# 2.1.2 Procedure for Controlling Pipe Ends

## Table of Contents

The following work procedure must be followed whenever pipe ends are being attached or released from a spool of Fiberspar LinePipe. Following this procedure will help to assure a safe, efficient, trouble-free installation.

## Introduction

Fiberspar LinePipe is a spoolable fiber-reinforced composite pipe. It consists of an inner thermoplastic pressure barrier layer that is bonded to, and reinforced by, high-strength glass embedded in an epoxy matrix. Once manufactured the pipe is packaged on spools for transport, storage and deployment.

During storage and transportation the ends of the pipe are securely attached to the spool so that the pipe cannot unravel during transit. When these attachments are removed a large amount of stored energy is released due to the inherent memory in the pipe, causing it to try and straighten out. This can lead to a number of possible hazards and careful coordination and safe practices are therefore required.

* Please note that LinePipe installation should always be done in accordance with the Fiberspar Safety and Installation manuals.

## Tools/Equipment Required

1. Suitable sling/strap to restrain the end of the pipe.
2. Small hammer
3. Wrench
4. Driving pin for removing bolts (e.g., a 8 in. x 3/8-in. (20.3-cm x 1-cm) bolt))
5. Drill with a 1/2-in. x 12-in. (1.3-cm x 30.5-cm) bit for re-securing pipe
6. An electric hacksaw (e.g. Sawzall®)
7. Personal protective equipment (including safety glasses)

## Safety

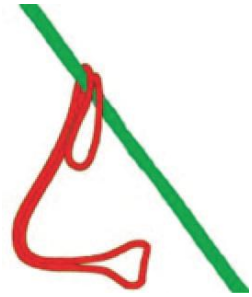
The successful release and attachment of pipe ends involves controlling a large amount of stored energy. Working with any amount of stored energy is a potential hazard and should be treated with the greatest respect and caution. The following is a list of general points that should always be followed:

1. All equipment should be fully inspected for defects prior to use, and all maintenance schedules followed. Damaged equipment should not be used.
2. Loads must be properly secured before attempting to release or attach pipe ends.
3. Before work on pipe ends commences unauthorized personnel and equipment should be cleared from the area around the spool where a strike is most likely to occur.
4. In addition to the above all local laws and health and safety regulations should be followed.

## Procedure

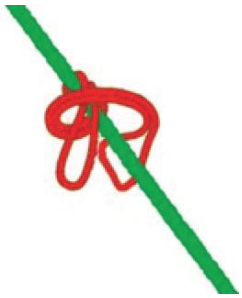
### Releasing a Pipe End

1. Secure the end of the pipe to be released. To do this, attach a sling/strap to the end of the pipe. This should be done approximately 4 ft (1.2 m) from the end of the pipe and the preferred method is as follows:

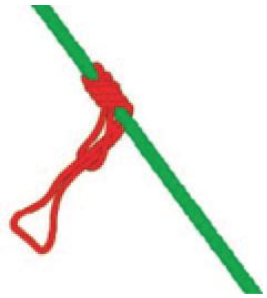


**Step 1:** Bring a loop behind and over the pipe.

**Step 2:** Cross the other part of the sling/strap, thus trapping the loop.



**Step 3:** Make a second crossing of the sling/strap over itself, trapping the anchor line.



**Step 4:** Tuck the longer end of the sling/strap through the short loop and tighten so that the short loop rests against the pipe.

***Note:*** If there is insufficient room to slide the sling/strap between the pipe and the spool, loosen the nuts on the bolts slightly to gain access. DO NOT REMOVE THE NUTS COMPLETELY UNTIL YOU HAVE SECURED THE PIPE WITH THE SLING/STRAP

2. Secure the opposite end of the sling/strap to the spooling frame with a shackle so that the pipe will be restrained once the bolts are removed.

***Note:*** On carousel mounted spools the arms on the spooling frame must be closed against the spool.

3. Ensure all personnel are clear of the area and carefully remove the nuts from the bolts that are securing the bolts.
4. Remove the bolts that are attaching the pipe to the spool using the driving pin and hammer. If the sling/strap is properly secured there should be very little pipe movement once the bolts are disengaged. When doing this position your entire body on the outside of the spool flange to ensure that you are out of the strike zone. It is tempting to look around the edge of the spool flange as you are driving the bolts out. DO NOT PUT YOUR FACE IN THIS DANGER AREA.
5. Release the stored energy in the pipe. This can be done by either:
    a. Slowly releasing the end of the sling/strap that is secured to the spooling frame.
    b. Engaging the hydraulic spooling equipment and rotating the spool a small amount so that slack is generated in the pipe. Care must be taken to not undo the half hitches during this process.
6. Remove the sling/strap and proceed with the installation.

**Attaching a Pipe End**

After completing the installation of a line there will often be excess pipe that has not been installed. In order for pipe to be safely transported on the spool it must be re-wound tightly back onto it, and the end of the pipe must then be re-attached to the spool flange. If the spooled pipe contains slack it can rub against itself, potentially causing damage during transport. The method for re-spooling and re-attaching the pipe is as follows:

1. Engage the hydraulic spooling equipment and rotate the spool so that excess pipe is wound onto the spool. Ensure not to spool up to much pipe at this point otherwise the loose end may try and flip over (or around on carousels) the spool.
2. Starting approximately 4 ft (1.2 m) from the end of the pipe, tie the sling/strap to the pipe as described above.
3. Secure the opposite end of the sling/strap to the spooling frame as described above.
4. Using the hydraulic spooling equipment remove the slack from the reel. DO NOT OVERTIGHTEN THE SPOOL AS THIS CAN CAUSE THE SLING/STRAP TO FAIL.
5. Position the end of the pipe against one of the spool flanges and drill a 1/2-in. hole at least 2 in. (5 cm) inside of the spool flange so that it passes through both the pipe and the spool flange. DO NOT LET THE DRILL BIT RUB ON THE SLING/STRAP DURING THIS PROCESS.
6. Insert the first bolt and attach the nut through the pipe and flange before drilling a second 1/2-in. hole 6 in. to 8 in. (15 cm to 20 cm) from the first. The first hole acts as a temporary safety.
7. Insert the second bolt and attach the nut with a flat washer and lock washer.
8. Remove the nut from the first hole and reattached it with a flat washer and lock washer.
9. Make sure both sets of bolts are securely tightened.
10. Slowly remove the sling/strap that is attached to the pipe.
11. Trim excess pipe from the end so that none of it protrudes past the spool flange.

## Comments/Tips

Beware of dust and splinters while cutting/drilling through the pipe.