



DOUGLAS
WASHING AND SANITIZING SYSTEMS

RECOMMENDED
INSTALLATION GUIDE



Parts & Service 800-331-6870

DougMac.com



DOUGLAS

WASHING AND SANITIZING SYSTEMS

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PLEASE NOTE: ALL MACHINES AND ELECTRICAL CONNECTIONS TO MACHINES MUST
COMPLY WITH ALL LOCAL, STATE, AND FEDERAL CODES.
FAILURE TO FOLLOW THE INSTALLATION GUIDE COULD RESULT IN
LOSS OF WARRANTY.

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SAFETY

Qualified installation personnel, individuals, firms, corporations, and companies are responsible for:

- Wear appropriate P.P.E., ie... hearing protection, thermal resistant gloves, and eye wear.
- Know where the **exits** are located.
- Always turn off and drain the machine before entering. Allow a cool-down period. Follow facility's L.O.T.O. procedures.
- **Never** enter a machine where the flooring has been removed.
- Fall Hazard.
- Use non-permit required confined space guidelines for entering.
- When loading a rack into the washer keep hands away from the door edges. Keep hands on the horizontal bars inside of the rack. **Do Not** hold racks on the vertical support bars or outside edges. Push the rack with both hands. **Never** strain yourself to move a rack. If the racks are too heavy, unload some product.
- **Always use caution.** - Use mats to reduce slip hazards.
- Ensure that the float switches and level probes are well maintained and cleaned daily. Failure to do so can result in unintended heater start up and potential fire.
- **Never** leave your machine idle (not in use) for more than four hours. This can cause water to evaporate from the machine resulting in damage.
Do not touch the rinse tank without a cool-down period.

IMPORTANT

Qualified installation personnel, individuals, firms, corporations, and companies are responsible for:

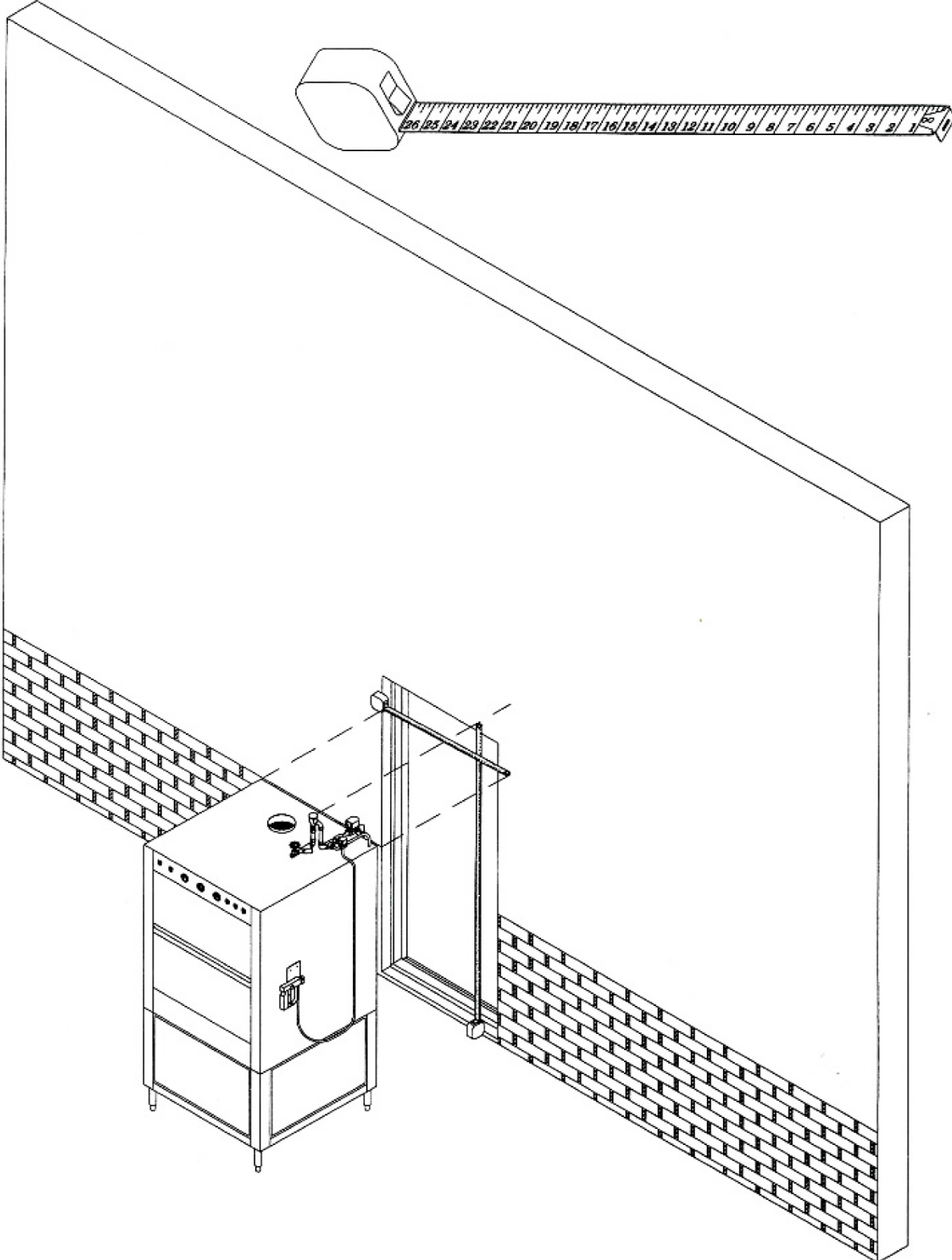
- The installation or replacement of the gas piping and connection, installation, repair, or servicing of the equipment. Qualified installation personnel must be experienced in such work, familiar with all precautions required, and have complied with all requirements of state or local authorities having jurisdiction. Reference National Fuel Gas Code, NFPA 54 or latest edition or ANSI Z223.1 or latest edition, Section 1.4.
- The installation of electrical wiring from the electric meter, main control box, or service outlet to the appliance. Qualified installation personnel must be experienced in such work, familiar with all precautions required, and have complied with all requirements of state or local authorities having jurisdiction. Reference National Electrical Code, ANSI/NFPA 70 or latest edition. In Canada, Canadian Electrical Code Part I (Std. 22.1 or latest).
- The installation of gas heated units in Canada. Qualified installation personnel should comply with the Installation Codes for Gas Burning Appliances and Equipment, (CAN-I-B 149.1 and B-149.2) and any local codes or approvals.
- The installation of washers equipped with casters. These washers shall be made with a connector that complies with the Standard for Connectors for Movable Gas Appliances, ANSI Z2 1.69 or latest, and a quick-connect device that complies with the Standard for Quick-Disconnect Devices for use with gas fuel, ANSI Z2 1.41 or latest.
- Water and waste piping and connections shall comply with the International Plumbing Code, International Code Council (ICC) or the Uniform Plumbing Code, International Association of Plumbing and Mechanical Officials (IAPMO). NSF/ANSI 3-2009
- Douglas Machines Corp. highly discourages the use of tank-less or demand water heating units as a hot water supply for our machines. They typically are not properly sized nor can they meet the demand required by our machines.

NOTE: A fixed restraint must be provided if casters are used in conjunction with a flexible connector for movable appliances. This restraint must secure the washer to a non-movable surface to eliminate stress on the connector. If the washer is moved, the restraint must be reconnected after the washer is returned to its normal position.

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PLEASE MEASURE ALL DOOR OPENINGS AND PASSAGEWAYS TO MACHINE'S FINAL LOCATION FOR CLEARANCES.

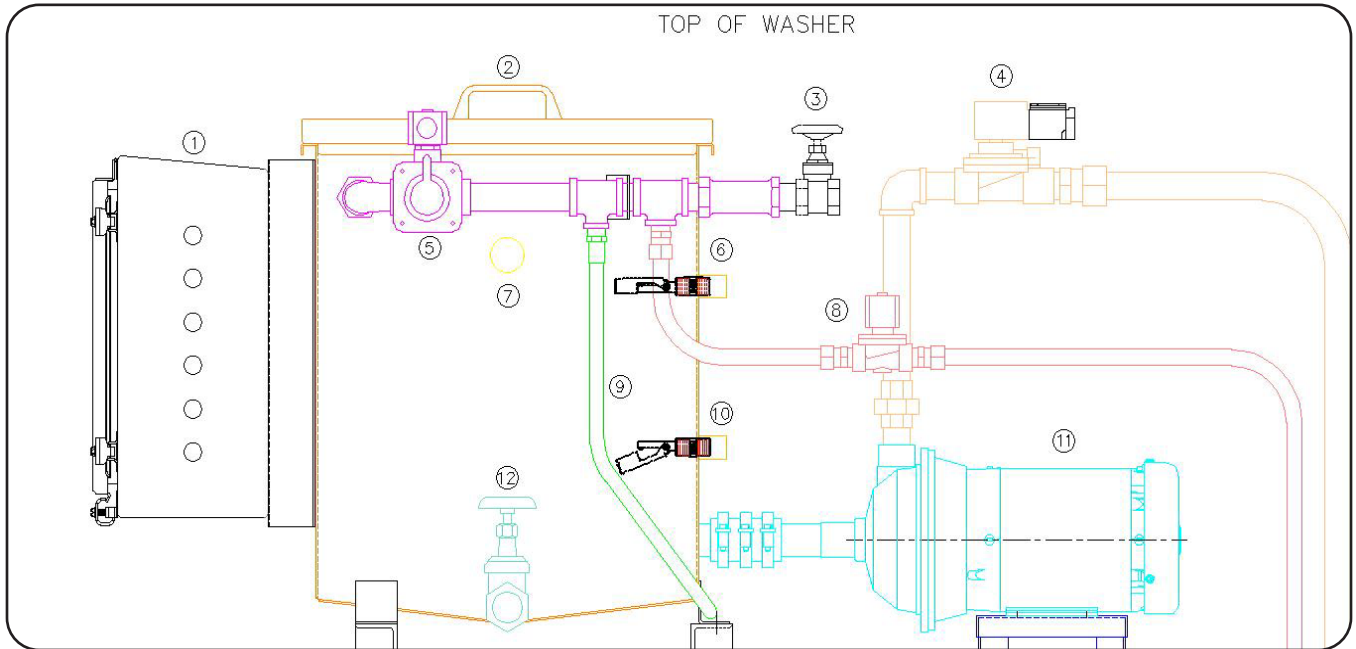


PLACEMENT

When choosing a location for your machine please consider the following factors.

- Check all doorways, hallways and ceiling heights to allow entry. Check the dimensions of the machine from the installation drawings supplied.
- Certain items may be able to be removed from top or around the machine. Consult the factory for details.
- Are all necessary utilities able to be accessed?
- Can all venting (gas & steam) be installed correctly? (See Venting Section)
- Serviceability, leave space around machine for service maintenance. Note some codes also include clearance requirements. Reference installation drawing.
- If unit is going to be installed in a pit, check that the pit depth will not interfere with existing plumbing lines and floor drain will be accessible.
- Ensure that the unit can be installed level.
- If ramp is going to be used ensure it will not block a pathway.

RINSE PUMP



- | | |
|--|--|
| 1. Electrical Enclosure & Controls | 8. Wash Tank Fill Solenoid Valve |
| 2. Rinse Tank | 9. Spray Hose |
| 3. Manual Shut Off Valve (By Customer) | 10. Float Switch (Bottom) Low Water Protection |
| 4. Rinse Solenoid Valve | 11. Rinse Motor & Pump |
| 5. Rinse Tank Fill Solenoid Valve | 12. Drain Valve 1 1/4" NPT |
| 6. Float Switch (Top) Level Control | |
| 7. Overflow Connection - 1 1/4" NPT | |

NOTE: Float switch items #6 & #10 are shipped with wire ties secured around them and need to be removed during installation. If unit was purchased with pumped rinse tank option, refer to specific installation drawing or contact factory for installation assistance.

PRE-INSTALLATION

Certain Washers may require the rinse tank to be mounted in the field.
Most Pan Washer with IR rinse tanks also need to be installed by customer.

- Mount rinse tank assembly on to the studs located on rinse tank support channels. Reference install drawing for proper placement and orientation.
- Connect rinse discharge pipe to rinse tank discharge pipe and machine rinse inlet.
- Connect conduit and coil labeled rinse solenoid coil to rinse solenoid valve labeled rinse solenoid valve.
- Connect conduit and coil labeled auto fill solenoid coil to auto fill solenoid valve labeled auto fill solenoid valve.
- Connect fill line labeled fill line to auto fill solenoid and machine fill line labeled machine fill line.

CONNECTION OF RINSE TANK HEAT SOURCE

ELECTRIC HEAT

Run conduit and wire to access hole in heater junction box, connect wires to indicated lugs, secure conduit to access hole.

STEAM HEAT

Connect incoming steam line to coupling marked "incoming steam", see installation drawing for appropriate line size for your land pressure machine.

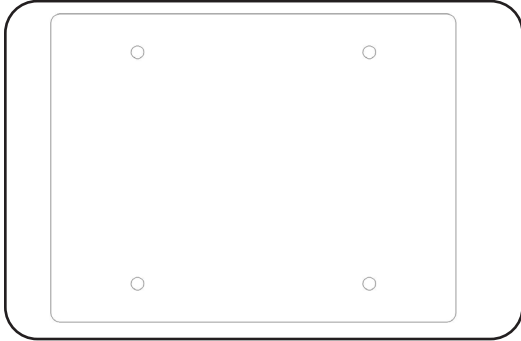
GAS MANIFOLD

Connect gas supply line to incoming gas valve, See installation drawing for appropriate line size and gas supply pressures for your machine.

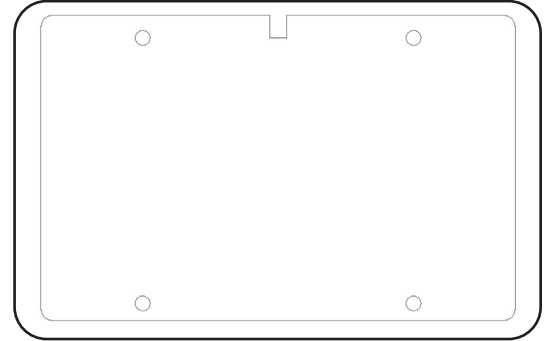
If washer was purchased with steam extraction fan and or hood these will need to be installed.
Rack Washer 12" diameter steam extraction fan installation.

Apply a liberal bead of silicone around the edge of the vent hole where the fan will be mounted. The baffle plate on the inside of the unit will need to be removed to bolt the fan down.

RACK WASHER STEAM EXHAUST BAFFLE PLATE



LD-20-PT - LD/SD36 STEAM EXHAUST BAFFLE PLATE



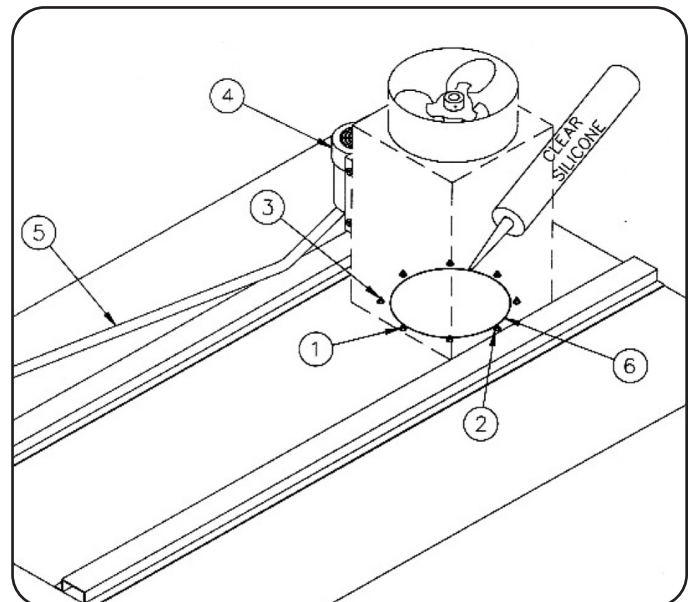
BAFFLE PLATE IS REMOVED FROM THE INSIDE OF THE MACHINE. THIS IS NECESSARY TO INSTALL A 12" DOUGLAS STEAM EXHAUST

- Mount the fan to the studs located on the top of the machine in the circular pattern. The correct orientation of the fan is to have the exhaust fan motor on the same side as the conduit and wire that is labeled exhaust fan. Secure fan with nuts & washers .
- Run the conduit and wire to the junction box on the exhaust fan motor. Connect wires in accordance to diagram on name plate and secure conduit to the junction box.
- Confirm voltage with install drawing.

Note the motor orientation in the following drawing before installing the fan.

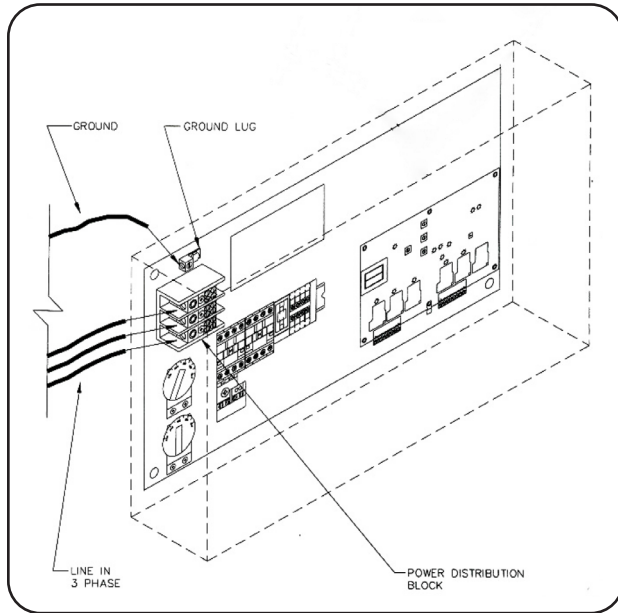
Item Description

1. 5/16" Lock nuts (16)
2. 5/16" Washer (16)
3. 5/16" X 1/2" Studs (16)
4. Exhaust Fan Motor
5. Conduit & Wire Exhaust
6. Place a bead of clear silicone around the edge of the vent hole. Bolt fan down to studs (food grade).

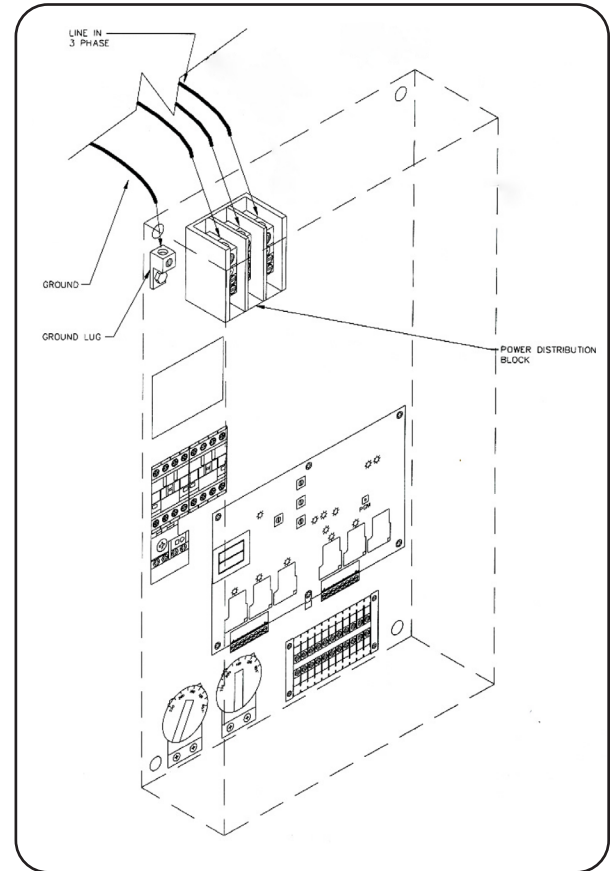


ELECTRICAL CONNECTIONS

Installation should to be completed by a professional.



POT, PAN, AND UTENSIL WASHER ELECTRICAL



RACK WASHER ELECTRICAL CONNECTIONS.

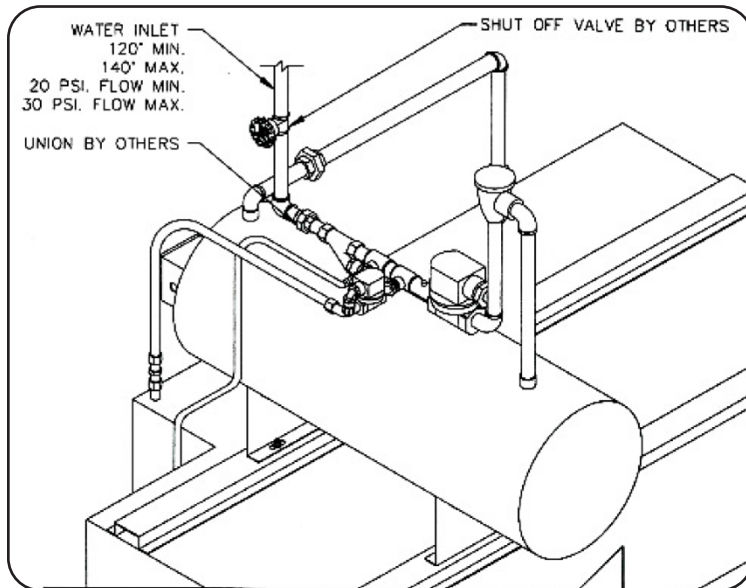
All electrical connections should be made by a qualified electrician and should comply with all local, state, and federal codes.

Single or 3 phase main connection. Refer to specific electrical drawing and or specification sheet supplied with machine, for recommended service size and voltage. Connect to power distribution block or disconnect if provided.

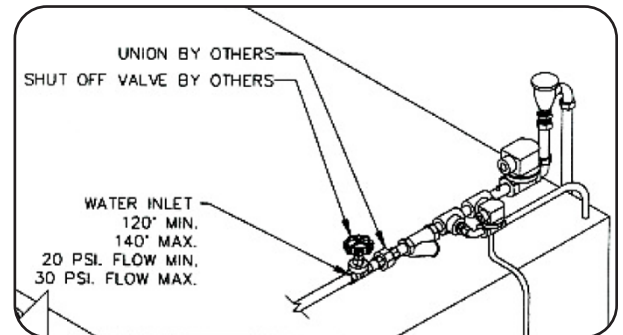
Connect suitable ground to ground lug. Reference electrical schematic for wire size and type.

WARNING: ENSURE ALL POWER IS TURNED OFF BEFORE ATTEMPTING TO DO ANY WIRING IN ELECTRICAL PANEL.

INCOMING WATER CONNECTIONS



RACK WASHER INCOMING WATER CONNECTIONS



POT, PAN, & UTENSIL WASHER INCOMING WATER

Wash tank fill depends on specific model. LD-36 and SD-36 washers fall under Rack Washer.

- Maximum usage after wash tank is full for the Rack Washers are 120 gal., per hour.
- Maximum usage after wash tank is full for the Pot, Pan, Utensil Washers is 60 gal., per hour.

Refer to installation drawing or specification sheet for incoming water pipe size.

Incoming water temperature must be between 120- and 140-degrees Fahrenheit. (Consult a factory representative if these temperatures cannot be achieved.)

Incoming water pressure is to be 20 psi minimum, and 30 psi during flow not static pressure. To achieve these pressures, use of a pressure regulating device may be necessary.

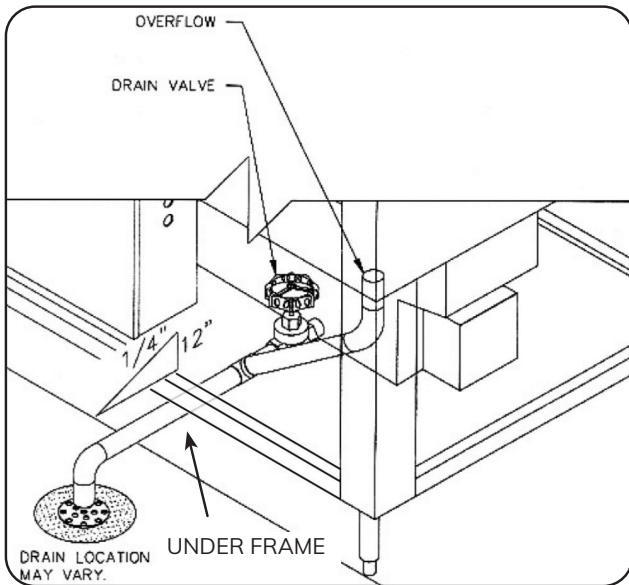
When connecting incoming water supply, install a shut-off valve and a union at the location shown on illustration or as close to machine as possible.

DRAIN CONNECTIONS

Refer to installation drawing or specification sheet for drain and overflow line size.

SINGLE LINE

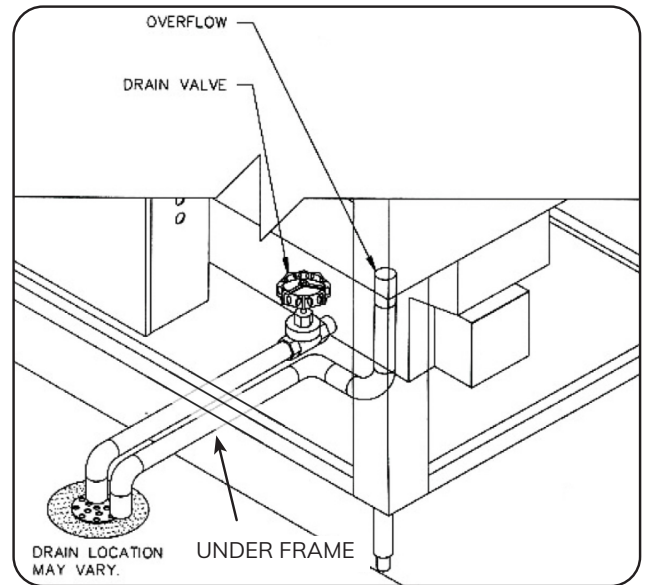
ACCEPTABLE CONNECTION IF THE OVERFLOW LINE IS CONNECTED ON THE OUTGOING SIDE OF THE DRAIN VALVE.



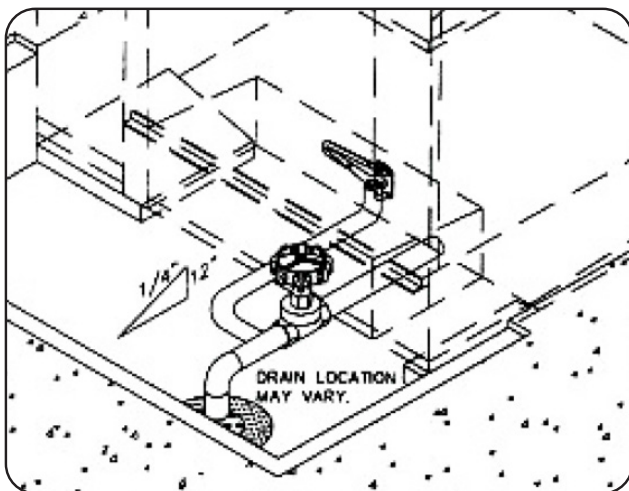
POT, PAN, & UTENSIL WASHER SINGLE LINE
(DRAIN AND OVERFLOW MERGED CONNECTION)

DUAL LINE

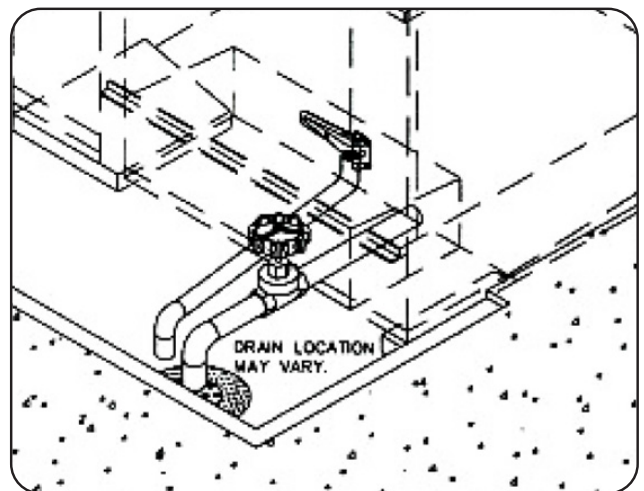
ACCEPTABLE CONNECTION IF THE FLOOR DRAIN IS LARGE ENOUGH TO ACCEPT BOTH LINES.



POT, PAN, & UTENSIL WASHER DUAL LINE
(SEPARATE DRAIN AND OVERFLOW CONNECTION)



RACK WASHER SINGLE LINE
(DRAIN AND OVERFLOW MERGED CONNECTION)



RACK WASHER DUAL LINE
(SEPARATE DRAIN AND OVERFLOW CONNECTION)

When the Rack Washer is in a pit, both these lines need not run all the way to the pit drain but must run far enough away from the machine in order that splashing water does not affect any components of the washer.

When running drain and overflow lines to a Rack Washer not in a pit, make sure it is not in the way of the ramp or rack dolly.

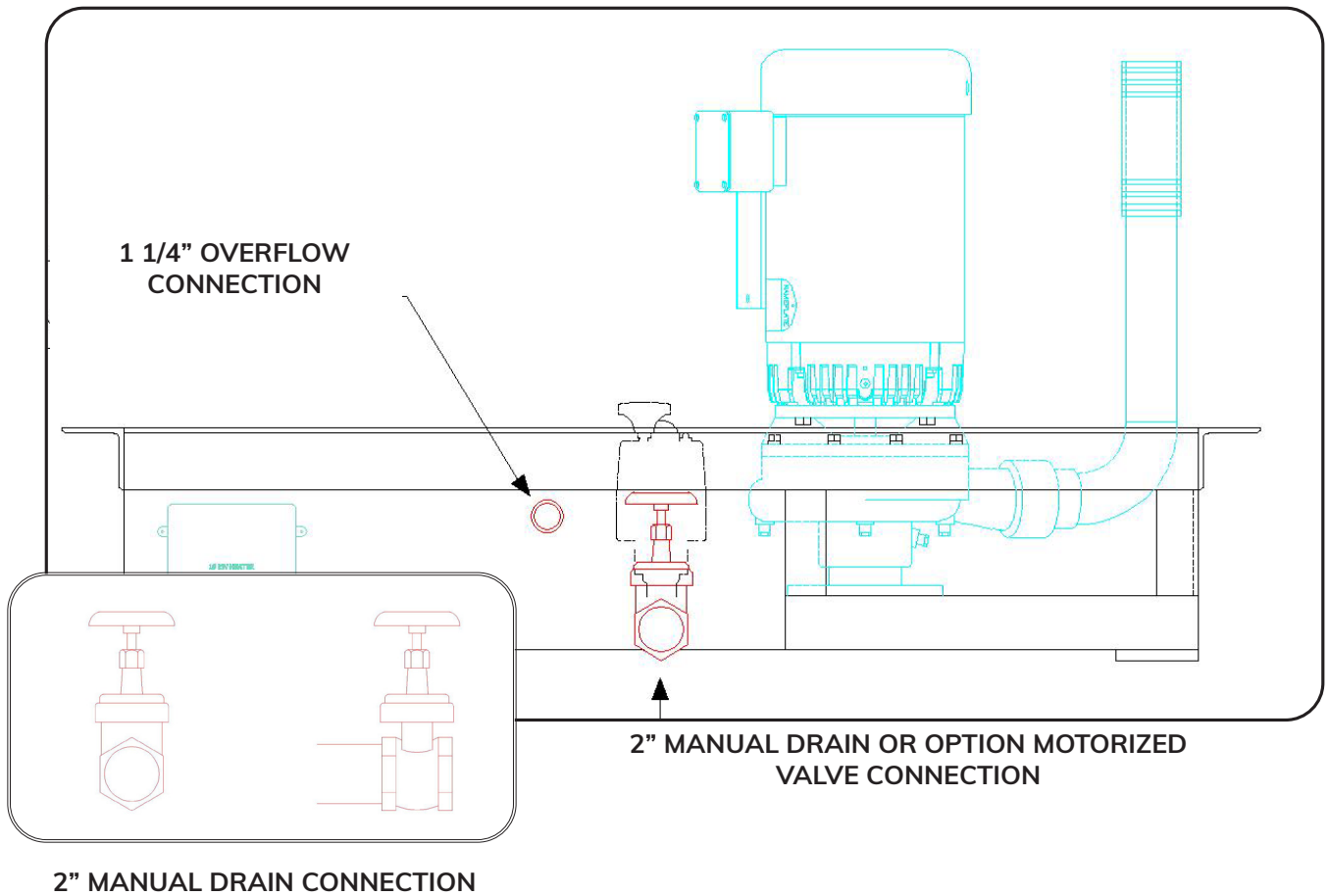
When running drain lines, be sure to maintain a minimum 1/4" of slope to every 12" of distance.

Materials that are suitable for drain and overflow lines: Check local codes

CPVC - Copper - Brass - Stainless Steel

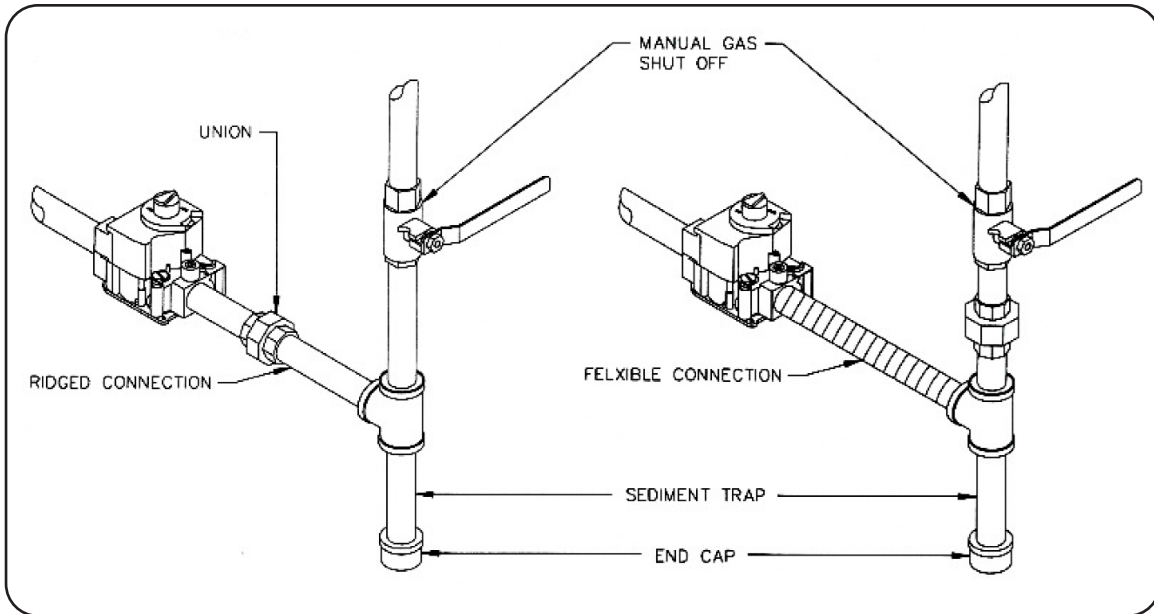
NOTE: YOU CANNOT RUN DRAIN AND OVERFLOW LINES ABOVE THE BASE CHANNEL FRAME BECAUSE YOU WILL NOT BE ABLE TO RE-INSTALL THE PANEL. REMEMBER TO PREVENT A TRIP HAZARD.

REAR VIEW OF RACK WASHER

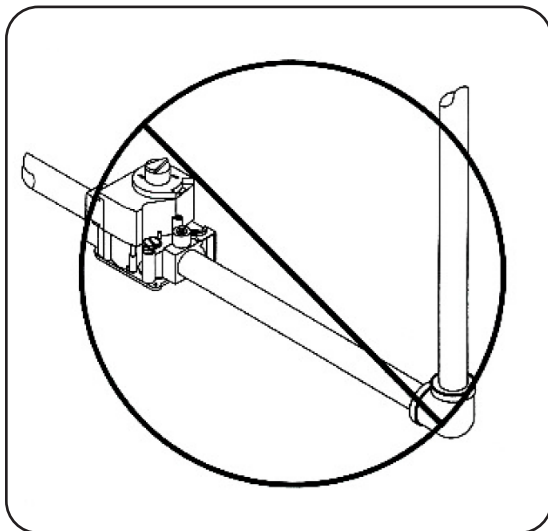


INCOMING GAS CONNECTIONS

Incoming gas lines on both Pot, Pan, Utensil Washers and Rack Washers.



THESE ARE SUGGESTED INSTALLATION CONNECTIONS. ALL LOCAL CODES SUPERSEDE INSTALLATION.



INCORRECT INSTALLATION

Refer to installation sheet and or specification sheet for BTUs, number of lines needed and size of incoming gas lines and supply pressure requirements.

Always follow local, state, and federal codes when installing gas lines.

Incoming gas pressure must be maintained between 6" W.C. and 14" W.C. Failure to maintain these pressures may cause operational problems and void the warranty on your gas burner system.

If you cannot install a shut-off valve and union as illustrated, install these items as close to gas valve as possible.

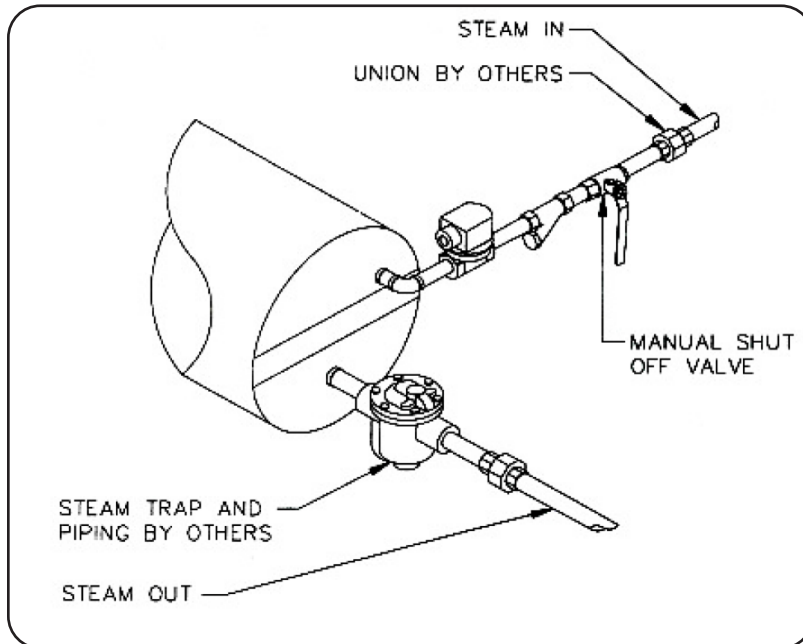
STEAM LINE CONNECTIONS

Refer to installation sheet and or specification sheet for pressure consumption, location and size of incoming and return steam lines. Install unions and steam traps as shown in illustrations.

If returning to the boiler, make sure all valves on the return line are fully open when starting. If a live steam system is to be used, check installation sheet for location and size of incoming steam line. Check specification sheet for consumption.

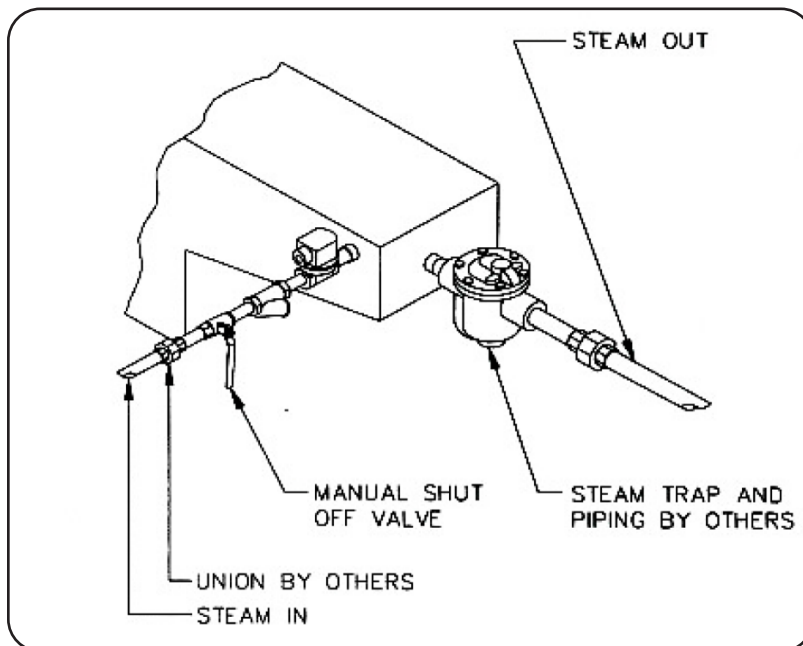
(STEAM INLETS & OUTLETS LOCATIONS MAY VARY)

RINSE TANK



Correct way to incoming and return steam lines for Pot, Pan, Utensil Washer and Rack Washer rinse tanks. (Coil Type with Return System)

WASH TANK

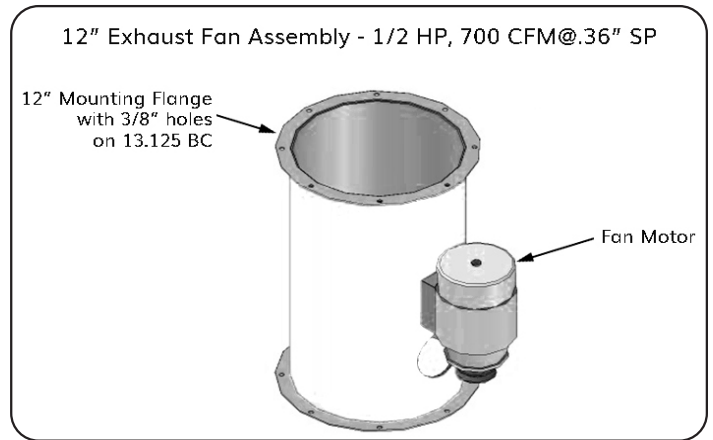
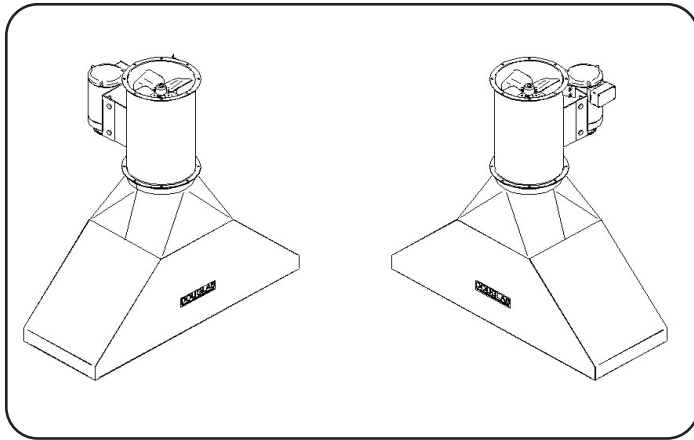


Correct way to install the incoming and return steam lines for Pot, Pan, Utensil Washer and Rack Washer wash tanks. (Coil Type with Return System)

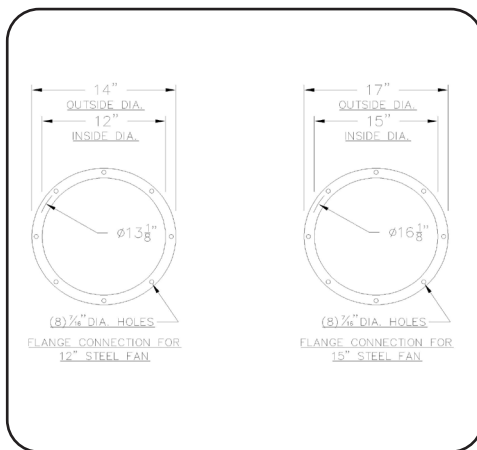
STEAM EXTRACTION VENTING

Steam Extraction Venting is very important. If not correctly installed, you could have an over-abundance of steam and water coming out of the door, both during operation and upon completion of cycle. Please follow these installation guidelines and all local, state, and federal codes. Reference installation drawing for steam vent connection point(s) and size.

The following illustrates shows a Rack Washer with multiple steam vent connections. It shows a connection for a hood fan and a cabinet fan. It also shows a single point connection for the cabinet only. Most importantly, it shows the most efficient way to install your venting, that is, as directly as possible.



If a fan other than the one purchased with the unit is needed or used, make sure it is wired to operate only after wash and rinse cycles are complete. (Contact factory for details.) If the fan is wired incorrectly and operates during the cycles, you will not maintain operating temperatures.



The most efficient way to install venting on a Pot, Pan, & Utensil Washer. If steam extraction fan option was purchased, this fan will need to be installed in the duct.

See instructions in fan box. The washer will be prewired for fan.

You will find plastic conduit and wire on top of the machine, labeled steam extraction fan.

Connect these to fan. Follow all other guidelines described above for proper vent installation.

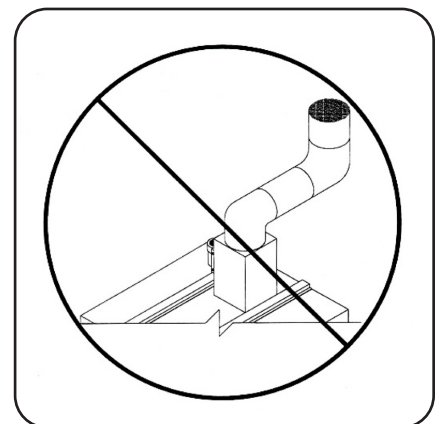
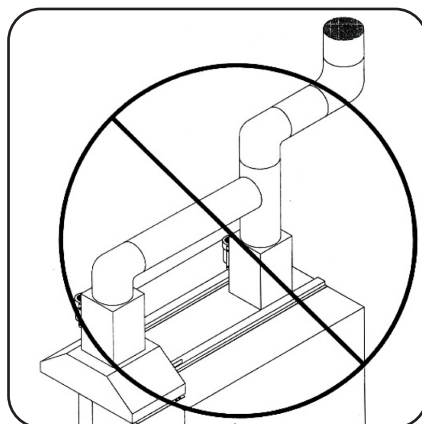
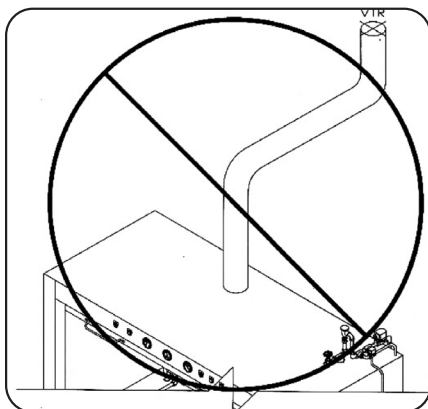
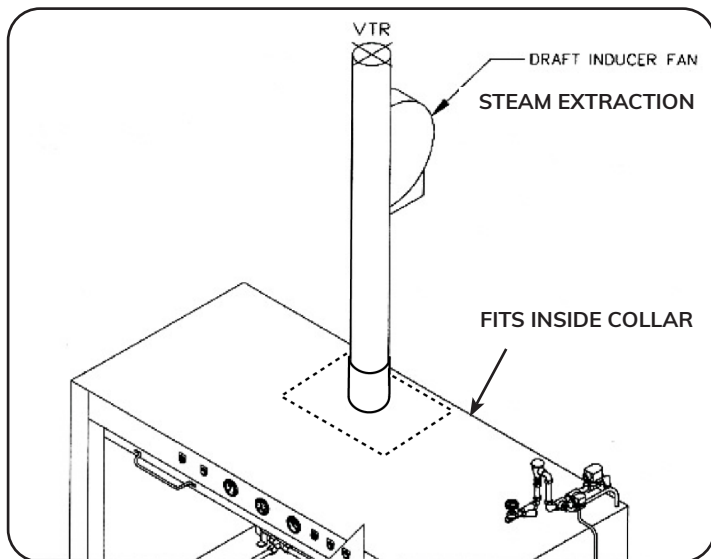
If machine is going to be located under a complete hood. You will still need a short steam vent pipe approximately 24" tall to prevent water from spraying out of the vent collar and accumulating on top of machine.

VENT SIZES AND RECOMMENDED DUCT MATERIALS.

All Rack Washers are supplied with a 12-7/8" I.D. vent collar.

All Pot, Pan, Utensil Washers are supplied with a 6-5/8" I.D. vent collar.

Vent collars are sized to accommodate 12" PVC on Rack Washers and 6" PVC on Pot, Pan, Utensil Washers. PVC is our recommendation for material to be used. Stainless Steel can also be used. Adapters or new collars can be manufactured to suit other vent sizes. If Stainless Steel is used, make sure all connections are sealed to allow for condensation to run back into unit. Ensure vent piping fits inside the collar on the machine or fan.



GAS FUEL VENTING

(Note: Do not use diverter and dampener in the same application.)

It is very important to correctly install the gas flue. If the flue is not correct you can expect many problems with the heating systems. You will not be able to achieve consistent performance or be able to maintain correct temperatures. So please, follow these guidelines carefully, and adhere to all local, state, and federal codes.

Douglas Machines Corp. currently uses two (2) types of gas burner systems. One a normally aspirated infrared system and the other a power blower open flame type system. The information in this guideline is applicable to both burner systems.

Refer to installation sheet and or specification sheet per specific model for BTU ratings. Size flue according to BTU rating and distance of run. Use only B-type flue material. It is important that you maintain a .045" W.C. draft. If this is not maintained, you will not achieve correct operating temperatures and your warranty may be void and the room may have high CO level. A licensed contractor should be used.

Illustration #21 shows a gas flue on a Pot, Pan, Utensil Washer. Notice it shows a barometric draft control and a draft inducer fan. The barometric draft control must be used, and the draft inducer fan may be necessary to achieve required draft. You must use a fan if any 45 or 90 degree bends and or any horizontal runs are used in the gas flue. If you need to purchase a fan, we recommend a rating of at least 175 C.F.M. at 3/4" static pressure. Electrical power will need to be supplied to this fan; machine is not pre-wired unless purchased with a draft inducing fan.

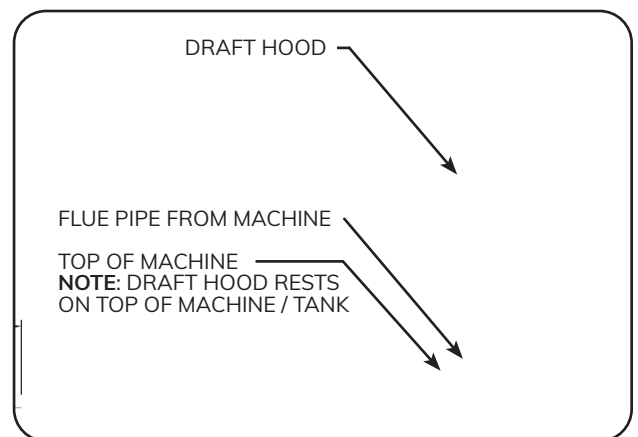
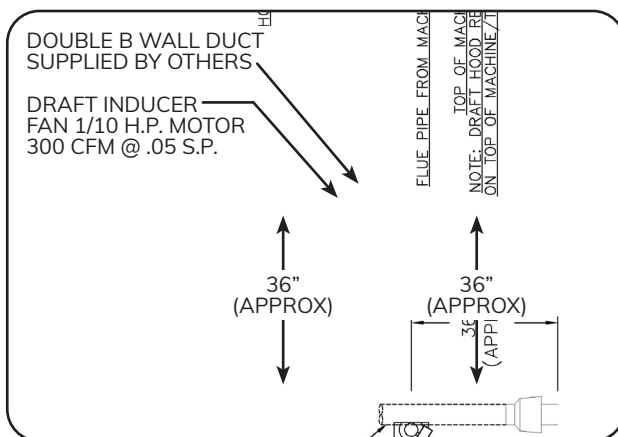
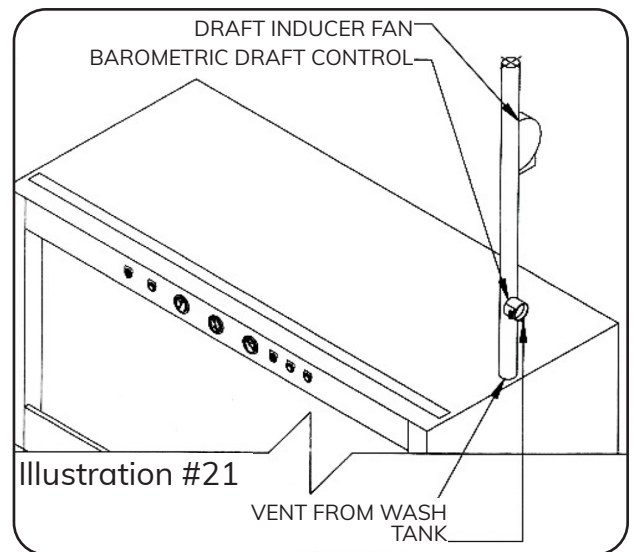


Illustration #22 shows to avoid 90-degree bends and horizontal runs. It also shows an incorrect position of the barometric draft control and the draft inducer fan. The barometric draft control must be mounted approximately 6" above the top of the machine. The draft inducer fan must be mounted in the center of the horizontal run. If no horizontal run is used, the fan should be mounted 3 to 4 feet above the barometric draft control.

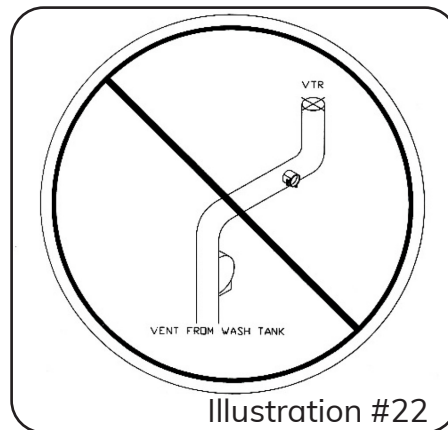


Illustration #23 shows the gas flues on a machine that has both gas heated wash and rinse. It is recommended you run wash and rinse flues separately. You must maintain a .045" W.C. draft on each individual flue.

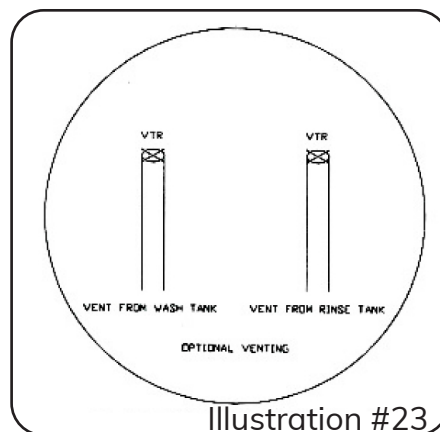
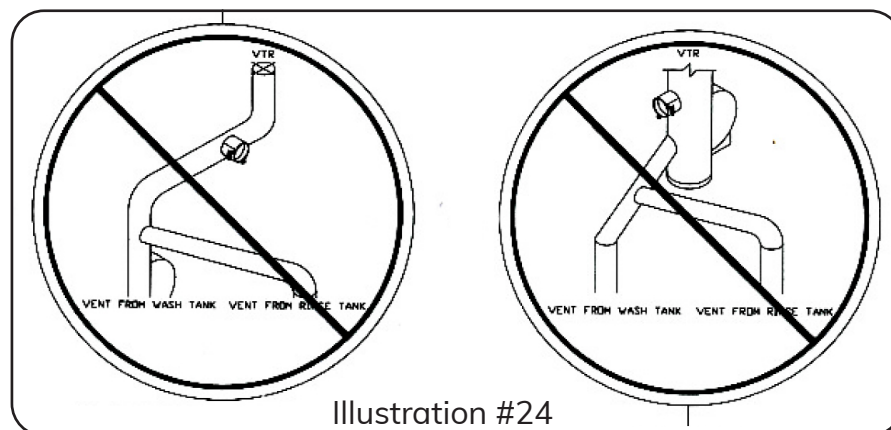
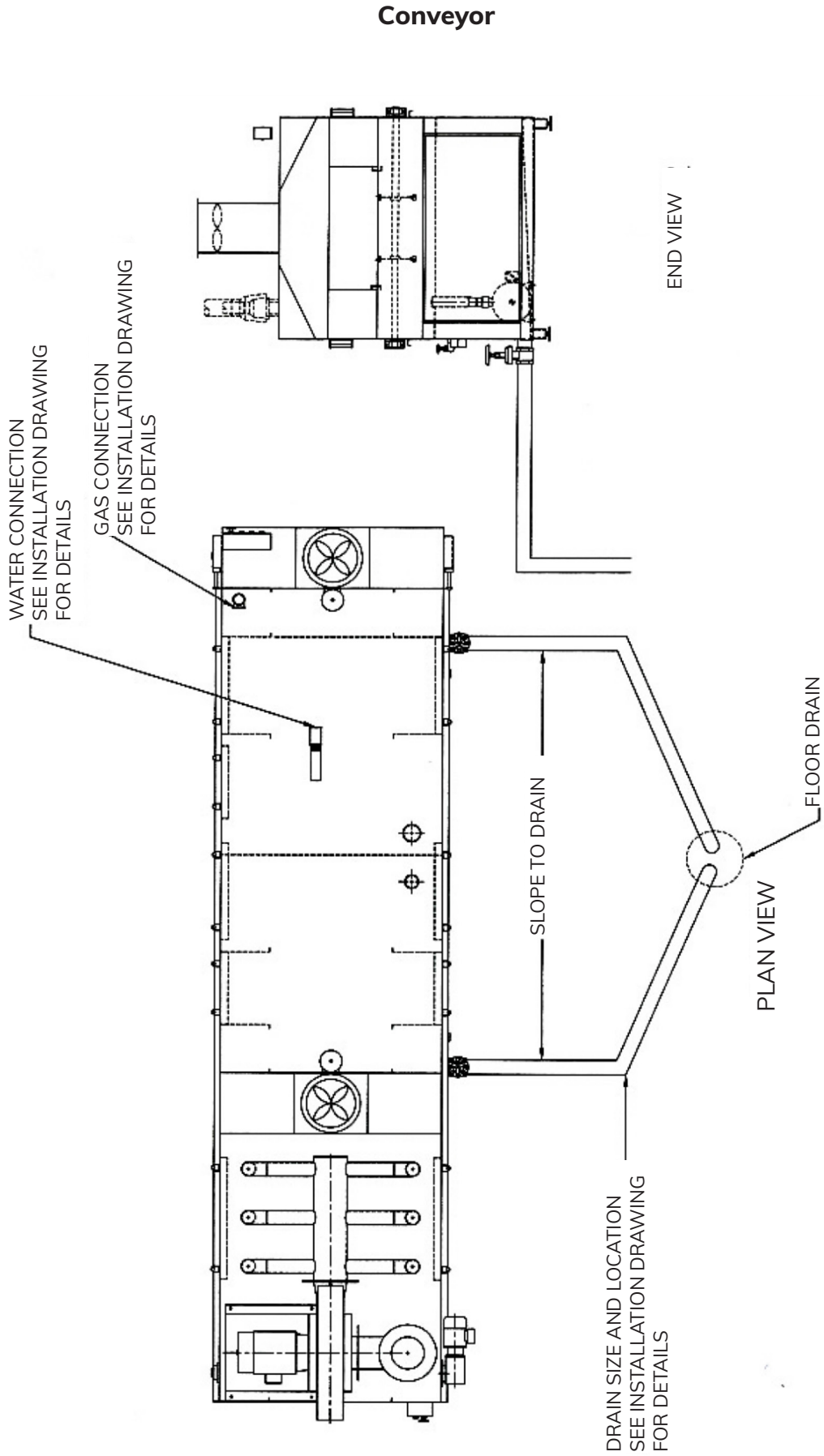


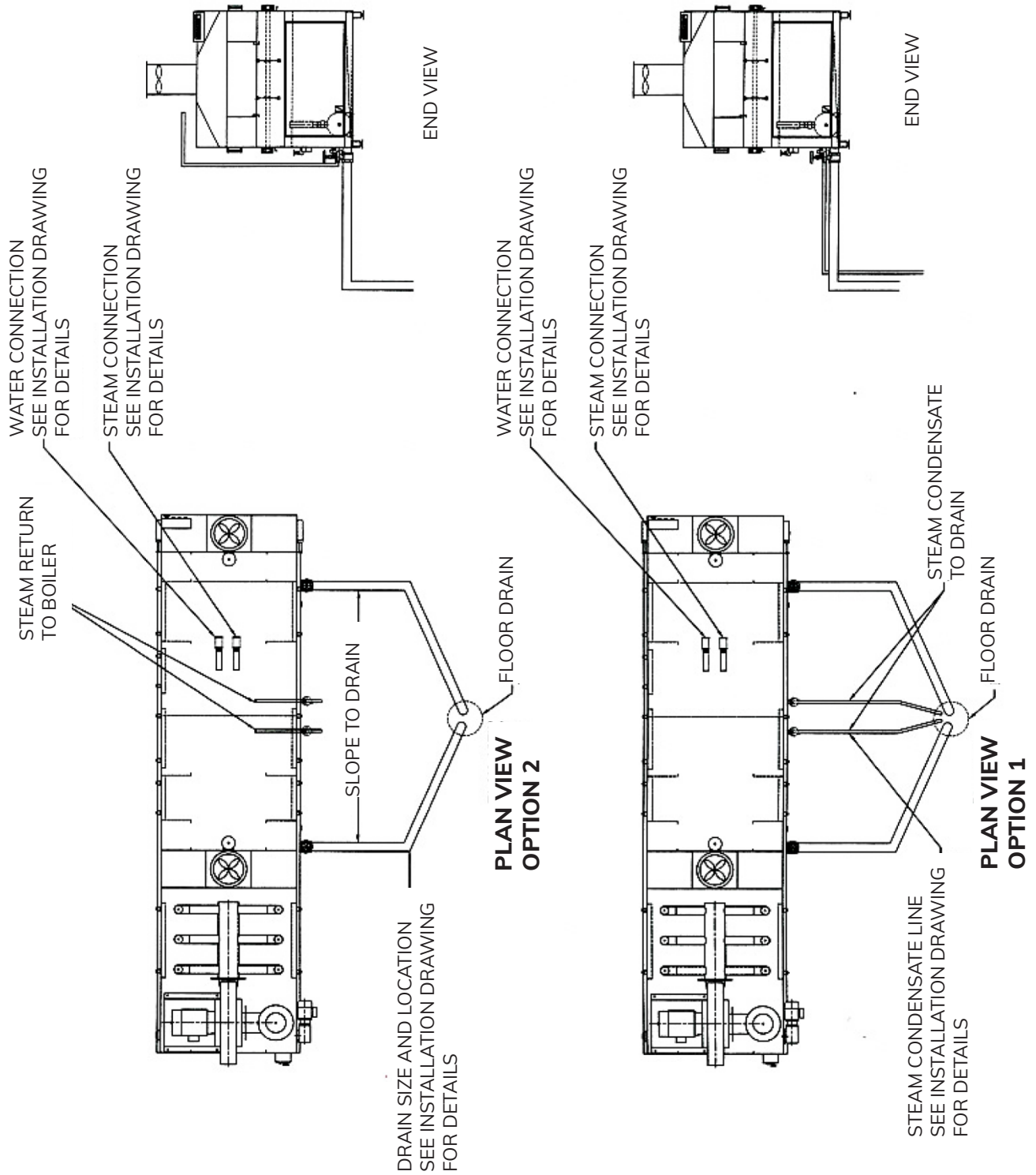
Illustration #24 is showing examples of incorrect methods for interconnecting the individual gas flues. If you have any questions on any of these guidelines, please feel free to contact a factory representative.



DRAIN, INCOMING WATER, AND INCOMING GAS LINE CONNECTIONS - GAS HEATED UNITS



DRAIN, INCOMING WATER, INCOMING STEAM AND STEAM



CONDENSATE CONNECTIONS - STEAM HEATED UNITS



DOUGLAS
WASHING AND SANITIZING SYSTEMS

Important Numbers

For warranty work you must call **DOUGLAS MACHINES CORP.**
We will issue a purchase order to the local service agent.

For parts or technical support, call **DOUGLAS MACHINES CORP.**

800-331-6870

Thank You!

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