



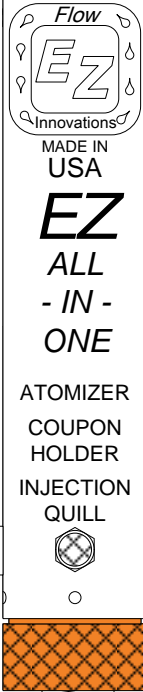
EZ
- IN -
ONE

LP
Unit
5000
PSI

HP
Unit
7500
PSI

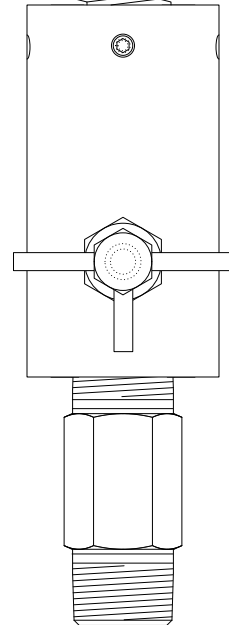
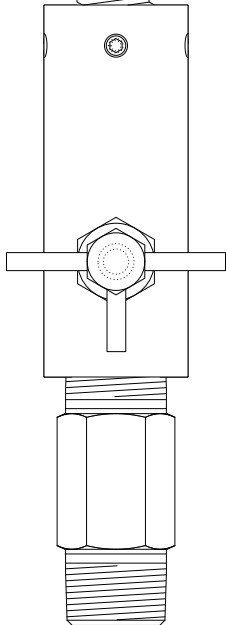
USER
MANUAL

4" Drive Handles



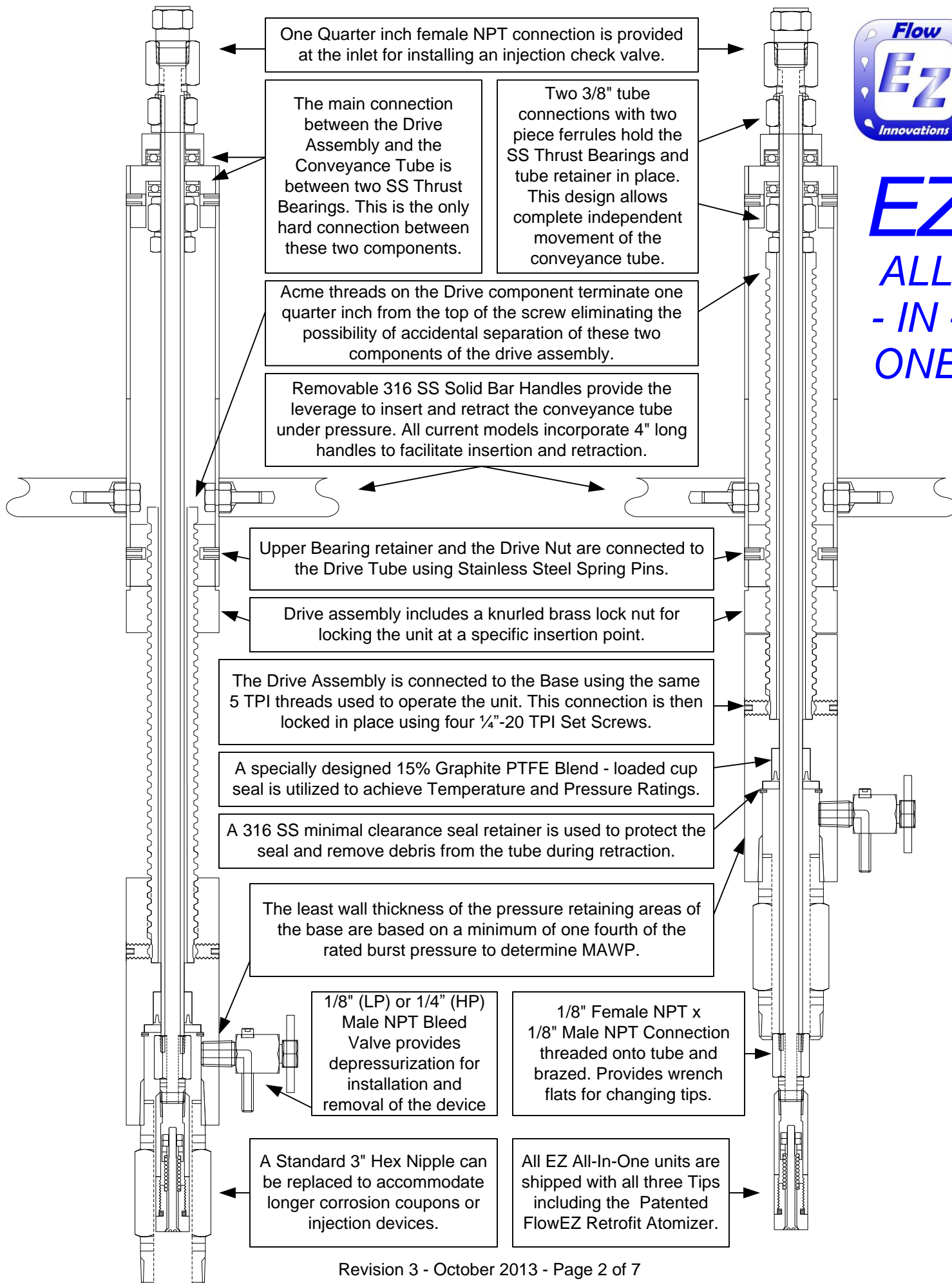
LP Units
Available in
12"
Insertion
Length

HP Units
Available in
12" & 18"
Insertion
Lengths





EZ
ALL
- IN -
ONE



CONNECTION CAN BE CHANGED TO AN ALTERNATE 3/8" TUBING CONNECTION TO SUIT CUSTOMERS NEEDS

1/4" FEMALE NPT INJECTION PORT CONNECTION

THRUST BEARINGS

CONVEYANCE TUBE

DRIVE TUBE

UNIVERSAL 4 INCH DRIVE HANDLES

DRIVE TUBE BUSHING

LOCK NUT

CAUTION

THIS UNIT WAS DESIGNED FOR SAFETY FIRST. TO ACHIEVE THIS GOAL THE UNIT CANNOT BE SERVICED BY THE END USER. THE CONVEYANCE TUBE MUST BE DESTROYED TO BE REMOVED AND REPLACED. AFTER A REBUILD, WHICH RETURNS THE UNIT TO A LIKE NEW MECHANICAL CONDITION, THE UNIT MUST ALSO BE PRESSURE TESTED BEFORE BEING RETURNED TO SERVICE.

DRIVE SCREW

BASE

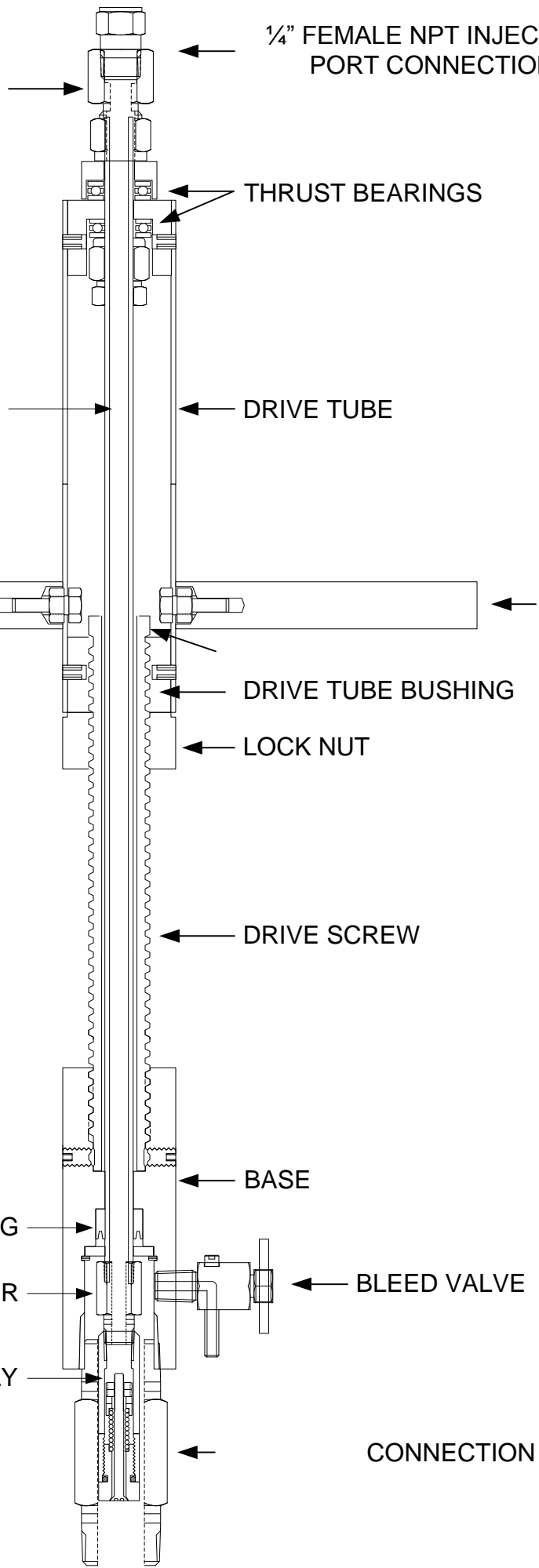
PACKING

BLEED VALVE

TIP ADAPTER

ATOMIZER ASSEMBLY

CONNECTION





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PRIOR TO INSTALLATION

PLEASE REFER TO PAGE 3 FOR COMPONENT IDENTIFICATION TERMS

THE CONVEYANCE TUBE IN THIS UNIT IS SUSPENDED IN THE UNIT BY TWO THRUST BEARINGS AT THE TOP OF THE DRIVE TUBE. IF INSTALLED WITH AN EXPANSION LOOP OR FLEXIBLE TUBING, THE UNIT CAN BE COMPLETELY REMOVED FROM THE INJECTION POINT BY STOPPING THE PUMP, RETRACTING, CLOSING INJECTION POINT VALVE, BLEEDING DOWN, AND REMOVING THE UNIT WITHOUT DISCONNECTING THE SUPPLY TUBE. THIS INFORMATION IS BEING PROVIDED FOR THE PURPOSE OF INSPECTING AND/OR TESTING AN ATOMIZER TIPS PERFORMANCE WITH MINIMAL EFFORT OR DOWN TIME.

IT IS VERY IMPORTANT THAT THE OPERATOR CHECK THE INJECTION POINT FOR COMPATABILITY WITH THIS UNIT BEFORE INSTALLATION. THE TIPS PROVIDED ARE 1/2" O.D. AND THE VALVE, NIPPLE, THREAD-O-LET, AND HOLE CUT IN THE PIPE PRIOR TO INSTALLING THE THREAD-O-LET MUST BE CHECKED FOR CLEARANCE SUFFICIENT TO ALLOW THE TIP TO TRAVEL INSIDE THE PIPE. THE UNIT IS DESIGNED FOR EASE OF INSERTION, AND EVEN THOUGH THE CONVEYANCE TUBE IS A STURDY .083 WALL SS TUBING, THE UNIT CAN PROVIDE THE POWER TO BEND THE TUBE INSIDE THE DRIVE TUBE SECTION IF THIS CLEARANCE IS INNSUFICIENT, OR INSERTION IS ATTEMPTED WITH THE VALVE CLOSED.

AFTER INSTALLING THE UNIT AND OPENING THE VALVE, GET A FEEL FOR THE AMOUNT OF FORCE IT TAKES TO INSERT THE TUBE WITH THAT PARTICULAR PRESSURE. THIS WILL NOT CHANGE THROUGHOUT THE INSERTION PROCESS. IF IT DOES GET MORE DIFFICULT, THERE ARE OTHER PROBLEMS AND YOU COULD DAMAGE THE UNIT.

GET A MEASUREMENT OF THE DESIRED INSERTION DEPTH BEFORE STARTING THE INSERTION PROCESS. THE EXACT DESIRED DEPTH CAN BE EASILY ACHIEVED BY SUBTRACTING THAT AMOUNT FROM 12 INCHES AND INSERTING UNTIL THAT DISTANCE IS MEASURED BETWEEN THE TOP OF THE BASE AND THE BOTTOM OF THE LOCK NUT WHEN IT IS AGAINST THE BOTTOM OF THE DRIVE TUBE. (SUBTRACT FROM 18 INCHES FOR HP-18 UNITS)

INSURE THAT THERE IS 12 INCHES BETWEEN THE TOP OF THE BASE AND THE BOTTOM OF THE LOCK NUT WHEN IT IS AGAINST THE BOTTOM OF THE DRIVE TUBE BEFORE CLOSING THE VALVE AFTER EXTRACTION. (18 INCHES FOR HP-18 UNITS)

IF YOU NEED TO KNOW THE ORIENTATION OF A CORROSION MEASUREMENT COUPON FOR EXAMPLE, YOU CAN PUT A MARK ON THE 3/8 TUBING CAP AT THE TOP OF THE DEVICE PRIOR TO INSTALLATION TO AID IN IDENTIFYING EROSION OR TURBULENT FLOW. THIS ORIENTATION MARK SHOULD NOT CHANGE UNLESS THAT 3/8 TUBING CAP IS LOOSENED.

AS OF THE DATE OF THIS REVISION, WITH OVER 1000 OF THESE UNITS IN SERVICE, WE HAVE NEVER HAD A DEVICE FAILURE. IN A FEW CASES WHERE OPERATORS TRIED TO INSTALL THE UNITS WITH THE VALVE CLOSED, ETC. AND FORCED THEM UNTIL THE CONVEYANCE TUBE BENT AND TWISTED INSIDE THE DRIVE TUBE, THE DRIVE ASSEMBLY HAS NEVER FAILED. COMBINED WITH THE THREADED AND BRAZED TIP ADAPTER BELOW THE SEAL, AND FOLLOWING THE PROCEDURES LISTED ABOVE AND THROUGHOUT THIS MANUAL, WE ARE HOPING TO MAINTAIN THIS SAFETY RECORD. THANK YOU FOR USING OUR PRODUCTS.



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UNIVERSAL INSTRUCTIONS PAGE 1

EZ ALL-IN-ONE – LP AND HP UNITS

THE BOX YOU RECEIVED SHOULD CONTAIN THE EZ ALL-IN-ONE UNIT, AND A BROWN ENVELOPE CONTAINING THE TWO 4" HANDLES AND THREE TIPS, ATOMIZER, INJECTION QUILL, AND A COUPON CHUCK. ALL THREE TIPS HAVE A 1/8" FEMALE NPT CONNECTION ON ONE END. THE ATOMIZER TIP LOOKS SOLID ON ONE END AND YOU SHOULD SEE A SMALL NUT INSIDE FROM THE FEMALE NPT END. THE SOLID LOOKING END IS ACTUALLY A PISTON THAT PUSHES OUT UNDER PRESSURE. THE INJECTION QUILL HAS TWO GROOVES ON THE SIDE NEAR THE END THAT FORCES DRIPS TO FALL OFF ON A HORIZONTAL INSTALLATION. THE COUPON CHUCK IS THE SHORTEST TIP, AND HAS A 1/4" -20 X 1/2 INCH SS BOLT IN IT THAT CAN BE DISCARDED. THIS BOLT IS USED TO MAINTAIN THE INTEGRITY OF THE THREADS DURING SHIPPING, AND TO MAKE SURE WE NEVER SHIP ONE WITHOUT ANY...

WE PRE-TEFLON THE INJECTION POINT CONNECTION AND THE 1/8" NPT CONNECTION ON THE TIP ADAPTER AFTER TESTING AND INSTALL A THREAD PROTECTOR. THIS IS SIX WRAPS OF HIGH GRADE TEFLON THAT SHOULD BE SUFFICIENT UNLESS YOUR COMPANY HAS SPECIAL REQUIREMENTS FOR TYPE AND OR QUANTITY OF WRAPS. THE UNIT HAS BEEN FULLY HYDRO-TESTED BEYOND THE RATED PRESSURE AND IF THERE IS ANY RESIDUALS FROM THESE TESTS IT IS ONLY CLEAN WATER AND POSSIBLY A TRACE AMOUNT OF MARVEL MYSTERY OIL THAT WE USE TO LUBRICATE OUR TEST PUMPS.

THE HANDLES WERE USED ON THE UNIT DURING ASSEMBLY AND REMOVED FOR SHIPPING, AND YOU CAN REMOVE THEM FROM THE ENVELOPE NOW AND INSTALL THEM ON THE UNIT ONTO THE ONE INCH BOLTS STICKING OUT OF THE SIDE OF THE DRIVE TUBE.

THE 1/8" NPT MUD DAUBER VENT LOCATED ON THE FRONT OF THE UNIT BETWEEN THE DRIVE HANDLE BOLTS IS ONLY A RELIEF PORT IN THE EVENT OF A PACKING FAILURE. IT WAS ADDED TO ALLOW DIRECTING THIS POSSIBLE FLOW OF GAS OR FLAMMMABLE LIQUIDS AWAY FROM A POSSIBLE IGNITION SOURCE. AFTER INSTALLATION, IF THERE IS A FIRED VESSEL OR OTHER POSSIBLE IGNITION SOURCE NEARBY, IT MAY BE ADVANTAGEOUS TO POINT THIS PORT AWAY JUST IN CASE. WE HAVE NOT HAD A PACKING FAIL IN ONE OF OUR UNITS TO DATE BUT THERE IS ALWAYS THAT POSSIBILITY.

WITH THE HANDLES INSTALLED, REMOVE THE THREAD PROTECTOR ON THE BOTTOM OF THE ASSEMBLY, AND SPIN THE DRIVE ASSEMBLY DOWN UNTIL THE TIP ADAPTER IS OUT OF THE BOTTOM OF THE UNIT. REMOVE THE TIP ADAPTER THREAD PROTECTOR, AND AS STATED ABOVE THERE WILL BE SIX WRAPS OF TEFLON PRE-INSTALLED ON THE THREADS. SELECT THE TIP THAT YOU NEED FOR YOUR PARTICULAR APPLICATION AND INSTALL IT ONTO THE TIP ADAPTER. BE VERY CAREFULL NOT TO BEND OR SCAR THE TUBE ABOVE THE TIP ADAPTER AS THIS PASSES THROUGH THE SEAL. A RELATIVELY SMALL NICK OR SCRATCH COULD CUT THE POLY GRAPHITE SEAL AND CAUSE LEAKAGE. THE UNIT WAS SHIPPED WITH THE CONVEYANCE TUBE IN A PERFECTLY STRAIGHT CONDITION, AS WE HAVE TO SPIN IT IN A LATHE AT 460 RPMS DURING MANUFACTURE AND IT HAS TO BE STRAIGHT FOR THAT. THE CLOSER YOU KEEP IT TO THAT CONDITION, THE EASIER THE UNIT WILL OPERATE, WITH LESS CHANCE OF HANGING ON A LIP OR LEDGE IN YOUR INJECTION POINT.

SPIN THE DRIVE ASSEMBLY BACK TO THE FULLY RETRACTED POSITION. INSURE THAT THE BLEED VALVE IS COMPLETELY CLOSED. IF YOU WILL BE USING THE UNIT AS AN INJECTION POINT, REMOVE THE 1/4" NPT PLUG AT THE TOP AND INSTALL ANY COMPONENTS UNIQUE TO YOUR EQUIPMENT. I.E. INJECTION CHECK VALVE, 90 DEGREE CONNECTION, ETC.



UNIVERSAL INSTRUCTIONS PAGE 2

EZ ALL-IN-ONE – LP AND HP UNITS

AT THE INSTALLATION SITE, PLAN THE INSTALLATION USING THE NOTES AND INSTRUCTIONS PROVIDED SO FAR IN THIS DOCUMENT. IF THE UNIT IS BEING USED TO ATOMIZE A CHEMICAL, THEORETICALLY DUE TO THE SPRING LOADED DESIGN OF THE TIP, YOU CAN PUMP THROUGH IT OUTSIDE THE LINE OR VESSEL TO INSURE THAT THE ATOMIZER IS WORKING TO YOUR EXPECTATIONS. THIS WOULD REQUIRE SOME TYPE OF AVAILABLE CONTAINMENT TO CAPTURE THE CHEMICAL. A PRESSURE GAUGE INSTALLED ON THE INJECTION PUMP DISCHARGE LINE WILL ALSO ALLOW YOU TO INSURE THAT THE ATOMIZER IS WORKING CORRECTLY AT ANY GIVEN TIME BY MONITORING 400 TO 600 PSI SURGES ABOVE THE LINE PRESSURE ON RECIPROCATING PUMPS, OR A CONSTANT 400 TO 600 PSI PRESSURE ABOVE THE LINE PRESSURE ON A CONSTANT FLOW PUMP, OR WITH AN ACCUMULATOR DEVICE.

IF THE UNIT IS BEING USED AS A COUPON HOLDER, THE 1/4" NPT PLUG AT THE TOP OF THE UNIT SHOULD STILL BE INSTALLED. STRAIGHT OUT OF THE BOX, THIS PLUG IS STILL TIGHTENED SUFFICIENTLY FROM THE TEST PROCEDURE. ALSO, PLEASE NOTE THAT THERE IS A 1/16" HOLE DRILLED IN THE COUPON CHUCK ABOVE THE INSULATOR TO ALLOW PRESSURE TO EQUALIZE ABOVE AND BELOW IT, AND THE 1/4" PLUG **MUST** BE IN PLACE TO USE THE UNIT FOR THIS PURPOSE.

WITH ALL THE ABOVE COMPLETE, AND ALL OF THE REQUIRED CONNECTIONS, COMPONENTS, AND TOOLS IN PLACE, WE ARE READY TO INSTALL THE UNIT.

INSTALLATION

- 1** INSURE THAT THE INSERTION POINT HAS AN I.D. LARGER THAT 1/2 INCH, AND THAT THE FEMALE THREADS ARE IN USABLE CONDITION.
- 2** INSURE THAT THE CORRECT TIP IS INSTALLED, CORRECT CONNECTIONS ARE INSTALLED AT THE TOP OF THE UNIT, A COUPON IS INSTALLED IF APPLICABLE, AND BLEED VALVE IS CLOSED.
- 3** TEST THE ATOMIZER PERFORMANCE INTO CONTAINMENT IF APPLICABLE
- 4** INSURE THAT THE EZ ALL-IN-ONE IS IN THE FULLY RETRACTED POSITION
- 5** SCREW THE UNIT INTO THE INJECTION POINT VALVE AND TIGHTEN SUFFICIENTLY FOR YOUR APPLICATION.
- 6** IF UNIT IS NOT RIGGED UP FOR STEP 3, COMPLETE THE CONNECTIONS TO THE TOP OF THE UNIT IF APPLICABLE, AND INSURE THAT ALL PUMP COMPONENTS, LINES, CONNECTIONS ARE COMPLETE AND READY FOR PRESSURE.



UNIVERSAL INSTRUCTIONS PAGE 3

EZ ALL-IN-ONE – LP AND HP UNITS

- 7** OPEN THE VALVE AND CHECK FOR LEAKAGE
- 8** TAKE A MEASUREMENT OF THE DESIRED INSERTION DEPTH ON THE OUTSIDE OF THE LINE OR VESSEL AND SUBTRACT FROM 12 INCHES. SCREW THE UNIT DOWN UNTIL THE DISTANCE BETWEEN THE TOP OF THE BASE AND BOTTOM OF THE LOCK NUT (LOCKED) EQUAL IT.
- 9** WITH THE LEAST CHANGE IN INSERTION DEPTH, DIRECT THE VENT AWAY FROM ANY POSSIBLE IGNITION SOURCES.
- 10** IF INJECTION LINE PRESSURE GAUGE IS PRESENT, CHECK THAT THE ATOMIZER IS FUNCTIONING PROPERLY.

REMOVAL

- 1** STOP PUMP, CLOSE VALVES, AND BLEED OFF ANY INJECTION LINE PRESSURE IF APPLICABLE.
- 2** LOOSEN THE DRIVE TUBE LOCK NUT AND SCREW DRIVE TUBE UP TO THE FULLY RETRACTED POSITION (12" OR 18" FOR HP-18 UNITS) AND CLOSE THE INSERTION POINT VALVE.
- 3** SLOWLY OPEN THE BLEED VALVE AND BLEED OFF PRESSURE IN THE EZ ALL-IN-ONE BASE.
- 3** UNSCREW THE UNIT. AGAIN, IF INJECTION TUBING WAS RUN TO THE UNIT WITH AN EXPANSION LOOP OR IN A MANNER THAT ALLOWS IT, IT DOES NOT HAVE TO BE DISCONNECTED TO REMOVE THE UNIT, BECAUSE THE CONVEYANCE TUBE RIDES ON THRUST BEARINGS AND IS NOT RIGIDLY CONNECTED TO THE BASE AND DRIVE PORTION OF THE EZ ALL-IN-ONE