



Model 613A



Model 614A



Model 612A



Model 611A

# **AURORA<sup>®</sup> 610 SERIES** SINGLE STAGE SOLIDS HANDLING PUMPS "SPHER-FLO"

# AURORA® 610 SERIES

## Single Stage Solids Handling Pumps "Spher-Flo"

Capacities to 20,000 GPM

Heads to 250 Feet

Temperatures to 250° F

Discharge sizes 6" through 20"

Spher-Flo 610 Series Pumps Are Available in Four Models: 611A (horizontal model), 612A (vertical model), 613A (vertical model) and 614A (vertical model)

The population explosion along with a broader understanding of the water pollution problem has brought about the need for more and better sewage treatment facilities. The installations of today and tomorrow demand more economical and reliable sewage pumping equipment. Longer life has become essential to overall pump performance. Aurora Pump has recognized the need for heavy duty, efficient, solids handling pumps for the wastewater industry. With over 90 years of experience, Aurora Pump is proud to present this brochure featuring the Series 610 Spher-Flo heavy duty horizontal and vertical solids handling pumps. This is the Aurora solution to wastewater pumping problems.

### Quick Reference 610 Series Spher-Flo Solids Handling Feature Selector

#### Standard Features

- 3" to 6" sphere capacity
- All iron fitted pump
- Regreaseable bearings
- 100,000 hour average bearing life
- Hardened stainless steel (450 min. Brinell) shaft sleeve (pumps with packing)
- External impeller clearance (cartridge type) adjustment
- Taper shaft fit at impeller
- Carbon steel shaft and impeller key
- Front or back impeller pullout
- Enclosed solids handling impeller
- Dynamically balanced impeller
- Centerline discharge casing
- Hydrostatic test all pumps
- Interchangeable packing and mechanical seal inserts
- Interwoven graphite/Teflon® lubricated acrylic yarn packing, diagonally split
- Lantern ring liquid seal for packed stuffing boxes
- Gasket sealed pump shaft stuffing box extension
- Leakage accumulator packing gland (Power frames 4, 5 and 6 only) (Models 612A and 613A)
- Suction elbow with clean out (Models 612A – 613A – 614A)
- Coupling guard

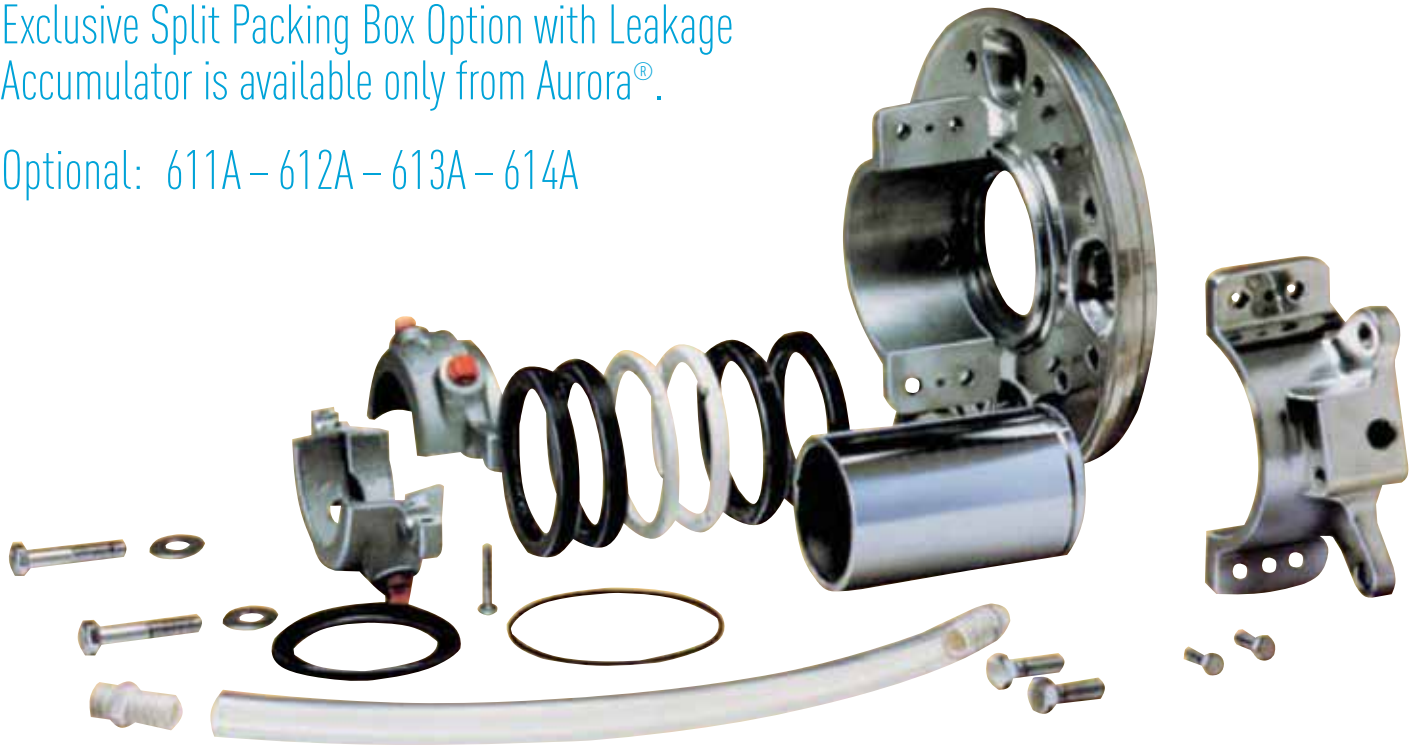
#### Optional Features

- Stainless steel case wear ring
- Stainless steel impeller wear ring
- Single or double mechanical seals
- Stainless steel shaft
- Alloy shaft sleeve (standard with mechanical seal)
- Impeller and case wear ring face flush line
- External stuffing box piping with filter or valve
- Automatic stuffing box grease seal lubricator
- Spacer type coupling (Horizontal Model 611A only)
- Flexible shaft drive with guard (Model 612A only)
- Water Seal Unit (Refer to Bulletin 680 for details)
- Constant liquid level system (Apco-Trol variable speed) (Refer to the Apco-Matic Bulletin 700 for details)
- Certified test report – witnessed or unwitnessed
- Special alloy pump construction
- Alternate discharge positions
- Suction increasing elbow with clean out (Models 612A – 613A – 614A)
- Eccentric suction increasers (Model 611A)
- Removable split packing box

# Shaft Seals

Exclusive Split Packing Box Option with Leakage Accumulator is available only from Aurora®.

Optional: 611A – 612A – 613A – 614A



## Split Packing Boxes

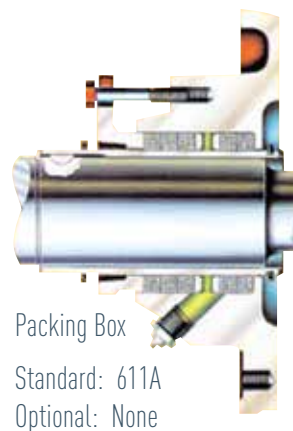
separate vertically through the packing insert to simplify packing replacement and shaft sleeve inspection. The insert halves are doweled, aligned and registered fit to prevent leakage. Only six bolts have to be removed to disassemble the insert from the pump assembly.

## Double Mechanical Seals

must be recommended for gritty or abrasive applications. Seal faces are protected by clear water under pressure, injected directly into the seal cavity. The seal box design allows speedy seal maintenance. Single mechanical seals are available.

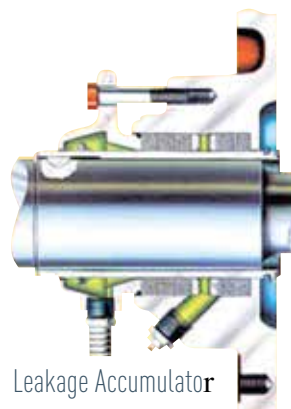
## Leakage Accumulator

for vertical pump models with packed stuffing boxes collects leakage for controlled drainage assuring effective odor control. The gland halves are dowel aligned.



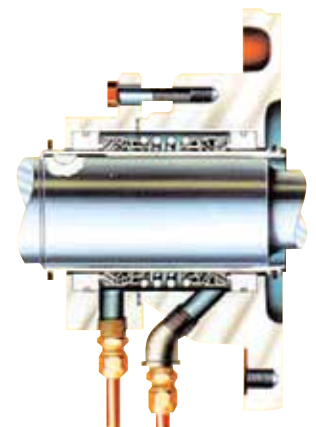
Packing Box

Standard: 611A  
Optional: None



Leakage Accumulator

Standard: 612A–613A  
Optional: 614A



Mechanical Seal

Standard: 614A  
Optional: 611A–612A–613A

# Pump Features

## Pump Features

Aurora Spher-Flo pumps are available for capacities to 20,000 gallons per minute and heads to 250 feet. The smallest pumps will pass a 3 inch diameter sphere and the largest passes a 7 inch diameter sphere. See factory for details.

### A. Efficient Skewed Vane Impeller

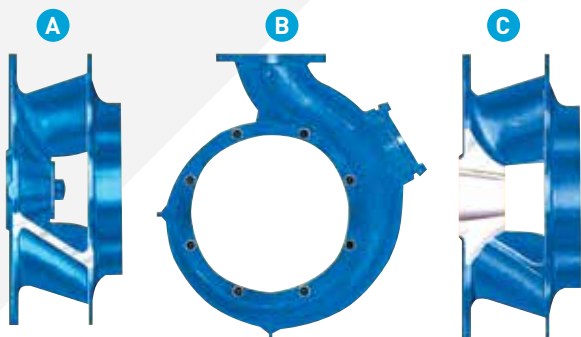
provides smooth flow and maximum ability to avoid clogging. This design also minimizes operating noise. The Spher-Flo impeller is an exclusive Aurora hydraulic design.

### B. Centerline Discharge Casings

are self venting and eliminate the need for left-hand pumps. Oversize cleanout openings near the casing cutwater simplify cleaning. The minimum cleanout size is 3" x 5". The casing discharge can be mounted on 45° increments.

### C. Tapered Impeller Fit

assures tight impeller to shaft and facilitates impeller removal. Back wiper vanes balance thrust bearing loads and prevent clogging behind impeller. Enclosed impeller provides highest efficiency and rugged construction for long service life and reliable pump operation. Bearings are selected for 2 year minimum life at worst conditions of load. Average bearing life is 10 years. See page 15 for additional bearing details.



## Model 611A

Model 611A is horizontally baseplate mounted with a driver flexibly coupled to the pump. This design is recommended where floor space is readily available and where flooding of the installation is not possible. Support of various pump components is important. Inadequate mounting designs impose unnecessary stress and strain on the pump installation. Spher-Flo pumps are designed to provide the best component support and serviceability, and is an important feature of the Aurora® Spher-Flo pump design.

Horizontal 611A units are supported at both pump and coupling end. This, with centerline discharge support, provides protection against pipe strain and maintains casing support when the drive end of the pump is removed for servicing. The rear support foot greatly simplifies shaft coupling alignment.

Aurora offers a complete line of vertical solids handling pumps. There are two distinct advantages over horizontal pump constructions:

- Less floor space required. Two vertical pumps will fit in the same space as one.
- An elevated motor will protect against potential flooding if the pump station location is in a low area.

## Model 612A

Model 612A is vertically mounted and uses flexible shafting between the driver and the pump. Vertically mounted models are frequently used on lift station applications where flooding of the installation is a possibility.

## Model 613A

Model 613A is vertically mounted with an elevated driver coupled directly to the pump through a flexible coupling. Model 613A is very popular for installations where available floor space is limited and where flooding is marginal. Model 614A driver couples directly to the pump.

## Vertical 613A Units

The steel motor base has a registered fit at the motor end and is fastened to a separate motor support. This arrangement assures alignment and concentrates loads on the separate pump adapter, thereby eliminating strain and misalignment of the bearing housing. This is another exclusive feature of the Aurora Spher-Flo pump. On



# Pump Features

612A, 613A and 614A units a steel suction base is registered to the suction cover, assuring adequate support for the pump unit.

## Standard Spher-Flo Pumps

Standard Spher-Flo pumps are designed for the requirements of the majority of applications. However, to meet special requirements, a number of optional features are available. For requirements not handled by the following list of options, refer to the local sales office.

## Suction Nozzles

Suction nozzles for Model 611A series pumps have hand-size inspection openings to allow access to the impeller.

## Replaceable Wear Ring

Replaceable wear ring available individually or together, protects the impeller and/or casing from wear.

## Spacer Couplings

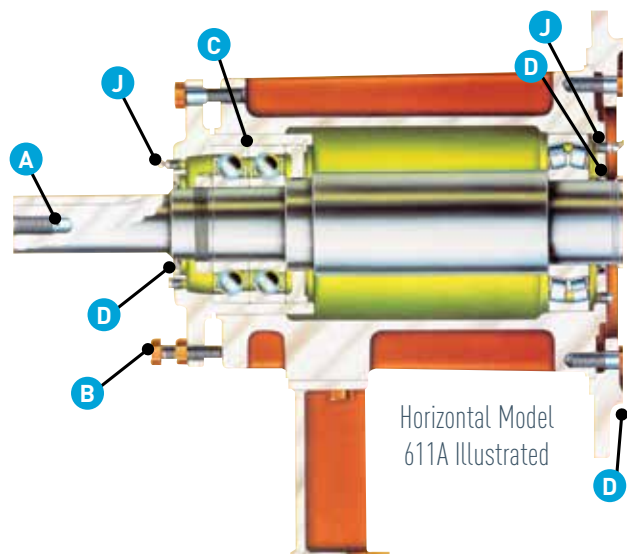
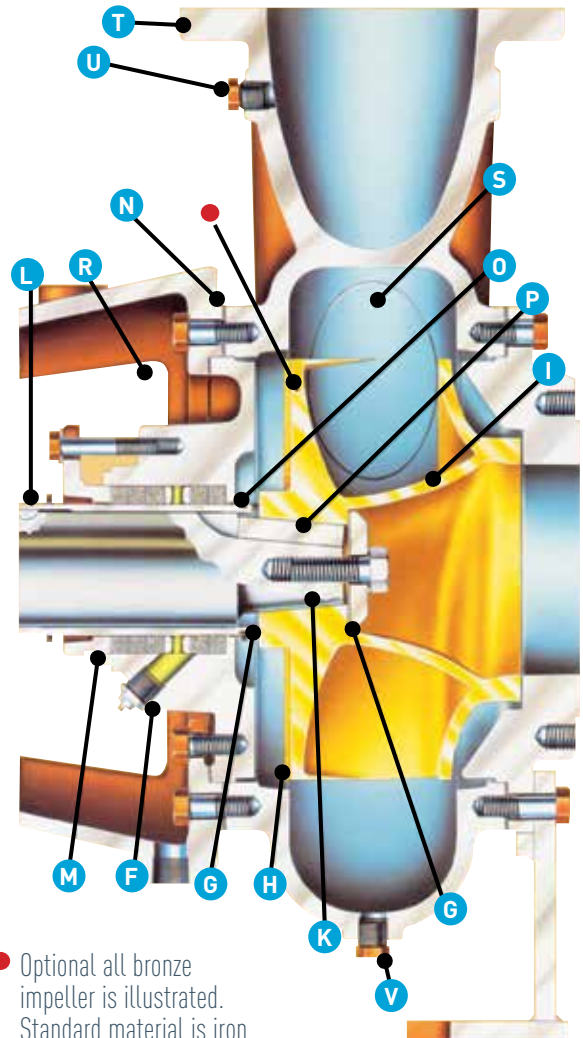
Spacer couplings are recommended for horizontal pump applications where it is desirable to remove the bearing assembly without disturbing the pump casing or motor.

## Shaft and Sleeve

Shaft and sleeve are available in special alloy construction for difficult pumping applications.

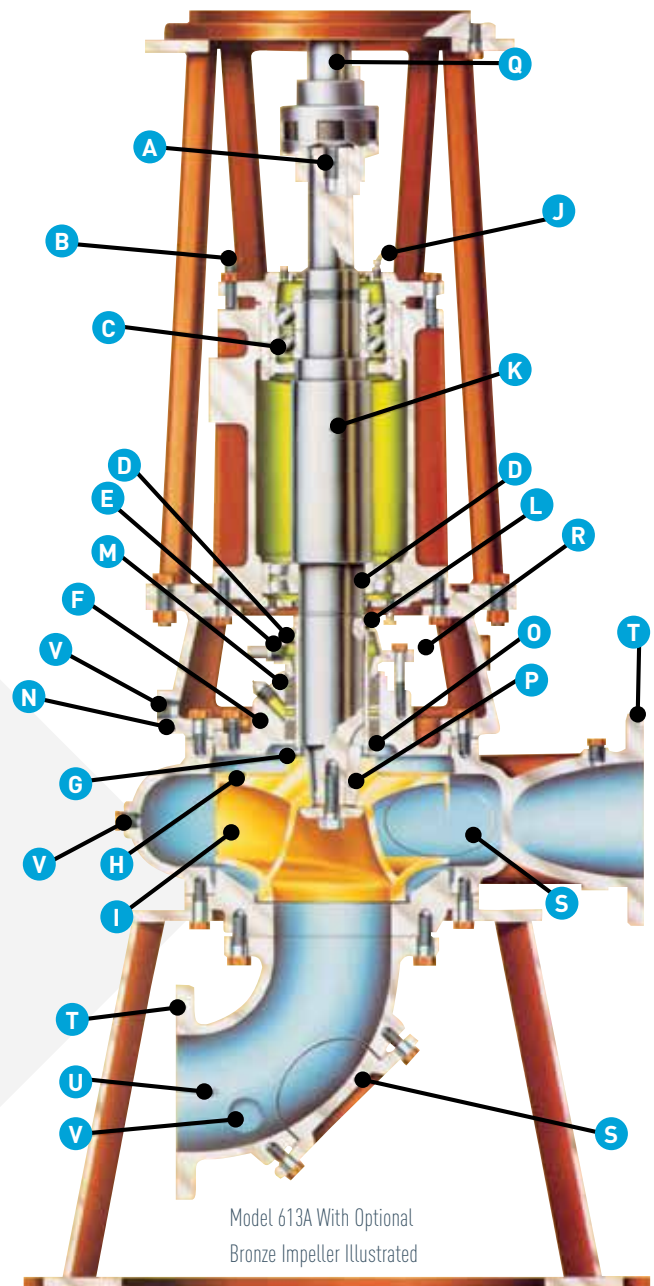
## Pump Features

- A. Lifting Eye**  
tap in shaft end simplifies disassembly.
- B. External Shaft Adjustment**  
provides for renewing impeller clearance and maintaining pump efficiency.
- C. Double Row Thrust Bearings**  
are added protection for high loads. Average bearing life is 10 years. Power Series 4 has a singledouble row thrust bearing. The back-to-back thrust bearings illustrated are standard on Power Series 5 and 6.



# Pump Features

- D. Water Slinger**  
and grease seals protect both bearings from moisture.
- E. Leakage Accumulator Gland**  
option siphons off packing leakage.
- F. Stuffing Boxes**  
are machined for mechanical seals or packing. Either may be used without modification.
- G. Gaskets**  
protect shaft from pumped liquid corrosion and contamination.
- H. Impeller Wiper Vanes**  
minimize stuffing box pressure and clogging.
- I. Impeller Vanes**  
bring well into the inlet eye to pick up liquid early and to minimize clogging.
- J. Grease Lubrication**  
purges old grease from both bearings.
- K. Rugged Shaft**  
with taper provides for easy removal and minimum deflection.
- L. Hardened Stainless Steel Sleeve**  
on packed pump is securely key locked to the shaft.
- M. .002 Maximum Shaft Deflection**  
at stuffing box face extends packing and mechanical seal life.
- N. Back Pullout Design**  
for pump maintenance does not disturb suction or discharge piping.
- O. Snap Ring**  
groove is provided for a snap ring to aid in sleeve removal during preventive maintenance period.
- P. Steel Impeller Key,**  
capscrew and washer secure impeller to shaft.
- Q. NEMA Standard "HP"**  
for mounting face and shaft extension motors.
- R. Large Access Openings**  
provide adequate visibility and working room.



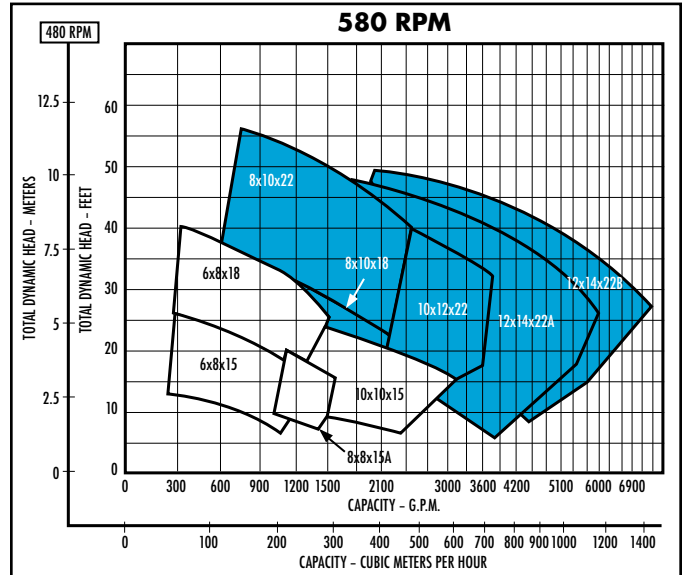
- S. Oval Cleanouts**  
are large, hand size and located to provide visibility and accessibility to the impeller blades and the casing cutwater.
- T. Discharge Flanges**  
can be located in 45° increments for 8 different positions, (suction in 90° -vertical pumps)
- U. Standard Gauge Taps**  
are conveniently located at both the discharge and suction flange openings.
- V. Standard Drain Taps**  
are located conveniently in the adapter bracket, suction elbow, and casing.

# Performance Data

## 580 RPM

Individual performance curves should be checked for final selection. For selections not shown on this chart please refer to the factory.

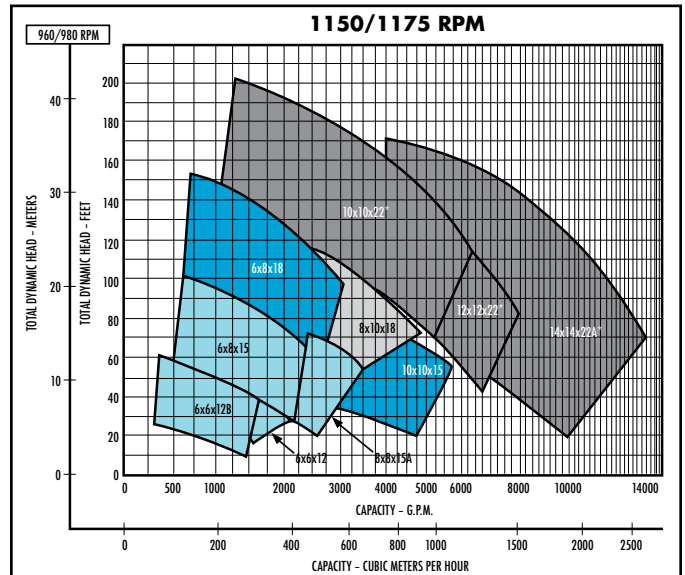
- Power Series No. 5E
- Power Series No. 5G



## 1150/1175\* RPM

Individual performance curves should be checked for final selection. For selections not shown on this chart please refer to the factory.

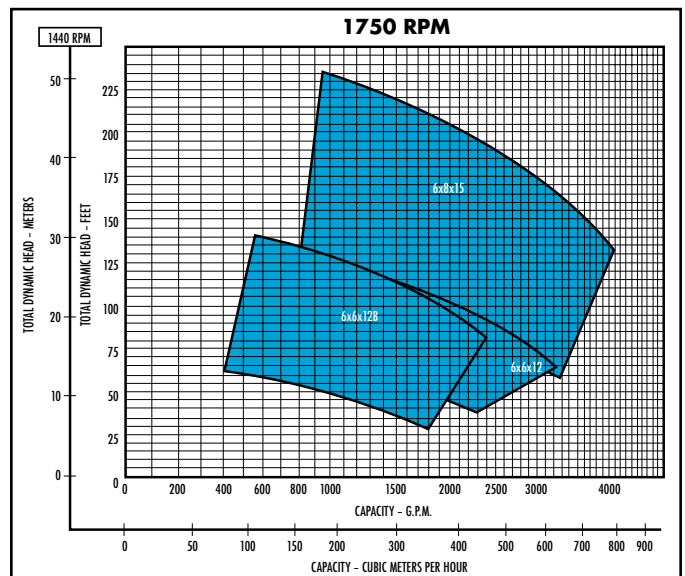
- Power Series No. 5E
- Power Series No. 5F
- Power Series No. 5H
- Power Series No. 6E



## 1750 RPM

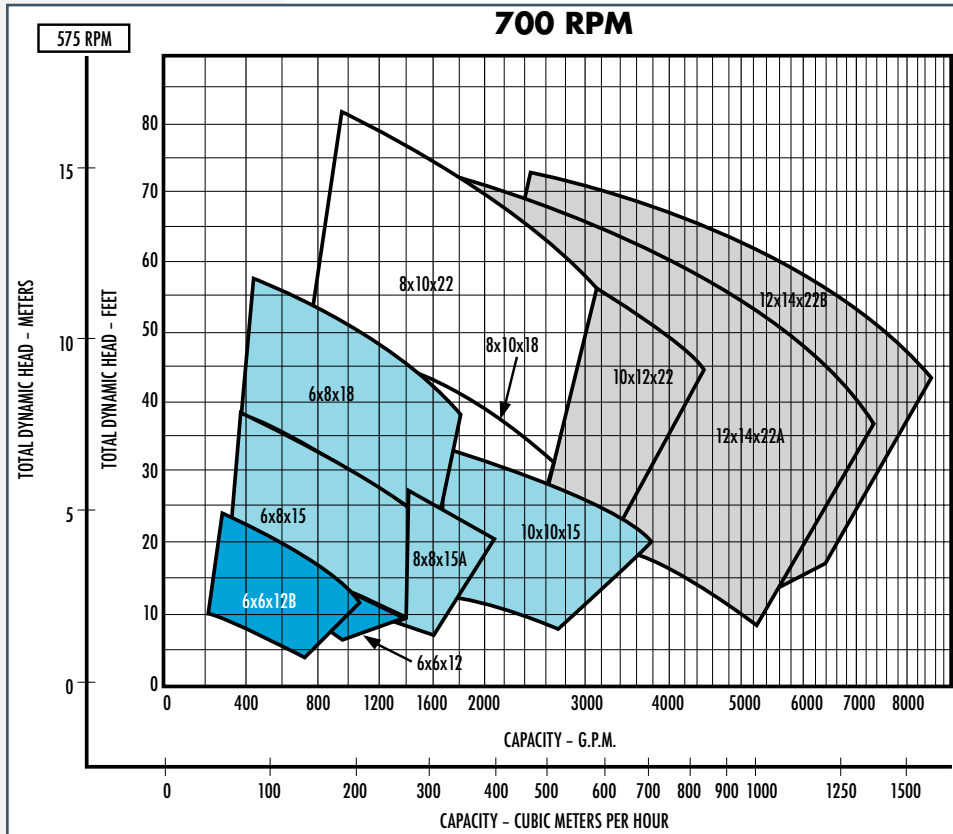
Individual performance curves should be checked for final selection. For selections not shown on this chart please refer to the factory.

- Power Series No. 5F

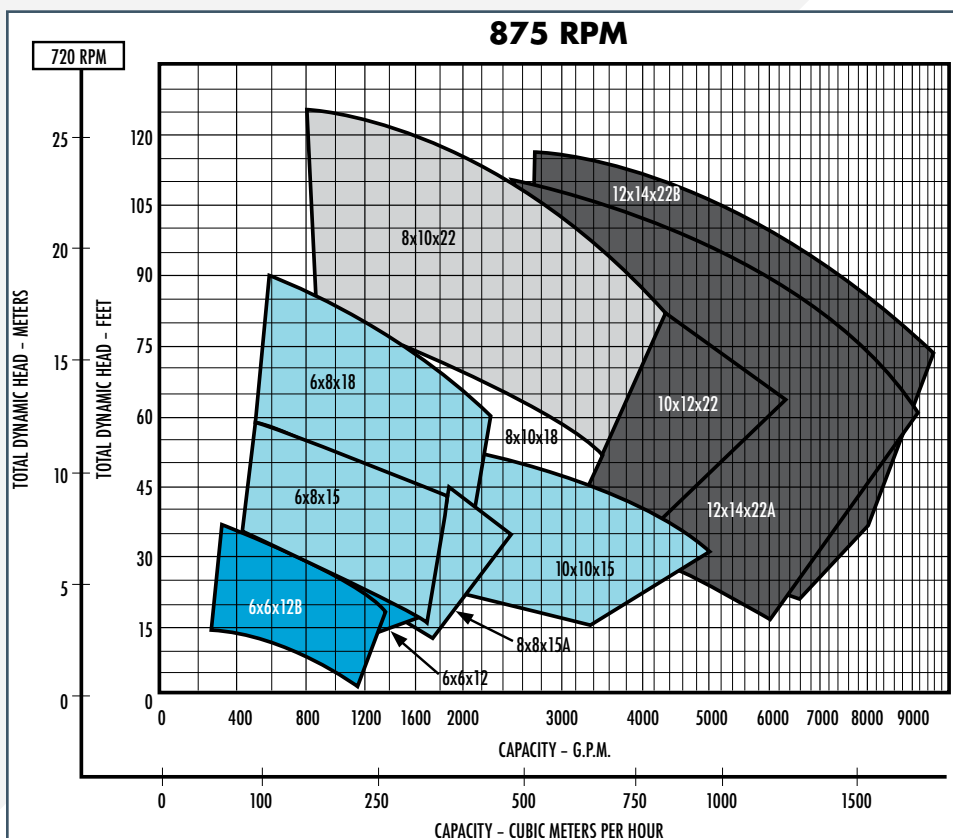


# Performance Data

700 RPM



875 RPM



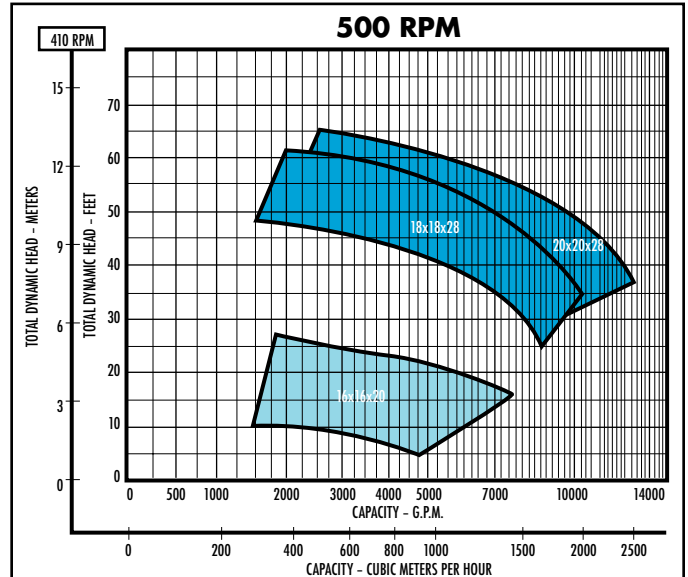


# Performance Data

## 500 RPM

Individual performance curves should be checked for final selection. For selections not shown on this chart please refer to the factory.

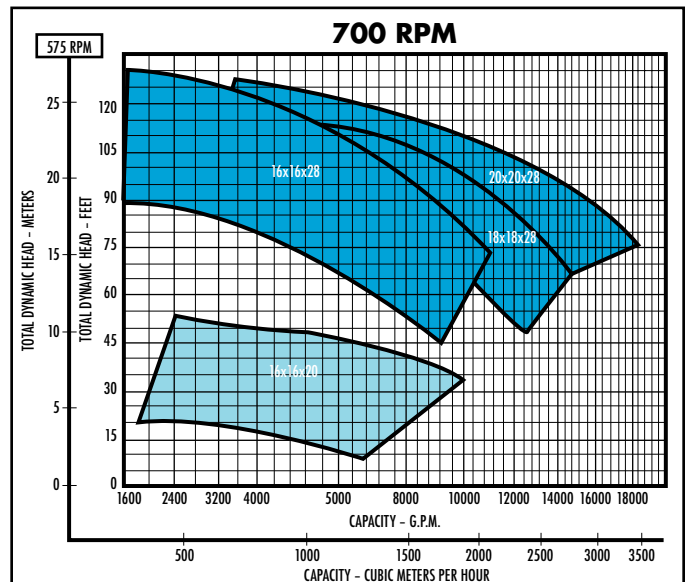
-  Power Series No. 6F
-  Power Series No. 8



## 700 RPM

Individual performance curves should be checked for final selection. For selections not shown on this chart please refer to the factory.

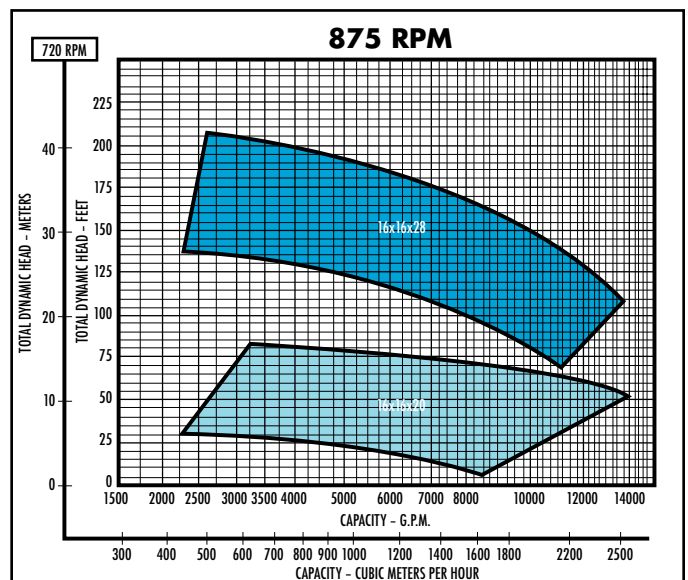
-  Power Series No. 6F
-  Power Series No. 8



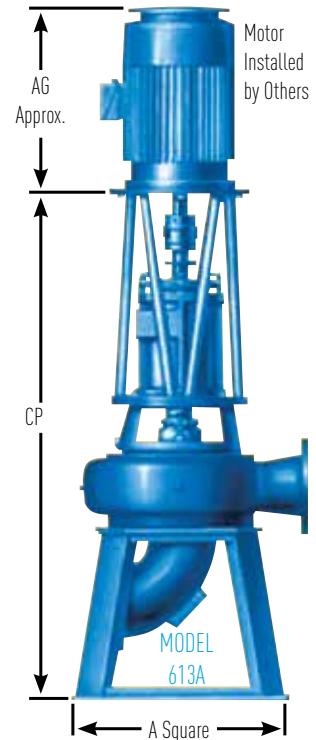
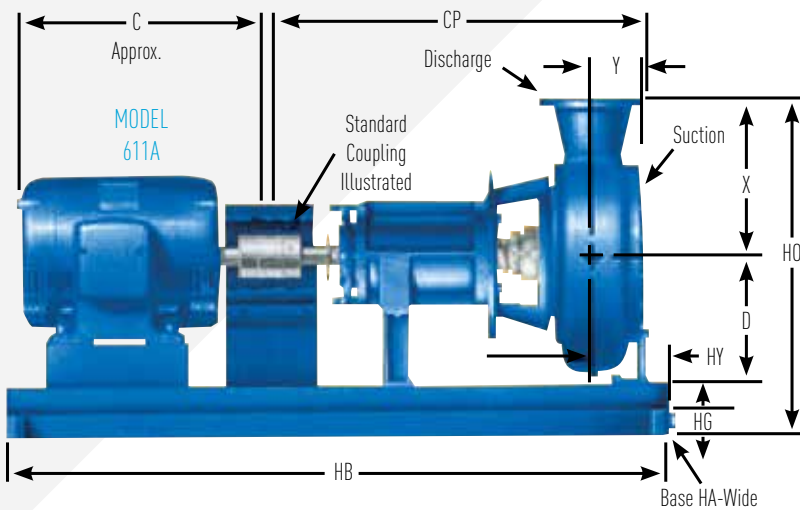
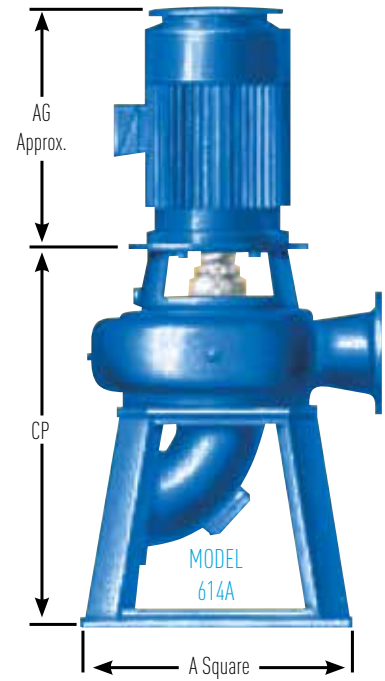
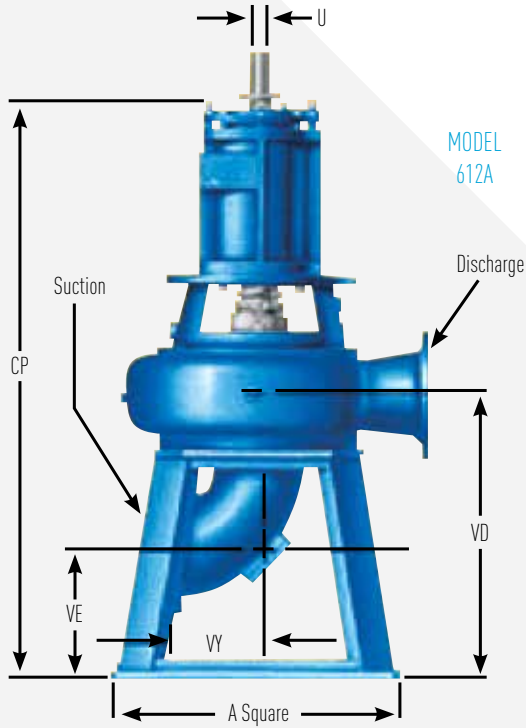
## 875 RPM

Individual performance curves should be checked for final selection. For selections not shown on this chart please refer to the factory.

-  Power Series No. 6F
-  Power Series No. 8



# Dimensional Details



# Dimensional Details

Pump Size		Case Bore	Power Frame	611A - 612A - 613A - 614A Pump Dimensions								CP						
Discharge	Suction			Pump Weight			A	D	U	X	Y	611A	612A	613A	614A	VD	VE	VY
6	6	12	4C-D	580	830	1080	24	13-1/2	1-1/4	14	6-13/16	29-1/2	47-11/16	52-3/16	34-1/8	24-5/16	10-1/8	8
			5F	645	1100	1325	24	13-1/2	2-3/8	14	6-13/16	40-3/8	58-9/16	64-1/8	35-1/4	24-5/16	10-1/8	8
6	6	12B	4C-D	580	830	1080	24	13-1/2	1-1/4	16	5-1/16	29-1/2	47-11/16	52-3/16	34-1/8	24-1/16	10-1/8	8
			5F	845	1100	1325	24	13-1/2	2-3/8	16	6-1/16	40-3/8	58-9/16	64-1/8	35-1/4	24-1/16	10-1/8	8
6	8	15	5E-F	850	1100	1350	30	15-1/4	2-3/8	16	6-1/8	39-7/8	65-7/8	71-7/16	38-1/7	32-1/8	17	9
6	8	18	5E-F	915	1235	1530	30	12-1/2	2-3/8	18	6-7/16	40-1/2	66-1/2	72-1/16	-	32-3/8	14-1/4	9
8	8	15	5E	920	1245	1470	30	15-1/4	2-3/8	19	9-1/8	43-1/4	66-1/2	72-1/16	32-3/8	32-3/8	14-1/4	9
8	10	18	5G-H	1055	1375	1675	30	17-1/2	2-3/8	19	6-3/4	41-3/8	67-5/8	73-3/16	-	33	16	11
8	10	22	5G-H	1260	1930	2220	37	21	2-3/8	22	6-7/8	41-1/2	69-1/8	74-11/16	-	34-1/2	16-5/8	11
10	10	15	5E-F	925	1510	1830	30	15-1/4	2-3/8	20	10-1/16	44-7/8	67-5/8	73-3/16	44	32-15/16	11-7/8	11
10	10	22	5E	1430	2100	-	37	21	2-7/8	22	6-7/8	44	71-5/8	77-3/16	-	34-1/2	16-5/8	11
10	12	22	5G-H	1390	2060	2360	37	21	2-3/8	22-1/2	7-3/16	42-1/4	70-1/4	75-13/16	-	35-1/8	15-9/16	12
			6D	1510	2160	2480	37	21	2-7/8	22-1/2	7-3/16	44-3/4	72-3/4	75-5/16	-	35-1/8	15-9/16	12
12	12	22	5E	1560	2230	-	37	21	2-7/8	22-1/2	7-1/4	44-3/8	72-3/4	75-5/16	-	35-1/8	15-9/16	12
12	14 A and B	22	5G-H	1460	2135	2435	37	21	2-3/8	24	7-1/4	44-3/8	70-1/4	75-13/16	-	35-1/8	13-7/8	14
			6D	1580	2250	2550	37	21	2-7/8	24	7-1/4	44-3/8	72-3/4	75-5/16	-	35-1/8	13-7/8	14
14	14	22A	6E	1630	2300	-	37	21	2-7/8	24	7-1/4	44-3/8	72-3/4	75-5/16	-	35-1/8	13-7/8	14
16	16	20	6F	2500	-	-	-	24	2-7/8	32	23-1/2	63-3/8	-	-	-	-	-	-

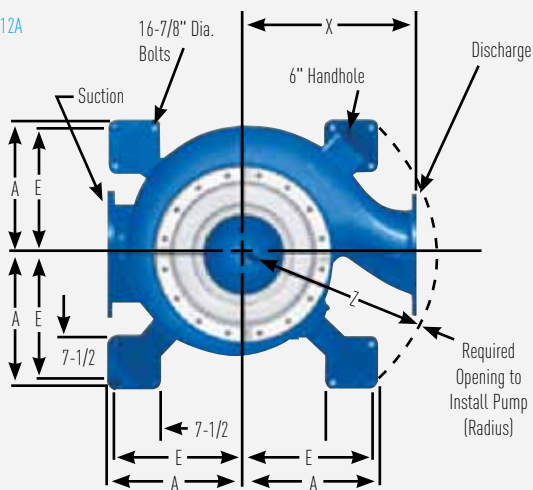
611A - Dimensions - Base							
Pump Size	Motor Frames	HA	HB	HG	HD	HY	Base Weight
6 x 6 x 12	254T-266T	20	56	1-1/2	32	10	131
	324T	25-5/8	72	2	32	7	272
	284T-365T	25-5/8	72	2	32	7	272
6 x 6 x 12B	254T-266T	20	56	1-1/2	32	10	131
	324T	25-5/8	72	2	32	7	272
	254T-365T	25-5/8	72	2	32	7	272
6 x 8 x 15	284T-365T	25-5/8	72	2	36	8	272
	404T-405T	29-5/8	82	2	35	8	437
	444T-445T	29-5/8	90	2	35	8	477
6 x 8 x 18	284T-365T	25-5/8	72	2	40	9	272
	404T-405T	29-5/8	82	2	40	9	437
	444T-445T	29-5/8	82	2	40	9	437
8 x 8 x 15A	256T-326T	25-5/8	72	2	36	9	272
	364T-365T	29-5/8	74	2	36	9	381
	404T-405T	29-5/8	82	2	36	9	437
8 x 10 x 18	284T-326T	25-5/8	72	2	41	9	272
	364T-365T	29-5/8	74	2	41	9	381
	404T-444T	29-5/8	82	2	41	9	437
8 x 10 x 22	445T and LGR	29-5/8	90	12	41	9	477
	324T-326T	29-5/8	74	2	47	12	381
	364T-405T	29-5/8	82	2	47	12	437
10 x 10 x 15	444T and LGR	29-5/8	90	2	47	12	477
	284T-326T	29-5/8	74	2	39	9	381
	364T-444T	29-5/8	82	2	39	9	437
10 x 10 x 22	445T and 365TS	25-5/8	90	2	39	9	477
	445T & LGR	37	110	2	48	13	735
	364T-365T	29-5/8	74	2	48	13	381
10 x 12 x 22	404T-405T	29-5/8	82	2	48	13	437
	444T-445T	29-5/8	90	2	48	13	477
	404T-405T	29-5/8	82	2	48	13	437
	444T-445T	29-5/8	90	2	48	13	477
	445T and LGR	37	110	2	48	13	735
12 x 14 x 22 A and B	304T-365T	29-5/8	74	2	49	13	381
	404T-405T	29-5/8	82	2	49	13	437
	444T-445T	29-5/8	90	2	49	13	477
	404T-405T	29-5/8	82	2	45	13	437
	444T and LGR	29-5/8	90	2	49	13	477
16 x 16 x 20	364T-365T	29-5/8	82	2	60-1/2	11-1/2	437
	404T-405T	29-5/8	90	2	60-1/2	11-1/2	477
	444T-445T	29-5/8	90	2	60-1/2	11-1/2	477
	445T and LGR	37	110	2	61	11-1/2	735

# Dimensional Details

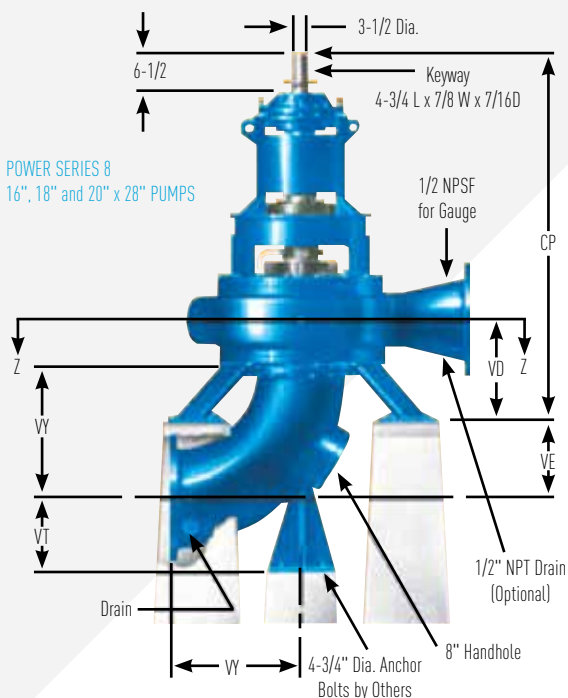
**Notes:**

1. Dimensions and weights are approximate.
2. Refer to factory for base dimensions when spacer couplings are specified.
3. Not for construction purposes unless certified.
4. Frame sizes shown are for open dripproof motors only.
5. Conduit box is shown in approximate position. Dimensions are not specified as they vary with each motor manufacturer.
6. Add pump, base and motor weight for unit weight.
7. Discharge position 1 is shown. Alternative discharge positions are available.
8. Refer to factory for Model 614A weight.

MODEL 612A  
VIEW Z-Z



POWER SERIES 8  
16\", 18\" and 20\" x 28\" PUMPS



Case Bore Suction Discharge	16 x 16 x 28	18 x 18 x 28	20 x 20 x 28
A	26-1/2	26-1/2	26-1/2
E	24-3/4	24-3/4	24-3/4
X	34	37	42
Z	36	39	44-1/4
CP	74-1/2	78	77-11/16
VD	20-1/8	22-7/8	22-1/16
Suct. elbow	16 x 16	18 x 18	20 x 20
VE	12-15/16	14-1/8	21-15/16
VT	13-3/4	15	16
VY	24	26-1/2	29

Limitations	
Maximum hydrostatic test pressure	125 psi*
Maximum recommended case work pressure	100 psi*
Maximum suction pressure	100 psi*
Maximum temperature packing	250°F
Maximum temperature mechanical seal	225°F
Maximum operation speed	1800 RPM
* For pump size 6 x 8 x 15 at 1750 RPM with shut-off TDH greater than 231 feet the following limitations apply:	
1. Maximum hydrostatic pressure	150 psi
2. Maximum recommended case working	125 psi
3. Maximum suction pressure	125 psi

Motor Frame*	Horsepower at RPM				Motor Weight in lbs.	C	AG
	1750	1150	875	700			
184T	5	-	-	-	85	14	14
213T	7-1/2	-	-	-	150	16	16
215T	10	5	-	-	190	18	17
254T	15	7-1/2	-	-	230	21	19
256T	20	10	7-1/2	5	250	23	21
284T	25	15	10	7-1/2	350	24	22
286T	30	20	15	10	380	25	23
324T	40	25	20	15	475	26	24
326T	50	30	25	20	525	28	26
364T	-	40	30	25	630	29	25
364TS	60	-	-	-	630	27	25
365T	-	50	40	30	690	30	25
365TS	75	-	-	-	690	28	25
404T	-	60	50	40	830	33	28
404TS	100	-	-	-	830	30	28
405T	-	75	60	50	915	34	28
405TS	125	-	-	-	915	31	29
444T	-	100	75	60	1000	38	32
444TS	150	-	-	-	1000	34	32
445T	200	125	100	75	1100	40	32
	250	150	125	100			

\*Notes: Frame sizes listed are for O.D.P. motors. Model 611A pumps use "T" frame motors. Models 612A and 613A use "HP" frame motors. Model 614A pumps use "TCV" frame motors.

# Engineering Specifications

## Models 611A, 612A, 613A and 614A

Furnish and install as shown on the plans. Aurora Model (horizontal 611A) (vertical 613A flexible coupled) (vertical 612A open shaft) (vertical 614A close coupled) type solids handling centrifugal pump. The pump shall be capable of delivering a capacity of \_\_\_GPM when operating against a total dynamic head of \_\_\_RPM. A unit operating at a lesser rotative speed will be considered, but in no event will a pump operating at more than the maximum speed specified be acceptable.

## Pump Casing

The pump casing shall be of the top centerline design and will be constructed of "APCO-Loy 33," and shall be of sufficient thickness to withstand stresses and strains at full operating pressures. Casings shall be subject to a hydrostatic pressure test of 125 lbs. A minimum size handhole 3" x 5" is to be provided in the casings for cleanout purposes. The casing design shall allow front or rear impeller pullout.

## Bearing Housing

The bearing housing is to be of cast iron and shall be furnished with a set of regreaseable bearings for both radial and thrust loads. The bearings shall have an average life of 100,000 hours and shall be mounted in a machined, moisture and dustproof housing. The housing is to have register fit and then be bolted to the pump casing to ensure permanent alignment. An extra deep (split) packing box simplifying package replacement and shaft sleeve inspection is to be provided and must be so arranged with a lantern ring for either grease lubrication or tapped connections for water sealing from an outside source. A 3/4" drain opening must be provided to facilitate removal of lubricating liquid.

## Impeller

The impeller shall be of the enclosed type with wiper blades located on the back shroud to prevent accumulation of solids behind the impeller. The vanes shall be skewed to reduce noise. The impeller is

to be of "APCO-LOY 33" and shall be capable of passing a minimum sphere size of \_\_\_inches. The impeller shall be dynamically balanced before assembly into the pump and shall be securely fastened to the shaft by means of a stainless steel key and impeller locknut. Axial adjustment of the impeller is to be external and a minimum clearance of \_\_\_thousands should be maintained between the impeller and suction wearplate.

## Pump Shaft

The pump shaft shall be constructed of high grade carbon steel having a tapered impeller extension and accurately machined. The minimum diameter acceptable will be \_\_\_inches. The pump shaft shall be protected from wear by a corrosion and wear resisting hardened stainless steel shaft sleeve having a 450 minimum Brinell hardness. An O-ring type gasket must be provided between the impeller hub and the shaft sleeve to prevent pumped liquid from corroding the shaft.

## Model 611A

The pump and motor shall be mounted on a common base (formed steel) (structural steel) with drip rim. Alignment shall be checked in accordance with the Standards of the Hydraulic Institute after installation and there shall be no strain transmitted to the pumps.

## Model 612A

Vertical open shaft pumps are to be driven through flexible shafting with \_\_\_diameter tubing and intermediate bearings. Shafting must be of sufficient size to transmit required horsepower and must be provided with a slip spine which will permit removal of the pump rotating assembly without removing any section of intermediate shafting, bearings, suction or discharge piping.

## Model 613A

Vertical flexible coupled pumps shall be furnished with a steel fab motor bracket which is to be bolted to a separate pump adapter.



# Engineering Specifications

Part Number	Description	Fitted	Materials of Construction
1	Casing	Iron	Cast Iron ASTM A48
2	Impeller	Iron	Cast Iron ASTM A48
3†	Wear Ring (Impeller)	Iron	Stainless Steel AISI 420
5	Cover	Iron	Cast Iron ASTM A48
6†	Wear Ring (Cover)	Iron	Stainless Steel AISI 420
8	Bracket	Iron	Cast Iron ASTM A48
9	Impeller Screws	Iron	Cadmium Plated Steel
11	Washer	Iron	Steel
21	Support	Iron	Steel ASTM A-36
22	Support – 611A	Iron	Steel ASTM A-36
22†	Motor Support – 613A	Iron	Steel ASTM A-36
27	Stuffing Box	Iron	Cast Iron ASTM A48
36	Sleeve (Pack)	Iron	Hard Stainless Steel AISI 440C
	Sleeve (Seal)	Iron	Bronze ASTM B62
	Sleeve (Seal)	Stainless	Stainless Steel AISI 316
40	Packing	Iron	Graphite/Teflon® tube acrylic yarn
		Stainless	Teflon
41	Lantern Ring	Iron	Stainless Steel AISI 316
		Stainless	Cast Aluminum A356-T6
44	Gland	Iron	Cast Aluminum A356-T6
44E	Clamp	Iron	Cadmium Plated Steel
		Stainless	Stainless Steel AISI 18-8
45	Stud (Optional)	Iron	Steel
	Capscrew (Standard)	Stainless	Stainless Steel AISI 18-8
48	Shaft	Iron	Steel SAE 1045
49	Bearing	Iron	Steel
50	Bearing	Iron	Steel
51	Bearing Cap	Iron	Cast Iron ASTM A48
56	Frame	Iron	Cast Iron ASTM A48
65†	Elbow	Iron	Cast Iron ASTM A48

† Not illustrated (optional). All iron pump construction is furnished unless specified.

The engineering specification has been condensed from a very comprehensive specification.

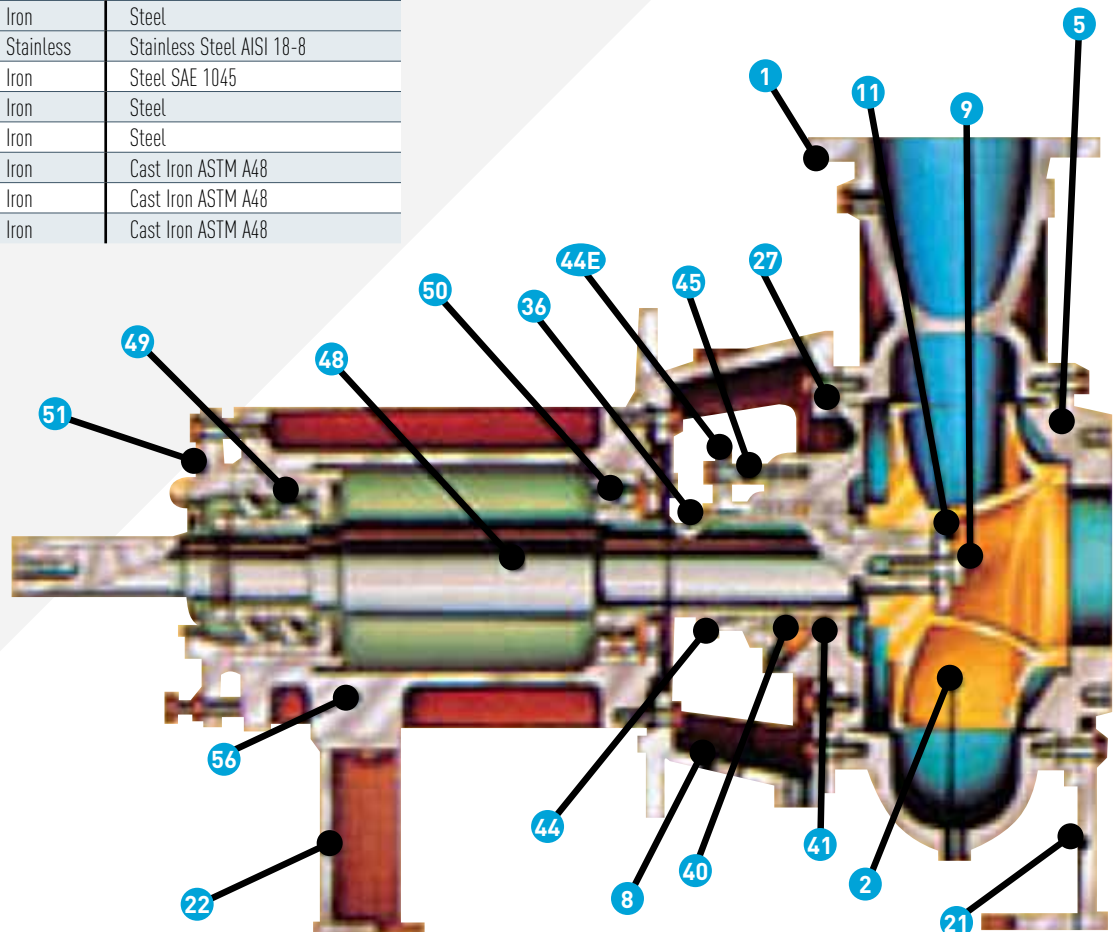
Additional information is available from any Aurora Pump Sales Office.

## Models 610A–614A

The motor bracket must be machined with a register fit to ensure proper alignment of motor and pump shaft.

## Models 612A, 613A and 614A

The pump shall be supported by a fabricated steel pedestal base and shall be fabricated with a square footing to prevent legs being broken during shipment. The pedestal shall have openings large enough to permit access to the suction line. A handhole of not less than 5" in diameter must be provided in the suction elbow. The pedestal must be of sufficient height so that the suction elbow will not touch the foundation upon which it stands.



# Engineering Specifications

Area	Description	Power Series *Indicates Back-to-Back Bearings Quantity 2.									
		4C	4D	5E	5F	5G	5H	6D-6F	6E	8	
Stuffing Box	Stuffing Box Bore Dia.	Packing	3-9/32	3-9/32	4-25/32	4-25/32	4-25/32	4-25/32	6-25/32	6-25/32	6-17/32
	Stuffing Box Depth		2-3/4	2-3/4	3-1/2	3-1/2	3-1/2	3-1/2	5-1/4	5-1/4	8-1/8
	Outside Dia. Sleeve for Packing		2-1/2	2-1/2	3-3/4	3-3/4	3-3/4	3-3/4	5-1/4	5-1/4	7
	Total No. of Pack Rings w/ Lantern Ring		5	5	5	5	5	5	5	5	5
	No. of Rings in Front of Lantern Ring		2	2	2	2	2	2	2	2	2
	Packing Size		3/8 x 3/8		1/2 x 1/2		1/2 x 1/2		3/4 x 3/4		3/4 x 3/4
	Width of Lantern Ring		5/8	5/8	3/4	3/4	3/4	3/4	1-1/8	1-1/8	1-1/8
	Distance from Box to Nearest Obstruction		2-15/16	2-15/16	2-3/4	2-3/4	2-3/4	2-3/4	3-15/16	3-15/16	2-1/2
	Length of Mech. Seal		Mechanical Seal	Refer to Factory							
Outside Dia. Sleeve for Mechanical Seal	2-1/4	2-1/4		3-5/8	3-5/8	3-5/8	3-5/8	5	5	N/A	
Shaft	Diameter at Impeller (Taper Average)	1-7/16	1-7/16	2-1/4	2-1/4	2-7/8	2-7/8	2-7/8	2-7/8	3-1/2	
	Diameter at Shaft Sleeve	1-7/8	1-7/8	3-1/4	3-1/4	3-1/4	3-1/4	4-1/2	4-1/2	6	
	Diameter Between Bearings (Max. Shaft Diameter)	3-15/16	3-15/16	4-1/8	4-1/8	4-1/8	4-1/8	5-1/4	5-1/4	7-1/2	
	Diameter at Coupling End	1-1/4	1-1/4	2-3/8	2-3/8	2-3/8	2-3/8	2-7/8	2-7/8	3-1/2	
	Maximum Deflection at Stuffing Box Face	.002	.002	.002	.002	.002	.002	.002	.002	.002	
Bearings	Bearing Number (Inboard Radial)	6311	21311	6317	21317	6317	21317	23024	22224	22232	
	Bearing Number (Outboard Thrust)	3309	3309	7315*	7315*	7315*	7315*	7222*	7322*	22326	
	Bearing Centers	7-3/4	7-3/4	12-11/16	12-11/16	12-11/16	12-11/16	12-5/8	12-3/4	21	
	Min. Life of Bearing Under Worst Conditions of Load In Years (2)	2	2	2	2	2	2	2	2	2	



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