

OWNER'S MANUAL FOR DRY WOB-L™ TANK MOUNTED VACUUM SYSTEM MODEL: 8150B-30



Warning
Be sure to properly identify intake and discharge before using pump.



Warning
These models are suitable for pumping air. Do not use for pumping mixtures other than air.

INSTRUCTION
WARNING AND CAUTION
PLEASE READ BEFORE OPERATION

While reading your manual, please pay close attention to areas labeled:
WARNING AND CAUTION.
The description of each is found below.

WARNING

Warnings are given where failure to observe instruction could result in injury or death to people.

CAUTION

Cautions are found where failure to observe the instruction could result in damage to the equipment, associated equipment and process.

These units confirm to the SI International system of units of measurement.
The following symbols (with recommendation of IEC1010) of warning will be found on the pump.



Caution - Refer to accompanying documents



Caution - Risk of electrical shock



Caution - Hot surface

WARNING

Motor includes a self resetting thermal cutout and the pump could restart without actuation under fault condition.

TABLE OF CONTENTS

Section 01 - Safety Information

- 1.10 Caution to prevent injury
- 1.20 Caution to reduce risk of electrical shock
- 1.30 Warning to reduce risk of electrocution
- 1.40 Warning to reduce risk of explosion or fire

Section 02 - Installation

- 2.10 Introduction
- 2.20 Unpacking
- 2.30 Location
- 2.40 Intake connections and discharge provisions
- 2.50 Electrical power
- 2.60 Vacuum connections
- 2.70 Vacuum gauges
- 2.80 Traps

Section 03 - Operation

- 3.10 Starting procedure
- 3.20 Leak detection
- 3.30 Operating pressure range
- 3.40 Vacuum switch adjustment
- 3.50 Shutdown procedure

Section 04 - Maintenance

- 4.10 Operation
- 4.20 Bearings

Section 05 - Troubleshooting

- 5.10 Vacuum problems

Section 06 - Specification

- 6.10 Pump specification chart
- 6.20 Dimensional drawing

Section 07 - Exploded views and parts list

- 7.10 Model 8150

SECTION 1: SAFETY INFORMATION

1.10 Caution: To Prevent Injury...

- 1.101 Never operate this product if it has a damaged cord or plug. If it is not working properly, has been dropped, damaged or has fallen into water, please return the product to a Welch service center for examination and repair.
- 1.102 Keep the cord away from heated surfaces.
- 1.103 Never block any air openings or place it on a soft surface where the opening may be blocked. The air openings are for ventilation of the motor inside the housing. Keep all air openings free of lint, dirt and other foreign objects.
- 1.104 Never drop objects or insert fingers into any openings.
- 1.105 Do not operate this product where oxygen is being administered.
- 1.106 This pump is thermally protected and can automatically restart when the protector resets. Always disconnect power source before servicing.
- 1.107 Wear safety glasses or goggles when operating this product.
- 1.108 Use only in well ventilated areas.
- 1.109 Do not use any tools or attachments without first determining maximum air pressure for that tool or attachment.
- 1.110 Never point any air nozzle or air sprayer toward another person or any part of there body.
- 1.111 All electrical products generate heat. To avoid serious burns never touch unit during or immediately after operation.
- 1.112 Be sure to properly identify intake and discharge before using pump.

1.20 Caution: To Reduce Risk Of Electrical Shock...

- 1.201 Unit is supplied with a three-pronged plug. Be sure to connect unit to a properly grounded outlet only.

1.30 Warning: To Reduce Risk Of Electrocution...

- 1.301 Do not use this product in or near area where it can fall or be pulled into water or other liquids.
- 1.302 Do not reach for this product if it has fallen in to liquid. Unplug immediately.
- 1.303 Never operate this product outdoors in the rain or in a wet area.

1.40 Warning: To Reduce The Risk Of Explosion Or Fire...

- 1.401 Do not use this unit in or near explosive atmospheres or where aerosol (spray) products are being used.
- 1.402 Do not pump anything other than atmospheric air.
- 1.403 Do not pump combustible liquids or vapors with this product or use in or near an area where flammable or explosive liquids may exist.
- 1.404 Do not use this product near flames.



Warning

Failure to observe the above safety precautions could result in severe bodily injury, including death in extreme cases.

SECTION 2: INSTALLATION

2.10 Introduction

2.101 This manual has been compiled not only for the care and maintenance of the Welch Dry Vacuum Pump or System now in your possession, but as a helpful reference guide to prevent many problems which can occur if used improperly.

2.20 Unpacking

2.201 Carefully remove the unit from the shipping box. Preserve all paperwork for future reference. If damage has occurred from shipment a claim must be filed with the carrier immediately; preserve the shipping carton for inspection by the carrier. If you are required to communicate with your dealer or Welch Vacuum be sure to include your order numbers for quick identification. Do not return the unit to the factory without first calling for a returned goods number.

2.30 Location

2.301 The unit should be located in a clean, dry and well-ventilated area. Please be sure not to block the ventilation ports located on the motor housing. The unit should be placed where the surrounding temperature remains between 5°C and 40°C (41°F and 104°F). Always check to insure the location chosen is protected from direct or indirect moisture contact.

2.40 Intake Connections

2.401 The Welch pump employs hose barbs that accept 7/16 inch ID hose. The Welch Dry Vacuum System connects to your process via a 3/8 inch ID hose barb. An exhaust muffler further quiets the pump.

2.50 Electrical Power

2.501 Power Source Review

Review the power source and the motor rating to be sure they agree in voltage, phase and frequency. Serious damage may occur to the motor if it is connected to an improper voltage. All Welch systems must be grounded. Grounding reduces the risk of electric shock in the event of an electrical short circuit. The plug must be plugged into an outlet that is properly grounded. Consult your local electrical codes if you have any doubts.

2.502 Overload Protection

Motor thermal overload protection is made available by the motor manufacturer as an aid to minimizing motor failure. Overload protection is a standard feature on single-phase motors. The motors have automatic overload protection. Automatic reset protection is designed to reset itself after a predetermined cooling period. If the fault to the drive remains unaltered, the motor will cycle on and off until the fault is corrected.

2.60 Vacuum Connections

2.601 Model 8150 utilizes 3/8 inch ID hose. Hose clamps should be used to hold the hose in place. Since these pumps operate in the viscous regime, the small diameter of the hose will generate minimal conductance loss. For best results, Welch recommends the length of the tubing between the pump and the chamber be kept as small as possible.

2.70 Vacuum Gauges

- 2.701 Typically dial gauges are used when measuring vacuum from 0 to 27 inches of Hg. A typical vacuum dial gauge gives negative pressure – that is, pressure below atmospheric. The reference point for the typical dial vacuum gauge is atmospheric pressure. Please keep in mind that atmospheric pressure tends to vary from day to day. As a result of this variability, the dial vacuum gauge will indicate slightly different maximum vacuum readings from day to day.

2.80 Traps

- 2.801 The pumps will handle humid air as long as water vapor comprises less than 1% of the gas flow. If there is a chance liquid may be drawn from the process under evacuation, Welch recommends a liquid trap be placed between the process and the pump.

Dry WOB-L™ Pumps are suitable for pumping only atmospheric air. Atmospheric air is a mixture of elements and compounds where nitrogen and oxygen comprise more than 99% with other trace gases comprising less than 1%.

Do not use this product in contaminated environments or for pumping mixtures other than atmospheric air.

SECTION 3: OPERATION

3.10 Starting Procedures

3.101 Starting a Welch Dry Pump/Vacuum System

Before attaching the unit to its application it is good to familiarize yourself with the function and action of the unit which you have acquired. Review the power requirements as described in Section 2.6. Welch recommends running the unit for a few minutes to warm it up before use.

The warm-up improves the pump's ability to handle humid air.

On a tank mounted model (8150B-30) a lever, located on the side of the vacuum switch, is used for operation in three positions. Off = float, On = Continuous, On/Off = Vacuum and Float. The Vacuum and Float setting automatically turns the pump on and off depending on the Vacuum Switch setting (Factory preset at 20 – 25 InHg). To adjust the Vacuum Switch setting refer to section 3.4 (Vacuum Switch Adjustment).

3.102 Cleanliness

Take every precaution to prevent foreign particulates from entering the unit. Particulates will damage the unit's performance. If you find that particulates will come off the process, a simple particulate trap can be made out of readily available materials. The trap would consist of glass wool placed in a glass or plastic tube. Two fine mesh screens placed on either end of the glass wool need to be used to hold the glass wool in place.

3.20 Leak Detection

- 3.201 The importance of eliminating all leaks in a vacuum system is obvious. The pump must remove this added volume of leaked gas to maintain the desired vacuum. Leaks can be located by slightly pressuring the system and painting the suspected area with a thick soap solution. Escaping air will produce soap bubbles.

3.30 Operating Pressure Range

3.301 Vacuum pumps are designed to be run from slightly below atmospheric to their maximum vacuum level on the intake side. Consult the Specification table for the ratings for your specific model.

3.40 Vacuum Switch Adjustment

3.401 On the Dry Vacuum Systems, the vacuum level at which the system shuts off and restarts can be adjusted. Begin by unplugging the unit from any power source. Remove the corner of the vacuum switch by loosening the small bolt on the top of the cover. The vacuum level at which the system shuts off can be increased by turning the nut on the longer screw counterclockwise. Turning the nut clockwise will decrease the level at which the system shuts off. The nut smaller screw controls the level at which the system restarts. Turning the nut clockwise will lower the level at which the system restarts, and turning the nut counterclockwise will raise the level at which the system restarts. The differential between system shutoff and restart can be between 5 and 10 inHg.

3.50 Shutdown Procedure

3.501 After use, Welch recommends the unit be run for about 2 minutes disconnected from the vacuum process and the valve open. The air pumped through will purge out humid air that may be inside the pump. This purge of the pump mechanism helps prevent corrosion.

SECTION 4: MAINTENANCE

4.10 Operation

4.101 Welch Dry Systems are 100% oil-free. The units are built for continuous duty operation.



Warning

Adding greases or petroleum products to this unit will reduce performance and can potentially damage the product.

4.20 Bearings

4.201 All bearings are sealed and permanently lubricated. Lubrication should not be attempted. The units are grease-packed bearings and do not require additional lubrication.

SECTION 5: TROUBLESHOOTING

5.10 Vacuum Problems

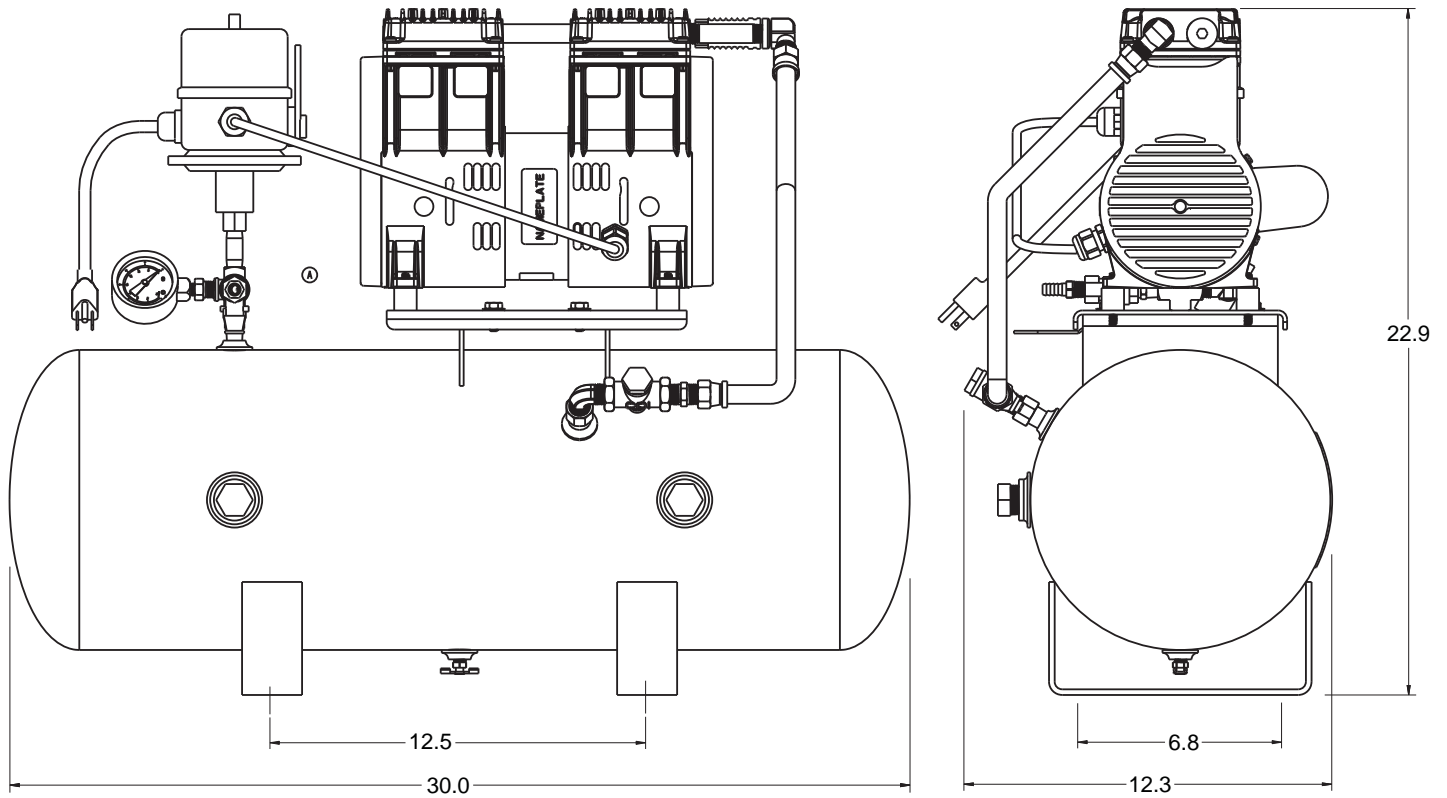
5.101 Leakage, contamination and unusual outgassing are the general causes of problems associated with poor vacuum. To operate at maximum efficiency a system must be thoroughly clean. If the system is completely clean and free from leaks, and unwarranted vacuum problems still exist, the pump should be checked. A simple criterion for the condition of the pump is the determination of its maximum vacuum capability.

SECTION 6: SPECIFICATION

6.10 Pump Specification Chart

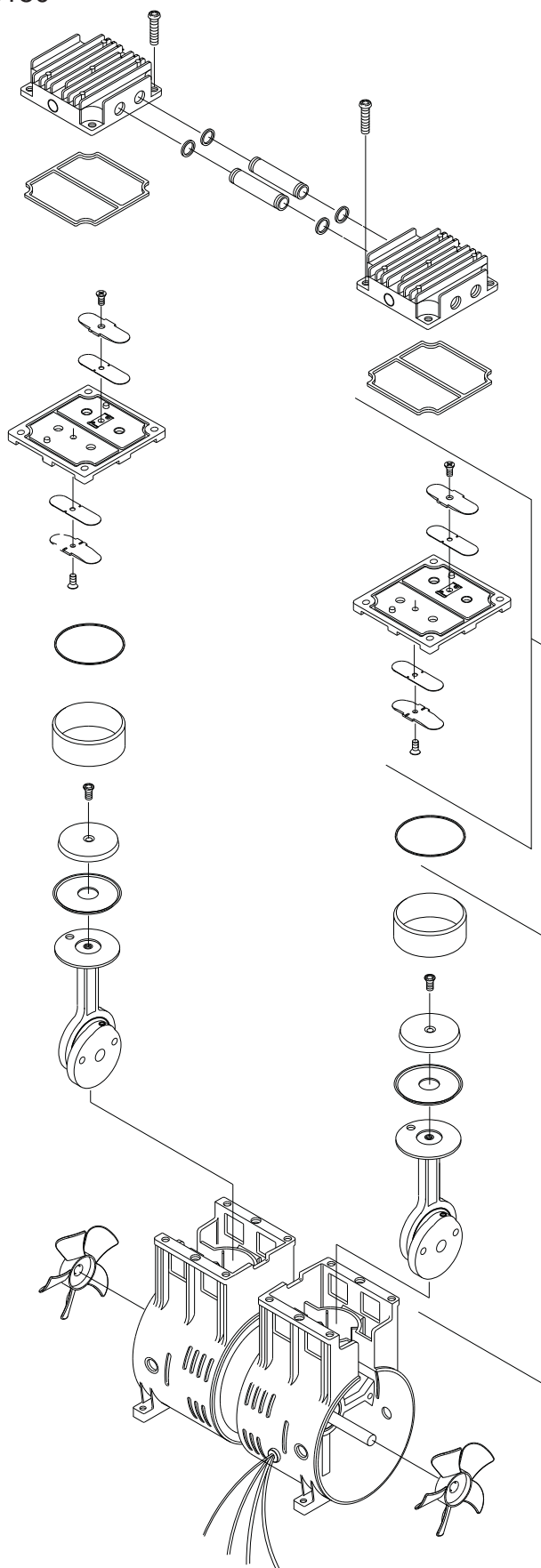
Welch Model	8150
Free air Displacement CFM (L/min) @ 60Hz	7.5 (214)
Maximum Vacuum in. Hg (Torr)	26 (100)
Tubing needed, I.D., inches (mm)	3/8 (10)
Catalog Number Wired for 115V, 60Hz, 1 Phase with North American 115V Plug	8150B-30
Motor H.P.	1/2
Weight , lbs (kg)	64 (29)

6.20 Dimensional Drawing for 8150B-30



SECTION 7: EXPLODED VIEWS AND PARTS LIST

7.10 Model : 8150



Rebuild Kit 2585K-03 Includes:

(2) Valve Plate Assemblies

(2) Connecting Rod Assemblies

All o-rings, gaskets, and exhaust
silencer, and servicing instructions.

Valve Plate Assembly

Connecting Rod Assembly