

ATLANTA SPECIAL PRODUCTS DIVISION

PACE MACHINERY GROUP, INC.

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ARCTIC FREEZE™ (-109 DEGREES F) CO₂ PIPE FREEZING SYSTEM INSTRUCTION MANUAL

GETTING STARTED

1. After selecting the proper size jacket, read the instructions on the jacket label carefully. Remember to take your time - do not try to rush a freeze.
2. Make sure that you have enough CO₂ on hand to complete the freeze. See table on back for estimated amount of CO₂ required for different pipe sizes. Always have more than enough to complete the freeze.
3. Be sure there is no flow of water through the pipe.
4. Keep torch flame at least 14" or more from end of jacket and place jacket 24" or more away from a closed connection.

BEGINNING THE FREEZE

1. Open valve on cylinder fully and inject liquid CO₂. (Injection time waiting time, and approximate total time is printed on the jacket label). The chart on the back also gives the approximate injection waiting and total time required for different pipe sizes.
2. During the freezing period, squeeze the jacket against the pipe to evenly distribute the CO₂. Wear gloves.
3. Note that the injection waiting and total time required is based on pipes containing cold water under 70 degrees F. It is important to fill the space between the pipe and the jacket with a solid ball of "dry ice". If upon completing the recommended injection and waiting times you squeeze the jacket and the space is not completely filled, proceed with additional injection/waiting times until "white frost rings" appear at either end of jacket and a solid ball of "dry ice" has formed around pipe. Caution - do not attempt to rush a freeze.

PROCEEDING WITH THE WORK

When "white frost rings" have formed at each end of jacket, the "ice-plug" inside the pipe has formed, and the work can be carried out.

ADDITIONAL INJECTIONS

About every 15 minutes make additional injections of CO₂ for 20 - 30 seconds to maintain a solid ball of "dry-ice" around pipe. This procedure will allow you to maintain the "freeze" until the work is completed.

UPON COMPLETION OF WORK

When the work is completed, remove the jacket and allow the pipe to thaw naturally. Do not apply heat! The "ice-plug" will melt and the flow will return to normal in about 10 minutes.

CO CYLINDER

The 20 pound cylinder weighs about 26 pounds empty and 46 pounds full. When full, it contains 18 pounds of usable CO₂ and 2 pounds of residual gas. The residual gas cannot be used for freezing. Always weigh the CO₂ cylinder before attempting a freeze to make sure that a sufficient amount is available. We recommend always having an extra tank of CO₂ on hand.

SAFETY PRECAUTIONS

Always use CO₂ in a well ventilated area as CO₂ is heavier than air.

FREEZING TABLE
COLD WATER/METAL PIPES
(UNDER 70 DEGREES F)

Pipe Size	3/8"	1/2-3/4"	1"	1 1/2"	2"	3"	4"
Injection Time	35 sec.	35 sec.	1 min.	1 min.	5 min.	5-6 min.	8-10 min.
Waiting Time	3 min.	3 min.	5 min.	5 min.	5 min.	6 min.	5 min.
No. of Injections	2	3	3	4	4	6	7-8
Approx. Total Time Required	7 min.	11 min.	18 min.	24 min.	40 min.	72 min.	120 min
Approx. Amount of CO ₂ Required	1 lb.	1 lb.	3 lb.	6 lb.	18 lb.	28 lb.	36 lb.

IMPORTANT - Read all of the instructions carefully before beginning a freeze. The above information is provided as an estimate. Individual conditions will change: injection time, waiting time, and total time required. Do not over inject CO₂ which will cause too much dry ice to form in the space between the jacket and the pipe and possibly damage the jacket. A siphon or bottom dip tube must be installed in CO₂ cylinder in order to get a freeze.

* **3" and 4" Pipe Sizes**

* Read instructions carefully - have plenty of CO₂ available. Contact our office if you have any questions -
800-327-3552 / FAX 630-377-0274.

TROUBLE SHOOTING - NOT OBTAINING A FREEZE

1. **There is a Flow of Water In Pipe**

A freeze will not take place if there is a significant flow of water. If a small amount of water movement is taking place, place two jackets end to end so that they touch and begin the freezing process again. Inject CO₂ to both jackets.

2. The CO₂ cylinder is empty. No dry ice will form around the pipe. If a solid ball of dry ice has not formed around the pipe, the tank is empty. Replace immediately.

3. Insufficient time has been allowed for the ice-plug to form. Start the freezing process over again from the beginning. Make sure that you have a sufficient amount of CO₂ .

SAFETY PRECAUTIONS

1. Use Arctic-Freeze only in well ventilated areas. CO₂ is heavier than air and care should be taken to disperse CO₂ in confined and low lying areas.
2. Because solid CO₂ is very cold (-109 degrees F) it can cause a burn or frostbite to the bare skin. Always wear protective gloves when using pipe freezing equipment. Keep out of the reach of children.
3. Store CO₂ cylinders in a cool place. Do not expose to any temperature over 120 degrees F.
4. Before beginning a freeze, check all of the equipment and replace any items that are damaged.

SUMMARY

Arctic-Freeze is easy to use. Read the instructions carefully and keep in mind that the freezing table is based on cold water - in metal pipes - under 70 degrees F. Higher water temperatures will require longer! Injection, waiting, and total time required for each pipe size. Also, the consumption of CO₂ will increase.

Always have more than enough CO₂ available to complete the freeze safely.

Do not attempt to freeze hot water.

Do not hesitate to contact our office to discuss any questions that you have about a specific pipe freezing application.