



**AURORA<sup>®</sup>**

# 1060B & 1060BP SERIES

(TOP & BOTTOM OUTLETS)

## **BLADDER EXPANSION TANKS**

### **INSTRUCTION, INSTALLATION, MAINTENANCE AND REPAIR MANUAL**

NOTE! To the installer: Please make sure you provide this manual to the owner of the equipment or to the responsible party who maintains the system.

**CAUTION**

Do not remove the drain plug or loosen the nuts on the dip tube / flange assembly.

**CALIFORNIA PROPOSITION 65 WARNING:**

**⚠ WARNING** This product and related accessories contain chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

**INSTALLATION – 1060B SERIES:**

If it is necessary to remove the drain plug, be sure the air pressure in the tank is at zero. Before bleeding to zero psi, isolate the tank from the system by closing the isolation valve. Also, **DO NOT** remove the dip tube/flange assembly before first bleeding to zero gauge pressure.

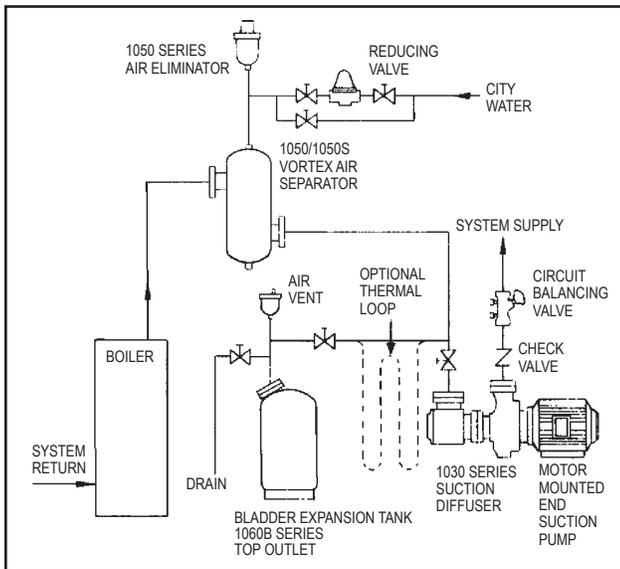
1. Inspect the Expansion Tank for damage which may have occurred during shipping. If any damage exists, note it on the freight bill and file a claim with the shipping company. **DO NOT INSTALL THE UNIT.**
2. A gate valve, with lockshield recommended, to isolate the tank from the system should be installed to facilitate:
  - a) Hydrostatic testing of the system.
  - b) Service of the tank.
3. A drain valve should be installed between the gate valve in #2 and the tank system connection to facilitate service.
4. System air must be purged and not allowed to enter the tank.

5. Check the tank system connection to be sure nothing is obstructing the inlet passageway.
6. Allow at least 18" (457 mm) clearance above the tank for the system connection.
7. See sketches 1 and 2 for typical piping configurations.
8. Tanks are precharged at 12 psi (83kPa). Before installing the tank, check the charge with an automotive tire gauge. If the tank charge is not at the desired psi, bleed off or fill to the psi required. Any alteration in the factory precharge should be completed **JUST PRIOR** to filling the system with water.
9. Tank connection piping and air separators with air vents should be arranged so that the air will not be trapped in the tank. When possible, connect the piping with the pitch down to the tank, using air vents as illustrated in the sketches.
10. On a closed system, connect the tank on the suction side of the pump. This is the point of no pressure change.

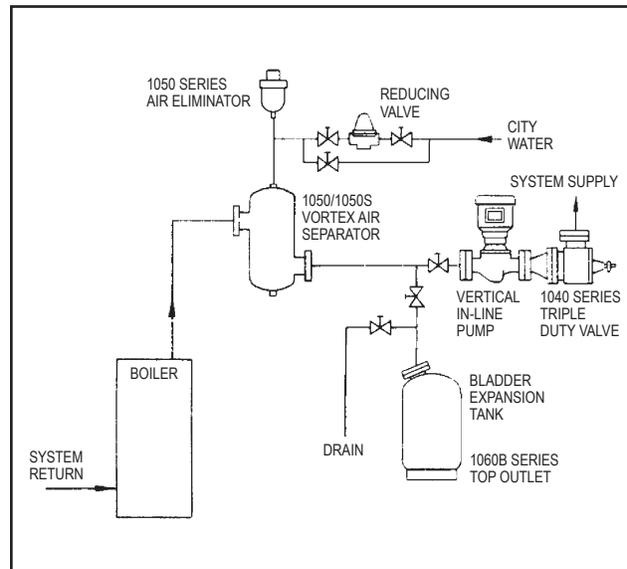
**CHANGING A SERIES 1060B BLADDER IN THE FIELD:**

The 1060B Series water system tank has been designed with a replaceable bladder. It is unlikely that replacement will be necessary; however, should some incident occur that requires the replacement of the bladder, the procedure outlined below should be followed:

**TYPICAL INSTALLATION – SKETCH 1:**



**TYPICAL INSTALLATION – SKETCH 2:**



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Before proceeding with bladder replacement, read these instructions through and check the “Required Tooling and Supplies” listing at the end.

1. Isolate the tank from the system. Shut off the automatic fill valve and drain the boiler to release all of the system pressure.
2. Drain the bladder tank as much as possible through the drain valve installed between the system isolation valve and the tank. Compressed air may be added through the charging valve to assist in draining the tank.
3. Release air from the tank through the air valve.
4. Remove the air valve core to bleed the remaining air charge (fig. 1). **CAUTION:** Be sure most of the air has been released before attempting this.
5. Open the drain plug to remove the water from the tank (fig. 2).
6. Disconnect the system connection.
7. Remove the bolted upper flange and dip tube. Prior to removal, mark the mating flanges to match when reassembling (fig. 3).
8. Attached to the upper flange is the bladder support and dip tube (fig. 4). Examine and clean prior to reassembly.
9. Pump or siphon the water out of the inside of the bladder, if necessary. Do not puncture the bladder.
10. Using a chain block, lift the bladder out of the tank with a twisting motion.
11. Pump out the remaining water from the very bottom of the tank. Hose down the inside walls to remove sediment if necessary.
12. Mop up the remaining water.
13. Dry out the inside of the tank (using a reversed vacuum cleaner).
14. Clean out any remaining dirt.
15. Roll up the replacement bladder (lengthwise) and tie at necessary intervals **WITH ROPE** to keep it rolled.
16. Insert the new bladder with the arrow on the flange pointing to the top of the tank (fig. 5). Remove the ties as they near the tank opening. With a long wooden stick, clear a path for the dip tube. **DO NOT USE A SHARP STICK.**
17. Check the top flange marking to be sure the upper/lower flanges line up per #7 above. Be sure the flange faces are clean and the bladder is positioned correctly in the tank.
18. Assemble the upper mating flange. Cross tighten the bolts evenly in several stages, per the accompanying torque chart.
19. Clean the drain plug and coupling.

20. Install the factory supplied drain plug, using a liberal amount of Tite-Seal Compound 55 or equivalent. **THIS CONNECTION MUST BE ABSOLUTELY AIR-TIGHT.**
21. Install the air valve core. Charge the tank to fill-pressure or minimum operating pressure before the system is filled with water.
22. Using soapy water, check the drain fitting threads, air valve core and flange joint for leakage.
23. Connect the tank to the system. Close the drain valve and open the fill valve. Replace the lock shield if used and check operation. **ALWAYS PRECHARGE THE TANK BEFORE COMPLETING THIS STEP.**

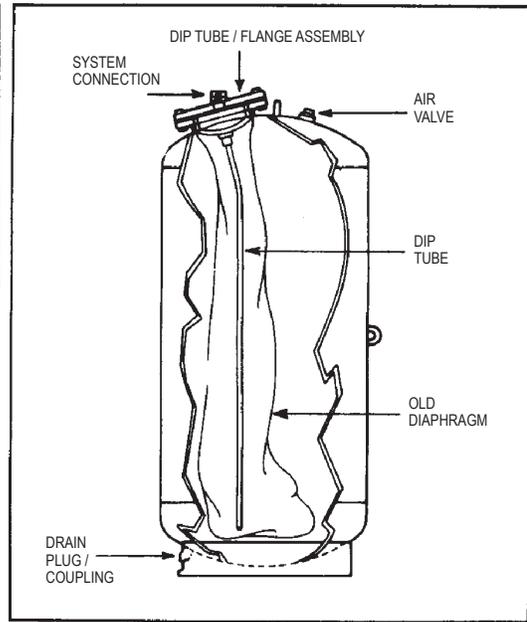
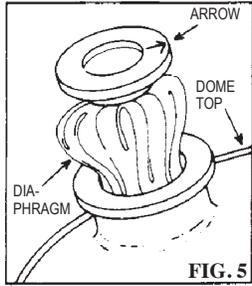
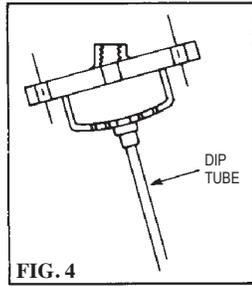
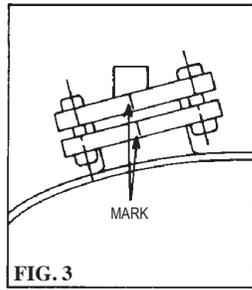
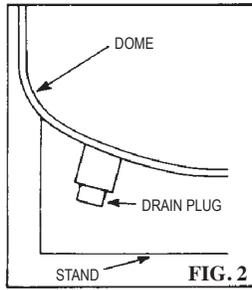
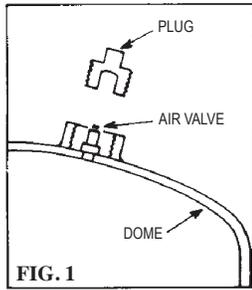
**REQUIRED TOOLING & SUPPLIES:**

1. Plumber’s toolbox.
2. Source of compressed air.
3. Portable pump with 20 ft. (6096 mm) suction hose.
4. Light with 20 ft. (6096 mm) cord.
5. Power extension cord (as required).
6. Chain block.
7. Rope (to tie diaphragm).
8. Pressure gauge and air valve tool (to remove valve core).
9. New replacement bladder.
10. Long wooden stick (not sharp), at least 1 ft. (305 mm) longer than tank height.

Dry Bolt Torque for Flanged Tank Openings				
Size Opening	Design Pressure		Torque	
	psi	kPa	IN-LBS	FT-LBS
6"	125	863	84	7
6"	175	1208	120	10
6"	250	1724	168	14
8"	125	865	168	14
8"	175	1211	240	20
8"	250	1730	336	28
10"	125	863	252	21
10"	175	1208	300	25
10"	250	1724	420	35
14"	125	863	252	21
14"	175	1208	360	30
14"	250	1724	444	37

TORQUES LISTED ARE MINIMUM REQUIREMENTS TO SEAT SEAL GASKET AGAINST DESIGN PRESSURE.

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## CAUTION

Do not remove the drain plug or loosen the nuts on the blind flange or system connection.

### **INSTALLATION – 1060BP SERIES:**

If it is necessary to remove the drain plug, be sure the air pressure in the tank is at zero. Before bleeding to zero psi, isolate the tank from the system by closing the isolation valve. Also, **DO NOT** remove the blind flange or system connection before first bleeding to zero gauge pressure.

1. Inspect the Expansion Tank for damage which may have occurred during shipping. If any damage exists, note it on the freight bill and file a claim with the shipping company. **DO NOT INSTALL THE UNIT.**
2. A gate valve, with lockshield recommended, to isolate the tank from the system should be installed to facilitate:
  - a) Hydrostatic testing of the system.
  - b) Service of the tank.
3. A drain valve should be installed between the gate valve in #2 and the tank system connection to facilitate service.
4. System air must be purged and not allowed to enter the tank.
5. Check the tank system connection to be sure nothing is obstructing the inlet passageway.
6. See sketches 3 and 4 for typical piping configurations.
7. Tanks are precharged at 30 psi. Before installing the tank, check the charge with an automotive tire gauge. If the tank charge is not at the desired psi, bleed off or fill to the psi required. Any alteration in the factory precharge should be completed **JUST PRIOR** to filling the system with water.
8. Tank connection piping and air separators with air vents should be arranged so that the air will not be trapped in the tank. When possible, connect the piping with the

pitch down to the tank, using air vents as illustrated in the sketches.

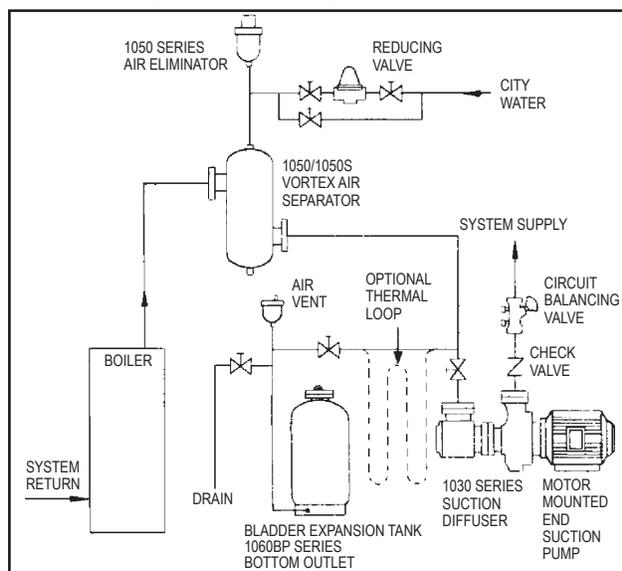
9. On a closed system, connect the tank on the suction side of the pump. This is the point of no pressure change. When used as an accumulator for a pressure booster system, the connection is on the discharge with a check valve installed between the pump and piping to the tank.

### **CHANGING A SERIES 1060BP BLADDER IN THE FIELD:**

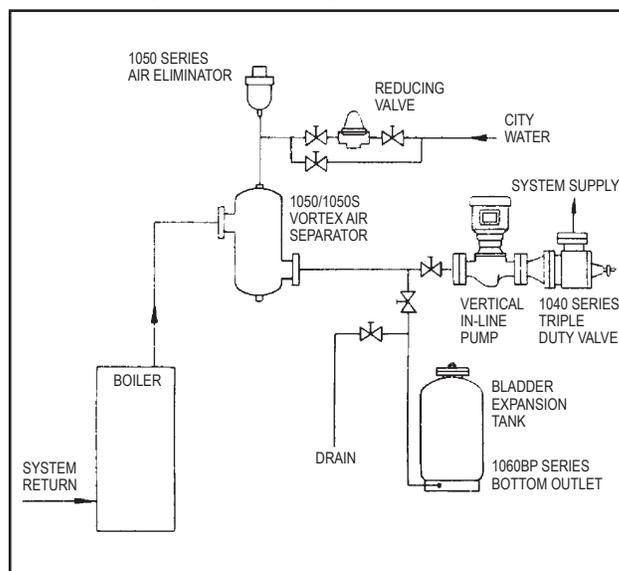
The 1060BP Series water system tank has been designed with a replaceable bladder. It is unlikely that replacement will be necessary; however, should some incident occur that requires the replacement of the bladder, the procedure outlined below should be followed:

1. Isolate the tank from the system by means of a shut-off valve.
2. Drain the bladder tank as much as possible through the drain valve installed between the system isolation valve and the tank. Compressed air may be added through the charging valve to assist in draining the tank.
3. Depress the air valve (fig. 6) to remove most of the air. Remove the valve air core in order to remove the remaining air charge. Be sure that the entire air charge has been removed before proceeding.
4. Open the drain plug (fig. 7) to drain the water.
5. Disconnect the tank from system piping.
6. Unbolt and remove the system connection. Prior to removal, mark the mating flanges to match when reassembling (fig. 8).
7. Unbolt the blind flange from the tank and attach suitable lifting equipment to the lifting eye. Turn the top flange counterclockwise to wrap the bladder around itself.

**TYPICAL INSTALLATION – SKETCH 3:**



**TYPICAL INSTALLATION – SKETCH 4:**



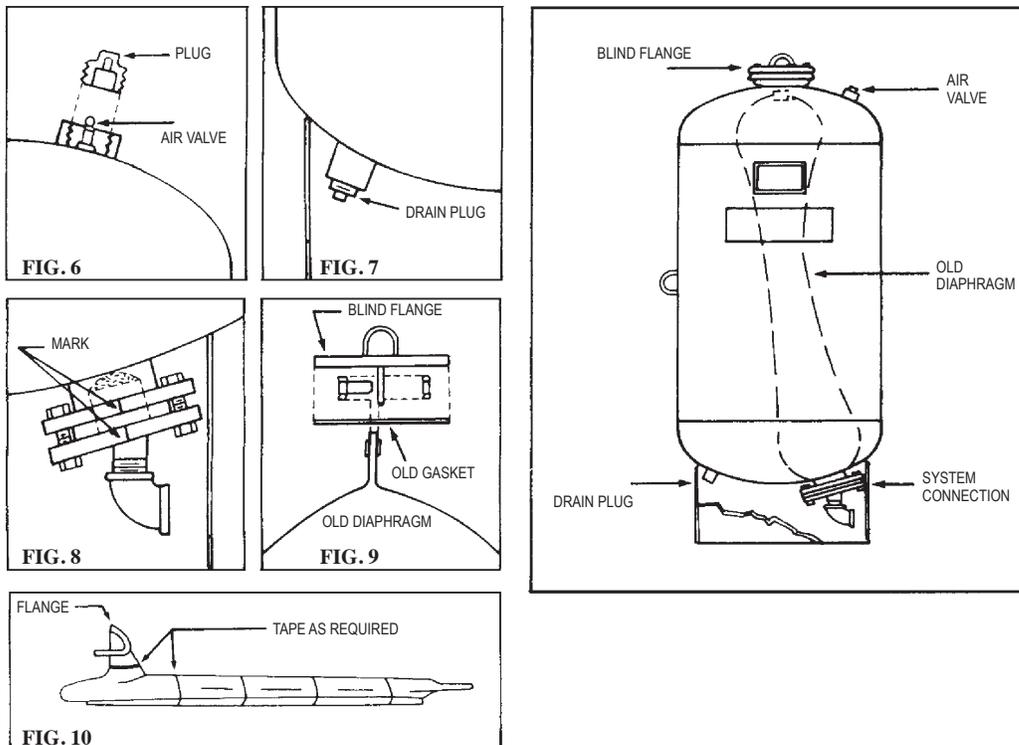
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8. Push the bladder flange into the tank at the system connection.
9. Pull the old bladder from the tank through the blind flange opening.
10. Unbolt the blind flange (fig. 9) from the old bladder and remove the old gasket.
11. Prior to inserting the bladder in the tank, inspect the tank's internal surface and remove any sediment. The internal surface must be dry.
12. Fold the new bladder lengthwise and tape at necessary intervals (fig. 10).
13. Fold in the bladder neck and tape.
14. Rebolt the blind flange to the new bladder and use the new gasket.
15. Working by hand, insert the bladder into the tank through the top flange opening with the flange pointing to the opening in the system connection, removing the tape as it is inserted into the tank. Do not remove the tape from the bladder flange.
16. Find and pull the bladder flange into position and remove the tape. Check through the top flange opening to assure the bladder is not twisted.
17. Rebolt the blind flange to the tank. Cross tighten the bolts evenly in several stages per the accompanying torque chart.
18. Line up the marks on the system connection flanges and be sure the surfaces are clean. Rebolt the system connection, cross tightening the bolts evenly in several stages per the accompanying torque chart.

19. Using soapy water, check the drain fitting threads, air valve, and flange joints for leakage. **THIS CONNECTION MUST BE ABSOLUTELY AIRTIGHT.**
20. Reinstall the tank to the system and open all valves slowly.
21. Install the drain fitting and pressurize through the air fitting to the proper precharge pressure. **WARNING:** Be sure the proper precharge pressure is not exceeded.

Dry Bolt Torque for Flanged Tank Openings				
Size Opening	Design Pressure		Torque	
	psi	kPa	IN-LBS	FT-LBS
6"	125	865	84	7
6"	175	1211	120	10
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TORQUES LISTED ARE MINIMUM REQUIREMENTS TO SEAT SEAL GASKET AGAINST DESIGN PRESSURE.



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## WARRANTY

Seller warrants equipment (and its component parts) of its own manufacture against defects in materials and workmanship under normal use and service for one (1) year from the date of installation or start-up, or for eighteen (18) months after the date of shipment, whichever occurs first. Seller does not warrant accessories or components that are not manufactured by Seller; however, to the extent possible, Seller agrees to assign to Buyer its rights under the original manufacturer's warranty, without recourse to Seller. Buyer must give Seller notice in writing of any alleged defect covered by this warranty (together with all identifying details, including the serial number, the type of equipment, and the date of purchase) within thirty (30) days of the discovery of such defect during the warranty period. No claim made more than 30 days after the expiration of the warranty period shall be valid. Guarantees of performance and warranties are based on the use of original equipment manufactured (OEM) replacement parts. Seller assumes no responsibility or liability if alterations, non-authorized design modifications and/or non-OEM replacement parts are incorporated. If requested by Seller, any equipment (or its component parts) must be promptly returned to Seller prior to any attempted repair, or sent to an authorized service station designated by Seller, and Buyer shall prepay all shipping expenses. Seller shall not be liable for any loss or damage to goods in transit, nor will any warranty claim be valid unless the returned goods are received intact and undamaged as a result of shipment. Repaired or replaced material returned to customer will be shipped F.O.B., Seller's factory. Seller will not give Buyer credit for parts or equipment returned to Seller, and will not accept delivery of any such parts or equipment, unless Buyer has obtained Seller's approval in writing. The warranty extends to repaired or replaced parts of Seller's manufacture for ninety (90) days or for the remainder of the original warranty period applicable to the equipment or parts being repaired or replaced, whichever is greater. This warranty applies to the repaired or replaced part and is not extended to the product or any other component of the product being repaired. Repair parts of its own manufacture sold after the original warranty period are warranted for a period of one (1) year from shipment against defects in materials and workmanship under normal use and service. This warranty applies to the replacement part only and is not extended to the product or any other component of the product being repaired. Seller may substitute new equipment or improve part(s) of any equipment judged defective without further liability. All repairs or services performed by Seller, which are not covered by this warranty, will be charged in accordance with Seller's standard prices then in effect.

THIS WARRANTY IS THE SOLE WARRANTY OF SELLER AND SELLER HEREBY EXPRESSLY DISCLAIMS AND BUYER WAIVES ALL OTHER WARRANTIES EXPRESSED, IMPLIED IN LAW OR IMPLIED IN FACT, INCLUDING ANY WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Seller's sole obligation under this warranty shall be, at its option, to repair or replace any equipment (or its component parts) which has a defect covered by this warranty, or to refund the purchase price of such equipment or part. Under the terms of this warranty, Seller shall not be liable for (a) consequential, collateral, special or liquidated losses or damages; (b) equipment conditions caused by normal wear and tear, abnormal conditions of use, accident, neglect, or misuse of said equipment; (c) the expense of, and loss or damage caused by, repairs or alterations made by anyone other than the Seller; (d) damage caused by abrasive materials, chemicals, scale deposits, corrosion, lightning, improper voltage, mishandling, or other similar conditions; (e) any loss, damage, or expense relating to or resulting from installation, removal or reinstallation of equipment; (f) any labor costs or charges incurred in repairing or replacing defective equipment or parts, including the cost of reinstalling parts that are repaired or replaced by Seller; (g) any expense of shipment of equipment or repaired or replacement parts; or (h) any other loss, damage or expense of any nature.

The above warranty shall not apply to any equipment which may be separately covered by any alternate or special warranties.

**PERFORMANCE:** In the absence of Certified Pump Performance Tests, equipment performance is not warranted or guaranteed. Performance curves and other information submitted to Buyer are approximate and no warranty or guarantee shall be deemed to arise as a result of such submittal. All testing shall be done in accordance with Seller's standard policy under Hydraulic Institute procedures.

**LIABILITY LIMITATIONS:** Under no circumstances shall the Seller have any liability under the Order or otherwise for liquidated damages or for collateral, consequential or special damages or for loss of profits, or for actual losses or for loss of production or progress of construction, regardless of the cause of such damages or losses. In any event, Seller's aggregate total liability under the Order or otherwise shall not exceed the contract price.

**ACTS OF GOD:** Seller shall in no event be liable for delays in delivery of the equipment or other failures to perform caused by fires, acts of God, strikes, labor difficulties, acts of governmental or military authorities, delays in transportation or procuring materials, or causes of any kind beyond Seller's control.

**COMPLIANCE WITH LAW:** Seller agrees to comply with all United States laws and regulations applicable to the manufacturing of the subject equipment. Such compliance shall include: The Fair Labor Standards Acts of 1938, as amended; Equal Employment Opportunity clauses of Executive Order 11246, as amended; Occupational Safety and Health Act of 1970 and the standards promulgated thereunder, if applicable. Since compliance with the various Federal, State, and Local laws and regulations concerning occupational health and safety, pollution or local codes are affected by the use, installation and operation of the equipment and other matters over which Seller has no control, Seller assumes no responsibility for compliance with those laws and regulations, whether by way of indemnity, warranty, or otherwise. It is incumbent upon the Buyer to specify equipment which complies with local codes and ordinances.



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