

Cardiovascular Systems Inc  
Form SC 13G  
February 15, 2013

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

SCHEDULE 13G

UNDER THE SECURITIES EXCHANGE ACT OF 1934  
(AMENDMENT NO. )\*

CARDIOVASCULAR SYSTEMS INC.

-----  
(Name of Issuer)

COMMON

-----  
(Title of Class of Securities)

141619106

-----  
(CUSIP Number)

-----  
(Date of Event Which Requires Filing of this Statement)

Check the appropriate box to designate the rule pursuant to which this Schedule is filed:

- Rule 13d-1(b)
- Rule 13d-1(c)
- Rule 13d-1(d)

\*The remainder of this cover page shall be filled out for a reporting person's initial filing on this form with respect to the subject class of securities, and for any subsequent amendment containing information which would alter the disclosures provided in a prior cover page.

The information required in the remainder of this cover page shall not be deemed to be "filed" for the purpose of Section 18 of the Securities Exchange Act of 1934 ("Act") or otherwise subject to the liabilities of that section of the Act but shall be subject to all other provisions of the Act (however, see the Notes).

PERSONS WHO RESPOND TO THE COLLECTION OF INFORMATION CONTAINED IN THIS FORM ARE NOT REQUIRED TO RESPOND UNLESS THE FORM DISPLAYS A CURRENTLY VALID OMB CONTROL NUMBER.

SEC 1745 (8-07)

CUSIP No. 141619106

13G

Page 2 of 5 Pages

1. Names of Reporting Persons.  
FIRST MANHATTAN CO.

- 2. Check the Appropriate Box if a Member of a Group (See Instructions)
  - (a) [    ]
  - (b) [ X ]

3. SEC Use Only

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4. Citizenship or Place of Organization	NEW YORK
5. Sole Voting Power	1,626,546
6. Shared Voting Power	73,300
7. Sole Dispositive Power	1,626,546
8. Shared Dispositive Power	73,300
9. Aggregate Amount Beneficially Owned by Each Reporting Person	1,699,846
10. Check if the Aggregate Amount in Row (9) Excludes Certain Shares (See Instructions) [ ]	
11. Percent of Class Represented by Amount in Row (9)	8.21%
12. Type of Reporting Person (See Instructions)	BD, IA, PN

CUSIP No. 141619106 13G Page 3 of 5 Pages

Item 1(a). Name of Issuer:

CARDIOVASCULAR SYSTEMS INC.

Item 1(b). Address of Issuer's Principal Executive Offices:

651 CAMPUS DRIVE  
ST. PAUL, MN 55112

Item 2(a). Name of Person Filing:

FIRST MANHATTAN CO.

Item 2(b). Address of Principal Business Office, or if None, Residence:

437 MADISON AVENUE  
NEW YORK, NY 10022

Item 2(c). Citizenship U.S.A.

Item 2(d). Title of Class of Securities COMMON

Item 2(e). CUSIP Number: 141619106

Item 3. If this statement is filed pursuant to 240.13d-1(b) or 240.13d-2(b) or (c), check whether the person filing is a:

- (a)  Broker or dealer registered under 15 of the Act (15 U.S.C. 78o).
- (b)  Bank as defined in section 3(a)(6) of the Act (15 U.S.C. 78c).
- (c)  Insurance company as defined in section 3(a)(19) of the Act (15 U.S.C.78c).
- (d)  Investment company registered under section 8 of the Investment Company Act of 1940 (15U.S.C 80a-8).

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- (e)  An investment adviser in accordance with 240.13d-1(b)(1)(ii)(E);
- (f)  An employee benefit plan or endowment fund in accordance with 240.13d-1(b)(1)(ii)(F);
- (g)  A parent holding company or control person in accordance with 240.13d-1(b)(1)(ii)(G);
- (h)  A savings associations as defined in Section 3(b) of the Federal Deposit Insurance Act (12 U.S.C.1813);
- (i)  A church plan that is excluded from the definition of an investment company under section 3(c)(14) of the Investment Company Act of 1940 (15 U.S.C.80a-3);
- (j)  Group, in accordance with 240.13d-1(b)(1)(ii)(J).

CUSIP No. 141619106

13G

Page 4 of 5 Pages

Item 4. Ownership.

Provide the following information regarding the aggregate number and percentage of the class of securities of the issuer identified in Item 1.

- (a) Amount beneficially owned 1,699,846
- (b) Percent of class: 8.21%
- (c) Number of shares as to which such person has:
  - (i) Sole power to vote or to direct the vote 1,626,546
  - (ii) Shared power to vote or to direct the vote 73,300
  - (iii) Sole power to dispose or to direct the disposition of 1,626,546
  - (iv) Shared power to dispose or to direct the disposition of 73,300

Item 5. Ownership of Five Percent or Less of a Class.

If this statement is being filed to report the fact that as of the date hereof the reporting person has ceased to be the beneficial owner of more than five percent of the class of securities check the following: [ ].

Item 6. Ownership of More Than Five Percent on Behalf of Another Person.

NOT APPLICABLE

Item 7. Identification and Classification of the Subsidiary Which Acquired the Security Being Reported on by the Parent Holding Company or Control Person.

NOT APPLICABLE

Item 8. Identification and Classification of Members of the Group.

NOT APPLICABLE

Item 9. Notice of Dissolution of Group.

CUSIP No. 141619106

13G

Page 5 of 5 Pages

Item 10. Certifications.

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(a) The following certification shall be included if the statement is filed pursuant to 240.13d-1(b):

By signing below I certify that, to the best of my knowledge and belief, the securities referred to above were acquired and are held in the ordinary course of business and were not acquired and are not held for the purpose of or with the effect of changing or influencing the control of the issuer of the securities and were not acquired and are not held in connection with or as a participant in any transaction having that purpose or effect.

(b) The following certification shall be included if the statement is filed pursuant to 240.13d-1(c):

By signing below I certify that, to the best of my knowledge and belief, the securities referred to above were acquired and are held in the ordinary course of business and were not acquired and are not held for the purpose of or with the effect of changing or influencing the control of the issuer of the securities and were not acquired and are not held in connection with or as a participant in any transaction having that purpose or effect.

SIGNATURE

After reasonable inquiry and to the best of my knowledge and belief, I certify that the information set forth in this statement is true, complete and correct.

February 14, 2013  
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(Date)

s/s/ Neal K. Stearns  
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(Signature)

Neal K. Stearns  
Senior Managing Director  
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(Name/Title)

Note. Schedules filed in paper format shall include a signed original and five copies of the schedule, including all exhibits. See Rule 13d-7 for other parties for whom copies are to be sent.

Attention. Intentional misstatements or omissions of fact constitute federal criminal violations (see 18 U.S.C. 1001).