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PRODUCTS LIABILITY

An Interactive Qualifying Project Report

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By

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Abstract

The objective of the Product Liability IQP is to give the student some knowledge and experience relative to the civil litigation process. The role of an engineer in the courtroom as an expert witness and as the defendant in a civil liability lawsuit were studied using various texts and video training materials. Practical experience in relating engineering principles to real civil suits was gained by evaluating three case studies and presenting developed opinions to a peer/advisor review group.

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1. Products Liability Law

1.1 Definitions

1.1.1 Product:

The reason for product liability laws is to protect the consumer from injuries that could result in defects of problems with the product. A product is a "tangible personal property". With the definition of a product determined now, what the definition of liability is required. Liability is defined as "accountability for" or responsible for. It is important to note that liability for a product is not just constrained but what is tangible, but it also includes things like writings, natural products and electricity. For example, if there is a manual for a product, and there are improper instructions in the manual that causes an accident, then the company who wrote the manual (usually meaning the company that builds the machine) is liable for damages. There are three factors that must be considered in determining the liability laws apply, 1. If the person(s) injured did anything that could have prevented the matter being considered; 2. The product involved; 3. Other policy concerns such as the difficulties of proof.

1.1.2 Defect:

Product liability is an important way in which the consumer can be sure that they have not bought a defective product. By that it is meant that the product is not in its perfect working condition when the product was bought. This would mean that the product is in defect or defective. Liability assures the consumer that if the product is defective, and the consumer was injured because of the defect while using the product, he or she will be

compensated. A manufacture defect is not to be confused with a defect that could happen because assembly instruction were not followed directly or if the proper maintenance was not performed by the consumer. In these cases, it is not the manufacturer fault as long as the proper assembly instructions or proper maintenance instructions were given to the consumer. But, it is not always easy to determine if there is a defect or if that defect caused harm, there are many factors that must be considered. This is where engineering experts are of major importance.

1.1.3 Types of Defects:

There are four categories for product defects: 1. manufacturing or production flaws, 2. design defects, 3. misrepresentation, and 4. defective instructions or warnings. Many times, two or more of these categories can be applied to a given case. Warning defects can be placed into either design defects or into misrepresentation. This is because according to An Engineer in the courtroom, "that a warning inadequacy, like a design inadequacy, is usually characteristic of a whole line of production while production or manufacturing flaw is usually random and atypical of the product. Misrepresentation is difficult to determine from the other forms of defects because the product may have manufacturing defects that could cause harm while the directions, instructions, and product expectations might also lack important information or promise the product to do something it can not. In a case like that, it would be difficult to determine which defect actually caused harm. Design defects are tend to be fewer because of the fact people have to approve the product and test it before it gets marketed, but they still occur.

Determining what type of defect has occurred can be difficult, but it is important because it can help in determining blame.

1.2 Conceptual Standards for Determining Defectiveness

1.2.1 General:

There are many ways in which defects and there different types could be interpreted and applied. The definition of a defect gives the court a strong guideline for determining if there was a problem with the product before the consumer purchased it.

1.2.2 Consumer Expectations:

When discussing whether or not a product contains a defect, it must not solely be based on if it is unsatisfactory, but it is also important to consider the standard of the implied ordinary consumer expectations. This is given in comment I of the Second Restatement of Torts 402A: "The article contemplated by the ordinary consumer who purchases it, with the ordinary knowledge common to the community as to its character". This standard works well in situations where a product defect occurs, or in situations where warnings should be posted. But, situations where a complex or complicated product is involved, it is not as helpful. This is caused by the fact that the consumer lacks the qualifying knowledge to know how safe or unsafe a product is. And the ordinary consumer expectation test is not effective in cases where danger is obvious.

1.2.3 Presumed Seller Knowledge:

Presumed seller knowledge deals with the fact that there are certain things about a product that the seller must be aware of before it can be sold. In the case where a manufacturer produces a product, the manufacturer should analyze the product and be able to tell if there are any problems, and places where people can get into problems. That way, there can be warning signs placed around dangerous areas. The Manufacturer is strictly liable in this example. Presumed seller knowledge also deals with the seller of a product. If there is a company that manufactures a product, but they use another company to sell it, that other company is also strictly liable. That is because it is the seller's responsibility, and the manufacture's responsibility to know if the product is safe. They would share the liability. This way, consumers can be sure that they received a safe product.

1.2.4 Risk-Benefit Analysis:

A risk-benefit analysis is used in determining whether a product is defective or not. It is most commonly used in design cases. It is the duty of the court to decide if the cost of making a safe product is greater then the risk of the danger of the product in its present design. The product is defective if the risk of danger is greater then the cost or burden of redesigning or fixing the danger. Phillips used the following example to explain risk-benefit analysis: It could be less safe to ride to work than to walk, but the benefit of riding may be greater than the imposed risk. For instance, work could be a two-hour walk away or a fifteen-minute drive, but it is not always true. If work is a ten-minute walk, then the burden of walking to work is less.

Dean John Wade proposed seven factors used for determining risk-benefit analysis:

1) The usefulness or the desirability of the product
2) The Likelihood of injury from this product
3) The availability of a replacement product that does the same job and is safe
4) The possibility of the manufacturer to fix the danger without impairing the usefulness or making the product too expensive
5) The ability of the user to avoid the danger
6) The user's awareness of the danger
7) The feasibility of the manufacturer of spreading the risk of loss by pricing ot insurance

1.2.5 State of the Art:

State of the art "involves all the available knowledge on the subject of a given time, and this includes scientific, medical, engineering, and any other knowledge that may be available." This argument applies to products manufactured before any safeguards were designed. If there was a new technology that was discovered, and this new technology would prevent injuries, then this technology must be applied to all related products in their design, manufacturing, or any other applicable situation. But, if a product was produced before this technology was discovered, then the manufacturer can not be held accountable.

1.2.6 Unavoidably Unsafe Products:

It is stated in comment k of the Second Restatement of Torts 402A that: "There are some products which, in the present of human knowledge, are quite incapable of being made safe for their intended and ordinary use."" This implies that if a product is deemed to be unavoidably unsafe then the seller can not be held strictly liable for the product. However, this does not protect the seller from improper warning, labels, or any workmanship defect of the "unsafe" product.

1.2.7 Defect and Unreasonable Danger:

The product liability law poses that a seller can be held accountable for injuries that are a result from the use of a product that is sold "in a defective unreasonably dangerous." In which a defective condition is one "not contemplated by the ultimate consumer, which will be reasonably dangerous to him." In which, unreasonably dangerous is defined as "dangerous to an extent beyond that which would be contemplated by the ordinary consumer who purchases it, with the ordinary knowledge common to the community as to its characteristics." "The plaintiff is responsible to prove that the product is unreasonably dangerous and defective by theses definitions.

2. Case 1:

John Frazier
Plaintiff

V.

S-B Power Tool Co.
Defendant

2.1 The Case

On May 14, 1996 Mr. John Frazier incurred an injury to his left hand while operating a Skil 10" Table Saw, Model 3400 Type 2, designed and manufactured by S-B Power Tools. Mr. Frazier has brought suit alleging that S-B Power Tools is guilty of negligence and breach of warranty. The injury consisted of substantial damage to the plaintiff's left hand, including amputation of the ring, index, and long fingers, as well as damage to the left thumb. The injury caused the plaintiff to suffer great pain in mind and body, as well as incurring medical expense. As a result of the accident, the plaintiff has a diminished ability to earn income, enjoy life, and perform simple tasks. The plaintiff's suit consists of two charges:

Count 1: Negligence. That S-B Power Tools was negligent in the design, manufacture, distribution, and sale of the Skil 10" Table Saw. S-B Power Tools negligently failed to warn of the dangerous propensities of the table saw, and this negligence was the cause of the plaintiff's injuries.

Count 2: Breach of Warranty. That S-B Power Tools' conduct constituted breach of warranties of express and implied merchantability and fitness for purpose, which breaches were the cause of the plaintiff's injuries.

2.2 The Accident

Mr. Frazier stated in his suit that the injury occurred when his left hand "...came into contact with the saw blade as a result of a kickback caused by a defective rip fence and defective anti-kickback finger.". In the plaintiff's Answers to Defendant's Interrogatories, Mr. Frazier elaborated on the details of the accident. He stated that at approximately 2:00 p.m. on May 14th, 1996 he was cutting a piece of pine board 27" long, 2&1/2" wide, and ¾" thick. He needed to remove 3/16" off of one side. The plaintiff stated that he set the fence and proceeded to push the wood along the fence, through the saw blade. At approximately half way through the cut, the piece kicked back violently and Mr. Frazier's left hand contacted the saw blade. Mr. Frazier was injured such that the middle finger of his left hand was amputated, the ring and middle finger of his left hand were fractured and semi-amputated only remaining attached by a little skin. The left thumb was cut down through the nail almost to the first knuckle. The repair of these injuries required microsurgery. The plaintiff stated that the rip fence would not align parallel to the blade, which caused the kickback. Further, the anti-kickback device was inadequate to provide protection during such an event, and there were no warnings or instructions relative to these deficiencies in the manual or on the machine. The plaintiff was questioned as to whether he had used a 'push stick' to push the board through the saw blade. Mr. Frazier responded that he had the push stick in his rear pocket, and that he had not gotten to a point where he felt he needed to use it when the kickback occurred. The plaintiff concluded his answers by stating that there had been no damage, alterations, modifications, repairs, or service to the product.

2.3 Analysis

The medical records presented in the case are similar to Mr. Frazier's description of his injury. The examining medical doctor states in his write-up of the case that the saw blade entered Mr. Frazier's hand through the left thumb and subsequently through his index, long, and ring fingers in that order. The pinky of the left hand was untouched by the saw blade, suffering only a minor contusion to the back of the finger, of unknown origin.

The table saw in question and the piece of wood to which the kickback occurred were examined through photographic evidence. Photos of the wood show the indents of the pawl in many places on the upper surface. There are no marks on the upper surface that indicate that the wood was forced out from under the kickback pawl. That is, there are no gouges or ripped out sections of the wood. The photos clearly show that one of the anti-kickback pawls had been bent away from the saw blade. The marks on the upper surface of the wood seem consistent with this bending, as there are marks along the edge of the wood where the pawl would normally activate, then marks of the pawl impacting the wood further and further away from the blade. All of these marks are located in an area forward of the area where the blade finished its cut. The side of the wood that was in contact with the blade of the saw clearly shows the path of the blade up to the point approximately halfway along its length where the cut stops abruptly. There are no friction burns on the piece that would indicate that the wood bound between the blade and the fence. The blade of the saw was positioned so that the top of the blade was" or more above the top of the work piece.

The Owners Operating Guide for the table saw in question was examined directly. Pages 3 to 9, inclusive, describe the kickback event, its causes, and recommend methods for avoiding kickback. The manual indicates that kickback can occur when the work piece binds between the saw blade and the rip fence, and may occur because of blade misalignment. Operators are warned that kickback can "...cause serious injury." and that they should "...keep face and body to one side of the saw blade..." to avoid injury should kickback occur. Also in this section of the manual is a list of instructions for avoiding kickback, including but not limited to, using a push stick for ripping widths from 2" to 6". Operators are instructed to apply feed force to the section of the workpiece between the saw blade and the rip fence using a push stick or block when appropriate. On the bottom of page 4 is a list of the following Warnings with which the operator is to be familiar prior to the operation of the saw.

"5. Always use a push stick... when rip cutting narrow work pieces.

8. Know how to avoid the risk of "kickback".

10. Never reach in back or over blade."

Kickback is defined in the Glossary of the manual on page 7. Instructions for making a push stick are on page 18. Instructions for setting the rip fence parallel to the blade are on page 20. These instructions include a step that requires the operator to check the functioning of the anti-kickback pawls. On page 21 there is a repeated warning about the width of work pieces that require the use of a push stick. The manual concludes that if the saw is found defective in any way, or if the operator is unable to perform any of the indicated steps required for use, that the saw should not be operated. Finally, there is a

list of warnings posted on the front of the saw itself that include instructions about kickback.

2.4 Results

After our examination of the evidence, we conclude that Mr. Frazier did not get hurt in the manner that he and his expert have stated. In order for Mr. Frazier to sustain the injury that he did, his left hand must have been positioned behind the saw blade. This is evidenced by the medical report that indicates that the saw blade entered the left hand through the left thumb then cut the index, long, and ring fingers in that order. Further, had Mr. Frazier's hand entered the blade area from the front, as he stated in his deposition, his left pinky finger would have been the first to enter the blade unless his hand was oriented with the palm facing up. When asked to show the placement of his hands on the saw immediately prior to the accident, Mr. Frazier did not indicate his left hand was oriented palm up. There is no physically possible way that the workpiece could drag Mr. Frazier's hand into the blade as it moved back away from the blade if his hands were located in the positions that the indicated. The way in which the injury occurred is the most telling piece of evidence in this case. We believe the following description accurately summarizes the events that did occur.

Mr. Frazier set up the saw to rip the work piece as he indicated in his deposition. He proceeded to push the piece along the fence with his left hand applying downward pressure to the piece and his right hand pushing the piece forward. Because Mr. Frazier was not applying sufficient force on the work to keep it against the fence, and because he

did not wish to have his hands to close to the front of the blade, the piece began to kickback. Uncontrolled by Mr. Frazier, and because he failed to secure power to the machine immediately, the workpiece repeatedly attempted to kickback. This explains the pawl marks on the top surface of the wood as the kickback pawl repeatedly restrained the piece from leaving the tabletop. The lack of friction burns and the generally rough texture of the cut also support this hypothesis, in that repeated contact with the blade may have removed some of these friction marks, and also caused less of this type of rubbing contact because the wood was bouncing under the pawl and no one small area was constantly in contact with the side of the wood. There is no way to know whether the guard was in place at this point or whether Mr. Frazier lifted it to gain access to the kickback pawl, but we believe that Mr. Frazier then tried to free the work piece by lifting the pawl away from the wood. Immediately, the uncontrolled work piece kicked back and off the table. This motion caused Mr. Frazier's hand to enter the blade whereupon he sustained the injury described in question. Our evidence for this is the nature of the injury itself, and the fact that there is no blood on the work piece. Clearly, the piece was already off the table when Mr. Frazier's hand contacted the blade, or the piece would be bloodstained.

There was no defect in the saw that caused Mr. Frazier to be injured. The failure of the rip fence to align parallel to the blade was not sufficient defect to cause a kickback, as alleged by the plaintiff's expert. This condition is common to inexpensive saws with this type of fence lock, and does not impede their safe use and operation. If Mr. Frazier truly felt that this was a dangerous defect, he should not have operated the saw, as indicated in the Owners Manual. Further, had Mr. Frazier used a push stick there is no way he could

have been injured even if a kickback did occur. This would be true even if the anti-kickback pawls failed, which they did not. We found that the warnings on the saw and in the manual were not only adequate, they were exhaustive. An individual that had read, understood, and obeyed all of the instructions on the saw and in the manual could not be injured during the operation of the saw, even if a kickback occurred. Finally, we found that the saw complied with all relevant ANSI and UL codes.

2.5 Conclusion

As a result of our investigation we believe that Mr. Frazier's suit is groundless, and that S-B Power Tools is not responsible for his injury. The SKIL 10" Table SAW, model #3400-type 2 designed and manufactured by S-b Power Tools is fit for purpose and is not to blame for Mr. Frazier's injury. There was no negligence in design, manufacture, distribution, or sale of the power saw that caused Mr. Frazier's injury. There was no breach of warranty that caused Mr. Frazier's injury.

3. Case 2

Hector Hernandez, Administrator
for the estate of Laura Hernandez,
Giselle Fred, Louie Fred,
Alex Rodriguez, & Laurimar Rodriguez
Plaintiffs

vs.

Michael D. Mackenzie and
Zachary S. Taylor
Defendants

3.1 The Case

Laura Hernandez was a fatality in a head on collision with Michael D. Mackenzie. Her family, represented by Mrs. Hernandez's brother Hector Hernandez, is bringing suit against Michael D. Mackenzie and Zachary S. Taylor. Mr. Taylor is the owner of the tractor-trailer combination rig that Mr. Mackenzie was driving at the time of the accident. The estate of Laura Hernandez contends that Michael Mackenzie and Zachary S. Taylor were liable for the accident and Mrs. Hernandez's death. If that were found to be true, Mr. Mackenzie's and Mr. Taylor's liability would be assumed by Mr. Taylor's insurer to the limit of the policy on a determination that Mackenzie was more than 50% at fault in the accident.

3.2 The Accident

On 7/21/92 at approximately 9:08 am, Laura Hernandez was travelling westbound on Rt. 12 in Ashburnham, Massachusetts. She had just finished working the late shift and was headed home to her four children. Mrs. Hernandez was alone. The car she was driving

was a blue 1986 Dodge Aries K car. At the same time, Michael D. Mackenzie was approaching from the opposite direction, in the eastbound lane of Rt. 12. He was driving a [Mack] tractor-trailer rig, which was outfitted as a tank truck for carrying water. Mr. Mackenzie was employed by Zachary S. Taylor, the owner of the truck, to drive the truck and deliver water to private swimming pools. The vehicles entered a curve in the road from opposite directions and in the middle of the turn, they collided. The left fronts of the vehicles overlapped by approximately eighteen inches. The car turned through 225° and stopped in its own lane facing the way it had come, totaled. The truck suffered relatively minor damage. The truck's left front tire was turned backwards, the steering broken, and the left two feet of the fender and bumper collapsed. Mrs. Hernandez was killed instantly, while Michael D. Mackenzie walked away from the accident.

3.3 Reconstruction & Analysis

There is one important question to be answered in this case: exactly where were the two vehicles located at the time of impact and how do their locations determine civil liability? As a result of our analysis we believe that Laura Hernandez is at least 50% at fault for her own death and that no liability should be assigned to Michael D. Mackenzie or Zachary S. Taylor.

The Chief of Police of Ashburnham, Ronald P. LaPlante investigated the accident. In his deposition, he states that he believes that the point of impact was on the Hernandez side of the line but that this indicated the truck was in his own lane because of the overhang. We agree with the assessment made by Chief LaPlante, because skid marks left at the

scene of the accident clearly show that the truck was in its own lane at the time of impact, and only subsequently did it cross the double yellow line. The skid mark from Mrs. Hernandez's vehicle's left front tire was on or within one inch of the yellow line. This mark shows the point about which her vehicle pivoted and was made by the rear inboard portion of that tire. This mark shows that Mrs. Hernandez was had the left tires of her vehicle very near or on the yellow line at the time of impact.

The shape of the impact indicates that Mrs. Hernandez may actually have been jumping out of Mackenzie's lane at the time of impact. This is conjecture, however we believe that the vehicle was actually at some angle to the front of the truck at the time of impact. This is borne out by the fact that the damage done to the car actually moves closer to the centerline of the vehicle as the truck traveled towards the passenger compartment of the car.

Another important factor to take into account when determining fault for this case is the front left tire of the truck. The impact of the accident caused the wheel to tear from the axial. It takes a tremendous force to cause that to happen to an axial. It is not going to be a glancing accident that would cause the wheel to rip like that, there must have been a lot of contact between the truck and the car. In order for that happen, in accordance with the tire marks that the truck obviously made, Mrs. Hernandez's car must have been over the yellow line.

There were no witnesses to the actual impact of the two vehicles. There is a witness who was preceding Mrs. Hernandez down the road who did not witness the impact, but rather heard it. This witness, Robert Kohlstrom heard the sound of the impact approximately 15 seconds after he passed the truck. Mr. Kohlstrom reports in his deposition that he was nervous because of the truck enough that he felt it necessary to give some room in his own lane, but that the truck was in his own lane. He states that he does not believe that the truck was speeding at the time it passed him, and further that Mr. Mackenzie was in his own lane by at least a few inches. This verifies that the trucks speed was near the limit and the acceleration performance of the truck determines the speed of the truck as within five mph over the limit at the time of impact. The limit in his lane was 40, hers only 35. The collision damage is consistent with an impact 85 mph or less, and this shows that both vehicles were moving within five miles per hour over the limit.

3.4 Conclusion

In conclusion, we feel that the physical evidence in this case determines that both vehicles were on or very near the double yellow line at the time of impact. The evidence also indicates that neither vehicle was in excess of the speed limit. Therefore, we conclude that both drivers are equally responsible for the accident, and for Mrs. Hernandez's death. We do not feel that damages should be assessed against either Michael D. Mackenzie or Zachary S. Taylor.

4. Case 3

NORMA LOPEZ, Individually and as Personal
Representative of the Estate of HECTOR
LOPEZ, Deceased, and as Next Friend
Of Minor VICTOR LOPEZ, MANUEL LOPEZ
And CARMEN VALENCIA DE LOPEZ
Plaintiffs,

V.

ENCORE WIRE CORPORATION,
MGS MANUFACTURING, INC.,
And
EWC LEASING CORP.
Defendants

4.1 The Case

The Facts in this case are as follows:

On Dec. 10 1997, Hector Lopez was working for Encore Wire Corporation at their plant in Collins County, Texas. The decedent became violently entangled in a "Rewinding Machine" designed, manufactured, & sold by MGS Manufacturing, Inc. Said machine was owned by EWC Leasing Corp., who in turn leased it to Encore Wire Corporation. Hector Lopez was operating the Rewinding Machine to remove defective wire from a spool so that Encore Wire Corp. could sell it for its scrap value. Hector Lopez became entangled in the wire that was being unspooled, and as a result of injuries sustained during the accident, he died.

Prior to his death Hector Lopez was in terror and screamed for assistance to prevent his injury or death, but assistance was not rendered in time to prevent his demise. Hector Lopez was repeatedly thrown against the floor and the Rewinding Machine. He suffered

repeated battering of his head, neck, legs, and arms. Employees of Encore Wire witnessed the accident and death but were unable to respond in a timely manner to shut down the machine. At the time of his death, Hector Lopez was a full time employee of Encore Wire Corp. He was 25 years old, married to Norma Lopez. Mr. & Mrs. Lopez have one son, Victor, aged three at the time of the accident.

4.2 Causes of Action

The charges against the three defendants are numerous. They include, but are not limited to charges that Encore Wire Corp. engaged in willful acts or omissions, and gross negligence, and such acts and omissions, among others, are as follows:
Encore Wire Corp. instructed Hector Lopez to operate the Rewinding Machine in an unsafe manner, knowing full well the dangers involved in said operation. They failed to provide a safe working environment, to warn Hector Lopez of the dangers involved in the operation of the Rewinding Machine, to provide Hector Lopez with the appropriate training, and to provide Hector Lopez with the appropriate supervision. Encore Wire Corp. had knowledge one year before the accident that they lacked the appropriate warning signs and they failed to post the signs even after informed of their absence. Encore Wire Corp. failed to have in place controls on the Rewinding Machine that would have prevented Hector Lopez's death.

Causes of Action against MGS Manufacturing, Inc. Include, but are not limited to charges that MGS Manufacturing is responsible for marketing defective products. Said products lacked critical safety devices, had no guards or barriers to restrict access to

moving machine parts, were not equipped with 'deadman' switches, and had no brake installed to prevent this type of injury. MGS Manufacturing knew of a safe alternative design, yet failed to use that design in their product. MGS Manufacturing could foresee this accident, but took no action to prevent it. MGS Manufacturing knew as early as 1964 that their product was unsafe.

Causes of action against EWC Leasing Corp. include, but are not limited charges that EWC had strict product liability as owner for all the conditions previously noted against the other two defendants. Further, EWC failed to provide warnings in Spanish, the native tongue of Hector Lopez.

4.3 Damages

Norma Lopez has undergone pain and suffering from the loss of her husband, and Victor Lopez has suffered from the loss of his father. Both of the plaintiffs have been deprived of the support provided for them by Hector Lopez. In addition Victor Lopez can be expected to suffer additional mental trauma as he ages and becomes more aware of the loss of his parent. Similarly, Manuel and Carmen Valencia De Lopez have suffered from the loss of support provided by their son. Hector Lopez was in good health at the time of his demise, and could be expected to provide for his family for many years. As a consequence of the plaintiffs claims of gross negligence, willful misconduct, conscious indifference, and extreme risk against the defendants the plaintiffs are seeking exemplary damages in this case.

4.4 Analysis:

In the case of Lopez vs. Encore Wire Corporation, MGS Manufacturing Inc., and EWC Leasing Corp., we find that all parties are at fault. In order to assign fault, the product and actions resulting from its use must be examined. It must first be decided if the product itself was defective. In this case, we found that the product was defective. The major reason being that the product was not labeled enough in reference to safety warnings. In fact, MGS Manufacturing Company wrote a manual about the product in question (the Rewinding Machine), after it had been leased to Encore Wire Corporation. In that manual, it discussed various problems and ways to prevent them from causing injury. However, MGS Manufacturing failed to provide a copy of this updated manual to Encore Wire Corp. In addition, this product was being used in a way that it was not meant to be used for. The machine was not designed for nor meant to be used for unwinding wire. MGS stated in the updated manual that this was the case, yet again failed to notify Encore Wire Corp.

With regard to MGS Manufacturing Inc., they are liable sighting that the product was not properly marked with warning signs and labels. A warning sign was obviously needed to let the user of the machine know that you are not allowed to walk behind the machine while it is in use. In addition, warnings should have been present to inform the operator not to put their hands into the moving machinery. MGS Manufacturing Corp. is also at fault sighting that they were selling an unsafe machine. Despite what can be said about a lack of training that might have caused the accident, MGS still sold an unsafe product. Proof that the machine was unsafe is found in the fact that the company later wrote a

manual that explained how to operate and not get hurt. There is further argument that MGS Manufacturing Inc. suggested that Encore buy the product, but MGS knew that Encore was going to use it in a way that it is not supposed to be used. MGS has strict liability in this case. It could be argued that MGS provided a product and that it was the safest that they could make it, deeming it an unavoidably unsafe product. This argument would be supported by Torts Second Restatement 402A that, "There are some products which, in the present state of human knowledge, are quite incapable of being safe", and this product could be such a product. This would protect the manufacturer of any product from being liable for a product that could not be made safe. However, this only protects the manufacturer and any other party involved as long as the product is well labeled and the dangers are known. This is not what happened in this case.

In the argument of Lopez vs. Encore Wire Corporation, Encore is at fault as well because of the fact that there was not sufficient training provided. Encore received a product and used it despite the fact that it did not have a manual of any kind. There is no way of knowing exactly how much training Mr. Lopez received, or actually how much of it he understood, but he was operating an unsafe machine and it is up to Encore to know it is unsafe before they make one of their employees use it. They should have known that there were signs missing, or that it wasn't marked with enough signs.

A major factor for a decision against Encore Wire that must be included is the method and setup of the Rewinding Machine for the operation that Encore Wire was conducting. In it's designed configuration the Rewinding Machine is meant to have the wire that is

being spooled led through a guide/counter on the top of the machine. This guide has a switch included so that if wire is not being fed through it, the machine will stop running. Encore Wire had this switch disabled so that they could run wire directly off of the spool onto the floor. The switch was actually jumped out in the machines electrical panel with a jumper wire, demonstrating deliberate action on Encore Wire's part. The action of this switch is meant to prevent a worker from approaching a turning spool that does not have wire being fed into it under tension. The reason for this is that if the wire is not under tension, a lash or birds-nest may occur, creating a hazardous condition. Clearly, MGS manufacturing anticipated this eventuality, because they included the shut off switch in the guide to prevent just such an accident. By disabling this device Encore is guilty of promoting an unusually unsafe situation with respect to this machine.

The final decision has to be made that they forced one of their employees to use an unsafe product. To apply this to law, if one is at fault for selling a defective or harmful item, then one must be at fault for making an employee use an unsafe item. In addition, Encore should be asked about what happened to the kill switch that was in the machine diagrams and that would have prevented Mr. Lopez from walking around behind the machine and getting himself caught in it. Encore is also strictly liable.

In the Argument of Lopez vs. EWC Leasing Corp., we found that EWC is also fault. While this corporation has the least share of the blame of the three companies, they are still partially at fault. Their fault lies in that fact that they leased out a defective product. It was defective because it was not marked enough as to its hazards and faults. Even

though they did not manufacture the product, and they were not the one's that made an employee use the product, they still leased out a defective product. In this case, as in all cases, companies must know exactly what it is that they are selling. And in this particular case, the consumer was sold a defective product. As previously discussed, the product was defective because it did not have the proper warnings or instructions.

4.5 Conclusion

All parties in this lawsuit are at fault, to a slight extent, even Mr. Lopez could have prevented this accident from occurring. A jury could have a tough time deciding weather or not Mr. Lopez had "ordinary knowledge" as described in the Second Restatement of Torts 402A, in which it is assumed that the consumer has the ordinary knowledge of the ordinary consumer. The reason why Mr. Lopez would not be found at fault in the end is because; he did not speak English and he did not posses technical information of the machine that he was using. Not to mention what was testified to as a habit of the company, Mr.Lopez did not receive enough training. But yet, he was thrown into a situation where he had to operate an unsafe machine. Encore Wire Corporation and MGS Manufacturing Inc. share equal blame while EWC Leasing Corp. is still at fault but less to blame. The distribution of blame is 40% for Encore Wire Corporation and MCS Manufacturing Inc, respectively, and 20% for EWC Leasing Corp. This product was obviously not well marked and none of the companies did anything to resolve this. The product did not come with a manual. This should have stopped EWC from leasing the product out, it should have prevented Encore from using it, and it should have prevented MGS from placing it on the market. Therefore, all three companies are strictly liable.

5.0 Mock Trial

On May 2, 1999 the eight Products Liability IQP groups met in Higgins Laboratories to discuss the cases that we had been examining over the course of the year. Two cases were examined; the case of Hernandez vs. McKenzie (automobile accident reconstruction) was discussed first, and the case of Lopez vs. Encore Wire et al was second.

In the Hernandez case several groups argued that Mr. McKenzie was at fault due to his being over the double yellow line. We responded with our stipulation that both vehicles were on the line, and that both drivers were equally at fault. The jury decided that Laura Hernandez was only 20% responsible for her own death and that Mr. McKenzie bore the remainder of the responsibility. They recommended a cash award of $750,000.

In the case of Lopez vs. Encore Wire et al, nearly every group agreed that Encore Wire was responsible for Hector Lopez's death. Open to debate was the matter of MGS Manufacturing Corp.'s liability. Some groups argued that they had no responsibility at all, while several groups, including ours, felt they shared a significant amount of the total liability. The jury found that Mr. Lopez was 5% responsible for his own death, while Encore Wire, MGS Manufacturing, and EWC Leasing share 50%, 40%, and 5% of the burden, respectively. The jury recommended a cash award of five million dollars.

At the end of the trial Professor Hagglund revealed the true outcomes of the cases. In the Hernandez case, Mr. McKenzie's insurance company chose to settle out of court. The estate of Mrs. Hernandez accepted a settlement of $650,000.

In the Lopez case another settlement was reached. Encore Wire and MGS Manufacturing agreed to pay a combined settlement of two million dollars, with the percentage to be paid by each company remaining undisclosed. Mrs. Lopez accepted this sum, and the case was closed.

We agree with the jury's evaluations in the Lopez case, but we still feel that Laura Hernandez is responsible, in significant part, for her own death. This is due primarily to our evaluation of the truck's speed and position immediately prior to the impact.

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Appendix

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installation information.
Q. Did you provide any operating instructions?
A. We did not.
Q. And why not?
A. It just was not done at the time.
Q. When you provided this machine in 1993 and '94, you did not provide operating instructions to any of your customers?
A. That's correct. Basically, the parts list, the lubrication, installation manual.
Q. When did you start providing operating instructions with your machines?
A. I would guess three to four years ago.
Q. So, it's your testimony that in 1994 through 1995, you started providing operating instructions?
A. I believe so.
Q. Why did you start providing operating instructions?
A. It was just an enhancement, really, to our maintenance manual. And we were – you know, we were adding engineers, and we had more resources available to us to do a more complete –
Q. Your testimony is that one of the reasons that you didn't provide operating instructions for the Encore Wire machine is because you did not have ample

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engineering resources?
A. I know it was just not done at the time.
Q. Why did you determine to provide operating instructions on later units sold?
MR. DAILY: Objection. Asked and answered.
A. Really as an enhancement to what we'd already provided in the past. It's a continuous improvement. You know, you always try to make your machine better and the information you give the customer better.
Q. Did you anticipate that any person, other than the one operator you trained at Encore Wire, would operate your machinery that you sold to Encore Wire?
A. Yes. Not only did we train the operator, but Gary Bliss was a part of the design process, so he was also knowledgeable of the operation of this rewind line.
Q. Did you provide operator training to Gary Bliss?
A. I can't remember specifically, but I'm sure – he approved the design and all the operations of the buttons, so I believe we did.
Q. When you say he approved the design and operation of all the buttons, how did he do that?
A. By actually running the product and testing

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the different functions of the operator station.
Q. Did he sign off on any documents showing his acceptance?
A. No.
Q. Is the payoff and takeup machine you provide to customers normally operated around the clock?
A. Yes, it is.
Q. Is it safe to say you knew that several operators would be required to operate this machinery sold to Encore Wire?
A. As I recall, at the time it was just being operated on the day shift, to start. In the future, I'm sure that other people and other operators would have been trained on it, also.
Q. Did you make any personal observations regarding the work force at Encore Wire when you were there to install the machine?
A. Other than the installation was very, very good and the people were very, very good to work with, very understanding and complete.
Q. When you – Strike that. How, specifically, did you type up the maintenance manual that was provided to Encore Wire in 1993?
MR. DAILY: Let me object as vague.

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A. You know, in order to define the machine, we inserted the standard pages that would go with a particular takeup or payoff and then we also added to that any special features or assemblies that would have been particular to this machine.
Q. Have you maintained copies of any maintenance manuals that you sold to any customers in the 1993/1994 time frame?
A. We did not. We prepared and sent the manuals with the machinery but did not keep a paper record of what was sent to the customer.
Q. Do you know if the paper history at that time was prepared on a word processor or on a typewriter?
A. I believe it was possibly a combination of typewriter and word processor and AutoCAD sketchers.
Q. Okay. What search did you do of your word processing files to determine if you had a copy of the maintenance manual you provided to Encore Wire?
A. We really, at the time, did not have and did not keep those files. It was mainly used to produce the manual and not really kept or stored.
Q. What happened to the – go ahead.
A. Currently, we have a operating manual subdirectory on our engineering server. So, we have a better organization of the jobs and an electronic

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concerns regarding the safety on the lock switch?
A. I can't really recall offhand.
Q. And when did this occur?
A. Probably within the last year or so.
Q. And what did MGS do in response?
A. What we've begun doing is adding a interlock switch to a lot of our equipment.
Q. What did MGS do to inform existing customers, with machinery in place, of this potential safety problem?
A. We just instituted it or we're trying it out on the machine now. So, once the design is complete, I would think we'll probably notify our customers that this option is now available.
Q. Have you ever sent notices to customers previously about potential safety concerns on any of your machines?
A. Not that I can recall.
Q. Have you ever sent notices to any customers regarding design defects or potential design defects on any of the machines you provide?
A. Not that I can recall.
Q. Have you ever been contacted by a customer, other than Encore Wire, regarding safety concerns on payoff-takeup machines that you have provided?

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MR. DAILY: Objection, assumes facts not in evidence.
A. Not that I can recall.
Q. Have you ever formulated any opinions personally regarding the safety to operators of your payoff-takeup machines?
A. You know, I think the – we try to work with the plant Safety Department in the installation and provide the safest working environment possible for the operators, either through defining safety zones or providing any devices that they may request.
Q. Did you work with the Safety Department at Encore Wire in connection with this order?
A. The two people we worked with were Gary Bliss and Dave Smith.
Q. And did you work with anyone from the Safety Department?
A. Not to my knowledge.
Q. Did you discuss with Dave Smith or Gary Bliss defining safety zones around the machines that were installed at the Encore plant?
A. I believe so.
Q. I just didn't hear you. I'm sorry?
A. Yeah, I don't believe so. Dave Smith did make a recommendation that we add traverse push buttons

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and additional E-stops to the machines. And we provided those parts for him to install. Other than that, I think he felt that the equipment was properly installed.
Q. Have you provided us with electrical drawings of the additional traverse push buttons and E-stops that you provided to Encore?
A. They would be shown on the last electrical schematic drawings that were sent to you.
Q. Okay. And is that a three-page drawing?
A. Yes.
Q. We'll look at it in a few minutes.
Prior to selling the machines in question to Encore Wire, what type of safety analysis did you conduct on this or similar machines?
A. To my knowledge, at that time there was not a particular safety analysis done.
Q. Is it your testimony prior to selling machines to Encore Wire, you had not done a safety analysis on the payoff and takeup machine?
A. That's correct.
Q. And why not?
A. I just – I don't know how to answer that.
Q. And prior to that time, you had been selling these machines for how many years?

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A. Since 1983.
Q. Who designed the first takeup-payoff machine that you sold?
A. Dean Williams.
Q. Do you know how he conceived of the design?
A. The design is similar to – Dean had previously worked at Bartell Machine.
Q. Is that B-a –
A. – r-t-e-l-l.
Q. Where is Bartell Machine located?
A. They're also located in Rome, New York.
Q. Do you know approximately when Dean Williams came to work for MGS?
A. I believe it was 1982, 1983.
Q. Do you know if Mr. Williams brought any drawings with him from Bartell Machine that he used to design your first payoff and takeup machine?
A. As far as I know, he did not bring any drawings with him.
Q. Okay. Do you know how long he worked for Bartell?
A. I would guess approximately ten years before.
Q. To your knowledge, was Mr. Williams brought to your company to start the payoff-takeup line?
A. Not specifically, but just to begin designs

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of machinery for a product line.
Q. Do you know if he's a degreed engineer?
A. Yes.
Q. Okay. Is the MGS payoff-takeup design essentially a copy of machines designed and sold by Bartell?
A. I would say it's similar but better.
Q. How is it better?
A. I think we have features that are better in terms of loading on the arms and construction that are better.
Q. So is the design of the basic machine essentially the same as it was in 1983?
A. From a period of – I think it's '83, '84, and '85, we had developed machines ranging from – using a 48-inch reel up to a 10-foot diameter reel. So, in that time frame, all the different machines were designed.
Q. Essentially, are the designs all the same except for an enlargement of capacity?
A. I would – you know, I would say similar. There's certain other changes that were made, depending on the size of the machine, in terms of hydraulics and capacities and electrics.
Q. When did MGS conduct its first hazard

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assessment of machines it sells to customers?
A. To my knowledge, it was in the summer of '97.
Q. Why did the practice of performing hazard assessment start in the summer of 1997?
A. One of the engineers that we had had experience along those lines, so he kind of spearheaded the analysis and the initial identification and process. And that was Mike Lamb.
Q. Prior to 1997, did you perform any type of safety or risk analysis for your machines?
A. You know, the basic engineering, you know, understanding and appreciation of building a safe machine, but no formal analysis was performed.
Q. So, there was no formal analysis of safety or hazardous assessments prior to 1997; is that correct?
A. Right, not in a committee format.
Q. When you conducted hazard analyses in 1997, did you share the analyses with any of your customers?
A. We did not.
Q. Why not?
A. I'm not sure. I think we felt it was self-improvement on trying to develop, you know, a better machine; but we did not go back and notify customers that had our existing machines.
Q. Was part of your hazard assessment designed

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to create safer machines?
A. That was the purpose behind that, to build safer machinery.
Q. Did you, in performing these analyses, discover design features which could be changed to result in a safer machine?
A. Yes. We realized that we needed to provide a better labeling on a lot of our different pinch points and rotating portions of the machine to notify the operator of possible unsafe points on the machine. And then we also added additional safety components to make it easier to stop the machine in the event of an emergency.
Q. How were operators of existing machines notified of new labels that were to be put on the machines?
A. We didn't notify them.
Q. And why not?
A. I'm not sure.
Q. Is it fair to say that operators of your machinery, in late 1997, did not realize the benefit of your hazard analysis work performed that year?
A. Could you repeat the question, please?
Q. Sure. In 1997, did you determine that your payoff and takeup machine should have additional

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labeling?
A. Yes, we did.
Q. Why was the additional labeling necessary?
A. To enhance the various possible pinch points and other dangerous portions of the machine.
Q. How did you notify the operators of your existing machines of these potential pinch points and other safety hazards?
A. We did not notify customers of previous machines.
Q. Were the customers of previous – Strike that.
Were the operators of existing machines subject to the same dangers as operators of newly designed machines?
A. Yes, they could be.
Q. Could you have provided labeling to customers which operated machines in 1997?
A. We could have.
Q. And why did you not?
A. I'm not sure why we didn't.
Q. What do you think the approximate cost would have been to providing labels to Encore Wire for the machines that they were operating in 1997?
A. I would guess 100 to $200, possibly.

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defective wire that he makes?
A. Yes.
Q. Did you ever communicate your suggested method of scrapping wire to anyone at Encore Wire?
A. We were really unaware of it until after the accident occurred. And that was one of the recommendations, also, of the OSHA inspector when he was at Encore.
Q. What was one of the recommendations?
A. Using a two-part spool.
Q. How was an operator of your machine, that was given the literature you provided with this particular machine, to know that this was an unproper use of the machine, in your words?
A. Really, the machine's system that we provided the payoff and the two takeups were relying on the counter and the safety devices that were located in the counter assembly. So, if those were changed or altered, you know, that would constitute improper operation.
But, really, we had two systems in the counter so that the machinery would not operate unless the wire would pass through the counter between the payoff and the takeup.
Q. How did this machine operate without wire

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going through the counter?
A. I don't have any knowledge of that, how it worked properly.
Q. Is it your testimony that you believe that changes were made to the electrical logic of the system to allow the machine to be used in the method it was being used at the time Hector Lopez died?
A. Yes, it's my opinion that that occurred.
Q. And is that a detail that you can show us on the drawings that you've provided?
A. I think so.
Q. Okay. Do you know what warnings were provided on this particular machine to notify the operator of potential hazards?
A. I don't believe any safety labels or other warnings were provided on the machinery, other than an oral presentation at the time the machinery was first installed.
Q. And the oral presentation you're talking about is one that you made to a single operator in 1994; is that correct?
A. Yes; and, you know, along with Gary Bliss and Dave Smith to make sure that the equipment was correctly installed and safe.
Q. And you've previously testified that you had

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specified labels for new machines that could have been placed on this machine, as well?
A. Yes.
Q. And those labels would have enhanced the safety of this machine; is that correct?
A. It would have provided warnings to the operator about the various possible hazards.
Q. Did you discuss the Hector Lopez death with anyone at Encore Wire?
MR. DAILY: Objection, Counsel, as to when. I mean, after the time we had notice of the suit, it's certainly going to be privileged as party communication. Oh, you said Encore Wire. I thought you meant our people. I withdraw the objection. I apologize. I'm sorry. My mind is somewhere else.
MR. URQUHART: That's okay.
Q. Go ahead. Did you talk with anybody at Encore Wire?
A. I have not.
Q. At any time?
A. At any time after the accident?
Q. After Hector Lopez's death.
A. No.
Q. Did you ever have a conversation with Gary Bliss about this death?

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A. I have not.
Q. What was the first time you became aware of this incident?
A. Apparently, shortly after it happened, Gary Bliss called our president, Bob Johnson, and said that there had been an accident on one of our machines. And he passed that information on to me.
Q. Okay. So we'd have to talk to Bob Johnson to see what Gary Bliss –
A. Yes.
Q. Okay. Are you familiar with what procedures any other wire manufacturers use to scrap defective wire?
A. I have seen other operations, yes.
Q. What other operations have you seen to scrap wire?
A. Some of the devices are, like, a collapsible core, where the wire is spooled from the bad reel onto a collapsible arbor or mandrel and, then, after completion that could be disassembled and the wire just falls out as a result of it.
Q. Where have you observed the device you've just described?
A. I've probably seen it at Stranflex Cable, which is a steel wire manufacturer in Oriskany, New

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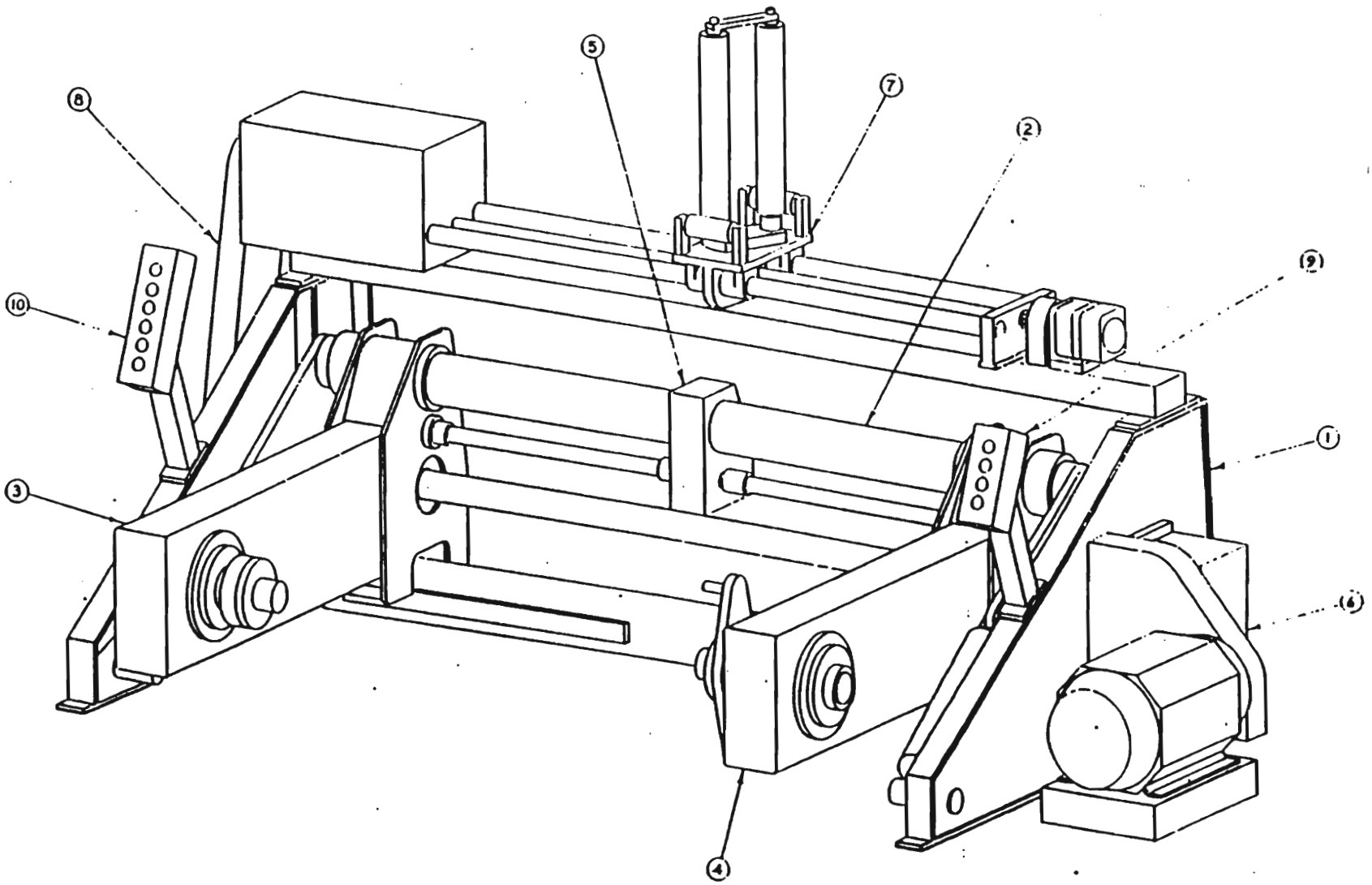

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R.H. SHAFTLESS TAKEUP ASSY

M.G.S.

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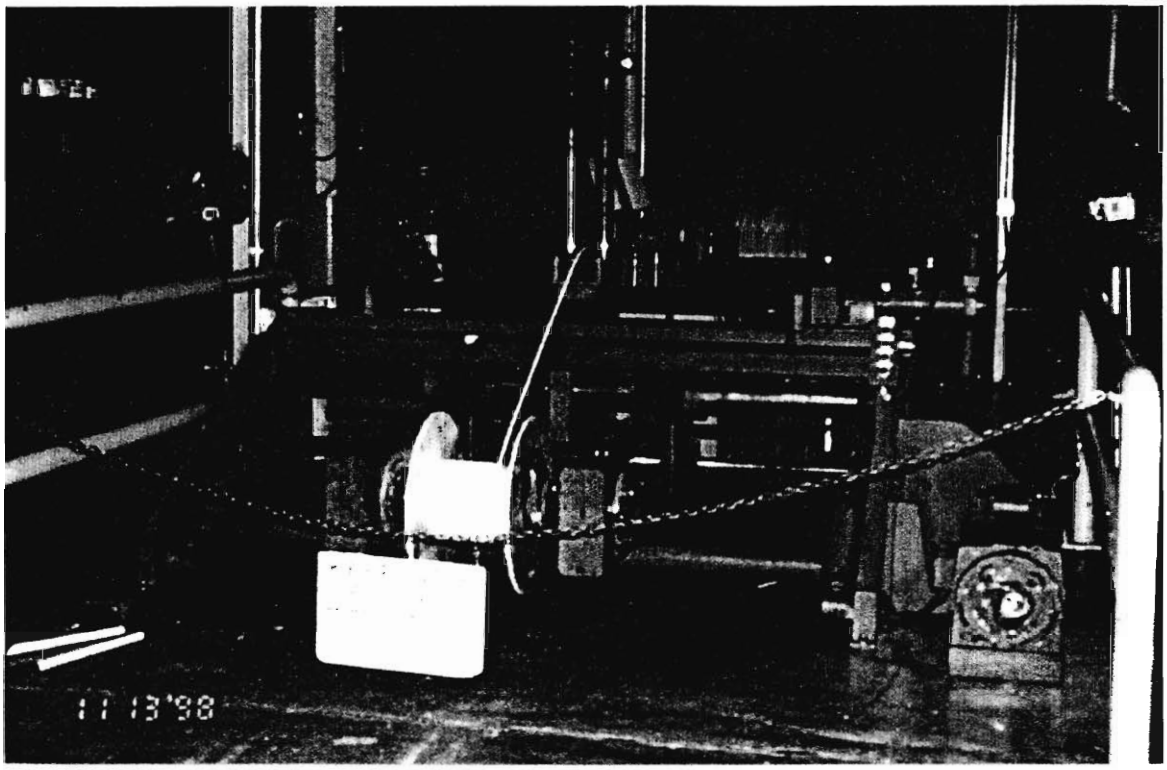

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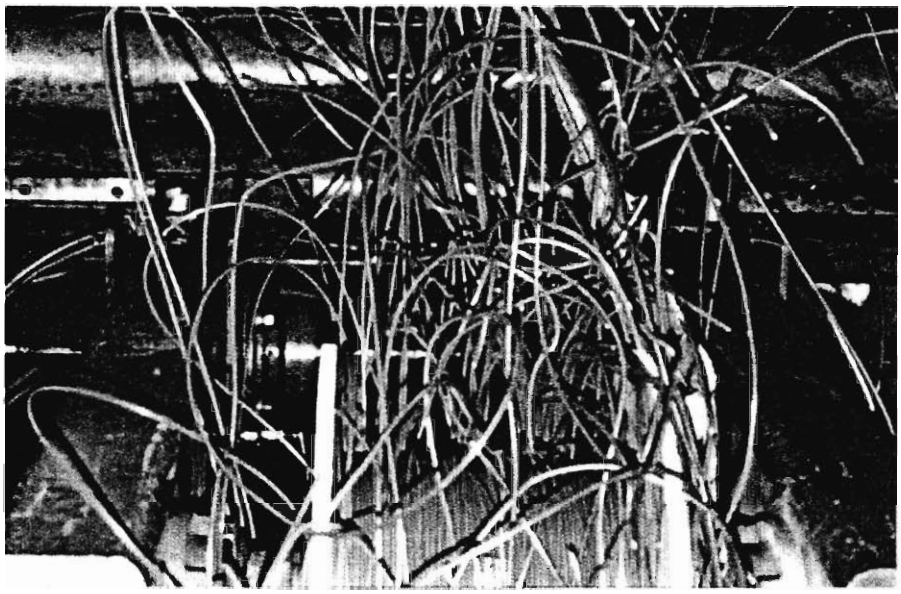

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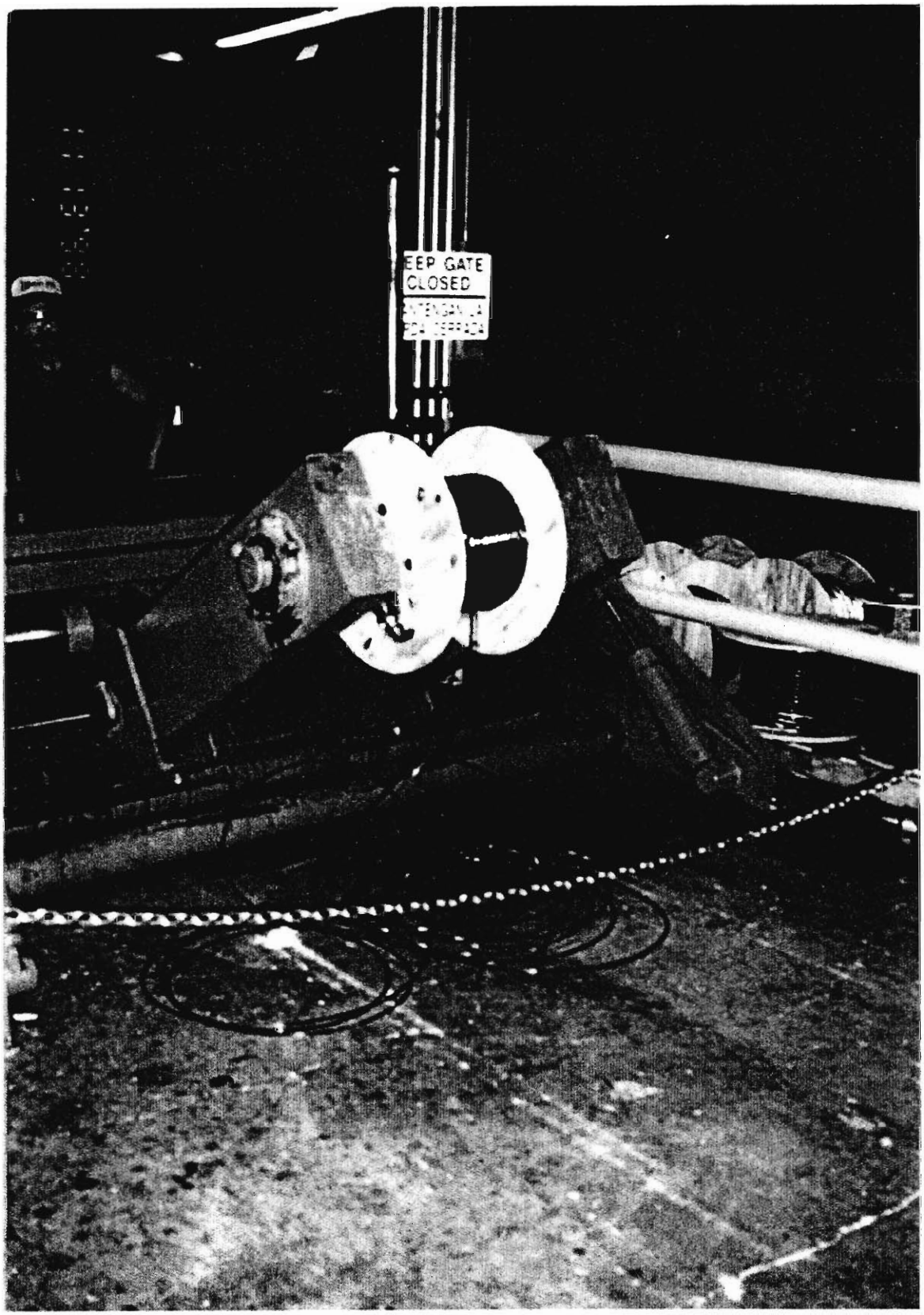

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Issued 12/17/97

Mr. Gary Bliss
Encore Wire Coaporation
1401 Millwood
McKinney, Texas 75069

December 17, 1997

Dear Mr. Bliss:

An inspection at your workplace at 1410 Millwood, McKinney, Texas, on December 12, 1997 disclosed the following hazards:

Employees involved in offwinding scrap wire from spools were subject to becoming entangled in the wire and being pulled into the rotating spool when attempting to clear a backlash in the wire without shutting off the machine power.

Since no OSHA standard applies and it is not considered appropriate at this time to invoke the Section 5(a)(1) general duty clause of the Occupational Health and Safety Act, no citation will be issued for these hazards at this time. However, the recurrence of this type of event in the future may establish a basis for the justification for the issuance of a citation to prevent employee injuries as far as possible.

Pursuant to Section 21 of the OSHA Act which authorizes OSHA to train employers and employees about workplace hazards and appropriate abatement methods, it is recommended that the following steps be taken to eliminate or reduce the hazards described above:

1) Install a "dead-man" control, either push-button or foot pedal, with convertability to the conventional control mode through lock and key action if desired, such that the machine will stop automatically when the operator leaves the control panel.

2) Devise a method of removing the wire from a spool by disassembling the spool to eliminate the offwinding operation.

This letter need not be posted.

Sincerely:

Joe Reiss

Area Director.

SHAFTLESS TAKEUP INSTALLATION, OPERATION AND MAINTENANCE MANUAL

Machine Serial Number
TUSL-60-XXX-LH ?? RH

Designed and Built by
MGS Manufacturing Inc.
P.O. Box 4259
Success Drive
West Rome Industrial Park
Rome, New York 13442
Tel: (315) 337-3350
Fax: (315) 337-4502

For
Company Name
Street Address
City, State Zipcode
Purchase Order No. ??????
Order Date: MO/DA/YR

Mounting:

NOTICE

It is recommended that a "safety zone" be set up encompassing the machine. Minimally this should be defined by either a yellow or yellow with black strip (per OSHA 29 CFR 1910.144). See the drawing "Safety Zone" in the appendix of this manual. All personnel should refrain from being in the "safety zone" when the machine is operating.

Floor Condition/Requirements:
The machine should be installed on a firm, level floor. If high spots and voids are present, it will be necessary to correct the problem before proceeding with the installation.

Machine Location and Level Requirements:
Allow adequate space around the machine for proper maintenance, (approximately 4 ft. minimum). Locate the machine square to the building aisle, wall, or column line. Set machine feet on grout pads if necessary for adequate support and leveling. Install anchor bolts and tighten after grout has set.

WARNING

It is the users responsibility to insure that the machine is adequately anchored to the floor.

Anchor Requirements:
This machine is designed to be anchored to the floor / support structure. It is the installer / user's responsibility to insure that the mounting bolts have an adequate fastening point (ie: concrete anchors, threaded holes in steel, or nuts under steel). See the mounting Specifications Section of this manual for fastener requirements. It is recommended that only fasteners manufactured in the US with the manufacture's company name and grade stamped on the bolt head be used.

Additional Mounting Requirements:
Reassemble any components and/or subassemblies removed for shipment. Fasten all mounting hardware securely. See the bolt torque chart listed in the appendix.

Connect control wiring to the Electrical Box per the Electrical Control Wiring Drawing in the Drawings Section of this manual.

Obtain Electrical Power Source requirements (voltage, current, phase, hertz, etc.) from the Electrical Data Panel located on the Electrical Box on the Machine. REMOVE all Main Power Supply Fuses and Turn all Circuit Breakers OFF inside the Electrical Box. Make all electrical power connections per the Electrical Power Wiring Drawing in the Drawings Section of this manual.

NOTE: All shielded or twisted pair cables are to be run in a separate conduit from the power wires.

Remove Lock Out and turn main supply power ON to the machine. Check voltage, current, phase and hertz at connection in the Electrical Box and verify with Electrical Data Plate Requirements. Phase rotation should be clockwise to ensure proper motor rotation direction (set at the factory).

Turn OFF and Lock Out main supply power to the Machine. INSTALL Main Power Supply Fuses and Turn all Circuit Breakers ON inside the Electrical Box. Check that all control switches and the Power Switch on the Electrical Panel are in the OFF positions. Remove Lock Out and turn main supply power ON to the machine.

Initial Start-Up

NOTICE

Initial Start-Up is to be performed by qualified personnel only. Prior to installation, insure that energy sources are OFF and Locked Out.

WARNING

Prior to operating the machine, the operator must read and understand this manual.

Check that machine has been securely mounted to the floor as per the machine Mounting Installation instruction.

Check that the compressed air supply has been properly connected as per the Compressed Air Installation instructions and that the compressed air supply has been turned on.

Check that all lubricants filled as per Lubrication Installation instructions.

Check that the electrical control and power supply wiring have been properly connected as per the Electrical Installation instructions.

Check that the Main Power Switch on the Electrical Box is in the OFF position. Check all controls for sticking buttons/levers.

Check that all Energy Sources are OFF and Locked Out, then remove the Drive Motor(s) fuses and turn the Energy Sources ON.

Check E-Stop circuit for proper operation with line controls, if any.

NOTICE

It is the Installers responsibility to test ALL EMERGENCY STOP controls for proper operation. This is to include the MGS machinery E-Stop push buttons stopping the line as well as the line E-Stop push buttons stopping the MGS machinery.

Check each electrical circuit for proper operation (signal response).

Turn OFF and Lock Out the Energy Sources, then reinstall the Drive Motor Fuses. Turn on the Energy Sources and check rotation direction of the drive motor at a low speed to verify correct phasing. See previous statement on phase wiring. Check ALL Emergency-Stop Buttons and Switches.

Operating Instructions

WARNING

Prior to operating the machine, the operator must read and understand this manual.

General:

NOTICE

This machine, a Shaftless Takeup, is designed to "take-up or wind" product (wire or cable) onto a reel. Use of this machine for any other function voids any and all warranties.

Description of Controls:

Console:

E-stop - Mushroom head twist-to-release push-button

Disables all machine functions when depressed. Must be twisted to release as it maintains its depressed position.

Brake Release - Red illuminated pushbutton

Press once to manually release the spindle brake, press again to reengage the brake. Whenever the brake is applied, the red light will be lit. The spindle brake automatically releases when jogging or running. Also indicates the cause of an internal fault condition by repeatedly flashing a number of times.

Jog - Black Flush Push Button

This push button allows the spindle to be jogged forward by the eddy-current motor. The jog preset speed is adjusted from a potentiometer mounted inside the enclosure.

Start - Green illuminated pushbutton

2. Enter the width or diameter of the product in inches (or fractions of an inch).
3. Press the **ENTER** key.

The M-Trim is now set to run the traverse motor at the proper speed to accurately layer wind the product. To achieve optimal lay the operator may need to increase or decrease the set speed value by small amounts, this can be done by pressing the scroll up/down keys on the face of the M-Trim.

By pressing the **TACH** key the operator can monitor how well the M-Trim is regulating. The number displayed should vary just above and below the set speed value as the M-Trim constantly adjusts to the feedback signals. If the **TACH** number is not within a few percent of the set speed then a problem may exist in the control system, monitor the feedback and external reference parameters in the M-Trim.

Operation Instructions:

WARNING

Prior to operating the machine, the operator must read and understand this manual.

Starting The Machine

1. At each shift change, inspect the machine for damage. Do not operate a machine with damaged or inoperative safety equipment.
2. Lower the lift arms using the "Lower" position on the joystick.
3. Open the lift arms using the "Out" position on the joystick
4. Check machine capacity specifications to insure that the reel is within the machine capacity.
5. Load the empty reel by rolling it between pintles on lift arms.

CAUTION

Pinch point.
Keep hands and feet clear while moving lift arms. Use extreme care while jogging drive arm for drive pin alignment.

6. Partially engage pintles with reel arbor using the "In" position on the joystick. Adjust the drive pin to match the radius of the drive pin hole on the reel if necessary.
7. Close lift arms, so that pintle flanges are seated against the reel, using the "In" position on the joystick.
8. Raise lift arms so that reel clears floor, using the "Raise" position on the joystick. Note it is not necessary to raise reel to highest position.
9. Adjust vertical guide rollers on the Traverse Guide Assembly for the product diameter to be run.

10. Align traverse guide rollers with the reel flanges and set traverse limits. Use rapid traverse function to check both reel flanges.
11. Shift transmission into proper gear for desired feed rate(see Maximum Spindle Speed(rpm)/Transmission Gear) in the Specifications chart at the front of this manual.
12. Feed product thru the vertical guide rollers on the traverse assembly and onto reel. Se product to the reel. Take-up slack in product using "jog" button.
13. Select either "Speed" or "torque" operating mode. Make sure traverse is on.
14. Set traverse lay controller to the product diameter being wound.
15. Check the surrounding area to ensure that all personnel are clear and that it is safe to operate the machine.
16. Start the machine using the "Start" button.

Stopping The Machine

1. Stop the machine using the "Drive Stop" button. This command stops the take-up from winding material.

CAUTION

Sudden release of line tension could cause product to lash.
Release line tension carefully and secure product.

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2. Release product line tension and secure the product.
3. Release brake by using "Brake Release" button.
4. Lower the lift arms and reel by using the "Lower" position on the joystick.
5. Open the lift arms using the"Out" position on the joystick.
6. Remove the reel.
7. At each shift change, inspect the machine for damage. Do not operate a machine with damaged or inoperative safety equipment.