 ft to water from pump Base.
Total Depth measured - 105 ft.
filled in 40 ft.

Air Line

PHYSICAL AND CHEMICAL ANALYSIS OF WATER

SAMPLE NO. WW 2-7

FROM: (Station or unit) U. S. Marine Corps Base, Camp Lejeune, North Carolina

DATE 1 March 1960

TO: (Name and location of laboratory) DPWO Sanitary Engineering Laboratory, Bldg. L-29, Naval Base, Norfolk 11, Virginia

SAMPLE FROM (Location of sampling point) Hadnot Point Area Well No. M-2, Bldg. No. 4007

COLLECTED BY	DATE	HOUR	SOURCE (Designate ground, surface, raw, treated)
Mr. R. L. Cox	3 Feb. 1960	—	Ground

REASON FOR EXAMINATION: E. S. R., DPWO PROJECT NO. 09-2455

EXAMINATION REQUESTED BY: Mr. R. L. Cox

NOTE: All results reported in parts per million unless otherwise noted except for pH, temperature, and specific conductance. One liter of potable water is assumed to weigh one kilogram.

I. Laboratory ~~FIELD~~ ANALYSIS

1. pH	TEMPERATURE °F	TEMPERATURE °C
7.45		24.

ITEM	PPM
2. CARBON DIOXIDE (CO_2)	
3. DISSOLVED OXYGEN (O_2)	
4. HYDROGEN SULFIDE (H_2S)	
5. CHLORINE DEMAND (CI_2)	

~~FIELD ANALYSIS BY~~ The temperature of the water at the time of collection was 18.5°C

DATE OF ANALYSIS

II. SPECIAL LABORATORY ANALYSES

Check (X) individual items to be included in the Special Analyses. Request determination only of those substances suspected of being present in significant amounts.

(X)	ITEM	PPM
	1. As	
	2. Se	
	3. Pb	
	4. B	
	5. Cu	
	6. Zn	
	7. Cr (Hexavalent)	
X	8. PO_4	0.0
	9. Cd	
	10. CN	
	11. Phenolic Compounds (PPB)	
	12. Others (Specify)	
X	13. Aluminum (Al)	0.0
	14.	
	15.	
	16.	

III. ROUTINE LABORATORY ANALYSIS

(CHECK ONE)

X REQUESTED ☐ NOT REQUESTED

ITEM	PPM
1. COLOR	Apparent 35. True 7.
2. TURBIDITY	settled 3.05 shaken 9.5
3. ALKALINITY ($CaCO_3$)	P 0.0 MO 170.
4. TOTAL HARDNESS ($CaCO_3$)	171.1
(Ca+Mg) Hardness	166.7
5. NON-CARBONATE HARDNESS ($CaCO_3$) (By Computation)	1.1
6. CARBONATE HARDNESS ($CaCO_3$) (By Computation)	170.
7. TOTAL DISSOLVED SOLIDS	—
8. SPECIFIC CONDUCTANCE (Micromhos)	300.

ITEM	PPM
9. CALCIUM (Ca)	60.3
10. MAGNESIUM (Mg)	3.95
11. SODIUM (Na) AND POTASSIUM (K) **	1.0
12. HYDROXIDE (OH)*. (as $CaCO_3$)	0.0
13. BICARBONATE (HCO_3)* (as $CaCO_3$)	170.
14. CARBONATE (CO_3)* (as $CaCO_3$)	0.0
15. SULFATE (SO_4)	1.6
16. CHLORIDE (Cl)	12.
17. NITRATE (NO_3)	—
18. IRON (Fe) TOTAL	1.6
19. MAGANESE (Mn)	0.0
20. SILICA (SiO_2)	15.
21. FLUORIDE (F)	0.0

*State whether determined or computed from P and MO alkalinity.

REMARKS (Such as unusual appearance, taste, odor, etc.)

Well pump auxiliary powered by a gasoline engine.

* Computed from P and MO alkalinity

** Computed

Note: At the time of analysis there was a small quantity of sediment in the bottom of the sample bottle. The well pump was in operation at the time the sample was collected (discharge pressure = 60 psig).

LABORATORY ANALYSIS BY: George I. Earnest, Jr., Chemist

DATE OF ANALYSIS: 29 Feb. 1960

DD FORM 1 APR 53 710 REPLACES WD AGO FORM 8-125, 1 APR 45, WHICH MAY BE USED. Analysis no. 2

GPO 912375

LCH4007

CHECKED BOX APPLIES	☒ ORDER FOR SUPPLIES OR SERVICES	☐ REQUEST FOR QUOTATIONS NO. RETURN COPY(IES) OF THIS QUOTE BY (THIS IS NOT AN ORDER. See DD Form 1155r)	PAGE 1 OF 2

1. CONTRACT/PURCH ORDER NO.	2. DELIVERY ORDER NO.	3. DATE OF ORDER	4. REQUISITION/PURCH REQUEST NO.	5. CERTIFIED FOR NATIONAL DEFENSE UNDER DMS REG 1 DO
M67001-84-M-6621		84 JAN 18	M93058-4012-W226	

6. ISSUED BY: CODE M67001
CONTRACTING DIVISION
P. O. Box 8368, Marine Corps Base
Camp Lejeune, North Carolina 28542
84-M-6621

7. ADMINISTERED BY: (If other than 6) CODE
Rec'd 1-17-84

8. DELIVERY FOB
☒ DEST
☐ OTHER
(See Schedule if other)

9. CONTRACTOR/QUOTER CODE FACILITY CODE

NAME AND ADDRESS
PEARSON PUMP SALES & SERVICE, INC.
P. O. BOX 1254
GOLDSBORO, NC 27530
1B/3U

Install in M67-LCH-4007 IT-53

10. DELIVER TO FOB POINT BY:
84 JAN 27

11. CHECK IF
☒ SMALL BUSINESS
☐ MINORITY BUSINESS

12. DISCOUNT TERMS
NET 30

13. MAIL INVOICES TO: (In Quadruplicate)
SAME AS BLOCK #6

14. SHIP TO: CODE
FREIGHT TRAFFIC BRANCH
Bldg. 1011, MCB,
Camp Lejeune, N.C. 28542
84-M-6621

15. PAYMENT WILL BE MADE BY: CODE M67001
Base Disbursing Officer
MCB, Camp Lejeune, North Carolina 28542

MARK ALL PACKAGES AND PAPERS WITH CONTRACT OR ORDER NUMBER

16. TYPE OF ORDER

DELIVERY		This delivery order is subject to instructions contained on this side of form only and is issued on another Government agency or in accordance with and subject to terms and conditions of above numbered contract. C
PURCHASE	X	Reference your TELEQUOTE 84 JAN 13, furnish the following on terms specified herein, including, for U.S. purchases, General Provision of Purchase Order on DD Form 1155r (EXCEPT CLAUSE NO. 13 APPLIES ONLY IF THIS BOX ☐ IS CHECKED, AND NO. 15 IF THIS BOX ☐ IS CHECKED); special provisions ; and delivery as indicated. This purchase is negotiated under authority of 10 USC 2304 (a)(3) or as specified in the schedule if within the U. S., its possessions or Puerto Rico; if otherwise, under 2304(a) (6).

☐ If checked, Additional General Provisions apply; Supplier shall sign "Acceptance" on DD Form 1155r and return copies.

17. ACCOUNTING AND APPROPRIATION DATA/LOCAL USE

1. 1741106.2720 000 67001 0 067001 2D 000000 42334282383T $6228.00

18. ITEM NO.	19. SCHEDULE OF SUPPLIES/SERVICES	20. QUANTITY ORDERED/* ACCEPTED	21. UNIT	22. UNIT PRICE	23. AMOUNT
	PRIORITY: 07				

THIS IS A CONFIRMING ORDER.....Confirms telephonic order of same number and date given to your MR. PEARSON by our J. HARRIS . DO NOT DUPLICATE SHIPMENT.

IMPORTANT READ AND UNDERSTAND DAR CLAUSE 7-104.103 BEFORE PROCESSING THIS ORDER. FULL TEXT OF CLAUSE IS FOUND ON ATTACHMENT TO THIS ORDER.

INQUIRIES REGARDING THIS ORDER SHOULD BE MADE TO: ORDER CONTROL DESK /919-451-2390

SEE PAGE #2 (PLUS ANY ADDITIONAL PAGES), for listing of items.

* If quantity accepted by the Government is same as quantity ordered, indicate by ✓ mark. If different, enter actual quantity accepted below quantity ordered and encircle.

24. UNITED STATES OF AMERICA
BY: Ken Silence
KEN SILENCE
PURCHASING OFFICER
CONTRACTING/ORDERING OFFICER

25. TOTAL $6228.00
29. DIFFERENCES
30. INITIALS

26. QUANTITY IN COLUMN 20 HAS BEEN:
☐ INSPECTED ☐ RECEIVED ☐ ACCEPTED, AND CONFORMS TO THE CONTRACT EXCEPT AS NOTED

DATE SIGNATURE OF AUTHORIZED GOVERNMENT REPRESENTATIVE

36. I certify this account is correct and proper for payment.
DATE T. R. DEDMOND Fiscal Acctg. Supv.
SIGNATURE AND TITLE OF CERTIFYING OFFICER

27. SHIP.NO.
☐ PARTIAL ☐ FINAL

28. D.O. VOUCHER NO.

31. PAYMENT
☐ COMPLETE ☐ PARTIAL ☐ FINAL

32. PAID BY
67001-
SYM #.5190
MCB CLNC

33. AMOUNT VERIFIED CORRECT FOR
34. CHECK NUMBER
35. BILL OF LADING NO.

37. RECEIVED AT	38. RECEIVED BY	39. DATE RECEIVED	40. TOTAL CONTAINERS	41. S/R ACCOUNT NUMBER	42. S/R VOUCHER NO.

DD FORM 1 FEB 77 1155 PREVIOUS EDITION IS OBSOLETE.

THIS PARAGRAPH APPLIES ONLY TO QUOTATIONS SU[illegible]ED:
Supplies are of domestic orgin unless otherwise indicated by quote[illegible] Government reserves the right to consider quotations or modifications thereof received after the date indicated should such action be in the interest of the Government. This is a request for information and quotations furnished are not offers. When quoting, complete blocks 11, 12, 22, 23, 25. If you are unable to quote, please advise. This request does not commit the Government to pay any cost incurred in preparation or the submission of this quotation or to procure or contract for supplies or services.

GENERAL PROVISIONS

1. **INSPECTION AND ACCEPTANCE**– Inspection and acceptance will be at destination, unless otherwise provided. Until delivery and acceptance, and after any rejections, risk of loss will be on the Contractor unless loss results from negligence of the United States Government. Notwithstanding the requirements for any Government inspection and test contained in specifications applicable to this contract, except where specialized inspections or tests are specified for performance solely by the Government, the Contractor shall perform or have performed the inspections and tests required to substantiate that the supplies and services provided under the contract conform to the drawings, specifications and contract requirements listed herein, including if applicable the technical requirements for the manufactures' part numbers specified herein.

2. **VARIATION IN QUANTITY**– No variation in the quantity of any item called for by this contract will be accepted unless such variation has been caused by conditions of loading, shipping, or packing, or allowances in manufacturing processes, and then only to the extent, if any, specified elsewhere in this contract.

3. **PAYMENTS**– Inv[illegible] *ginal")*
unless otherwise specif AMENDMENT: r, Item
n[illegible] Note: Attached Invoices Clause cancels Bill of
la[illegible] and supercedes this paragraph. Unless
o[illegible] ien the
a[illegible]

4. **DISCOUNTS**– In connection with any discount offered, time will be computed from date of delivery of the supplies to carrier when acceptance is at the point of origin, or from date of delivery at destination or port of embarkation when delivery and acceptance are at either of these points, or from the date the correct invoice or voucher is received in the office specified by the Government, if the latter is later than date of delivery. Payment is deemed to be made for the purpose of earning the discount on the date of mailing of the Government check.

5. **DISPUTES**– (a) Except as otherwise provided in this contract, any dispute concerning a question of fact arising under this contract which is not disposed of by agreement shall be decided by the Contracting Off[illegible] AMENDMENT final
and[illegible] ls or
othe[illegible] NOTE: Attached Disputes Clause, on of
the[illegible] and
con[illegible] cancels and supersedes this paragraph. s, or
arbi[illegible] ntial
evid[illegible] rt of
his[illegible] n the
perf[illegible] ites"
clause does not preclude consideration of law questions in connection with decisions provided for in (a) above, provided, that nothing in this contract shall be construed as making final the decision of any administrative official, representative, or board on a question of law.

6. **FOREIGN SUPPLIES**– This contract is subject to the Buy American Act *(41 U.S.C. 10a-d)* as implemented by Executive Order 10582 of December 17, 1954, and any restrictions in appropriation acts on the procurement of foreign supplies.

7. **CONVICT LABOR**– In connection with the performance of work under this contract, the Contractor agrees not to employ any person undergoing sentence of imprisonment except as provided by Public Law 89-176, September 10, 1965 *(18 U.S.C. 4082(c)(2))* and Executive Order 11755, December 29, 1973.

8. **OFFICIALS NOT TO BENEFIT**– No member of or Delegate to Congress or resident commissioner, shall be admitted to any share or part of this contract, or to any benefit that may arise therefrom, but this provision shall not be construed to extend to this contract if made with a corporation for its general benefit.

9. **CONVENANT AGAINST CONTINGENT FEES**– The Contractor warrants that no person or selling agency has been employed or retained to solicit or secure this contract upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee, excepting bona fide employees or bona fide established commercial or selling agencies maintained by the Contractor for the purpose of securing business. For breach or violation of this warranty the Government shall have the right to annul this contract without liability or in its discretion to deduct from the contract price or consideration or otherwise recover, the full amount of such commission, percentage, brokerage or contingent fee.

10. **GRATUITIES**– (a) The Government may, by written notice to the Contractor, terminate the right of the Contractor to proceed under this contract if it is found after notice and hearing, by the Secretary or his duly authorized representative, that gratuities *(in the form of entertainment, gifts or otherwise)* were offered or given by the Contractor, or any agent or representative of the Contractor, to any officer or employee of the Government with a view toward securing a contract or securing favorable treatment with respect to the awarding or amending, or the making of any determinations with respect to the performing of such contract, provided, that the existence of the facts upon which the Secretary or his duly authorized representative make such findings shall be in issue and may be reviewed in any competent court. (b) In the event this contract is terminated as provided in paragraph (a) hereof the Government shall be entitled (i) to pursue the same remedies against the Contractor as it could pursue in the event of a breach of the contract by the Contractor and (ii) as a penalty in addition to any other damages to which it may be entitled by law to exemplary damages in an amount *(as determined by the Secretary or his duly authorized representative)* which shall be not less than three nor more than ten times the costs incurred by the Contractor in providing any such gratuities to any such officer or employee. (c) The rights and remedies of the Government provided in this clause shall not be exclusive and are in addition to any other rights and remedies provided by law or under this contract.

11. **RENEGOTIATION**– This contract, and any subcontract hereunder, is subject to the Renegotiation Act of 1951, as amended *(50 U.S.C. App. 1211 et seq.)* and shall be deemed to contain all the provisions required by Section 104 thereof, and is subject to any subsequent act of Congress providing for the renegotiation of contracts.

12. **CONDITION FOR ASSIGNMENT**– This Purchase Order may not be assigned pursuant to the Assignment of Claims Act of 1940, as amended *(31 U.S.C. 203, 41 U.S.C. 15)*, unless or until the supplier has been requested and has accepted this order by executing the Acceptance hereon.

13. **COMMERCIAL WARRANTY**– The Contractor agrees that the supplies or services furnished under this contract shall be covered by the most favorable commercial warranties the Contractor gives to any customer for such supplies or services and that the rights and remedies provided herein are in addition to and do not limit any rights afforded to the Government by any other clause of this contract.

14. **PRIORITIES, ALLOCATI[illegible] AND ALLOTMENTS**– The Contractor shall follow the provisions of DMS Reg. 1 or DPS Reg. 1 and all other applicable regulations and orders of the Bureau of Domestic Commerce in obtaining controlled materials and other products and materials needed to fill this order.

15. **FAST PAYMENT PROCEDURE**–

(a) General. This is a fast payment order. Invoices will be paid on the basis of the Contractor's delivery to a post office, common carrier, or, in shipment by other means, to the point of first receipt by the Government.

(b) Responsibility for Supplies. Title to the supplies shall vest in the Government upon delivery to a post office or common carrier for shipment to the specified destination. If shipment is by means other than post office or common carrier, title to the supplies shall vest in the Government upon delivery to the point of first receipt by the Government. Notwithstanding any other provision of the purchase order, the Contractor shall assume all responsibility and risk of loss for supplies (i) not received at destination, (ii) damaged in transit, or (iii) not conforming to purchase requirements. The Contractor shall either replace, repair, or correct such supplies promptly at his expense, *provided* instructions to do so are furnished by the Contracting Officer within ninety (90) days from the date title to the supplies vests in the Government.

(c) Preparation of Invoice.

(1) Upon delivery of supplies to a post office, common carrier, or in shipments by other means, the point of first receipt by the Government, the Contractor shall prepare an invoice in accordance with Clause 3 of the General Provisions of Purchase Order, except that invoices under a blanket purchase agreement shall be prepared in accordance with the provisions of the agreement. In shipments by either post office or common carrier, the Contractor shall either (A) cite on this invoice the date of shipment, name and address of carrier, bill of lading number or other shipment document number, or (B) attach copies of such documents to his invoice as evidence of shipment. In addition the invoice shall be prominently marked "Fast Pay." In case of delivery by other than post office or common carrier, a receipted copy of the Contractor's delivery document shall be attached to the invoice as evidence of delivery.

(2) If the purchase price excludes the cost of transportation, the Contractor shall enter the prepaid shipping cost on the invoice as a separate item. The cost of parcel post insurance will not be paid by the Government. If transportation charges are separately stated on the invoice, the Contractor agrees to retain related paid freight bills or other transportation billings paid separately for a period of three years and to furnish such bills to the Government when requested for audit purposes.

(3) In the event this order requires the preparation of a Material Inspection and Receiving Report (DD Form 250), the contractor has the option of either preparing the DD Form 250 or including the following information on the invoice, in addition to that required in (c)(1) above: (A) a statement in prominent letters "NO DD 250 PREPARED"; (B) shipment number; (C) mode of shipment; and (D) at line item level, (i) National Stock Number and/or Manufacturer's part number, (ii) unit of measure, (iii) Ship-To-Point, (iv) Mark-For-Point if in contract, and (v) MILSTRIP document number if in contract.

(d) Certification of Invoice. The Contractor agrees that the submission of an invoice to the Government for payment is a certification that the supplies for which the Government is being billed have been shipped or delivered in accordance with shipping instructions issued by the ordering officer, in the quantities shown on the invoice, and that such supplies are in the quantity and of the quality designated by the cited pruchase order.

OUTER SHIPPING CONTAINERS SHALL BE MARKED "FAST PAY"

16. *(This clause applies if this contract is for services and is not exempted by applicable regulations of the Department of Labor.)*
SERVICE CONTRACT ACT OF 1965– Except to the extent that an exemption, variation or tolerance would apply pursuant to 29 CFR 4.6 if this were a contract in excess of $2,500, the Contractor and any subcontractor hereunder shall pay all of his employees engaged in performing work on the contract not less than the minimum wage specified under section 6 (a)(1) of the Fair Labor Standards Act of 1938, as amended (current minimum wage). However, in cases where section 6 (c)(2) of the Fair Labor Standards Act of 1938 is applicable, the rates specified therein will apply. All regulations and interpretations of the Service Contract Act of 1965 expressed in 29 CFR Part 4 are hereby incorporated by reference in this contract.

ADDITIONAL GENERAL PROVISIONS

17. **CHANGES**– The Contracting Officer may at any time, by a written order, and without notice to the sureties, make changes, within the general scope of this contract, in (i) drawings, designs, or specifications, where the supplies to be furnished are to be specially manufactured for the Government in accordance therewith; (ii) method of shipment or packing and (iii) place of delivery. If any such change causes an increase or decrease in the cost of, or the time required for performance of this contract, whether changed or not changed by any such order, an equitable adjustment shall be made by written modification of this contract. Any claim by the Contractor for adjustment under this clause must be asserted within 30 days from the date of receipt by the Contractor of the notification of change provided that the Contracting Officer, if he decides that the facts justify such action, may receive and act upon any such claim if asserted prior to final payment, under this contract. Failure to agree to any adjustment shall be a dispute concerning a question of fact within the meaning of the clause of this contract entitled "Disputes." However, nothing in this clause shall excuse the Contractor from proceeding with the contract as changed.

18. **TERMINATION FOR DEFAULT**– The Contracting Officer, by written notice, may terminate this contract, in whole or in part, for failure of the Contractor to perform any of the provisions hereof. In such event, the Contractor shall be liable for damages, including the excess cost of reprocuring similar supplies or services; provided that, if (i) it is determined for any reason that the Contractor was not in default or (ii) the Contractor's failure to perform is without his and his subcontractor's control, fault or negligence, the termination shall be deemed to be a termination for convenience under paragraph 19. As used in this provision the term "subcontractor" and "subcontractors" means subcontractors at any tier.

19. **TERMINATION FOR CONVENIENCE**– The Contracting Officer, by written notice, may terminate this contract, in whole or in part, when it is in the best interest of the Government. If this contract is for supplies and is so terminated, the Contractor shall be compensated in accordance with Section VIII of the Armed Services Procurement Regulation, in effect on this contract's date. To the extent that this contract is for services and is so terminated, the Government shall be liable only for payment in accordance with the payment provisions of this contract for services rendered prior to the effective date of termination.

20. **ASSIGNMENT OF CLAIMS**– Claims for monies due or to become due under this contract shall be assigned only pursuant to the Assignment of Claims Act of 1940, as amended *(31 U.S.C. 203, 41 U.S.C. 15)*. However, payments to an assignee of monies under this contract shall not, to the extent provided in said Act, as amended, be subject to reduction or set-off *(See Clause 12)*.

ACCEPTANCE

The Contractor hereby accepts the offer represented by the numbered purchase order as it may previously have been or is now modified, subject to all of the terms and conditions set forth, and agrees to perform the same.

NAME OF CONTRACTOR	SIGNATURE	TYPED NAME AND TITLE	DATE SIGNED

☆U.S. GOVERNMENT PRINTING OFFICE: 1980 – 603-189/8439 2-1

STANDARD FORM 36, JULY 1966 GENERAL SERVICES ADMINISTRATION FED. PROC. REG. (41 CFR) 1-16.101	CONTINUATION SHEET	REF. NO. OF DOC. BEING CONT'D. 3U M67001-84-M-6621	PAGE 2 OF 2

NAME OF OFFEROR OR CONTRACTOR
PEARSON PUMP SALES & SERVICE, INC.

ITEM NO.	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT
0001	M93058-4012-W226/MML999/4320-00-C99-3393 PUMP, VERTICAL, TURBINE, WATER LUBRICATED FOR 10" WELL, COMPLETE WITH FLANGED DISCHARGE HEAD, ELECTRIC MOTOR 250 VOLTS, 15 H.P. 3 PH 60HZ 1750 RPM, AND RIGHT ANGLE DRIVE, 300 G.P.M. CAPACITY AT 125' T.D.H. 76% OF EFFICIENCY, COLUMN SIZE 5" X 1" X 70' THREADED WITH 10' SUCTION AND CONE STRAINER. SHAFT-14 TPI., SHAFT BEARINGS AND RETAINER NO MORE THAN 10' APART. RIGHT ANGLE DRIVE SPEED RATIO 4:3.	1	EA	6228.00	6228.00

5-3-73

Well pump #2 discharge pressure 42 lbs
GPM. 287 Static 39' Pumping level 12'

Midway Park M-2

G. P. M. 150 56 lbs head

" 180 40 lb. head

old well ?.
This pump lands at 180 G.P.M.

Bill for $5.00

STATE LABORATORY OF HYGIENE
North Carolina State Board of Health

ANALYSIS OF WATER

SENT BY Heater Well Co.

ADDRESS Raleigh, N.C.

MARKED Midway Park Well (NEW), Camp Lejeune Well LCH-2

SOURCE FROM WHICH SAMPLE WAS TAKEN Well 150' power-driven

COLLECTED BY J.C. Hartsfield DATE COL'D 12-15-56 COUNTY Onslow

LABORATORY NO. 57299 DATE REC'D 12-19-56 DATE REP'D 12-27-56

Bacteriological Analysis

Coliform Group:

Number Tubes Planted	Five		One		One
Quantity of Sample Per Tube	10 ml		1 ml		$\frac{1}{10}$ ml
Number Presumptive Positive	5		1		1
Number Confirmed Tubes	5		1		1
MPN	240 +	Plate count TGY Agar 35° C.—24 hrs.			

Physical Analysis and pH Value

Sediment		Color		Turbidity	
Odor Cold		Odor Hot		pH Value	6.8

Chemical Analysis—Results in Parts Per Million

Chlorides (Cl)		Fluorides (F)		Nitrites (NO_2)	0
Manganese (Mn)		Total Hardnes ($Ca\ CO_3$)		Alkalinity ($Ca\ CO_3$)	
Iron (Fe)		Alum (Al)			

Remarks: c.c. Heater Well Co., Kinston, N.C.

JOHN H. HAMILTON, M.D., *Director*

REPORTED BY FOSTER

DECEMBER 15, 1956

TEST DATA ON NEW WELL AT MIDWAY PARK, N.C.
STATIC WATER LEVEL 30'-6" LENGTH OF AIR LINE 70'-0"

Pumping Stages		15 Min.	30 Min.	45 Min.	60 Min.	Inches of water in Piezometer tube. Orifice 6" pipe 4"Ori.
150	GPM.	37.66	37.66	38.00	38.00	5"
175	"	41.00	41.30	41.50	42.00	7"
200	"	44.00	44.00	44.50	45.00	9½"
225	"	48.00	48.00	48.00	48.00	12"
250	"	50.00	50.00	50.50	50.00	15"
275	"	52.50	52.50	52.50	52.60	18"
300	"	55.00	55.00	55.00	55.00	22"
325	"	57.00	57.40	57.87	58.00	26"

36 Hour test run at 275 GPM: Started 22:00 hrs. Dec.12, 1956

GPM.	Hrs.	Pump level
275	1	53.20
	2	53.20
	3	53.83
	4	"
	5	"
	6	"
	7	"
	8	Same Pump level
	9	for 36 Hours.
	10	
	11	
	12	
	13	
	14	
	15	
	16	
	17	
	18	to 36

RECOVERY OF WATER IN WELL TIME	WATER LEVEL
5 Sec.	46.9
10 "	44.59
20 "	42.28
30 "	41.12
40 "	39.97
60 "	38.81
2 Min.	38.23
3 "	37.66
5 "	37.20
10 "	36.04
15 "	35.81
20 "	35.58
30 "	35.12
40 "	34.66
60 "	34.20

Note.
After test run was completed, driller surged and washed well with a Calgone product for several hours. Result of his work has apparently developed the well further as shown by 5 Hr. test run.

GPM 300 08:30 PL. 50.00 09.00 PL. 51.00 09.30 PL. 51.6
10.00 " 52.00 10.30 " 52.6 11.00 " 52.6
continued to 13.00 at 300 GPM PL. same at 52.6

Robert Passingham
Mechanical Inspector

FORM A-4
(JUNE '66)

U.S. DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
OFFICE OF WATER DATA COORDINATION

APPROVED.
Budget Bureau No. 42-R1485
Approval Expires June 30, 1968

INVENTORY OF HYDROLOGIC DATA STATIONS
QUALITY OF WATER

1. AGENCY CODE	2. TYPE	3. LATITUDE	4. LONGITUDE	5.
MC	Q	° ' " N 34 43 11	° ' " W 77 19 52	

6. AGENCY STATION NO.	7. STATION NAME
4007	HP20-LCH2

8. DRAINAGE BASIN CODE		9. STATE CODE	10. COUNTY CODE	11. COUNTY NAME
No.	Letter			
06	N	32	133	ONSLOW

12. PERIOD OF RECORD			13.	14.
Began	Discontinued	Y ☐ Continuous Interruption Exceeds 1 Year		

15. SITE

- ☐ 101 Stream
- ☐ 102 Canal
- ☐ 103 Lake
- ☐ 104 Reservoir
- ☐ 105 Estuary
- ☐ 106 Spring
- ☑ 107 Well
- ☐ 110 Other

16. FREQUENCY OF MEASUREMENT

- ☐ 201 Continuous Recorder
- ☐ 202 Telemetered
- ☐ 203 Daily
- ☐ 204 Weekly
- ☐ 205 Monthly
- ☐ 206 Quarterly
- ☐ 207 Seasonal
- ☐ 208 Annual
- ☐ 209 Other Periodic
- ☑ 210 Occasional

17. TYPES OF DATA AVAILABLE

Physical
- ☐ 311 Temperature
- ☐ 312 Specific Conductance
- ☐ 313 Turbidity
- ☐ 314 Color
- ☐ 315 Odor
- ☐ 316 Radioactivity
- ☐ 317 pH (field)
- ☑ 318 pH (lab)
- ☐ 319 Eh
- ☐ 320 Other

Chemical
- ☐ 331 Dissolved solids
- ☑ 332 Chlorides Only
- ☐ 333 Nutrients (Nitrogen and phosphorus compounds)
- ☐ 334 Common ions
- ☑ 335 Hardness
- ☐ 336 Radiochemical
- ☐ 337 Dissolved oxygen
- ☐ 338 Other Gases
- ☐ 339 Other

Organic
- ☐ 351 Pesticides (insecticides, herbicides, etc.)
- ☐ 352 Synthetic detergents
- ☐ 353 Other

Biologic
- ☐ 361 Coliforms
- ☐ 362 Other Micro-organisms
- ☐ 363 BOD
- ☐ 364 Other

Sediment
- ☐ 371 Concentration
- ☐ 372 Particle size
- ☐ 373 Other

18. SUPPLEMENTARY DATA FOR SITE

- ☐ 421 Surface Water Station
- ☐ 422 Ground Water Station
- ☐ 423 Water Stage or Level
- ☑ 424 Water discharge
- ☐ 425 Time of Travel
- ☐ 426 Drainage Area

19. STORAGE OF DATA

- ☐ 501 Periodic Report
- ☐ 502 Areal Report
- ☑ 503 Not Published
- ☐ 504 Data on Punchcard
- ☐ 505 Data on Magnetic Tape
- ☐ 506 Other

20. OFFICE AT WHICH DATA AVAILABLE

Office BASE MAINTENANCE DEPARTMENT, UTILITIES DIVISION

Street No. MARINE CORPS BASE

City, State, Zip CAMP LEJEUNE, N. C. 28542

City Code 0735

21. OFFICE COMPLETING FORM

BASE MAINTENANCE DEPARTMENT

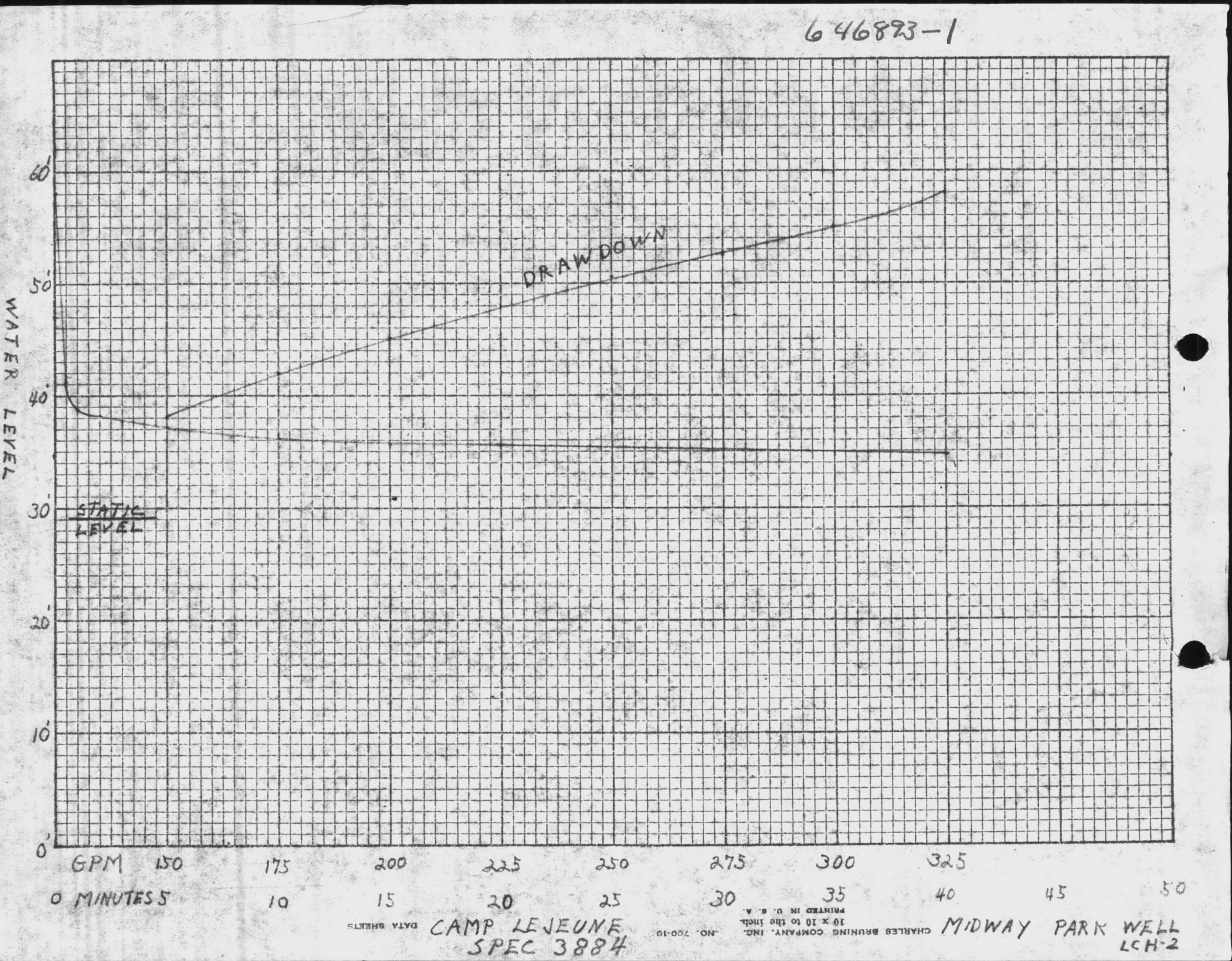
22. COMPILER'S NAME

F. E. TEW, JR.

23. DATE

Month 09 Year 1966

646893-1



CHARLES BRUNING COMPANY, INC. NO. 700-10
10 x 10 to the inch.
PRINTED IN U. S. A.
DATA SHEETS

CAMP LEJEUNE
SPEC 3884

MIDWAY PARK WELL
LCH-2

PUBLIC WORKS DEPARTMENT
CAMP LEJEUNE, NORTH CAROLINA

APPROVED

SUBJECT TO CONTRACT REQUIREMENTS

CONTRACT NOy 3884 SPEC. NO 3884/56

TITLE Repairs to Mills, Midway Park & Camp Geiger

DATE: 2/4/57

BY DIRECTION OF OFFICER
IN CHARGE OF CONSTRUCTION

HEATER WELL COMPANY

INCORPORATED

Largest Well Drilling Organization in the Carolinas

TELEPHONE 2-4675 306 S. SALISBURY STREET

RALEIGH, NORTH CAROLINA

Noy-3884

Driller: Emmitte Fields

LOG OF WELL For Marine Corps, Midway Park Well, Camp Lejeune, N. C.

Located at Camp Lejeune **in** Onslow **County, State** North Carolina

Date Drilling Started November 20, 19 56 **Date Started** November 19, 19 56

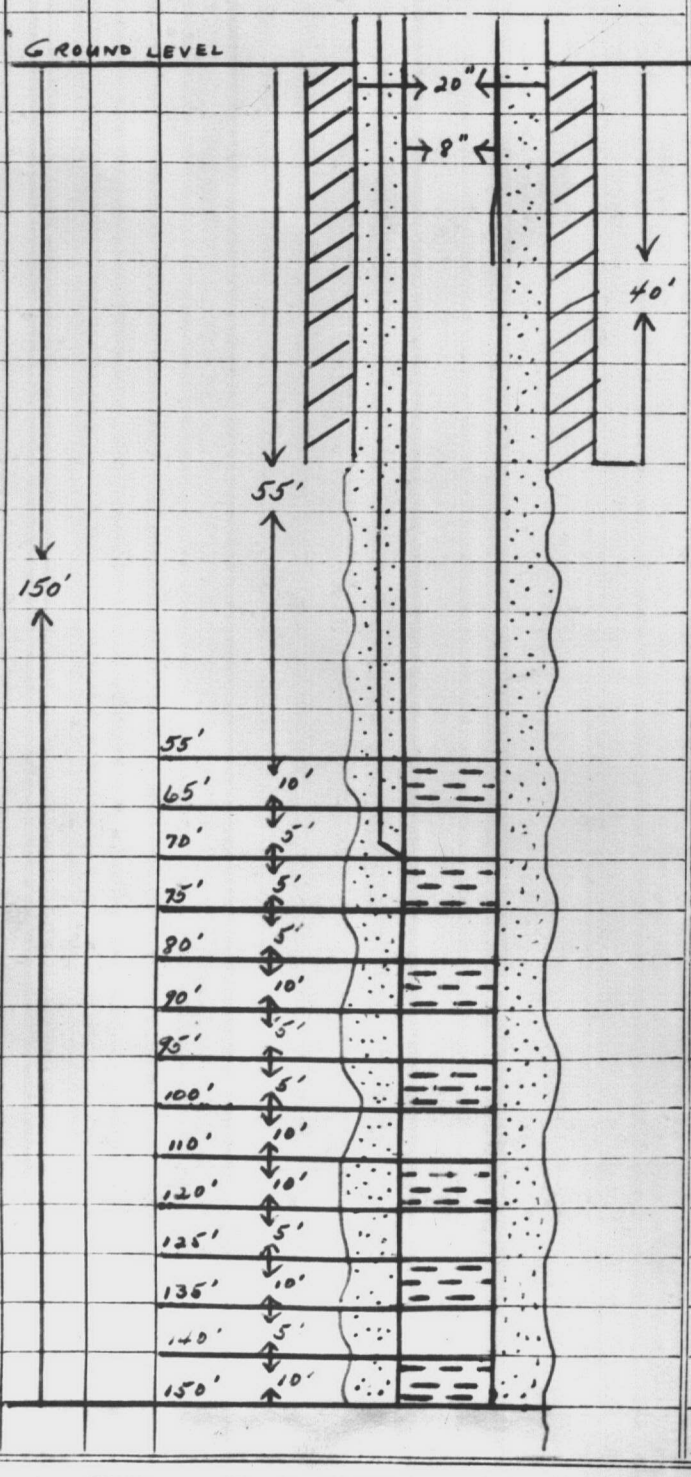
Finished Drilling December 8, 19 56 **Finished** December 21, 19 56

FORMATIONS AND DEPTH OF WELL

TOTAL DEPTH OF ALL STRATA FT.	IN.	DEPTH OF EACH STRATUM FT.	IN.	FORMATION FOUND AT EACH STRATUM
2		2		Top soil
5		3		Sandy clay
23		18		Sand, white, soft
34		11		Sandy clay, soft, mixed
36		2		Sand, coarse, soft
41		5		Sandy clay & rock, hard
49		8		Hard rock
59		10		Hard rock, medium, some
				shellrock, soft in streaks
102		43		Fine to coarse sand & gravel
112		10		Gray shellrock, med. soft
127		15		Gray shellrock, med. soft
137		10		Fine pepper sand & shellrock
152		15		Fine pepper sand with some
				gravel, soft in streaks,
				soft from 145 to 152
177		25		Fine pepper sand, gray
192		15		Pepper sand, fine, gray
202		10		Pepper sand, fine, gray

DIMENSIONS OF CASING AND SCREEN

TOTAL LENGTH OF ALL SCREENS and CASINGS FT.	IN.	LENGTH OF EACH SEC. OF SCREEN OR CASING FT.	IN.	SPECIFY SCREEN OR CASING	SIZE OF SCREEN OR CASING IN.	GAUGE OF SCREEN
40		40		Casing	20	Pit casing
55		55		Casing	8	
65		10		Screen	8	Bronze
70		5		Casing	8	
75		5		Screen	8	Bronze
80		5		Casing	8	
90		10		Screen	8	Bronze
95		5		Casing	8	
100		5		Screen	8	Bronze
110		10		Casing	8	
120		10		Screen	8	Bronze
125		5		Casing	8	
135		10		Screen	8	Bronze
140		5		Casing	8	
150		10		Screen	8	Bronze
				Air Line	1/4	



WELL DATA:

Preliminary Test

Date Tested 19 Static Level

Production GPM Pumping Level

Permanent Test

Date Tested 12-12- 1956 Static Level 29'

Production 275 GPM Active St. Level

Drawdown Pumping Level 53'

Remarks:

Casing extends 1½' above ground, top casing actually 56' long.

PUMP DATA:

Shop No. Type Lubr.

Type Head Size Suction

Depth Setting (BP to MB)

Size Column Length Suction

Type Bowl Length Air Line 70'

No. Stages Discharge-

Cap'y and Head Pressure

MOTOR DATA:

Horsepower Voltage

RPM Phase

Type Cycles

Make Frame No.

Midway Park Well Camp Lejeune, N. C.

646893-2

CAPACITY DRAWDOWN CURVE

WELL Nº LGH 2

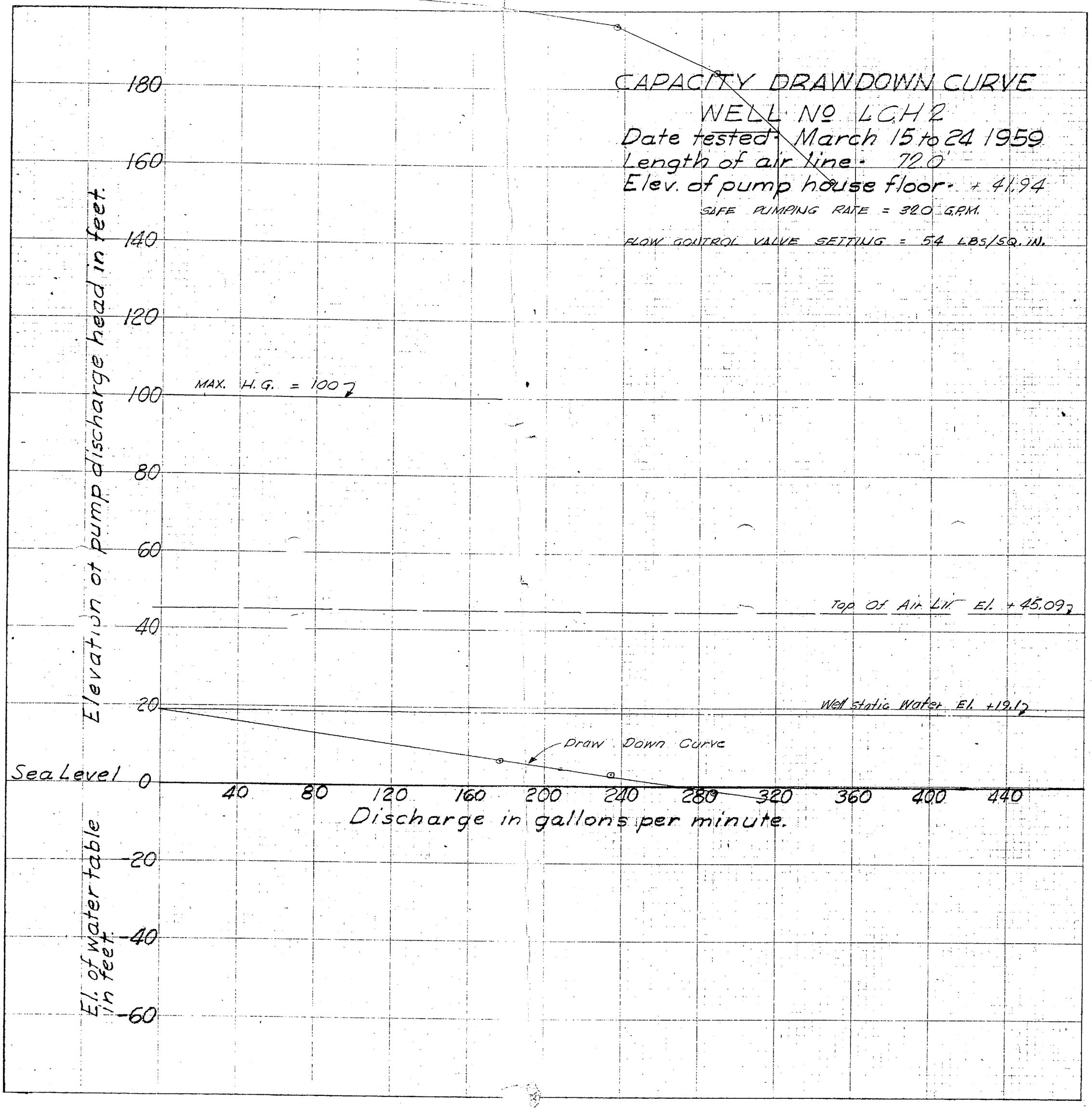
Date ~~tested~~ March 15 to 24 1959

Length of air line - 720'

Elev. of pump house floor - + 41.94

SAFE PUMPING RATE = 320 G.P.M.

FLOW CONTROL VALVE SETTING = 54 LBS/SQ. IN.



FILE FOLDER

DESCRIPTION ON TAB:

New Well Replacement 4009

MI LC4 4009

☐ **Outside/inside of actual folder did not contain hand written information**

☑ **Outside/inside of actual folder did contain hand written information**
***Scanned as next image**

Confidential Records Management, Inc.
New Bern, NC
1-888-622-4425
9/08

4009

Well Depth	134'
Pump Set	80'
Air Line	100'
Static	25'
Pumping Level	70'
GPM	450

WELL NUMBER 4009 | BY SALMS | DATE 7-10-02

AIR LINE	STATIC LEVEL	PUMPING LEVEL	DRAIN DOWN	DISCHARGE PRESSURE	GPM	START TIME
75	25	40	15	100	122	25
		45	20	90	162	35
		50	25	80	203	45
		55	30	70	248	55
		60	35	65	269	05
		65	45	60	293	15
	SET AT	65	45	55	319	25
				50		30

REMARKS D/H-115 Replaced 80' A/L TO 75' A/L 7/16/02 SALMS

MANUFACTURER	STAGE	S.N.	TOTAL HEAD	SIZE

WELL NUMBER 400.9 | BY Stevenson & Sons | DATE 5-8-01

AIR LINE	STATIC LEVEL	PUMPING LEVEL	DRAIN DOWN	DISCHARGE PRESSURE	GPM	START TIME
80	24	33	11	110	100	
		37	13	100	130	
		41	17	90	178	
		45	21	80	222	
		50	26	70	283	
		56	32	60	317	
		62	38	50	349+	

D/H - 716

REMARKS

MANUFACTURER	STAGE	S.N.	TOTAL HEAD	SIZE

North C[illegible]a Department of Environment, Health, and [illegible]
Division of Environmental Health, Public Water Supply Sect[illegible]

SOURCE INFORMATION
GROUND WATER

Date Form Completed: M M D D Y Y = 0 7 2 6 9 5

PWSID: 1 1 0 4 9 4 0

Owner Assigned Source Code: 009

Well Name (If purchase, name of system): HADNOT POINT ~~4009~~ LCH 4009

Code: G (G=Ground, W=Purchase/G, Y=G w/direct influence, Z=W w/direct influence)

If Purchase, seller ID#:

Source Begin Date (M M Y Y):

Source exempt—SWTR? ___ Y N

Direct Influence Date (M M D D Y Y):

Availability: P (P=Permanent, E=Emergency, S=Seasonal, I=Interim, O=Other)

Location of well within the system (If purchase, location of master meter): HY-24 NORTH SIDE

Latitude (N) Deg. Min. Sec.: 3 4 4 3 2 6.1

Longitude (W) Deg. Min. Sec.: 0 7 7 2 0 1 3.2

How Determined: G (G=GPS, M=Map, S=Surveyed)

GPS Data: Q3 (Q# or DOP #)

No. of Sats. Locked on: 4

(If purchase, use seller's primary source lat/long)

Vulnerable (VOCs)? ___ Y N

Assessment Date (M M D D Y Y):

ENTRY POINT INFORMATION

Use Code: C (C=Ground/Permanent, D=Ground/non-permanent)

Availability: P (P=Year-round, S=Seasonal, E=Emergency, I=Interim, O=Other)

Owner Assigned Entry Point Code: 100

Entry Point Name: ~~LCH 4009~~ MCB HADNOT PT WTP

Location:

Well Site: Owned or controlled? Y (Y,N) Control Area (100' radius)? Y (Y,N) If no, explain:

Sources of pollution/distance: 100' to hwy 68' to RW ditch

Surface water within 200'? N Y N If yes, actual distance ___ feet If yes, bact. samples collected? ___ (Y,N)

Adequate slope? Y (Y,N) Flooding? N (Y,N) Maintenance:

Well House: Free of stored materials? Y (Y,N) Properly drained? Y (Y,N) Locked? Y (Y,N)

Condition of house: OK Type of freeze protection: elec heat

Well: Diameter: 8" Type: SCREENED Yield (gpm): 1450 Properly sealed? Y (Y,N)

Properly vented? Y (Y,N) Casing depth: 50 ft. (If unknown, put 'UNK') Well depth: 134' Meter available? Y (Y,N)

Concrete slab adequate? ___ (Y,N) If no, explain: well not in center of slab Size: 10x12

Size of blow-off: 4" (V) Sample tap: Before treatment? Y (Y,N) After treatment? ___ (Y,N)

Pumps: Capacity: GPM: 1450 HP: 30 Pump intake depth: 80 Auxiliary Power? Y (Y,N)

Type pump: VERTICAL TURBINE Height above floor (pump/casing): 12" / ___

Storage at well site: Elev: Hydro: Ground:

If hydroautomatic, air volume control? ___ (Y,N) Safety valves? ___ (Y,N) Coded? ___ (Y,N)

High service pumps: 1. ___ gpm ___ hp 2. ___ gpm ___ hp 3. ___ gpm ___ hp Auxiliary Power? ___ (Y,N)

Is the water treated at this well? Y N If yes, complete back of form.

If other wells are treated here, which ones? If treated elsewhere, where? HP-20 PLANT

If purchase, retreat? ___ Y N If yes, complete back of form.

① previous fuel leak @ aux drive. Valve S/B secured

② seal pump pedestal *

DATE 7-25-00

PWSID 04-67-041

WELL # LCH-4009

WELL NAME LOW COST Housing FOR HOD NOT POINT HP20

BLDG. LCH 4009

CODE S

AVAILABILITY P

LOCATION HWY 24 NORTH SIDE

LATITUDE 34.72364

LONGITUDE 77.33699

WELL DIAMETER 8"

WELL DEPTH 134

SCREEN INTERVAL

YIELD 420

STATIC LEVEL 30'

PUMPING LEVEL 65'

PUMP TYPE VERTICAL TURBINE

MOTOR HP 30

INTAKE DEPTH 80'

DESIGN CAPACITY 450

ACTUAL GPM 450

SIZE OF CONCRETE SLAB 10X12

HEIGHT OF CASING 12"

WELL NUMBER 4009 | BY Stevenson & Petelson | DATE 4-8-97

AIR LINE	STATIC LEVEL	PUMPING LEVEL	DRAIN DOWN	DISCHARGE PRESSURE	GPM	START TIME
80	30	38	8	105	100	45
		45	15	90	187	55
		49	19	80	236	05
		55	25	70	293	15
		60	30	60	349	25
		65	35	55	420	—

D/H 119

REMARKS

MANUFACTURER	STAGE	S.N.	TOTAL HEAD	SIZE

WELL NUMBER 4009		BY Stevenson & Brown			DATE 10-31-94	
AIR LINE	STATIC LEVEL	PUMPING LEVEL	DRAIN DOWN	DISCHARGE PRESSURE	GPM	START TIME
80	42	48	6	103	100	
		55	13	90	170	
		60	18	80	221	
		62	20	70	272	
		67	25	60	350+	

REMARKS D/H 115 PSI

MANUFACTURER	STAGE	S.N.	TOTAL HEAD	SIZE

WELL NUMBER LCH 4009 [redacted] Thomas / Coy [redacted] DATE 10-2-90

AIR LINE	STATIC LEVEL	PUMPING LEVEL	DRAIN DOWN	DISCHARGE PRESSURE	GPM	START TIME
80	42	47	5	103	111	25
		53	11	90	167	35
		57	15	80	214	45
		59	17	70	263	55
		67	25	60	325	05
left stat →		70	28	55	349+	10

REMARKS Pulled air line
Checked water level with electro tape

dead head 117

MANUFACTURER	STAGE	S.N.	TOTAL HEAD	SIZE

NUMBER LCH4009 BY THOMAS/SARDINAS DATE 10-25-88

LINE	STATIC LEVEL	PUMPING LEVEL	DRAIN DOWN	DISCHARGE PRESSURE	GPM	START TIME
100	25	27	2	106	104	60
		28	3	100	137	10
		29	4	95	162	20
		30	5	80	239	30
		36	11	70	304	40
		40	15	20	164" on tape	

Dead head 122

RRS

164" on tape
(904 o/m)

FACTURER	STAGE	S.N.	TOTAL HEAD	SIZE

8 WATER WELLS - MARINE CORP BASE - CAMP LEJEUNE NC

ID	LOCATION	Pump Data: Model	Stages	Motor HP	Gear Box Model	GPM	RPM	1st Screen Setting	2nd Screen Setting	3rd Screen Setting	4th Screen Setting	5th Screen Setting	Static Water Level	Ft. to Water Levels: Pumping Down	Pump Rate GPM
11	Berkley Manor	8MS	8	20	20	70	45	65-75	115-135	182-197	—	—	35	49	300
4	Stone Street	8MS	8	20	20	80	44	106-120	150-170	217-227	—	—	15	80	300
1404006	MIDWAY PARK	8HL	8	30	40	80	42	90-114	116-139	—	—	—	25	70	450
21	Piney Green Rd	8MS	6	15	20	70	40	60-70	125-135	160-170	220-230		18-7	54-9	200
27	Sneeds Ferry Rd	8MS	6	15	20	70	40	50-65	87-102	125-135	—	—	14	44	175
R227	Ripple Range	8HL	8	25	40	80	35	190-210	223-233	242-247			13	58	300
638	TARAWA TERRACE	8MS	6	15	20	85	35	70-95	132-142	—	—	—	27	63	160
39	Sneeds Ferry Rd	8MS	6	15	20	70	42	121-131	134-146	185-195	215-220	225-230	4	96	200

Please
Lease
Well — 10-10-84

CONSOLIDATED PUMP & EQUIPMENT, INC.

DISTRIBUTORS AND MANUFACTURER REPRESENTATIVES • WATER & WASTE WATER TREATMENT

POST OFFICE BOX 3188 • ROCK HILL, SOUTH CAROLINA 29730 • 803/328-1891

March 28, 1983

SUBMITTAL DATA

JOB: Replace Water Wells
Camp Lejeune, N. C.

Engineer: Peirson & Whitman, Inc.

Contractor: East Coast Construction Co.

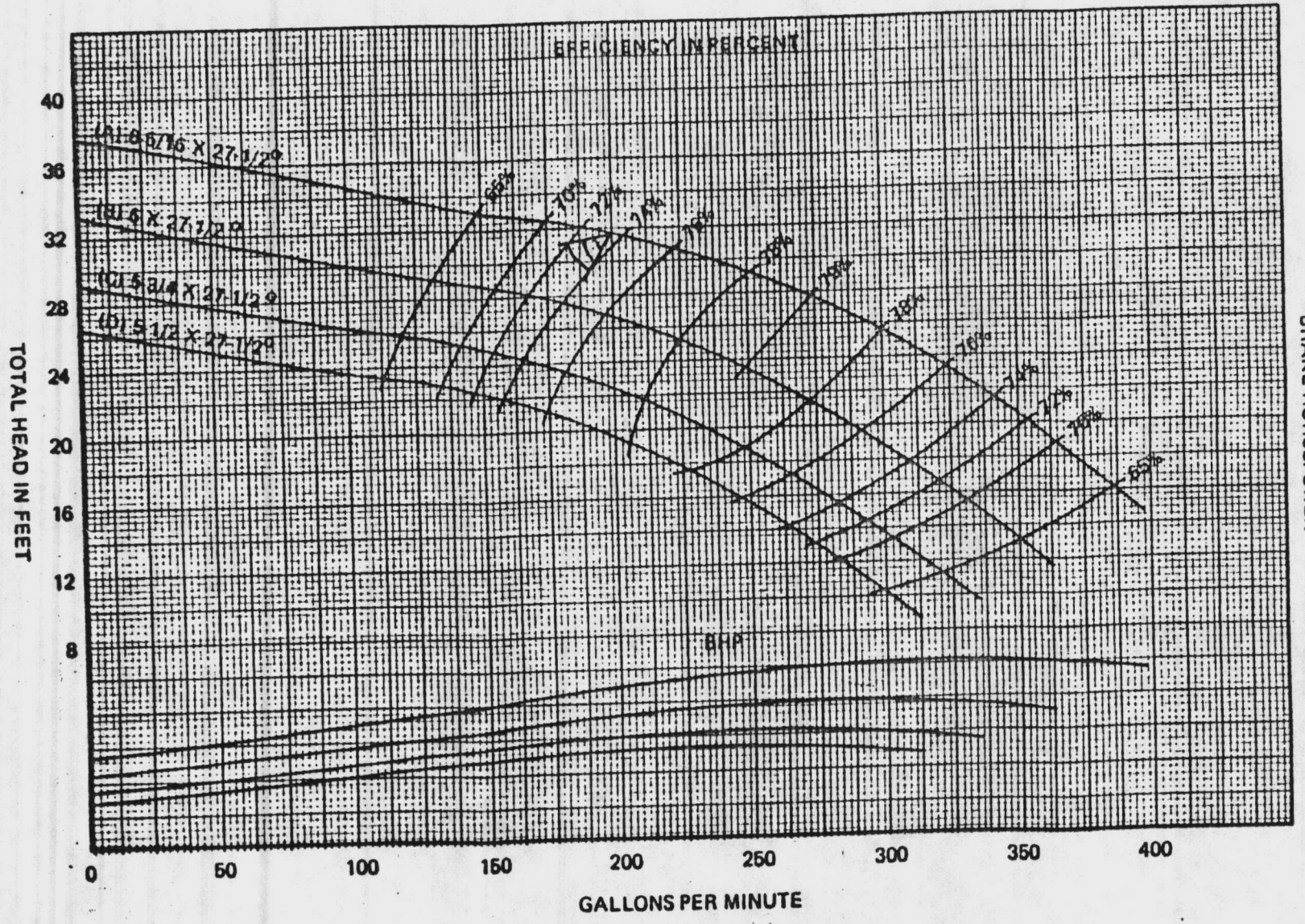
Material Submitted:

8 - Jacuzzi Model 15-8MSA6 Verticle Turbine Pump consisting of 6 stage 8MS pump head, 10' - 6" suction pipe with cone strainer, 100' - 6" discharge column, 1" drive shaft, model L6A discharge head, model S-20 Combination Right Angle Gear Drive, 1 : 1 Ratio, and 15 HP V. H. S. motor.

Conditions of service 200 GPM @ 190.5' TDH

TURBINE PUMP CURVE

8MS
SECTION 2120
MAY 15, 1970



NUMBER OF BOWLS	CHANGE EFFICIENCY AS FOLLOWS
1	−4
2	−3
3	−2
4	−1

Change in efficiency may affect both head and horsepower

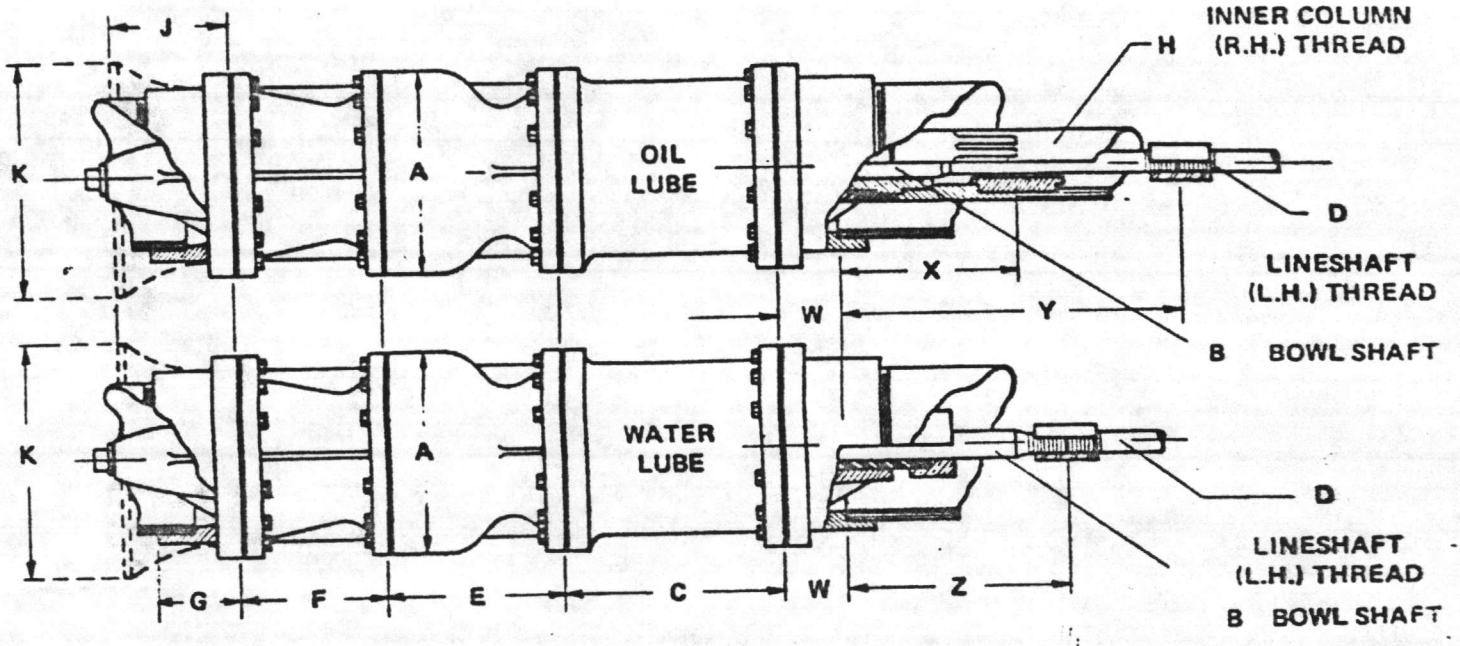
Bowl Dia.	7-1/2 In.
Bowl No.	3591-S, C.I., ENAM.
Impeller No.	3590, BRONZE
Eye Area	6.6 Sq. In.
Imp. Type	SEMI-OPEN K = 4.28

STAGE PERFORMANCE

Curve No.	8M-172
R. P. M.	1760
Bowl	8MS

Performance based on pumping clear, fresh water at a temperature not over 85°F., and free of gas, air or abrasives, and with bowls properly adjusted and submerged.

Turbine Bowl

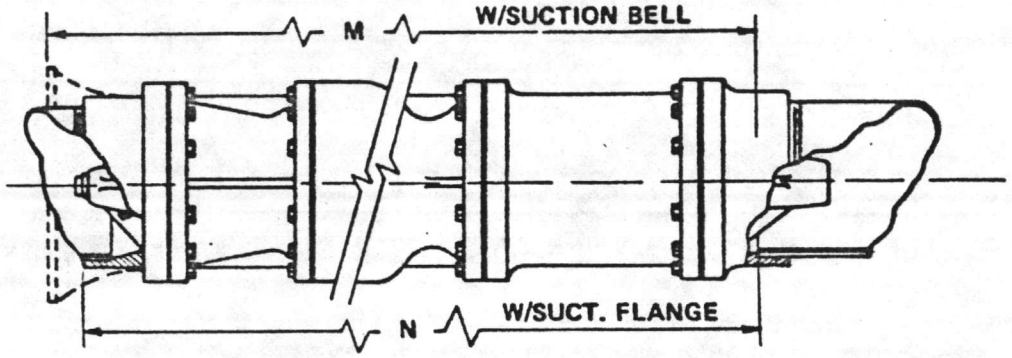


Nom. Bowl Size	Bowl Figure Number	ALL DIMENSIONS IN INCHES													
		Bowl Dia. Max. O.D. STD. A	Bowl Dia. Turned ALT. A	B	C	E	F	Max. G	Suction Bell J	Suction Bell K	W	O.L. X	O.L. Y	W.L. Z	Available Outer Column and Suction Pipe
6	6J,6L 6M,6H,6X,6W,6Y	5 9/16		3/8 1	4 3/16	3 1/2 4 3/4	3 1/4	5	4	7 1/4	3	9 1/2	22	7 1/2	3,4,5
8	8J,8L,8K,8M,8H 8Y	7 1/8 7 13/16	7 1/2	1 1 3/16	6	5 5/8 7 1/2	4	5	4 1/2	9 1/4	3	9 1/2	22	7 1/2	4, 5, 6 4, 5, 6
10	10L,10M,10H	9 1/2	9 1/4	1 1/2	8	7	6	4 13/16	5 1/4	11 1/4	3	9 1/2	22	7 1/2	4,5,6,8
10	10W,10Y,10Z	9 1/8	9 1/2	1 1/16	8 7/8	8 1/2	6 3/4	5 15/16	7	14 1/4	3	9 1/2	22	7 1/2	6,8,10
12	12L, 12M, 12H, 12X	11 5/16	11 1/4	1 1/16	9	10 1/2	5 1/4	3 3/8	6	13 1/4	3	9 1/2	22	7 1/2	6, 8, 10
12	12W	12 3/16	12	1 1/16	9	11 1/4	5 1/4	3 3/8	6	13 1/4	3	9 1/2	22	7 1/2	6, 8, 10
14	14L,14M 14H,14X	13 1/2	13 1/4	1 15/16	9 15/16	12 1/2	7 1/16	5 13/16	8	15 1/4	3	9 1/2	22	7 1/2	8, 10, 12
14	14W	14 1/16	13 3/4	1 15/16	9 15/16	13 1/4	7 1/16	5 13/16	8	15 1/4	3	9 1/2	22	7 1/2	8, 10, 12
16	ALL	15 1/2	15 1/4	1 15/16	9 15/16	15	8	6 3/16	10	22	3	9 1/2	22	7 1/2	10, 12, 14
20	ALL	19 1/4	19 1/4	1 15/16	14	18	12	6 3/16	12 1/2	27	3	9 1/2	22	7 1/2	12, 14
24	ALL	23 1/2	23 1/2	2 3/16	20	21	14	3 3/16	14	32	1	16 1/2	29	14 1/2	12, 14, 16
28	ALL	27	27	2 15/16	24	24	15	3 3/16	16	38	1	16 1/2	29	14 1/2	14, 16, 18

* Note: Maximum Diameter for 24" Bowl is Discharge Column Flange at 25" and for 28" is 27 1/2".

D	Lineshaft Dia. & Pitch (L.H.)	3/8 16P.	1 12P.	1 3/16 12P.	1 1/2 12P.	1 11/16 12P.	1 15/16 12P.	2 3/16 12P.	2 7/16 8P.	2 11/16 8P.	2 15/16 8P.
H	O.L. Inner Col. & Thread (R.H.)	1 1/8 1 1/8-12P.	1 1/2 1 1/8-12P.	2 2 1/16-12P.	2 1/2 2 1/2-12P.	3 3 1/16-12P.	3 3 1/16-12P.	3 1/2 3 1/2-12P.	4 4-8P.	5 5-8P.	5 5-8P

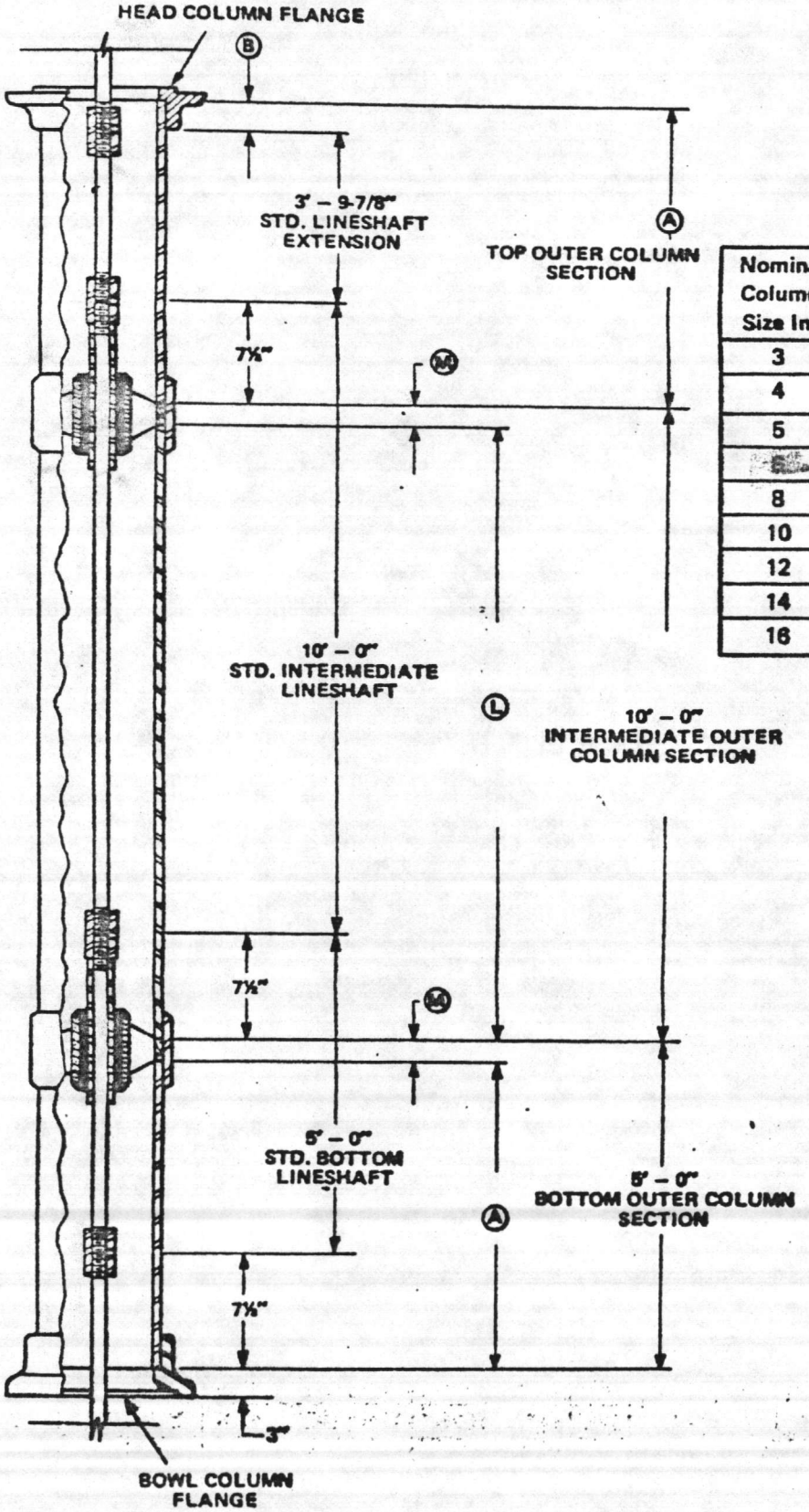
Turbine Bowl



Nom. Bowl Size	Bowl Figure Number	(M) = BOWL ASSEMBLY LENGTH W/SUCTION BELL — INCHES NUMBER OF BOWLS													
		1	2	3	4	5	6	7	8	9	10	11	12	13	14
6	6L	18½	22	25½	29	32½	36	39½	43	46½	50	53½	57	60½	64
	6M,H,X,W,Y	19¾	24½	29¼	34	38¾	43½	48¼	53	57¾	62½	67¼	72	76¾	81½
	8J,8L,8K,8M,8H	23⅛	28¾	34⅜	40	45⅝	51¼	56⅞	62½	68⅛	73¾	79⅜	85	90⅝	96¼
8	8Y	25	32½	40	47½	55	62½	70	77½	85	92½	100	107½	115	122½
10	10L,M,H	29¼	36¼	43¼	50¼	57¼	64¼	71¼	78¼	85¼	92¼	99¼	106¼	113¼	120¼
10	10W,Y,Z	34⅛	42⅝	51⅛	59⅝	68⅛	76⅝	85⅛	93⅝	102⅛	110⅝	119⅛	127⅝	136⅛	144⅝
12	12L, M, H, X	33¾	44¼	54⅝	65¼	75¾	86¼	96⅝	107¼	117¾	128¼	138⅝	149¼	159⅝	170¼
12	12W	34½	45⅝	57	68⅛	79½	90⅝	102	113¾	124½	135⅝	147	158⅛	169½	180⅝
14	14L,M,H,X	40¾	53¼	65⅝	78¼	90¾	103¼	115⅝	128¼	140¾	153¼	165⅝	178¼	190¾	203¼
14	14W	41½	54¾	68	81¼	94½	107¾	121	134¼	157½	160¾	174	187¼	200½	213¾
16	ALL	46	61	76	91	106	121	136	151	166	181	196	211	226	241
20	ALL	59½	77½	95½	113½	131½	149½	167½	185½	203½	221½	239½			
24	ALL	70	91	112	133	154	175	196	217	238	259				
28	ALL	80	104	128	152	176	200	224	248	272					

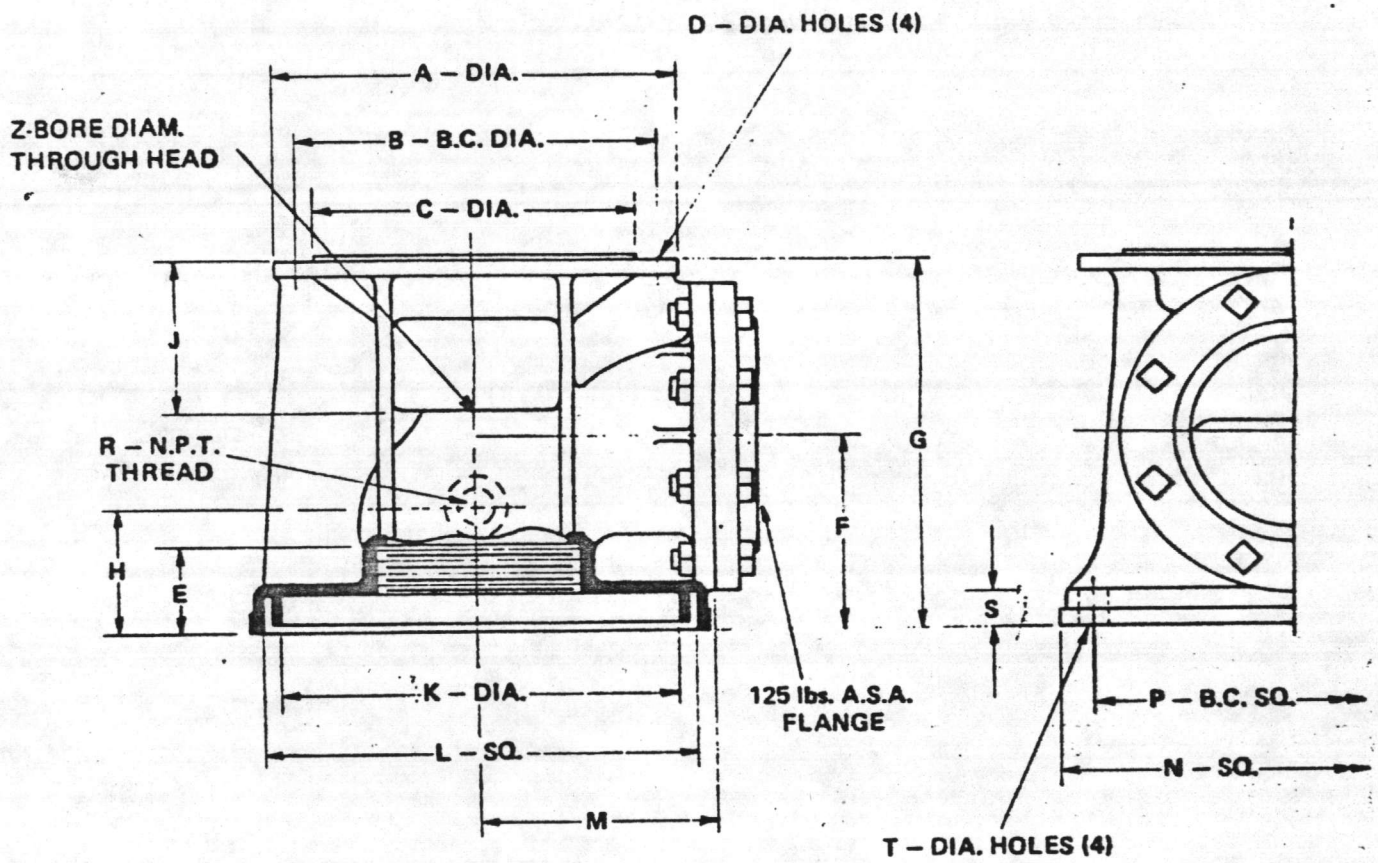
Nom. Bowl Size	Bowl Figure Number	(N) = BOWL ASSEMBLY LENGTH W/SUCTION FLANGE — INCHES NUMBER OF BOWLS													
		1	2	3	4	5	6	7	8	9	10	11	12	13	14
6	6L	19½	23	26½	30	33½	37	40½	44	47½	51	54½	58	61½	65
	6M,H,X,W	20¾	25½	30¼	35	39¾	44½	49¼	54	58¾	63½	68¼	73	77¾	82½
8	8J,8L,8K,8M,8H	23⅝	29¼	34⅞	40½	46⅝	51¾	57⅞	63	68⅝	74¼	79⅞	85½	91⅝	96¾
8	8Y	25½	33	40½	48	55½	63	70½	78	85½	93	100½	108	115½	123
10	10L,M,H	28⅞	35⅞	42⅞	49⅞	56⅞	63⅞	70⅞	77⅞	84⅞	91⅞	98⅞	105⅞	112⅞	119⅞
10	10W,Y,Z	33⅛	41⅝	50⅛	58⅝	67⅛	75⅝	84⅛	92⅝	101⅛	109⅝	118⅛	126⅝	135⅛	143⅝
12	12L, M, H, X	31½	42	52½	63	73½	84	94½	105	115½	126	136½	147	157½	168
12	12W	32¼	44½	55¾	67	78¼	89½	100¾	112	123¼	134½	145¾	157	168¼	179¼
14	14L,M,H,X	38⅛	51⅛	63⅝	76⅛	88⅝	101⅛	113⅝	126⅛	138⅝	151⅛	163⅝	176⅛	188⅝	201⅛
14	14W	39⅛	52⅝	65¼	79⅛	92⅛	105⅝	118⅛	132⅛	145¼	158⅝	171⅛	185¼	198⅝	211⅝
16	ALL	42⅛	57⅛	72⅛	87⅛	102⅛	117⅛	132⅛	147⅛	162⅛	177⅛	192⅛	207⅛	222⅛	237⅛
20	ALL	53¼	71¼	89¼	107¼	125¼	143¼	161¼	179¼	197¼	215¼	233¼			
24	ALL	59¼	80¼	101¼	122¼	143¼	164¼	185¼	206¼	227¼	248¼				
28	ALL	67¼	91¼	115¼	139¼	163¼	187¼	211¼	235¼	259¼					

Turbine Column — Water-Lube, Butt Joint



Nominal Column Size In.	A	B	L	M
3	4'11½"	6⅛"	9'11½"	½"
4				
5	4'11¼"	5⅛"	9'11¼"	¼"
6				
8				
10				
12				
14				
16				

Cast, Standard Discharge Heads



Head Fig. No.	Max. Size (In.) Disch.	Max. Size (In.) Inner Col.	Outer Col. (In.)	DIMENSIONS INCHES A	B	C	D	E	F	G	H	J	K	L	M	N	P	R	S	T	Z
L5A L5AB	6	1½	5	10	9⅛	8¼	1/16	3⅛	8 1/16	15⅜	4⅛	6¼	14¾	14¾	8 1/16	15½	13⅜	1	1½	⅞	2⅝ 3⅛
L6A L6AB	6	1½	6	10	9⅛	8¼	1/16	3⅛	8 1/16	15⅜	4⅛	6¼	14¾	14¾	8 1/16	15½	13⅜	1	1½	⅞	2⅝ 3⅛
L8C L8CD	8	2	8	16½	14¾	13½	¾	3¼	7⅞	15½	4⅞	6⅛	16½	17⅝	9⅝	18½	15½	1½	1½	1½	3⅛ 3¾
L10C	10	2½	10	16½	14¾	13½	¾	4 1/16	9⅞	18 3/16	5 3/16	6½	16½	18½	10⅛	19½	16½	1½	1⅛	1½	3¾

Water Lubricated Turbine Pump

MATERIAL SPECIFICATIONS OF STANDARD CONSTRUCTION

KEY NO.	DESCRIPTION	MATERIAL	SPECIFICATION IF APPLICABLE	PART ORDER NUMBER
1	Discharge Head	Cast Iron	ASTM A48 CL.30	
2	Head Column Flange	Cast Iron	ASTM A48 CL.30	
3	Head Column Flange Gasket	Asbestos		
4	Studs (Hd. Column Flange Assy)	Steel	C1137	
5	Nuts (Used W/Key No. 4 Head Column Flange Assy)	Low Carbon Steel	ASTM A-307	
6	Head Discharge Flange	Cast Iron	ASTM A-126	
7	Head Discharge Flange Gasket	Asbestos		
8	Discharge Flg. Assy. Cap Scrs.	Steel	ASTM A-301	
9	Discharge Flg. Assy. Nuts (Used with Key No. 8)	Low Carbon Steel	ASTM A-307	
10	Head Dsch. Flg. Assy. Studs	Steel	C1137	
11	Head Dsch. Flg. Assy. Nuts (Used With Key No. 10)	Low Carbon Steel	ASTM A-307	
14	Head Packing Housing W/Brg. Includes Key No. 32	Cast Iron (Pkg. Hsg.)	ASTM A48 CL.30	
15	"O" Ring	Buna-N		
16	Head Packing Housing Cap Scrs.	S. Steel	300 Series	
18	W/L Headshaft	S. Steel	AISI 316	
19	Headshaft Flinger	Neoprene		
20	Headshaft Adj. Nut	Steel	C-1213	
21	Hd. Pkg. Hsg. Sand Shield	Bronze	SAE 660	
22	Packing (Set)	Asbestos		
23	Packing Follower	Bronze	SAE 40	
25	Hd. Pkg. Housing Grease Fittings	Steel		
26	Packing Follower Studs	S. Steel	AISI 416	
27	Packing Follower Retn. Nuts	S. Steel	300 Series	
28	Adapter Flange	Cast Iron	ASTM A48 CL45	
29	Adapter Flange O-Ring	Buna-N		
30	Adapter Flg. Assy. Cap Screws	S. Steel	300 Series	
32	W/L Headshaft Bearing	Bronze	SAE 660	
33	Headshaft Gib Key	Steel		
34	Adj. Nut Machine Screw	S. Plated		
67	Shaft Coupling (Hd. Shaft, Line Shaft, Bowl Shaf.)	Steel	C1137	
68	Shaft Adapter Coupling Hd/Sht, L/Sht., Bowl/Sht	Steel	C1137	
69	O/C Coupling	Blk. Steel	ASTM A-120-57T Grade B	
76	W/L O/C Section	Black Steel	ASTM A-120-57T Grade B	
77	W/L O/C Section	Black Steel	ASTM A-120-57T Grade B	
78	W/L L/S Bearing Spider	Brass		
79	W/L L/S Bearing	Rubber		

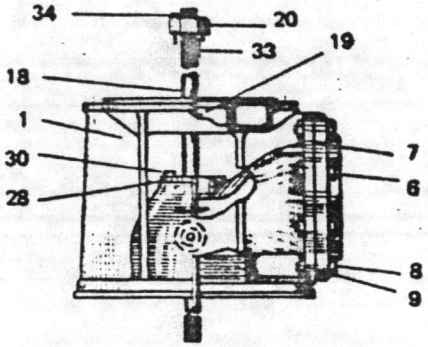
(CONTINUED ON PAGE 22)

Water Lubricated Turbine Pump

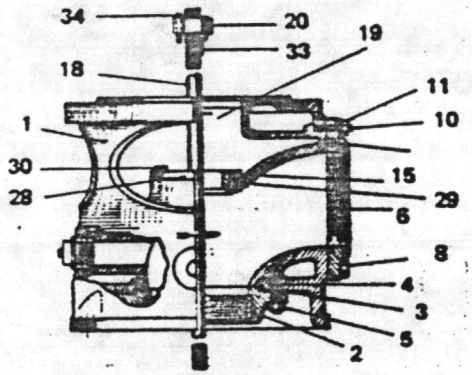
MATERIAL SPECIFICATIONS OF STANDARD CONSTRUCTION

KEY NO.	DESCRIPTION	MATERIAL	SPECIFICATION IF APPLICABLE	PART ORDER NUMBER	
80	W/L S/S Sleeve	S. Steel	304		
81	W/L L/S Extension 3' - 9 7/8" Lg.	Steel	C-1045		
82	W/S L/S Section (5' - 0" Lg.)	Steel	C-1045		
83	W/L L/S Section 10' - 0" Lg.	Steel	C-1045		
84	W/L Bowl Shaft	S. Steel	AISI 416		
90	W/L Discharge Housing Assy (Includes Key No. 91 & No. 92)	Cast Iron	ASTM A48 CL30		
91	W/L Upper Disch. Hsg. Brg.	Neoprene			
92	W/L Lower Disch. Hsg. Brg.	Neoprene			
93	W/L Disch. Hsg. Brg. Sand Cap	Bronze	SAE 40		
94	Sand Cap Set Screws (For K. No. 93)	S. Steel	300 Series		
103	Bowl Assy. (Closed Type) Includes Key No. 104	Cast Iron	ASTM A48 CL 30		
104	Bowl Bearing	Bronze	SAE 794		
105	Bowl Assy. (Semi-Open Type) Includes Key No. 104	Cast Iron	ASTM A48 CL30		
106	Impeller (Closed Type)	Bronze	SAE 40		
107	Impeller (Semi-Open Type	Bronze	SAE 40		
108	Taper Lock	S. Steel	416 SS		
109	Brg. Stage Assy. (Closed Type) Includes Key No. 110	Cast Iron	ASTM A48 CL30		
110	Bearing Stg. Bearing	Bronze	SAE 660		
111	Brg. Stg. Assy. (Semi-Open) Includes Key No. 110	Cast Iron	ASTM A48 CL30		
112	Pipe Plug (For Key No. 109 & No. 111	Galv. Steel			
113	Bearing Stage End Plug	Galv. Steel			
114	Bearing Stage Sand Cap	Bronze	SAE 40		
115	Sand Cap Set Screws (For K. No. 114)	S. Steel	300 Series		
116	Bowl Suction Flange	Cast Iron	ASTM A48 CL30		
117	Bowl Assy. Cap Screws	S. Steel	300 Series		
119	Suction Bell (Optional; Delete Key No. 116 if Suct. Bell is Used	Cast Iron	ASTM A48 CL30		
152	W/L O/C Assy. T & C (Nom. 5' Lg.) (Assy of Key No. 69 & No. 76)	Black Steel	ASTM A-120-57T Grade B		
153	W/L O/C Assy T & C (Nom. 10' Lg.) (Assy of Key No. 69 & No. 77)	Black Steel	ASTM A-120-57T Grade B		

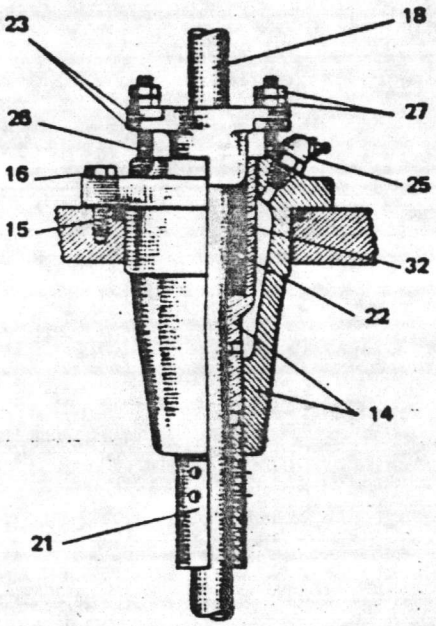
WATER LUBRICATED TURBINE PUMP PARTS DIAGRAM

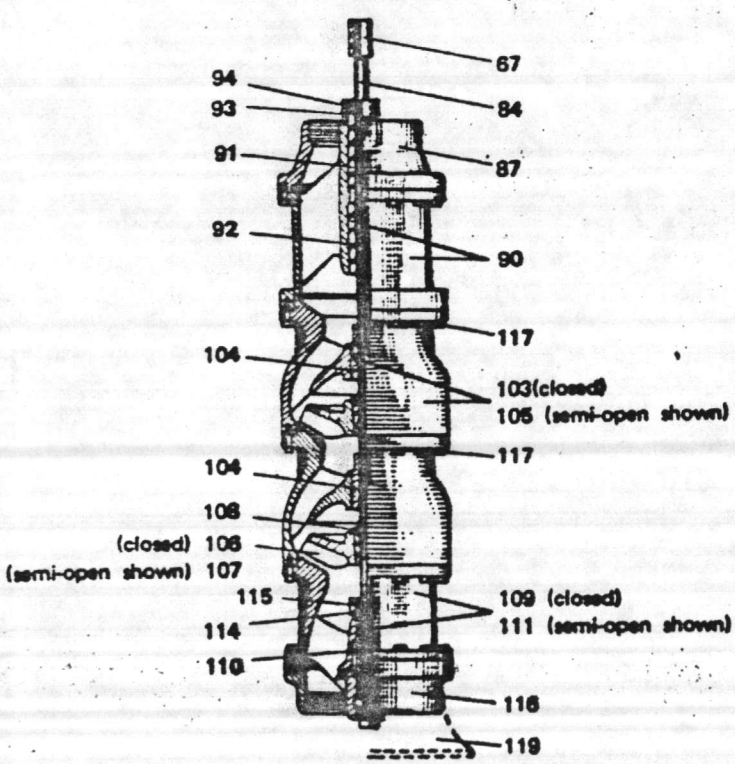


TYPICAL STANDARD HEAD

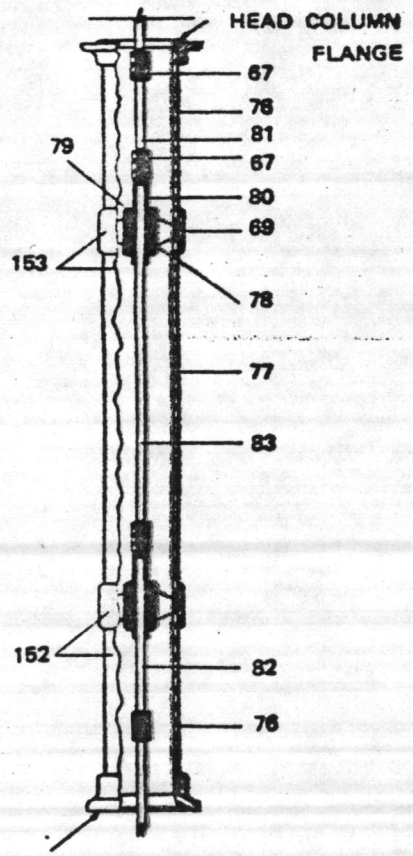


TYPICAL HEAVY DUTY HEAD





BOWL ASSEMBLY



BOWL COLUMN FLANGE

TABLE 3

NOTE: Drives that are rated at 1760 RPM vertical speed **ARE NOT LIMITED** to 1760 RPM. See Table 1.

MODEL	Vertical Shaft RPM	H.P. Rating	DOWNTHRUST CAPACITY IN POUNDS												
			HOLLOW SHAFT						SOLID SHAFT						COMB.
			Type SL		Type S		Type SH		Type SSL		Type SS		Type SSH		Type C
			Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min. Max.
20	1160	15	0	978	797	2358	797	3680	0	978	0	2358			0 2358
	1460	18	0	901	760	2173	760	3392	0	901	0	2173			0 2173
	1760	20	0	850	700	2050	700	3200	0	850	0	2050			0 2050
	3460	30	0	680	534	1640	534	2560	0	680	0	1640			0 1640
40	1160	30	0	1495	1138	3565	1138	5520	0	1495	0	3565			0 3565
	1460	35	0	1378	1055	3286	1055	5088	0	1378	0	3286			0 3286
	1760	40	0	1300	1000	3100	1000	4800	0	1300	0	3100			0 3100
60	960	39	0	2074	1490	5002	1490	7320	0	2074	0	5002			0 5002
	1160	45	0	1955	1422	4715	1422	6900	0	1955	0	4715			0 4715
	1460	53	0	1802	1331	4346	1331	6360	0	1802	0	4346			0 4346
	1760	60	0	1700	1250	4100	1250	6000	0	1700	0	4100			0 4100
80	960	52	0	3904	2085	6954	2085	11224	0	3904	0	6954			0 6954
	1160	60	0	3680	1991	6555	1991	10580	0	3680	0	6555			0 6555
	1460	70	0	3392	1846	6042	1846	9752	0	3392	0	6042			0 6042
	1760	80	0	3200	1750	5700	1750	9200	0	3200	0	5700			0 5700
100	960	66	0	3904	2101	7198	2101	11224	0	3904	0	7198			0 7198
	1160	75	0	3680	1991	6785	1991	10580	0	3680	0	6785			0 6785
	1460	88	0	3392	1856	6254	1856	9752	0	3392	0	6254			0 6254
	1760	100	0	3200	1750	5900	1750	9200	0	3200	0	5900			0 5900
125	720	68	0	5535	3135	7965	3135	12420	0	5535	0	7965			0 7965
	960	83	0	5002	2722	7198	2722	11224	0	5002	0	7198			0 7198
	1160	94	0	4715	2560	6781	2560	10580	0	4715	0	6781			0 6781
	1460	110	0	4346	2387	6254	2387	9752	0	4346	0	6254			0 6254
	1760	125	0	4100	2250	5900	2250	9200	0	4100	0	5900			0 5900
150	720	80	0	6750	3520	9180	3520	14243	0	6750	0	9180	0	14243	0 9180
	960	98	0	6100	3234	8296	3234	12871	0	6100	0	8296	0	12871	0 8296
	1160	112	0	5750	3059	7820	3059	12133	0	5750	0	7820	0	12133	0 7820
	1460	132	0	5300	2864	7208	2864	11183	0	5300	0	7208	0	11183	0 7208
	1760	150	0	5000	2700	6800	2700	10550	0	5000	0	6800	0	10550	0 6800
200	720	107	0	6750	3531	9180	3531	14243	0	6750	0	9180	0	14243	0 9180
	960	131	0	6100	3242	8296	3242	12871	0	6100	0	8296	0	12871	0 8296
	1160	150	0	5750	3072	7820	3072	12133	0	5750	0	7820	0	12133	0 7820
	1460	176	0	5300	2864	7208	2864	11183	0	5300	0	7208	0	11183	0 7208
	1760	200	0	5000	2700	6800	2700	10550	0	5000	0	6800	0	10550	0 6800
275	720	147	0	8100	3920	17213	3920	25650	0	8100	0	13973	3920	25650	
	960	180	0	7320	3600	15555	3600	23180	0	7320	0	12627	3600	23180	
	1160	206	0	6900	3410	14663	3410	21850	0	6900	0	11903	3410	21850	CONSULT
	1460	241	0	6360	3169	13515	3169	20140	0	6360	0	10971	3169	20140	FACTORY
	1760	275	0	6000	3000	12750	3000	19000	0	6000	0	10350	3000	19000	
375	580	172	0	8700	4871	27550	4871	36250	0	8700	0	15008	4871	27550	
	720	201	0	8100	4586	25650	4586	33750	0	8100	0	13973	4586	25650	
	960	246	0	7320	4209	23180	4209	30500	0	7320	0	12627	4209	23180	CONSULT
	1160	281	0	6900	3979	21850	3979	28750	0	6900	0	11903	3979	21850	FACTORY
	1460	329	0	6360	3702	20140	3702	26500	0	6360	0	10971	3702	20140	
	1760	375	0	6000	3500	19000	3500	25000	0	6000	0	10350	3500	19000	
450	580	207	0	8700	5583	27550	5583	36250	0	8700	0	15008	5583	27550	
	720	241	0	8100	5236	25650	5236	33750	0	8100	0	13973	5236	25650	
	960	295	0	7320	4807	23180	4807	30500	0	7320	0	12627	4807	23180	CONSULT
	1160	337	0	6900	4545	21850	4545	28750	0	6900	0	11903	4545	21850	FACTORY
	1460	395	0	6360	4232	20140	4232	26500	0	6360	0	10971	4232	20140	
	1760	450	0	6000	4000	19000	4000	25000	0	6000	0	10350	4000	19000	
600	580	275	0	11600	6259	36250			0	11600	0	15008	6259	36250	
	720	321	0	10800	5885	33750			0	10800	0	13973	5885	33750	
	870	367	0	10080	5568	31500			0	10080	0	13041	5568	31500	
	960	393	0	9760	5404	30500	CONSULT		0	9760	0	12627	5404	30500	CONSULT
	1160	449	0	9200	5109	28750	FACTORY		0	9200	0	11903	5109	28750	FACTORY
	1460	527	0	8480	4765	26500			0	8480	0	10971	4765	26500	
	1760	600	0	8000	4500	25000			0	8000	0	10350	4500	25000	
750	580	344	0	11310	6959	36250			0	11310	0	15008	6259	36250	
	720	401	0	10530	6535	33750			0	10530	0	13973	5885	33750	
	870	458	0	9828	6177	31500			0	9828	0	13041	5568	31500	
	960	491	0	9516	6001	30500	CONSULT		0	9516	0	12627	5404	30500	CONSULT
	1160	561	0	8970	5674	28750	FACTORY		0	8920	0	11903	5109	28750	FACTORY
	1460	659	0	8268	5296	26500			0	8268	0	10971	4765	26500	
	1760	750	0	7800	5000	25000			0	7800	0	10350	4500	25000	

Please see pages 13 and 14 for all information on Model 1200 Drives.

TABLE 4

NOTE: Drives that are rated at 1760 RPM vertical speed **ARE NOT LIMITED** to 1760 RPM. See Table 1.

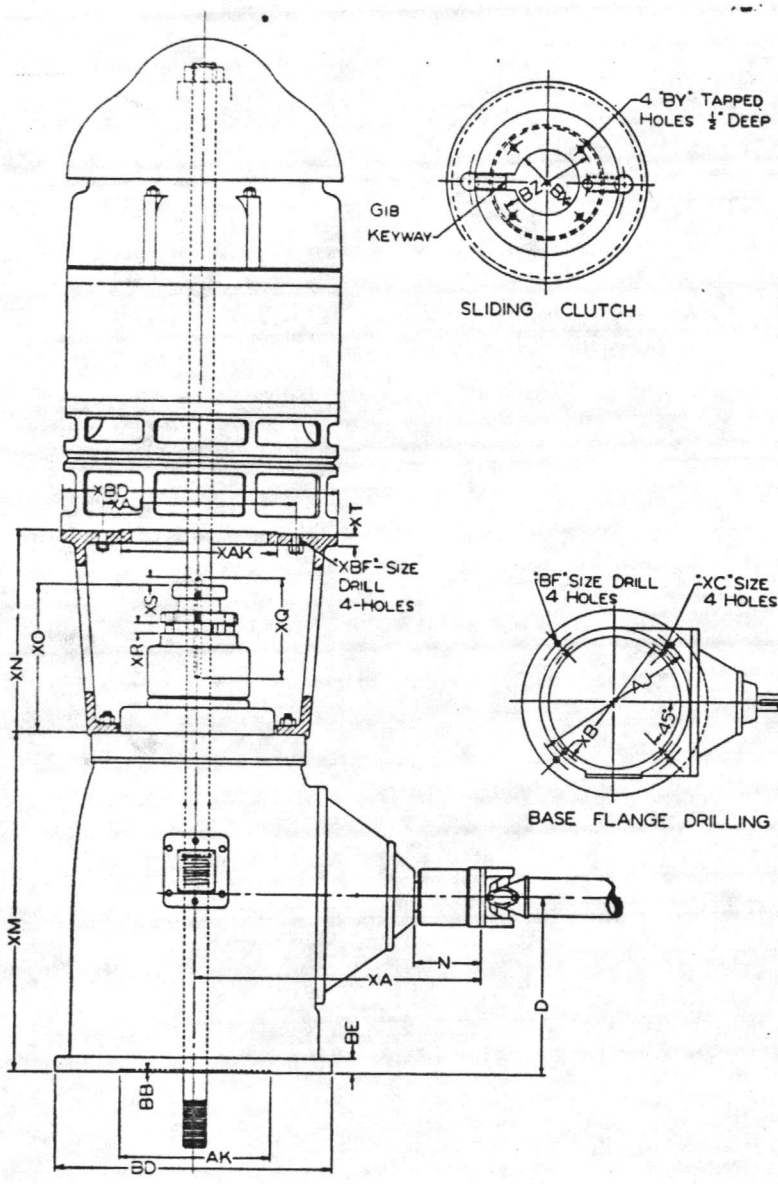
MODEL	VERTICAL SHAFT RPM	ENGINE RPM											
		1:1	10:11	5:6	4:5	3:4	2:3	5:8	4:7	1:2	4:9	2:5	1:3*
20	1160	1160		967		870	773			580			387
	1460	1460		1217		1095	973			730			487
	1760	1760		1467		1320	1173			880			587
	3460	3460		2883		2595	2307			1730			1153
40	1160	1160		967		870	773		667	580			387
	1460	1460		1217		1095	973		840	730			487
	1760	1760		1467		1320	1173		1012	880			587
60	960	960	864	800	768	720	640	597	545	480		398	320
	1160	1160	1044	967	928	870	773	721	659	580		481	387
	1460	1460	1314	1217	1168	1095	973	908	830	730		605	487
	1760	1760	1584	1467	1408	1320	1173	1094	1000	880		730	587
80	960	960	864	800	768	720	640	597	545	480		398	320
	1160	1160	1044	967	928	870	773	721	659	580		481	387
	1460	1460	1314	1217	1168	1095	973	908	830	730		605	487
	1760	1760	1584	1467	1408	1320	1173	1094	1000	880		730	587
100	960	960	864	800	768	720	640	597	545	480		398	
	1160	1160	1044	967	928	870	773	721	659	580		481	
	1460	1460	1314	1217	1168	1095	973	908	830	730		605	
	1760	1760	1584	1467	1408	1320	1173	1094	1000	880		730	
125	720	720	650	600	576	540	480						
	960	960	867	800	768	720	640						
	1160	1160	1048	967	928	870	773						
	1460	1460	1319	1217	1168	1095	973						
	1760	1760	1590	1467	1408	1320	1173						
150	720	720	650	597	576	540	480		409	360	320	293	240
	960	960	867	796	768	720	640		545	480	426	391	320
	1160	1160	1048	960	928	870	773		659	580	516	473	387
	1460	1460	1319	1210	1168	1095	973		830	730	649	595	487
	1760	1760	1590	1458	1408	1320	1173		1000	880	782	717	587
200	720	720	650	597	576	540	480		409	360	320	293	
	960	960	867	796	768	720	640		545	480	426	391	
	1160	1160	1048	960	928	870	773		659	580	516	473	
	1460	1460	1319	1210	1168	1095	973		830	730	649	595	
	1760	1760	1590	1458	1408	1320	1173		1000	880	782	717	
275	720	720	656	623	576	540	480	450	409	352	318	291	
	960	960	875	830	768	720	640	600	546	470	425	388	CONSULT
	1160	1160	1058	1003	928	870	773	725	660	568	513	468	FACTORY
	1460	1460	1331	1263	1168	1095	973	913	830	715	646	590	
	1760	1760	1605	1522	1408	1320	1173	1100	1000	862	778	711	
375	580	580	529	502	464	439	392	363	330	284			
	720	720	656	623	576	545	486	450	409	352			
	960	960	875	830	768	726	648	600	546	470			CONSULT
	1160	1160	1058	1003	928	875	783	725	660	568			FACTORY
	1460	1460	1331	1263	1168	1105	985	913	830	715			
	1760	1760	1605	1522	1408	1332	1188	1100	1000	862			
450	580	580	529	502	**461**	439	392	363	330	284			
	720	720	656	623	**573**	545	486	450	409	352			
	960	960	875	830	**764**	726	648	600	546	470			CONSULT
	1160	1160	1058	1003	923	878	783	725	660	568			FACTORY
	1460	1460	1331	1263	1161	1105	985	913	830	715			
	1760	1760	1605	1522	1400	1392	1188	1100	1000	862			
600	580	580			461	432	383	360	327	285			
	720	720			573	536	475	447	406	353			
	870	870			692	648	574	539	490	427			CONSULT
	960	960			764	715	634	595	541	471			FACTORY
	1160	1160			923	864	766	719	654	569			
	1460	1460			1161	1087	964	905	823	717			
	1760	1760			1400	1311	1162	1091	992	864			
750	580	565		486		429	383		327	276			
	720	700		603		533	475		406	342			
	870	846		729		643	574		490	414			CONSULT
	960	933		804		710	634		541	456			FACTORY
	1160	1128		972		858	766		654	551			
	1460	1421		1223		1080	963		823	694			
	1760	1712		1475		1302	1162		992	837			

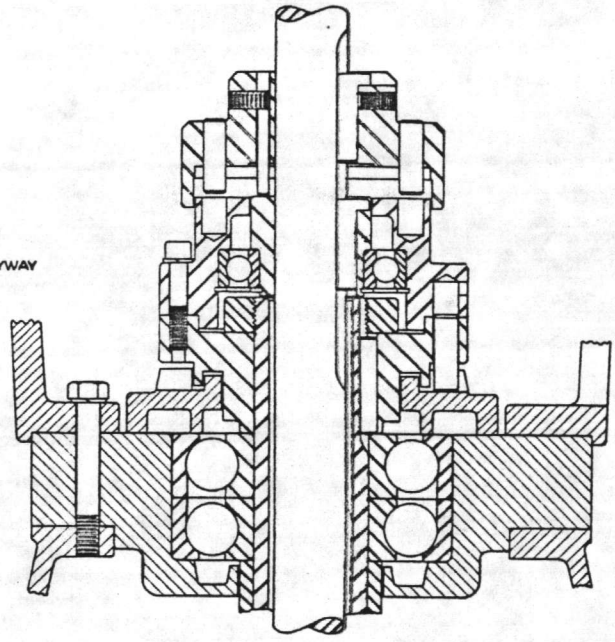
*Model 20 1:3 ratio not available with Figure 2 or Figure 3 rotation.

Please see pages 13 and 14 for all information on Model 1200 Drives.

COMBINATION DRIVE

In response to the need for utmost reliability, a combination drive may be specified. This drive is normally installed with an electric motor top-mounted for constant service. In the event of power failure or motor failure the drive is simply converted for engine or turbine operation by lowering the integral sliding clutch into drive position. No additional pins or bolts are required for this conversion. These combination drives may be furnished with either solid or hollow shafts. Consult combination drive operation manual for installation instructions.





Combination Clutch — Sub-Assembly
Clutch Shown Disengaged

TABLE OF DIMENSIONS — COMBINATION DRIVE

TABLE 7

MODEL	D	N	HORIZONTAL SHAFT U NOMINAL	HORIZONTAL SHAFT U ACTUAL	HORIZONTAL SHAFT U KEYWAY	AJ	AK	BB	BD	BE	BF	XA	XB	XC	XL	XM	XN	XO	XQ	XR	XS	XT	XAJ	XAK	XBD	XBF	BX BORE MAXIMUM
C20	6¾	2⅝	1¼	1.249	5/16 X 5/32	9⅛	8.250	3/16	10	5/8	7/16	10⅞			9/32	12¼	12½	5½	5¼	½	1½	7/16					1 *
C40A	8½	4⅜	1½	1.499	⅜ X 3/16	9⅛	8.250	¼	12	13/16	7/16	15⅝			9/32	16 3/16	16	6½	7	⅝	2	⅝					1¼
C40B	8½	4⅜	1½	1.499	⅜ X 3/16	14¾	13.500	¼	16½	13/16	11/16	15⅝			9/32	16 3/16	16	6½	7	⅝	2	⅝					1¼
C60	11½	4¼	1½	1.499	⅜ X 3/16	14¾	13.500	¼	16½	¾	11/16	16¾			9/32	20¼	18	7 13/16	7¾	¾	2¼	¾					1½
C80	11½	4¼	1⅞	1.874	⅜ X 3/16	14¾	13.500	¼	16½	¾	11/16	16¾			9/32	20⅜	18	7 13/16	7¾	¾	2¼	¾					1½
C100	11½	4¼	1⅞	1.874	⅜ X 3/16	14¾	13.500	¼	16½	¾	11/16	16¾			9/32	20⅜	18	7 13/16	7¾	¾	2¼	¾					1½
C125	11½	4½	2 7/16	2.436	⅜ X 5/16	14¾	13.500	¼	16½	¾	11/16	18¾			9/32	21⅛	18	7½	9	¾	2¼	¾					1 11/16
C150	13¾	5¼	2 7/16	2.436	⅜ X 5/16	18¼	13.500	¼	20	1⅛	11/16	20¾	14¾	5/8-11-NC	9/32	25⅝	20	9	10	⅞	2¾	⅞					2 *
C200	13¾	5¼	2 7/16	2.436	⅜ X 5/16	18¼	13.500	¼	20	1⅛	11/16	20¾	14¾	5/8-11-NC	9/32	25⅝	20	9	10	⅞	2¾	⅞					2
C275	16	6	2 15/16	2.936	¾ X ⅜	23	13.500	¼	24½	1⅛	13/16	†25½	14¾	5/8-11-NC	9/32		27	12½	11½	1⅛	3½	1					2 7/16
C375	16	6	2 15/16	2.936	¾ X ⅜	23	13.500	¼	24½	1⅛	13/16	†25½	14¾	5/8-11-NC	9/32		27	12⅜	11½	1⅛	3½	1					2 7/16
** C450	16	6	3¾	3.749	⅞ X 7/16	23	13.500	¼	24½	1⅛	13/16	†25½	14¾	5/8-11-NC	9/32		27	12⅜	11½	1⅛	3½	1					2 7/16
C600	18	6	3¾	3.749	⅞ X 7/16	23	13.500	¼	24½	1⅛	13/16	†26¾	14¾	5/8-11-NC	9/32												2 7/16
C750	21	8	4	3.998	1 X ½	28¾	22.000	¼	30½	1¼	13/16	36⅞	26	¾-10-NC	7/16		30	16¼	15	1 5/16	4	1¼					2 15/16

* Model C20, ratio 1:3, maximum clutch bore ⅞"; Model C150, ratio 1:3, maximum 1-11/16". Consult factory for maximum clutch bore for Fig. 2 and Fig. 3 rotation. Model C20, 1:3 ratio, not available with Fig. 2 or Fig. 3 rotation.

** Horizontal shaft dimensions shown for Model 450 apply to ratios in Table 4 only. Consult factory for dimensions of all others.

† "XA" dimensions shown apply to ratios in Table 4 and reducing ratios 11:10, 6:5 and 4:3 only. Consult factory for dimensions of all others.