WARREN

SOLIDSMASTER

pumps the difficult ones!

WARREN SOLIDSMASTER

. . . a totally new concept in pumping liquids and solids!

WARREN SOLIDSMASTER introduces a new, unique hydraulic force in centrifugal pumping. A vortex-developing, computer-designed impeller (recessed completely out of flow path) creates a whirlpool of fluid in the casing. This rapidly rotating fluid picks up entering solids and discharges most in one revolution.

Pump design reduces turbulence and provides a rotating cushion of fluid in the casing so most particles entering

Handles difficult applications!

WARREN SOLIDSMASTER tames many extremely difficult fluid handling problems as well as the roughest of slurry applications. Its non-clogging design, abrasion-resistant construction, and ability to handle more entrained air than most pumps makes SOLIDSMASTER ideal for pumping the following:

- ✻ **fluids with large solids**
- ✻ **abrasive slurries**
- ✻ **fluids with long-stringy solids**
- ✻ **fluids with entrained air or aerated pulp**
- ✻ **fluids containing crystals or solids . . . where gentle action is required to prevent particle degradation**
- ✻ **sludge, sewage, wastes**

ASPHALT RODS
BALL BEARINGS
BARK
BAUXITE
BEANS
BILGE
BLOOD
BONES
CEMENT
CHEMICALS
CHEMICAL SLURRIES
CHIPS
CLARIFIER SLUDGE
COAL
COAL REFUSE
COKE FINES
CORN COBS
CRYSTALS
CRYSTAL SLURRIES
DRILLING MUD
FILTER AIDS
FISH
FOOD PRODUCTS
FRUIT
GARBAGE
GRAVEL
GROUND METALLICS
HAIR
HIDES
IRON OXIDE
LIQUORS
LIME
NATURAL FERTILIZERS
OLIVES
ORES
MASH
PACKING HOUSE WASTE
PAINT
PAPER PULPS
PHARMACEUTICALS
PLASTIC SLURRY
POTATOES
RAGS
RESIN BEADS
ROCK WOOL
SAND
SAWDUST
SEWAGE
SHRIMP
STEEL CHIPS
SUGAR CANE
SYNTHETICS
TEXTILES
WOOD CHIPS
WOOL FLOCS

SOLIDSMASTER PLUS FEATURES!

✻ **Heavy duty bearing frame** ✻ **Back-pull-out (self-support case)** ✻ **Heavy duty shaft** ✻ **Vortex inducing suction** ✻ **Heavy duty bearings** ✻ **Standard suction sizes** ✻ **Impellers threaded to shaft . . . provide shaft-end protection** ✻ **Standard angular-contact thrust bearing** ✻ **Choice of two impellers (fit same case) optimize pump applications** ✻ **Renewable wear parts**

CASING Smooth extra-heavy section designed for unobstructed flow. Abrasive or solids-laden flow goes directly into vortex of liquid and out the discharge. No liners required . . . eliminating fits or joints that create hot spots of wear. No close clearances between case and impeller (as in conventional pumps) to generate wear. Nothing between suction and discharge to jam, clog, break or bind . . . a totally non-clog concept in pumping!

IMPELLER Impeller, fully recessed out of flow path, is not subjected to wear by solids or abrasive particles churning in the flow when handling solids or slurries . . . greatly improving impeller life! Impellers are threaded to shaft to provide shaft-end protection. Specially designed back vanes keep stuffing-box pressure low and flushed out . . . for longer sleeve and packing life.

Two types of impellers are available. Type "SMO" is primarily for those material handling applications involving light to medium abrasive conditions. Type "SME" impellers (made in hard metals) are for those applications where medium to heavy abrasive conditions are encountered.

SHAFT SLEEVE Shafts are designed for maximum operating heads and correctly proportioned for operational loads. Minimum span and overhang reduce shaft deflection and vibration.

Straight shaft sleeve is keyed to shaft and gasket-sealed to stop leakage under sleeve. Minimum sleeve lengths and maximum shaft diameters eliminate sleeve expansion problems.

STUFFING BOX Five rings of graphite-free, oil-free packing and glass-filled Teflon water seal ring. Seal ring location reduces pumpage dilution from seal water. Special "arrowhead and tail" cut in water seal ring allows ring to automatically realign for easy repacking. Gland is also split for easy removal and additional repacking space. Gland bolts are removable. In-and-out water sealing is standard. Large drip hole under gland prevents water from collecting and corroding bearing pedestal.

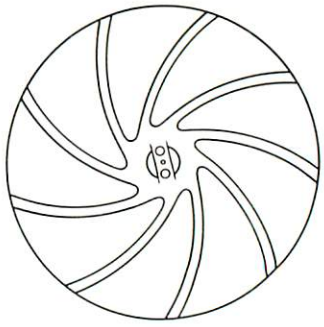
BEARINGS Angular-contact ball thrust bearings carry radial and thrust loads. Thrust bearings are back-to-back mounted, locked with nuts and lockwashers. Oil lubrication is standard. Constant level oiler maintains proper oil level. Labyrinth seals direct oil back to sump to stop oil leakage along shaft. Grease lubrication can be furnished at no extra cost.

Bearings are well protected from dirt and washdown water with non-metallic excluders which rotate with shaft. Flexible lips maintain continuous pressure contact on bearing heads. Protection is positive both while pump is running and when shut-down. Stainless splash guard provides additional protection during washdowns.

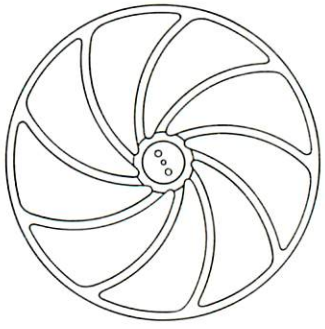
BEARING LIFE Bearings have a minimum B-10 life rating of 40,000 hours when operating at 50% best efficiency point capacity. In most cases, life will exceed 100,000 hours of continuous operation at or near best efficiency point.

BASEPLATE Cast iron to resist corrosion; box type to resist distortion. Grout holes and tapped connection for drain are furnished.

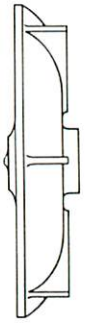
TWO IMPELLER DESIGNS TO MEET YOUR EXACT NEEDS



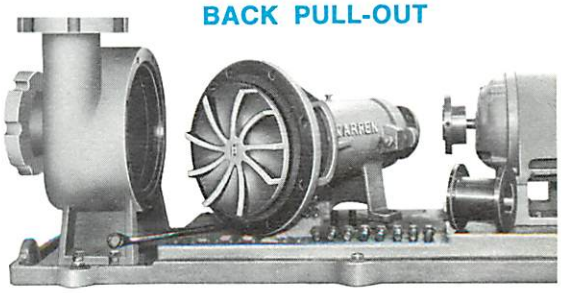
SMO



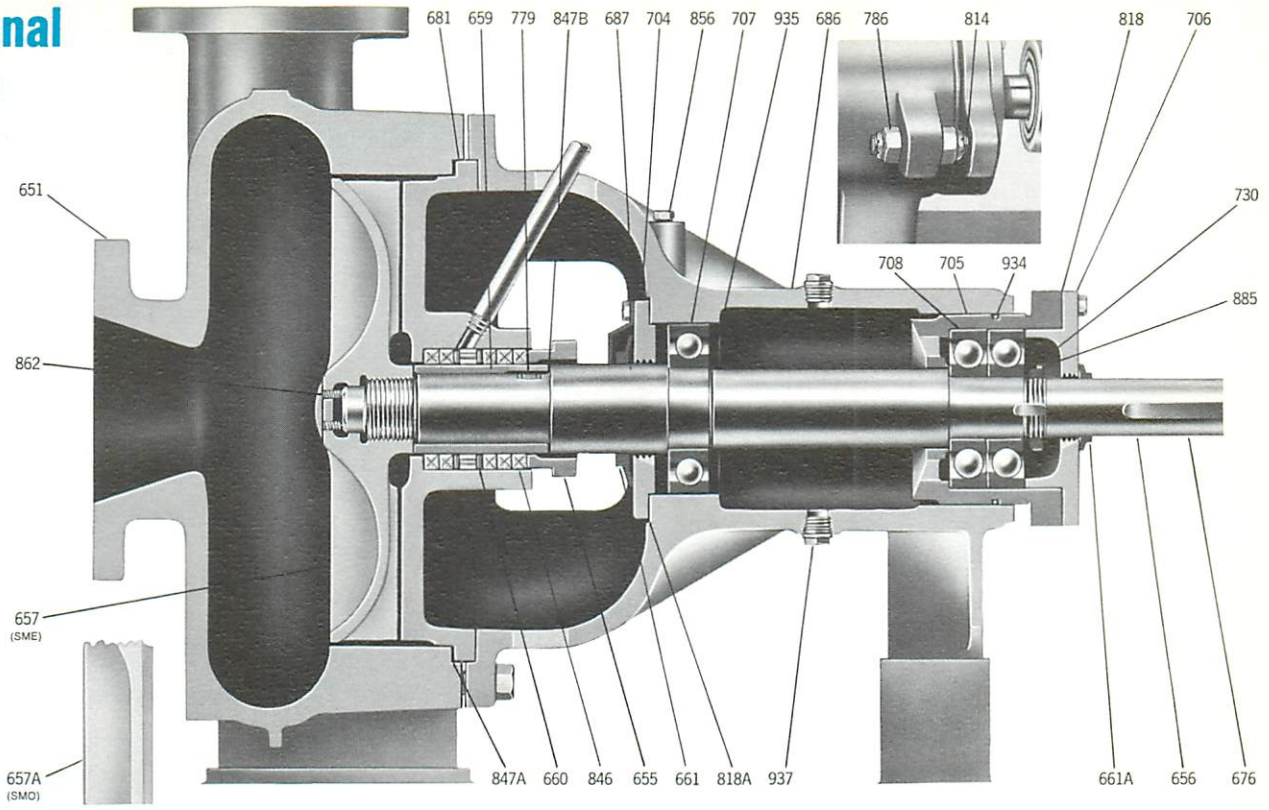
SME



BACK PULL-OUT



Sectional Views



Parts List

Maximum Interchangeability Without Sacrificing Optimum Hydraulic and Mechanical Design

PART NO.	PART *(NOT SHOWN)
651	CASE
655	GLAND
656	SHAFT
657	IMPELLER (SME)
657A	IMPELLER (SMO)
659	SHAFT SLEEVE
660	WATER SEAL RING
661	SLINGER
661A	SLINGER
676	COUPLING KEY
681	BACK HEAD
686	BEARING PEDESTAL
687	SPLASH GUARD
704	PLAIN BEARING HEAD
705	THRUST BEARING HOUSING
706	THRUST BEARING HEAD
707	BALL BEARING (PLAIN)
708	BALL BEARING (THRUST)
730	BEARING LOCKWASHER (THRUST)
779	SLEEVE KEY
786	ADJUSTING NUT
812	GREASE CUP*
814	ADJUSTING STUD
818	BEARING HOUSING GASKET
818A	BEARING HOUSING GASKET
846	PACKING
847A	GASKET (CASE TO HEAD)
847B	SHAFT SLEEVE GASKET
848	GLAND STUD*
849	GLAND STUD WASHER*
850	GLAND STUD NUT*
856	AIR VENT
861	CONSTANT LEVEL OILER*
862	IMPELLER LOCKING SCREW
885	BEARING LOCKNUT (THRUST)
934	O RING
935	SNAP RING
937	OIL DRAIN PLUG

PART NO.	PART	3-SME-15 3-SMO-15	4-SME-15 4-SMO-15	6-SME-15 6-SMO-15	8-SME-15 8-SMO-15
655	GLAND				
659	SHAFT SLEEVE				
660	WATER SEAL RING				
661 & 661A	SLINGERS				
687	SPLASH GUARD				
704	PLAIN BEARING GUARD				
705	THRUST BEARING HOUSING				
706	THRUST BEARING HEAD				
707	PLAIN BEARING				
708	THRUST BEARING				
730	TH. BRG. LOCKWASHER				
874	ADJUSTING NUTS & STUDS				
846	PACKING				
885	THRUST BRG. LOCKNUT				
935	SNAP RING				
656	SHAFT				
681	BACK HEAD				
686	BEARING PEDESTAL				

Materials of Construction

PART	SMO				SME	
	ALL IRON		ALL 316 ST. STL.		28% CHROME IRON	
	Mat'l	Warren Spec. No.	Mat'l	Warren Spec. No.	Mat'l	Warren Spec. No.
Casing	Cast Iron	A010A	316 St. Stl.	B407A	28% Ch. Iron	A802T
Back Head	Cast Iron	A010A	316 St. Stl.	B407A	28% Ch. Iron	A802T
Impeller	Cast Iron	A010A	316 St. Stl.	B407A	28% Ch. Iron	A802T
Water Seal Ring	G.F. Teflon	P051A	G.F. Teflon	P051A	G.F. Teflon	P051A
Shaft	Steel	F060A	316 St. Stl.	G232A	Steel	F060A
Shaft Sleeve	Cast Iron	A010A	316 St. Stl.	B407A	316 St. Stl.	B407X
Gland	Cast Iron	A010A	316 St. Stl.	B407A	316 St. Stl.	B407X
Gland Bolts	St. Stl.	N081A	St. Stl.	N081A	St. Stl.	N081A
Bearing Pedestal	Cast Iron	A011A	Cast Iron	A011A	Cast Iron	A011A

Material Conversion Table

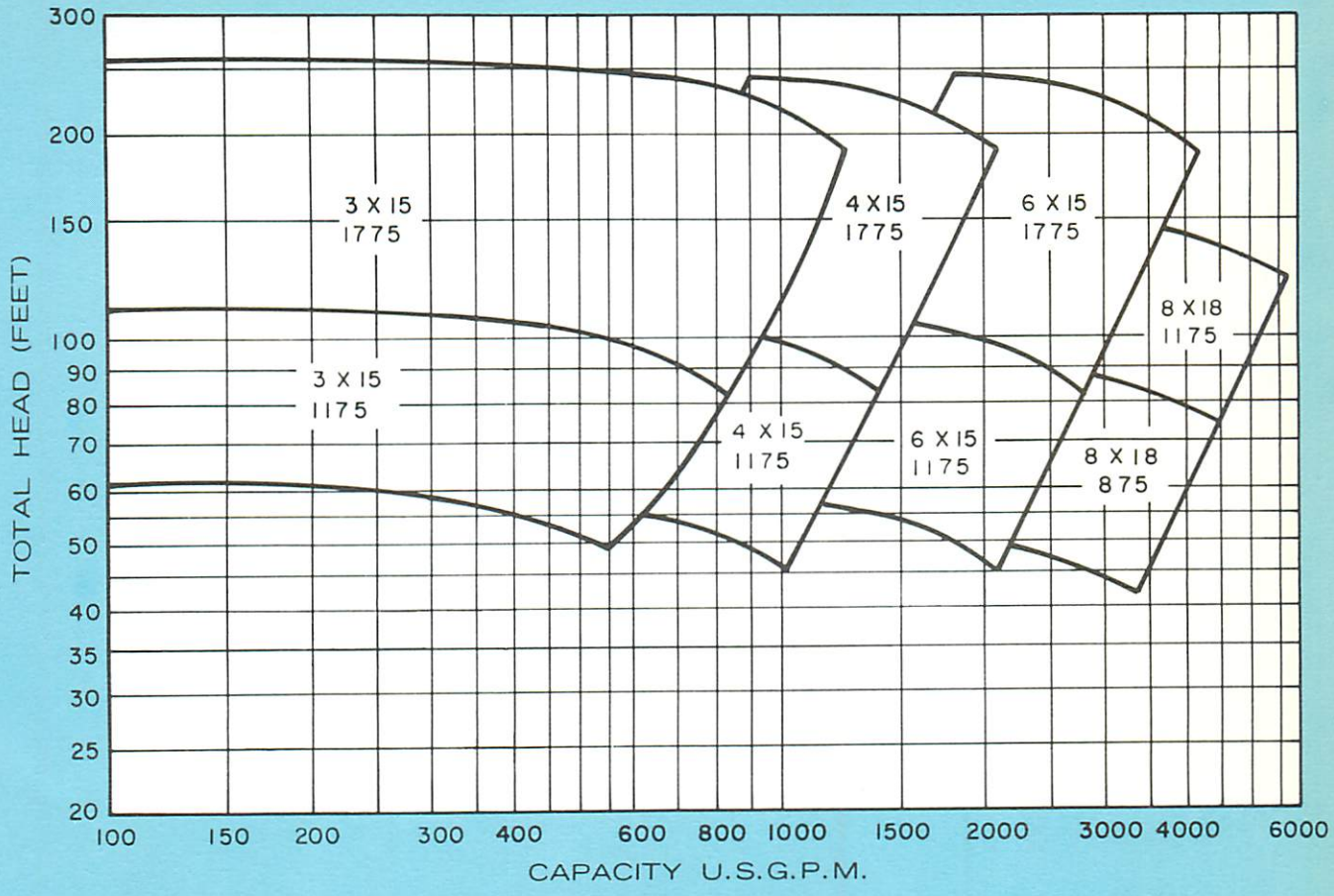
WARREN SPEC.	EQUIVALENT ASTM
A010A	A48 Cl. 35
A011A	A48 Cl. 35 (stress relieved)
B407A	A296 Gr. CF-8M
B407X	A296 Gr. CF-8M (ceramic coated)
F060A	Type 1144
G232A	A276 Type 316
P051A	Glass Filled Teflon
N081A	A193 Gr. B8
A802T	28% Chrome Iron (Hardened)

Design Data

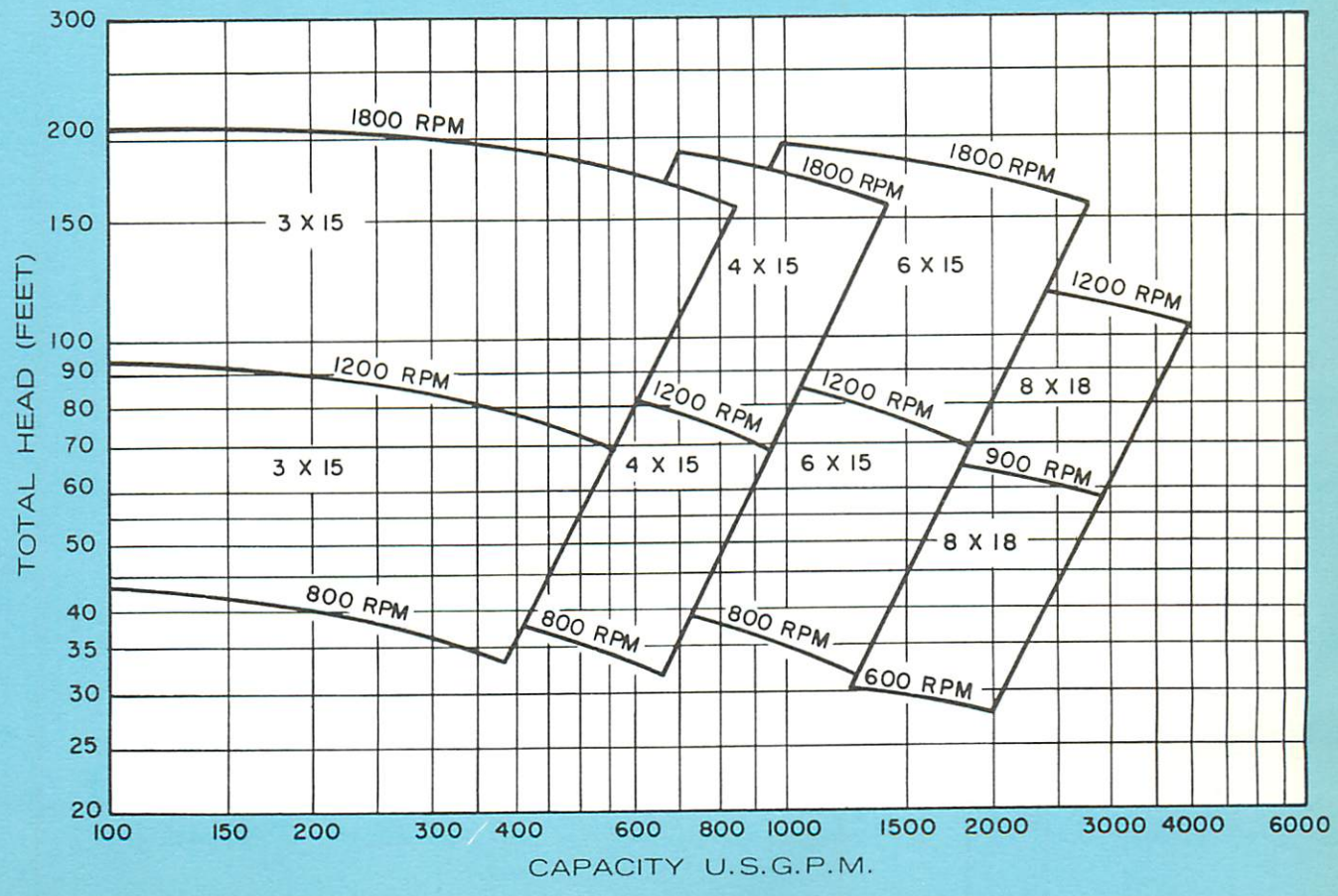
	3-SME-15 3-SMO-15	4-SME-15 4-SMO-15	6-SME-15 6-SMO-15	8-SME-18 8-SMO-18
Thrust Bearing	7410-BG	7410-BG	7413-BG	7413-BG
Plain Bearing	ND-3313	ND-3313	ND-3316	ND-3316
Shaft Diameters				
Maximum Diameter	2⅞	2⅞	3½	3½
At Coupling	1⅞	1⅞	2 11/16	2 11/16
At Impeller	2	2	2¼	2¼
At Shaft Sleeve	2¼	2¼	2⅞	2⅞
Shaft Sleeve Diameter	2⅞	2⅞	3½	3½
Stuffing Boxes				
Bore	3⅜	3⅜	4¾	4¾
Depth	3½	3½	4⅜	4⅜
Number Rings Packing	5	5	5	5
Packing Size	½ Sq.	½ Sq.	⅝ Sq.	⅝ Sq.
Water Seal Width	⅞	⅞	1"	1"
Casing Thickness				
Volute	⅝	⅝	¾	¾
Side Wall	¾	¾	⅞	⅞
Maximum Diameter Sphere	2⅞	3⅜	5⅞	7⅞
Test Pressure (psi)	175#	175#	175#	125#
Working Pressure (psi)	125#	125#	125#	85#
Maximum Liquid Temperature	250°F	250°F	250°F	250°F
H.P. Limits				
HP/100 RPM	16	16	30	30

Approximate Coverage

SMO



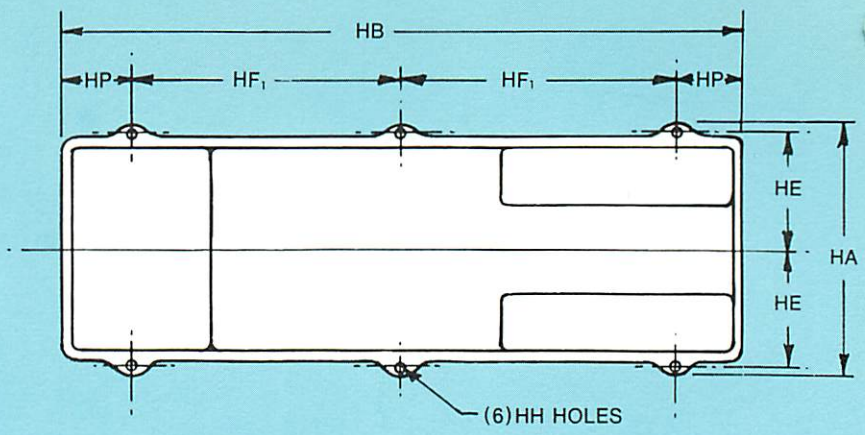
SME

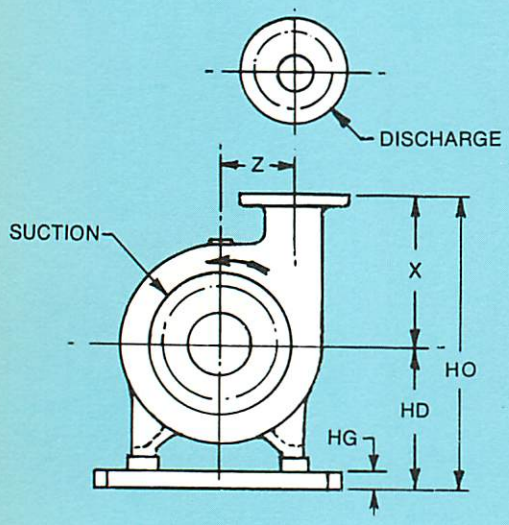


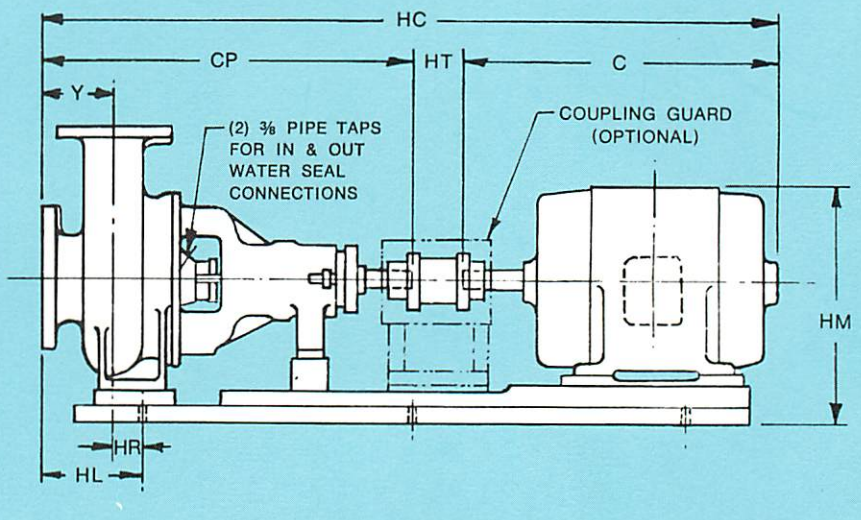
Approximate Dimensions

FLANGES ANS B16.1 125 LB.				
SIZE	O.D.	B.C.	NO. & SIZE SLOTS	THICKNESS
3	7½	6	(4) ¾ WIDE	15/16*
4	9	7½	(8) ¾ WIDE	15/16
6	11	9½	(8) ⅞ WIDE	1
8	13½	11¾	(8) ⅞ WIDE	1⅛
10	16	14¼	(12) 1 WIDE	1 3/16

*FLANGE THICKNESS ANS B 16.5 150 LB.







PUMP	SUCT.	DISC.	C	CP	X	Y	Z	HA	HB	HC	HD	HE	HF	HG	HH	HL	HM	HO	HP	HR	HT
3-SM-15	4	3	29⅝	34¾	12	5	7⅝	26¼	72	69¼	15½	12¼	29	2	15/16	6½	26	27½	7	1½	5
4-SM-15	6	4	34	36½	13	5¾	7⅝	26¼	72	75½	15½	12¼	29	2	15/16	8¼	27¼	28½	7	2½	5
6-SM-15	8	6	36	43⅞	14½	7	7⅝	26¼	78	86⅞	15½	12¼	32	2	15/16	11⅝	27¼	30	7	4⅝	7
8-SM-18	10	8	39¾	47⅜	17½	8½	9⅛	33¾	84	94⅛	19	15¾	34	2½	1 1/16	15 5/16	30¾	36½	8	6 13/16	7

LOCATION OF FOUNDATION BOLTS ARE SUBJECT TO VARIATION OF PLUS OR MINUS ¼"

DIMENSIONS C, HC & HM VARIES WITH FRAME SIZE & TYPE OF ENCLOSURE

ALL DIMENSIONS ARE IN INCHES. DIMENSIONS NOT TO BE USED FOR CONSTRUCTION PURPOSES

Warren

HYDRAULIC INSTITUTE 1917

WARREN PUMPS, INC., Warren, Massachusetts / Peace Dale, Rhode Island