

**UNITED STATES
SECURITIES AND EXCHANGE COMMISSION**
WASHINGTON, D.C. 20549

FORM S-1

REGISTRATION STATEMENT UNDER THE SECURITIES ACT OF 1933

SUNSHINE HEART, INC.

(Exact name of registrant as specified in its charter)

Delaware
(State or other jurisdiction of
incorporation or organization)

3841
(Primary Standard Industrial
Classification Code Number)

68-0533453
(I.R.S. Employer
Identification No.)

**12988 Valley View Road
Eden Prairie, MN 55344
(952) 345-4200**

(Address, including zip code, and telephone number, including area code, of registrant's principal executive offices)

**David A. Rosa
Chief Executive Officer
Sunshine Heart, Inc.**

**12988 Valley View Road
Eden Prairie, MN 55344
(952) 345-4200**

(Name, address, including zip code, and telephone number, including area code, of agent for service)

Copies to:

**Jonathan R. Zimmerman
Matthew R. Kuhn**
Faegre Baker Daniels LLP
2200 Wells Fargo Center
90 South Seventh Street
Minneapolis, MN 55402-3901
(612) 766-7000

**Timothy R. Curry
Jacob C. Tiedt**
Jones Day
1755 Embarcadero Road
Palo Alto, CA 94303
(650) 739-3939

Approximate date of commencement of proposed sale to the public: As soon as practicable after the effective date of this registration statement.

If any of the securities being registered on this Form are to be offered on a delayed or continuous basis pursuant to Rule 415 under the Securities Act of 1933, as amended, check the following box.

If this Form is filed to register additional securities for an offering pursuant to Rule 462(b) under the Securities Act, check the following box and list the Securities Act registration number of the earlier effective registration statement for the same offering. 333-182727

If this Form is a post effective amendment filed pursuant to Rule 462(c) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering.

If this Form is a post effective amendment filed pursuant to Rule 462(d) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering.

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, or a smaller reporting company. See the definitions of "large accelerated filer," "accelerated filer" and "smaller reporting company" in Rule 12b-2 of the Exchange Act. (Check one):

Large Accelerated Filer

Accelerated Filer

Non-Accelerated Filer

Smaller Reporting Company

(Do not check if a smaller reporting company)

CALCULATION OF REGISTRATION FEE

Title of Each Class of Securities to be Registered	Amount to be Registered(1)	Proposed Maximum Aggregate Offering Price Per Share(2)	Proposed Maximum Aggregate Offering Price(2)	Amount of Registration Fee
Common stock, par value \$0.0001 per share	431,250	\$ 7.00	\$ 3,018,750	\$ 345.95

(1) Includes 56,250 shares that the underwriters have an option to purchase to cover over-allotments, if any.

(2) Estimated solely for the purpose of computing the registration fee pursuant to Rule 457(a) of the Securities Act of 1933.

THIS REGISTRATION STATEMENT SHALL BECOME EFFECTIVE UPON FILING WITH THE SECURITIES AND EXCHANGE COMMISSION IN ACCORDANCE WITH RULE 462(b) UNDER THE ACT.

**EXPLANATORY NOTE AND
INCORPORATION OF CERTAIN INFORMATION BY REFERENCE**

This Registration Statement on Form S-1 is being filed with respect to the registration of an additional number of shares of common stock, par value \$0.0001 per share ("Common Stock"), of Sunshine Heart, Inc., a Delaware corporation (the "Company"), pursuant to Rule 462(b) under the Securities Act of 1933, as amended. This Registration Statement includes the registration statement facing sheet, this page, the signature page, an exhibit index, an opinion of counsel regarding the legality of the securities being registered and a related consent, and the consent of the Company's independent registered public accounting firm. This Registration Statement relates to the Company's Registration Statement on Form S-1, as amended (File No. 333-182727) (the "Original Registration Statement"), initially filed by the Company on July 17, 2012 and declared effective by the Securities and Exchange Commission on August 9, 2012. The Company is filing this Registration Statement for the sole purpose of increasing the number of shares of Common Stock offered to reflect the actual initial public offering of 2,875,000 shares of Common Stock, plus an over-allotment option of 431,250 shares, at a price to the public of \$7.00 per share. Pursuant to Rule 462(b), the contents of the Original Registration Statement, including the exhibits and the power of attorney thereto, are incorporated by reference into this Registration Statement.

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SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, as amended, the registrant confirms that it has reasonable grounds to believe that it meets all of the requirements for filing on Form S-1 and has duly caused this Registration Statement on Form S-1 to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of Eden Prairie, State of Minnesota on this 9th day of August, 2012.

SUNSHINE HEART, INC.

By: /s/ DAVID A. ROSA
David A. Rosa
Chief Executive Officer

Pursuant to the requirements of the Securities Act of 1933, this Registration Statement has been signed by the following persons in the capacities and on the dates indicated.

<u>Signature</u>	<u>Title</u>	<u>Date</u>
<u>/s/ DAVID A. ROSA</u> David A. Rosa	President, Chief Executive Officer and Director (principal executive officer)	August 9, 2012
<u>/s/ JEFFREY MATHIESEN</u> Jeffrey Mathiesen	Chief Financial Officer (principal financial and accounting officer)	August 9, 2012
<u>*</u> Paul Buckman	Director	August 9, 2012
<u>*</u> Geoffrey Brooke	Director	August 9, 2012
<u>*</u> Nicholas Callinan	Director	August 9, 2012
<u>*</u> Mark Harvey, Ph.D.	Director	August 9, 2012
<u>*</u> William Peters, M.D.	Director	August 9, 2012
<u>*</u> Donal O'Dwyer	Director	August 9, 2012
<u>*</u> Gregory Waller	Director	August 9, 2012
<u>*/s/ JEFFREY MATHIESEN</u> Jeffrey Mathiesen Agent and attorney-in-fact		

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EXHIBIT INDEX

<u>No.</u>	<u>Description</u>
5.1	Opinion of Faegre Baker Daniels LLP
23.1	Consent of Ernst & Young LLP
23.2	Consent of Faegre Baker Daniels LLP (included in Exhibit 5.1)
24.1*	Power of Attorney

* Incorporated by reference from the Company's Registration Statement on Form S-1, as amended (File No. 333-182727), initially filed by the Company on July 17, 2012 and declared effective by the Securities and Exchange Commission on August 9, 2012.

FAEGRE BAKER DANIELS LLP
2200 Wells Fargo Center, 90 South Seventh Street
Minneapolis, Minnesota 55402-3901

August 9, 2012

Sunshine Heart, Inc.
12988 Valley View Road
Eden Prairie, MN 55344

Ladies and Gentlemen:

We have acted as counsel for Sunshine Heart, Inc., a Delaware corporation (the "*Company*"), in connection with the Company's filing of a Registration Statement on Form S-1 (File No. 333-182727) (the "*Original Registration Statement*") relating to the registration under the Securities Act of 1933, as amended (the "*Act*"), of 2,875,000 shares of Common Stock, par value \$0.0001 per share (the "*Common Stock*"), of the Company. We have also acted as counsel in connection with the Company's filing of a Registration Statement on Form S-1 (the "*Additional Registration Statement*") relating to the registration of an additional 431,250 shares of Common Stock that will be issued by the Company (the "*Shares*").

We have examined the Original Registration Statement, the Additional Registration Statement and the amended and restated certificate of incorporation of the Company, which has been filed with the Securities and Exchange Commission (the "*Commission*") as an exhibit to the Original Registration Statement. We also have examined the originals, or duplicates or certified or conformed copies, of such corporate and other records, agreements, documents and other instruments and have made such other investigations as we have deemed relevant and necessary in connection with the opinions hereinafter set forth. As to questions of fact material to this opinion, we have relied upon certificates or comparable documents of public officials and of officers and representatives of the Company.

In rendering the opinions set forth below, we have assumed (i) the genuineness of all signatures, (ii) the legal capacity of natural persons, (iii) the authenticity of all documents submitted to us as originals, (iv) the conformity to original documents of all documents submitted to us as duplicates or certified or conformed copies, and (v) the authenticity of the originals of such latter documents.

Based upon the foregoing, and subject to the qualifications, assumptions and limitations stated herein, we are of the opinion that the Shares have been duly authorized and, upon payment and delivery in accordance with the underwriting agreement in the form filed with the Commission as an exhibit to the Original Registration Statement, the Shares will be validly issued, fully paid and nonassessable.

We do not express any opinion herein concerning any law other than the Delaware General Corporation Law (including the statutory provisions, all applicable provisions of the Delaware Constitution and reported judicial decisions interpreting the foregoing).

We hereby consent to the filing of this opinion as an exhibit to the Additional Registration Statement and to the reference to our firm under the caption "Legal Matters" included in the Original Registration Statement and the related Prospectus. In giving this consent, we do not hereby admit that we are in the category of persons whose consent is required under Section 7 of the Act or the rules and regulations of the Commission.

This opinion is furnished to you in connection with the filing of the Additional Registration Statement, and is not to be used, circulated, quoted or otherwise relied upon for any other purpose. This opinion is limited to the specific issues addressed herein, and no opinion may be inferred or implied beyond that expressly stated herein. This opinion speaks only as of the date the Additional Registration Statement becomes effective under the Act and we assume no obligation to revise or supplement this opinion thereafter.

Very truly yours,
FAEGRE BAKER DANIELS LLP

/s/ Jonathan R. Zimmerman

By: Jonathan R. Zimmerman

Consent of Independent Registered Public Accounting Firm

We consent to the incorporation by reference in the Registration Statement (Form S-1) of our report dated March 23, 2012, except for the change in the presentation of comprehensive income, discussed in Note 1 to the consolidated financial statements, as to which the date is July 17, 2012, included in its Registration Statement (Form S-1 No. 333-182727) and related Prospectus for the registration of shares of its common stock, filed with the Securities and Exchange Commission.

/s/ Ernst & Young LLP

Minneapolis, Minnesota
August 7, 2012
