

SOLAR

PUMP GUIDE



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ALMATEC[®]
A **DOVER** COMPANY

Solar energy is the cleanest, most abundant renewable energy source in the world, and recent advances in solar energy technology allow the power of the sun to be harnessed like never before. Advancements in thermal energy and electric utility technology promise to decrease global reliance on fossil fuels, reduce the impact on global warming and create thousands of jobs around the world.

As one of the world's leading manufacturers of pneumatic diaphragm pumps, Almatec® is committed to providing solutions to manufacturers within the solar energy manufacturing market by providing safe, low maintenance, efficient products for the transfer of solar cell manufacturing fluids and media.

Solar photovoltaics (PV) – This precise, but harsh, manufacturing process of the wafers (transfer of slurry used as polishing or cutting agent and of liquids for chemical supply) is the perfect atmosphere for the use of Almatec E-Series pumps, which are well-suited for all applications found in solar cell production.

Solar Energy Industry: Poised For Global Growth

- The expanding global solar market will boost this industry's economic value by creating thousands of new jobs in the electrical, construction, plumbing, roofing, engineering and manufacturing industries.
- Alternative renewable energy sources have taken on increased relevance in the wake of the Japan earthquake of 2011. Many countries are altering or eliminating plans to expand the use of nuclear power.
- Annual solar cell shipments have doubled in recent years. The current solar project order backlog in the US as of this printing has soared past 12 gigawatts (GW).*
- China is currently putting infrastructure in place to build up to 20 GW in solar power generation by 2020.
- The United States is planning to build up to 3,000 GW of solar power generation capacity by 2050.**

* Solarbuzz United States Deal Tracker
** SolarTech USA

Almatec's E-series pumps are perfectly suited for the unique challenges solar cell manufacturing present. E-series pumps do not require electricity, are self-priming, and can pump media ranging from wastewater to abrasive slurries and media with solids in suspension, like the hard, sharp silicon particle by-product of the wafer cutting process. Almatec E-series pumps were designed to operate in the rugged solar energy manufacturing applications where most other pumps fail.

- **Superior Materials of Construction** – All E-Series housings and components, even the valves, are constructed of **polyethylene (PE)** or **PTFE** in a solid-block design. The PE material gives the pumps higher abrasion resistance than even steel, which is a prime consideration when handling the extremely abrasive and corrosive silicon-carbide slurry used in solar cell manufacture.
- **Precision Machining** – E-Series pumps are built from a mechanically machined solid plastic block, not molded, which gives them the structural integrity necessary to support the oscillating-pump action and maintain maximum process fluid containment. E-Series pumps consist of just three solid housing parts which feature an integrated support ring on each side. This design increases pump safety by evenly distributing the housing forces and increasing permissible bolt torque and torque retention.
- **Maintenance-Free Air Control** – Almatec's PERSWING P® air-control system ensures accurate reversal of the pump's main piston, as well as low noise levels. With only two moving parts, the PERSWING P has no dead center and does not require maintenance.

Wear factors based on sand-slurry applications:



Polyethylene (PE) = 1



Polypropylene (PP) = 7



Steel = 1.6





The preferred choice for solar cell manufacturers worldwide, Almatec® E-Series sets the standard in solar cell manufacturing...

- Wide range of chemical compatibility for supply, circulation and filtration of shear-sensitive and abrasive liquids
- Transfer of slurry used as polishing or cutting agent
- Excellent dry-run and self-priming capabilities
- Exterior free of metal
- Increased pump safety due to innovative ring-tightening structure
- Accommodate a variety of flow and discharge pressures
- Maximum containment in difficult operating conditions (no bearings, rotating parts, or shaft seals)



- **Pulsation Dampers** – As optional equipment the E-Series pumps can be equipped with a screwed-on or flanged pulsation damper. It adjusts automatically to optimize the diaphragm setting and ensure a consistent flow rate with minimal pulsation.



TECHNICAL DATA

Pump Size:		E 08	E 10	E 15	E 25	E 40	E 50
Dimensions, mm (in.):	length:	88 (3.5)	110 (4.3)	166 (6.5)	220 (8.7)	304 (12.0)	399 (15.7)
	width:	128 (5.0)	147 (5.8)	189 (7.4)	255 (10.0)	353 (13.9)	430 (16.9)
	height:	129 (5.1)	169 (6.7)	240 (9.4)	320 (12.6)	432 (17.0)	552 (21.7)
Nominal port size NPT:		1/4"	3/8"	1/2"	1"	1-1/2"	2"
Weight, kg (lb):	PE:	-	-	7 (15)	15 (33)	34 (75)	66 (146)
	PTFE:	2 (4)	5 (11)	12 (26)	29 (64)	69 (152)	131 (289)
Max. particle size of solids mm (in.) for pumps with ball valves:		2 (0.08)	3 (0.12)	4 (0.16)	6 (0.24)	9 (0.35)	11 (0.43)
Suction lift dry, mWC (ft):	cylinder valves:	1 (3.3)	2 (6.6)	3 (9.8)	4 (13.1)	5 (16.4)	5 (16.4)
	ball valves:	0.5 (1.6)	1 (3.3)	2 (6.6)	3 (9.8)	4 (13.1)	4 (13.1)
Suction lift wet, mWC (ft):		9 (29.5)	9 (29.5)	9.5 (31.2)	9.5 (31.2)	9.5 (31.2)	9.5 (31.2)
Max. operating pressure:	bar (psig):	7 (100)	7 (100)	7 (100)	7 (100)	7 (100)	7 (100)
Max. operating temperature, °C (F):	PE:	-	-	70 (158)	70 (158)	70 (158)	70 (158)
	PTFE:	100 (212)	100 (212)	120 (248)	120 (248)	120 (248)	120 (248)

These technical data apply to ALMATEC E-Series standard pumps without optional equipment and dampers.

e-SERIES
PUMPS





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