

## **115/230 VAC $\frac{3}{4}$ HP Compressor (902404) and Pneumatic System Operator's Manual**



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TP-4945001-00

June 2013



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The Manufacturer warrants its products to be free from defects in material and workmanship for a period of one year from the date of shipment from the factory. The Manufacturer shall not be responsible for any damage resulting to or caused by its products by reason of improper installation, improper storage, unauthorized service, alteration of products, neglect or abuse, or use of the product in a manner inconsistent with its design, accident, acts of God, or failure to properly maintain this product. This warranty does not extend to any component parts not manufactured by Manufacturer, however, Manufacturer's warranty herein shall not limit any warranties made by manufacturers of component parts which may extend to Buyer.

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## Document History

Manual	Version	Date	Remarks
TP-4861201	00	June, 2012	First Release



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## SAFETY SUMMARY

### SIGNAL WORD DEFINITION

Per the ANSI Z535.4 standard, the following signal words and definitions are used to indicate hazardous situations:

#### **DANGER**

DANGER indicates an imminently hazardous situation that, if not avoided, will result in death or serious injury.

#### **WARNING**

WARNING indicates a potentially hazardous situation that, if not avoided, could result in death or serious injury.

#### **CAUTION**

CAUTION indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury. It is also used to alert against unsafe practices.

### GENERAL SAFETY PRECAUTIONS

The following are general safety precautions that are not related to any specific procedures and therefore do not appear elsewhere in this publication. These are recommended precautions that personnel must understand and apply during many phases of operation and maintenance.

#### **DANGER**

**Electrocution Hazard!** Contact with high voltage will result in death or serious injury. Observe general safety precautions for handling equipment using high voltage. Do not locate or operate mast near electrical lines, cables or other unwanted sources of electricity. Do not operate mast in lightning. Be certain electrical cables are undamaged and properly terminated. Always disconnect power at the breaker box of the unit before performing service, repair or test operations. The breaker box is located on the rear, inner wall of the base panel, just above the base of the stowed mast. Open the hinged door of the box and flip the breakers to the OFF position before removing the cover.

#### **WARNING**

**Safety Instruction - Read Manual!** Failure to follow operating instructions could result in death or serious injury. Read and understand the operator's manual before using the mast.

#### **WARNING**

**Tip Over Hazard!** Mast tip over could result in death or serious injury. Do not operate in high winds. Operate on level ground only. Stand clear of mast and mast payload during operation. Be certain mast is level and secure before and during installation, operation and maintenance.

**⚠ WARNING**

**Safety Instruction - Trained Personnel Only!** Death or serious injury could result if proper inspection, installation, operation and maintenance procedures are not observed. Installation, operation and maintenance to be performed by trained and authorized personnel only. Proper eye protection should be worn when servicing the mast.

**⚠ WARNING**

**Health and Safety Hazard!** Solvent used to clean parts is potentially dangerous. Avoid inhalation of fumes and also prolonged contact to skin.

### SPECIFIC SAFETY PRECAUTIONS

The following are safety precautions that are related to specific procedures and therefore appear elsewhere in this publication for emphasis. These are recommended precautions that personnel must understand and apply during specific phases of installation, operation and maintenance.

**⚠ WARNING**

**Safety Instruction-Operation!** For outdoor use only. Do not use in areas that have been classified as hazardous as defined in Article 500 of the National Electric Code.

**⚠ WARNING**

**Crush Hazard!** Death or serious injury could result if mast fails suddenly. Do not stand directly beneath the mast or its payload. Be certain payload is properly installed and secured.

**⚠ WARNING**

**Burst Hazard!** Over pressurizing mast will trip safety valve and could result in death or serious injury. Do not exceed maximum operating pressure of 20 psi (138 kPa) for Standard Duty masts. Keep personnel clear of safety valve exhaust direction.

**⚠ WARNING**

**Fire Hazard!** Cleaning solvent, used for maintenance, is flammable and can be explosive resulting in death or serious injury. Do not smoke. Use cleaning solvent in a well-ventilated area. Keep cleaning solvent away from ignition sources. Always store cleaning solvent in the proper marked container.

**⚠ WARNING**

**Relocation Hazard!** Relocating the mast during operation or after extension could result in death or serious injury. Do not relocate the mast during operation or while extended. This applies especially to masts mounted to vehicles. Operate the mast only if the vehicle is stationary and the vehicle engine is off.

**⚠ WARNING**

**Mast Extension Hazard!** Extending mast into obstructions could result in death or serious injury and could render the mast inoperable and partially extended. Before applying power and operating the mast, be certain there is sufficient clearance above and to all sides of the expected location of the fully extended mast and payload. Keep all persons clear of mast and mast extension. Do not lean directly over the mast.

**⚠ WARNING**

**Mounting Structure Hazard!** Mounting mast into a structure unable to resist the forces generated from customer-specific loading scenario could result in death or serious injury and could damage the mast. Before operation, be certain mounting structure is capable of resisting forces generated from all loading and environmental conditions, including, but not limited to, mast size and weight, payload size and weight, sail size, wind speed, guy line arrangement, support bracket or roof line location and base plate assembly.

**⚠ WARNING**

**Electrocution Hazard!** Do not touch live wires. Death or serious injury could result.

**⚠ WARNING**

**Safety Instruction – Operation!** Make sure all power has been disconnected prior to performing maintenance via the breaker box on the unit. The breaker box is located on the rear, inner wall of the base unit, just above the base of the stowed mast. Open the hinged door of the box and flip the breakers to the OFF position before removing the cover prior to performing service.

**⚠ WARNING**

**Safety Instruction -Trained Personnel Only!** Only trained and qualified personnel should perform installation, adjustments, and servicing. Only a properly trained and qualified certified electrician should perform electric installations and service.

**⚠ WARNING**

**Safety Instruction – Operation!** At all times prior to mast operation, insure that:

- 1.) The mast area is free of personnel and mechanical obstruction;
- 2.) All electrical cables are undamaged and properly terminated;
- 3.) The operator must have full view of the mast during use;
- 4.) Any transit tie-downs on the payload have been removed;
- 5.) The vehicle is not moving;
- 6.) The area above the mast is free of mechanical obstructions.

**⚠ CAUTION**

**Safety Instruction-Operation!** Lamps are extremely hot and should not come into contact with people or combustible and/or explosive materials. Do not operate if breakage occurs or unit is knocked over.

**⚠ CAUTION**

**Safety Instruction – Installation!** At all times while using pipe and hose during installation, recognize that:

- 1.) Pipe and hose should be routed, mounted and restrained to protect from damage;
- 2.) Do not use second hand piping for installation;
- 3.) Do not bend air pipe and hose at a radius less than specified by the manufacturer;
- 4.) Pipes should be marked to avoid hazards from incorrect connection;
- 5.) The exhaust should be fitted with a silencer and be directed away from personnel;
- 6.) When routing piping, install in such a way as to minimize torsion on the joints;
- 7.) Mounting air pipe and hose shall be accomplished only by the use of tools to prevent readily disconnecting air pipe and hose from mast.

**⚠ CAUTION**

**Safety Instruction – Operation!** Do not operate the Nightscan mast during an electrical storm.

**⚠ CAUTION**

**Lifting Hazard!** Manually lifting over 55Lbs (25kg) is prohibited. In the UK, all lifting equipment must be thoroughly examined annually by a competent person according to the Lifting Operations and Lift Equipment Regulations 1998. Equivalent regulations exist in other EU states.

**⚠ CAUTION**

**Safety Instruction – Operation!** All operators must read the Operation section of this manual and be properly trained.

**NOTE:** The equivalent continuous A-weighted sound pressure level at the operating position is less than 70 dB (A).

## Chapter 1 Introduction

### 1.1 Safety Precautions

Refer to the Safety Summary for precautions to be observed while operating or servicing this equipment.

### 1.2 Introduction

This manual covers the operation, maintenance, and troubleshooting of the installation, operation, troubleshooting and maintenance instructions for the following pneumatic Will-Burt products:

- Compressor (902404)
- Control Valve Kit (913882)
- Solenoid Valve Kit (904034)

### 1.3 Compressor (902404) Description

The Compressor (902404) has the ratings shown in Table 1-1,

Parameter	Value
Compressor Type	Articulated Piston Compressor
Pressure Flow Rate	5.2 cfm
Maximum Pressure	50 psi
Voltage	115/230 V AC
Motor Rating	825 watts
Current Drawn	10.6 A
Speed	1725 rpm
Weight	45.08 lb
Minimum Ambient Temperature:	50°F
Maximum Ambient Temperature	104°F

Table 1-1 Compressor (902404) Ratings

Figure 1-1 and Figure 1-2 show the physical dimensions and the electrical connections for the pneumatic system.

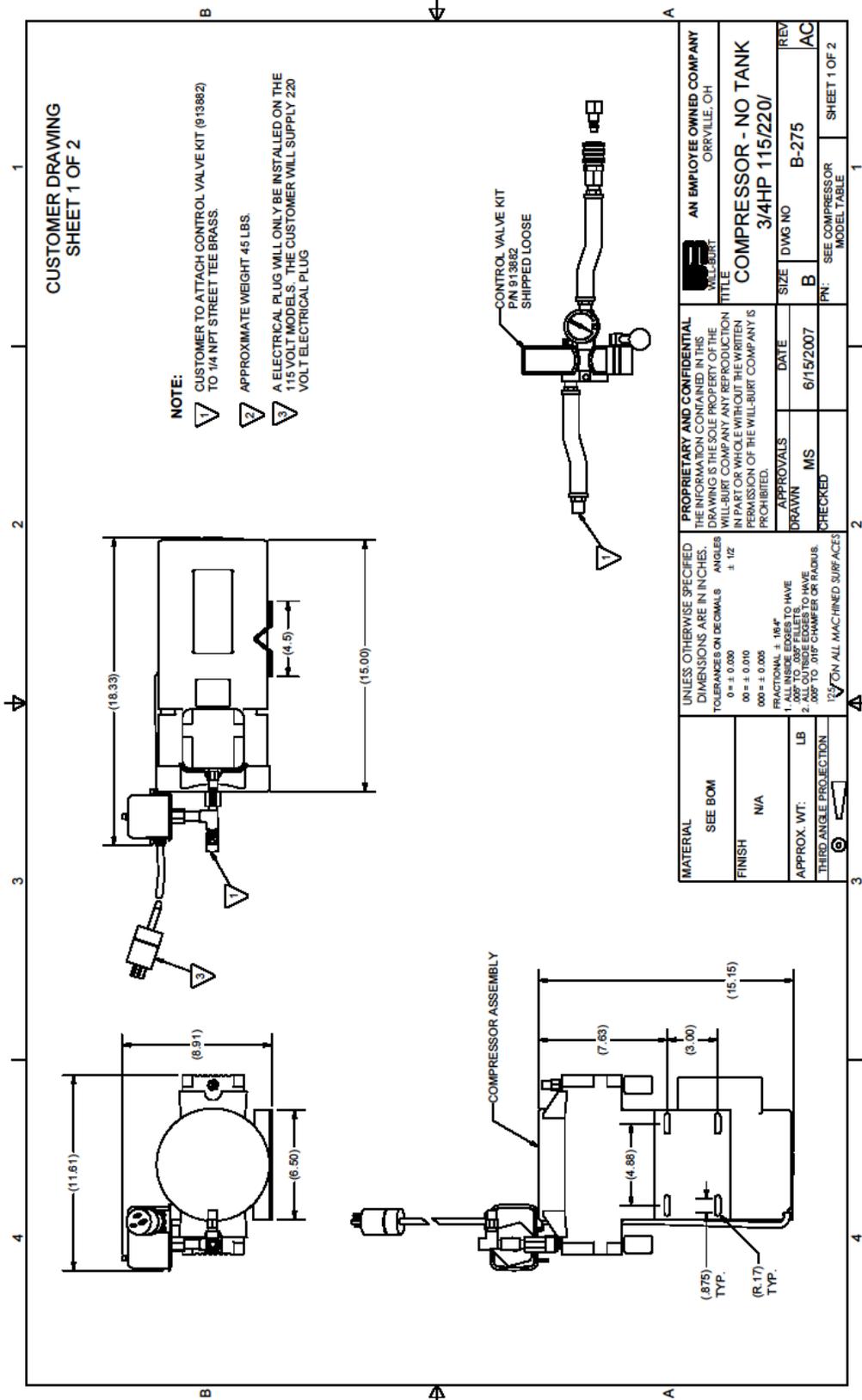


Figure 1-1 Compressor (902404) Physical Dimensions

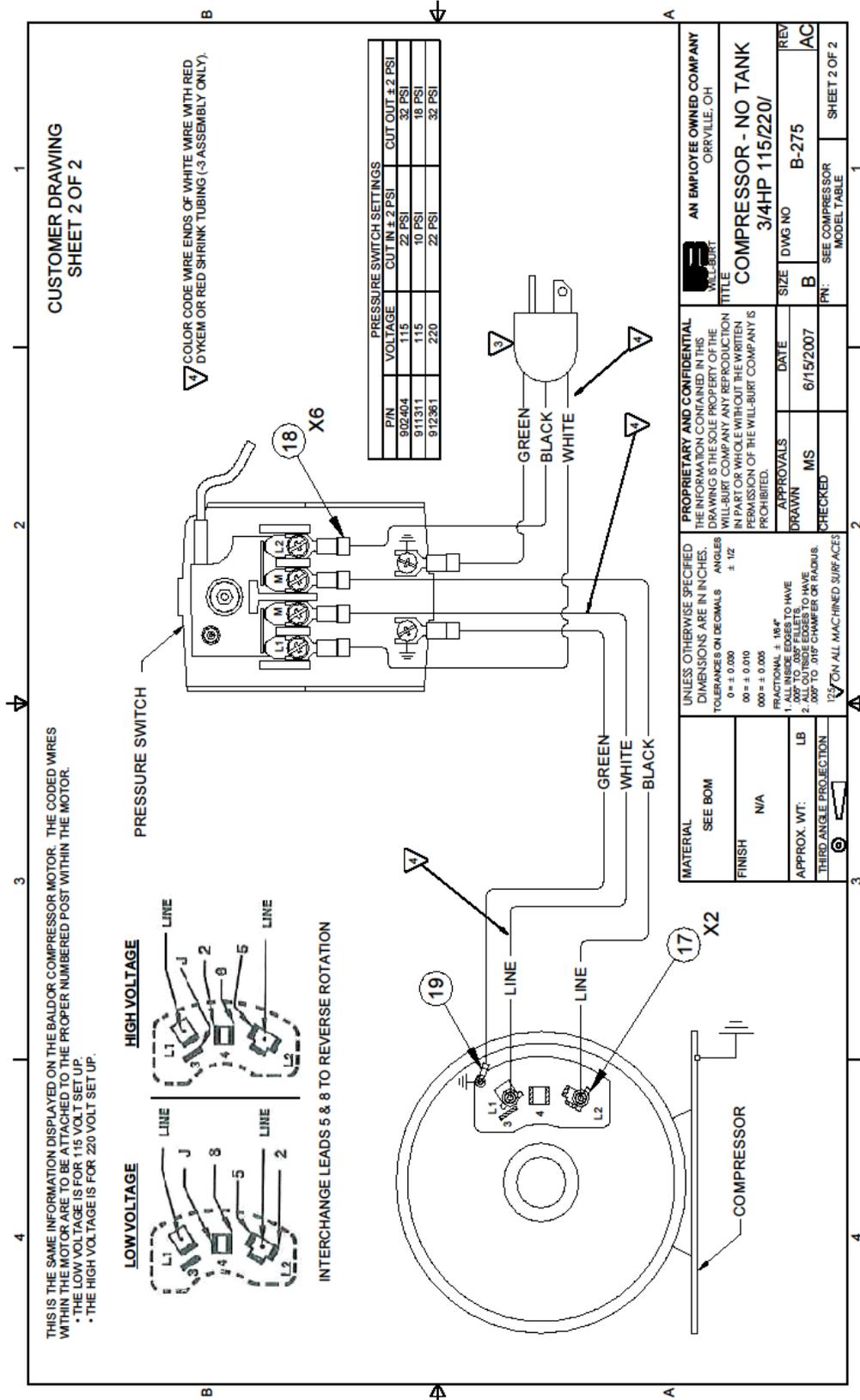


Figure 1-2 Compressor (902404) Electrical Connections

## Chapter 2 Operation

### 2.1 Manual Operation

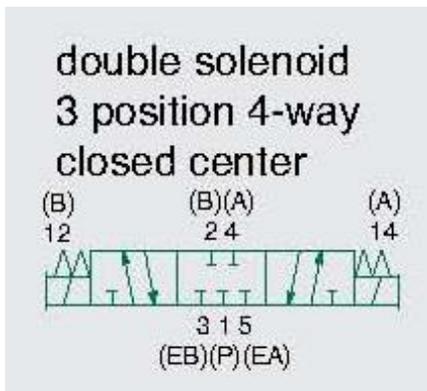
Assemble control valve kit, WB part number 913882 by cutting the hose to length and assembling per drawing B-3818, figure 2-1. Attach control valve kit to compressor assembly by attaching the male 1/4" NPT thread on the control valve kit to the brass 1/4" NPT street tee. Use Teflon tape or paste on threads before assembly.

The control valve is a spring centered, three position, three way valve with all ports blocked in the center position. The 'A' or exhaust port should be plumbed to the mast. The 'P' or pressure port should be connected to the compressor assembly.

With the hand lever facing the operator push the lever forward to extend the mast and pull the lever to retract the mast. A hose or elbow can be plumbed to the open port to direct the exhaust air away from the operator. The pressure gage on the right side of the control valve indicates the pressure in the mast when the valve is in the center or non-actuated position.

### 2.2 Electric Operation

When the pneumatic system is equipped with a solenoid operated valve it should be wired like Figure 2.2. The solenoid valve is a double solenoid, three position, four way valve configured as shown below.



The up solenoid 'A' is energized to shift the spool valve to connect the pressure port 'P' to the 'A' port which provides a path to allow air pressurized air into the mast. When the down solenoid 'B' is energized the 'A' port is connected to the exhaust port 'EA'.



## Chapter 3 Maintenance

### 3.1 Compressor Maintenance

This compressor is oil-less with teflon rings as piston sleeves. DO NOT LUBRICATE THIS COMPRESSOR! The piston cups are designed to run dry and the grease packed sealed bearings require no additional lubrication. Replace compressor air filter every 6 months or sooner in dusty locations.

### 3.2 Valve Maintenance

The major cause of improper solenoid valve operation is foreign material lodging in the valve. It is important to supply clean air to the valve. This is typically done with a filter regulator lubricator module similar to Will-Burt part number 900484. The filter bowl should be drained regularly. The lubricator should be adjusted to put a fine mist into the air line in direct proportion to the rate of flow.