CO₂ REGULATOR

TITAN® CONTROLS

Thank you for purchasing the Titan Controls® CO₂ Regulator. You have taken a great step toward a better garden. As you know, CO₂ is a critical component to successful indoor gardening. Plants in an optimum CO₂ enriched garden will grow faster & healthier and produce bountiful yields of fruits and flowers.

Now that you have the CO₂ tank and CO₂ regulator, it is time to consider a device to control your regulator. This can be accomplished with a CO₂ monitor/controller, a repeat cycle timer or a standard wall timer. Your garden and budget will determine which method you choose. For the avid gardener, seeking precise control of your CO₂ levels, your best option is the **Titan Controls® Atlas® Series CO₂ Monitor/ Controller.** This Controller will allow you to set a desired PPM (Parts Per Million) level of CO₂ in your room and will active the regulator when your PPM falls below the set point. Some gardeners prefer to use a **Titan Controls® Apollo™ Series** repeat cycle timer or a standard wall timer to control a CO₂ regulator. The timer activates the CO₂ regulator at desired time intervals. Keep in mind there are many variables in a given garden area; it is difficult to suggest how often a CO₂ regulator should be turned on and off. See the chart included to help with timer settings. Please note the chart is simply a guide and results will vary from garden to garden.

Flowmeter

1/4" CO₂ dispensing tubing

Flow Adjustment Knob

Tank Pressure Gauge

Regulator nut to tighten regulator to CO₂ tank valve

Solenoid

White Plastic Washer

1/4" barbed fitting for CO₂ dispensing tubing

120 volt power cord

WARNING:
1) All CO₂ tanks should be placed on a flat surface and securely mounted to a permanent structure such as a wall, or metal frame. These tanks are under extreme pressure. Should one fall or be knocked over, personal injury may result.
2) Follow all local laws for transporting, storing and handling CO₂.
3) PPM levels should be kept below 2500 PPM. Levels above 5000 PPM can be harmful.
4) Always completely turn off the tank valve before attaching or detaching the regulator.

INSTRUCTIONS:
1) There may be particulates or debris in the tank valve. Before the regulator is connected to the tank, this material needs to be cleared. This is done by opening the tank valve very quickly for 3 seconds and closing immediately. This should be performed each time a new tank is installed.
2) When attaching the regulator to the tank, do not hold on to the plastic flow meter. Putting this pressure on the flow meter will break the seal at the base and permanently damage the unit. This will not be covered under the warranty.
3) Insert one of the provided white plastic washers inside the large brass nut. This will help prevent leaks. We recommend replacing the white plastic washer with each tank change. This will ensure a tight fit, without leaks, each time. Replacement washers can be purchased at your local indoor gardening store (item #702712).
4) Securely attach the regulator to the CO₂ tank. Use a crescent wrench to make this connection. Do not use pliers or channel-locks to tighten the nut. Do not over-tighten the nut.
5) Do not use pipe thread tape or lubricants when making the connection to the tank.
6) Attach the provided black tubing to the ¼" barbed fitting on the CO₂ regulator. Run the tubing from the regulator to the back of an oscillating fan. Zip tie the tubing to the back of your fan. The fan will aid in the CO₂ dispersion around your room.
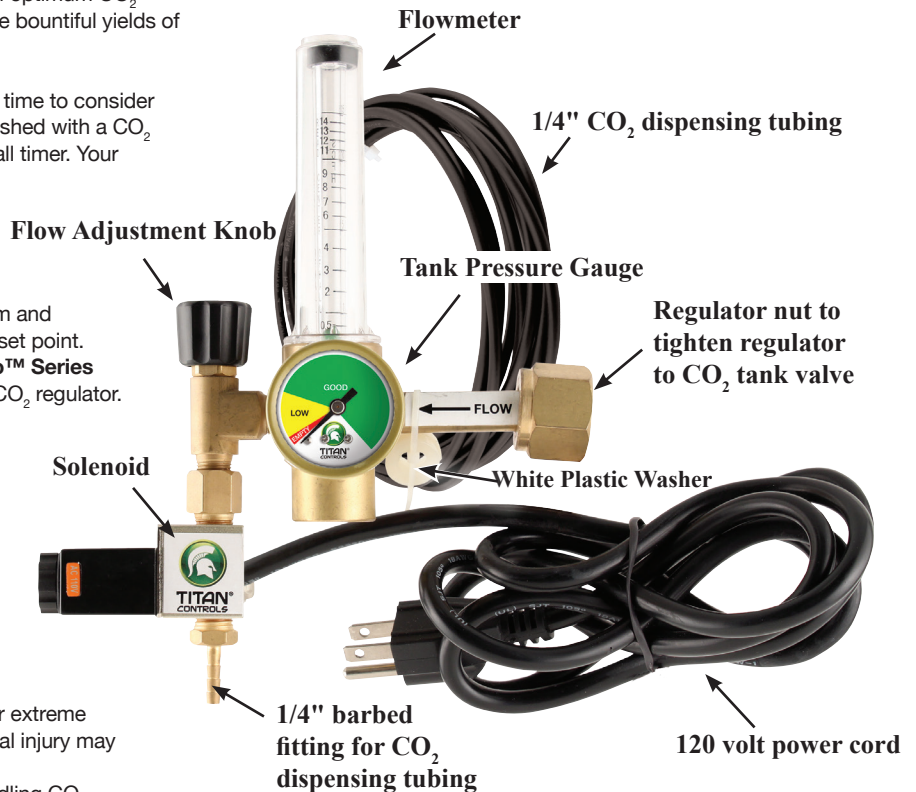
7) Plug the 120 volt power cord into a CO₂ monitor/control system like a **Titan Controls® Atlas® Series CO₂ Controller** or a **Titan Controls® Apollo™ Series** repeat cycle timer or standard wall timer may also be used.
8) Before opening the valve on the CO₂ tank, slightly open (1/2 turn counter-clockwise) the flow adjustment knob on the regulator to relieve the pressure from the gas being released. Failure to do this can permanently damage the unit and void the warranty.
9) Open the valve on your CO₂ tank 2 or 3 rotations. Check for CO₂ leaks at all connections by using soapy water.
10) To set the flow rate, turn the brass Flow Adjustment Knob. The ball will move up and down inside the Flowmeter. Adjust the knob to your desired flow rate.

WARNING: Opening the 'Flow Adjustment Knob' completely, where the ball moves past the top of the flow scale, can allow the CO₂ to flow too fast. This can cause freezing of the regulator and will void the warranty.

11) Please note: CO₂ should be used during daylight hours when the lights are on. Remember: Light + CO₂ = Photosynthesis.

WARRANTY: This unit is covered against material defects for one (1) year. Abuse or misuse will void the warranty

The typical level of CO$_2$ in the air we breathe is 300 - 400 PPM. This timing chart will assist with adding an additional 1100 - 1200 PPM of CO$_2$, bringing your garden area's CO$_2$ level to 1500 PPM, which is considered ideal for most indoor gardens.

Along the top row of the chart represents cubic feet (CU.FT) of your garden area (length x width x height = CU.FT). The left column represents the Flowmeter setting (CU.FT/HR) which is controlled by the Flow Adjustment Knob. Simply determine your CU.FT/HR and set your Flowmeter. The chart will tell you how long to set your timer to bring your CO$_2$ level to 1500 PPM. **EXAMPLE:** If you have 800 CU/FT and set your Flowmeter to read 6. It will take 10 minutes to bring the CO$_2$ up to a level of 1500 PPM. Ideal CO$_2$ enrichment times range from 8-15 minutes. The quicker you can replenish the CO$_2$ in your space the better. **CAUTION:** Excessive flow rates of CO$_2$ from a tank through a regulator can cause the regulator to freeze and can permanently damage the regulator. Your garden area will determine adjustments made to this timing chart (plant maturity, drafts, leaks, etc. should be considered). Some gardens will require less time than indicated and some gardens will require more. For those not using a Titan Controls® CO$_2$ Monitor/Controller, we recommend purchasing a CO$_2$ test kit to assist with establishing optimum enrichment times when using a repeat cycle timer or standard timer with your regulator.

FOR AREAS LARGER THAN 2000 CU.FT, USE THE FORMULA TO FIGURE YOUR SETTING

1. Take the total PPM and divide by 1,000,000
Example: 1200 PPM / 1,000,000 = 0.0012

2. Divide the result by the Flowmeter Setting
Example: .0012 / 12 CU.FT/HR = 0.0001

3. Multiply the result by the CU.FT of the space you are using
Example: 0.0001 x 2500 CU.FT = 0.25

4. Multiply the result by 60 to get minutes
Example: 0.25 x 60 = 15 minutes

With a flow rate of 12 CU.FT/HR and a room size of 2500 CU.FT the timer should be set to 15 minutes to bring your CO$_2$ level up to 1500 PPM.

1200 PPM TIMING CHART
GARDEN SIZE CUBIC FEET (L x W x H)

FLOW METER SETTINGS — CUBIC FEET PER HOUR

CU/FT	100	200	300	400	500	600	700	800	900	1000	1200	1400	1600	1800	2000
1	7	14	22	30	36	43	50	58	65	72	87	101	115	130	144
2	4	7	11	14	18	22	25	29	32	36	43	50	58	65	72
3	2	5	7	10	12	14	17	19	22	24	29	34	38	43	48
4	2	4	5	7	9	11	13	14	16	18	22	25	29	32	36
5	1	3	4	6	7	9	10	12	13	14	17	20	23	26	29
6	1	2	4	5	6	7	8	10	11	12	14	17	19	22	24
7	1	2	3	4	5	6	7	8	9	10	12	14	17	19	21
8	1	2	3	4	5	5	6	7	8	9	11	13	14	16	18
9	1	2	2	3	4	5	6	6	7	8	10	11	13	14	16
10	NA	1	2	3	4	4	5	6	7	7	9	10	12	13	14
11	NA	1	2	3	3	4	5	5	6	7	8	9	11	12	13
12	NA	NA	2	3	3	4	4	5	5	6	7	8	10	11	12
13	NA	NA	2	2	3	3	4	4	5	6	7	8	9	10	11
14	NA	NA	2	2	3	3	4	4	5	6	6	7	8	9	10
15	NA	NA	1	2	2	3	3	4	4	6	6	7	8	9	10

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National Garden Wholesale
Sunlight Supply, Inc.