CHORE-TIME®

Poultry Production Systems

Installation and Operators Manual

PDS™ Control 4 and 8 Station

Pneumatic Drinking System
Installation and Operators Manual

Installation and Operators Manual

August 2009

MW1402E

Warranty

C**hore-Time Poultry Production Systems,** a division of CTB, Inc., ("Chore-Time"), warrants each new CHORE-TIME® product manufactured by it to be free from defects in material or workmanship for one (1) year from and after the date of initial installation by or for the original purchaser. If such a defect is found by Chore-Time to exist within the one-year period, the Chore-Time will, at its option, (a) repair or replace such product free of charge, F.O.B. the factory of manufacture, or (b) refund to the original purchaser the original purchase price, in lieu of such repair or replacement. Labor costs associated with the replacement or repair of the product are not covered by the Manufacturer.

Conditions and Limitations

1. The product must be installed by and operated in accordance with the instructions published by the **Manufacturer or Warranty will be void**.

2. Warranty is void if **all components** of the system are not original equipment supplied by the **Manufacturer**.

3. This product must be purchased from and installed by an authorized distributor or certified representative thereof or the Warranty will be void.

4. "Malfunctions or failure resulting from misuse, abuse, mismanagement, negligence, alteration, accident, or lack of proper maintenance, or from lightning strikes, electrical power surges or interruption of electricity shall not be considered defects under the Warranty. Corrosion, material deterioration and/or equipment malfunction caused by or consistent with excessive additions of chemicals, minerals, sediments or other foreign elements with the product shall not be considered defects under the Warranty."

5. This Warranty applies only to systems for the care of poultry and livestock. Other applications in industry or commerce are not covered by this Warranty.

Chore-Time shall not be liable for any **Consequential or Special Damage** which any purchaser may suffer or claim to suffer as a result of any defect in the product. **"Consequential"** or **"Special Damages"** *as used herein include, but are not limited to, lost or damaged products or goods, costs of transportation, lost sales, lost orders, lost income, increased overhead, labor and incidental costs and operational inefficiencies.*

THIS WARRANTY CONSTITUTES THE MANUFACTURER'S ENTIRE AND SOLE WARRANTY AND THIS MANUFACTURER DISCLAIMS ANY AND ALL OTHER WARRANTIES, INCLUDING, BUT NOT LIMITED TO, EXPRESS AND IMPLIED WARRANTIES AS TO MERCHANTABILITY, FITNESS FOR PARTICULAR PURPOSES SOLD AND DESCRIPTION OR QUALITY OF THE PRODUCT FURNISHED HEREUNDER.

Chore-Time Distributors are not authorized to modify or extend the terms and conditions of this Warranty in any manner or to offer or grant any other warranties for CHORE-TIME® products in addition to those terms expressly stated above. An officer of CTB, Inc. must authorize any exceptions to this Warranty in writing. Chore-Time reserves the right to change models and specifications at any time without notice or obligation to improve previous models.

Effective: **August 2008**

Chore-Time Poultry Production Systems
A Division of CTB, Inc.
410 N. Higbee Street • Milford, Indiana 46542 • U.S.A.
Phone (574) 658-4101 • Fax (877) 730-8825
E-mail: poultry@choretime.com • Internet: www.choretimepoultry.com

Thank You

The employees of CTB, Inc. would like to thank your for your recent Chore-Time purchase. If a problem should arise, your Chore-Time distributor can supply the necessary information to help you.

Contents

About This Manual

The intent of this manual is to help you in two ways. One is to follow step-by-step in the order of assembly of your product. The other way is for easy reference if you have questions in a particular area.

Important: Read ALL instructions carefully before starting construction.

Important: Pay particular attention to all SAFETY information.

- *Metric measurements are shown in millimeters and in brackets, unless otherwise specified.* " " equals inches and " ' " equals feet in English measurements.
  Examples:
  1" [25.4]
  4' [1.219]

- Optional equipment contains necessary instructions for assembly or operation.

- Very small numbers near an illustration (*i.e.*, 1257-48) are identification of the graphic, not a part number.

Note: The original, authoritative version of this manual is the English version produced by CTB, Inc. or any of its subsidiaries or divisions, (hereafter collectively referred to as "CTB"). Subsequent changes to any manual made by any third party have not been reviewed nor authenticated by CTB. Such changes may include, but are not limited to, translation into languages other than English, and additions to or deletions from the original content. CTB disclaims responsibility for any and all damages, injuries, warranty claims and/or any other claims associated with such changes, inasmuch as such changes result in content that is different from the authoritative CTB-published English version of the manual. For current product installation and operation information, please contact the customer service and/or technical service departments of the appropriate CTB subsidiary or division. Should you observe any questionable content in any manual, please notify CTB immediately in writing to: CTB Legal Department, P.O. Box 2000, Milford, IN 46542-2000 USA.

Safety Information

Caution, Warning and Danger Decals have been placed on the equipment to warn of potentially dangerous situations. Care should be taken to keep this information intact and easy to read at all times. Replace missing or damaged safety decals immediately.

Using the equipment for purposes other than specified in this manual may cause personal injury and/or damage to the equipment.

Safety–Alert Symbol

This is a safety–alert symbol. When you see this symbol on your equipment, be alert to the potential for personal injury. This equipment is designed to be installed and operated as safely as possible...however, hazards do exist.

Understanding Signal Words

Signal words are used in conjunction with the safety–alert symbol to identify the severity of the warning.

DANGER indicates an imminently hazardous situation which, if not avoided, **WILL** result in death or serious injury.

WARNING indicates a potentially hazardous situation which, if not avoided, **COULD** result in death or serious injury.

CAUTION indicates a hazardous situation which, if not avoided, MAY result in minor or moderate injury.

Safety Instructions

Follow Safety Instructions

Carefully read all safety messages in this manual and on your equipment safety signs. Follow recommended precautions and safe operating practices.

Keep safety signs in good condition. Replace missing or damaged safety signs.

Decal Descriptions

DANGER: Electrical Hazard

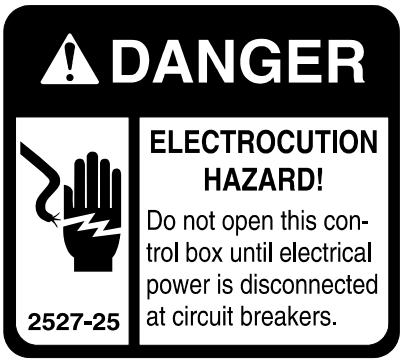
Disconnect electrical power before inspecting or servicing equipment unless maintenance instructions specifically state otherwise.

Ground all electrical equipment for safety.

All electrical wiring must be done by a qualified electrician in accordance with local and national electric codes.

Ground all non-current carrying metal parts to guard against electrical shock.

With the exception of motor overload protection, electrical disconnects and over current protection are not supplied with the equipment.



General

Support Information

The Chore-Time 4 and 8 Station Pneumatic Drinking System (PDS™) Controls are designed to control water line regulators in a Chore-Time Nipple Watering System. Using this equipment for any other purpose or in a way not within the operating recommendations specified in this manual will void the warranty and may cause personal injury.

This manual is designed to provide comprehensive planning and installation information. The Table of Contents provides a convenient overview of the information in this manual.

Installation Information

Please read the installation instructions in this manual prior to beginning the installation. This manual provides the necessary information on the installation, operation and maintenance of the Chore-Time equipment you have purchased.

The 4 and 8 Station PDS™ Control is available in either a 4 or 8 station control. Each station is capable of controlling up to two (2) individual Chore-Time water regulators. For example a 4 station control can regulate and flush up to 8 individual water regulators.

Compressed air must be available and regulated between 6 and 12 psi *[41.37 and 82.74 kPa]*. Each PDS™ control consumes a low volume of air when in operation. Therefore, one centrally located air compressor with a holding tank can easily supply enough air for multiple PDS™ controls. See “Compressed Air Supply” on page 9 of this manual for recommended air compressor specifications.

The System Layout

Below are examples of the Chore-Time Nipple Watering system layouts. These are to be used to show different methods for installing the PDS™ system. Refer to Parts List Section, **page 15** for item part numbers.

Broiler System Layout

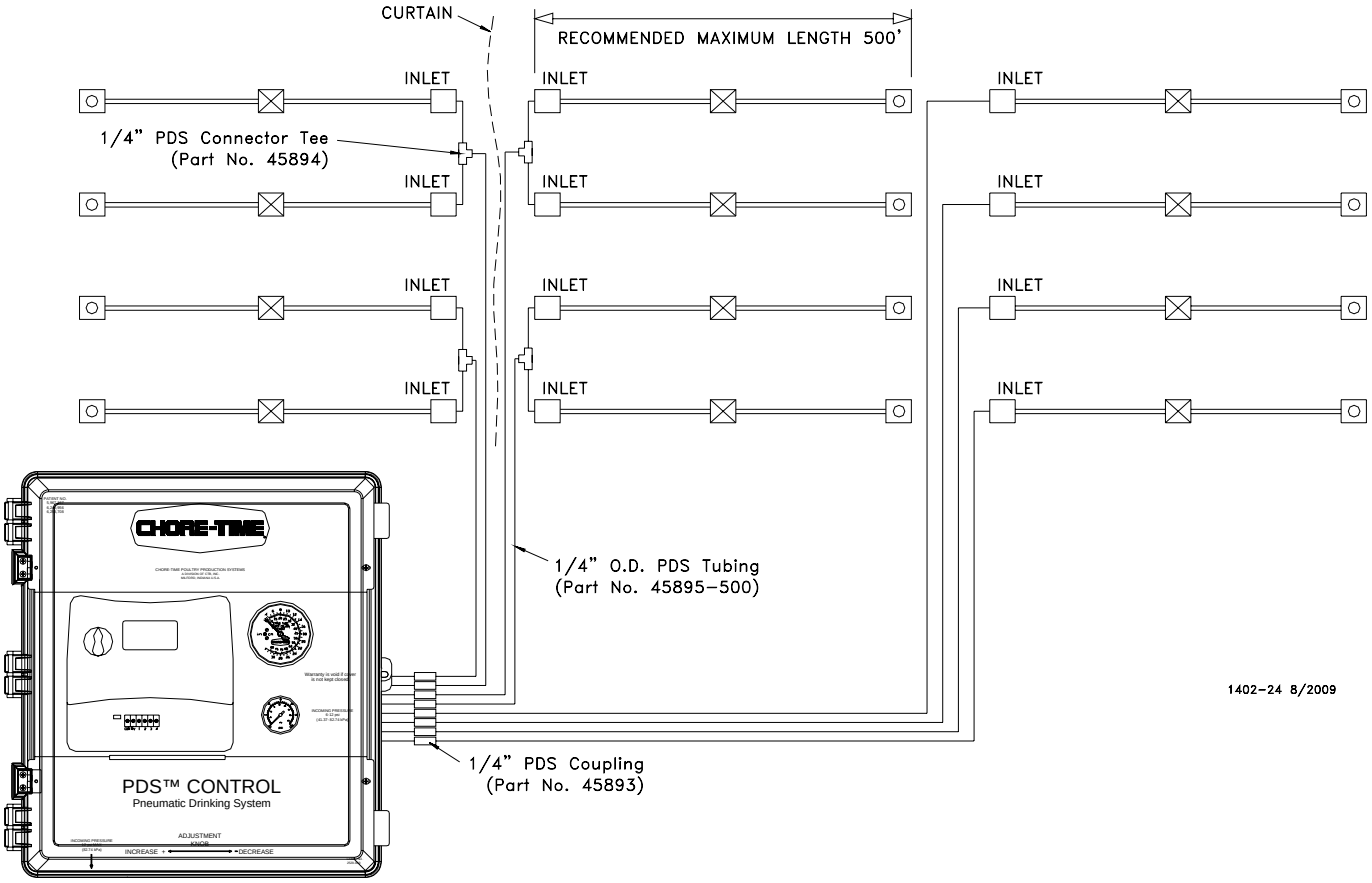


Figure 1. Broiler Layout

Multiple House Layout

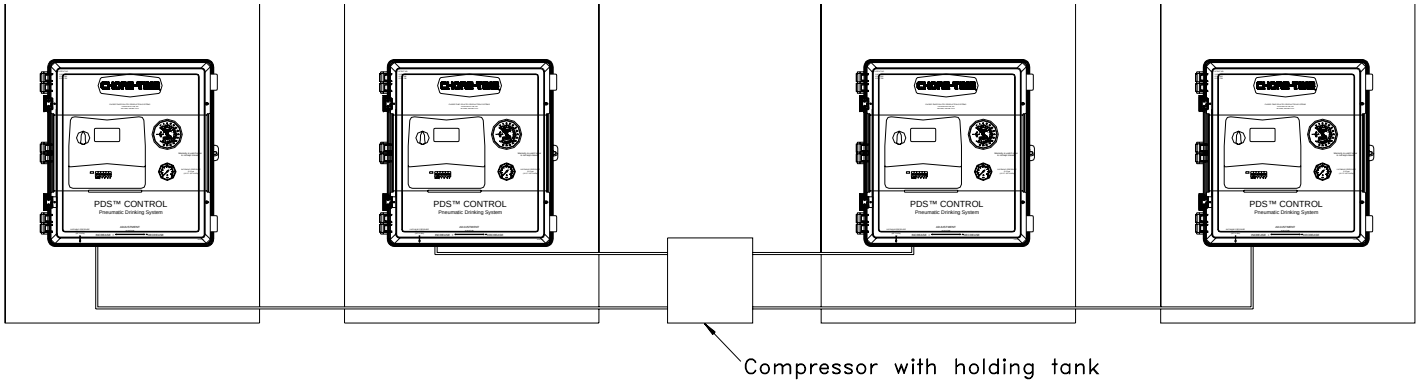


Figure 2. (4 House Layout)

Air can be run from a central location to supply multiple houses. Air lines can consist of Chore-Time tubing (Part number 45895-500), which will supply a sufficient air supply, or PVC plumbing.

Installation

Locate the control in a convenient location where it can easily be seen and adjusted.

Fasten the control to the wall through the four holes in the corners (mounting hardware not supplied). It is recommended to use #10 flat head wood screws as mounting hardware.

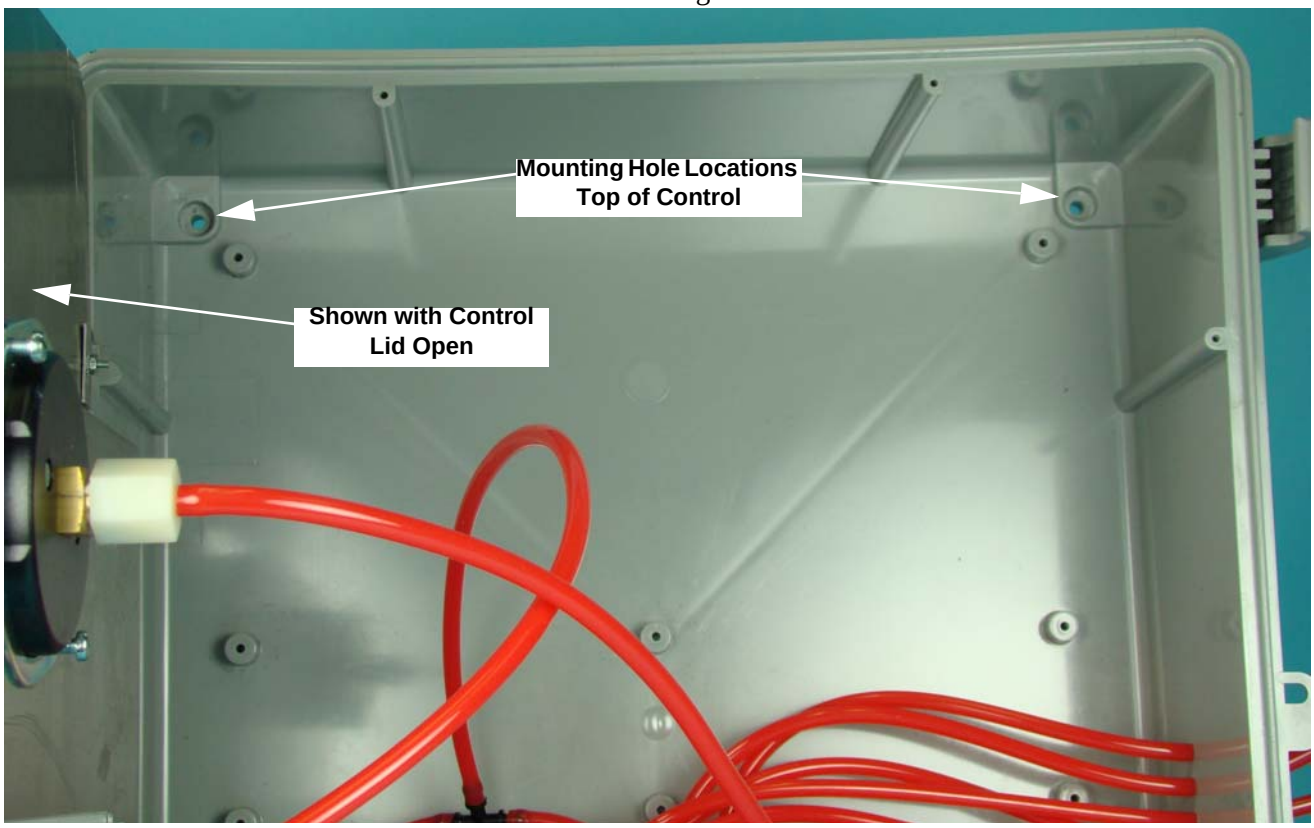


Figure 3. Mounting orientation

Wiring

Caution: Be sure power to the control is still disconnected and no backup battery is installed!

All wiring must be done by a qualified electrician in accordance with local and national codes.

CHORE-TRONICS®

When using CHORE-TRONICS® to monitor water consumption, flush water can be automatically subtracted from the water usage through the meter. To do this connect one wire to common and one wire to MV both in the Rain Bird Timer. Run these two wires to a 24VAC Coil Relay (not supplied), from the relay run the two wires to the Chore-Tronics control, **see figure 4.**

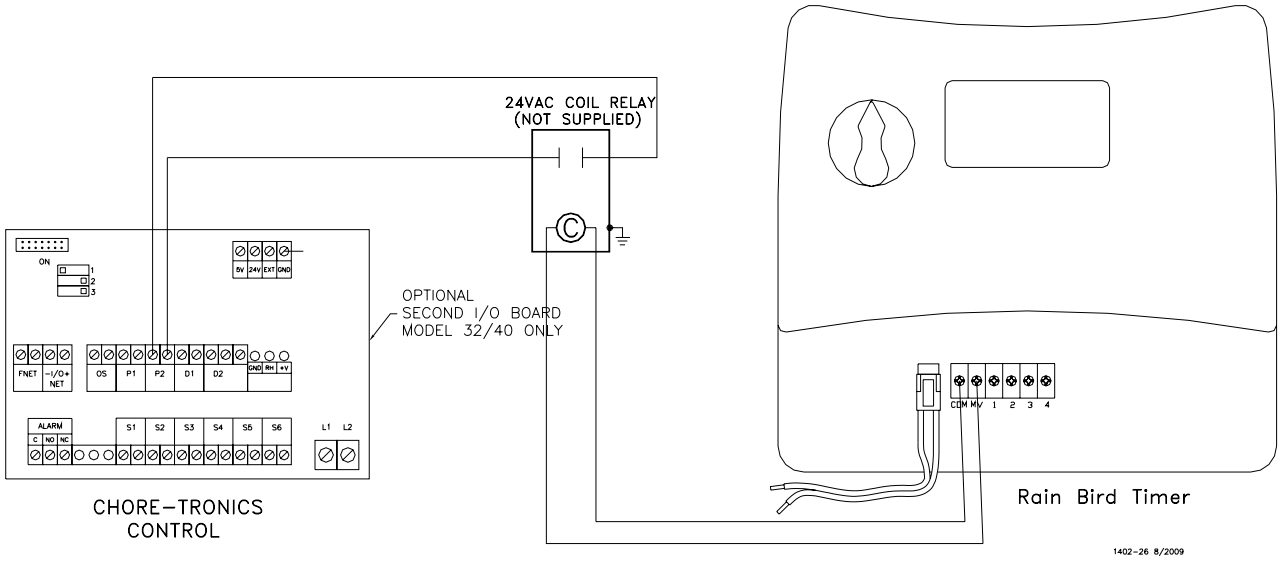


Figure 4. Rain Bird/Chore-Tronics Wiring

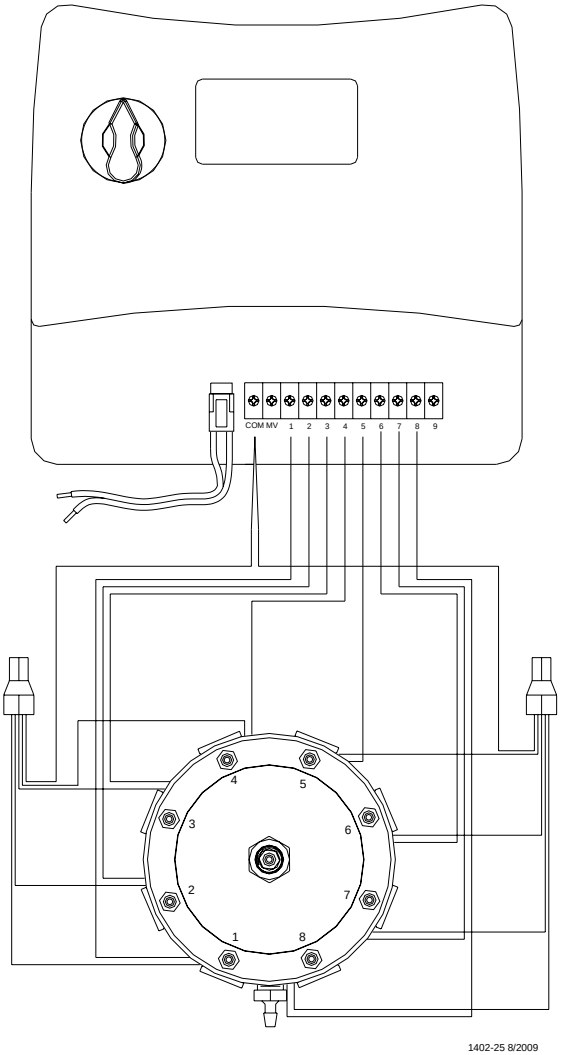


Figure 5. Internal Wiring

Tubing

Route the regulator tubing so any condensation in the air lines will not run into the control. Allow slack in the regulator tube leads so that they can be pinched for maintenance and diagnostic purposes, **see figure 6.**

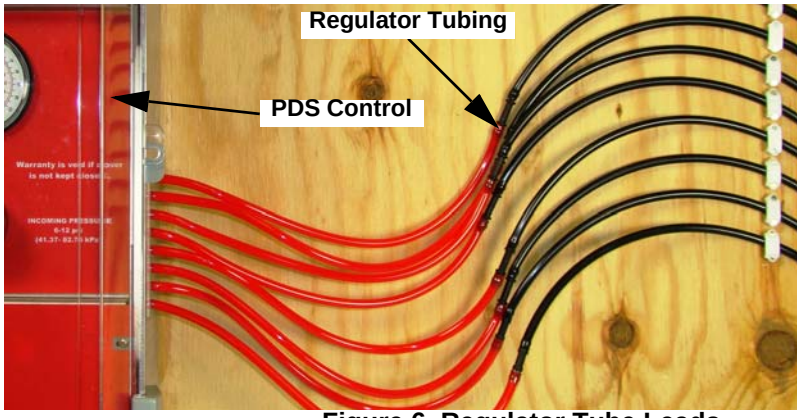


Figure 6. Regulator Tube Leads

Connect the regulator tubing to the control tube leads using tube couplings. Warming the end of the tubeing will aid in installation.

Caution: Over-Heating of tube end can cause distortion and leaking.

Each regulator tubing lead may be used to supply air to two nipple line regulator inlets. This will assure enough flush water volume per line to move air and sediment down the nipple lines and out. Run each air supply tube across the ceiling and down the water supply hose to each of the regulators, attaching it to the provided air supply connection on the bottom of each regulator, **see figure 7.**

Figure 7. Air Supply to Regulator

Compressed Air Supply

Air compressor (not supplied) guidelines to operate the system.

- All air compressors must have a minimum rating to run 4 times per hour for 5 minutes each run.
- One (1) PDS™ Control - 2 gallon minimum recommended air supply tank.
- Two (2) - four (4) PDS™ Controls - 5 gallon minimum recommended air supply tank.
- Five (5) - six (6) PDS™ Controls - 10 gallon minimum recommended air supply tank.
- Air regulator with 1/4" fitting.
- Approved air regulators:
  - Grainger Industrial Supply Part number 4ZMO8
  - Grainger Industrial Supply Part number 4ZMO6
  - NAPA Part number 90-725

Note: The PDS Control operates at 12 psi *[82.74 kPa]* MAX. Most air regulators supplied with air compressors will not effectively regulate air pressure at this low pressure. Chore-Time recommends using one of the approved air regulators listed above.

Caution: DO NOT FLUSH DRINKER LINES WITH PDS™ CONTROL unless drinker lines are pressurized with water! Damage may occur if this caution is not followed.

Caution: DO NOT FLUSH DRINKER LINES WITH PDS™ CONTROL unless drinker lines are pressurized with water! Damage may occur if this caution is not followed.

BEFORE connecting the compressed air supply to the control, turn the red adjustment knob on the PDS control clockwise (decrease) until the knob stops turning, **see figure 8.**

BEFORE connecting the compressed air supply to the control, **the compressed air supplied to the PDS™ control, must be regulated between 6 and 12 psi *[41.37 and 82.74 kPa]*. Failure to do this will result in damage to the gauges and possibly other components.** After the air supplied from the compressor is confirmed to be between 6 and 12 psi *[41.37 and 82.74 kPa]*, connect the air supply to the incoming pressure line on the PDS control, **see figure 8.**

Figure 8. Adjusting the water column

The PDS Control has an air pressure gauge to monitor the incoming air pressure. Under normal operating conditions, this gauge should show between 6 and 12 psi *[41.37 and 82.74 kPa]* of air pressure.

Figure 9. Air Pressure Gauge

Water Column Gauge Calibration

Turn the red adjustment knob counter-clockwise (increase) until the water column gauge reads 14 inches *[35.56 cm]*, **see figure 8.**

After installation of the PDS regulators make sure all the water lines are flushed and charged. Then measure the water column at one of the water regulators and confirm 14 inches of water column. If anything other than 14 inches is measured at the stand tube, the water column gage will need to be re-calibrated to that measurement.

To re-calibrate the water column gauge remove the plastic cover with a small screwdriver. Then turn the calibration screw **(see figure 10.)** until the gauge reads the same water column height as the measurement. Replace the plastic cover on the gauge.

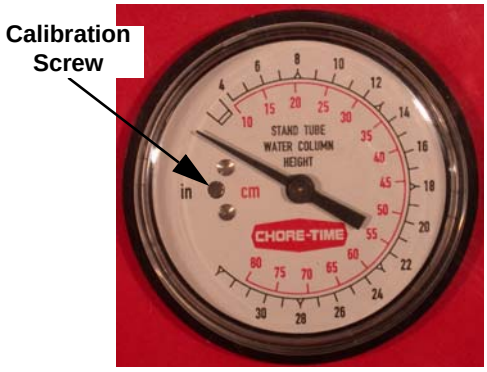


Figure 10. Water Column

Regulator Minimum Water Column Adjustment

Water regulators have an adjustable minimum water column height. In the event of air pressure loss to the regulator the adjusted minimum water column height will be the default setting.

1. Turn the red adjustment knob on the PDS control clockwise (decrease) until the knob stops turning, **see figure 8.**
2. At the regulator adjust the minimum height by rotating the water column adjustment knob on the regulator to the desired setting, **see figure 11. DO NOT** adjust the water column height below the stand tube outlet otherwise water hammer will occur.
3. In the event of air pressure loss to the water regulator. The water regulators can be adjusted individually to maintain an adequate water column height. Once air pressure issue is corrected steps 1 and 2 will need to be performed to operate water regulators with the PDS control.

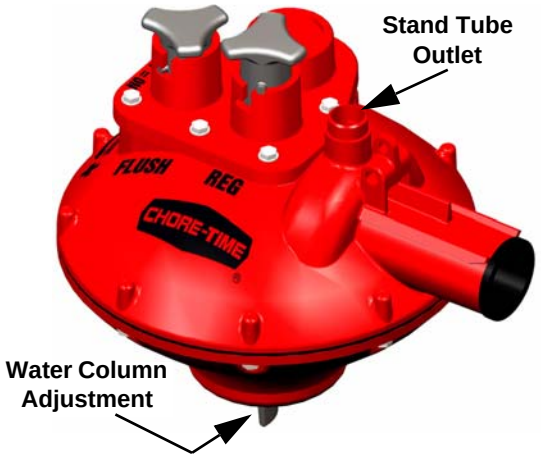


Figure 11. Water Regulator

Air Leak Test

Check each control and house for air leaks with the water column gauge at 8 inches *[20.32 cm]*. To check for air leaks in the control or the house pinch the incoming air supply tube to shut off the incoming air pressure. Watch the air pressure gauge on the control, the gauge should not drop any more than 2 psi *[13.79 kPa]* in 1 minute. If the air pressure does drop faster than 2 psi *[13.79 kPa]* in 1 minute, refer to the trouble shooting section on **page 14**. Repeat this procedure for every PDS control.

Operation

The PDS control will adjust the regulator water column height at all the regulators. To adjust the water column height turn the red adjustment knob counter-clockwise to increase and clock-wise to decrease **(see figure 12.)** until the water column gauge reads the desired water column height.

Figure 12. Adjusting the water column

Note: Individual PDS regulators provide a minimum water column height in case air pressure is lost. The regulators CAN NOT be adjusted below this height regardless of the water column gauge reading. For infromation on setting the minumum water column height, See "Regulator Minimum Water Column Adjustment" on page 10.

Flushing The System

Caution: DO NOT FLUSH DRINKER LINES WITH PDS™ CONTROL unless drinker lines are pressurized with water! Damage may occur if this caution is not followed.

Refer to the Rain Bird Timer manual for specific programing details.

Single stations or multiple stations may be manually flushed at any time. Refer to **Operating the Sprinkler Timer** section in the Rain Bird manual.

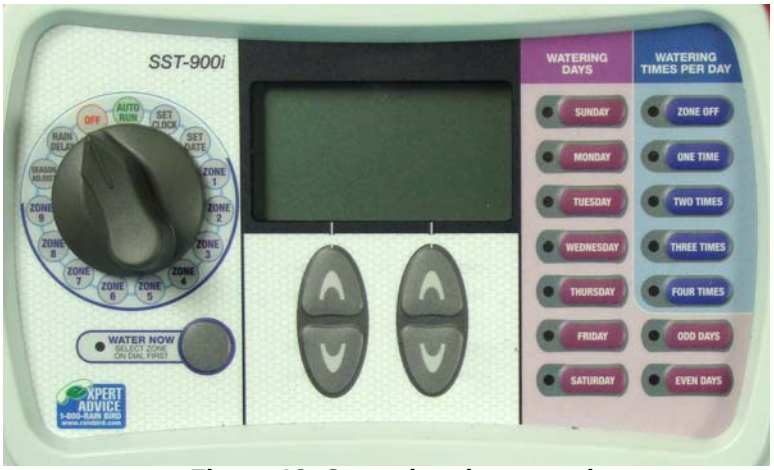


Figure 13. Operating the control

When birds go out it is a good idea to turn the Rain Bird Timer to the off position and turn the adjustment knob on the PDS control to the minimum setting.

The actual amount of time it takes to completely change the water in a 3/4" drinker line is dependent on the flow rate through the line. This flow rate can easily be estimated by putting the regulator into flush and timing how long it takes to fill a container of known volume at the drain end of the line. Once this time is determined use the formula below to calculate the flow rate in gallons or liters per minute and then refer to the charts **on page 12** to determine the estimated flush time in minutes for your specific line length.

$$\frac{\text{Volume of Container (Gallons or Liters)}}{\text{Seconds to Fill Container Divided by 60}} = \text{Flow Rate in Gallons or Liters per Minute}$$

For example, if it takes 185 seconds to fill a 5 gallon container the resulting flow rate would be 1.6 GMP.

$$\frac{5 \text{ Gallons}}{185/60} = \frac{5}{3.08} = 1.6 \text{ Gallons per Minute.}$$

Minutes to Flush and Total Line Capacity for Chore-Time Nipple Systems

Water Line Length in Feet

Gallons per Minute Flow Rate	100’	200’	300’	400’	500’	600’	700’	800’
1	3.4	6.8	10.2	13.6	17.0	20.4	23.8	27.2
2	1.7	3.4	5.1	6.8	8.5	10.2	11.9	13.6
3	1.1	2.3	3.4	4.5	5.7	6.8	7.9	9.1
4	0.9	1.7	2.6	3.4	4.3	5.1	6.0	6.8
5	0.7	1.4	2.0	2.7	3.4	4.1	4.8	5.4
6	0.6	1.1	1.7	2.3	2.8	3.4	4.0	4.5
7	0.5	1.0	1.5	1.9	2.4	2.9	3.4	3.9
8	0.4	0.9	1.3	1.7	2.1	2.6	3.0	3.4
	↑			Estimated Flush Time in Minutes			↑	
	Total Line Capacity 3.4 Gallons	Total Line Capacity 6.8 Gallons	Total Line Capacity 10.2 Gallons	Total Line Capacity 13.6 Gallons	Total Line Capacity 17.0 Gallons	Total Line Capacity 20.4 Gallons	Total Line Capacity 23.8 Gallons	Total Line Capacity 27.2 Gallons

Gallons of water in one foot of 3/4" Chore-Time water pipe=.034

Water Line Length in Meters

Liters Per Minute Flow Rate	30m	60m	90m	120m	150m	180m	210m	240m
4	3.2	6.3	9.5	12.7	15.8	19.0	22.2	25.3
6	2.1	4.2	6.3	8.4	10.6	12.7	14.8	16.9
8	1.6	3.2	4.7	6.3	7.9	9.5	11.1	12.7
10	1.3	2.5	3.8	5.1	6.3	7.6	8.9	10.1
12	1.1	2.1	3.2	4.2	5.3	6.3	7.4	8.4
14	0.9	1.8	2.7	3.6	4.5	5.4	6.3	7.2
16	0.8	1.6	2.4	3.2	4.0	4.7	5.5	6.3
18	0.7	1.4	2.1	2.8	3.5	4.2	4.9	5.6
20	0.6	1.3	1.9	2.5	3.2	3.8	4.4	5.1
22	0.6	1.2	1.7	2.3	2.9	3.5	4.0	4.6
24	0.5	1.1	1.6	2.1	2.6	3.2	3.7	4.2
26	0.5	1.0	1.5	1.9	2.4	2.9	3.4	3.9
28	0.5	0.9	1.4	1.8	2.3	2.7	3.2	3.6
30	0.4	0.8	1.3	1.7	2.1	2.5	3.0	3.4
	↑			Estimated Flush Time in Minutes			↑	
	Total Line Capacity 12.7 Liters	Total Line Capacity 25.3 Liters	Total Line Capacity 38.0 Liters	Total Line Capacity 50.6 Liters	Total Line Capacity 63.3 Liters	Total Line Capacity 76.0 Liters	Total Line Capacity 88.6 Liters	Total Line Capacity 101.3 Liters

Liters of water in one meter of 3/4" (1.90 cm) Chore-Time water pipe=.422

Estimated flush times above are to completely exchange the water in the pipe. The water line length must include the length of the supply line from the water source to completely exchange the water. The flush time to stimulate bird drinking may be less, depending on the frequency of flushes.

Flushing Recommendations

Multiple House Application:

Well capacity typically limits the number of water lines that can be flushed at one time. Flushing should be staggered so 2 lines per well supply are flushed at the same time.

When to flush the system

Single stations or all stations may be manually flushed at any time. Refer to **Operating the Sprinkler Timer** section in the Rain Bird Timer manual.

Flushing for Sediment, Air Locks, and Cleaning

Start by flushing several times per flock. Watch the water coming out of the ends of the water lines. If the water is clean with little or no air you can flush less often. If the water is discolored and has sediment or large amounts of air you may want to flush more often until these problems disappear. The sediments could react with medications, vaccines, and electrolytes. They will also hamper the effects of disinfectants and cleaners.

Flushing After Introduction of Water Treatment or Bird Health Products

After running any type of medication, disinfectant, electrolyte, vitamin, or vaccine the lines must be thoroughly flushed (see the chart on **page 12** for estimated flush times). Some products or treatments may require longer flushing time to be completely removed from the water lines.

Flush to Stimulate Birds to Drink

1. In periods of hot weather flushing will provide cool, fresh water.

2. As birds mature, additional flushing can stimulate the birds to drink more water.

Maintenance

Keep the control box lid closed. The control is not capable of operating in a dusty environment. The loading regulator vents into the control box. When the control box is sealed the positive internal air pressure keeps dust out

Clean inside and outside of the water line stand tubes at least once a week.

Troubleshooting

Problem	Correction
No water in Regulator Stand Tube.	1. Water Off. 2. Defective or plugged Regulator. 3. Regulator plumbed backwards. 4. Stand Tube Cap plugged (not venting).
Water Column does not change on a Regulator.	1. Stand Tube Cap plugged (not venting). 2. Air line to Regulator pinched.
Water Column to top of Stand Tube.	1. Regulator seat worn or foreign object in seat area. 2. Stand Tube Cap plugged (not venting). 3. Air Loading Unit putting out too high pressure (defective solenoid).
Compressor suddenly runs more often than normal.	1. Shut off or pinch off all lines going to the individual controls to find which house is the problem. 2. Open one line at a time until you find one that causes the compressor tank to lose air more quickly. 3. See correction for house leak below.
House seems to leak or lose compressed air too quickly.	1. Shut off the incoming air line to the control and watch the small INCOMING PRESSURE GAUGE. If the control holds pressure, the leak is between the air source and that house. 2. With the incoming air off and the gauge indicates that there is a 2 PSI drop or more within 1 minute, the problem is in the control, lines, or regulators. 3. Shut off or pinch off all lines going out to the regulators and the incoming line. If the control loses pressure, the problem is inside the control. See control unit leak below. 4. If the unit holds pressure, release one line at a time to isolate the cause of the leak. 5. Test line connections and regulator for leaks.
Control unit leaks compressed air.	1. Check the vent hole in the red cover of the Air Loading Unit, **see figure 14.** Put soapy water over the hole. A small amount of air coming out is normal (bubble should grow slowly over several seconds). 2. Put soapy water on all internal hose connections to find leak.

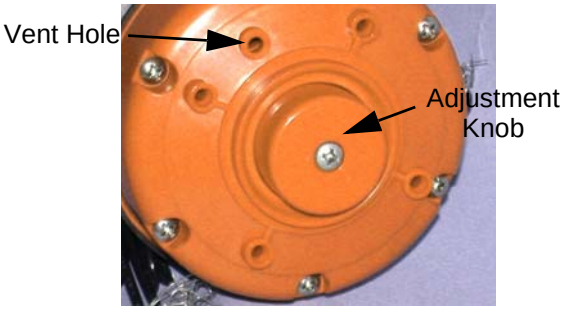
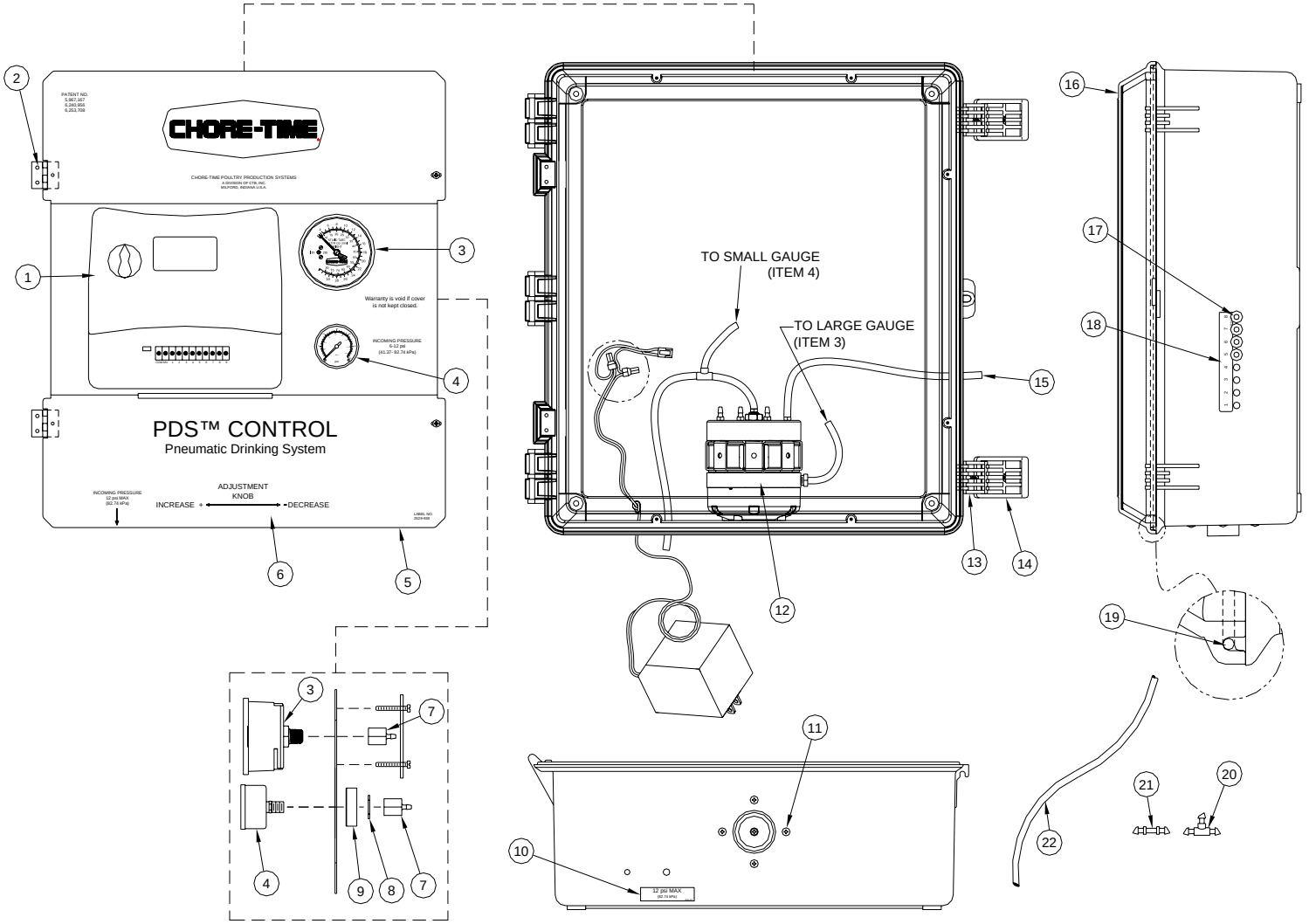


Figure 14. Vent Hole

Parts Listing

4 Station PDS™ Control: 52430-4

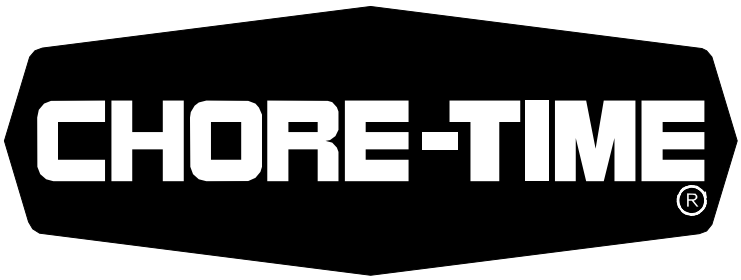
8 Station PDS™ Control: 52430-8



Item	Description	52430-4 Part No	52430-8 Part No
1	120V Timer Control	52412-1	52412-2
2	Hinge	49482	49482
3	Water Column Gauge	44029	44029
4	Air Pressure Gauge	48585	48585
5	Control Plate	52411	52411
6	Control Decal	2529-939	2529-939
7	1/8" Female Pipe Adapter	48586	48586
8	1/2" Machine Washer	2499	2499
*9	Gasket	6968-1	6968-1
*10	Max Pressure Decal	2526-437	2526-437
11	#6-20 x 5/8" Pan Hd Screw	48577	48577
12	Airloader W/Adjustment Knob	48837	48584

Item	Description	52430-4 Part No	52430-8 Part No
13	Control Box Latch Pivot	30863	30863
14	Control Box Latch	30862	30862
*15	1/4" O.D. Tubing	48574	48574
16	Control Box Lid	42683	42683
17	1/4" Plug	48588	48588
18	Station Number Decal	2526-430	2526-430
*19	1/8" Diameter Seal	34767	34767
20	1/4" Tube Coupling Tee	45894	45894
21	1/4" Tube Coupling	45893	45893
22	1/4" O.D. Tubing (500 Ft Roll)	45895-500	45895-500

***Item sold in Feet.**



MADE TO WORK.

BUILT TO LAST.®

Contact your nearby Chore-Time distributor or representative for additional parts and information.

CTB Inc.
P.O. Box 2000 • Milford, Indiana 46542-2000 • U.S.A.
Phone (574) 658-4101 • Fax (877) 730-8825
E-mail: poultry@choretime.com • Internet: www.choretimepoultry.com

Printed in the U.S.A.