# PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1
Stylesheet Version v1.2

EPAS ID: PAT6422591

| | |
|---|---|
| **SUBMISSION TYPE:** | NEW ASSIGNMENT |
| **NATURE OF CONVEYANCE:** | ASSIGNMENT |

**CONVEYING PARTY DATA**

| Name | Execution Date |
|---|---|
| THORATEC LLC | 11/28/2016 |

**RECEIVING PARTY DATA**

| | |
|---|---|
| **Name:** | TC1 LLC |
| **Street Address:** | 6035 STONERIDGE DRIVE |
| **City:** | PLEASANTON |
| **State/Country:** | CALIFORNIA |
| **Postal Code:** | 94588 |

**PROPERTY NUMBERS Total: 1**

| Property Type | Number |
|---|---|
| **Application Number:** | 17106569 |

**CORRESPONDENCE DATA**

**Fax Number:** (314)621-2307

***Correspondence will be sent to the e-mail address first; if that is unsuccessful, it will be sent using a fax number, if provided; if that is unsuccessful, it will be sent via US Mail.***

**Phone:** 3146215070
**Email:** uspatents@armstrongteasdale.com
**Correspondent Name:** ARMSTRONG TEASDALE LLP
**Address Line 1:** 7700 FORSYTH BLVD
**Address Line 2:** SUITE 1800
**Address Line 4:** ST. LOUIS, MISSOURI 63105-1847

| | |
|---|---|
| **ATTORNEY DOCKET NUMBER:** | P04024USC1 |
| **NAME OF SUBMITTER:** | CHRISTOPHER M. GOFF |
| **SIGNATURE:** | /Christopher M. Goff/ |
| **DATE SIGNED:** | 11/30/2020 |

**Total Attachments: 25**
source=P04024US_ASSIGNMENT-THORATEC LLC -TC1 LLC#page1.tif
source=P04024US_ASSIGNMENT-THORATEC LLC -TC1 LLC#page2.tif
source=P04024US_ASSIGNMENT-THORATEC LLC -TC1 LLC#page3.tif
source=P04024US_ASSIGNMENT-THORATEC LLC -TC1 LLC#page4.tif
source=P04024US_ASSIGNMENT-THORATEC LLC -TC1 LLC#page5.tif

source=P04024US_ASSIGNMENT-THORATEC LLC -TC1 LLC#page6.tif
source=P04024US_ASSIGNMENT-THORATEC LLC -TC1 LLC#page7.tif
source=P04024US_ASSIGNMENT-THORATEC LLC -TC1 LLC#page8.tif
source=P04024US_ASSIGNMENT-THORATEC LLC -TC1 LLC#page9.tif
source=P04024US_ASSIGNMENT-THORATEC LLC -TC1 LLC#page10.tif
source=P04024US_ASSIGNMENT-THORATEC LLC -TC1 LLC#page11.tif
source=P04024US_ASSIGNMENT-THORATEC LLC -TC1 LLC#page12.tif
source=P04024US_ASSIGNMENT-THORATEC LLC -TC1 LLC#page13.tif
source=P04024US_ASSIGNMENT-THORATEC LLC -TC1 LLC#page14.tif
source=P04024US_ASSIGNMENT-THORATEC LLC -TC1 LLC#page15.tif
source=P04024US_ASSIGNMENT-THORATEC LLC -TC1 LLC#page16.tif
source=P04024US_ASSIGNMENT-THORATEC LLC -TC1 LLC#page17.tif
source=P04024US_ASSIGNMENT-THORATEC LLC -TC1 LLC#page18.tif
source=P04024US_ASSIGNMENT-THORATEC LLC -TC1 LLC#page19.tif
source=P04024US_ASSIGNMENT-THORATEC LLC -TC1 LLC#page20.tif
source=P04024US_ASSIGNMENT-THORATEC LLC -TC1 LLC#page21.tif
source=P04024US_ASSIGNMENT-THORATEC LLC -TC1 LLC#page22.tif
source=P04024US_ASSIGNMENT-THORATEC LLC -TC1 LLC#page23.tif
source=P04024US_ASSIGNMENT-THORATEC LLC -TC1 LLC#page24.tif
source=P04024US_ASSIGNMENT-THORATEC LLC -TC1 LLC#page25.tif

# CONFIRMATORY ASSIGNMENT

WHEREAS, Thoratec Corporation was converted to Thoratec LLC pursuant to the Articles of Organization – Conversion, filed on November 12, 2015.

WHEREAS, Thoratec LLC, a Limited Liability Company of California, having its principal place of business at 6035 Stoneridge Drive, Pleasanton, California 94588 ("Assignor"), has heretofore sold, transferred, and conveyed to TC1 LLC, a Limited Liability Company having a principal place of business at 6035 Stoneridge Drive, Pleasanton, California 94588 ("Assignee"), all of its right, title, and interest, in and to certain inventions, patents, and patent applications as set forth in Exhibit A attached hereto, as part of an assignment agreement dated November 16, 2015 and attached as Exhibit A.

NOW, THEREFORE, for good and valuable consideration, the receipt and sufficiency of which is acknowledged, Assignor hereby confirms that Assignor did sell, transfer, and convey unto Assignee all right, title, and interest in and to the following:

(a) all intellectual property (including, without limitation, any innovation, information, invention, discovery, product, process, work or design) disclosed, embodied, shown, or claimed in the below-referenced patent applications in Exhibit A, implicitly or explicitly;

(b) the below-referenced patent applications in Exhibit A, the right to claim priority to the below-referenced patent applications in Exhibit A, all applications based in whole or in part upon the below-referenced patent applications in Exhibit A, including, without limitation, all applications that are a provisional, non-provisional, design, divisional, continuation, continuation-in-part, registration, utility model, industrial design, reissue, renewal, substitute, extension, reexamination, post-grant review, inter partes review, supplemental examination or non-U.S. patent applications or application for other rights based in whole or in part on the below-referenced patent applications in Exhibit A;

(c) all patents (including, without limitation, all U.S. and non-U.S. patents, registrations, utility models, industrial designs, design patents, counterparts, continuations, continuations-in-part, divisionals, reissues, renewals, substitutes, extensions, reexaminations, post-grant reviews, inter partes reviews and supplemental examinations) that are granted or issued upon, or that claim priority to, any and all applications described in (b) of this paragraph or that disclose or claim intellectual property described in (a) of this paragraph, in whole or in part; and

(d) all claims for damages by reason of past infringement of any rights under the applications or patents described in (a), (b) or (c) of this paragraph (including provisional rights to reasonable royalties pursuant to 35 U.S.C. §154(d)) and the right to sue for and collect such damages and royalties for Assignee's own use.

Assignor hereby authorizes and requests the U.S. Patent and Trademark Office or any other U.S. or non-U.S. agency to issue to the Assignee any and all patent(s), or other rights or documents, resulting from the intellectual property, patent application(s) and patents described in this Confirmatory Assignment.

Assignor hereby agrees to sign all papers and documents, including without limitation, applications, declarations, oaths and petitions, and, at the Assignee's expense, perform any other acts that are necessary in connection with prosecution of patent application(s) or intellectual property described in

this Confirmatory Assignment and the enforcement of patent(s) or other rights resulting from such patent application(s) or intellectual property.

Assignor hereby agrees that the terms, covenants, and conditions of this Confirmatory Assignment shall be binding upon and inure to the benefit of the Assignee, its successors, assigns and other legal representative.

Assignor hereby promises and affirms that Assignor has not entered, and will not enter, into any assignment, contract, or understanding that conflicts with this Confirmatory Assignment.

In Witness Whereof, Assignor and Assignee have executed this Confirmatory Assignment on the dates indicated below.

Dated: Nov 28 2016

Jason Zellers
Title: Manager
TCI LLC, Assignee

Dated: Nov 28, 2016

Jason Zellers
Title: Manager
Thoratec LLC, Assignor

# Exhibit A

| Knobbe Ref. | Thoratec Ref. | Country | Title of Invention | Appl. No. | Filing Date | Status |
|---|---|---|---|---|---|---|
| THOR.001PCA | P02000X4CA1 | CA | IMPLANTABLE HEART ASSIST SYSTEM | 2480467 | 2/14/2003 | Issued |
| THOR.001PCAD1 | P02000X4CA2 | CA | IMPLANTABLE HEART ASSIST SYSTEM AND METHOD OF APPLYING SAME | 2785934 | 8/7/2012 | Abandoned |
| THOR.001PPC | P02000X4WO | WO | IMPLANTABLE HEART ASSIST SYSTEM | PCT/US2003/04853 | 2/14/2003 | Abandoned |
| THOR.007VREP | P02002EP2 | EP | CANNULAE HAVING A REDIRECTING TIP | 8010438.3 | 11/10/2004 | Abandoned |
| THOR.014A | P02007 | US | IMPLANTABLE HEART ASSIST SYSTEM AND METHOD OF APPLYING SAME | 10/686040 | 10/15/2003 | Abandoned |
| THOR.033A | P04000 | US | EXPANDABLE IMPELLER PUMP | 11/227277 | 9/15/2005 | Issued |
| THOR.033C1 | P04000C1 | US | EXPANDABLE IMPELLER PUMP | 12/157267 | 6/9/2008 | Issued |
| THOR.033C1C1 | P04000C2 | US | EXPANDABLE IMPELLER PUMP | 13/072624 | 3/25/2011 | Issued |
| THOR.033C3 | P04000C3 | US | EXPANDABLE IMPELLER PUMP | 13/740042 | 1/11/2013 | Issued |
| THOR.033C4 | P04000C4 | US | EXPANDABLE IMPELLER PUMP | 14/622339 | 2/13/2015 | Published |
| THOR.033PR | P04000A | US | LEFT VENTRICULAR ASSIST DEVICE (LVAD) WITH EXPANDABLE CATHETER/IMPELLER PUMP | 60/610938 | 9/17/2004 | Closed |
| THOR.033VAU | P04000AU1 | AU | EXPANDABLE IMPELLER PUMP | 2005286914 | 9/16/2005 | Issued |
| THOR.033VAUD1 | P04000AU2 | AU | EXPANDABLE IMPELLER PUMP | 2012203159 | 9/16/2005 | Issued |
| THOR.033VCA | P04000CA | CA | EXPANDABLE IMPELLER PUMP | 2580452 | 9/16/2005 | Issued |
| THOR.033VCN | P04000CN | CN | EXPANDABLE IMPELLER PUMP | 200580031227.1 | 9/16/2005 | Issued |
| THOR.033VEP | P04000EP | EP | EXPANDABLE IMPELLER PUMP | 5799883.3 | 9/16/2005 | Published |
| THOR.033VEPD1 | P04000EP2 | EP | EXPANDABLE IMPELLER PUMP | 13167651 | 5/14/2013 | Published |

| Knobbe Ref. | Thoratec Ref. | Country | Title of Invention | Appl. No. | Filing Date | Status |
|---|---|---|---|---|---|---|
| THOR.033VHK | P04000HK | HK | EXPANDABLE IMPELLER PUMP | 7106935.8 | 9/16/2005 | Published |
| THOR.033VJP | P04000JP1 | JP | EXPANDABLE IMPELLER PUMP | 2007-532569 | 9/16/2005 | Issued |
| THOR.033VJPD1 | P04000JP2 | JP | EXPANDABLE IMPELLER PUMP | 2011-000620 | 9/16/2005 | Issued |
| THOR.033VPC | P04000WO | WO | EXPANDABLE IMPELLER PUMP | PCT/US2005/033416 | 9/16/2005 | Closed |
| THOR.034A | P04001 | US | HEART ASSIST DEVICE WITH EXPANDABLE IMPELLER PUMP | 11/728051 | 3/23/2007 | Issued |
| THOR.034C1 | P04001C1 | US | HEART ASSIST DEVICE WITH EXPANDABLE IMPELLER PUMP | 12/945594 | 11/12/2010 | Issued |
| THOR.034C2 | P04001C2 | US | HEART ASSIST DEVICE WITH EXPANDABLE IMPELLER PUMP | 13/618071 | 9/14/2012 | Issued |
| THOR.034C3 | P04001C3 | US | HEART ASSIST DEVICE WITH EXPANDABLE IMPELLER PUMP | 15/176620 | 6/8/2016 | Pending |
| THOR.034PR1 | P04001A | US | EXPANDABLE IMPELLER PUMP | 60/785299 | 3/23/2006 | Closed |
| THOR.034PR2 | P04002A | US | HEART ASSIST DEVICE WITH EXPANDABLE IMPELLER PUMP | 60/785531 | 3/23/2006 | Closed |
| THOR.034VAU | P04001AU | AU | HEART ASSIST DEVICE WITH EXPANDABLE IMPELLER PUMP | 2007230945 | 3/23/2007 | Issued |
| THOR.034VCA | P04001CA | CA | HEART ASSIST DEVICE WITH EXPANDABLE IMPELLER PUMP | 2646277 | 3/23/2007 | Issued |
| THOR.034VCN | P04001CN1 | CN | HEART ASSIST DEVICE WITH EXPANDABLE IMPELLER PUMP | 200780018603.2 | 3/23/2007 | Issued |
| THOR.034VCND1 | P04001CN2 | CN | HEART ASSIST DEVICE WITH EXPANDABLE IMPELLER PUMP | 201110240259.X | 3/23/2007 | Abandoned |
| THOR.034VEP | P04001EP | EP | HEART ASSIST DEVICE WITH EXPANDABLE IMPELLER PUMP | 7753903.9 | 3/23/2007 | Issued |

| Knobbe Ref. | Thoratec Ref. | Country | Title of Invention | Appl. No. | Filing Date | Status |
|---|---|---|---|---|---|---|
| THOR.034VEP | P04001DE | DE | HEART ASSIST DEVICE WITH EXPANDABLE IMPELLER PUMP | 7753903.9 | 3/23/2007 | Issued |
| THOR.034VEP | P04001GB | GB | HEART ASSIST DEVICE WITH EXPANDABLE IMPELLER PUMP | 7753903.9 | 3/23/2007 | Issued |
| THOR.034VEP | P04001NL | NL | HEART ASSIST DEVICE WITH EXPANDABLE IMPELLER PUMP | 7753903.9 | 3/23/2007 | Issued |
| THOR.034VEP | P04001FR | FR | HEART ASSIST DEVICE WITH EXPANDABLE IMPELLER PUMP | 7753903.9 | 3/23/2007 | Issued |
| THOR.034VEPD1 | THOR-P04001EP2 | EP | HEART ASSIST DEVICE WITH EXPANDABLE IMPELLER PUMP | 16169053 | 5/10/2016 | Pending |
| THOR.034VHK | P04001HK | HK | HEART ASSIST DEVICE WITH EXPANDABLE IMPELLER PUMP | 9100058 | 3/23/2007 | ABA Intent |
| THOR.034VJP | P04001JP1 | JP | HEART ASSIST DEVICE WITH EXPANDABLE IMPELLER PUMP | 2009-501590 | 3/23/2007 | Abandoned |
| THOR.034VJPD1 | P04001JP2 | JP | HEART ASSIST DEVICE WITH EXPANDABLE IMPELLER PUMP | 2011-102836 | 3/23/2007 | Abandoned |
| THOR.034VJPD2 | P04001JP3 | JP | HEART ASSIST DEVICE WITH EXPANDABLE IMPELLER PUMP | 2012-083873 | 3/23/2007 | Issued |
| THOR.034VPC | P04001WO | WO | HEART ASSIST DEVICE WITH EXPANDABLE IMPELLER PUMP | PCT/US07/07313 | 3/23/2007 | Closed |
| THOR.039A | P04003 | US | BLOOD PUMP WITH EXPANDABLE CANNULA | 12/829359 | 7/1/2010 | Issued |
| THOR.039AU | P04003AU | AU | BLOOD PUMP WITH EXPANDABLE CANNULA | 2010266166 | 7/1/2010 | Issued |
| THOR.039C1 | P04003C | US | BLOOD PUMP WITH EXPANDABLE CANNULA | 13/968161 | 8/15/2013 | Issued |
| THOR.039CA | P04003CA | CA | BLOOD PUMP WITH EXPANDABLE CANNULA | 2769631 | 7/1/2010 | Pending |

| Knobbe Ref. | Thoratec Ref. | Country | Title of Invention | Appl. No. | Filing Date | Status |
|---|---|---|---|---|---|---|
| THOR.039CN | P04003CN | CN | BLOOD PUMP WITH EXPANDABLE CANNULA | 201080038684.4 | 7/1/2010 | Abandoned |
| THOR.039EP | P04003EP | EP | BLOOD PUMP WITH EXPANDABLE CANNULA | 10730681 | 7/1/2010 | Published |
| THOR.039JP | P04003JP1 | JP | BLOOD PUMP WITH EXPANDABLE CANNULA | 2012-518617 | 7/1/2010 | Issued |
| THOR.039JPD1 | P04003JP2 | JP | BLOOD PUMP WITH EXPANDABLE CANNULA | 2015-186444 | 9/24/2015 | Pending |
| THOR.039PR | P04003A | US | BLOOD PUMP WITH EXPANDABLE CANNULA | 61/222236 | 7/1/2009 | Expired |
| THOR.039VPC | P04003WO | WO | BLOOD PUMP WITH EXPANDABLE CANNULA | PCT/US2010/040847 | 7/1/2010 | Expired |
| THOR.045A | P04008 | US | PERCUTANEOUS HEART PUMP | 13/345597 | 1/6/2012 | Issued |
| THOR.045C1 | P04008C | US | PERCUTANEOUS HEART PUMP | 14/858354 | 9/18/2015 | Published |
| THOR.045PR | P04008A | US | PERCUTANEOUS HEART PUMP | 61/430537 | 1/6/2011 | Expired |
| THOR.045WO | P04008WO | WO | PERCUTANEOUS HEART PUMP | PCT/US2012/020553 | 1/6/2012 | Expired |
| THOR.046A | P04009 | US | CATHETER PUMP | 13/343618 | 1/4/2012 | Issued |
| THOR.046CA | P04009CA | CA | PERCUTANEOUS HEART PUMP | 2823951 | 7/4/2013 | Pending |
| THOR.046EP | P04009EP | EP | PERCUTANEOUS HEART PUMP | 12731913 | 8/5/2013 | Published |
| THOR.046PR | P04009A | US | PERCUTANEOUS HEART PUMP | 61/430129 | 1/5/2011 | Expired |
| THOR.046TW | P04009TW | TW | HEART PUMP AND CATHETER ASSEMBLY THEREFOR | 101100509 | 1/5/2012 | Issued |
| THOR.046WO | P04009WO | WO | PERCUTANEOUS HEART PUMP | PCT/US2012/020382 | 1/5/2012 | Expired |
| THOR.047A | P04010 | US | IMPELLER HOUSING FOR PERCUTANEOUS HEART PUMP | 13/343617 | 1/4/2012 | Issued |
| THOR.047AU | P04010AU | AU | IMPELLER HOUSING FOR PERCUTANEOUS HEART PUMP | 2012204321 | 7/2/2013 | Pending |
| THOR.047CA | P04010CA | CA | IMPELLER HOUSING FOR PERCUTANEOUS HEART PUMP | 2823950 | 7/4/2013 | Pending |

| Knobbe Ref. | Thoratec Ref. | Country | Title of Invention | Appl. No. | Filing Date | Status |
|---|---|---|---|---|---|---|
| THOR.047EP | P04010EP | EP | IMPELLER HOUSING FOR PERCUTANEOUS HEART PUMP | 12732507 | 8/5/2013 | Published |
| THOR.047PR | P04010A | US | IMPELLER HOUSING FOR PERCUTANEOUS HEART PUMP | 61/430146 | 1/5/2011 | Expired |
| THOR.047TW | P04010TW | TW | IMPELLER HOUSING FOR PERCUTANEOUS HEART PUMP | 101100510 | 1/5/2012 | Abandoned |
| THOR.047WO | P04010WO | WO | IMPELLER HOUSING FOR PERCUTANEOUS HEART PUMP | PCT/US2012/020369 | 1/5/2012 | Expired |
| THOR.048A | P04011 | US | CATHETER PUMP | 13/344544 | 1/5/2012 | Issued |
| THOR.048PR | P04011A1 | US | PERCUTANEOUS HEART PUMP | 61/430171 | 1/6/2011 | Expired |
| THOR.048PR2 | P04011A2 | US | PERCUTANEOUS HEART PUMP | 61/430517 | 1/6/2011 | Expired |
| THOR.048WO | P04011WO | WO | PERCUTANEOUS HEART PUMP | PCT/US2012/020383 | 1/5/2012 | Expired |
| THOR.072A | P04013 | US | DISTAL BEARING SUPPORT | 13/802556 | 3/13/2013 | Issued |
| THOR.072C1 | P04013C | US | DISTAL BEARING SUPPORT | 15/266864 | 9/15/2016 | Pending |
| THOR.072DE | P04013DE | DE | DISTAL BEARING SUPPORT | 102013008158 | 5/13/2013 | Published |
| THOR.072EP | P04013EP | EP | DISTAL BEARING SUPPORT | 13791119 | 11/12/2014 | Published |
| THOR.072GB | P04013GB1 | GB | DISTAL BEARING SUPPORT | 1308544.4 | 5/13/2013 | Issued |
| THOR.072GBD1 | P04013GB2 | GB | DISTAL BEARING SUPPORT | 1414709.4 | 8/19/2014 | Abandoned |
| THOR.072JP | P04013JP | JP | DISTAL BEARING SUPPORT | 2015-512724 | 11/13/2014 | Pending |
| THOR.072PR | P04013A | US | DISTAL BEARING SUPPORT | 61/646755 | 5/14/2012 | Expired |
| THOR.072WO | P04013WO | WO | DISTAL BEARING SUPPORT | PCT/US2013/040798 | 5/13/2013 | Expired |
| THOR.084A | P04012 | US | FLUID HANDLING SYSTEM | 14/203978 | 3/11/2014 | Issued |
| THOR.084D1 | P04012D | US | FLUID HANDLING SYSTEM | 15/198342 | 6/30/2016 | Published |
| THOR.084DA1 | D04018 | US | CATHETER PUMP CONSOLE INTERFACE | 29/449306 | 3/14/2013 | Issued |
| THOR.084DA2 | D04020 | US | CATHETER PUMP CONSOLE | 29/449287 | 3/14/2013 | Issued |

| Knobbe Ref. | Thoratec Ref. | Country | Title of Invention | Appl. No. | Filing Date | Status |
|---|---|---|---|---|---|---|
| THOR.084EP | P04012EP | EP | FLUID HANDLING SYSTEM | 14779928 | 9/9/2015 | Published |
| THOR.084JP | P04012JP | JP | FLUID HANDLING SYSTEM | 2016-500668 | 9/11/2015 | Pending |
| THOR.084PR | P04012A1 | US | FLUID HANDLING SYSTEM | 61/646861 | 5/14/2012 | Abandoned |
| THOR.084PR2 | P04012A2 | US | FLUID HANDLING SYSTEM | 61/780656 | 3/13/2013 | Expired |
| THOR.084WO | P04012WO | WO | FLUID HANDLING SYSTEM | PCT/US2014/020790 | 3/5/2014 | Expired |
| THOR.084XAU1 | D04018AU | AU | CATHETER PUMP CONSOLE INTERFACE | 14455/2013 | 9/9/2013 | Issued |
| THOR.084XAU2 | D04020AU1 | AU | CATHETER PUMP CONSOLE | 14456/2013 | 9/9/2013 | Issued |
| THOR.084XAU3 | D04020AU2 | AU | CATHETER PUMP CONSOLE | 14457/2013 | 9/9/2013 | Issued |
| THOR.084XCA1 | D04018CA | CA | CATHETER PUMP CONSOLE INTERFACE | 152903 | 9/9/2013 | Issued |
| THOR.084XCA2 | D04020CA | CA | CATHETER PUMP CONSOLE | 152904 | 9/9/2013 | Issued |
| THOR.084XCA2D1 | D04020CA2 | CA | CATHETER PUMP CONSOLE | 157980 | 7/31/2014 | Issued |
| THOR.084XEU1 | D04018EP | EM | CATHETER PUMP CONSOLE INTERFACE | 001383715-0001 | 9/10/2013 | Issued |
| THOR.084XEU2 | D04020EP | EM | CATHETER PUMP CONSOLE | 001383624-0001-0002 | 9/10/2013 | Issued |
| THOR.084XJP1 | D04018JP | JP | CATHETER PUMP CONSOLE INTERFACE | 2013-021388 | 9/17/2013 | Issued |
| THOR.084XJP2 | D04020JP | JP | CATHETER PUMP CONSOLE | 2013-021389 | 9/17/2013 | Issued |
| THOR.089A | P04014 | US | SHEATH SYSTEM FOR CATHETER PUMP | 13/801833 | 3/13/2013 | Published |
| THOR.089DE | P04014DE | DE | SHEATH SYSTEM FOR CATHETER PUMP | 102013008159.9 | 5/13/2013 | Published |
| THOR.089EP | P04014EP | EP | SHEATH SYSTEM FOR CATHETER PUMP | 13790890 | 11/21/2014 | Published |
| THOR.089GB | P04014GB | GB | SHEATH SYSTEM FOR CATHETER PUMP | 1308566.7 | 5/13/2013 | Issued |
| THOR.089PR | P04014A | US | SHEATH SYSTEM FOR CATHETER PUMP | 61/646789 | 5/14/2012 | Expired |

| Knobbe Ref. | Thoratec Ref. | Country | Title of Invention | Appl. No. | Filing Date | Status |
|---|---|---|---|---|---|---|
| THOR.089WO | P04014WO | WO | SHEATH SYSTEM FOR CATHETER PUMP | PCT/US2013/040799 | 5/13/2013 | Expired |
| THOR.090A | P04015 | US | IMPELLER FOR CATHETER PUMP | 13/802570 | 3/13/2013 | Issued |
| THOR.090C1 | -P04015C | US | IMPELLER FOR CATHETER PUMP | 15/142522 | 4/29/2016 | Published |
| THOR.090DE | P04015DE | DE | IMPELLER FOR CATHETER PUMP | 102013008168.8 | 5/13/2013 | Published |
| THOR.090EP | P04015EP | EP | IMPELLER FOR CATHETER PUMP | 13790364 | 11/21/2014 | Published |
| THOR.090GB | P04015GB | GB | IMPELLER FOR CATHETER PUMP | 1308563.4 | 5/13/2013 | Abandoned |
| THOR.090NP | P04015US | US | IMPELLER FOR CATHETER PUMP | 14/401096 | 11/13/2014 | Issued |
| THOR.090PR | P04015A1 | US | BLADES FOR CATHETER PUMP | 61/646827 | 5/14/2012 | Expired |
| THOR.090PR2 | P04015A2 | US | BLADES FOR CATHETER PUMP | 61/667875 | 7/3/2012 | Expired |
| THOR.090WO | P04015WO | WO | IMPELLER FOR CATHETER PUMP | PCT/US2013/040809 | 5/13/2013 | Expired |
| THOR.092A | P04016 | US | CATHETER PUMP | 13/801528 | 3/13/2013 | Issued |
| THOR.092D1 | P04016D | US | CATHETER PUMP | 15/172664 | 6/3/2016 | Published |
| THOR.092EP | P04016EP | EP | CATHETER PUMP | 13813867 | 12/23/2014 | Published |
| THOR.092PR | P04016A | US | CATHETER PUMP | 61/667903 | 7/3/2012 | Expired |
| THOR.092WO | P04016WO | WO | CATHETER PUMP | PCT/US2013/048343 | 6/27/2013 | Expired |
| THOR.093A | P04017 | US | MOTOR ASSEMBLY FOR CATHETER PUMP | 13/802468 | 3/13/2013 | Issued |
| THOR.093C1 | P04017C | US | MOTOR ASSEMBLY FOR CATHETER PUMP | 14/719816 | 5/22/2015 | Abandoned |
| THOR.093C2 | P04017C2 | US | MOTOR ASSEMBLY FOR CATHETER PUMP | 15/242024 | 8/19/2016 | Pending |
| THOR.093DE | P04017DE | DE | MOTOR ASSEMBLY FOR CATHETER PUMP | 102013011042.4 | 7/2/2013 | Published |
| THOR.093EP | P04017EP | EP | MOTOR ASSEMBLY FOR CATHETER PUMP | 13813687 | 12/23/2014 | Published |
| THOR.093GB | P04017GB | GB | MOTOR ASSEMBLY FOR CATHETER PUMP | 1311685 | 6/28/2013 | Abandoned |
| THOR.093PR | P04017A | US | CATHETER PUMP | 61/667869 | 7/3/2012 | Expired |
| THOR.093WO | P04017WO | WO | MOTOR ASSEMBLY FOR CATHETER PUMP | PCT/US2013/048332 | 6/27/2013 | Expired |

| Knobbe Ref. | Thoratec Ref. | Country | Title of Invention | Appl. No. | Filing Date | Status |
|---|---|---|---|---|---|---|
| THOR.097A | P04019 | US | CATHETER PUMP ASSEMBLY INCLUDING A STATOR | 14/209889 | 3/13/2014 | Issued |
| THOR.097C1 | P04019C | US | CATHETER PUMP ASSEMBLY INCLUDING A STATOR | 15/065573 | 3/9/2016 | Published |
| THOR.097EP | P04019EP | EP | CATHETER PUMP ASSEMBLY INCLUDING A STATOR | 14764393 | 10/7/2015 | Published |
| THOR.097NP | P04019US | US | CATHETER PUMP ASSEMBLY INCLUDING A STATOR | 14/775501 | 9/11/2015 | Published |
| THOR.097PR | P04019A1 | US | CATHETER PUMP ASSEMBLY INCLUDING A STATOR | 61/798590 | 3/15/2013 | Expired |
| THOR.097PR2 | P04019A2 | US | CATHETER PUMP ASSEMBLY INCLUDING A STATOR | 61/903282 | 11/12/2013 | Expired |
| THOR.097WO | P04019WO | WO | CATHETER PUMP ASSEMBLY INCLUDING A STATOR | PCT/US2014/020878 | 3/5/2014 | Expired |
| THOR.102A | P04022 | US | SENSORS FOR CATHETER PUMPS | 14/687493 | 4/15/2015 | Published |
| THOR.102EP | P04022EP | EP | SENSORS FOR CATHETER PUMPS | 15780622 | 10/28/2016 | Pending |
| THOR.102PR | P04022A | US | SENSORS FOR CATHETER PUMPS | 61/979920 | 4/15/2014 | Expired |
| THOR.102WO | P04022WO | WO | SENSORS FOR CATHETER PUMPS | PCT/US2015/025960 | 4/15/2015 | Published |
| THOR.103NP | P04024US | US | CATHETER PUMP WITH OFF-SET MOTOR POSITION | 15/303711 | 10/12/2016 | Pending |
| THOR.103PR | P04024A | US | CATHETER PUMP WITH OFF-SET MOTOR POSITION | 61/979876 | 4/15/2014 | Expired |
| THOR.103WO | P04024WO | WO | CATHETER PUMP WITH OFF-SET MOTOR POSITION | PCT/US2015/025959 | 4/15/2015 | Expired |
| THOR.104NP | P04026 | US | HEART PUMP PROVIDING ADJUSTABLE OUTFLOW | 15/303698 | 10/12/2016 | Pending |

| Knobbe Ref. | Thoratec Ref. | Country | Title of Invention | Appl. No. | Filing Date | Status |
|---|---|---|---|---|---|---|
| THOR.104PR | P04026A | US | HEART PUMP PROVIDING ADJUSTABLE OUTFLOW | 61/979925 | 4/15/2014 | Expired |
| THOR.104WO | P04026WO | WO | HEART PUMP PROVIDING ADJUSTABLE OUTFLOW | PCT/US2015/026014 | 4/15/2015 | Expired |
| THOR.105A | P04021 | US | CATHETER PUMP WITH POSITIONING BRACE | 15/130170 | 4/15/2016 | Published |
| THOR.105PR | P04021A1 | US | CATHETER PUMP WITH POSITIONING BRACE | 61/979974 | 4/15/2014 | Expired |
| THOR.105PR2 | P04021A2 | US | CATHETER PUMP WITH POSITIONING BRACE | 62/148420 | 4/16/2015 | Expired |
| THOR.106A | P04027 | US | CATHETER PUMP WITH ACCESS PORTS | 14/687382 | 4/15/2015 | Published |
| THOR.106EP | P04027EP | EP | CATHETER PUMP WITH ACCESS PORTS | 15780293 | 10/28/2016 | Pending |
| THOR.106PR | P04027A | US | CATHETER PUMP WITH ACCESS PORTS | 61/979952 | 4/15/2014 | Expired |
| THOR.106WO | P04027WO | WO | CATHETER PUMP WITH ACCESS PORTS | PCT/US2015/026013 | 4/15/2015 | Expired |
| THOR.107EP | P04023EP | EP | CATHETER PUMP INTRODUCER SYSTEMS AND METHODS | 15779336 | 10/28/2016 | Pending |
| THOR.107NP | P04023US | US | CATHETER PUMP INTRODUCER SYSTEMS AND METHODS | 15/303709 | 10/12/2016 | Pending |
| THOR.107PR | P04023A | US | CATHETER PUMP INTRODUCER SYSTEMS AND METHODS | 61/979937 | 4/15/2014 | Expired |
| THOR.107WO | P04023WO | WO | CATHETER PUMP INTRODUCER SYSTEMS AND METHODS | PCT/US2015/026025 | 4/15/2015 | Expired |
| THOR.108PR | P04025A | US | GUIDE FEATURES FOR PERCUTANEOUS CATHETER PUMP | 62/038678 | 8/18/2014 | Expired |

| Knobbe Ref. | Thoratec Ref. | Country | Title of Invention | Appl. No. | Filing Date | Status |
|---|---|---|---|---|---|---|
| THOR.108WO | P04025WO | WO | GUIDE FEATURES FOR PERCUTANEOUS CATHETER PUMP | PCT/US2015/045370 | 8/14/2015 | Published |
| THOR.127A | P04028 | US | REDUCED ROTATIONAL MASS MOTOR ASSEMBLY FOR CATHETER PUMP | 15/003576 | 1/21/2016 | Published |
| THOR.127PR | P04028A | US | REDUCED ROTATIONAL MASS MOTOR ASSEMBLY FOR CATHETER PUMP | 62/106670 | 1/22/2015 | Expired |
| THOR.127WO | P04028WO | WO | REDUCED ROTATIONAL MASS MOTOR ASSEMBLY FOR CATHETER PUMP | PCT/US2016/014371 | 1/21/2016 | Published |
| THOR.128A | P04029 | US | MOTOR ASSEMBLY WITH HEAT EXCHANGER FOR CATHETER PUMP | 15/003682 | 1/21/2016 | Published |
| THOR.128PR | P04029A | US | MOTOR ASSEMBLY WITH HEAT EXCHANGER FOR CATHETER PUMP | 62/106675 | 1/22/2015 | Expired |
| THOR.128WO | P04029WO | WO | MOTOR ASSEMBLY WITH HEAT EXCHANGER FOR CATHETER PUMP | PCT/US2016/014379 | 1/21/2016 | Published |
| THOR.130A | P04030 | US | ATTACHMENT MECHANISMS FOR MOTOR OF CATHETER PUMP | 15/003696 | 1/21/2016 | Published |
| THOR.130PR | P04030A | US | ATTACHMENT MECHANISMS FOR MOTOR OF CATHETER PUMP | 62/106673 | 1/22/2015 | Expired |
| THOR.130WO | P04030WO | WO | ATTACHMENT MECHANISMS FOR MOTOR OF CATHETER PUMP | PCT/US2016/014391 | 1/21/2016 | Published |
| THOR.1CP6C5C2 | P02000X6C5C1 | US | IMPLANTABLE HEART ASSIST SYSTEM AND METHOD OF APPLYING SAME | 12/565651 | 9/23/2009 | Issued |
| THORCV.001A | P02000 | US | IMPLANTABLE HEART ASSIST SYSTEM | 09/166005 | 10/2/1998 | Issued |

| Knobbe Ref. | Thoratec Ref. | Country | Title of Invention | Appl. No. | Filing Date | Status |
|---|---|---|---|---|---|---|
| THORCV.001C1 | P02000C1 | US | IMPLANTABLE HEART ASSIST SYSTEM | 09/558445 | 4/25/2000 | Issued |
| THORCV.001CP1 | P02000X1 | US | IMPLANTABLE HEART ASSIST SYSTEM | 09/289231 | 4/9/1999 | Issued |
| THORCV.001CP2 | P02000X2 | US | IMPLANTABLE HEART ASSIST SYSTEM AND METHOD OF APPLYING SAME | 09/470841 | 12/23/1999 | Issued |
| THORCV.001CP3 | P02000X3 | US | IMPLANTABLE HEART ASSIST SYSTEM AND METHOD OF APPLYING SAME | 09/552979 | 4/21/2000 | Issued |
| THORCV.001CP4 | P02000X4 | US | IMPLANTABLE HEART ASSIST SYSTEM AND METHOD OF APPLYING SAME | 10/078260 | 2/15/2002 | Issued |
| THORCV.001CP5 | P02000X5 | US | IMPLANTABLE HEART ASSIST SYSTEM AND METHOD OF APPLYING SAME | 10/171023 | 6/11/2002 | Issued |
| THORCV.001CP6 | P02000X6 | US | IMPLANTABLE HEART ASSIST SYSTEM AND METHOD OF APPLYING SAME | 10/289467 | 11/6/2002 | Issued |
| THORCV.001GCH | P02000X6CH | CH | IMPLANTABLE HEART ASSIST SYSTEM AND METHOD OF APPLYING SAME | 3778067.3 | 10/28/2003 | Issued |
| THORCV.001GDE | P02000X6DE | DE | IMPLANTABLE HEART ASSIST SYSTEM AND METHOD OF APPLYING SAME | 3778067.3 | 10/28/2003 | Issued |
| THORCV.001GEP | P02000X6EP | EP | IMPLANTABLE HEART ASSIST SYSTEM | 3778067.3 | 10/28/2003 | Issued |
| THORCV.001GES | P02000X6ES | ES | IMPLANTABLE HEART ASSIST SYSTEM AND METHOD OF APPLYING SAME | 3778067.3 | 10/28/2003 | Issued |

| Knobbe Ref. | Thoratec Ref. | Country | Title of Invention | Appl. No. | Filing Date | Status |
|---|---|---|---|---|---|---|
| THORCV.001GFR | P02000X6FR | FR | IMPLANTABLE HEART ASSIST SYSTEM AND METHOD OF APPLYING SAME | 3778067.3 | 10/28/2003 | Issued |
| THORCV.001GGB | P02000X6GB | GB | IMPLANTABLE HEART ASSIST SYSTEM AND METHOD OF APPLYING SAME | 3778067.3 | 10/28/2003 | Issued |
| THORCV.001GIT | P02000X6IT | IT | IMPLANTABLE HEART ASSIST SYSTEM AND METHOD OF APPLYING SAME | 3778067.3 | 10/28/2003 | Issued |
| THORCV.001GLI | P02000X6LI | LI | IMPLANTABLE HEART ASSIST SYSTEM AND METHOD OF APPLYING SAME | 3778067.3 | 10/28/2003 | Issued |
| THORCV.001GNL | P02000X6NL | NL | IMPLANTABLE HEART ASSIST SYSTEM AND METHOD OF APPLYING SAME | 3778067.3 | 10/28/2003 | Issued |
| THORCV.001GPC | P02000X6WO | WO | IMPLANTABLE HEART ASSIST SYSTEM AND METHOD OF APPLYING SAME | PCT/US2003/034869 | 10/28/2003 | Closed |
| THORCV.001GSE | P02000X6SE | SE | IMPLANTABLE HEART ASSIST SYSTEM AND METHOD OF APPLYING SAME | 3778067.3 | 10/28/2003 | Issued |
| THORCV.001HAU | P02000X2AU | AU | HEART ASSIST SYSTEM | 38844/00 | 3/15/2000 | Abandoned |
| THORCV.001HCA | P02000X2CA1 | CA | HEART ASSIST SYSTEM | 2367469 | 3/15/2000 | Abandoned |
| THORCV.001HCH | P02000X2CH | CH | HEART ASSIST SYSTEM | 917948.2 | 3/15/2000 | Issued |
| THORCV.001HDE | P02000X2DE | DE | HEART ASSIST SYSTEM | 917948.2 | 3/15/2000 | Issued |
| THORCV.001HEP | P02000X2EP | EP | HEART ASSIST SYSTEM | 917948.2 | 3/15/2000 | Issued |
| THORCV.001HES | P02000X2ES | ES | HEART ASSIST SYSTEM | 917948.2 | 3/15/2000 | Issued |
| THORCV.001HFR | P02000X2FR | FR | HEART ASSIST SYSTEM | 917948.2 | 3/15/2000 | Issued |
| THORCV.001HGB | P02000X2GB | GB | HEART ASSIST SYSTEM | 917948.2 | 3/15/2000 | Issued |

| Knobbe Ref. | Thoratec Ref. | Country | Title of Invention | Appl. No. | Filing Date | Status |
|---|---|---|---|---|---|---|
| THORCV.001HIT | P02000X2IT | IT | HEART ASSIST SYSTEM | 917948.2 | 3/15/2000 | Issued |
| THORCV.001HLI | P02000X2LI | LI | HEART ASSIST SYSTEM | 917948.2 | 3/15/2000 | Issued |
| THORCV.001HNL | P02000X2NL | NL | HEART ASSIST SYSTEM | 917948.2 | 3/15/2000 | Issued |
| THORCV.001HPC | P02000X2WO | WO | HEART ASSIST SYSTEM (AMEND PER PCT SEARCH REPT) | PCTUS00/06749 | 3/15/2000 | Closed |
| THORCV.001HSE | P02000X2SE | SE | HEART ASSIST SYSTEM | 917948.2 | 3/15/2000 | Abandoned |
| THORCV.001HTW | P02000X2TW | TW | IMPLANTABLE HEART ASSIST SYSTEM AND METHOD OF APPLYING SAME | 89105156 | 3/21/2000 | Abandoned |
| THORCV.001PAU | P02000X4AU | AU | IMPLANTABLE HEART ASSIST SYSTEM AND METHOD OF APPLYING SAME | 2003215293 | 2/14/2003 | Abandoned |
| THORCV.001PR | P02000A | US | IMPLANTABLE HEART ASSIST DEVICE | 60/061434 | 10/9/1997 | Closed |
| THORCV.001VAU | P02000AU | AU | IMPLANTABLE HEART ASSIST SYSTEM | 97976/98 | 10/9/1998 | Issued |
| THORCV.001VBR | P02000BR | BR | IMPLANTABLE HEART ASSIST SYSTEM | PI9814060-4 | 10/9/1998 | Abandoned |
| THORCV.001VCA | P02000CA | CA | IMPLANTABLE HEART ASSIST SYSTEM | 2305443 | 10/9/1998 | Issued |
| THORCV.001VCH | P02000CH | CH | IMPLANTABLE HEART ASSIST SYSTEM | 98952226 | 10/9/1998 | Issued |
| THORCV.001VCN | P02000CN | CN | IMPLANTABLE HEART ASSIST SYSTEM | 98809992 | 10/9/1998 | Abandoned |
| THORCV.001VCZ | P02000CZ | CZ | IMPLANTABLE HEART ASSIST SYSTEM | PV2000-1173 | 10/9/1998 | Issued |
| THORCV.001VDE | P02000DE | DE | IMPLANTABLE HEART ASSIST SYSTEM | 98952226 | 10/9/1998 | Issued |
| THORCV.001VEP | P02000EP | EP | IMPLANTABLE HEART ASSIST SYSTEM | 98952226 | 10/9/1998 | Issued |

| Knobbe Ref. | Thoratec Ref. | Country | Title of Invention | Appl. No. | Filing Date | Status |
|---|---|---|---|---|---|---|
| THORCV.001VES | P02000ES | ES | IMPLANTABLE HEART ASSIST SYSTEM | 98952226 | 10/9/1998 | Issued |
| THORCV.001VFR | P02000FR | FR | IMPLANTABLE HEART ASSIST SYSTEM | 98952226 | 10/9/1998 | Issued |
| THORCV.001VGB | P02000GB | GB | IMPLANTABLE HEART ASSIST SYSTEM | 98952226 | 10/9/1998 | Issued |
| THORCV.001VHK | P02000HK | HK | IMPLANTABLE HEART ASSIST SYSTEM | 106798.1 | 10/9/1998 | Abandoned |
| THORCV.001VIL | P02000IL | IL | IMPLANTABLE HEART ASSIST SYSTEM | 135209 | 10/9/1998 | Issued |
| THORCV.001VIT | P02000IT | IT | IMPLANTABLE HEART ASSIST SYSTEM | 98952226 | 10/9/1998 | Issued |
| THORCV.001VJP | P02000JP1 | JP | IMPLANTABLE HEART ASSIST SYSTEM | 2000-515640 | 10/9/1998 | Issued |
| THORCV.001VJPD2 | P02000JP3 | JP | IMPLANTABLE HEART ASSIST SYSTEM | 2010-037404 | 10/9/1998 | Issued |
| THORCV.001VKR | P02000KR | KR | IMPLANTABLE HEART ASSIST SYSTEM | 10-2000-7003855 | 10/9/1998 | Issued |
| THORCV.001VMX | P02000MX | MX | IMPLANTABLE HEART ASSIST SYSTEM | PA/a/2000/003173 | 10/9/1998 | Issued |
| THORCV.001VNL | P02000NL | NL | IMPLANTABLE HEART ASSIST SYSTEM | 98952226 | 10/9/1998 | Issued |
| THORCV.001VPC | P02000WO | WO | IMPLANTABLE HEART ASSIST SYSTEM | PCTUS98/21424 | 10/9/1998 | Closed |
| THORCV.001VRJP | P02000JP2 | JP | IMPLANTABLE HEART ASSIST SYSTEM | 2004-372152 | 10/9/1998 | Issued |
| THORCV.001VRU | P02000RU | RU | IMPLANTABLE HEART ASSIST SYSTEM | 200107816 | 10/9/1998 | Issued |
| THORCV.001VSE | P02000SE | SE | IMPLANTABLE HEART ASSIST SYSTEM | 98952226 | 10/9/1998 | Issued |
| THORCV.001VSG | P02000SG | SG | IMPLANTABLE HEART ASSIST SYSTEM | 200001547-9 | 10/9/1998 | Issued |
| THORCV.001VTW | P02000TW | TW | IMPLANTABLE HEART ASSIST SYSTEM | 87116785 | 1/28/1999 | Abandoned |

| Knobbe Ref. | Thoratec Ref. | Country | Title of Invention | Appl. No. | Filing Date | Status |
|---|---|---|---|---|---|---|
| THORCV.001VUA | P02000UA | UA | IMPLANTABLE HEART ASSIST SYSTEM | 2000041978 | 10/9/1998 | Issued |
| THORCV.006A | P02001 | US | EXTRA-CORPOREAL VASCULAR CONDUIT | 09/780083 | 2/9/2001 | Issued |
| THORCV.006VPC | P02001WO | WO | EXTRA-CORPOREAL VASCULAR CONDUIT | PCTUS01/29542 | 9/20/2001 | Closed |
| THORCV.007VCA | P02002CA | CA | CANNULAE HAVING A REDIRECTING TIP | 2545838 | 11/10/2004 | Abandoned |
| THORCV.007VCH | P02002CH | CH | CANNULAE HAVING A REDIRECTING TIP | 4810735.3 | 11/10/2004 | Abandoned |
| THORCV.007VDE | P02002DE | DE | CANNULAE HAVING A REDIRECTING TIP | 4810735.3 | 11/10/2004 | Abandoned |
| THORCV.007VEP | P02002EP1 | EP | CANNULAE HAVING A REDIRECTING TIP | 4810735.3 | 11/10/2004 | Abandoned |
| THORCV.007VEPD2 | P02002EP3 | EP | CANNULAE HAVING A REDIRECTING TIP | 10185579.9 | 11/10/2004 | Abandoned |
| THORCV.007VES | P02002ES | ES | CANNULAE HAVING A REDIRECTING TIP | 4810735.3 | 11/10/2004 | Abandoned |
| THORCV.007VFR | P02002FR | FR | CANNULAE HAVING A REDIRECTING TIP | 4810735.3 | 11/10/2004 | Abandoned |
| THORCV.007VGB | P02002GB | GB | CANNULAE HAVING A REDIRECTING TIP | 4810735.3 | 11/10/2004 | Abandoned |
| THORCV.007VHKD2 | P02002HK | HK | CANNULAE HAVING A REDIRECTING TIP | 11105622 | 11/10/2004 | Abandoned |
| THORCV.007VIT | P02002IT | IT | CANNULAE HAVING A REDIRECTING TIP | 4810735.3 | 11/10/2004 | Abandoned |
| THORCV.007VNL | P02002NL | NL | CANNULAE HAVING A REDIRECTING TIP | 4810735.3 | 11/10/2004 | Abandoned |
| THORCV.007VSE | P02002SE | SE | CANNULAE HAVING A REDIRECTING TIP | 4810735.3 | 11/10/2004 | Abandoned |
| THORCV.008A | P02003 | US | MULTILUMEN CATHETER FOR MINIMIZING LIMB ISCHEMIA | 09/876281 | 6/6/2001 | Issued |
| THORCV.008CP1 | P02003X1 | US | MULTILUMEN CATHETER FOR MINIMIZING LIMB ISCHEMIA | 10/078283 | 2/14/2002 | Abandoned |

| Knobbe Ref. | Thoratec Ref. | Country | Title of Invention | Appl. No. | Filing Date | Status |
|---|---|---|---|---|---|---|
| THORCV.008DV1 | P02003D1 | US | A MULTILUMEN CATHETER FOR MINIMIZING LIMB ISCHEMIA | 10/743841 | 12/22/2003 | Abandoned |
| THORCV.008DV3 | P02003D3 | US | MULTILUMEN CATHETER FOR MINIMIZING LIMB ISCHEMIA | 11/417509 | 5/3/2006 | Abandoned |
| THORCV.008DV4 | P02003D4 | US | A MULTILUMEN CATHETER FOR MINIMIZING LIMB ISCHEMIA | 11/418499 | 5/3/2006 | Abandoned |
| THORCV.008QAU | P02003X1AU1 | AU | A MULTILUMEN CATHETER FOR MINIMIZING LIMB ISCHEMIA | 2003211034 | 2/13/2003 | Abandoned |
| THORCV.008QAUD2 | P02003X1AU3 | AU | A MULTILUMEN CATHETER FOR MINIMIZING LIMB ISCHEMIA | 2011202758 | 2/13/2003 | Abandoned |
| THORCV.008QCA | P02003X1CA | CA | A MULTILUMEN CATHETER FOR MINIMIZING LIMB ISCHEMIA | 2480465 | 2/13/2003 | Abandoned |
| THORCV.008QCH | P02003X1CH | CH | MULTILUMEN CATHETER FOR MINIMIZING LIMB ISCHEMIA | 3739796.5 | 2/13/2003 | Issued |
| THORCV.008QDE | P02003X1DE | DE | MULTILUMEN CATHETER FOR MINIMIZING LIMB ISCHEMIA | 3739796.5 | 2/13/2003 | Issued |
| THORCV.008QEP | P02003X1EP | EP | A MULTILUMEN CATHETER FOR MINIMIZING LIMB ISCHEMIA | 3739796.5 | 2/13/2003 | Issued |
| THORCV.008QES | P02003X1ES | ES | MULTILUMEN CATHETER FOR MINIMIZING LIMB ISCHEMIA | 3739796.5 | 2/13/2003 | Abandoned |
| THORCV.008QFR | P02003X1FR | FR | MULTILUMEN CATHETER FOR MINIMIZING LIMB ISCHEMIA | 3739796.5 | 2/13/2003 | Issued |
| THORCV.008QGB | P02003X1GB | GB | MULTILUMEN CATHETER FOR MINIMIZING LIMB ISCHEMIA | 3739796.5 | 2/13/2003 | Issued |
| THORCV.008QIT | P02003X1IT | IT | MULTILUMEN CATHETER FOR MINIMIZING LIMB ISCHEMIA | 3739796.5 | 2/13/2003 | Issued |

| Knobbe Ref. | Thoratec Ref. | Country | Title of Invention | Appl. No. | Filing Date | Status |
|---|---|---|---|---|---|---|
| THORCV.008QJP | P02003X1JP1 | JP | A MULTILUMEN CATHETER FOR MINIMIZING LIMB ISCHEMIA | 2003-567483 | 2/13/2003 | Issued |
| THORCV.008QJP D1 | P02003X1JP2 | JP | A MULTILUMEN CATHETER FOR MINIMIZING LIMB ISCHEMIA | 2010-059190 | 2/13/2003 | Issued |
| THORCV.008QLI | P02003X1LI | LI | MULTILUMEN CATHETER FOR MINIMIZING LIMB ISCHEMIA | 3739796.5 | 2/13/2003 | Issued |
| THORCV.008QN L | P02003X1NL | NL | MULTILUMEN CATHETER FOR MINIMIZING LIMB ISCHEMIA | 3739796.5 | 2/13/2003 | Issued |
| THORCV.008QPC | P02003X1WO | WO | A MULTILUMEN CATHETER FOR MINIMIZING LIMB ISCHEMIA | PCT/US2003/04401 | 2/13/2003 | Abandoned |
| THORCV.008QR AU | P02003X1AU2 | AU | A MULTILUMEN CATHETER FOR MINIMIZING LIMB ISCHEMIA | 2008200502 | 2/13/2003 | Abandoned |
| THORCV.008QSE | P02003X1SE | SE | MULTILUMEN CATHETER FOR MINIMIZING LIMB ISCHEMIA | 3739796.5 | 2/13/2003 | Issued |
| THORCV.008VA U | P02003AU | AU | A MULTILUMEN CATHETER FOR MINIMIZING LIMB ISCHEMIA | 2002214653 | 10/15/2001 | Abandoned |
| THORCV.008VC A | P02003CA | CA | A MULTILUMEN CATHETER FOR MINIMIZING LIMB ISCHEMIA | 2449689 | 10/15/2001 | Abandoned |
| THORCV.008VC H | P02003CH | CH | A MULTILUMEN CATHETER FOR MINIMIZING LIMB ISCHEMIA | 1983207 | 10/15/2001 | Abandoned |
| THORCV.008VD E | P02003DE | DE | A MULTILUMEN CATHETER FOR MINIMIZING LIMB ISCHEMIA | 1983207 | 10/15/2001 | Abandoned |
| THORCV.008VEP | P02003EP | EP | A MULTILUMEN CATHETER FOR MINIMIZING LIMB ISCHEMIA | 1983207 | 10/15/2001 | Issued |
| THORCV.008VES | P02003ES | ES | A MULTILUMEN CATHETER FOR MINIMIZING LIMB ISCHEMIA | 1983207 | 10/15/2001 | Abandoned |

| Knobbe Ref. | Thoratec Ref. | Country | Title of Invention | Appl. No. | Filing Date | Status |
|---|---|---|---|---|---|---|
| THORCV.008VFR | P02003FR | FR | A MULTILUMEN CATHETER FOR MINIMIZING LIMB ISCHEMIA | 1983207 | 10/15/2001 | Abandoned |
| THORCV.008VGB | P02003GB | GB | A MULTILUMEN CATHETER FOR MINIMIZING LIMB ISCHEMIA | 1983207 | 10/15/2001 | Abandoned |
| THORCV.008VIT | P02003IT | IT | A MULTILUMEN CATHETER FOR MINIMIZING LIMB ISCHEMIA | 1983207 | 10/15/2001 | Abandoned |
| THORCV.008VJP | P02003JP | JP | A MULTILUMEN CATHETER FOR MINIMIZING LIMB ISCHEMIA | 2003-501535 | 10/15/2001 | Abandoned |
| THORCV.008VNL | P02003NL | NL | A MULTILUMEN CATHETER FOR MINIMIZING LIMB ISCHEMIA | 1983207 | 10/15/2001 | Abandoned |
| THORCV.008VPC | P02003WO | WO | A MULTILUMEN CATHETER FOR MINIMIZING LIMB ISCHEMIA | PCTUS01/42774 | 10/15/2001 | Closed |
| THORCV.008VSE | P02003SE | SE | A MULTILUMEN CATHETER FOR MINIMIZING LIMB ISCHEMIA | 1983207 | 10/15/2001 | Issued |
| THORCV.009A | P02004 | US | PERCUTANEOUS CATHETER ASSEMBLY | 09/741695 | 12/19/2000 | Issued |
| THORCV.009C1 | P02004C | US | PERCUTANEOUS CATHETER ASSEMBLY | 10/308235 | 12/2/2002 | Issued |
| THORCV.021A | P02011 | US | CANNULAE HAVING REDUCED FLOW RESISTANCE | 10/866535 | 6/10/2004 | Issued |
| THORCV.027A | P02012 | US | QUICK PRIMING CONNECTORS FOR BLOOD CIRCUIT | 11/370225 | 3/6/2006 | Issued |
| THORCV.027C1 | P02012C | US | QUICK PRIMING CONNECTORS FOR BLOOD CIRCUIT | 12/254746 | 10/20/2008 | Issued |
| THORCV.027VCN | P02012CN | CN | QUICK PRIMING CONNECTORS FOR BLOOD CIRCUIT | 200780013366 | 3/6/2007 | Abandoned |
| THORCV.027VEP | P02012EP | EP | QUICK PRIMING CONNECTORS FOR BLOOD CIRCUIT | 7752420.5 | 3/6/2007 | Abandoned |
| THORCV.031A | P02013 | US | BLOOD CONDUIT CONNECTOR | 11/371208 | 3/8/2006 | Abandoned |

| Knobbe Ref. | Thoratec Ref. | Country | Title of Invention | Appl. No. | Filing Date | Status |
|---|---|---|---|---|---|---|
| THORCV.059AU | P02018AU | AU | IMPLANTABLE HEART ASSIST SYSTEM | 2009285537 | 8/28/2009 | Abandoned |
| THORCV.059CA | P02018CA | CA | IMPLANTABLE HEART ASSIST SYSTEM | 2771158 | 8/28/2009 | Abandoned |
| THORCV.059EP | P02018EP | EP | IMPLANTABLE HEART ASSIST SYSTEM | 9810687.5 | 8/28/2009 | Abandoned |
| THORCV.059JP | P02018JP | JP | IMPLANTABLE HEART ASSIST SYSTEM | 2011-525254 | 8/28/2009 | Abandoned |
| THORCV.059NP | P02018US | US | IMPLANTABLE HEART ASSIST SYSTEM | 13/061086 | 2/25/2011 | Abandoned |
| THORCV.059WO | P02018WO | WO | IMPLANTABLE HEART ASSIST SYSTEM | PCT/US2009/055431 | 8/28/2009 | Expired |
| THORCV.105A | P01060 | US | MULTI-LUMEN CANNULA | 12/469328 | 5/20/2009 | Issued |
| THORCV.105AU | P01060AU1 | AU | MULTI-LUMEN CANNULA | 2010249562 | 11/22/2011 | Abandoned |
| THORCV.105AU D1 | P01060AU2 | AU | MULTI-LUMEN CANNULA | 2013203979 | 4/11/2013 | Abandoned |
| THORCV.105C1 | P01060C | US | MULTI-LUMEN CANNULA | 13/561197 | 7/30/2012 | Issued |
| THORCV.105CA | P01060CA | CA | MULTI-LUMEN CANNULA | 2762569 | 11/18/2011 | Issued |
| THORCV.105CN | P01060CN | CN | MULTI-LUMEN CANNULA | 201080028684.6 | 12/27/2011 | Abandoned |
| THORCV.105EP | P01060DE | EP | MULTI-LUMEN CANNULA | 10721065 | 12/14/2011 | Issued |
| THORCV.105HK | P01060HK | HK | MULTI-LUMEN CANNULA | 12104748 | 5/15/2012 | Abandoned |
| THORCV.105JP | P01060JP | JP | MULTI-LUMEN CANNULA | 2012-511994 | 11/18/2011 | Issued |
| THORCV.105WO | P01060WO | WO | MULTI-LUMEN CANNULA | PCT/US2010/035424 | 5/19/2010 | Closed |
| THORCV.1CP4C1 | P02000X4C1 | US | IMPLANTABLE HEART ASSIST SYSTEM AND METHOD OF APPLYING SAME | 10/408926 | 4/7/2003 | Issued |
| THORCV.1CP4C1C | P02000X4C1C | US | IMPLANTABLE HEART ASSIST SYSTEM AND METHOD OF APPLYING SAME | 10/878592 | 6/28/2004 | Issued |

| Knobbe Ref. | Thoratec Ref. | Country | Title of Invention | Appl. No. | Filing Date | Status |
|---|---|---|---|---|---|---|
| THORCV.1CP4C2 | P02000X4C2 | US | IMPLANTABLE HEART ASSIST SYSTEM AND METHOD OF APPLYING SAME | 11/418490 | 5/3/2006 | Abandoned |
| THORCV.1CP4C3 | P02000X4C3 | US | IMPLANTABLE HEART ASSIST SYSTEM AND METHOD OF APPLYING SAME | 11/418502 | 5/3/2006 | Abandoned |
| THORCV.1CP4C4 | P02000X4C4 | US | IMPLANTABLE HEART ASSIST SYSTEM AND METHOD OF APPLYING SAME | 11/417917 | 5/3/2006 | Abandoned |
| THORCV.1CP6C1 | P02000X6C1 | US | IMPLANTABLE HEART ASSIST SYSTEM AND METHOD OF APPLYING SAME | 10/729026 | 12/5/2003 | Issued |
| THORCV.1CP6C2 | P02000X6C2 | US | IMPLANTABLE HEART ASSIST SYSTEM AND METHOD OF APPLYING SAME | 10/878591 | 6/28/2004 | Issued |
| THORCV.1CP6C3 | P02000X6C3 | US | IMPLANTABLE HEART ASSIST SYSTEM AND METHOD OF APPLYING SAME | 11/121352 | 5/3/2005 | Issued |
| THORCV.1CP6C4 | P02000X6C4 | US | IMPLANTABLE HEART ASSIST SYSTEM AND METHOD OF APPLYING SAME | 11/418393 | 5/3/2006 | Abandoned |
| THORCV.1CP6C5 | P02000X6C5 | US | IMPLANTABLE HEART ASSIST SYSTEM AND METHOD OF APPLYING SAME | 11/417905 | 5/3/2006 | Issued |
| THORCV.1CP6C5C | P02000X6C5C2 | US | IMPLANTABLE HEART ASSIST SYSTEM AND METHOD OF APPLYING SAME | 12/616087 | 11/10/2009 | Issued |
| THORCV.1CP6C5C3 | P02000X6C5C3 | US | IMPLANTABLE HEART ASSIST SYSTEM AND METHOD OF APPLYING SAME | 13/175735 | 7/1/2011 | Issued |

| Knobbe Ref. | Thoratec Ref. | Country | Title of Invention | Appl. No. | Filing Date | Status |
|---|---|---|---|---|---|---|
| THORCV.1CP6C6 | P02000X6C6 | US | IMPLANTABLE HEART ASSIST SYSTEM AND METHOD OF APPLYING SAME | 11/417889 | 5/3/2006 | Issued |
| THORCV.1CP6C7 | P02000X6C7 | US | IMPLANTABLE HEART ASSIST SYSTEM AND METHOD OF APPLYING SAME | 11/417677 | 5/3/2006 | Issued |
| THORCV.1HR1CA | P02000X2CA2 | CA | HEART ASSIST SYSTEM | 2466577 | 3/15/2000 | Abandoned |
| THORCV.8CP1DV1 | P02003X1D1 | US | MULTILUMEN CATHETER FOR MINIMIZING LIMB ISCHEMIA | 11/417652 | 5/3/2006 | Abandoned |
| THORCV.8CP1DV2 | P02003X1D2 | US | MULTILUMEN CATHETER FOR MINIMIZING LIMB ISCHEMIA | 11/417662 | 5/3/2006 | Abandoned |
| THORCV.8CP1DV3 | P02003X1D3 | US | MULTILUMEN CATHETER FOR MINIMIZING LIMB ISCHEMIA | 11/417918 | 5/3/2006 | Abandoned |
| THORCV.8CP1DV4 | P02003X1D4 | US | MULTILUMEN CATHETER FOR MINIMIZING LIMB ISCHEMIA | 11/418377 | 5/3/2006 | Abandoned |
| THORCV.8CP1DV5 | P02003X1D5 | US | MULTILUMEN CATHETER FOR MINIMIZING LIMB ISCHEMIA | 11/417647 | 5/3/2006 | Issued |
| THORCV.8CP1DV6 | P02003X1D6 | US | MULTILUMEN CATHETER FOR MINIMIZING LIMB ISCHEMIA | 11/417937 | 5/3/2006 | Abandoned |
| THORCV.8CP1DV7 | P02003X1D7 | US | MULTILUMEN CATHETER FOR MINIMIZING LIMB ISCHEMIA | 11/417487 | 5/3/2006 | Abandoned |
| THORCV.8CP1DV8 | P02003X1D8 | US | MULTI-LUMEN CATHETER FOR MINIMIZING LIMB ISCHEMIA | 11/418489 | 5/3/2006 | Abandoned |
| FORFLOW.001PEP | P02000X4EP | EP | IMPLANTABLE HEART ASSIST SYSTEM AND METHOD OF APPLYING SAME | 3711112.7 | 2/14/2003 | Abandoned |
| FORFLOW.001PJP | P02000X4JP | JP | IMPLANTABLE HEART ASSIST SYSTEM | 2003-569252 | 2/14/2003 | Abandoned |

| Knobbe Ref. | Thoratec Ref. | Country | Title of Invention | Appl. No. | Filing Date | Status |
|---|---|---|---|---|---|---|
| FORFLOW.006V AU | P02001AU | AU | EXTRA-CORPOREAL VASCULAR CONDUIT | 2001292901 | 9/20/2001 | Abandoned |
| FORFLOW.006V CA | P02001CA | CA | EXTRA-CORPOREAL VASCULAR CONDUIT | 2437796 | 9/20/2001 | Abandoned |
| FORFLOW.006VE P | P02001EP | EP | EXTRA-CORPOREAL VASCULAR CONDUIT | 1973308.8 | 9/20/2001 | Abandoned |
| FORFLOW.009VP C | P02004WO | WO | IMPROVED PERCUTANEOUS CATHETER ASSEMBLY | PCTUS01/42773 | 10/15/2001 | Abandoned |
| ORQIS.007A | P02002 | US | CANNULAE HAVING A REDIRECTING TIP | 10/706346 | 11/12/2003 | Abandoned |
| ORQIS.007C1 | P02002C1 | US | CANNULAE HAVING A REDIRECTING TIP | 11/417916 | 5/3/2006 | Abandoned |
| ORQIS.007C2 | P02002C2 | US | CANNULAE HAVING A REDIRECTING TIP | 11/417510 | 5/3/2006 | Abandoned |
| ORQIS.007C3 | P02002C3 | US | CANNULAE HAVING A REDIRECTING TIP | 11/417528 | 5/3/2006 | Abandoned |
| ORQIS.007C4 | P02002C4 | US | CANNULAE HAVING A REDIRECTING TIP | 11/417877 | 5/3/2006 | Abandoned |
| ORQIS.007C5 | P02002C5 | US | CANNULAE HAVING A REDIRECTING TIP | 11/417678 | 5/3/2006 | Abandoned |
| ORQIS.007VAU | P02002AU | AU | CANNULAE HAVING A REDIRECTING TIP | 2004289319 | 11/10/2004 | Abandoned |
| ORQIS.007VJP | P02002JP | JP | CANNULAE HAVING A REDIRECTING TIP | 2006-539854 | 11/10/2004 | Abandoned |
| ORQIS.007VPC | P02002WO | WO | CANNULAE HAVING A REDIRECTING TIP | PCT/US2004/037636 | 11/10/2004 | Closed |
| ORQIS.010A | P02005 | US | SYSTEM INCLUDING A CANNULA HAVING REDUCED FLOW RESISTANCE | 10/865045 | 6/10/2004 | Abandoned |
| ORQIS.013A | P02006 | US | METHODS FOR MINIMALLY INVASIVE VASCULAR ACCESS | 11/083042 | 3/17/2005 | Abandoned |
| ORQIS.014VPC | P02007WO | WO | IMPLANTABLE HEART ASSIST SYSTEM AND METHOD OF APPLYING SAME | PCT/US2004/033575 | 10/12/2004 | Abandoned |

| Knobbe Ref. | Thoratec Ref. | Country | Title of Invention | Appl. No. | Filing Date | Status |
|---|---|---|---|---|---|---|
| ORQIS.015A | P02008 | US | METHODS FOR REDUCING BLEEDING FROM A CANNULATION SITE | 11/057692 | 2/14/2005 | Abandoned |
| ORQIS.015VPC | P02008WO | WO | APPARATUS AND METHODS FOR REDUCING BLEEDING FROM A CANNULATION SITE | PCT/US2006/005038 | 2/13/2006 | Closed |
| ORQIS.018A | P02009 | US | CANNULAE FOR SELECTIVELY ENHANCING BLOOD FLOW | 10/735413 | 12/12/2003 | Abandoned |
| ORQIS.019A | P02010 | US | CANNULA HAVING REDUCED FLOW RESISTANCE | 10/866649 | 6/10/2004 | Abandoned |
| ORQIS.021VEP | P02011EP | EP | CANNULAE AND SYSTEM HAVING REDUCED FLOW RESISTANCE | 5757823.9 | 6/10/2005 | Abandoned |
| ORQIS.021VPC | P02011WO | WO | CANNULAE AND SYSTEM HAVING REDUCED FLOW RESISTANCE | PCT/US2005/020663 | 6/10/2005 | Closed |
| ORQIS.027VPC | P02012WO | WO | QUICK PRIMING CONNECTORS FOR BLOOD CIRCUIT | PCT/US2007/005719 | 3/6/2007 | Closed |
| ORQIS.031VPC | P02013WO | WO | BLOOD CONDUIT CONNECTOR | PCT/US2007/005875 | 3/7/2007 | Abandoned |
| ORQIS.037PR | P02018A | US | IMPLANTABLE HEART ASSIST SYSTEM | 61/092714 | 8/28/2008 | Closed |

24513051
110816