United States District Court,
S.D. Indiana, Indianapolis Division.

MAGARL, L.L.C. and Lawler Manufacturing Co., Inc,
Plaintiffs.
v.
CRANE CO. and Mark Controls Corporation, both d/b/a Powers Process Controls; Watts Water Technologies Inc., d/b/a Powers, a Watts Industries Co.; and Sloan Valve Company,
Defendants.

No. 1:02-cv-0478-LJM-WTL

Feb. 6, 2008.

Background: Holder of patents for proportional mixing valves for mixing hot and cold fluid brought patent infringement action against competitors alleging infringement of multiple patents. Parties sought construction of patent terms in two patents.

Holdings: Following *Markman* hearing, the District Court, Larry J. Mckinney, J., held that:
(1) term "proportional mixing valve" in preamble to patent was claim limitation;
(2) term "mixing chamber" meant an enclosed cavity or space in which mixing occurs;
(3) term "inlet" meant opening, rather than an opening in the valve body that provides for the admission of fluid to the valve body;
(4) in prosecution and other proceedings, patentees disclaimed only hollow sleeves, rather than plug that is hollowed out but closed on one end; and
(5) term "flow control member for controlling flow" was means-plus-function that was limited to actuator assembly, the liner assembly and two shuttle assemblies disclosed in specification and their equivalents.

Claims construed.

5,379,936, 6,042,015. Construed.

Danford Royce Due, Due Doyle Fanning Ewing & Metzger, Gregory Andrew Duff, Jay G. Taylor, Michael A. Swift, Ice Miller LLP, Indianapolis, IN, for Plaintiffs.

Greg A. Small, Linda Joy Cooley, Krieg Devault LLP, Cory Stephen Brundage, Indianapolis, IN, Anthony S. Fiotto, Daniel M. Forman, John C. Englander, Goodwin Procter LLP, Boston, MA, James R. Kyper, Neil Patrick Kearney, Kirkpatrick & Lockhart Preston Gates LLP, Pittsburgh, PA, for Defendants.

ORDER ON CLAIM CONSTRUCTION

LARRY J. McKINNEY**, District Judge.**

The parties in this cause, plaintiffs, Magarl, L.L.C., and Lawler Manufacturing Co., Inc. (collectively,

"Plaintiffs"), and defendants, Crane Co., Mark Controls, Watts Water Technologies Inc., and Sloan Valve Company (collectively, "Defendants"), have presented argument on and have briefed the claim terms to be construed in the patents-in-suit, U.S. Patent No. 6,042,015, Mar. 28, 2000 (the "'015 patent"), and U.S. Patent No. 5,379,936, Jan. 10, 1995 (the ""6 patent"). Guided by the Supreme Court's opinion in Markman v. Westview Inst., Inc., 517 U.S. 370, 388-90, 116 S.Ct. 1384, 134 L.Ed.2d 577 (1996) (" Markman II "), and by the Federal Circuit's opinions in Markman v. Westview Inst., Inc., 52 F.3d 967 (Fed.Cir.1995) (" Markman I "), and Phillips v. AWH Corp., 415 F.3d 1303 (Fed.Cir.2005), to the extent practicable the claim construction rendered herein will not be a "tentative one" subject to change upon receipt of additional information and evidence, but a definitive one based on all of the evidence of record at this point in the litigation. *See* Int'l Comm. Mat'ls, Inc. v. Ricoh Co., Ltd., 108 F.3d 316, 318-19 (Fed.Cir.1997) (noting that district court performed a "tentative construction" of the claim language to facilitate a decision of the preliminary injunction issue).

I. *BACKGROUND*

A. THE '015 PATENT

The '015 patent is directed to a "proportional mixing valve for mixing a hot and a cold fluid that includes a fail-safe mechanism for shutting off hot fluid flow when the temperature of the fluid exiting the valve exceeds a predetermined set point." '015 Patent, col. 1, ll. 5-9. The patent specification outlines the following objects of the invention:

One object of the present invention is to provide a mixing valve in which the relative diameters of the fluid inlets are proportionately sized to control the mixed fluid temperature below a safe threshold temperature. Another object of the present invention is to provide a fail-safe assembly that isolates hot fluid flow [w]hen the mixed fluid temperature exceeds the threshold level due to, for instance, failure of the cold fluid supply.

It is yet another object of the present invention to provide a fail-safe proportional mixing valve with a means for preventing backflow [sic] into a failed or low pressure fluid supply line from the intact supply line. A further object is accomplished by features that permit adjustment of the maximum mixed fluid temperature discharged from the mixing valve assembly, without sacrificing the fail-safe features of the assembly.

Id. col. 3, ll. 6-21. The patent suggests that these objects are not exclusive as one of ordinary skill in the art would find more objectives "apparent from the ... description of the preferred embodiment and the accompanying figures."

Plaintiffs assert claims 9 and 14 of the '015 patent against certain of Defendants' products. Claim 9 is dependent upon claims 1 and 4. Claim 14 is an independent claim. The relevant claims read:

1. A fail-safe proportional mixing valve assembly, comprising:

a valve body having a cylindrical portion defining a mixing chamber and a longitudinal axis;

a cold fluid inlet in communication with said mixing chamber and connectable to a supply of a first flow of a cold fluid;

a hotter fluid inlet in communication with said mixing chamber along said longitudinal axis and connectable to a supply of a second flow of a relatively hotter fluid;

a fluid outlet in communication with said mixing chamber for discharge of fluid therefrom; and

means for substantially restricting said second flow of hotter fluid into said mixing chamber when the temperature of the fluid in said mixing chamber exceeds a predetermined set point temperature, said means including; [sic]

thermally responsive member disposed in said mixing chamber that moves in proportion to the fluid temperature in said mixing chamber;

a plug disposed between said hotter fluid inlet and said mixing chamber and engaged to said thermally responsive member to move with said member,

wherein said thermally responsive member is operable to move said plug along said longitudinal axis between an open position which allows substantially full flow from said hotter fluid inlet into said mixing chamber, and a closed position in which said plug substantially restricts flow from said hotter fluid inlet when the fluid temperature in said mixing chamber exceeds said set point temperature; and

biasing means for biasing said plug away from said closed position when the temperature of fluid within said mixing chamber is below said set point temperature.

* * *

4. The mixing valve assembly according to claim 1, wherein said biasing means includes a first spring disposed between said hotter fluid inlet and said plug to bias said plug away from said closed position.

* * *

9. The mixing valve assembly according to claim **4,** wherein said biasing means includes a second spring operating on said plug and opposing said first spring, wherein said first spring and said second spring are arranged to support said plug within said hollow interior of said mixing chamber and to maintain alignment of said plug with said hotter fluid inlet.

* * *

14. A fail-safe proportional mixing valve assembly, comprising:
a valve body defining a mixing chamber;

a cold fluid inlet in communication with said mixing chamber and connectable to a supply of a first flow of a cold fluid;

a hotter fluid inlet in communication with said mixing chamber and connectable to a supply of a first flow of a cold fluid;

a fluid outlet in communication with said mixing chamber and connectable to a supply of a second flow of a relatively hotter fluid;

means, independent of said adjustable flow control member, for substantially restricting said flow control member, for substantially restricting said second flow of hotter fluid into said mixing chamber when the temperature of the fluid in said mixing chamber exceeds a predetermined set point temperature, said means including:

a thermally responsive member disposed in said mixing chamber that moves in proportion to the fluid temperature in said mixing chamber;

a plug disposed between said hotter fluid inlet and said mixing chamber and engaged to said thermally

responsive member to move with said member,

wherein said thermally responsive member is operable to move said plug between an open position which allows substantially full flow from said hotter fluid inlet into said mixing chamber, and a closed position in which said plug substantially restricts flow from said hotter fluid inlet when the fluid temperature in said mixing chamber exceeds said set point temperature;

a first spring disposed between said hotter fluid inlet and said plug to bias said plug away from said closed position; and

a second spring operating on said plug and opposing said first spring, wherein said first spring and said second spring are arranged to support said plug within said hollow interior of said mixing chamber and to maintain alignment of said plug with said hotter fluid inlet.

Id. col. 8, l. 44 to col. 10, l. 44.
Additional details about the '015 patent are included as necessary in the Court's discussion of the parties' arguments.

B. THE "6 PATENT

The "6 patent is directed to "a mixing valve responsive to varying fluid conditions, such as temperature, to maintain a desired stable fluid condition." "6 Patent, col. 1, ll. 7-9. It is also directed to a mixing valve that has "a bypass mechanism [that] provides a constant flow of fluid when the desired condition cannot be achieved." Id. col. 1, ll. 9-11. Unlike the '015 patented invention in which there is a "fail-safe" mechanism, in the "6 patented invention "a bypass mechanism ... ensures a room temperature product fluid in the absence of chilled fluid. The valve, in essence, frustrates the normal function of a thermostatic valve when a flow of fluid ceases." Id. col. 2, ll. 9-12. The "6 patent summarizes:

A flow control mixing valve assembly is provided with a condition responsive actuator to maintain a desired fluid condition by governing the relative amounts of incoming fluids into a mixing chamber. The assembly is also provided with a bypass mechanism to allow outflow of a fluid with a less desirable but acceptable condition when substantial flow of one of the incoming fluids ceases. The flow control mixing valve assembly is useful for several fluid conditions, such as temperature, pH or concentration.

* * *

This flow control mixing valve assembly mixes incoming fluids to achieve a product fluid with a desired condition when there is substantial flow through both inlets. The assembly is provided with a bypass mechanism that ensures a fluid with a less desirable but acceptable condition when substantial flow through one of the inlets ceases.
Id. col. 2, ll. 15-24; 62-68.
Plaintiffs assert claims 9 and 10 of the "6 patent against Defendants. Those claims read:

9. A flow control valve assembly, comprising:

a valve body defining:

a first fluid inlet;

a second fluid inlet;

a fluid mixing chamber; and

a fluid outlet communicating with said fluid mixing chamber;

a flow control member for controlling flow of a first fluid from the first fluid inlet and a second fluid from the second fluid inlet to said fluid mixing chamber, said flow control member defining a number of primary flow passageways between said inlets and said mixing chamber and a number of secondary flow passageways between said inlets and said mixing chamber;

said flow control member disposed within said valve body and moveable between positions in a normal operating condition in which substantially all flow from said inlets is directed through said primary flow passageways, and moveable to a failure condition in which substantially all flow from said inlets is directed through said secondary passageways; and

a condition responsive actuator disposed at least partially within said fluid mixing chamber and movable in response to a condition of fluid in said mixing chamber, said actuator connected to said flow control member to move said member in the normal operating condition when fluid flows through both the first fluid inlet and the second fluid inlet, and to move said member to the failure condition when flow through one of either of the first fluid inlet or the second fluid inlet ceases.

10. The flow control valve assembly of claim **9,** wherein said flow control member includes a shuttle disposed within said valve body, said shuttle defining said primary passageways and said secondary passageways, said shuttle restricting the flow of the first fluid from said first fluid inlet and the flow of the second fluid from said second inlet in relation to movement of said condition responsive actuator in the normal operating condition, said shuttle moveable to failure condition positions including a first failure position when the flow of the first fluid ceases and a second failure position when the flow of the second fluid ceases.

Id. col. 8, l. 52 to col. 9, l. 28.

The Court addresses further aspects of the "6 patented invention as appropriate in the Discussion section of this Order.

II. *CLAIM CONSTRUCTION STANDARDS*

[1] [2] [3] When construing the '015 and "6 patents' claims, the Court must determine the meaning of the language used before it can ascertain the scope of the claims Plaintiffs assert are infringed. *See* Markman I, 52 F.3d at 979. In doing so, the Court's interpretive focus is not the subjective intent of the parties employing a certain term, but the objective test of what one of ordinary skill in the art at the time of the invention would have understood the term to mean. *See* Phillips, 415 F.3d at 1313; Innova/Pure Water v. Safari Water Filtration, 381 F.3d 1111, 1116 (Fed.Cir.2004). When the Court undertakes its duty to construe the claims, it first must look to the intrinsic evidence: the asserted and unasserted claims, the specification, and the prosecution history. *See* Phillips, 415 F.3d at 1314; Ecolab, Inc. v. Envirochem, Inc., 264 F.3d 1358, 1366 (Fed.Cir.2001); Vitronics Corp. v. Conceptronic, Inc., 90 F.3d 1576, 1581 (Fed.Cir.1996); Markman I, 52 F.3d at 979. Most of the time, such evidence will provide sufficient information for construing the claims. *See* Vitronics, 90 F.3d at 1583.

[4] [5] [6] The patent claims should " 'particularly point out and distinctly clai[m] the subject matter which the applicant regards as his invention.' " Markman II, 517 U.S. at 373, 116 S.Ct. 1384 (citing 35 U.S.C. s. 112). During claim construction, the appropriate starting point for the Court's inquiry is always the words of both the asserted and unasserted claims. *See* Phillips, 415 F.3d at 1314; Elkay Mfg. Co. v. Ebco Mfg. Co.,

192 F.3d 973, 977 (Fed.Cir.1999); *see also* Renishaw PLC v. Marposs Societa' per Azioni, 158 F.3d 1243, 1248 (Fed.Cir.1998). As the Federal Circuit has noted, "[c]ommon words, unless the context suggest otherwise, should be interpreted according to their ordinary meaning." Desper Prods., 157 F.3d at 1336 (citing York Prods., Inc. v. Central Tractor Farm & Family Ctr., 99 F.3d 1568, 1572 (Fed.Cir.1996)). *See also* Phillips, 415 F.3d at 1314 (citing Brown v. 3M, 265 F.3d 1349, 1352 (Fed.Cir.2001)). Further, when there are several common meanings for a term, "the patent disclosure serves to point away from the improper meanings and toward the proper meaning." Renishaw, 158 F.3d at 1250. *Accord* Phillips, 415 F.3d at 1315-17 (discussing the role of the specification in claim construction).

[7] [8] The correct claim construction is also the one that "stays true to the claim language and most naturally aligns with the patent's description of the invention." Renishaw, 158 F.3d at 1250. *See also* Phillips, 415 F.3d at 1316. That description, or specification, serves an important purpose. In it, the patentee must provide a written description of the invention that would allow a person of ordinary skill in the art to make and use the invention. *See* Phillips, 415 F.3d at 1313-14; Markman I, 52 F.3d at 979. The applicable statute requires that "[t]he specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains ... to make and use the same...." 35 U.S.C. s. para. 112, para. 1. *See also* Phillips, 415 F.3d at 1312, 1315; Johnson Worldwide Assocs., 175 F.3d at 993. Therefore, to discover the correct meaning of a disputed claim term, the Court must refer to the specification's description of the invention.

[9] In addition, a patentee may be his or her own lexicographer and use terms in a manner different from their ordinary meaning. *See* Phillips, 415 F.3d at 1316; Johnson Worldwide Assocs., 175 F.3d at 990; Vitronics, 90 F.3d at 1582. If the patentee chooses to do that, he or she must clearly state the special definition in the specification or file history of the patent. *See* Phillips, 415 F.3d at 1316 (citing CCS Fitness, Inc. v. Brunswick Corp., 288 F.3d 1359, 1366 (Fed.Cir.2002)). The specification then serves as a dictionary when it defines terms, either expressly or by implication, that are used in the claims.

[10] [11] Although claims must be read in light of the specification, limitations from the specification may not be read into the claims. FN1 *See* Phillips, 415 F.3d at 1323; Comark, 156 F.3d at 1186. In particular, the Court should not limit the invention to the specific examples or preferred embodiment found in the specification. *See* Phillips, 415 F.3d at 1323; Texas Instruments, Inc. v. United States Int'l Trade Comm'n, 805 F.2d 1558, 1563 (Fed.Cir.1986). Therefore, the "repetition in the written description of a preferred aspect of a claim invention does not limit the scope of an invention that is described in the claims in different and broader terms." Laitram Corp. v. NEC Corp., 163 F.3d 1342, 1348 (Fed.Cir.1998). *See also* Phillips, 415 F.3d at 1323 (describing how to distinguish between a best mode disclosure and a limitation disclosure in a specification).

FN1. An exception to this rule applies when the claim is written in a means- or step-plus-function format under 35 U.S.C. s. 112, para. 6. The rules of claim construction relative to those types of claims are discussed later herein.

[12] [13] Interpreting the meaning of a claim term " 'is not to be confused with adding an extraneous limitation appearing in the specification, which is improper.' " Laitram, 163 F.3d at 1348 (quoting Intervet Am., Inc. v. Kee-Vet Lab., Inc., 887 F.2d 1050, 1053 (Fed.Cir.1989) (further citation omitted by Intervet court)). *See also* Innova/Pure Water, 381 F.3d at 1117. An extraneous limitation is a limitation added "wholly apart from any need to interpret what the patentee meant by particular words and phrases in the claim." Hoganas AB v. Dresser Indus., Inc., 9 F.3d 948, 950 (Fed.Cir.1993). *See also* Phillips, 415 F.3d at 1323; Renishaw, 158 F.3d at 1249. Although there is a fine line between reading a claim in light of the specification and reading a limitation from the specification into the claim, the Court must look cautiously

to the specification for assistance in defining unclear terms. *See* Phillips, 415 F.3d at 1323-24; Innova/Pure Water, 381 F.3d at 1117.

[14] [15] The third source of intrinsic evidence is the prosecution history of the patents-in-suit. *See* Phillips, 415 F.3d at 1317; Desper Prods., 157 F.3d at 1336-37; Vitronics, 90 F.3d at 1582. In a patent's prosecution history the Court will find a complete record of the proceedings before the PTO leading to issuance of the patent. *See* Vitronics, 90 F.3d at 1582. The prosecution history contains both express representations made by the patentee concerning the scope of the patent, as well as interpretations of claim terms that were disclaimed during the prosecution. *See* id. at 1582-83; *see also* Phillips, 415 F.3d at 1317; Ecolab, 264 F.3d at 1368. Although the prosecution history is useful for understanding claim language, it "cannot enlarge, diminish, or vary the limitations in the claims." Markman I, 52 F.3d at 979 (quotations omitted).

[16] [17] [18] [19] [20] In some cases, it may be necessary for the Court to consult extrinsic evidence to aid it in construing the claim language. *See* Phillips, 415 F.3d at 1317; Vitronics, 90 F.3d at 1584. Extrinsic evidence is any evidence outside of the patent and prosecution history, "including expert and inventor testimony, dictionaries, and learned treatises." Markman I, 52 F.3d at 980. *See also* Phillips, 415 F.3d at 1317. It may be used to assist the Court's understanding of the patent, or the field of technology. *See* Markman I, 52 F.3d at 980-81. However, "courts [should] not *rely* on extrinsic evidence in claim construction to contradict the meaning of claims discernible from thoughtful examination of the claims, the written description, and the prosecution history-the intrinsic evidence." Pitney Bowes, Inc. v. Hewlett-Packard Co., 182 F.3d 1298, 1308 (Fed.Cir.1999) (emphasis in original) (citing Vitronics, 90 F.3d at 1583). Judges are not usually "conversant in the particular technical art involved," or capable of reading the patent specification and claims as one skilled in the art might. *See* Markman I, 52 F.3d at 986; *see also* Pitney Bowes, 182 F.3d at 1308-09. Therefore, "consultation of extrinsic evidence is particularly appropriate to ensure that [the Court's] understanding of the technical aspects of the patent is not entirely at variance with the understanding of one skilled in the art." Pitney Bowes, 182 F.3d at 1309. *See also* Phillips, 415 F.3d at 1318. When the Court relies on extrinsic evidence to assist with claim construction, and the claim is susceptible to both a broader and a narrower meaning, the narrower meaning should be chosen if it is the only one clearly supported by the intrinsic evidence. *See* Digital Biometrics v. Identix, 149 F.3d 1335, 1344 (Fed.Cir.1998); *see also* Phillips, 415 F.3d at 1317-19 (discussing the proper use of extrinsic evidence). It is entirely proper for the Court to accept and admit extrinsic evidence, such as an expert's testimony, to educate itself, but then base its construction solely on the intrinsic evidence. *See* Mantech Envt'l Corp. v. Hudson Envt'l Servs., Inc., 152 F.3d 1368, 1373 (Fed.Cir.1998).

Further, the Federal Circuit has taken special note of the use by courts of a specific type of extrinsic evidence: dictionaries. In its Vitronics opinion, the court explained that although technical treatises and dictionaries are extrinsic evidence, judges are free to consult these resources at any time in order to get a better understanding of the underlying technologies. 90 F.3d at 1584 n. 6. The Vitronics court stated that judges may rely on dictionaries when construing claim terms as long as the dictionary definition does not contradict the definition found in, or ascertained by, a reading of the patent. Id. The Federal Circuit affirmed this approach in Phillips. 415 F.3d at 1322-23.

There may be claim terms disputed by the parties that are written in means-plus-function format pursuant to 35 U.S.C. s. 112, para. 6. Claim elements of the '015 and "6 patents that are written in a means-plus-function format under 35 U.S.C. s. 112, para. 6, require special rules of construction. When a patentee uses such an element, he or she is subject to the following statutory provision:

[a]n element in a claim for a combination may be expressed as a means ... for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specifications and equivalents thereof.

35 U.S.C. s. 112, para. 6. *See also* Mas-Hamilton Group v. LaGard, Inc., 156 F.3d 1206, 1211 (Fed.Cir.1998).

[21] For an element in a means-plus-function format, the "means" term "is essentially a generic reference for the corresponding structure disclosed in the specification." Chiuminatta Concrete Concepts v. Cardinal Indus., 145 F.3d 1303, 1308 (Fed.Cir.1998). *See also* Mas-Hamilton Group, 156 F.3d at 1211 (quoting Chiuminatta Concrete Concepts, 145 F.3d at 1308). By using this format, a patentee is allowed to claim a function without expressingall of the possible means of accomplishing that function. *See* O.I. Corp. v. Tekmar Co., 115 F.3d 1576, 1583 (Fed.Cir.1997). "The price that must be paid for use of that convenience is limitation of the claim to the means [or acts] specified in the written description and equivalents thereof." Id.

[22] [23] Thus, a claim expressed in means-plus-function language constitutes an exception to the rule that prohibits reading limitations from the specification into the claims. *See* Valmont Indus., Inc. v. Reinke Mfg. Co., 983 F.2d 1039, 1042 (Fed.Cir.1993). When dealing with a means-plus-function claim, specific alternative structures to accomplish the function mentioned in the specifications, and equivalents thereto, delineate the scope of the patent claim. *See* Mas-Hamilton Group, 156 F.3d at 1211; Serrano v. Telular Corp., 111 F.3d 1578, 1583 (Fed.Cir.1997). The alternative structures must be specifically identified, not just mentioned as possibilities, in order to be included in the patent claim's scope. *See* Fonar Corp. v. Gen. Elec. Co., 107 F.3d 1543, 1551 (Fed.Cir.), *cert. denied,* 522 U.S. 908, 118 S.Ct. 266, 139 L.Ed.2d 192 (1997).

III. *DISCUSSION*

A. THE '015 PATENT

1. *Proportional Mixing Valve*

[24] The first disputed term in the '015 patent is "proportional mixing valve." Plaintiffs contend that the phrase is part of the preamble and needs no construction. Alternatively, if the Court concludes that the term is a limitation, Plaintiffs argue that it merely means that the "valve mixes fluid in proportion to the temperature of the mixed fluid." In contrast, Defendants assert that the preamble of claim 1 is a limitation and that the specification makes clear that in the context of the '015 patent, a "proportional mixing valve" is one that "relies entirely upon relative size of inlet diameters to determine the proportion of hot and cold fluid."

[25] [26] The Court agrees with Defendants that "proportional mixing valve" is a limitation. To resolve whether or not language in the preamble of a claim is a limitation, the Court must review the entire patent to ascertain what the inventors intended to encompass by the claim. *See* Poly-Am., L.P. v. GSE Lining Tech., Inc., 383 F.3d 1303, 1309 (Fed.Cir.2004); Catalina Marketing Int'l, Inc. v. Coolsavings.com, Inc., 289 F.3d 801, 808 (Fed.Cir.2002). "[A] preamble limits the invention if it recites essential structure or steps, or if it is 'necessary to give life, meaning, and vitality' to the claim." Catalina Marketing Int'l, 289 F.3d at 803 (quoting Pitney Bowes Inc. v. Hewlett-Packard Co., 182 F.3d 1298, 1305 (Fed.Cir.1999)). The Federal Circuit has found that a preamble limits a claim in the following instances: when the claim is in the format required by 37 C.F.R. s. 1.75; when the claim, or future claims, depend on the preamble for antecedent basis; when the preamble is necessary for understanding something in the body of the claim; when the preamble recites additional structure or steps underscored as important by the specification; and when there is clear reliance on the preamble during prosecution to distinguish the invention over prior art. *See* id. at 808. However, "a preamble is not limiting 'where a patentee defines a structurally complete invention in the

claim body and uses the preamble only to state a purpose or intended use for the invention.' " Id. (quoting Rowe v. Dror, 112 F.3d 473, 478 (Fed.Cir.1997)). Here, the term proportional mixing valve gives life to the claims and recites structure that is underscored as important by the specification.

Starting with the language of the claims themselves, other than the proportional mixing valve language there is nothing in asserted claim 9, or the claims upon which it depends, claims 1 and 4, that explains how to accomplish the primary object of the invention: to use proportional flow of a cold and hot fluids to temper a hot fluid supply. '015 Patent, col. 2, ll. 17-20; id. col. 3, ll. 6-9. Likewise, claim 20, which describes "[a] system for providing tempered water at an outlet" specifically claims that "a proportional mixing valve" is used "for discharge of tempered water therefrom to [a] second flow control valve at a predetermined set point temperature...." Id. col. 11, l. 47 to col. 12, l. 6. Clearly "proportional mixing valve" is a limitation in claim 20; the Court can see no reason in the claims, or the specification, that would lead to the conclusion that the same language in claim 1 is not a limitation.

Moreover, the specification is replete with references to a proportional mixing valve or proportional flow of cold and hotter fluids. Specifically, the Abstract states: "A fail-safe proportional mixing valve is provided that tempers a hot fluid supply by proportional flow from a hot fluid inlet and a cold fluid inlet." Id. Abstract. Furthermore, the Summary of the Inventions states: "A proportional mixing valve assembly is provided that allows a hot fluid supply to be tempered with a predetermined proportional flow of cold fluid...." Id. col. 2, ll. 27-30. Coupled with evidence in the claims that the "proportional mixing valve" language of the preamble gives life to the claims, the specification clearly evidences that the term is an important characteristic of the claimed invention.

[27] Having concluded that "proportional mixing valve" is a limitation, the Court must now construe the term. At the outset, the Court concludes, as Dr. Ovens testified to in his deposition, that there is no plain meaning to the phrase "proportional mixing valve" in the art. Therefore, the patent specification will supply the best context for deciphering the term's meaning. *See* Honeywell Int'l Inc. v. Universal Avionics Sys. Corp., 488 F.3d 982, 991 (Fed.Cir.2007). Plaintiffs contend that the term means a valve "that mixes cold and hotter fluid in proportion to the temperature of the mixed fluid." Joint Cl. Constr. Chart, at 2.

According to Dr. Ovens' testimony at the hearing, a proportional mixing valve could be either a thermostatic mixing valve, which uses a thermostat to proportion the amount of hot and cold fluids let into the mixing chamber, or a mixing valve that controls the amount of either or both the hot and cold fluid flows by the size of the fluid inlets. Plaintiffs argue that this reading of the '015 patented invention is supported by the language describing the fail-safe mechanism in claim 1, and in the specification at column 5, where it describes a preferred embodiment that includes a thermally expansive material that prevents fluid flow from the hot fluid inlet when the mixed fluid temperature goes above the set point. *Id.* col. 5, ll. 5-8 & 25-35. Although Dr. Oven's testimony explains the way in which thermostats work to change the relative position of parts attached thereto, the claims and the patent specification make clear that in the '015 patented invention, this mechanism functions as the fail-safe piece of the invention. There is no link, either in the claims or the specification, between the thermostatic portion of this valve and the proportioning of the cold and hotter fluids to temper the water at the outset of use.

Specifically, claim 1 reads:

means for substantially restricting said second flow of hotter fluid into said mixing chamber when the temperature of the fluid in said mixing chamber exceeds a predetermined set point temperature, said means including[:]

thermally responsive member disposed in said mixing chamber that moves in proportion to the fluid temperature in said mixing chamber;

a plug disposed between said hotter fluid inlet and said mixing chamber and engaged to said thermally responsive member to move with said member,

wherein said thermally responsive member is operable to move said plug along said longitudinal axis between an open position which allows substantially full flow from said hotter fluid inlet into said mixing chamber, and a closed position in which said plug substantially restricts flow from said hotter fluid inlet when the fluid temperature in said mixing chamber exceeds said set point temperature; and

biasing means for biasing said plug away from said closed position when the temperature of fluid within said mixing chamber is below said set point temperature.

Id. col. 8, l.56 to col 9, l. 12. This part of claim 1 teaches that the thermally responsive member moves in proportion to the fluid temperature in the mixing chamber and moves the plug between an open position and a closed position. The mechanism is set up such that a spring biases, or pushes, the plug into the open position when the fluid in the mixing chamber is at a temperature below the set point. The proportional language in this element is all related to how the thermostatic material functions, not to how the amount of fluid flowing from the cold and hot inlets is apportioned.

Similarly, the language in column 5 teaches:

Thermostat cavity **37** includes an amount of thermal expansion material **37.** In one embodiment, the thermal expansion material **37** includes a thermally responsive wax, which volumetrically changes with changes in temperature. In another embodiment, the thermal expansion material **37** includes a memory metal, which expands and contracts with temperature changes. In any event, the end of piston **33** disposed within sleeve **34** is in contact with the thermal expansion material disposed within thermostat cavity **37.**

* * *

Referring now to FIG. **5,** plug **31** prevents flow from hot fluid inlet **12** when the mixed fluid temperature in cavity **23** exceeds a pre-determined threshold temperature. As the temperature of the mixed fluid increases, thermal expansion material **37** in thermostat housing **35** expands in sleeve **34.** This expansion causes piston **33** [to] move plug **32** towards hot fluid inlet **12,** lengthening fail-safe mechanism **30** and further compressing first spring **31** and second spring **36.** When the temperature of the fluid exceeds a set point temperature, plug **32** engages hot fluid inlet **12** and prevents further flow.
Id. col. 5, ll. 4-35. Although these passages clearly explain how the thermostat of the '015 patented invention is used to prevent fluid flow from the hotter inlet, there is nothing in these passages to suggest that the plug is used to proportion the flow from the hotter inlet to control the temperature below the set point as Plaintiffs' definition for proportional mixing valve requires.
The Court agrees with Defendants that the patent is directed to an invention that proportions the cold and hotter fluid flows in two ways: 1) inlet size; and 2) an adjustment member on the fluid inlets. Both of these ways apportion the fluids using inlet size. This conclusion is supportedby the most general portions of the specification that specifically point to the importance of proportional flow from the cold and hotter inlets, which is accomplished through inlet size, whether alone or through an adjustment mechanism. The Abstract teaches: "A fail-safe proportional mixing valve is provided that tempers a hot fluid supply by proportional flow from a hot fluid inlet and a cold fluid inlet." *Id*. Abstract. Furthermore, the Summary of the Inventions reads:

A proportional flow mixing valve assembly is provided that allows a hot fluid supply to be tempered with a predetermined proportional flow of cold fluid based on the relative inlet diameters of the hot and cold fluid supplies.

* * *

.... The desired temperature is obtained based on the sizing of relative inlet diameters allowing proportional flow from the hot and cold fluid inlets.

* * *

In a further embodiment, a flow control member is interposed at one of the fluid inlets, such as the cold inlet. The flow control member is adjustable to permit adjustment of the limit temperature of the mixed fluid discharged from the valve.
Id. col. 2, ll. 27-65.
The importance of this aspect of the invention is underscored in the Background of the Invention where it summarizes the advantages of the '015 patented invention: "What is needed, therefore, is a mixing valve assembly, which does not require modulating elements in order to temper the hot fluid supply." A definition for proportional mixing valve in the context of the ' 015 patent that includes a modulating element, such as the thermostatic actuator explained by Dr. Ovens as the operative flow controller in U.S. Patent No. 5,011,074 to Kline ("'074 patent"), would be contrary to this express purpose.

Plaintiffs assert that the doctrine of claim differentiation precludes a definition for proportional mixing valve that limits the manner in which cold and hotter fluids are proportioned to inlet size. Specifically, Plaintiffs argue that claims 5, 8 and 23, which are dependent upon either claim 1 or claim 20, further limit the proportional control mechanism to inlet size; therefore, in order to be substantially different from a mixing valve that uses inlet size to apportion the fluids, these claims preclude a narrow definition for proportional mixing valve. The Court disagrees that those claims would be coextensive with a proportional mixing valve that uses inlet size to apportion the fluid. Claims 5, 8, and 23, read:

5. The mixing valve assembly according to claim **1,** wherein said cold fluid inlet defines a cold inlet bore with a first diameter and said hot fluid inlet defines a hot inlet bore with a second diameter greater than said first diameter.

* * *

8. The mixing valve assembly according to claim **1,** in which the cold fluid is provided at a minimum temperature and the hotter fluid is provided at a maximum temperature, wherein said cold fluid inlet and said hotter fluid inlet are proportionally sized to temper the hotter fluid within said mixing chamber below said set point temperature.

* * *

23. The system for providing tempered water to an outlet according to claim **20,** wherein said cold water inlet and said hot water inlet are proportionally sized to temper the hot water within said mixing chamber below said predetermined set point temperature.
Id. col. 9, l. 25 to col. 12, l. 37.
With respect to claim 5, that claim requires that the hot fluid inlet bore be of a greater diameter than the cold fluid inlet bore. A proportional mixing valve that uses inlet size to apportion the cold and hotter fluids is broader than claim 5 because it does not require a particular inlet to be of a greater diameter than the other. In other words either inlet could be the larger inlet or the inlets could be the same size, although they would still be in a certain proportion to each other.

With respect to claim 8, that claim requires that the cold fluid be provided at a minimum temperature and the hotter fluid be provided at a maximum temperature, then the inlet sizes are proportioned to ensure that the mixed fluid temperature is below the set point of the valve. A proportional mixing valve that uses inlet size to apportion the cold and hotter fluids is broader because it neither specifies the temperature of either

the cold or hotter fluids, nor specifies that the mixed fluid temperature be less than the set point temperature of the valve.

With respect to claim 23, that claim requires that inlet sizes be proportioned to ensure that the mixed fluid is below the predetermined set point temperature. A proportional mixing valve that uses inlet size to apportion the cold and hotter fluids is broader because it does not specify that the mixed fluid be less than the set point temperature of the valve.

Plaintiffs make other arguments based on the prosecution history and extrinsic evidence, however, the Court concludes that these arguments are unpersuasive in light of the clear evidence in the claims and the specification that the term "proportional mixing valve" is a limitation and means "a valve that uses inlet size to apportion fluids."

2. *A Valve Body having a Cylindrical Portion Defining a Mixing Chamber*

[28] At its core, the parties' dispute with respect to the element, "a valve body having a cylindrical portion defining a mixing chamber," centers around whether or not the '015 patent requires that a single cylindrical portion delineate the mixing chamber. Plaintiffs contend that the use of the term "a" in conjunction with the transitional phrasing "comprising" means "one or more." Pls.' Reply, at 10 (citing KCJ Corp. v. Kinetic Concepts, Inc., 223 F.3d 1351, 1356 (Fed.Cir.2000)). In contrast, Defendants assert that the word "portion" implies that it is a single part of a whole. Defs.' Br. at 13. Moreover, Defendants point to Figures 2 and 9 of the '015 patent specification that identify the "mixing chamber" as a single, cylindrical section within the valve body to support their construction.

[29] The Court agrees with Plaintiffs that this element is not limited to a single cylindrical section. As set forth in KCJ Corp., the Federal Circuit

> has repeatedly emphasized that an indefinite article "a" or "an" in patent parlance carries the meaning of "one or more" in open-ended claims containing the transitional phrase "comprising." Unless the claim is specific as to the number of elements, the article "a" receives a singular interpretation only in rare circumstances when the patentee evinces a clear intent to so limit the article. Under this conventional rule, the claim limitation "a," without more, requires at least one.

KCJ Corp., 223 F.3d at 1356 (citations omitted). The fact that the figures used to describe the preferred embodiment show a single cylindrical portion does not change the plain language of the claim that uses the indefinite article "a," which means "one or more." *See* CCS Fitness, Inc. v. Brunswick Corp., 288 F.3d 1359, 1366-67 (Fed.Cir.2002) (discussing the four circumstances under which the ordinary meaning of a claim term may be restricted by the disclosure in the specification and concluding that a drawing of a particular embodiment, absent additional narrowing statements in the specification or prosecution history, limited the ordinary meaning of the claim term).

The Court also disagrees with Defendants that the use of the term "portion" limits this element to a single cylindrical section. Although the Court cannot disagree with Defendants that the plain meaning of the term "portion" is "a part of a whole," the Court is not clear why this definition precludes a finding that the plain meaning of "a," in patent parlance, is "one or more." One or more cylinders that define a mixing chamber could still be part of a whole.

[30] The parties also dispute whether the mixing chamber has to be "within" the valve body. Plaintiffs suggest that the valve body is merely an enclosure for the operating parts of the valve, that the term "defining" means "establishing, delineating, encompassing or setting the bounds of," and that the term "mixing chamber" means "an enclosed cavity or space in which mixing occurs." Putting all of this together,

Plaintiffs assert that these constructions are broad enough to mean that the valve body encompasses any cylindrical cavity in which mixing occurs.

In contrast, Defendants contend that the "valve body" is "the main, central or principal part," that the term "defining" is more limited to "delineate the outline or form of," and that the mixing chamber is an area in which two separate flows are combined. Defendants' construction of these terms lead them to conclude that the cylindrical portion in which mixing occurs must be in the main part of the valve.

The Court agrees with Plaintiffs that there is nothing in the claim term itself or the patent specification that requires the valve body to be the main part, rather, it can be as broadly construed as "an enclosure for the operating parts of a valve." Moreover, the plain meaning of mixing chamber is "an opening, cavity or space in which mixing occurs." As such, the plain meaning of "defining," which is to delineate, would include the concept proposed by Plaintiffs in which the valve body includes one or more cylindrical sections that have an opening, cavity or space in which mixing occurs.

In summary, the Court adopts Plaintiffs' definitions for the terms "valve body," "cylindrical portion," and "mixing chamber." The Court concludes that the term "defining" means "to delineate." Therefore, the entirety of the element "a valve body having a cylindrical portion defining a mixing chamber ..." means that the valve body includes one or more cylindrical sections that have an opening, cavity or space in which mixing occurs.

3. *Inlet, In Communication With, & Along Said Longitudinal Axis*

[31] The next disputed terms are "inlet," "in communication with," and "along said longitudinal axis." The specific elements appear in claim 1 and read as follows:

a cold fluid inlet in communication with said mixing chamber and connectable [sic] to a supply of a first flow of a cold fluid;

a hotter fluid inlet in communication with said mixing chamber along said longitudinal axis and connectable [sic] to a supply of a second flow of a relatively hotter fluid

'015 Patent, col. 8, ll. 49-54. Plaintiffs contend that an "inlet" is "an opening." Defendants assert that the term means "an opening in the valve body that providesfor the admission of fluid to the valve body." The Court sees no reason to construe the term "inlet" to have anything other than its plain meaning of "opening." Defendants do not seem to really dispute this definition. *See* Defs.' Br. at 15. Rather, the parties' real dispute is over where the opening must be located: Plaintiffs argue that the opening must be into the mixing chamber and Defendants argue the opening must be into the valve body. But, this dispute is really over the term "in communication with," which the Court now addresses.

[32] [33] Plaintiffs assert that the term "in communication with" means "opening directly into." Plaintiffs assert that this definition is the only one that is consistent with the other requirements of claim 1 for the hotter fluid inlet. Claim 1 requires that the hotter fluid inlet be "in communication with said mixing chamber along said longitudinal axis ..." and that the means for substantially restricting the hotter fluid flow have "a plug disposed between said hotter fluid inlet and said mixing chamber ..." that moves "along said longitudinal axis between an open position ... and a closed position ...," and have a "biasing means for biasing said plug away from said closed position...." In other words, the only way in which all the elements of claim 1 can be met is if "in communication with" means "opening directly into" and if "along said longitudinal axis" means "aligned on the longitudinal axis." Left unsaid, but implied, by Plaintiffs' argument is that "in communication with" for the cold fluid inlet must mean the same thing because the claim language is the same.

Defendants contend that the term "in communication with" should be broadly construed to mean "opening into or connecting, either directly or indirectly" and that "along said longitudinal axis" merely requires that the opening be at a point along the longitudinal axis. Defendants assert that there is nothing in the claims or the specification to limit the plain meaning of the relevant terms to the preferred embodiment as it is depicted in the figures of the ' 015 patent. Rather, as stated by both Dr. Ovens and Ackroyd, the term "in communication with" would be understood by one of ordinary skill in the art to mean opening or connecting to, either directly or indirectly. Ovens Dep. at 192; Ackroyd Rep. at 5. Similarly, Defendants aver that "along said longitudinal axis" merely requires that the hotter fluid inlet communicate with, or open or connect to, the mixing chamber at a point along the longitudinal axis of the valve.

[34] The Court agrees with Defendants that the plain meaning of the terms "in communication with" and "along said longitudinal axis" should prevail. As discussed earlier in this Order, the ordinary meaning of a claim term is presumptively valid unless it is limited in one of four ways: (1) the patentee acts as his own lexicographer; (2) "the intrinsic evidence shows that the patentee distinguished [the] term from prior art on the basis of a particular embodiment[;]" (3) the "term 'chosen by the patentee so deprive[s] the claim of clarity' as to require a resort to the other intrinsic evidence for a definite meaning[;]" (4) the term is in means-plus-function format. CCS Fitness, 288 F.3d at 1366-67. In this instance, Plaintiffs point only to the other claim elements and the drawings of the preferred embodiment to limit these terms to "open directly into" and "aligned along the longitudinal axis." The only relevant exception might be that the term is not clear, but there is no support for such an argument; both experts discussed the plain meaning of "in communication with" and there is no evidence that "along said longitudinal axis" means anything other than just that. Moreover, there is no evidence that a plain meaning construction, such as that proffered by Defendants, would exclude the preferred embodiment. Neither is there evidence that such a construction would read out the other claim terms.

For these reasons, the Court concludes that the term "inlet" means "opening;" the term "in communication with" means "opening into or connecting, either directly or indirectly;" and the term "along said longitudinal axis" means what it says.

4. ***Substantially Limitations***

[35] The term "substantially" is used in the relevant claims in two disputed limitations: "means for substantially restricting ...," FN2 and "an open position ... allows substantially full flow from said hotter fluid inlet...." ' 015 Patent, col. 8, l. 57 & col. 9, ll. 3-6. Plaintiffs contend that the term "substantially" has its ordinary meaning, "largely, essentially, or in the main." Moreover, Plaintiffs assert that the term should mean the same thing throughout the ' 015 patent, regardless of the term it modifies. In contrast, Defendants argue that the "substantially restricting" function, to the extent it is not indefinite, means "an essentially negligible flow," while the "substantially full flow" term means that "the flow is not substantially restrained or checked by the presence of the fail-safe mechanism."

FN2. The Court notes that the parties largely ignore the use of the term "substantially restricts flow" in the claim element that includes the "substantially full flow" term. '015 Patent, col. 9, 11. 1-8.

The Court agrees with Plaintiffs that the term "substantially" means the same thing regardless of the claim or term in which it appears in the '015 patent. Moreover, the term has its ordinary meaning of "largely, essentially, or in the main." First, there was no indication from the experts that "substantially" has an a special meaning in the art, therefore, the plain meaning of substantially should suffice unless other claim terms or the specification leads to a different conclusion. Phillips, 415 F.3d at 1314. In the case of this claim term, there is nothing to alter the plain meaning of the term. This conclusion is supported by the use of the

term in claim 1 where "substantially" is an adjective that modifies the type of flow from the hotter fluid inlet into the proportional mixing valve: "restricting flow" (or "restricts flow") or "full flow." *See, e.g.,* '015 Patent, col. 8, ll. 57-61 & col. 9, ll. 1-8. In fact, the term "substantially" is used to modify this type of flow in the unasserted claim as well. *See, e.g.,* id. col. 12, ll. 9-12 & ll. 23-29.

Defendants point to language in the specification as evidence that the restriction of flow must be more than essentially or in the main, but "essentially negligible." Specifically, the Abstract states that the fail-safe feature of the '015 patented invention has a mechanism "to isolate flow from the hot fluid inlet in the event the temperature of the mixed fluid exceeds a predetermined set point." Id., Abstract. Similar language is used to describe the restriction of hot fluid flow upon the failure of the cold fluid flow in the Summary of Invention. Id. col. 2, ll. 30-33, 42-46, 56-57 & id. col. 3, ll. 9-13. The Description of the Preferred Embodiment describes the restriction of hot fluid flow in the fail-safe mechanism as being isolated or prevented:

Referring now to FIG. **5,** plug **31** prevents flow from hot fluid inlet **12** when the mixed fluid temperature in cavity **23** exceeds a pre-determined threshold temperature.... When the temperature of the fluid exceeds the set point temperature, plug **32** engages hot fluid inlet **12** and prevents further flow of hot fluid.

* * *

... The fail-safe mechanism **30,** shown in FIG. **5,** will prevent flow from the hot water supply line **65** when the temperature of the water in valve body **14** exceeds a predetermined threshold temperature.... If cold water supply **64** were to fail ... then the water from water heater **66**[ ][f]ails-safe mechanism **30** will then react to isolate hot water supply **64**....
Id. col. 5, ll. 25-27, 33-35 & col. 6, ll. 38-46. A limitation of "negligible" is also supported, Defendants suggest, later in the specification where it teaches: "The fail-safe components of the valve are calibrated to a particular temperature at which hot flow is reduced to a trickle upon failure of the cold fluid inlet." Id. col. 8, ll. 2-5. Defendants assert that the words "isolate" and "prevent," in addition to the phrase "reduced to a trickle" suggest zero leakage.
The Court disagrees with Defendants that such a restriction is necessary. A trickle connotes more than zero and the terms "substantially restricting" and "substantially restricts" connote the same thing if substantially means "largely, essentially or in the main." In other words, the hot water flow is largely, essentially or mainly restricted or stopped when the temperature reaches the predetermined set point. There is no need to further limit the term by adding "negligible" to the definition.

Defendants also argue that the term "substantially full flow" should be limited to "the flow is not substantially restrained or checked by the presence of the fail-safe mechanism." Defendants' expert opined that this definition is necessary to ensure that the term is applied in comparison to the way the plug of the fail-safe mechanism substantially restricts flow. Again, the Court disagrees that further limitation of the term "substantially full flow" is necessary because the claim language itself makes clear what this limitation further requires.

For these reasons, the plain meaning of substantially applies equally to the phrase "restricting flow" and the term "full flow", and means "largely, essentially or in the main."

5. *Predetermined Set Point Temperature*

[36] The parties' dispute with respect to the "predetermined set point temperature" limitation centers around when the set point temperature is "predetermined." Plaintiffs argue that one of ordinary skill in the art at the time of the invention would read the term broadly such that the set point temperature of the valve is determined any time in advance of its use.

Defendants contend that the set point temperature of the '015 patented invention is decided at the time of manufacture of the valve. Defendants argue that the term "set point" already implies to one of ordinary skill in the art that the temperature is selected at some time prior to a particular use; therefore, a definition for "predetermined" that allows for adjustment of the set point after it is manufactured reads the term "predetermined" out of the patent.

The Court agrees with Defendants that the term "predetermined" must be given independent meaning and in the context of the '015 patent it means "fixed or appointed at the time of manufacture." Although Dr. Ovens testified at the hearing that it is possible for a user to change the set point temperature of a valve described by the '015 patent's claims, the process would include disassembling the valve and replacing parts. This type of manipulation is simply outside the scope of the plain language of the claims and is outside the scope of the disclosure in the specification. The experts from both parties seem to agree that the plain meaning of "set point" to one of ordinary skill in the art is a value fixed or appointed in advance. *See* Ackroyd Rep. para. 7; Pls.' Br. at 13 (defining "set" as "fixed or appointed in advance"); Ovens Rep. para. 8; Ovens Dep. at 193, 197-98; *see also* MCGRAW-HILL DICTIONARY OF SCI. & TECH. TERMS 1803 (McGraw-Hill Book Co. 5th ed.1994) (defining "set point" as "[t]he value selected to be maintained by an automatic controller.") (hereinafter "SCI. & TECH. TERMS DICTIONARY"). But, if "set point temperature" by itself means a temperature fixed or appointed in advance, then a "predetermined set point temperature" must mean something different in order to give meaning to the term "predetermined," which also has a plain meaning of fixed or appointed in advance. *See* Power Mosfet Techs., L.L.C. v. Siemens AG, 378 F.3d 1396, 1410 (Fed.Cir.2004) (stating that interpretations that render some portion of the claim language superfluous are disfavored); Elekta Instrument S.A. v. O. U.R. Scientific Int'l, Inc., 214 F.3d 1302, 1307 (Fed.Cir.2000) (giving phrase its ordinary meaning and avoiding rendering claim language superfluous).

The specification supports a construction for predetermined set point temperature that limits the invention to a set point determined at the time of manufacture. First, after discussing the disadvantages of prior art systems that allow the user to adjust the set point temperature at an outlet, the ' 015 patent specifically outlines as advantages the lack of modulating elements and the use of a fail-safe mechanism that ensures a safe temperature regardless of where the valve is used. '015 Patent, col. 2, ll. 17-23. Coupled with that disclosure, the specification repeatedly refers to the fail-safe feature having a "predetermined threshold." Id. col. 2, ll. 55-56; id. col. 5, l. 27. Moreover, the specification teaches that an alternative embodiment uses a flow control member on one of the fluid inlets to adjust the limit of the mixed fluid temperature, however, such a change "does not interfere with the fail-safe functioning of the valve...." Id. col. 2, l. 61 to col. 3, l. 2. All of these reference teach away from a valve that allows the user to change the set point temperature because it would erase the features that the specification outline as the advantages of the '015 patented invention.

In addition, with respect to a particular embodiment of the '015 patented invention the specification states:

The fail-safe components of the valve are calibrated to a particular temperature at which hot flow is reduced to a trickle upon failure of the cold fluid inlet. The fail-safe components do not provide any means within the valve assembly for adjusting the maximum mixed fluid temperature discharged from the valve assembly.

Id. col. 8, ll. 5-7. The use of the phrase "calibrated to a particular temperature" implies that the predetermine set point temperature is never adjusted once it has been fixed or adjusted by the manufacturer. Indeed, this is the best reading of this phrase in light of the way in which Plaintiffs distinguish U.S. Patent No. 4,299,354 to Ketley ("Ketley" or "Ketley patent"). As the Court alluded to before, the '015 patent specification states that in the Ketley invention the user manipulates an actuator to determine the maximum temperature of the mixed fluid. '015 Patent, col. 1, ll. 51-57 & col. 2, ll. 6-9 (stating that the prior art "devices also rely on a modulating control member to temper the hot water supply whose setting is controlled by the user's

manipulation of an actuator"). *See also* Pls.' Reply, at 8 (stating that unlike in Ketley where the user manipulates an actuator, "the invention of the '015 patent tempers hot and cold water without user input"). In contrast, the '015 patent states that the advantage of its invention "is a mixing valve assembly, which does not require modulating elements in order to temper the hot fluid supply." Id. col. 2, ll. 17-19. In other words, the user does not determine the set point because it has already been fixed by the manufacturer.

For the foregoing reasons the Court concludes that the term "predetermined" means "fixed or appointed at the time of manufacture."

6. *Thermally Responsive Member & In Proportion to the Fluid Temperature*

[37] The next two disputed terms "thermally responsive member" and "in proportion to," appear in the following claim element: "means for substantially restricting ... including[:] thermally responsive member disposed in said mixing chamber that moves in proportion to the fluid temperature in said mixing chamber...." '015 Patent, col. 8, ll. 57-64. The Court perceives little difference between the parties' proffered constructions for the terms "thermally responsive member" and "in proportion to." Specifically, Plaintiffs contend that

a "thermally responsive member" is a thermal actuator such as actuator 33, 34, 35 shown positioned in the mixing chamber 23, that contains a thermally responsive material (such as wax or a fluid) that expands or contracts in proportion to increased or decreased temperature to cause a movable portion (e.g., piston 33 or a bellows) to move in proportion to the changes in temperature (See, e.g., Figs. 2 and 4 and col. 4, line 67-col. 5, line 5-8).

Joint Cl. Constr. Chart, at 5. Defendants contend that "[t]he term 'thermally responsive member' means a 'thermostat cavity which includes an amount of thermal expansion material.' " Id. But, the Court cannot agree with either party's definition.

First, Plaintiffs' definition goes beyond the ordinary meaning to incorporate the preferred embodiment. Absent some reason to do so, Plaintiffs' definition is too narrow. *See* CCS Fitness, 288 F.3d at 1366-67. Second, neither party states the simplest definition: a thermally responsive member is a part that reacts to changes in temperature; nor do they evidence why this simple definition is inappropriate. Other than proffering the above-stated definitions, neither party argues that a more explicit definition is necessary. It appears that a more explicit definition would not be necessary in an art where mixing valves and fail safe mechanisms are "well known" for modulating the temperature of fluids. '015 Patent, col. 1, ll. 10-44. This is particularly true in this case where the '015 patent specification discloses that prior art valves also contain "thermally responsive control member[s]...." Id. col. 1, ll. 45-57 (describing U.S. Patent No. 4,299,354 to Ketley). *See also* id. col. 1, l. 64 to col. 2, l. 3 (describing the thermally responsive member in U.S. Patent No. 4,480,784 to Bennett). Furthermore, in its most broadly-stated description, the thermally responsive member of the '015 patented invention "can include a housing containing a thermally responsive medium, which volumetrically reacts to changes in the fluid temperature in the mixing chamber." '015 Patent, col. 2, ll. 51-53. This description reveals that the thermally responsive member is a part that reacts to temperature change.

The Court concludes that because thermally responsive members were well known to those of ordinary skill in the art at the time of the invention, the plain meaning of the term, "a part that reacts to changes in temperature," is the best definition for the term.

[38] The Court concludes that Plaintiffs' definition for "in proportion to" is improperly narrow as well. Plaintiffs contend that the "in proportion to the fluid temperature" language should mean "that there is a relationship between the fluid temperature and the amount of movement of the moveable portion of the

thermally responsive member." Joint Cl. Constr. Chart, at 5. Defendants propose a plain meaning definition for "in proportion to:" "correspondingly in size, degree, or intensity." Id. Plaintiffs make no argument to support their narrow definition for the term "in proportion to," and the plain meaning should suffice in light of the well-known nature of thermally responsive members in the art. *See* '015 Patent, col. 1, ll. 10-57 (describing the thermally responsive member of the Ketley patent); *see also* id. col. 1. l. 64 to col. 2, l. 3 (describing the thermally responsive member of U.S. Patent No. 4, 480,784 to Bennett).

Moreover, as discussed with respect to the thermally responsive member term, the broadest description of the '015 patented invention reveals that the "in proportion to" language has its plain meaning. The '015 patent states: "The fail-safe mechanism can include a housing containing a thermally responsive medium, which volumetrically reacts to changes in the fluid temperature in the mixing chamber." '015 Patent, col. 2, ll. 50-53. *See also* id. col. 5, ll. 4-10 (describing two alternative thermal expansion materials, "wax, which volumetrically changes with changes in temperature ... [and] a memory metal, which expands and contracts with temperature changes"). The Summary of the Invention disclosure reveals that a change in temperature causes a corresponding change in the size of the thermal expansion material inside the housing. Nothing more is needed to describe the "in proportion to" language of claim 1.

The Court concludes that "in proportion to" means "corresponding in size, degree or intensity to."

7. *A Plug Disposed Between*

The next disputed term is "a plug," which appears in conjunction with the "means for substantially restricting" and the "a thermally responsive member" elements of claims 1 and 14. The claim element in which the term first appears reads: "a plug disposed between said hotter fluid inlet and said mixing chamber and engaged to said thermally responsive member to move with said member...." '015 Patent, col. 8, ll. 65-67 & col. 10, ll. 26-28. However, this is not the only element in which the term "plug" appears. In claim 1, the other relevant elements read:

wherein said thermally responsive member is operable to move said plug along said longitudinal axis between an open position which allows substantially full flow from said hotter fluid inlet into said mixing chamber, and a closed position in which said plug substantially restricts flow from said hotter fluid inlet when the fluid temperature in said mixing chamber exceeds said set point temperature; and

biasing means for biasing said plug away from said closed position when the temperature of fluid within said mixing chamber is below said set point temperature.

Id. col. 9, ll. 1-12. The other relevant elements of claim 9 read:

... said biasing means includes a first spring disposed between said hotter fluid inlet and said plug to bias said plug away from said closed position.

* * *

... said biasing means includes a second spring operating on said plug and opposing said first spring, wherein said first spring and said second spring are arranged to support said plug within said hollow interior of said mixing chamber and to maintain alignment of said plug with said hotter fluid inlet.
Id. col. 9, ll. 21-24 & ll. 41-47. These latter two elements also appear, verbatim, in claim 14. Id. col. 10, ll. 37-44.
Generally, the parties agree that the term "plug" is a piece or part that is used to obstruct an opening, or a part that fills a hole. Joint Cl. Constr. Chart, at 6. The parties' dispute with respect to the plug term turns on two different issues: first, the scope of the disclaimer the patentees made when distinguishing U.S. Patent

No. 2,855,151 to Lesovsky ("Lesovsky" or "Lesovsky patent") during prosecution; and second, whether the plug can be simultaneously "disposed between said hotter fluid inlet and said mixing chamber," and supported "within said hollow interior mixing chamber" as required by claims 9 and 14. The Court addresses each dispute in turn.

a. Scope of Disavowal

[39] With respect to the scope of the waiver, Plaintiffs argue that the patentees only disclaimed hollow sleeves, such as the one described in Lesovsky, thus there is no reason to extend this disclaimer to other structures not disclosed in the specifically-cited prior art. Pls.' Reply, at 15 (citing Lesovsky, Figs. 2 & 4; col. 2, ll. 41-56; Pls.' Ex. 7, at 9). Moreover, Plaintiffs assert that the patentees' statement in prosecution of the Australian equivalent to the '015 patent that U.S. Patent No. 5,203,496 to Kline (the "'496 patent") "does not use a plug as claimed for stopping the flow of hot fluid," is not a clear and unmistakable disclaimer of a plug that is hollow but closed on one end. Pls.' Reply, at 15 (citing '496 Patent, col. 2, ll. 45-54 & Fig. 1).

In contrast, Defendants argue that Plaintiffs disclaimed hollow sleeves that are closed at one end when they distinguished Lesovsky. The mixing valve in Lesovsky, as depicted in Figure 2 of that patent, has a valve body with a longitudinal axis, a cold inlet, a hot inlet, a mixing chamber, a mixed fluid outlet, and a thermostat. Lesovsky, col. 2, ll. 9-69. A hollow sleeve is attached to the thermostat to modulate the flow of cold fluid into the mixing chamber. Id. col. 3, ll. 14-22. As the temperature increases, the thermostat member moves the hollow sleeve such that cold fluid is allowed into the mixing chamber. Id. col. 3, ll. 46-67. Defendants contend that during prosecution of the '015 patent Plaintiffs distinguished Lesovsky, in part, because "the [Lesovsky] thermostatic device does not include a plug, but instead uses a hollow sleeve," and because the hollow sleeve restricts the flow of cold fluid "transverse to the axis of the housing." Pls.' Ex. 7, at 9. Defendants conclude that, with these statements, Plaintiffs clearly disavowed any hollow sleeve that restricts flow along the transverse axis, including a sleeve with a closed end. Furthermore, Defendants assert that Plaintiffs' disavowal of a hollow piston with one closed end in the '496 patent when it prosecuted the Australian counterpart to the '015 patent is further evidence that a plug in the '015 patent cannot be a sleeve that is closed at one end. Defs.' Br. at 22 (citing Forman Decl. Ex. F, at WA 7592; '496 Patent, Fig. 1 & col. 2, ll. 45-56).

[T]he scope of such disavowal will depend on the nature of the argument made by the patentee. As the court explained in Omega [Engineering, Inc. v. Raytek Corp., 334 F.3d 1314,] 1324 [(Fed.Cir.2003)], even in the case of an unequivocal disavowal of claim scope, the court must construe the claim "congruent with the scope of the surrender." In order to constitute binding surrender of claim scope, the statements in question must be such that "a competitor would reasonably believe that the applicant had surrendered the relevant subject matter." Cybor Corp. v. FAS Techs., Inc., 138 F.3d 1448, 1457 (Fed.Cir.1998) (en banc). If the court finds that the patentee made a clear disavowal of the subject matter that is subsequently asserted to be equivalent to the limitation in question, it will preclude the patentee from asserting equivalency as to that subject matter. *See* Bayer AG v. Elan Pharm. Res. Corp., 212 F.3d 1241, 1252 (Fed.Cir.2000).

Cordis Corp., 511 F.3d 1157, 1177.

In the case at bar, in what is entitled "Amendment After First Action," the ' 015 patent inventors made changes to claim 1 to overcome the examiner's rejection over prior art. Pls.' Ex. 7, at 8. In the discussion of those changes, and with respect to the plug element at issue here, the patentees stated the following:

The Lesovsky reference shows a thermostatic actuating device that is disposed within a cylindrical housing in which the hot fluid inlet is aligned with the longitudinal axis. However, the thermostatic device does not include a plug, but instead uses a hollow sleeve. Moreover, the sleeve is operable to restrict flow only

through the cold water inlet that is transverse to the axis of the housing. This is in direct contrast to the present invention in which the plug operates along the longitudinal axis of the mixing chamber to close the hot water inlet.

Id. at 9. It is clear from this passage that the extent of the disavowal is only as to a hollow sleeve, which necessarily implies that there is an opening at both ends because the plain meaning of sleeve is something that allows an object to go completely through it. This also is in concert with the plain understanding of a plug, which connotes that at least one end is blunted in some manner to prevent an object from going completely through it. Such an understanding would not exclude plugs that have an opening at one end because this would still comport with the plain meaning of plug.

With respect to Defendants' argument regarding prosecution of the Australian equivalent to the '015 patent, the Court disagrees that what was stated in that prosecution is a clear disavowal that would limit the scope of the term plug. In Australia, the examiner rejected claim 1 as lacking novelty and inventiveness in light of, among other patents, the '496 patent. In response, the patentees stated:

[The '496 patent] discloses a thermostatic control valve with fluid mixing, but the hot fluid does not communicate with the mixing dome along the longitudinal axis of the mixing dome.

Additionally, '496 does not use a plug as claimed for stopping the flow of hot fluid. Moreover, '496 does not disclose a bias of the hot fluid supply toward open when the temperature of the fluid in the cavity is below the predetermined maximum temperature as claimed.

Forman Decl. Ex. F, at 3-4. The relevant disclosure in the '496 patent, as pointed to by Defendants, states:

... Valve assembly **10** includes a hot inlet **11,** a cold inlet **12** and an outlet **13.** Inlets **11** and **12** are connected to opposite sides of flow control valve **14** and open to annular cavities **15** and **16,** respectively, within the flow control valve. The inner wall of annular cavities **15** and **16** is defined by a cylindrically shaped liner **17.** Liner **17** is open at both ends and includes a plurality of openings or slots **18** which are distributed around its circumference in communication with cavities **15** and **16.**

Slidably mounted within liner **17** is a cylindrically shaped piston **19** which is open at its upper end. Piston **19** is preferably pressure balanced and includes a plurality of openings or slots **20** that are distributed around its circumference. Preferably, each opening **20** through piston **19** has a counterpart opening **18** in liner **17.** Modulation of the piston **19** within liner **17** variably opens the cavities **15** and **16** to the interior of the piston **19,** which communicates the combined hot and cold fluid to the outlet **14** ***a*** of the flow control valve.

Flow control valve **14** also includes a bottom plug **21** which can be removed to allow access to repair, replace or clean the interior parts of the flow control valve **14.**

'496 Patent, col. 2, ll. 35-57.

First, clearly the reference to a plug in the '496 patent cannot be said to read on the '015 patented invention because the purpose of the plug in the '496 patented invention is completely different from that of the plug in the '015 patent. As such, the Court will disregard this reference in its entirety.

Second, the only thing in the '496 patent that the patentees disavowed during the Australian prosecution is the part used "for stopping the flow of hot fluid." Forman Decl. Ex. F, at 4. From the description of the preferred embodiment of the '496 patented invention as quoted above, the '496 invention uses the combination of a slotted liner, which "is open at both ends," and a reciprocally-slotted piston, which "is open at its upper end," to allow hot and cold fluid into the outlet of the flow control valve. '496 Patent, col.

2, ll. 39-54. Therefore, if anything, the '496 patent discloses a completely hollow liner that works in conjunction with a slotted piston to control the hotter fluid flow; there is no mention of the piston, or the liner for that matter, being used to stop the hotter fluid flow. As plainly stated by the patentees, there is nothing in the device described in the '496 patent that resembles the plug of the '015 patented invention, which is used to prevent hotter fluid from flowing. As such, there is no clear disavowal of a plug that is hollowed out, but closed on one end.

In summary, the Court concludes that the plain meaning of "plug" is "a part that closes or fills an opening, but it does not include a completely hollow sleeve."

b. "Disposed Between" & Supported "Within"

[41] Turning now to the parties' second dispute, Defendants contend that the elements of claims 9 and 14 that require the plug both to be "disposed between said hotter fluid inlet and said mixing chamber" and to be supported "within said hollow interior of said mixing chamber" render claims 9 and 14 indefinite. Specifically, Defendants argue that if "between" means "positioned somewhere in or through the space that separates," as Plaintiffs assert, then it is inconsistent for the plug also to be supported within the mixing chamber.

Plaintiffs assert that the term "disposed" means "placed in a particular suitable place." Hr'g Tr. at 80. Furthermore, Plaintiffs contend that the term "disposed between" in the context of the '015 patent, means "the space immediately adjacent to," as more particularly described by claim 4 and depicted in Figure 4. Id. at 81.

The Court disagrees with both parties. The Court notes at the outset that the language "disposed between" does not appear anywhere else in the '015 patent specification; it only appears in the claims. The Court concludes that it must, then, read the term within the context of the '015 patented invention to arrive at the appropriate definition. *See* Phillips, 415 F.3d at 1314. The '015 patent is directed to a mixing valve that includes a fail-safe feature that operates to plug the hot fluid inlet when the mixed fluid temperature reaches a set point. *See* '015 Patent, col. 2, ll. 49-60 (describing the fail-safe feature of the invention); *see also* id. col. 8, l. 57 to col. 9, l. 12 (describing the fail-safe feature of the invention in claim 1). The '015 patent discloses that the failure response means includes many parts, one of which is the plug, that must engage both the mixing chamber and the hot fluid inlet because that means senses the mixed fluid temperature and "[w]hen the fluid temperature exceeds a predetermined threshold, [a] plug isolates the hot fluid supply." Id. col. 2, ll. 49-57. *See also* id. col. 4, l. 46 to col. 5, l. 13 (describing the preferred embodiment, which includes the elements of claims 9 and 14). Therefore, in the context of the '015 patent, the plug is "between" or "jointly engaging" the mixing chamber and the hot fluid inlet. *See* WEBSTER'S THIRD NEW INT'L DICTIONARY 209 (Merriam-Webster, Inc.1981) (defining "between," in the first instance as "involving the reciprocal action of: ...: jointly engaging"). A part that is disposed to jointly engage the mixing chamber and the hot fluid inlet certainly could also be supported within the mixing chamber waiting to be pressed into action by the remaining parts of the fail-safe mechanism.

For these reasons, the Court concludes that the term "disposed between" means "placed so as to jointly engage." Claims 9 and 14 are not indefinite.

8. *Biasing Means*

[42] The parties do not really seem to dispute the fact that the only disclosure in the '015 patent for the structure of the biasing means, which is used to bias the plug away from the closed position, is a spring. *See* Joint Cl. Constr. Chart, at 7. The Court disagrees with Defendants to the extent that they want to limit the placement of the spring because on that subject, the Claims speak for themselves.

Moreover, the structure for the biasing means is clearly defined in claims 4 and 9 and the Court concludes that those terms fall outside of the scope of 35 U.S.C. s. 112, para. 6.

For these reasons, the Court concludes that the structure of the "biasing means for biasing said plug away from said closed position ..." is "a spring or its equivalent."

9. *Said Adjustable Flow Control Member*

[43] The final disputed term of the '015 patent is "said adjustable flow control member," which appears in claim 14. That claim element reads, in relevant part: "means, independent of said adjustable flow control member, for substantially restricting said second flow of hotter fluid into said mixing chamber when the temperature of the fluid in said mixing chamber exceeds a predetermined set point temperature, said means including...." '015 Patent, col. 10, ll. 17-22.

Defendants contend that claim 14 is indefinite because the term "said adjustable flow control member" has no antecedent basis. Defs.' Br. at 23-24 (citing Patent & Trademark Office, MANUAL OF PATENT EXAMINING PROCEDURE s. 2173.05(e) (8th ed.2004) (hereinafter "MPEP"); Process Control Corp. v. HydReclaim Corp., 190 F.3d 1350, 1355 (Fed.Cir.1999)). In the alternative, Defendants assert that the term "adjustable flow control member" must be construed as a "stepped diameter adjustment screw inserted transversely in either the cold or hot water inlet." Joint Cl. Constr. Chart, at 10.

In contrast, Plaintiffs assert that "the inclusion of the term 'said' rather than 'an' is an obvious drafting error that the [C]ourt can correct." Pls.' Reply, at 17 (citing Novo Indus., L.P. v. Micro Molds Corp., 350 F.3d 1348, 1357 (Fed.Cir.2003); Hoffer v. Microsoft Corp., 405 F.3d 1326, 1331 (Fed.Cir.2005)). Alternatively, Plaintiffs argue that "[e]ven if the claim term lack[s] antecedent basis, the claim is not indefinite [because] 'the scope of [the] claim would be reasonably ascertainable by those of ordinary skill in the art.' " *Id.* (quoting Bose Corp. v. JBL, Inc., 274 F.3d 1354, 1359 (Fed.Cir.2001)) (quoting MPEP s. 2173.05(e)). Therefore, Plaintiffs conclude, an "adjustable flow control member" is "any member or element that is adjustable to control the conditions of flow." Joint Cl. Constr. Chart, at 10.

The Court concludes that the term "adjustable flow control member" is not indefinite because the meaning of the term could be reasonably ascertainable by those of ordinary skill in the art. Going back to the basics, the Court always starts a claim construction inquiry with the language of the asserted and unasserted claims. Phillips, 415 F.3d at 1314. Here, the term "adjustable flow control member" first appears in the claims in unasserted claim 11. ' 015 Patent, col. 9, ll. 52-56. That claim reads: "**11.** The mixing valve assembly according to claim **1,** further comprising an adjustable flow control member disposed within said valve body between said mixing chamber and at least one inlet of said cold fluid inlet and said hotter fluid inlet." Id. Therefore, in the scope of the entirety of the claims, the adjustable flow control member referred to in claim 14 has an implied antecedent basis in claim 11. *Accord* Energizer Holdings, Inc. v. Int'l Trade Comm'n, 435 F.3d 1366, 1370-71 (Fed.Cir.2006) (stating that "an antecedent basis can be present by implication") (citing Cross Med. Prods. v. Medtronic Sofamor Danek, 424 F.3d 1293, 1319 (Fed.Cir.2005); Slimfold Mfg. Co. v. Kinkead Indus., Inc., 810 F.2d 1113, 1116 (Fed.Cir.1987)).

Moreover, when read in light of the specification, it is reasonably clear that "said adjustable flow control member" means "an adjustable control member." Although the Court cannot rewrite a claim to correct a material error, *see* Energizer Holdings, 435 F.3d at 1370, the Federal Circuit has reaffirmed that a court "can continue to correct obvious minor typographical and clerical errors in patents." Novo Indus., L.P. v. Micro Molds Corp., 350 F.3d 1348, 1357 (Fed.Cir.2003). According to the Novo Industries court, a district court can correct a patent error "only if (1) the correction is not subject to reasonable debate based on consideration of the claim language and the specification and (2) the prosecution history does not suggest a different interpretation of the claims." 350 F.3d at 1357. *See also* Hoffer v. Microsoft Corp., 405 F.3d 1326,

1331 (Fed.Cir.2005) (a harmless error in a patent not subject to reasonable debate can be corrected by the court), *cert. denied,* 546 U.S. 1131, 126 S.Ct. 1037, 163 L.Ed.2d 928 (2006). Here, Defendants do not even try to claim that a correction is subject to reasonable debate when the other claim language and the specification is consulted. In addition, Defendants point to nothing in the prosecution history that would suggest a different interpretation of the claims.

Turning now to the proper construction of the term, Plaintiffs contend that the proper construction for the term "adjustable flow control member" is "any member or element that is adjustable to control the conditions of flow." Joint Cl. Constr. Chart, at 10. Plaintiffs assert that there is nothing in the claims or the specification that would limit the type of part that could perform this task. In contrast, Defendants argue that the term has no plain meaning in the art, therefore, the term must be limited to the "stepped diameter adjustment screw inserted transversely in either the cold or hot water inlet" outlined in the Description of the Preferred Embodiment. *Id. See also* Defs.' Br. at 24-25 (citing '015 Patent, col. 2, l. 61 to col. 3, l. 1; id. col. 7, ll. 10-14).

The Court concludes that "adjustable flow control member" means "a part interposed at an inlet that can be manipulated or moved to regulate the flow of fluid from that inlet." Apparently, the parties' experts agree that the term has no special meaning in the art. Ackroyd Rep. at 18; Ovens Dep. at 21-22. Therefore, the Court must rely upon the disclosures in the patent to define the term. *See* Honeywell Int'l, 488 F.3d at 991. Although the Court agrees with Plaintiffs that the language of the '015 patent specification is broad enough to encompass parts with a different configuration than the one described for the preferred embodiment, Plaintiffs' definition is not helpful because it merely repeats the words of the limitation in a different order. The Court's definition best incorporates the usage of the term in the claims and in the specification without using the same words to describe the term's meaning.

Claim 11, the first place in the claims in which the term appears, supports the Court's reading of the invention because it specifically places the adjustable flow control member where it is engaged by either the cold fluid inlet or the hot fluid inlet. '015 Patent, col. 9, ll. 52-56. As Dr. Ovens points out in his report, Ovens Rep. at 13, Claim 14 also suggests that the adjustable flow control member is separate and apart from the elements used for the fail-safe mechanism because it specifically states that the fail-safe mechanism, with its thermally responsive member and plug, is "independent of," or separate from, the adjustable flow control member. Id. col. 10, ll. 17-18.

Similarly, the specification supports a more robust definition that includes reference to where the part must be located. The Abstract states: "In a further aspect, the cold fluid inlet includes an adjustment set screw to adjust the cold fluid flow into the mixing valve, thereby adjusting the maximum mixed fluid temperature that can be discharged from the valve assembly." Id. Abstract. In other words, the adjustable flow control member is a part that is used to regulate the flow of cold fluid within the inlet itself. But, the Summary of the Invention reveals that the inventors contemplated assemblies other than a set screw; the patent teaches:

In a further embodiment, a flow control member is interposed at one of the fluid inlets, such as the cold inlet. The flow control member is adjustable to permit adjustment of the limit temperature of the mixed fluid discharged from the valve. The adjustable flow control member can include a stepped diameter screw that is advanced across the inlet fluid flow to reduce the flow in relation to the stepped diameter. This adjustable flow control member does not interfere with the fail-safe functioning of the valve, but instead allows the user to specifically determine the maximum mixed fluid temperature at a particular fixture or faucet.

Id. col. 2, l. 61 to col. 3, l. 5. The phrase "[t]he adjustable flow control member can include" implies that the patentees contemplated parts within an inlet that would regulate the flow of fluid that were different from the stepped-diameter screw they were disclosing in the patent.

For these reasons, the Court concludes that the term "adjustable flow control member" means "a part interposed at an inlet that can be manipulated or moved to regulate the flow of fluid from that inlet."

B. THE "6 PATENT

The Court notes at the outset that Defendants proposed that the terms "inlet," "mixing chamber," and "defining," should be given the same meaning in the "6 patent as that given to them in the '015 patent. Joint Cl. Constr. Chart, at 12 n. 2. Apparently, Plaintiffs want to consider each patent to stand on its own and suggest the terms should be construed separately. Id. After reading the parties' briefs, the Court is not sure Plaintiffs really believe the claim terms should be interpreted differently, however, the Court concludes that the a short discussion about each of the disputed terms is warranted. They are addressed in the context in which they come up among the more hotly-contested claim terms.

1. ***A Fluid Mixing Chamber***

[44] The first disputed term of the "6 patent is the term "mixing chamber." Similarly to their constructions of the same term in the ' 015 patent, the Plaintiffs assert that the term means "an enclosed space or cavity within the valve body in which fluid mixing occurs." Defendants contend that the term should be given the same meaning as the same term in claim 14 of the '015 patent, "an area in which two separate flows are combined," which eliminates the requirement Defendants' proposed for claim 1 of the '015 patent that the area be a single cylindrical section.

Because the parties' proposed definitions are not that dissimilar, and because there is nothing in the "6 patent that would lead to the Court to conclude that the term should be limited in any way, the Court adopts the Plaintiffs' construction for the term "mixing chamber;" therefore, that term means "an enclosed space or cavity in which mixing occurs."

2. ***A Flow Control Member for Controlling Flow***

[45] The primary dispute with respect to the "flow control member" element of the "6 patent is whether or not the term must be construed in accordance with 35 U.S.C. s. 112, para. 6. Defendants contend that the term is a means-plus-function term, despite the absence of the word "means," because "flow control member" is not a term that has a plain meaning to one of ordinary skill in the art; the word "member" is " 'simply a substitute for the term "means for," ' " Defs. Br. at 31 (quoting Lighting World, Inc. v. Birchwood Lighting, Inc., 382 F.3d 1354, 1362 (Fed.Cir.2004)); and in the specification, the patentees used the term "member" interchangeably with the term "means." Id. (citing "6 Patent, col. 2, ll. 41-48; id. col. 2, ll. 51-57).

[46] [47] [48] The Court agrees with Defendants that the term "flow control member" must be construed in accordance with 35 U.S.C. s. 112, para. 6. Although the absence of the term "means" creates a presumption that s. 112, para. 6, does not apply, *see* Personalized Media Commc'ns, LLC v. Int'l Trade Comm'n, 161 F.3d 696, 703-04 (Fed.Cir.1998), the "presumption can be rebutted if the evidence intrinsic to the patent and any relevant extrinsic evidence so warrant." Id. at 704. More specifically, the presumption is rebutted if Defendants can "demonstrate[ ] that the claim term fails to 'recite sufficiently definite structure' or else recites a 'function without reciting sufficient structure for performing that function.' " CCS Fitness, 288 F.3d at 1369(quoting Watts v. XL Sys., Inc., 232 F.3d 877, 880 (Fed.Cir.2000)). "To help determine whether a claim term recites sufficient structure, [the Court must] examine whether it has an understood meaning in the art." Id.

In the case at bar, there is no plain meaning in the art for the term "flow control member." This conclusion is supported by the opinions of Defendants' expert, Ackroyd Rep. para. 1, and the testimony of the inventor of the "6 patent, Kevin Kline ("Kline"). Kline Dep. Vol. III, at 23. Kline testified that the term "flow control member" did not have a usual and customary meaning to valve designers. Kline Dep. Vol. III, at 23. Rather,

Kline opined that the term is "more something that a patent lawyer uses to cover generalities." Id. Also, when asked if he knew what sort of structure a "flow control member" referred to, Kline stated that he would have no idea and could not draw it. Id. at 24.

Plaintiffs' expert, Dr. Ovens, opined that the structure of the "flow control member" is further defined in subsequent elements of the claim, Ovens Rep. para. 3, however, he does not elaborate or explain this opinion. Similarly, Plaintiffs argue that the claim language provides sufficient structure. Pls.' Br. at 25. But, the term "member," which is defined in a scientific dictionary as "a structural unit such as a wall, column, beam or tie[,]" SCI. & TECH. TERMS DICTIONARY, at 993, does not connote the structure described in the claims. Rather, the "flow control member" has primary and secondary fluid passageways for controlling the flow of fluids, "6 Patent, col. 8, ll. 59-65; must be movable between a normal operating condition and a failure condition, id. col. 8, l. to col. 9, l. 5; and must be connected to an actuator such that its movement in the normal operating condition is controlled thereby. Id. col. 9, ll. 7-16. Moreover, the second requirement, pointed to by Plaintiffs as reciting structure, is more accurately described as a functional requirement.

A conclusion that the flow control member is more accurately construed as a means-plus-function term is also supported by the usage of the term in the specification. The specification reveals that the patentees used the terms "flow control member" and "flow control means" interchangeably. "6 Patent, col. 2, ll. 41-48; id. col. 2, ll. 51-57. In other words, the term "member for" was used as a "mere prox[y] for the term 'means for.' " Lighting World, 382 F.3d at 1362. Specifically, the Summary of the Invention describes a "[f]low control means," primarily in functional terms:

Flow control means are connected to the thermostat for controlling the flow of warm or chilled fluid from their respective inlets into the mixing chamber. The flow control means includes a reciprocating actuator with a valve disc engaged to the actuator. The flow control means and the thermostat normally operate to restrict one fluid inlet when the fluid flow ceases from the other fluid inlet.

"6 Patent, col. 2, ll. 41-48. The specification then describes these functions in terms of a "flow control member:"

The condition responsive actuator acts upon the flow control member to stop flow from the warm fluid inlet while allowing flow from the chilled fluid inlet. Since the flow from the chilled fluid inlet has ceased, all fluid flow into the valve will substantially cease. The flow control member of the present invention then moves to a failure position.

Id., col. 2, ll. 51-57. These passages reveal that "flow control *means* " and "flow control*member* " were used interchangeably by the patentees where "member" was a proxy for "means." Therefore, the presumption that s. 112, para. 6 is inapplicable based on the absence of the word "means" is rebutted. *See* Lighting World, 382 F.3d at 1362-63.

As the Court stated in the Standards section of this Order, for an element in a means-plus-function format, the "means" term "is essentially a generic reference for the corresponding structure disclosed in the specification." Chiuminatta Concrete Concepts v. Cardinal Indus., 145 F.3d 1303, 1308 (Fed.Cir.1998). *See also* Mas-Hamilton Group v. LaGard, Inc., 156 F.3d 1206, 1211 (Fed.Cir.1998) (quoting Chiuminatta Concrete Concepts, 145 F.3d at 1308). By using this format, a patentee is allowed to claim a function without expressing all of the possible means of accomplishing that function. *See* O.I. Corp. v. Tekmar Co., 115 F.3d 1576, 1583 (Fed.Cir.1997). "The price that must be paid for use of that convenience is limitation of the claim to the means [or acts] specified in the written description and equivalents thereof." Id.

Thus, a claim expressed in means-plus-function language constitutes an exception to the rule that prohibits reading limitations from the specification into the claims. *See* Valmont Indus., Inc. v. Reinke Mfg. Co., 983

F.2d 1039, 1042 (Fed.Cir.1993). When dealing with a means-plus-function claim, specific alternative structures to accomplish the function mentioned in the specifications, and equivalents thereto, delineate the scope of the patent claim. *See* Mas-Hamilton Group, 156 F.3d at 1211; Serrano v. Telular Corp., 111 F.3d 1578, 1583 (Fed.Cir.1997). The alternative structures must be specifically identified, not just mentioned as possibilities, in order to be included in the patent claim's scope. *See* Fonar Corp. v. Gen. Elec. Co., 107 F.3d 1543, 1551 (Fed.Cir.), *cert. denied,* 522 U.S. 908, 118 S.Ct. 266, 139 L.Ed.2d 192 (1997).

[49] With respect to the "flow control member," there is no dispute that the function of the flow control member is to control the "flow of a first fluid from the first fluid inlet and a second fluid from the second fluid inlet to said mixing chamber...." "6 Patent, col. 59-62. *See also* Ackroyd Rep. para. 1; Ovens Dep. 140-41. Similarly, the experts agree that the structures that correspond to this function are the actuator assembly, the liner assembly and two shuttle assemblies disclosed in the specification. Ackroyd Rep. 8-9 (indicating that two structures are corresponding structures for the function and both structures include a liner assembly, the actuator assembly, and a shuttle assembly); Ovens Dep. 145 (identifying components of corresponding structure); id. at 148 (indicating that the components are necessary to perform the function of controlling flow). *See also* "6 patent, col. 4, ll. 22-29 (liner assembly), col. 4, ll. 40-60 (actuator assembly), col. 4, ll. 52-68 (shuttle, including a piston with flanges shown in Figs. 1, 2, and 3), col. 5, ll. 38-50 (same), col. 6, ll. 18-54 (shuttle including a piston with a longitudinal groove shown in Figs. 4 & 5). The Court sees no reason in the intrinsic evidence to disagree with the parties' experts in this regard. Accordingly, the term "flow control member for controlling flow ..." is limited to these structures and their equivalents.

In summary, the Court concludes that the "flow control member" is a means-plus-function term that must be construed in accordance with s. 112, para. 6. The element's function is "for controlling flow of a first fluid from the first fluid inlet and a second fluid from the second fluid inlet to said fluid mixing chamber," which has a corresponding structure of an actuator assembly, *see* ' 936 Patent, col. 4, ll. 40-60; a liner assembly, *see* id. col. 4, ll. 22-29; and a shuttle, *see* id. col. 4, ll. 52-68, col. 5, ll. 38-50, & col. 6, ll. 18-54; and their equivalents.

3. ***A Number Of & Said Inlets*** FN3

FN3. Plaintiffs argued in the Joint Claim Construction Chart that the term "defining" would have a meaning in the "6 patent independent of that for the '015 patent, however, Plaintiffs provide no other definition for the term in the "6 patent. Therefore, the Court adopts the plain meaning for the term "defining," like it did for the same term in the '015 patent, namely, "to delineate." Similarly, the parties seem to think that "inlets" needs further interpretation, but they never argue about that term specifically, rather they argue about its relationship to the terms "a," "a number of," and "said." As a result, the Court also adopts the plain meaning of this term for purposes of the "6 patent, which is "opening."

[50] [51] The parties dispute with respect to the terms "a number of," and "said inlets" are interrelated; therefore, the Court will address the construction of those terms here. The dispute arises from the proper construction of the same claim element as the "flow control member" limitation. The entire element reads:

a flow control member for controlling flow of a first fluid from the first fluid inlet and a second fluid from the second fluid inlet to said fluid mixing chamber, said flow control member defining a number of primary flow passageways between said inlets and said mixing chamber and a number of secondary flow passageways between said inlets and said mixing chamber....

"6 Patent, col. 8, ll. 59-67. Plaintiffs assert that the term "a" means "one or more," and that the term "a number of" means "one or more." Pls.' Reply, at 21-22. As a result of these constructions, Plaintiffs conclude that:

the "flow control member" defines "a number of (one or more) primary flow passageways between said (one or more first fluid and/or one or more second fluid) inlets and said mixing chamber and a number of (one or more) secondary flow passageways between said (one or more first fluid and/or one or more second fluid) inlets and said mixing chamber."

Id. at 23. In other words, each option for one or more must be applied to each limitation to which it applies throughout this claim element to give the claim its broadest possible interpretation consistent with the claims and the specification. Plaintiffs contend that this interpretation is consistent with both the claim language and the specification where it teaches that only one bypass is necessary. Id. at 21-24 (citing "6 Patent, col. 9, ll. 3-5 & ll. 14-16).

In contrast, Defendants assert that this claim element requires that the mixing valve have at least one first fluid inlet, at least one second fluid inlet, and at least one primary and one secondary passageway for both of those inlets. Defendants argue that this interpretation is the only one that is consistent with the remainder of the claim language, does not rewrite the claim language, and is consistent with the disclosures in the specification, including the purpose of the invention, which is to "fail on."

The Court agrees with Defendants that Plaintiffs' construction tortures the plain language of the claim and renders the possibilities so broad as to read out the term "mixing" from the requirement of the invention. First, although Plaintiffs claim that they are only trying to read "one or more" into the terms "a" and "a number of," the recitation of Plaintiffs' fully construed element reveals that they intend to replace the terms "the" and "said" with "one or more" as well. In addition, Plaintiffs want to add an "and/or" before the term "inlets." The Court cannot disagree with Plaintiffs that ordinarily in patent parlance the term "a" means "one or more." *See* KCJ Corp. v. Kinetic Concepts, Inc., 223 F.3d 1351, 1356 (Fed.Cir.2000). Neither can the Court disagree that "a number of" might be construed as "one or more." But, reading those terms in the context of the "6 patent in that manner, and in conjunction with Plaintiffs' addition of "and/or" before "inlets," renders a nonsensical possibility: a mixing valve that doesn't mix anything.

Second, in the Court's opinion, and as discussed in part by Defendants, the term "said inlets" derives its antecedent basis from two places: the prior "inlet" elements ("a first fluid inlet" and "a second fluid inlet") and the just-referenced inlets in the same element. With respect to the first antecedent basis, claim 9 requires that the inventive valve have a first *and* a second inlet. "6 Patent, col. 8, ll. 54-55. Necessarily then, any reference later in the claims to "said inlets" implies at least one inlet of each type, first and second, because reading "said inlets" as either multiple "first inlets" or multiple "second inlets" would read one of the limitations out of the claim. *See* Bicon, Inc. v. Straumann Co., 441 F.3d 945, 951 (Fed.Cir.2006) (stating that adopting a construction that reads limitations out of the claim is "contrary to the principle that claim language should not be treated as meaningless").

With respect to the second antecedent basis claim 9 of the "6 patent requires that the flow control member manage the flow of fluid from " *the* first fluid inlet" and the flow of fluid from " *the* second fluid inlet." "6 Patent, col. 8, ll. 59-61 (emphasis added). This language appears just before the "said inlets" limitation. Plainly, then, the use of "the" before referencing the first and second inlets implies that the "said inlets" language refers back to those inlets. There is no "and/or" implied by the use of the term "the" before describing which inlets are controlled by the flow control member; rather "said inlets" must mean " *the* at least one first fluid inlet *and the* at least one second fluid inlet" just referenced.

What does that conclusion mean for the proper construction of the remaining disputed terms of this element? The Court can see no other reading than the plain language: at least one primary flow passageway between each of the first and second inlets and the mixing chamber, and at least one secondary flow passageway between each of the first and second inlets and the mixing chamber. Contrary to Plaintiffs'

contention, this interpretation does not read out other limitations of the claim or the preferred embodiments. The remaining elements of claim 9 read:

said flow control member disposed within said valve body and moveable between positions in a normal operating condition in which substantially all flow from said inlets is directed through said primary flow passageways, and moveable to a failure condition in which substantially all flow from said inlets is directed through said secondary passageways; and

a condition responsive actuator ... said actuator connected to said flow control member to move said member in the normal operating condition when fluid flows through both the first fluid inlet and the second fluid inlet, and to move said member to the failure condition when flow through one of either of the first fluid inlet or the second fluid inlet ceases.

Id. col. 8, l. 67 to col. 9, l. 16. Plaintiffs assert that a construction such as the Court's would read out of these claim elements the possibility of no flow from one inlet upon failure of the other. In other words, it would read out of the claims the possibility that the invention could be used as an emergency valve or as an eyewash valve. But, a "fail cold" or "fail off" mechanism such as that used in the emergency valve and eyewash applications is not what these elements require. Rather, a plain reading of these elements teaches that regardless of which of the flows fails, first or second, hot or cold, high pH or low pH, salty or sweet, some fluid will continue to flow from this valve, even if it the less desirable of the two fluids.

This is exactly the purpose that is described for the valve in the most general, as well as the most specific, portions of the specification: the valve is always to "fail on." The Abstract teaches:

Fluid flows through the primary passageway when the flow control member is in a normal operating condition, i.e., with substantial fluid flow through both inlets. If flow through one of the inlets ceases, the shuttle moves to a failure condition, in which substantially all flow from the inlets is directed through a secondary passageway. This provides a fluid of a desired condition when there is substantial flow through both inlets and a fluid of a less desirable but acceptable condition when substantial flow through one of the inlets ceases.

Id. Abstract. Similarly, the Background of the Invention states:

... The invention also concerns a bypass mechanism which provides a constant flow of fluid when the desired condition cannot be achieved.

* * *

... The present invention provides a thermostatic mixing valve with a bypass mechanism that ensures a room temperature product fluid in the absence of chilled fluid. The valve, in essence, frustrates the normal function of a thermostatic valve when a flow of fluid ceases.
Id. col. 1, ll. 9-12 & col. 2, ll. 7-12.
In addition, both the Background of the Invention and the Summary of the Invention teach that the purpose of this valve is not an emergency shut off or to fail cold, rather the purpose of this valve is to ensure that fluid flows regardless of which fluid source fails. For example, the "6 patent discloses that

[i]n an application of mixing valves in which the output fluid is in contact with the user, it is critical that some form of emergency shut-off be provided in the event of a failure of at least the cold fluid source.... In the eye-wash application, it is imperative that at least some cold water is maintained, otherwise the victim may suffer serious injury for failure to wash the eyes completely. U.S. Pat. No. 5,011,074 to the present inventor teaches a thermostatic mixing valve with a thermostatic failure compensation means. In the event

of a failure of the thermostat, the invention operates to prevent hot flow into the mixing chamber.

In other applications of mixing valves, such as in combination with carbonated beverage dispensers, ... [a] prior art mixing valve would regulate the relative flow volume of a warm fluid versus the flow volume of a relatively chilled [fluid] into the mixing chamber [ ] in order to maintain a constant temperature of the output fluid. If the flow of the chilled fluid ceased, the temperature in the mixing chamber would therefore increase and the thermostat and mixing valve would react to restrict or stop the input of the warm fluid. This would lead to substantial decrease in or complete cessation of fluid output, which is unacceptable in commercial applications, such as fast food restaurants. The present invention provides a thermostatic mixing valve with a bypass mechanism that ensures a room temperature product fluid in the absence of chilled fluid. The valve, in essence, frustrates the normal function of a thermostatic valve when a flow of fluid ceases.

Id. col. 1, l. 30 to col. 2, l. 12. Later, the specification further distinguishes these prior art valves: "When either the warm or the chilled supply is disrupted, the prior art mixing valve assemblies will fail because the desired temperature cannot be achieved. This valve assembly has a bypass mechanism which allows flow of product fluid of any temperature when the desired temperature cannot be achieved." Id. col. 2, ll. 27-34.

In other words, unlike other thermostatic mixing valves in which the thermostat acts to shut off the valve entirely or acts to stop the fluid flow from one of the inlets, the more egregious of the two, upon failure of the thermostat or upon failure of the other fluid flow, the invention of the ' 936 patent ensures that fluid is flowing regardless of which fluid fails. This aspect of the invention is repeatedly referred to in the specification as an important distinguishing feature. *See* id. col. 2, ll. 1-12; id. col. 2, ll. 19-23; id. col. 2, ll. 26-34; id. col. 2, ll. 62-68; id. col. 5, l. 59 to col. 6, l. 13; id. col. 6, ll. 36-54.

A conclusion that the "6 patent is not meant to address either emergency valves or eyewash applications was confirmed by both Dr. Ovens, Plaintiffs' expert, and the inventor of the "6 patent, Kline. In his deposition, Dr. Ovens conceded that the "6 patented invention had nothing to do with eyewash applications. Ovens Dep. at 149-50. In fact, Dr. Ovens testified that the ' 936 patent discussed the eyewash application as an example of a valve that was different from the invention disclosed therein. Id. at 151-52. Similarly, Kline testified that neither of the embodiments disclosed in the ' 936 patent (Figures 1 and 4) were suitable for emergency eyewash foundations because they allowed the flow of hot water in the instance of a cold water failure. Kline Dep. Vol. III, at 80-81.

In summary, the Court concludes that "said inlets" means "the at least one first fluid inlet and the at least one second fluid inlet," and that "number of primary flow passageways between said inlets" and "a number of secondary flow passageways between said inlets" means "at least one primary flow passageway between each of the first and second inlets and the mixing chamber, and at least one secondary flow passageway between each of the first and second inlets and the mixing chamber."

4. ***Movable Between Positions in a Normal Operating Condition ... and***

Movable to a Failure Condition FN4

FN4. The Court notes that Plaintiffs argue that the term "movable" also needs construction, but Defendants do not dispute that an ordinary definition for movable would apply in the context of the "6 patent. Joint Cl. Constr. Chart, at 15. The Court agrees with Defendants that "moveable" is not used in a way that would require claim construction; therefore, the Court will not construe that term.

[52] The parties' next dispute concerns the correct construction of the terms "normal operating condition"

and "failure condition." The Court addresses the terms together because their plain meaning is derived from the same source: claim 9 itself.

Relying upon various portions of the Description of the Preferred Embodiment, Plaintiffs contend that "normal operating condition" means "when there is normal fluid flow from both inlets and the actuator is working normally." Pls.' Br. at 29. Defendants' assert that "normal operating condition" means "only that there is flow through both the first and second inlet [,]" there is no requirement that the actuator work normally. Defs.' Br. at 28-29. The Court agrees with Defendants.

Claim 9 expressly defines the term "normal operating condition" as "when fluid flows through both the first fluid inlet and the second fluid inlet." "6 patent, col. 9, ll. 11-13. This meaning of normal operating condition is consistent with usage of the term in the specification. The Abstract states that "[f]luid flows through the primary passageway when the flow control member is in a normal operating condition, i.e., with substantial fluid flow through both inlets" and that "the shuttle moves to a failure condition ... [i]f flow through one of the inlets ceases[.]" Id. Abstract. Similarly, the Summary of the Invention implies that a normal operating condition is one where there is substantial flow; that section concludes:

This flow control mixing valve assembly mixes incoming fluids to [ ] achieve a product fluid with a desired condition when there is substantial flow through both inlets. The assembly is provided with a bypass mechanism that ensures a fluid with a less desirable but acceptable condition when substantial flow through one of the inlets cease.

Id. col. 2, ll. 62-68. The description of the preferred embodiment also teaches the same definition. It reads: "In normal operation, warm and chilled fluids flow through their respective inlets ... and are mixed within the mixing chamber...." Id. col. 3, ll. 47-50. And, "[f]luid flows through the primary passageway in the normal operating condition." Id., col. 5, ll. 51-52. *See also* id., col. 6, ll. 11-13 ("When normal flow resumes the valve assumes the normal operating condition, allowing fluid flow through the primary passageway."), & ll. 3 6-38 ("In the normal operating condition, warm fluid flows through the primary passageway from the warm fluid channel....").

Plaintiffs claim that the "normal operating condition" also requires that "the condition responsive actuator properly manipulates the shuttle between positions in which the shuttle restricts, or partially closes, the chilled fluid opening or the warm fluid opening." Pls.' Br. at 29 (citing "6 patent, col. 5, ll. 3-10 ("In normal operation of the valve, the bellows thermostat **36** of the actuator **35** manipulates the shuttle **70** ... to vary the amount of warm and chilled water flow into the mixing chamber.")). But, this passage is not defining "normal flow," rather it describes the operation of the condition responsive actuator, or thermostat, when normal flow conditions exist.

The Court concludes that the proper construction for the term "normal operating condition" is "when fluid flows through both the first fluid inlet and the second fluid inlet."

With respect to the term "failure condition," the Court also agrees with Defendants that claim 9 provides its own definition for the term: "when flow through one of either of the first fluid inlet or the second fluid inlet ceases." "6 Patent, col. 9, ll. 14-16. To the extent that Plaintiffs' argue that the definition of this term must also include reference to the failure condition of the actuator, such a definition would exclude the preferred embodiment. *See* Vitronics Corp., 90 F.3d at 1583 (stating that an interpretation that excludes a preferred embodiment is "rarely, if ever, correct"). Dr. Ovens testified that the embodiments depicted in Figures 2 and 4 will respond to an actuator or thermostat failure by moving a shuttle to a position in which the hotter fluid would flow through the primary flow passageways. Ovens Dep. at 168-69, 170. Yet, claim 9 requires that in a "failure condition," "substantially all flow from said inlets is directed through said secondary passageways." "6 patent, col. 9, ll. 3-5. Therefore, the embodimentsin Figures 2 and 4 would not satisfy the

requirements of claim 9 if a thermostat failure is construed as part of a "failure condition." Although Dr. Ovens opined in his report that the "failure condition" includes the failure of the actuator, Ovens Rep. at 21-22, he later retracted this opinion in his deposition when he conceded that the "distinction between normal operation and failed operation is not based upon the status of the actuator[,]" and that the opinion in his report was a mistake. Ovens Dep. at 170-71. *See also* Ovens Dep. at 172 (conceding that the "6 patent defines "normal operating condition" to be when substantial fluid flows through both inlets).

For these reasons, the Court concludes that "failure condition" means "when flow through one of either of the first fluid inlet or the second fluid inlet ceases."

5. *Condition Response Actuator*

Defendants do not provide a definition of "condition response actuator" because they assert it has an ordinary meaning. Joint Cl. Constr. Chart, at 16. However, a lay juror may not know what that means to one of ordinary skill in the art at the time of the invention. Plaintiffs propose the definition of "a part that can sense the condition of the mixed fluid." The parties are ORDERED to address this term in their summary judgment briefs, if any are filed, if it is a term upon which they cannot agree on the ordinary meaning. This particular order should not be construed as an invitation to the parties to ask the Court to construe additional terms at the summary judgment stage of the proceedings. Rather, the parties shall limit any claim construction arguments to the term "condition response actuator" if such argument is necessary.

6. *Shuttle*

[53] The remaining disputed term in the "6 patent, "shuttle," appears in claim 10. Claim 10 states, in its entirety:

10. The flow control valve assembly of claim **9,** wherein said flow control member includes a shuttle disposed within said valve body, said shuttle defining said primary passageways and said secondary passageways, said shuttle restricting the flow of the first fluid from said first fluid inlet and the flow of the second fluid from said second inlet in relation to movement of said condition responsive actuator in the normal operating condition, said shuttle moveable to failure condition positions including a first failure position when the flow of the first fluid ceases and a second failure position when the flow of the second fluid ceases.

"6 Patent, col. 8, l. 52 to col. 9, l. 28. Plaintiffs assert that the term "shuttle" means "a part ... that moves back and forth within the valve body to control the flow of fluid from the first and second inlets by restricting the relative flow of fluids from the inlets under normal conditions." Joint Cl. Constr. Chart, at 17. Defendants argue the "shuttle" of claim 10 should be limited to the shuttle assemblies disclosed in Figures 1-3 and 3-4, respectively. Defendants assert that this term must be so limited because the "flow control member" term of claim 9 should be interpreted as a means-plus-function term and the structures therein are limited to the shuttle assemblies described in the "6 patent and their equivalents; therefore, to be more narrow than claim 9, the shuttle in claim 10 must exclude equivalents of the structures disclosed in the specification.

The Court had concluded that the "flow control member" of claim 9 is a means-plus-function term. Consequently, the structure of that limitation includes two shuttle assemblies and their equivalents. "6 Patent, col. 4, ll. 54-68; id. col. 5, ll. 38-50; id. col. 6, ll. 18-54. In order for claim 10, which further defines the structure of the flow control member, to be more narrow than claim 9, the shuttle of claim 10 must be limited to those shuttles described by the "6 patent specification. *See* Laitram Corp. v. Rexnord, Inc., 939 F.2d 1533, 1538 (Fed.Cir.1991) (explaining the relationship between the structural elements of means-plus-function terms in independent claims and the structural terms in claims dependent upon that independent

claim).

For this reason, the Court concludes that "shuttle" in claim 10 of the "6 patent means the shuttle assemblies disclosed in the specification of the ' 936 patent at column 4, lines 52-68 (shuttle, including a piston with flanges shown in Figures 1, 2, and 3); at column 5, lines 38-50 (same); and at column 6, lines 18-54 (shuttle including a piston with a longitudinal groove shown in Figures 4 & 5).

IV. *CONCLUSION*

For the reasons stated herein, the Court construes the disputed terms of the patents-in-suit, U.S. Patent No. 6,042,015, Mar. 28, 2000, and U.S. Patent No. 5,379,936, Jan. 10, 1995, as follows:

U.S. PATENT NO. 6,042,015

CLAIM TERM	CONSTRUCTION
"proportional mixing valve"	is a claim limitation and means "a valve that uses inlet size to apportion fluids"
"a valve body having a cylindrical portion defining a mixing chamber ..."	"one or more cylindrical sections that have an opening, cavity or space in which mixing occurs"
"inlet"	"opening"
"in communication with"	opening into or connecting, either directly or indirectly
"along said longitudinal axis"	"along said longitudinal axis"
"substantially"	"largely, essentially, or in the main"
"predetermined set point temperature"	"fixed or appointed at the time of manufacture"
"thermally responsive member"	"a part that reacts to changes in temperature"
"in proportion to"	"corresponding in size, degree or intensity to"
"plug disposed between"	"plug" means "a part that closes or fills an opening, but it does not include a completely hollow sleeve"
	"disposed between" means "placed so as to jointly engage"
"biasing means"	the structure is "a spring or its equivalent"
"said adjustable flow control member"	"a part interposed at an inlet that can be manipulated or moved to regulate the flow of fluid from that inlet"

U.S. PATENT NO. 5,379,936

CLAIM TERM	CONSTRUCTION	
"mixing chamber"	"an enclosed space or cavity in which mixing occurs"	
"flow control member for controlling flow"	function:	controlling flow
	structure:	the actuator assembly, "6 Patent, col. 4, ll. 40-60; the liner assembly, *id*. col. 4, ll. 22-29; and one or the other of two shuttle assemblies, *id*. col. 4, ll. 52-68; *id*. col. 5, ll. 38-50; *id*. col. 6, ll. 18-54; and their equivalents
"said inlets" & "a number of"	"said inlets" means "the at least one first fluid inlet and the at least one second fluid inlet"	
	"a number of" means "at least one primary flow passageway between each of the first and second inlets and the mixing chamber, and at least one secondary flow passageway between each of the first and second inlets and the mixing chamber"	

"normal operating condition"	"when fluid flows through both the first fluid inlet and the second fluid inlet"
"failure condition"	"when flow through one or either of the first fluid inlet or the second fluid inlet ceases"
"shuttle"	one or the other of two shuttle assemblies, "6 Patent, col. 4, ll. 52-68; *id*. col. 5, ll. 38-50; *id*. col. 6, ll. 18-54, only

Other, more minor terms, were construed by the Court as stated herein. The parties are hereby ORDERED to address the term "condition response actuator" in their summary judgment pleadings, if any are filed, to the extent they cannot agree on the ordinary meaning of said term. This particular order shall not be construed as an invitation to ask the Court to construe additional terms at the summary judgment stage of this litigation.

IT IS SO ORDERED.

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