LIMITATIONS, DESCRIPTION & MAINTENANCE OF THIS SYSTEM

MODEL WRU 4 RO/DI PLUS

LIMITATIONS-OUTPUT OF PURE WATER. THE THIN FILM COMPOSITE MEMBRANE IN THIS SYSTEM IS RATED BY GALLONS PER DAY OF PRODUCTION IT CAN ACHIEVE. THIS RATING WAS DETERMINED AT A WATER INLET PSI OF 65, A WATER TEMPERATURE OF 77 DEGREES FAHRENHEIT AND A WATER TDS LEVEL OF 500 MG/L NaCl SOLUTION. IF INLET PRESSURE IS BELOW 65, THERE IS A PROPORTIONATE DECREASE IN PURE WATER PRODUCTION. IF THE WATER IS BELOW 77 DEGREES FAHRENHEIT, PRODUCTION WILL BE LESS, IF MORE THAN 500 TDS IS PRESENT IN THE SOURCE WATER, PRODUCTION MAY BE SLIGHTLY AFFECTED. SYSTEM OUTPUT WILL INCREASE AFTER CARTRIDGES AND MEMBRANE BECOME SATURATED (WITHIN ONE WEEK).

DESCRIPTION OF SYSTEM FUNCTIONS

LOOK AT THE SYSTEM FROM THE FRONT....FROM RIGHT TO LEFT.

1.) THIS SYSTEM IS IDENTICAL TO THE WRU 3RO PLUS BUT HAS THE ADDED FEATURE OF A DEIONIZATION MIXED BED CARTRIDGE (CANISTER #3) AS THE FINAL STAGE AFTER PURE WATER HAS EXITED THE R.O. MEMBRANE HOUSING.

2.) THE **FIRST CANISTER** CONTAINS A **5-MICRON CARBON BLOCK** CARTRIDGE. THE **PURPOSE** OF THIS CARTRIDGE IS TO **REMOVE**

SEDIMENT FROM THE SOURCE WATER. THE FACT THAT IT IS A CARBON BLOCK MEANS THAT THE CARTRIDGE WILL ALSO DO A **SECONDARY** FUNCTION OF **REMOVING CHLORINE** FROM THE SOURCE WATER. (P/N IWF CTO 85-5).

3.) THE **SECOND CANISTER** CONTAINS A **1-MICRON CARBON BLOCK CARTRIDGE.** THE **PURPOSE** OF THIS CARTRIDGE IS TO **REMOVE CHLORINE**. THE FACT THAT THE CARTRIDGE IS RATED AT 1-MICRON MEANS THAT IT WILL ALSO CONTINUE A **SECONDARY FUNCTION** OF **REMOVING ADDITIONAL SEDIMENT** FROM THE SOURCE WATER. (P/N IWF CTO 85-1).

4.) THE **MEMBRANE HOUSING** (MOUNTED HORIZONTALLY) CONTAINS A GALLON PER DAY (GPD) PRODUCTION RATED **THIN FILM COMPOSITE MEMBRANE**. THE SOURCE WATER HAS PASSED THROUGH CANISTERS #1 AND #2 AND IS CLEAN AND CHLORINE FREE. THE PREFILTERED SOURCE WATER ENTERS THE MEMBRANE HOUSING TO BEGIN THE **PROCESS OF REVERSE OSMOSIS SEPARATION** OF PURE WATER FROM TOTAL DISSOLVED SOLIDS (TDS), PESTICIDES, VIRUSES, BACTERIA, HERBICIDES, HEAVY METALS, CYSTS, CALCIUM, ARSENIC, ETC. **NOTE: THE PORE SIZE OF THE MEMBRANE IS NO LARGER THAN .001 MICRON. (OR, 1/1000 OF A MICRON)**

THE **REJECTED TDS WATER EXITS** THE MEMBRANE HOUSING THROUGH AN **RED TUBE** AND FLOWS THROUGH A FLOW RESTRICTOR AND DOWN THE WASTE DRAIN OF THE LOCATION PREMISES.

5.) THE **PURE WATER EXITS** THE MEMBRANE HOUSING THROUGH A **YELLOW ¼" POLYETHYLENE TUBE**. THIS TUBE ENTERS **THE THIRD CANISTER**, WHICH CONTAINS **A DYED MIXED BED OF DEIONIZING CATION AND ANION RESINS.**

IT IS COMBINED IN THIS SYSTEM WITH THE REVERSE OSMOSIS SYSTEM OF THE WRU 3RO PLUS. THE PURE WATER EXITING THE MEMBRANE HOUSING HAS LITTLE IF ANY TDS REMAINING AND ENTERS THE THIRD CANISTER WHERE THE DYED MIXED BED RESINS OF THE DI CARTRIDGE WORK TO **REMOVE REMAINING NEGATIVELY AND POSITIVELY CHARGED IONS (TDS)** THAT MAY STILL EXIST IN THE PURE PRODUCT WATER.

NORMALLY, DI RESIN IS USED BY ITSELF TO REMOVE ALL TDS IN SOURCE WATER. USED IN THIS MANNER, DI RESINS BECOME EXHAUSTED QUICKLY. HOWEVER, WHEN DI MIXED BED RESIN IS USED IN COMBINATION WITH REVERSE OSMOSIS TECHNOLOGY, THE DI RESIN CARTRIDGE HAS ONLY TO REMOVE RESIDUAL TDS REMAINING IN THE R.O. PURE PRODUCT WATER AND THE **RESIN WILL LAST FOR SEVERAL HUNDREDS OF GALLONS** BEFORE THE CARTRIDGE NEEDS TO BE CHANGED. THE DYED RESINS IN THE CARTRIDGE **CHANGE COLOR** TO LIGHT TAN AND YELLOW **WHEN THE CARTRIDGE IS EXHAUSTED.**

6.) **ZERO TDS WATER EXITS THE THIRD CANISTER THROUGH A BLUE TUBE.** THIS TUBE SHOULD LEAD TO A RESERVOIR OR TANK AS THE SITUATION OF USE DICTATES.

MAINTENANCE OF THE SYSTEM

1.) THE **PRESSURE GAUGE** LOCATED ON THE FRONT OF THE BRACKET WILL NORMALLY REGISTER IN THE 40 PSI RANGE IF THE WATER SOURCE INLET PRESSURE OF THE SYSTEM IS IN THE 60 PSI RANGE. (PSI MEANS POUNDS PER SQUARE INCH) THE 40 PSI RANGE READING IS CAUSED BY **TWO FACTORS**. **ONE** IS THE INLET PRESSURE LOSS DUE TO PUSHING SOURCE WATER THROUGH THE TWO PREFILTER CARTRIDGES IN CANISTERS #1 & #2. **TWO** IS THE RESULT OF BACK PRESSURE CREATED IN THE SYSTEM DRAIN LINE BY THE PRESENCE OF A WATER FLOW RESTRICTOR. (THE PRESSURE READING ON THE GAUGE IS THE NORMAL PRESSURE FOR THIS SYSTEM IN THIS LOCATION. **MAKE NOTE OF IT**.)

2.) IF **PRESSURE** REGISTERED BY THE GAUGE DROPS, THIS DROP INDICATES THAT THE **5-MICRON CARBON BLOCK CARTRIDGE IN CANISTER #1** IS BEGINNING TO CLOG WITH SEDIMENT AND SHOULD BE CHANGED VERY SOON. CLOGGING IS NOT A LONG TERM PROCESS ONCE IT STARTS.

3.) **CARTRIDGES IN CANISTERS #1 AND #2** SHOULD BE **CHANGED AFTER 1500 GALLONS** OF **PURE WATER** HAS BEEN PRODUCED. **KEEP A LOG ON APPROXIMATE WATER PRODUCED** BECAUSE CHLORINE REMOVAL IS VERY IMPORTANT TO THE LIFE OF THE MEMBRANE AND TIMELY REPLACEMENT OF THE CARBON BLOCK PREFILTER CARTRIDGES PROTECTS THE MEMBRANE.

4.) IF THE CARTRIDGE IN CANISTER #1 HAS BEEN CHANGED DUE TO CLOGGING, IT WILL NOT BE NECESSARY TO CHANGE IT ALONG WITH THE CARTRIDGE IN CANISTER #2 AT THE 1500 GALLON PURE WATER MARK. THE CARTRIDGES IN CANISTER #1 WILL PROBABLY ALWAYS BE CHANGED OUT TIMELY DUE TO SEDIMENT EXHAUSTION.

5.) SHOULD THE **PRESSURE GAUGE RISE** ABOVE NORMAL, THAT READING INDICATES A NEED TO FLUSH THE MEMBRANE. OVER TIME, PRECIPITATED MATTER FROM THE WATER IN THE MEMBRANE HOUSING COLLECTS ON THE SURFACE OF THE MEMBRANE AND INHIBITS THE PASSAGE OF PURE WATER THROUGH THE MEMBRANE. THIS FACTOR INCREASES THE AMOUNT OF WATER ATTEMPTING TO EXIT DOWN THE DRAIN AND INCREASES THE BACK PRESSURE CREATED BY THE SYSTEM FLOW RESTRICTOR. THUS, THE RISE OF PRESSURE REGISTERED ON THE GAUGE.

6.) THIS SYSTEM IS FITTED WITH A **COMBINED FLOW RESTRICTIOR/BALL VALVE** LOCATED ON THE **DRAIN LINE** THAT EXITS THE MEMBRANE HOUSING. THE **FRBV** IS A WHITE PLASTIC DEVICE WITH A **RED HANDLE**. THE FLOW IS BEING RESTRICTED WHEN THE RED HANDLE IS POSITIONED ACROSS THE DRAIN LINE. TO **FLUSH MEMBRANE, TURN RED HANDLE ¼ TURN** SO IT IS POSITIONED IN LINE WITH THE DRAIN LINE.

7.) **FLUSHING THE MEMBRANE.** IT IS A GOOD IDEA TO FLUSH THE MEMBRANE WHENEVER ANY OR ALL PREFILTER CARTRIDGES ARE CHANGED IN CANISTERS #1 AND #2. HOWEVER, SHOULD THE PRESSURE

GAUGE RISE FROM ITS NORMAL READING, THIS IS AN INDEPENDENT SIGNAL THAT THE MEMBRANE NEEDS FLUSHING **NOW**!

8.) TURN RED HANDLE IN LINE WITH DRAIN LINE. TURN ON SYSTEM SO IT BEGINS NEW WATER PRODUCTION AND LEAVE THE RED HANDLE IN FLUSH POSITION FOR 10 MINUTES. PUT RED HANDLE BACK INTO FLOW RESTRICTION POSITION AFTER 10 MINUTES. THE PRESSURE GAUGE SHOULD HAVE RETURNED TO NEAR NORMAL.

9.) CHANGING A CARTRIDGE. THE SYSTEM COMES WITH A SPANNER WRENCH. IT LOOKS LIKE A SMALL TENNIS RACKET WITH NO STRINGS. IT FITS AROUND THE BOTTOM PART OF THE CARTRIDGE CANISTER AND SLIDES UP THE SIDES OF THE CANISTER SUMP UNTIL IT CAN SLIDE UP NO FURTHER. TURN OFF WATER TO THE SYSTEM. WHEN FACING THE SYSTEM, TURN WRENCH RIGHT TO LEFT (COUNTER CLOCKWISE TO LOOSEN AND REMOVE THE SUMP). REMOVE CARTRIDGE FROM THE CANISTER SUMP. RINSE OUT SUMP WITH WATER. THE NEW CARTRIDGE HAS A RUBBER WASHER ON EACH END. SPREAD A LITTLE VASELINE OVER THE SURFACE OF EACH WASHER TOP. INSERT THE CARTRIDGE IN EITHER DIRECTION. THERE IS NO WRONG WAY. SPREAD VASELINE OVER THE SURFACE OF THE O-RING AND REPLACE IT ON THE HEAD OR SUMP. SCREW CANISTER SUMP BACK ONTO CANISTER HEAD. WITH SPANNER WRENCH, TURN LEFT TO RIGHT TO TIGHTEN. TURN WATER ON AND CHECK FOR LEAKS.

10.) WHEN THE **DI CARTRIDGE** IN CANISTER #3 **CHANGES COLOR**, IT IS **EXHAUSTED AND SHOULD BE CHANGED**. THE NEW CARTRIDGE HAS A RUBBER WASHER ON THE TOP ONLY AND THE CARTRIDGE FITS IN THE CANISTER ONLY IF THE WASHER IS FACING UP. FOLLOW STEP #9 FOR CARTRIDGE CHANGING PROCEDURE.

11.) **REPLACE THE MEMBRANE.** EVERY YEAR OR MORE OFTEN, CHECK THE WATER EXITING THE BLUE TUBE AND READ ITS **TDS** CONTENT. IF TDS EXCEEDS 40 PPM, THE MEMBRANE SHOULD BE REPLACED. TURN OFF SYSTEM. REMOVE YELLOW TUBE FROM THE ACETAL QUICK CONNECT IN THE CENTER OF THE MEMBRANE HOUSING CAP. UNSCREW MEMBRANE HOUSING CAP. BE CAREFUL NOT TO LOSE THE O-RING. WITH PLIERS, GRIP THE PLASTIC ROUND END OF THE MEMBRANE. PULL HARD TO BREAK SEAL. TAKE NEW MEMBRANE AND SPREAD VASELINE ON THE TWO O-RINGS LOCATED ON END SHAFT. ALSO, PUT VASELINE ON MEMBRANE HOUSING CAP O-RING. PUSH NEW MEMBRANE INTO HOUSING (TWO O-RING TUBE FIRST) WITH THE PALM OF YOUR HAND. YOU WILL FEEL THE TWO O-RINGS HIT THE POST CAVITY AT THE OTHER END OF THE HOUSING. PUSH WITH A LITTLE EXTRA PRESSURE AT THAT POINT TO FEEL THE O-RINGS SLIDE INTO THE POST CAVITY. SCREW ON CAP WITH O-RING AND REATTACH YELLOW TUBE WITH A HARD PUSH INTO THE ACETAL QUICK CONNECT RING (COLLET).

12.) **SANITIZING THE SYSTEM**. (A GOOD TIME IS WHEN MEMBRANE MUST BE CHANGED) TURN OFF WATER SOURCE. REMOVE ALL CARTRIDGES AND MEMBRANES. POUR 2 OUNCES OF CHLORINE BLEACH INTO CANISTER #1. TIGHTEN ALL EMPTY CANISTERS & HOUSINGS AS IF THEY CONTAINED CARTRIDGES AND MEMBRANES. TURN ON WATER SOURCE. **MAKE SURE END OF BLUE TUBE IS NOT IN A RESERVOIR OR TANK. PUT END OF BLUE TUBE IN A DRAIN**. FILL THE SYSTEM UNTIL WATER RUNS OUT OF ORANGE & BLUE TUBES. SHUT OFF WATER. WAIT ½ HOUR. NOW, FLUSH OUT THE SYSTEM BY LETTING THE WATER RUN FOR 15 MINUTES. REATTACH BLUE TUBE TO TANK OR RESERVOIR. REPLACE THE MEMBRANE AND CARTRIDGES. SEAL ALL CANISTERS AND HOUSING. TURN ON SYSTEM AND CHECK FOR LEAKS.

LIMITED WARRANTY

ENTIRE SYSTEM HAS A LIMITED WARRANTY FOR TWO YEARS. INCLUDES BOTH MATERIAL AND WORKMANSHIP. THE QUICK CONNECT FITTINGS HAVE A LIFETIME LIMITED WARRANTY. (REPLACEABLES SUCH AS CARTRIDGES, ELEMENTS & MEMBRANES ARE NOT COVERED UNDER MATERIALS AND WORKMANSHIP).