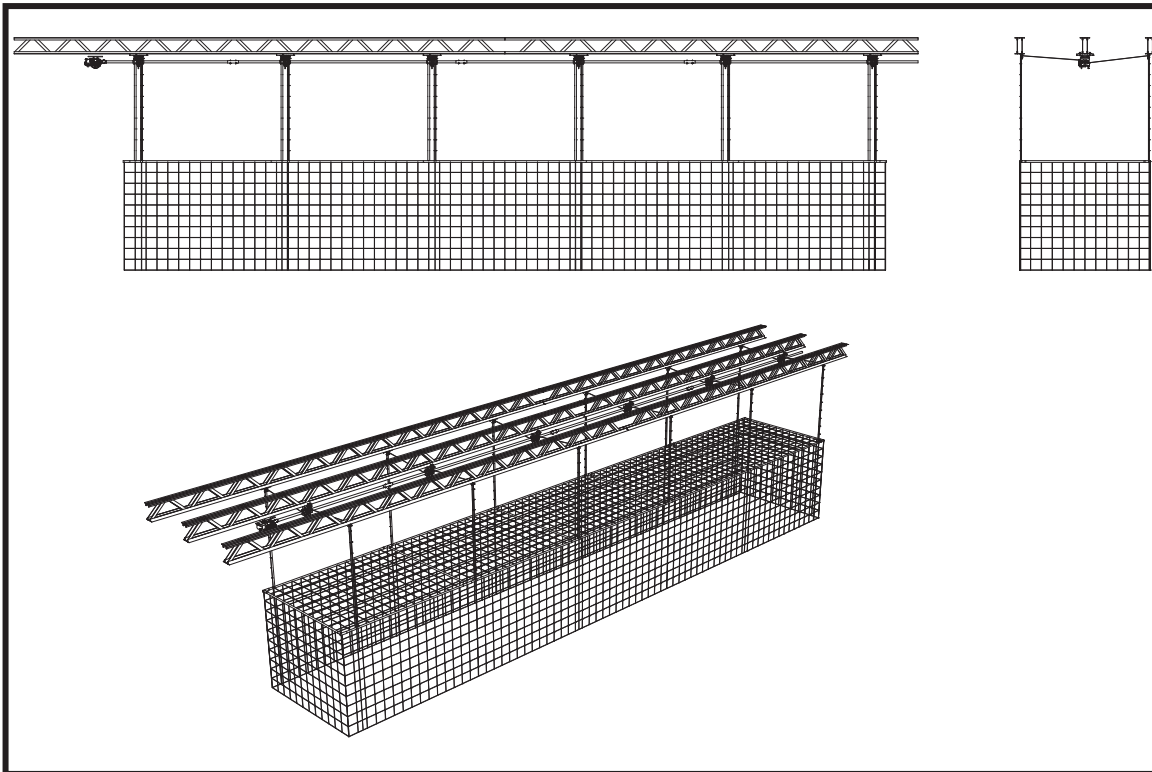


CEILING SUSPENDED BOTTOM LIFT BATTING / GOLF CAGE

No. 90920201



Porter[®]

Installation, Operation, and Maintenance Manual

SAVE THESE INSTRUCTIONS FOR FUTURE USE



INSTRUCTIONS: Dealer and/or Installation Supervisor
Please give this book to the Owner/Customer

NAME OF PROJECT:	

NAME OF DEALER:	NAME OF INSTALLATION COMPANY
PHONE #:	PHONE #:

Porter Order Number: _____

Date of Scheduled shipment: _____

Date of Substantial Completion: _____

The gymnasium equipment for this project has been custom fabricated according to the Owner's/Architect's specification. Care has been taken to fabricate and install this equipment to provide years of safe, satisfactory use and trouble-free service.

The key to satisfactory service is proper operation and care. Should any malfunctions occur, please notify your supervisor and call your local Porter Dealer or Representative.

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PORTER LIMITED PRODUCT WARRANTY

Product Line: Ceiling Suspended Bottom Lift Batting Cage (the “Equipment”)

Porter Athletic (“Porter”) provides the below limited warranty (the “Limited Warranty”) to the original purchaser of the Equipment and only as to the facility in which the Equipment was originally installed. The Limited Warranty extends from the time the Equipment is installed by qualified installers and continues based on the timeline listed below under the terms and conditions stated below.

Limited Warranty Terms and Conditions

Porter warrants the Equipment against defects in material or factory workmanship which cause failure of the Equipment within the applicable Limited Warranty period and provided that notification of defects, together with proof of purchase, is given to Porter at Porter@porterathletic.com within thirty (30) days of discovery of such defect. Porter, once it confirms the existence of a covered defect will, at its sole discretion, repair or replace the defective Equipment with comparable Equipment or will provide a refund of the purchase price prorated over the remaining Limited Warranty period. In the event of repair or replacement, the Limited Warranty includes labor, materials, and freight during the first year of the Limited Warranty and then materials only for the balance of the Limited Warranty period based on the Limited Warranty coverage time period shown below for each category. All other costs, expenses or losses are excluded, including, but not limited to, costs for maintenance of the Equipment. The manner of fulfillment of the Limited Warranty (including investigation, timing of response, labor, and manner of shipment, if applicable) is at the sole discretion of Porter.

Standard Limited Warranty Coverage Time Period

1 year - Structural Components, Mechanical Components, Electrical Components, Fabric

Other components—may be covered by separate warranty, please see product information sheets

Exclusions and Conditions: This limited warranty excludes and does not apply to:

- Damage, whether natural or manmade, including, but not limited to fire, flood, wind, lightening or other acts of nature or God.
- Normal maintenance items such as fuses and belts.
- Normal wear and tear
- Use for other than intended purpose or use not in accord with generally approved practices
- Abuse, neglect, vandalism, alterations, modifications or misuse – as determined by Porter
- Equipment not installed by Porter Athletic Approved Installers
- Natural variations occurring in product finishes are not considered defects.
- User attached accessories
- Damage caused by operation of Equipment by persons not properly trained to operate it
- Equipment not routinely inspected and maintained by facility personnel or operators in accordance with the Porter Operation and Maintenance Manual.

In cases where repair or replacement of Equipment is deemed necessary, color or texture shall be in accord with that offered by Porter at the then current time.

Porter’s liability under this Limited Warranty is limited to repair or replacement of defective Equipment or a prorated refund as described above. The sole and exclusive remedy against Porter, or its parent, affiliates, subsidiaries, or distributors shall be for the repair, replacement or prorated refund, at Porter’s sole discretion, of any defective Equipment as provided herein. IN NO EVENT SHALL PORTER OR ITS PARENT, AFFILIATES, SUBSIDIARIES, OR DISTRIBUTORS BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES RELATING TO, ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THE EQUIPMENT, INCLUDING WITHOUT LIMITATION, ANY LABOR AND/OR OTHER INSTALLATION EXPENSES INCURRED IN CONNECTION WITH THE REPLACEMENT OR REPAIR OF DEFECTIVE EQUIPMENT, EXCEPT TO THE EXTENT OTHERWISE SET FORTH HEREIN, OR ANY OTHER INDIRECT OR CONSEQUENTIAL DAMAGES OF ANY NATURE WHATSOEVER, INCLUDING, BUT NOT LIMITED TO, LOSS OF REVENUE, PROFITS OR OPPORTUNITY.

This document constitutes Porter’s Limited Warranty in its entirety and no other provisions express or implied exist. This Limited Warranty excludes, without limitation, any implied warranties of merchantability or fitness for a particular purpose. Any modifications of this Limited Warranty must be in writing and signed by an officer of Porter. No other person, agent or representative of Porter or any distributor or dealer has any authority to change or modify this Limited Warranty, either verbally or in writing.

Porter reserves the right to change required inspection and maintenance provisions for the Equipment from time to time and upon notification of such change, Customer must abide by those revised provisions or this limited warranty is void.

Various states may have laws affecting your rights under this Limited Warranty.

PORTER EXTENDED LIMITED PRODUCT WARRANTY

Product Line: Ceiling Suspended Bottom Lift Batting Cage (the “Equipment”)

Porter Athletic (“Porter”) provides the below extended limited warranty (the “Extended Limited Warranty”) to the original purchaser of the Equipment and only as to the facility in which the Equipment was originally installed. The Extended Limited Warranty extends from the time the Equipment is installed by qualified installers and continues based on the timeline listed below under the terms and conditions stated below, including, but not limited to, the required inspections and maintenance referenced below (the “Maintenance Program”).

Extended Limited Warranty Terms and Conditions

Porter warrants the Equipment against defects in material or factory workmanship which cause failure of the Equipment within the applicable Extended Limited Warranty period and provided that notification of defects, together with proof of purchase, is given to Porter at Porter@porterathletic.com within thirty (30) days of discovery of such defect. Porter, once it confirms the existence of a covered defect and compliance with the Maintenance Program, will, at its sole discretion, repair or replace the defective Equipment with comparable Equipment or will provide a refund of the purchase price prorated over the remaining Extended Limited Warranty period. In the event of repair or replacement, the Extended Limited Warranty includes labor, materials, and freight during the first year of the Extended Limited Warranty and then materials only for the balance of the applicable Extended Limited Warranty based on the Extended Limited Warranty coverage time period shown below for each category. All other costs, expenses or losses are excluded, including, but not limited to, costs for maintenance of the Equipment. The manner of fulfillment of the Extended Limited Warranty (including investigation, timing of response, labor, and manner of shipment, if applicable) is at the sole discretion of Porter.

Extended Limited Warranty Coverage Time Period

15 years – Structural Components (Structure Pipes, and Ceiling attachments)

10 years – Mechanical (Line Shafts, Pulleys, Hinges, Roller Assembly, Straps)

5 years -- Electrical Components (Winches, Control Systems)

Other components – Covered by separate warranty, please see product information sheets

Exclusions and Conditions: This Extended Limited Warranty excludes and does not apply to

- Equipment not properly inspected or maintained by a Porter certified inspector at least annually in accordance with the Maintenance Program set forth in the current Porter Installation, Operation and Maintenance Manual for Basketball Backstops of the series covering the involved Equipment which is delivered with the product, is available on line at www.porterathletic.com, or which may be ordered from Porter.
- Damage, whether natural or manmade, including, but not limited to fire, flood, wind, lightening or other acts of nature or God.
- Normal maintenance items such as fuses and belts.
- Normal wear and tear
- Use for other than intended purpose or use not in accord with generally approved practices
- Abuse, neglect, vandalism, alterations, modifications or misuse – as determined by Porter
- Equipment not installed by Porter Athletic Approved Installers
- Natural variations occurring in product finishes are not considered defects.
- User attached accessories
- Damage caused by operation of Equipment by persons not properly trained to operate it
- Equipment not routinely inspected and maintained by facility personnel or operators in accordance with the Porter Operation and Maintenance Manual.

In cases where repair or replacement of Equipment is deemed necessary, color or texture shall be in accord with that offered by Porter at the then current time.

Porter’s liability under this Extended Limited Warranty is limited to repair or replacement of defective Equipment or a prorated refund as described above. The sole and exclusive remedy against Porter, or its parent, affiliates subsidiaries, or distributors shall be for the repair, replacement or prorated refund, at Porter’s sole discretion, of any defective Equipment as provided herein. IN NO EVENT SHALL PORTER OR ITS PARENT, AFFILIATES, SUBSIDIARIES, OR DISTRIBUTORS BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES RELATING TO, ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THE EQUIPMENT, INCLUDING WITHOUT LIMITATION, ANY LABOR AND /OR OTHER INSTALLATION EXPENSES INCURRED IN CONNECTION WITH THE REPLACEMENT OR REPAIR OF DEFECTIVE EQUIPMENT, EXCEPT TO THE EXTENT OTHERWISE SET FORTH HEREIN, OR ANY OTHER INDIRECT OR CONSEQUENTIAL DAMAGES OF ANY NATURE WHATSOEVER, INCLUDING, BUT NOT LIMITED TO, LOSS OF REVENUE, PROFITS OR OPPORTUNITY.

This document constitutes Porter’s Extended Limited Warranty in its entirety and no other provisions express or implied exist. This Extended Limited Warranty excludes, without limitation, any implied warranties of merchantability or fitness for a particular purpose. Any modifications of this Extended Limited Warranty must be in writing and signed by an officer of Porter. No other person, agent or representative of Porter or any distributor or dealer has any authority to change or modify this Extended Limited Warranty, either verbally or in writing.

Porter reserves the right to change required inspection and maintenance provisions for the Equipment from time to time and upon notification of such change, Customer must abide by those revised provisions or this Extended Limited Warranty is void.

Various states may have laws affecting your rights under this Extended Limited Warranty.

LIABILITY

Liability is not only an issue with the installation and maintenance of this product, but it also extends to the proper operation by the end user. The operational instructions must be read and understood before operating this equipment!

This manual for the Model No. 90920201 Bottom Lift Batting/Golf Cage, which provides examples of overhead attachment, is meant to serve as a general guideline only, for the safe installation of this product. Variables must be taken into consideration which are outside of Porter's control, including, but not limited to, steel joist variations which include splice plate interference, web panel point attachments if specified by the architect, conduit interference, HVAC and sprinkler interference, non-grouted cells of block walls, spacing and frequency of wall ties, appropriate selection of wall anchors for the given wall composition, proper installation of said anchors, embed depth of the anchors, etc. It is Porter's explicit requirement that this product be installed in a safe and secure manner. Any structural deviation from Porter installation drawings without written authorization will void all warranties. Contact the factory immediately should such a condition exist, necessitating a design revision. All anchor and fastening methodology is to comply with the International Conference of Building Officials (ICBO), the Uniform Building Code (UBC), the Industrial Fastener Institute (IFI), and all state regulatory agencies, such as The Division of the State Architect (DSA) in California.

General Hardware Guidelines

- Do not substitute hardware without written authorization from the factory.
- Minimum Grade 5 hardware is to be utilized at all attachments, unless specified otherwise.
- On eyebolt applications, a turned eye is not acceptable. Utilize forged eyebolts or, if necessary, a turned eye that is welded closed.
- Do not substitute for the factory-supplied cable and cable clamps. The quality of the 1/8" cable and clamps can vary widely from different manufacturers, and are not all suited for Batting/Golf Cage applications.
- All "S" hook connections must be crimped closed.
- All Nicopress[®] clamps must be installed utilizing the proper tool and technique listed in this manual, ensuring a "worn" tool is **NOT** used.

MODEL No. 90920201 BOTTOM LIFT BATTING / GOLF CAGE

OVERVIEW OF MANUAL



WARNING

READ ALL INSTRUCTIONS THOROUGHLY BEFORE ATTEMPTING TO OPERATE THIS EQUIPMENT. FAILURE TO COMPLY WITH THE FOLLOWING INSTRUCTIONS AND WARNINGS MAY RESULT IN SERIOUS INJURIES AND/OR PROPERTY DAMAGE.

This manual has been prepared to assist you with the installation, operation and maintenance of the No. 90920201 Bottom Lift Batting/Golf Cages.

Enclosed in this manual is an inspection list for your equipment, including operational information.

We recommend that you read this manual to become familiar with the operation of the No. 90920201 Bottom Lift Batting/Golf Cages, and then assign it to the person responsible for the maintenance and inspection program. If you need additional copies of this manual, please let us know.

The safest equipment can be damaged when used by the untrained. We suggest that qualified personnel supervise all utilized equipment.

For ease of administering this maintenance program, we suggest that your equipment be numbered, and a file maintained on its location, name of manufacturer, original item number, date of purchase, and maintenance performed. This will be useful when ordering replacement parts and keeping track of maintenance. Defective equipment must be marked "*DO NOT USE*", and the circuit breaker must be turned off and also tagged "*DO NOT USE*", until replacement or repairs are completed.

Inspections should be performed periodically, depending upon the nature of the equipment and its use. When the equipment is exposed to heavy use, special inspections should be made in addition to the normal maintenance program. At the minimum, a yearly inspection of the system is recommended.

Any structural and/or electrical deviation from the Porter installation manuals and drawings, without written authorization, will void all warranties.

Important Note for Bubbled Parts Shown in this Booklet:

For items 1 through 76, refer to packing list and/or Batting Cage installation shop drawings (See pages 24 thru 26 for sample shop drawing and packing lists).

MODEL No. 90920201 BOTTOM LIFT BATTING / GOLF CAGE

OPERATION INSTRUCTIONS

WARNING

The No. 90920201 Bottom Lift Batting/Golf Cage is powered by a 3/4 h.p. electric winch, which develops tremendous forces. This equipment is to be operated **ONLY** by qualified personnel, to avoid structural damage or possible injury to the operator and other individuals in the gymnasium.

Caution should be exercised at all times for safety reasons, keeping the following guidelines in mind:

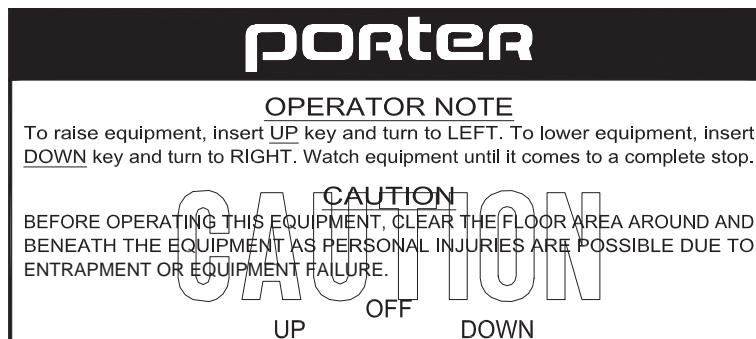
1. **ONLY** authorized, **TRAINED** personnel are to operate the No. 90920201 Bottom Lift Batting/Golf Cages. Authorized personnel is defined as an individual (or individuals) who is at least 21 years of age, has witnessed the proper operation of this unit, and is sanctioned by the facility as being responsible for the operation of the batting/golf cage.
2. The key switch or Powr-Touch[®] pad, which controls the Bottom Lift Batting/Golf Cage, must be flush-mounted on the wall, located in full view of the equipment, and must not be directly beneath the equipment.
3. Always make sure the area below the cage and in the path of travel is clear of all individuals when raising and lowering the unit.
4. The Bottom lift Batting/Golf Cage may be raised or lowered by placing the "UP" or "DOWN" key into the key switch, and turning as indicated on the switch cover plate. One foot of netting must be laying on the floor when the cage is in use. Refer to the separate Powr-Touch[®] or Sportsonic[®] II manuals for the key pad or remote control type operation.

The key (or Sportsonic[®] II transmitter) that operates the unit must be retained at all times by a designated, authorized person, or kept in a lock box. ***Make sure that the key is never left in the key switch unattended.***

5. It is critical that the operator visually monitor the area around the cage through the entire raising and lowering travel cycles, making certain no one is at or near the cage. Pay particular attention to the unit as it nears a limit switch cut-off juncture. If the limits are not stopping the cage at the "**DOWN**" position (No lower than 10'-0" off the floor), or allowing the cage to rise higher than the top of the up limits (approximately 6" below line shaft), contact your Porter representative immediately.
6. The netting may be flipped to the top of the frame for storage purposes. Never store or lay anything other than the netting itself on top of the frame assembly.
7. Do not use cage assembly as a hoisting mechanism of any kind under any circumstances.

Again, the safest equipment can be damaged when used by the untrained. It is imperative that the procedures set forth in this manual are strictly observed.

Note: The key switch must be labeled with the following operational instructions, as shown. If your key switch is not labeled properly, contact your Porter dealer immediately.



MODEL NO. 90920201 INSPECTION / MAINTENANCE CHECKLIST

Porter recommends a maintenance inspection take place at least once a year by a Porter Certified Inspector, using the attached check list. Porter recommends the same check list be used as a guide for additional inspections by facility personnel or operators every 6 months. Any abnormal movement or sound during operation is cause for an immediate and thorough inspection. The annual inspection by a Porter Certified Inspector is required to maintain the extended limited warranty.

GENERAL

- Before inspecting, be certain to follow all OSHA guidelines concerning the use of scaffolds and lifts. The proximity of the scaffold or lift to the cage must be of adequate distance to provide working clearance, so as not to have the cage contact the lift during operational checks.
- Make certain the Porter Key switch is not substituted and is located within full view (but not beneath) the cage. Check the walls in close proximity to the cage for any type of protrusion that may interfere with the raising or lowering of the unit (i.e., new scoreboard, chinning bars, etc.).

ELECTRIC WINCH

- Although virtually maintenance-free, the electric winch should also be periodically inspected for proper operation of the limit switch assembly and key switch. Refer to the key switch/limit switch instructions that come with the winch for adjustment procedure.
- Inspect the connection to the superstructure, ensuring all hardware is tight. The hardware at the building connection is also to be inspected for tightness. Ensure the lineshaft hardware is securely attached to the winch with no sign of line-shaft "key-holing"
- If Porter belt drive system is present, ensure belt is tight and that both pulleys are secure. Ensure set screws and keys are tight.
- If Porter 720 direct drive system is present, ensure gearing is free of obstruction and shows no abnormal sign of wear.
- Ensure Winch and line shaft systems are clear of power chords.

LINE SHAFT

- Inspect the line shaft for proper rotation on the four (4) roller wheels at each roller support location. If the line shaft rotates with a cam effect (wobble), replace that length of line shaft. Make certain the cause of deflected shaft is identified and remedied, such as a roller support assembly being greater than 3'-0" from a cable drum.
- Inspect all hardware at line shaft splices and the winch output shafts, tightening as necessary.

ROLLER ASSEMBLY SUPPORTS

- Inspect all connections, making certain the hardware is all "tight". Alignment of the roller assembly is to be inspected for a smooth rotation of the line shaft. Lubricate wheels for drive system to ensure free rotation.
- All support fittings, shaft and pipe splices, support rods, etc. should be inspected for fatigue cracks, loose bolts or set screws, and corrosion, on an annual basis. Replace defective parts as required.

HOISTING CABLES

- Inspect all 1/8" galvanized hoisting cables for kinking or fraying, replacing as necessary.

PULLEYS

- Inspect all 1/8" pulleys for free rotation and proper alignment. Lubricate wheels. Ensure all Hardware is tight.

D-RING STRAPS

- Inspect all D ring straps for wear. Ensure all are properly secured to the frame and that the cable is exiting the top of the strap without excessive rubbing or wear.

CABLE DRUMS

- Make certain all cable drums are secured with two (2) 5/16" x 7/16" lg. rivets, and **not** just a set screw. All cable must be within the side drum plates. If any cable is winding outside the drum on the line shaft, this is an indication of an incorrect up or down limit switch adjustment. Refer to the limit switch section of this manual for adjustment procedure.

NETTING

- Inspect the cage mesh for any tears, fraying or holes. Tears or holes in the netting can cause serious injury if not repaired or replaced immediately.

BATTING CAGE FRAME

- Inspect the batting cage frame to ensure all connections are secure and tight.

SUPERSTRUCTURE

- Visually inspect all super structure and connections for any sign of abnormal deflection or structural cracks. Check all hardware to confirm it is present and secure.

FABRIC

- Inspect the net for any tears, holes, or wear. Replacement netting can be obtained through Porter Athletic.

MODEL NO. 90920201 INSPECTION REPORT

The following page should be copied and returned to Porter Athletic by a Porter Certified Inspector after each inspection.

Porter Order Number _____

Project Name _____

Name of Selling Dealer _____

Date of Scheduled Shipment _____

Date of Substantial Completion _____

(Information should be found on the first page of Installation manual)

Inspecting Company Name _____

Porter Certified Inspector Name _____

Inspection Date _____

Summary of Inspected Equipment, Include any replaced, repaired, damaged, or worn parts. _____

Please attach the checklist of each equipment inspected

BOTTOM LIFT BATTING CAGE CHECKLIST

Please refer to previous pages for details on inspections.
 This checklist is to assist you in your inspection program.
 As you are making the inspection, enter "S" for satisfactory, or "R" for repair and replace.

INSPECT ALL ITEMS FOR EACH CAGE											
WINCH											
#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12
LINESHAFT											
#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12
ROLLER ASSEMBLY SUPPORTS											
#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12
HOISTING CABLES											
#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12
PULLEYS											
#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12
D-RING STRAPS											
#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12
CABLE DRUMS											
#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12
NETTING											
#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12
CAGE FRAME											
#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12
SUPERSTRUCTURE											
#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12
FABRIC											
#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12
OTHER											
#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12

INVENTORY and INSPECTION

Inventory parts listed on the packing list to ensure parts required are accounted for. Inspect all components for possible shipping damage. Report any shortages to Porter's Customer Service Department immediately. On visible freight damage, sign as damaged, and file a freight damage claim with the carrier immediately. Failure to report shortages or hidden freight damage directly to Porter's Customer Service Department within three working days will place the financial burden for the missing or replacement parts with the installer or general contractor.

PREPARATION OF ASSEMBLY AREA

Moving the cage after assembly is both difficult and awkward. For that reason, the assembly of the cage should take place below or near the cage overhead support location. The floor should be protected with a suitable material, covering the entire length of the cage in the assembly area, to prevent damage to the floor or cage. In addition, the floor and the covering must be free of any debris generated from assembly procedures prior to netting installation.

SAFETY ATTIRE TO BE WORN AT ALL TIMES DURING THE INSTALLATION AND MAINTENANCE OF THE EQUIPMENT

- ☐ Remove all jewelry before commencing with installation or maintenance.
- ☐ Hard hat.
- ☐ Long jeans (no shorts).
- ☐ Steel toe work boots.
- ☐ Safety glasses.
- ☐ Leather gloves.
- ☐ OSHA approved harness (properly tethered).
- ☐ Nothing which may be caught by moving equipment such as long hair or baggy clothing.

TOOLS and EQUIPMENT REQUIRED

To Be Provided by the installer:

- ☐ Scissor lift or scaffolding.
- ☐ Hand tools, power drill, drop cord, laser measuring device, etc.
- ☐ 1/8" Allen wrench.
- ☐ Cable & bolt cutters.
- ☐ Nicopress[®] crimper "VM" size
- ☐ Nicopress[®] checking gauge – "Oval M" size
- ☐ "U" type 1/8" cable clamps
- ☐ 5/16" drill bit (minimum of 2 – for drilling & pinning couplers & drums to 2 3/8" line shafts – step No. 4 & 14)
- ☐ 17/32" drill bit x 4" (+) long (minimum of 3 – for drilling 2 3/8" line shaft for 1/2" hardware – step No. 3 & 4)

- ❑ Control Box Assembly with Plug (Porter part no. ELEC 00201 000 or equal) for Drop Cord Operation (Recommended)

Power Requirements:

Note – anticipate needing an electrician or a temporary control box for step Nos. 23 through 33.

- "Cheater" box, Porter part no. ELEC 00201 000, is available through Porter.

OPTIONAL EQUIPMENT



ELEC 00201 000 - "Cheater" box for powering of equipment during installation



Cable cutter modified for closing "S" hooks



Vise-Grips modified for a variety of special uses including closing "S" hooks

INSTALLATION OF WINCH AND LINE SHAFT

1. Unpack and check all parts and verify quantities with packing list. Verify the location of the cage with the architectural prints, ensuring the cage is not located at a doorway, or creates a narrow egress when in the lowered position. Notify the owner, project superintendent or architect if conflicting situations arise. Do not proceed with installation until all conditions are clarified and settled. Failure to do so may result in relocating the cage at the **installer's expense! This step is critical!**
2. Locate centerline of cage on gymnasium floor. Study cage installation drawings and all details of roller bracket assemblies, drum cable assemblies and winch mounting assembly before proceeding with installation. Make certain the 12' x 70' footprint will clear all potential obstacles (HVAC, backstops in the up **AND** down position, etc.).

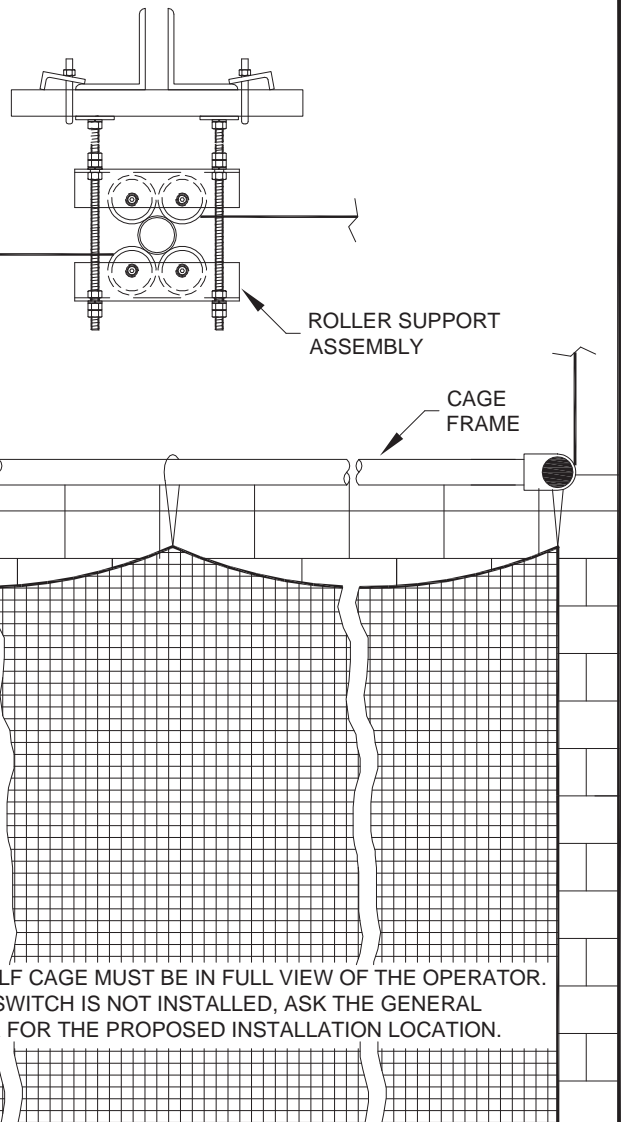
CAUTION

NOTE – The cage frame must be located within full view of the key switch (or other operating device) that will control this cage assembly. If the key switch is not installed yet, ask the general contractor for the proposed installation location of the key switch. See Detail "A".

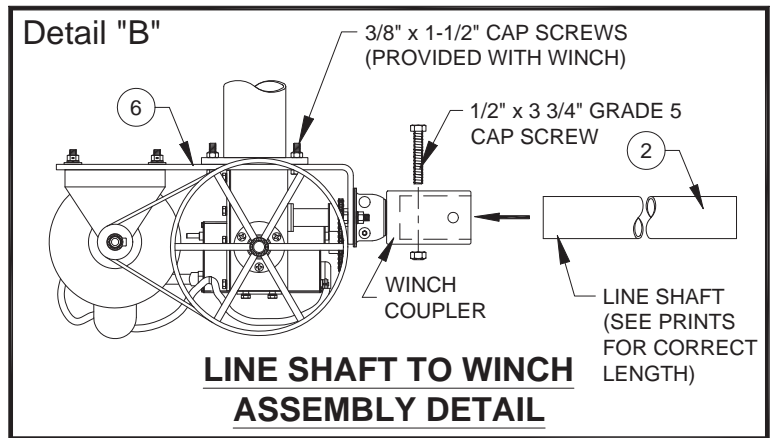
Detail "A"

CAUTION

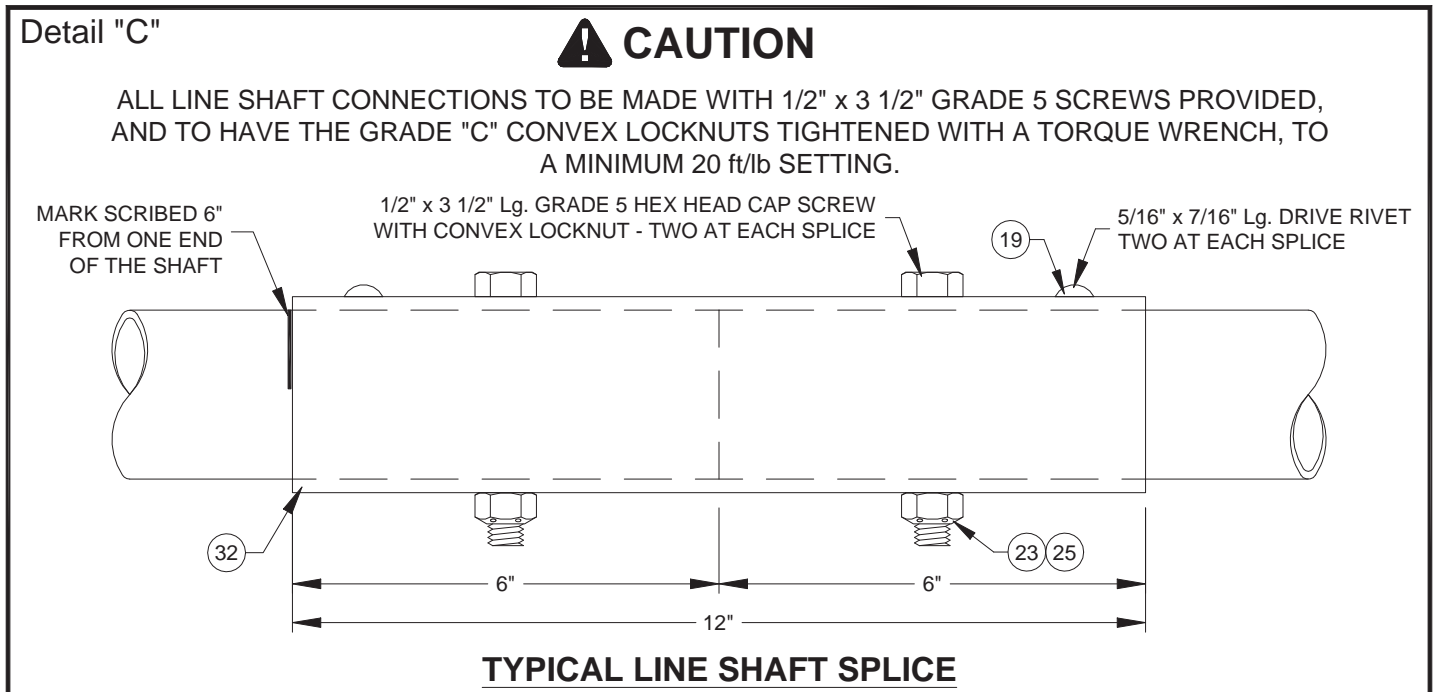
THE BATTING/GOLF CAGE MUST BE WITHIN FULL VIEW OF THE KEY SWITCH (OR OTHER OPERATING DEVICE) IN ORDER THAT THE INDIVIDUAL OPERATING THE SYSTEM WILL BE VISUALLY AWARE OF ENTRAPMENT OR EQUIPMENT FAILURE IN THE UP & DOWN OPERATION OF THE CAGE. CAGE MUST ALSO BE POSITIONED A MINIMUM OF 2'-6" OFF THE NEAREST WALL. CAGE MAY NOT BE LOCATED AT A WALKWAY OR DOORWAY



3. With the winch sitting on the floor, and the floor area protected, slide the 2-3/8" O.D. line shaft completely into the winch coupler. The installation prints will call out the proper sequence lengths of the line shaft. Support the opposite end of the line shaft before drilling. Utilizing the two existing holes in the winch coupler as guides, drill one 17/32" diameter hole through both walls of the line shaft. Secure the line shaft to the coupler by inserting one 1/2" x 3-3/4" lg. grade 5 cap screw provided, **before** drilling the second hole (See Detail "B"). This will keep the line shaft in place and provide proper alignment for the second hole. Now drill the second hole, utilizing the additional hole in the line shaft coupler. Insert a second 1/2" cap screw to ensure a proper fit. Now remove the two 1/2" cap screws, and remove the line shaft section from the winch assembly.

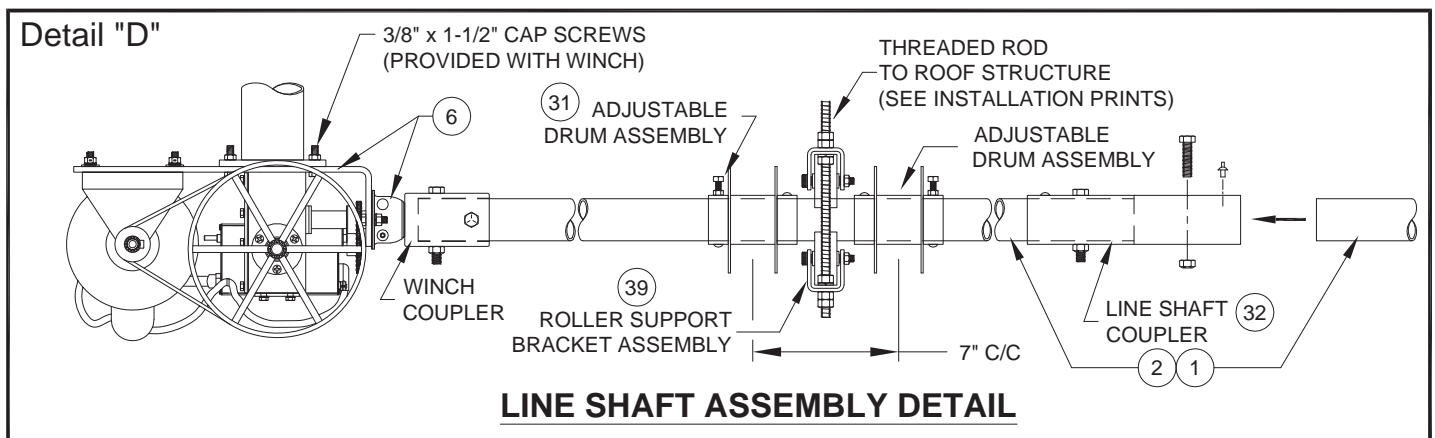


4. On the opposite end of the line shaft in which the two 17/32" diameter holes were drilled, scribe a line 6" from the end (opposite of the holes). Now slide the line shaft coupler on to the shaft, and drill a 5/16" diameter hole at the pilot hole, through one wall of the shaft. Secure the coupler to the shaft with a 5/16" x 7/16" lg. drive rivet. (See Detail "C") This will now allow you to drill a 17/32" diameter hole through the line shaft at the pilot hole for this size, without the shaft turning. Insert the 1/2" x 3-1/2" lg. grade 5 cap screw, and secure with a 1/2" grade C convex locknut, again to a minimum 20 ft/lb setting.

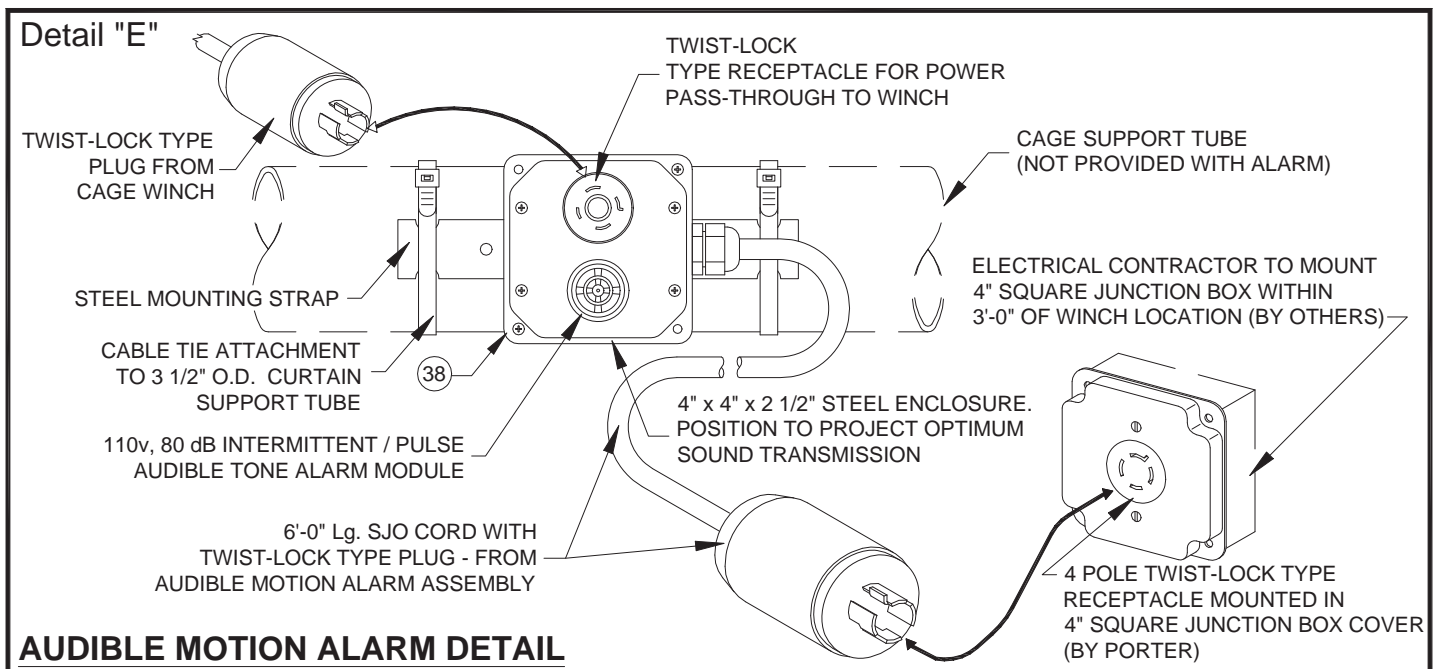


5. You may now prepare the additional sections of the line shafts in the same manner, pre-drilling each section on the ground, before raising into the air. Make note that the coupler is fastened to one end of the line shaft only on the ground, so each section may be sleeved together and secured in the air. **Do not secure a coupler to each end of a line shaft section at this time.** It will be necessary to slide the drum assemblies onto each section of shaft!
6. Locate the winch support adapter, and mount as detailed on the project-specific installation prints.
7. Now secure the winch to the winch support adapter, and attach with the four (4) 3/8" x 1-1/2" grade 5 cap screws, lockwashers, and hex nuts. The winch coupler (output shaft) now determines the elevation for the line shaft. Sight down the 70' length of the cage area to determine if there is any interference with the shaft location. If interference exists, contact the factory. A longer winch adapter and drop brackets may be required.

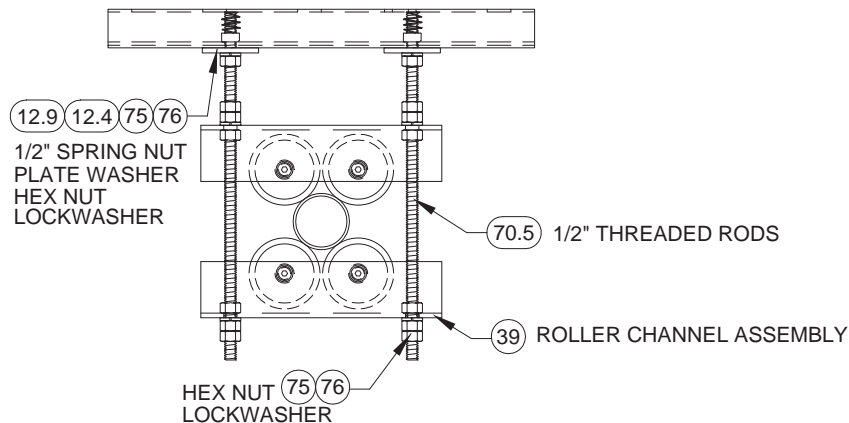
8. Now mount the first and second roller bracket assemblies to the support structure as detailed and dimensioned on the installation print. The brackets are provided with vertical adjustments to level the line shaft. See Detail "F" on page 14 for typical roller bracket attachments. See installation drawings for job-specific details.
9. Referring to the installation drawing, determine how many drums must be slid onto each section of line shaft before proceeding. Just before securing the line shafts to the winch and to the coupler, it will be necessary to slide the proper amount of drums onto each section.
10. Slide the pre-drilled line shaft assembly from step no. 3 into the winch coupler output shaft (6), and support the opposite end from the roller bracket. Are the drums slid onto the shaft? Secure the shaft to the winch coupler, utilizing two (2) 1/2" x 3-3/4" lg. grade 5 cap screws, and secure with 1/2" grade C convex locknuts, tightened to a minimum 20 ft/lb setting (See Detail "D").
11. After the first line shaft section is in place, secure the next section (from Step No. 5) to it. Slide the next section into the line shaft coupler until it bottoms out on the previous section. Drill for and install the 5/16" x 7/16" lg. drive rivet. Then drill for and install the 1/2" x 3-1/2" lg. grade 5 cap screw, and secure with a 1/2" grade C convex locknut, to a minimum 20 ft/lb setting. Repeat for all remaining line shaft sections. (See Detail "C").
12. Make certain the line shaft is level. This is critical to the proper operation of the unit. Adjust as necessary at each roller bracket assembly.



13. Attach the audible motion alarm to the winch and secure audible box to support pipe or the nearest superstructure (Ties included in audible motion assembly). Once the alarm is in place, test the operation of the line shaft using the electric operator with a temporary control box switch/drop cord, or wall-mounted key switch if already installed (See Detail "E").



Detail "F"

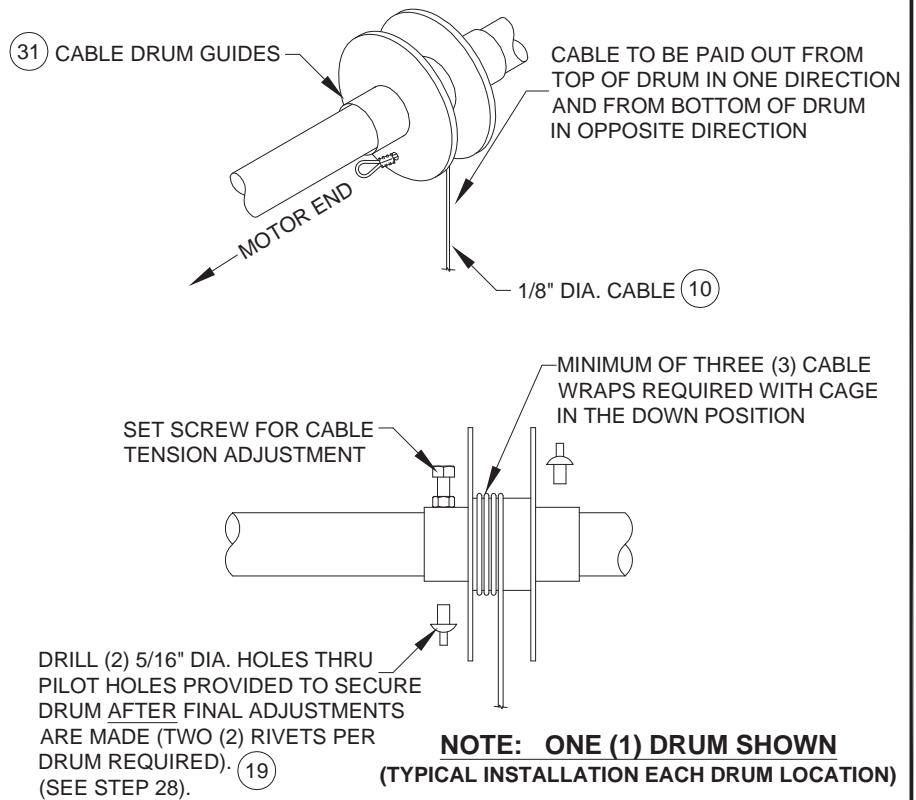


TYPICAL ROLLER BRACKET ATTACHMENTS

ASSEMBLY & ADJUSTMENT OF CABLE DRUMS

14. Center the cable drum assemblies (as installed in step 9) on the shaft per the dimensions given on the installation print. Check the centerline of each cable drum to ensure the location is correct. The cable drum location can be marked on the floor with tape, and transferred up to the line shaft by a plumb bob or laser. The cable drums are **not** to be secured with rivets to the line shaft until the cage frame is adjusted and ready to have the netting installed to it. Spin the drums so that all the cable holes in the side plates are facing directly toward the floor (this will help with the adjustment of the drums). Once this is done secure the drums in place temporarily with the set screw located on the drum (See Detail "G"). Next install the 1/8" pick up cable to the drum by starting with the non-looped end of the cable at the drum assembly and feed it through the outside hole in the side plate of the drum assembly until the Nicopress® loop comes to rest against the side plate (See Detail "G"). Feed cable off to the right side of the drum as you would be looking at it from the motor end and let the cables hang at rest until you are ready to attach the frame assembly to them. When you are ready to hang the cage frame make sure that there are **at least** three cable wraps around the drum assembly when the cage is in the down position.

Detail "G"

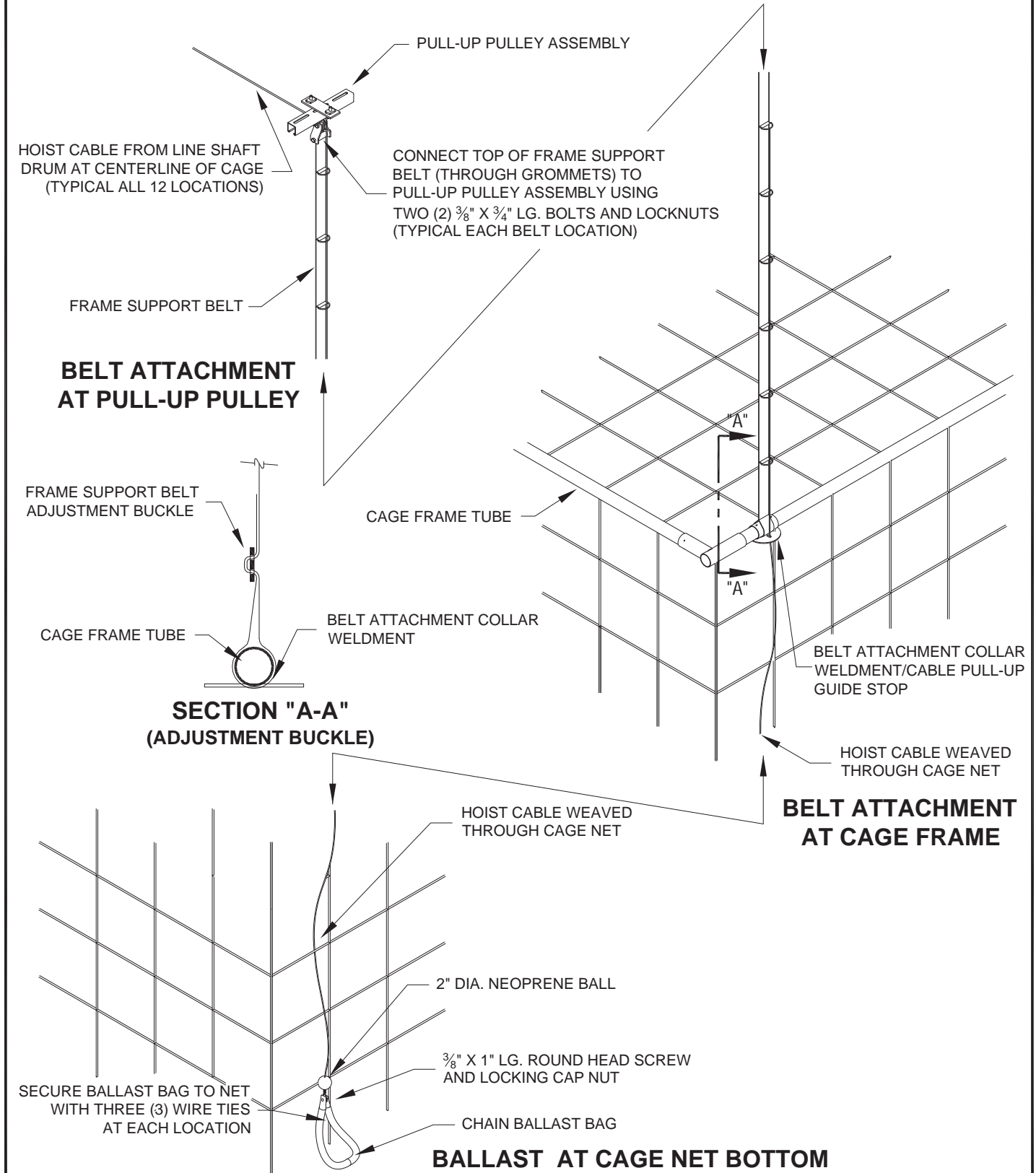


ADJUSTABLE DRUM ASSEMBLY DETAIL

INSTALLATION OF FRAME PULL-UP/BELT ATTACHMENT PULLEYS

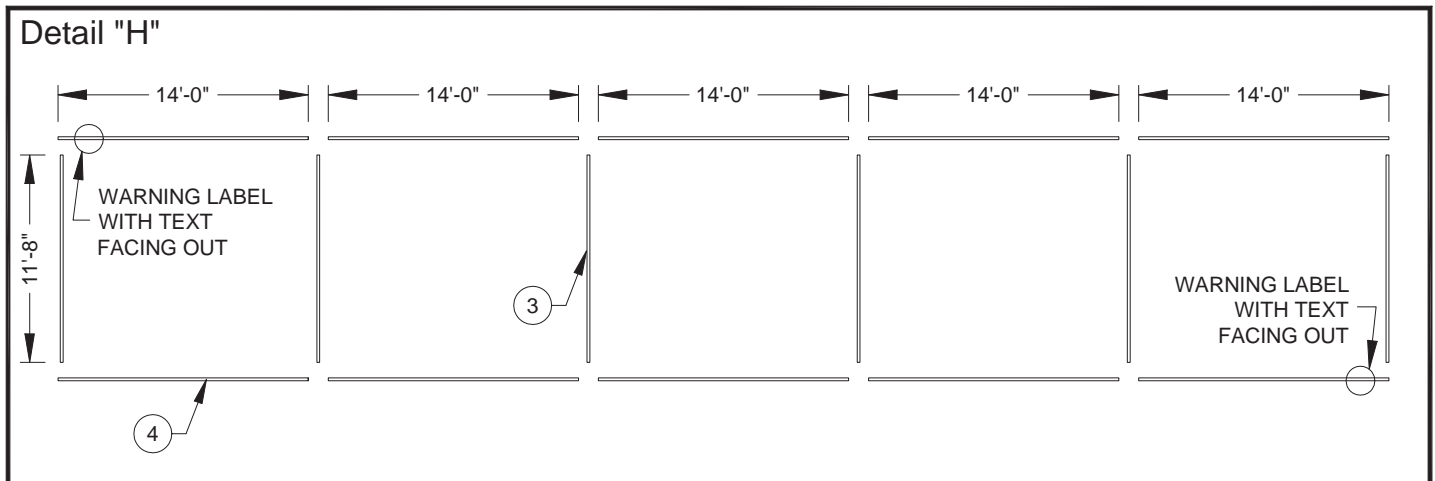
15. With the 2-3/8" line shaft system installed, it will be necessary to install and position the frame pull-up pulley assemblies and frame support belts. The location of each pulley assembly must be in-line with its corresponding drum and located above its frame belt attachment collar location (note each pulley assembly also serves as an upper frame support belt tie-off). Refer to belt system/pull-up pulley example below. This step must be repeated at all twelve (12) pull-up assembly locations. **NOTE:** It will be necessary to refer to the project specific drawings for support structure installation information which the pull-up pulley assemblies will connect to.

Frame Support Belt/Pull-up Pulley Detail

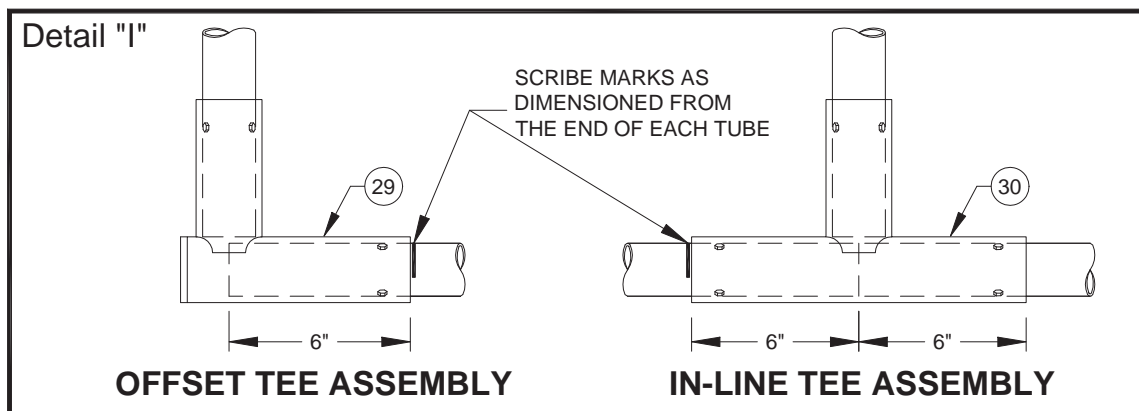


ASSEMBLY OF FRAME

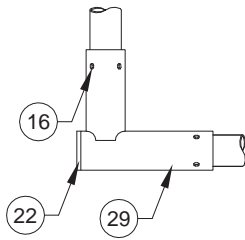
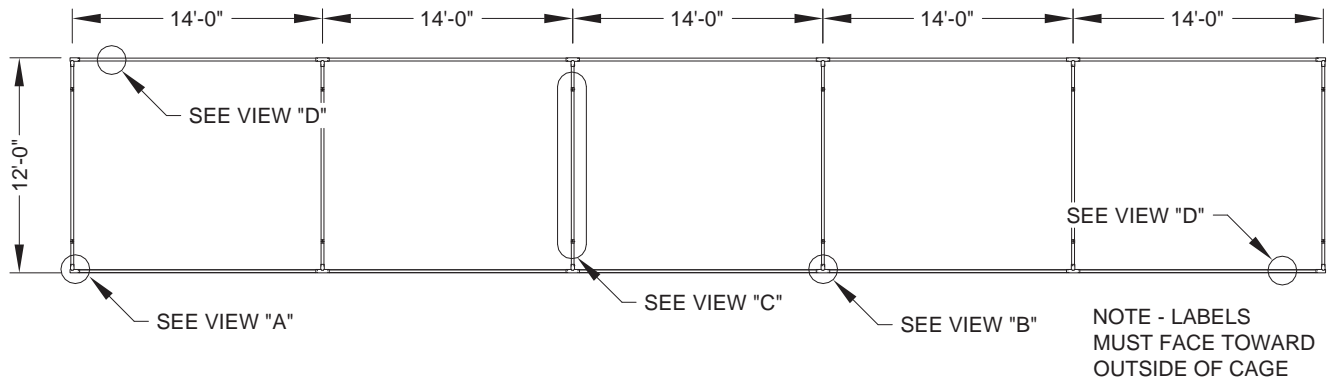
16. With the floor area protected, start by laying out all of the 1-7/8" O.D. frame tubes centered underneath the installed line shaft. Lay out the ten 14' long side tubes and six 11'-8" cross tubes as illustrated in Detail "H".



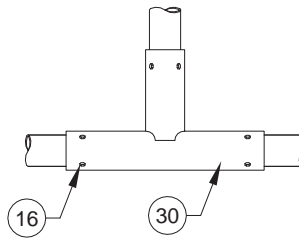
17. You are now ready to install the offset tees (29), in-line tees (30), and the **belt attachment stop collars (12)** to the side tubes. Scribe a mark 6" from the end of each tube as a guide for insertion depth into the tee fittings. Slide all side tubes into the collars making sure that they are centered (6" from the end of the tubes), and the pilot holes in each tee fitting are accessible for installing the self tapping screws.
18. Once the side frames are connected insert the cross spreaders completely into the connecting tees to create your box frame (See Detail "I"). Before connecting the offset tees (29) to the cross frame end tubes (3) you must install the warning labels (36) to the side frames. These are simply installed by sliding the label onto the end of the frame (one at each end, on opposite sides of each other). Note – the labels must face toward the outside of the cage (See Detail "H" & "J").
19. Once all of the center tees (30) are connected, and warning labels are sleeved on connect the end cross frame tubes to the offset tee's (29) (See Detail "J").
20. The final step in the frame assembly process is to make sure that the cage is square. After you ensure the square ness and dimensional correctness of the frame, install all of the self drilling self tapping screws (16) through the pilot holes provided in the tops of the tees to the side and cross tubes. Once the frame is secured with the screws, insert the internal cap plugs (22) into the four end tees.



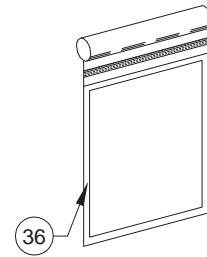
Detail "J"



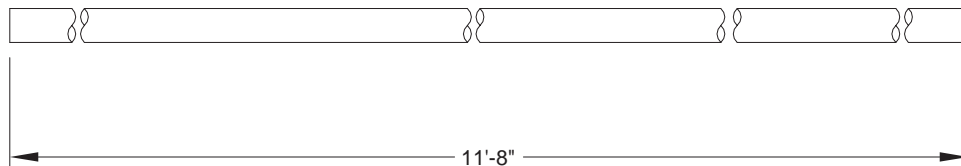
**VIEW "A"
CORNER ASSEMBLY**



**VIEW "B"
TEE ASSEMBLY**



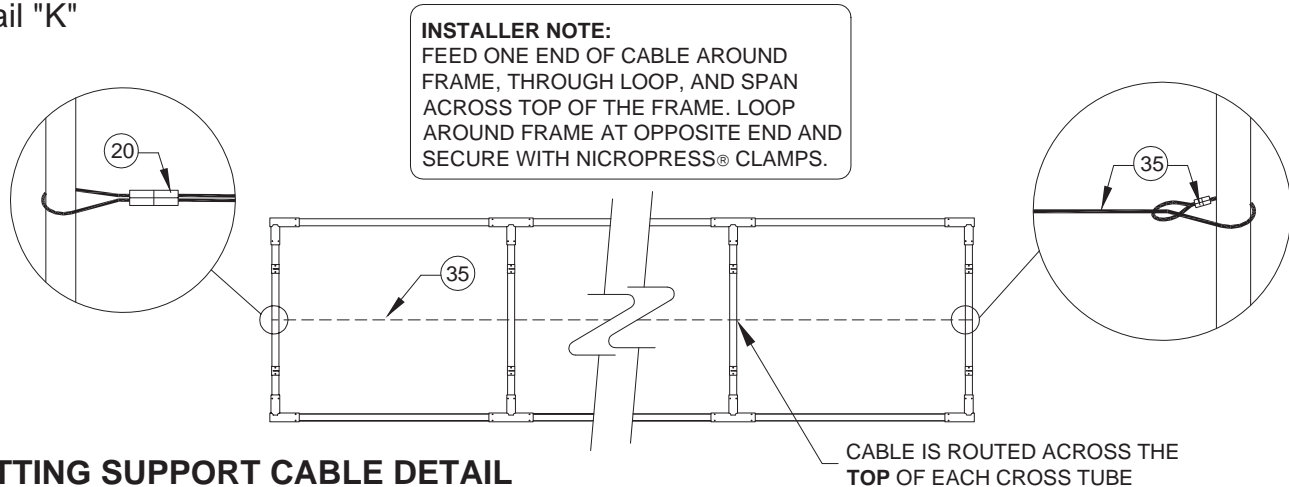
**VIEW "D"
WARNING LABEL**



**VIEW "C"
SPREADER TUBE**

21. Secure the net support cable across the **top** of the frame. Start at the end of the frame and loop the plain end of the cable around the cross tube through the pre-assembled loop, creating a choker hitch. Span the cable across the top of the frame to the opposite end, and create a loop around the outer cross frame tube (See Detail "M"). Once you have created the loop around the end cross frame, pull the cable taut and secure the cable by using the 1/8" Nicopress® clamps (see step 24 and Detail "M" for Nicopress® installation information).

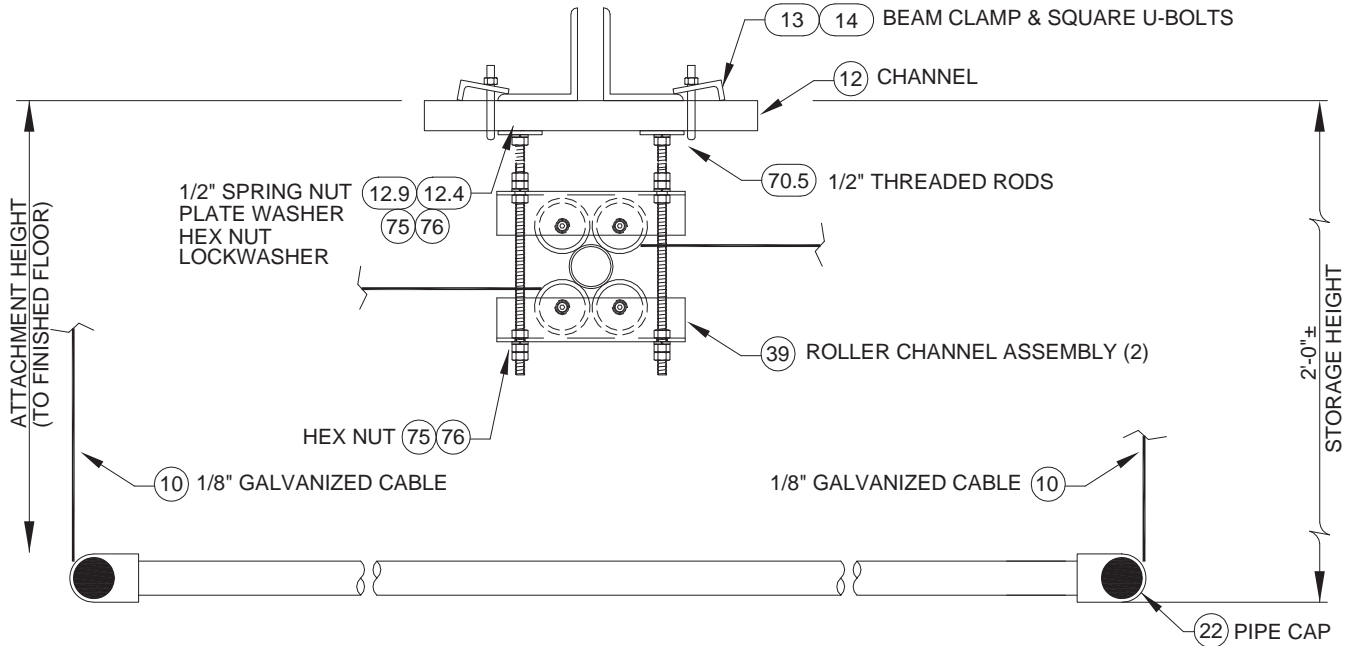
Detail "K"



NETTING SUPPORT CABLE DETAIL

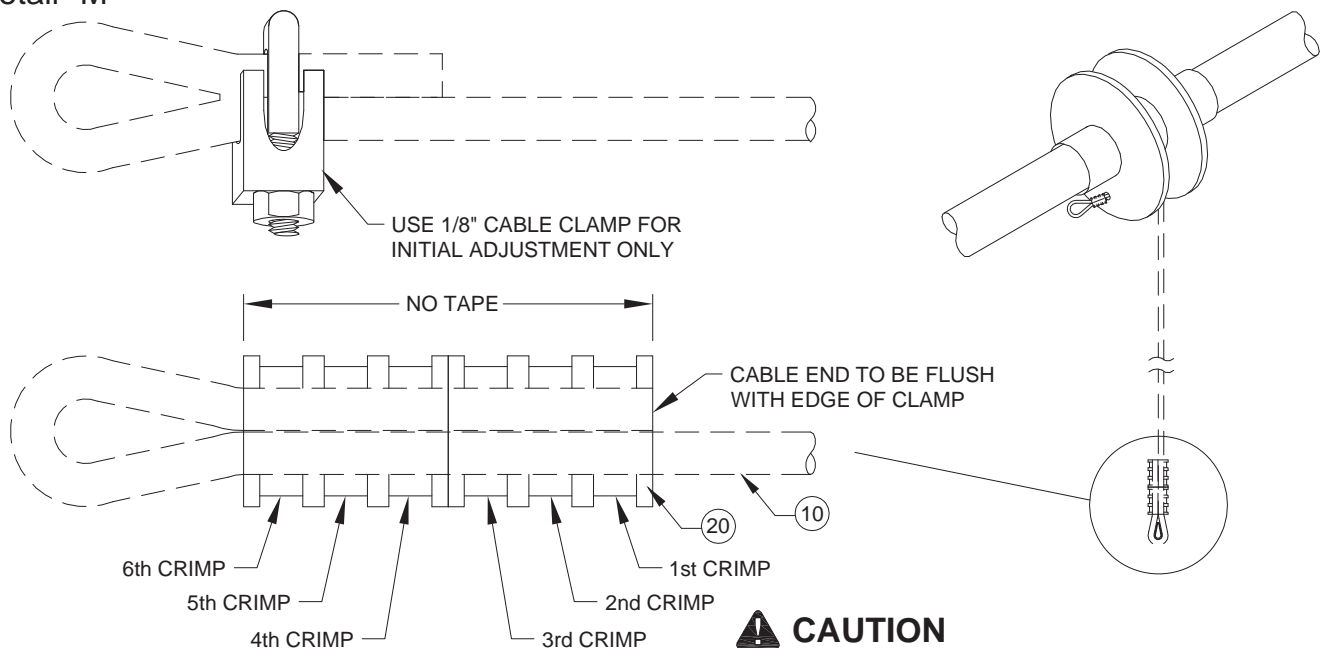
ASSEMBLY OF FRAME TO CABLE ASSEMBLIES

Detail "L"



22. With each cable exiting the two drums at each roller support assembly (one cable off top of drum, and one cable off bottom of drum) route the cables through each corresponding pull-up assembly (12 total). Refer to Detail "L". After routing cables through pull-up assemblies and frame support belt D-rings, allow approximately two feet of excess cable to lie on the floor. Position the cage frame with the belt attachment collars in alignment with the twelve (12) cable drop points, route each cable through the outside collar slot at each location attachment location. Using temporary 1/8" cable clamps loop the cable end as shown in Detail "M".

Detail "M"



CAUTION

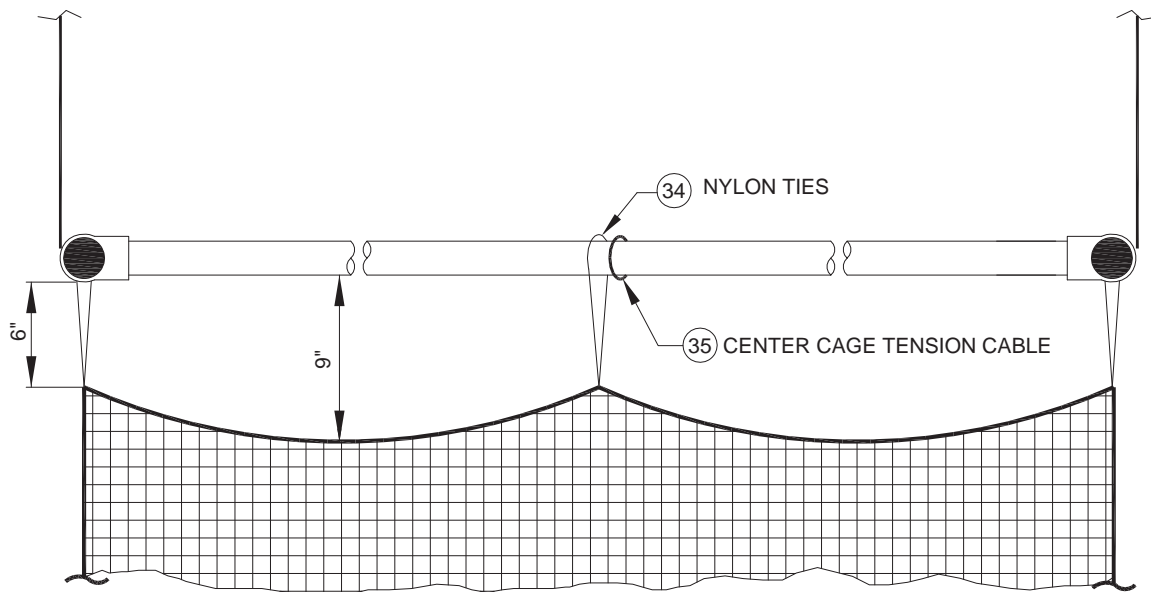
TAPE CABLE BEFORE CUTTING.
NO FRAYED CABLE EDGES MAY BE EXPOSED ON THE ASSEMBLY.
NO TAPE MAY BE ON CLAMPED AREA OF CABLE
ALL NICOPRESS® CLAMPS TO BE CRIMPED IN THREE LOCATIONS AND CHECKED WITH THE
THE CRIMP GAUGE. SLOT MARKED "OVAL M" MUST FIT OVER EACH CRIMP.

23. With all twelve (12) hoist cables all in position, energize the winch (either by the key switch or “cheater box”), to raise the cage no more than two feet off the ground. Inspect each take up drum to ensure the cable is aligned. Adjust the drum(s) horizontally on the line shaft with the frame resting on the floor. Now raise the cage to a comfortable height for net installation.

INSTALLATION OF NETTING

24. Clean the floor area (with broom and dust mop) and unfold cage netting. With netting fully unfolded and the cage frame lowered above but not laying on top of the cage netting, tie off the four corners of the cage netting with the nylon poly ropes that are attached at the four corners of the net to the ends of the cage frame. With the ends tied off to the frame start attaching the nylon cords (34) supplied with the hardware approximately 2'-4" apart (See pictures below for nylon rope tying procedure Steps 1 through 4) and allow the cage netting to hang down at least 6" below the cage frame when attaching the netting to the cage frame (See Detail “N”). **Note – The net must be suspended at least 6" below the cage frame. It must not be in contact with the cage frame.** Be sure to allow the fullness as shown in the photograph, as the baffle effect of the netting is what will stop the ball, and prevent premature wear of the net. Once all the cords are tied raise the cage to a working height and start the process again tying the center of the cage net to the center cage tension cable (35).

Detail "N"



CAGE NETTING END VIEW



Interior view of cage with netting being picked up at both ends of frame and at the center cage tension cable.



Top netting attachment detail showing 6" nylon tie drop at side frame and center cage tension cable.

NYLON ROPE TYING PROCEDURE



Step #1

Once nylon tie is looped around frame, hold the ends together as shown in picture above.



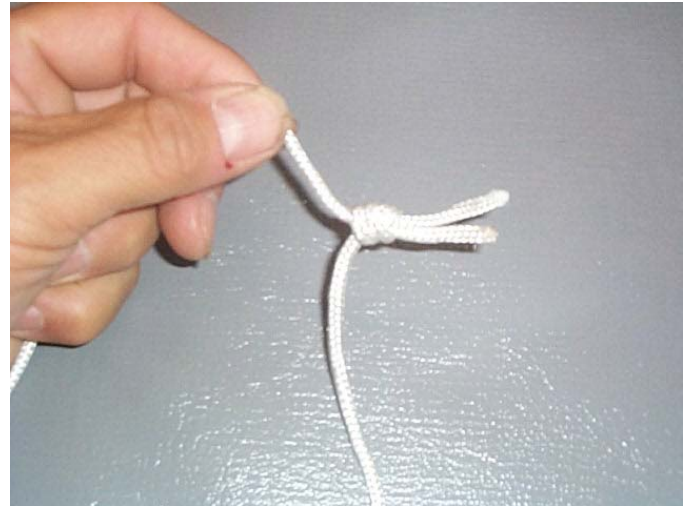
Step #2

Take nylon tie ends and loop around finger as shown.



Step #3

Once the loop is created around your finger, pull the ends of the nylon rope through the loop to create a tied end as shown in the picture above.



Step #4

Once you have created your tied end as shown in the previous figure pull the ends tight to create your final knot as shown in the picture above.

FRAME BELT SUPPORT & CABLE INSTALLATION

25. Once all the nylon cords are attached, raise the cage frame net system to the height of 10'-0". Attach the frame support belts at each belt attachment collars (12). Plumb and level the cage by adjusting the belt at the buckle assembly (see Frame Support Detail on Page 13).
26. Now check again that the cage is plumb and level at a 10'-0" elevation from the floor and is supported by the frame support belts and not the hoist cables. After adjustments are made, energize the winch to lower the hoist cables within approximately 3" from the floor. Remove the cable clamp. Now starting from the top of the cage net, weave each cable through the net at approximately 2'-0" on center at all twelve (12) pull-up locations.
27. With all twelve (12) hoist cables weaved through the cage net. Cut the existing cable where the end is approximately 6" above the finished floor. Slide the 2" diameter neoprene ball onto each cable with the counter-bored hole oriented down. Form a 1" loop so each cable is 8" above the finished floor level. Secure the loop with two (2) 1/8" Nicopress® clamps, again referring to Detail "M".
- ☐ Remove all tape from area of cable to be secured with clamp
 - ☐ Slide two clamps over two widths of cable, forming a loop, and insert cable thimble.
 - ☐ The cable must be flush with the end of the Nicopress® clamp.
 - ☐ Crimp the Nicopress® clamp in the sequence shown in Detail "M" – first at the end furthest away from the loop, next at the middle of the clamp and last at the end closest to the loop. Now crimp the second clamp in the sequence shown.
 - ☐ Three (3) crimps must be visible on each Nicopress® clamp.
 - ☐ Check each assembly with the gauge. Check all three crimps. The slot on the gauge marked "Oval M" must be fit over each crimp. If it does not, then the crimp is too loose. The cable assembly must be rejected. The crimping tool must be adjusted accordingly.
- ☐ Ensure a minimum of three wraps of cable are on each drum with cable 8" above the finished floor.
28. Secure all the belt adjustment collars to the frame with self drilling self tapping screws (16).
29. Drill for and install two (2) drive rivets (19) to each of the adjustable drum assemblies (31) on the line shaft. (See Detail "G").
30. Attach each chain ballast bag to each cable loop using one 3/8" x 1" Lg. round head screw and locking cap nut. Slide the previously installed 2" diameter neoprene ball over the cable Nicopress® clamp. Secure the ballast bag to net using three cable ties at each cable location (see Frame Support Detail on Page 13). Note: With cable properly positioned the lower portion of the chain ballast bag will rest on the floor. Approximately one foot of netting will also rest on the floor when the cage frame is at the 10'-0" height.
31. Adjust the "up" and "down limit switches in order for the cage frame to automatically stop a minimum of 6" from the line shaft structure in the "up" direction of travel, and at the 10'-0" cage frame height in the "down" direction of travel with 1'-0" of cage net resting on the floor.
32. After the limit switches are set, cycle the curtain up and down a total of three times to ensure proper operation and alignment.
33. Once unit is tested demonstrate the operation of this unit to an individual at the site, who is responsible for the safe operation and maintenance of this equipment. Point out safety concerns and the necessity of using a Porter key switch in the event that it has not been installed. Go over each operational instruction in this manual, ensuring the individual is clear in understanding the forces developed by the Model No. 90920201 Bottom Lift Batting/Golf Cage systems, and the necessity of having only trained, authorized personnel operate this equipment. Provide the key switch assembly (if not installed) to the individual signing off on the installation of the cage.


INSTALLER NOTES

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