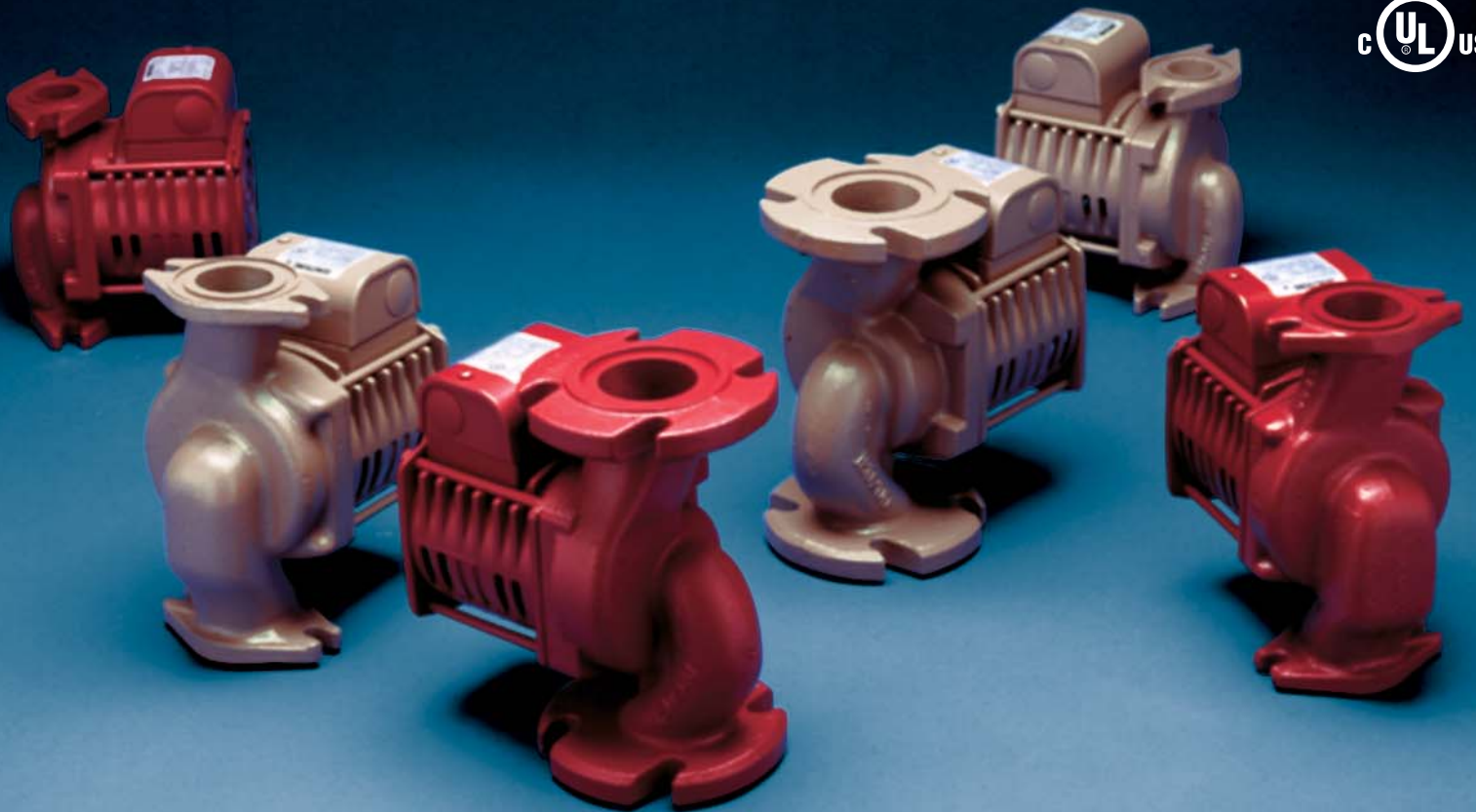


ARMSTRONG



ARM*flo* Circulators

FILE NO:	10.16
DATE:	Jan. 30, 2007
SUPERSEDES:	10.16
DATE:	Aug. 8, 2006

The smaller, more efficient *ARMflo* E Series dry motor circulator.

The E Series circulators deliver outstanding value to designers and specifiers, installing contractors, wholesalers, OEM's and building owners:

► Efficiency Breakthrough

Highly efficient dry motor design and hydraulics make E Series circulators up to 74% more efficient than competitive pumps of similar power!

► Excellent Value

With higher performance ratings than competitive pumps and a comparable price, E Series circulators will save money right out of the box. From installation and beyond, they will save building owners money with reduced operating costs year after year.

► Environmentally Friendly

Never throw away another pump. E Series circulators are designed to be economically repaired in less than 5 minutes by simply replacing the mechanical seal, putting the pump back in operation in no time!

► Effective use of Space

The advanced motor design used in E Series circulators makes them up to 30% smaller than other dry motor circulators. A great feature, particularly for OEM designers when fitting circulators into compact enclosures such as cabinets.

► Extra Quiet Operation

Each E Series circulator rotor is dynamically balanced, making these pumps a perfect choice for residential or commercial installations.

► Easy to Understand Warranty

Armstrong ARMflo circulators are backed by a 2-year, "no questions asked" product replacement warranty. Hassle free. Guaranteed.



Photos courtesy of Wirsbo.



Armstrong *ARMflo* E Series Circulator Family

The new Armstrong **ARMflo E Series** circulators are durable, versatile and designed to be used in a wide range of hydronic applications, including:

- ▶ **Hot water and chilled water recirculation**
- ▶ **Domestic hot water generation**
- ▶ **Snow melt installations**
- ▶ **Radiant heating systems**
- ▶ **Geothermal heat pumps**

Built tough to last for years

System engineers will appreciate the rugged construction of the E Series design: stainless steel shaft, permanently lubricated bearings, silicon carbide mechanical seal and high-strength Noryl impeller. These high performance components are designed, constructed and assembled to give years of trouble-free service.

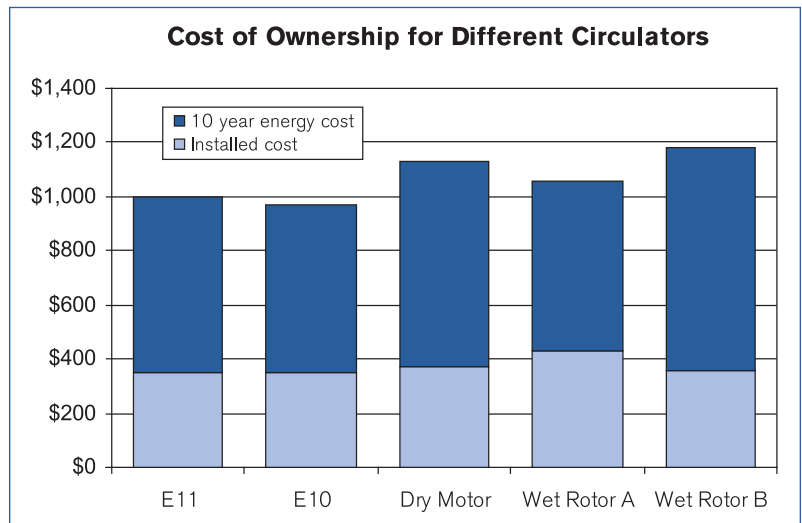
Easy to use – whether for new installations or as a replacement circulator

Installing contractors will appreciate the interchangeability of the E Series pumps: flange-to-flange dimensions and hydraulic characteristics (flow and head) are matched to many competing pumps of equal power, so it's easy to upgrade existing installations with an E Series pump when other pumps have failed.

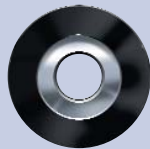
More profitable right from the start

Building owners will appreciate the fact that E Series circulators save money... from the start and for the future:

1. A very competitive initial purchase price that saves you money right away.
2. Higher efficiency means significant ongoing savings through reduced operation costs.
3. Easy-to-replace mechanical seal costs a fraction of the price of installing a new replacement circulator! It makes the E Series an investment to appreciate rather than an expense to manage. With calculated L_{10} bearing life of greater than 50 years (at best efficiency point), you will enjoy these savings for years to come.

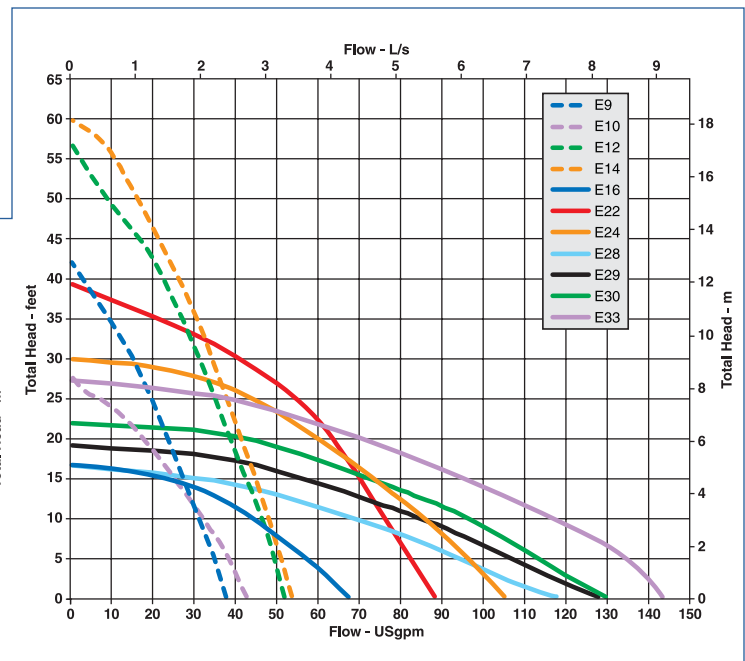
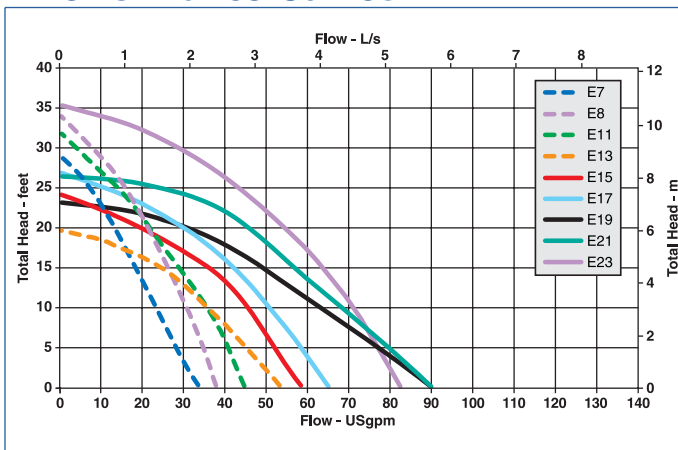


Mechanical seal can be replaced easily in less than 5 minutes



Actual size

▶ Performance Curves



► Technical Data

Model	E7	E8	E9	E10	E11	E12*	E13	E14*	E15	E16	E17	E19	E21	E22	E23	E24	E28	E29	E30	E33
Max. Flow	38.0 (2.4)	38.0 (2.4)	38.0 (2.4)	43.0 (2.7)	45.0 (2.8)	50.0 (3.1)	54.0 (3.4)	52.0 (3.3)	58 (3.7)	68.0 (4.3)	65 (4.1)	90 (5.7)	90 (5.7)	88 (5.6)	83 (5.2)	105 (6.6)	117.0 (7.4)	128 (8.1)	130.0 (8.2)	143.0 (9.0)
Max. Head	26.0 (7.9)	34.0 (10.4)	42.4 (12.9)	28.0 (8.5)	31.9 (9.7)	56.0 (17.0)	19.7 (6.0)	61.0 (18.6)	24.5 (7.5)	16.8 (5.1)	27.0 (8.2)	23.0 (7.0)	26.5 (8.1)	39.5 (12.0)	35.5 (10.8)	30.0 (9.1)	17.0 (5.2)	19.0 (5.8)	22.0 (6.7)	26.0 (7.9)
Max. Fluid Temperature:	230°F (110°C)																			
Max. Ambient Temperature:	122°F (50°C)																			
Max. Working Pressure:	150 psi (1034 kPa)																			

Notes: Flow in USgpm (L/s) and Head in feet (m). *Models E12-TE and E14-TE feature totally enclosed non-ventilated motors with a maximum fluid temperature of 150°F (65°C).

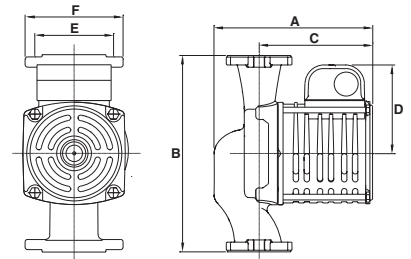
► Motor Data†

Model	E7	E8	E9	E10	E11	E12	E13	E14	E15	E16	E17	E19	E21	E22	E23	E24	E28	E29	E30	E33
Speed	3400	3250	3250	3300	3300	3300	3400	3300	3500	3400	3500	3450	3450	3350	3400	3400	3450	3400	3350	3300
Nominal Power	1/6 (125)	1/6 (125)	1/6 (125)	1/6 (125)	1/6 (125)	2/5 (298)	1/6 (125)	2/5 (298)	2/5 (298)	1/6 (125)	2/5 (298)	2/5 (298)	2/5 (298)	2/5 (298)	2/5 (298)	2/5 (298)	2/5 (298)	2/5 (298)	2/5 (298)	2/5 (298)
120 V	2.0	2.0	2.0	2.0	2.0	4.8	2.0	4.8	2.5	2.0	3.0	3.4	3.8	5.7	5.0	5.0	3.3	3.9	4.7	5.7
Full Load Amp Draw	208 V	1.0	1.0	1.0	--	2.4	--	2.4	1.8	--	1.6	1.8	2.0	3.0	2.6	2.6	1.7	2.0	2.4	3.1
240 V	1.0	1.0	1.0	1.0	1.0	2.4	1.0	2.4	1.8	1.0	1.6	1.8	2.0	3.0	2.6	2.6	1.7	2.0	2.4	3.1
277 V	--	--	--	--	--	2.4	--	2.4	1.8	--	1.6	1.8	2.0	3.0	2.6	2.6	1.7	2.0	2.4	3.1

Note: Speed in rpm, Nominal Power in hp (W) and Full Load Amp draw in Amps. † All motors are 2 pole, single phase.

► Materials of Construction

Pump Body:	Cast Iron or Bronze	Impeller:	30% Glass-filled Noryl
Face Plate & Shaft:	Stainless Steel	Seal:	Silicon Carbide <i>EnviroSeal</i>
Gasket:	EPDM	Bearings:	Permanently lubricated Stainless Steel



► Dimensions and Weights

Model	A	B	C	D	E	F	CONNECTION	SHIPPING WEIGHT	
								Cast Iron	Bronze
ARMflo E7/E7B	6 ³ / ₈ (164)	6 ³ / ₈ (164)	4 ¹³ / ₁₆ (122)	3 ¹ / ₁₆ (97)	3 ³ / ₁₆ (81)	4 ⁷ / ₃₂ (107)	1 1/4" Diameter 2-bolt flanges	11.5 (5.2)	12.8 (5.8)
ARMflo E8/E8B	6 ³ / ₈ (164)	6 ³ / ₈ (164)	4 ¹³ / ₁₆ (122)	3 ¹ / ₁₆ (97)	3 ³ / ₁₆ (81)	4 ⁷ / ₃₂ (107)	1 1/4" Diameter 2-bolt flanges	11.5 (5.2)	12.8 (5.8)
ARMflo E9/E9B	6 ³ / ₈ (164)	6 ³ / ₈ (164)	4 ¹³ / ₁₆ (122)	3 ¹ / ₁₆ (97)	3 ³ / ₁₆ (81)	4 ⁷ / ₃₂ (107)	1 1/4" Diameter 2-bolt flanges	11.5 (5.2)	12.8 (5.8)
ARMflo E10/E10B	6 ³ / ₈ (174)	8 1/2 (215)	4 ¹⁵ / ₁₆ (125)	3 ¹ / ₁₆ (97)	3 ³ / ₈ (86)	4 ⁷ / ₃₂ (107)	1 1/2" Diameter 2-bolt flanges	13.0 (5.9)	14.8 (6.7)
ARMflo E11/E11B	6 ³ / ₈ (174)	8 1/2 (215)	4 ¹⁵ / ₁₆ (125)	3 ¹ / ₁₆ (97)	3 ³ / ₈ (86)	4 ⁷ / ₃₂ (107)	1 1/2" Diameter 2-bolt flanges	13.0 (5.9)	14.8 (6.7)
ARMflo E12/E12B	8 ⁹ / ₁₆ (218)	6 ⁷ / ₁₆ (164)	7 ¹ / ₁₆ (180)	4 (101)	3 ³ / ₁₆ (81)	4 ⁷ / ₃₂ (107)	1 1/4" Diameter 2-bolt flanges	17.1 (7.8)	17.9 (8.1)
ARMflo E13/E13B	6 ³ / ₈ (174)	8 1/2 (215)	4 ¹⁵ / ₁₆ (125)	3 ¹ / ₁₆ (97)	3 ³ / ₈ (86)	4 ⁷ / ₃₂ (107)	1 1/2" Diameter 2-bolt flanges	13.0 (5.9)	14.8 (6.7)
ARMflo E14/E14B	8 ⁹ / ₁₆ (218)	6 ⁷ / ₁₆ (164)	7 ¹ / ₁₆ (180)	4 (101)	3 ³ / ₁₆ (81)	4 ⁷ / ₃₂ (107)	1 1/4" Diameter 2-bolt flanges	17.1 (7.8)	17.9 (8.1)
ARMflo E15/E15B	9 ⁵ / ₈ (244)	8 1/2 (215)	7 ¹ / ₄ (185)	4 (101)	3 ³ / ₁₆ (81)	4 ⁷ / ₃₂ (107)	1 1/4" Diameter 2-bolt flanges	20.3 (9.2)	20.3 (9.2)
ARMflo E16/E16B	7 ¹ / ₁₆ (195)	8 1/2 (215)	5 ¹ / ₈ (130)	3 ¹ / ₁₆ (97)	2 ⁷ / ₈ (73)	5 ⁵ / ₃₂ (131)	2" Diameter 4-bolt flanges	18.6 (8.4)	20.7 (9.4)
ARMflo E17/E17B	9 ⁵ / ₈ (244)	8 1/2 (215)	7 ¹ / ₄ (185)	4 (101)	3 ³ / ₁₆ (81)	4 ⁷ / ₃₂ (107)	1 1/4" Diameter 2-bolt flanges	20.3 (9.2)	20.3 (9.2)
ARMflo E19/E19B	9 ⁵ / ₈ (244)	8 1/2 (215)	7 ¹ / ₄ (185)	4 (101)	3 ³ / ₈ (86)	4 ⁷ / ₃₂ (107)	1 1/2" Diameter 2-bolt flanges	20.1 (9.1)	20.1 (9.1)
ARMflo E21/E21B	9 ⁵ / ₈ (244)	8 1/2 (215)	7 ¹ / ₄ (185)	4 (101)	3 ³ / ₈ (86)	4 ⁷ / ₃₂ (107)	1 1/2" Diameter 2-bolt flanges	20.1 (9.1)	20.1 (9.1)
ARMflo E22/E22B	9 ⁵ / ₈ (244)	8 1/2 (215)	7 ¹ / ₄ (185)	4 (101)	3 ³ / ₈ (86)	4 ⁷ / ₃₂ (107)	1 1/2" Diameter 2-bolt flanges	20.1 (9.1)	20.1 (9.1)
ARMflo E23/E23B	9 ⁵ / ₈ (244)	8 1/2 (215)	7 ¹ / ₄ (185)	4 (101)	3 ³ / ₈ (86)	4 ⁷ / ₃₂ (107)	1 1/2" Diameter 2-bolt flanges	20.1 (9.1)	20.1 (9.1)
ARMflo E24/E24B	9 ⁵ / ₈ (244)	8 1/2 (215)	7 ¹ / ₄ (185)	4 (101)	3 ³ / ₈ (86)	4 ⁷ / ₃₂ (107)	1 1/2" Diameter 2-bolt flanges	20.1 (9.1)	20.1 (9.1)
ARMflo E28/E28B	10 ⁵ / ₈ (269)	8 1/2 (215)	7 ⁹ / ₁₆ (193)	4 (101)	3 ¹ / ₂ (89)	6 (152)	3" Diameter 4-bolt flanges	27.7 (12.6)	27.7 (12.6)
ARMflo E29/E29B	10 ⁵ / ₈ (269)	8 1/2 (215)	7 ⁹ / ₁₆ (193)	4 (101)	3 ¹ / ₂ (89)	6 (152)	3" Diameter 4-bolt flanges	27.7 (12.6)	27.7 (12.6)
ARMflo E30/E30B	10 ³ / ₁₆ (259)	8 1/2 (215)	7 ⁹ / ₁₆ (193)	4 (101)	2 ⁷ / ₈ (73)	5 ⁵ / ₃₂ (131)	2" Diameter 4-bolt flanges	23.1 (10.5)	24.7 (11.2)
	10 ⁵ / ₈ (269)	8 1/2 (215)	7 ⁹ / ₁₆ (193)	4 (101)	3 ¹ / ₂ (89)	6 (152)	3" Diameter 4-bolt flanges	27.7 (12.6)	27.7 (12.6)
ARMflo E33/E33B	10 ³ / ₁₆ (259)	8 1/2 (215)	7 ⁹ / ₁₆ (193)	4 (101)	2 ⁷ / ₈ (73)	5 ⁵ / ₃₂ (131)	2" Diameter 4-bolt flanges	23.1 (10.5)	24.7 (11.2)
	10 ⁵ / ₈ (269)	8 1/2 (215)	7 ⁹ / ₁₆ (193)	4 (101)	3 ¹ / ₂ (89)	6 (152)	3" Diameter 4-bolt flanges	27.7 (12.6)	27.7 (12.6)

Note: Dimensions are in inches (mm) and weights in lbs (kg).

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