Qwik-Freezer™

PORTABLE PIPE FREEZING EQUIPMENT




COB
INDUSTRIES, INC.

PROVIDING SOLUTIONS FOR THE PIPING INDUSTRY FOR OVER 35 YEARS

QWIK-FREEZER™ IS USED TO MAKE A DOUBLE FREEZE ON A PIPE IN ORDER TO ISOLATE A VALVE.

A FREEZE IS MADE UPSTREAM FROM THE LOCATION OF A NEEDED REPAIR. THE DOWNSTREAM IS THEN DRAINED AND THE REPAIR COMPLETED

QWIK-FREEZER® KITS AVAILABLE FOR 3 / 8" – 8" PIPE ID

Qwik-Freezer™
Simplifies Pipe Repair or Modification

The Qwik-Freezer™ Technique

The Qwik-Freezer™ kit is easy to use. A specially-designed jacket is wrapped around the pipe at the point where the freeze is required. A nozzle on the jacket is then coupled to a cylinder of liquid CO_2 by means of a high pressure hose. When the liquid CO_2 is injected into the space between the jacket and the pipe, it immediately expands to form solid carbon dioxide (dry ice) at a temperature of -109°F (-78°C). This low temperature quickly freezes the contents forming a secure "ice plug" which seals the pipe.

The "ice plug" forms only in the section of pipe covered by the jacket so the resulting rise in pressure is very small, and there is no damage to the pipe. The technique can be used safely on iron, lead, stainless steel, copper, brass and plastic pipe.

Major Advantages

- Saves valuable time normally lost draining down and refilling a system
- Avoids complete shutdown of systems and equipment (as in a sprinkler or water supply system)
- Prevents waste of large amounts of water
- Eliminates handling of wasted water
- Safe and cost effective

For Use in Many Industries

Office and commercial buildings
Petro/chemical refineries
Food & beverage plants
Municipalities
Hospitals/nursing homes
Industrial plants
Water treatment facilities
Conventional & nuclear power plants
Residential
Restaurants
Ships
Schools/universities
Hotels/motels
Water utilities
Aerospace

Qwik-Freezer™
Standard Equipment

Qwik-Freezer™ Kits Standard Equipment:

Insulating pipe jackets
CO_2 cylinder(s)
Reinforced high pressure hose
Fittings
Insulated work gloves
Rubber mallet
Safety glasses
Operating manual
Timing log
Rigid fibre carrying case
See table for exact contents.

Qwik-Freezer™ Jackets:

- QF 101 for 3/8" (9.375mm) to 3/4" (18.75mm) pipe size
- QF 102 for 3/4" (18.75mm) to 1 1/2" (37.5mm) pipe size
- QF 103 for 1 1/2" (37.5mm) to 3" (75mm) pipe size
- QF 104 for 3" (87.5mm) to 4" (100mm) pipe size
- QF 106 for 5" (125mm) to 6" (150mm) pipe size
- QF 108 for 7" (175mm) to 8" (200mm) pipe size

CO_2 Cylinder

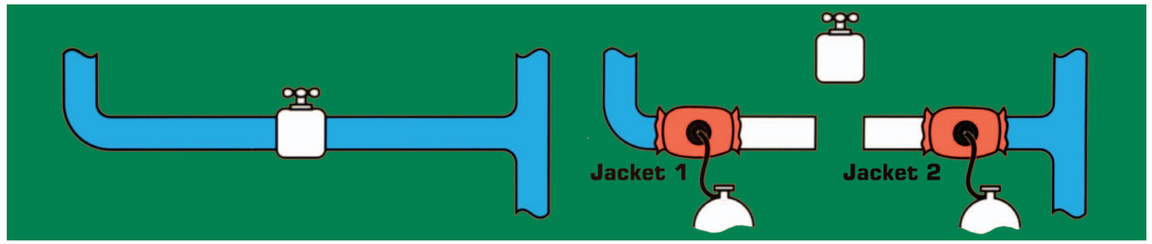
COB provides specially adapted liquid CO_2 cylinders for use with Qwik-Freezer™ equipment. The COB QFAL 20, a 20-lb. aluminum cylinder with protective handle, is supplied with 3/8" to 3" kits.

A 50-lb. aluminum cylinder, COB QFAL 50, is supplied with 4"-8" kits as standard equipment.

CO_2 cylinders can be filled by local welding and carbonic gas distributors.

A Typical Qwik-Freezer™ Application: Replacing a defective valve.

The water is brought to a static condition. the Qwik-Freezer™ jacket (orange) is then wrapped around the pipe, Jacket #1, at a nearby upstream location. Injecting liquid CO_2 into the jacket rapidly freezes the water in the pipe, permitting valve removal for servicing or replacement. Jacket #2 shows position of a second



Qwik-Freezer™ jacket and tank used when a double freeze is required to block flow on both sides of the valve.

4" FREEZE JACKET (QF 104)

LIQUID CO2 INJECTION

DRY ICE

4" DIAMETER ICE PLUG

Qwik-Freezer™
Pipe Freezing Tables

The tables below are for typical freezing of static water at 68°F in Schedule 40 steel pipe. Higher temperatures will require additional injection and waiting periods. Plastic pipe will take up to 3 times longer. Refer to Operating Manual for detailed instructions. For freezing applications on pipes larger than 8" (203mm) in diameter, please contact COB Industries for information.

3/8" to 3" FREEZING TABLE

PIPE JACKET	QF101 (8 INCHES)		QF102 (12 INCHES)		QF103 (14 INCHES)	
Pipe Size	1/2" (12.5mm)	3/4" (18.75mm)	1" (25mm)	1 1/2" (27.5mm)	2" (50mm)	3" (75mm)
No. of Injections	2	2	3	4	3	6
Injection Time	1 min	1 min	1 min	1 min	5 min	5 min
Waiting Time	3 min	3 min	5 min	5 min	5 min	5 min
Total Time Required	8 min	8 min	18 min	24 min	30 min	60 min
Approx CO_2 Required	1 lb	1 lb	3 lbs	6 lbs	18 lbs	36 lbs

4" to 8" FREEZING TABLE

PIPE JACKET	QF104 (20 INCHES)		QF106 (28 INCHES)		QF108 (33 INCHES)	
Pipe Size	3" (75mm)	4" (100mm)	5" (125mm)	6" (150mm)	7" (175mm)	8" (203mm)
No. of Injections	6	7	9	11	15	17
Injection Time	6 min	8 min	12 min	12 min	12 min	12 min
Waiting Time	8 min	10 min	8 min	8 min	8 min	8 min
Total Time Required	84 min	126 min	190 min	220 min	310 min	340 min
Approx CO_2 Required	42 lb	65 lb	243 lbs	297 lbs	405 lbs	475 lbs

Qwik-Freezer™
Pipe Freezing Kits

3/8" to 3" PIPE FREEZING KITS

These kits contain the following standard accessories: gloves, rubber mallet, timing log, safety glasses, operating manual, and carrying case. Indiivdual items (jackets) may also be ordered separately. Double freeze kits available through 8". Please contact factory.

KIT NO.	QF101 8" (203mm) Jacket	QF102 12" (305mm) Jacket	QF103 14" (356mm) Jacket	QF800 Hose (10ft)	QFAL 20 20lb. CO_2 Cylinder	QF801 Valve Adapter
QF1500 3/8" (9.375mm) to 1 1/2" (37.5mm) pipe	1	1	–	1	1	1
QF2000 3/4" (18.75mm) to 1 1/2" (37.5mm) pipe	–	1	–	1	1	1
QF2200 3/4" (18.75mm) to 1 1/2" (37.5mm) pipe (Double Freeze)	–	2	–	2	2	2
QF3000 3/8" (9.375mm) to 3" (75mm) pipe	1	1	1	2	2	2

Qwik-Freezer™
Pipe Freezing Kits

4" to 8" PIPE FREEZING KITS

These kits contain the following standard accessories: gloves, rubber mallet, timing log, safety glasses, operating manual, and carrying case. Individual items (jackets) may also be ordered separately. Refer to the price list for a complete parts listing.

KIT NO.	QF101 8" JKT (203mm)	QF102 12" JKT (305mm)	QF103 14" JKT (356mm)	QF104 20" JKT (508mm)	QF106 28" JKT (711mm)	QF108 33" JKT (838mm)	QF800B Hose (16ft)	QF801 Valve Adaptor	QF802 T-Connector	QF815 Timing Board	QFL50 50lb CO_2 Cylinder
QF4000 3/8" to 4" pipe	1	1	1	1	–	–	*	2	2	1	2
QF4100 3" to 4" pipe	–	–	–	1	–	–	*	2	2	1	2
QF6000 3/8" to 6" pipe	1	1	1	1	1	–	4	4	2	1	6
QF6100 5" to 6" pipe	–	–	–	–	1	–	3	4	2	1	6
QF8000 3/8" to 8" pipe	1	1	1	1	1	1	4	4	2	1	12
QF8100 7" to 8" pipe	–	–	–	–	–	1	4	4	2	1	12

* All 4" kits come with 10 ft Hoses

Accu-Freeze™ (patented)
The Controlled Liquid Nitrogen Pipe Freezing System

- Larger diameter pipe
- Challenging freezes (glycol, oil, etc.)
- Controls the temperature of the pipe wall

Accu-Freeze® was created to meet a specific need in the nuclear industry for "controlled pipe freezing". In other words, the ability to freeze pipes to create an ice plug while controlling the temperature that the pipe wall is subjected to. Accu-Freeze Kits include a digital controller and a solenoid header assembly that allow the operator to actually set and control the temperature of the pipe wall. The system then automatically injects the necessary amounts of LN2 required to freeze the pipe to the programmed temperature. The system can also be operated from remotely. Accu-Freeze is used by nuclear facilities and power plants across the USA and Europe and by the US Navy on nuclear powered vessels. Accu-Freeze was also used by NASA for an urgent hydraulic line repair on the Space Shuttle Atlantis while on the launch pad. Standard Accu-Freeze Kits are available for up to 12" diameter pipe (can be modified to accommodate larger pipe diameters) and can be used to freeze fluids with lower freeze points than water such as glycol.

Qwik-Freezer™
Equipment Operating Procedures

Setup Preparations

- Be sure there is enough **liquid** CO_2 on hand for the job.
- Be sure there is no flow of water through pipe.
- Connect hose to nozzle on jacket and to cylinder.
- Fit the jacket around the pipe. Always keep the jacket at least 16" (406mm) or more from the point of repair if a torch is to be used and 12" for every inch of pipe from the nearest closed connection or freeze plug.

Beginning the Freeze

- Open COB cylinder valve fully and inject **liquid** CO_2 (for times, see table)
- During the freezing period, distribute the dry ice around the pipe by pressing the jacket firmly or tapping the jacket with the rubber mallet supplied with kit. Wear gloves and safety glasses.

Proceeding with Repair

- Frost forms on the outside of the pipe near the edges of the jacket when the contents are frozen. The pipe is now sealed by the ice plug and repairs can be carried out.
- Make an additional injection every 15 minutes. This procedure will maintain the freeze for as long as required. Extra cylinders required.
- Upon finishing repair, remove jacket and allow pipe to thaw naturally. Do not use a torch. The water system should return to normal in a matter of minutes.

CO_2 Cylinder

- The COB QFAL20 cylinder weighs 27 lbs. empty and 47 lbs. full. When full, it contains 18 lbs. of usable **liquid** CO_2 and 2 lbs. of residual gas.
- The COB QFAL50 cylinder weighs 49 lbs. empty and 99 lbs. full. When full it contains 48 lbs. of usable **liquid** CO_2 and 2 lbs. of residual gas. The residual gas cannot be used for freezing.
- Always weigh your cylinder before attempting a freeze to ensure that more than enough CO_2 is available to do the job safely.

Safety Precautions

- AS CO_2 is heavier than air, care should be taken to disperse CO_2 in confined and low lying areas. Always provide good ventilation in the work area.

Call us for more information on our complete line of low, medium and high pressure test plugs

EXPANSION PLUGS 0.5" to 6"

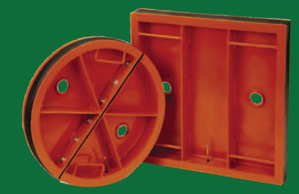
CAST ALUMINUM EXPANSION PLUGS 1 1/2" TO 36"

QWIK-FIT CYLINDER PLUGS

LOW-PRESSURE EXPANSION PLUGS

OLS PIPE PLUG/FLOW STOPPER

INFLATABLE SEAL PLUGS Low and Medium Pressure



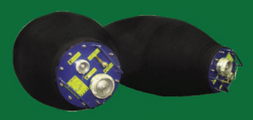
QWIK-HIGH PRESSURE EXTERNAL CLOSURE

QWIK-SEALFAST INFLATABLE PLUGS 4" TO 72"

FLEX ODS BYPASS PLUG

BAG PLUGS 2" to 72"

MEGAPLUG®



QWIK-SOCKET WELD PLUG

COB INDUSTRIES, INC.
PO Box 361175 • Melbourne, FL 32936-1175

Qwik-Freezer™

Qwik-Freezer™ equipment utilizes liquid carbon dioxide (CO_2) to freeze stationary water in selected sections of pipe or tubing. By producing very low "dry ice" temperatures, Qwik-Freezer™ forms a secure in-line ice plug. This temporarily isolates the water in the system and allows repairs or modifications to be made without draining down or shutting off systems.

COB INDUSTRIES, INC.
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