

PERFECT PRESSURE PUMP



APPLICATION, INSTALLATION

AND MAINTENANCE

MANUAL (V3.1)

REVISION NUMBER	DATE	DESCRIPTION
1	03/25/2017	INSTALLATION AND APPLICATION MANUAL
2	02/21/2018	ADDED FEATURES AND INSTRUCTIONS
2.1	03/02/2018	ADDED SUCTION PRESSURE DETECTION
2.2	06/26/2018	Added new power hookup instruction
2.3	07/09/2018	Added new in/out dims for HV pumps
3.0	07/13/2018	LED status improvements
3.1	12/05/2018	On sensitivity & min PSI add

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SAFETY AND COMMON SENSE

THIS DEVICE USES 220V SINGLE PHASE POWER ONLY.

APPROPRIATE CIRCUIT PROTECTION BY MEANS OF A SUITABLE GROUND FAULT PROTECTION BREAKER (GFCI) RATED AT 15 AMPS TWO POLE NEEDS TO BE USED TO PROTECT THE DRIVE AND MOTOR.

ELECTRICAL INSTALLATION



DANGER!

- The following information is merely a guide for proper installation. Comply with the applicable local regulations for electrical installations.
- Make sure the power supply is disconnected before starting the installation.
- The **Pump** must not be used as an emergency stop device. Provide other devices for that purpose.

Identification of the Power Terminals and Grounding Points

The location of the power, grounding and control connections are shown

Description of the power terminals:

- **Terminal X1 (L1/L, L2/N and L3 (R, S, T, ⚡)):** AC power supply.
- **Terminal X2 (U/T1, V/T2, W/T3, ⚡):** connection for the motor.

Grounding Connections



DANGER!

- The inverter must be connected to a protection grounding (PE).
- Use grounding wiring with a gauge at least equal to that indicated in [Table](#)

- The maximum tightening torque of the grounding connections is of 1.7 N.m (15 lbf.in).
- Connect the grounding points of the inverter to a specific grounding rod, or specific grounding point or to the general grounding point (resistance $\leq 10 \Omega$).
- Do not share the grounding wiring with other equipment that operate with high currents (e.g. high power motors, soldering machines, etc.).

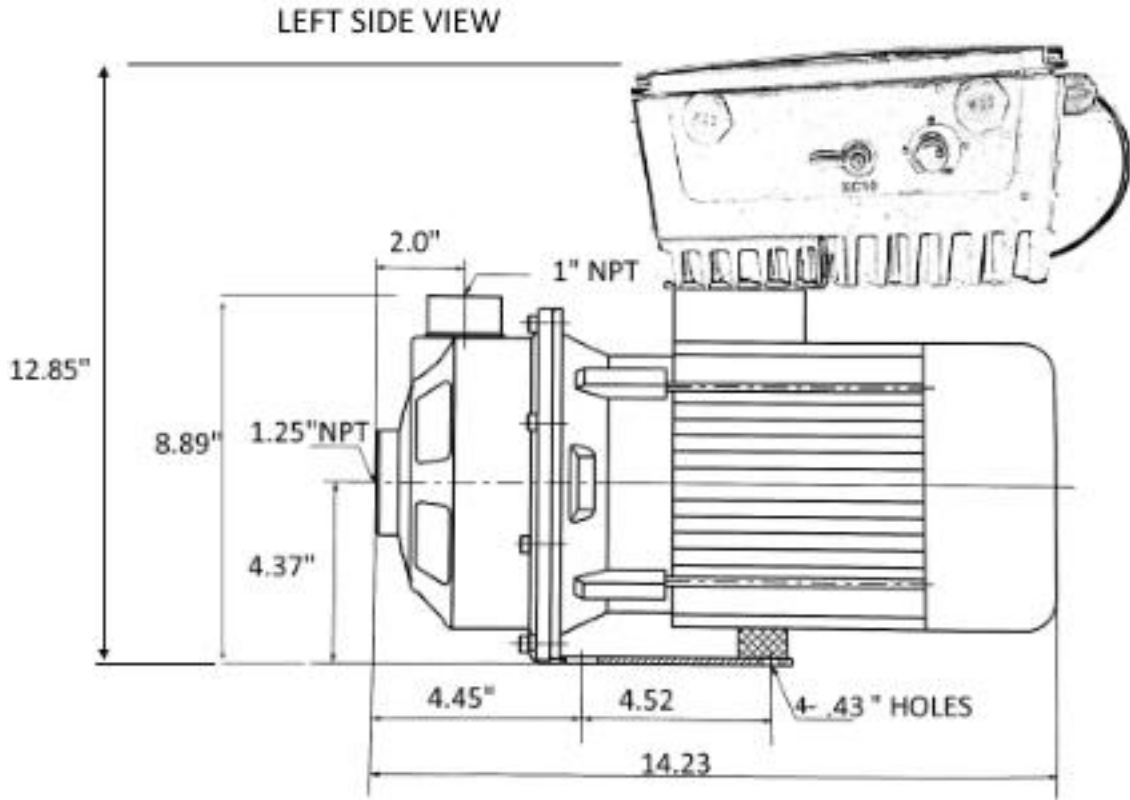
IF A 115V TO 230V STEP UP TRANSFORMER IS NEEDED, A TRANSFORMER OF AT LEAST A 1.5KVA RATING MUST BE USED TO CONVERT 110VAC TO 220VAC.

TAW CAN PROVIDE THIS OPTIONAL ITEM. CONTACT TAW.

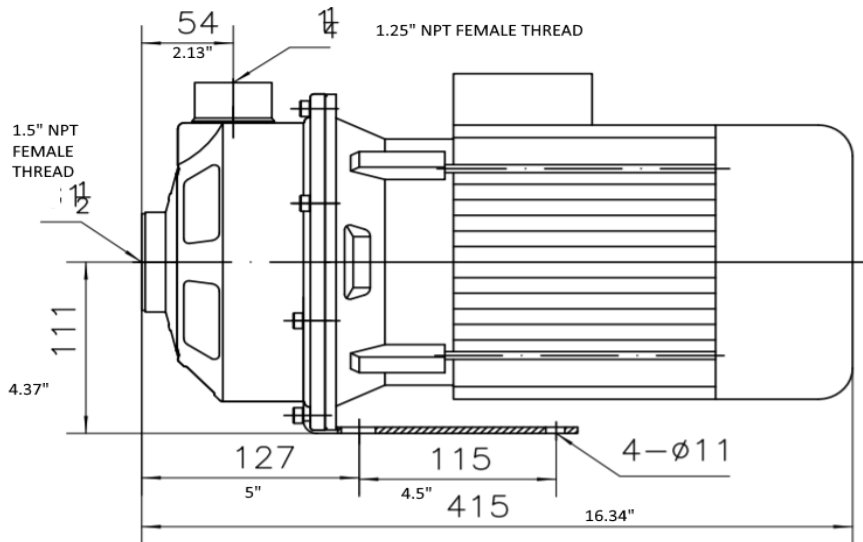
A SINGLE POLE 20 AMP GFCI BREAKER IS RECOMMENDED. THE 110V NEUTRAL DOES NOT NEED TO HAVE A BREAKER.

THE DRIVE IS WATER PROOF BUT THE SUN CAN OVERHEAT THE DRIVE. TAW SELLS AN OPTIONAL SUN SHIELD TO INSTALL ABOVE THE DRIVE IF YOU CAN NOT SHADE THE DRIVE FROM THE SUN WITH OTHER MEANS. CONTACT TAW FOR THE OPTIONAL SUN SHIELD KIT AT (407) 493.2355.

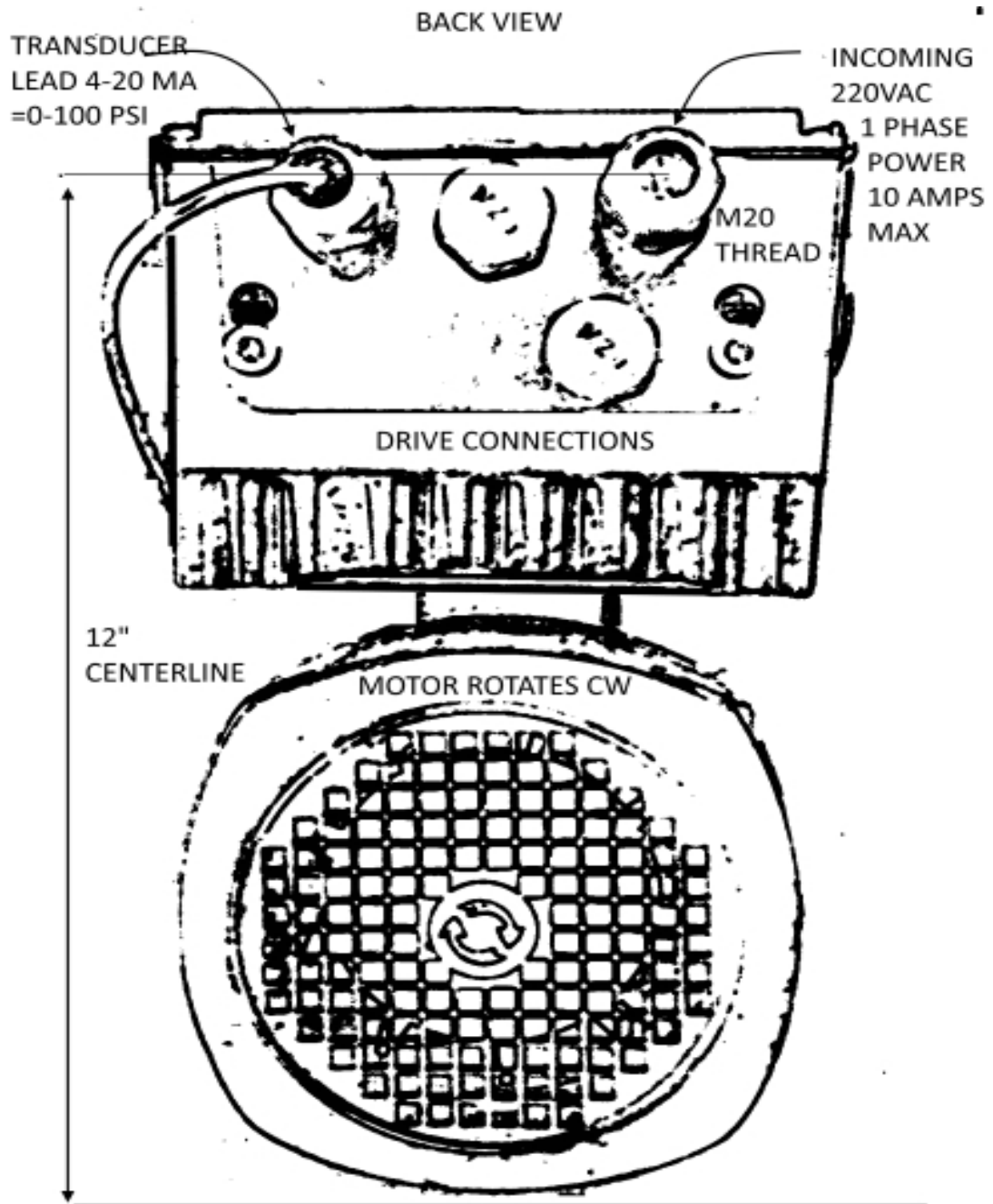
DIMENSIONS for 1HP, 1.5HP and 2HP pumps



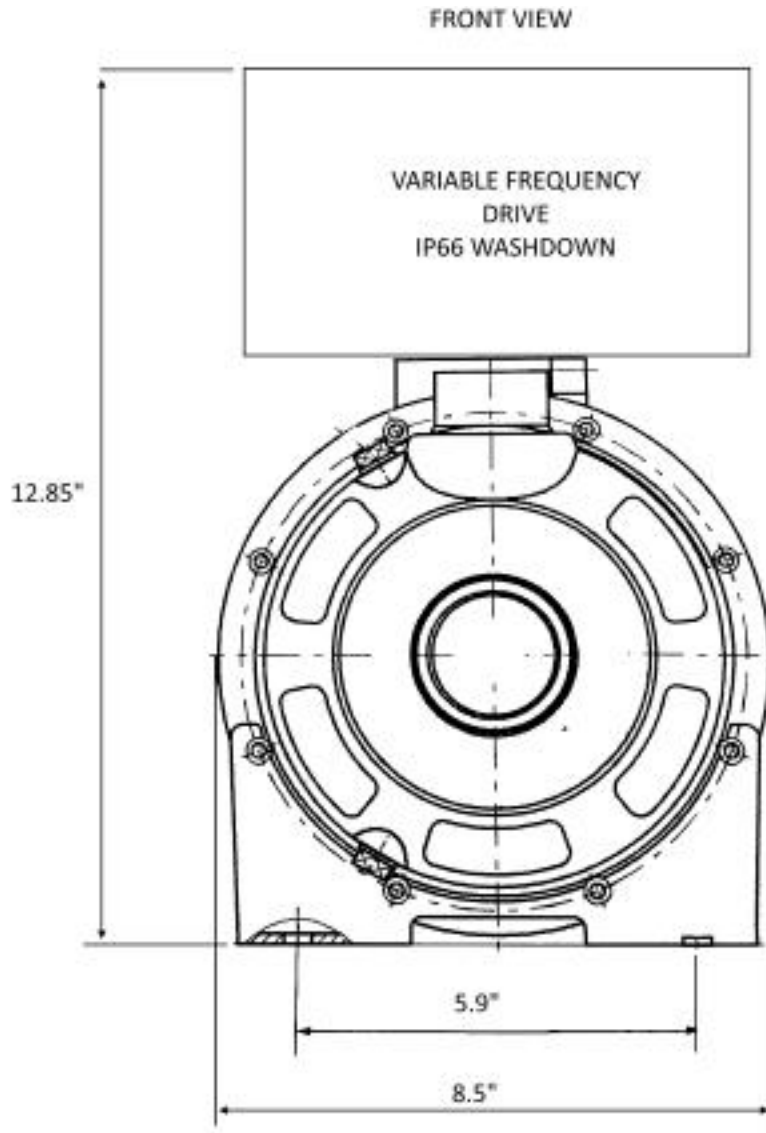
**DIMENSIONS for 1.5HP-HV, 2HP-HV (HIGH VOLUME) pumps
HEIGHT AND DRIVE DIMS SAME.**



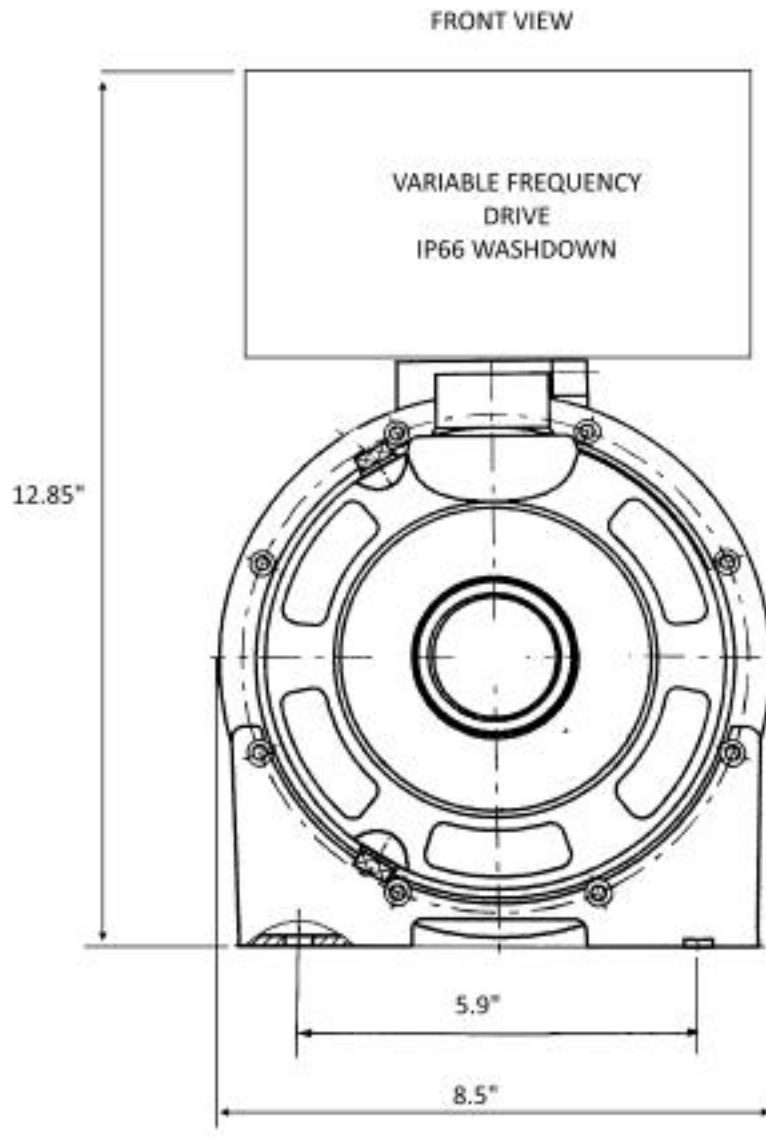
DIMENSIONS



DIMENSIONS



DIMENSIONS



POWER CONNECTIONS TO DRIVE

THE INVERTER IS POWERED BY INSERTING A 1/2" STRIPPED 12-14 AWG WIRE INTO THE L1 AND L2 TERMINALS. GROUND MUST BE CONNECTED AND AN ADDITIONAL MOTOR GROUND TIED TO A GOOD GROUND ROD FOR OUTSIDE MOUNTING IS RECOMMENDED TO HELP PROTECT AGAINST LIGHTENING. LIGHTENING PRONE AREAS ARE RECOMMENDED TO ADD A LIGHTENING PROTECTION DEVICE TO THE INCOMING POWER. TAW CAN PROVIDE OPTIONAL PROTECTION DEVICES. CONTACT TAW AT (407) 493.2355.



4 TERMINAL DRIVE POWER HOOKUP



3 TERMINAL DRIVE POWER HOOK UP

POWER CONNECTIONS ARE PUSHED INTO SPRING LOADED TERMINAL STRIPS. CONNECT 220VAC TO L1, L2 AND GROUND. AS SHOWN HERE:

NOTE: WE ADDED A PIECE OF RED TAPE TO INDICATE THE L2 IS A POWER LEAD, NOT NEUTRAL. THE DRIVE MUST BE FED 220VAC.

DANGER! The inverter must be connected to a protection grounding (PE). „ Use grounding wiring with a gauge at least equal to the L1 & L2 power leads. „ The maximum tightening torque of the grounding connections is of 1.7 N.m (15 lbf.in). Connect the grounding points of the inverter to a specific grounding rod, or specific grounding point or to the general grounding point (resistance $\leq 10 \Omega$). Do not share the grounding wiring with other equipment that operate with high currents (e.g. high power motors, soldering machines, etc.).

BEFORE POWERING UP THE DRIVE, DOUBLE CHECK THE CONNECTIONS BY PULLING ON THE WIRE TO INSURE THEY ARE FULLY SEATED. INSTALL THE COVER OF THE DRIVE TO PROTECT AGAINST POTENTIAL ARC FLASH WHEN FIRST POWERING UP ANY ELECTRICAL DEVICE.

TO REMOVE A WIRE SIMPLY PUSH A SMALL HEAD SCREW DRIVER INTO THE RELEASE HOLE ABOVE THE APPROPRIATE TERMINAL. WHILE PUSHING DOWN PULL THE WIRE OUT. MAKE CERTAIN POWER IS OFF!

SEE PHOTO BELOW:



MOTOR CONNECTIONS

THE MOTOR CONNECTION SHOULD ALREADY BE CONNECTED TO THE DRIVE INTERNALLY FROM THE FACTORY. IF A MOTOR IS NEEDED TO BE REPLACED, PLEASE NOTE THE ORIENTATION OF THE UVW OUTPUT TERMINAL WIRE COLORS. IF THE MOTOR ROTATES IN REVERSE (CCW), TWO OF THESE PHASES MUST BE REVERSED.

TO REMOVE A WIRE SIMPLY PUSH A SMALL HEAD SCREW DRIVER INTO THE RELEASE HOLE ABOVE THE APPROPRIATE TERMINAL.

THE BELOW PHOTO IS PROVIDED FOR REFERENCE ONLY, THE CONNECTIONS SHOULD ALREADY BE MADE FOR YOU BY THE FACTORY.



TRANSDUCER & CONNECTIONS:

THE STAINLESS STEEL TRANSDUCER PROVIDED WITH THE PUMP WILL CONVERT 0-100 PSI PRESSURE INTO A 4-20 MA SIGNAL TO CONTROL THE PUMP. IF THIS TRANSDUCER FAILS OR THE WIRE IS CUT OR DAMAGED THE DRIVE WILL FAULT. THIS PREVENTS THE DRIVE FROM RUNNING FULL SPEED THINKING THE PRESSURE IS AT ZERO.



THE TRANSDUCER SHOULD ALREADY BE CONNECTED TO THE VFD FROM THE FACTORY. THE RED WIRE CONNECTS TO TERMINAL 9 (+24VDC) AND THE BLACK WIRE CONNECTS TO TERMINAL 6 (AI1).



NOTE: THIS PHOTO IS FOR REFERENCE ONLY. THE CONNECTION SHOULD ALREADY BE MADE FROM THE FACTORY.

PUMP MOUNTING & CONSIDERATIONS

PUMP IS MOUNTED BY 4) 1/4" BOLTS WITH WASHERS THAT GO THROUGH THE BASE. TAPCONS CAN BE USED TO MOUNT TO A CINDER BLOCK BURIED INTO THE DIRT OR A CEMENT SLAB CAN BE POURED.

HOLES ARE PRE-DRILLED TO ALLOW THE TAPCONS TO SECURE INTO THE MOUNTING MATERIAL.

TYPICAL MOUNTING USING TAPCONS. PRE-DRILL MOUNTING SURFACE.



CONSIDERATIONS:

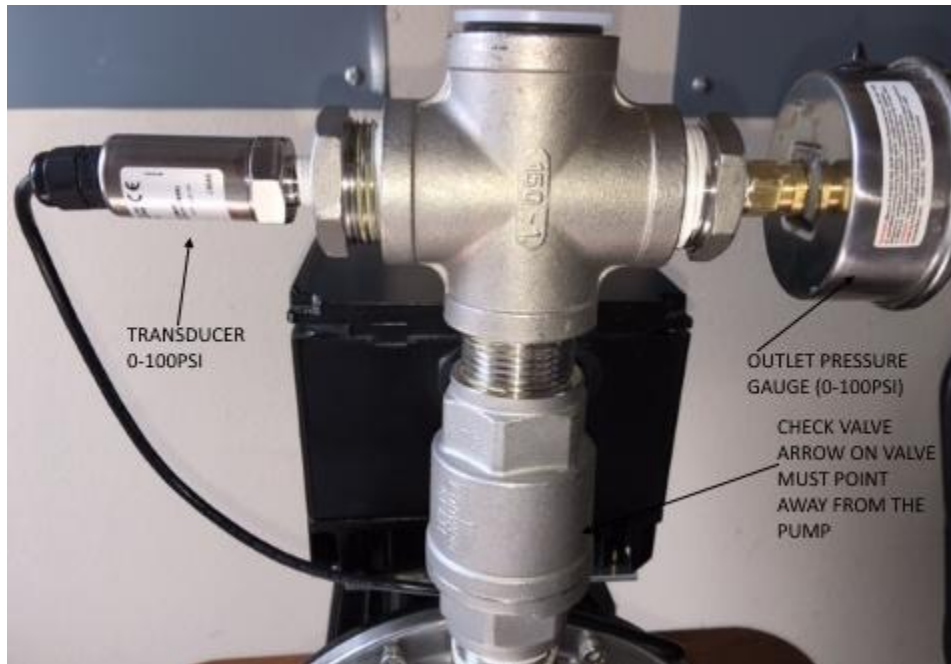
WHEN MOUNTING THE PUMP OUTSIDE, REALIZE THE PUMP IS WATER RESISTANT WHEN THE COVER IS PROPERLY TIGHTENED DOWN BY THE 4 PHILLIPS SCREWS THAT HOLD IT DOWN. THE PUMP SHOULD BE ORIENTATED AWAY FROM DIRECT SUNLIGHT. UV WILL NOT HURT THE PUMP OR THE DRIVE BUT THE SUN CAN HEAT UP THE DRIVE AND PUMP IF ALLOWED TO BEAT DOWN ON IT FOR LONG

PERIODS OF TIME. IF THE PUMP CAN NOT BE ORIENTATED SO THE SUN WILL NOT DIRECTLY HIT IT, THEN PROVIDE A MEANS TO SHADE THE PUMP FROM DIRECT SUNLIGHT. TAW ALSO CAN PROVIDE AN OPTIONAL SUN SHIELD. CONTACT TAW.

PLUMBING PUMP

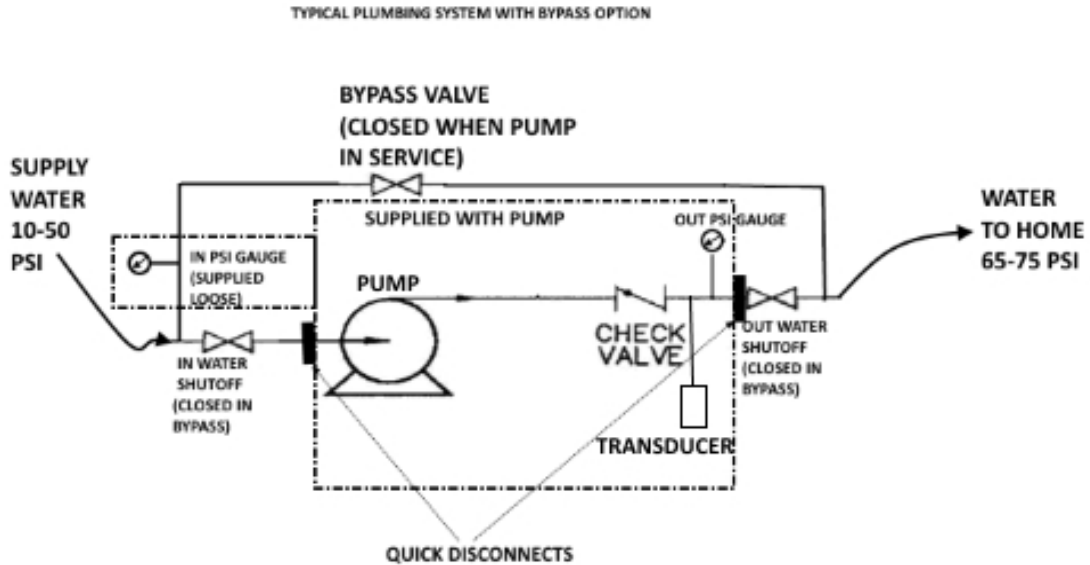
PUMP PLUMBING MATERIAL IS BASED ON LOCAL CODE. PLEASE CHECK LOCAL CODES FOR PROPER MATERIAL. THE INLET IS A 1.25" NPT FEMALE THREAD. THE OUTLET IS A 1" NPT FEMALE THREAD. IT IS RECOMMENDED TO USE A BYPASS ARRANGEMENT THAT WILL ALLOW THE PUMP TO BE EASILY REMOVED IN CASE OF PUMP REPLACEMENT OR REPAIR. THIS ALLOWS THE HOME TO BE PRESSURIZED WITHOUT THE PUMP PRESENT. THE PUMP WILL ALLOW WATER TO PASS THROUGH IT IF POWER IS OFF SO IF THE PUMP IS UNPLUGGED, WATER PRESSURE WILL STILL BE PRESENT IN THE HOME, JUST NOT BOOSTED.

THE PUMP WILL COME COMPLETE WITH A STAINLESS STEEL CHECK VALVE, TRANSDUCER , PRESSURE GAUGE AND STAINLESS STEEL PIPING AS SHOWN:



THE PUMP CONTAINS NO LEAD AND FEATURES ALL STAINLESS STEEL COMPONENTS.

TYPICAL PLUMBING SHOWING OPTIONAL BYPASS AND QUICK THREAD ADAPTERS TO ALLOW THE PUMP TO BE REMOVED WHILE MAINTAINING WATER PRESSURE ON THE HOME. THIS IS AN OPTIONAL ARRANGEMENT BUT CONVENIENT IF THE PUMP EVER NEEDS TO BE TAKEN OUT FOR MAINTENANCE. THE PUMP WILL PASS WATER IF POWER IS REMOVED IF THE BYPASS IS NOT USED.



NOTE: INCOMING PRESSURE GAUGE IS SUPPLIED LOOSE (OPTIONAL).

IT IS HIGHLY RECOMMENDED TO BE USED TO DETERMINE YOUR INCOMING PRESSURE.

THE PUMP OUTPUT PRESSURE SHOULD ALWAYS BE SET AT LEAST 10 PSI ABOVE INCOMING PRESSURE.

FAILURE TO DO THIS WILL RESULT IN THE PUMP TURNING ON AND OFF DUE TO INSUFFICIENT PRESSURE DIFFERENTIAL.

OPERATION

NOW THAT THE PUMP IS MOUNTED, PLUMBED AND REASONABLY PROTECTED FROM THE SUN, WE ARE READY TO OPERATE THE PUMP.

APPLY POWER BY TURNING ON THE GFCI BREAKER. AS SOON AS THE POWER IS APPLIED ONE OF THE DRIVES LEDS WILL ILLUMINATE. THE ORANGE ALARM LED WILL LIGHT IF THE PUMP IS NOT BEING TOLD TO RUN. THE GREEN LED WILL FLASH WHEN THE DRIVE IS NOT RUNNING AND BE SOLID ON WHEN IT DOES RUN.



SEE PHOTO ABOVE.

UNITS SHIPPING AFTER JULY 13, 2018 HAVE IMPROVED LED STATUS OPERATION.

GREEN LED WILL FLASH EVERY .5 SEC. WHEN READY TO RUN.

GREEN LED WITH STAY STEADY GREEN WHEN RUNNING.

ORANGE ALARM LED WILL LIGHT WHEN MOTOR CURRENT EXCEEDS FLA. ANTI CAVITATION WILL AUTOMATICALLY SLOW THE PUMP DOWN WHEN THIS OCCURS

RED LED INDICATES A FAULT, RESETTING A FAULT IS DONE BY TURNING PRESSURE KNOB FULL CCW FOR 3 SECONDS OR RESETTING POWER.

RED LED FAULT INDICATIONS ARE AS FOLLOWS: (V3.0 & ABOVE)

- 1 FLASH OFF 3 SECONDS - MOTOR OVERLOAD
- 2 FLASHES OFF 3 SECONDS - UNDER VOLTAGE (POWER BELOW 190VAC)
- 3 FLASHES OFF 3 SECONDS - OVER VOLTAGE (POWER ABOVE 255VAC)
- 4 FLASHES OFF 3 SECONDS - MOTOR SHORT - CALL FACTORY
- 5 FLASHES OFF 3 SECONDS - GROUND FAULT - CALL FACTORY
- 6 FLASHES OFF 3 SECONDS - OVER TEMP (AMBIENT ABOVE 122F) ADD SUN SHIELD.
- 7 FLASHES OFF 3 SECONDS - NO WATER, LOW PRESSURE OR HIGH PRESSURE.

SETTING PRESSURE

ONCE THE PLUMBING IS VERIFIED AND THE GAUGE HAS PRESSURE AND THERE ARE NO LEAKS, FIRST MAKE CERTAIN THAT THERE IS NO PRECHARGE OR AIR IN THE SYSTEM. YOU CAN DO THIS BY THE FOLLOWING.

WHILE THE PSI KNOB IS FULL CCW (PUMP OFF) TURN ON EACH FAUCET TO EVACUATE THE AIR IN EVERY LINE OF THE HOME, YOU MAY NEED TO RUN EACH FAUCET, SHOWER AND TOILET FOR SEVERAL MINUTES UNTIL NO MORE AIR ESCAPES. NEXT KEEP ONLY ONE FAUCET ON, THIS WILL EQUALIZE THE PUMPS INLET (SUCTION) AND OUTLET (DISCHARGE) PRESSURES. WITH THE ONE FAUCET ON, TURN THE PSI KNOB ON THE PUMP CW SLOWLY UNTIL THE PRESSURE REACHES THE DESIRED SET POINT. TYPICALLY 50-60 PSI BUT CAN BE AS HIGH AS 70 PSI.

THE PUMP WILL START AND ACCELERATE TO THE PRESSURE SET ON THE KNOB. MAXIMUM PRESSURE IS LIMITED TO 70PSI FROM THE FACTORY SO NO NEED TO BE CONCERNED THAT THE SYSTEM WILL OVER PRESSURIZE THE PIPES.



WHEN FLOW STARTS THE PUMP WILL START WITHIN 0.2 SECONDS AND QUICKLY RAISE THE PRESSURE BACK TO SETPOINT (WITHIN 2 SECONDS).

THE PUMP WILL MAINTAIN THE SET-POINT AS LONG AS THE SUPPLY HAS ENOUGH WATER CAPACITY. THE PUMP CAN PROVIDE UP TO 42PSI BOOST MEANING IF YOU SET THE PUMP TO THE MAX PRESSURE OF 65PSI, THE PUMP CAN MAINTAIN THIS PRESSURE FOR UP TO 24GPM AT 25PSI INCOMING PRESSURE.

IF THERE IS NOT ENOUGH SUPPLY TO MAINTAIN THE SETPOINT PRESSURE THE PUMP WILL AUTOMATICALLY REDUCE ITS SPEED TO THE POINT THE DEMAND CAN KEEP UP WITH THE WATER SUPPLY. THIS IS OUR ANTI-CAVITATION ALGORITHM. ONCE DEMAND REDUCES TO THE POINT THE SUPPLY CAN KEEP UP THE PUMP AUTOMATICALLY WILL RAISE ITS SET POINT PRESSURE TO WHATEVER THE SETTING IS.

ONCE THE DEMAND STOPS, FIXTURE TURNS OFF THE PUMP WILL RUN FOR UP TO 30 SECONDS AND THEN SHUT OFF. THE PUMP SHOULD NOT RUN FOR LONGER THAN 90 SECONDS. IF IT DOES, THERE IS FLOW SOMEWHERE IN THE HOME OR THERE IS AIR IN THE LINE .

REMOVING AIR IS SIMPLE, UNSCREW THE 20 MM STAINLESS STEEL PLUG AT THE 11 O'CLOCK POSITION ON THE PUMP CASING UNTIL WATER STARTS COMING OUT, YOU WILL TYPICALLY HEAR AIR ESCAPING. YOU WILL NEED A TOWEL TO WIPE UP THE WATER THAT WILL ESCAPE WHILE REMOVING THE AIR.

AIR IN THE PUMP WILL MAKE THE PUMP SOUND NOISY. THERE ARE AUTOMATIC AIR VENT VALVES THAT CAN BE USED IF YOU ARE PUMPING HOT WATER. WATER TEMPERATURE CAN NOT EXCEED 160 DEGREES F.

IMPORTANT NOTES ON PUMP OPERATION

THE PUMP WILL AUTOMATICALLY TURN ON AND OFF BASED ON DEMAND. IT IS NORMAL FOR THE PUMP TO STAY OFF AND LEAK DOWN TO CITY PRESSURE WHEN NO WATER IS DEMANDED. THE PRESSURE WILL INCREASE FROM CITY PRESSURE TO THE SET PRESSURE OVER A PERIOD OF ABOUT 1-2 SECONDS. THIS GRADUAL INCREASE IS INTENTIONAL AND DESIRED TO INCREASE FIXTURE AND TOILET VALVE SERVICE LIFE. THE PUMP MAY NOT TURN ON IF THERE IS A VERY SLIGHT FLOW. CRACKING A FIXTURE TO THE POINT OF ALLOWING A TRICKLE OF WATER WILL NOT SIGNAL THE PUMP TO COME ON. THIS IS AGAIN INTENTIONAL. IF YOU DO NOT DESIRE FULL FLOW, THEN YOU DO NOT NEED FULL PRESSURE.

THE PUMP IS INTENDED FOR HOMES WITH LOW WATER PRESSURE. HOMES WITH AN INCOMING PRESSURE OF 40PSI OR LESS WILL BENEFIT THE MOST FROM PERFECT PRESSURE PUMP.

IF THE PUMP TURNS OFF WHILE A FIXTURE IS ON FULL, TYPICALLY THE DIFFERENTIAL FROM THE STREET PRESSURE AND THE DESIRED PRESSURE IS TOO LOW, TURN UP THE PRESSURE SET-POINT 5 PSI AND REATTEMPT A PUMP START BY TURNING OFF THE FAUCET AND TURNING IT BACK ON. MAKE CERTAIN SCREENS ON FAUCETS ARE CLEAN. VERY LOW FLOWS MAY CAUSE THE PUMP TO TURN OFF. BLADDER TANKS, FILTERS AND ANYTHING IN THE WATER SYSTEM THAT MAKES THE SYSTEM SPONGY SUCH AS AIR MAY HAMPER THE TURN ON OR OFF OPERATION. TUN ON ALL FAUCETS IN THE HOME TO EVACUATE AIR THAT MAY HAVE BEEN TRAPPED WHEN INSTALLING THE PUMP.

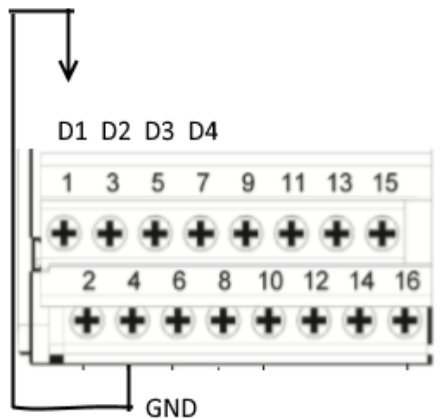
THE PUMP WILL AUTOMATICALLY START IF THE PRESSURE DROPS BELOW 10 PSI. THIS IS TO INSURE ENOUGH PRESSURE TO DETECT DEMAND WHEN WATER IS NEEDED. THE PUMP WILL TURN OFF ONCE IT REACHES SETPOINT.

IF THE PUMP TURNS ON INTERMITTENTLY WHEN THERE IS NO HOUSE DEMAND THE STREET PRESSURE COULD BE DEVIATING DRASTICALLY. A GRADUAL DEVIATION IS IGNORED BY THE PUMP BUT IF THE CITY PRESSURE CHANGES RAPIDLY (NOT TYPICAL)

IF THIS BECOMES AN ISSUE, A CHECK VALVE CAN BE ADDED TO THE INLET SIDE OF THE PUMP. THIS IS AN OPTION AS MOST HOMES WILL NOT EXPERIENCE THIS SITUATION. CONTACT TAW.

PUMPS SHIPPED AFTER 12/1/2018:

An ON sensitivity jumper has been added to the pump to allow the pump to turn off at lower flows. This can be done with jumpers as shown below.



NO JUMPER - NORMAL SENSITIVITY
 GND TO D1 20% HIGHER THAN NORM
 GND TO D2 40% HIGHER THAN NORM
 GND TO D3 60% HIGHER THAN NORM
 GND TO D4 RAISES MIN ON TO 40 PSI

Minimum on pressure can be raised from nominal 20 PSI to 40 PSI by jumpering D4 to GND. This should only be done if turn on by rate of pressure change is not providing sufficient turn on reliability. This normally occurs when there is something in the pipes that is restricting flow or there is air in the lines.

NORMAL OCCURANCES

THE DRIVE WILL SHUT DOWN IF IT GETS TOO HOT. ALTHOUGH THE PUMP IS AN ALL ALUMINUM FRAME PRODUCT AND WILL NOT BE DAMAGED BY THE SUN LIKE PLASTIC DRIVES THAT CRACK FROM THE SUNS UV, THE DRIVE CAN GET EXCEEDINGLY HOT.

A GOOD INDICATION OF THIS IS YOU WILL HEAR THE INTERNAL FAN COME ON. IF THIS OCCURS, GOOD PRACTICE IS TO SHADE THE PRODUCT FROM THE SUN. THIS IS EASILY DONE BY A VARIETY OF METHODS OR YOU CAN PURCHASE AN OPTIONAL SUN SHIELD FROM TAW.

IF YOU CONTINUOUSLY TURN ON AND OFF A FIXTURE THE PUMP WILL NOT BE ABLE TO REGULATE THE PRESSURE. IT IS ASSUMED THAT A FIXTURE WILL BE TURNED ON AND LEFT ON FOR AT LEAST 3 SECONDS. FASTER FIXTURE CYCLING WILL NOT ADVERSELY EFFECT THE PRODUCT, THE PRESSURE WILL NOT STABILIZE IF FAUCETS OR VALVES ARE TURNED ON AND OFF QUICKLY AND CONTINUOUSLY.

EXCEEDING THE HOME WATER SUPPLY WILL OCCUR WHEN DEMAND EXCEEDS THE MAXIMUM FLOW OF THE PIPES. THE PRESSURE WILL NOT REACH SET-POINT AND THE DRIVE WILL BE AT FULL SPEED. PRESSURE CAN ONLY BE MAINTAINED WHEN THERE IS A SUFFICIENT AMOUNT OF WATER. THE PUMP CAN NOT COMPENSATE FOR THE LACK OF WATER. A BOOST PRESSURE BENEFIT WILL STILL BE OBSERVED BUT THE SET PRESSURE MAY NOT BE REACHED DUE TO LACK OF WATER SUPPLY. THE PUMP WILL AUTOMATICALLY SLOW DOWN TO COMPENSATE. A CAVITATING PUMP SOUNDS LIKE A POPCORN MAKER AND LONG TERM OPERATION UNDER CAVITATION WILL DAMAGE A PUMP ALTHOUGH THIS WILL TYPICALLY TAKE DAYS .

PROTECTIONS

AN ALARM LED WILL FLASH when drive reaches motor full load amps

IT WILL NOT SHUT DOWN THE PUMP BUT IS SIMPLY modulate the max flow to FLA. Eventually the drive could shut down on over heat. If this occurs, turn down the PSI setpoint.

THE DRIVE WILL SHOW A FAULT WHEN THE STREET OR INLET PRESSURE IS BELOW 2 PSI .

PUMP WILL TURN ON AT 20 PSI FOR A SHORT PERIOD TO KEEP PRESSURE ON DISCHARGE ABOVE 20 PSI AT ALL TIMES. setting jumper D14 to ground raises this to 40 PSI.

THIS PROTECTS THE PUMP FROM RUNNING DRY. THE PUMP WOULD EVENTUALLY BURN ITSELF OUT IF IT RAN DRY. THIS PREVENTS THE PUMP FROM RUNNING TO FULL SPEED IF THE PRESSURE FEEDBACK FAILS.

THE DRIVE WILL FAULT IF THERE IS TOO HIGH A LINE VOLTAGE OR TOO LOW A LINE VOLTAGE.

LINE VOLTAGE MUST BE MAINTAINED BETWEEN 190 AND 255 VAC.

THE DRIVE WILL FAULT IF THE MOTOR GETS WATER IN IT OR GROUND FAULTS.

RESETTING ANY OF THESE FAULTS IS DONE BY TURNING THE PSI ADJUSTMENT KNOB FULL CCW FOR TWO SECONDS AND RESETTING BACK TO DESIRED PRESSURE.

IF THE FAULT CONTINUES TO OCCUR AND THE PRESSURE SHOWS GOOD PRESSURE ON THE GAUGE, CALL THE FACTORY FOR FURTHER TROUBLESHOOTING.

TROUBLESHOOTING

PUMP DOES NOT TURN ON.

CHECK THERE IS POWER, A FLASHING GREEN RUN LED WILL FLASH IF THERE IS POWER AND NO FAULTS. Air in line, set Sensitivity higher with jumpers shown on Page 26

DRIVE FAULTED

THE RED FAULT LED WILL FLASH, TURN PSI ADJUSTMENT KNOB FULL CCW FOR 2 SECONDS TO RESET. CHECK PAGE 21 FOR FAULT CODES MAKE CERTAIN THE PUMP HAS PRESSURE ON IT BY LOOKING AT THE PRESSURE GAUGE.

PSI KNOB TURNED DOWN. TURN THE PRESSURE POT CW TO THE DESIRED PRESSURE FROM 15 PSI ABOVE STREET PRESSURE TO 75PSI.

PUMP CYCLES ON WHEN NO DEMAND IS PRESENT.

MAKE CERTAIN THE CHECK VALVE DOES NOT HAVE DIRT IN IT. THIS IS APPARENT BY NOTICING A FAST PRESSURE DROP ONCE THE PUMP STOPS PRESSURING THE SYSTEM. A SLOW DROP IS NORMAL (1 PSI OR LESS PER SECOND) BUT A FAST PRESSURE DROP IS AN INDICATION THAT THE CHECK VALVE HAS DIRT IN IT. YOU CAN ATTEMPT TO CLEAN THE VALVE BY REMOVING THE VALVE, PUSHING THE PIN WITH YOUR THUMB KEEPING IT OPEN AND DIPPING IT IN A BUCKET OF CLEAN , SOAPY WATER. DO NOT USE ANY TOXIC CHEMICALS AND BE CERTAIN TO RINSE WELL AFTER YOU CLEAN IT.

IF CLEANING FAILS, YOU CAN OPEN IT UP BY MOUNTING THE UNIT IN A VICE AND TURNING THE TWO HALF'S CCW WITH A PIPE WRENCH. IT WILL BE HARD TO BREAK LOOSE, AN ALTERNATIVE IS TO ORDER A NEW ONE FROM THE FACTORY.

PUMP TURNS OFF WHEN DEMAND IS REQUESTED.

THIS TYPICALLY IS AN ISSUE IF THERE IS NOTE ENOUGH DIFFERENTIAL BETWEEN

THE INLET AND OUTLET PRESSURE. THE PUMP REQUIRES A MINIMUM OF 15 PSI DIFFERENTIAL FROM THE INLET PRESSURE AND OUTLET.

PUMP GETS HOT.

MAKE CERTAIN THE SUN IS NOT HITTING THE PUMP. SHADE IT HOWEVER POSSIBLE OR REQUEST A FREE SUN SHIELD.

MAKE CERTAIN THE PUMP TURNS OFF WHEN NO DEMAND IS REQUESTED. THE LONGEST THE PUMP SHOULD RUN IS 60 SECONDS WITH NO FLOW. IF THE PUMP CONTINUES TO RUN AND THE PUMP GETS HOT, THE CHECK VALVE MAY HAVE DEBRIS IN IT AND MAY NEED CLEANING , REFER TO MAINTENANCE SECTION ON HOW TO CLEAN THE CHECK VALVE.

PUMP LEAKS

SEALS MAY NEED REPLACING. THE SEALS ARE TYPICALLY LONG LASTING BUT EVENTUALLY COULD WEAR OUT. CALL THE FACTORY FOR A REBUILD KIT.

PUMP MAKES NOISE

TRY INSTALLING PIECES OF RUBBER BETWEEN THE MOUNTING SURFACE AND THE PUMP MOUNT. PUMPS MOUNTED ON CEMENT WILL RESONATE. RESILIENTLY MOUNTING THE PUMP DRAMATICALLY IMPROVES THE WHINING NOISE YOU MAY EXPERIENCE. A HIGH PITCHED WHINE IS RESONANCE, A LOWER FREQUENCY NOISE (RUMBLING) IS EITHER AIR IN THE PUMP . A GOOD WAY TO ISOLATE RESONANCE PROBLEMS IS TO PUT YOUR HANDS OVER THE FINS ON THE MOTOR. IF THE MOTOR QUIETS DOWN APPRECIABLY, RESILIENT MOUNTING IS ADVISED.

MOTOR RUNS BACKWARDS.

THE THREE PHASE WIRES COULD HAVE BEEN CHANGED BUT THEY COME FACTORY INSTALLED AND SHOULD NOT NEED CHANGING.

MAINTENANCE

THE PUMP IS DESIGNED TO BE MAINTENANCE FREE BUT SEVERAL ISSUES MAY RESULT OVER TIME.

DEBRIS IN THE MOTOR FAN.

CLEAR WEEDS THAT MAY BE GROWING AROUND THE PUMP AS THEY WILL PREVENT PROPER COOLING.

WASH DOWN THE PUMP AND DRY IT OFF WITH A CLEAN RAG IF TOO MUCH DIRT OR DUST HAS ACCUMULATED ON IT.

CHECK THE PLUMBING FITTING FOR LEAKS AND TIGHTEN IF NECESSARY.

STAINLESS STEEL FITTINGS ONLY NEED TO BE TIGHTENED $\frac{1}{4}$ TURN PAST HAND TIGHT. IF THE FITTING LEAKS AT THIS POINT REMOVE THE FITTING AND REAPPLY 3 WRAPS OF TEFLON TAPE ON THE FIRST 5 THREADS OF THE FITTING AND RE-ASSEMBLE.

HAND TIGHTEN AND THEN TIGHTEN DOWN $\frac{1}{2}$ TURN FURTHER. LEAKS SHOULD BE FIXED.

OVER TIGHTENING OF STAINLESS STEEL FITTINGS WILL RESULT IN CEASING AND FURTHER LEAKING. AT TIMES, STAINLESS STEEL FITTINGS REQUIRE A THREAD SEALANT TO PREVENT LEAKS, TAW RECOMMENDS LOCKTITE 577 STAINLESS STEEL THREAD SEALANT IN THESE SITUATIONS. IT IS DESIGNED FOR POTABLE WATER.

APPLY SEALANT ON THE SECOND THRU FIFTH THREAD AND WORK THE PASTE INTO THE THREADS ON THE MALE CONNECTOR ONLY. RE-THREAD AND TIGHTEN $\frac{1}{4}$ TURN PAST HAND TIGHT. ALL 1 HOUR TO CURE BEFORE APPLYING PRESSURE. TEFLON TAPE IS NOT NEEDED WHEN SEALANT IS USED.

CHECK MOUNT

INSURE IT IS FASTENED SECURELY TO THE THE SLAB OR BLOCK IT IS AFFIXED TO.

CHECK WIRING

INSURE NO ANIMALS HAVE CHEWED INTO THE TRANSDUCER CABLE.

POWER DOWN THE DRIVE AND OPEN THE COVER OF THE DRIVE BY UNSCREWING THE 4 STAINLESS STEEL PHILLIPS HEAD SCREWS AND INSURE THE INSIDE OF THE DRIVE IS TRY AND NO WATER HAS ENTERED.

THIS MAINTENANCE SHOULD BE PERFORMED ONCE A YEAR OR IF THERE IS A SUSPECTED NEED.

WE APPRECIATE YOUR BUSINESS AND ALWAYS WELCOME SUGGESTIONS AND COMMENTS TO MAKE OUR PRODUCTS BETTER.

PLEASE CONTACT TAW WITH ANY QUESTIONS OR CONCERNS REGARDING ANY OF OUR PRODUCTS. TAW CAN BE REACHED VIA EMAIL AT

SALES@PERFECTPRESSUREPUMP.COM OR VIA PHONE AT (407) 493.2355

OR YOU CAN VISIT THE PERFECTPRESSUREPUMP.COM WEBSITE TO VIEW VIDEOS AND OTHER INFORMATION . THIS WEBSITE CONTINUES TO BE UPDATED WITH MEDIA AND INFORMATION AS WE CONTINUE TO DEVELOP AND IMPROVE THE MOST INNOVATIVE BOOSTER PUMP ON THE PLANET.

BTW, YOUR PUMP CAN BE UPDATED TO THE NEWEST FIRMWARE AT ANYTIME BY SIMPLY CALLING TAW AND ARRANGING AN UPDATE MODULE TO BE SENT TO YOUR LOCATION. THERE IS A DEPOSIT FOR THE MODULE BUT IS REFUNDED ON ITS RETURN. THIS ALLOWS YOUR PRODUCT TO BE UPDATED AS WE CREATE NEW AND INNOVATIVE ALGORITHMS TO THE PUMP.

THANK YOU FOR YOUR CONTINUED SUPPORT AND BUSINESS. WE HOPE YOU ENJOY YOUR PUMP FOR YEARS TO COME.

ALL THE BEST,

PHIL TUTTOBENE

PRESIDENT, OWNER AND LEAD ENGINEER - TOTAL AUTOMATION WORKS,LLC

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