



OPERATIONS MANUAL

TBC2 STANDARD BARREL WASHING MACHINE

**DESIGNED AND MANUFACTURED BY
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INTRODUCTION

This manual is designed for operators of the TBC 2 Standard barrel washing systems manufactured by the Tom Beard Company.

The TBC 2 Standard barrel washing systems represent the state of the art in barrel care. We hope this manual assists you in safe, efficient use of your system.

If you have any questions concerning our barrel washing systems not covered by this manual, please call us at 1-707-573-3150.

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FIGURE 1: SYSTEM FRONT VIEW



FIGURE 2: SYSTEM REAR VIEW

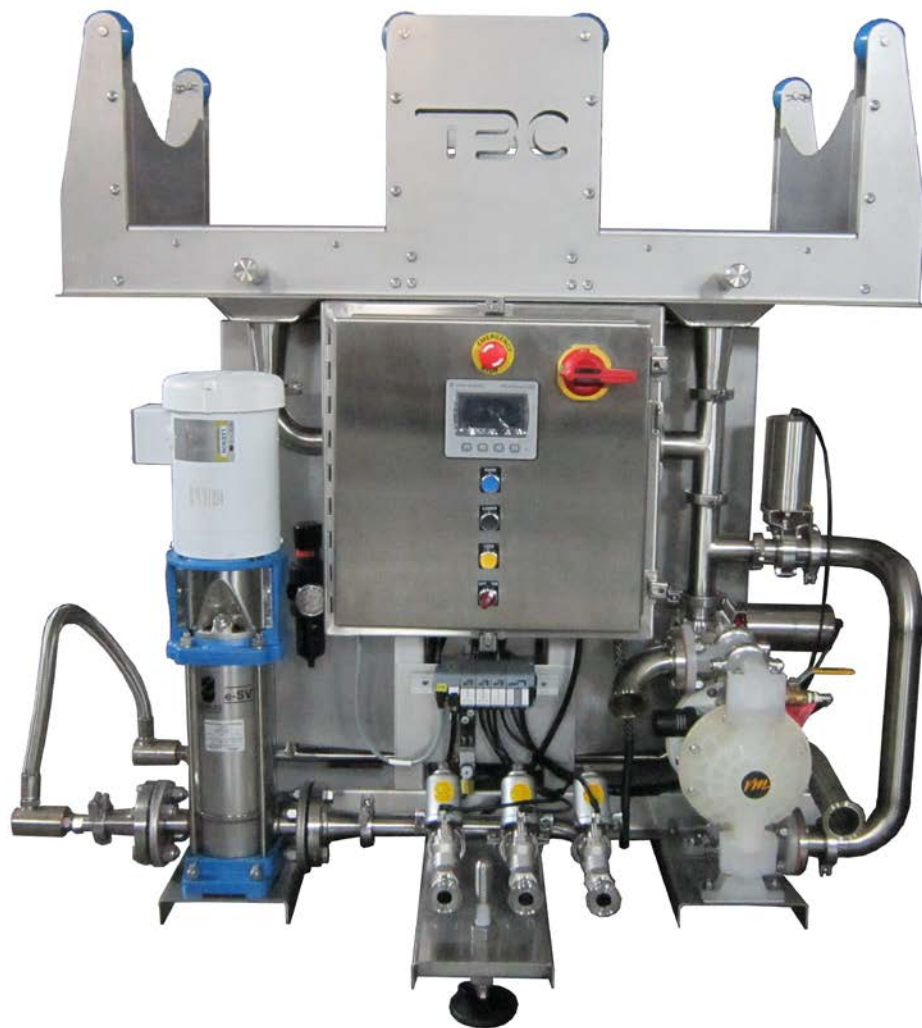


FIGURE 3: CONTROL PANEL LAYOUT



INITIAL SYSTEM SET-UP

When the TBC barrel washer system first arrives at your facility, set up the system using the following steps:

1. Locate the system. Locate the barrel washer on a level concrete surface where 220 volt or 480 volt power (575 volts on Canadian systems and 380 volts for South American systems), hot and cold water, compressed air and a drain are all available. The system is delivered with a 25-foot power cord. Water, air and drain lines are supplied by the winery.

2. Level the System. The barrel washer comes equipped with adjustable feet. Level the system using a carpenter's level or similar leveling device. Adjust the feet by placing a jack or forklift under the machine near the feet, which need to be raised or lowered. The machine should be level in both directions: that is, side-to-side and front- to back.

3. Establish a Drain. The machine should be located directly over a plant drain unless water is to be removed to a remote location. This is accomplished with a hose attached to the drain pipe at the rear of the machine.

4. Connect the System to Plant Water. The rear of the barrel washer contains the water feed ports. Tri-Clover style ferrules are used to make water connections. For TBC2 systems, there are both hot and cold water feed ports. Both ports must be connected to plant water on these systems. Some systems are delivered with an optional third inlet valve, permitting washing with hot water, cold water and ozone in any desired sequence.

WARNING: USE ONLY HOSES, CLAMPS, COUPLINGS AND ADAPTERS APPROVED FOR HOT WATER ON HOT/COLD SYSTEMS. DO NOT USE HOSES OR FITTINGS MADE OF PLASTIC OR OTHER MATERIALS THAT MAY BREAK OR THAT MAY FAIL IN HOT WATER APPLICATIONS

5. Connect the System to the Power Source. The system comes with a power cord, but because of the variety of cord caps employed by different wineries, a cord cap is not provided. Connect the power cord to a winery cord cap, but at this point leave the cord cap only partially closed so that hot leads can be switched if the rotation is incorrect; see step 6.

Connect the cord to an approved winery power supply. The power supply should incorporate a 20-amp circuit breaker.

WARNING: DISCONNECT THE SYSTEM FROM THE PLANT POWER SOURCE WHENEVER PERFORMING MAINTENANCE OR REPAIR WORK.

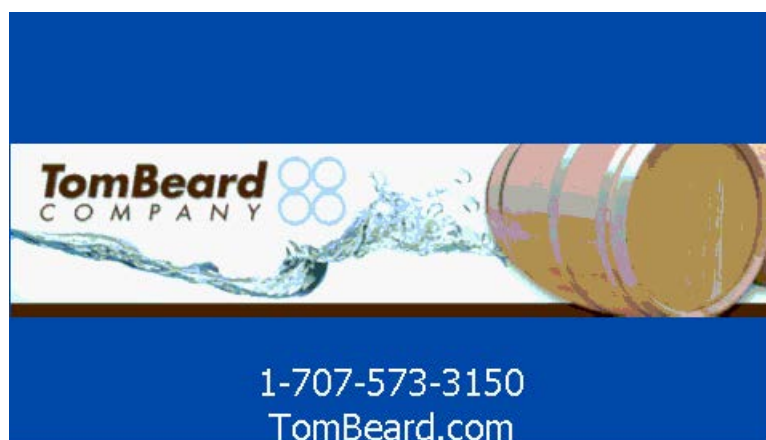
6. **Energize the System.** Turn the main Power switch located in the upper right hand corner of the control panel.

Turn the “Power On” selector switch on the system’s control panel (See Figure 3) to the ON position. The power switch should illuminate, and the touch screen should power up to the “TBC” logo screen. If these illuminations do not appear, maintenance personnel should open the electrical enclosure and check to see that the main circuit breaker is on, and that there is a functional fuse in the fuse block.

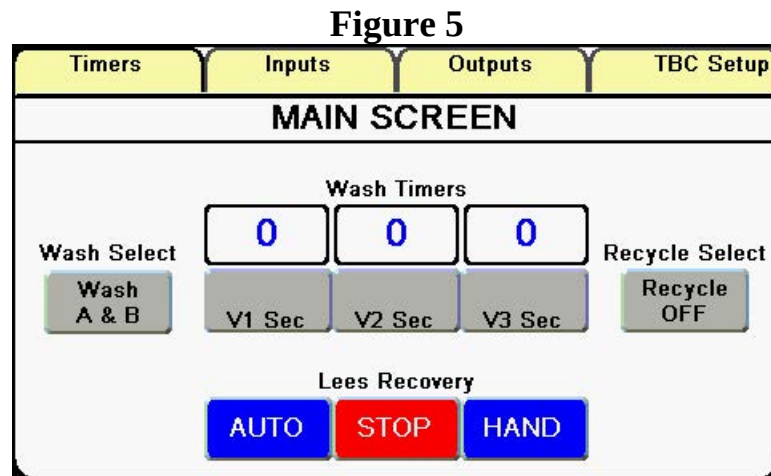
7. **Test the Water Pump for Proper Rotation.** This test is performed on the control panel. Proceed as follows:

- a) By viewing the Motor from the Top, observe the pumps Fan rotation. There are rotation Arrows on the pump housing and the Motor mounting bracket. The rotation is clock wise as viewed from the top.
- b) Touch the Screen Saver Screen (Figure 4) to move to the control pages. The Screen Saver looks like this:

Figure 4

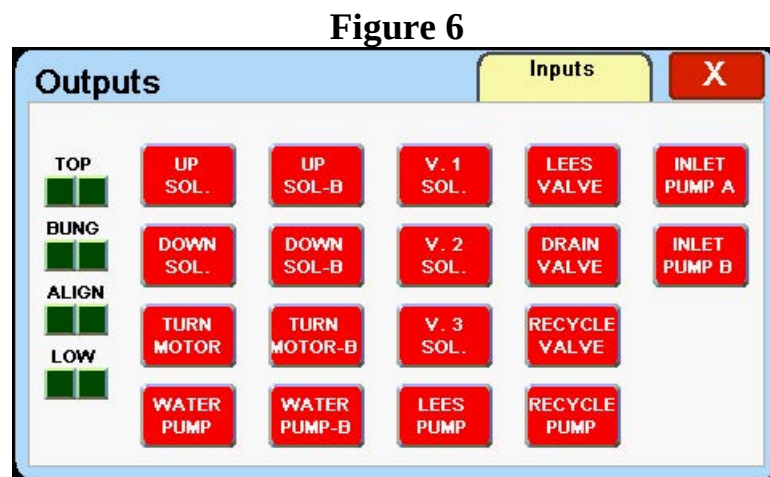


- c) The Main Screen (Figure 5) will appear. It looks like this:



- d) Push the “Output Screen” button in the upper Tab of the “Wash Time Values” screen.

The Output Screen (Figure 6) will appear. It looks like this:



- e) Momentarily push on the “Pump” button to the right in the lower row and observe the direction of rotation of the pump shaft.
- f) If the rotation is correct, proceed with start-up.
- g) If the rotation is backward, switch any 2 of the hot leads in the cord cap and repeat the rotation test.

WARNING: FAILURE TO ESTABLISH CORRECT PUMP ROTATION BEFORE OPERATING THE BARREL WASHER WILL RESULT IN MAJOR DAMAGE AND WILL VOID THE PUMP WARRANTY.

8. Connect Compressed Air. Connect a compressed air supply hose to the appropriate port on the rear of the system.

NOTE: ROUTE THE POWER CORD, THE WATER SUPPLY HOSES, DRAIN HOSE, AND THE AIR LINE AWAY FROM THE BARREL WASHER ALONG PATHS THAT WILL NOT INTERFERE WITH FORK LIFT OPERATIONS, AND IN LOCATIONS WHICH WILL BE THE SAFEST FROM THE STAND POINT OF FOOT TRAFFIC.

II. DAILY PRE-OPERATION CHECKS

CAUTION: BEFORE EACH SYSTEM USE, THE OPERATOR MUST PERFORM THE FOLLOWING SAFETY AND PRE-OPERATION CHECKS:

1. The machine must be inspected for movement from its proper plant location and for damage from fork lift operations: Each leg should be checked to be certain it is straight, contacting the floor, and undamaged. A level should then be used along the face of the machine, and along the front-to-back axis of the machine, to be certain the machine itself is properly positioned, or level side-to-side and front-to-back.

2. The electrical supply cord, hot and cold water supply hoses, airline, and drain and lees hoses (if installed) must be inspected for proper connection to the machine and your plant. Each cord and hose should be positioned so as to be clear of all phases of forklift operation and from foot traffic to the extent possible.

3. Each operator must have read this manual and been briefed in system operation by supervisory personnel.

4. Each operator must become familiar with the machine's components and the panel controls. Figures 1, 2, and 3 are included in the manual to assist in this process.

5. The wash timers must be set in the desired positions before operating the machine; see Section III below.

6. Like all machinery, the barrel washer should only be operated by trained, alert, and safety conscious personnel.

NOTE: PRESSING ONE OF THE RED EMERGENCY STOP BUTTONS AT ANY TIME WILL FREEZE MACHINE OPERATION AND SHOULD BE PUSHED IMMEDIATELY IF ANY POTENTIAL SAFETY OR OPERATIONAL PROBLEM ARISES. THERE IS ONE E-STOP BUTTON ON THE FRONT OF THE MACHINE AND A SECOND ON THE BACK CONTROL PANEL.

III. OPERATING THE BARREL WASHER

Having performed the daily pre-operation checks, the barrel washer is ready to operate. Proceed as follows (See Figure 3):

1. **Turn “Power on”.** Energize the system by rotating the power selector knob to the ON position. The backlighting on the power switch will illuminate. Note that the wash heads will be driven in the down position.

2. **Set the Wash Timers and Other Configuration Timers.** Select the wash cycle times by using the Wash Timer Page of the Touch Screen (see Figure 5 above). The inlet valves themselves and the timers on the Timer Page are labeled #1, #2 and #3. Generally, hot water will be used in valve #1 and cold and ozone in valves #2 and #3 in the desired order.

To change the time valves, push on the appropriate existing time reading for the valve in question. A numeric key pad will appear. Push in the desired new time in seconds, and then push on “Enter.” The new time will appear.

If no wash is desired for a particular valve, such as when not using valve #3, set the time value at zero seconds.

In addition to wash time values, certain other time values can be adjusted using the “Wash Configuration Screen,” accessed by pushing the button bearing that label on the “Wash Timer Screen” page.

The “Wash Configuration Screen (Figure 7) looks like this for a unit without the optional lees recovery system:

Figure 7

Bung Wash Dwell Time	Top Wash Dwell Time	Drain Wands Down Delay	Lees Pump Run Time	Drain Valve Close Delay	Recycle Valve Open Delay	Recycle Valve Close Delay
0	0	0	0	0	0	0
Sec	Sec	Sec	Sec	Sec	Sec	Sec

Help ?

The timers that can be changed on this screen are:

Bung Dwell Timer: This is the length of time the wash heads wash at the bunghole level on each wash cycle.

Top Dwell Timer: This is the length of time the wash heads wash at the middle of the barrel – the top of the cycle.

Drain Timer: This is the length of time the drain remains open at the end of the wash cycle.

These time values are changed in the same way as the wash timers.

3. **Load the Machine.** Place a pallet of barrels on the machine using a forklift. With the forklift withdrawn, the barrels can be rotated as the rack drops away.

**CAUTION: AVOID DAMAGING THE MACHINE
WITH THE FORK LIFT DURING PALLET LOADING
AND UNLOADING.**

4. **Lees Recovery-Optional.** If your machine is equipped with the optional Lees Recovery System and lees recovery is desired, refer to Section IV of the Manual for lees recovery steps at this point.

5. **Push the “UP” Button.** To align the barrels for washing, push the UP Button on the control panel. The wash heads will automatically rise to a point just below the bottom of the barrels.

NOTE: THE RED STROBE WILL BEGIN FLASHING WHEN THE WASH HEADS ARE RAISED. DO NOT ATTEMPT TO REMOVE A PALLET FROM THE MACHINE WITH THE RED STROBE ON. WASH HEAD AND/OR WASH TUBE DAMAGE WILL RESULT.

6. **Align the Barrels.** With the wash heads stopped just below the bottom of the barrels, rotate each barrel on the rollers, until the bunghole is down and the wash head is centered directly under the bunghole. This requires two adjustments: the bung hole must be directly down using the rollers, and the barrel must be moved forward or backward on the rollers so that the wash head will enter each barrel without contacting any part of the barrel. The fore and aft adjustment is accomplished by the operator placing his or her hands on the ends of the barrels, with elbows braced on the machine, and moving the barrels fore and aft.

CAUTION: FAILURE TO PROPERLY ALIGN THE BARRELS WILL RESULT IN BENT WASH TUBES OR OTHER MACHINE DAMAGE.

7. **Push the “UP” Button Again to Start Wash.** Once the barrels are properly aligned, push the UP button again and hold it until

the wash heads stop moving and the wash cycle begins. Release the button once the water pump is activated.

8. Cancel Cycle. To cancel the wash cycle once it begins, or to retract the wash heads at any time, push the “DOWN” push button. This will cause any wash cycle in operation to stop. The wash heads will retract. The DOWN push button may also be used before a wash cycle begins to retract the wash heads for any reason.

9. Unload the Machine. When the wash cycle ends, the wash heads will automatically retract. The RED STROBE will stop flashing, signaling the operator that the wash heads are down and that the pallet can safely be removed from the machine.

NOTE: THE MACHINE MAY BE STOPPED AT ANY TIME BY PUSHING THE RED EMERGENCY STOP BUTTON. WHEN POWER IS RESTORED, (BY PULLING OUT THE RED E-STOP BUTTON) THE MICROPROCESSOR HAS A SEVEN SECOND DELAY BEFORE IT CAN PERFORM ANY FUNCTION. THE “DOWN” PUSHBUTTON MUST BE PUSHED TO RESET THE WASH CYCLE, BEFORE THE WASH CYCLE CAN BE ACTIVATED AGAIN.

IV. OPERATING THE OPTIONAL LEES RECOVERY SYSTEM

For machines equipped with the optional lees recovery system, proceed as follows if lees recovery is desired:

1. **Establish Air Pressure.** Make certain compressed air is supplied to the rear of the machine. Set the air regulator to approximately 100 PSI. Adjust the regulator as required following initial operation.

2. **Connect Lees Recovery Hose.** Connect a hose from the lees recovery port on the rear of the machine to a lees tank.

3. **Set Lees Timer Values on the Touch Screens.** Lees recovery times are found on the “Wash Configuration Screen” which is accessed from the “Main Screen.”

The “Wash Configuration Screen” (Figure 8) on a barrel washer with the lees recovery option looks like this:

Figure 8

The screenshot shows a touch screen interface titled "Wash & Lees Timers" with a red "X" button in the top right corner. The screen displays seven timer categories, each with a numerical value and a unit label:

Bung Wash Dwell Time	Top Wash Dwell Time	Drain Wands Down Delay	Lees Pump Run Time	Drain Valve Close Delay	Recycle Valve Open Delay	Recycle Valve Close Delay
0	0	0	0	0	0	0
Sec	Sec	Sec	Sec	Sec	Sec	Sec

A blue "Help ?" button is located in the bottom right corner.

The length of time the lees pump will run is set using the “Lees Pump Timer” button. The pump also will stop if the operator pushes one of the “UP” push buttons to start the wash cycle.

The “Drain Valve Delay” timer, as the name implies, is used to set the length of desired delay in opening the drain valve at the completion of lees recovery.

4. Prepare for Lees Recovery. Perform Steps 1 through 3 of Section III of this Manual. Then roll the barrels until the bungholes are down, so that the lees will be drained into the wash sink and drain tube.

5. Push one of the “Lees” buttons. To recover the lees in the wash sink and drain tube, push the LEES button on the front or control panel and release. The pump will continue to operate until the Lees Pump timer has counted down or the wash cycle has been initiated by pushing one of the “UP” buttons.

V. MAINTENANCE

I. DAILY MAINTENANCE CHECKS

On a daily basis the operator should thoroughly inspect the machine. Look in particular for the following potential maintenance requirements:

A. THE WASH TUBE SEALS. Normal usage will eventually crack or otherwise degrade the seals through which the wash tubes slide in the wash sinks. The seals need replacing when water can be seen running down the outside of the wash tubes under the sinks. To change these seals, remove the wash heads, the snap rings in the black wash tube “hats” and the white Teflon washers, which will expose the seals. Remove the seals with a small hook or needle nose tool. Install new seals and re-install the Teflon washers, snap rings and wash heads.

B. THE WASH TUBE LIFTING ASSEMBLY. The wash tubes are elevated on cross tubes driven by an air actuated rodless cylinder. The winery’s air system should be free of water and debris. The regulator water trap should be cleaned regularly, to keep any condensation out of the rodless actuator.

C. THE WASH SINK. The wash sink and its drain should be kept clean and free of barrel solids.

D. WASH UNION SEALS. There is a second set of seals located in the base of the wash unions where the plumbing is connected with Tri Clover clamps. Check these areas during washer operation for leakage. When leakage begins, change the seals by removing the guards around the wash mechanisms, and then remove the plumbing by removing the Tri Clover clamps and gaskets. The seals are removed with a hook or needle nose tool.

Once removed, the seals can be replaced and the plumbing and guards re-installed.

NOTE: The foregoing daily maintenance checks, and the replacement of seals as needed, are part of routine maintenance, and thus the responsibility of the winery. Replacement of seals is beyond the scope of Tom Beard Company warranties.

II. TROUBLE SHOOTING

If a problem develops that cannot be remedied quickly, call Tom Beard Company and ask to speak with a Service Technician. The Service Technician may ask the operator or local maintenance person to go to the “Maintenance” page on the Touch Screen (see Figure 6, page 10) and observe whether certain inputs and outputs on the PLC are energized or not. This process will assist in trouble shooting the problem.

VI. LOCKOUT / TAGOUT PROCEDURES

For *Tom Beard Company* *Barrel Processing Lines and Barrel Washers* (Based on Title 8, section 3314, California Code of Regulations)

The following *LOCKOUT PROCEDURES* must be strictly followed whenever trouble shooting, maintenance or servicing is to be performed on *Tom Beard Company* barrel processing lines and barrel washers:

A. POWER OFF PROCEDURES. If it is possible, service or maintenance should be performed with all energy sources off in accordance with the following steps. If trouble shooting, service or maintenance requires continuing uses of energy sources (power, compressed air and / or nitrogen), refer to section B (“POWER ON PROCEDURES”).

1. An employee or employees designated in advance by management (such as a Maintenance Supervisor or Cellar Master) shall notify all affected employees that servicing or maintenance is required on the *Tom Beard Company* equipment and that the equipment must be shut down and locked out to perform the servicing or maintenance.
2. The designated employee or employee giving notification of shutdown shall be familiar with the type and magnitude of the energy utilized by the equipment, shall understand the hazards of the energy, and shall know the methods to control the energy. With respect to *Tom Beard Company* equipment, the energy sources are electrical power (208 or 480 volts, 3 phase, 10-60 amps); hot, cold or ozonated water (40-250 psi); compressed air (100 psi); and nitrogen (20-60 psi) for empty and fill systems if installed.
3. If the equipment is operating, the designated employee shall shut it down utilizing the normal stopping procedures as described in the appropriate *Tom Beard Company Operations Manual*.

4. An authorized employee shall de-activate the energy isolating device so that the equipment is isolated from the energy source(s). In most cases, this involves turning off the lockable main electrical power switch on the outside of the main electrical enclosure, and if necessary, shutting off compressed air, nitrogen and / or water and ozone valves supplying the equipment.
5. The authorized employee shall lock out the energy isolating device(s) with locks assigned to the lockout function by management.
6. The authorized employee shall ensure that the equipment is disconnected from the energy source(s) by first checking that no personnel are exposed, then by verifying the isolation of the equipment by operating the normal operating controls (up-down push buttons, etc.) to make certain the equipment will not operate.

Following steps 1-6, the equipment is now locked out.

B. POWER ON PROCEDURES. There are times when it is necessary to leave energy sources connected to trouble shoot, service or repair *Tom Beard Company* equipment. In this event, the following modified procedures must be followed:

1. Follow step 1 from Section A, except advise all affected employees that energy sources must be left on during trouble shooting, maintenance or servicing, and that extra caution is required.
2. Follow step 2 from Section A.
3. With the required energy sources left on, one person is designated to perform the trouble shooting, repair or servicing, while a second person is designated to service as a *spotter*. The spotter is positioned in a place where the work can be observed while the spotter stands by in a position to immediately disconnect energy sources if a problem arises. The spotter must have a clear line of sight to the person doing the work, and must be able to communicate with that other person by voice or radio at all times. If multiple energy sources might need to be shut down at different locations, multiple spotters should be designated. In the case of *Tom Beard Company* stand alone barrel washers, power on trouble shooting by one person may be safe if the person has

immediate access to energy disconnects while worked is being performed. Single person trouble shooting, repairs or servicing should only be conducted with the express permission of management.

4. All energy sources must be immediately disconnected by the spotter(s) in the event of any indication of trouble, either by communication from the person performing the work or by the spotter's own observations.

C. START-UP PROCEDURES. When trouble shooting, repairs or servicing have been completed, start-up must be done using the following steps:

1. Check the equipment and the immediate area around the equipment to ensure that all tools, parts, and other nonessential items have been removed and that the equipment's components are operationally intact.
2. Check the work area to ensure that all employees have been safely positioned or removed from the area.
3. Verify that all controls are in neutral.
4. Remove lockout devices and reenergize the equipment if power off procedures were utilized.
5. Notify all affected employees that the servicing or maintenance is completed and the equipment is ready to be tested and used if found in working order.