

<b>PATENT ASSIGNMENT COVER SHEET</b>
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Electronic Version v1.1  
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EPAS ID: PAT5768401

<b>SUBMISSION TYPE:</b>	NEW ASSIGNMENT
<b>NATURE OF CONVEYANCE:</b>	ASSIGNMENT
<b>CONVEYING PARTY DATA</b>	
<b>Name</b>	<b>Execution Date</b>
ADVANCED CIRCULATORY SYSTEMS, INC.	04/12/2017
<b>RECEIVING PARTY DATA</b>	
<b>Name:</b>	ZOLL MEDICAL CORPORATION
<b>Street Address:</b>	269 MILL ROAD
<b>City:</b>	CHELMSFORD
<b>State/Country:</b>	MASSACHUSETTS
<b>Postal Code:</b>	01824-4105
<b>PROPERTY NUMBERS Total: 1</b>	
<b>Property Type</b>	<b>Number</b>
<b>Application Number:</b>	16596097
<b>CORRESPONDENCE DATA</b>	
<b>Fax Number:</b>	(412)471-4094
<i>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.</i>	
<b>Phone:</b>	4124718815
<b>Email:</b>	assignments@webblaw.com
<b>Correspondent Name:</b>	ANN M. CANNONI
<b>Address Line 1:</b>	THE WEBB LAW FIRM
<b>Address Line 2:</b>	420 FT. DUQUESNE BLVD., SUITE 1200
<b>Address Line 4:</b>	PITTSBURGH, PENNSYLVANIA 15222
<b>ATTORNEY DOCKET NUMBER:</b>	7713-1907366
<b>NAME OF SUBMITTER:</b>	ANN M. CANNONI, REG. NO. 35,972
<b>SIGNATURE:</b>	/Ann M. Cannoni/
<b>DATE SIGNED:</b>	10/14/2019
<b>Total Attachments: 15</b>	
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PATENT RIGHTS ASSIGNMENT

This Patent Rights Assignment (this "Assignment") is made effective this 1st day of April, 2017, by and between Advanced Circulatory Systems, Inc., a Delaware corporation, and having a usual place of business at 1905 West County Road C, Roseville, MN 55113 ("Assignor") and ZOLL Medical Corporation, a Massachusetts corporation, and having a usual place of business at 269 Mill Road, Chelmsford, Massachusetts 01824 ("Assignee").

WHEREAS, Assignor possesses certain rights in and to the patents and patent applications (and patents issuing on such applications) set forth on Exhibit A attached hereto and incorporated herein by reference (collectively, the "Patent Rights") and the invention(s) described and/or claimed in the Patent Rights (the "Inventions"); and

WHEREAS, Assignor and Assignee are parties to that certain Agreement and Plan of Merger, dated December 11, 2014 (the "Agreement"), pursuant to which Assignor has agreed to transfer, sell and convey to Assignee substantially all of the assets of Assignor, including the Inventions and Patent Rights;

WHEREAS, Assignor now wishes to assign the Inventions and Patent Rights to Assignee, and Assignee desires to acquire the Inventions and Patent Rights from Assignor; and

WHEREAS, the execution and delivery of this Assignment is a condition to Closing under the Agreement.

NOW, THEREFORE, in consideration of the premises set forth above and in the Agreement and for other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged:

Assignor does hereby sell, assign, convey and transfer unto Assignee and its successors, assigns, and legal representatives, Assignor's entire right, title and interest in and throughout the world in and to the Inventions, together with Assignor's entire right, title and interest in and to the Patent Rights and such other patents as may issue thereon or claim priority under United States law or international convention, including but not limited to non-provisionals, continuations, divisionals, reissues, reexaminations, reviews, extensions, and substitutions of patents and patent applications within the Patent Rights or such other patents, and any right, title and interest Assignor may have in applications to which the Patent Rights claim priority; the Inventions and the Patent Rights to be held and enjoyed by Assignee for its own use and behalf and for its successors, assigns and legal representatives, to the full end of the term for which said patents may be granted as fully and entirely as the same would have been held by Assignor had this assignment and sale not been made; and Assignor hereby conveys all of its rights arising under or pursuant to any and all United States laws and international agreements, treaties or laws relating to the protection of industrial property by filing any such applications for patent, including but not limited to any cause(s) of action and damages accruing prior to this assignment. Assignor hereby acknowledges that this assignment, being of Assignor's entire right, title and interest in and to the Inventions and the Patent Rights carries with it the right in Assignee to apply for and obtain from competent authorities in all countries of the world any and all patents by attorneys and agents of Assignee's selection and the right to procure the grant of all patents to Assignee in its own name as assignee of Assignor's entire right, title and interest therein.

Assignor hereby further agrees for itself and its successors, assigns, agents, and legal representatives to execute upon request any other lawful documents and likewise to perform any other lawful acts which may be deemed necessary to secure fully the Patent Rights to Assignee, its successors, assigns, and legal representatives, as well as to third parties at the request of Assignee including the execution of documents (including, without limitation, petitions, specifications, oaths, assignments, disclaimers, declarations and affidavits) relating to non-provisional, substitution, continuation, divisional, reissue, reexamination, or corresponding foreign or international patent applications within the Patent Rights, as requested by Assignee, and generally do everything possible to aid Assignee, its successors, assigns and legal representatives to obtain, record, maintain, and enforce full protection for the Inventions in all countries, but in each instance at Assignee's reasonable expense.

Assignor does hereby authorize the Director of the United States Patent & Trademark Office, and the empowered officials of all other governments whose duty it is to record patents, applications and title thereto, to record the Patent Rights and title thereto as the property of Assignee, its successors, assigns, or legal representatives in accordance with the terms of this instrument.

Assignor does hereby further authorize and request the Director of the United States Patent and Trademark Office and the empowered officials of all other governments to issue such Patent Rights or patents as shall be granted upon the Patent Rights, or applications based thereon, to Assignee, its successors, assigns, or legal representatives.

Assignee and Assignor also agree that multiple copies of this Assignment may be executed, each of which shall be deemed an original, and each of which shall be valid and binding upon Assignee and Assignor.

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Execution Version

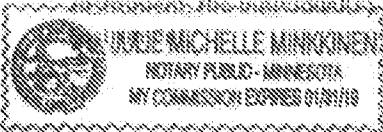
IN WITNESS WHEREOF, Assignor and Assignee have caused this Assignment to be executed by their duly authorized representatives as of the date first written above.

ASSIGNOR: Advanced Circulatory Systems, Inc.  
Name: Michael Black  
Signature: [Signature]  
Title: President

State Minnesota )  
 ) ss:

County Ramsey )

On the 12<sup>th</sup> day of April in the year 2017 before me, the undersigned, a Notary Public in and for said State, personally appeared in person personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name(s) is (are) subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their capacity(ies), and that by his/her/their signature(s) on the instrument, the individual(s) or the person upon behalf of which the individual(s) acted, executed the



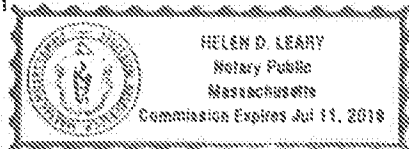
[Signature]  
Notary Public  
My Commission Expires: 1/31/19

ASSIGNEE: ZOLL Medical Corporation  
Name: [Signature]  
Signature: [Signature]  
Title: IP Counsel

Commonwealth of Massachusetts )  
 ) ss:

County Middlesex )

On the 18<sup>th</sup> day of April in the year 2017 before me, the undersigned, a Notary Public in and for said State, personally appeared in person personally known to me or proved to me on the basis of satisfactory evidence to be the individual(s) whose name(s) is (are) subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their capacity(ies), and that by his/her/their signature(s) on the instrument, the individual(s), or the person upon behalf of which the individual(s) acted, executed the instrument.



[Signature]  
Notary Public  
My Commission Expires: 7/11/2018

ADVANCED CIRCULATORY SYSTEMS, INC.  
SIGNATURE PAGE TO PATENT RIGHTS ASSIGNMENT

**EXHIBIT A**  
**Patent Rights Assignment**

ZOLL Docket Number	Country	Sub Case	Application No.	Filing Date	Patent Number	Issue Date	Status	Entity	Title
Z20610	Canada	1	2,174,778	11/7/1994	2,174,778	12/27/2005	Expired	ACSI	METHOD AND DEVICE FOR ASSISTING CARDIOPULMONARY RESUSCITATION
Z20610	Canada	2	2,214,887	2/16/1996	2,214,887	7/29/2008	Expired	ACSI	CPR DEVICE HAVING VALVE FOR INCREASING THE DURATION AND MAGNITUDE OF NEGATIVE INTRATHORACIC PRESSURES
Z20595	Canada	1	2,523,847	4/20/2004	2,523,847	7/9/2013	Expired	ACSI	VENTILATOR AND METHODS FOR TREATING HEAD TRAUMA AND LOW BLOOD CIRCULATION
Z20567	Canada	1	2,684,613	10/19/2009			Abandoned	ACSI	VOLUME EXCHANGER VALVE SYSTEM AND METHOD TO INCREASE CIRCULATION DURING CPR
Z20557	Canada	1	2,766,064	6/21/2010			Abandoned	ACSI	VACUUM AND POSITIVE PRESSURE VENTILATION SYSTEMS AND METHODS FOR INTRATHORACIC PRESSURE REGULATION
Z20469	Canada	1	2859814	12/19/2012			Abandoned	ResQSystems, Inc.	SYSTEMS AND METHODS FOR THERAPEUTIC INTRATHORACIC PRESSURE REGULATION
Z20595	Europe	1	04760311.3	4/20/2004			Abandoned	ACSI	Ventilator and Methods for Treating Head Trauma and Low Blood Circulation
Z20567	Europe	1	08745882.4	4/15/2008			Abandoned	ACSI	VOLUME EXCHANGER VALVE SYSTEM AND METHOD TO INCREASE CIRCULATION DURING CPR

ZOLL Docket Number	Country	Sub Case	Application No.	Filing Date	Patent Number	Issue Date	Status	Entity	Title
Z20557	Europe	1	10790332.0	6/21/2010			Abandoned	ACSI	VACUUM AND POSITIVE PRESSURE VENTILATION SYSTEMS AND METHODS FOR INTRATHORACIC PRESSURE REGULATION
Z20469	Europe	1	12859349.8	12/19/2012			Published	ResQSystems, Inc.	SYSTEMS AND METHODS FOR THERAPEUTIC INTRATHORACIC PRESSURE REGULATION
Z20616	Europe	1	14864458.6	6/22/2016			Abandoned	ResQSystems, Inc.	PRESSURE ACTUATED VALVE SYSTEMS AND METHODS
Z20557	Europe	2	16000669.8	3/18/2016			Abandoned	ACSI	VACUUM AND POSITIVE PRESSURE VENTILATION SYSTEMS AND METHODS FOR INTRATHORACIC PRESSURE REGULATION
Z20595	Europe	2	16163024.9	3/30/2016			Abandoned	ACSI	Ventilator and Methods for Treating Head Trauma and Low Blood Circulation
Z20610	Germany	1	95901822.7	11/7/1994	728028	5/21/2003	Expired	ACSI	METHOD AND DEVICE FOR ASSISTING CARDIOPULMONARY RESUSCITATION
Z20610	Europe	1	95901822.7	11/7/1994	728028	5/21/2003	Expired	ACSI	METHOD AND DEVICE FOR ASSISTING CARDIOPULMONARY RESUSCITATION
Z20610	Spain	1	95901822.7	11/7/1994	728028	5/21/2003	Expired	ACSI	CPR DEVICE AND METHOD WITH STRUCTURE FOR INCREASING THE DURATION AND MAGNITUDE OF NEGATIVE INTRATHORACIC PRESSURES
Z20610	France	1	95901822.7	11/7/1994	728028	5/21/2003	Expired	ACSI	CPR DEVICE AND METHOD WITH STRUCTURE FOR INCREASING THE DURATION AND MAGNITUDE OF NEGATIVE INTRATHORACIC PRESSURES

ZOLL Docket Number	Country	Sub Case	Application No.	Filing Date	Patent Number	Issue Date	Status	Entity	Title
Z20610	United Kingdom	1	95901822.7	11/7/1994	728028	5/21/2003	Expired	ACSI	METHOD AND DEVICE FOR ASSISTING CARDIOPULMONARY RESUSCITATION
Z20610	Netherlands	1	95901822.7	11/7/1994	728028	5/21/2003	Expired	ACSI	METHOD AND DEVICE FOR ASSISTING CARDIOPULMONARY RESUSCITATION
Z20610	Sweden	1	95901822.7	11/7/1994	728028	5/21/2003	Expired	ACSI	METHOD AND DEVICE FOR ASSISTING CARDIOPULMONARY RESUSCITATION
Z20610	China	2	96193712.2	2/16/1996	Z196193712.2	8/14/2002	Expired	ACSI	CPR DEVICE HAVING STRUCTURE FOR INCREASING THE DURATION AND MAGNITUDE OF NEGATIVE INTRATHORACIC PRESSURE
Z20610	Germany	2	96905523.5	2/16/1996	898485	5/2/2003	Expired	ACSI	CPR DEVICE HAVING VALVE FOR INCREASING THE DURATION AND MAGNITUDE OF NEGATIVE INTRATHORACIC PRESSURES
Z20610	Europe	2	96905523.5	2/16/1996	898485	5/2/2003	Expired	ACSI	CPR DEVICE HAVING VALVE FOR INCREASING THE DURATION AND MAGNITUDE OF NEGATIVE INTRATHORACIC PRESSURES
Z20610	France	2	96905523.5	2/16/1996	898485	5/2/2003	Expired	ACSI	CPR DEVICE HAVING VALVE FOR INCREASING THE DURATION AND MAGNITUDE OF NEGATIVE INTRATHORACIC PRESSURES
Z20610	United Kingdom	2	96905523.5	2/16/1996	898485	5/2/2003	Expired	ACSI	CPR DEVICE HAVING VALVE FOR INCREASING THE DURATION AND MAGNITUDE OF NEGATIVE INTRATHORACIC PRESSURES



ZOLL Docket Number	Country	Sub Case	Application No.	Filing Date	Patent Number	Issue Date	Status	Entity	Title
Z20610	Sweden	2	96905523.5	2/16/1996	898485	5/2/2003	Expired	ACSI	CPR DEVICE HAVING VALVE FOR INCREASING THE DURATION AND MAGNITUDE OF NEGATIVE INTRATHORACIC PRESSURES
Z20610	Australia	6	2002308587	5/1/2002	2002308587	4/24/2008	Expired	ACSI	SHOCK TREATMENT SYSTEMS AND METHODS
Z20567	Australia	1	2008243018	4/15/2008	2008243018	10/3/2013	Expired	ACSI	VOLUME EXCHANGER VALVE SYSTEM AND METHOD TO INCREASE CIRCULATION DURING CPR
Z20459	Australia	1	2012358977	12/19/2012			Abandoned	ResQSystems, Inc.	SYSTEMS AND METHODS FOR THERAPEUTIC INTRATHORACIC PRESSURE REGULATION
Z20595	China	1	200480017342.9	4/20/2004	ZL200480017342.9	3/23/2011	Expired	ACSI	VENTILATOR AND METHODS FOR TREATING HEAD TRAUMA AND LOW BLOOD CIRCULATION
Z20567	China	1	200880020411	4/15/2008			Abandoned	ACSI	VOLUME EXCHANGER VALVE SYSTEM AND METHOD TO INCREASE CIRCULATION DURING CPR
Z20610	Italy	2	502003901135 234	2/16/1996	898485	5/2/2003	Expired	ACSI	CPR DEVICE HAVING VALVE FOR INCREASING THE DURATION AND MAGNITUDE OF NEGATIVE INTRATHORACIC PRESSURES
Z20610	Italy	1	502003901139 043	11/7/1994	728028	5/21/2003	Expired	ACSI	METHOD AND DEVICE FOR ASSISTING CARDIOPULMONARY RESUSCITATION
Z20610	USA	1	08/149,204	11/9/1993	5,551,420	9/3/1996	Expired	ACSI	CPR DEVICE AND METHOD WITH STRUCTURE FOR INCREASING THE DURATION AND MAGNITUDE OF NEGATIVE INTRATHORACIC PRESSURES

ZOLL Docket Number	Country	Sub Case	Application No.	Filing Date	Patent Number	Issue Date	Status	Entity	Title
Z20612	USA	1	08/376,177	1/20/1995	5685298	11/11/1997	Expired	ACSI	ARTIFICIAL VENTILATION MASK WITH PPO2 REDUCER AND/OR EPINEPHERINE SOURCE IN MASK
Z20610	USA	2	08/403,009	3/10/1995	5,692,498	12/2/1997	Expired	ACSI	CPR DEVICE HAVING VALVE FOR INCREASING THE DURATION AND MAGNITUDE OF NEGATIVE INTRATHORACIC PRESSURES
Z20630	USA	1	08/625,733	3/29/1996	5827893	10/27/1998	Expired	ACSI	MECHANICAL AND PHARMACOLOGICAL THERAPIES TO TREAT CARDIAC ARREST
Z20615	USA	1	08/747,371	11/12/1996	5,730,122	3/24/1998	Expired	ACSI	HEART FAILURE MASK AND METHODS FOR INCREASING NEGATIVE INTERATHORACIC PRESSURES
Z20610	USA	3	08/950,702	10/15/1997	6,062,219	5/16/2000	Expired	ACSI	APPARATUS AND METHODS FOR ASSISTING CARDIOPULMONARY RESUSCITATION
Z20614	USA	2	09/019,843	2/6/1998	6,029,667	2/29/2000	Granted	ACSI	HEART FAILURE MASK AND METHODS FOR INCREASING NEGATIVE INTRATHORACIC PRESSURES
Z20618	USA	1	09/095,916	6/11/1998	6,234,985	5/22/2001	Granted	ACSI	DEVICE AND METHOD FOR PERFORMING CARDIOPULMONARY RESUSCITATION
Z20617	USA	1	09/168,049	10/7/1998	6,155,257	12/5/2000	Granted	ACSI	CARDIOPULMONARY RESUSCITATION VENTILATOR AND METHODS
Z20618	USA	2	09/197,286	11/20/1998	6,224,562	5/1/2001	Granted	ACSI	METHODS AND DEVICES FOR PERFORMING CARDIOPULMONARY RESUSCITATION

ZDILL Docket Number	Country	Sub Case	Application No.	Filing Date	Patent Number	Issue Date	Status	Entity	Title
Z20618	USA	3	09/315,396	5/20/1999	6,312,399	11/6/2001	Granted	ACSI	STIMULATING DEVICE AND METHODS TO ENHANCE VENOUS BLOOD RETURN DURING CARDIOPULMONARY RESUSCITATION
Z20612	USA	2	09/372,440	8/11/1999	6196220	3/5/2001	Expired	ACSI	ARTIFICIAL VENTILATION MASK
Z20618	USA	4	09/533,880	3/22/2000	6,463,327	10/8/2002	Granted	ACSI	STIMULATORY DEVICE AND METHODS TO ELECTRICALLY STIMULATE THE PHRENIC NERVE
Z20610	USA	5	09/546,252	4/10/2000	6,526,973	3/4/2003	Granted	ACSI	APPARATUS AND METHODS FOR ASSISTING CARDIOPULMONARY RESUSCITATION
Z20619	USA	1	09/564,889	5/4/2000	6,459,933	10/1/2002	Granted	ACSI	REMOTE CONTROL ARRHYTHMIA ANALYZER AND DEFIBRILLATOR
Z20610	USA	6	09/854,238	5/11/2001	6,604,523	8/12/2003	Granted	ACSI	APPARATUS AND METHODS FOR ENHANCING CARDIOPULMONARY BLOOD FLOW AND VENTILATION
Z20627	USA	1	09/966,945	9/28/2001			Abandoned	ACSI	FACE MASK VENTILATION/PERFUSION SYSTEMS AND METHOD
Z20620	USA	1	09/967,029	9/28/2001	6,776,156	8/17/2004	Granted	ACSI	SYSTEMS AND METHODS TO FACILITATE THE DELIVERY OF DRUGS
Z20610	USA	7	10/119,203	4/8/2002	7,210,480	5/1/2007	Granted	ACSI	SHOCK TREATMENT SYSTEMS AND METHODS
Z20618	USA	5	10/158,528	5/29/2002	6,587,726	7/1/2003	Granted	ACSI	STIMULATORY DEVICE AND METHODS TO ELECTRICALLY STIMULATE THE PHRENIC NERVE
Z20610	USA	8	10/224,263	8/19/2002	6,985,349	1/17/2006	Granted	ACSI	SYSTEMS AND METHODS FOR ENHANCING BLOOD CIRCULATION

ZOLL Docket Number	Country	Sub Case	Application No.	Filing Date	Patent Number	Issue Date	Status	Entity	Title
Z20621	USA	1	10/251,080	9/20/2002	6,863,656	3/8/2005	Expired	ACSI	STRESS TEST DEVICES AND METHODS
Z20610	USA	10	10/396,007	3/24/2003	7,174,891	2/13/2007	Granted	ACSI	CPR MASK WITH COMPRESSION TIMING METRONOME AND METHODS
Z20610	USA	9	10/401,493	3/28/2003	7,204,251	4/17/2007	Granted	ACSI	DIABETES TREATMENT SYSTEMS AND METHODS
Z20622	USA	1	10/410,229	4/8/2003	7,044,128	5/16/2006	Granted	ACSI	CPR DEMONSTRATION DEVICE AND METHODS
Z20595	USA	1	10/426,161	4/28/2003	7,195,012	3/27/2007	Granted	ACSI	SYSTEMS AND METHODS FOR REDUCING INTRACRANIAL PRESSURE
Z20595	USA	2	10/460,558	6/11/2003	7,185,649	3/6/2007	Granted	ACSI	SYSTEMS AND METHODS FOR INCREASING CEREBRAL SPINAL FLUID FLOW
Z20623	USA	1	10/660,366	9/11/2003	6,938,618	9/6/2005	Expired	ACSI	BAG-VALVE RESUSCITATION FOR TREATMENT OF HYPOTENSION, HEAD TRAUMA, AND CARDIAC ARREST
Z20595	USA	3	10/660,462	9/11/2003	7,082,945	8/1/2006	Granted	ACSI	Ventilator and Methods for Treating Head Trauma
Z20595	USA	4	10/765,318	1/26/2004	7,195,013	3/27/2007	Granted	ACSI	SYSTEMS AND METHODS FOR MODULATING AUTONOMIC FUNCTION
Z20595	USA	5	10/796,875	3/8/2004	7,836,881	11/23/2010	Granted	ACSI	VENTILATOR AND METHODS FOR TREATING HEAD TRAUMA AND LOW BLOOD CIRCULATION
Z20620	USA	2	10/920,678	8/17/2004	6,935,336	8/30/2005	Expired	ACSI	SYSTEMS AND METHODS TO FACILITATE THE DELIVERY OF DRUGS
Z20469	Korea	1	10-2014-7020282	12/19/2012			Pending	ResQSystems, Inc.	SYSTEMS AND METHODS FOR THERAPEUTIC INTRATHORACIC PRESSURE REGULATION

ZOLL Docket Number	Country	Sub Case	Application No.	Filing Date	Patent Number	Issue Date	Status	Entity	Title
Z20610	Australia	1	10918/95	11/7/1994	687942	7/2/1998	Expired	ACSI	CPR DEVICE & METHOD WITH STRUCTURE FOR INCREASING THE DURATION & MAGNITUDE OF NEGATIVE INTRATHORACIC PRESSURES
Z20595	USA	6	11/034,996	1/12/2005	7,766,011	8/3/2010	Granted	ACSI	POSITIVE PRESSURE SYSTEMS AND METHODS FOR INCREASING BLOOD PRESSURE AND CIRCULATION
Z20621	USA	2	11/051,345	2/4/2005	7,311,668	12/25/2007	Granted	ACSI	STRESS TEST DEVICES AND METHODS
Z20623	USA	2	11/127,993	5/11/2005	7,275,542	10/2/2007	Granted	ACSI	BAG-VALVE RESUSCITATION FOR TREATMENT OF HYPOTENSION, HEAD TRAUMA, AND CARDIAC ARREST
Z20623	USA	3	11/679,693	2/27/2007	8,011,367	9/6/2011	Granted	ACSI	CPR DEVICES AND METHODS UTILIZING A CONTINUOUS SUPPLY OF RESPIRATORY GASES
Z20595	USA	7	11/690,065	3/22/2007			Abandoned	ACSI	SYSTEMS AND METHODS FOR MODULATING AUTONOMIC FUNCTION
Z20567	USA	2	11/871,879	10/12/2007	8,151,790	4/10/2012	Granted	ACSI	VOLUME EXCHANGER VALVE SYSTEM AND METHOD TO INCREASE CIRCULATION DURING CPR
Z20621	USA	3	11/949,490	12/3/2007	7,682,312	3/23/2010	Granted	ACSI	SYSTEM FOR SENSING, DIAGNOSING AND TREATING PHYSIOLOGICAL CONDITIONS AND METHODS
Z20624	USA	2	12/141,864	6/18/2008	8,210,176	7/3/2012	Granted	ACSI	METHOD AND SYSTEM TO DECREASE INTRACRANIAL PRESSURE, ENHANCE CIRCULATION, AND ENCOURAGE SPONTANEOUS RESPIRATION

ZOLL Docket Number	Country	Sub Case	Application No.	Filing Date	Patent Number	Issue Date	Status	Entity	Title
Z20557	USA	2	12/819,959	6/21/2010	8967144	3/3/2015	Granted	ACSI	VACUUM AND POSITIVE PRESSURE VENTILATION SYSTEMS AND METHODS FOR INTRATHORACIC PRESSURE REGULATION
Z20595	USA	8	12/843,512	7/26/2010	8,408,204	4/2/2013	Granted	ACSI	POSITIVE PRESSURE SYSTEMS AND METHODS FOR INCREASING BLOOD PRESSURE AND CIRCULATION
Z20611	USA	2	13/026,459	2/14/2011	8,702,633	4/22/2014	Granted	ACSI	GUIDED ACTIVE COMPRESSION DECOMPRESSION CARDIOPULMONARY RESUSCITATION SYSTEMS AND METHODS
Z20611	USA	3	13/175,670	7/1/2011			Abandoned	ResQSystems, Inc.	VASODILATOR-ENHANCED CARDIOPULMONARY RESUSCITATION
Z20625	USA	2	13/189,330	7/22/2011			Abandoned	ACSI	AIRWAY ADJUNCT RESUSCITATION SYSTEMS AND METHODS
Z20567	USA	3	13/411,230	3/2/2012	8,985,098	3/24/2015	Granted	ACSI	CPR VOLUME EXCHANGER VALVE SYSTEM WITH SAFETY FEATURE AND METHODS
Z20611	USA	4	13/554,458	7/20/2012			Abandoned	ResQSystems, Inc.	METHODS AND SYSTEMS FOR REPERFUSION INJURY PROTECTION AFTER CARDIAC ARREST
Z20469	USA	2	13/554,986	7/20/2012			Published	ResQSystems, Inc.	ENHANCED GUIDED ACTIVE COMPRESSION DECOMPRESSION CARDIOPULMONARY RESUSCITATION SYSTEMS AND METHODS
Z20469	USA	3	13/720,858	12/19/2012	9238115	1/19/2016	Granted	ResQSystems, Inc.	SYSTEMS AND METHODS FOR THERAPEUTIC INTRATHORACIC PRESSURE REGULATION

ZOLL Docket Number	Country	Sub Case	Application No.	Filing Date	Patent Number	Issue Date	Status	Entity	Title
Z20595	USA	9	13/852,142	3/28/2013			Published	ACSI	POSITIVE PRESSURE SYSTEMS AND METHODS FOR INCREASING BLOOD PRESSURE AND CIRCULATION
Z20616	USA	2	14/197,996	3/5/2014			Published	ResQSystems, Inc.	PRESSURE ACTUATED VALVE SYSTEMS AND METHODS
Z20626	USA	2	14/262,423	4/25/2014			Published	ResQSystems, Inc.	SYSTEMS AND METHODS TO PREDICT THE CHANCES OF NEUROLOGICALLY INTACT SURVIVAL WHILE PERFORMING CPR
Z20613	USA	2	14/292,578	5/30/2014			Abandoned	ResQSystems, Inc.	End-Tidal Carbon Dioxide and Amplitude Spectral Area as Non-Invasive Markers of Coronary Perfusion Pressure and Arterial Pressure
Z20567	USA	4	14/522,402	10/23/2014	9,352,111	5/31/2016	Granted	ACSI	SYSTEMS AND METHODS TO INCREASE SURVIVAL WITH FAVORABLE NEUROLOGICAL FUNCTION AFTER CARDIAC ARREST
Z20557	USA	3	14/602,057	1/21/2015			Published	ACSI	VACUUM AND POSITIVE PRESSURE VENTILATION SYSTEMS AND METHODS FOR INTRATHORACIC PRESSURE REGULATION
Z20567	USA	5	14/635,525	3/2/2015			Published	ACSI	CPR VOLUME EXCHANGER VALVE SYSTEM WITH SAFETY FEATURE AND METHODS
Z20469	USA	4	14/978,412	12/22/2015			Published	ResQSystems, Inc.	SYSTEMS AND METHODS FOR THERAPEUTIC INTRATHORACIC PRESSURE REGULATION
Z20567	USA	7	15/158,738	5/19/2016			Published	ACSI	SYSTEMS AND METHODS TO INCREASE SURVIVAL WITH FAVORABLE NEUROLOGICAL FUNCTION AFTER CARDIAC ARREST

ZOLL Docket Number	Country	Sub Case	Application No.	Filing Date	Patent Number	Issue Date	Status	Entity	Title
Z20613	USA	3	15/420,653	1/31/2017			Pending	ResQSystems, Inc.	End-Tidal Carbon Dioxide and Amplitude Spectral Area as Non-Invasive Markers of Coronary Perfusion Pressure
Z20567	Japan	1	2010-504192	4/15/2008			Abandoned	ACSI	VOLUME EXCHANGER VALVE SYSTEM AND METHOD TO INCREASE CIRCULATION DURING CPR
Z20557	Japan	1	2012-516376	6/21/2010	5875192		Granted	ACSI	VACUUM AND POSITIVE PRESSURE VENTILATION SYSTEMS AND METHODS FOR INTRATHORACIC PRESSURE REGULATION
Z20469	Japan	1	2014-548847	12/19/2012			Abandoned	ResQSystems, Inc.	SYSTEMS AND METHODS FOR THERAPEUTIC INTRATHORACIC PRESSURE REGULATION
Z20557	Japan	2	2016-007489	1/18/2016			Abandoned	ACSI	VACUUM AND POSITIVE PRESSURE VENTILATION SYSTEMS AND METHODS FOR INTRATHORACIC PRESSURE REGULATION
Z20610	Japan	1	513953/95	11/7/1994	3672922		Expired	ACSI	METHOD AND DEVICE FOR ASSISTING CARDIOPULMONARY RESUSCITATION
Z20567	USA	1	60/912,891	4/19/2007			Expired	ACSI	VOLUME EXCHANGER VALVE SYSTEM AND METHOD TO INCREASE CIRCULATION DURING CPR
Z20557	USA	1	61/218,763	6/19/2009			Expired	ACSI	VACUUM AND POSITIVE PRESSURE VENTILATION SYSTEMS AND METHODS FOR INTRATHORACIC PRESSURE REGULATION
Z20469	USA	1	61/577,565	12/19/2011			Expired	ResQSystems, Inc.	SYSTEMS AND METHODS FOR THERAPEUTIC INTRATHORACIC PRESSURE REGULATION



ZOLL Docket Number	Country	Sub Case	Application No.	Filing Date	Patent Number	Issue Date	Status	Entity	Title
Z20595	PCT	1	PCT/US2004/01 2294	4/20/2004			Expired	ACSI	VENTILATOR AND METHODS FOR TREATING HEAD TRAUMA AND LOW BLOOD CIRCULATION
Z20567	PCT	1	PCT/US2008/06 0367	4/15/2008		4/10/2012	Expired	ACSI	VOLUME EXCHANGER VALVE SYSTEM AND METHOD TO INCREASE CIRCULATION DURING CPR
Z20557	PCT	1	PCT/US2010/03 9391	6/21/2010			Expired	ACSI	VACUUM AND POSITIVE PRESSURE VENTILATION SYSTEMS AND METHODS FOR INTRATHORACIC PRESSURE REGULATION
Z20469	PCT	1	PCT/US2012/07 0700	12/19/2012			Expired	ResQSystems, Inc.	SYSTEMS AND METHODS FOR THERAPEUTIC INTRATHORACIC PRESSURE REGULATION
Z20616	PCT	1	PCT/US2014/02 2725	3/10/2014			Expired	ResQSystems, Inc.	PRESSURE ACTUATED VALVE SYSTEMS AND METHODS