



Safety Bulletin

June 2023

Narrow Roll Handling Safety Guideline

This guideline document provides options that RPTA member mills may consider to protect employees who handle narrow rolls¹ or will be in the vicinity of narrow rolls. Narrow rolls represent a heightened risk of injury due to their unstable configuration.

Special hazards associated with narrow rolls, which typically weigh between 400 to 1000 pounds, include crushing injuries, back and muscle strains, lacerations and punctures.

This Guideline is not an industry standard; rather, it describes the normal range of best practices, based on the combined thoughts of RPTA membership.

Each mill must select the best practices for the specific conditions at their mill.

This Guideline was built on RPTA member input². If you see that we have not covered equipment or procedures that can significantly reduce the risk of injury, please send these to Kate McGlynn, RPTA Executive Director, at kmcglynn@rpta.org. Photos are particularly helpful.

We will accumulate recommendations and publish updated versions as needed.

¹ Narrow rolls are also known as ribbon rolls.

² RPTA members on Guideline Task Team were Bill Doerr, Mike Jenkins and Reece Perkins, Greif; Clay Staley and David Cronk, Ox Industries; James Haun, Lea Ann Hjetland and Mike Gunderson, Westrock.

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GUIDELINE SCOPE

The scope of this Guideline is to provide RPTA member mills with knowledge from other member mills of best practices and safe narrow roll handling techniques from the paper machine winder to the location where the narrow roll is laid flat or stored and no longer presents a high safety risk. Free-standing narrow rolls are susceptible to falling over which can create a high-risk activity and potentially lead to employee injuries, property damage, and product losses.

NARROW ROLL DEFINITION

There is no single definition of a narrow roll. Essentially, a narrow roll is a roll whose width to diameter ratio makes it particularly unstable due to its center of gravity.

Generally, RPTA member mills define narrow rolls as rolls that have widths less than 8 to 10 inches. However, some mills define narrow rolls based on the ratio of width to diameter. As an example, one member defines a narrow roll as a roll with a width less than 20% of the diameter.

Mills have various names for narrow rolls as well. Edge Rolls, Butt Rolls, Side Rolls, and Trim Rolls are alternative names used around the United States.

Each mill should determine what definition best suits their specific circumstances.

PERSONAL PROTECTIVE EQUIPMENT (PPE)

OSHA 29 CFR 1910.132(d)(1) states “The employer shall assess the workplace to determine if hazards are present, or are likely to be present, which necessitate the use of personal protective equipment (PPE). If such hazards are present, or likely to be present, the employer shall: 1910.132(d)(1)(I) Select, and have each affected employee use, the types of PPE that will protect the affected employee from the hazards identified in the hazard assessment;” It is recommended that each mill utilize an approved PPE Hazard Assessment to identify appropriate PPE for use while handling rolls.

Although as a best practice, member mills have identified and recommended the use of gloves, preferably cut-resistant, while handling paperboard rolls.

HOUSEKEEPING

Narrow rolls can become unstable due to uneven surfaces or debris on the floor. It is important that the path for transporting narrow rolls is clear of such risks. Keep areas and walkways clean and clear to avoid creating trip hazards. Keep all spills and leaks cleaned up and/or contained to avoid slip hazards.

HISTORICAL LESSONS LEARNED

RPTA members shared lessons they have learned from experience with narrow rolls.

- If wood sticks are used to separate rolls on a forklift or in warehouse storage, use the same height wood, so the load is not destabilized.
- Use a chock and not a wafer or piece of wood to secure a roll.
- Mechanical sleds to move rolls are not recommended.
- Narrow rolls that are ejected from paper machines can come loose from the converted rolls and roll on alternative paths to automated chocks or manual chocks. There are situations where narrow rolls mill the chocks and immediately fall over or find an alternate path. These rolls will continue on a path until they run into an object.

TRAINING

Best practices for training adult learners:

- Treat trainees with respect
- Respond to individual learning styles
- Maintain flexibility in tone and pace of subject delivery
- Coach and counsel trainees to maximize learning experience
- Encourage participation from all trainees (everyone has experience to learn from)
- Use multiple media types (short documents, pictures, videos, power points, and hands-on examples)

Three levels of training are appropriate for narrow roll handling.

New Hire

New employees may not be familiar with industrial risks and may not see the special risks that narrow rolls present. New hires who will be working in areas with narrow rolls should receive both classroom training and hands-on training. This can be incorporated in the new hire orientation and job specific training processes. Recommended Frequency: Upon hire and job progression.

Frequent Refresher

A pre-task review of risks and necessary precautions should be performed. Supervisors may hold meetings to discuss the methods that will be used to secure narrow rolls, with a sign-up sheet to track participation. Recommended Frequency: Routine basis throughout a calendar year.

General Awareness

Mills should communicate and warn any person in the vicinity of narrow rolls about the risks associated with narrow rolls and the precautions they should take. General awareness training can cover past near misses or injuries associated with roll handling and best practices. Recommended Frequency: Annually.

Note: All training should be bi-lingual if there is a significant population of employees who have another language as their primary language.

HANDLING ASSISTS

Each mill will need to evaluate the risk at their operation and decide the type of handling assistance that should be considered. For example, some mills may have to handle narrow rolls infrequently, while others may handle multiple narrow rolls per winder set. These circumstances require different solutions, and in this section, we discuss various handling equipment and techniques for consideration.

Handling Equipment

- a) Forklift attachment (turn-a-load)
- b) Turn-a-load width adjuster/spacer (Remember, all attachments must be identified on the forklift's capacity tag)



Schlumpf Manual Hoist-Based Roll Turner

See videos at [MRT-330 \(Manual Hoist Based Roll Turner\) - YouTube](#) and [Schlumpf MRT Hoist Based Roll Handler with Screw Level - YouTube](#)

c) Automated Roll Handling Solutions:

If investment opportunities are available, implementing engineering solutions is the preferred method to reduce roll handling risks at the dry end of the paper mill. These solutions include fully automated robotic solutions as well as collaborative robots (cobots), which allows for fully automatic mode or a manual mode where the cobots interact with humans in a shared work zone.



d) Pre-Edge Trim Removal Systems

If narrow rolls are not generated for sale but rather are trim rolls to be discarded, an alternative to handling the rolls is pneumatic edge trim removal systems. These vacuum style systems are common at winders to remove edge trim. An enhancement would be a pre-trim system, ahead of the winder deck, that is sufficient to take 6-8" additional trim per side. These systems have several names including trim removal system, trim system, slitter trim system, shaving removal system, and edge trim system. In a trim system, the edge trim is typically pulled into and through ductwork with fittings ranging from 3" diameter to 24" diameter, using airflow generated by centrifugal fans. Fans and ductwork can be located to minimize impact on plant operations, such as fork truck traffic, roll handling pathways, walkways, and storage.



Typical light duty converting operation



Air Pressure Blower with Venturi

Once trim is through the system, there are a variety of ways to receive the trim, including dry-end pulpers, cages, trucks, balers, shredders, cyclones, and other material and air separators.



Trim Baling Example from Cyclone Receiver

Handling Techniques

- a) Designated rack or support system (any system should support both sides of the roll)
 - a. "Bicycle Racks"
 - b. Engineered/modified stands that apply pressure/clamp the rolls against a fixed object



- c. Engineered lean stands



- d. Overhead Support System

- b) Trigger clamps can be installed on the outside of rolls or the inside of the cores to aid in securing them together.



- c) The use of plastic, PVC, or aluminum piping/conduit inside the core can help hold the narrow rolls together.



In use with roll stop.



- d) Banding

PROCEDURES BY PRODUCTION LOCATION

Employees may handle rolls at several locations between the paper machine and the location where they are stored or transported flat. Each location has different risks and constraints.

Best practices by location include:

All Locations Within the Mill

- Keep out of the line of fire
 - Never put yourself between a roll and a fixed object.
 - Do not place a hand between the narrow roll and the roll next to it.
 - Never be closer than the roll diameter to an unsecured roll.
 - Position body behind safety barrier.
 - If manually handling rolls, use two team members, off to the side of roll.
- Always keep eyes on task
- Never turn your back on the roll
- Take measures to keep roll from falling, examples:
 - Never leave a free-standing narrow roll unattended. Always secure the roll or position it flat.
 - Do not place on edge (i.e.: standing vertically) without effective restraint to keep from falling.
 - Ensure stabilizing devices or securing mechanisms are appropriate for the intended use.
 - Options for stabilizing or securing devices:
 - PVC or aluminum pipes can be placed inside of cores to prevent tip-over. Please consider the inside diameter of the pipe vs. the core, as well as the length of pipe vs. the width of roll(s). See photo above.
 - Band narrow rolls together if grouping is large enough as one group to stand safely.
 - Trigger clamps on the outside of the rolls or through the core.
 - Engineered/modified stands that apply pressure/clamp the rolls against a fixed object.
 - Engineered lean stands.

Minimize risk if a roll starts to fall:

- Never try to catch or stop a roll from falling; get out of the way and let it fall.
- All crew members stand back as the roll falls.
- Communicate loudly that a roll is falling, to protect passersby.
- If a roll unintentionally falls, it is recommended to follow the mill's safety incident investigation procedure for near misses to determine root cause and implement a suitable corrective action.
- In the event that a roll falls, use proper lifting procedures/equipment to lift the roll and ensure you have the ability to keep it stable upon lifting – Do not recreate the same issue that caused it to originally fall.
- If transporting rolls on standard forklift forks long distances (Ex: from dry end of mill to stock prep for remilling), rolls should be secured for transport.
- Although discouraged, if sticks must be used between rolls stacked flat then use at least two sticks of the same size, e.g., two 2x2 or two 4x4.

Transitioning from the Winder

- Do not enter table area until rolls have stopped moving, to ensure stability.
- Use chocking devices where needed.
- The use of plastic, PVC, or aluminum piping inside the core of the entire width can help hold the narrow rolls together as it exits the winder. See photo under “Handling Techniques”.
- Trigger clamps can be installed on the outside of rolls or the inside of the cores to aid in securing them together during the processes stage. For example:



- The use of tape to secure narrow rolls on the outside of the set to inside rolls aids in securing the rolls to prevent fall-over as it exits the winder. Tape can also be used to secure narrow rolls on the inside of the set to ensure the rolls are separated in a controlled manner.



- Ensure the set is rolled out far enough so it can be turned or safely positioned to be handled by mechanical equipment, such as a forklift.
- If utilizing a roll conveyor or shuttle device, make sure the ribbons are stable before starting or moving the device.
- If narrow rolls are produced with larger width rolls in a set, safely handle and secure the narrow rolls prior to handling the wider rolls.
- If machine profile allows, narrow rolls can be positioned inside larger cuts to prevent narrow rolls from falling off ends upon ejection.

Moving after the Winder

- Use two crew members to secure rolls after taking off the winder.
- Do not handle more than one narrow roll at once.
- Always prioritize and handle narrow rolls first if they are produced with large width rolls. This aids in unintentional tip-overs during the workflow.
- Some production sets may routinely trim a small quantity of narrow rolls requiring temporary storage until a large enough quantity can be aggregated for packaging and shipment. In this case, it is important to have an established, safe method in-place for temporary storage. It is critical to limit the frequency and distance that these rolls are handled in the process. Example of safe temporary storage methods include:

- “Bicycle Racks”
- Engineered/modified stands that apply pressure/clamp the rolls against a fixed object.
- Engineered lean stands.
- Always transport the roll flat, never try to transport narrow rolls standing up on standard forks:
 - Once narrow rolls are safely lying down on forks, transport to the skid designated for side rolls.
- If utilizing an upender to combine individual narrow rolls, ensure there is a crew member on each end of the roll and maneuver the roll in front of upender. The rolls should be turned toward the upender and, with one crew member stepping aside, guided into position with the flat side of the roll facing the flat backing of the upender.
- A roll should never be left free-standing – Never assume it will stay up while handling other rolls in the workflow process. Always have someone hold the roll or secure in an appropriate storage device.

Storage

The clear preference is to store flat; however, if not possible then:

- Chock the ends of rolls if they are staged or stored in a line.
- Lean up against a permanent building structure, engineered/modified stand that applies pressure/clamps roll against a fixed object, or engineered lean stand.
- Firmly anchor the rolls (s) to a piece of equipment.
- Store only in designated area.
- Always lean in the designated area.
- Rolls can be stored without support if they are clamped in a stable bundle of rolls.