

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

FORM S-8
 REGISTRATION STATEMENT
 UNDER
 THE SECURITIES ACT OF 1933

CHF SOLUTIONS, INC.

(Exact name of registrant as specified in its charter)

Delaware
 (State or other jurisdiction of
 incorporation or organization)
12988 Valley View Road
Eden Prairie, Minnesota
 (Address of Principal Executive Offices)

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

55344
 (Zip Code)

CHF Solutions, Inc. 2017 Equity Incentive Plan
CHF Solutions, Inc. 2013 Non-Employee Directors' Equity Incentive Plan
CHF Solutions, Inc. New-Hire Equity Incentive Plan
 (Full title of the plan)

John L. Erb
Chief Executive Officer
CHF Solutions, Inc.
12988 Valley View Road
Eden Prairie, MN 55344
(952) 345-4200
 (Name, address and telephone number, including area code, of
 agent for service)

Copy to:
Phillip D. Torrence, Esq.
 Honigman Miller Schwartz and Cohn LLP
 350 East Michigan Avenue, Suite 300
 Kalamazoo, MI 49007
 (269) 337-7702

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

Large accelerated filer Accelerated filer

Non-accelerated filer (Do not check if a smaller reporting company) Smaller reporting company
 Emerging growth company

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 7(a)(2)(B) of the Securities Act.

CALCULATION OF REGISTRATION FEE

Title of securities to be registered	Amount to be registered(1)	Proposed maximum offering price per share(2)	Proposed maximum aggregate offering price(2)	Amount of registration fee
Common Stock, par value \$0.0001 per share	1,759,426	\$ 0.57	\$ 1,002,872.82	\$ 116.23

- (1) Pursuant to Rule 416(a) under the Securities Act of 1933, as amended (the "**Securities Act**"), this Registration Statement shall also cover any additional shares of the Registrant's common stock ("**Common Stock**") that become issuable under the Plans (as defined below) by reason of any stock dividend, stock split, recapitalization or any other similar transaction without receipt of consideration that results in an increase in the number of shares of the Registrant's outstanding Common Stock.
- (2) Estimated solely for the purpose of calculating the registration fee pursuant to paragraphs (c) and (h) of Rule 457 under the Securities Act. The offering price per share and aggregate offering price are based upon the average of the high and low prices of the Common Stock as reported on the NASDAQ Capital Market on May 30, 2017, a date within five business days prior to the date of filing of this Registration Statement, for: (i) shares reserved for future grant pursuant to the Registrant's 2017 Equity Incentive Plan (the "**2017 EIP**"); (ii) shares reserved for future grant pursuant to the Registrant's 2013 Non-Employee Directors' Equity Incentive Plan (the "**Directors' EIP**"); and (iii) shares reserved for future grant pursuant to the Registrant's New-Hire Equity Incentive Plan (the "**New-Hire Plan**"); and collectively, with the 2017 EIP and the Directors' EIP, the "**Plans**").

Securities	Number of Shares	Offering Price Per Share	Aggregate Offering Price
Shares reserved for future grant under the 2017 EIP	845,009(3)	\$ 0.57	\$ 481,655.13
Shares reserved for future grant under the Directors' EIP	40,030(4)	\$ 0.57	\$ 22,817.10
Shares reserved for future grant under the New-Hire Plan	874,387(5)	\$ 0.57	\$ 498,400.59
Proposed Maximum Offering Price			\$ 1,002,872.82

(3) As described in the Explanatory Note below, the number of shares of common stock, par value \$0.0001 per share, registered hereby consists of (i) 534,857 shares being registered for the first time pursuant to the 2017 EIP, and (ii) 310,152 shares of common stock issuable under the 2017 EIP as a result of reserved shares not issued or subject to outstanding grants under the Registrant's Amended and Restated 2002 Stock Plan and Second Amended and Restated 2011 Equity Incentive Plan, which are available for future grants as of the effective date of the 2017 EIP.

(4) Consist of shares that were automatically added to the shares authorized for issuance under the Directors' EIP on January 1, 2017 pursuant to an "evergreen" provision contained in the Directors' EIP. Pursuant to the Directors' EIP, the share reserve will automatically increase on January 1st of each year, for a period of not more than ten years, commencing on January 1, 2014 and ending on (and including) January 1, 2023, to an amount equal to two percent (2%) of the fully diluted shares outstanding on December 31st of the preceding calendar year; provided that the Board of Directors may act prior to January 1st of a given year to provide that there will be no January 1st increase in the share reserve for such year or that the increase in the share reserve for such year will be a lesser number of shares than would otherwise occur.

(5) Consist of shares reserved for future grant under the New-Hire Plan pursuant to a Fourth Amendment to the New-Hire Plan that was approved by the Registrant's Board of Directors on May 25, 2017.

EXPLANATORY NOTE

On May 25, 2017 (the "**Effective Date**"), the stockholders of CHF Solutions, Inc. (the "**Registrant**") approved the 2017 Equity Incentive Plan (the "**2017 EIP**"). This Registration Statement on Form S-8 (the "**Registration Statement**") is being filed to register (i) 845,009 shares of common stock, consisting of 534,857 new shares of common stock reserved under the 2017 EIP and 310,152 reserved shares not issued or subject to outstanding grants under the Registrant's Amended and Restated 2002 Stock Plan and the Second Amended and Restated 2011 Equity Incentive Plan as of the Effective Date, available for issuance to employees, directors and consultants under the 2017 EIP, (ii) an additional 40,030 shares reserved for future grant pursuant to the Registrant's 2013 Non-Employee Directors' Equity Incentive Plan and (iii) an additional 874,387 shares reserved for future grant pursuant to the Registrant's New-Hire

Equity Incentive Plan. The Registrant's authority to grant new awards under the 2011 Equity Incentive Plan terminated upon stockholder approval of the 2017 EIP on the Effective Date.

INCORPORATION BY REFERENCE OF CONTENTS OF REGISTRATION STATEMENTS ON FORM S-8

The contents of the Registration Statements on Form S-8 previously filed with the Securities and Exchange Commission (the "**Commission**") on September 14, 2012 (File No. 333-183925), May 30, 2013 (File No. 333-188935), August 9, 2013 (File No. 333-190499), March 18, 2014 (File No. 333-194642), March 20, 2015 (File No. 333-202904), and March 15, 2016 (File No. 333-210215) are incorporated by reference herein.

PART I

INFORMATION REQUIRED IN PROSPECTUS

The documents containing the information required in this Part I will be delivered to the participants in the Plan, as specified in Rule 428(b)(1) of the Securities Act. Such documents are not required to be filed with the Commission as part of this Registration Statement.

PART II

INFORMATION REQUIRED IN THE REGISTRATION STATEMENT

Item 3. Incorporation of Documents by Reference.

The following documents filed with the Commission by the Registrant are hereby incorporated by reference in this Registration Statement:

- (a) The Registrant's Annual Report on Form 10-K for the year ended December 31, 2016, filed with the Commission on March 8, 2017;
- (b) The Registrant's Quarterly Report on Form 10-Q for the period ended March 31, 2017, filed with the Commission on May 12, 2017;
- (c) The Registrant's Current Reports on Form 8-K filed with the Commission on January 10, 2017, January 13, 2017, February 3, 2017, February 10, 2017, February 16, 2017, March 3, 2017, March 22, 2017, March 24, 2017, March 29, 2017, April 11, 2017, April 25, 2017, April 28, 2017, May 5, 2017, May 23, 2017 and May 30, 2017; and
- (d) The description of the Registrant's Common Stock contained in the Registration Statement on Form 10 (File No. 001-35312) filed pursuant to Section 12(b) on September 30, 2011 and all amendments thereto.

In addition, all documents the Registrant subsequently files pursuant to Sections 13(a), 13(c), 14 or 15(d) of the Securities Exchange Act of 1934, as amended, after the filing of this Registration Statement and prior to the filing of a post-effective amendment which indicates that all securities offered hereby have been sold or which

deregisters all securities covered hereby then remaining unsold are incorporated by reference in this Registration Statement and are a part hereof from the date of filing of such documents.

Any statement contained in a document incorporated or deemed to be incorporated by reference herein shall be deemed to be modified or superseded for purposes of this Registration Statement to the extent that a statement contained herein, or in any subsequently filed document, which also is or is deemed to be incorporated by reference herein, modifies or supersedes such prior statement. Any such statement so modified or superseded shall not be deemed, except as so modified or superseded, to constitute part of this Registration Statement.

Item 4. Description of Securities.

Not applicable.

Item 5. Interests of Named Experts and Counsel.

Not applicable.

Item 6. Indemnification of Directors and Officers.

The Registrant's Fourth Amended and Restated Certificate of Incorporation, as amended limits the liability of the Registrant's directors to the fullest extent permitted by Delaware law. Delaware law provides that directors of a corporation will not be personally liable for monetary damages for breach of their fiduciary duties as directors, except for liability for any:

- breach of their duty of loyalty to the Registrant or the Registrant's stockholders;
- act or omission not in good faith or that involves intentional misconduct or a knowing violation of law;
- unlawful payment of dividends or redemption of shares as provided in Section 174 of the Delaware General Corporation Law; or
- transaction from which the directors derived an improper personal benefit.

These limitations of liability do not apply to liabilities arising under federal securities laws and do not affect the availability of equitable remedies such as injunctive relief or rescission.

The Registrant's bylaws provide that it will indemnify and advance expenses to its directors and officers to the fullest extent permitted by law or, if applicable, pursuant to indemnification agreements. The bylaws further provide that the Registrant may choose to indemnify its other employees or agents from time to time. Subject to certain exceptions and procedures, the Registrant's bylaws also require it to advance to any person who was or is a party, or is threatened to be made a party, to any proceeding by reason of the person's service as one of the Registrant's directors or officers all expenses incurred by the person in connection with such proceeding.

Section 145(g) of the Delaware General Corporation Law and the Registrant's bylaws also permit it to secure insurance on behalf of any officer, director, employee or other agent for any liability arising out of his or her actions in connection with their services to us, regardless of whether the Registrant's bylaws permit indemnification. The Registrant maintains a directors' and officers' liability insurance policy.

The Registrant entered into indemnification agreements with each of its directors and executive officers that provide, in general, that the Registrant will indemnify them to the fullest extent permitted by law in connection with their service to the Registrant or on its behalf and, subject to certain exceptions and procedures, that the Registrant will advance to them all expenses that they incur in connection with any proceeding to which they are, or are threatened to be, a party.

2

At present, there is no pending litigation or proceeding involving any of the Registrant's directors or officers as to which indemnification is required or permitted, and the Registrant is not aware of any threatened litigation or proceeding that may result in a claim for indemnification.

Insofar as indemnification for liabilities arising under the Securities Act may be permitted to directors, officers and controlling persons of the registrant pursuant to the foregoing provisions, or otherwise, the registrant has been advised that in the opinion of the Securities and Exchange Commission this indemnification is against public policy as expressed in the Securities Act and is therefore unenforceable.

Item 7. Exemption from Registration Claimed.

Not applicable.

Item 8. Exhibits.

The Exhibit Index attached to this Registration Statement is incorporated herein by reference.

Item 9. Undertakings.

(a) The Registrant hereby undertakes:

- (1) To file, during any period in which offers or sales are being made, a post-effective amendment to this Registration Statement:
 - (i) To include any prospectus required by Section 10(a)(3) of the Securities Act;
 - (ii) To reflect in the prospectus any facts or events arising after the effective date of the Registration Statement (or the most recent post-effective amendment thereof) which, individually or in the aggregate, represent a fundamental change in the information set forth in the Registration Statement. Notwithstanding the foregoing, any increase or decrease in volume of securities offered (if the total dollar value of securities offered would not exceed that which was registered) and any deviation from the low or high end of the estimated maximum offering range may be reflected in the form of prospectus filed with the Commission pursuant to Rule 424(b) if, in the aggregate, the changes in volume and price represent no more than a 20 percent change in the maximum aggregate offering price set forth in the "Calculation of Registration Fee" table in the effective Registration Statement;
 - (iii) to include any material information with respect to the plan of distribution not previously disclosed in the Registration Statement or any material change to such information in the Registration Statement;

provided, however, that paragraphs (a)(1)(i) and (a)(1)(ii) do not apply if the information required to be included in a post-effective amendment by those paragraphs is contained in periodic reports filed with or furnished to the Commission by the Registrant pursuant to Section 13 or 15(d) of the Exchange Act that are incorporated by reference in the Registration Statement; and

- (2) That, for the purpose of determining any liability under the Securities Act, each such post-effective amendment shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offer thereof.
- (3) To remove from registration by means of a post-effective amendment any of the securities being registered which remain unsold at the termination of the offering.

(b) The Registrant hereby undertakes that, for the purpose of determining any liability under the Securities Act, each filing of the Registrant's annual report pursuant to Section 13(a) or Section 15(d) of the Exchange Act

3

(and, where applicable, each filing of an employee benefit plan's annual report pursuant to Section 15(d) of the Exchange Act) that is incorporated by reference in the Registration Statement shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.

(c) Insofar as indemnification for liabilities arising under the Securities Act may be permitted to directors, officers and controlling persons of the Registrant pursuant to the foregoing provisions, or otherwise, the Registrant has been advised that in the opinion of the Commission such indemnification is against public policy as expressed in the Securities Act and is, therefore, unenforceable. In the event that a claim for indemnification against such liabilities (other than the payment by the Registrant of expenses incurred or paid by a director, officer or controlling person of the Registrant in the successful defense of any action, suit or proceeding) is asserted by such director, officer or controlling person in connection with the securities being registered, the Registrant will, unless in the opinion of its counsel the matter has been settled by controlling precedent, submit to a court of appropriate jurisdiction the question whether such indemnification by it is against public policy as expressed in the Securities Act and will be governed by the final adjudication of such issue.

SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, the Registrant certifies that it has reasonable grounds to believe that it meets all of the requirements for filing on Form S-8 and has duly caused this Registration Statement to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of Eden Prairie, State of Minnesota, on June 2, 2017.

CHF SOLUTIONS, INC.

By: /s/ CLAUDIA DRAYTON
 Name: Claudia Drayton
 Title: Chief Financial Officer

We, the undersigned officers and directors of CHF Solutions, Inc., hereby constitute John L. Erb and Claudia Drayton, as the true and lawful attorneys with full power to them, and each of them singly to sign for us and in our names, in the capacities indicated below the Registration Statement filed herewith and any amendments to said Registration Statement, and generally to do all such things in our name and behalf in our capacities as officers and directors to enable CHF Solutions, Inc. to comply with the provisions of the Securities Act of 1933 and all requirements of the Securities and Exchange Commission, hereby ratifying and confirming our signatures as they may be signed by our said attorneys, or any of them, to said Registration Statement and any and all amendments thereto. 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/ JOHN L. ERB</u> John L. Erb	President, CEO and Chairman (principal executive officer)	June 2, 2017
<u>/s/ CLAUDIA DRAYTON</u> Claudia Drayton	Chief Financial Officer (principal financial and accounting officer)	June 2, 2017
<u>/s/ STEVE BRANDT</u> Steve Brandt	Director	June 2, 2017
<u>/s/ MATTHEW LIKENS</u> Matthew Likens	Director	June 2, 2017
<u>/s/ JON W. SALVESON</u> Jon W. Salvesson	Director	June 2, 2017
<u>/s/ GREGORY D. WALLER</u> Gregory D. Waller	Director	June 2, 2017
<u>/s/ WARREN S. WATSON</u> Warren S. Watson	Director	June 2, 2017

EXHIBIT INDEX

<u>Exhibit Number</u>	<u>Exhibit Description</u>	<u>Incorporated By Reference</u>			<u>Exhibit Number</u>	<u>Filed Herewith</u>
		<u>Form</u>	<u>File Number</u>	<u>Date of First Filing</u>		
4.1	Fourth Amended and Restated Certificate of Incorporation	10	001-35312	February 1, 2012	3.1	
4.2	Certificate of Amendment to the Fourth Amended and Restated Certificate of Incorporation	8-K	001-35312	January 13, 2017	3.1	
4.3	Certificate of Amendment to Fourth Amended and Restated Certificate of Incorporation	8-K	001-35312	May 23, 2017	3.1	

4.4	Form of Certificate of Designations of Series A Junior Participating Preferred Stock	8-K	001-35312	June 14, 2013	3.1
4.5	Certificate of Designation of Preferences, Rights and Limitations of Series B Convertible Preferred Stock	8-K	001-35312	July 25, 2016	3.1
4.6	Certificate of Designation of Preferences, Rights and Limitations of Series B-1 Convertible Preferred Stock	8-K	001-35312	November 3, 2016	3.1
4.7	Certificate of Designation of Preferences, Rights and Limitations of Series C Convertible Preferred Stock	8-K	001-35312	November 3, 2016	3.2
4.8	Certificate of Designation of Preferences, Rights and Limitations of Series D Convertible Preferred Stock	8-K	001-35312	November 3, 2016	3.3
4.9	Certificate of Designation of Preferences, Rights and Limitations of Series E Convertible Preferred Stock	S-1/A	333-216841	April 4, 2017	3.9
4.10	Second Amended and Restated Bylaws	8-K	001-35312	May 23, 2017	3.2
4.11	Warrant to Purchase Stock, dated February 18, 2015, issued to Silicon Valley Bank	8-K	001-35312	February 19, 2015	4.1
4.12	Warrant to Purchase Stock, dated February 18, 2015, issued to Life Science Loans, LLC	8-K	001-35312	February 19, 2015	4.2
4.13	Form of common stock Purchase Warrant issued pursuant to the Securities Purchase Agreement, dated July 20, 2016, among the Company and the purchasers signatory thereto	8-K	001-35312	July 22, 2016	4.2
4.14	Form of common stock Purchase Warrant issued to Northland Securities, Inc.	8-K	001-35312	July 22, 2016	4.3
4.15	Registration Rights Agreement between the Company and Gambro UF Solutions, Inc. dated August 5, 2016	8-K	001-35312	August 8, 2016	4.1

Exhibit Number	Exhibit Description	Incorporated By Reference			Exhibit Number	Filed Herewith
		Form	File Number	Date of First Filing		
4.16	Form of common stock Purchase Warrant issued pursuant to the Securities Purchase Agreement, dated October 30, 2016, among the Company and the purchasers signatory thereto	8-K	001-35312	October 31, 2016	4.1	
4.17	Form of common stock Purchase Warrant issued pursuant to the Letter Agreement, between the Company and the purchasers signatory thereto, dated February 15, 2017	8-K	001-35312	February 16, 2017	4.1	
4.18	Form of common stock Purchase Warrant to purchase shares of common stock	S-1/A	333-216841	April 4, 2017	4.8	
5.1	Opinion of Honigman Miller Schwartz Cohn LLP					X
23.1	Consent of Ernst & Young LLP					X
23.2	Consent of Honigman Miller Schwartz					X

and Cohn LLP (included in its opinion filed as Exhibit 5.1 to this Registration Statement)

24.1	Power of Attorney (included with signatures)					X
99.1	2013 Non-Employee Directors' Equity Incentive Plan	14A	001-35312	April 5, 2013		App. A
99.2	Form of Stock Option Grant Notice and Option Agreement for 2013 Non-Employee Directors' Equity Incentive Plan	10-K	001-35312	March 20, 2015		10.10
99.3	Form of Restricted Stock Unit Award Grant Notice and Agreement for 2013 Non-Employee Directors' Equity Incentive Plan	10-K	001-35312	March 20, 2015		10.11
99.4	New-Hire Equity Incentive Plan	10-Q	001-35312	August 8, 2013		10.1
99.5	First Amendment to New-Hire Equity Incentive Plan	10-Q	001-35312	November 12, 2013		10.1
99.6	Second Amendment to New-Hire Equity Incentive Plan	S-8	333-202904	March 20, 2015		99.12
99.7	Third Amendment to New-Hire Equity Incentive Plan	S-8	333-210215	March 15, 2016		99.13
99.8	Fourth Amendment to New-Hire Equity Incentive Plan	8-K	001-35312	May 30, 2017		10.4
99.9	Form of Stock Option Grant Notice and Option Agreement for New-Hire Equity Incentive Plan	10-K	001-35312	March 20, 2015		10.14
99.10	2017 Equity Incentive Plan	8-K	001-35312	May 30, 2017		10.1

<u>Exhibit Number</u>	<u>Exhibit Description</u>	<u>Incorporated By Reference</u>			<u>Exhibit Number</u>	<u>Filed Herewith</u>
		<u>Form</u>	<u>File Number</u>	<u>Date of First Filing</u>		
99.11	Form of Stock Option Grant Notice and Option Agreement for 2017 Equity Incentive Plan	8-K	001-35312	May 30, 2017	10.2	
99.12	Form of Restricted Stock Unit Grant Notice and Restricted Stock Unit Agreement for 2017 Equity Incentive Plan	8-K	001-35312	May 30, 2017	10.3	

HONIGMAN

Honigman Miller Schwartz and Cohn LLP
Attorneys and Counselors

(313) 465-7000
Fax: (313) 465-8000
www.honigman.com

June 2, 2017

CHF Solutions, Inc.
12988 Valley View Road
Eden Prairie, MN 55344

RE: Registration Statement on Form S-8

Ladies and Gentlemen:

We have acted as counsel to CHF Solutions, Inc., a Delaware corporation (the "**Company**"), in connection with the preparation and filing of a Registration Statement on Form S-8 (the "**Registration Statement**") with the Securities and Exchange Commission (the "**Commission**") for the registration under the Securities Act of 1933, as amended (the "**Securities Act**"), of up to 1,759,426 shares of the Company's Common Stock, \$0.0001 par value per share (the "**Shares**"), to be issued pursuant to awards under the Company's 2017 Equity Incentive Plan, 2013 Non-Employee Directors' Equity Incentive Plan and New-Hire Equity Incentive Plan (collectively, the "**Plans**").

Based on our examination of such documents and other matters as we deem relevant, we are of the opinion that the Shares, when offered, sold and issued by the Company in accordance with the applicable Plans and the awards thereunder, the Registration Statement and the related Prospectuses, will be validly issued, fully paid and nonassessable.

We consent to the filing of this opinion as an exhibit to the Registration Statement. In giving such consent, we do not hereby admit that we come within the category of persons whose consent is required under Section 7 of the Securities Act or the rules and regulations of the Commission under the Securities Act.

Very truly yours,

/S/ HONIGMAN MILLER SCHWARTZ AND COHN LLP

350 East Michigan Avenue · Suite 300 · Kalamazoo, Michigan 49007-3800
Detroit · Lansing · Oakland County · Ann Arbor · Kalamazoo · Chicago

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We consent to the incorporation by reference in the Registration Statement (Form S-8) pertaining to the CHF Solutions, Inc. 2017 Equity Incentive Plan, the CHF Solutions, Inc. 2013 Non-Employee Directors' Equity Incentive Plan, and the CHF Solutions, Inc. New-Hire Equity Incentive Plan, as amended, of our report dated March 8, 2017, with respect to the consolidated financial statements of Sunshine Heart, Inc. (now known as CHF Solutions, Inc.) and subsidiaries included in its Annual Report (Form 10-K) for the year ended December 31, 2016, filed with the Securities and Exchange Commission.

/s/ Ernst & Young LLP
Minneapolis, Minnesota

June 2, 2017
