

Description

This invention relates to boiling water units such as are disclosed in the specification of Australian Patent Specification No.531449 the contents of which are incorporated herein by reference.

Boiling water units are required to be compact and aesthetically pleasing whilst performing the task of delivering water, from a mains supply, in boiling or near boiling condition as and when required by the user.

Australian Patent Specification No.531449 discloses a boiling water unit including a connection between a float chamber and a heating tank comprising a transfer pipe having a first end located to receive water from the float chamber and a second end located in the heating tank to deliver water thereto. Joints are provided between this transfer pipe and the float chamber and between the transfer pipe and the heating chamber. Further, there is an elbow joint in the transfer pipe.

In certain circumstances a problem resides in the transfer of water from the float chamber, where cold water is stored, to the heating/delivery chamber where water is heated to boiling point before being drawn off, in that if there is expansion or contraction in the float chamber, in the transfer pipe, or in the heating tank, strain may be placed on one or more of the specified joints causing potential leaks and possible distortion of the float chamber, which may be of plastics material.

With a view to ameliorating these problems, the invention provides, in a boiling water unit, a connection between a float chamber and a heating tank comprising a transfer pipe having a first end located to receive water from the float chamber and a second end located in the heating tank to deliver water thereto; characterised by the transfer pipe being of TEFLON (Registered Trade Mark) material and by the provision of a first connecting joint having an expansion joint surrounding the first end of the transfer pipe and securing the transfer pipe to the float chamber; and a second connecting joint having an expansion joint surrounding the transfer pipe in the region of its entry to the heating tank, each surrounding expansion joint defining an annular groove in its interior, each groove accommodating an O-ring and being packed with a lubricant adapted to operate between ambient and very high temperatures, the O-rings sealingly engaging the respective connecting joint and the transfer pipe, and the second end of the transfer pipe being slightly elevated relative to the first end of the pipe, said expansion joints being adapted to accommodate movement of said transfer pipe occasioned by strain placed on one or more of said connecting joints.

A preferred lubricant is available under the trade name "MOLYKOTE III" and operates between -40°C and 260°C to resist both hot and cold environments,

steam washout and harsh chemical attacks and is also competent to protect seals such as O-rings from oxidation to allow non-destructive disassembly. Thus, in the preferred construction, a seal is created between the connecting joint body and the transfer pipe, the construction being such that movement of the TEFLON pipe may occur whilst a water tight transfer system remains in place.

It is further preferred that the end of the transfer pipe where it enters the heating tank is chamfered. The combination of end chamfer and elevation of the transfer pipe is effective in the prevention of entrapment in the pipe of air bubbles which have deleterious effect on water flow between the float chamber and the heating tank.

By way of example only, one embodiment of a boiling water unit in accordance with this invention will now be described with reference to the accompanying drawing wherein:-

A float chamber 1 is provided with a metering tube 2 with a connecting joint 3 connecting the tube 2 to the bottom 4 of the chamber 1. The metering tube 2 is elbowed at 4A and a further connecting joint 5 is provided adjacent the end of the tube 2 to provide a connection between the tube 2 and one end of the Teflon transfer pipe 6. A further connecting joint 7 provides a connection between the wall 8 of heating tank 9 and the other end 17A of transfer pipe 6. Each connecting joint 3, 5, 7 is provided with a circular groove accommodating, respectively, O-rings 3A, 5A, 7A, each joint 5, 7 having means surrounding the transfer pipe 6. Each O-ring is packed in its respective groove with a heat resistant sealing lubricant such as MOLYKOTE III. The end 17A of the pipe 6, where the pipe enters the heating tank 9 is chamfered as at 11 and the transfer pipe 6 is inclined slightly upwardly at end 17A compared with the end 12 thereof.

Claims

1. In a boiling water unit, a connection between a float chamber (1) and a heating tank (9) comprising a transfer pipe (6) having a first end (12) located to receive water from the float chamber (1) and a second end (17A) located in the heating tank (9) to deliver water thereto; characterised by the transfer pipe (6) being of TEFLON (Registered Trade Mark) material and by the provision of a first connecting joint (5) having an expansion joint surrounding the first end (12) of the transfer pipe (6) and securing the transfer pipe to the float chamber (1); and a second connecting joint (7) having an expansion joint surrounding the transfer pipe (6) in the region of its entry to the heating tank (9), each surrounding expansion joint defining an annular groove in its interior, each groove accommodating an O-ring (5A, 7A) and being



Description

This invention relates to boiling water units such as are disclosed in the specification of Australian Patent Specification No.531449 the contents of which are incorporated herein by reference.

Boiling water units are required to be compact and aesthetically pleasing whilst performing the task of delivering water, from a mains supply, in boiling or near boiling condition as and when required by the user.

Australian Patent Specification No.531449 discloses a boiling water unit including a connection between a float chamber and a heating tank comprising a transfer pipe having a first end located to receive water from the float chamber and a second end located in the heating tank to deliver water thereto. Joints are provided between this transfer pipe and the float chamber and between the transfer pipe and the heating chamber. Further, there is an elbow joint in the transfer pipe.

In certain circumstances a problem resides in the transfer of water from the float chamber, where cold water is stored, to the heating/delivery chamber where water is heated to boiling point before being drawn off, in that if there is expansion or contraction in the float chamber, in the transfer pipe, or in the heating tank, strain may be placed on one or more of the specified joints causing potential leaks and possible distortion of the float chamber, which may be of plastics material.

With a view to ameliorating these problems, the invention provides, in a boiling water unit, a connection between a float chamber and a heating tank comprising a transfer pipe having a first end located to receive water from the float chamber and a second end located in the heating tank to deliver water thereto; characterised by the transfer pipe being of TEFLON (Registered Trade Mark) material and by the provision of a first connecting joint having an expansion joint surrounding the first end of the transfer pipe and securing the transfer pipe to the float chamber; and a second connecting joint having an expansion joint surrounding the transfer pipe in the region of its entry to the heating tank, each surrounding expansion joint defining an annular groove in its interior, each groove accommodating an O-ring and being packed with a lubricant adapted to operate between ambient and very high temperatures, the O-rings sealingly engaging the respective connecting joint and the transfer pipe, and the second end of the transfer pipe being slightly elevated relative to the first end of the pipe, said expansion joints being adapted to accommodate movement of said transfer pipe occasioned by strain placed on one or more of said connecting joints.

A preferred lubricant is available under the trade name "MOLYKOTE III" and operates between -40°C and 260°C to resist both hot and cold environments,

steam washout and harsh chemical attacks and is also competent to protect seals such as O-rings from oxidation to allow non-destructive disassembly. Thus, in the preferred construction, a seal is created between the connecting joint body and the transfer pipe, the construction being such that movement of the TEFLON pipe may occur whilst a water tight transfer system remains in place.

It is further preferred that the end of the transfer pipe where it enters the heating tank is chamfered. The combination of end chamfer and elevation of the transfer pipe is effective in the prevention of entrapment in the pipe of air bubbles which have deleterious effect on water flow between the float chamber and the heating tank.

By way of example only, one embodiment of a boiling water unit in accordance with this invention will now be described with reference to the accompanying drawing wherein:-

A float chamber 1 is provided with a metering tube 2 with a connecting joint 3 connecting the tube 2 to the bottom 4 of the chamber 1. The metering tube 2 is elbowed at 4A and a further connecting joint 5 is provided adjacent the end of the tube 2 to provide a connection between the tube 2 and one end of the Te-flon transfer pipe 6. A further connecting joint 7 provides a connection between the wall 8 of heating tank 9 and the other end 17A of transfer pipe 6. Each connecting joint 3, 5, 7 is provided with a circular groove accommodating, respectively, O-rings 3A, 5A, 7A, each joint 5, 7 having means surrounding the transfer pipe 6. Each O-ring is packed in its respective groove with a heat resistant sealing lubricant such as MOLYKOTE III. The end 17A of the pipe 6, where the pipe enters the heating tank 9 is chamfered as at 11 and the transfer pipe 6 is inclined slightly upwardly at end 17A compared with the end 12 thereof.

Claims

1. In a boiling water unit, a connection between a float chamber (1) and a heating tank (9) comprising a transfer pipe (6) having a first end (12) located to receive water from the float chamber (1) and a second end (17A) located in the heating tank (9) to deliver water thereto; characterised by the transfer pipe (6) being of TEFLON (Registered Trade Mark) material and by the provision of a first connecting joint (5) having an expansion joint surrounding the first end (12) of the transfer pipe (6) and securing the transfer pipe to the float chamber (1); and a second connecting joint (7) having an expansion joint surrounding the transfer pipe (6) in the region of its entry to the heating tank (9), each surrounding expansion joint defining an annular groove in its interior, each groove accommodating an O-ring (5A, 7A) and being



packed with a lubricant adapted to operate between ambient and very high temperatures, the O-rings (5A, 7A) sealingly engaging the respective connecting joint and the transfer pipe (6), and the second end (17A) of the transfer pipe (6) being slightly elevated relative to the first end (12) of the pipe, said expansion joints being adapted to accommodate movement of said transfer pipe occasioned by strain placed on one or more of said connecting joints.

2. A boiling water unit according to claim 1, characterised in that the transfer pipe (6) is internally chamfered (11) at the second end (17A).

Patentansprüche

1. Verbindung zwischen einer Pufferkammer (1) und einem Heizbehälter (9) in einer Siedewassereinheit, beinhaltend ein Übergangsrohr (6) mit einem ersten Ende (12), angeordnet zum Empfang von Wasser aus der Pufferkammer (1), und einem zweiten Ende (17A), angeordnet im Heizbehälter und zum Transport von Wasser dorthin, gekennzeichnet durch ein Übergangsrohr (6) aus Teflon™-Material und durch Vorsehen: eines ersten Verbindungsstücks (5) mit einem Dehnungsstück, welches das erste Ende (12) des Übergangsrohrs (6) umgibt und es zur Pufferkammer (1) sichert und eines zweiten Verbindungsstücks (7) mit einem Dehnungsstück, welches das Übergangsrohr (6) im Bereich seines Eintritts in den Heizbehälter (9) umgibt, wobei jeweils das umgebende Dehnungsstück innenseitig eine ringförmige Vertiefung besitzt, die einen Dichtungsring (5A, 7A) enthält und mit Schmiermittel gefüllt ist, das von Umgebungstemperatur bis sehr hohen Temperaturen geeignet ist; wobei die Dichtungsringe (5A, 7A) dichtig jeweils mit dem Verbindungsstück und dem Übergangsrohr eingreifen, das Übergangsrohr (6) und das zweite Ende (17A) des Übergangsrohrs (6) bezüglich des ersten Endes (12) des Rohrs leicht angehoben ist, die Dehnungsstücke so eingerichtet sind, daß sie eine Bewegung des Übergangsrohrs aufgrund einer Spannung an einem oder mehreren der Verbindungsstücke mitmachen können.
2. Siedewassereinheit nach Anspruch 1, dadurch gekennzeichnet, daß das Übergangsrohr (6) am zweiten Ende (17A) innen (11) abgeschrägt ist.

Revendications

1. Dans une unité de chauffage de l'eau, une liaison entre une cuve à niveau constant (1) et un réservoir de chauffage (9) comprenant une conduite de transfert (6) avec une première extrémité (12) placée pour recevoir de l'eau provenant de la cuve à niveau constant (1) et une seconde extrémité (17A) située dans le réservoir de chauffage (9) pour lui envoyer de l'eau, caractérisée par le fait que la conduite de transfert (6) est en Téflon® (marque déposée) et par la présence d'un premier joint de liaison (5) qui comprend un joint de dilatation entourant la première extrémité (12) de la conduite de transfert (6) et qui fixe la conduite de transfert à la cuve à niveau constant (1), et un second joint de liaison (5) qui comprend un joint de dilatation entourant la conduite de transfert (6) dans la région où elle pénètre dans le réservoir de chauffage (9), chaque joint de dilatation d'entourage définissant une rainure annulaire dans son intérieur, chaque rainure logeant un joint torique (5A, 7A) et étant remplie d'un lubrifiant apte à fonctionner entre la température ambiante et des températures très élevées, les joints toriques (5A, 7A) venant en contact étanche avec les joints de liaison respectifs et la conduite de transfert (6), et la seconde extrémité (17A) de la conduite de transfert (6) étant légèrement soulevée par rapport à la première extrémité (12) de la conduite, lesdits joints de dilatation étant aptes à accommoder le déplacement de ladite conduite de transfert provoqué par une contrainte qui porte sur un ou plusieurs desdits joints de liaison.
2. Unité de chauffage de l'eau selon la revendication 1, caractérisée en ce que la conduite de transfert (6) est chanfreinée intérieurement (11) au niveau de la seconde extrémité (17A).

5

10

15

20

25

30

35

40

45

50

55

3