

Response to Exhibit B-1
Responsive Chart for U.S. Patent No. 11,351,357 over HeartMate III: Pump Design for a Centrifugal LVAD with a Magnetically Levitated Rotor (“Bourque 2001”)

The following chart represents Miracor’s preliminary response to Defendants’ Invalidity Chart (“the invalidity chart”), identified as Exhibit B-1, for the application of “Bourque 2001” (also, “the reference;” K. Bourque, et al., “HeartMate III: Pump Design for a Centrifugal LVAD with a Magnetically Levitated Rotor,” ASAIO Journal 2001, 47:401-405) to U.S. Patent No. 11,351,357 (“the ’357 patent”). Defendants assert without evidence or explanation that Bourque 2001 is prior art to the ’357 patent. Miracor does not agree with or acquiesce to this assertion and reserves all rights to refute the status of Bourque 2001 as prior art.

Defendants assert that they apply the apparent claim constructions set forth in Miracor’s Initial Infringement Contentions. Defendants appear not to apply those apparent claim constructions, not to apply the apparent claim constructions set forth in Defendants’ Initial Noninfringement Contentions, and not to apply the plain and ordinary meaning of the claim terms. Nothing in this chart conveys agreement or acquiescence with any meaning that Defendants attempt to convey for any claim term.

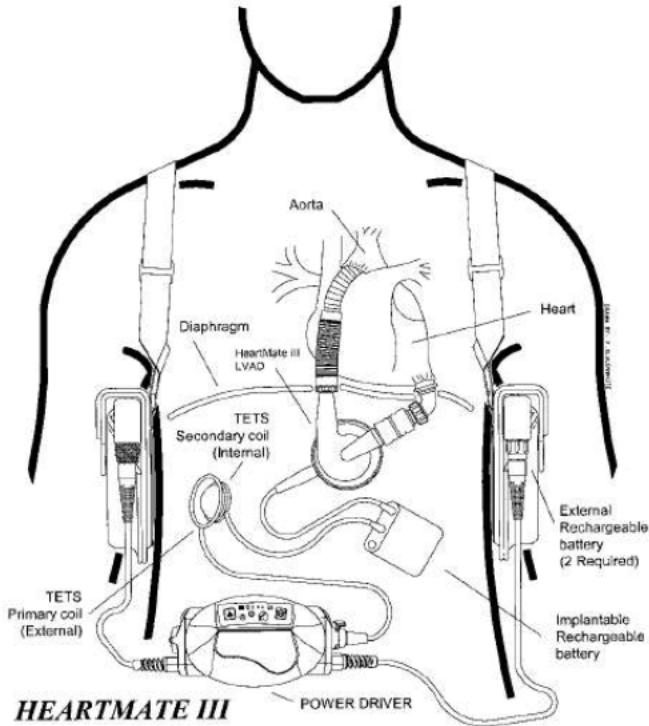
The invalidity chart fails to comply with LPR 2.3(b)(2). In particular, Defendants provide no detailed statement of whether the reference anticipates or renders obvious any claim. Instead Defendants assert that each element is disclosed, and if an element is not disclosed it is inherent, and if it is not inherent it can be found in one of the other cited references. Also, the invalidity chart provides no reason to combine any elements from different references.

The invalidity chart fails to comply with LPR 2.3(b)(3). In particular, Defendants do not identify where specifically in each alleged item of prior art each element of the asserted claims are found. All of the elements are met with a conclusory recitation that the reference discloses the claim element. Some of these recitations are followed by quotes from the reference, many of which do not include the relevant claim elements. At best, Defendants simply identify portions of the various references that they apparently believe disclose or render obvious various claim elements without explanation of how these disclosures correspond to the claim elements. Next, each element is met with an assertion that even if the element is not disclosed, it is inherent or obvious in combination with any of the other references, without any reasons given in support of this assertion. Miracor does not respond to Defendants’ arguments regarding combinations with other references as such a response would fall outside of LPR 2.5. This compliance with the rules does not indicate any agreement, acquiescence or waiver with respect to Defendants’ arguments regarding combinations with other references.

Because of Defendants’ failure to explain its purported invalidity positions, Miracor is limited in its ability to respond to them. Miracor reserves all rights to further respond should Defendants be allowed to expand their contentions. In the initial responsive chart

below, Miracor states as best it can, given Defendants' contentions, whether the reference includes the relevant claim element. Miracor may modify its response to each claim element subject to further explanation or definition by Defendants.

U.S. Patent No. 11,351,357			
#	Claim Element	Bourque 2001	Miracor's Response as to Whether the Element is Present in the Reference
1	[PRE] A system for assisting the blood circulation of a heart, comprising:	Bourque 2001 discloses "A system for assisting the blood circulation of a heart, comprising" at least under the apparent construction and scope of the claims as set forth in Miracor's Initial Infringement Contentions and to the extent the asserted claims are found to be not indefinite.. Bourque 2001 at fig. 3	Yes, subject to the limitations stated at the top of this document and the comments made throughout. Miracor may modify its response to this claim element subject to further explanation or definition by Defendants.

U.S. Patent No. 11,351,357			
#	Claim Element	Bourque 2001	Miracor's Response as to Whether the Element is Present in the Reference
		 Figure 3. HeartMate III LVAD implanted configuration. TETS, transcutaneous energy transmission system. To the extent it is found that Bourque 2001 does not expressly disclose this limitation, the limitation is inherent. And to the extent it is found that Bourque 2001 does not anticipate this claim, Bourque 2001 renders it obvious, standing alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with one or more other	

U.S. Patent No. 11,351,357			
#	Claim Element	Bourque 2001	Miracor's Response as to Whether the Element is Present in the Reference
		prior art references identified in the cover pleading of Defendants' Initial Invalidity Contentions.	
	[1a] a heart assist pump device deliverable to the heart and comprising:	Bourque 2001 discloses "a heart assist pump device deliverable to the heart and comprising" at least under the apparent construction and scope of the claims as set forth in Miracor's Initial Infringement Contentions and to the extent the asserted claims are found to be not indefinite.. Bourque 2001 at Abstract ABT-MIR-00000024 A long-term, compact left ventricular assist device (LVAD), the HeartMate III, has been designed and fabricated, featuring a centrifugal pump with a magnetically levitate rotor. Bourque 2001 at page 401 ABT-MIR-00000024 The advent of the left ventricular assist device (LVAD) has provided significant benefit to certain [congestive heart failure] patients since becoming clinically available. Bourque 2001 at page 404 ABT-MIR-00000024 It was a fundamental goal of the HeartMate III mechanical design to achieve optimal pumping performance and to enclose a sophisticated motor in the simplest possible way, this being the best means of achieving success.	No. Bourque 2001 does not disclose or suggest a heart assist pump device that is deliverable or delivered to the heart. Instead, the pump is located in the "least obtrusive position," spaced apart from the heart and connected to the heart by what Bourque 2001 calls an "inflow cannula" which does not meet the recitations of the claimed "inflow tube" of the claimed "heart assist pump device." Bourque 2001 at 402. Bourque 2001's "inflow cannula" is part of what Bourque 2001 calls an "inflow subassembly" comprising "a section that partially decouples the position ... of the heart from the pump and facilitates pump recovery at explant." <i>Id.</i> at 402. In vivo bovine testing involved similar cannulation that spaces the "heart assist

Bourque 2001 at fig. 3.

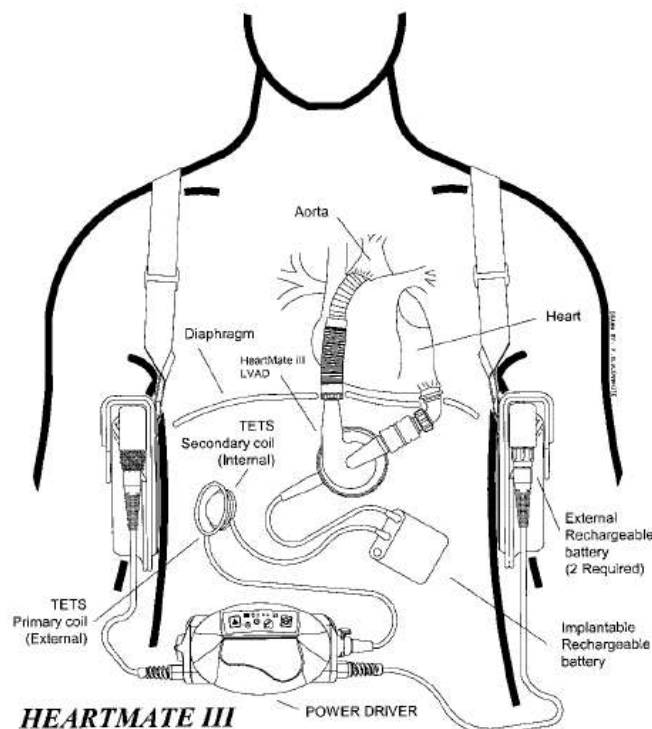
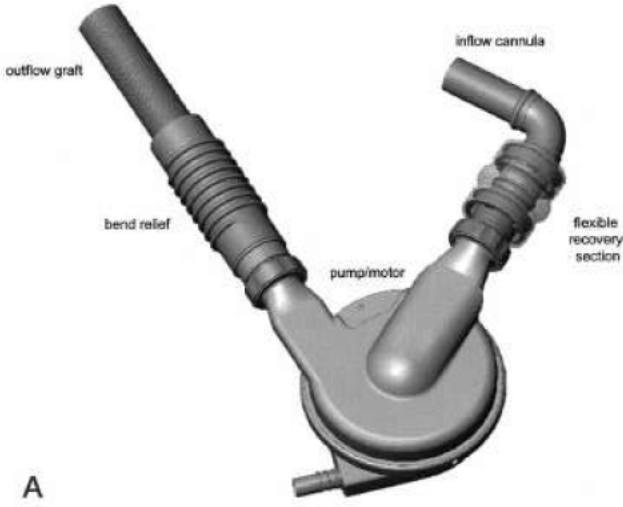


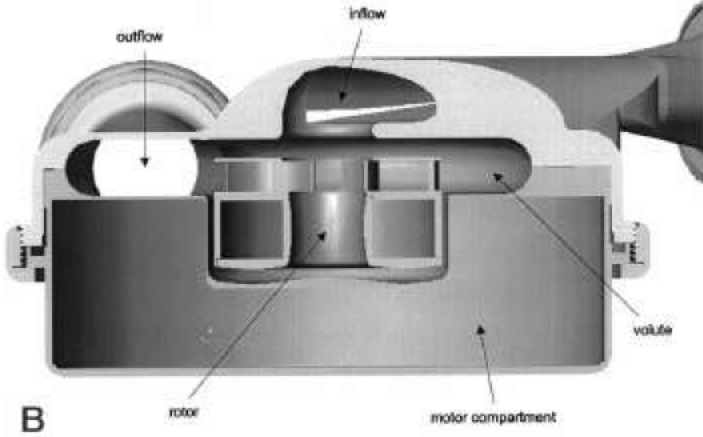
Figure 3. HeartMate III LVAD implanted configuration. TETS, transcutaneous energy transmission system.

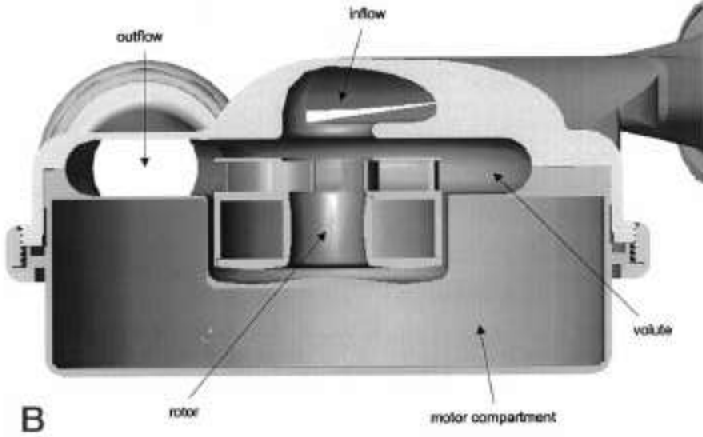
To the extent it is found that Bourque 2001 does not expressly disclose this limitation, the limitation is inherent. And to the extent it is found that Bourque 2001 does not anticipate this claim, Bourque 2001 renders it obvious, standing alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with one or more other prior art references identified in the cover pleading of Defendants' Initial Invalidity Contentions.

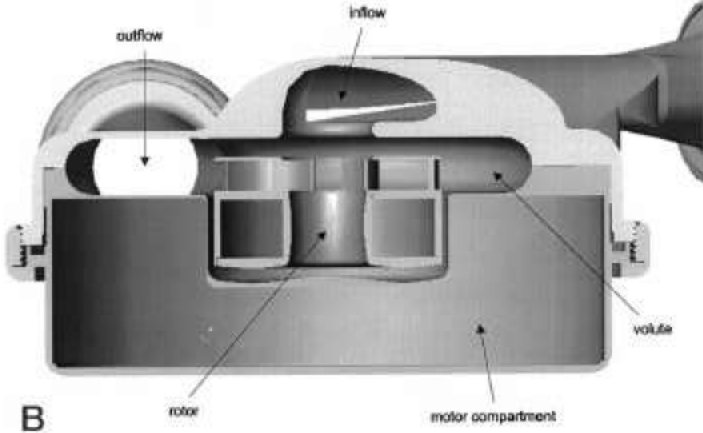
pump device" away from the heart. *Id.* at 403.

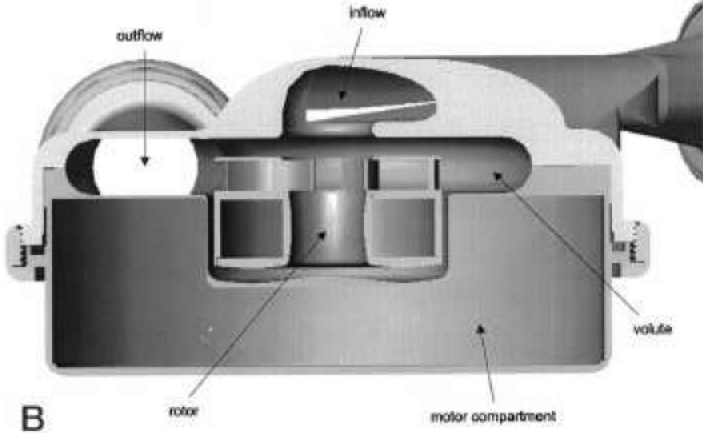
Miracor may modify its response to this claim element subject to further explanation or definition by Defendants.

U.S. Patent No. 11,351,357			
#	Claim Element	Bourque 2001	Miracor's Response as to Whether the Element is Present in the Reference
	[1b] an inflow tube defining a blood inflow path;	Bourque 2001 discloses “an inflow tube defining a blood inflow path” at least under the apparent construction and scope of the claims as set forth in Miracor’s Initial Infringement Contentions and to the extent the asserted claims are found to be not indefinite.. Bourque 2001 at 401 ABT-MIR-00000024 The HeartMate III pump...comprises an upper housing that includes the inflow and outflow channels and the upper half of the volute;...an inflow subassembly that includes a left ventricular (LV) cannula and a section that partially decouples the position and motion of the heart from the pump and facilitates pump recovery at explant. Bourque 2001 at fig. 1A 	No. Defendants’ bare citation in support fails to comply with LPR 2.3(b)(3) and does not specifically identify a suction end of an inflow tube. Moreover, Defendants do not identify an “inflow tube”—as explained below, Bourque 2001 does not disclose or suggest an inflow tube meeting the recitations of this claim. Miracor may modify its response to this claim element subject to further explanation or definition by Defendants.

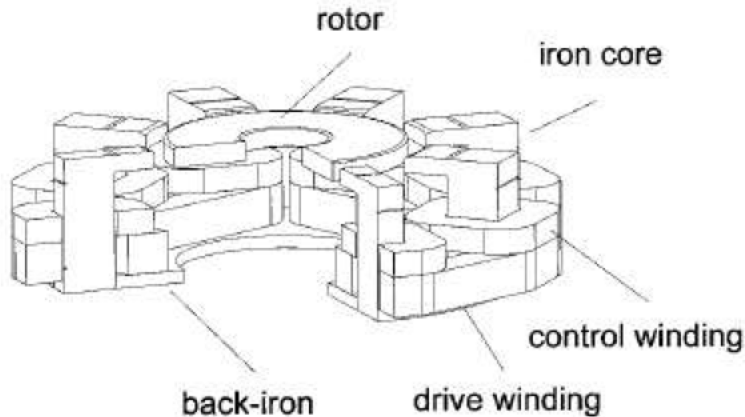
U.S. Patent No. 11,351,357			
#	Claim Element	Bourque 2001	Miracor's Response as to Whether the Element is Present in the Reference
		Bourque 2001 at fig. 1B  The diagram shows a cross-section of a medical device. An inflow tube enters from the top right, leading to a central chamber. An outflow tube exits from the top left. A rotor is positioned in the center of the chamber. Below the rotor is a motor compartment. A valve is located at the bottom right of the chamber. The entire device is housed within a larger structure. To the extent it is found that Bourque 2001 does not expressly disclose this limitation, the limitation is inherent. And to the extent it is found that Bourque 2001 does not anticipate this claim, Bourque 2001 renders it obvious, standing alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with one or more other prior art references identified in the cover pleading of Defendants' Initial Invalidity Contentions.	
	[1c] a magnetically driven rotor axially aligned with the inflow tube,	Bourque 2001 discloses "a magnetically driven rotor axially aligned with the inflow tube" at least under the apparent construction and scope of the claims as set forth in Miracor's Initial Infringement Contentions and to the extent the asserted claims are found to be not indefinite..	No. Bourque 2001 does not disclose a magnetically driven rotor axially aligned with the inflow tube. Defendants do not identify a rotor axis, nor do Defendants identify an inflow tube or an inflow tube direction.

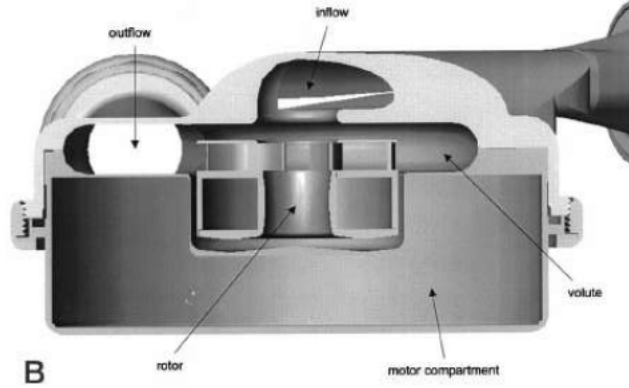
U.S. Patent No. 11,351,357			
#	Claim Element	Bourque 2001	Miracor's Response as to Whether the Element is Present in the Reference
		Bourque 2001 at fig. 1B  To the extent it is found that Bourque 2001 does not expressly disclose this limitation, the limitation is inherent. And to the extent it is found that Bourque 2001 does not anticipate this claim, Bourque 2001 renders it obvious, standing alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with one or more other prior art references identified in the cover pleading of Defendants' Initial Invalidity Contentions.	Miracor notes that, in the figures presented, the rotor axis appears to be orthogonal to what Bourque 2001 calls the "inflow cannula." Miracor may modify its response to this claim element subject to further explanation or definition by Defendants.
	[1d] and [the magnetically driven rotor] being rotatable within a surrounding	Bourque 2001 discloses "and [the magnetically driven rotor] being rotatable within a surrounding rotor housing to act upon blood flowing from the inflow tube toward the magnetically driven rotor" at least under the apparent construction and scope of the claims as set forth in Miracor's Initial Infringement Contentions and to the extent the asserted claims are found to be not indefinite..	No. Defendants' bare citation in support fails to comply with LPR 2.3(b)(3), does not specifically identify a flow of blood from an inflow tube, and does not specifically identify

U.S. Patent No. 11,351,357			
#	Claim Element	Bourque 2001	Miracor's Response as to Whether the Element is Present in the Reference
	rotor housing to act upon blood flowing from the inflow tube toward the magnetically driven rotor	Bourque 2001 at page 401 ABT-MIR-00000024 The HeartMate III pump...comprises...a lower housing that includes the lower half of the volute and a cavity for the rotor, in which the motor is enclosed. Bourque 2001 at fig. 1B  To the extent it is found that Bourque 2001 does not expressly disclose this limitation, the limitation is inherent. And to the extent it is found that Bourque 2001 does not anticipate this claim, Bourque 2001 renders it obvious, standing alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with one or more other prior art references identified in the cover pleading of Defendants' Initial Invalidity Contentions.	any acting on the flowing blood by the rotor. Miracor may modify its response to this claim element subject to further explanation or definition by Defendants.

U.S. Patent No. 11,351,357			
#	Claim Element	Bourque 2001	Miracor's Response as to Whether the Element is Present in the Reference
	[1e] the magnetically driven rotor being rotatable about a central axis and	Bourque 2001 discloses “the magnetically driven rotor being rotatable about a central axis and” at least under the apparent construction and scope of the claims as set forth in Miracor’s Initial Infringement Contentions and to the extent the asserted claims are found to be not indefinite.. Bourque 2001 at fig. 1B  Bourque 2001 at page 402 ABT-MIR-00000024 To orient the pump in the least obtrusive position...it was decided that the rotational axis of the pump’s rotor should be perpendicular to the body’s long axis. To the extent it is found that Bourque 2001 does not expressly disclose this limitation, the limitation is inherent. And to the extent it is found that Bourque 2001 does not anticipate this claim, Bourque 2001 renders it	No. Defendants’ bare citation in support fails to comply with LPR 2.3(b)(3) and does not specifically identify a central axis. Miracor may modify its response to this claim element subject to further explanation or definition by Defendants.

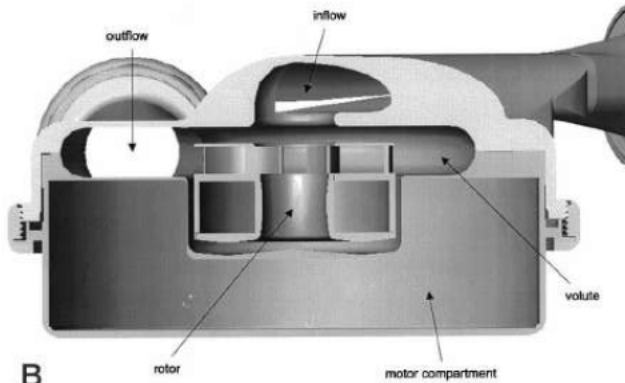
U.S. Patent No. 11,351,357			
#	Claim Element	Bourque 2001	Miracor's Response as to Whether the Element is Present in the Reference
		obvious, standing alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with one or more other prior art references identified in the cover pleading of Defendants' Initial Invalidity Contentions.	
	[1f] [the magnetically driven rotor] being rigidly coupled to a first magnetic device	Bourque 2001 discloses "[magnetically driven rotor] being rigidly coupled to a first magnetic device" at least under the apparent construction and scope of the claims as set forth in Miracor's Initial Infringement Contentions and to the extent the asserted claims are found to be not indefinite.. Bourque 2001 at page 402 ABT-MIR-00000024 The HeartMate III motor includes drive and levitation in a single magnetic structure as show in Figure 4. Bourque 2001 at page 401 ABT-MIR-00000024 a rotor that includes an impeller and passively magnetic elements;	No. Defendants' bare citation in support fails to comply with LPR 2.3(b)(3), does not specifically identify a first magnetic device, and does not specifically identify a rigid coupling. Miracor may modify its response to this claim element subject to further explanation or definition by Defendants.

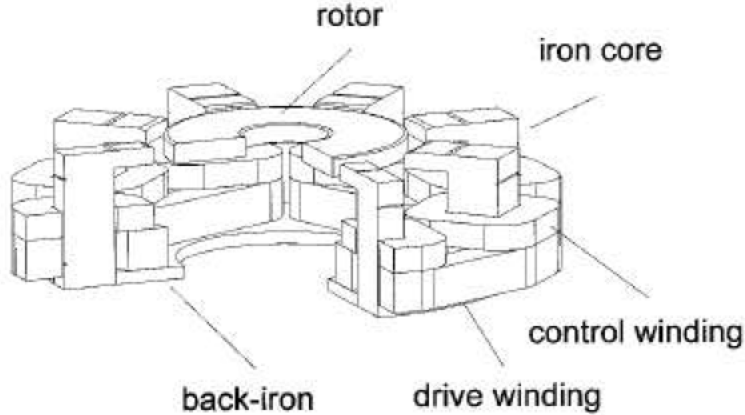
U.S. Patent No. 11,351,357			
#	Claim Element	Bourque 2001	Miracor's Response as to Whether the Element is Present in the Reference
		Bourque 2001 at fig. 4  Figure 4. HeartMate III motor, drive, and levitation (control) in a single magnetic structure. To the extent it is found that Bourque 2001 does not expressly disclose this limitation, the limitation is inherent. And to the extent it is found that Bourque 2001 does not anticipate this claim, Bourque 2001 renders it obvious, standing alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with one or more other prior art references identified in the cover pleading of Defendants' Initial Invalidity Contentions.	
	[1g] that [the first magnetic device] is located within	Bourque 2001 discloses "that [the first magnetic device] is located within the surrounding rotor housing" at least under the apparent construction and scope of the claims as set forth in Miracor's Initial Infringement	No. Defendants' bare citation in support fails to comply with LPR 2.3(b)(3) and does not specifically identify a first

U.S. Patent No. 11,351,357			
#	Claim Element	Bourque 2001	Miracor's Response as to Whether the Element is Present in the Reference
	the surrounding rotor housing	Contentions and to the extent the asserted claims are found to be not indefinite.. Bourque 2001 at page 402 ABT-MIR-00000024 The HeartMate III motor includes drive and levitation in a single magnetic structure as show in Figure 4. Bourque 2001 at page 401 ABT-MIR-00000024 The HeartMate III pump...comprises an <i>upper housing</i> that includes the inflow and outflow channels and the upper half of the volute; a <i>lower housing</i> that includes the lower half of the volute and a cavity for the rotor, in which the motor is enclosed; a <i>rotor</i> that includes an impeller and passively magnetic elements... Bourque 2001 at figs. 1B  To the extent it is found that Bourque 2001 does not expressly disclose this limitation, the limitation is inherent. And to the extent it is found that	magnetic device, and thus does not specifically identify a first magnetic device within the surrounding rotor housing. Miracor may modify its response to this claim element subject to further explanation or definition by Defendants.

U.S. Patent No. 11,351,357			
#	Claim Element	Bourque 2001	Miracor's Response as to Whether the Element is Present in the Reference
		Bourque 2001 does not anticipate this claim, Bourque 2001 renders it obvious, standing alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with one or more other prior art references identified in the cover pleading of Defendants' Initial Invalidity Contentions.	
	[1h] wherein both the magnetically driven rotor and first magnetic device are entirely spaced apart from the surrounding rotor housing by a gap during rotation of the magnetically driven rotor;	Bourque 2001 discloses "wherein both the magnetically driven rotor and first magnetic device are entirely spaced apart from the surrounding rotor housing by a gap during rotation of the magnetically driven rotor" at least under the apparent construction and scope of the claims as set forth in Miracor's Initial Infringement Contentions and to the extent the asserted claims are found to be not indefinite.. Bourque 2001 at page 401 ABT-MIR-00000024 The rotor is magnetically suspended, eliminating contact between moving parts and consequently extending wear life indefinitely. It is anticipated that this design will profoundly increase reliability. Bourque 2001 at page 402-403 ABT-MIR-00000024 The HeartMate III motor includes drive and levitation in a single magnetic structure as shown in Figure 4. The rotor is passively magnetically levitated in the axial-translational and transverse-rotational degrees of freedom (Figure 5) and actively magnetically levitated in the remaining degrees of freedom. Bourque 2001 at page 402 ABT-MIR-00000024 By creating a similar opening in the lower half of the rotor, a second backflow path underneath the rotor results, eliminating what would have been an accumulation of stagnant blood there, and relieving the upward thrust load on the rotor. However, both of these backflows consume	No. Defendants' bare citation in support fails to comply with LPR 2.3(b)(3), does not specifically identify the first magnetic device as discussed above and thus does not specifically identify the "first magnetic device are entirely spaced apart from the surrounding rotor housing by a gap." Miracor may modify its response to this claim element subject to further explanation or definition by Defendants.

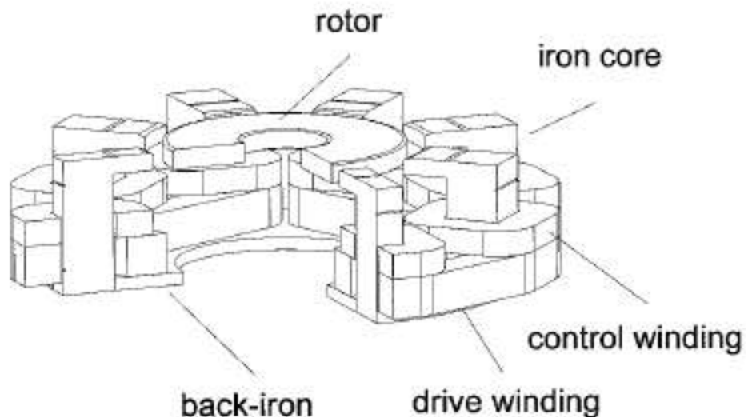
U.S. Patent No. 11,351,357			
#	Claim Element	Bourque 2001	Miracor's Response as to Whether the Element is Present in the Reference
		hydraulic power without contributing to physiologic perfusion. Thus, the clearances above and below the rotor were chosen to balance reduced hydraulic efficiency with sufficient washing of blood contacting surfaces. Backflow clearances were further constrained by the stiffness of the magnetic suspension (passive in the axial direction, actively controlled in the radial direction), which describes the levitation system's capacity to counteract imposed deviations of rotor position; the gaps permit up to 7X gravitational loads in any direction without contact between the rotor and housing. Bourque 2001 at page 402 ABT-MIR-00000024 The pump components were designed to achieve the desired flow paths, accommodate the motor, and provide convenient reliable connections in the simplest, most cost effective way. To the extent it is found that Bourque 2001 does not expressly disclose this limitation, the limitation is inherent. And to the extent it is found that Bourque 2001 does not anticipate this claim, Bourque 2001 renders it obvious, standing alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with one or more other prior art references identified in the cover pleading of Defendants' Initial Invalidity Contentions.	
	[1i] a magnetic drive system comprising a second magnetic device axially aligned with	Bourque 2001 discloses "a magnetic drive system comprising a second magnetic device axially aligned with the central axis of the magnetically driven rotor" at least under the apparent construction and scope of the claims as set forth in Miracor's Initial Infringement Contentions and to the extent the asserted claims are found to be not indefinite..	No. Defendants' bare citation in support fails to comply with LPR 2.3(b)(3), does not specifically identify a second magnetic device, does not identify a central axis, and thus does not specifically identify an

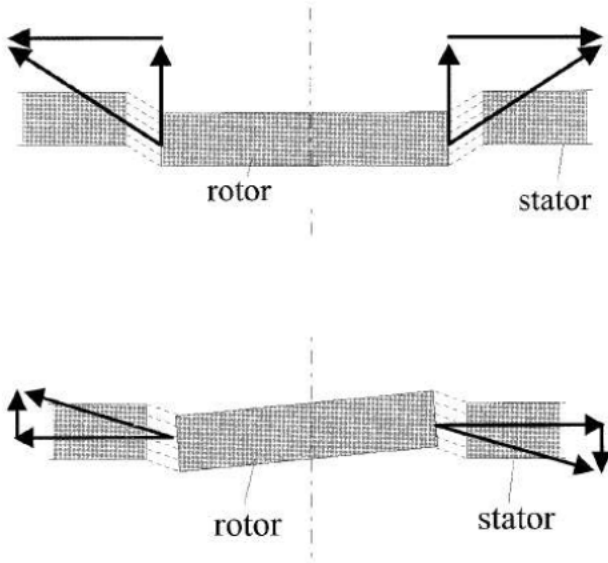
U.S. Patent No. 11,351,357			
#	Claim Element	Bourque 2001	Miracor's Response as to Whether the Element is Present in the Reference
	the central axis of the magnetically driven rotor	Bourque 2001 at fig. 1B  Bourque 2001 at fig. 4	axially aligned position of a second magnetic device with respect to a central axis as recited in the claim. Miracor notes that the portion of Bourque 2001's Fig. 1B labeled as "inflow" appears to be orthogonal to Bourque 2001's motor. Miracor may modify its response to this claim element subject to further explanation or definition by Defendants.

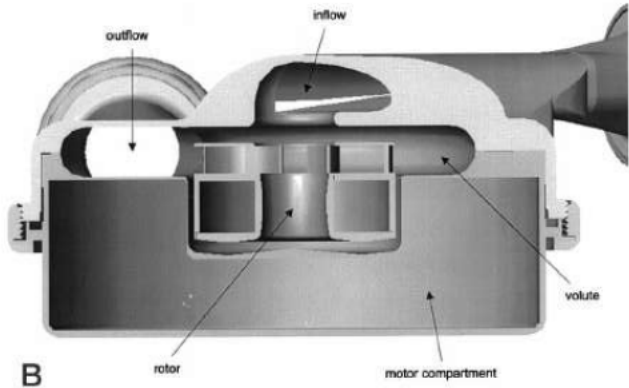
U.S. Patent No. 11,351,357			
#	Claim Element	Bourque 2001	Miracor's Response as to Whether the Element is Present in the Reference
		 Figure 4. HeartMate III motor, drive, and levitation (control) in a single magnetic structure. To the extent it is found that Bourque 2001 does not expressly disclose this limitation, the limitation is inherent. And to the extent it is found that Bourque 2001 does not anticipate this claim, Bourque 2001 renders it obvious, standing alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with one or more other prior art references identified in the cover pleading of Defendants' Initial Invalidity Contentions.	
	[1j] [a second magnetic device] spaced apart from the magnetically	Bourque 2001 discloses "[a second magnetic device] spaced apart from the magnetically driven rotor such that a wall of the surrounding rotor housing is positioned between the magnetically driven rotor and the second magnetic device" at least under the apparent construction and scope of the claims as set forth in Miracor's Initial Infringement	No. Defendants' bare citation in support fails to comply with LPR 2.3(b)(3), does not specifically identify the second magnetic device for the reasons

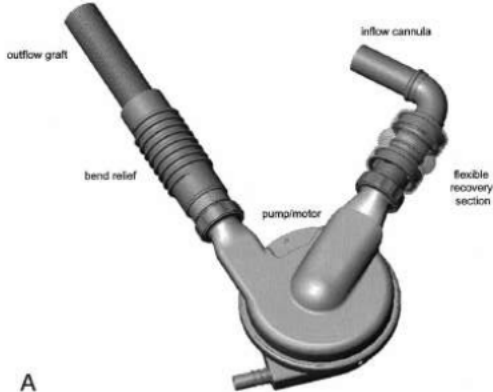
U.S. Patent No. 11,351,357			
#	Claim Element	Bourque 2001	Miracor's Response as to Whether the Element is Present in the Reference
	driven rotor such that a wall of the surrounding rotor housing is positioned between the magnetically driven rotor and the second magnetic device	Contentions and to the extent the asserted claims are found to be not indefinite.. upper Bourque 2001 at page 401 ABT-MIR-00000024 The rotor is magnetically suspended, eliminating contact between moving parts and consequently extending wear life indefinitely. It is anticipated that this design will profoundly increase reliability. Bourque 2001 at page 402-403 ABT-MIR-00000024 The HeartMate III motor includes drive and levitation in a single magnetic structure as shown in Figure 4. The rotor is passively magnetically levitated in the axial-translational and transverse-rotational degrees of freedom (Figure 5) and actively magnetically levitated in the remaining degrees of freedom. Bourque 2001 at page 402 ABT-MIR-00000024 By creating a similar opening in the lower half of the rotor, a second backflow path underneath the rotor results, eliminating what would have been an accumulation of stagnant blood there, and relieving the upward thrust load on the rotor. However, both of these backflows consume hydraulic power without contributing to physiologic perfusion. Thus, the clearances above and below the rotor were chosen to balance reduced hydraulic efficiency with sufficient washing of blood contacting surfaces... [T]he gaps permit up to 7X gravitational loads in any direction without contact between the rotor and housing.	discussed above, and does not specifically identify a wall. Miracor may modify its response to this claim element subject to further explanation or definition by Defendants.

U.S. Patent No. 11,351,357			
#	Claim Element	Bourque 2001	Miracor's Response as to Whether the Element is Present in the Reference
		To the extent it is found that Bourque 2001 does not expressly disclose this limitation, the limitation is inherent. And to the extent it is found that Bourque 2001 does not anticipate this claim, Bourque 2001 renders it obvious, standing alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with one or more other prior art references identified in the cover pleading of Defendants' Initial Invalidity Contentions.	
	[1k] the second magnetic device positioned axially closer to the first magnetic device than to the magnetically driven rotor so as to provide a magneto coupling with the first magnetic device to drive rotation of the magnetically driven rotor	Bourque 2001 discloses "the second magnetic device positioned axially closer to the first magnetic device than to the magnetically driven rotor so as to provide a magneto coupling with the first magnetic device to drive rotation of the magnetically driven rotor" at least under the apparent construction and scope of the claims as set forth in Miracor's Initial Infringement Contentions and to the extent the asserted claims are found to be not indefinite.. Bourque 2001 at fig. 4	No. Defendants' bare citation in support fails to comply with LPR 2.3(b)(3), does not specifically identify a second magnetic device, does not specifically identify a first magnetic device, and thus does not specifically identify a position for a second magnetic device to magnetically drive rotation of the magnetically driven rotor via a magneto coupling with the first magnetic device or axial spacing between a first magnetic device, a second magnetic device, and a magnetically driven rotor. Miracor may modify its response to this claim element subject to further explanation or definition by Defendants.

U.S. Patent No. 11,351,357			
#	Claim Element	Bourque 2001	Miracor's Response as to Whether the Element is Present in the Reference
		 Figure 4. HeartMate III motor, drive, and levitation (control) in a single magnetic structure. Bourque 2001 at page 402-403 ABT-MIR-00000024 The HeartMate III motor includes drive and levitation in a single magnetic structure as shown in Figure 4. The rotor is passively magnetically levitated in the axial-translational and transverse-rotational degrees of freedom (Figure 5) and actively magnetically levitated in the remaining degrees of freedom.	

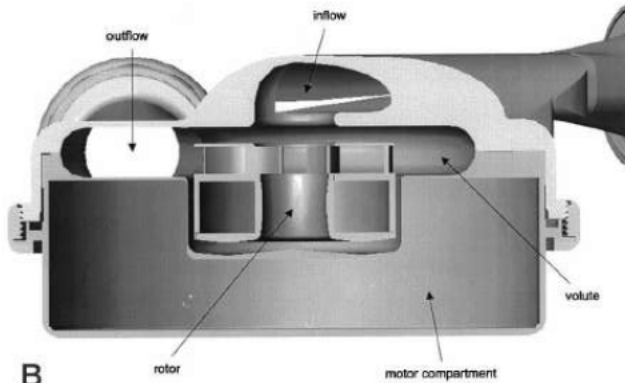
U.S. Patent No. 11,351,357			
#	Claim Element	Bourque 2001	Miracor's Response as to Whether the Element is Present in the Reference
		Bourque 2001 at fig. 5  Figure 5. Passive magnetic levitation. Above, Restoration force when axially displaced. Below, Restoration force when tilted. To the extent it is found that Bourque 2001 does not expressly disclose this limitation, the limitation is inherent. And to the extent it is found that Bourque 2001 does not anticipate this claim, Bourque 2001 renders it obvious, standing alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with one or more other prior art references identified in the cover pleading of Defendants' Initial Invalidity Contentions.	
	[11] a blood outflow port	Bourque 2001 discloses "a blood outflow port positioned radially adjacent the magnetically driven rotor such that blood driven by the magnetically	No. Defendants' bare citation in support fails to comply with

U.S. Patent No. 11,351,357			
#	Claim Element	Bourque 2001	Miracor's Response as to Whether the Element is Present in the Reference
	positioned radially adjacent the magnetically driven rotor such that blood driven by the magnetically driven rotor is configured to exit the surrounding rotor housing in a direction substantially perpendicular from the blood inflow path and the central axis of the magnetically driven rotor,	driven rotor is configured to exit the surrounding rotor housing in a direction substantially perpendicular from the blood inflow path and the central axis of the magnetically driven rotor,” at least under the apparent construction and scope of the claims as set forth in Miracor’s Initial Infringement Contentions and to the extent the asserted claims are found to be not indefinite.. Bourque 2001 at fig. 1B 	LPR 2.3(b)(3) and does not specifically identify a direction of blood exiting the housing or a direction of the inflow tube or an axis for the rotor—as a result, there is no indication that the “blood driven by the magnetically driven rotor is configured to exit the surrounding rotor housing in a direction substantially perpendicular from the inflow tube and the central axis of the magnetically driven rotor.” Miracor notes that, to the extent the relevant directions can be estimated, blood exiting through the outflow appears to be flowing substantially parallel to the portion labeled as “inflow cannula” in Bourque 2001’s Fig. 1A. Miracor may modify its response to this claim element subject to further explanation or definition by Defendants.

U.S. Patent No. 11,351,357			
#	Claim Element	Bourque 2001	Miracor's Response as to Whether the Element is Present in the Reference
		Bourque 2001 at fig. 1A  To the extent it is found that Bourque 2001 does not expressly disclose this limitation, the limitation is inherent. And to the extent it is found that Bourque 2001 does not anticipate this claim, Bourque 2001 renders it obvious, standing alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with one or more other prior art references identified in the cover pleading of Defendants' Initial Invalidity Contentions.	
	[1m] wherein the magneto coupling orients the magnetically driven rotor so that, in response to	Bourque 2001 discloses "wherein the magneto coupling orients the magnetically driven rotor so that, in response to rotation of the magnetically driven rotor, the magnetically driven rotor is space apart from the surrounding rotor housing by the blood flowing in the gap and to the blood outflow port;" at least under the apparent construction and scope of the claims as set forth in Miracor's Initial Infringement Contentions and to the extent the asserted claims are found to be not indefinite..	No. Defendants' bare citation in support fails to comply with LPR 2.3(b)(3), does not specifically identify the first or second magnetic devices or the magneto coupling as discussed above and thus does not specifically identify the

U.S. Patent No. 11,351,357			
#	Claim Element	Bourque 2001	Miracor's Response as to Whether the Element is Present in the Reference
	rotation of the magnetically driven rotor, the magnetically driven rotor is spaced apart from the surrounding rotor housing by the blood flowing in the gap and to the blood outflow port; and	Bourque 2001 at page 401 ABT-MIR-00000024 The rotor is magnetically suspended, eliminating contact between moving parts and consequently extending wear life indefinitely. It is anticipated that this design will profoundly increase reliability. Bourque 2001 at page 402-403 ABT-MIR-00000024 The HeartMate III motor includes drive and levitation in a single magnetic structure as shown in Figure 4. The rotor is passively magnetically levitated in the axial-translational and transverse-rotational degrees of freedom (Figure 5) and actively magnetically levitated in the remaining degrees of freedom. Bourque 2001 at page 402 ABT-MIR-00000024 By creating a similar opening in the lower half of the rotor, a second backflow path underneath the rotor results, eliminating what would have been an accumulation of stagnant blood there, and relieving the upward thrust load on the rotor. However, both of these backflows consume hydraulic power without contributing to physiologic perfusion. Thus, the clearances above and below the rotor were chosen to balance reduced hydraulic efficiency with sufficient washing of blood contacting surfaces. Backflow clearances were further constrained by the stiffness of the magnetic suspension (passive in the axial direction, actively controlled in the radial direction), which describes the levitation system's capacity to counteract imposed deviations of rotor position; the gaps permit up to 7X gravitational loads in any direction without contact between the rotor and housing. Bourque 2001 at page 402 ABT-MIR-00000024	magneto coupling orienting the rotor, and does not identify the blood outflow port as discussed above and thus also does not specifically identify the blood flowing to the blood outflow port as recited in the claim. Miracor may modify its response to this claim element subject to further explanation or definition by Defendants.

U.S. Patent No. 11,351,357			
#	Claim Element	Bourque 2001	Miracor's Response as to Whether the Element is Present in the Reference
		The pump components were designed to achieve the desired flow paths, accommodate the motor, and provide convenient reliable connections in the simplest, most cost effective way. To the extent it is found that Bourque 2001 does not expressly disclose this limitation, the limitation is inherent. And to the extent it is found that Bourque 2001 does not anticipate this claim, Bourque 2001 renders it obvious, standing alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with one or more other prior art references identified in the cover pleading of Defendants' Initial Invalidity Contentions.	
	[1n] an external control unit configured to regulate operation of the second magnetic device, the external control unit connectable to the heart assist pump device for controlling the second magnetic device to	Bourque 2001 discloses "an external control unit configured to regulate operation of the second magnetic device, the external control unit connectable to the heart assist pump device for controlling the second magnetic device to thereby magnetically drive the rotation of the magnetically driven rotor via the magneto coupling with the first magnetic device." at least under the apparent construction and scope of the claims as set forth in Miracor's Initial Infringement Contentions and to the extent the asserted claims are found to be not indefinite..	No. Defendants' bare citation in support fails to comply with LPR 2.3(b)(3), does not specifically identify a first or second magnetic device or magneto coupling as discussed above, and does not specifically identify any regulation of the second magnetic device by the shelf mounted electronics. Defendants' argument that elements can be found in a different reference fails to comply with the relevant rules because Defendants do not identify with specificity where such elements can be found in that different reference.

U.S. Patent No. 11,351,357			
#	Claim Element	Bourque 2001	Miracor's Response as to Whether the Element is Present in the Reference
	thereby magnetically drive the rotation of the magnetically driven rotor via the magneto coupling with the first magnetic device.	Bourque 2001 at fig. 1B  B Bourque 2001 at page 403 ABT-MIR-00000024 The electronics for power and control of the LVAD and for data acquisition resided on a shelf and alongside the cages containing the calves. The animals were continuously monitored for general welfare, and certain parameters such as arterial pressure, pump and pulmonary artery volume flow rates, pump speed, and blood chemistry (including plasma free hemoglobin) were periodically recorded. In two animals, measurement of pressure head throughout the duration of the studies were made with flocked carotid lines and fluid filled LV catheters.	Miracor does not further respond to Defendants' arguments regarding combination with other references as such a response would fall outside of LPR 2.5. Miracor's compliance with the rules does not indicate any agreement, acquiescence or waiver with respect to Defendants' arguments regarding combinations with other references. Miracor may modify its response to this claim element subject to further explanation or definition by Defendants.

Bourque 2001 at fig. 3.

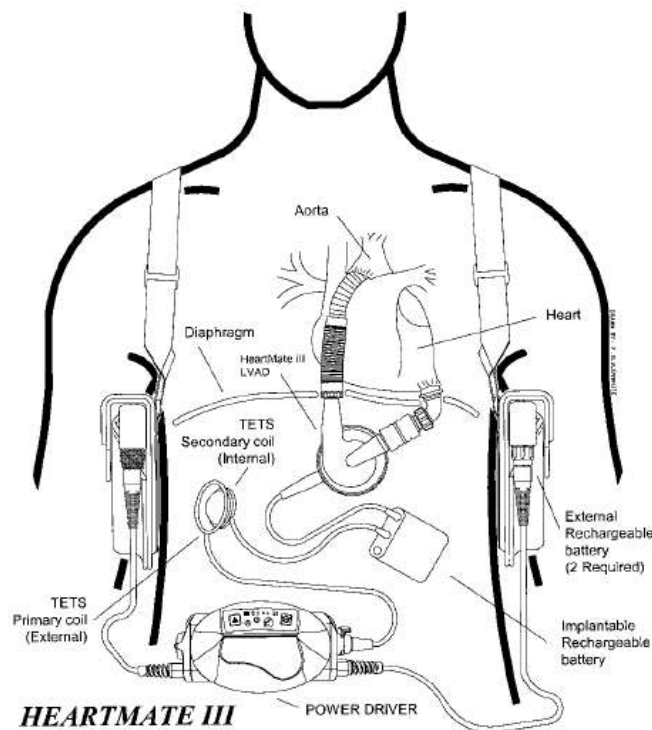
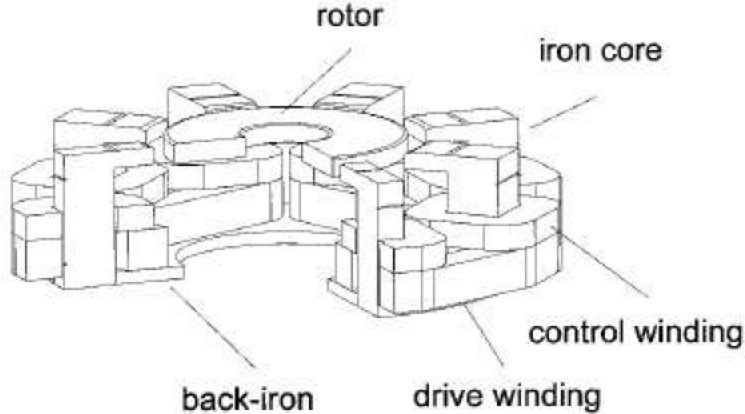


Figure 3. HeartMate III LVAD implanted configuration. TETS, transcutaneous energy transmission system.

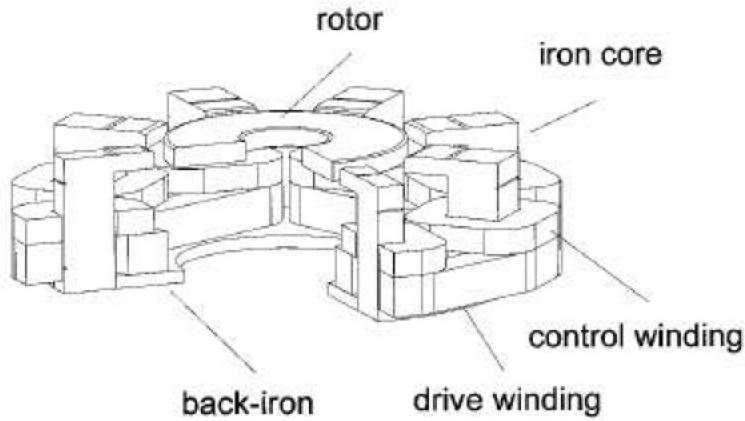
To the extent it is found that Bourque 2001 does not expressly disclose this limitation, the limitation is inherent. And to the extent it is found that Bourque 2001 does not anticipate this claim, Bourque 2001 renders it obvious, standing alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with one or more other prior art references identified (e.g., Schob '705 Ex. B-6, Bearnson '066 Ex. B-20) in the cover pleading of Defendants' Initial Invalidity Contentions. For example, a person of ordinary skill in the art would know that per Earnshaw's Theorem, magnetic levitation requires constant

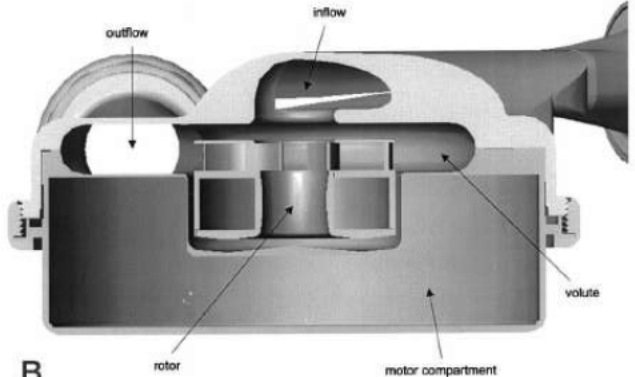
U.S. Patent No. 11,351,357			
#	Claim Element	Bourque 2001	Miracor's Response as to Whether the Element is Present in the Reference
		power and an active control system to keep the levitation stable. Further, a person of ordinary skill in the art would have been motivated to combine Bourque 2001 with one or more other references identified in the cover pleading of Defendants' Initial Invalidity Contentions (e.g., Schob '705 Ex. B-6, Bearson '066 Ex. B-20) with a reasonable expectation of success because each of these references contains familiar elements within the similar fields of endeavor to address similar known problems, according to known methods which would yield predictable results.	
2 ¹	The system of claim 1, wherein the magnetically driven rotor comprises guide surfaces to produce centrifugal flow components.	Bourque 2001 discloses "The system of claim 1, wherein the magnetically driven rotor comprises guide surfaces to produce centrifugal flow components" at least under the apparent construction and scope of the claims as set forth in Miracor's Initial Infringement Contentions and to the extent the asserted claims are found to be not indefinite.. Bourque 2001 at page 401 ABT-MIR-00000024 A long-term, compact left ventricular assist device (LVAD), the HeartMate III, has been designed and fabricated, featuring a centrifugal pump with a magnetically levitated rotor. Bourque 2001 at page 402 ABT-MIR-00000024 An opening in the shroud (<i>i.e.</i>, the cover across the top of the blades on the rotor) permits fluid leaving the inflow conduit to enter the impeller. This results in a backflow path from the trailing edges of the blades (where the pressure is relatively high), over the shroud, and back to the leading edges of the blades. By creating a similar opening in the lower half of the rotor, a second backflow path underneath the rotor results,	Defendants' bare citation in support fails to comply with LPR 2.3(b)(3) and does not specifically identify any centrifugal flow components or any guide surfaces that produce centrifugal flow components.

¹ Miracor does not assert this claim in its LPR 2.2 Initial Infringement Contentions, but certain asserted claims depend from this claim.

U.S. Patent No. 11,351,357			
#	Claim Element	Bourque 2001	Miracor's Response as to Whether the Element is Present in the Reference
		eliminating what would have been an accumulation of stagnant blood there, and relieving the upward thrust load on the rotor. Bourque 2001 at fig. 4  Figure 4. HeartMate III motor, drive, and levitation (control) in a single magnetic structure. To the extent it is found that Bourque 2001 does not expressly disclose this limitation, the limitation is inherent. And to the extent it is found that Bourque 2001 does not anticipate this claim, Bourque 2001 renders it obvious, standing alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with one or more other prior art references identified in the cover pleading of Defendants' Initial Invalidity Contentions.	

U.S. Patent No. 11,351,357			
#	Claim Element	Bourque 2001	Miracor's Response as to Whether the Element is Present in the Reference
3	The system of claim 2, wherein the first magnetic device rotates together with the magnetically driven rotor relative to the surrounding rotor housing.	Bourque 2001 discloses “The system of claim 2, wherein the first magnetic device rotates together with the magnetically driven rotor relative to the surrounding rotor housing” at least under the apparent construction and scope of the claims as set forth in Miracor’s Initial Infringement Contentions and to the extent the asserted claims are found to be not indefinite.. Bourque 2001 at page 401 ABT-MIR-00000024 The rotor is magnetically suspended, eliminating contact between moving parts and consequently extending wear life indefinitely. Bourque 2001 at page 401 ABT-MIR-00000024 The HeartMate III pump...comprises...a <i>rotor</i> that includes an impeller and passively magnetic elements. Bourque 2001 at page 402-3 ABT-MIR-00000024 The HeartMate III motor includes drive and levitation in a single magnetic structure as show in Figure 4. The rotor is passively magnetically levitated in the axial-translational and transverse-rotational degrees of freedom...and actively magnetically levitated in the remaining degrees of freedom.	No. Defendants’ bare citation in support fails to comply with LPR 2.3(b)(3), does not specifically identify a first magnetic device, for the reasons discussed above. Miracor may modify its response to this claim element subject to further explanation or definition by Defendants.

		Bourque 2001 at fig. 4  Figure 4. HeartMate III motor, drive, and levitation (control) in a single magnetic structure. Bourque 2001 at page 404 ABT-MIR-00000024 The very simple main flow path is a consequence of the motor's 'J' core configuration...which places an imaginary plane near the mid-height of the pump, below which are confined the motor and levitation elements, and above which the hydrodynamic elements are permitted free reign. To the extent it is found that Bourque 2001 does not expressly disclose this limitation, the limitation is inherent. And to the extent it is found that Bourque 2001 does not anticipate this claim, Bourque 2001 renders it obvious, standing alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with one or more other prior art references identified in the cover pleading of Defendants' Initial Invalidity Contentions.	
10 ²	The system of claim 1, wherein the	Bourque 2001 discloses "The system of claim 1, wherein the magnetically driven rotor is positioned axially side-by-side with the first magnetic device and rotates together with the first magnetic device within the	No. Defendants' bare citation in support fails to comply with LPR 2.3(b)(3), does not

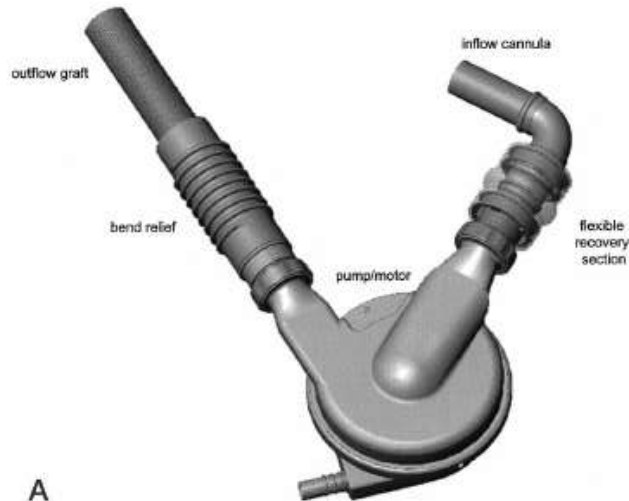
U.S. Patent No. 11,351,357			
#	Claim Element	Bourque 2001	Miracor's Response as to Whether the Element is Present in the Reference
	magnetically driven rotor is positioned axially side-by-side with the first magnetic device and rotates together with the first magnetic device within the surrounding rotor housing.	surrounding rotor housing.” at least under the apparent construction and scope of the claims as set forth in Miracor’s Initial Infringement Contentions and to the extent the asserted claims are found to be not indefinite.. Bourque 2001 at fig. 1B  Bourque 2001 at page 401 ABT-MIR-00000024 The rotor is magnetically suspended, eliminating contact between moving parts and consequently extending wear life indefinitely. Bourque 2001 at page 401 ABT-MIR-00000024 The HeartMate III pump...comprises...a <i>rotor</i> that includes an impeller and passively magnetic elements. Bourque 2001 at page 402-3 ABT-MIR-00000024	specifically identify a first or second magnetic device, and does not specifically identify relative positioning between first and second magnetic devices. Miracor may modify its response to this claim element subject to further explanation or definition by Defendants.

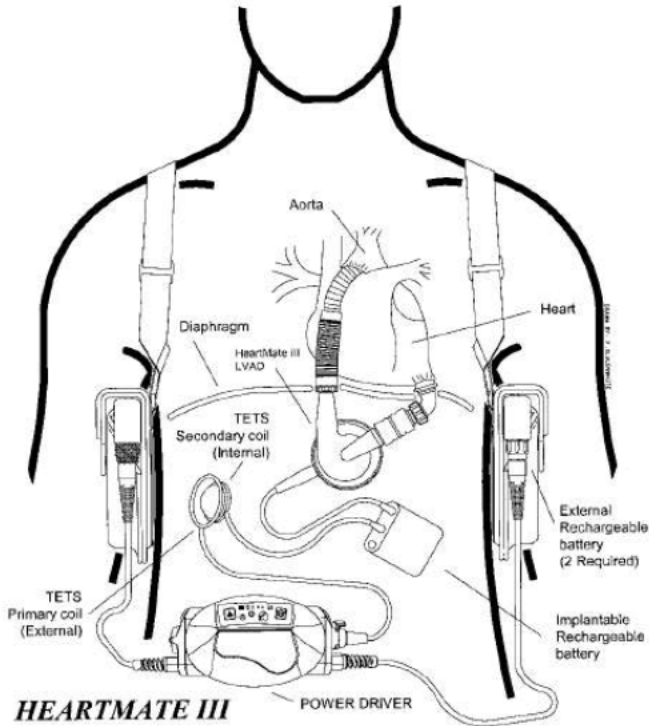
² Miracor does not assert this claim in its LPR 2.2 Initial Infringement Contentions, but certain asserted claims depend from this claim.

U.S. Patent No. 11,351,357			
#	Claim Element	Bourque 2001	Miracor's Response as to Whether the Element is Present in the Reference
		The HeartMate III motor includes drive and levitation in a single magnetic structure as show in Figure 4. The rotor is passively magnetically levitated in the axial-translational and transverse-rotational degrees of freedom...and actively magnetically levitated in the remaining degrees of freedom. To the extent it is found that Bourque 2001 does not expressly disclose this limitation, the limitation is inherent. And to the extent it is found that Bourque 2001 does not anticipate this claim, Bourque 2001 renders it obvious, standing alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with one or more other prior art references identified in the cover pleading of Defendants' Initial Invalidity Contentions.	
11	The system of claim 10, further comprising one or more sensors that deliver feedback signals to the external control unit.	Bourque 2001 discloses "The system of claim 10, further comprising one or more sensors that deliver feedback signals to the external control unit" at least under the apparent construction and scope of the claims as set forth in Miracor's Initial Infringement Contentions and to the extent the asserted claims are found to be not indefinite.. Bourque 2001 at page 403 ABT-MIR-00000024 Speed and motor parameters were set and controlled using software specifically designed to develop the HeartMate III. All measurements were automatically processed and recorded using Labview. Bourque 2001 at page 403 ABT-MIR-00000024 The electronics for power and control of the LVAD and for data acquisition resided on a shelf and alongside the cages containing the calves. The animals were continuously monitored for general welfare, and certain parameters such as arterial pressure, pump and pulmonary artery	No. Defendants' bare citation in support fails to comply with LPR 2.3(b)(3), does not specifically identify signals from sensors that are provided to an external control unit. Miracor may modify its response to this claim element subject to further explanation or definition by Defendants.

U.S. Patent No. 11,351,357			
#	Claim Element	Bourque 2001	Miracor's Response as to Whether the Element is Present in the Reference
		volume flow rates, pump speed, and blood chemistry (including plasma free hemoglobin) were periodically recorded. In two animals, measurement of pressure head throughout the duration of the studies were made with flocked carotid lines and fluid filled LV catheters. The pump was prescribed to run at 3,500 rpm perioperatively, then gradually adjusted to maintain volume flow rates at 5 ± 1 L/min throughout the study. To the extent it is found that Bourque 2001 does not expressly disclose this limitation, the limitation is inherent. And to the extent it is found that Bourque 2001 does not anticipate this claim, Bourque 2001 renders it obvious, standing alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with one or more other prior art references identified in the cover pleading of Defendants' Initial Invalidity Contentions.	
14	The system of claim 1, wherein the external control unit is configured to regulate operation of the second magnetic device based on a fixed control value.	Bourque 2001 discloses "The system of claim 1, wherein the external control unit is configured to regulate operation of the second magnetic device based on a fixed control value." at least under the apparent construction and scope of the claims as set forth in Miracor's Initial Infringement Contentions and to the extent the asserted claims are found to be not indefinite.. See analysis of [1n]. To the extent it is found that Bourque 2001 does not expressly disclose this limitation, the limitation is inherent. And to the extent it is found that Bourque 2001 does not anticipate this claim, Bourque 2001 renders it obvious, standing alone, in combination with the knowledge of a person of ordinary skill in the art, and/or in combination with one or more other	No. Defendants' bare citation in support fails to comply with LPR 2.3(b)(3), does not identify a second magnetic device for the reasons discussed above, and does not specifically identify any regulation of a second magnetic device by the shelf mounted electronics or a fixed control value. Miracor may modify its response to this claim element subject to further explanation or definition by Defendants.

U.S. Patent No. 11,351,357			
#	Claim Element	Bourque 2001	Miracor's Response as to Whether the Element is Present in the Reference
		prior art references identified in the cover pleading of Defendants' Initial Invalidity Contentions.	
17	The system of claim 1, wherein heart assist pump device is a catheter device.	Bourque 2001 discloses "The system of claim 1, wherein heart assist pump device is a catheter device" at least under the apparent construction and scope of the claims as set forth in Miracor's Initial Infringement Contentions and to the extent the asserted claims are found to be not indefinite.. Bourque 2001 at 401 ABT-MIR-00000024 The HeartMate III pump...comprises an upper housing that includes the inflow and outflow channels and the upper half of the volute;...an inflow subassembly that includes a left ventricular (LV) cannula and a section that partially decouples the position and motion of the heart from the pump and facilitates pump recovery at explant.	No. Defendants' bare citation in support fails to comply with LPR 2.3(b)(3) and does not identify the method of claim 1, for the reasons discussed with respect to claim 1 above. Miracor may modify its response to this claim element subject to further explanation or definition by Defendants.

		Bourque 2001 at fig. 1A  A Bourque 2001 at fig. 3.	
--	--	---	--

U.S. Patent No. 11,351,357			
#	Claim Element	Bourque 2001	Miracor's Response as to Whether the Element is Present in the Reference
		 HEARTMATE III Figure 3. HeartMate III LVAD implanted configuration. TETS, transcutaneous energy transmission system. To the extent it is found that Bourque 2001 does not expressly disclose this limitation, the limitation is inherent. And to the extent it is found that Bourque 2001 does not anticipate this claim, Bourque 2001 renders it obvious, standing alone, in combination with the knowledge of a person	

U.S. Patent No. 11,351,357			
#	Claim Element	Bourque 2001	Miracor's Response as to Whether the Element is Present in the Reference
		of ordinary skill in the art, and/or in combination with one or more other prior art references identified in the cover pleading of Defendants' Initial Invalidity Contentions.	