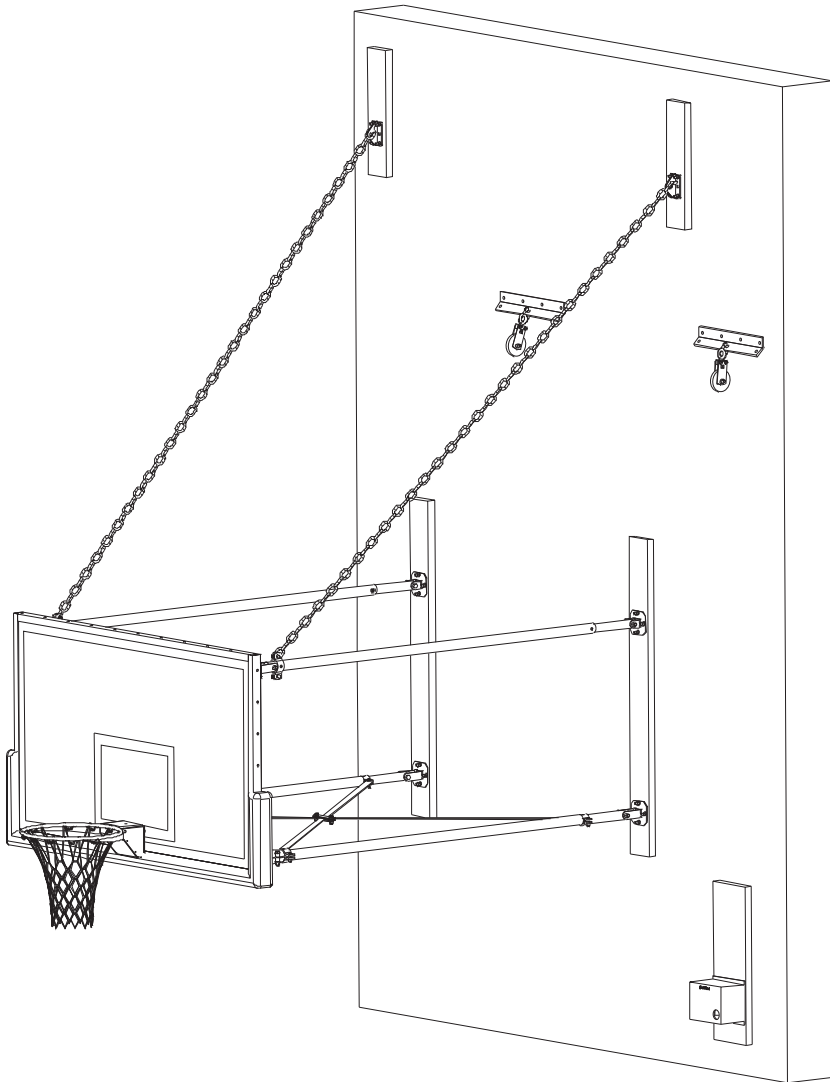


BASKETBALL BACKSTOPS

219, 220 AND 312 SERIES



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.



WALL-MOUNTED BACKSTOPS

INSTALLATION, OPERATION AND MAINTENANCE MANUAL

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PORTER LIMITED PRODUCT WARRANTY

Product Line: Wall Mounted Basketball Backstops (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

10 years – Structural Components (Pipes, Brackets, Braces)

1 year – Mechanical (Saf Straps, Height Adjuster, Pulleys, Hinges)

1 year -- Electrical Components (Winches, Height Adjuster Motors, Control Systems)

Backboard/Goal/Rim – 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: Wall Mounted Basketball Backstops (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 (Pipes, Brackets, Braces)

10 years – Mechanical (Height Adjuster, Pulleys, Hinges, Chains)

5 years—Saf Straps

5 years -- Electrical Components (Electric Winch, Height Adjuster Motors, Control Systems)

Backboard/Goal/Rim – 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 Wallmounted Backstop Manual, which provides explicit examples of a variation of wall attachments, 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, cure time of the concrete wall, non-grouted cells of block or acoustical 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; therefore, a thru-bolt requirement is mandatory of each wood pad, as illustrated in this manual, combined with auxiliary anchor attachments. Should thru-bolting not be allowed on any given project, the project architect must specify the anchoring method. Porter's suggestion of adhesive anchors in lieu of thru-bolting is not an approved Porter substitution, but that we have observed architects' recommending on specific projects. 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 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. Refer to the specific part drawing in this manual for the proper grade of hardware.
- On eyebolt applications, a turned eye is not acceptable. Utilize forged eyebolts or, if necessary, a turned eye that is welded closed.
- On all chain (or cable) attachments, a "S" hook is **not** acceptable. Utilize a repair link, threaded master link, or forged shackle only.

INTRODUCTION



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 your basketball backstops.

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

We recommend that you read this manual to become familiar with the style and operation of the backstop unit you have, 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 only 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. We suggest that you use the inspection chart as a checklist and indicate with an "S" when satisfactory, and mark "R" when replacement or repair is necessary. 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 annually. When the equipment is exposed to heavy use, special inspections should be made in addition to the normal maintenance program.

Any structural deviation from the Porter installation drawings without written authorization will void all warranties, and could cause an unsafe condition of the equipment.

OPERATIONAL INSTRUCTION OVERVIEW

Operation – Both manual and electrically powered winches develop tremendous forces; therefore, all backstops must be operated by qualified personnel only to avoid structural damage or possible personal injury. Authorized personnel is defined as an individual (or individuals) who is at least 21 years of age, has been trained for the proper operation of the unit, and is sanctioned by the facility as being responsible for the operation of the equipment.

Should your backstop be a stationary model (non-folding), supervision of its' use is still required. Wall mounted units must have all components attached securely. This includes all chain supports, cross flats, extension pipes, etc. Should your backstop be altered in any way from the "as-built" drawing(s), contact Porter immediately, and **DO NOT USE** the equipment. **Improperly installed or altered wall mounted backstops have the potential to cause serious personal injury, or even death.**

Electrically Operated Equipment – The wall mounted key switch must be flush-mounted on the wall and located in full view of the gymnasium equipment so that the operator may stop the operation of the equipment should there be any malfunction during the raising and lowering cycles. At no time should the key switch or reversing switch on the portable electric operator be reversed quickly, as this may cause damage to gears and may cause the electrical circuitry to override the up-and-down limits. On the up cycle, the backstop operation must halt before any portion of it strikes the building structure.

Manually Operated Equipment – Limit switches or mechanical stops may not be used. Therefore, it is the responsibility of the operator to stop the hoisting operation before the backstop strikes an obstruction. As a visual aid, a piece of tape may be placed on the hoist cable to align with the top of winch when the backstop is in the up position.

Important Note – These units can be dangerous if operated carelessly by inexperienced personnel; therefore, the keys or handles of the manual winches must be in the possession of responsible, trained personnel only. Proper operation and maintenance will promote longevity to the equipment and avoid the possibility of accidents.

MAINTENANCE CHECKLIST

This inspection checklist is to assist you with your maintenance program. As you are making the inspection, enter an "S" for satisfactory, or an "R" for repair or replacement.

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.

1. **Wall Anchors** – Inspect all anchors to ensure they are tight. Check all wood pads for splits; replace as necessary. Be certain all wood pads tight to the wall; sight from each edge of the pad to ensure there is no gap between the wall and wood pad. Inspect wall for cracks, which may indicate a support problem.
2. **Chain Supports** – Carefully examine the entire chain support. Make certain no turned eyes, "S" hooks, etc. were substituted (refer to "General Hardware Guidelines"). Replace with appropriate hardware, as indicated. The chain support at the wall (or overhead support) must be securely anchored as noted in this manual. Chain to be secured to upper structure by a repair link, threaded "Quick" link, or minimum Grade 5 bolt only. The clamp securing the chain at the extension pipe must be either backed by a second clamp, or secured with a rivet through the wall of the pipe. Inspect the chain for any fatigues links. Replace entire chain if any link is suspect.

3. **Inspect Backstop Fittings** – Visually inspect backstop clamps and support fittings for hairline cracks, loose bolts and corrosion, replacing defective parts as required. All backstop fittings should be tightened occasionally to keep backstop rigid. Vibration may cause fittings to loosen causing undue “rattling” of backstops. To stiffen backstops with cross tension type flats, drive the bottom clamps downward on pipe to put flats in tension. Check all hinge fittings, tightening and lubricating hinge bolt as required. Replace worn bolts as required, utilizing the proper grade bolt and nut type as listed in the Fittings Parts List in this manual. Be certain the backstop has not been altered from the “as-built) drawings, and that all chain supports, cross flats, extension pipes, etc., are still securely in place.
4. **Check Backstop Accessories** – Such as the height adjuster unit (see height adjuster section in this manual for general maintenance).
5. **Inspect Telescoping Diagonal Braces** – (Model 220 side fold unit only) Clean inside telescoping brace and lubricate periodically to prevent binding on the side-fold cycle. Binding of the telescoping brace could cause damage to backstop if not properly lubricated. A dry silicon lubricant is recommended on the telescoping brace so as not to collect dirt and dust which cause binding of the operation.

Note: No.'s 6 through 9 pertain to the 219 Fold-Up unit.

6. **Inspect All Winches** – The winch, either manual or electric, is the most important part to maintain on a folding-type- basketball backstop.

- A. For the manual winches, periodically check the winch every three to four months, lubricating as required. Use Pyroshield No. 5182 Grease (or equal).

Check gears for excessive wear, replacing them if signs of wear are apparent. To properly check manual winches, the metal cover may be removed. If the teeth of either the bronze or steel gear show signs of becoming pointed or tapering to a point, they should be replaced. Steel or bronze shavings (a sign of improper lubrication) will usually be present if the teeth have worn this severely. Normally the teeth will appear to be blunt and show signs of slight wear only on the sides. If this is the case, lubricate the gears with the recommended open gear lubricant.

- B. Electric winches should also be periodically inspected for proper operation of the limit switch assembly and key switch. Faulty electrical components could create serious hazards.

The winches should also be inspected for possible hairline cracks in the cable drum. If cracks are visible, do not use until unit is replaced or repaired. If winch is belt driven, inspect the small and large belt drive pulleys, making certain they are properly secured to each shaft, and rotate concentrically. Also, check anchorage of winch to either the support pipe or wall; and loose anchorage should be repaired immediately. If the winch is gear driven, make sure the gear is not showing excessive signs of wear. Note any excessive noise as well as checking the limits are properly set to ensure complete stop before backstop comes within a safe distance of any obstructions. Make sure cable is properly spooling to ensure the limits will properly engage. The cable should evenly wrap the cable drum until the entire cable drum is wrapped or the limits are reached before the cable wraps on top of itself.

7. **Inspect Hoisting Cable** – Check cable for kinking and fraying. The best method is to take an oily or grease-filled rag and rub along the cable. The rag may hit broken strands of cable and snag. If the snags appear approximately ten times in a ten (10) foot length of cable, the cable should be replaced. This procedure not only checks the cable, but lubricates it for longer wear. Also, make certain the cable wraps evenly on the drum. Refer to the instructions in this manual for correcting an uneven cable wrap.

Note – The grinding noise of the hoist cable against the strands already wrapped on the winch-hoisting drum is normal with this hoist system.

8. **Inspect All Pulleys** – It is advisable to check all pulleys, checking the sheave bearing and shaft for excessive wear, replacing if necessary. Lubricate bearing at assembly.
9. **Safety Straps** – Check Saf-Strap to make sure it retracts properly into the housing unit. Also inspect strap tie-off on the equipment, ensuring it is securely attached, and all bolts. It is recommended that a safety lock be used on any backstop which folds over a spectator bleacher. Consult factory for details if this unit was not included on the original installation.
10. **Structure Tubes and braces** - Ensure all support tubes are free of bends, dents, or other damage. Inspect structure welds for any sign of abnormal wear.

WALLMOUNT BACKSTOP 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.

[illegible]

Please attach the checklist of each equipment inspected

WALL MOUNTED BASKETBALL BACKSTOP INSPECTION 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 BACKSTOP											
WALL ANCHORS											
#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12
CHAIN SUPPORTS											
#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12
BACKSTOP FITTINGS											
#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12
HEIGHT ADJUSTER (IF APPLICABLE)											
#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12
TELESCOPING/SLIDING BRACES (IF APPLICABLE)											
#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12
WINCH (IF APPLICABLE)											
#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12
CABLE (219 ONLY)											
#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12
PULLEYS (219 ONLY)											
#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12
SAFTEY STRAPS (219 ONLY)											
#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12
STRUCTURE TUBES AND BRACES											
#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12

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.

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

TOOLS and EQUIPMENT REQUIRED

To Be Provided by the installer:

- ☐ Scissor lift or scaffolding.
- ☐ Plumb bob with 12' Gammon Reel ® or laser plumbing device
- ☐ Tape Measure (100' preferable for measuring court lengths)
- ☐ Pencil
- ☐ Speed Square
- ☐ Drill
- ☐ Drill Bits (varies per installation)
 - 3/8" Dia. for Hammer Hit Rivet on Extension Tubes
 - 13/32" Dia. for 3/8" carriage bolts
 - 17/32" Dia. for Wood Pads
 - 9/16" Dia. x 18" Lg. for Thru-Bolting 12" Walls
 - 11/16" Dia. x 18" Lg. for Typical 1/2" Dia. Adhesive Anchors
 - 1" Dia. x 18" Lg. for Typical 3/4" Dia. Adhesive Anchors
- ☐ Wire Brush (for cleaning out 9/16" dia. bored holes)
- ☐ Air compressor
- ☐ Hammer (for rivet application)
- ☐ Level
- ☐ Plumb bob with 12' Gammon Reel ® or laser plumbing device
- ☐ Sockets (1/2" and 3/4")
- ☐ Open or box wrench (1/2" and 3/4")

OPTIONAL EQUIPMENT



Bolt Cutter



Vice-Grips for a variety of special



ELEC00201000 - "Cheater" box for powering of equipment during installation

STRUCTURAL AND ANCHORING REQUIREMENTS NECESSARY FOR A WALL MOUNTED BACKSTOP

Long considered the most utilitarian of basketball backstop and, allegedly, easiest to install, the Wall Mounted Backstop is not always appropriate for the given building parameters. Safety continues to be Porter's primary objective with the installation of this product. The evaluation of building conditions, along with the methodology of anchoring, is paramount. **The assessment of whether or not the wall is adequate for this type of installation is the responsibility of the architect or structural engineer. If an architect is not presently involved with the project, it is strongly recommended the general contractor secure an architect for this purpose.**

Before choosing a Wall Mounted style backstop, it is absolutely critical the structural integrity of the wall, itself, be appropriate for the load and impact which will be applied at the attachment points. Not only does the static load of the backstop need to be accounted for, but the dynamic loads introduced during the course of play - such as "slam-dunking" - must be evaluated by the architect or structural engineer. The extension of the backboard out from the wall creates a lever arm on the wall anchors, increasing the pull-out force on the anchors as the backstop extension increases. Refer to the load diagrams in this manual for general parameters in loading at the backstop attachment points. For specific loads and custom applications, please contact the factory.

Wall Structure Requirements

Ideally, a bearing wall comprised of concrete masonry units (CMU) is well suited for a wall mounted backstop application. Tilt-up concrete panels may also be utilized for wall mounted backstops, provided that the recommendation of the architect/structural engineer approves all building attachments.

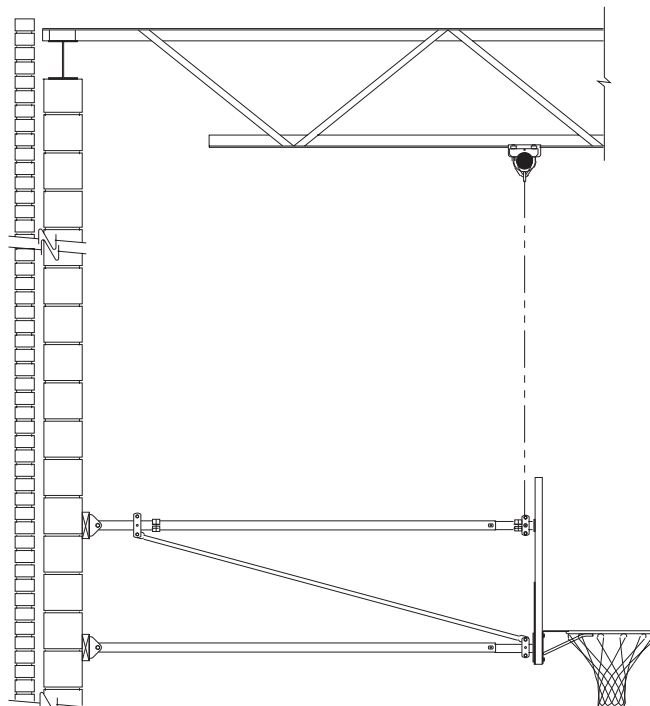
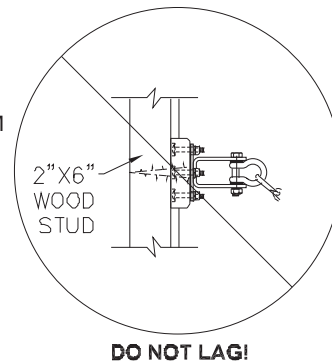
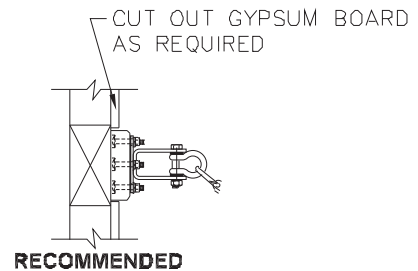
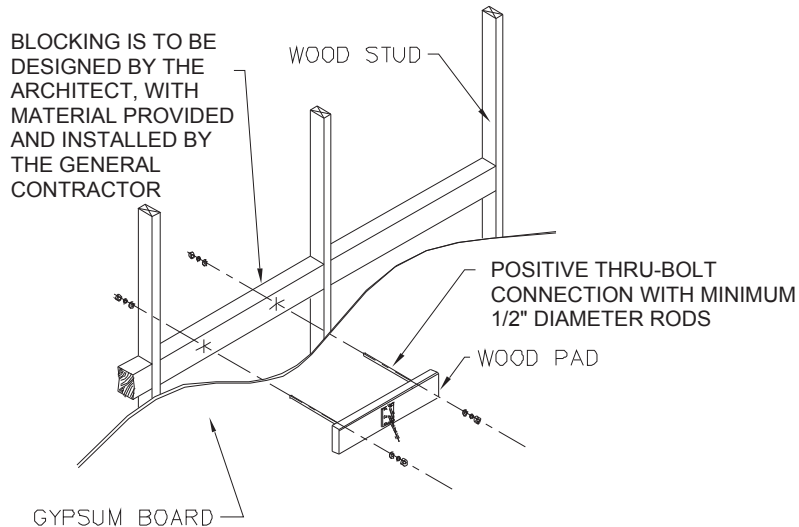
Wood and metal stud construction, however, pose an integrity issue for this style of backstop. Even if the wood stud construction is considered a bearing wall, this type of wall is not well suited for the weight of a backstop. Variables such as the overall length of stud from sole plate to top plate, locations of ties (if any) to the outside wall structure, interior wall blocking, and inside face material all contribute to the feasibility of this type of attachment. It is recommended an overhead supported unit or portable backstop is specified in lieu of a wall mounted backstop with this type of construction. The load of the backstop, even without "slam-dunking," may cause the studs (at the anchor points) to "belly out," not only compromising the integrity of the wall, but causing interior wall cracks on finishes such as gypsum wallboard tape joints. Should the architect approve the wall-mounted backstop style for a stud wall with gypsum face, it is recommended the support wood pads be secured directly to the studs and blocking. Mounting the wood pad over gypsum board will compress the face of the board, and not yield a secure attachment. Blocking of the wall for this type of attachment is mandatory.

Porter does not furnish either the blocking material, or design requirements of the blocking. Due to the myriad variables in construction of the supporting wall, the architect/structural engineer must make the blocking recommendation. Please note, however, regardless of blocking, use of wood lag screws as a method of anchoring is prohibited. This must be a positive connection. Please refer to Detail "A".

STRUCTURAL AND ANCHORING REQUIREMENTS NECESSARY FOR A WALL MOUNTED BACKSTOP

DETAIL "A"

PORTER DOES NOT RECOMMEND A WALL-MOUNTED STYLE BACKSTOP TO STUD WALL CONSTRUCTION WITHOUT A SPECIFIC SUPPORT BLOCKING DETAIL BY THE PROJECT ARCHITECT.



CHAIN ATTACHMENT TO OVERHEAD STRUCTURE
WHEN POSSIBLE IS PREFERRED

METHODS OF ANCHORING

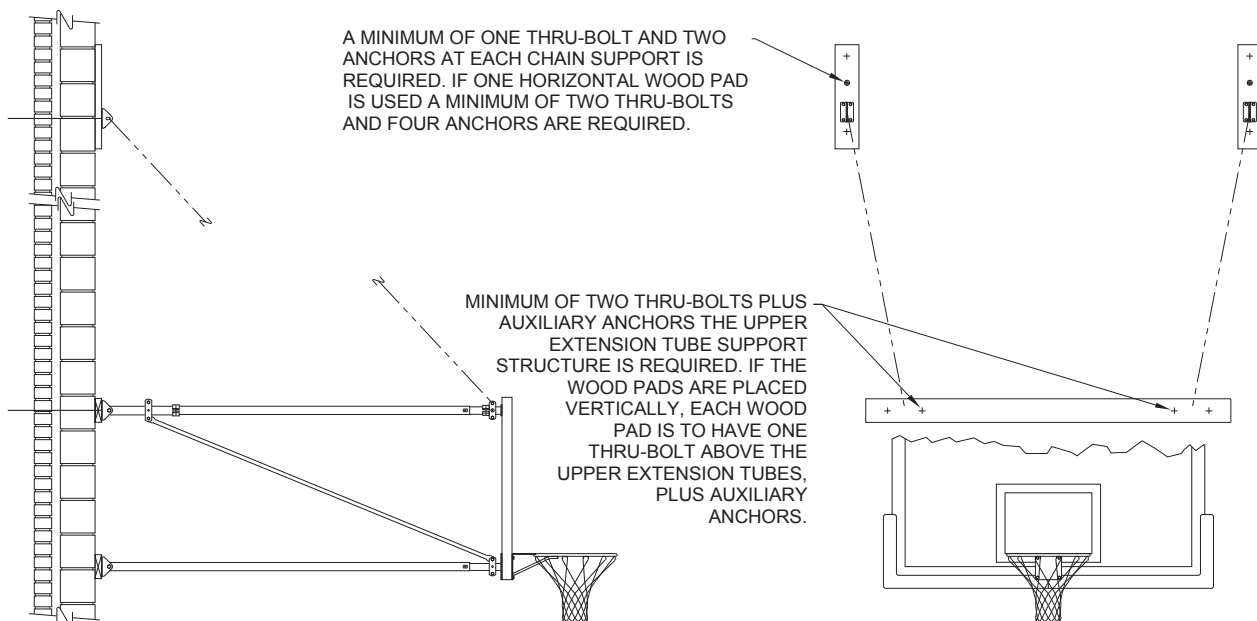
WARNING

The installer must match the correct type of wall fastener with composite material the wall is constructed of for a safe and permanent connection. Failure to do so could result in a catastrophic failure, causing serious injury, or even death.

THRU-BOLTING

The only approved Porter methodology of attachment of Wall Mounted Backstops is to thru-bolt a minimum of two anchor points at the backstop extension structure, and a minimum of two thru-bolts at the chain support (should your backstop be provided with such), in conjunction with the appropriate anchors, as indicated on your project specific installation drawings. Detail "B" is for illustration only, and may not reflect your projects' anchoring requirements. Do not drill less than 9" from any door or window opening, and never attach to the top course of a block wall. **Please also refer to the General Anchoring layout examples in this manual.**

DETAIL "B"



METHODS OF ANCHORING

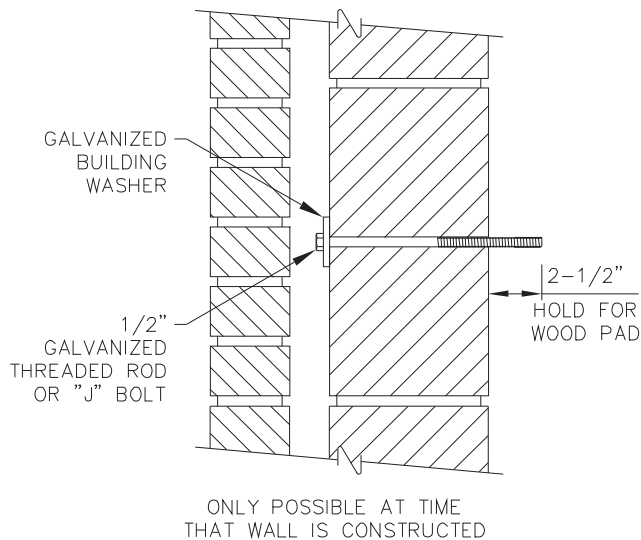
Penetration of the buildings exterior must be made with weather-treated hardware such as galvanized threaded rods, building washers and hardware. Care must be taken when drilling through the block/brick, so as not to spall the outside surface. Use of the hammer option on drills is not permitted for this reason.

The Ideal Anchoring Methodology

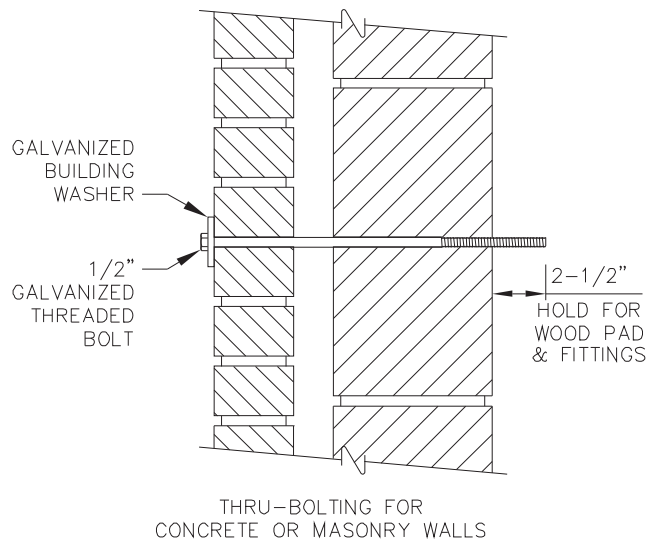
The ideal anchoring methodology is at the time of wall construction, utilizing 1/2" diameter (galvanized) "J" bolts of 1/2" diameter rods cast in place as shown on the left side detail in Detail "C," which negates the penetration of the outside wall. Porter can provide such weather-treated hardware for the general contractor to pre-cast in the wall at the time of construction. Simply order Part no. 00100000 for the hardware, and specify the backstop model number with extension, type of backboard, and whether or not the optional height adjuster is specified, for a planograph detailing the anchor locations.

DETAIL "C"

DURING CONSTRUCTION



EXISTING WALL (THRU-BOLT)



NOTE - ALL HARDWARE FOR ATTACHING WOOD PADS TO WALL ARE BY OTHERS. VERIFY MATERIAL AND THICKNESS OF WALL, AND USE APPROPRIATE HARDWARE/ANCHOR COMBINATION (MINIMUM 1/2" DIA. HARDWARE). FOR AN OPTIONAL THROUGH-BOLT HARDWARE PACKAGE, ORDER PART No. 00100000.

METHODS OF ANCHORING

The Remaining Anchorage to Augment Thru-Bolting or Pre-Cast Rods

Should 1/2" diameter rods or "J" bolts not be pre-cast in place, but thru-bolting is available in the locations shown in Detail "B," the remaining anchors must be a minimum of 1/2" diameter, with sufficient embedment length (see general anchoring guidelines), and appropriate for the composite material of the wall. Double expansion, four-way expansion, wedge, and fiber plug anchors, etc., may or may not be suitable for your application. Follow the manufacturer's instructions for the suitable type of anchor, with associated loading application for your installation. **Porter prohibits the use of toggles, and also expressly prohibits anchoring through only one wall of hollow block.**

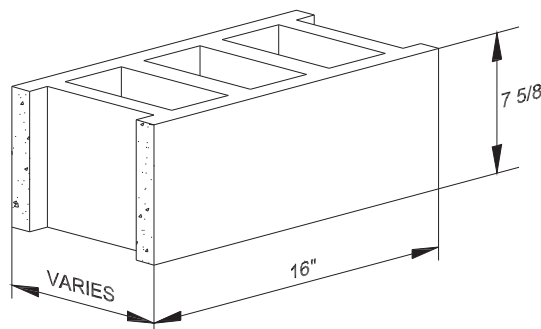
CMU and Concrete Wall Anchoring Guidelines

Concrete masonry units (CMU), commonly called concrete block, are available in a variety of shapes and sizes. Acoustical CMU, which literally has exposed cavities on the inside face, can pose additional attachment restrictions on the installer. Ideally, standard CMU should be utilized at the backstop attachment location, with solid grout fill. If this is not the case, contact the architect or structural engineer of record. It may be necessary for fasteners to be located at the mortar lines only.

Holding power of the fasteners will also be governed by the cure time of the wall. If you are installing in a new installation, the anchoring of fasteners is significantly weaker when made in green concrete. Do not anchor in any concrete which has cured for less than seven days. Generally, the load rating by anchor manufacturers is provided in concrete that has cured for approximately 28 days. If anchors are installed in green concrete, the strength of the anchor is considered diminished, unless the loading of the anchors takes place after the cure time of the concrete.

When drilling concrete masonry units with hollow cavities, restraint must be exercised to avoid spalling on the inside wall of the cavity. This will significantly reduce the integrity of the CMU, leading to diminished holding capacity of the anchor. Drilling CMU is to be accomplished by using rotation drilling only, with absolutely no hammering action.

TYPICAL CMU



TYPICAL CMU WITH MORTAR JOINT, WITH DEPTHS VARYING 6" TO 12"

GENERAL ANCHORING GUIDELINES

The most critical factors in choosing the auxiliary anchors to be used in conjunction with the thru-bolt or cast-in-place anchors is the wall material matched with the appropriate style and size of anchor, with the size referring to both diameter and embedment depth. The following are general guidelines only, and do not necessarily constitute what is correct for your specific project.

The embedment depth of the anchor is defined as the face of the wall (not including the wood pad) to the bottom of the anchor. Refer to the anchor manufacturer's specifications for the correct embedment depth for the approximate load and appropriate safety factor on the anchor, and thickness of the wall to which it is being attached. A general rule for embedment depth is the wall thickness (for concrete tilt-up panels or concrete block with solid grout fill) should be 125% of the anchor embedment. For example, on a 5" concrete tilt-up panel, the embedment can be up to 4" deep. Increasing the embedment will also increase the occurrence of the concrete panel to spall at the anchor location, reducing the effectiveness of the anchor.

The edge distance of the anchor to an opening (window, doorway, top of wall, etc.) is also a critical factor. Again, refer to the anchor manufacturer for minimum edge distance per type of anchor and embedment depth chosen. A general guideline on backstop installations is to maintain a minimum 9" edge distance.

Clearance holes for anchors will be provided by the manufacturer. A general guideline for anchors under 1" is diameter is to drill the hole 1/16" oversized from the anchor diameter. Wire brush the hole, and clean out the compressed air before inserting the anchor.

Application examples that follow are advisory only. Porter is not responsible for claims or damage arising from not properly selecting and installing anchors for your specific project. **These anchors must be used in conjunction with a positive thru-bolt application, as previously described.**

Concrete or Solid Fill-Block Wall: Wedge-type anchor, minimum 1/2" diameter. Double or four-way expansion shield anchors are suitable for this application.

Mortar Joint (or concrete) Wall: Lag shield anchors. When installing in a mortar joint, make certain the anchor expands against the block, and not to the open cell.

Adhesive Anchors for either Hollow CMU Blocks or Concrete: The hollow CMU will require a different adhesive anchor than one for a concrete wall. These anchors also have a limited shelf life, so be certain to check the expiration date.

WHEN YOU ABSOLUTELY CANNOT THRU-BOLT

Porter's only approved anchoring methodology is a positive connection, i.e. thru-bolting a wall, augmented with a minimum 1/2" diameter anchors with the proper embed length per the anchor manufacturer, or chain support secured to the overhead structure. Should such a condition not be available (thru-bolting), it is recommended the architect or structural engineer be contacted for an anchoring specification. The project specific installation drawings indicate the attachment locations for your particular backstop. Detail "B" gives the recommendation for thru-bolting locations, with the remaining attachment points approved as anchors only.

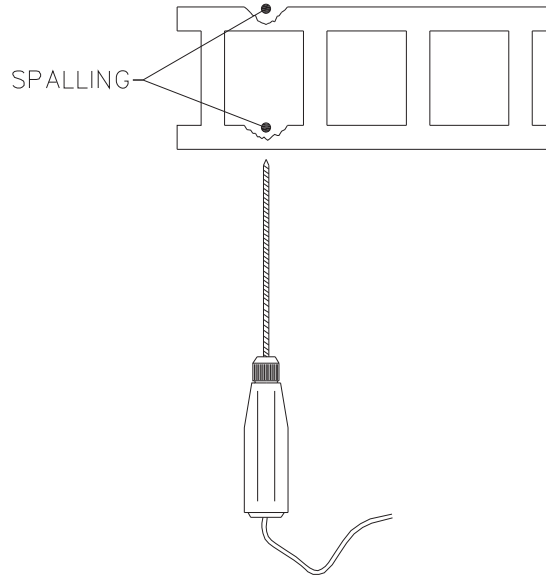
There is a multitude of new anchor technology being brought to market each year, but none are substitute for a positive connection. Although newer and heavy-duty toggle bolts are now available, **Porter will not allow the use of toggles!** The diameter and strength of the toggle pin, plus the fact the toggle is expanded (typically) in the cavity of the CMU, yields the toggle application suspect, at best. Should there be any spalling of the CMU cavity wall, the wall thickness and strength of that wall are significantly diminished.

An alternative to thru-bolting sometimes specified by architects is the use of adhesive anchors. It is imperative when selecting and installing an adhesive anchoring system, the anchor manufacturer's instructions are explicitly followed. Failure to do so will provide an unsafe installation. Following is only a brief, general guideline of installing adhesive anchors. Each manufacturer of adhesive anchors provides detailed selection and installation instructions. Companies such as Hilti® provide technical assistance and information regarding these products.

ADHESIVE ANCHOR INSTALLATION GUIDELINES **(Follow Anchor Manufacturer's Specific Instructions)**

- Wear safety glasses, gloves, and have a rag ready to wipe off excess adhesive.
- Follow the manufacturer's edge distance guidelines before drilling holes near windows, doors, etc.
- For hollow CMU, Porter requires both walls of the block to be drilled, utilizing the integrity of both walls for anchoring.
- Select the proper size bit per the manufacturer's instructions. Caution: Porter recommends a minimum 1/2" diameter anchor. The depth of the block may dictate a 3/4" diameter anchor per the adhesive anchor supplier. Typically, an 8" deep block requires an 8" screen and 1/2" diameter rod, while a 12" deep block requires a 13" screen and a 3/4" diameter rod.
- Do not use a hammer drill (to reduce the risk of spalling the CMU walls).

WHEN YOU ABSOLUTELY CANNOT THRU-BOLT

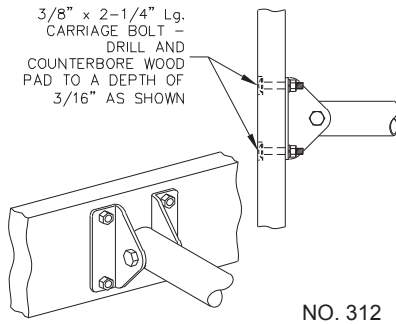


- It is imperative to clean the hole. Use a brush to remove loose material, and clean out the hole with compressed air.
- Insert the manufacturer's specified screen through both walls of the CMU
- Following the adhesive anchor installation instructions, load the resin and hardener into the mixing dispenser with nozzle. Typically, two or three trigger pulls of the adhesive are to be discarded. This assures properly mixed resin and hardener.
- Fill the screen completely, working from back to front.
- Insert the diameter specific threaded rod. Be certain the rod is free of any oil, and is clean. The rod must be twisted slightly as it is inserted, to ensure proper adhesion to the resin.
- Adjust the position of the rod during the gel time. Make certain the rod is inserted the full depth of the screen, and the rod protrudes out from the wall to accept the wood pad thickness, fitting, plus accepting a flatwasher, lockwasher and hex nut (approximately 2 -1/2").
- Do not load fastener until the cure time has elapsed. The excess threaded rod length must be trimmed after installation of the wood pad.

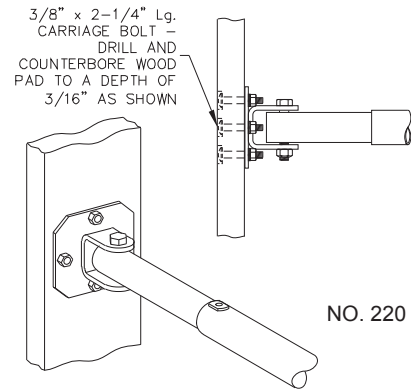
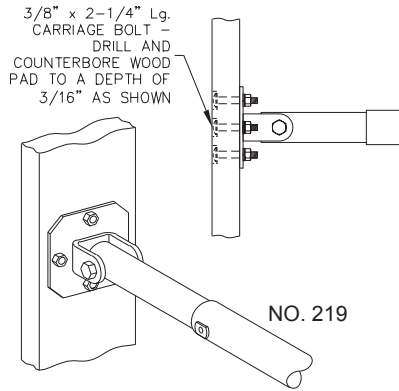
By utilizing both adhesive (or epoxy) anchors with standard mechanical anchors, the entire backstop can be installed and supported from the mechanical anchors, allowing the epoxy to cure before fastening the flatwasher, lockwasher and nut at the adhesive anchor locations. This can be delegated to the end of the installation, ensuring the proper cure time before loading these anchors, and not losing valuable installation time.

ANCHORING OF WALL MOUNTED BACKSTOPS

EXTENSION PIPE ANCHOR FOR STATIONARY BACKSTOPS



EXTENSION PIPE HINGE ANCHOR FOR FOLDING BACKSTOPS



NOTE: HINGES COME IN TWO SIZES. NO. 220 SHOULD HAVE THE LONG HINGES ON THE OPPOSITE SIDE OF THE DIRECTION OF FOLD. NO. 219 SHOULD HAVE THE LONG HINGES ON THE BOTTOM. (SHORT HINGES SHOWN IN DETAIL)

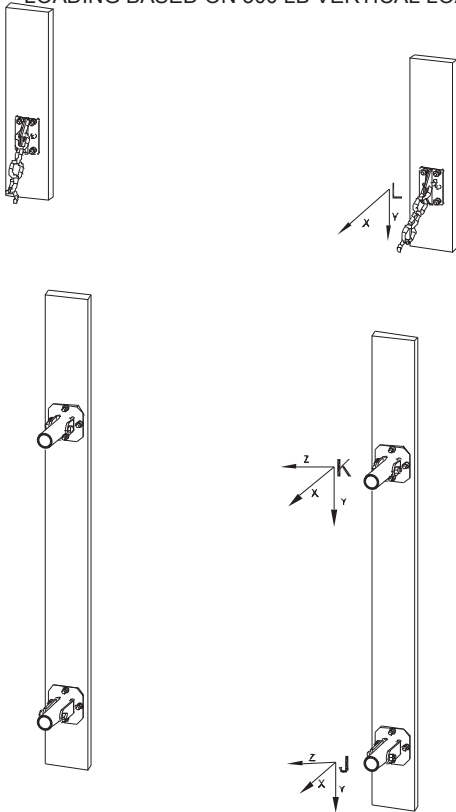
POINTS TO REMEMBER

1. THIS IS A PERMANENT STRUCTURE.
2. BACKSTOP MUST BE ANCHORED TO A VERTICAL WALL CAPABLE OF SUPPORT OF THE BACKBOARD AT THE EXTENSION REQUIRED.
3. THRU-BOLTING OF AT LEAST THE TOP TWO WALL LOCATIONS IS MANDATORY ON ALL INSTALLATIONS
4. ON NON-FOLDING BACKSTOPS (312's), THE DIAGONAL SUPPORT CHAINS MAY BE SECURED TO THE ROOF FRAMING IF NECESSARY TO REDUCE WALL LOADING. (CONTACT THE FACTORY FOR ADDITIONAL HARDWARE REQUIREMENTS).
5. ON STATIONARY BACKSTOPS (312's), OFFSETS CAN BE COMPENSATED FOR BY LENGTH OF EXTENSION PIPES (SPECIFY).
6. ON FOLDING BACKSTOPS (219's AND 220's), ATTACHMENTS AT WALL MUST BE IN ALIGNMENT (NO OFFSETS OR PROJECTIONS). IF OFFSETS EXIST, BLOCKING AND/OR ADDITIONAL STRUCTURAL SUPPORT MUST BE SUPPLIED (BY OTHERS) TO COMPENSATE FOR THE OFFSET.

219 LOADING AND ANCHORING

LOADING

LOADING BASED ON 300 LB VERTICAL LOAD, 200 LB SIDE LOAD AND 200 LB HORIZONTAL LOAD AT RIM



FACE OF BACKBOARD TO WALL AND BACKBOARD STYLE	J _x	J _y	J _z	K _x	K _y	K _z	L _x	L _y
UP TO 6'-0" RECTANGULAR	-402 LBS	42 LBS	92 LBS	381 LBS	163 LBS	8 LBS	415 LBS	405 LBS
UP TO 6'-0" FAN	-786 LBS	38 LBS	110 LBS	311 LBS	187 LBS	-9 LBS	312 LBS	379 LBS
UP TO 6'-0" WITH HEIGHT ADJUSTER	-624 LBS	29 LBS	92 LBS	509 LBS	125 LBS	8 LBS	507 LBS	418 LBS
UP TO 9'-0" RECTANGULAR	-532 LBS	48 LBS	92 LBS	343 LBS	124 LBS	8 LBS	372 LBS	349 LBS
UP TO 9'-0" FAN	-1065 LBS	45 LBS	110 LBS	292 LBS	138 LBS	-9 LBS	276 LBS	332 LBS
UP TO 9'-0" WITH HEIGHT ADJUSTER	-834 LBS	36 LBS	92 LBS	472 LBS	96 LBS	8 LBS	460 LBS	354 LBS
UP TO 12'-0" RECTANGULAR	-687 LBS	64 LBS	92 LBS	326 LBS	119 LBS	8 LBS	361 LBS	333 LBS
UP TO 12'-0" FAN	-1382 LBS	59 LBS	110 LBS	289 LBS	127 LBS	-9 LBS	267 LBS	319 LBS
UP TO 12'-0" WITH HEIGHT ADJUSTER	-1055 LBS	47 LBS	92 LBS	460 LBS	90 LBS	8 LBS	444 LBS	331 LBS

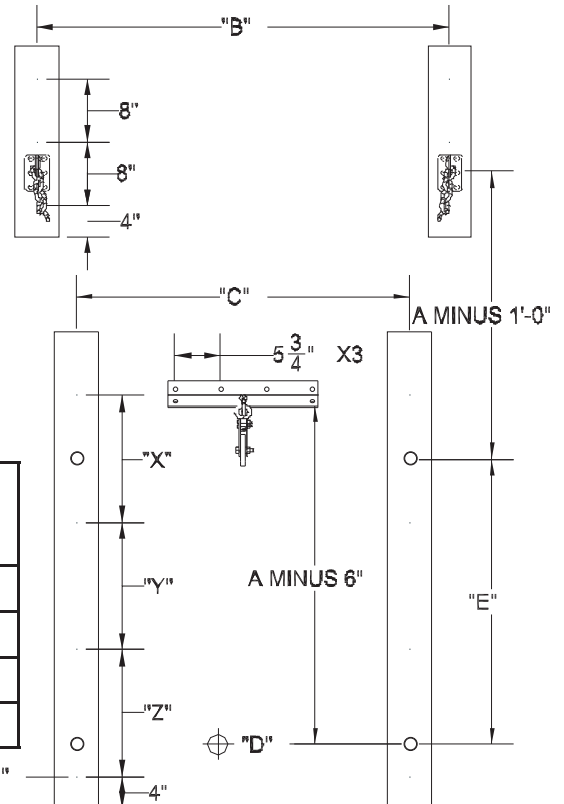
NOTE: HEAVIEST BACKBOARD OF EACH STYLE SHOWN, SOME BACKBOARDS MAY REDUCE LOADS.

SUGGESTED ANCHORING LOCATIONS

SEE W-219-10 OR W-219-12 FOR PLACEMENT DETAILS

"A" FACE OF BACKBOARD TO WALL	"B" CHAIN HANGER DISTANCE (RECTANGULAR NO HEIGHT ADJUSTER)	"B" CHAIN HANGER DISTANCE (FAN OR ANY HEIGHT ADJUSTER)
4'-0" to 5'-0"	6'-0" (1.83m)	4'-0" (1.22m)
5'-0-1/8" to 6'-0"	6'-6" (1.98m)	4'-6" (1.37m)
6'-0-1/8" to 7'-0"	7'-0" (2.14m)	5'-0" (1.53m)
7'-0-1/8" to 8'-0"	7'-6" (2.28m)	5'-6" (1.67m)
8'-0-1/8" to 9'-0"	8'-0" (2.77m)	6'-0" (1.83m)
9'-0-1/8" to 10'-0"	8'-6" (2.59m)	6'-6" (1.98m)
10'-0-1/8" to 11'-0"	9'-6" (2.9m)	7'-6" (2.3m)
11'-0-1/8" to 12'-0"	9'-6" (2.9m)	7'-6" (2.3m)

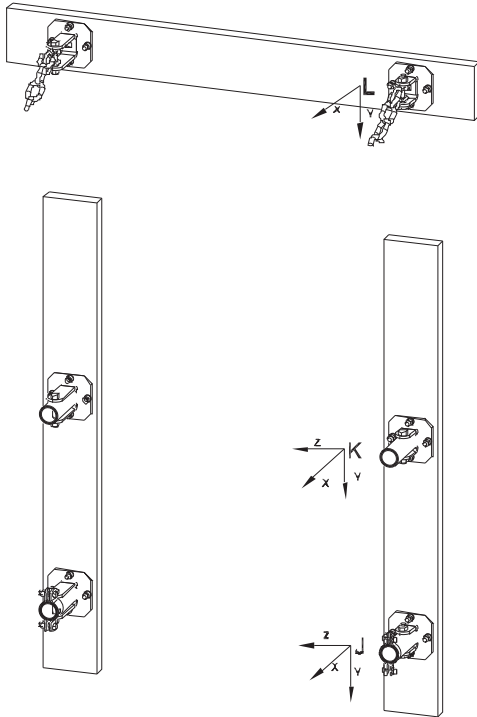
BACKBOARD STYLE	"X"	"Y"	"Z"	"H"	"C" PIPE SUPPORT DISTANCE	"D" CENTERLINE HINGE TO FLOOR	"E" VERTICAL PIPE SUPPORT DISTANCE
RECTANGULAR	16" (0.41m)	16" (0.41m)	16" (0.41m)	9'-5" (2.87m)	5'-6" (1.68m)	9'-9" (2.97m)	3'-0" (0.92m)
FAN	8" (0.203m)	16" (0.41m)	16" (0.41m)	9'-8" (2.95m)	2'-11" (0.89m)	10'-2" (3.10m)	1'-8" (0.51m)
RECTANGULAR HEIGHT ADJUSTER	16" (0.41m)	16" (0.41m)	24" (0.61m)	9'-4" (2.8m)	2'-11" (0.89m)	9'-8 1/2" (2.96m)	3'-8 1/2" (1.12m)
FAN HEIGHT ADJUSTER	16" (0.41m)	16" (0.41m)	24" (0.61m)	9'-4" (2.8m)	2'-11" (0.89m)	9'-8" (2.94m)	3'-8 1/2" (1.12m)



220 LOADING AND ANCHORING

LOADING

LOADING BASED ON 300 LB VERTICAL LOAD, 200 LB SIDE LOAD AND 200 LB HORIZONTAL LOAD AT RIM



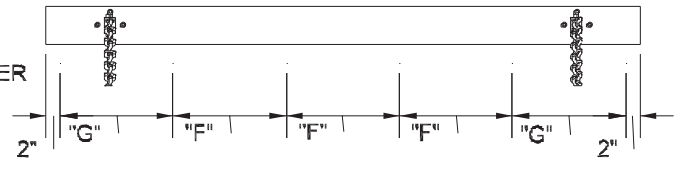
FACE OF BACKBOARD TO WALL AND BACKBOARD STYLE	J _x	J _y	J _z	K _x	K _y	K _z	L _x	L _y
UP TO 6'-0" RECTANGULAR	-387 LBS	27 LBS	92 LBS	390 LBS	151 LBS	8 LBS	406 LBS	393 LBS
UP TO 6'-0" FAN	-765 LBS	27 LBS	110 LBS	347 LBS	170 LBS	-9 LBS	334 LBS	376 LBS
UP TO 6'-0" WITH HEIGHT ADJUSTER	-616 LBS	20 LBS	92 LBS	514 LBS	117 LBS	8 LBS	502 LBS	410 LBS
UP TO 9'-0" RECTANGULAR	-511 LBS	34 LBS	92 LBS	351 LBS	112 LBS	8 LBS	364 LBS	339 LBS
UP TO 9'-0" FAN	-1035 LBS	34 LBS	110 LBS	325 LBS	123 LBS	-9 LBS	297 LBS	328 LBS
UP TO 9'-0" WITH HEIGHT ADJUSTER	-822 LBS	26 LBS	92 LBS	477 LBS	88 LBS	8 LBS	455 LBS	347 LBS
UP TO 12'-0" RECTANGULAR	-651 LBS	45 LBS	92 LBS	336 LBS	102 LBS	8 LBS	351 LBS	319 LBS
UP TO 12'-0" FAN	-1327 LBS	44 LBS	110 LBS	323 LBS	109 LBS	-9 LBS	285 LBS	311 LBS
UP TO 12'-0" WITH HEIGHT ADJUSTER	-1042 LBS	39 LBS	92 LBS	465 LBS	83 LBS	8 LBS	439 LBS	325 LBS

NOTE: HEAVIEST BACKBOARD OF EACH STYLE SHOWN, SOME BACKBOARDS MAY REDUCE LOADS.

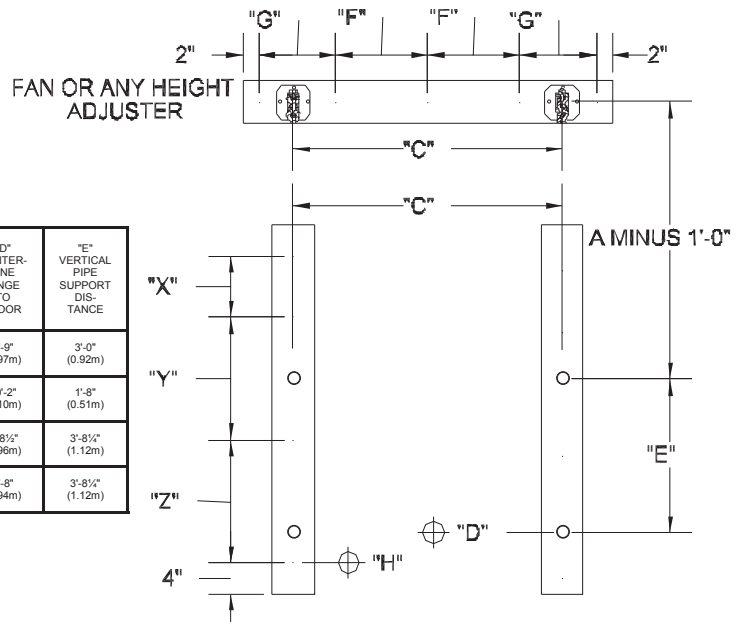
SUGGESTED ANCHORING LOCATIONS

SEE W-220-10 OR W-220-12 FOR PLACEMENT DETAILS

RECTANGULAR
WITH NO HEIGHT ADJUSTER



"A" IS FACE OF BACKBOARD TO WALL

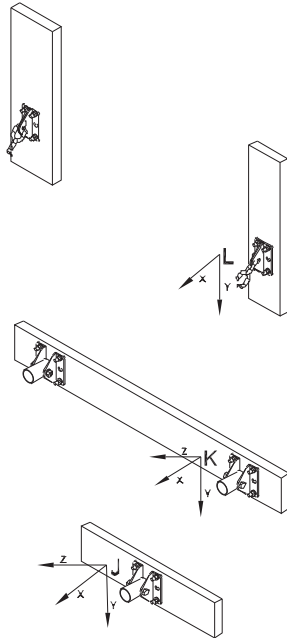


BACKBOARD STYLE	"X"	"Y"	"Z"	"F"	"G"	"H"	"C" PIPE SUPPORT DISTANCE	"D" CENTER-LINE HINGE TO FLOOR	"E" VERTICAL PIPE SUPPORT DISTANCE
RECTANGULAR	16" (0.41m)	16" (0.41m)	16" (0.41m)	16" (0.41m)	16" (0.41m)	9'-5" (2.87m)	5'-6" (1.68m)	9'-9" (2.97m)	3'-0" (0.92m)
FAN	8" (0.203m)	16" (0.41m)	16" (0.41m)	12" (0.31m)	10" (0.25m)	9'-8" (2.95m)	2'-11" (0.89m)	10'-2" (3.10m)	1'-8" (0.51m)
RECTANGULAR HEIGHT ADJUSTER	16" (0.41m)	16" (0.41m)	24" (0.61m)	12" (0.31m)	10" (0.25m)	9'-4" (2.8m)	2'-11" (0.89m)	9'-8 1/2" (2.96m)	3'-8 1/2" (1.12m)
FAN HEIGHT ADJUSTER	16" (0.41m)	16" (0.41m)	24" (0.61m)	12" (0.31m)	10" (0.25m)	9'-4" (2.8m)	2'-11" (0.89m)	9'-8" (2.94m)	3'-8 1/2" (1.12m)

312 LOADING AND ANCHORING

LOADING

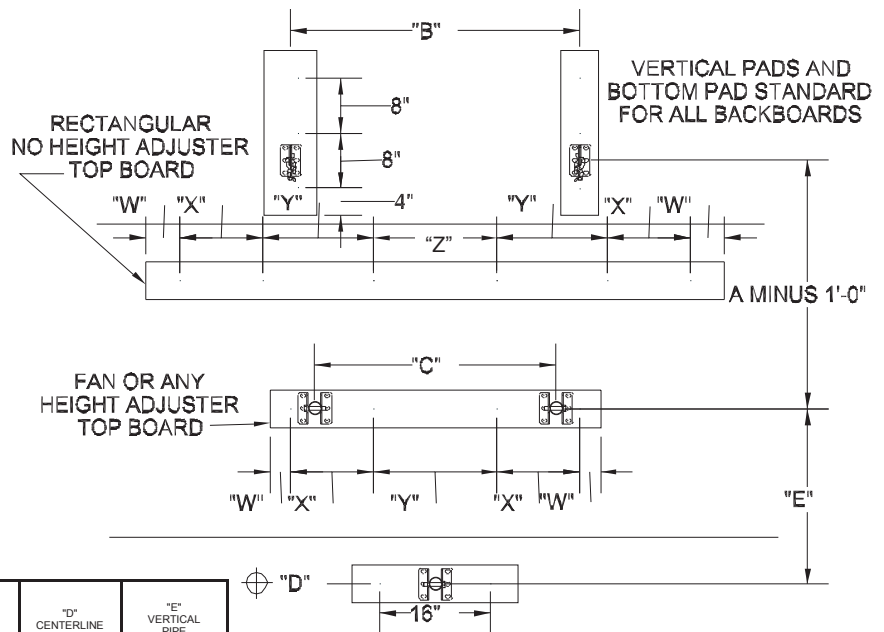
LOADING BASED ON 300 LB VERTICAL LOAD, 200 LB SIDE LOAD AND 200 LB HORIZONTAL LOAD AT RIM



FACE OF BACKBOARD TO WALL AND BACKBOARD STYLE	J _x	J _y	J _z	K _x	K _y	K _z	L _x	L _y
UP TO 3'-0" RECTANGULAR	-974 LBS	209 LBS	183 LBS	-286 LBS	209 LBS	8 LBS	—	—
UP TO 3'-0" FAN	-1120 LBS	169 LBS	173 LBS	-572 LBS	169 LBS	14 LBS	—	—
UP TO 3'-0" WITH HEIGHT ADJUSTER	-932 LBS	247 LBS	184 LBS	-376 LBS	247 LBS	8 LBS	—	—
UP TO 6'-0" RECTANGULAR	-499 LBS	48 LBS	183 LBS	636 LBS	-151 LBS	8 LBS	404 LBS	381 LBS
UP TO 6'-0" FAN	-717 LBS	49 LBS	173 LBS	765 LBS	-138 LBS	14 LBS	333 LBS	365 LBS
UP TO 6'-0" WITH HEIGHT ADJUSTER	-720 LBS	34 LBS	184 LBS	964 LBS	-173 LBS	8 LBS	484 LBS	394 LBS
UP TO 9'-0" RECTANGULAR	-639 LBS	59 LBS	183 LBS	689 LBS	-84 LBS	8 LBS	361 LBS	329 LBS
UP TO 9'-0" FAN	-955 LBS	61 LBS	173 LBS	901 LBS	-75 LBS	14 LBS	295 LBS	320 LBS
UP TO 9'-0" WITH HEIGHT ADJUSTER	-939 LBS	47 LBS	184 LBS	1102 LBS	-99 LBS	8 LBS	350 LBS	315 LBS
UP TO 12'-0" RECTANGULAR	-829 LBS	89 LBS	183 LBS	762 LBS	-40 LBS	8 LBS	350 LBS	315 LBS
UP TO 12'-0" FAN	-1244 LBS	85 LBS	173 LBS	1055 LBS	-35 LBS	14 LBS	284 LBS	306 LBS
UP TO 12'-0" WITH HEIGHT ADJUSTER	-1188 LBS	72 LBS	184 LBS	1262 LBS	-55 LBS	8 LBS	423 LBS	318 LBS

NOTE: HEAVIEST BACKBOARD OF EACH STYLE SHOWN, SOME BACKBOARDS MAY REDUCE LOADS.

"A" FACE OF BACKBOARD TO WALL	"B" CHAIN HANGER DISTANCE (RECTANGULAR NO HEIGHT ADJUSTER)	"B" CHAIN HANGER DISTANCE (FAN OR ANY HEIGHT ADJUSTER)
6' to 3'-6"	NO CHAIN	—
3' 6-1/8" to 4'-0"	5'-6" (1.68m)	3'-6" (1.07m)
4' 0-1/8" to 5'-0"	6'-0" (1.83m)	4'-0" (1.22m)
5' 0-1/8" to 6'-0"	6'-6" (1.98m)	4'-6" (1.37m)
6' 0-1/8" to 7'-0"	7'-0" (2.14m)	5'-0" (1.53m)
7' 0-1/8" to 8'-0"	7'-6" (2.28m)	5'-6" (1.67m)
8' 0-1/8" to 9'-0"	8'-0" (2.77m)	6'-0" (1.83m)
9' 0-1/8" to 10'-0"	8'-6" (2.59m)	6'-6" (1.98m)
10' 0-1/8" to 11'-0"	9'-6" (2.9m)	7'-6" (2.3m)
11' 0-1/8" to 12'-0"	9'-6" (2.9m)	7'-6" (2.3m)



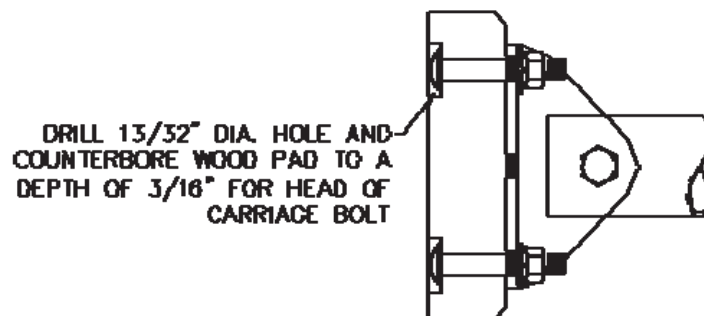
BACKBOARD STYLE	"W"	"X"	"Y"	"Z"	"C" PIPE SUPPORT DISTANCE	"D" CENTERLINE HINGE TO FLOOR	"E" VERTICAL PIPE SUPPORT DISTANCE
RECTANGULAR	5" (0.127m)	12" (0.30m)	16" (0.41m)	18" (0.46m)	5'-6" (1.68m)	9'-9" (2.97m)	3'-0" (0.92m)
FAN	3" (0.076m)	12" (0.30m)	—	18" (0.46m)	2'-11" (0.89m)	9'-8 1/2" (2.96m)	2'-1 1/2" (0.65m)
RECTANGULAR HEIGHT ADJUSTER	3" (0.076m)	12" (0.30m)	—	18" (0.46m)	2'-11" (0.89m)	9'-8 1/2" (2.96m)	3'-8 1/4" (1.12m)
FAN HEIGHT ADJUSTER	3" (0.076m)	12" (0.30m)	—	18" (0.46m)	2'-11" (0.89m)	9'-8" (2.94m)	3'-8 1/4" (1.12m)

GENERAL STEP-BY-STEP GUIDELINES FOR INSTALLING A PORTER WALL-MOUNTED BACKSTOP

1. Location of the equipment is critical. On new construction, verify the backstop location and extension from wall with the general contractor. Verification with the most recent set of architectural plans at the job trailer is mandatory.
2. If working over an unfinished floor, verify the thickness of the floor before starting. The floor thickness can vary from 1/8" to 4"!
3. With either a laser or plumb bob, mark the centerline of the backstop on the wall. From this line, all anchor and thru-bolt points can be extrapolated.
4. Mark all anchor locations on the wall per the project specific installation print. Note on the vertical wood pad configuration, the spacing of anchors is dimensioned in multiples of 8". This is to correspond with the horizontal masonry lines. The first anchor location dimensioned from the finished floor can be adjusted slightly to match the closest masonry line, if masonry lines are to be utilized for anchoring.
5. Before drilling, be certain the chain support pad is to be thru-bolted to the wall at a minimum of two places, or the chains are to be secured to the overhead support structure with a positive connection (no lags). Each remaining vertical wood pad support is to have no less than one thru-bolt or, if mounted horizontally, no less than two thru-bolts.
6. Follow the anchor supplier's recommendation for drill size and depth. Carefully drill each anchor hole accordingly. Caution: do not use the hammer option on the drill to help prevent block spalling. Clean each hole with a wire brush and compressed air before inserting the anchor.
7. Prepare the wood pads to accept the hinge angles or brackets. Inspect the wood pad for any splits, and discard if your wood pad has any obvious imperfections. Note: the wood must be of a rugged construction grade. Porter supplies Southern yellow pine wood pads.

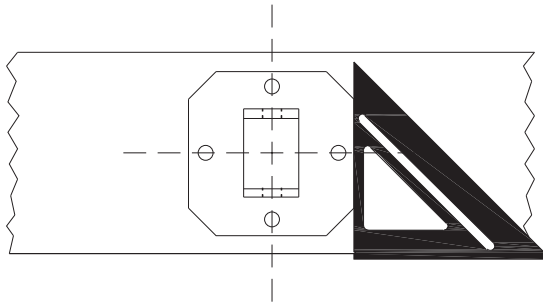
Each bracket attachment is to be secured with a total of four (4) 3/8" x 2-1/4" Lg., Grade 5 (min.) carriage bolts. A template is provided for the spacing of the hinge angles, for proper spacing about the extension tubes. The hinge weldments may be used as templates for the hole locations (see Detail "D"). Drill four (4) 13/32" diameter holes through the wood pad at the locations indicated on the project specific installation print. Counter-bore the backside of the wood pad at the carriage bolt locations, being careful not to counter-bore more than 3/16" depth of the wood pad. **To counter-bore any deeper will negatively impact the integrity of the connection!**

Counter-Bore Detail

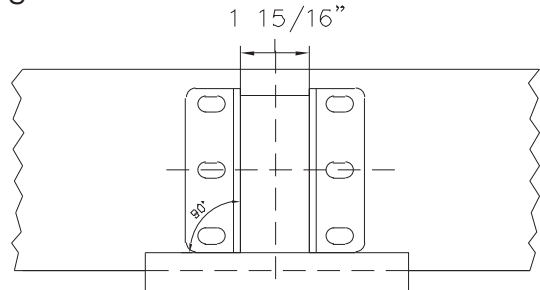


GENERAL STEP-BY-STEP GUIDELINES FOR INSTALLING A PORTER WALL-MOUNTED BACKSTOP

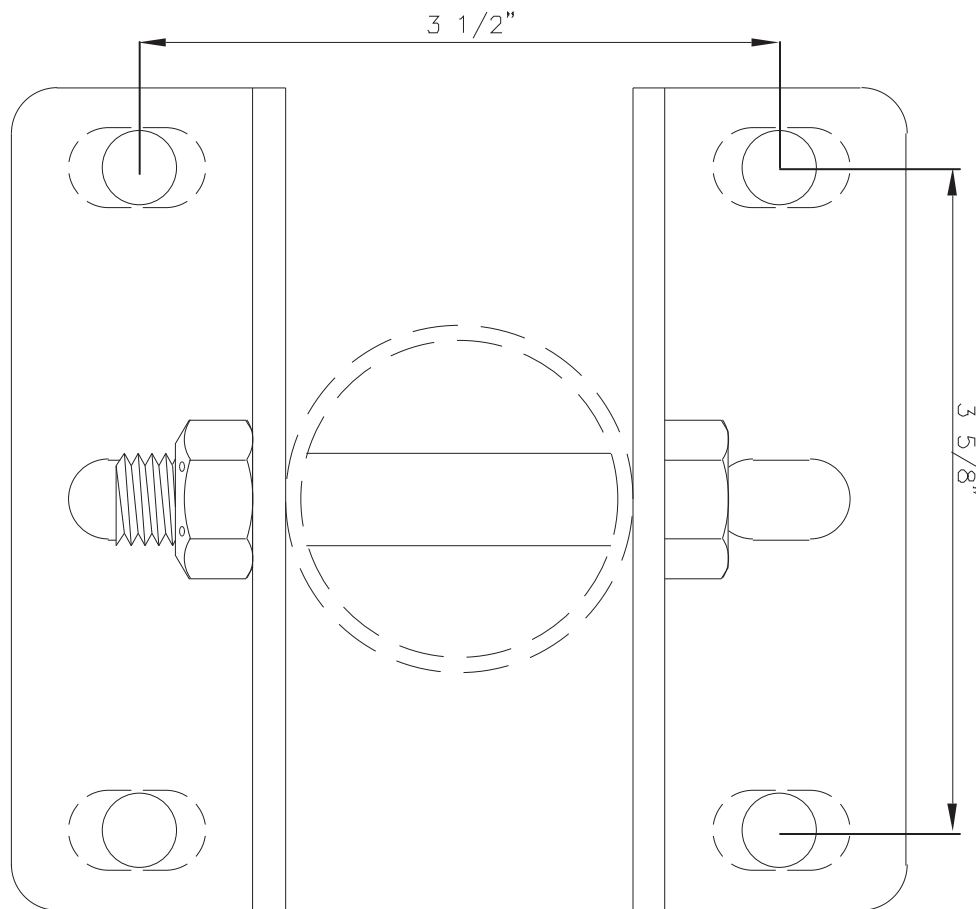
DETAIL "D" INSTALLATION TIPS



On folding backstops, utilize a speed square on the wood pad and edge of the hinge plate. Be certain to scribe pencil lines on the wood pad at the extension pipe centers. Use the hinge plate as a drilling template, aligning the holes as shown over the pencil marks.



On stationary backstops, you may utilize the template below for locating the holes, or simply construct a wood jig as shown and utilize the hinge angles as drilling templates.



GENERAL STEP-BY-STEP GUIDELINES FOR INSTALLING A PORTER WALL-MOUNTED BACKSTOP

8. Secure two hinge angles (back-to-back) for each chain support on a Model 312 (stationary) unit and a Model 219 (up-folding) unit. Secure with four (4) 3/8" X 2 1/4" Grade 5 (min.) carriage bolts, lockwashers and nuts. For a Model 220 (side-folding) unit, long and short hinge weldments are provided with swivel shackles. Determine the direction of fold-first before mounting the wood pad to the wall. The long hinge will be furthest from the folded unit.

Installation Tip: On folding units, the placement of the long and short hinge plates is critical. The folding operation is based on a collapsing parallelogram shape. Should the hinge plates be off as little as 1", the unit will not fold properly. Be certain the wall is straight, and shim as necessary. The telescoping adjustments on the extension tubes will allow you to plumb the bank, but will not help in adjusting pivot points due to a wall camber or poor hinge plate placement.

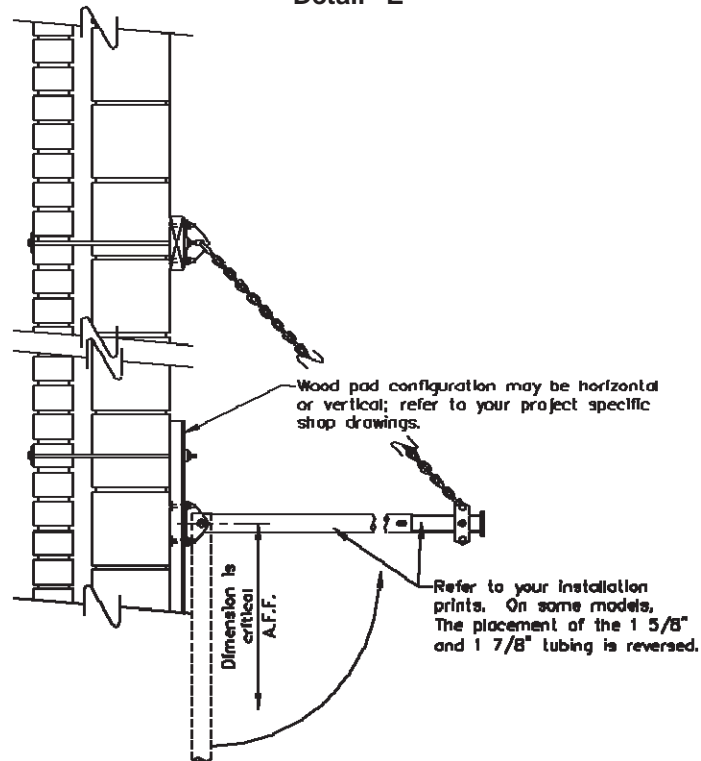
9. Mount the wood pad with hinge angle supports as detailed, and secure with 1/2" diameter Grade 5 bolts, flatwashers, lockwashers, and, in the case of the thru-bolt locations, nuts. Cut off excess threaded rod at thru-bolt locations, as required.
10. Secure the 5/16" repair link at each double hinge angle location (or swivel hinge plate), and attach the 3/16" proof coil chain. Crimp the repair link closed.
11. Now mount the wood pads with the hinge angles spaced properly to accept the 1 7/8" OD tubing (or, in the case of folding units, the hinge plate weldments). Repeat Steps 8 & 9 for attachment methodology. **Important:** Verify the distance of the hinge angles above the finished floor to assure proper goal height.
12. On stationary backstops, attach the top extension pipes to the hinge angle brackets, utilizing a 1/2" x 2-3/4" Lg. Grade 5 hex head cap screw. Secure with a 1/2" lockwasher and hex nut. On folding backstops, attach the top extension pipes to the hinge plate weldment, utilizing a 1/2" x 3" Lg. Grade 5 hex head cap screw, and secure with a Grade C convex locknut. On Model No. 219 and No. 220 units, a 1-5/8" OD telescoping attachment is first secured to the wall bracket.

Installation Tip: Be careful to separate the 1-5/8" half-clamps from the 1-7/8" half-clamps utilized to securing chain or flats to the extension pipes.

13. Referring to the installation print, the chain will terminate at either the 1-7/8 OD telescoping tube, or the shorter 1-5/8" OD telescoping tube, dependent upon the backstop model you have. Sleeve the telescoping portion on, and place the half-clamp assembly near the end of the extension. Swing the assembly to horizontal (90° from the wall), and secure the chain to the half clamp assembly. There is a setscrew to aid in holding the proper extension from the wall. **Do not** secure with a rivet, or cut excess chain at this point! Tighten the half-clamp securely. You may have to readjust this clamp later, but this connection must be secure to support the backboard. See Detail "E".

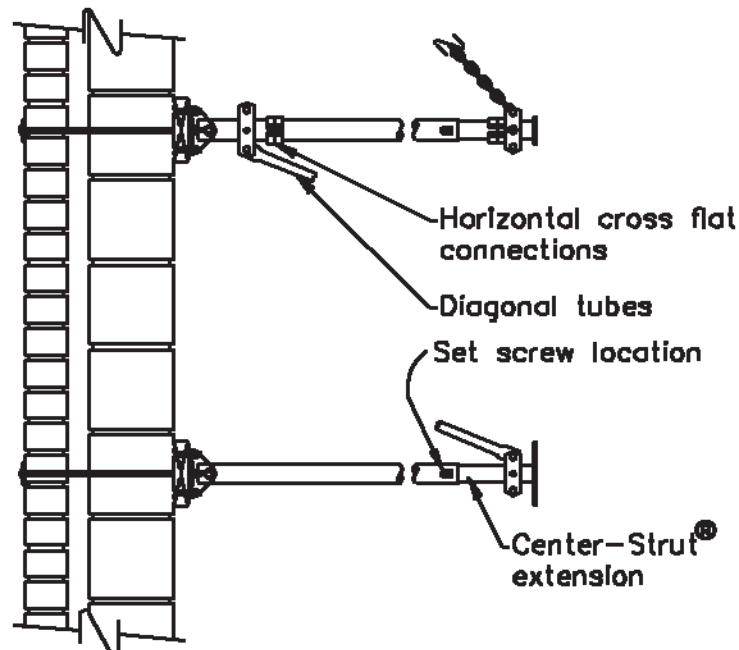
GENERAL STEP-BY-STEP GUIDELINES FOR INSTALLING A PORTER WALL-MOUNTED BACKSTOP

Detail "E"



14. Now secure the lower extension pipe(s) as detailed in the previous step. On stationary Model 312 units, there is a single extension, supported by two diagonal tubes. Attach the diagonals with 1-7/8" and 1-5/8" half-clamps as detailed, to support the lower extension. The Center Strut® telescoping extension is to be supported by the diagonals as shown in Detail "F".

Detail "F"



GENERAL STEP-BY-STEP GUIDELINES FOR INSTALLING A PORTER WALL-MOUNTED BACKSTOP

On a Model 219 up-fold unit, it will be necessary to temporarily chain or rope off the lower extensions to the top extension in order to hold them in place. On the Model 220 side fold units, 3/16" x 1-1/4" flats placed between the top and bottom extension tubes will aid in holding the lower extensions in place, but it is still necessary to temporarily chain or tie the lower extensions in place. Again, measure the distance of the support tubes at wall to the finished floor, ensuring the locations are correct to yield a 10'-0" goal height (or 8' goal height if so specified).

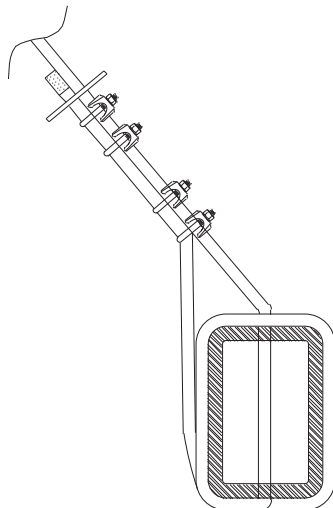
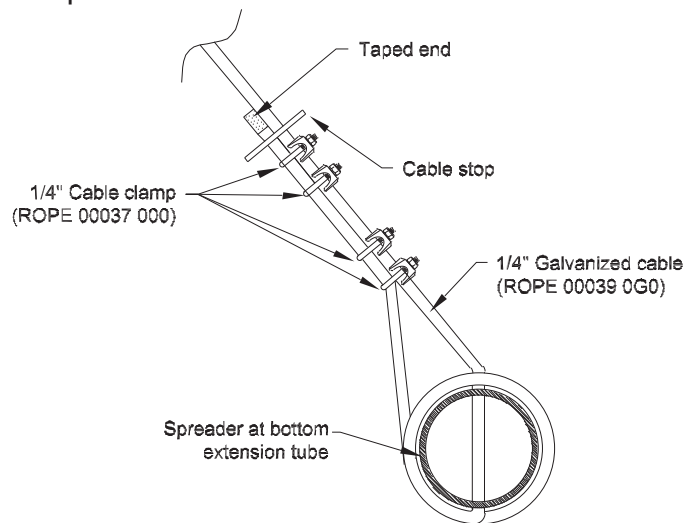
15. Utilizing a block and tackle system or, preferably a lift, hoist the backboard in place, and secure to the extensions utilizing the hardware specified on your project specific drawings.
16. Drop a plumb bob (or laser mark) from the face of bank to the floor, and adjust the extension to the courtlines, typically 15'-0" to the free-throw line, and 4'-0" to the base line, but not in all cases. Secure the setscrews on the extensions, ensuring the backboard is plumb both vertically and horizontally to the court.
17. Mount the goal, and check the elevation for 10'-0" A.F.F. The height can be adjusted by sliding the chain support on the top extension forward or back for nominal adjustment. For greater adjustment, chain links can be changed in the terminating bolt of the half-clamp. It will now be necessary to re-plumb the backboard.
18. Tap the clamps securing the flats in place for tension, and tighten all flat-clamps. After all adjustments have been made, secure the telescoping extensions with the rivets specified by drilling through the pilot hole on each extension, and driving the rivet through the holes. Repeat this procedure at the half-clamp securing the chain.
19. Check all hardware connections for tightness.
20. On Model 219 fold-up units, follow the project specific installation print for mounting the winch and pulleys. See Detail "G" for cable tie-off.
21. On Model 220 side fold units, follow the project specific installation print for installing the telescoping diagonal brace tube. Refer to Detail "H".
22. Operate the folding units a minimum of three times to ensure functionality, and that all final adjustments have been made.

GENERAL STEP-BY-STEP GUIDELINES FOR INSTALLING A PORTER WALL-MOUNTED BACKSTOP

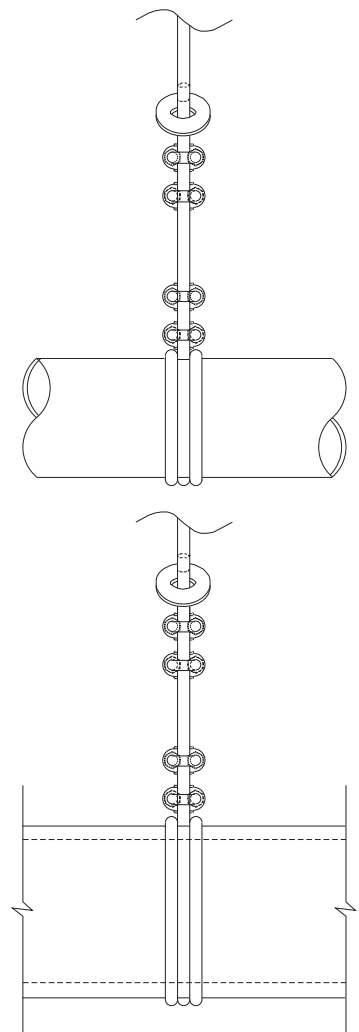
DETAIL "G"

MODEL NO. 219 CABLE TIE-OFF INSTRUCTIONS TO SPREADER

1. Locate cable stop as detailed on manual winch operation units to prevent unit from folding to a complete 90° fold. The weight of the backstop must not be in balance in the folded position. Failure to install the cable stop may cause the unit to free-fall in the "down" cycle should the cable be allowed to become slack. On electric operation, set the up limit so the backstop is never more than 80° off the horizontal in the "up" position, and tension remains on the cable.
2. Route the cable thru hole in pipe (location indicated on installation drawing).
3. Loop cable around pipe twice, once on each side of hole.
4. Secure two widths of cable as shown with four 1/4" cable clamps provided.
5. Tape what will be cut end of the loose cable before trimming off excess.



Tie off on unit with height adjuster

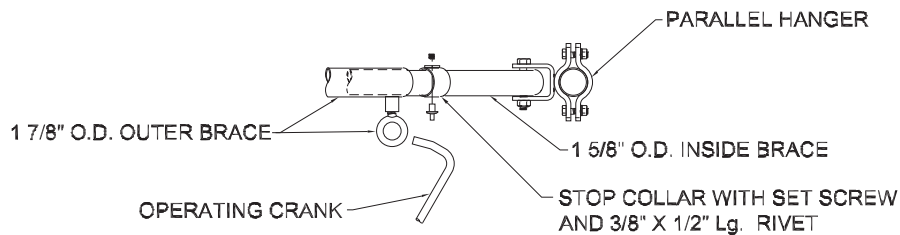


Tie off on unit with height adjuster

GENERAL STEP-BY-STEP GUIDELINES FOR INSTALLING A PORTER WALL-MOUNTED BACKSTOP

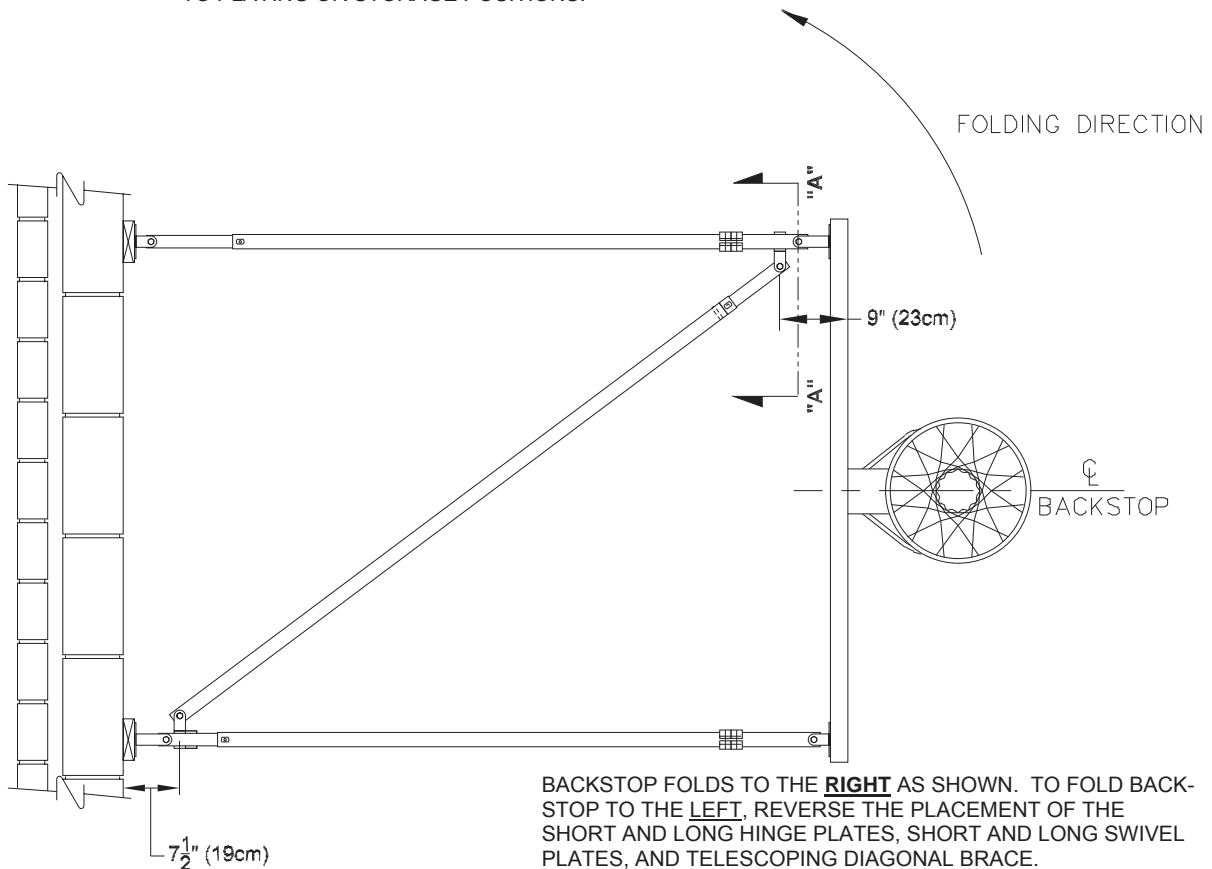
DETAIL "H"

MODEL NO. 220 DIAGONAL TELESCOPING BRACE TUBE



SECTION "A"- "A"

EXTENSION CRANK ENGAGES EYEBOLT TO LOCK TELESCOPING BRACE IN POSITION. CRANK IS ALSO USED TO PULL BACKSTOP TO PLAYING OR STORAGE POSITIONS.

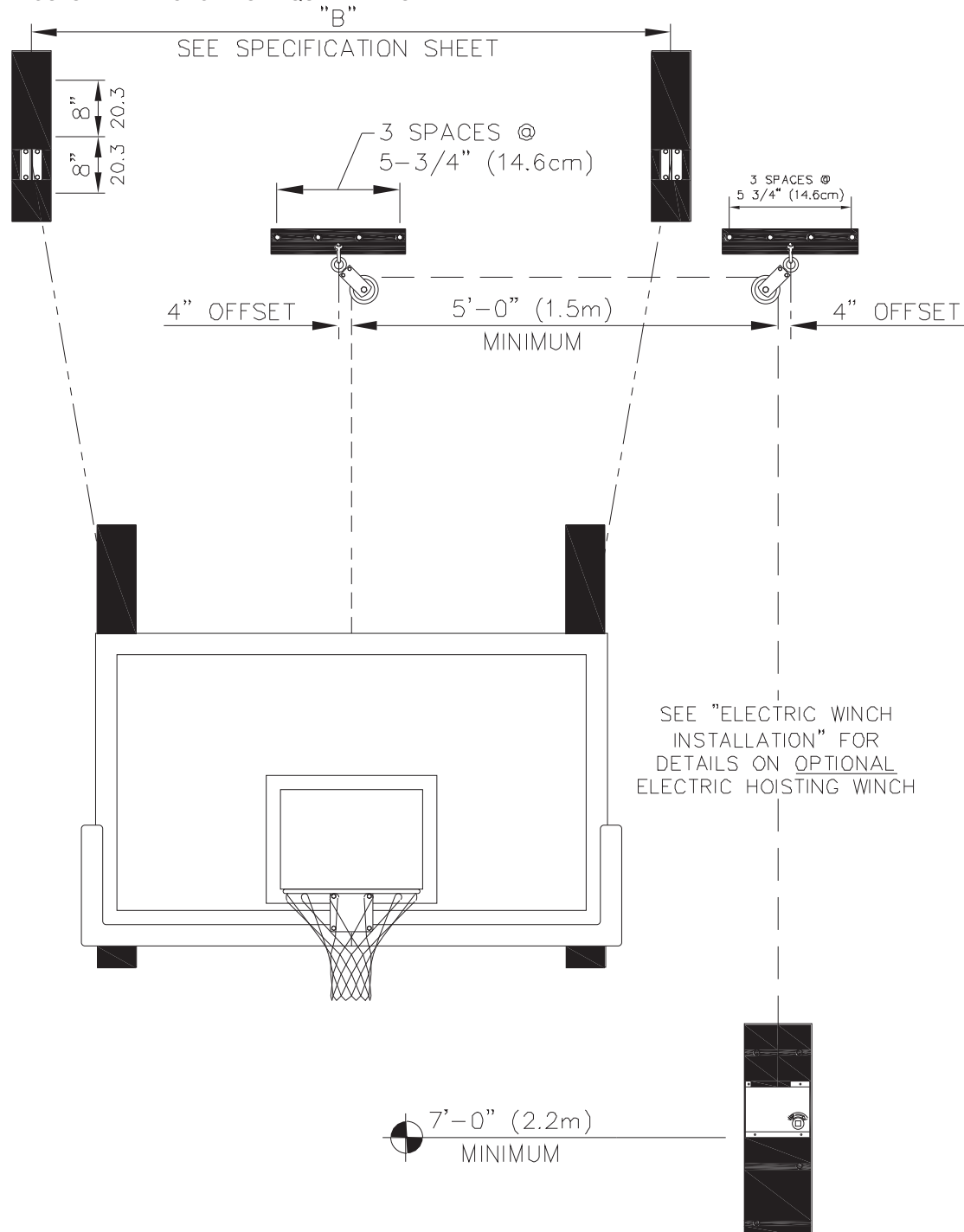


MODEL NO. 219

PULLEY ASSEMBLY INSTALLATION

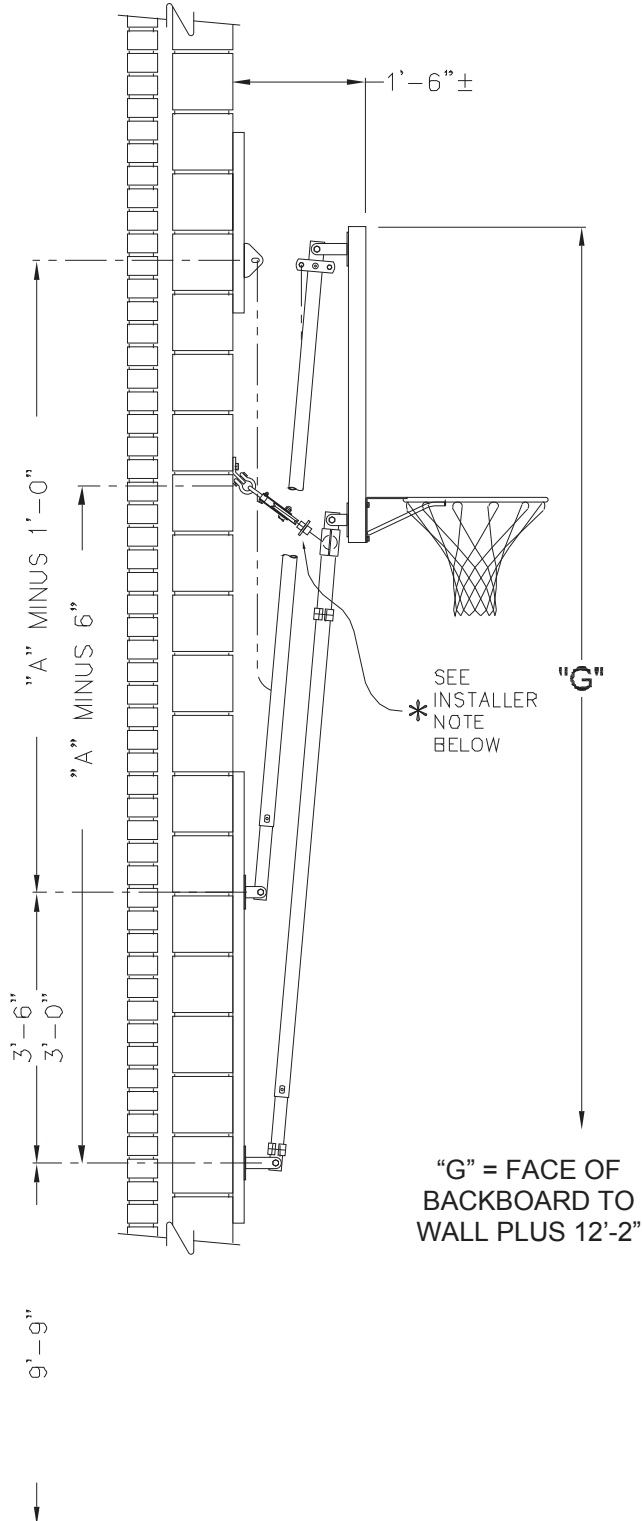
The two pulley assemblies (along with the chain supports), are critical connections, which must be thru-bolted to a load bearing wall with a minimum of two (2) 1/2" diameter weather treated rods and building washers. The placement of the manual winch is left to the architect's or owner's discretion, but it must be mounted a minimum of 7'-0" above the finished floor.

THRU-BOLT CONNECTIONS REQUIRED AT EACH ANCHOR
PLATE / WOOD PAD (SEE "GENERAL ANCHORING
LAYOUTS" AND "ANCHORING REQUIREMENTS."

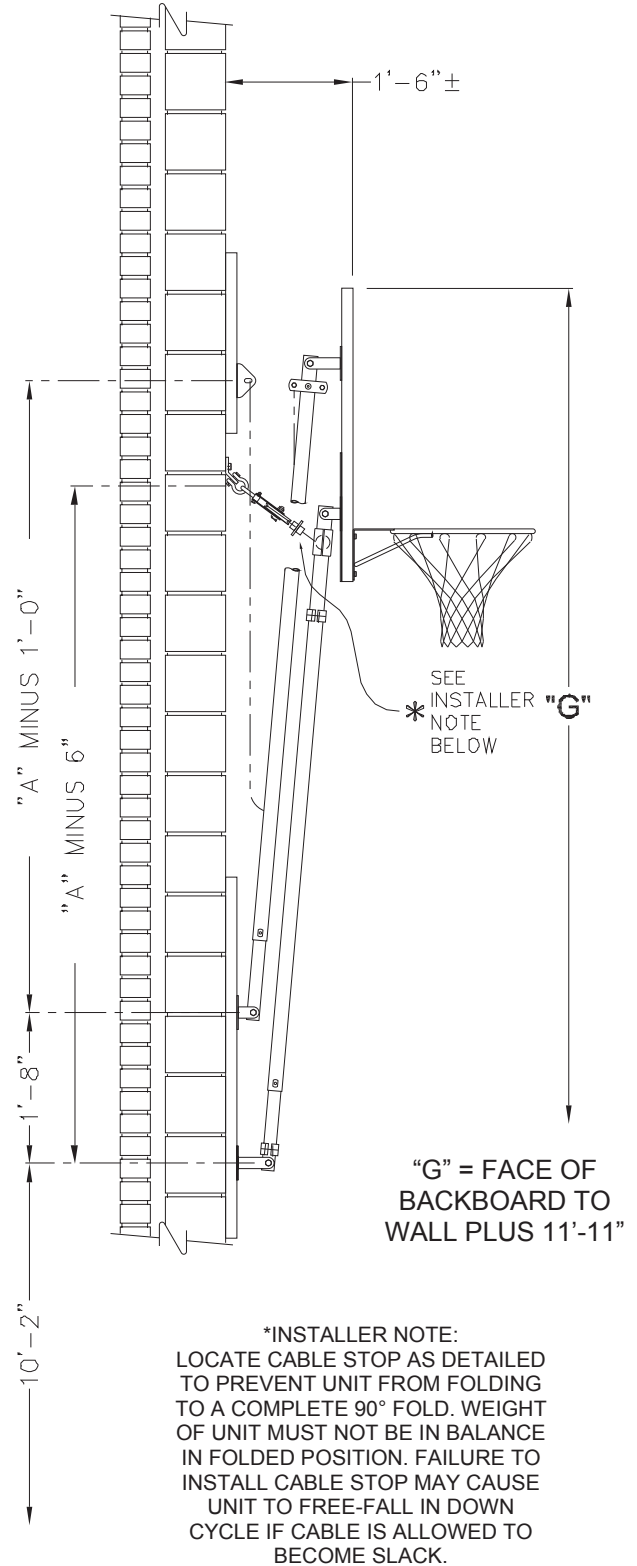


MODEL NO. 219 FOLDING DIMENSIONS (WITHOUT HEIGHT ADJUSTER)

WALL MOUNTED BACKSTOP
WITH RECTANGULAR BACKBOARD

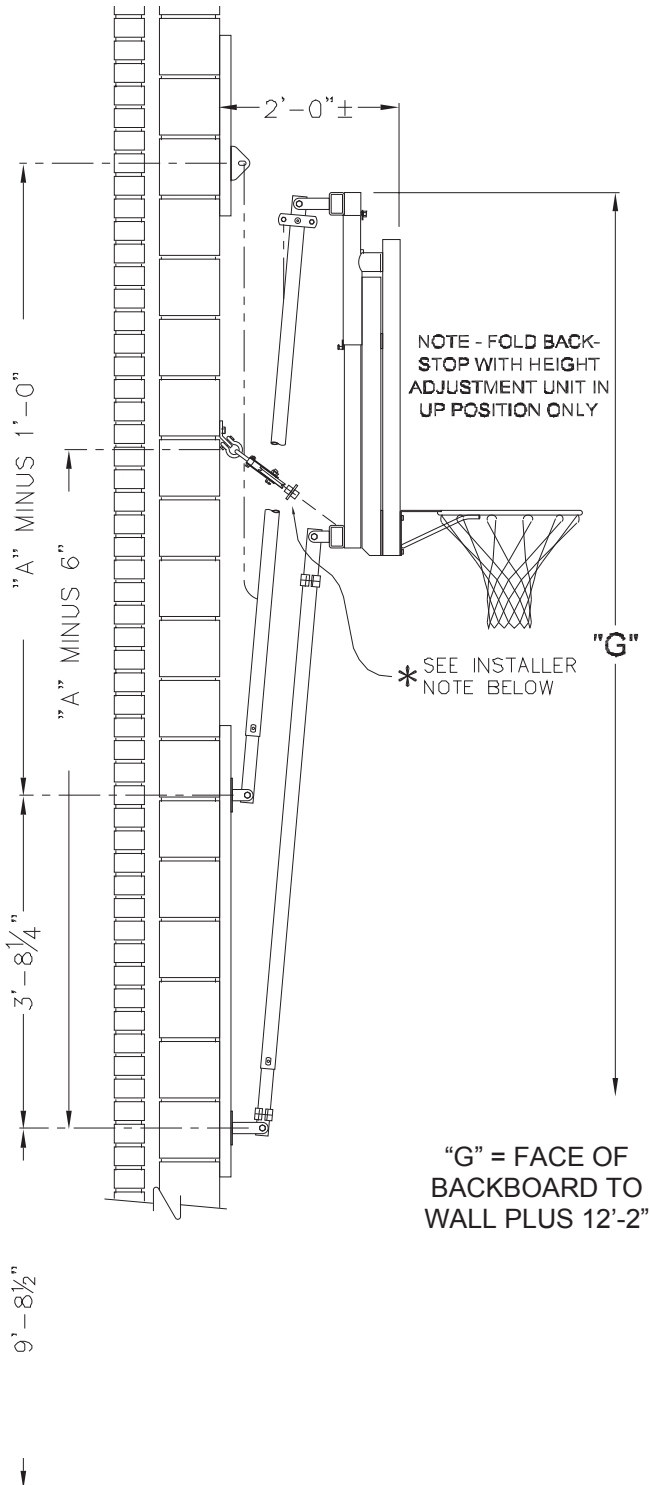


WALL MOUNTED BACKSTOP
WITH FAN BACKBOARD

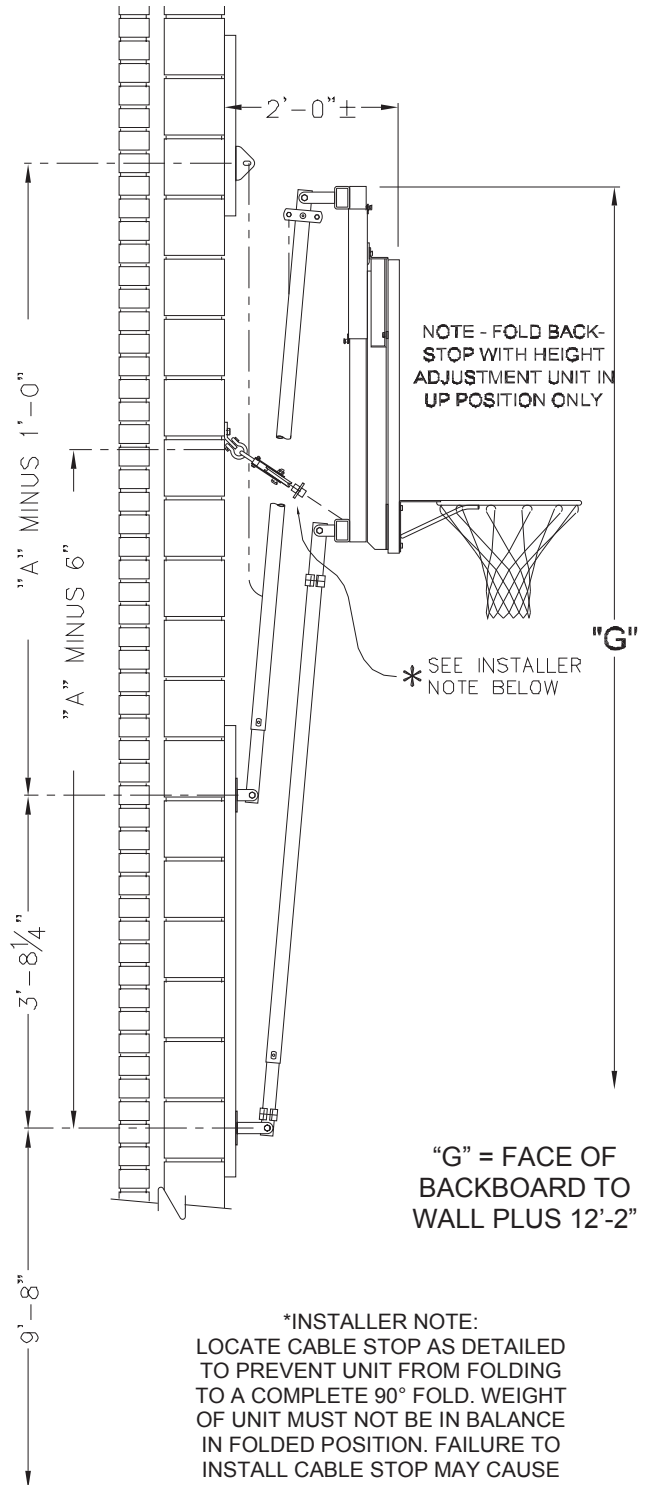


MODEL NO. 219 FOLDING DIMENSIONS (WITH HEIGHT ADJUSTER)

WALL MOUNTED BACKSTOP
WITH RECTANGULAR BACKBOARD



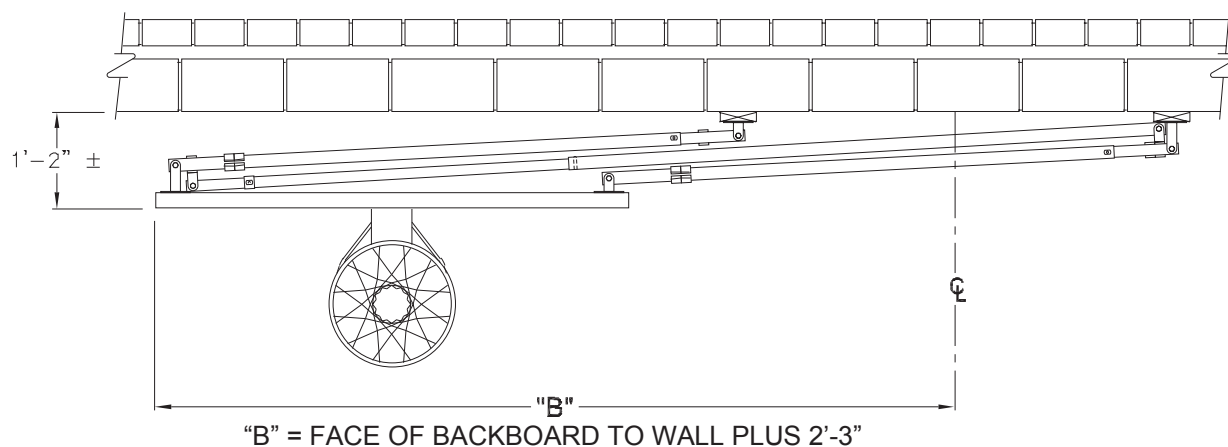
WALL MOUNTED BACKSTOP
WITH FAN BACKBOARD



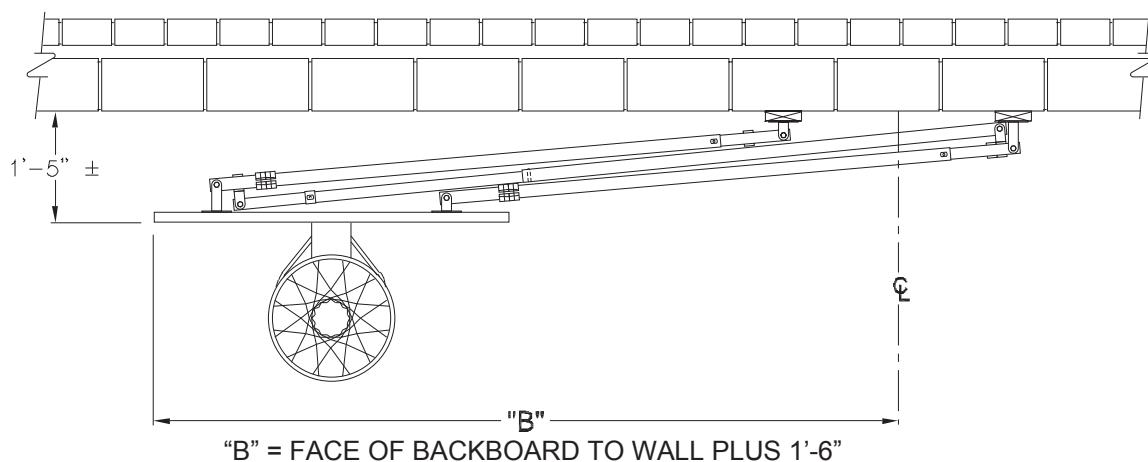
*INSTALLER NOTE:
LOCATE CABLE STOP AS DETAILED
TO PREVENT UNIT FROM FOLDING
TO A COMPLETE 90° FOLD. WEIGHT
OF UNIT MUST NOT BE IN BALANCE
IN FOLDED POSITION. FAILURE TO
INSTALL CABLE STOP MAY CAUSE
UNIT TO FREE-FALL IN DOWN
CYCLE IF CABLE IS ALLOWED TO
BECOME SLACK.

MODEL NO. 220 FOLDING DIMENSIONS (WITHOUT HEIGHT ADJUSTER)

WALL MOUNTED BACKSTOP WITH RECTANGULAR BACKBOARD

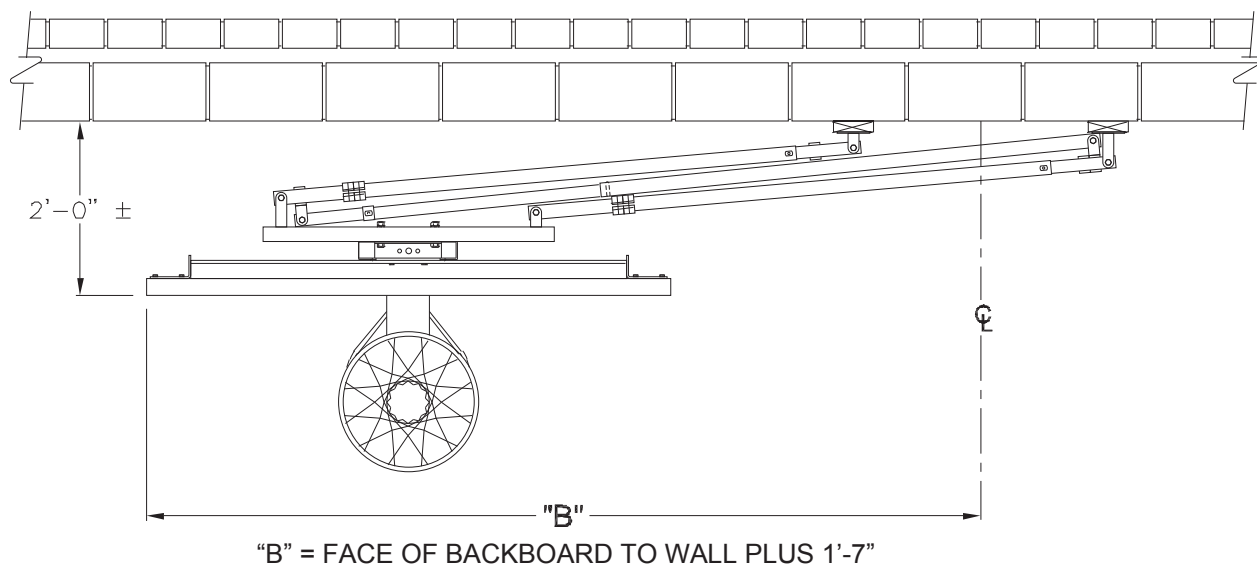


WALL MOUNTED BACKSTOP WITH FAN BACKBOARD

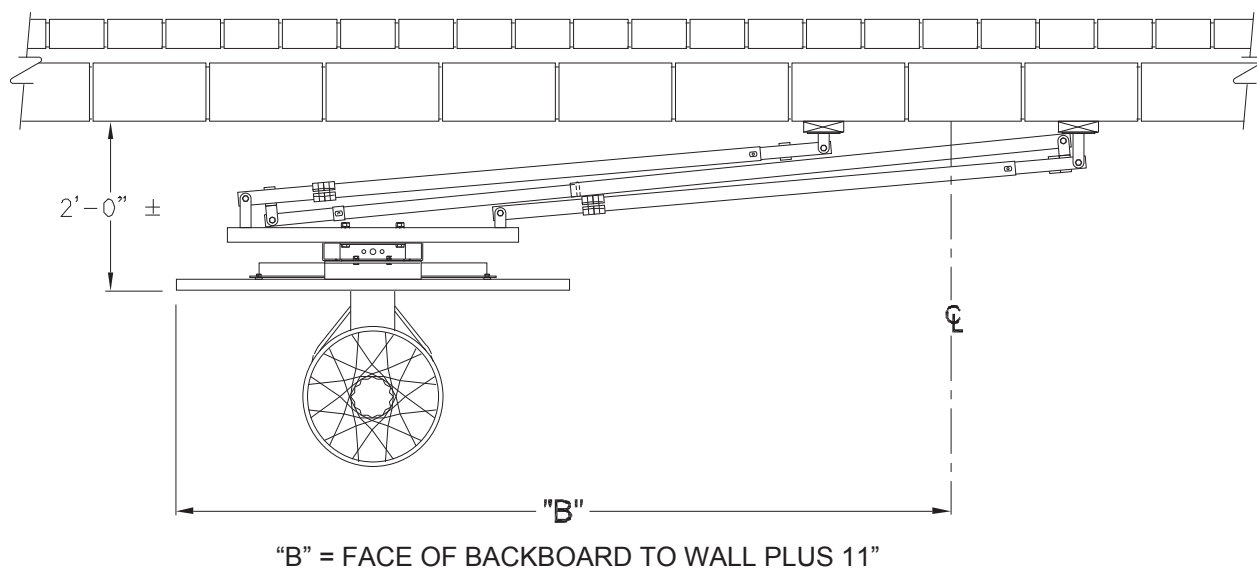


MODEL NO. 220 FOLDING DIMENSIONS (WITH HEIGHT ADJUSTER)

WALL MOUNTED BACKSTOP WITH RECTANGULAR BACKBOARD



WALL MOUNTED BACKSTOP WITH FAN BACKBOARD



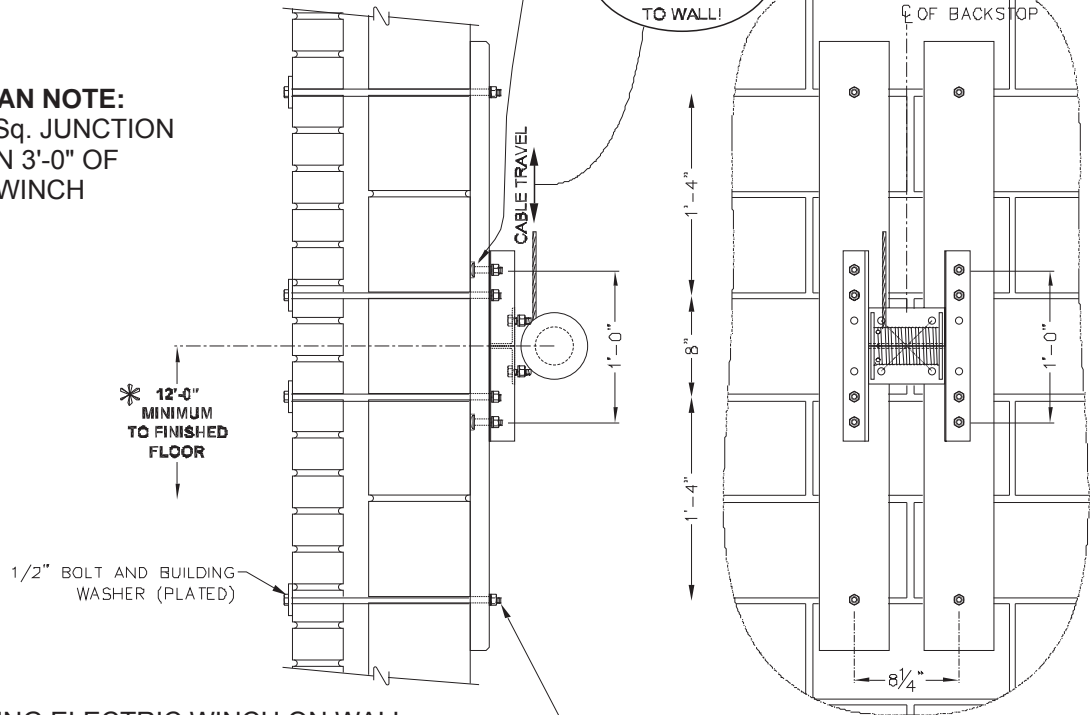
ELECTRIC WINCH MOUNTED TO WALL

ELECTRIC WINCH MOUNTED ON MASONRY WALL

ELECTRICIAN NOTE:
MOUNT 4" Sq. JUNCTION
BOX WITHIN 3'-0" OF
ELECTRIC WINCH

DRILL AND COUNTERBORE
WOOD PADS AS SHOWN FOR
1/2" x 21/4" Lg. CARRIAGE
BOLTS - (4) PLACES.
COUNTERBORE TO A DEPTH
OF 3/16"

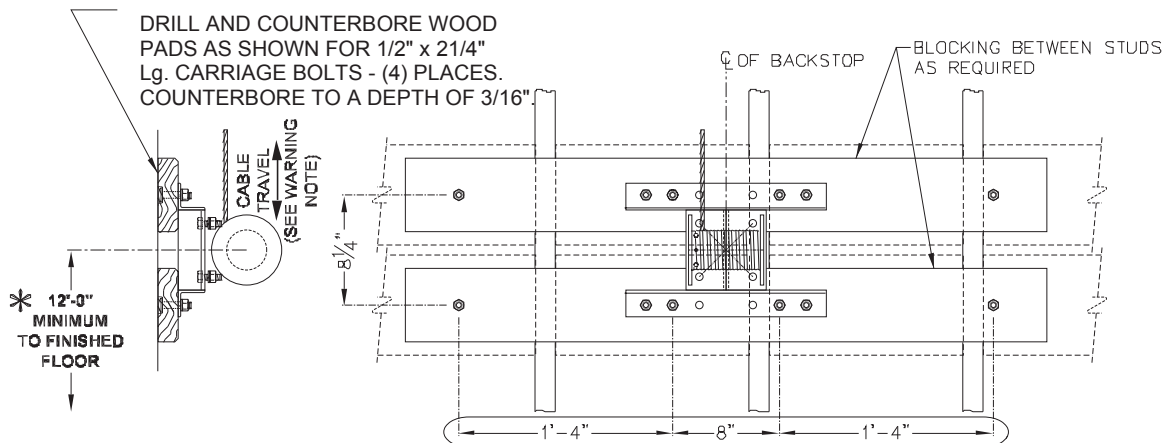
WARNING
CABLE FEED MUST
NEVER BE
PERPENDICULAR
TO WALL!



*WHEN LOCATING ELECTRIC WINCH ON WALL,
CHECK TO ENSURE WINCH WILL NOT INTERFERE
WITH THE MODEL NO. 219'S CROSS FLATS ON
BACKSTOP WHEN BACKSTOP IS FOLDED UP

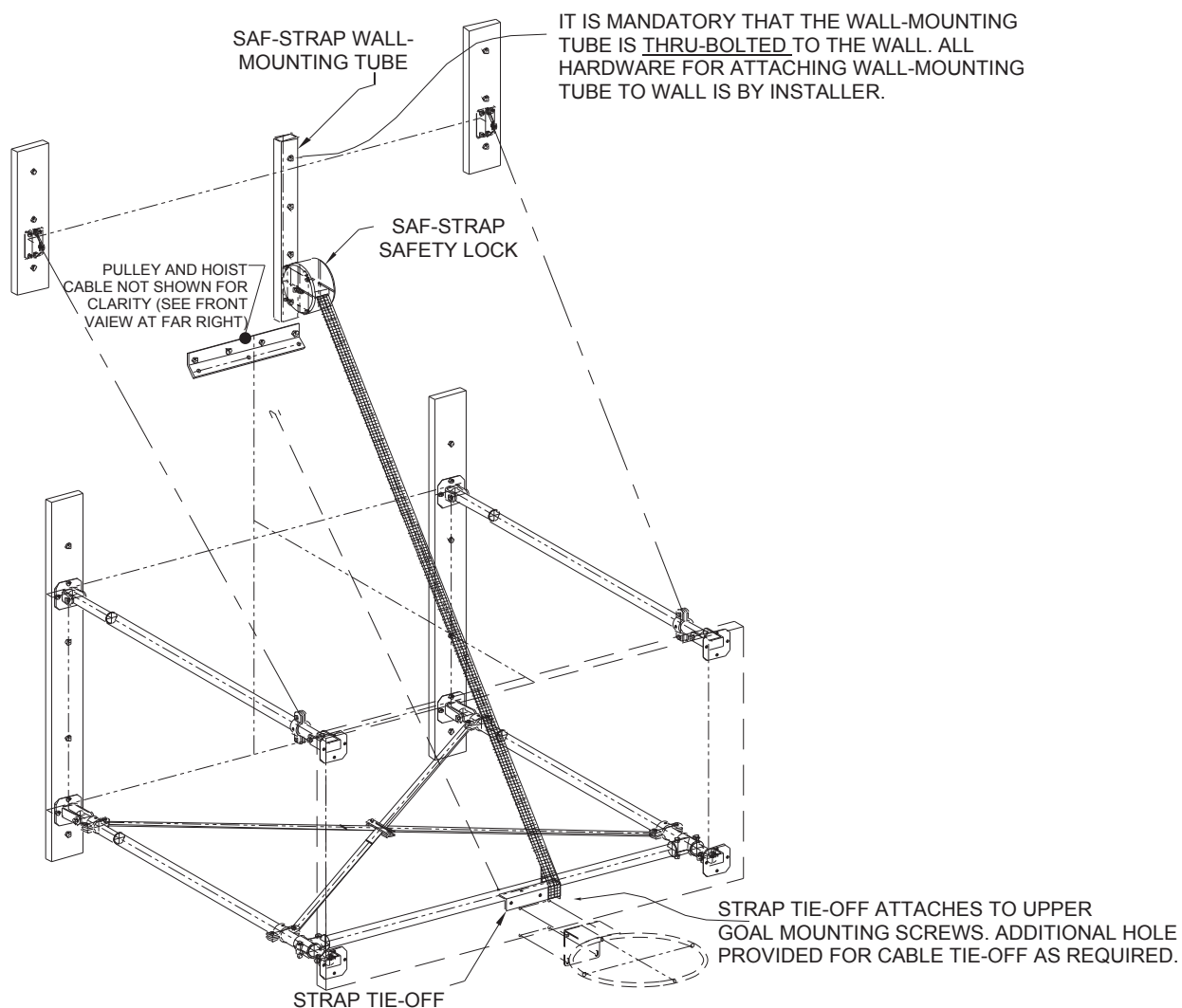
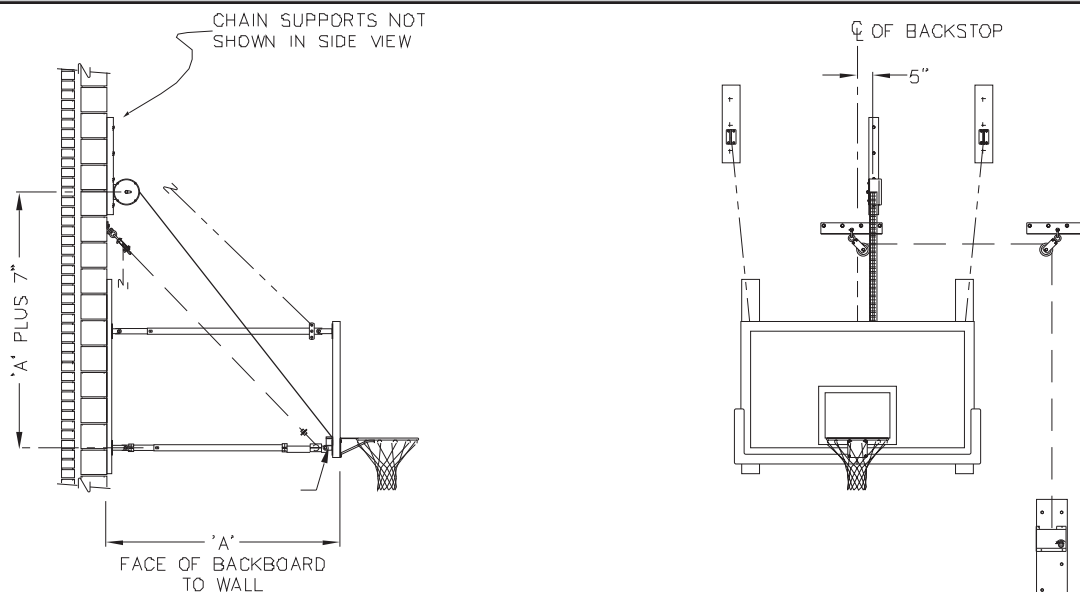
THRU BOLTING FOR CONCRETE OR
MASONRY WALLS. 1/2" MASONRY ANCHORS
IN HORIZONTAL GROUT LINES BY INSTALLER.
(EIGHT ANCHOR BOLTS RECOMMENDED.)

ELECTRIC WINCH MOUNTED ON STUD WALL (OR MASONRY WALL FOR HORIZONTAL APPLICATION)

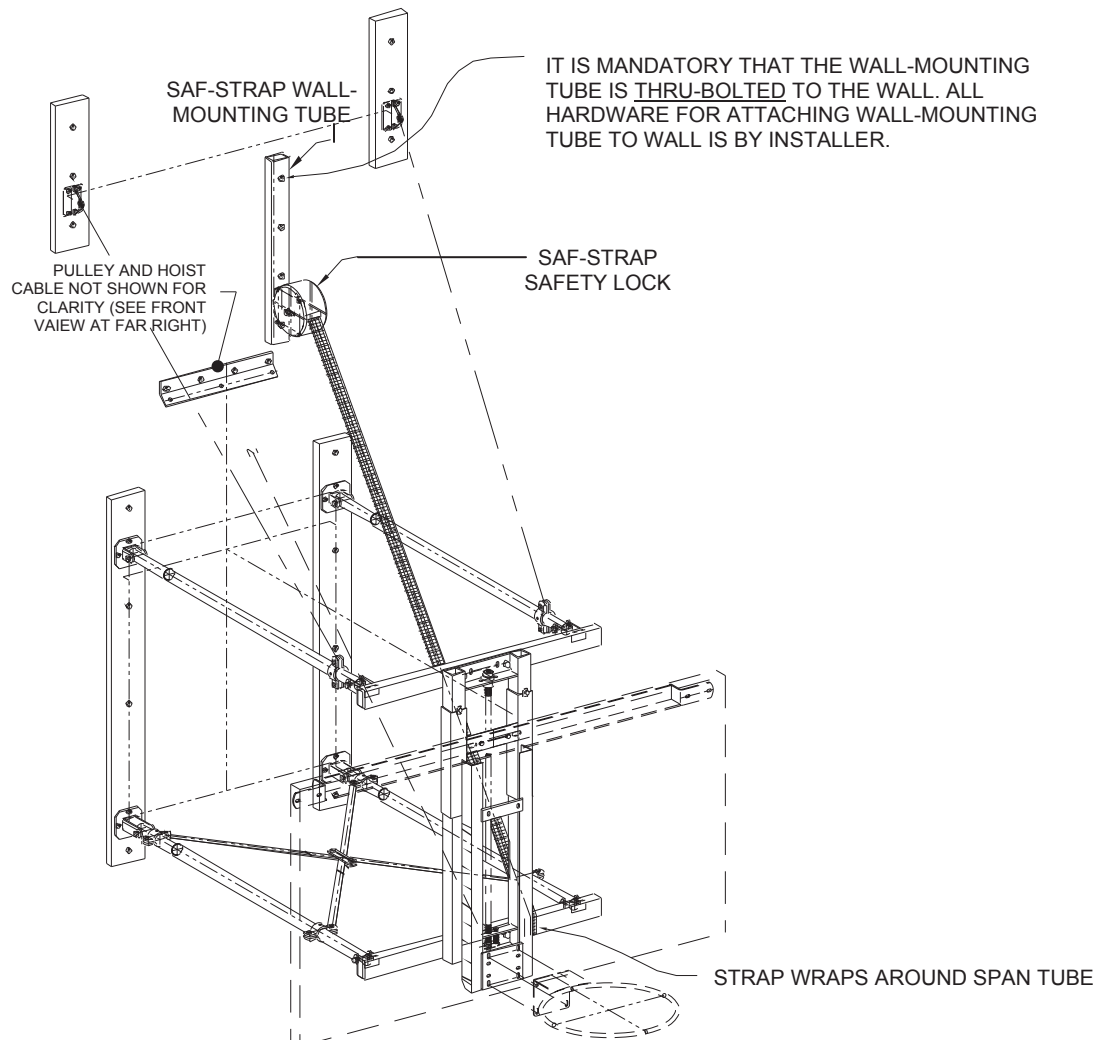
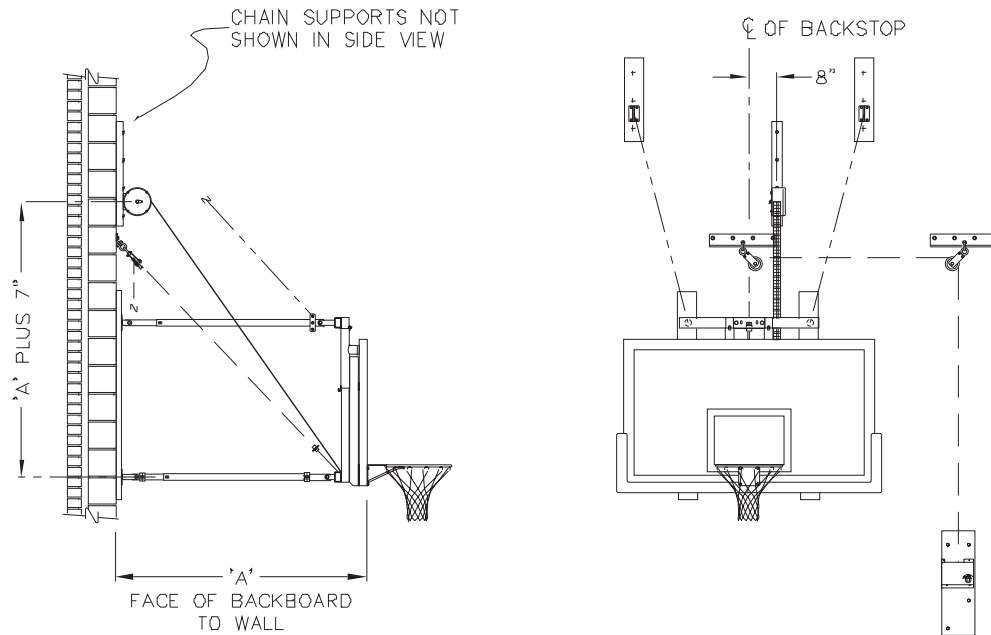


RECOMMEND A MINIMUM OF FOUR POSITIVE FASTENER
CONNECTIONS TO THE WALL. LAG SCREWS ARE NOT APPROVED.

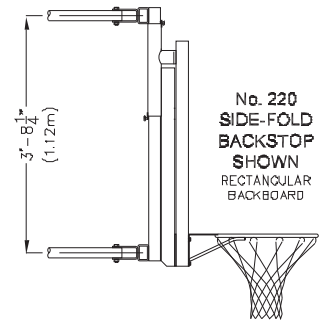
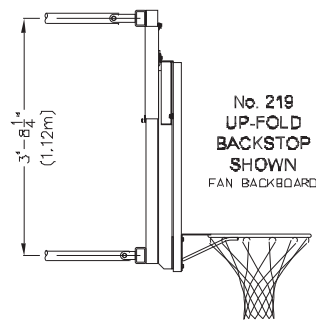
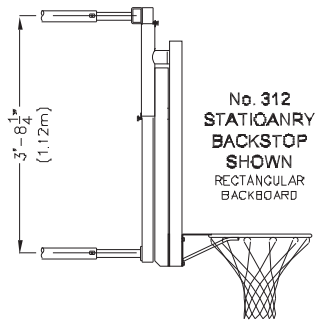
SAF-STRAP INSTALLATION (WITHOUT HEIGHT ADJUSTER)



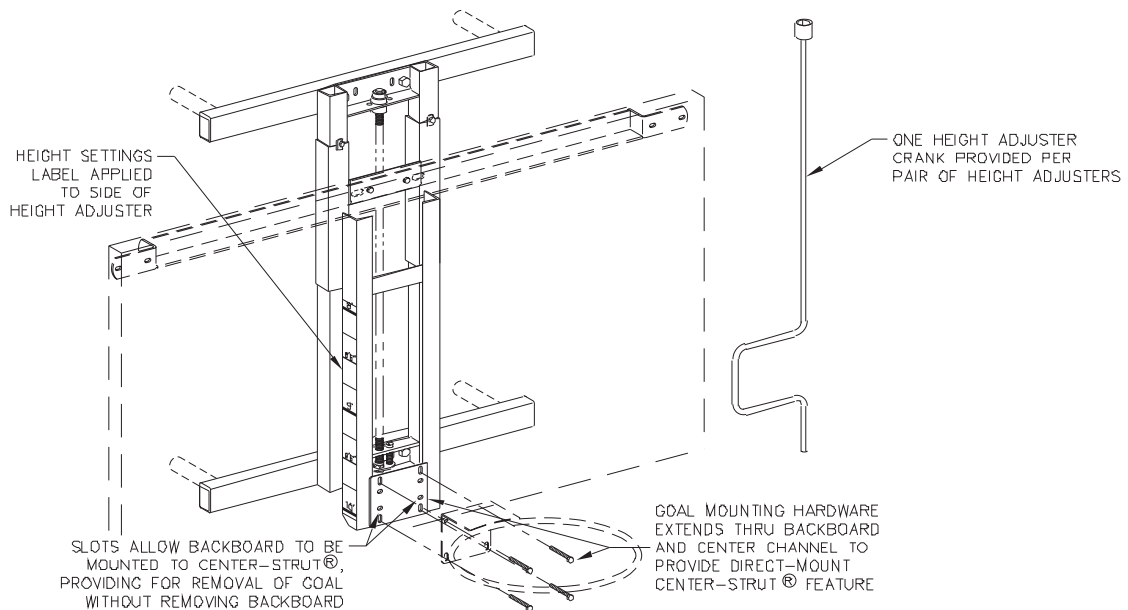
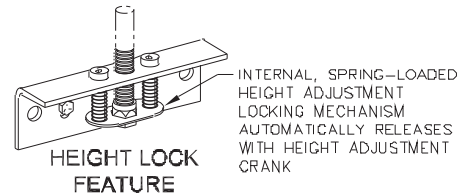
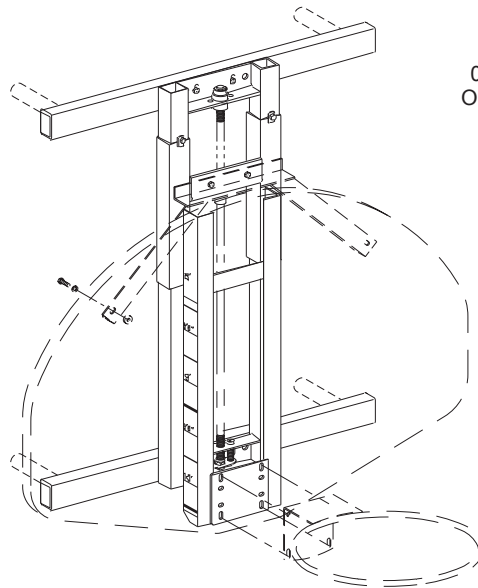
SAF-STRAP INSTALLATION (WITH HEIGHT ADJUSTER)



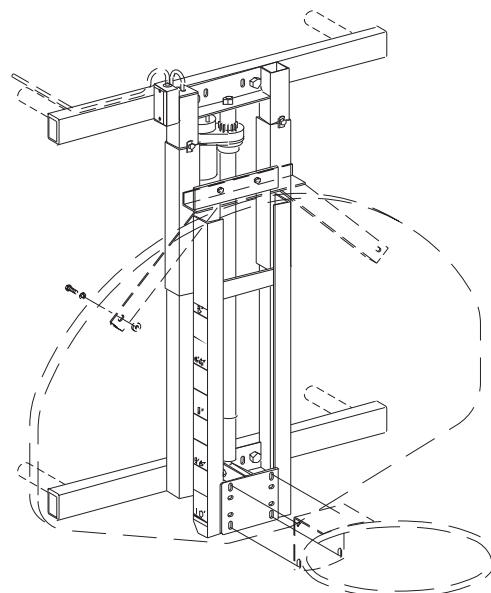
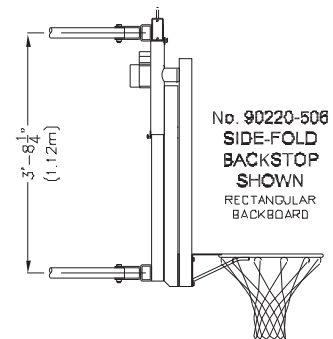
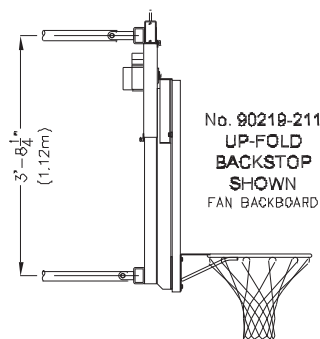
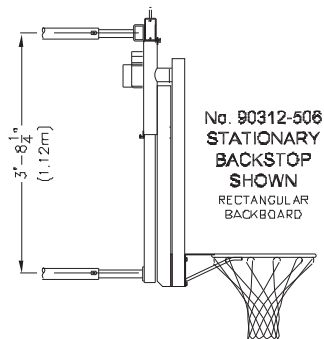
HEIGHT ADJUSTER WITH MANUAL OPERATION



NOTE: FOR USE ONLY WITH PORTER NO. 00267698 FAN FIBERGLASS AND NO. 00234000 OR 00234300 FAN ALUMINUM BACKBOARD, AND ALL PORTER RECTANGULAR BACKBOARDS.



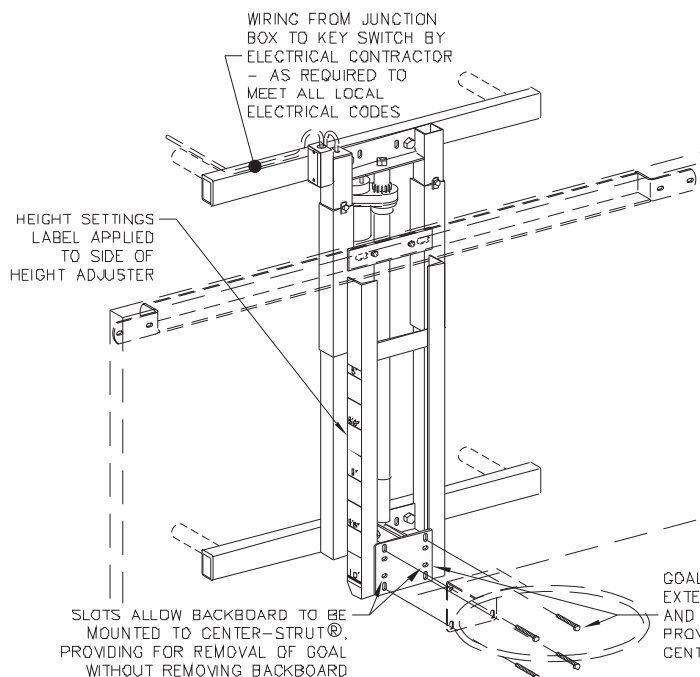
HEIGHT ADJUSTER WITH KEY SWITCH OPERATION



NOTE: FOR USE ONLY WITH PORTER NO. 00267698 FAN FIBERGLASS AND NO. 00234000 OR 00234300 FAN ALUMINUM BACKBOARD, AND ALL PORTER RECTANGULAR BACKBOARDS.



FLUSH MOUNTED TYPE SWITCH FURNISHED WITH DUAL (UP-DOWN) KEY OPERATION MOUNTED IN A STAINLESS STEEL COVER PLATE. WIRING DIAGRAM PROVIDED WITH EACH UNIT



WARNING

SUBSTITUTION OF THIS KEY SWITCH WILL VOID ALL WARRANTIES AND WILL RENDER THE OPERATION OF THE HEIGHT ADJUSTER UNSAFE.

CAUTION

KEY SWITCH MUST BE MOUNTED ON THE WALL IN A LOCATION SO THAT THE EQUIPMENT IT IS CONTROLLING IS IN FULL VIEW OF THE OPERATOR

SEE PAGE No. W-200-1-K FOR FIELD WIRING DETAILS AND REQUIREMENTS

HEIGHT ADJUSTER WITH KEY SWITCH OPERATION

CENTER-STRUT HEIGHT ADJUSTMENT SYSTEM ELECTRIC OPERATION WITH KEY SWITCH CONTROL FIELD WIRING DETAILS AND REQUIREMENTS

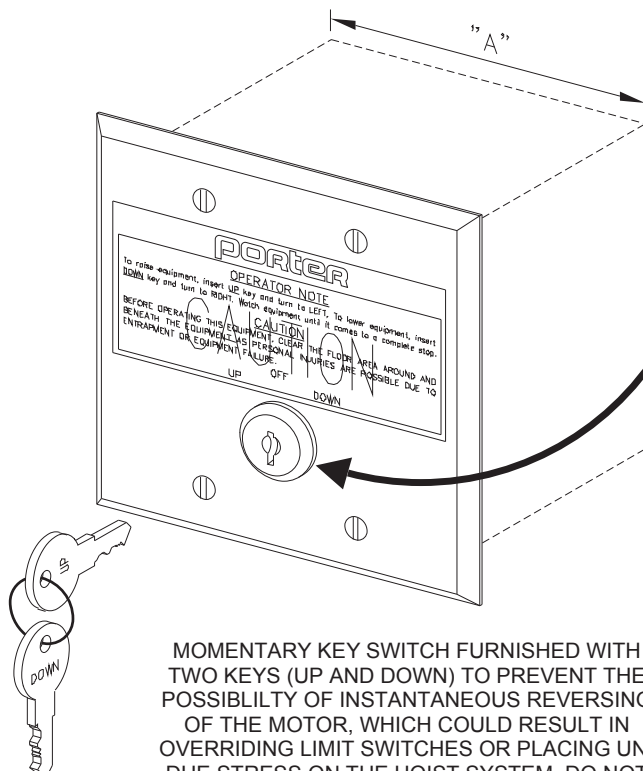
NOTE - All wiring between the height adjuster and the key switch is to be done by an electrical contractor per the diagram below, to meet all local code requirements.

IMPORTANT NOTE - PERFORMANCE OF MOTOR IS BASED ON HAVING 115 VOLTS AT MOTOR TERMINALS. VOLTAGES LESS THAN 115 VOLTS WILL AFFECT HOISTING CAPACITY AND RESULT IN DAMAGE TO MOTOR THUS VOIDING WARRANTY. **SUBSTITUTION** OF THIS KEY SWITCH WILL VOID ALL WARRANTIES AND WILL RENDER THE OPERATION OF HEIGHT ADJUSTER UNSAFE.

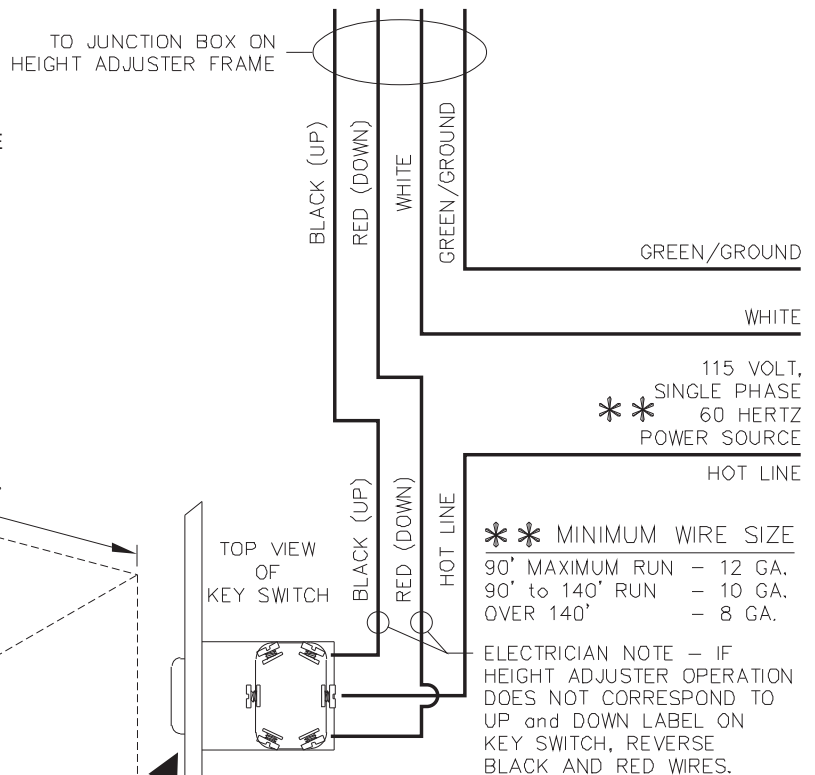
NOTE: ELECTRICAL CONTRACTOR TO PROVIDE FIELD WIRING AS REQUIRED TO MEET ALL LOCAL ELECTRICAL CODES

CAUTION

KEY SWITCH MUST BE MOUNTED ON THE WALL IN A LOCATION SO THAT THE EQUIPMENT IT IS CONTROLLING IS IN FULL VIEW OF THE OPERATOR



MOMENTARY KEY SWITCH FURNISHED WITH TWO KEYS (UP AND DOWN) TO PREVENT THE POSSIBILITY OF INSTANTANEOUS REVERSING OF THE MOTOR, WHICH COULD RESULT IN OVERRIDING LIMIT SWITCHES OR PLACING UN-DUE STRESS ON THE HOIST SYSTEM. DO NOT SEPARATE THE KEYS FROM EACH OTHER.



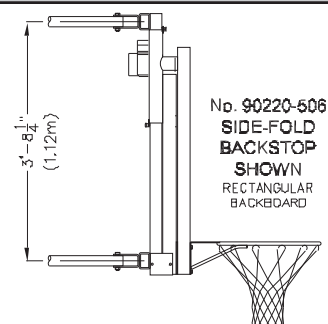
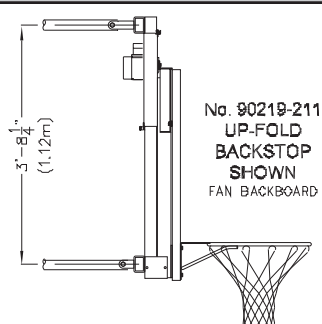
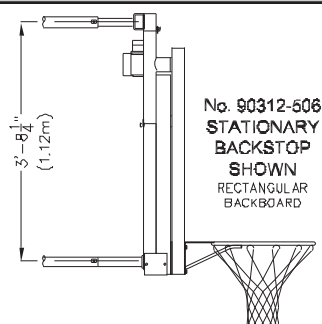
**** MINIMUM WIRE SIZE**
90' MAXIMUM RUN - 12 GA.
90' to 140' RUN - 10 GA.
OVER 140' - 8 GA.

ELECTRICIAN NOTE - IF HEIGHT ADJUSTER OPERATION DOES NOT CORRESPOND TO UP and DOWN LABEL ON KEY SWITCH, REVERSE BLACK AND RED WIRES.

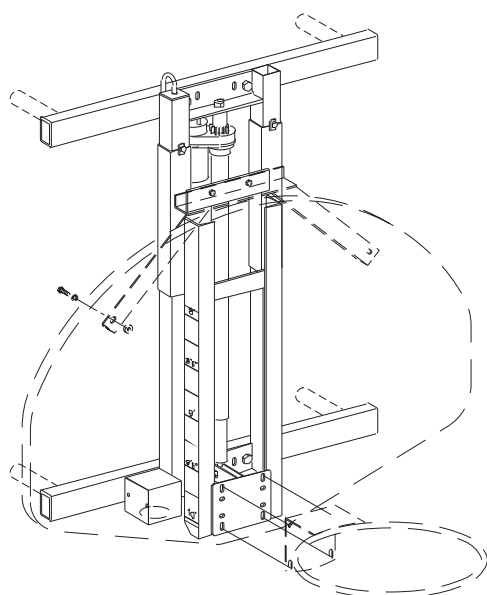
INDIVIDUAL KEY SWITCH MOUNTED IN A STANDARD 4-1/2" SQUARE FLUSH MOUNTED STAINLESS STEEL COVER PLATE FOR MOUNTING IN A 4" SQUARE x 3-1/2" DEEP MASONRY BOX (THEPITT NO. 691 OR EQUAL) BY ELECTRICAL CONTRACTOR. KEY SWITCHES MAY BE GANGED IN PAIRS IN ONE COVER PLATE - ONE FOR THE BACKSTOP, ONE FOR THE HEIGHT ADJUSTER. SEE TABLE BELOW FOR WALL BOX SIZE REQUIREMENTS - DIMENSION "A".

KEY SWITCH QTY.	"A" BOX WIDTH	THEPITT BOX No. (OR EQUAL)
1	3-3/4"	691
2	7-3/8"	693

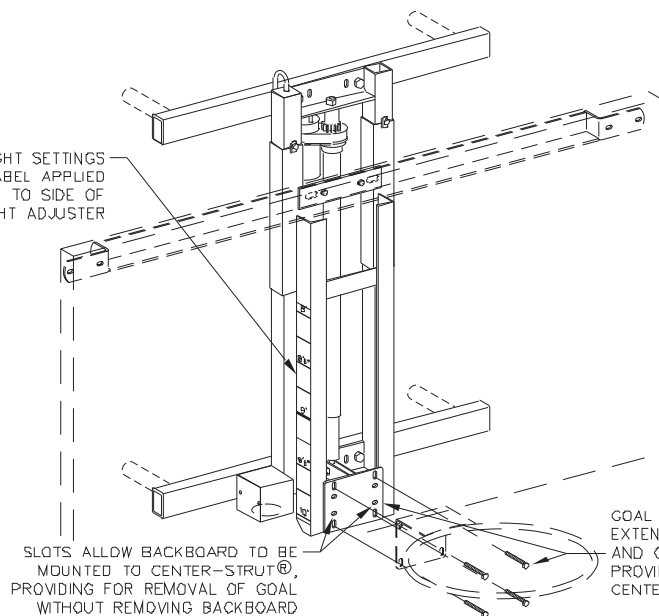
HEIGHT ADJUSTER WITH POWR-STICK OPERATION



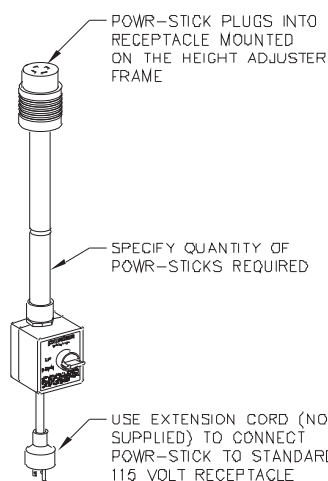
NOTE: FOR USE ONLY WITH PORTER NO.
00267698 FAN FIBERGLASS AND NO. 00234000
OR 00234300 FAN ALUMINUM BACKBOARD, AND
ALL PORTER RECTANGULAR BACKBOARDS.



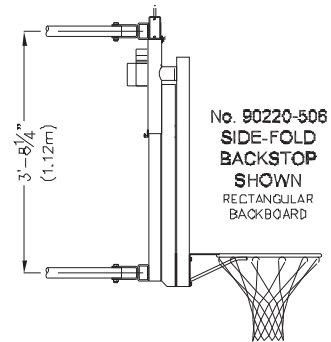
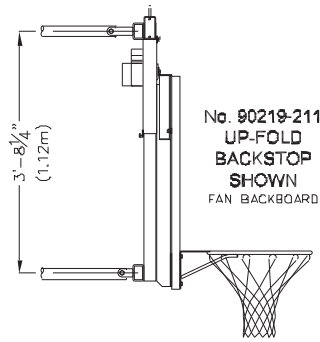
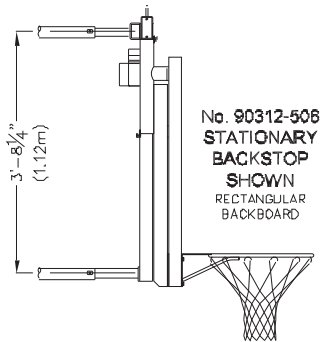
HEIGHT SETTINGS
LABEL APPLIED
TO SIDE OF
HEIGHT ADJUSTER



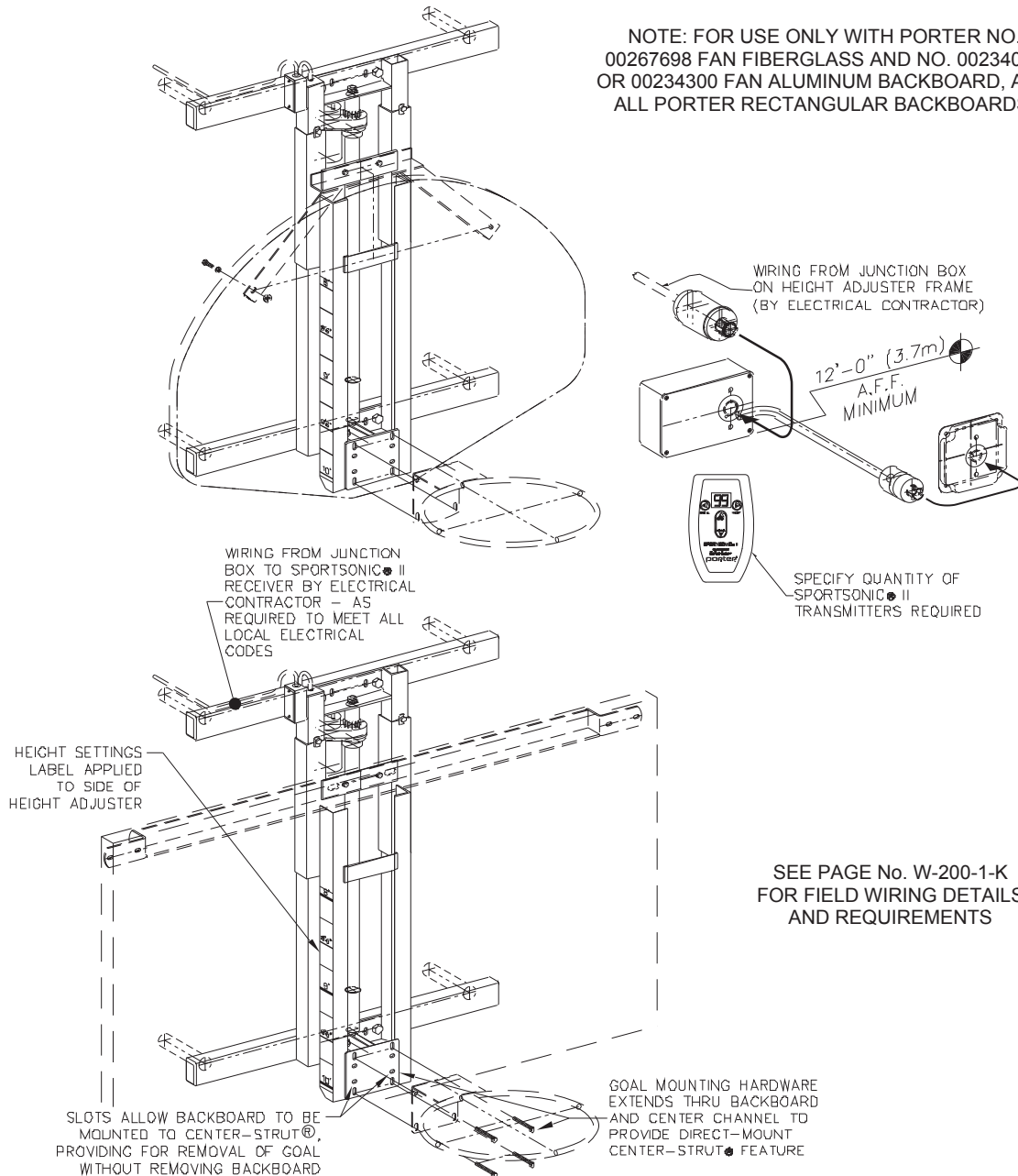
GOAL MOUNTING HARDWARE
EXTENDS THRU BACKBOARD
AND CENTER CHANNEL TO
PROVIDE DIRECT-MOUNT
CENTER-STRUT® FEATURE



HEIGHT ADJUSTER WITH SPORTSONIC OPERATION



NOTE: FOR USE ONLY WITH PORTER NO. 00267698 FAN FIBERGLASS AND NO. 00234000 OR 00234300 FAN ALUMINUM BACKBOARD, AND ALL PORTER RECTANGULAR BACKBOARDS.



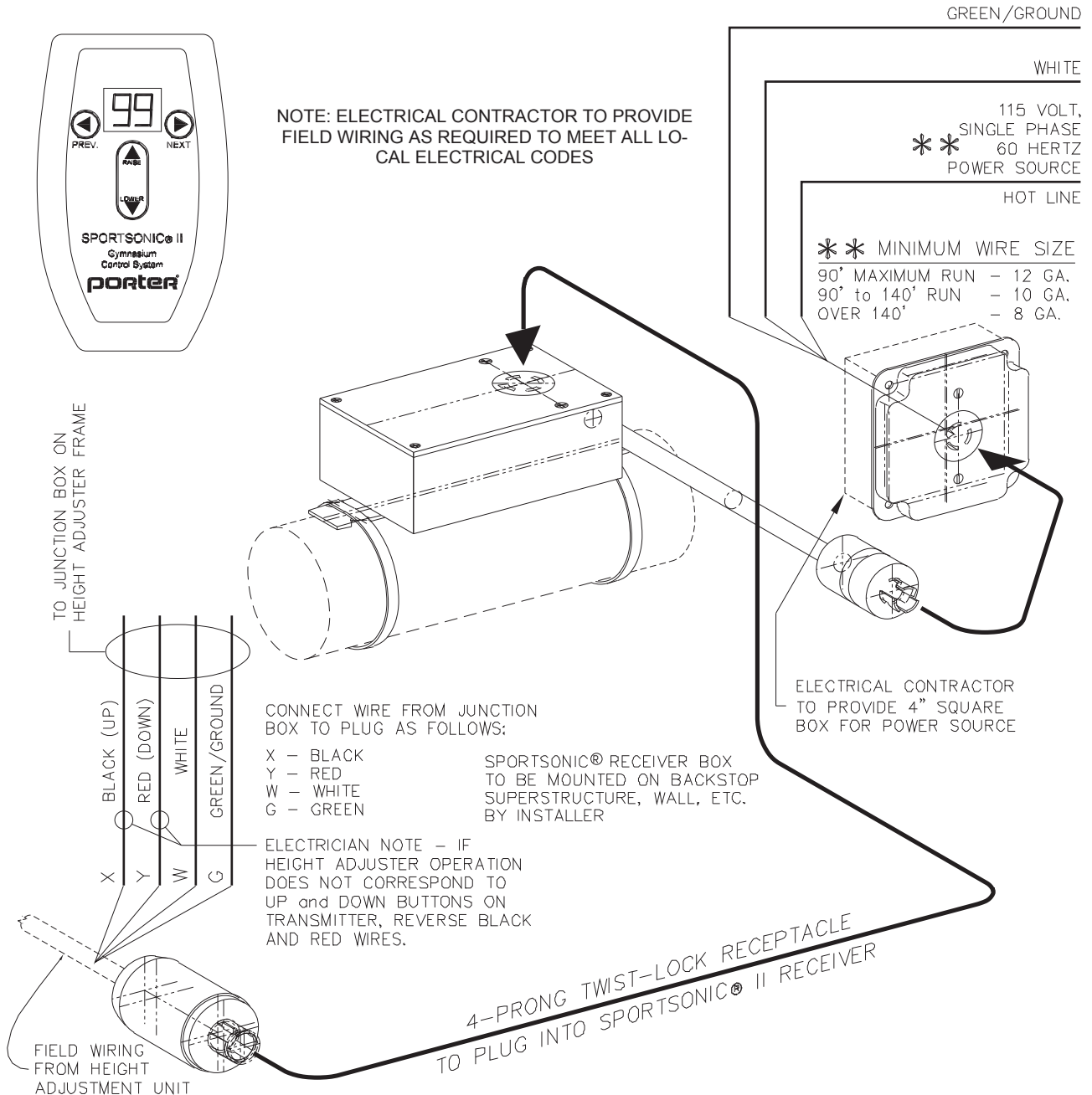
SEE PAGE No. W-200-1-K
FOR FIELD WIRING DETAILS
AND REQUIREMENTS

HEIGHT ADJUSTER WITH SPORTSONIC OPERATION

CENTER-STRUT HEIGHT ADJUSTMENT SYSTEM ELECTRIC OPERATION WITH SPORTSONIC II CONTROL FIELD WIRING DETAILS AND REQUIREMENTS

NOTE - All wiring between the height adjuster and the Sportsonic II is to be done by an electrical contractor per the diagram below, to meet all local code requirements.

IMPORTANT NOTE - PERFORMANCE OF MOTOR IS BASED ON HAVING 115 VOLTS AT MOTOR TERMINALS. VOLTAGES LESS THAN 115 VOLTS WILL AFFECT HOISTING CAPACITY AND RESULT IN DAMAGE TO MOTOR THUS VOIDING WARRANTY.



HEIGHT ADJUSTER MAINTENANCE

There are a total of eight different height adjuster manuals. See your specific installation instructions sent with the unit for further information. This is intended as a general information guide only.

CAUTION

MANUAL HEIGHT ADJUSTERS ONLY

- ◆ Do not continue to crank unit once it reaches the 10'-0" or 8'-0" goal heights as this will place undue strain on the mechanism and possibly jam unit in place.
- ◆ When using a power drill (with the optional No. XCRK 90000 202 Power Drill Adapter) to raise and lower the height adjuster, use ONLY a battery-operated power drill with a torque (clutch) adjustment. CAUTION - As a safety precaution, use the lowest torque clutch setting possible to operate the height adjuster, to avoid undue stress on the unit as it reaches the maximum Up (10') or Down (8') positions.

ALL HEIGHT ADJUSTERS (MANUAL AND ELECTRIC)

- ◆ When height adjustment unit is mounted on a folding type backboard support system, always adjust the goal height to 10'-0" before hoisting or folding the unit so as not to place undue strain on the hoist system or the height adjustment mechanism.
- ◆ Always keep the operating device (Hand Crank, Keys from Key Switch, Powr-Stick, Sportsonicâ II Transmitter, or Powr-Touch Pad) in the possession of a responsible adult trained in the proper use of this system.

WARNING

Before attempting any repairs, lower the unit to the lowest position (8'-0" goal height) to eliminate the possibility of the backboard dropping suddenly, which could result in serious injuries or death.

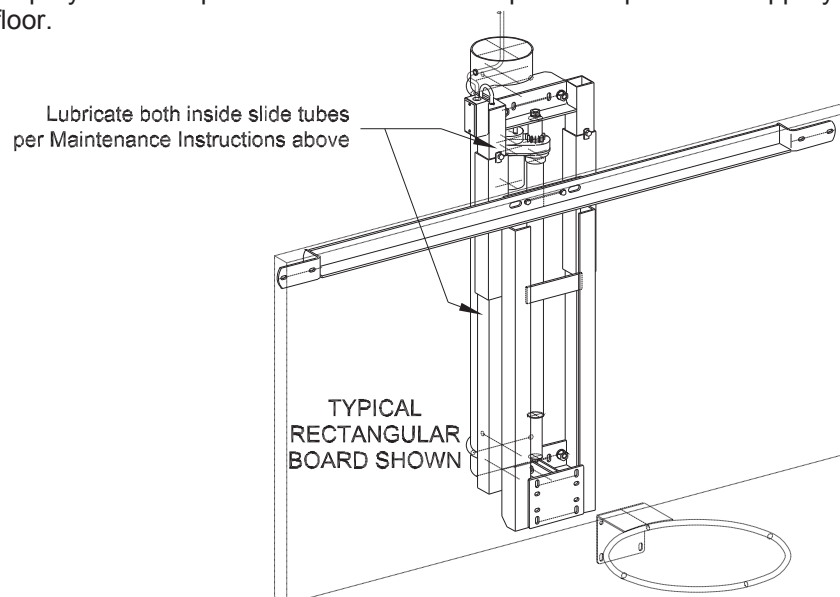
CARE AND MAINTENANCE

MANUAL HEIGHT ADJUSTERS ONLY

- ◆ Semi-annually lubricate the entire threaded rod assembly and upper thrust roller bearing with any high quality multi-purpose type grease.

ALL HEIGHT ADJUSTERS (MANUAL AND ELECTRIC)

- ◆ Periodically inspect height adjustment and support system for loose or defective parts - tighten or replace immediately as required.
- ◆ Periodically (at least annually, depending on usage) lubricate the two plated inside slide tubes with a WD-40 type lubricant. Run height adjuster up and down (10' to 8') several times, and wipe slide tubes dry to clean any dust or residue build-up. Spray the two plated inside slide tubes once again with a high quality silicon spray. NOTE - protect the floor with a drop cloth to prevent a slippery build-up on the gymnasium floor.



 **WARNING:** This product can expose you to Titanium Dioxide, which is known to the State of California to cause cancer. For more information go to www.p65warnings.ca.gov.

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INSTALLER NOTES

porter[®]

601 Mercury Drive, Champaign, IL U.S.A., 61820

www.porterathletic.com

(888) 277-7778

SAVE THESE INSTRUCTIONS FOR FUTURE USE