

FLO SAFE, INC.

THE COMPLETE CONTAINMENT PIPING SOLUTION

Flo-Safe B Installation Time Estimate

To provide a guide in estimating Flo-Safe B installations the following assembly times are provided.

Assembly Time per Fitting

<u>Part Number</u>	<u>Description</u>	<u>Time</u>
C91040B	4" Clear PVC Tee	3 minutes
C91060B	6" Clear PVC Tee	4 minutes
C96040B	4" Clear PVC 90 EL	2 minutes
C96060B	6" Clear PVC 90 EL	3 minutes
C97040B	4" Clear PVC 45 EL	2 minutes
C97060B	6" Clear PVC 45 EL	3 minutes
C99040B	4" Clear PVC Coupling	2.5 minutes
C99060B	6" Clear PVC Coupling	3.5 minutes
C94040B	4" Clear PVC Lateral Wye	3.5 minutes
C94060B	6" Clear PVC Lateral Wye	4.5 minutes

The chart above was calculated from the mean assembly time developed by actual installers on project sites around the country.

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PIPE CENTRALIZER SPACING

Flo Safe™ pipe centralizers prevent abrasion of the outside wall of the carrier pipe and the inside wall of the containment pipe, when thermal expansion and the contraction occur. They also allow for the insertion of leak detection cables and probes and the interstitial space between the two pipes. Spacing of the centralizers will vary, dependent upon the weight and diameter of the carrier pipe. The following recommendations are for plastic carrier pipe:

4" FLO SAFE

<u>CARRIER PIPE SIZE</u>	<u>SPACE BETWEEN CENTRALIZERS</u>
3/4	4.5 FEET
1"	4.5 FEET
1-1/2	5.0 FEET
2"	6.0 FEET

6" FLO SAFE

<u>CARRIER PIPE SIZE</u>	<u>SPACE BETWEEN CENTRALIZERS</u>
2"	6.0 FEET
3"	7.0 FEET
4"	8.0 FEET

Centralizers should be placed approximately 3 feet from a fitting connection. Consult Flo Safe, Inc. for recommendations on other carrier piping materials.

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ABOVE AND BELOW GROUND INSTALLATION INSTRUCTIONS

ABOVE GROUND

Care must be taken in handling and storing Flo Safe™ pipe and fittings. Outdoor storage and exposure to sun and heat should be avoided. Above ground, outside installations must be protected. Consult the factory for advice on appropriate methods.

Flo Safe™ must be properly supported, when installed above ground. Support from pipe hangers with wide, flat surfaces, typically used with plastic pipe. This will prevent damage to the containment pipe. Spacing of the hangers will depend upon the diameter and combined weight of the carrier and containment pipe. Recommended hanger spacing for Flo Safe™ with plastic carrier pipe is as follows.

4" Flo Safe™

<u>CARRIER PIPE SIZE</u>	<u>HANGER SPACING</u>
3/4	9.0 FEET
1"	9.0 FEET
1.5"	8.5 FEET
2"	8.0 FEET

6" Flo Safe™

<u>CARRIER PIPE</u>	<u>SIZE HANGER SPACING</u>
2"	11.0 FEET
3"	10.0 FEET
4"	9.0 FEET

The above hanger spacing recommendations are based on ambient external temperatures. Consult Flo Safe, Inc. for recommendations at higher temperatures, as well as heavier carrier pipe (metal & fiberglass).

BELOW GROUND

Proper backfilling procedures are very important to the below ground installation of Flo Safe™. Care must be taken to provide firm support and compacting. This becomes more important when the installation is deeper than ten feet. Additional consideration must be given to the width of the trench. Normal engineering and installation guidelines, which are used for any thermoplastic piping systems, would apply to Flo Safe™ as well.

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Important Installation Information

Follow these guidelines and instructions to insure proper installation. If these instructions are followed exactly the installation of the leak detection port or the drain or vent port will be easy and simple. The Flo Safe™ ports are precision designed and engineered.

1. If hydrostatic or pneumatic testing is required, it must be done prior to the installation of the Flo Safe™ ports.
2. Flo Safe™ ports (saddles and clamping wedges) are made from top quality PVC materials but they must receive the same handling care as for any other PVC pipe and fittings to prevent physical damage.
3. Be sure the Flo Safe™ pipe and ports are clean and free from any dirt, sand or anything that might cause excessive tension on the saddle when the wedge is driven on. The outlet of the port should be placed at twelve o'clock if possible, otherwise at either three or nine o'clock. **The port should never be placed with outlet at six o'clock.**
4. The wedge is designed to slide half-way on the saddle without force. If the wedge has to be forced on to start, something is wrong. **Never force the wedge past the end of the saddle guide.**
5. Once the leak detection port is properly placed on the Flo Safe™ containment pipe, bore a 3/4" hole into the pipe. The leak detection probe should be positioned to lie at the bottom of the containment pipe.
6. The hole should be plugged up around the cable after the probe is positioned. Flo Safe, Inc. recommends 3M Intermesant Foam as a sealant. However, other options are available. Keep in mind the probe has to be removable if there is a leak.
7. Flo Safe, Inc. warranties its products against defective materials and workmanship, **not against improper installation procedures.**

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FLO SAFE B PRECAUTIONARY NOTICE

KEEP ADHESIVE CARTRIDGES REFRIGERATED (35° F). AMBIENT EXPOSURE TIME: 48 HOURS

ADHESIVE WILL CURE INSIDE MIXING TIP IF TIME EXCEEDS 15 MINUTES. REPLACE MIXING TIP.

NO SMOKING – CONTENTS OF CARTRIDGE ARE FLAMMABLE.

DO NOT EXPOSE TO OPEN FLAME OR SPARK

FITTINGS MUST BE FREE OF DEBRIS PRIOR TO ADHESIVE APPLICATION.

FLASHPOINT: 51° F, 200° F {nonflammable} after 2-6 hours

CURE TIME: Set Time = 15-45 minutes
Air pressure Testing = 4-8 hours*
Hydrostatic Testing = 8-24 hours*

OPERATING TEMPERATURE: 35° F to 105° F

*Operating temperatures below 73° F may have a longer cure time.

Your Flo Safe, Inc. Dealer Is:

FLO SAFE, INC.

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Installation Instructions

Flo-Safe B (Bonded)

Secondary Containment Piping System

———— Packaging ————

Flo-Safe B fittings are individually packaged in plastic bags. This includes two fitting halves and pre-cut assembly pins. The bags should not be opened until it is time to install fittings, in order to keep surfaces clean and to prevent loss. Adhesive cartridge(s), mixing tip(s), and applicator gun(s) are packaged separately.

———— Pre-Assembly ————

Pipe spacers should be clipped onto the carrier (inner) pipe, approximately every three feet from a fitting connection. The spacers need to be installed before the containment (outer) pipe. It is helpful to lay out the system, cut and dry fit the carrier piping. The containment piping and all non-split fittings, such as terminating couplings, must be installed prior to joining the carrier piping. The containment piping can be cut shorter than the carrier pipe because of the deep sockets of the deep sockets of the Flo-Safe P fittings. Consult the Flo-Safe fitting dimensional drawings for socket depth. This will allow sufficient space for joining the carrier pipe. If an error in calculation should occur, and the

short, this may be remedied by using the two piece Flo-Safe B coupling. Cut the length of containment pipe in half and reassemble the pipe with the two lengths joined by the coupling. The ends of the containment pipe must be cut squarely and made free of burrs and sharp edges. The pipe ends should be inspected for any cuts or grooves in the surface. Sandpaper should be used to smooth the pipe ends. Any grease or foreign debris must also be cleaned from all surfaces. For underground applications, we recommend that a plastic sheet be placed under the area where the fittings will be installed, to help keep the surfaces clean. When ready to install split fitting, remove pins and re-insert according to the following assembly procedures. Possible tools that might be of use include: disposable gloves, a pocket or utility knife and a small mallet.

NOTE: Flo-Safe systems require that any Flo-Safe B product must be used with other Flo-Safe B products, such as Flo-Safe B pipe and fittings, Flo-Safe Applicator gun and adhesive cartridges, etc. Substituting and/or installing with any other similar product will void warranties and result in possible system failure.



Applicator Gun

First, remove metal disc from cartridge. Unscrew retaining nut to remove nose plug and retaining nut from cartridge. Install mixing tip onto cartridge. Screw retaining nut back onto cartridge to secure mixing tip to cartridge. Next, to install cartridge into applicator gun, press the clutch lever (1) and completely pull back the piston (2). Load cartridge into applicator gun (3).

To start dispensing adhesive, the cartridge should be burped to assure even dispensing of adhesive components. Squeeze the trigger and apply a few grams or quarter-size bead to a disposable surface. This allows the mixing tip to be purged of unmixed material.

After cartridge has been burped, there are fewer than 15 minutes to apply adhesive to fittings. If 15 minutes have passed, the adhesive will seal the mixing tip shut and should be replaced. To replace mixing tip, simply unscrew retaining nut, dispose of the old mixing tip, install a new mixing tip onto cartridge, and then screw the retaining nut back on cartridge.

CAUTION: Smoking should not be permitted while handling cartridges. Under no circumstances should adhesive cartridges be exposed to and open flame.



Assembly

Application

To control dispensing rate of adhesive, maintain a uniform pressure on the trigger. Apply a liberal amount of adhesive to both the narrow and wide channels of split fittings. Completely fill channels until there is at least 1/8" rounded bead emerging from the channel. Using a pocket or utility knife, cut back the mixing tip to allow a greater dispensing rate for wider channels. Recommended ambient temperature for applying adhesive is 35°-105°F (2°- 40°C). There should be no smoking in the immediate area until the adhesive has fully cured.

Pins

After completely applying adhesive to each half of the fitting, make certain that the containment pipe sections are securely in place. Carefully mate both fitting halves around containment pipe sections. Avoid any debris from adhesive and containment pipe sections. Prevent sections from sliding while securing each fitting half around containment pipe. Insert pins through fitting hinges. If some difficulty should occur, apply pressure to each fitting half and use a small mallet to tap pins into place.

Mixing Tips

Allow no more than 15 minutes between assembly of each fitting. If more than 15 minutes pass, the adhesive will start curing inside the mixing tip. If all of the adhesive has not been used, simply replace mixing tip. This is accomplished by unscrewing the retaining nut, replacing the mixing tip, and replacing the nut.



Testing

Flo-Safe recommends testing the carrier piping system prior to installing Flo Safe B Fittings. After testing the carrier piping, fittings should be assembled and the containment piping tested to insure proper joining. Remember, as a containment system, the testing is merely to verify the joint integrity, should a leak occur. Flo-Safe B fittings should be tested only at 5psi penumatically or 75psi hydrostatically. Severe damage and personal injury may result if higher pressures are used. During testing, it is necessary to restrain all pipe movement. Check all joints with soap solution while under pressure. If a leak occurs, air bubbles will be apparent at the source of the leak. To remedy a leak, release pressure right away and mark exact location.

Clean and dry location. With a file, rough the general area about 3/4" radius. Then reapply Flo-Safe B to area.

Flo-Safe B is to be tested as a complete system. If other products are substituted for Flo-Safe B components (fittings, pipe, adhesive cartridge, applicator gun, etc.), the system may fail and product warranty will be voided.

Flashpoint : 51°-200°F(non-flammable) after 2-6 hours

Cure Time : Set time - 15-45 minutes

Air pressure testing - 4-8 hrs.

Hydrostatic Testing - 8-24 hrs.

Operating Temperature : 35°-105°F

Operating Temperatures below 73°F may produce a longer cure time.



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