

# Series 1522 Centrifugal Pump



## Instructions for: Installation, Operation, & Safety Service

**INSTALLER:** PLEASE LEAVE THIS MANUAL FOR THE OWNER'S USE.

### DESCRIPTION

The Bell & Gossett Series 1522 is a horizontal, foot mounted pump designed for extra quiet operation. The Series 1522 minimizes space requirements, facilitates maintenance and features several stock sizes to cover most pumping requirements. As a B&G standard, the back pullout feature affords serviceability without disturbing the piping.

The Series 1522 is available with suction sizes from 1 1/4" to 2" and is offered with motors varying in size from 1/4 to 3/4 HP. Combining these parameters makes possible the achievement of flow rates to 100 gpm and heads to 31 feet.

### OPERATIONAL LIMITS

B&G Series 1522 pumps are designed to pump liquids compatible with their iron or bronze body construction at working pressures up to 175 psi and a maximum temperature of 225°F.

#### Do not exceed these values.

#### Pump Construction:

Bronze Fitted or All Bronze  
All Iron  
#316 Stainless Steel

#### Standard Mechanical Seal:

BUNA – PH Limitations 7-9;  
Temperature Range – 40 to + 225°F  
EPT – PH Limitations 7-11;  
Temperature Range – 40 to + 250°F

### PUMP APPLICATION

Bell & Gossett Centrifugal Pumps may be used for hydronic heating and cooling, domestic water, industrial applications and general service operations. Bell & Gossett recommends that bronze constructed pumps be used for pumping potable water. This pump is for indoor use only.



### SAFETY INSTRUCTIONS

This safety alert symbol will be used in this manual and on the pump instructions decal to draw attention to safety related instructions. When used, the safety alert symbol means **ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED! FAILURE TO FOLLOW THE INSTRUCTIONS MAY RESULT IN A SAFETY HAZARD.**



### WARNING

BEFORE INSTALLING,  
USING OR SERVICING  
THIS PRODUCT, READ  
THE WARNING NOTES  
AND INSTRUCTIONS  
IN INSTRUCTION  
MANUAL. FAILURE TO  
DO SO MAY RESULT  
IN SERIOUS INJURY  
OR PROPERTY DAMAGE.

V56845

Your Series 1522 pump should have this warning label affixed to the pump near the conduit box cover. If this warning is missing or illegible, contact your local Bell & Gossett Representative for a replacement.

## SAFETY REQUIREMENTS

### ELECTRICAL SAFETY

**WARNING: Electrical Shock Hazard**  
Electrical connections to be made by a qualified electrician in accordance with all applicable codes, ordinances and good practices. Failure to follow these instructions could result in serious personal injury, death and/or property damage.

**WARNING: Electrical Overload Hazard**  
Three phase motors must have properly sized heaters to provide overload and under voltage protection. Single phase motors have built-in overload protectors. Failure to follow these instructions could result in serious personal injury, death and/or property damage.

### THERMAL SAFETY

**WARNING: Extreme Temperature Hazard**  
If the pump, motor or piping are operating at extremely high or low temperature, guarding or insulation is required. Failure to follow these instructions could result in serious personal injury, death and/or property damage.

**WARNING: Hot Water Hazard**  
When disassembling a gasketed joint, always use a new gasket upon reassembly. NEVER RE-USE OLD GASKETS. Failure to follow these instructions could result in serious personal injury, death and/or property damage.

### MECHANICAL SAFETY

**WARNING: Unexpected Start-Up Hazard**  
Disconnect and lockout power before servicing. Failure to follow these instructions could result in serious personal injury, death and/or property damage.

**WARNING: Excessive System Pressure Hazard**  
The maximum working pressure of the pump is listed on the nameplate – DO NOT EXCEED THIS PRESSURE. Failure to follow these instructions could result in serious personal injury, death and/or property damage.

**WARNING: Excessive Pressure Hazard – Volumetric Expansion –**  
The heating of water and other fluids causes volumetric expansion. The associated forces may cause failure of system components and release high temperature fluids. This can be prevented by installing properly sized and located compression tanks and pressure relief valves. Failure to follow these instructions could result in serious personal injury, death and/or property damage.

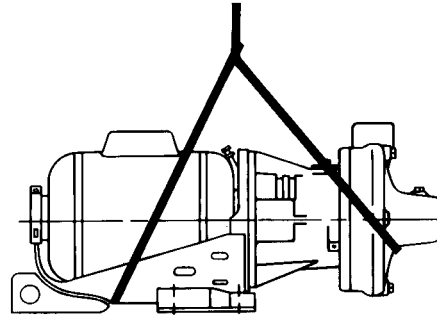
## PUMP INSTALLATION

### PUMP SUPPORT AND LOCATION

Bell & Gossett Series 1522 pumps should be installed as near to the supply source as possible. There should also be sufficient room for future inspection, maintenance and service. The maximum suction lift should not exceed 15 feet, including friction losses.

Special precautions should be taken to avoid sound and vibration transmission. If the pump is to be located near a noise sensitive area, consult a sound specialist.

If it is required to lift the entire pump, do so with slings placed around the pump assembly as shown.



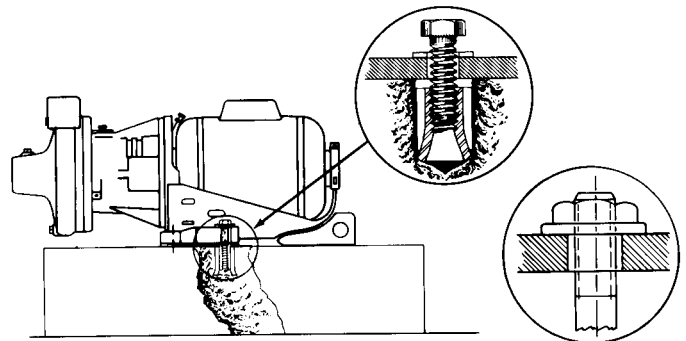
**IMPORTANT:** In closed systems, do not install and operate Bell & Gossett pumps, 3D valves, suction diffusers, etc., without properly sized safety and control devices. Such devices include the properly sized and located pressure relief valves, compression tanks and pressure, temperature, and flow controls. If the system is not equipped with these devices, consult the responsible engineer or architect before operating.

### MODE OF DISCHARGE

B&G Series 1522 end suction pumps change the direction of the fluid by 90°. THE ARROW CAST IN THE PUMP BODY MUST POINT IN THE DIRECTION OF THE FLOW.

Mounting this pump requires no special foundation, however, it is recommended that the pump be mounted on a concrete base weighing at least 2½ times the weight of the pump.

If possible, tie the concrete pad in with the finished floor. To facilitate servicing, use expansion fittings by inserting the female portion into a hole in the pad so that its top surface is flush with the pad surface. By doing so, the motor can be removed by sliding it back from the pump when the hold-down bolts are removed.



## SYSTEM PIPING

Always install a section of straight pipe between the suction side of the pump and the first elbow. The length of this pipe should be equal to five times the diameter of the suction pipe size. This reduces turbulence of the suction by straightening the liquid flow path prior to pump entry. If high temperature variation is anticipated, expansion fittings should be installed to reduce pump strain.

It is highly recommended that service valves (shut-off) also be installed on each side of the pump to facilitate servicing or replacing the pump without draining the system. Install check valves to protect the pump casing from breakage that might occur as a result of water hammer.

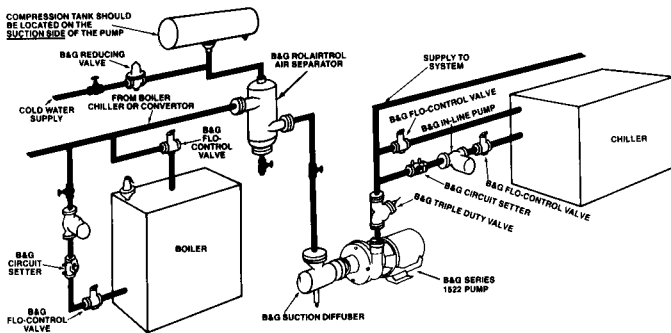
To prevent air from being drawn into pumps operating in open systems, place the end of the suction pipe at least three feet (3') below the surface of the water in the suction well. Avoid air pockets in the suction line and ensure that each section of the suction pipe is absolutely air tight. WHERE THERE IS SUCTION-LIFT, HORIZONTAL RUNS OF SUCTION PIPING SHOULD SLOPE DOWNWARD FROM THE PUMP TOWARD THE SUCTION WELL BUT NEVER UPWARD.

Minimize strain on the pump by supporting the suction and discharge piping with pipe hangers near the pump. Line up the vertical and horizontal piping so that each is aligned to the discharge and suction openings of the pump. DO NOT ATTEMPT TO SPRING THE SUCTION OR DISCHARGE LINES INTO POSITION. THIS MAY RESULT IN UNWANTED STRESS IN THE PUMP BODY AND/OR PIPING. The code for pressure piping, ANSI B31.1, lists types of supports available for various applications.

Ordinary wire or band hangers are not adequate to maintain alignment. It is very important to provide strong, rigid support for the suction and discharge lines.

**WARNING: Hot Water Leakage Hazard**  
 Make certain that the piping has been adequately torqued to provide leak-proof joints. Failure to follow these instructions could result in serious personal injury and/or property damage.

## PIPING SCHEMATIC



## WIRING INSTRUCTIONS

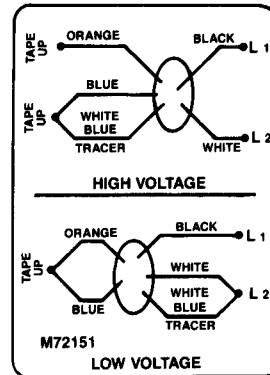
**WARNING: Electrical Shock Hazard**  
 Disconnect and lockout the power before making electrical connections. Failure to follow these instructions could result in serious personal injury or death.

Remove the screws securing the conduit box cover (wiring compartment) and lift off the cover. Attach the appropriate size connector to the hole in the side of the conduit box.

### I. SINGLE PHASE MOTORS

The B&G dual voltage single phase motor can operate at low voltage (115V) as well as at high voltage (230V). Determine the voltage at which you choose to operate your B&G pump and make wiring connections according to the following diagrams (these diagrams are also found in the conduit box cover):

#### B&G MOTORS ONLY

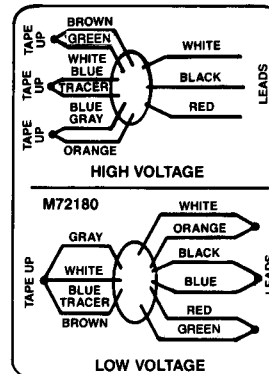


**NOTE:** Bell & Gossett single phase motors are protected with inherent overheating devices and do not require external overload protection.

### II. THREE PHASE MOTORS

The B&G Series 1522 three phase motors can operate at either low voltage (208-230V) or at high voltage (460V). Determine the voltage you choose to operate your B&G pump. Wiring instructions for each option is listed below and is also found in the conduit box cover.

#### B&G MOTORS ONLY



**WARNING:** Be certain that all connections are secure and the conduit box cover is closed before electrical power is connected. Failure to follow these instructions could result in serious personal injury, death and/or property damage.

If motor is other than B&G manufactured, connection shall be per motor nameplate or inside conduit box.

## OPERATIONAL INSTRUCTIONS

### SYSTEM PREPARATION

Prior to pump start up, closed heating and cooling systems should be flushed with clean water and drained. The system should then be filled with clean water having a PH between 7 and 9.

### LUBRICATION

All new B&G pumps are test run at the factory, but must be lubricated thoroughly before being placed in operation. Bell & Gossett supplies a high quality lubricant specifically for this purpose which can be purchased from any B&G Representative (Part No. L23401). Proper lubrication procedures are as follows:

1. **PUMP BEARINGS:** Fill the bearing frame according to the oiling instruction decal. At the time of installation or start of each heating season, add approximately 1 oz. of B&G #20 weight non-detergent oil. A SAE 20 (non-detergent) or 10W-30 oil may be substituted. More frequent lubrication may be required under adverse conditions such as high ambient temperatures.

2. **MOTOR BEARINGS: Sleeve Bearings** – Lubricate through the motor oil cups per the lubrication decal once every four months or more often under adverse conditions. Use eight to ten drops in each oil cup.


**Ball Bearings** – Lubricate every six months to two years depending on conditions with soda soap or lithium base grease.

For Non-Bell & Gossett Motors, lubrication should be in accordance with the motor manufacturer's nameplate instructions.


### ROTATION

Pump rotation is clockwise when viewed from the back of the motor. An arrow is provided to show the rotational direction.

### PRIMING AND STARTING

 **CAUTION: Seal Damage Hazard**  
Do not run the pump dry – seal damage may occur. Failure to follow these instructions could result in moderate personal injury and/or property damage.

Before starting, the Series 1522 pump must be filled with water. Manual priming may be necessary if the system does not fill the pump body automatically. Vent plugs are provided on the pump body to vent the air.

 **WARNING: Hot Water Leakage Hazard**  
Pressurize the pump body slowly while checking for leaks at all joints with gaskets. Failure to follow these instructions could result in serious personal injury and/or property damage.

The pump should be started with the discharge valve closed and the suction valve fully open. After the pump is at operating speed, the discharge valve should be opened gradually.

When the pump is primed from an independent source, a 1/4" pipe line controlled by a valve may be connected to one of the side plugs on the volute shell.

Do not attempt to prime a pump while it is running by letting water into it through its discharge pipe. This is an unsatisfactory method that could damage the pump or motor or possibly blow out a fuse.

To facilitate priming and draining, plugs in top and bottom in the volute casing may be replaced by 1/8" valves.

## SERVICE INSTRUCTIONS


### GENERAL INSTRUCTIONS

1. Keep the pump and motor properly lubricated.
2. If the pump is to be exposed to freezing temperatures, drain the pump.


### PERIODIC INSPECTION

Inspect the pump regularly for leaking seals, worn gaskets, and loose or damaged components. Replace or repair as required.

### REPLACING THE SEAL

 **WARNING: Electrical Shock Hazard**  
Disconnect and lockout the power before servicing. Failure to follow these instructions could result in serious personal injury or death.

The electrical supply must be disconnected and locked out of service. Loosen the conduit box cover screws and remove the cover. Disconnect conduit and wiring.

 **WARNING: Unexpected Start-Up Hazard**  
Disconnect and lockout power before servicing. Failure to follow these instructions could result in serious personal injury, death and/or property damage.

Close the valves on the suction and discharge sides of the pump (if no valves have been installed, it will be necessary to drain the system).

**CAUTION: Extreme Temperature Hazard**  
 Allow the pump temperature to reach an acceptable level before proceeding. Open the drain valve and do not proceed until the liquid has completely drained. If the liquid does not stop flowing from the drain valve, then the isolation valves are not sealing and should be repaired before continuing. After the liquid has stopped flowing, leave the drain valve open and continue. Remove the drain plug located on the bottom of the pump volute. Do not reinstall this plug or close the drain valve until the reassembly is complete. Failure to follow these instructions could result in moderate personal injury and/or property damage.

Loosen the volute capscrews but do not remove them. Shift the pump position slightly to allow the pressurized water to escape.

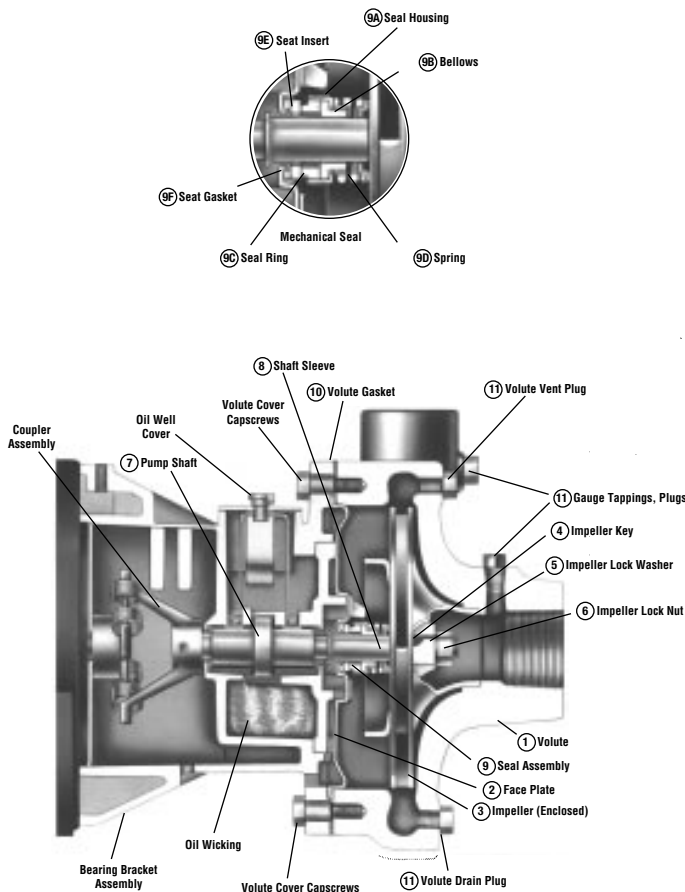
**WARNING: Excessive Pressure Hazard**  
 Make certain that the internal pressure is relieved before continuing. Failure to follow these instructions could result in serious personal injury and/or property damage.

Remove the volute capscrews and remove the pump assembly from the volute.

### DETERMINE THE SEAL TYPE

A cut away diagram has been provided to illustrate the components of the Series 1522 bearing assembly. Refer to this diagram whenever seal replacement becomes necessary.

### SEAL ASSEMBLY DIAGRAM



### REPLACEMENT PROCEDURE





With the bearing assembly and motor removed from the system, use the following instructions to facilitate the replacement.

1. Use a strap wrench or rag to prevent the impeller from turning with one hand and loosen the impeller nut with the other.
  2. Lift the spring retainer and the seal spring from the shaft. Remove the compression ring from the seal collar by inserting a small screwdriver underneath the ring and carefully applying an upward prying force. Remove the ring, collar and the remaining seal components from the shaft.  
**NOTE:** Bell and Gossett seal assemblies consist of a stationary seal insert and rotating seal assembly. Each of these components must be replaced when replacing the mechanical seal. NEVER REPLACE INDIVIDUAL COMPONENTS SEPARATELY.
  3. Using a clean, lint free rag, remove any debris that may have accumulated in the seal recess.
  4. Place the new retainer in the face plate seal recess. Seat the thin rubber gasket in the recess and set the ceramic insert atop the gasket. The ceramic has a top side and bottom side. The bottom is identifiable by its slightly recessed grooves. These grooves should face downward toward the rubber gasket.
  5. Before proceeding, place the shaft end on a wooden block; the wooden block should push the shaft to its forward-most position (there should not be any end-play in the shaft).
  6. Lubricate the rubber seal collar with soapy water. The entire *rotating* seal assembly, which includes the carbon seal ring, rubber collar, brass collar and compression ring, is to be pushed onto the shaft as one unit. Do not attempt to assemble the seal by placing the components on the shaft individually. The notches in the brass collar should be aligned with the recesses found on each side of the carbon ring.
  7. Press the brass compression ring tightly against the upper end of the rubber collar. A screwdriver can be used at several points along its periphery to provide a tight and even fit. Press with the screwdriver – do not tap. Tapping on the seal may break the ceramic or carbon insert.
  8. With the shaft resting on the wooden block, place the seal spring and cup retainer on the shaft. Next, place the impeller and lock washer. Thread the impeller nut to the shaft and tighten according to:  $\frac{3}{8}$ " nut to 8-12 ft.-lbs.,  $\frac{7}{16}$ " nut to 17-22 ft.-lbs. Do not overtighten.
- WARNING: Hot Water Hazard**  
 Whenever the bearing assembly is removed from the piping, use a new gasket when reinstalling. Failure to follow these instructions could result in serious personal injury and/or property damage.
9. Clean the pump body of excess debris. Place a new gasket in the recess of the pump body; ensure that it sits flush against the gasket surface.
  10. Replace the motor and bearing assembly by inserting the impeller in the pump body and evenly tighten the eight  $\frac{3}{8}$ " capscrews to 10-14 ft.-lbs.
  11. Refer to the WIRING INSTRUCTIONS section in this manual to properly configure all electrical connections.
  12. Follow the OPERATIONAL INSTRUCTIONS in this manual to 1) check the PH of the system water, 2) to check the rotation of the pump, and 3) to prime the system prior to starting.

## ADDITIONAL PUMP REPAIR

Refer to the following manual for further repair instructions for the Bell & Gossett Series 1522 pump:

Coupler & Motor Mount Replacement . . . . . #P06452  
or #S15900 Rev. D

Capscrew Type	Head Marking	CAPSCREW TORQUE (FOOT-POUND)								
		Capscrew Diameter								
		1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1
SAE Grade 2		6	13	25	38	60	120	190	210	300
Brass Stainless Steel	 or 	4	10	17	27	42	83	130	200	300
SAE Grade 5		10	20	35	60	90	180	325	525	800

## DEALER SERVICING

If your pump requires further repair, contact your local B&G Representative. Having the following information at hand will facilitate your representative's ability to assist you:

1. Complete data from nameplate.
2. Suction and discharge pipe pressure gauge readings.
3. Ampere draw of the motor.
4. A sketch of the pumping system (includes pipes, valves, etc.)

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