

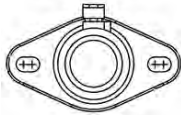
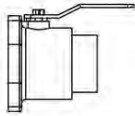
# ARMSTRONG PUMPS



## ASTRO SERIES CIRCULATORS

The ASTRO line of circulators. Astros are available with self-lubricated bearing, vent plug for initial purging, and dynamically balanced stainless steel rotor assembly. No need for mechanical seal; no coupler alignment failure. Pumps will accept flange sizes 3/4", 1", 1-1/4" & 1-1/2" (specify CI or BRZ). Same flange to flange dimension as competitive small circulators. All Astros: 120 VOLT/60Hz

Order No.	Model No.	Description	REPLACES	Approx. GPM @ Listed Head (ft.)			
				2.5	5	10	15
<b>CIRCULATORS</b>							
<b>3-SPEED</b>							
110123307	ASTRO50CI	ASTRO 50 CI CIRC L/FLGS	TACO 007F, 008F, 0010F	18	17	13	7
110123308	ASTRO50BR	ASTRO 50 BRZ CIRC L/FLGS	TACO 007BF, 008BF, 0010BF	18	17	13	7
<b>ASTRO / "S" SERIES CIRC. PUMP ACCESSORIES</b>							
816013111	816013111	CI COMPANION FLANGE KIT, 3/4"					
816012111	816012111	CI COMPANION FLANGE KIT, 1"					
816011111	816011111	CI COMPANION FLANGE KIT, 1-1/4"					
816009111	816009111	CI COMPANION FLANGE KIT, 1-1/2"					
816013141	816013141	BRZ COMPANION FLANGE KIT, 3/4"					
816012141	816012141	BRZ COMPANION FLANGE KIT, 1"					
816011141	816011141	BRZ COMPANION FLANGE KIT, 1-1/4"					
816009141	816009141	BRZ COMPANION FLANGE KIT, 1-1/2"					



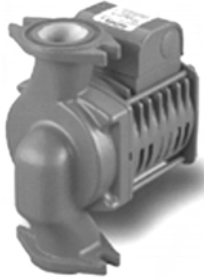
### CIRCULATOR SERIES "CIF" ISOLATION FLANGES

SPECIAL ORDER	SPECIAL ORDER	CI ISOLATION FLANGE, 1/2" NPT
CIF-075T	CIF-075T	CI ISOLATION FLANGE, 3/4" NPT
CIF-100T	CIF-100T	CI ISOLATION FLANGE, 1" NPT
CIF-125T	CIF-125T	CI ISOLATION FLANGE, 1 1/4" NPT
CIF-150T	CIF-150T	CI ISOLATION FLANGE, 1 1/2" NPT
SPECIAL ORDER	SPECIAL ORDER	SWT ISOLATION FLANGE, 1/2" SWEAT
SPECIAL ORDER	SPECIAL ORDER	SWT ISOLATION FLANGE, 3/4" SWEAT
SPECIAL ORDER	SPECIAL ORDER	SWT ISOLATION FLANGE, 1" SWEAT
SPECIAL ORDER	SPECIAL ORDER	SWT ISOLATION FLANGE, 1 1/4" SWEAT
SPECIAL ORDER	SPECIAL ORDER	SWT ISOLATION FLANGE, 1 1/2" SWEAT

NOTE: The "CIF" Series Flanges have slotted holes for universal Armstrong Pump applications.

Flanges will fit the "Astro", "E", "H" and "S" series pumps.

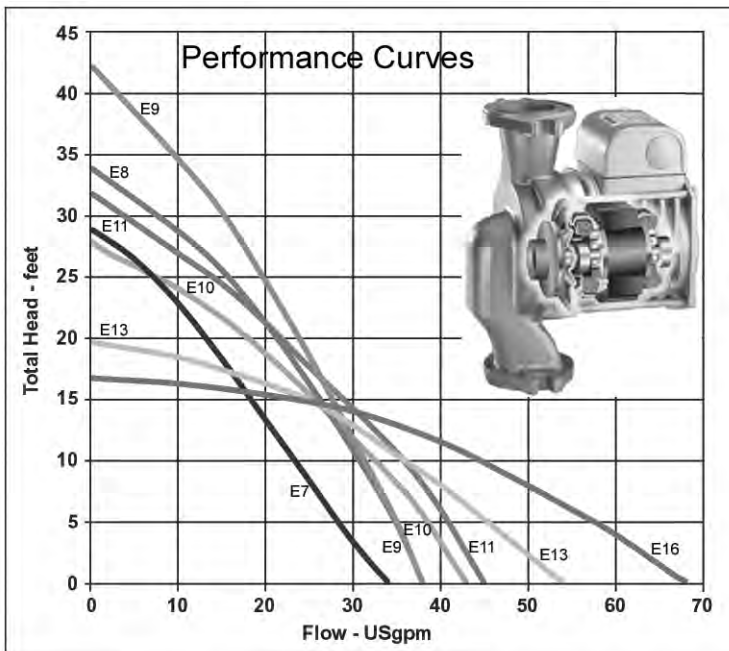
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## ARMflo E SERIES CIRCULATORS

The ARMFlo line of circulators offers a competitive, compact, high efficiency, quiet, circulator with repairable component design. The air cooled motor designed for this series is up to 74% more efficient than some wet rotor pumps of similar power. Pumps will accept flange sizes 3/4", 1", 1-1/4" & 1-1/2" (specify CI or BRZ). Same flange to flange dimension as competitive circulators.

Order No.	Model No.	Description	Voltage
<b>CIRCULATORS</b>			
Special Order	ARMFLO E7	ARMFLO CI CIRC 1/12 HP L/FLGS	120/60
E9	ARMFLO E9	ARMFLO CI CIRC 1/6 HP L/FLGS	120/60
E9B	ARMFLO E9B	ARMFLO BRZ CIRC 1/6 HP L/FLGS	120/60
E11	ARMFLO E11	ARMFLO CI CIRC 1/6 HP L/FLGS	120/60
E11B	ARMFLO E11B	ARMFLO BRZ CIRC 1/6 HP L/FLGS	120/60
<b>ARMFLO ACCESSORIES</b>			
810120204	810120204	HARDWARE KIT FOR E11/E11B	



### FLANGE KITS

Contains 2 flanges, hardware & gaskets	Cast Iron		
	E7/E8/E9	E10/E11/E13	E16
Flange (3/4")	816013-211	N / A	N / A
Flange (1")	816012-211	806073-111	N / A
Flange (1 1/4")	816011-211	804300-111	N / A
Flange (1 1/2")	816009-211	804301-111	N / A
Flange (2")	N / A	N / A	806074-111

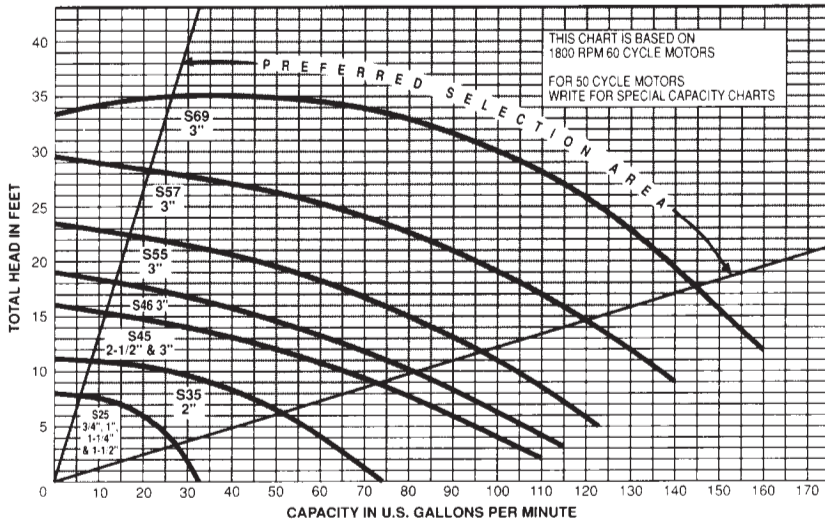
	Bronze		
	E7/E8/E9	E10/E11/E13	E16
Flange (3/4")	816013-241	N / A	N / A
Flange (1")	816012-241	806073-141	N / A
Flange (1 1/4")	816011-241	804300-141	N / A
Flange (1 1/2")	816009-241	804301-141	N / A
Flange (2")	N / A	N / A	806074-141

# ARMSTRONG PUMPS

## S & H SERIES CIRCULATORS

Both S and H Series circulators feature unique Armstrong shaft and bearing module for ease of serviceability and maximum interchangeability. Features include oversized shafts of alloy steel and impellers constructed from non-ferrous material designed for optimal water delivery. Every circulator operated before shipment. Available in bronze fitted or all bronze. 1750 RPM motors.

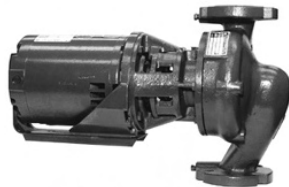
Order No.	Model No.	Flange Sizes (NPT)	HP	V/Ph.	Fig-Fig Dimension	Replacement for:	
<b>CI BODY, BF</b>							
S25BF	S-25 BF	CI 3/4", 1", 1-1/4", 1-1/2"	1/12	115/1	6-1/2"	B & G	Taco
S35BF	S-35 BF	CI 2"	1/6	115/1	8-1/2"	Ser. 100	110
H32BF	H-32 BF	CI 1", 1-1/4", 1-1/2"	1/6	115/1	8-1/2"	HV	111
H51BF1PH	H-51 BF	CI 1"	1/4	115/1	11-1/2"	60-11	1600
<b>ALL BRONZE</b>							
S25AB	S-25 AB	BRZ 3/4", 1", 1-1/4", 1-1/2"	1/12	115/1	6-1/2"	Ser.100AB	110B
H32AB	H-32 AB	BRZ 1", 1-1/4", 1-1/2"	1/6	115/1	8-1/2"	HV-AB	111B
H41AB	H-41 AB	BRZ 1"	1/6	115/1	8-1/2"	1" PR	113B



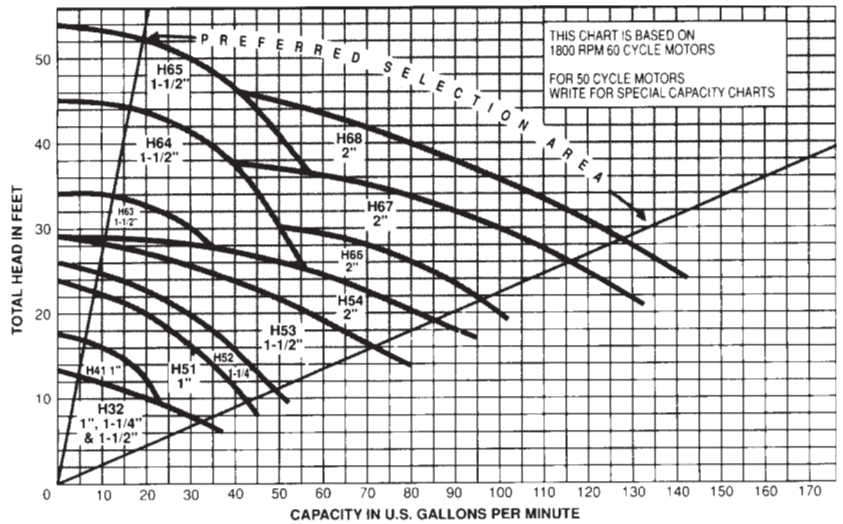
**Series S**



**S Series**



**H Series**

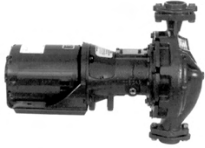


**Series H**

OKLAHOMA CITY • (405) 239-7301  
(800) 289-3331 • FAX: (405) 232-5438

TULSA • (918) 249-1918  
(800) 955-1918 • FAX: (918) 249-9014

# ARMSTRONG PUMPS



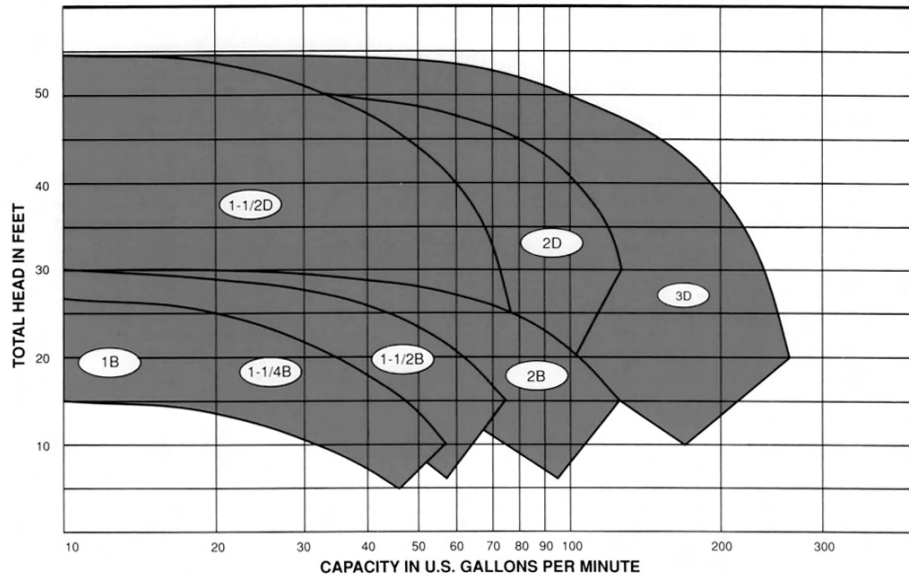
## 1050/1060 SERIES CIRCULATORS

These custom circulators feature the classic horizontal in-line design, engineered for durability and smooth operation. Designed for large flow applications. Custom sized impellers and motors are fine-tuned to meet the exact system requirements. 1050 Series has unique Armstrong shaft and bearing module for ease of serviceability. 1060 Series has extra long brz sleeve bearings to keep shaft in perfect alignment and quiet operation. Available in all-bronze and bronze-fitted construction.

Max. Op. Temp. 225°F; Max. Working Pres. 175 psi

Order No.	Model No.	Fig Size (NPT)	HP	V/Ph.	Fig-Fig Dimension	Imp. Trim (in.D)
<b>1050 SERIES CI BODY, BRZ FITTED</b>						
1050BF1PH.3B1.5	1050-1.5B	1-1/2"	1/3	115/230/1	11-1/2"	4.75"
1050BF1PH.5B1.5	1050-1.5B	1-1/2"	1/2	115/230/1	11-1/2"	5.15"
1050BF3PH.5B1.5	1050-1.5B	1-1/2"	1/2	230/460/3	11-1/2"	5.15"
1050BF1PH.5B2	1050-2B	2"	1/2	115/230/1	11-1/2"	4.5"
1050BF1PH.75B2	1050-2B	2"	3/4	115/230/1	11-1/2"	5.0"
1050BF1PH1B2	1050-2B	2"	1	115/230/1	11-1/2"	5.25"
<b>1050 SERIES ALL BRONZE</b>						
1050AB1PH.5B1.5	1050-1.5B	1-1/2"	1/2	115/230/1	11-1/2"	5.15"
1050AB1PH.5B2	1050-2B	2"	1/2	115/230/1	11-1/2"	4.5"
1050AB1PH.75B2	1050-2B	2"	3/4	115/230/1	11-1/2"	5.0"
<b>1060 SERIES CI BODY, BRZ FITTED</b>						
1060BF1PH1D1.5	1060-1.5D	1-1/2"	1	115/230/1	13-1/2"	6.5"
1060BF3PH1D1.5	1060-1.5D	1-1/2"	1	230/460/3	13-1/2"	6.5"
1060BF1PH1D2	1060-2D	2"	1	115/230/1	14"	5.85"
1060BF3PH1D2	1060-2D	2"	1	208-230/460/3	14"	5.85"
1060BF3PH1.5D2	1060-2D	2"	1-1/2	208-230/460/3	14"	6.55"
1060BF3PH2D2	1060-2D	2"	2	208-230/460/3	14"	7.0"

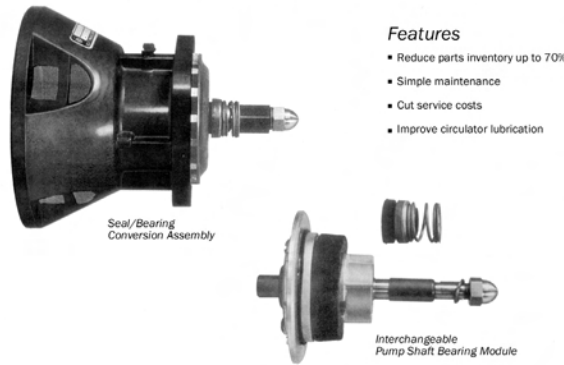
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**1050/1060 SERIES PUMPS**

Please see pages 330 through 337 for useful information on pumps, including sizing and selection tips.

## Interchangeable Pump Shaft Bearing Module



### UNIVERSAL SEAL/BEARING ASSEMBLY FOR MOST STANDARD ARMSTRONG AND BELL & GOSSETT IN-LINE CIRCULATING PUMPS

Here is a new concept in replacement parts standardization with significant advantages for stocking wholesalers, pump maintenance firms, institutions and large commercial and industrial users of circulating pumps.

It is based on a new Universal seal bearing assembly design which incorporates an interchangeable pump shaft bearing module. With as few as five types of seal bearing assemblies on hand, more than 100 different Armstrong and B&G pump models can be converted to this new module program during routine maintenance. Once the conversion is made, future maintenance will normally require replacement of the pump shaft bearing module only. Since all seal bearing assemblies accept the same module, and elaborate and costly parts inventories are not required.

The Armstrong Universal Seal/Bearing Conversion Assembly is available in one construction replacing standard, bronze-fitted or all bronze construction. It features a positive mechanical seal in the well-known "ARMSEAL" construction... a tried and proven method of preventing water leakage. Made of long-lasting, hard-wearing materials, it ensures many years of noise-free, trouble-free, service.

A dependable, quiet-operating, oil-lubricated sleeve bearing with a new superior oiling design offers long-life operation.

The shaft module has an alloy steel shaft with copper sleeve and positive oil O-ring seals.

**Materials:** Pump shaft bearing module






**Shaft:** Alloy Steel

**Seal:** "ARMSEAL" positive mechanical

**Bearing:** copper sleeve oil lubricated

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### Conversion Chart

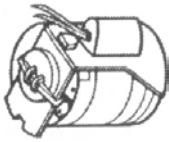
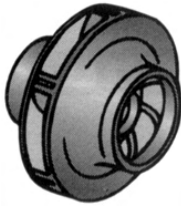
	Pump Model Numbers		Armstrong Seal Bearing Conversion Assembly*	Shaft Module
	Armstrong	Bell & Gossett		
2 Series 	S-25 3/4 S-25 1 S-25 1 1/4 S-25 1 1/2	#75 #100 #125 #150	Universal 816019-002	 816999-041
3 Series 	S-35 H-32 1 H-32 1 1/4 H-32 1 1/2	2 HV 1 HV 1 1/4 HV 1 1/2	Universal 816549-091 Universal 816023-001 (B & G only)	
4 Series 	S-45 2 1/2 S-45 3 S-46 H-41	2 1/2 3 LD 3 HD 1 PR	Universal 816027-002	
5 Series 	S-55 ** S-57 ** H-51 ** H-52 ** H-53 ** H-54 *	PD-35 PD-37 60-1 or 60-11 60-2 60-3 or 60-13 60-4 or 60-14	Universal 816032-000	

\*Conversion assembly NOT required on Armstrong module-designed pump.

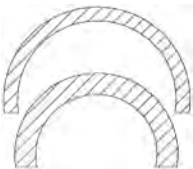
\*\* Can also be used on 1050 Series circulators

# ARMSTRONG PUMPS

## CIRCULATOR AND STOCK PUMP PARTS AND ACCESSORIES



3



Order No.	Model No.	Description	For Use With Model(s)	Replaces B&G #
<b>IMPELLERS</b>				
812961111	812961-111	IMPELLER NFI (2.75")	S-25	118840, 189132,
816322111	816322111	IMPELLER NFI (3.375")	S-35, H-32	118666, 118435
816305328	816305-328	IMPELLER 3.875"	S-45	
816301325	816301-325	IMPELLER PLASTIC (4.25")	H-41	
816302319	816302-319	IMPELLER NFI (5.0")	H51/1050-1B	186360
816302047	816302-047	IMPELLER BRZ FULL TRIM (5.25")	H-52	186359
816304047	816304-047	IMPELLER BRZ FULL TRIM (5.25")	H-54	118626
116304317-4.5	116304317	IMPELLER PLASTIC 4.50" TRIM	H-54/1050-2B	
116302317-4.5	116302317	IMPELLER PLASTIC 4.50" TRIM	1050-1.25B	
116303317-5.15	116303317	IMPELLER PLASTIC 5.15" TRIM	1050-1.5B	
11604047-5.0	11604047	IMPELLER BRZ 5.0" TRIM	1050-2-B	
116304317-5.0	116304317	IMPELLER PLASTIC 5.00" TRIM	1050-2B, 1060-2D	
<b>MOTORS</b>				
410191062	410191-062	1/2 HP 115/230/1 MOTOR 3450 RPM	702S PUMP	
805316010	805316-010	1/12 HP 115/1 1800 RPM	S-25	111034
817025001	817025-001	1/6 HP 115/1 1725 RPM	S-35, H-32	111036, 111031
817025007	817025-007	1/4 HP 115/60/1 1800 RPM	S-45	111040
816141001	816141-001	1/4 HP 115/1 1800 RPM	H-51	169035
831009062	831009-062	1/2 HP 115/230/1 1800 RPM	H-53, 1050, 1060	
831011083	831011-083	1/2 HP 208-230/460/3 1800 RPM	H-53, 1050, 1060	111046 <sup>2 3</sup>
831010062	831010-062	3/4 HP 115/230/1 1800 RPM	1050, 1060	
831012083	831012-083	3/4 HP 208-230/460/3 1800 RPM	H-54, 1050, 1060	111049 <sup>2 3</sup>
816676069	816676-069	1 HP 208-230/460/3 1800 RPM	S-69, 1050, 1060	169089, 169090, 111051 <sup>3</sup>
<b>FLANGES<sup>1</sup></b>				
106074011	106074-011	2 BRZ FLG (PER EA)	4360, H54	
804301111	804301-111	1-1/2 FLG KIT CI (2 FLGS)	E10/E11/E13	
804300111	804300-111	1-1/4 FLG KIT CI (2 FLGS)	E10/E11/E13	
804300141	804300-141	1-1/4 FLG KIT BRZ (2 FLGS)	E10/E11/E13B	
804301141	804301-141	1-1/2 FLG KIT BRZ (2 FLGS)	E10/E11/E13B	
806073111	806073-111	1 FLG KIT CI (2 FLGS)	E10/E11/E13	
806073141	806073-141	1 FLG KIT BRZ (2 FLGS)	E10/E11/E13B	
816009211	816009-211	1-1/2 FLG KIT CI (2 FLGS)	E8/E9	
816009241	816009-241	1-1/2 FLG KIT BRZ (2 FLGS)	E8B/E9B	
816011211	816011-211	1-1/4 FLG KIT CI (2 FLGS)	E8/E9	
816011241	816011-241	1-1/4 FLG KIT BRZ (2 FLGS)	E8B/E9B	
816012211	816012-211	1 FLG KIT CI (2 FLGS)	E8/E9	
816013211	816013-211	3/4 FLG KIT CI (2 FLGS)	E8/E9	
816013241	816013-241	3/4 FLG KIT BRZ (2 FLG)	E8B/E9B	
816009111	816009-111	1-1/2 FLG KIT CI (2 FLGS)	ASTRO, S25	
816009141	816009-141	1-1/2 FLG KIT BRZ 2 FLGS)	ASTRO, S25	
816011111	816011-111	1-1/4 FLG KIT CI (2 FLGS)	ASTRO, S25	
816011141	816011-141	1-1/4 FLG KIT BRZ (2 FLGS)	ASTRO, S25	
816012111	816012-111	1 FLG KIT CI (2 FLGS)	ASTRO, S25	
816012141	816012-141	1 FLG KIT BRZ (2 FLGS)	ASTRO, S25	
816013111	816013-111	3/4 FLG KIT CI (2 FLGS)	ASTRO, S25	
816013141	816013-141	3/4 FLG KIT BR (2 FLGS)	ASTRO, S25	
<b>GASKETS</b>				
104442000	104442-000	BODY GASKET	S-25	P04080
106049000	106049-000	BODY GASKET	S-35, H-32	P04890
106050000	106050-000	BODY GASKET	S-45, S-46, H-41	P05800
106158000	106158-000	BODY GASKET	1050 SERIES, S-55, S57, H51, to H-54	P57410
106592000	106592-000	BODY GASKET	1060 Series, S-69, H-63 to H-68	P57700
804034000	804034-000	FLANGE GASKET (PER SET)	H-32, 1-1/2D	118373

# ARMSTRONG PUMPS

## CIRCULATOR AND STOCK PUMP PARTS AND ACCESSORIES

Order No.	Model No.	Description	For Use With Model(s)	Replaces B&G #
<b>GASKETS con't</b>				
805176000	805176-000	FLANGE GASKET (PER SET)	H-41,51,52,53, 1050-1, 1-1/4, 1-1/2	118368
105176001	105176-001	FLANGE GASKET	H32, H51, 1050-1B, H52, 1050-1-1/4B, H53, 1050-1-1/2B	
805209000	805209-000	FLANGE GASKET (PER SET)	S-35	118065
810120202	810120-202	FLG GSKT, BOLT & NUT KIT	S-25, ASTRO	
810120204	810120-204	FLG GSK, BOLT & NUT KIT	E11	
810120212	810120-212	FLG GSKT, BOLT & NUT KIT	1050-2B, 1060-2D	
810120218	810120-218	FLG GSKT, BOLT & NUT KIT	H-41,51,52,53, 1050-1, 1-1/4, 1-1/2	
816117000	816117-000	FLANGE GASKET KIT	H-54,66,67,68, 1050-2B, 1060-2D	118378
816653000	816653-000	FLG GASKET SET (2)	S-25	118368
880200071	880200-071	BODY GSKT E10/E10B/E11/ELLB	E10/E10B/E11/E11B	
AS1170-363	AS1170-363	GASKET CASING O'RING	4270 SERIES	
<b>MECHANICAL SEALS</b>				
816706021	816706-021	SEAL KIT SMALL CIRCS	S-25 to 57, H-32 to 54, 1050 SERIES	118681
816706023	816706-023	SEAL KIT VITON HI-TEMP SEAL	LAARS BOILERS	
816707001	816707-001	SEAL KIT 3/4"D LARGE CIRCS	1060 SERIES	
825458001	825458-001	SEAL KIT 1.25" TYPE 21 BP-1C1		186860
975000991	975000-991	SEAL KIT 1.25" EDPM TYPE 21		
975000993	975000-993	SEAL KIT 1.625" EDPM TYPE 21		
633	633	SEAL 5/8" TYPE 21	4270 SERIES (SAME AS 810134-000)	
<b>BEARING ASSEMBLIES</b>				
810119001	810119001	UNIV SEAL BRG ASSY #2	S-25	118844, 189034
816549091	816549-091	UNIV SEAL BRG ASSY #3	S-34, S-35, H-32	189100, 189101, 189102, 189103
816027002	816027-002	UNIV SEAL BRG ASSY #4	S-45, S-46, H-41	189105, 189106,
816032000	816032-000	UNIV SEAL BRG ASSY #5	H-51 to 54, 1050	186863, 186864, 186865
816366041	816366-041	UNIV SEAL BRG ASSY #6	1-1/2D & 2D 1060	
816999041	816999-041	SHAFT & BEARING MODULE	FITS BRG ASSY #2-5	
<b>COUPLER ASSEMBLIES</b>				
806026001	806026-001	COUPLER 1/2 X 1/2 CCWR	S-25, S-35, H-32, H-41	118705, 189110, 118712, 118709,
806137000	806137-000	3J COUPLER 1/2 X 5/8 (flex spacer style)	H-51&H-52 (3PH), 1050 1/4 & 1/3 HP 3PH, 1/2 & 3/4 HP 1 & 3 PH	118709
806168001	806168-001	COUPLER 1/2 X 1/2 CCWR	S45, S46	118723
807436000	807436-000	3J COUPLER 1/2 X 1/2 CWR (flex spacer style)	H-51 & H-52 (1PH), 1050 1/4 & 1/3 HP	
810120003	810120-003	COUPLER 1/2 X 1/2 CWR	H-51, H-52	118473
810120006	810120-006	COUPLER 1/2 X 5/8 CWR	H-53, H-54	118709
816665000	816665-000	4J COUPLER 5/8 X 5/8 CWR	1060 1-1/2D, 2D	118476, P77265
<b>MISCELLANEOUS</b>				
410133181	410133-181	WATER SLINGER 410133-181		
810120050	810120-050	MOTOR MOUNT KIT FOR 48 FRAME MARATHON		
874055000	874055-000	MOTOR MOUNT KIT FOR 56 FRAME MARATHON		
816646011	816646-011	CASING/PUMP BODY 3D 4360/1060		
974507100	974507-100	IMPELLER KEY (WOODRUFF #2)		

<sup>1</sup> "Kit" consists of flanges, gasket & hardware.

<sup>2</sup> When replacing B & G motor, also replace coupler with 806137-000.

<sup>3</sup> Rigid mount ball bearing motor can replace resilient mount motor.



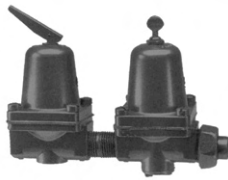
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# ARMSTRONG PUMPS

## HYDRONIC SPECIALTIES

Armstrong's quality specialty items are ideal for commercial hydronic systems to control air, water pressure, and to attach the system to a conventional expansion tank.

Order No.	Model No.	Description	Size
RD11U	216944-300	PRES REDUCING VALVE, BRZ BODY, 12 PSI	1/2"
RD40-SPECIAL ORDER	207937-343	PRES REDUCING VALVE, BRZ BODY, 12 PSI (REPLACED BY #A41-12 CASH ACME)	3/4"
C11U	216945-300	DUAL CONTROL, PRES RED 12# & RELIEF 30#	1/2"
TMA24	213991-307	EXPANSION TANK FITTING	1/2" TANK 3/4" SYSTEM
ART446	572017-004	AIR REMOVAL TRAP (AIR SCOOP)	2"



C11U



TMA 24

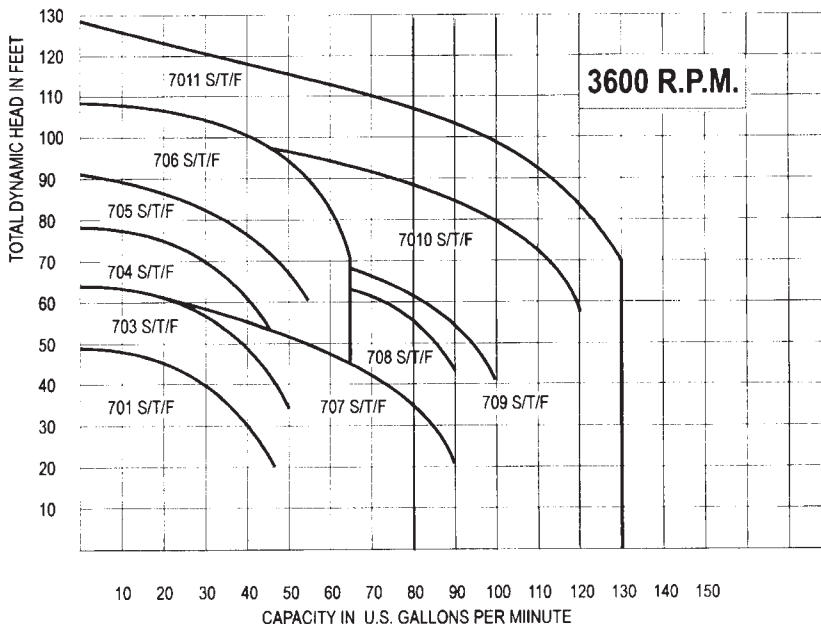


RD 40



ART 446

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## 4270 SERIES CENTRIFUGAL STOCK PUMPS

Series 4270 end-suction motor mounted pumps are your competitive choice for cooling towers, HVAC and general purpose pumping applications. Construction from iron body, high strength engineered resin (ULTEM) impellers, SS shaft, SS faceplate, with 3600 RPM ODP motors make this a quality multi-use pump. Popular sizes are stocked in both single and three phase motors.

Order No.	Replacing STA-RITE Model	HP	Ph./V	Size
702S	JBMC	1/2	1/115/230	1 x 1.25
703S	JBMD	3/4	1/115/230	1 x 1.25
703T	JBMD3	3/4	3/230/460	1 x 1.25
704S	JBME	1	1/115/230	1 x 1.25
704T	JBME	1	3/230/460	1 x 1.25
708S	JBMF	1-1/2	1/115/230	1.5 x 2
708T	JBMF3	1-1/2	3/230/460	1.5 x 2
709T	JBMG	2	3/230/460	1.5 x 2



# ARMSTRONG PUMPS



4360 Series



4380 Series

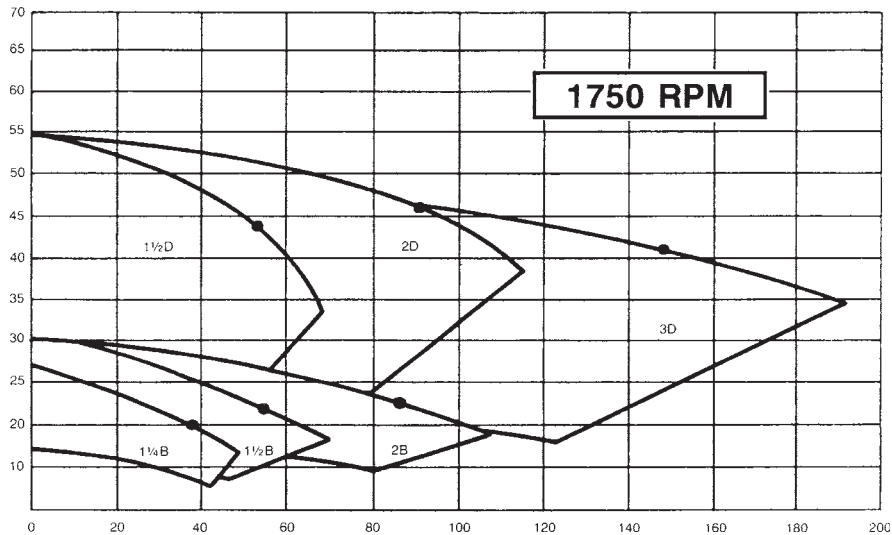
## 4360 & 4380 VERTICAL IN-LINE MOTOR MOUNTED PUMPS

Armstrong's line of quality vertical in-line pumps is the broadest in the industry. The advantages of space saving, ease of installation, and maintenance superiority make this the pump of choice. All sizes are listed below in composite curves. Federal has the ability to assemble from a kit, 11 of the most popular sizes. Using factory computer software, a pump size, motor and exact impeller trim can be selected. The components can quickly be assembled into a complete pump to meet your exact requirements. Contact a salesperson to help you with your custom pump needs.

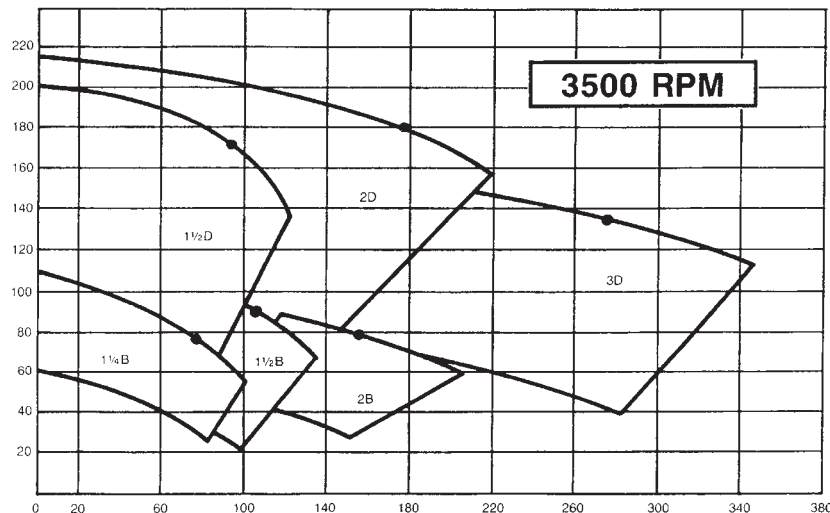
Order No.	Model Size	Motor Fr. Size
<b>MODEL 4360</b>		
PK4360-2D	2", MODEL 2D	143-184JM
<b>MODEL 4380</b>		
PK4380-1.5X8-14	1.5 X 1.5 X 8	143-184 JM
PK4380-1.5X8-21	1.5 X 1.5 X 8	213-215 JP
PK4380-2X6-143	2 X 2 X 6	143-184 JM
PK4380-2X6-213	2 X 2 X 6	213-215 JM
PK4380-3X6-143	3 X 3 X 6	143-184 JM
PK4380-3X6-213	3 X 3 X 6	213-215 JM
PK4380-4X6-143	4 X 4 X 6	143-184 JM
PK4380-2X8-143	2 X 2 X 8	143-184 JM

Order No.	Model Size	Motor Fr. Size
<b>MODEL 4380 con't</b>		
PK4380-3X8-143	3 X 3 X 8	143-184 JM
PK4380-3X8-213	3 X 3 X 8	213-215JP
PK4380-4X8-143	4 X 4 X 8	143-184 JM
PK4380-4X8-213	4 X 4 X 8	213-215 JP
PK4380-2X10-143	2 X 2 X 10	143-184 JM
PK4380-2X10-213	2 X 2 X 10	213-215 JP
PK4380-3X10-143	3 X 3 X 10	143-184 JM
PK4380-3X10-213	3 X 3 X 10	213-215 JP
PK4380-4X10-213	4 X 4 X 10	213-215 JP
PK4380-4X10-254	4 X 4 X 10	254-256 JM

4360 Series



4360 Series



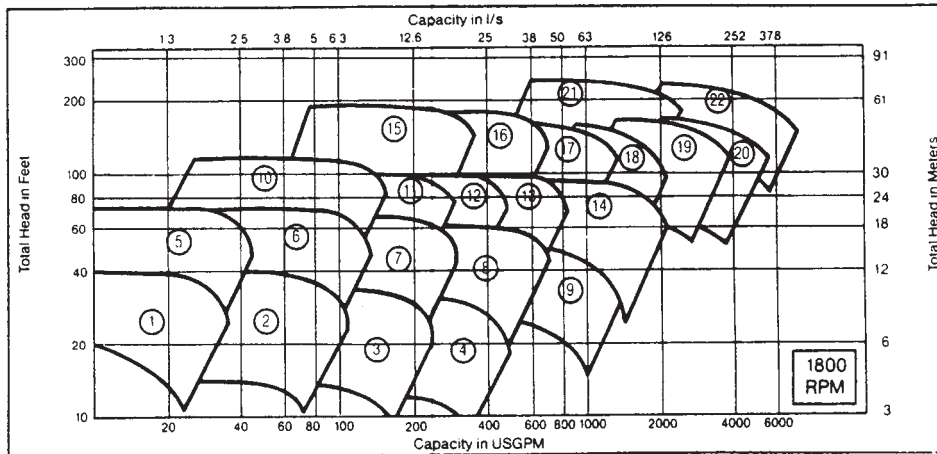
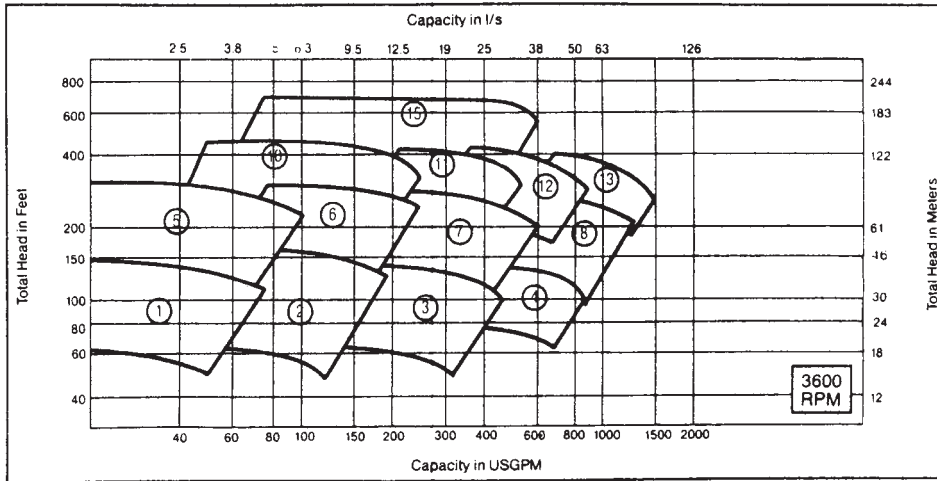
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# ARMSTRONG PUMPS

## 4360 & 4380 VERTICAL IN-LINE MOTOR MOUNTED PUMPS (cont.)

### 4380 Series ( and 4300 Series)



### PUMP SIZE

Suction x  
Discharge x Impeller

▶ (1) 1½ x 1½ x 6	▶ (12) 4 x 4 x 10
▶ (2) 2 x 2 x 6	(13) 6 x 6 x 10
▶ (3) 3 x 3 x 6	(14) 8 x 8 x 10
▶ (4) 4 x 4 x 6	(15) 3 x 3 x 13
▶ (5) 1½ x 1½ x 8	(16) 4 x 4 x 13
▶ (6) 2 x 2 x 8	(17) 6 x 6 x 13
▶ (7) 3 x 3 x 8	(18) 8 x 8 x 13
▶ (8) 4 x 4 x 8	(19) 10 x 10 x 13*
(9) 6 x 6 x 8	(20) 12 x 12 x 13*
▶ (10) 2 x 2 x 10	(21) 8 x 8 x 15*
▶ (11) 3 x 3 x 10	(22) 10 x 10 x 15*

\*Series 4300 only

▶ Stocked at Federal

3

## *Federal assembles pumps!*



Good news! Federal has been authorized by Armstrong to assemble pumps. Over 20 different sizes and styles of pumps are on the shelf ready to be assembled to either 1750 or 3500 RPM motors. 2 to 20 HP pumps can be assembled in one hour to two days, depending on availability of motor and impeller. Software makes selection a breeze.



3

Your pump headaches are a thing of the past. Ask us for cross-references, literature and a CD containing Armstrong's powerful software.



Let us help you with all of your pump, hydronic specialty, heat exchanger and engineered products requirements.

Please read Tech Tip #26 on page 331 for proper pump sizing and selection tips.

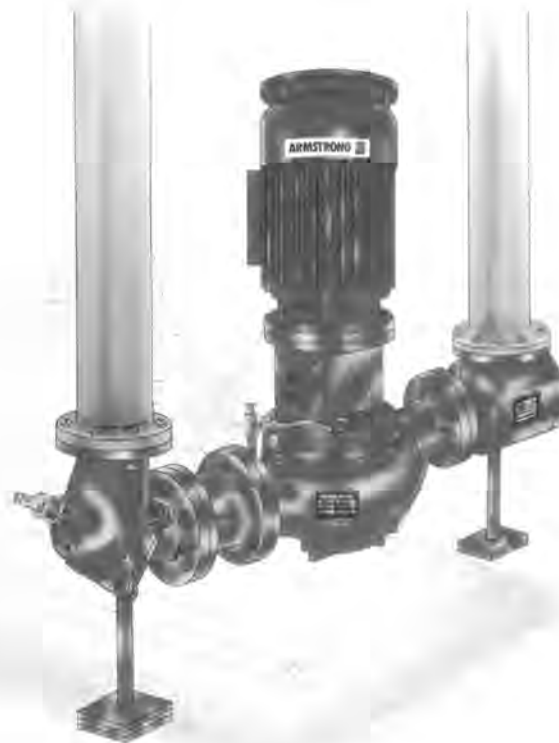
## 4300 SERIES SPLIT COUPLED VERTICAL IN-LINE PUMPS



Armstrong is known for pioneering the vertical in-line pumps in HVAC applications. The 4300 Series is the ultimate industry for both features and sizes available.

3

See the 4380 Composite Curves to view most of the similar 4300 sizes.



### LIFE CYCLE VALUE AT EVERY TURN:

**INSTALLATION:** Vertical In-Line pumps, being integral components of the pipework, eliminate need for inertia bases, inertia base springs, flexible pipe connectors, field grouting and alignment. Pipe hangers, sized for the weight of pump, piping and fittings, are the only supports required. Pipe stools, with vibration isolating pads, may be installed under each pipe leg.

**SPACE SAVING:** Greatest floor space savings result when Vertical In-Line pumps are installed with Armstrong Suction Guides and Flo-Trex valves. (see above illustration)

Equivalent base mounted horizontal split case pumps may take 3 times more floor space.

**MAINTENANCE:** Mechanical seal is the critical service item in any pump. Removal of the Series 4300 split spacer coupling allows all mechanical seal components to be withdrawn for servicing, through the resulting space between pump and motor shafts, without disturbing other pump components or motor connection. Re-installing the rigid coupling brings the unit rotating assembly back to factory alignment specifications.

**RELIABILITY:** Dynamically balanced impeller, and shaft assembly rotating vertically on the Series 4300 centerline means a quiet, long lasting pump with minimum vibration, as static shaft deflection is eliminated. There are no pump bearings to service in the Vertical In-Line design. Series 4300 is a reliable, time-proven unit with less down time.

**FLEXIBILITY:** Small footprint, low installation costs, reliable and easy to maintain. These features, combined with flow range in excess of 10,000 gpm (630 l/s), affirms the Series 4300 as the most flexible pump design available.

## 4302 & 4382 DUAL ARM VERTICAL IN-LINE PUMPS

### Smart pumps for the commercial HVAC market



SERIES 4302 - ILLUSTRATED WITH ONE GUARD REMOVED TO SHOW OUTSIDE BALANCED SEAL, AND CUTAWAY TO SHOW ISOLATION VALVE.

- ARMSTRONG Vertical In-Line pump, the best design for HVAC systems, introduced in 1969.
- ARMSTRONG *dualArm* Vertical In-Line pump, introduced in 1994.
- *dualArm* Series 4302 & 4382 contain all features and advantages of **(two)** time proven ARMSTRONG Vertical In-Line pumps ... *in one casing*.

NOTE: 4302 - Split coupling (as shown)  
4382 - Close-coupled

3

### Adding value to hydronic systems

- FLOOR SPACE VALUE: In a typical system (Example: 1000 USgpm flow at 50 ft. head) *dualArm* needs 4 times less space than two end suction base mounted pumps and **8 times less** space than two split case horizontal pumps.
- INSTALLATION VALUE: Vertical In-Line pumps become an integral component of the piping system. This configuration eliminates the need for flexible connectors, inertia bases, grouting and field alignment.
- MAINTENANCE VALUE: Mechanical seals are the highest maintenance item in any pump. Service is performed on any Vertical In-Line pump without removing the casing from the piping. The series 4302 split spacer coupling design allows the mechanical seals to be serviced without disturbing the pump or motor connections.
- SYSTEM VALUE: Standby and parallel pump systems may now be designed using only one pump piping set. Two pumps in a single large port casing allow both pumps to operate simultaneously, in true parallel fashion, with no loss in single pump efficiency.
- DESIGN VALUE: *dualArm* Vertical In-Line pumps, designed with a swing flapper valve in the discharge port, prevent liquid recirculating when only one pump is operating. ARMSTRONG unique *isolation valves* allow one pump to be removed with the second pump still operating.

# ARMSTRONG PUMPS

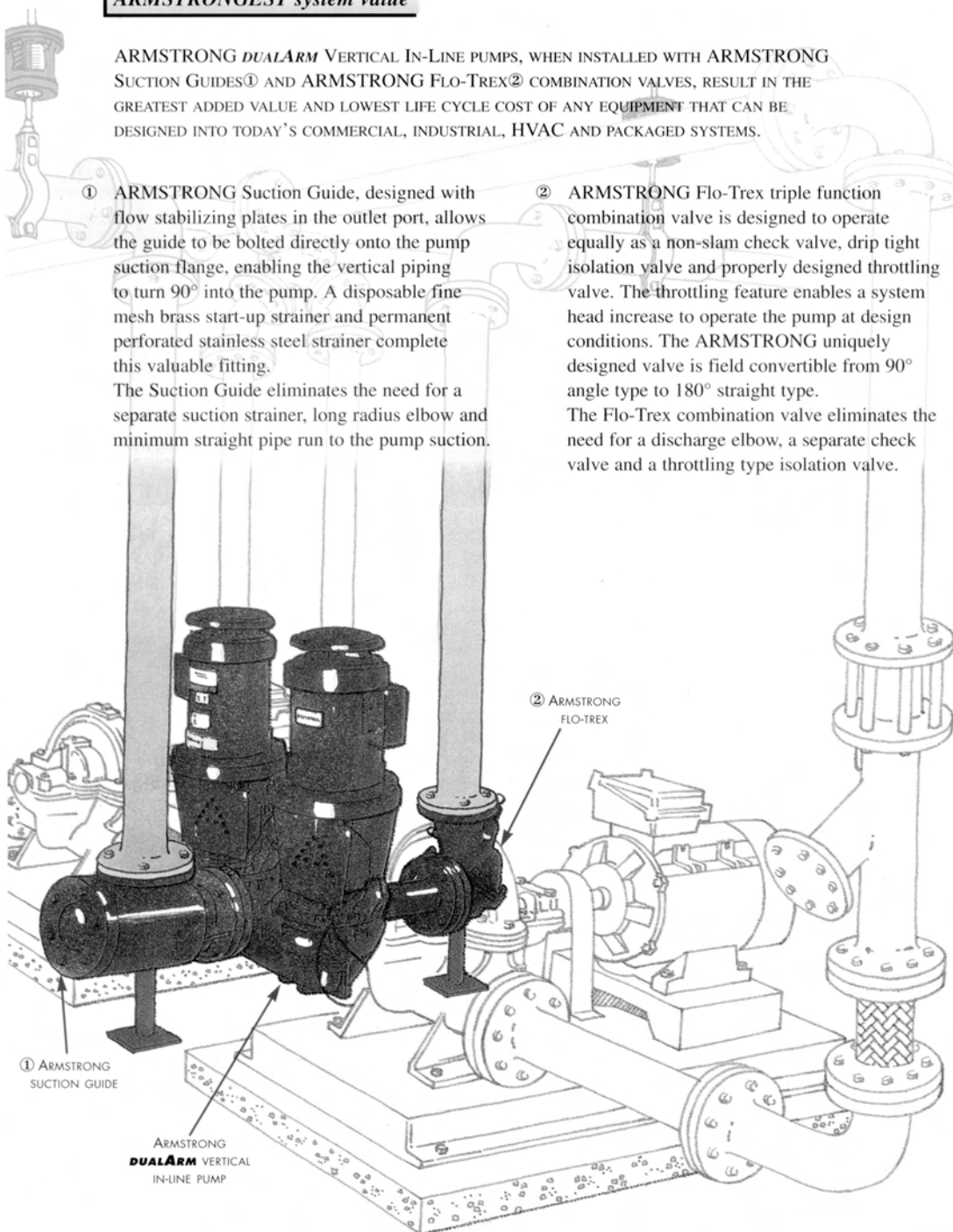
## 4302 & 4382 DUAL ARM VERTICAL IN-LINE PUMPS

### ARMSTRONGEST system value

ARMSTRONG *DUALARM* VERTICAL IN-LINE PUMPS, WHEN INSTALLED WITH ARMSTRONG SUCTION GUIDES<sup>①</sup> AND ARMSTRONG FLO-TREX<sup>②</sup> COMBINATION VALVES, RESULT IN THE GREATEST ADDED VALUE AND LOWEST LIFE CYCLE COST OF ANY EQUIPMENT THAT CAN BE DESIGNED INTO TODAY'S COMMERCIAL, INDUSTRIAL, HVAC AND PACKAGED SYSTEMS.

- ① ARMSTRONG Suction Guide, designed with flow stabilizing plates in the outlet port, allows the guide to be bolted directly onto the pump suction flange, enabling the vertical piping to turn 90° into the pump. A disposable fine mesh brass start-up strainer and permanent perforated stainless steel strainer complete this valuable fitting. The Suction Guide eliminates the need for a separate suction strainer, long radius elbow and minimum straight pipe run to the pump suction.

- ② ARMSTRONG Flo-Trex triple function combination valve is designed to operate equally as a non-slam check valve, drip tight isolation valve and properly designed throttling valve. The throttling feature enables a system head increase to operate the pump at design conditions. The ARMSTRONG uniquely designed valve is field convertible from 90° angle type to 180° straight type. The Flo-Trex combination valve eliminates the need for a discharge elbow, a separate check valve and a throttling type isolation valve.



A Dual Arm arrangement takes only a fraction of the floor space of conventional pumps.

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# ARMSTRONG PUMPS



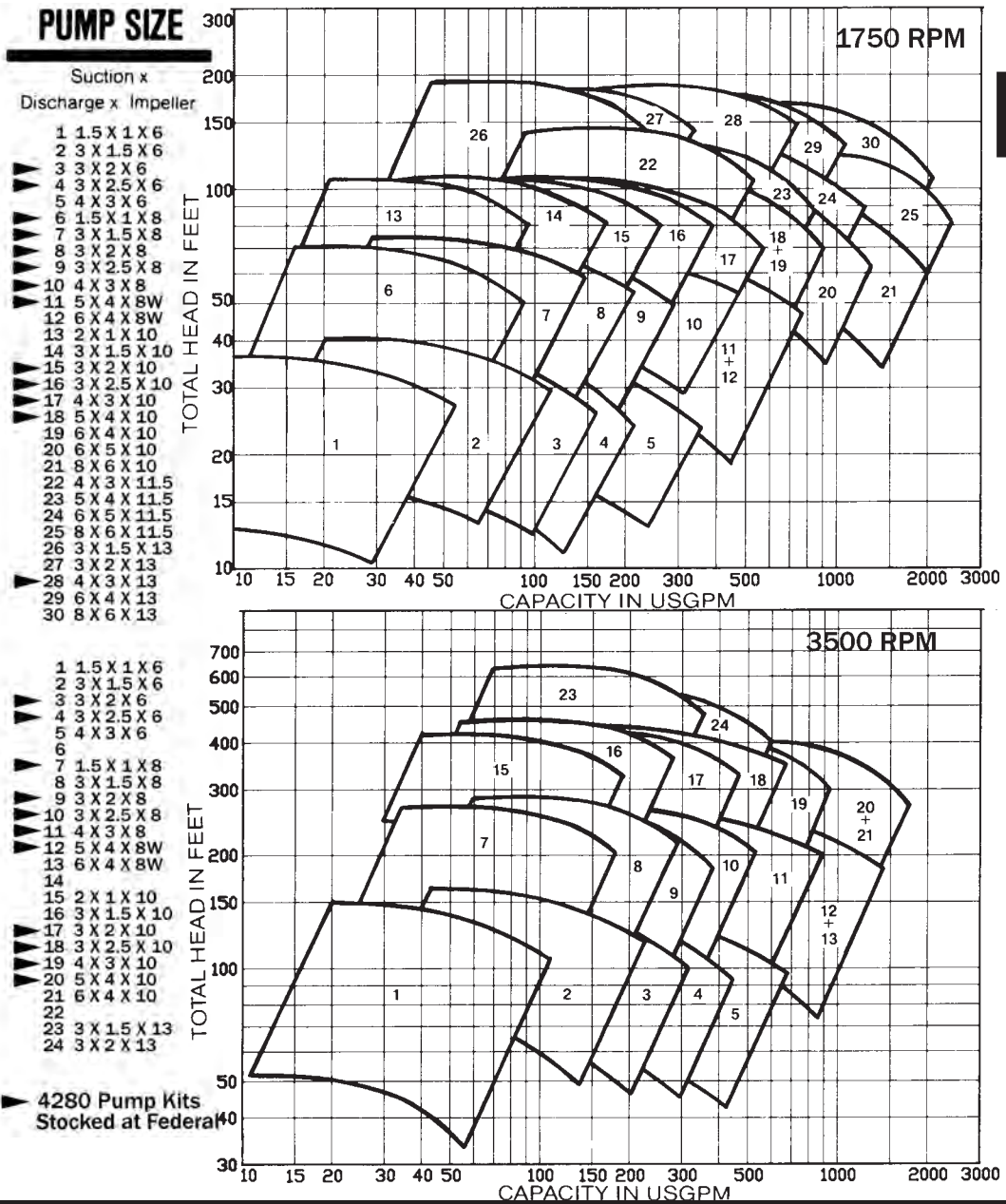
## 4280 END SUCTION MOTOR MOUNTED PUMPS

Armstrong's broad line of quality end suction pumps can be ordered from the factory, or Federal has the ability to assemble from a kit, 11 of the most popular sizes highlighted on the composite list below. Using factory computer software, a pump size, motor and exact impeller trim can be selected to meet your exact conditions. The components can quickly be assembled into a complete pump. Contact a salesperson to help you with your custom pump needs.

Order No.	Pump Size	Motor Fr. Size
PK4280-2X6-143	3 X 2 X 6	143-184 JM
PK4280-2X6-213	3 X 2 X 6	213-215 JM
PK4280-2.5X6-14	3 X 2.5 X 6	143-184 JM
PK4280-2.5X6-21	3 X 2.5 X 6	213-215 JM
PK4280-1X8-143	1.5 X 1 X 8	143-184 JM
PK4280-1.5X8-14	3 X 1.5 X 8	143-184JM
PK4280-2X8-143	3 X 2 X 8	143-184 JM
PK4280-2.5X8-14	3 X 2.5 X 8	143-184 JM
PK4280-3X8-143	4 X 3 X 8	143-184 JM
PK4280-3X8-213	4 X 3 X 8	213-215 JP

Order No.	Pump Size	Motor Fr. Size
PK4280-4X8-213	5 X 4 X 8W	213-215 JP
PK4280-2X10-143	3 X 2 X 10	143-184JM
PK4280-2X10-213	3 X 2 X 10	213-215 JP
PK4280-2.5X10-1	3 X 2.5 X 10	143-184 JM
PK4280-2.5X10-2	3 X 2.5 X 10	213-215 JP
PK4280-3X10-213	4 X 3 X 10	213-215 JP
PK4280-3X10-254	4 X 3 X 10	254-256 JM
PK4280-4X10-254	5 X 4 X 10	254-256 JM

*Instant Pumps!  
Pumps marked are  
stocked in OKC in kit  
form and can be as-  
sembled immediately!*



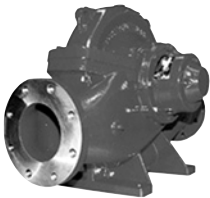
**3**

# ARMSTRONG PUMPS



## 4030 SERIES HORIZONTAL PUMPS

A comprehensive range of single stage, end suction, radially-split centrifugal pumps designed for a wide variety of applications. Features self-venting casing to prevent air binding, heavy duty bearings that are sealed and lubricated for life, back pull-out bearing frame for easy removal, and self-lubricating mechanical seal to prevent liquid seepage. Available in bronze-fitted, all bronze and all iron construction. Sizes up to 8 X 6 X 13 with heads to 600 feet and flows to 2000 GPM. See the 4280 Curves to view most of the similar 4030 Sizes.



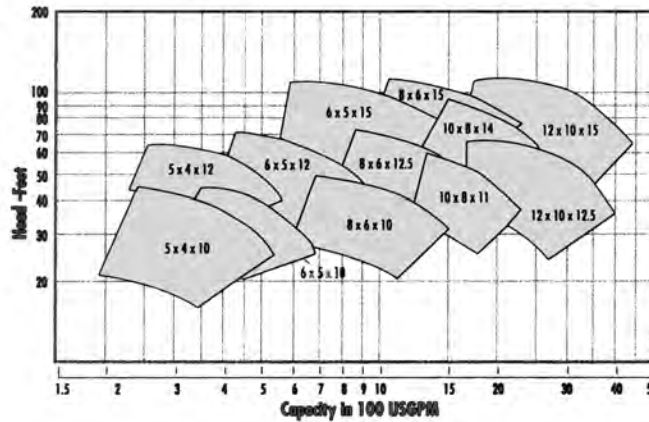
## 4600 SERIES HORIZONTAL SPLIT CASE PUMPS

The 4600 Series of pumps capitalize on the "Tilted Parting" concept to minimize turbulence at the eye of the impeller by its straight laminar approach, thus maximizing efficiency. This also results in the lowest profile and minimum floor space of any HSC pump on the market today. They are designed with commonality of parts, low installation cost, and ease of maintenance objectives. Twelve sizes up to 12 X 10 X 15 provide a range of flows to 5000 GPM and heads of up to 600 feet.

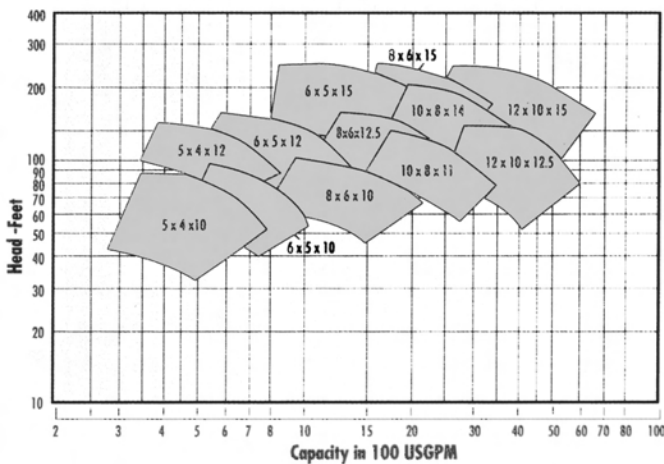
NOTE: THESE ARE SPECIAL ORDER ONLY.

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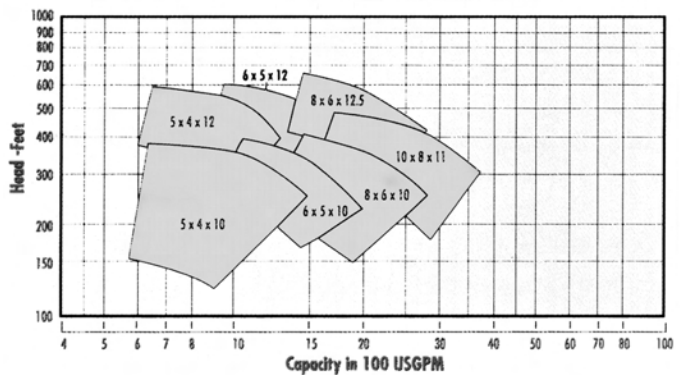
1200 rpm



1800 rpm



3600 rpm





Angle Configuration



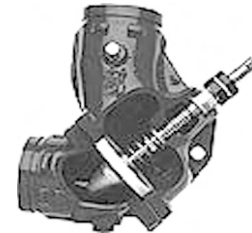
Straight Configuration



## FLO-TREX VALVES

Flo-Trex combination valves combine the features of a check valve, throttling valve, and a shut-off valve, and are designed for installation on the discharge side of centrifugal pumps. Multi-turn valve allows precise adjustment instead of more crude quarter turn adjustment. The convertible body design permits the valve to be changed on site from the straight to the angle configuration. Available in 2 1/2" to 12" sizes. Standard construction: CI valve body, SS and bronze trim, with class 125 flanges. Also available with ductile iron body for higher pressures, and grooved end connections.

Order No.	Straight Model No.	Angle Model No.	Flg Size
FSA015	FSA-1-1/2	FSA-1-1/2	1-1/2
FSA2	FSA-2	FSA-2	2
FSA2.5	FSA-2-1/2	FSA-2-1/2	2-1/2
FSA3	FSA-3	FSA-3	3
FTV2.5FS	FTV-2.5FS	FTV-2.5FA	2-1/2"
FTV3FS	FTV-3FS	FTV-3FA	3"
FTV4FS	FTV-4FS	FTV-4FA	4"
Special Order	FTV-5FS	FTV-5FA	5"
FTV6FS	FTV-6FS	FTV-6FA	6"
Special Order	FTV-8SFS	FTV-8FA	8"
Special Order	FTV-10FS	FTV-10FA	10"
Special Order	FTV-12FS	FTV-12FA	12"



Cross-section of Flow-Trex Valve w/ groove connections

3



## SUCTION GUIDES

Armstrong's Model SG suction guides are designed for direct mounting to the suction side of horizontal or vertical pumps. Guide vanes provide proper flow conditions by reducing water turbulence to minimize stress on pump parts. Space savings are achieved through elimination of long radius elbow, suction entrance pipe, and conventional 'Y' strainer. Available in sizes 2" to 14" Flg. connections and supplied with fine mesh brass start up strainer and permanent strainer. Body and cover made from cast iron; strainer is SS. Max. working pressure/temperature, 175 psi/300°F.

Order No.	Model No.	Size
Special Order	SG-215	2 X 2-1/2
Special Order	SG-2515	2.5 x 1.5
Special Order	SG-252	2.5 x 2
SG32	SG-32	3 x 2
Special Order	SG-2525	2.5 x 2.5
SG33	SG-33	3 x 3
SG43	SG-43	4 x 3
SG44	SG-44	4 x 4
Special Order	SG-54	5 x 4
SG64	SG-64	6 x 4
Special Order	SG-55	5 x 5
SG65	SG-65	6 x 5
SG86	SG-86	8 x 6
Special Order	SG-88	8 x 8
Special Order	SG-108	10 x 8
Special Order	SG-1010	10 x 10
Special Order	SG-1210	12 x 10
Special Order	SG-1212	12 x 12
Special Order	SG-1412	14 x 12
Special Order	SG-1414	14 x 14
Special Order	SG-1614	16 x 14



# ARMSTRONG PUMPS

## CIRCUIT BALANCING VALVES

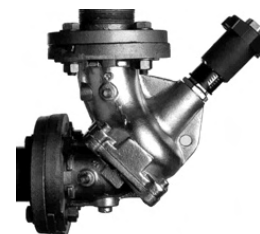
CBV's feature multi-turn adjustment for detailed control, hidden memory stop to set balance point, and soft seats for positive shutoff. CBV's offer much greater accuracy in adjustment compared to quarter turn valves. All Armstrong CBV models feature precision flow measurement, pump throttling, and temperature measurement capabilities. Models from 2-1/2" to 12" feature flange or groove connections which can either be set in straight or 90 degree elbow configurations.

Order No.	Model No.	Size
<b>THREADED ENDS</b>		
CBV-8T	CBV-1/2T	1/2"
CBV-12T	CBV-3/4T	3/4"
CBV010T	CBV-1T	1"
CBV012T	CBV-1-1/4T	1-1/4"
CBV015T	CBV-1-1/2T	1-1/2"
CBV020T	CBV-2T	2"
<b>SOLDER ENDS</b>		
CBV-8S	CBV-1/2S	1/2"
CBV-8S-LF (LOW FLOW)	CBV-1/2S-LF	1/2"
CBV-12S	CBV-3/4S	3/4"
CBV-12S-LF (LOW FLOW)	CBV-3/4S-LF	3/4"
CBV010S	CBV-1S	1"
CBV012S	CBV-1-1/4S	1-1/4"
CBV015S	CBV-1-1/2S	1-1/2"
CBV020S	CBV-2S	2"
<b>FLANGED ENDS</b>		
CBV025F	CBV-2-1/2FS	2-1/2"
CBV030F	CBV-3FS	3"
CBV040F	CBV-4FS	4"
CBV060F	CBV-6FS	6"

Order No.	Model No.	Description
<b>CBV ACCESSORIES</b>		
SPECIAL ORDER	CBDM-200	CBV METER, 0-200", WITH HOSES AND CARRYING CASE
	570109-203	CBV CIRCULAR SLIDE RULE
CBVRULEV	570109-204	CBV CIRCULAR SLIDE RULE FOR USE WITH V



1/2"-2" Circuit Balancing Valves, Sweat or Threaded



2-1/2 - 8" Flanged CBV-FA Angle Configuration



2-1/2 - 8" Flanged Models CBV-FS Straight Configuration

# ARMSTRONG PUMPS

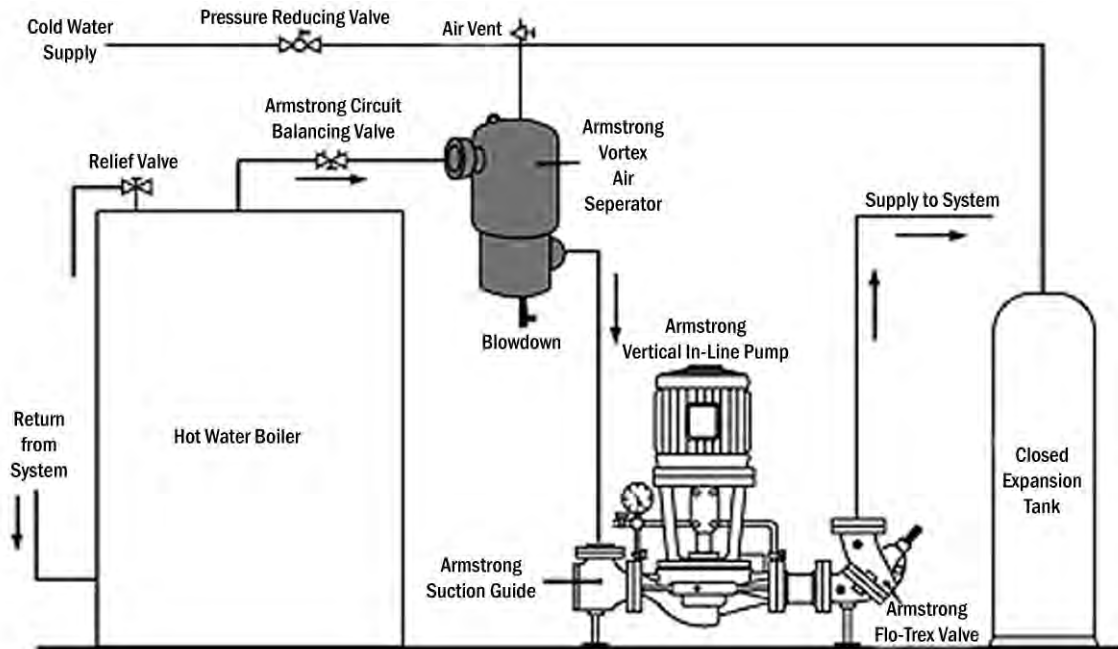


## VA/VAS VORTEX AIR SEPARATORS

Air in hydronic systems can hinder flow, inhibit heat transfer, and cause corrosion in piping systems. The circulation of water into the VA separator causes a vortex, or whirlpool action forcing the air to the center of the tank where it is returned to the expansion tank or vented to atmosphere. Tanks are constructed to ASME standards. Sizes 2"-3" CI body, thrd conn. Sizes 4"-24" fab steel body, flg conn.

Order No. (less strainer)	Model (less strainer)	Model (w/ strainer)	Size	Suggested Flow (GPM)		Max pres/temp
				VA	VAS	psi/°F
Special Order	VA 2	VAS 2	2"	70	70	160/350
Special Order	VA 2.5	VAS 2.5	2-1/2"	180	160	160/350
VA030T	VA 3	VAS 3	3"	250	220	160/350
VA040F	VA 4	VAS 4	4"	300	300	165/375
Special Order	VA 5	VAS 5	5"	550	500	165/375
VA060F	VA 6	VAS 6	6"	910	425	165/375
Special Order	VA 8	VAS 8	8"	1,850	1250	165/375
Special Order	VA 10	VAS 10	10"	3,550	2000	165/375
Special Order	VA 12	VAS 12	12"	4,700	2800	165/375
Special Order	VA 14	VAS 14	14"	6,000	3350	125/350
Special Order	VA 16	VAS 16	16"	8,000	3500	125/350
Special Order	VA 18	VAS 18	18"	10,000	5200	125/350
Special Order	VA 20	VAS 20	20"	12,000	7000	125/350
Special Order	VA 22	VAS 22	22"	14,000	7750	125/350
Special Order	VA 24	VAS 24	24"	17,000	8800	125/350

3



Normal piping layout for Vortex Air Separator in a hot water boiler installation

# ARMSTRONG PUMPS



## Series DAS Dirt & Air Separator

Armstrong's line of Dirt & Air Separators (DAS) are designed to eliminate entrained air and suspended dirt particles associated with the start-up and maintenance of hydronic systems. The units incorporate a robust stainless steel coalescing medium which directs dirt particles of all sizes to the collection chamber at the bottom, and allows the air to be released through an air vent at the top.

For applications with high pipe velocity and flow, Armstrong's DASH (High Velocity) unit allows increased flow capacity for the same connection size.

3

The DAS Series is available with either a welded or removable head, both of which conform to ASME Section VIII, Div. 1. The welded head design is also available, for a price reduction, as a non-ASME rated unit. All models are available with NPT connections up to 4".

### System Advantages

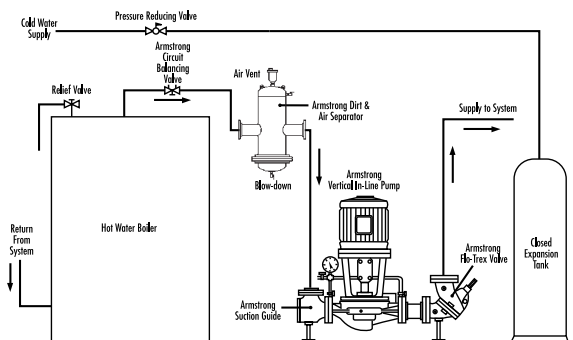
- Air and dirt removed with one unit
- Decreased corrosion, pump cavitation and wear of system components
- Bypass/isolation valves, filters and other flow reducing components eliminated
- Less maintenance
- Greater owner satisfaction

### Unit Advantages

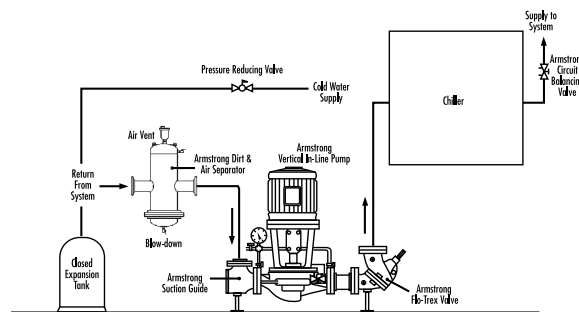
- Robust stainless steel coalescing medium
- ASME rated units as standard
- High pressure units and larger than 12" connection sizes available upon request
- Dirt particles can be flush and air vent cleaned/replaced during system operation
- Minimal pressure drop with no fluctuations
- Quiet operation
- Faster air removal than vortex separators
- Velocity independent air removal

### Installation Schematics

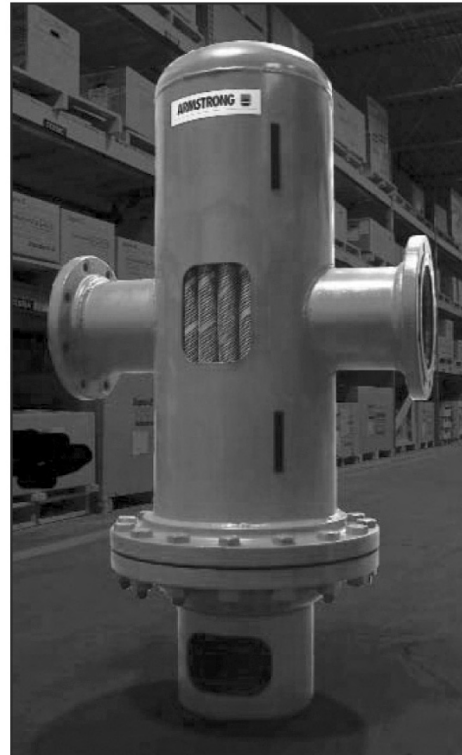
Armstrong Dirt & Air Separators should be installed at the highest temperature and the lowest pressure points in the system. Where this is not possible, the best location is at the point of highest temperature. Ideally, a separator should be located on the outlet side of the boiler, and the suction side of the pump.



For Boiler Applications



For Chiller Applications

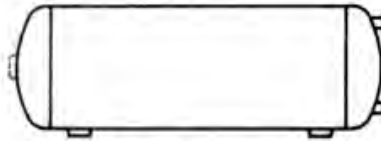


# ARMSTRONG PUMPS

## EXPANSION TANKS - STANDARD ASME PAINTED STEEL

Armstrong's tanks are constructed to the ASME Code for Unfired Pressure Vessels, Sec. VIII. Tanks are furnished with gauge glass tappings.

Order No.	Model No. (including tank size)	Size (gal.)
Special Order	AET 12x33	15
AET12x51	AET 12x51	24
AET14x48	AET 14x48	30
AET14x63	AET 14x63	40
AET16x72	AET 16x72	60
AET20x62	AET 20x62	80
Special Order	AET 20x78	100
Special Order	AET 24x65	120
Special Order	AET 24x72	135



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## EXPANSION TANKS - AX SERIES, PRECHARGED ASME

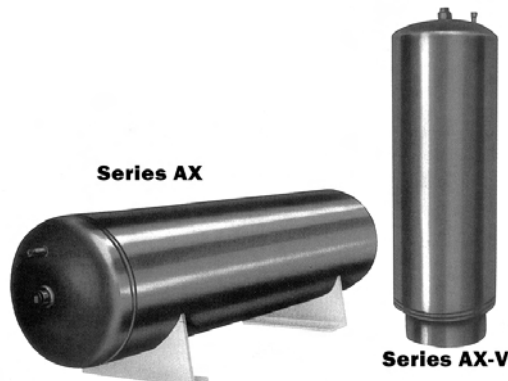
Armstrong's ASME precharged diaphragm and bladder type tanks separate the air and water within the tank, thus allowing use of smaller tank, eliminating air from system rather than trying to control it, and improving system performance. Tanks constructed to ASME code for 125 psi, max temp 240°F. Heavy duty butyl diaphragm inside of steel shell insure long life. Other bladder and diaphragm tanks are available from Armstrong. Please ask a salesperson for help.

### VERTICAL MODELS

Order No.	Model	Volume (USGal)		Order No.	Model	Volume (USGal)	
		Tank	Acceptance			Tank	Acceptance
Special Order	AX-15V	7.8	2.5	Special Order	AX-144V	77.0	34.0
Special Order	AX-20V	10.9	2.5	Special Order	AX-180V	90.7	34.0
Special Order	AX-40V	21.7	5.0	Special Order	AX-200V	110.7	34.0
AX60V	AX-60V	33.6	11.1	Special Order	AX-240V	131.7	44.4
AX80V	AX-80V	44.4	22.2	Special Order	AX-260V	159.0	56.0
Special Order	AX-100V	55.7	22.2	Special Order	AX-280V	211.0	84.0
Special Order	AX-120V	67.0	34.0				

### HORIZONTAL MODELS

Order No.	Model	Volume (USGal)		Order No.	Model	Volume (USGal)	
		Tank	Acceptance			Tank	Acceptance
Special Order	AX-15	7.8	2.5	Special Order	AX-144	77.0	34.0
AX20	AX-20	10.9	2.5	Special Order	AX-180	90.0	34.0
AX40	AX-40	21.7	11.3	Special Order	AX-200	110.0	34.0
Special Order	AX-60	33.6	11.3	Special Order	AX-240	132.0	46.0
Special Order	AX-80	44.4	22.6	Special Order	AX-260	159.0	56.0
Special Order	AX-100	55.7	22.6	Special Order	AX-280	211.0	84.0
Special Order	AX-120	68.0	34.0				



# ARMSTRONG PUMPS



Typical WS Series

## HEAT EXCHANGERS -- SHELL & TUBE

The Armstrong Shell and Tube heat exchanger is made in numerous configurations, from steam-to-water, water-to-water, and tube bundle in tank. Applications include heating water in hydronic systems, heating or cooling various fluids from swimming pools to industrial processes. Steel shells, U-bend tube bundles from copper and other alloys, and various tube sheets are available. Two and four pass construction from 4" to 36" shells are built to ASME Sec. VIII standards. Series WS Steam-to-water heat exchangers stocked by Federal are illustrated here, but additional information can be obtained on all series. Stock units have steel shell, 3/4" OD copper tubes, & steel tube sheet.

Order No.	Model No.	Description	Size (D x L) in.	Shell (steam) conn.	Tube (water) conn.
WS442	WS-44-2	2 Pass WS steam-to-water, 150 psi @ 375°F	4X48	2" x 1" Thrd.	1-1/4" x 1-1/4" Thrd.
WS662	WS-66-2	2 Pass WS steam-to-water, 150 psi @ 375°F	6X72	3" x 1" Thrd.	2" x 2" Thrd.
WS872	WS-87-2	2 Pass WS steam-to-water, 150 psi @ 375°F	8X84	4" Flg x 1-1/4" Thrd.	3" x 3" Thrd.



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## PLATE & FRAME HEAT EXCHANGERS

The Armstrong plate and frame heat exchanger consists of a number of specially corrugated metal plates assembled in a frame and bolted between two pressure plates, one fixed and one adjustable. Turbulence is created in the liquid flow channels, which creates very high heat transfer coefficients and provides efficient heat transfer in a compact design. Armstrong plate and frame heat exchangers are normally supplied with stainless steel plates. Titanium plates are available as an option.



### Dimensions

Model	Area ft <sup>2</sup> (cm <sup>2</sup> )	Max. Plate Count	Nozzle dia. inches (mm)
S7	0.7 (650)	100	1 (25)
3	3	3	3
S149	16 (14860)	600	14 (355)

Armstrong plate designs have been optimized for water-to-water heat transfer to provide enhanced performance in HVAC applications.

Units are designed for 100 psi, 150 psi and 300 psi (690 kPa, 1034 kPa and 2068 kPa) designs. Applications requiring higher working pressures can also be accommodated.



## ABX BRAZED PLATE HEAT EXCHANGERS\*

Armstrong offers brazed plate heat exchangers for refrigeration, hydronic heating, and process temperature control applications. The heat exchanger plates and connections are made from 316 stainless steel, to provide improved corrosion resistance. Standard designs include copper brazed plates. Nickel brazing is available as an option.

# ARMSTRONG PUMPS

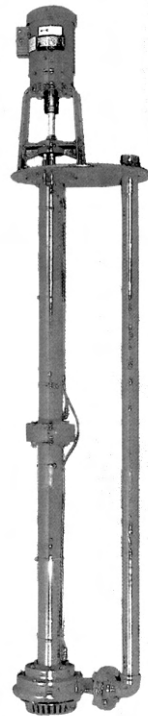
## 5000 COLUMN SUMP & SEWAGE PUMP SYSTEMS

Armstrong offers a complete range of high performance, easily maintained column type sump & sewage pumps. Built from the highest quality engineered components, pumps can be supplied as replacement pumps or as part of a new installation. Armstrong systems are available vertical motors (ODP, TEFC, or X-Proof), with control panel, level controls, and sump pit cover plate. View series from composite curves, then ask Federal for a quote on your specific system requirements.

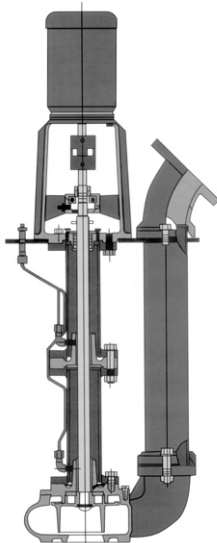
Sump Series 5200 & 5240 -- both light-duty and heavy-duty series are used in applications as varied as elevator pits, electrical tunnels, loading docks, drain tiles, laundry facilities, floor drains and condensate returns. Simplex or duplex units are available. Multiple column sections can be bolted together to accommodate custom sump depths. Both grease lubricated and water lubricated bearings are available.

Sewage Series 5400 -- for building, municipal and industrial applications requiring top-quality long lasting product. Similar to Series 5240, but with cast iron 2-vane open-type non-clog impeller.

NOTE: THESE ARE SPECIAL ORDER ONLY.

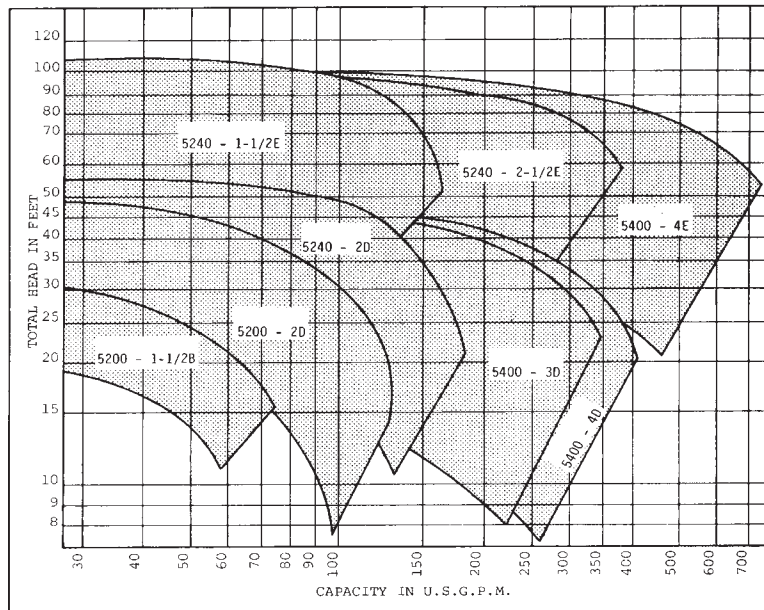


5240 Series

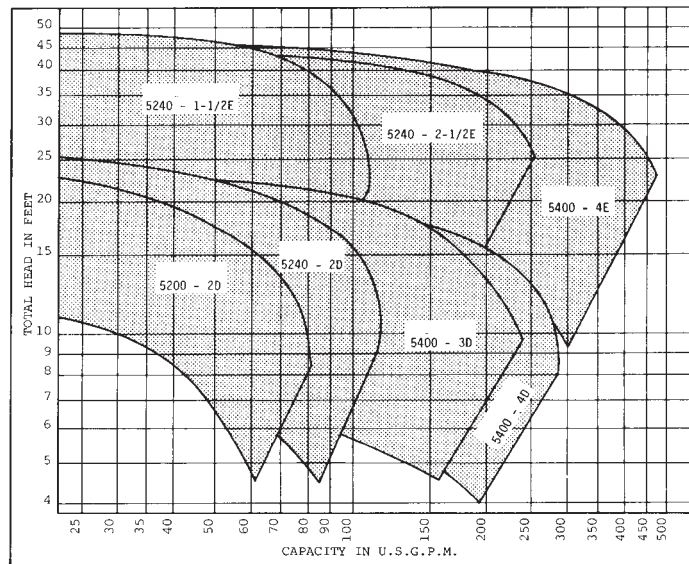


5400 Series

### TYPE 5000 1750 R.P.M.



### TYPE 5000 1150 R.P.M.

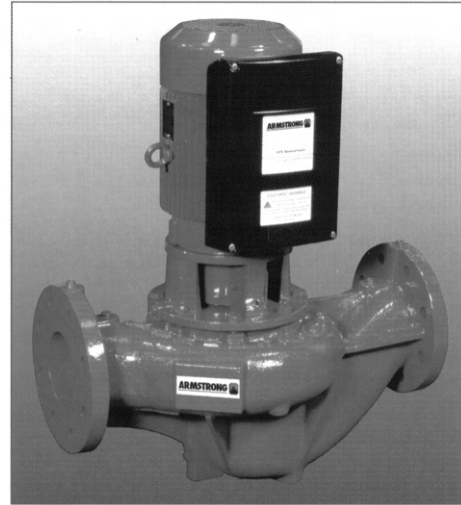


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# ARMSTRONG PUMPS

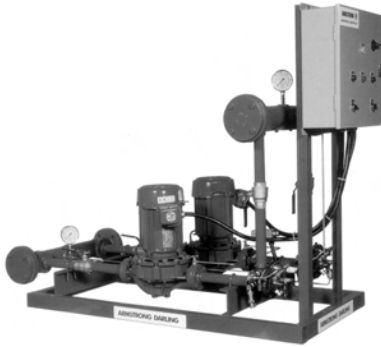
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The IVS Sensorless pump is designed to meet the need for energy-efficient pumping systems in today's buildings. Traditional smaller pumping systems, up to and including 10 hp, incorporating fixed-speed pumps waste energy through crude throttling valve flow control. Lifetime Cost Analysis shows that the capital cost of a fixed-speed pump is typically only 5% of its lifetime cost.



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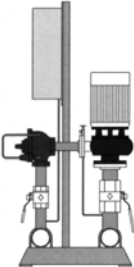


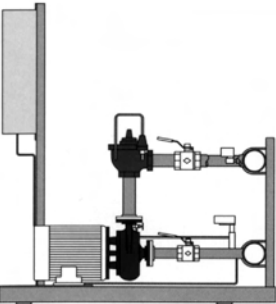


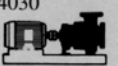
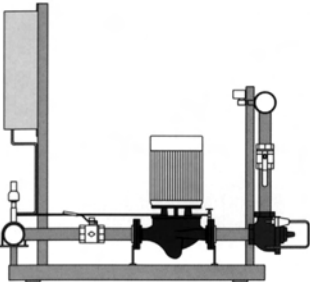




- \* Variable speed technology allows the speed of the pump to be tuned to suit system demand.
- \* Technological advancements make variable speed pumps attractive in terms of both capital and lifetime cost.
- \* **Pressure transducers/sensors are no longer required**, further reducing capital and installation cost.
- \* The IVS Sensorless pump is a new generation pump, completely integrated into a compact package.
- \* Applications for this technology include variable volume heating and chilled water applications.
- \* Goes beyond ASHRAE 90.1 standards by adding value through varying pump speed with 10 hp and lower motor sizes.



MODEL 6722 SHOWN

## 6000 SERIES HYDOPAK BOOSTER SYSTEMS

Quality booster systems at competitive prices, the Series 6000 Hydopak units perfectly fulfill requirements of commercial, high rise, or industrial applications. Units are equipped with state of the art control systems that provide uninterrupted, unattended pump operation in the most energy efficient way. Hydopak fully factory assembled, tested and UL labeled units offer single source responsibility. Compact design minimizes floor space, allowing up to 500 gpm models to fit through 34" doorways. Piping and headers are available in various metals, with connections either flanged or grooved. Standard equipment includes isolation valves, pilot operated pressure reducing valves, thermal bleed circuits, inlet and outlet pressure gauges, calibration and testing, and factory mounting and painting of pumps, valves, piping and control panel on base. Custom packages can include pressure tanks and custom pump controls. Contact Federal for a computer analysis and proposal for your unique needs.

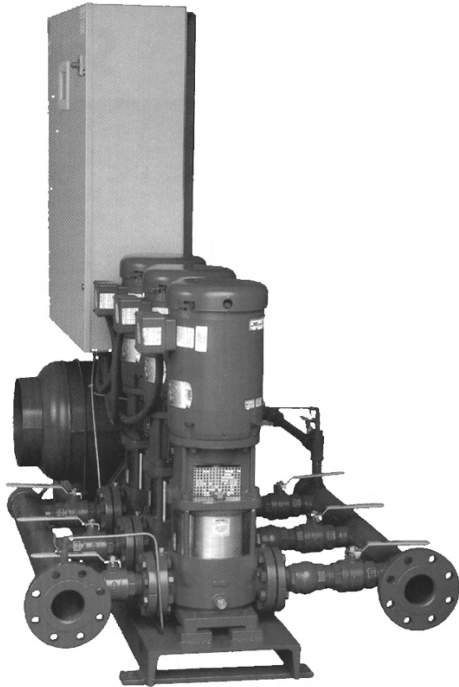
	<p><b>SERIES 6500</b></p> <ul style="list-style-type: none"> <li>• Maximum Flow/USgpm 500</li> <li>• Maximum Boost/psi 140</li> <li>• Header sizes - 3" or 4"</li> <li>• PRV or check valve sizes 1 1/2" - 4"</li> </ul>	* Pump Series	Number of Pumps	Booster Model No.
		4270 	2	6524
			3	6534
		4280 	2	6525
	3	6535		
	<p><b>SERIES 6600</b></p> <ul style="list-style-type: none"> <li>• Maximum Flow/USgpm 1000</li> <li>• Maximum Boost/psi 190</li> <li>• Header sizes - 3", 4" or 6"</li> <li>• PRV or check valve sizes 1 1/2" - 4"</li> </ul>	* Pump Series	Number of Pumps	Booster Model No.
		4270 	1	6614
			2	6624
			3	6634
		4280 	1	6615
			2	6625
			3	6635
		4030 	1	6616
			2	6626
	3	6636		
	<p><b>SERIES 6700</b></p> <ul style="list-style-type: none"> <li>• Maximum Flow/USgpm 1000</li> <li>• Maximum Boost/psi 240</li> <li>• Header sizes - 3", 4" or 6"</li> <li>• PRV or check valve sizes 1 1/2" - 4"</li> </ul>	* Pump Series	Number of Pumps	Booster Model No.
		4360 	1	6711
			2	6721
			3	6731
		4380 	1	6712
			2	6722
			3	6732
		4300 	1	6713
			2	6723
			3	6733
		4700 	1	6717
			2	6727
	3	6737		

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# ARMSTRONG PUMPS

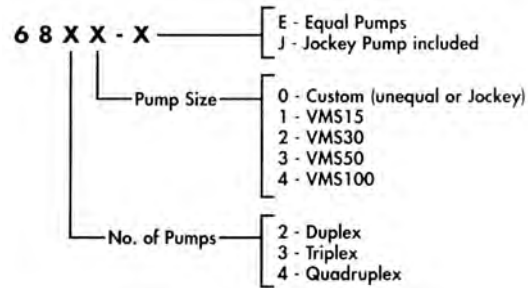
## SERIES 6800 VMSPak BOOSTER SYSTEMS



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The ARMSTRONG VMSPak is available in three standard arrangements with four different pump sizes to cover a broad range of applications. When used with ARMSTRONG'S variable speed controller, the VMSPak provides energy-efficient, auto-mated pumping and allows the user to adjust pressure and alarm settings with the touch of a button.

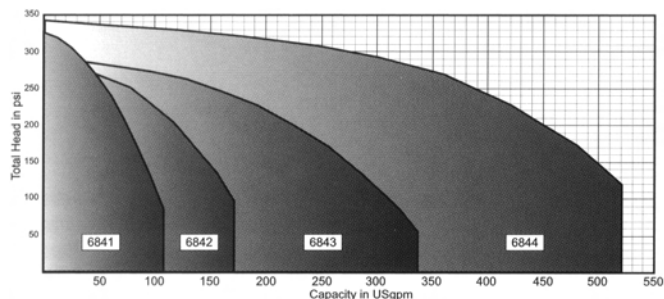
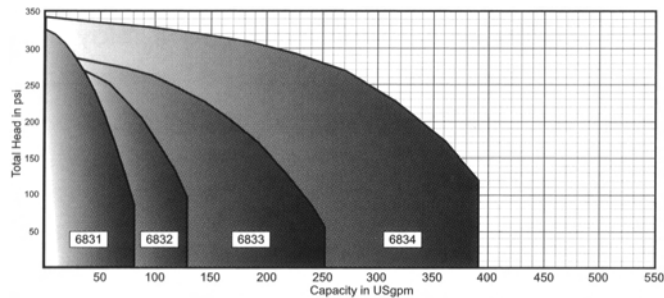
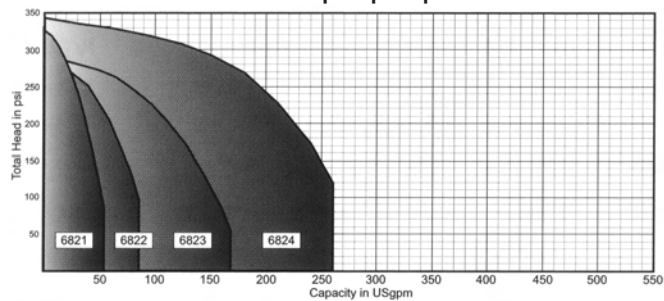
- Available in standard configurations with up to 4 pumps
- Available with jockey pumps or redundant (standby) pumps



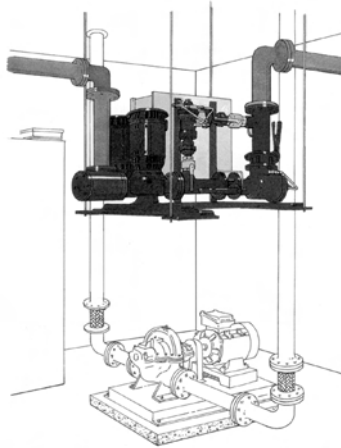
The new VMSPak Booster System is the latest addition to the ARMSTRONG family of Pressure Booster Systems. Designed to provide a reliable supply of domestic water, the ARMSTRONG VMSPak is compact, energy-efficient and easy to install. Contractors and Building Owners will appreciate the small footprint. Design Engineers will appreciate the versatility and range provided by the 12 available standard configurations. In addition to the small footprint and energy-efficient design, the ARMSTRONG VMSPak includes the following important features:

- Stainless Steel construction, suitable for potable water applications
- Available with constant speed control or variable speed with microprocessor control
- ASME or BS4814 rated hydro-accumulator
- Compact "Knock-down" design
- Efficient multistage pumps
- Single-source responsibility for the complete packaged system
- Pumps and complete package manufactured to ARMSTRONG'S industry leading quality standards
- Available with flanged or threaded system connections
- Optional CSA, UL or CE rated controls
- Factory performance tested and certified

Selection range charts for 2 to 4 pump systems with equal pumps



# ARMSTRONG PUMPS



DualPak can be ceiling suspended

## 6900 SERIES DualPak BOOSTER SYSTEM

Armstrong's DualPak offers the highest GPM per square foot of floorspace of any duplex domestic water booster system available today! Ideal for hotels, motels, resorts, condominiums, apartments, schools, office buildings, retirement homes and hospitals. DualPak fits through 30" doorways, and takes less than half the footprint of conventional systems. Units are lightweight, allowing for ceiling suspension if desired. Using Armstrong's unique dualArm pump (two pumps in one casing), DualPak systems cover flow ranges from 100 - 350 gpm, and pressure ranges between 20 and 100 psi. Available in 3 different configurations to meet your requirements. All systems are factory tested at simulated jobsite conditions prior to shipment from the factory, avoiding any potential on-site problems. Request your proposal from Federal.

SERIES CONFIGURATION	BOOSTER MODEL PUMP SIZE	BOOSTER COMPONENTS
<b>DualPak 6900 ECONO SERIES</b> 	<b>6901 – 3x3x6</b> <b>6902 – 3x3x8</b>	<b>1</b> – dualArm PUMP <b>2</b> – MAIN PRV <b>3</b> – DUAL PUMP CONTROLLER <b>4</b> – TEMPERATURE PROBE <b>5</b> – SOLENOID VALVE <b>6</b> – BASE & PANEL SUPPORT <b>7</b> – GAUGES
<b>DualPak 6900 EDITION SERIES</b> 	<b>6911 – 3x3x6</b> <b>6912 – 3x3x8</b>	<b>1</b> – dualArm PUMP <b>2</b> – MAIN PRV <b>3</b> – DUAL PUMP CONTROLLER <b>4</b> – TEMPERATURE PROBE <b>5</b> – SOLENOID VALVE <b>6</b> – BASE & PANEL SUPPORT <b>7</b> – GAUGES <b>8</b> – BY-PASS SPOOL <b>9</b> – ISOLATION BUTTERFLY VALVES <b>10</b> – BY-PASS ISOLATION BALL VALVE
<b>DualPak 6900 ULTRA SERIES</b> 	<b>6921 – 3x3x6</b> <b>6922 – 3x3x8</b>	<b>1</b> – dualArm PUMP <b>2</b> – MAIN PRV <b>3</b> – DUAL PUMP CONTROLLER <b>4</b> – TEMPERATURE PROBE <b>5</b> – SOLENOID VALVE <b>6</b> – BASE & PANEL SUPPORT <b>7</b> – GAUGES <b>8</b> – BY-PASS SPOOL <b>9</b> – ISOLATION BUTTERFLY VALVES <b>10</b> – BY-PASS ISOLATION BALL VALVE <b>11</b> – 1.5" BY-PASS PILOT OPERATED PRV

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# ARMSTRONG PUMPS

## SERIES 8100 ARMkool PACKAGED SYSTEMS

# ARMkool HVAC Chilled Water Packages

ARMSTRONG **ARMkool** Series 8100 HVAC Chilled Water Packages include a range of traditional HVAC components that are brought together in a package to:

- Save installation time
- Reduce material cost
- Improve the quality of assembly
- Provide a single source responsibility

**ARMkool** Series 8100 Packages are available for the following applications:

- Constant speed primary, constant speed secondary (CPCS)
- Constant speed primary, variable speed secondary (CPVS)

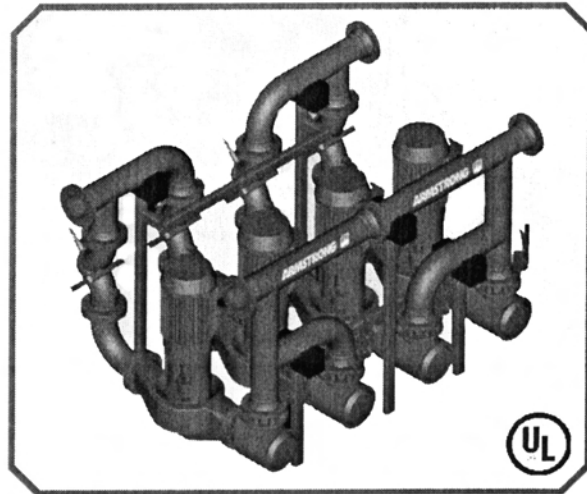
### Standard Features

The following components and features are included as standard items in all **ARMkool** packages:

- Structural steel base, suitable for grouting (floor mount systems only)
- ARMSTRONG Series 4300 vertical in-line or Series 4030 horizontal base-mounted pumps
- IEC rated motor starters
- 6 panel-mounted pressure gauges
- ARMSTRONG Model SG Suction Guides
- ARMSTRONG Model FTV Flo-trex valves
- Inter-connecting piping spools and elbows, isolation valves, electrical wiring, suction and discharge headers
- Single-point electrical power connection
- Flanged connections with flexible connectors (not required on vertical pumps)
- De-coupler line
- UL Listed

### Optional Features

- Standby pump
- VFD on secondary pumps with manual bypass, manual speed control override, one local differential pressure sensor
- Up to 16 remote zone controllers
- Sequencing option for parallel pumping
- ARMSTRONG Vortex air separator
- Bladder style expansion tank
- Make-up water system
- BAS/BMS interface with alarms



Isometric drawing of pipe-mounted HVAC Chilled Water Package showing primary and secondary pumps, inlet and outlet headers.

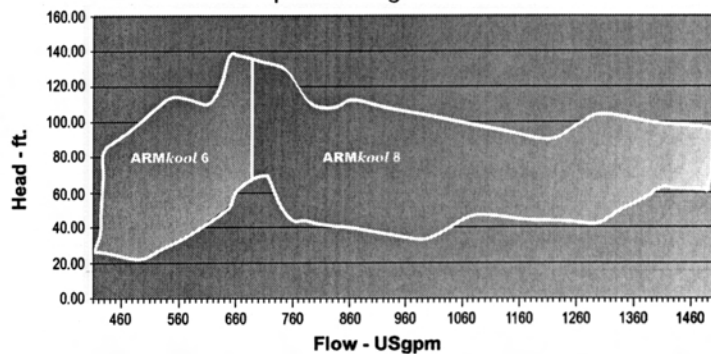
### Product Configurations

**ARMkool** Series 8100 Chilled Water Packages are available as:

- Floor-mounted units with horizontal pumps
- Floor-mounted units with vertical in-line pumps
- Pipe-mounted units with vertical in-line pumps

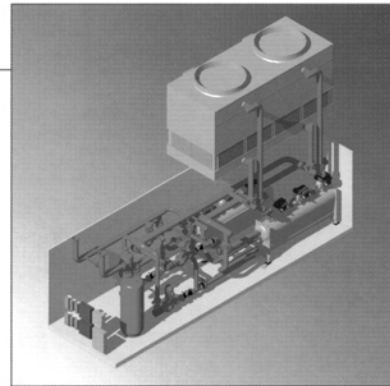
### Product Range

All of the **ARMkool** catalogued packages are flow and pressure tested to ensure their ratings. The following chart summarizes the **ARMkool 6** and **ARMkool 8** product range.



## INTEGRATED PLANT PACKAGE-CHILLED WATER SYSTEM

Experience the risk-free approach to the most energy efficient chilled water plant solution.



The Armstrong chilled water line of Integrated Plant Package (IPP-CHW) bring customers today's most space, energy and environmentally efficient solution for the 150 to 1080 ton at 60 Hz or 500 to 3600 kW at 50 Hz range.

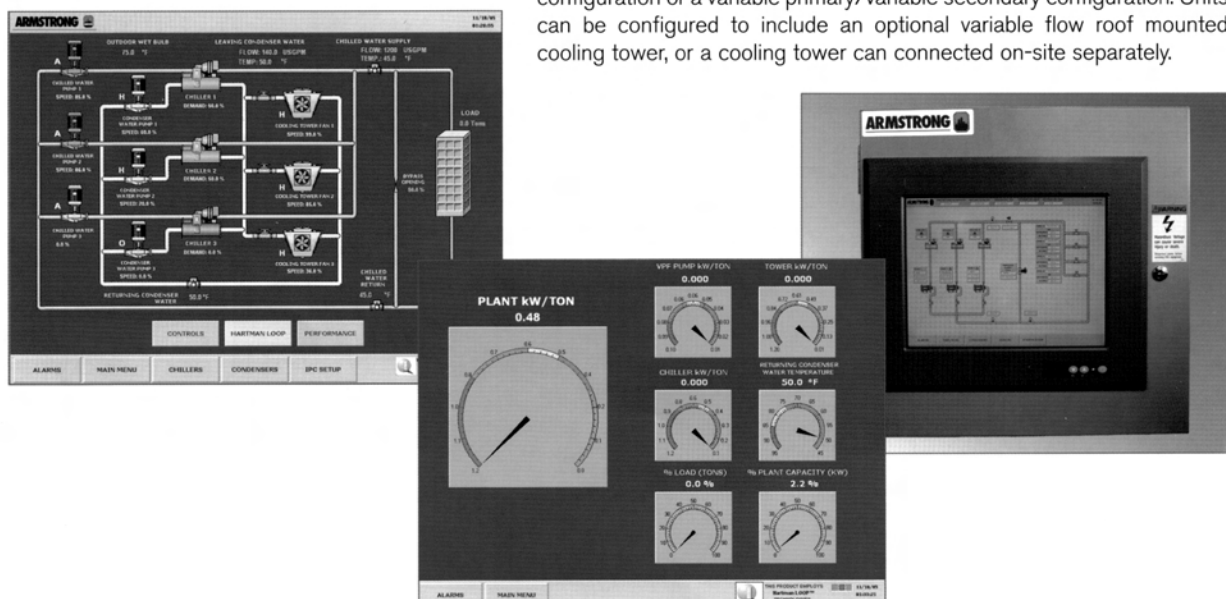
Available for exterior installation with full enclosure or mechanical room installation, the IPP-CHW solution brings about a new way of constructing a facility.

The IPP-CHW solution is a pre-fabricated factory-built solution, optimized for quick installation with future service needs in mind.

All IPP-CHW solutions incorporate Armstrong VIL Series 4300 pumps, Turbocor™ oil-free frictionless compressors, and Armstrong IPC 11550 ultra-efficient chilled water plant control systems with Hartman LOOP® technology. This impressive combination provides important benefits for the end user including:

- ▶ Operating plant efficiencies of less than 0.5 kW/ton or COP of 7.3 (on an annual average basis)
- ▶ Remote monitoring and control functionality through the web for multi-facility operation
- ▶ The world's simplest pump seal replacement procedure
- ▶ Lubricant (oil) free compressor operation (saves on maintenance time and lubricant costs)
- ▶ Extremely quiet operation from the Turbocor™ (less than 75 dBA) compressor and the VIL pumps
- ▶ Extraordinarily low vibration levels from the VIL pumps and Turbocor™ compressor
- ▶ Easy access to components for compressor service, pump service and chiller tube bundle maintenance
- ▶ Best-in-class user interface for capturing operation data, or fine tuning system parameters through the IPC 11550 user interface screens

The IPP-CHW solution is available as a variable primary flow configuration or a variable primary/variable secondary configuration. Units can be configured to include an optional variable flow roof mounted cooling tower, or a cooling tower can be connected on-site separately.



# ARMSTRONG PUMPS



## 9000 SERIES INTEGRATED PUMPING SYSTEMS

Armstrong's Integrated Pumping System (IPS) automatically ensures delivery of required pumping capacity to match key building loads, while maintaining pumping energy costs at a minimum. With the use of system load detectors (differential pressure sensors or temperature sensors), IPS automatically and continuously provides just the required flow for the current needs in HVAC systems. The heart of the system is the PSM-9000 controller which can control as many as 6 pumps in parallel, with up to 18 remote system load sensors in a closed loop system. Armstrong's DDC precision control maintains the speed of all operating pumps to within +/- 5 rpm, maximizing energy cost reductions. Dedicated or shared Variable Frequency Drives (VFDs) may be used, with or without power bypass systems. Pumps may be operated as 100% standby or in a multiple pump staged parallel sequence. Armstrong offers the most advanced IPS available, with the flexibility to meet the most demanding pumping applications. Request information from your Federal sales person.



## GLA STANDARD Glycol Auto-Fill Unit

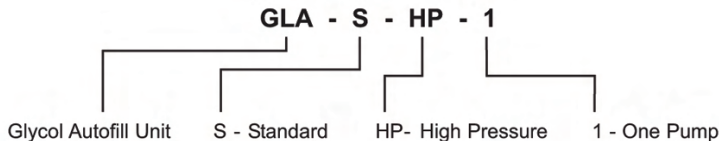
## PRODUCT DATA SHEET

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The Armstrong GLA glycol Auto-Fill unit is designed to provide automatic glycol make-up for HVAC systems. In the past, contractors and/or end-users have usually provided customized add-on assemblies for this function. The specially molded mixing tank offers a compact package with built-in housing for the controls and make-up pump.

This Auto-Fill package is a comprehensive system that can be specified on your project.

### Model Designation



**Maximum working pressure is 125 psi (850 kPa)**

### Benefits

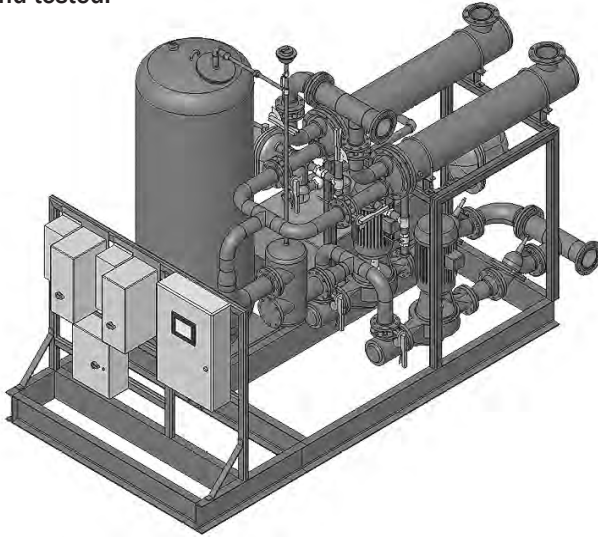
- Monitors and maintains system pressure at all times
- Provides a safe solution for handling of glycol
- Streamlined space-saving design maximizes storage capacity while minimizing floor space requirements
- In the event of system rupture, only the contents of the GLA tank is pumped into the HVAC system
- Provides low fluid-level warning

### Features

- Provides glycol make-up automatically
- Suitable for all selections of bladder and compression tanks up to 90 psi (621 kPa) cold-fill pressure. Higher cold-fill pressures are available. Please refer GLA Ultra bulletin.
- Large mixing tank capacity - to accommodate system overspill through safety valve
- Automatic cut-out switch monitors the status of the GLA tank and shuts down the pump in the event that mixture level is too low
- Single phase power connection
- Volume scale is etched on the side of the GLA tank
- 1/2" NPT fitting for connecting the GLA tank to the HVAC system

## HTP SERIES HEAT TRANSFER PACKAGES

A heat exchanger, utilizing steam or hot water as a heat source, provides hot water or hot glycol for comfort or process heating. The pumps circulate the heated water throughout the hydronic system. An integral air separator and expansion tank remove air and control system water volume. The package is completely factory piped, assembled and tested.



Armstrong Heat Transfer Packages are designed for the Hydronic Heating of Schools, Hospitals, Office Buildings, Apartments, Industrial Plants, Airport Terminals and Sports Centers. Other applications include industrial process systems.

### Benefits

- Single Source Responsibility
- Simplified Selection
- Compact Design
- Ready to Install

### HTP Features

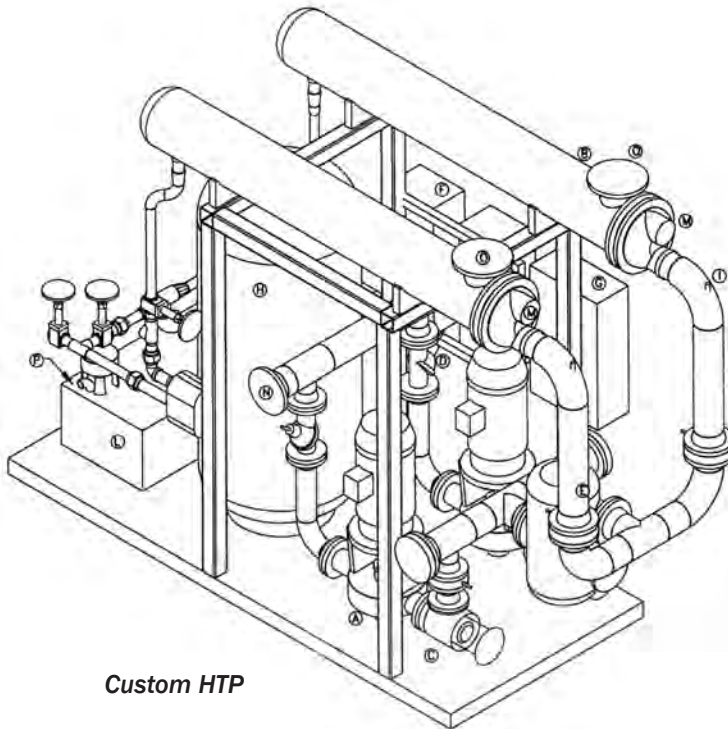
- Heat Exchanger (Shell and Tube or Plate and Frame)
- Pumps (Vertical or Horizontal style)
- Expansion Tank
- Air Separation
- Flow Control
- Piping and Valves
- Assembly and Testing

### Standard HTP Options

- Electrical Controls
- Variable Frequency Drives
- Motors
- Steam Trap
- Steam Control Valve
- Glycol Fill Connection

### Custom HTP Options

- Condensate Pumps



Custom HTP

- A. PUMPS
- B. HEAT EXCHANGERS
- C. SUCTION GUIDE
- D. FLOW TREX VALVES
- E. AIR SEPARATOR
- F. VARIABLE FREQUENCY DRIVES
- G. MAIN DISCONNECT AND TRANSFORMER
- H. EXPANSION TANK
- I. 1" CONNECTIONS FOR SENSING BULBS
- J. VACUUM BREAKER (NOT SHOWN)
- K. RELIEF VALVE (NOT SHOWN)
- L. CONDENSATE PUMP PACKAGE
- M. SYSTEM RETURN
- N. SYSTEM SUPPLY
- O. STEAM SUPPLY
- P. CONDENSATE RETURN (HIDDEN)

3

# BURKS PUMPS



## Versatile Solutions For Your Pumping Applications

Burks Pumps offers a wide variety of pump designs and configurations that are suitable for almost any plant service or OEM pumping application, including End Suction, Self-Priming Centrifugal Pumps and Regenerative Turbines Pumps. Burks Regenerative Turbine design offers a unique pump engineered for high pressure, low flow applications. Other superior products include In-Line Centrifugal Pumps and Condensate Return Systems.

Each Burks pump is quality built for long life and factory tested for assured performance. We can help you find the pump that exactly meets your needs. If a standard pump is not available to satisfy your requirements, we can design one specifically for your application. Either way, we can save you money using existing components from our pump line.

3



## Close-Coupled Centrifugal Pumps

Series	RPM	HP Range	Capacity Range (GPM)	Heads to (Feet)
GA5-1	3500	1/3 to 2	20 to 100	110
GA5-1 1/4		1/3 to 3	20 to 100	130
GA6-1 1/4	3500			
GA7-1 1/4		3 to 7 1/2	20 to 80	220
GA6-1 1/2	1750	1 to 7 1/2	20 to 300	170
GA6-2	or	1 1/2 to 7 1/2		
GA7-1 1/2	3450	1 to 10	20 to 175	230
G5-1 1/4	3500	1/3 to 3	20 to 80	135
G6-1 1/4				
G6-1 1/2	1750	1 to 7 1/2	20 to 1100	360
G6-2	or	1 to 7 1/2		
G6-2 1/2	3500			
G7-2				
G7A-2				
G7-2 1/2				
G9A-1 1/2				
G9-1 1/2				
G9-2				
G9-2 1/2				
G9-3F				
G9A-3F	3500			
G9-4F	1750			
DF4-1 1/4	3500	1/2 to 1 1/2	20 to 125	55
4DF6-2 1/2	1750	1 to 3	40 to 330	40

## Burks End Suction Centrifugal Pumps

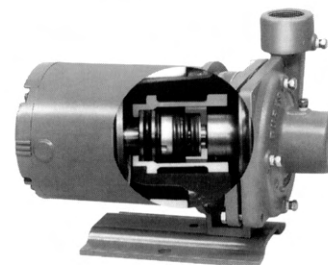
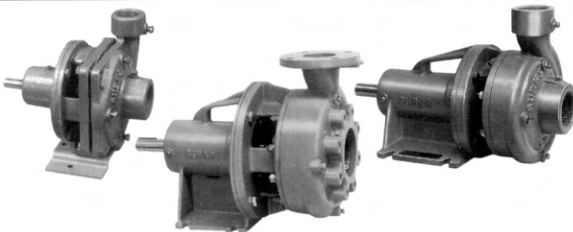
These pumps are available in close-coupled and base-mounted configurations. Standard construction for Burks Centrifugal Pumps is bronze fitted cast iron. Models are also available in all bronze and all iron. Series G5-1 1/4 pumps are available in stainless steel. Flanged casings available on 2" and 2 1/2" pumps; 3" pumps are flanged only.

## High Temperature Applications

Most Burks Turbine and End Suction Centrifugal pumps are available with an optional special seal arrangement for pumping liquids up to 500°F. This simple, patented MJ Jacketed Seal® eliminates the need for complicated seal jacketing configurations or expensive shaft seals. (Request Form 926.)

## Base-Mounted Centrifugal Pumps

Series	RPM	Capacity Range (GPM)	Heads to (Feet)
GNA5-1 1/4	1750	10 to 80	135
GNA6-1 1/4	or		
GNB	3500	20 to 1100	380
GNC			





## Special Application Pumps Match Specific Needs

Series WT – for water and other 1.0 S.G. fluids. Cast iron construction.

Series WPT – for perchloroethylene and other 1.62 S.G. fluids. Cast iron construction.

Series WST – for petroleum solvents and other 0.82 S.G. fluids. Cast iron construction.

Series WA6 – 1 to 3 hp; capacities to 90 GPM; heads to 130 ft. Standard construction is bronze fitted, with optional all bronze or all iron construction available.



## Close-Coupled Self-Priming Centrifugal Pumps

Series	RPM	HP Range	Capacity Range (GPM)	Heads to (Feet)	Construction
WG6-2	3500	5 to 10	0 to 270	178	Standard Bronze Fitted, All Bronze, or All Iron
WA6		1 to 3	0 to 90	130	
WT	3500	1/3 to 2	0 to 140	100	Bronze Fitted, Buna-N
WPT		1/3 to 3	0 to 144	99	Bronze Fitted, Viton®
WST		1/2 to 2	0 to 142	100	Bronze Fitted, Buna-N

## Self-Priming Centrifugal Pumps

Burks Pumps offer a full line of self-priming centrifugal pumps designed for the broadest range of general and special industrial applications throughout a variety of industries, including chemical processing, petrochemical, paper and pulp, agriculture, marine, energy, and textile. The versatile design provides an excellent choice for many applications including pressure boosting, dewatering clean liquids, irrigation, cooling and recirculation systems, sprinkler systems, and washdown applications. Burks offers, as standard, self-priming centrifugal pumps for special applications, such as perchloroethylene and petroleum solvents.

Close-coupled and base-mounted pumps are available in sizes ranging from 1 1/2" to 6" with capacities up to 1,875 GPM and heads 184 ft. The advanced design and quality construction of these pumps make them some of the most efficient, versatile, and dependable pumps in the industrial pump market today.



## Stainless Steel and Cast Iron Pumps for Demanding Applications

Burks Series WB and WSB pumps are designed for optimum performance, easy maintenance and less downtime. These rugged self-priming pumps are available in class 30 cast iron and 316 stainless steel construction. Series WB cast iron models offer abrasive wear resistance and maximum strength for heavy-duty applications. Series WSB stainless steel models offer outstanding performance in corrosive liquid (4 to 14 pH scale) applications.

## Self-Priming Centrifugal Pumps

Series	Size (Inches)	Max. RPM	Capacity (GPM)	Heads to (Feet)
WB4/WSB4	1 1/2	3450	120	94
WB6/WSB6	1 1/2		134	97
WB9/WSB9	2	2400	165	102
WBH7/WSBH7	2		124	170
WB12/WSB12	2		223	130
WB19/WSB19	3		345	107
WB21/WSB21	3	2000	378	116
WB30	3		500	184
WB40-10X	4	2250	940	180
WB40-9H	4		950	150
WB40-9D	4		830	136
WB40-8F	4		775	107
WB60-12X	6	2250	1800	156
WB60-11H	6		1875	140
WB60-11X	6		1800	154
WB60-10L	6		1800	144

3

As a master distributor, Federal stocks a broad line of Burks turbine pumps. We can arrange quick factory shipments for all Burks pumps. Call for assistance.



# BURKS PUMPS



## Burks Regenerative Turbine Pumps

This unique pump is engineered for high pressure, low flow applications. The impeller is the only moving part. The raceway conducts fluid into the impeller, then provides a channel for the liquid to move as it is propelled and energized by the impeller.

Annular rings, or sealing grooves, are machined into the face of both the impeller and the raceway. The grooves intermesh without metal-to-metal contact, to form a labyrinth seal created by the thin film of liquid within the grooves. Friction and wear are minimized.



### Close-Coupled Turbine Pumps

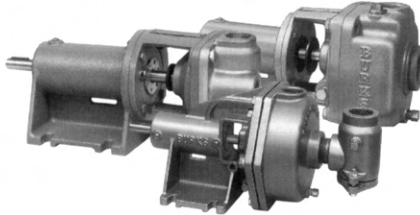
Series	RPM	HP Range	Capacity Range (GPM)	Heads to (Feet)	Construction	Shaft Seal
CR	3450	1/3	2.8 to 4.3	200	All Bronze	Mech.
CT		1/3 to 3/4	2.4 to 12.7	350	Standard Bronze	Mech.
4CT	1725	1/4	0.3 to 3.4	300	Fitted,	or
CS	3450	1 to 5	7.1 to 32.5	350	All Bronze or	Stuffing
4CS	1725	1/3 to 1/2	1.6 to 12.2	275	Stainless Steel	Box

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## Exclusive External Impeller Adjustment

The patented Life-Lok® external impeller adjustment allows precise setting of pump performance during factory testing and enables field adjustment, if necessary, to match system pressure. This enables you to restore “like-new” performance

after years of service, greatly extending pump life. Pump performance can be adjusted without disturbing piping, disassembling the pump, or replacing parts.



### Base-Mounted Turbine Pumps

Series	RPM	Capacity Range (GPM)	Heads to (Feet)	Construction	Shaft Seal
ET	1725	0.2 to 3.4	300	Standard Bronze	Mech.
	3450	2.4 to 11.7	350	Fitted,	or
EC	1750	3.6 to 35.3		All Bronze or	Stuffing
ED		17.1 to 91.0		Stainless Steel	Box
ES	1725	1.0 to 14.5			
	3450	7.0 to 32.0			

## CS SERIES CLOSE COUPLED TURBINE PUMPS

Regenerative type turbine pumps are designed to handle clear water and many other non-abrasive, lower viscosity liquids on high pressure, low capacity applications with the greatest possible efficiency. The only turbine pump with Life-Lok® External Impeller Adjustment feature that allows readjustment of impeller without disturbing piping. The Standard Materials of Construction include: bronze fitted-cast iron frame and case; bronze (monel blades) impeller; bronze raceway; #303 stainless steel shaft; carbon-ceramic stainless steel-Buna N shaft sleeve for temperatures to 225°F.

Order No.	Model No.	Description	HP	RPM	Phase	Capacity in GPM @ Total Head (PSI/Ft.)														
						8.6/20	17.2/40	26/60	43.3/100	54.1/125	64.9/150	75.8/175	86.6/200	97.4/225	108.3/250	119.1/275	130/300	140.1/325	151.6/350	
15CS6M	15CS6M	PUMP TURB 1-1/2HP	1 1/2	3450	SINGLE <sup>1</sup>	16	15.2	15	13.5	12.8	12.4	12	11.5	11	10.7	-	-	-	-	
Special Order	20CS6M	PUMP BF TURB 2HP 1/115/208/230	2	3450	SINGLE <sup>1</sup>	16	15.2	15	13.5	12.8	12.4	12	11.5	11	10.7	10.5	10	9.7	9.5	
330CS7M	330CS7M	PUMP TURB 3HP 3/60/208/230/46	3	3450	THREE <sup>2</sup>	21	19.6	20	17.3	16.5	16	15.3	14.7	14.2	13.7	13.3	13	12.5	12	

Tappings: 1" discharge x 1 1/4" suction

<sup>1</sup> 115/205-230/1/60

<sup>2</sup> 208-230/460/3/60

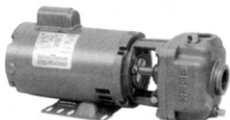
### REPAIR KITS<sup>1</sup>

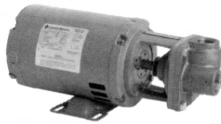
Order No.	Model No.	Description
B205225	20522-5	KIT REP F/CS5M, ES5M
B205226	20522-6	KIT REP F/CS6M/ES6M
B205227	20522-7	KIT REP F/CS7M/ES7M
B205229	20522-9	KIT REP F/CS9M/ES9M

<sup>1</sup> Kit includes impeller, raceway, shaft seal, "O" ring, suction sleeve, impeller locknut, raceway screws, shaft key and instructions.

### REPAIR PARTS

Order No.	Model No.	Description
8991	8991	3/4" MECHANICAL SEAL
9791	9791	BUNA N O-RING





## CT SERIES CLOSE COUPLED TURBINE PUMPS

Designed for pumping clear water and many other non-abrasive, lower viscosity liquids. Available in bronze fitted as standard. Recommended for many applications requiring higher pressures and lower capacities. The standard 1-phase motors are 3450 RPM, ODP construction. The Standard Bronze Fitted Materials of Construction include: cast iron frame and case; bronze (monel blades) impeller; bronze raceway; #316 stainless steel shaft; carbon-ceramic shaft seal.

Order No.	Model No.	Description	HP	Voltage	Phase	Capacity in GPM @ Total Head			
						8.6/20	43.3/100	86.6/200	130/300
Special Order	3CT5M	PUMP TURB 1/3HP 1/115/208/230	1/2	115/230V	1 PHASE	4.2 GPM	3.4 GPM	2.8 GPM	-
5CT6M	5CT6M	PUMP TURB 1/2HP 1/115/208/230	1/2	115/230V	1 PHASE	6.0 GPM	4.8 GPM	4.2 GPM	3.7 GPM
7CT7M	7CT7M	PUMP TURB 3/4HP 1/115/208/230	3/4	115/230V	1 PHASE	8.3 GPM	6.8 GPM	5.8 GPM	5.2 GPM

Tappings: 1" discharge x 1" suction

### REPAIR KITS<sup>1</sup>

Order No.	Model No.	Description
Special Order	20158-5	KIT REP CT5M/ET5M
B201586	20158-6	KIT REP CT6M/ET6M
B201587	20158-7	KIT REP CT7M/ET7M

<sup>1</sup> Kit includes impeller, raceway, shaft seal, "O" ring, impeller

### REPAIR PARTS

Order No.	Model No.	Description
8514	8514	5/8" MECHANICAL SEAL
9530	9530	BUNA N O-RING
8105	8105	SLINGER WASHER

## EC & ED SERIES BASE MOUNTED TURBINE PUMPS

Designed for pumping any clean, non-corrosive, non-abrasive, lower viscosity liquids on low flow, high head applications. They may be used for boiler feed, condensate return, heat transfer, jockey pump, hydraulic oil circulation, high pressure spray, brine circulation and pressure boost. The adjusting screw in the power frame provides a means for external adjustment of the clearance between the impeller and raceway to compensate for any possible wear between these parts. Readjustment can be made without disassembling the pump or disturbing the piping. 1750 RPM. The Standard Materials of Construction include: cast iron casing; cast iron (brass screen) strainer; bronze (monel blades) impeller; bronze raceway; #303 stainless steel shaft; carbon-ceramic stainless steel-Buna N shaft sleeve for temperatures to 225°F.

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Order No.	Model No.	Description	Capacity in GPM @ Total Head (PSI/Ft.)													
			8.6/20	17.2/40	26/60	43.3/100	54.1/125	64.9/150	75.8/175	86.6/200	97.4/225	108.3/250	119.1/275	130/300	140.1/325	151.6/350
Special	EC7M	GPM PUMP TURB BF	20.9	19.9	19.1	17.7	16.8	16.0	15.3	14.5	13.8	13.1	12.4	11.8	11.2	10.7
Order	BHP	LESS BASE	0.65	0.75	0.85	1.1	1.2	1.4	1.6	1.7	1.9	2.1	2.2	2.4	2.6	2.7
Special	EC9M	GPM PUMP TURB BF	29.2	27.7	26.3	24.0	22.5	21.3	20.0	18.8	17.7	16.5	15.3	14.3	13.3	12.2
Order	BHP	LESS BASE	0.73	0.86	1.0	1.4	1.6	1.9	2.1	2.4	2.6	2.9	3.2	3.4	3.7	4.0
EC10M	EC10M	GPM PUMP TURB BF	35.3	33.1	31.3	28.3	26.5	25.0	23.5	22.1	20.7	19.4	18.0	16.7	15.5	14.3
	BHP	LESS BASE	1.0	1.2	1.4	1.9	2.2	2.5	2.7	3.0	3.3	3.6	3.9	4.2	4.6	4.9
ED10M	ED10M	GPM PUMP TURB BF	52.5	48.6	46.2	43.0	41.2	39.4	37.5	36.7	34.0	32.1	30.0	28.5	26.7	24.8
	BHP	LESS BASE	2.0	2.3	2.5	2.9	3.2	3.6	3.9	4.3	4.6	5.0	5.3	5.7	6.1	6.4
ED12M	ED12M	GPM PUMP TURB BF	73.2	69.4	66.0	61.0	58.6	56.4	54.1	52.2	50.3	48.5	46.7	45.0	43.4	41.7
	BHP	LESS BASE	2.5	2.8	3.3	4.1	4.5	5.0	5.6	6.0	6.5	7.0	7.3	7.8	8.3	8.7
ED14M	ED14M	GPM PUMP TURB BF	91	85.8	81.5	75.0	71.3	68.0	65.0	62.0	59.2	56.3	53.5	51.0	48.5	46.0
	BHP	LESS BASE	4.1	4.4	4.8	5.8	6.4	7.1	7.7	8.3	9.0	9.6	10.3	11.0	11.7	12.3

The standard bronze fitted materials of construction consists of cast iron casing, cast iron (brass screen) strainer, bronze (monel blades) impeller, bronze raceway, #303 stainless steel shaft, carbon-ceramic-S.S. - Buna N shaft seal for temperatures to 225°F.



ED Series

### IMPELLER & RACEWAY REPAIR KITS<sup>1</sup>

Order No.	Model No.	For
2170710	21707-10	E22/E22M/EC10/EC10M
2171010	21710-10	E25/E25M/ED10/ED10M
2171012	21710-12	E27/E27M/ED12/ED12M
2171014	21710-14	E29/E29M/ED14/ED14M

<sup>1</sup> For E, EC, & ED Series Pumps. Kit includes impeller, raceway and instructions.

### MECHANICAL SHAFT SEAL REPAIR KITS<sup>2</sup>

Order No.	Model No.	For
21708	21708	ECM PUMPS
21711	21711	EDM PUMPS

<sup>2</sup> For ECM & EDM Series Pumps. Kit includes impeller locknut, shaft key, raceway screws, suction sleeve, shaft seal, case gasket, housing gasket and instructions.

### REPLACEMENT PARTS FOR EC & ED SERIES

Order No.	Description	Order No.	Description
Special Order	IMPELLER/LOCKNUT	21332	OIL SEAL
1407	SCREEN STRAINER FOR EC	21333	GASKET
4231	SUCTION SLEEVE, BUNA N	21337	GASKET
4646	SCREEN STRAINER FOR ED	21473	BEARING
8991	SEAL MECH 3/4	21732	O-RING, BUNA N, FOR STRAINER
20921	SHAFT	21748A	KEY-1/8"X5/8" SQ. ROD
21322	BEARING SPRING	21942	SEAL MECH 1-1/8
21328	GASKET		

### PARTS FOR DISCONTINUED "E SERIES" PUMPS

Replaced by EC (smaller) and ED (larger) series.

Order No.	Model No.	Description
4654A	4654A	WASHER STUFF BOX
5258	5258	SCREW ADJUSTABLE REAR
5619	5619	GASKET
5811	5811	WASHER STUFF BOX
7003	7003	BOLT GLAND BRS (Large E Series)
8797	8797	MECH. SEAL 7/8" (Small E Series)

### MISCELLANEOUS PUMP AND TANK PARTS

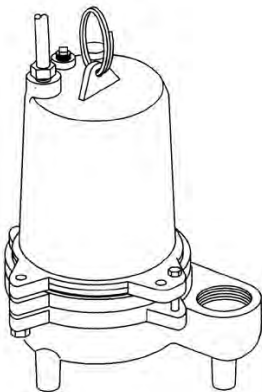
Order No.	Description
7323	FLOAT SWITCH, DOUBLE POLE, NO OVERLOAD PROTECTION, for use with horizontal receiver tanks.
7492A	WRENCH SPANNER 5/32 PIN
9917	SEAL MECH 1-1/4
21271	SEAL MECH
22083	GASKET
22063C	SLEEVE SHAFT BRZ

# BARNES PUMPS

# BARNES®

The Barnes family of pump products provides versatility, high performance and unequalled value. For more than a century, design and specifying engineers, plumbing contractors and end-users including homeowners have relied on Barnes Pumps for reliability and durability. From mundane but essential applications like sewage and wastewater to decorative fountain pumps found in the town square, Barnes Pumps delivers innovative, cost-effective solutions with speed and accuracy.

3



## SERIES SE EFFLUENT PUMP

Submersible, non-clog sewage pump designed for typical raw sewage applications. Able to pump 2" solids. 2" NPT, Female, Vertical. Wide-Angle, PVC, Mechanical level control. 15' Cord w/piggy-back plug.

**Capacity:** 100 gpm @ 8' TDH  
 50 gpm @ 17' TDH  
 25 gpm @ 23' TDH  
 Shut off head 25'

Order No.	Model No.	HP	VOLT/PH	Hz	RPM	FULL LOAD AMPS	LOCKED ROTOR AMPS	CORD SIZE
SE411A	SE411A	0.4	115/1	60	1750	12.0	19.0	14/3

For more information go to [www.cranepumps.com](http://www.cranepumps.com)



1ABS

## AUTOMATIC CONDENSATE PUMPS

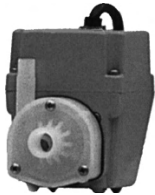
Vertical type pump unit, stainless steel shaft. Ideal for small flows as in HVAC evaporator condensate.

Order No.	Model No.	Description	Volts	HP	Amp/Watt	Gallons Per Hour @ Height					Shut off	PSI	Power Cord
						1'	3'	5'	7'	9'			
<b>"IN PAN"</b>													
1ABS	550520	PUMP, LESS PAN W/1/4" MPT CONN	115V	1/150HP	1.1A/70W	205	180	145	-	-	10'	4.3	6'
2ABS	551020	PUMP W/1/2 GAL PAN, 1/4" MPT CONN	115V	1/40HP	1.7A/100W	300	255	205	160	105	11.8'	5.1	6'

### ACCESSORIES

SPECIAL 599122 OVERFLOW SAFETY SWITCH, INSTALLS ON CONDENSATE PAN

ORDER



## DUAL PURPOSE PUMP

May be used either totally submerged or in an open air closed line system

Order No.	Model No.	Volts	HP	Amp/Watt	Gallons Per Hour @ Height					Shut off	PSI	Power Cord
					1'	3'	5'	10'	20'			
L2E38N	2E-38N 502203	115/1	1/40	1.7/100	300	255	205	70	11.8'	5.1	6'	

3



5MSP

## WATER WIZARD® UTILITY PUMPS

This little workhorse includes garden hose adapter. Pumps down to 1/8" from surface. Epoxy coated cast aluminum housing, nylon volute, SS shaft. Manual operation without RSS.

Order No.	Model No.	Description	Volts	HP	Amp/Watt	Gallons Per Hour @ Height						Shut off	PSI	Power Cord
						1'	3'	5'	10'	15'	20'			
<b>LITTLE GIANT WATER WIZARD® - SUBMERSIBLE</b>														
5MSP	505000	UTILITY PUMP LITTLE GIANT	115/11/6	HP 5A/380W	1200	1170	1100	1000	840	520	350	26.3'	11	10'
RSS <sup>1</sup>	599008	REMOTE LIQUID LEVEL SWITCH	115/1	-	10	-	-	-	-	-	-	-	-	10'

### POTENT® PUMP SETS - NON-SUBMERSIBLE

Special Order	PPS1		115/1	1/10	1.65/171	275	-	-	225	-	165	-	-	6'
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<sup>1</sup> Converts a manual pump, up through 1/2 HP, to automatic operation. Attaches easily to the back of the Water Wizard. "ON" level 7 3/8" (+/- 3/8"). "OFF" level 3/4" (+/- 3/8")



PPS1

## BIG JOHN® SUMP PUMPS

For extended or continuous use in moving large volumes of water. Includes automatic liquid level switch.

### SPECIFICATIONS

**Construction:** Cast iron housing with protective epoxy coating, polypropylene base, polycarbonate cover, thermal overload protection, screened intake, non-clog pumping head and impeller. For intermittent use, max temp of liquid 140°F.

Order No.	Model No.	Description	Volts	HP	Gallons Per Minute @ Height					Shut off	PSI	Power Cord
					5'	10'	15'	20'	25'			
<b>AUTOMATIC PUMPS<sup>1</sup></b>												
6C1A	506158	AUTO SUMP PUMP, 1-1/2" DISC.	115/1	1/4	46	30	15	-	18'	7.8	8'	
8C1A	508157	AUTO SUMP PUMP, 1-1/2" DISC.	115/1	4/10	54	40	25	8	22'	9.5	10'	

<sup>1</sup>Pressure actuated On-"Off" switch engages 7-10" water, and disengages in 1-3" of water.



# SKIDMORE PUMPS

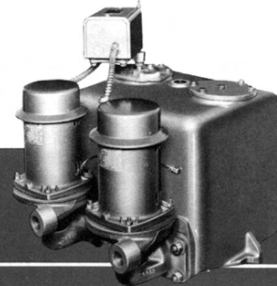
Specify *Skidmore* and you'll receive the very best in condensate return pumps, boiler feed systems, vacuum systems and accessories. Since 1921, every *Skidmore* product has been carefully manufactured and tested to rigid standards, assuring you of the highest quality and reliability.

Your local *Skidmore* representative is well-trained to help you in the design, installation and service of your heating system. He is backed by experienced *Skidmore* application engineers ready to assist in solving your special design and application challenges.

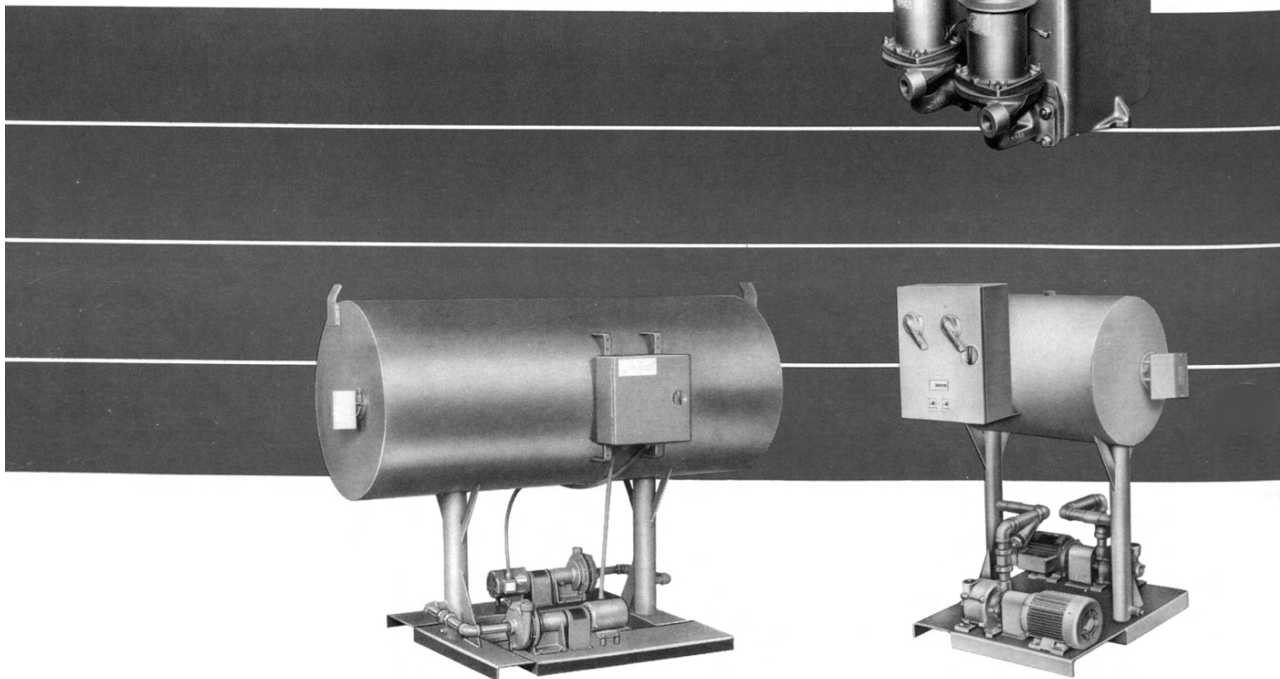
Consider our full line of quality products and commitment to customer support when you select boiler feed or condensate return equipment. We're sure *Skidmore* will be your choice.

## 10MX Series Pumps

Skidmore 10MX series condensate return and boiler feed pumps are available in either simplex or duplex models and with 6, 15 or 21 gal. cast iron or 10 thru 1000 gal. welded steel receivers. The centrifugal pumps are close coupled to heavy duty, single or three phase motors. Capacity range is from 8000 to 12,000 sq. ft. EDR or 18 GPM, with discharge pressures to 40 PSIG. Heavy duty controls are standard. Bulletin #24A-5.



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## Horizontal Boiler Feed and Condensate Return Units

The HPM, HSSM & HJSM horizontal units are available in both simplex and duplex models. The three models are horizontal centrifugal type with the HP coupled to the motor through a flexible coupling and the HS & HJ types being close coupled. Capacities range from 7.5 to 900 boiler horsepower and to 187 GPM, at discharge pressures of 10 to 75 PSI. Ten steel receiver sizes range from 21 to 1000 gal. Bulletin #16A.

NOTE: Pump capacity 30 gpm at 20 psi discharge 3/4 hp. All boiler feed systems simplex and duplex with make-up valve and sight glass.

## Regenerative Turbine Pumps

The STM Boiler Feed and STH Condensate Return Systems are available in both single and duplex models with pressure ranges from 20 to 260 PSIG and capacities through 50,000 EDR. Standard receivers are available in 21 to 260 gallons in 10 gauge steel and 1/4" steel through 1000 gallon sizes. Both systems are standard with the STP Turbine Pump Motor Unit which was engineered for long dependable service in low flow moderate-to-high pressure boiler systems. Bulletin #17B-1.

# SKIDMORE PUMPS

## V Series Pumps

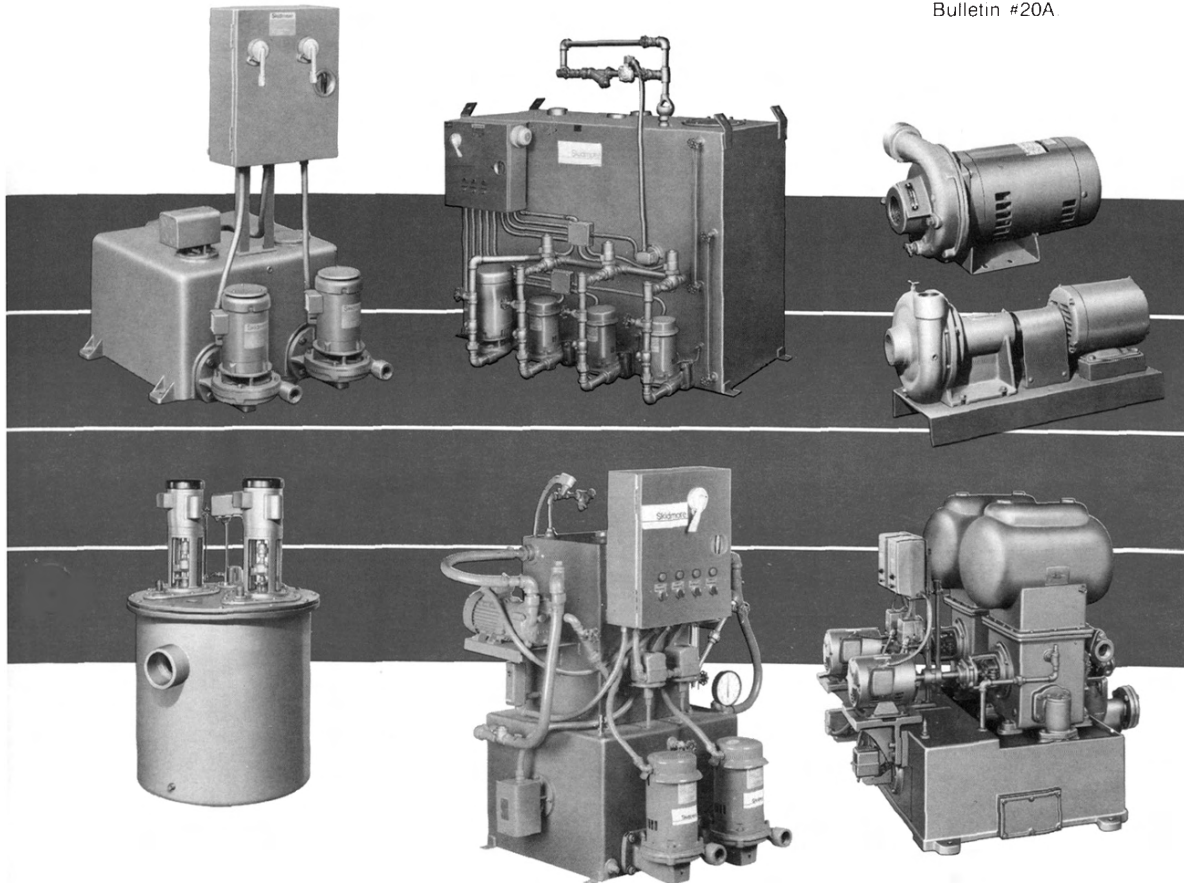
The V series condensate return and boiler feed pumps are also available in the various combinations as the 10MX series. However, the VCS series handle EDR capacities to 100,000 sq. ft., 150 GPM and discharge pressures to 75 PSIG. Cast iron or steel receivers are available from 15 to 110 gal. with 1750 or 3500 RPM motors. 2' NPSH pumps readily available. Bulletin #10D.

## Custom Multiplex Systems

A Skidmore custom built multiplex boiler feed system, totally automatic in operation, is the ideal boiler feed unit for heating systems incorporating two or more boilers. The capacity of the tank is sized to meet the total system requirements and may be dimensioned to fully utilize limited space. Vertical, close coupled pumps are mounted to the tank, one pump per boiler, plus one stand-by-pump. Capacities are available to 100,000 sq. ft. EDR. Bulletin #11D.

## General Purpose Horizontal Pumps

The HPB, HCPS, PE & J general purpose horizontal centrifugal pump and motor units are ideal for use as hot or cold water circulation pumps, booster cooling tower, or condensate return pumps. HPB pumps, motors and couplings are mounted on a channel steel base. HCPS pumps are close coupled to motors with an optional base. The PE and J series are also close coupled to motors with an integral base. Pump capacities range to 125,000 sq. ft. EDR and 187 GPM with discharge pressures to 75 PSI. Bulletin #20A.



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## Vertical Condensate Return and Boiler Feed Systems

Skidmore UV vertical condensate return and boiler feed systems feature cast iron receivers and are designed for use where return lines are below the floor level. The units are so designed that the motors and controls can be elevated up to 6 ft. above floor level for installations where there is danger of flooding. Both single and duplex models are available with capacities to 100,000 sq. ft. EDR, discharge pressures to 75 PSI and receiver sizes to 282 gal. Bulletin #19C.

## Jet Vacuum Pumps

The JV and PD series combine a vacuum producer with a condensate return section for condensate return or boiler feed use. The units are available in simplex models having one vacuum pump and one return pump, semi-duplex models with one vacuum and two return pumps and duplex models with two vacuum and two return pumps. Ten capacity sizes are available from 2500 to 65,000 sq. ft. EDR. Vacuum tanks have 26 gal. capacity and the return tanks are available in 21 thru 1000 gal. receiver sizes. Bulletin #8J-IT.

## Rotary Vacuum Pumps

Skidmore rotary vacuum condensate return and boiler feed pumps feature 'whisper quiet' operation. Liberal tolerances minimize excessive wear and assure constant capacity and efficiency for years. The units are available in single or duplex models with capacities to 150 GPM (water), 56 CFM (air) and discharge pressures to 60 PSI. Bulletin #9-D1.

# Skidmore

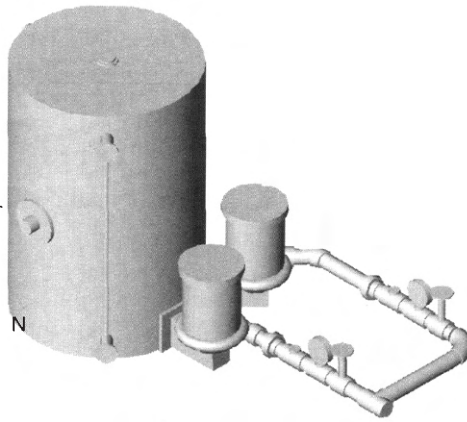
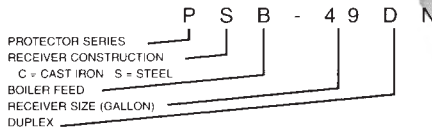
T.M.

# SKIDMORE PUMPS

## DESCRIPTION

The Protector Series condensate and boiler feed units are capable of handling hot (210° F) or cold water. The series is available in simplex or duplex; either condensate return or boiler feed. Many units have low profiles for low headroom applications.

## TYPICAL CATALOGUE CODE



## SPECIFICATIONS

**Receiver:** Steel or cast iron  
**Volute:** Cast iron  
**Seal plate:** Cast iron  
**Impeller:** Non-ferrous material  
**Mechanical seal:** John Crane type 6 or equal, ceramic and CraneCarb seal faces, neoprene, EPT and Buna-N elastomers, stainless steel metal parts (Crane Packing Co. CraneCarb is a phenolic bonded carbon graphite)  
**Float switch:** Simplex units normally open contacts which energize pump on demand (liquid rise)

**Mechanical alternator:** Duplex unit equalizes running time between two pumps and provides emergency backup in case of excessive liquid return or pump failure.

**3/8" Make-up valve:** Maximum inlet psi 80 (boiler feed operation)

**Casing gasket:** Cellulose fiber chloroprene

**Water slinger:** Neoprene

**Hardware:** Stainless steel, brass (cadmium plated)

**Maximum limits:** Liquid temperature 210°F, ph range: 4-9

**Close coupled motor:** Square flange, 1/3 hp, 115/230 ODP, 3450 RPM, permanently grease lubricated shielded ball bearings, threaded stainless steel shaft, Capacitor start, induction run, built-in thermal overload protection with automatic reset.

**Suction isolation valve:** (optional)

## COMPARISON GUIDE

VENT-RITE "PROTECTOR"      HOFFMAN "WATCHMAN"

### CONDENSATE UNITS

PC-6N	WC-6-20B
PC-15N	WC-12-20B
PC-15DN	WCD-12-20BMA
PC-21N	
PC-21DN	
PS-10N	WCS-8-20B
PS-20N	
PS-20DN	

### BOILER FEED UNITS RECTANGLE

PSB-20N	
PSB-20DN	

### BOILER FEED UNITS HORIZONTAL

PSB-49N	
PSB-49DN	
PSB-71N	
PSB-71DN	
PSB-117N	
PSB-117DN	
PSB-150N	
PSB-150DN	

### BOILER FEED UNITS VERTICAL

VPSB-49N	50VBFS-B
VPSB-49DN	50VBFD-B
VPSB-71N	
VPSB-71DN	
VPSB-117N	100VBFS-B
VPSB-117DN	100VBFD-B
VPSB-110N	
VPSB-110DN	
• VPSB-211J	200VBF-S
• VPSB-211JD	200VBF-D

## PUMP CHARACTERISTICS

GPM	PSI	NPSHR
10	25	2'
20	20	2'
30	15	2'
40	10	3.5'

## APPLICATIONS

- Boiler feed
- Condensate transfer
- Air conditioning
- Heating
- Liquid transfer
- Residential effluent
- Remote liquid transfer
- Assembly line drainage

## FEATURES

- Low NPSHR requirements
- Multiple profiles for specific applications
- Expertly designed for maneuverability
- Simplicity in field hook up
- Versatile compatibility of handling 210°F water
- Competitively priced
- Manufactured in the US by a team of professional craftsmen
- Industry leader in prompt delivery
- Largest selection to fit many different applications
- Simplex units equipped for future second pump (except PC-6N and PS-10N)
- All units factory tested



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# SKIDMORE PUMPS



PC6N  
Condensate Return

## PROTECTOR SERIES CONDENSATE RETURN/BOILER FEED UNITS

Packaged and completely assembled, wired and tested at the factory. Designed to provide maximum efficiency and easy maintenance in a compact, space-saving configuration. Units have 1/3 HP ODP motors (115/230/1), 3500 RPM, capable of pumping 18 GPM @ 20 PSI discharge.

Order No.	Model No.	Description	Receiver Size	Receiver Material	Controls Std.	No. of Pumps
<b>CONDENSATE RETURN PUMPS</b>						
PC6N	PC6N 57412	COND PUMP 1/3 SIMPLEX 115/230	6 gal.	C.I.	Float Switch	1
PC15N	PC15N 57509	COND PUMP 1/3 SIMPLEX 115/230	15 gal.	C.I.	Float Switch	1
PC15DN	PC15DN 5751	COND PUMP 1/3 DUPLEX 115/230	15 gal.	C.I.	Mech. Alter.	2
PS10N	PS10N 5754	COND PUMP 1/3 SIMPLEX 115/230	10 gal.	Steel	Float Switch	1
PS20DN	PS20DN 5756	COND PUMP 1/3 DUPLEX 115/230	20 gal.	Steel	Mech. Alter.	2
<b>BOILER FEED PUMPS</b>						
PSB71N	PSB71N 5760	BOILER FEED PUMP 1/3 115/230				



PSB Series  
Boiler Feed

### PARTS USED WITH PROTECTOR SERIES

Order No.	Model No.	Description
S504781	50478-1	VOLUTE GASKET PROTECTOR SERIES
51290	51290	GASKET, SEAL PLATE
53399	53399	BLANK OFF SUCTION PLATE
54049	54049	5/8 SEAL KIT PROTECTOR/10MX/VJSS/HJS
54766NS	54766-NS	PUMP/MTR ASSY 1/3 115/230 NO VOLUTE
56885	56885	IMPELLER (N) PROTECTOR
56887	56887	FLOAT SWITCH SIDE MTG (6 GAL AFTER 1991)
569481S	56948-1S	VOLUTE FLANGED

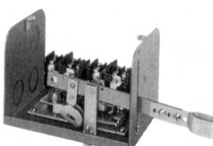
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## COMMON SKIDMORE PARTS



10M Series  
(Discontinued but parts still available)

Order No.	Model No.	Description
<b>FOR 10M SERIES</b>		
Special Order	50640	PUMP & MTR ASSY 1/3 1/115/230
Special Order	51724-1	1/2 HP, 115/230V, 1 PH., 3,500 RPM MOTOR (ONLY). FOR CCVS & 10M SERIES.
52069	52069	GSK KIT FOR 10M/CCVS
54052	54052	5/8S SEAL KT 10M/CCVS/VCSS/HCPS
Special Order	50205-1	MOTOR BRACKET W/GASKET FOR 10M/CCVS
Special Order	50206-1	PUMP HOUSING W/GASKET FOR 10M/CCVS
<b>MISCELLANEOUS SKIDMORE PARTS</b>		
Special Order	52068	SCREW STUDS AND NUTS KIT INCLUDES ITEMS 14, 24, 34 & 35 (PART #14-A.)
54055	54055	7/8 SEAL KT VCSS/HP/HCPS/HSS/VES
Special Order	54058	1-1/8S TYPE SL KT VCSS/HCPS/HSS
Special Order	57151	CHECK VALVE DISC WITH GASKET (3 1/2" X 3/8" X 3/8"). FOR SIZES H & I VACUUM PUMP (ITEM #59).



Type AG1  
Mechanical  
Alternator,  
Float Operated

## FLOAT SWITCHES

Mechanical switches and alternators designed to operate pumps in tanks or sumps.

Order No.	Model No.	Description
54500	54500	FLOAT SWITCH ASSY (9037EG-9) W/FLOAT & ROD
9037EG9	9037EG-9	FLOAT SWITCH LESS FLOAT & ROD
9038AG1	9038 AG-1	MECHANICAL ALTERNATOR, LESS FLOAT & ROD
9038DG8	9038DG-8	MECHANICAL ALTERNATOR, LESS FLOAT & ROD
9049EF-1	9049EF-1	304 SS FLOAT
9049ER-3	9049ER-3	416 STAINLESS STEEL ROD



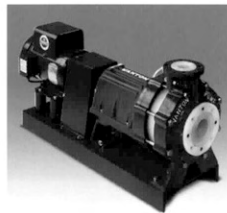
## THERMOPLASTIC PUMPS

*for corrosive, abrasive, hazardous, and ultrapure fluids*

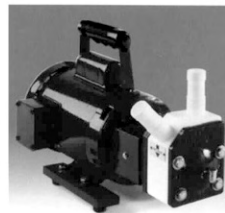
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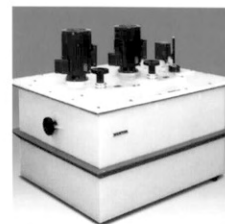
**SUMP-GARD®**  
Vertical  
Centrifugal Pumps



**CHEM-GARD®**  
Horizontal  
Centrifugal Pumps



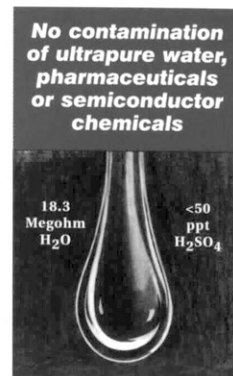
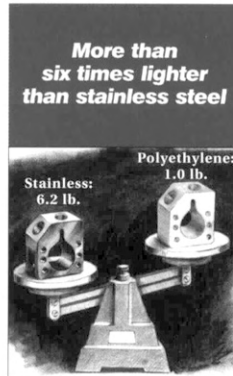
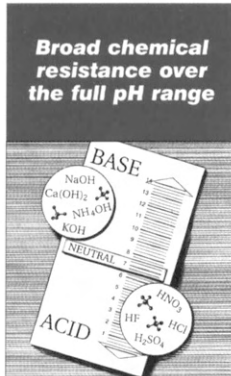
**FLEX-I-LINER®**  
Rotary  
Peristaltic Pumps



**PUMP/TANK**  
Nonmetallic  
Systems

# VANTON

## Why engineered thermoplastics are specified for handling corrosive, abrasive, hazardous, and ultrapure fluids:



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MATERIALS OF CONSTRUCTION		PROPERTIES			
MATERIAL		MAXIMUM TEMP.		SPECIFIC GRAVITY	WEIGHT LOSS (MILLIGRAMS) TABER, 1000 CYCLES
		°F	°C		
PVC	polyvinyl chloride	140	60	1.30	12-20
CPVC	chlorinated polyvinyl chloride	210	99	1.49	20
PE	polyethylene	200	93	.92-.94	5
PP	polypropylene	185	85	0.94	15-20
PVDF	polyvinylidene fluoride	275	135	1.75	5-10
ECTFE	ethylene chlorotrifluorethylene	300	149	1.75	5-10
PTFE	polytetrafluorethylene	500	260	2.14-2.20	500-1000
FRP	fiberglass reinforced plastic	250	121	3.4-5.0	388-520
SS	stainless steel type 304/316	NA	NA	7.9	50



### APPLICATIONS

Thermoplastic components are preferred over stainless steel, exotic alloys, FRP solid materials or linings because they offer broader use for handling acids, caustics, solvents, chlorides, halogens and other corrosive, abrasive or hazardous fluids, even mixed or unknown liquids, plant effluents and waste streams. Their chemical inertness assures purity when handling ultrapure water and other fluids required by chemical and pharmaceutical manufacturers, printed circuit board fabricators, utilities and

other companies whose processing operations cannot tolerate contamination. Although extensive corrosion resistance charts are available from Vanton and other sources, there is no substitute for experience, and no company with as much experience in the application of thermoplastic pumps as Vanton. The latest edition of this Technical Library Index of published data on specific applications is available for the asking.



*This couldn't happen with a thermoplastic pump. The entire suction flange has been corroded away. The impeller is badly rusted and eroded. Metals corrode. Thermoplastics don't.*

# CONERY

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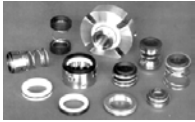
## MERCURY SWITCHES

Designed for operating sump or sewage pumps to control liquid level in sumps. Can also be used to operate alarms to indicate high or low water conditions in sumps or tanks. 2900 series wide angle, internally weighted, (13 amp) 1/2 hp 120/240 VAC.

Order No.	Model No.	Description
2900WP10	2900-B1S4P1-10	10' CORD, Normally open switch
2900WP20	2900-B1S4P1-20	20' CORD, Normally open switch
2901WP20	2901-B1S4P1-20	20' CORD, Normally closed switch

# NPS

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## MECHANICAL SEALS/SEAL KITS

Order No.	Description
FOR PACO PUMPS	
K1001	seal kit
K1051	seal kit
K1061	seal kit
14007083	seal

Order No.	Description
MISC. SEALS	
1012	seal
185	seal
185V	seal
501	seal
508	seal
633	seal

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