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PORTABLE T21B

RUNNING MAN TARGET SYSTEM

OPERATIONS MANUAL

ATS PARTS LIST:

ITEM	PART NUMBER
1. Carriage Assembly	210-000019
2. Carriage track wheels (4)	870-000017
3. Motor/Control bracket complete assembly	210-000020
4. Motor 12-volt DC	870-000019
5. Idler wheels (2)	870-000018
6. Motor controller	210-000029
7. Nylon drive cord	810-000020
8. Proximity sensor assembly	200-000032
9. Proximity sensor (only)	630-000006
10. Idler assembly complete	210-000021
11. Idler wheel	870-000017
12. Rail coupling kit	210-000022

Wired version only:

13. Remote control pendant with 300 ft. cable and connector	200-000027

Wireless version only:

14. T21B Wireless Transmitter
15. Antenna (2)

PARTS NOT SUPPLIED:

1. I-Beam track
2. Track supports
3. 12-volt power supply (automotive or marine battery)
4. 9 Volt battery for T21B Wireless Transmitter

INTRODUCTION

The **PORTABLE T21B RUNNING MAN TARGET SYSTEM** is a rail mounted, horizontal target mover. It is easily set-up and disassembled making the entire system very portable.

The control/drive system mounts on a single rail allowing the operation of two independent target carriers on a single "I" beam track.

Modular construction and ease of installation makes it easy to remove it from the rail after usage and put in secure storage.

The system is usually installed behind a protective wall, railroad ties, or bullet berm to protect the drive components and the rail from damage.

Power for this system can be supplied from a standard 12 volt automotive type battery or an optional 12 volt AC to DC power supply that is powered from the 120 VAC line. A marine type, 12 volt, deep cycle battery provides even better long term operating characteristics.

The remote pendant control is compact and allows easy operation with a single hand for direction and speed control.

SPECIFICATIONS	STANDARD SINGLE CHANNEL T21B
Operating Power:	12 volts DC 0 to 4.5 amps normal and 16 amps+ at reversal and start-up.
Speed Range:	0 to 9 feet per second.
Standard Track Length:	20 to 50 feet (100 feet of drive cord is standard supply).
Remote Pendant Control:	300 feet of standard cable.

Directional reversal without stopping. Input power reversal hook-up protection and indication. Electrical protection against the target carrier running into the ends of the track.

Carriage width:	18-3/4 inches.
Beam size (supplied by user):	W6 x 9.0 (see Figure 1).
Beam supports (supplied by user):	(See Figure 2).
Wireless only: Wireless transmitter range:	150 yards, line-of-sight

SET-UP OF THE T21B TARGET SYSTEM

Before beginning set-up, take inventory to see that all required parts are there and that they are in good condition.

1. Set up track per Figure 2.

2. Slide the **Target Carriage** onto the rail from one end of the rail with the face printing in the normal upright direction facing the shooter. Tip the carriage assembly slightly to place the top wheel on the track first then tip it back to level while guiding the lower wheel onto the lower rail. Holding the carriage level, gently slide the carriage onto the track as you align the other wheels onto the track.

3. Check to see if the two lower track wheels need adjustment. This is done first by lifting up on one end of the carriage then the other. The carriage should have approximately 1/32" vertical travel. If it travels more than this or if the carriage seems to bind or drag as you move it, then you need to adjust the lower wheels' vertical position. This adjustment is accomplished by loosening the wheel axle nuts. Adjust them one at a time.

4. Mount the **Motor/Controller Assembly** to the track. See Figure 3. Normal mounting is with the bracket located at the left end of the track when looking at it from the front or from the firing line. The motor and idler pulleys will be located immediately beyond the end of the rail. Tighten the rail clamping bracket bolt only enough to keep the assembly firmly attached to the track. Over tightening could distort the clamp.

5. Mount the drive cord **Idler Assembly** at the opposite end from the Motor/Controller Assembly end of the track. Position it approximately 4 to 6 inches in from the end of the track to allow for tightening of the drive cord. See Figure 4.

6. Place the **Proximity Limit Switch Assemblies** (that are used to stop the carriage before the end of the track) on the center flat area of the beam centered approximately 24 to 0 inches away from the two end assemblies and with the sensor tip facing the carriage as it passes in front of it. Position the carriage in front of the sensor and position the limit assembly so that there is approximately 1/8 to 1/4 inch gap between the sensor and the carriage. **Note:** These assemblies have magnetic bases to hold them in position. **No additional fastening is required.** See Figure 5 for positioning details.

   The control wiring must be positioned down the center of the rail so that it will not interfere with the carriage and drive cord movement. Adhesive backed cable clamps are supplied for this purpose.

The sensors will interrupt the motor drive power as the front edge of the carriage passes the sensor. This will prevent the carriage from slamming into the motor drive assembly or the idler assembly. A small LED (light) located on the backside of the sensor will be illuminated when power is applied properly to these sensors. This light will turn off* as the carriage passes in front of the sensor if the sensor is positioned correctly. If the sensor is positioned too close to the I-beam flange, the light will not come on and the target won't move. *Note: T-21Bs purchased after March 1, 2001, "the light will turn on as the carriage passes in front...")

7. String the drive cord as shown in Figure 6. Slide the carriage to the idler end. Tie one end of the cord to one of the two **s-hooks**. Attach the **s-hook** to the hole on the back of the carriage closest to the idler assembly. String the cord around the idler pulley, to the motor end, thru the motor assembly pulleys, and back to the carriage. Attach this end of the cord to the other **s-hook** and hook it onto the tension spring. Attach the other end of the tension spring to the remaining hole on the carriage back plate. **Note:** Once the cord is tied to the **s-hooks**, simply unhook them for disassembly. Leave the cord attached to the **s-hooks** for reuse. If the track length is increased, install a new drive cord. Do not attempt to splice an additional cord.

8. Tighten the drive cord by repositioning the idler assembly towards the end of the rail. The proper tension is accomplished when the tension springs stretch approximately 1 to 1½ inches.

9. Attach the proximity sensor cable to the **Motor Controller Assembly**.

10. For wired version, connect the **Assembly Remote Pendant Control** to the Motor Controller Assembly. For wireless version, install a 9-volt battery (not included) into the battery compartment of the T-21B Wireless Transmitter.

11. Connect the input power leads to a 12 volt battery (not supplied) or to the optional AC to DC converter. **Note:** If properly connected, the green light on the motor controller will illuminate. If connected in reverse, the red light will illuminate. If neither light is illuminated, check the connections to the power source or check the power source itself.

12. To check the proximity sensors, position the carriage in front of either proximity sensor. Using the target remote pendant control or T21B Transmitter, try to drive the target carriage toward the end that it is positioned nearest. It should **NOT** move. If it does move, check the connector, the path of the drive cord, and the sensor's position (it should be 1/8 to 1/4 inch from the metal surface of the carriage). Repeat this test at the other end. The system is now ready for target installation and operation.

OPERATION OF THE T21B TARGET SYSTEM

1. Check to see that the power is **ON**. The green light on the Motor Controller should be illuminated.

2. Wired version:

   Using the **Assembly Remote Pendant Control**, drive the target carriage in either direction by holding the toggle switch in either direction. This is a spring-loaded switch and will return to the center **OFF** position when released.

   Wireless version:

   Using the **Wireless T21B Transmitter**, drive the target carriage in either direction by holding the CONTROL 1 or CONTROL 2 toggle switch in either direction, depending on configuration. This is a spring-loaded switch and will return to the center OFF position when released.

3. Turn the **Speed** control knob clockwise to increase the speed and counterclockwise to decrease the speed of the target carriage. For units that include **AUTO-MODE**, click the desired toggle to the right three times in quick succession. To adjust speed in **AUTO-MODE**, simply turn the speed control knob to the desired speed and click one time to the right. To take the system out of AUTO-MODE, click once to the left, and resume normal operation.

NOTE ON CONFIGURATION OF WIRELESS VERSION

The Wireless T21B system allows for 16 separate T21B devices to operate in close proximity to one another. Each device and transmitter is assigned a unique channel ID, where one Wireless T21B Transmitter is capable of driving two T21B Motor Control Assemblies. This allows for an installation of 16 T21B Motor Control Assemblies and 8 Wireless T21B Transmitters in a single location.

To configure the Motor Controller Assembly:

1. Remove power from the system.
2. Remove the four large Philips head screws from the front cover.
3. Gently remove the front cover from the enclosure.
4. On the enclosed printed circuit board, set the CHANNEL/S1 rotary switch to a unique channel.
5. If the device is to be installed on the rear rail, install the jumper on J6 position 2 to reverse movement direction.
6. Carefully re-attach the front cover.

To configure the Wireless T21B Transmitter:

1. Remove the battery and antenna from the Wireless T21B Transmitter. The antenna is threaded and can be removed with a counter-clockwise motion.
2. Remove the antenna nut and lockwasher.
3. Remove the six Philips head screws from the back cover.
4. Gently separate the front and back portions of the enclosure.
5. Set the S1 rotary switch to the desired channel for CONTROL 1. This is the channel of the Motor Controller Assembly to be controlled with CONTROL 1.
6. Set the S2 rotary switch to the desired channel for CONTROL 2. This is the channel of the Motor Controller Assembly to be controlled with CONTROL 2.
7. Carefully re-assemble the enclosure, re-attach the antenna and re-install the battery.

POWER SUPPLY

MODEL T21B-PS-12DC

The **Model T21B-PS-12DC Power Supply** is intended for use with the **Advanced Training Systems Model T21B Running Man Target System**. This power supply connects to 120 VAC line power and provides 12 volts DC power to drive the Running Man Target System.

MOUNTING:

The power supply is housed in a 3-R (rainproof) enclosure. There are four holes on the backside of the enclosure that are intended for mounting purposes.

The front cover is removed to gain access to these mounting holes. Remove the two screws located at the bottom edge of the cover. Carefully slide the cover down to lift it off the enclosure. **Note:** The electronic circuitry is attached to the inside of the cover and care must be taken to prevent damaging this circuitry. The cover fits quite snugly, and it may be necessary to use a screwdriver inserted through one of the cover holes to force it downward.

HOOK-UP/OPERATION

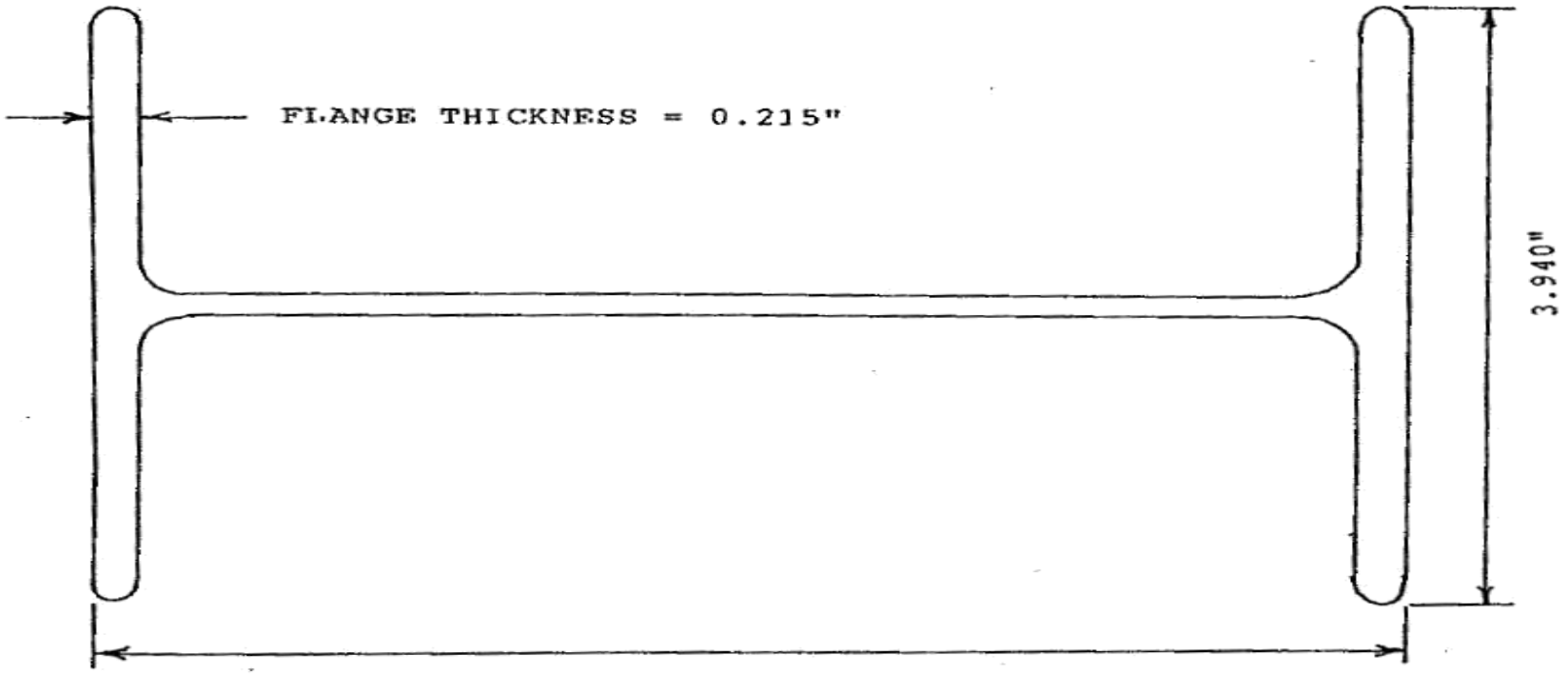
1. Connect the T21B power input clips to the terminals on the side of the power supply.

2. Plug the power cord into the 120 VAC outlet.

3. Turn **ON** the power switch located on the bottom of the power supply enclosure.

Note: It is normal for the front cover of the power supply to become warm during operation, since it also acts as a heat sink for the power supply regulating circuitry.

TRACK DIMENSIONS



NOTE: TRACK IS TO BE MADE FROM A STANDARD W6 X 9.0 WIDE FLANGE BEAM

FIGURE #1

SUGGESTED TRACK ASSEMBLY

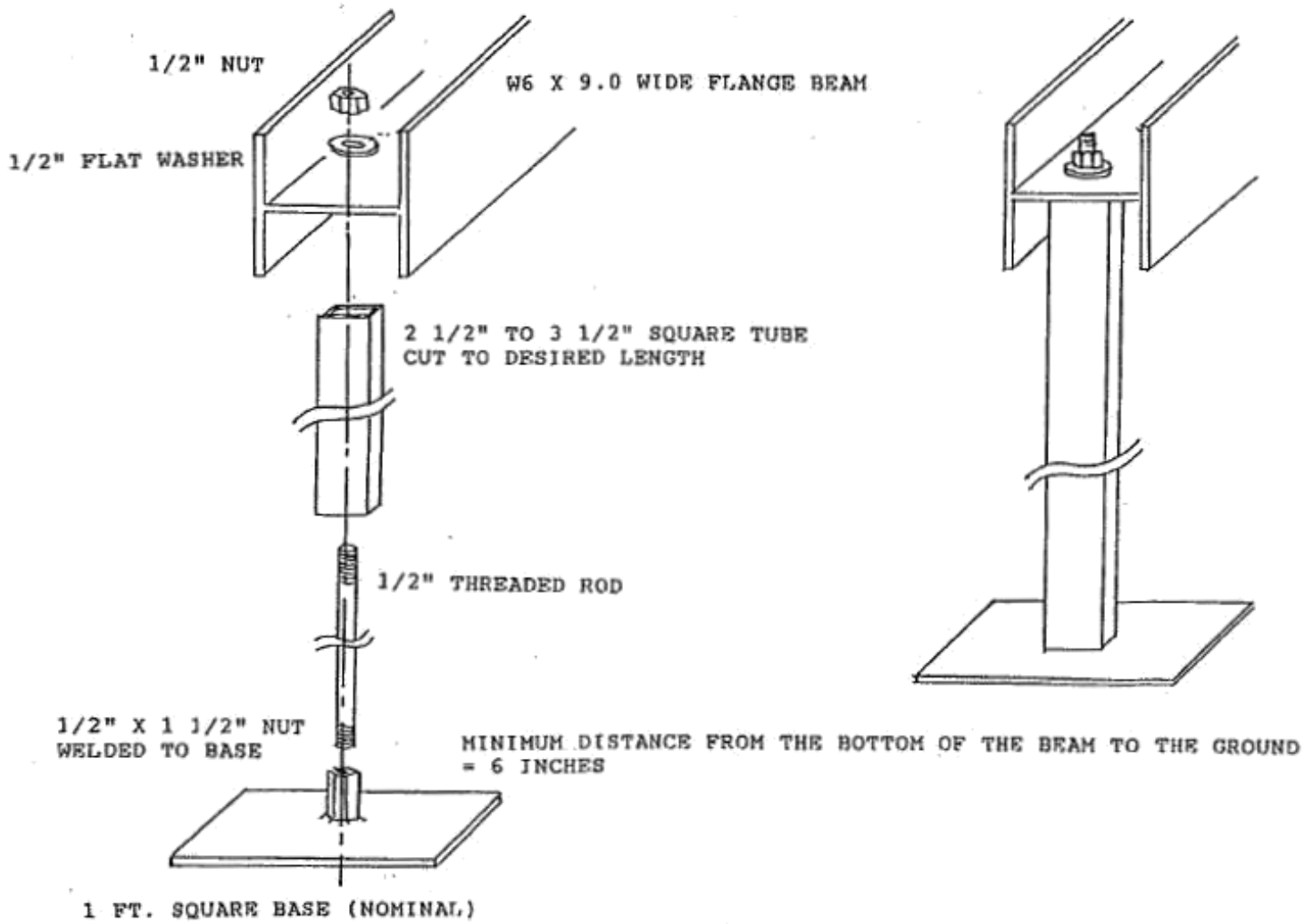
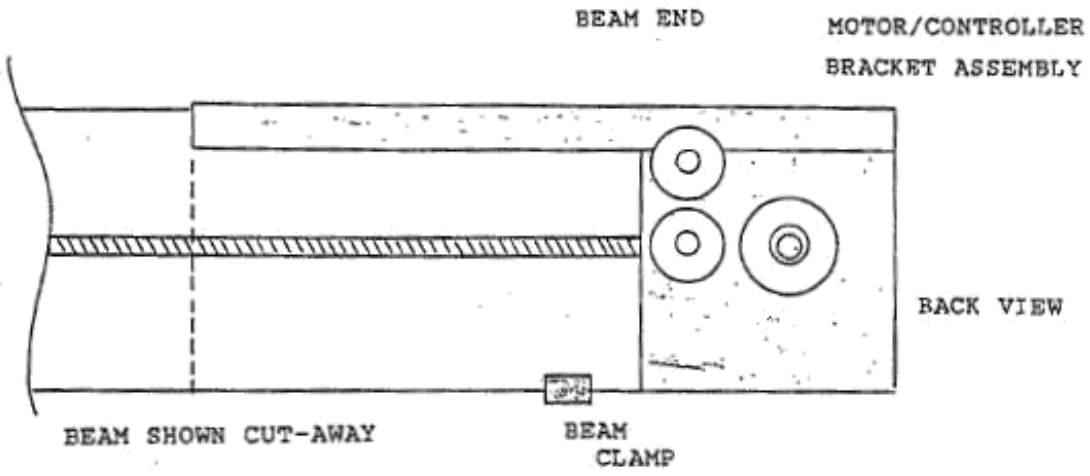
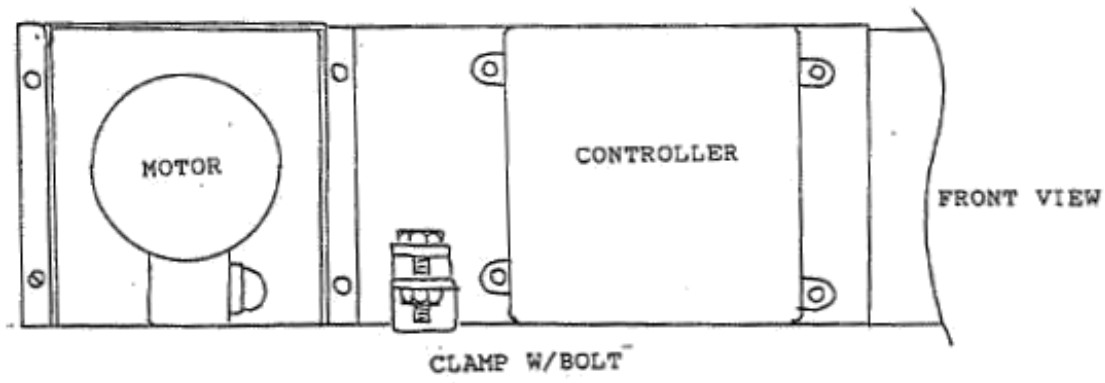


FIGURE #2

MOTOR/CONTROLLER ASSEMBLY INSTRUCTIONS



1. POSITION ASSEMBLY ON THE END OF THE BEAM WITH IDLER PULLEYS CLOSE TO THE BEAM END.

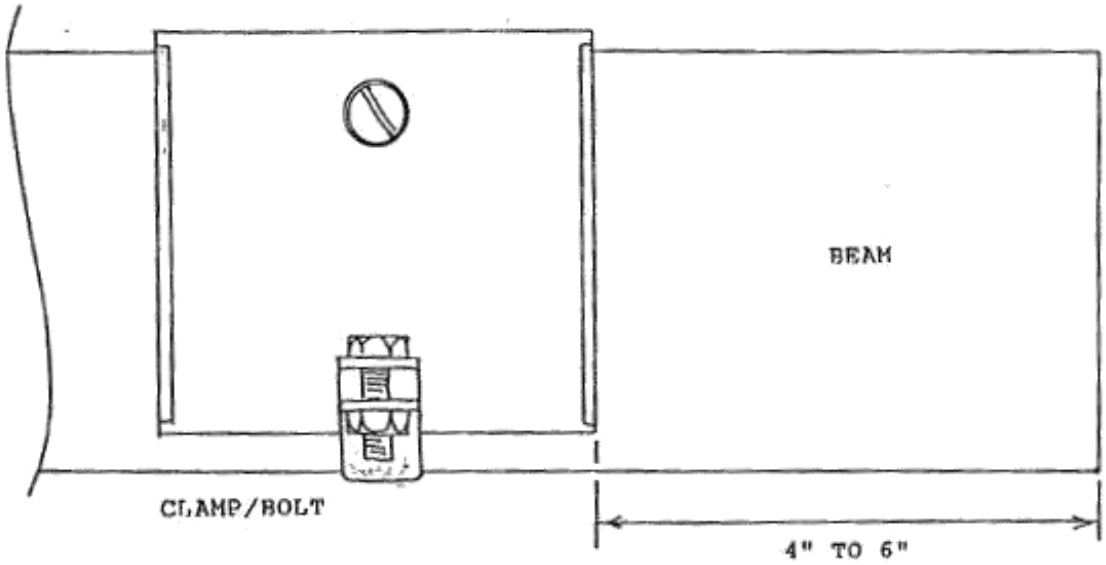


2. PLACE THE RETAINING CLAMP ON THE BEAM AND TIGHTEN THE BOLT JUST ENOUGH TO HOLD THE ASSEMBLY IN POSITION.

FIGURE #3

IDLER ASSEMBLY INSTALLATION

IDLER ASSEMBLY



1. POSITION IDLER ASSEMBLY 4 TO 6 INCHES FROM THE END OF THE TRACK (BEAM).

2. PLACE CLAMP ON BEAM, INSERT AND TIGHTEN BOLT.

FIGURE #4

PROXIMITY SENSOR POSITIONING

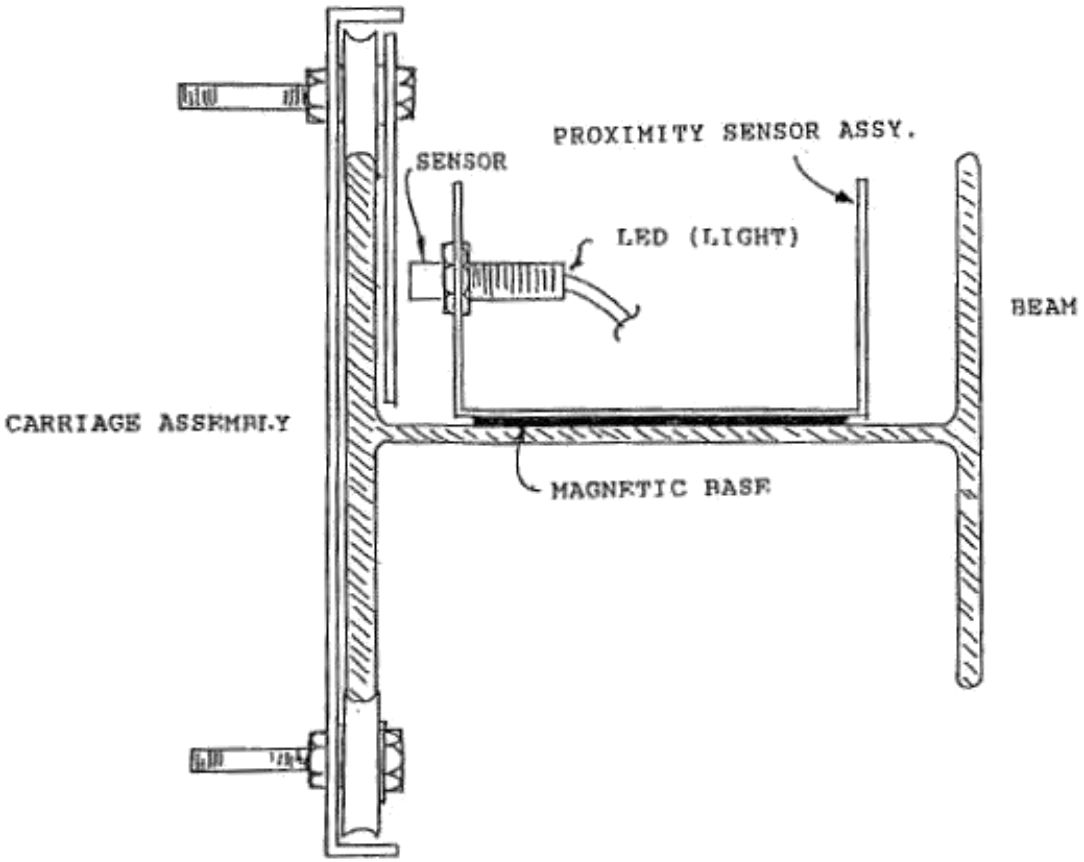


FIGURE #5

DRIVE CORD INSTALLATION

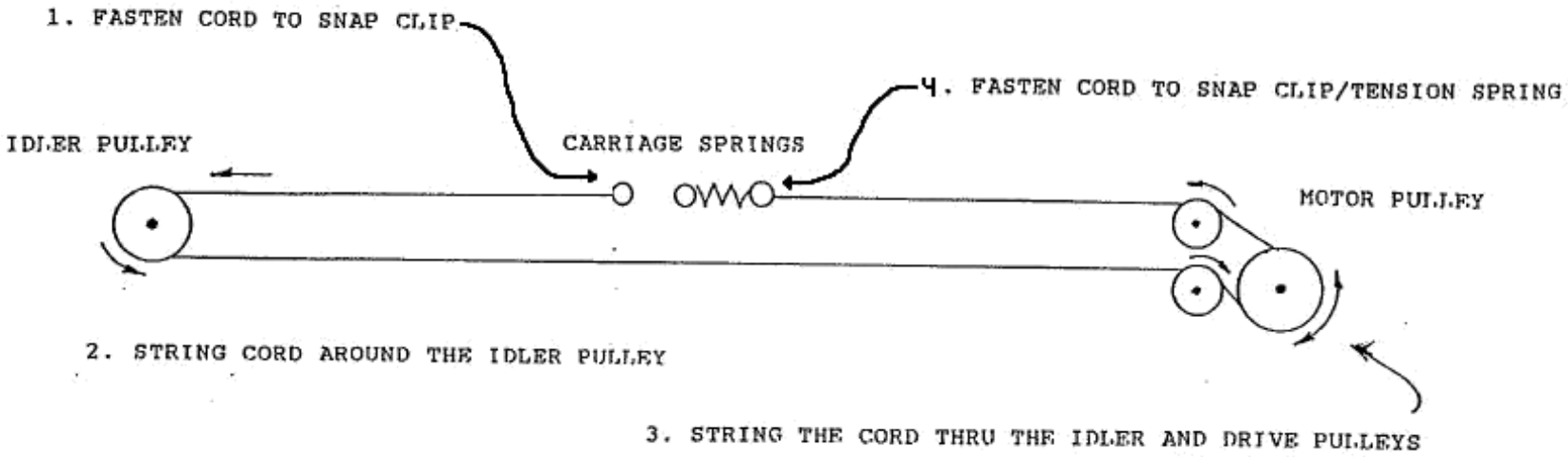


FIGURE #6