



CHIEF 

**CHIEF INDUSTRIAL BUCKET ELEVATOR (CIBE)
P/N 94-0-100008**

INSTALLATION, MAINTENANCE AND OPERATION'S MANUAL

Trusted. Tested. True. ®

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Manual Revisions

94-0-100008

v1.032024

Release

Westgo Chief Philippines Corporation
Building 19, Philexcel Business Park, Clark Freeport Zone,
Angeles City, Pampanga, Philippines 2009

For more informaton about Westgo Chief Philippines Corporation and or additional products or services please visit our website.

<https://asia.chiefind.ph/>

STANDARD LIMITED WARRANTY

Material Handling Products

1. Definitions. The following terms, when they appear in the body of this standard limited warranty for material handling products in initial capital letters shall have the meaning set forth below:

- A. Accepted purchase order shall mean the purchase order identified below.
- B. Westgo Chief shall mean Westgo Chief philippines corporation.
- C. Original owner shall mean the original owner identified below.
- D. Product shall mean the Westgo Chief equipment as described in the accepted purchase order.
- E. Reseller shall mean the authorized Westgo Chief philippines Corporation equipment dealer identified below.

2. Limited product warranty. Upon and subject to the terms and conditions set forth below, Westgo Chief hereby warrants to the reseller, and, if different, the original owner as follows:

- A. All new products delivered to the reseller or the original owner by Westgo Chief pursuant to the accepted purchase order will, when delivered, conform to the specifications set forth in the accepted purchase order;
- B. All new products delivered pursuant to the accepted purchase order will, in normal use and service, be free from defect in materials or workmanship; and
- C. Upon delivery, Westgo Chief will convey good and marketable title to the products, free and clear of any liens or encumbrances except for, where applicable, a purchase money security interest in favor of Westgo Chief.

3. Duration of warranty and notice requirements. Subject to the exceptions, exclusions and limitations set forth below, the warranties set forth in section 2 above shall apply to all covered non-conforming conditions that are discovered within the first twenty-four (24) months following delivery of the product to the carrier designated by the reseller and/or the original owner at Westgo Chief's manufacturing facility in Philippines, Clark Freeport Zone, Pampanga (the "warranty period") and are reported to the Westgo Chief as provided in section 4 below within thirty (30) days following discovery (a "notice period").

4. Notice procedure. In order to make a valid warranty claim, the reseller and/or the original owner must provide Westgo Chief with a written notice of any nonconforming condition discovered during the warranty period within the applicable notice period specified in section 3 above. Said notice must be in writing; be addressed to Westgo Chief Philippines Corporation, Building 19, Clark Freeport Zone 2009, Philippines and contain the following information: (a) the customer's name and address; (b) the reseller's name and address; (c) the make and model of the product in question; (d) the current location of the product; (e) a brief description of the problem with respect to which warranty coverage is claimed; and (f) the date on which the product was purchased.

5. Exceptions and exclusions. Anything herein to the contrary notwithstanding, the warranties set forth in section 2 above do not cover any of the following, each of which are hereby expressly excluded:

- A. Defects that are not discovered during the applicable warranty period;
- B. Defects that are not reported to the Westgo Chief Philippines Corporation customer service department in conformity with the notice procedure set forth in section 4 above within the applicable notice period specified in section 3;
- C. Any used or pre-owned products;
- D. Any Westgo Chief manufactured parts that are not furnished as a part of the accepted purchase order;
- E. Any fixtures, equipment, materials, supplies, accessories, parts or components that have been furnished by Westgo Chief but are manufactured by a third party;
- F. Any products which have been removed from the location at which they were originally installed;
- G. Any defect, loss, damage, cost or expense incurred by the Reseller or the Original Owner to the extent the same arise out of, relate to or result, in whole or in part, from any one or more of the following:
 - (i) Usual and customary deterioration, wear or tear resulting from normal use, service and exposure;

- (ii) Theft, vandalism, accident, war, insurrection, fire or other casualty;
- (iii) Any damage, shortages or missing parts which result during shipping or are otherwise caused by the Reseller, the Original Owner and/or any third party;
- (iv) Exposure to marine environments, including frequent or sustained salt or fresh water spray;
- (v) Exposure to corrosive, chemical, ash, smoke, fumes, or the like generated or released either within or outside of the structure on which the Product is installed, regardless of whether or not such facilities are owned or operated by the Reseller, the Original Owner or an unrelated third party;
- (vi) Exposure to or contact with animals, animal waste and/or decomposition;
- (vii) The effect or influence the Product may have on surrounding structures, including, without limitation, any loss, damage or expense caused by drifting snow;
- (viii) Any Product or portion thereof that has been altered, modified or repaired by the Reseller, the Original Owner or any third party without Westgo Chief's prior written consent;
- (ix) Any Product or portion thereof that has been attached to any adjacent structure without Westgo Chief's prior written approval;
- (x) Any Product to which any fixtures, equipment, accessories, materials, parts or components which were not provided as a part of the original Accepted Purchase Order have been attached without Westgo Chief's prior written approval;
- (xi) The failure on the part of the Reseller, the Original Owner or its or their third party contractors to satisfy the requirements of all applicable statutes, laws, ordinances rules, regulations and codes, (including zoning laws and/or building codes);
- (xii) The use of the Product for any purpose other than the purpose for which it was designed; and/or
- (xiii) The failure of the Reseller, the Original Owner and/or any third party to:
 - (a) properly handle, transport and/or store the Product or any component part thereof;
 - (b) properly select and prepare a site that is adequate for the installation and/or operation of the Product or any component part thereof;
 - (c) properly design and construct a foundation that is adequate for the installation and/or operation of the Product or any component part thereof;
 - (d) properly set up, erect, construct or install the Product and/or any component part thereof; and/or
 - (e) properly operate, use, service and/or maintain the Product and each component part thereof.

6. Resolution of Warranty Claims. In the event any nonconforming condition is discovered within the Warranty Period and Westgo Chief is notified of a warranty claim as required by Section 4 prior to the end of the applicable Notice Period set forth in Section 3 above, Westgo Chief shall, with the full cooperation of the Reseller and the Original Owner, immediately undertake an investigation of such claim. To the extent Westgo Chief shall determine, in its reasonable discretion, that the warranty claim is covered by the foregoing Limited Product Warranty, the following shall apply:

- A. Warranty Claims With Respect to Covered Non-Conforming Conditions Discovered Within the First Three Hundred Sixty Five (365) Days and Reported to Westgo Chief Within Thirty (30) Days of Discovery. In the case of a warranty claim which relates to a covered non-conforming condition that is discovered during the first three hundred sixty five (365) days of the Warranty Period and is reported to Westgo Chief as required by Section 4 within thirty (30) days of discovery as required by Section 3, Westgo Chief will, as Westgo Chief's sole and exclusive obligation to the Reseller and the Original Owner, and as their sole and exclusive remedy, work in cooperation with the Reseller and the Original Owner to correct such non-conforming condition, and in connection therewith, Westgo Chief will ship any required replacement parts to the "ship to address" set forth in the Accepted Purchase Order FOB. Westgo Chief's facilities in Philippines, Clark Freeport Zone, Pampanga and will either provide the labor or reimburse the Reseller or the Original Owner, as may be appropriate in the circumstances, for any out of pocket expense the Original Owner may reasonably and necessarily incur for the labor that is required to correct such non-conforming condition, provided that if work is to be performed by the Reseller or a third party contractor, Westgo Chief may require at least two competitive bids to perform the labor required to repair or correct the defect and reserves the right to reject all bids and obtain additional bids. Upon acceptance of a bid by Westgo Chief, Westgo Chief will authorize the necessary repairs.

- B. **All Other Warranty Claims.** Except as is otherwise provided in subsection 6A above, in the case of all other warranty claims which relate to covered non-conforming conditions that are discovered during the Warranty Period and are reported to Westgo Chief as required by Section 4 within thirty (30) days following discovery, Westgo Chief will, as Westgo Chief's sole and exclusive obligation to the Reseller and the Original Owner, and as the Reseller's and the Original Owner's sole and exclusive remedy, ship any required replacement parts to the Original Owner at the "ship to address" specified in the Accepted Purchase Order FOB Westgo Chief's facilities in Philippines, Clark Freeport Zone, Pampanga; and in such event, Westgo Chief shall have no responsibility or liability to either the Reseller or the Original Owner for the cost of any labor required to repair or correct the defect.
7. **Warranty Not Transferable.** This Warranty applies only to the Reseller and the Original Owner and is not transferable. As such, this Warranty does not cover any Product that is sold or otherwise transferred to any third party following its delivery to the Original Owner.
8. **Limitation on Warranties, Liabilities and Damages.** The Reseller and the Original Owner expressly agree that the allocation of the risk, liability, loss, damage, cost and expense arising from any Product that does not conform to the limited warranty given in Section 2 above are fair and reasonable and acknowledge that such allocation was expressly negotiated by the parties and was reflected in the Purchase Price of the Product. Accordingly the Reseller and the Original Owner expressly agree as follows:
- A. **Disclaimer of Implied Warranties.** EXCEPT AS IS OTHERWISE EXPRESSLY SET FORTH HEREIN, WESTGO CHIEF MAKES NO OTHER REPRESENTATIONS OR WARRANTIES OF ANY KIND WHATSOEVER, WHETHER EXPRESS OR IMPLIED, BY OPERATION OF LAW, COURSE OF DEALING OR OTHERWISE WITH RESPECT TO THE PRODUCT, ANY COMPONENT PART THEREOF OR ANY OTHER GOODS OR SERVICES THAT CHIEF MANUFACTURES, FABRICATES, PRODUCES, SELLS OR PROVIDES TO THE DEALER OR THE ORIGINAL OWNER PURSUANT TO THE TERMS OF ANY ACCEPTED PURCHASE ORDER, INCLUDING WITHOUT LIMITATION ANY REPRESENTATION OR WARRANTY WITH RESPECT TO DESIGN, CONDITION, MERCHANTABILITY OR FITNESS OF THE PRODUCT OR ANY OTHER GOODS OR SERVICES FOR ANY PARTICULAR PURPOSE OR USE.
- B. **Limitation on Liability.** EXCEPT AS IS OTHERWISE EXPRESSLY SET FORTH IN SECTION 6 ABOVE, WESTGO CHIEF'S LIABILITY TO THE DEALER AND/OR THE ORIGINAL OWNER WITH RESPECT TO ANY DEFECTS IN ANY PRODUCTS OR FOR ANY OTHER GOODS OR SERVICES WHICH DO NOT CONFORM TO THE WARRANTIES SET FORTH ABOVE SHALL NOT, IN ANY EVENT, EXCEED THE ACTUAL COST OF SUCH NON-CONFORMING PRODUCT, GOODS OR SERVICES AS DETERMINED PURSUANT TO THE ACCEPTED PURCHASE ORDER; AND
- C. **Limitation on the Nature of Damages.** EXCEPT AS EXPRESSLY PROVIDED IN SECTION 6 ABOVE, WESTGO CHIEF SHALL NOT, UNDER ANY CIRCUMSTANCES, BE LIABLE TO THE DEALER, THE ORIGINAL OWNER OR ANY THIRD PARTY FOR ATTORNEY FEES COURT COSTS OR ANY OTHER SPECIAL, INDIRECT, INCIDENTAL, CONSEQUENTIAL, LIQUIDATED OR PUNITIVE DAMAGES OF ANY NAME, NATURE OR DESCRIPTION AS A RESULT OF THE FAILURE OF ANY PRODUCT OR ANY OTHER GOODS OR SERVICES PURCHASED BY THE DEALER OR THE ORIGINAL OWNER FROM WESTGO CHIEF PURSUANT TO THE ACCEPTED PURCHASE ORDER TO CONFORM TO THE LIMITED WARRANTIES SET FORTH IN SECTION 2 ABOVE.
9. **Applicable Law.** This Limited Product Warranty has been issued, accepted and entered into by the Reseller, the Original Owner and Westgo Chief in the Philippines and shall be governed by, and construed in accordance with, the internal laws of the Philippines. Any legal action or proceeding with respect to any goods or services furnished to the Original Owner by Westgo Chief in connection herewith, or any document related hereto shall be brought only in the judicial courts of Philippines and, by execution and delivery of this Limited Product Warranty, the undersigned Original Owner hereby accept for themselves and with respect to their property, generally and unconditionally, the jurisdiction of the aforesaid courts. Further, the undersigned Original Owner hereby irrevocably waives any objection, including, without limitation, any forum non conveniens, which it may now or hereafter have to the bringing of such action or proceeding in such respective jurisdictions.

ACKNOWLEDGMENT OF RECEIPT

By its signature hereto, the undersigned Reseller represents and warrants to Westgo Chief that the Reseller has provided a true, correct and complete copy of this Standard Limited Warranty to the Original Owner at the time the product was purchased.

Reseller Name and Address:

Original Owner Name and Address:

Accepted Purchase Order No.

Original Jobsite Address:

RESELLER:

By: _____
Date

Print name and title

Warning

Water Sensitive Materials - Read this notice carefully

Items must be inspected and carrier advised immediately if damage is noted. White rust is a corrosion attack of the zinc coating resulting from the presence of water. Anywhere rust is found will result in a reduction of the life of the galvanized steel.

If water has entered a bundle or if condensation has formed between items, the bundle must be opened, the items separated and all surfaces dried.

If items are to be installed within 10 days:

Store bundled items off the ground high enough to allow air circulation beneath bundle and to prevent water from entering. Store 1 end at least 8" (20.32cm) higher than the opposite end. Support long bundles in the center. Prevent rain from entering the bundle by covering with a tarpaulin, making provision for air circulation between the draped edges and the ground.

Do not wrap in plastic.

If items are not to be installed within 10 days:

Provide inside dry storage. Storage beyond 6 months is not recommended. If white rust is apparent upon receipt of shipment, notify Westgo Chief immediately. Damage to items, resulting from improper storage, is the responsibility of the receiver.

Before You Begin

Before starting the installation of the bucket elevator, take time to thoroughly study the construction methods in this manual, this will save you time and money.

Westgo Chief makes no warranty concerning components, accessories or equipment not manufactured by Westgo Chief.

When using a cutting torch or welding galvanized material, the possibility of developing toxic fumes will exist. Provide adequate ventilation and respiratory protection when using this type of equipment during installation.

Introduction

Thank you for purchasing a Chief bucket elevator. Proper installation and operation will ensure you the best overall experience with your equipment and guarantee smooth operation. This proprietary information is loaned with the expressed agreement that the drawings and information therein contained are the property of Westgo Chief Philippines Corporation and will not be reproduced, copied, or otherwise disposed of, directly or indirectly, and will not be used in whole or in part to assist in making or to furnish any information for the making of drawings, prints or other reproduction hereof, or for the making of additional products or equipment except upon written permission of Westgo Chief Philippines Corporation first obtained and specific as to each case. The acceptance of this material will be construed as an acceptance of the foregoing agreement. The technical data contained herein is the most recent available at the time of publication and is subject to modification without notice. Westgo Chief Philippines Corporation reserves the right to modify the construction and method of operation of their products at any time without any obligation on their part to modify any equipment previously sold and delivered.

Special Service Note: If you are unable to remedy any service problem after thoroughly studying this manual, contact the dealer from whom you purchased the unit. Your dealer is your first line of service. The following information is required for service:

1. Bucket elevator model and serial number: _____
2. Head pulley diameter: _____
3. Discharge height: _____
4. Motor RPM and HP: _____
5. Type of grain and capacity: _____
6. Dealer purchased from: _____
7. Dealer address and phone number: _____
8. Date purchased: _____
9. Service contractor:
 - a. Name: _____
 - b. Address: _____
 - c. Phone: _____

General Design Information

All steel materials are purchased in accordance with the applicable ASTM Standard.

All bolted connections are designed using high strength bolts which meet the specifications of the applicable ASTM or SAE standard.

All galvanized steel conform to ASTM specification A653 with the galvanized coating to ASTM specification A924.

Galvanized coating type G-115 specifies galvanization of 1.15 oz/ft² (Z350; 350 gm/m²) total for both sides in the following materials:

- 22 Gauge thickness & lighter = Commercial Steel Type A, 33ksi min yield (grade 230)
- 18 & 20 Gauge thickness = Structural Steel Grade 40, Class I; 40ksi min yield (grade 275)
- 17 Gauge thickness & heavier = Structural Steel Grade 55, Class I; 55ksi min yield (grade 340)

Accessory Equipment

All accessory equipment should be installed and maintained in accordance with each individual supplier's installation and operation instructions. However, if any modifications to the Westgo Chief standard design are required, contact Westgo Chief for special recommendations.

Important Note: Do not modify the bucket elevator design without Chief approval. It is the responsibility of the general contractor to verify that all equipment is properly installed and that the equipment is compatible with the intended use. A qualified electrician should be contracted to complete all electrical wiring and servicing.

General Contractor Responsibilities

It is the responsibility of the general contractor to verify that the complete system (bucket elevator, foundation and other accessory equipment) is constructed with quality workmanship and that all equipment is installed per the respective manufacturer's instructions.

In addition, the general contractor is responsible for the fitness of use of any system which he constructs. All accessory equipment incorporated into the system should be approved for the intended use by each respective equipment manufacturer.

Field Modifications and Installation Defects

Westgo Chief assumes no responsibility for field modifications or installation defects which result in structural damage or storage quality problems. If any field modifications are necessary which are not specifically covered by the contents of the installation manual, contact Westgo Chief for approval. Any unauthorized modification or installation defect which affects the structural integrity of the bucket elevator will void the warranty.

Checking Shipment

For your convenience individual items will be labeled with an appropriate part number and packages labeled. Hardware, including bolts, nuts, screws and other small clips or brackets may be divided into smaller packages for ease of use and identification. Check your shipment at the time of delivery against the packing list provided with the shipment. If any items are missing or any damaged material is evident, note such shortage or damage on the freight bill before you sign the shipment paperwork. Claims of shortages will not be honored after 30 days from receipt of shipment. Parts that are missing or damaged are the responsibility of the delivering carrier, not the manufacturer or dealer. It is advisable to reorder damaged or missing parts immediately so that there will be no delay in the bin installation. After receiving the invoice for the reordered material, file a claim with the delivering carrier immediately.

Suggested Equipment

Chief recommends the following equipment and tools needed for installation. Individual installations may vary.

- Impact wrenches and sockets
- End wrenches
- Crescent wrenches
- Vise grip pliers
- Alignment punches
- Rubber mallets
- Level
- Drill and drill bits
- Screw Guns
- Metal Saw
- Extension cords
- Ladders

Hardware Torque

The following table contains recommended minimum and maximum torque values for installation.

When installing hardware the minimum and maximum torque values shown below must be followed. All hardware must seat tight against the corresponding bin component.

Bolt Diameter	Torque
5/16" (8mm)	16 ft.-lbs. (22N-m)
3/8" (10mm)	29 ft.-lbs (39N-m)
7/16" (11mm)	46 ft.-lbs. (62N-m)
1/2" (13mm)	70 ft.-lbs (95N-m)
5/8" (16mm)	140 ft.-lbs (190N-m)
3/4" (19mm)	250 ft.-lbs (340N-m)
7/8" (22mm)	400 ft.-lbs (542N-m)
1" (25mm)	600 ft.-lbs. (813N-m)
1 1/2" (29mm)	750 ft.-lbs (1017N-m)
1 1/4" (32mm)	1100 ft.-lbs (1491N-m)

READ THIS SECTION BEFORE ASSEMBLING, INSTALLING, OR OPERATING THE DRAG CONVEYOR.

This section provides important cautions and recommendations relating to personal safety. If you have questions regarding safety, installation, operation, and maintenance of your Belt Conveyor that are not answered in this manual, contact Westgo Chief Philippines Corporation.

PERSONAL SAFETY

Westgo Chief Philippines Corporation strongly recommends the following safety precaution be observed at all times, during assembly, installation, and operation of the Drag Conveyor.

- Make sure lighting is adequate around the area where equipment is used.
- Do not operate the conveyor until all guards have been securely installed.
- Never operate the conveyor with safety guards removed.
- Always clear the area of bystanders before starting the unit.
- Wear proper eye protection whenever operating the conveyor.
- Keep hands, feet, clothing, and hair away from all moving parts.
- Never step, walk, or ride on the conveyor. Keep off equipment at all times.
- Keep untrained personnel away from the equipment while in operation.
- Safety warning labels have been provided by Westgo Chief for the protection of personnel who operate the conveyor. Should warning labels be removed or made illegible, contact Westgo Chief for replacement safety labels.



Electrical Safety Recommendations

- All electrical connections should be made by a qualified electrician.
- Check local codes before installation.
- A lockable external safety lockout switch (line disconnect) must be provided and located as close as possible to the machine.
- Always be sure that electrical outlets, tools, and components are properly grounded.
- Make sure all electrical connections are tight and the electrical cords are routed safely out of the way of traffic or protected.
- Make sure all control switches are in the off position before connecting the unit to the power source.
- Before adjusting, repairing, or cleaning the unit, shut down the conveyor and power source, lock out the power source, and make sure all moving parts have stopped.

Bucket Elevator Safety

The following decals are installed at appropriate locations. Keep the decals clean at all times. If decals are no longer readable or missing they must be replaced. Contact Westgo Chief Philippines Corporation for replacement decals.

Located on the inspection window:



Pre-Installation Planning Information

Bucket elevators should be preplanned to meet the project requirements. Engineering drawings will simplify the installation and should include the following:

- Site layout
- Capacities
- Location and orientation of elevator
- Locations of boot foundation
- Location of spouting and accessories

Structural Capacity

Safety is the first consideration in all planning for installation and operation of the elevator. This elevator has been designed to safely support its own weight and withstand winds to 186.41mph to the height specified. It is not designed to support or brace other equipment.

Important Note: All distributors, cleaners and/or spouting must be approved in writing by Westgo Chief Philippines Corporation when intending to use the elevator for full or partial support, or bracing, otherwise extra attachments must be independently supported and braced.

Elevator Location

The elevator must be properly located to receive incoming material and discharge it at the desired location. This requires an exact location for the elevator boot unit. Determine whether the boot is to be fed from the down or the up leg side or both sides of the elevator. The down leg side is recommended for light materials like ground feed. The up leg side is recommended for heavier, free flowing materials like whole grains. On outside installations, check the planned location for the boot, head, spouting, and guy cables for clearance to other structures. Driveways, overhead power lines and building structures can present special hazards and obstructions. On inside installations, check the location for the leg as it passes through each floor. Additional clearance for the ladder must be provided.

Concrete Design and Construction

Foundation designs are based on the allowable soil bearing capacity of the undisturbed soil and should be certified by a licensed engineering firm. Using soil borings to determine the allowable soil bearing capacity, a professional engineer will need to be employed by the contractor to design the foundation and floor slab accordingly. Foundation designs must be approved by a licensed engineer in order to meet local governing building codes and local soil and weather conditions, including seismic and wind loading requirements.

Non-uniform settlement of the foundation can cause severe structural damage to the structure and foundation. An improperly designed or constructed foundation will void all aspects of the warranty. It is the responsibility of the general contractor to verify that an adequate foundation is provided.

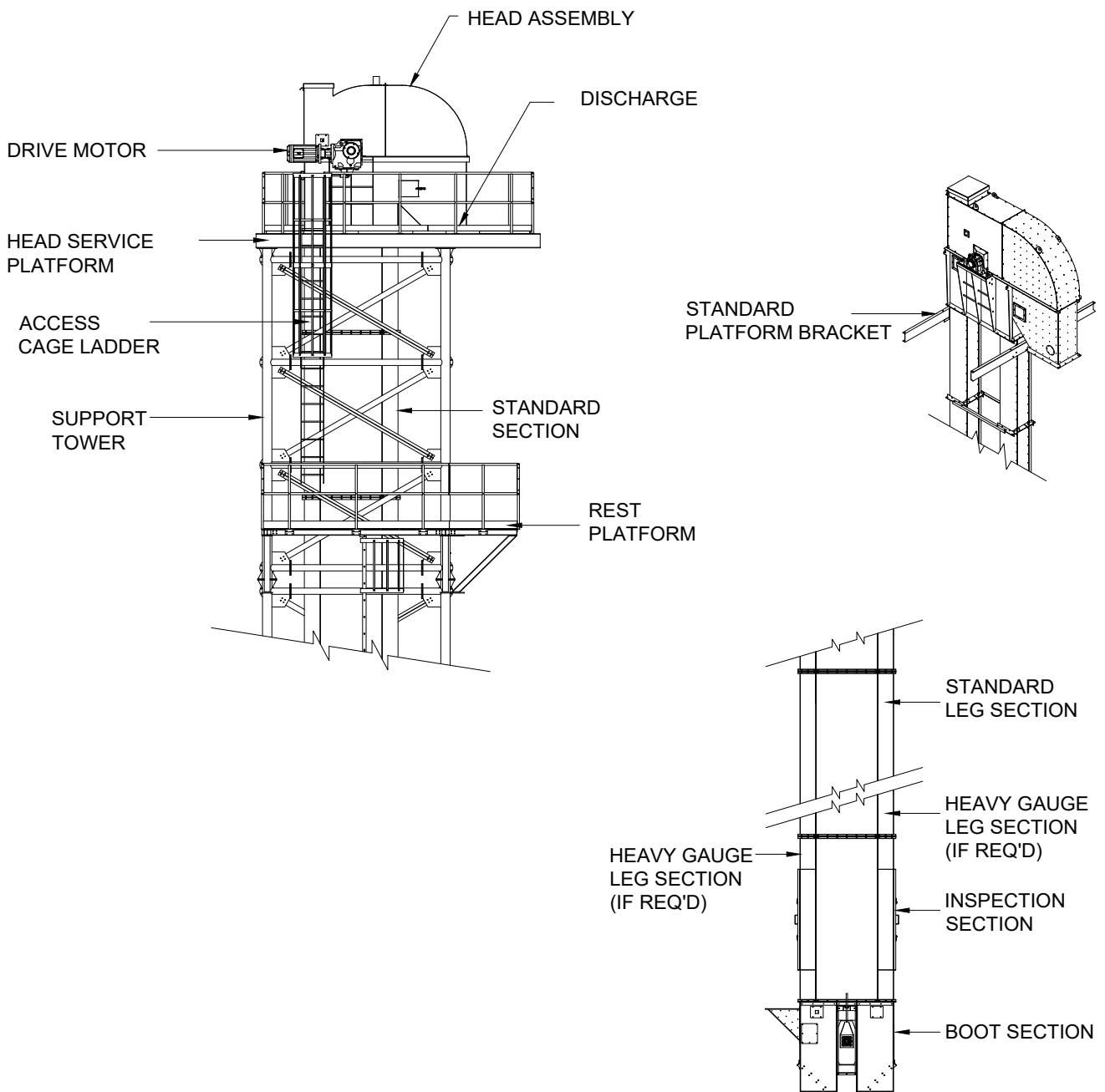
Important Note: If the boot is installed in a pit or other permanent structure then adequate clearance must be provided to service the elevator.

INSTALLATION

Westgo Chief does not assume any responsibility from parts damaged due to faulty or improper installation procedures.

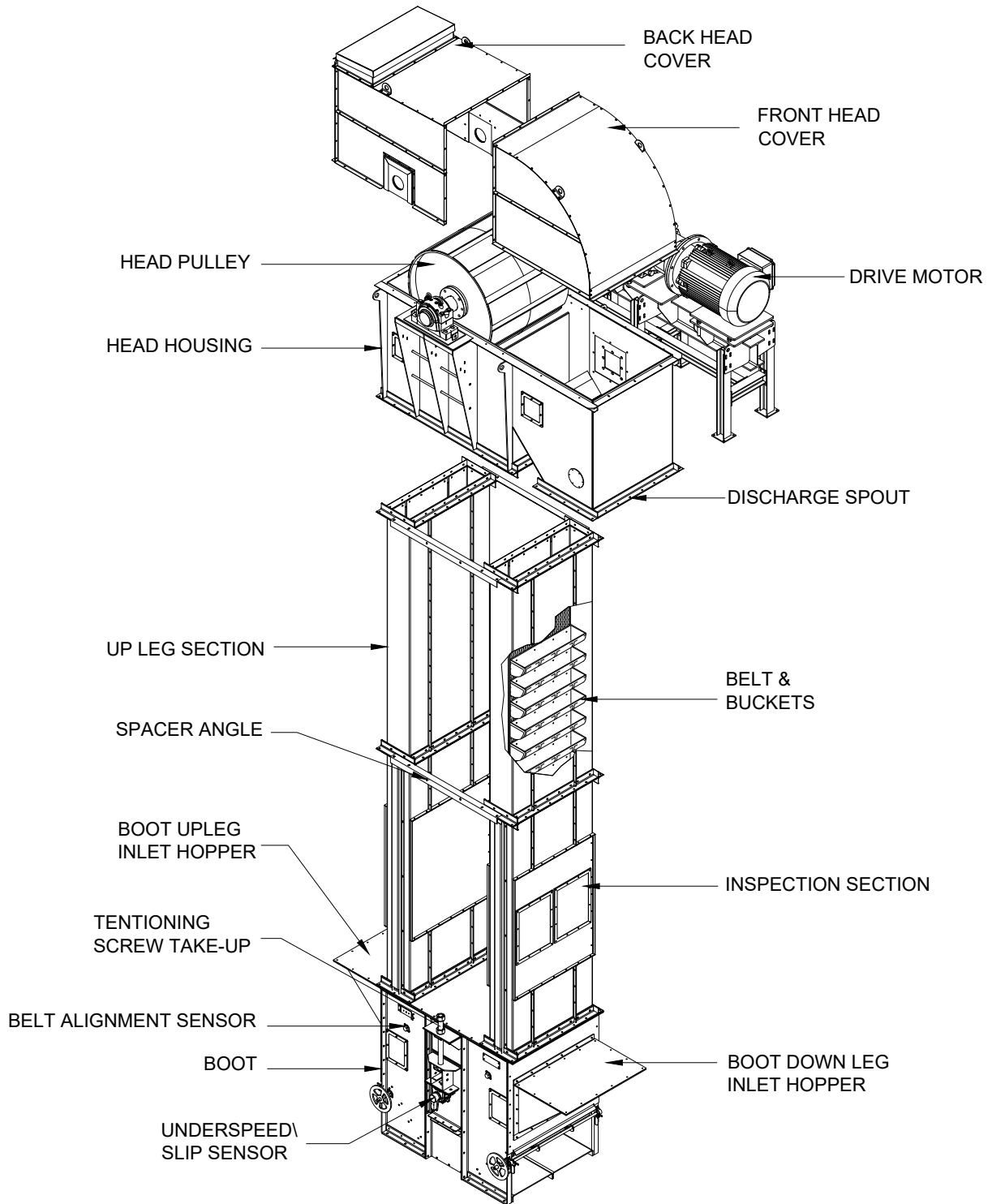
The general installation of the bucket elevator components will be in the following order. The elevator can be completely assembled within about 10' of the ground if this method is used. Crane time can be reduced if 30' sections, including accessories are attached horizontally on the ground and then hoisted with the crane.

1. Set the boot section on the footing
2. Install leg sections from the top down
3. Install head section



Part Identification

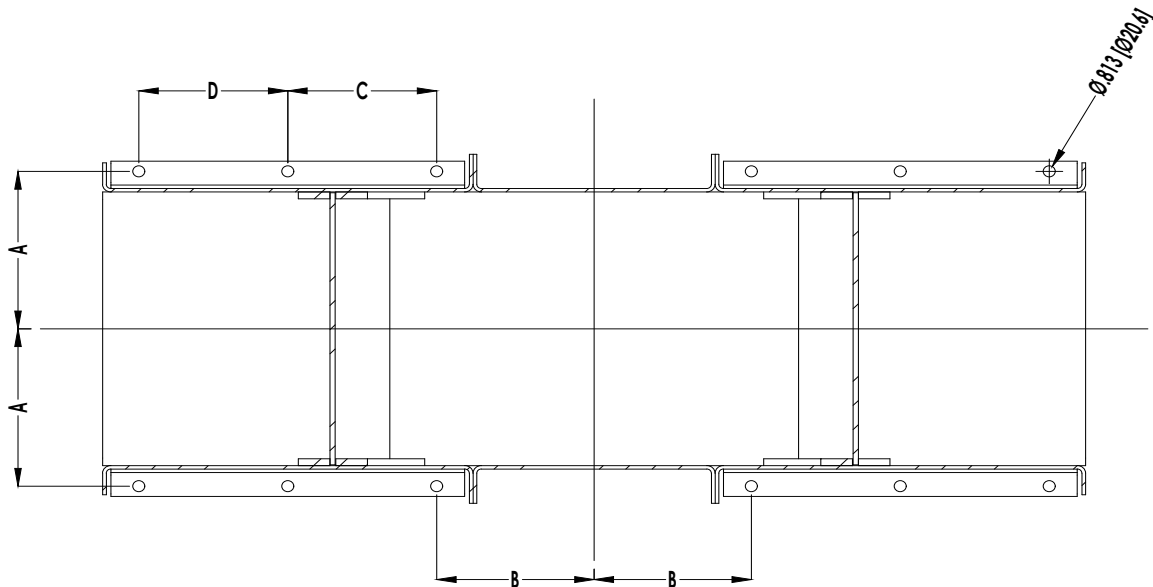
Use the following information to identify parts used during installation.



BOOT SECTION ASSEMBLY

Locate the boot on its foundation according to the pre-planned requirements. The boot must be bolted into position prior to installation of the elevator to avoid accidental movement. Use lag bolts for anchor clip attachment.

Important Note: Verify the top flanges of the boot where the leg sections will attach are level. Use a grouting cement under the boot base angles as needed to level the boot section. Verify that the grouting cement is used below the complete leveled surface of the boot base angle for proper boot support.



This section explains how to assemble the bucket elevator. If a question arises during the assembly procedure that is not answered in this document, contact Westgo Chief Philippines Corporation and ask for Field Service.

ARRANGE COMPONENTS

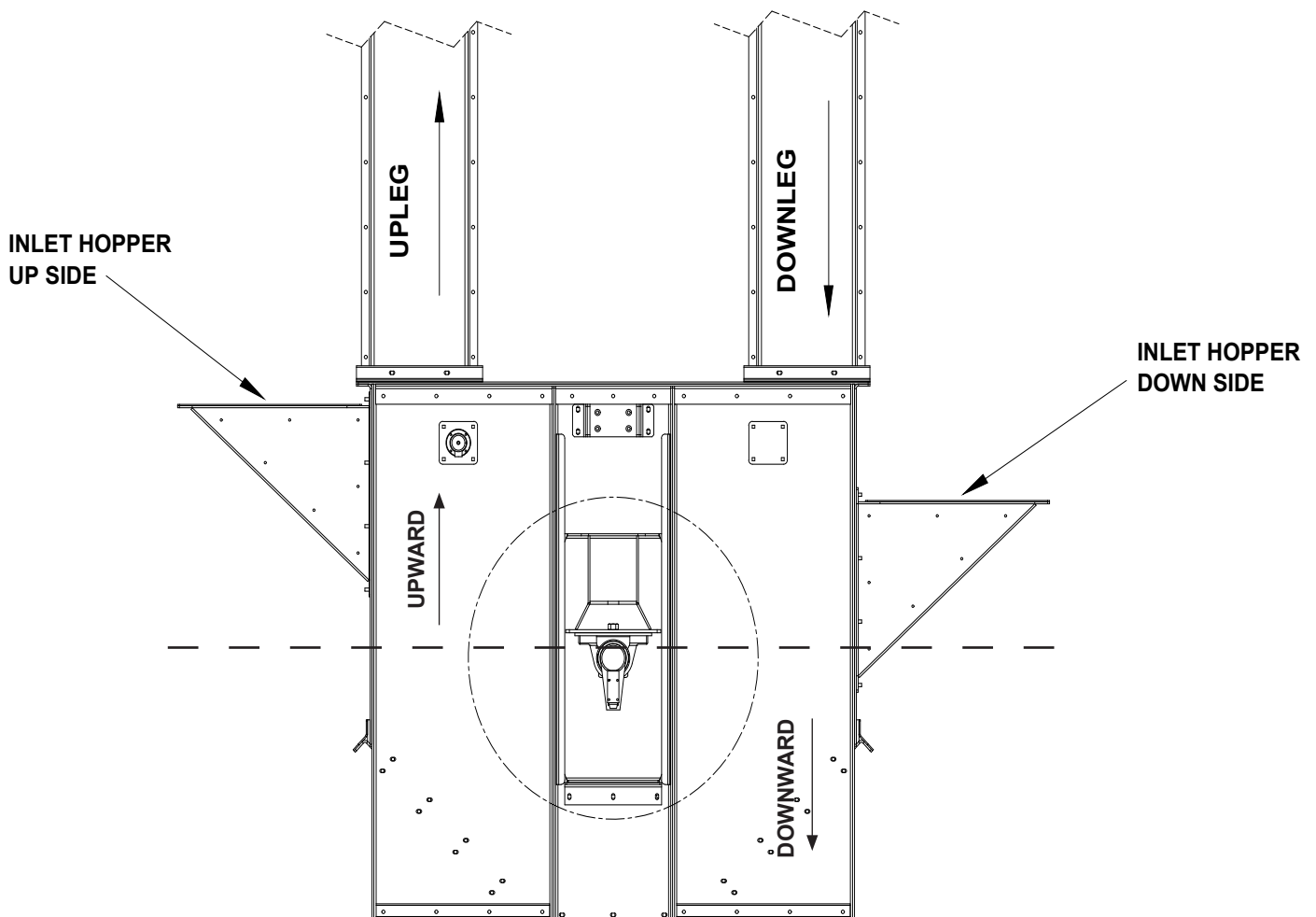
- Lay out the sections as they are intended to be installed.
- Boot section.
- Determine in what order the casing sections should be assembled so that the inspection door casings are at the proper work floor height. See Assembly, Bill of Material Drawing. A short section may be required.
- Locate the inspection door casing with the hinged inspection door. This section must be on the up side of the bucket elevator.
- Standard 10' casing sections.
- Short casing sections are usually required to complete the final bucket elevator height.
- Head section and its components.

SUPPORTING BUCKET ELEVATOR

- Install permanent bracing. Casing more than 30 feet high should be guyed or braced until permanent bracing is installed.
- Bracing maintains alignment and prevents twisting of casing.
- Install bracing at casing joints. Brace in two directions at 90 degrees. Permanent bracing is NOT supplied with bucket elevator.
- All bucket elevators must be braced or anchored to a rigid structure to maintain stability.
- Bucket elevators should be braced at a point not more than 4 feet below the head shaft and at intermediate points not over 20 feet apart.

BOOT SECTION INSTALLATION

- Standard type boot sections are pre-assembled at the factory, but pulley alignment should be checked at this time. Tighten all set screws and taper type hub screws.
- Place boot section on foundation provided by contractor and make certain inlet side is correctly located.
- Mount inlet hopper(s). Inlet hoppers can be placed on the up-side or down-side of the boot or on both sides. The standard inlet hopper is designed to be bolted on either side (up or down side). Standard type boot sections are pre-assembled at the factory, but pulley alignment should be checked at this time. Tighten all set screws and taper type hub screws.
- Place boot section on foundation provided by contractor and make certain inlet side is correctly located.
- Mount inlet hopper(s). Inlet hoppers can be placed on the up-side or down-side of the boot or on both sides. The standard inlet hopper is designed to be bolted on either side (up or down side).
- Level top of boot with steel shims under boot. Place shims by the anchor bolts. Use enough shims to level boot. Anchor boot securely to foundation. Move boot shaft to the top of the take-up travel with screw adjusters and lock in place. Mark housing and sliding portion of take-up for reference points when making future adjustments.

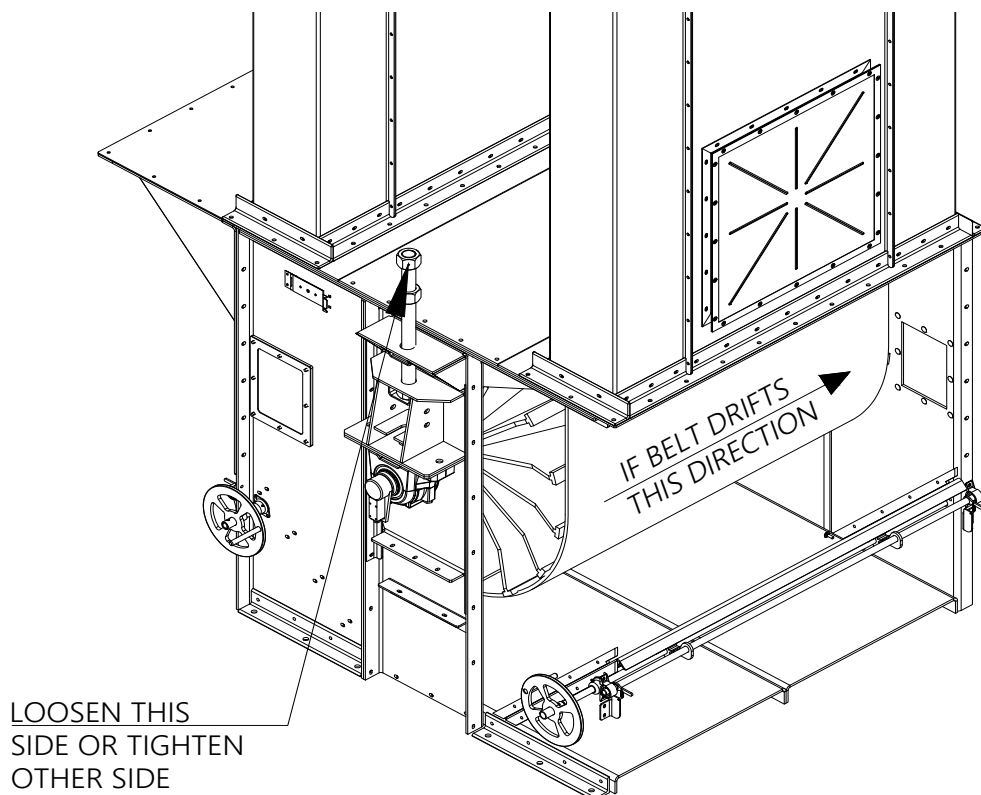
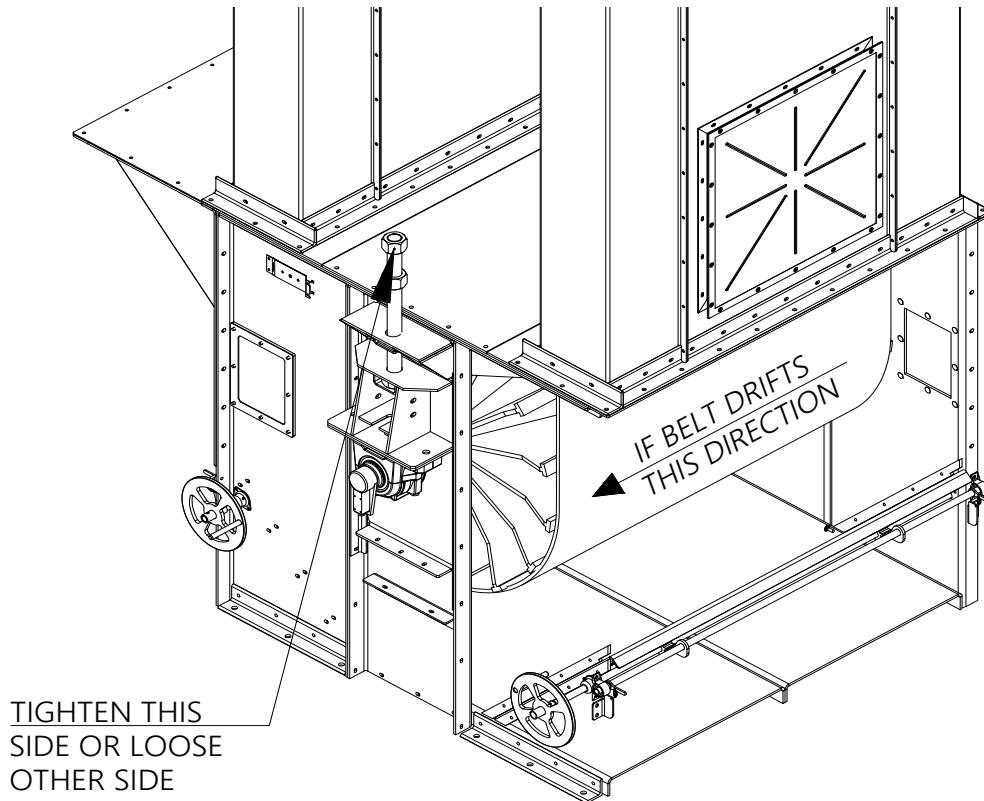


BELT TENSION

Adjust screw take-ups down to keep slack out of belt when elevator is operating loaded and to provide the necessary head pulley traction to drive the elevator under normal operating conditions.

Optional gravity take-ups are usually shipped with a minimum amount of counter weight. Additional weight may have to be added to keep slack out of belt as described in the preceding paragraph for screw take-ups.

Important note: User should provide suitable safety guard around limit of travel of gravity type take-ups to permit full travel yet protect against any injury to personnel. Guard must be suited to physical surroundings for each individual installation.



LEG SECTION ASSEMBLY

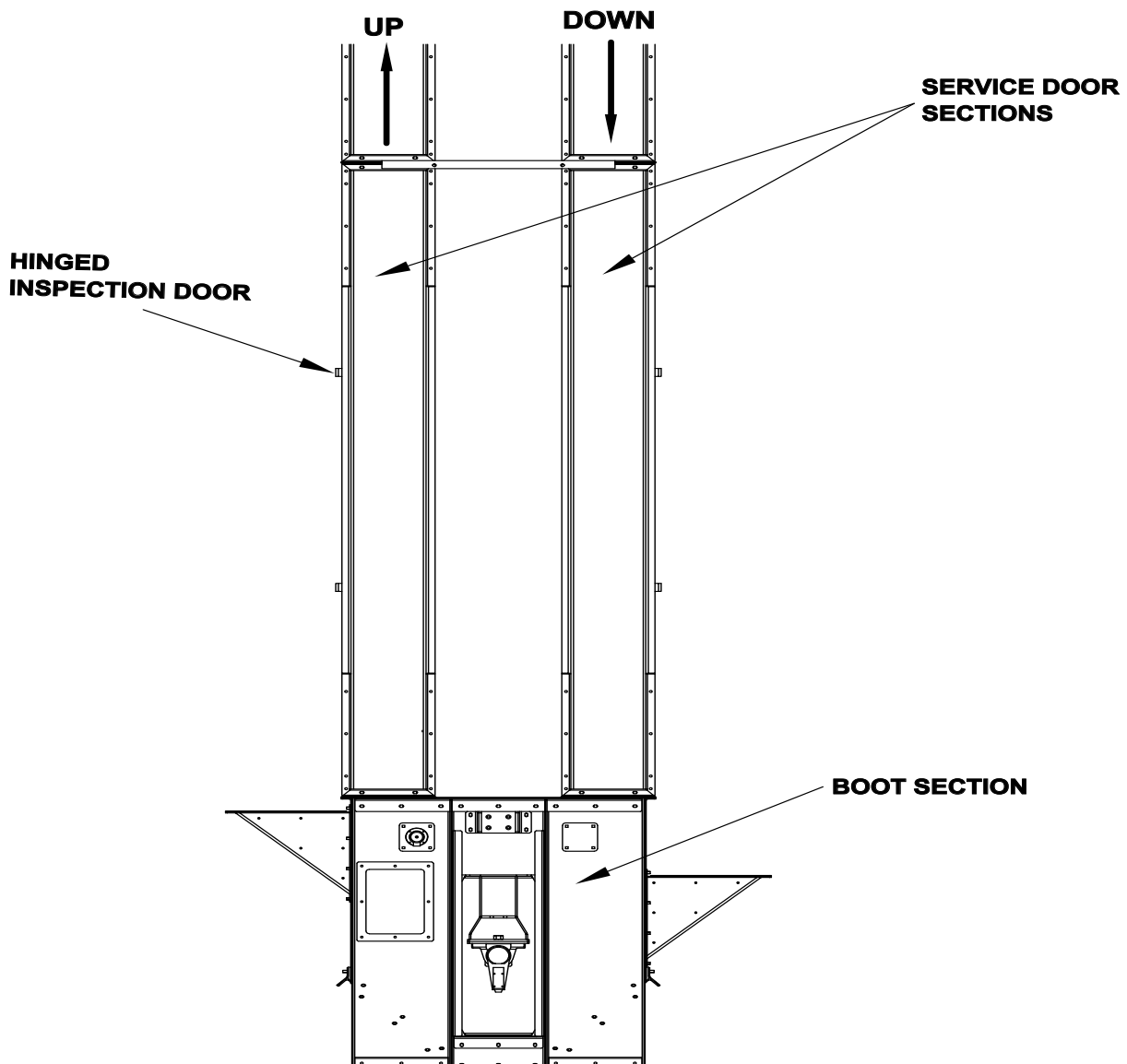
Install bolted flange leg sections. The elevator height will determine if heavier gauged material leg sections are required at specific locations of your unit. Bolted flange leg sections will be factory stamped, identifying the material gauge. This gauge will determine the placement of the leg section with heavy gauge sections located at the bottom near the boot assembly and lighter gauge sections located at the top near the head section.

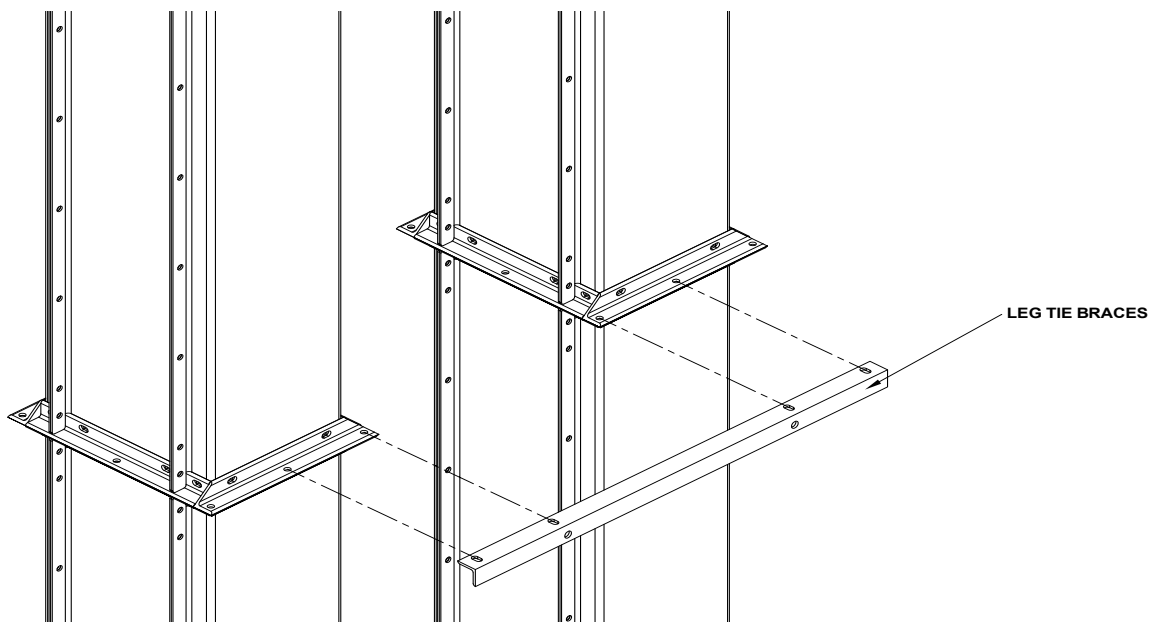
Engineering drawings supplied with shipment will provide stacking instructions.

Important Note: Leg section component design will vary depending upon elevator model. Leg sections will consist of two body sections or of a body section and a lid panel.

CASING INSTALLATION

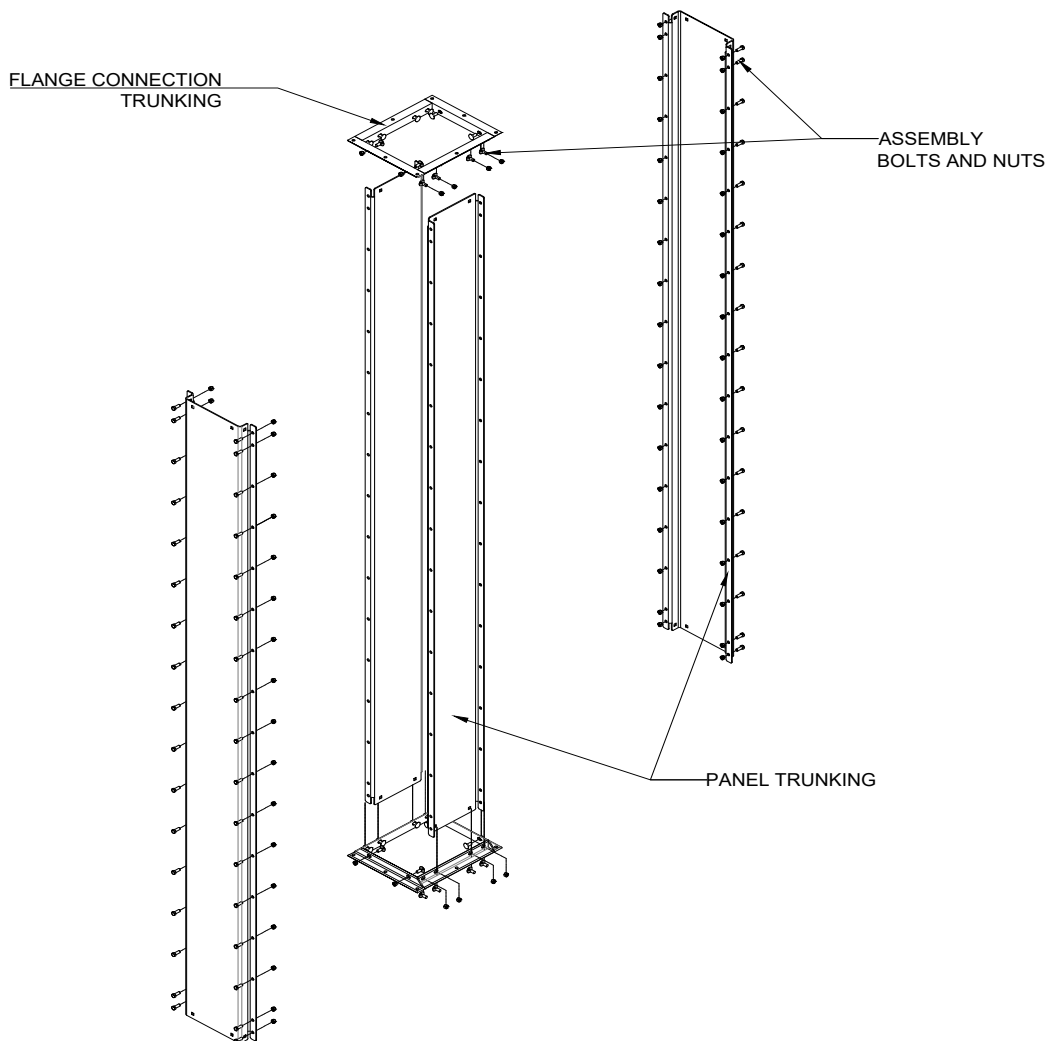
- Refer to project drawing to locate inspection door section.
- If your bucket elevator came with ladder and cage assembly see Ladder in the Options section.
- Apply sealing compound (mastic or gasket material) at casing joints and to top of boot section.
- Install first sections on top of boot.
- Using alignment punch in two holes of flange (opposite corners), install bolts in remaining holes. Plumb and square the sections. (Do not tighten bolts completely at this time.)
- Install next 10' casings using alignment punch. Repeat procedure above. Install leg tie braces at this time.



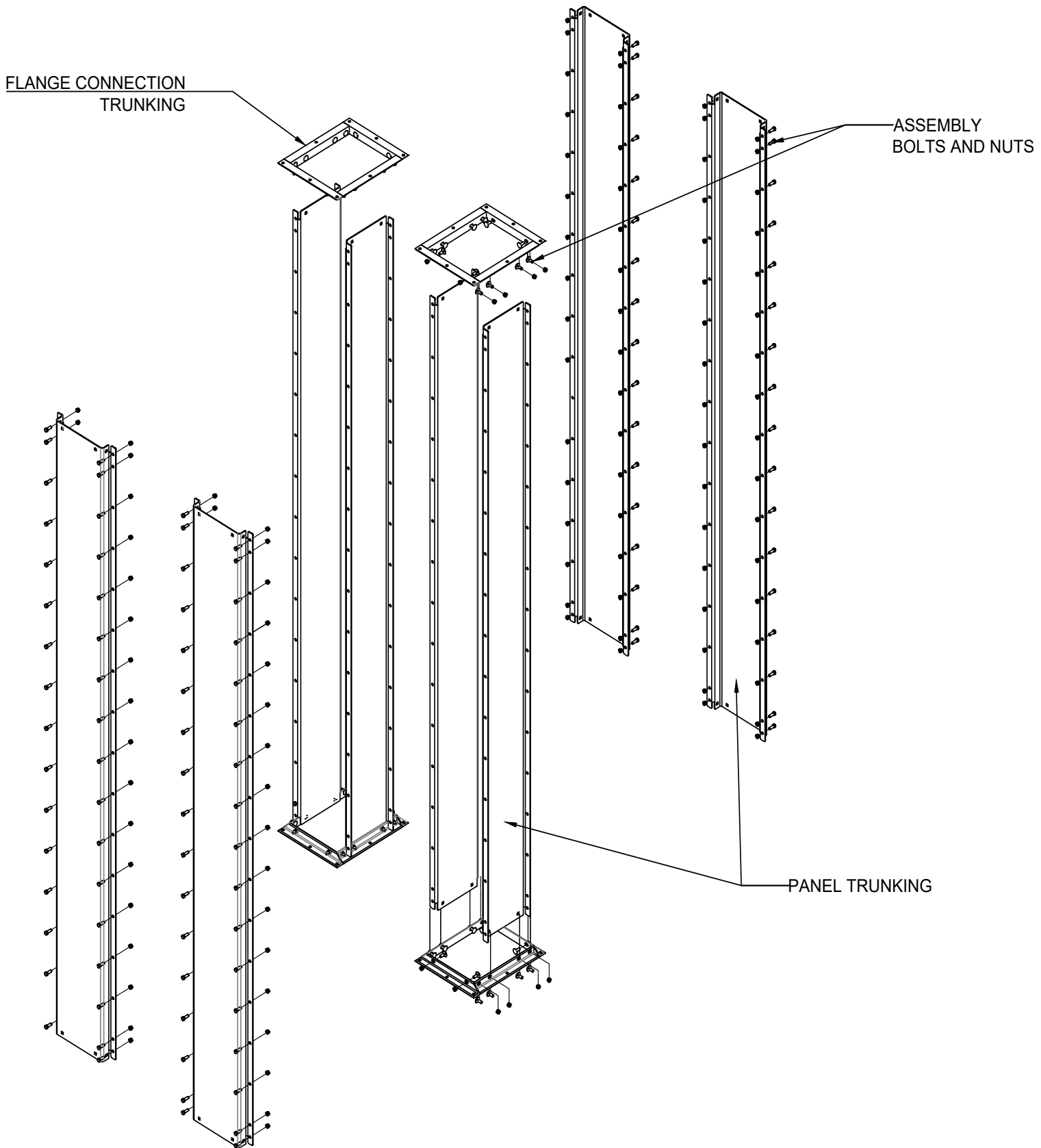


- Tighten bolts at the first connection. Remove alignment punch, insert bolts and tighten.
- Repeat steps above until all casings sections are assembled.
- If your bucket elevator came with a head service platform, assemble platform and mount to platform casing sections.

Important note: Apply caulk around the outside perimeter of the angle flanges to prevent water from entering and dust from exiting inside the bucket elevator.



Important note: Apply caulk around the outside perimeter of the angle flanges to prevent water from entering and dust from exiting inside the bucket elevator.



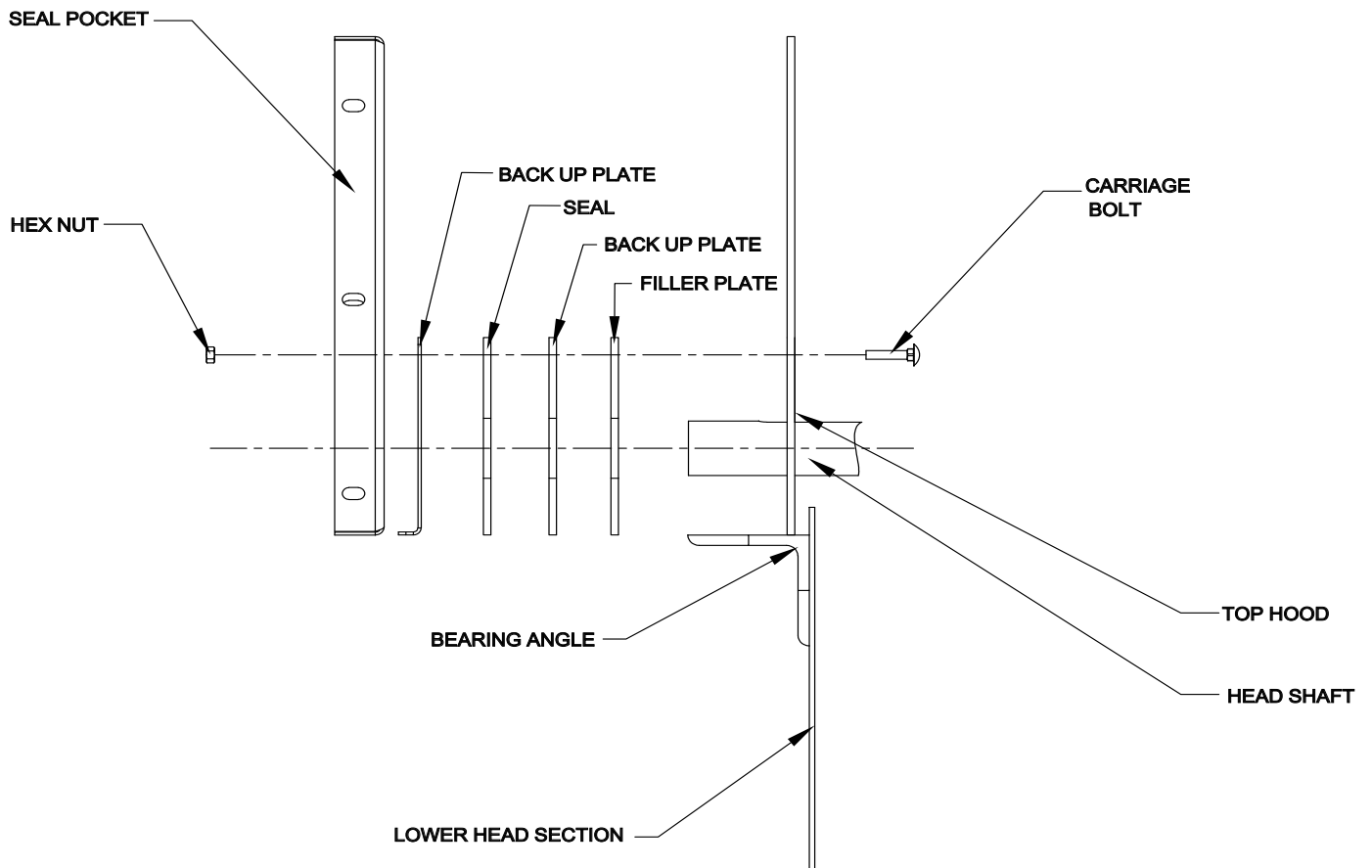
HEAD SECTION ASSEMBLY

Install the head section of the bucket elevator.

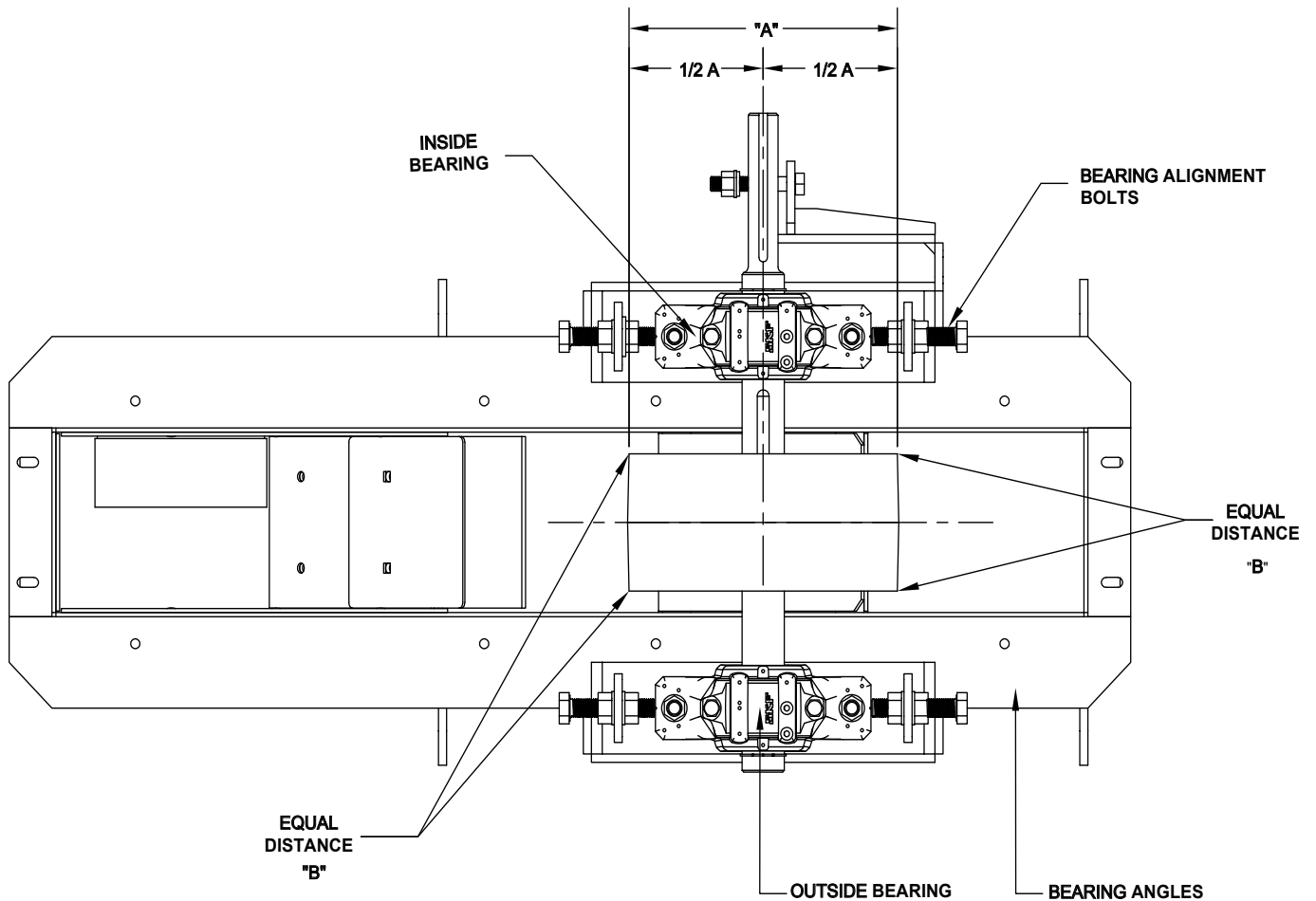
A reducer backstop is recommended on tall and large capacity elevators. This backstop prevents a loaded elevator from reversing direction when power is lost to the head pulley. If the reducer drive has been equipped with a backstop, verify the correct direction of rotation. To verify the direction of rotation, rotate the top of the head pulley towards the discharge side of the head. The pulley should rotate freely in this direction but not in the opposite direction. If the backstop is reversed, refer to the reducer manufacturer's instructions.

Position the motor on the head assembly motor mount and attach with the bolt package provided. Adjustment to the motor mount may be required so that the end of the motor shaft is in line with the end of the reducer input shaft.

Install the drive belts and adjust belt tension. Using a belt tension checker adjust the belts so that a force in the middle of each belt will deflect the belt 1/64" for each inch of distance between the sheave centers.



- Assemble head pillow block bearings to head shaft in the approximate correct locations. See bearing installation instructions packed with bearings.
- Lift head pulley assembly and place onto lower head section with bearings setting on bearing angles and install bearing bolts through bearing and bearing support angles. Do not tighten at this time.
- Move head shaft so that approximately 1/2" of shaft protrudes beyond the end of outboard bearing. Lock outboard and inside bearings to shaft.
- Align head pulley in head section. Pulley must be centered in head section (equal distance from section sides) and tighten pulley hubs to shaft.
- Using bearing alignment bolts, center pulley in head section. Set shaft center distance to half of the "A" dimension, adjusting so that all four corners of pulley are equal distance "B" from head section sides.
- Using bearing jack bolts, level head pulley. Jack bearing up on the low side until level. Place shim plates under bearing and back off jack bolt screw.
- Tighten head bearing bolts to secure bearing to head section.
- Do not mount top hoods at this time, return to Head Section Installation in the Assembly section.

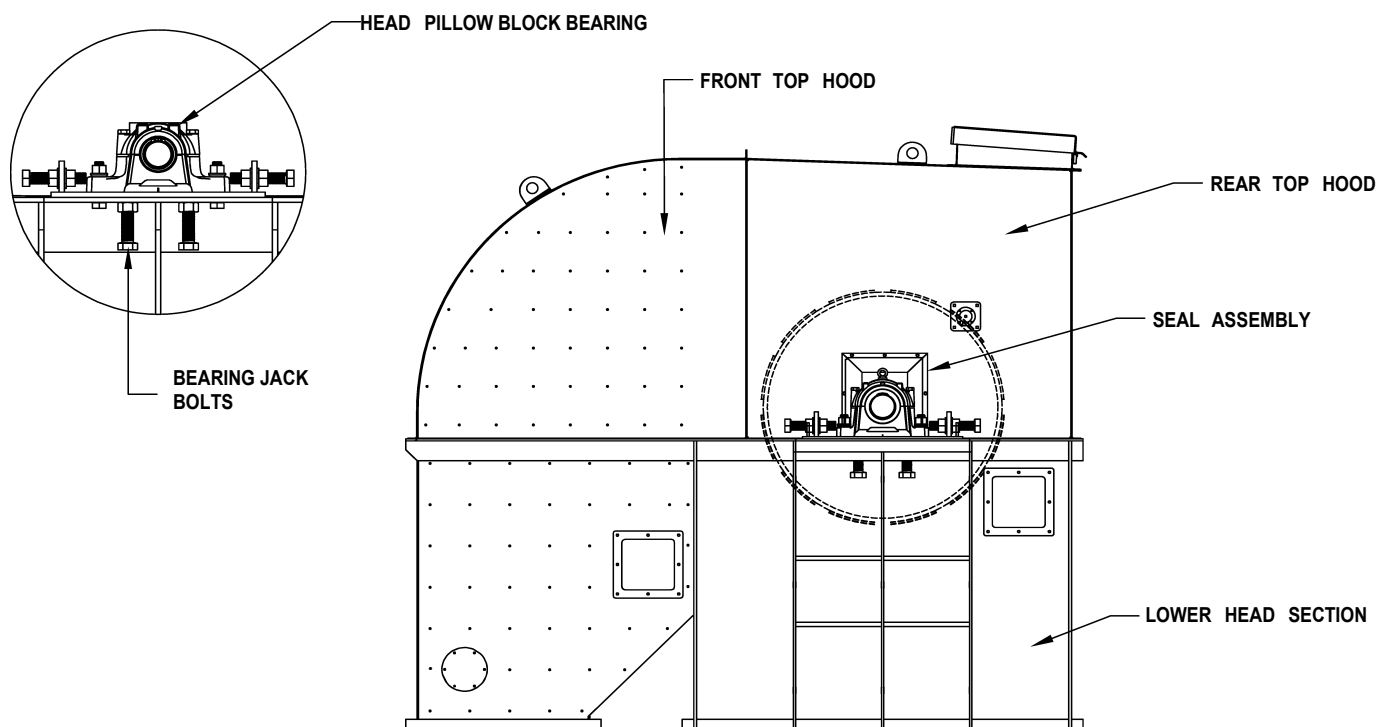


HEAD SECTION INSTALLATION

- Align and level head pulley.
- Install motor mount and drive.
- Bolt lower head section to the last casing sections.
- Plumb and align entire casing using lines hung at center of each side of casing.

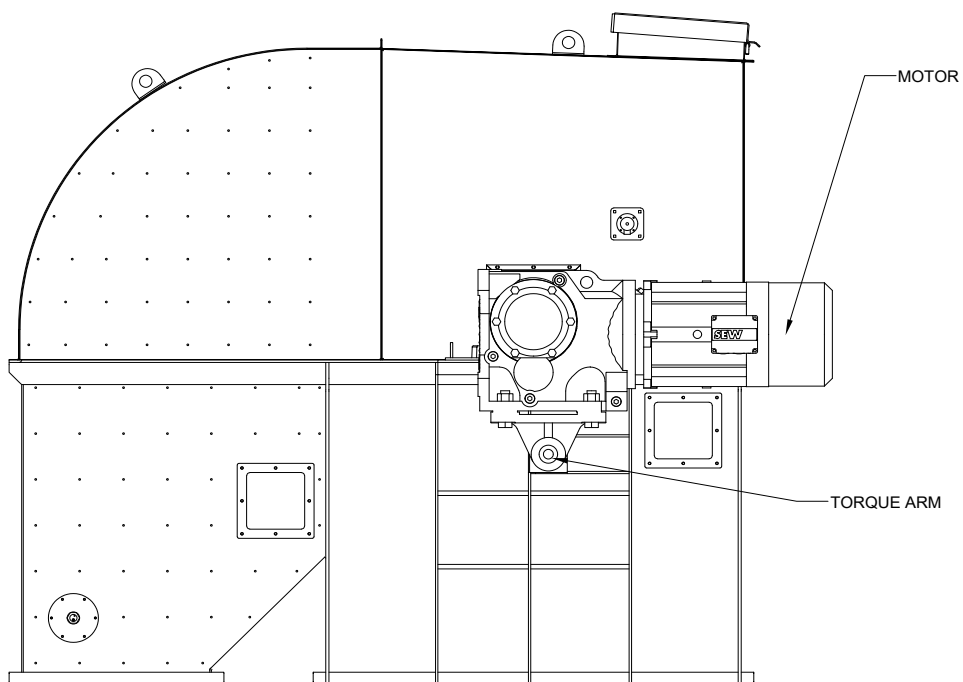
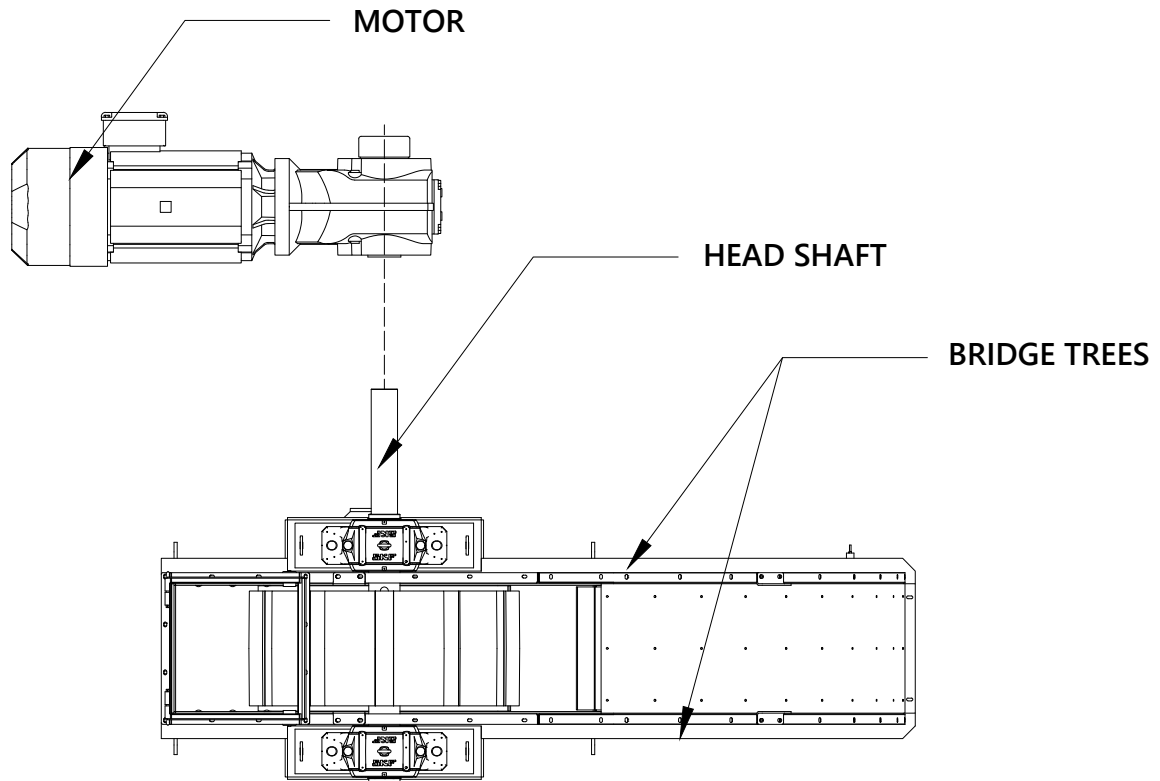
Mount Hood and Seals

- Apply sealing compound (mastic or gasket material) at all flange joints and place back top hood (upside) on lower head section over head shaft and bolt in place.
- Place shaft seal plates next to top hood sides and bolt seal pocket in place.
- When you have completed this section, return to Head Section Installation in the Assembly Section.



Shaft Mount Drive

- Unpack drive components from shipping containers as needed. Keep all instruction sheets packed with each drive component and insert them in this section of the manual for future reference and service.
- If your drive requires a back stop, install the back stop at this time. See instruction manual for installing back stops in the Service Bulletin section of this manual.
- Using the instructions and hardware supplied with the reducer, assemble it to the Bucket Elevator head shaft. (Don't forget to fill reducer with proper oil.)



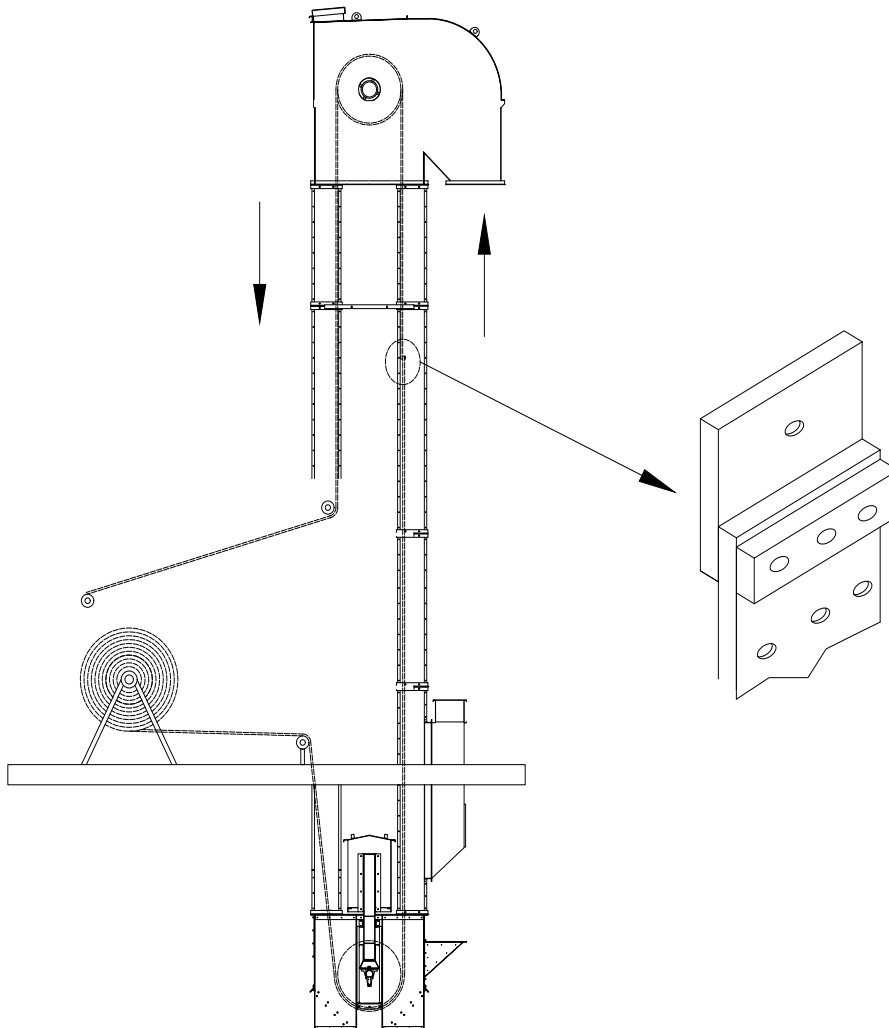
BELT INSTALLATION

Install belt over head and boot pulleys after one end of belt has been squared.

One method of installing belt is as follows: Thread rope or cable around boot and head pulleys. Pull belt through casing with winch. Support roll of belting so it is free to turn. Use a belt clamp arrangement to pull belt, bolting through last row of bucket holes at squared end of belt. (If belt is long, it may need to be bolted through more than one row of bucket holes.) To prevent damage to belt, DO NOT use “C” clamps.

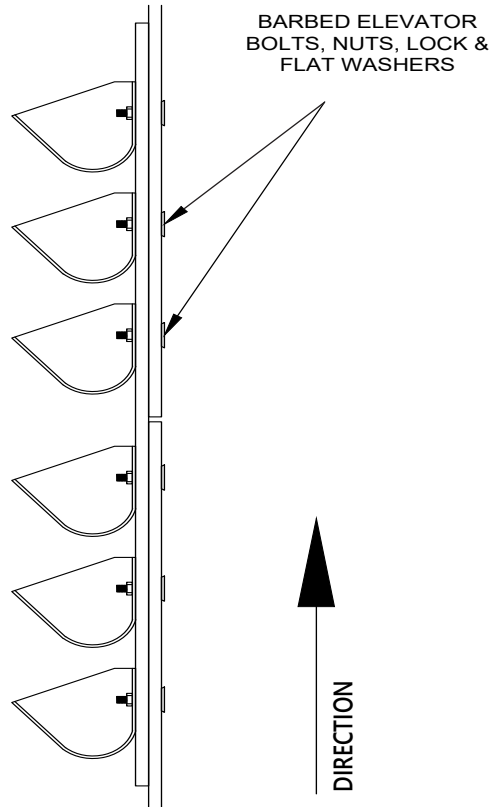
Important note: Belts should be installed using a temporary splice or belt clamps. Attach buckets and let hang for 24 hours before making permanent splice. (This removes most of the inherent stretch in a new belt.) Then pull belt as tight as possible prior to making permanent splice. If this procedure is impractical, it is advisable to at least put the belt on as tight as possible to minimize take-up adjustment.

- Pull ends of belt together with belt clamps inserted through doors provided and splice belt as instructed here depending on type of splice specified on order.
- If metal belt fasteners are used (such as Flexco), follow instructions provided with fasteners.
- Take-ups should be at full up position when belt is spliced.
- Splice belt. For thin belts, lap joints may be used. Lap belt ends three to six times bucket spacing and bolt the buckets through both belt strands. The inside strand end should be tapered for smoother pulley passage.
- For heavy belts, the best joint is a butt strap splice. (This is the type provided for on the Rapat Bucket Elevators.) Cut belts to proper length and square ends. Butt ends and fasten with the strap cut from extra belt. Butt strap should pass under at least three buckets above and below butt joints.

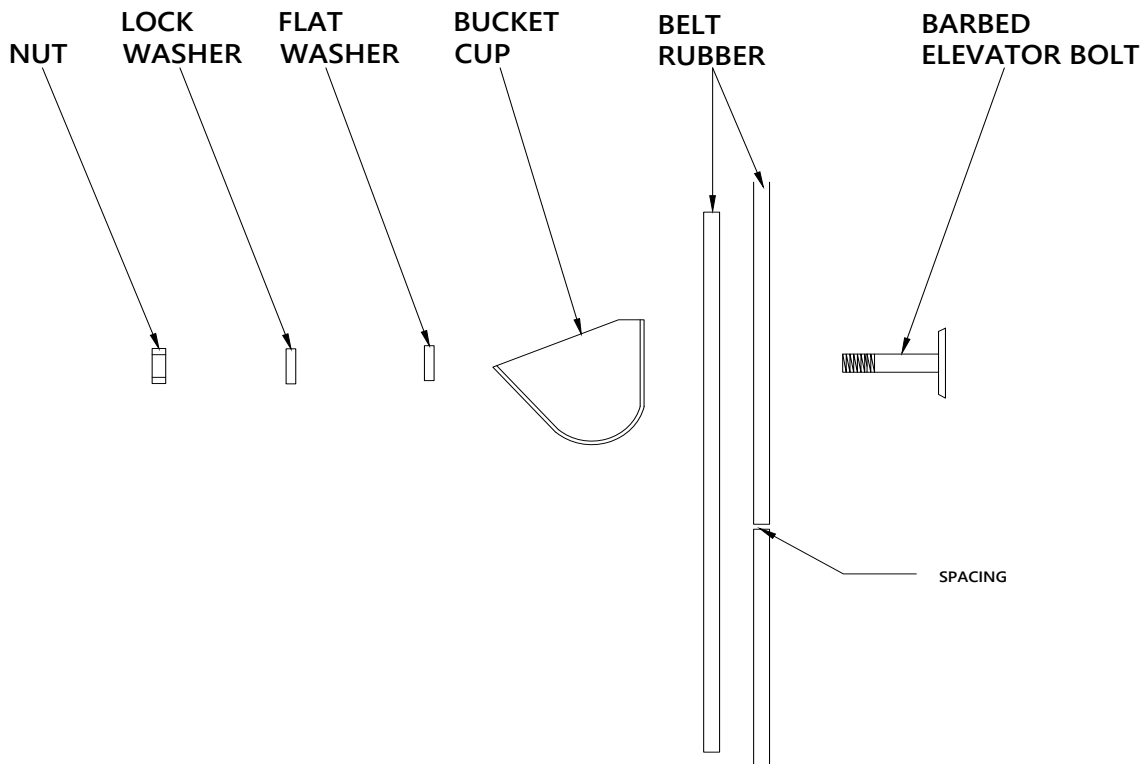


BUCKETS INSTALLATION

- Attach buckets to belt on opposite sides at top and bottom at same time to maintain an even balance on belt.
- After buckets are installed, adjust throat plate wiper in discharge to clear buckets by about 1 inch.

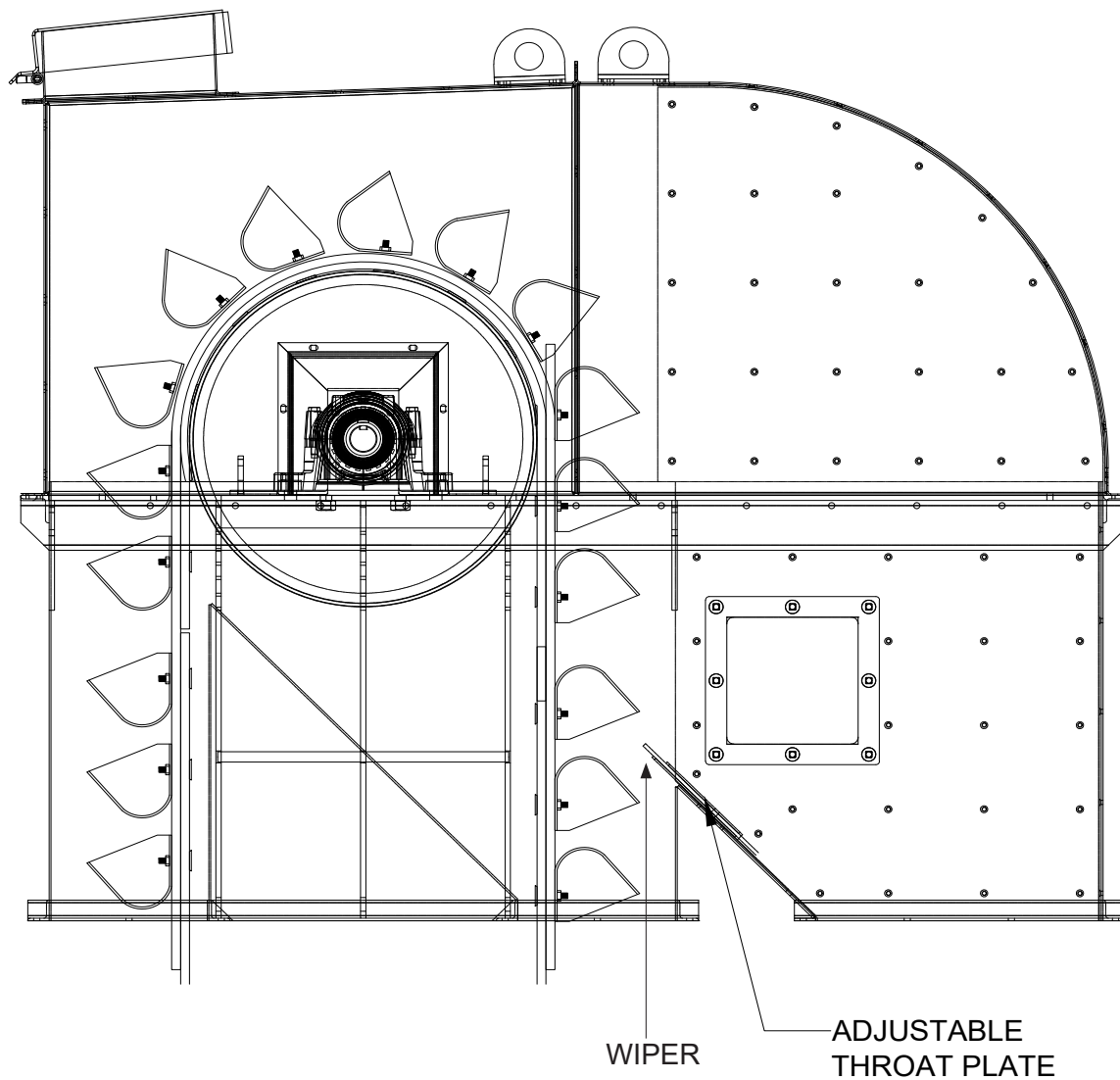


TYPICAL LAP SPLICE



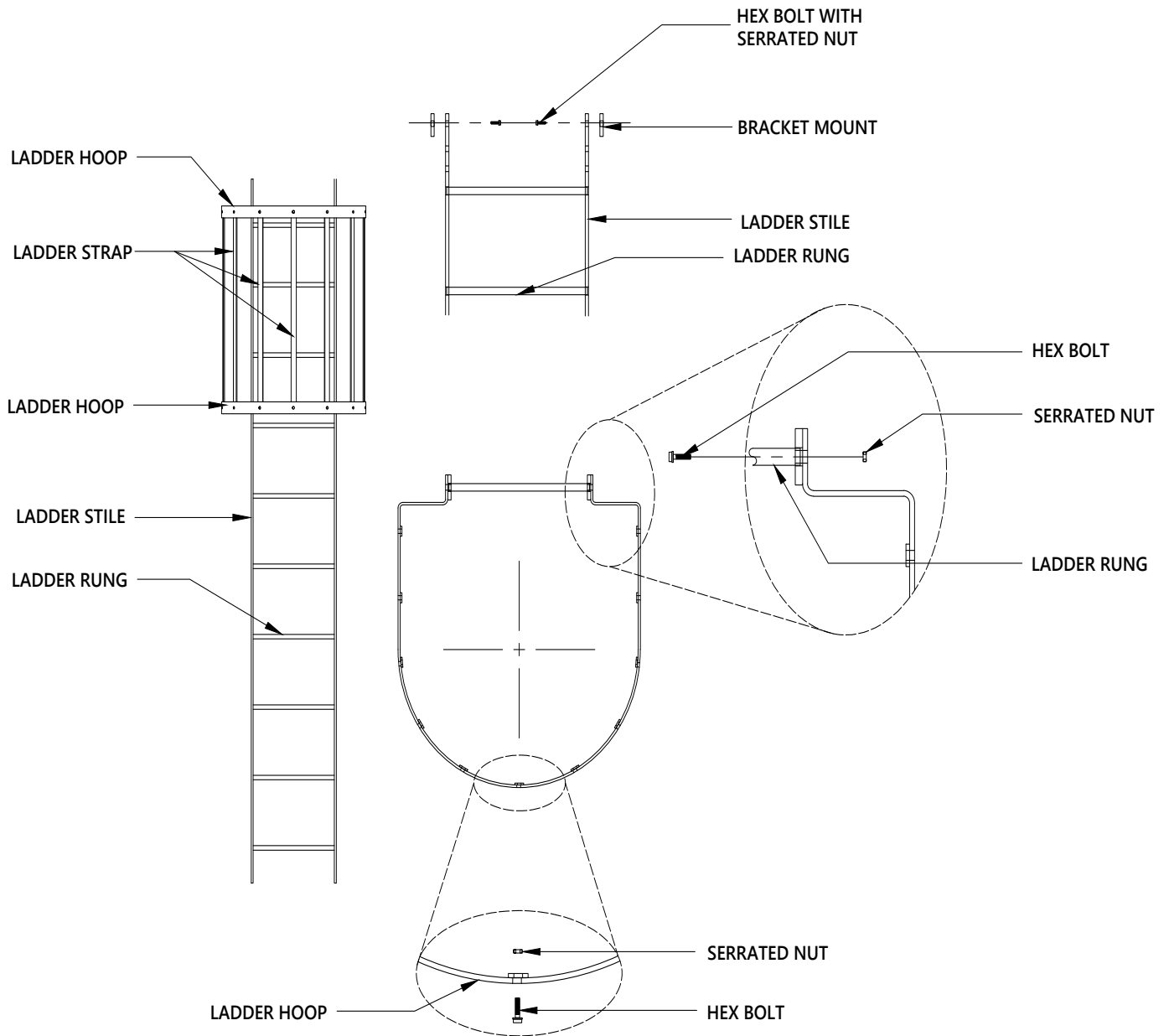
INSTALL HEAD SECTION TOP HOODS

- Mount back head hood and install shaft seal plates.
- Apply sealing compound (mastic or gasket material) at all flange joints.
- Mount front head hood and tighten all bolts.



Important note: Wiper should be 1/4" distance between the bucket cups.

LADDER AND CAGE ASSEMBLY

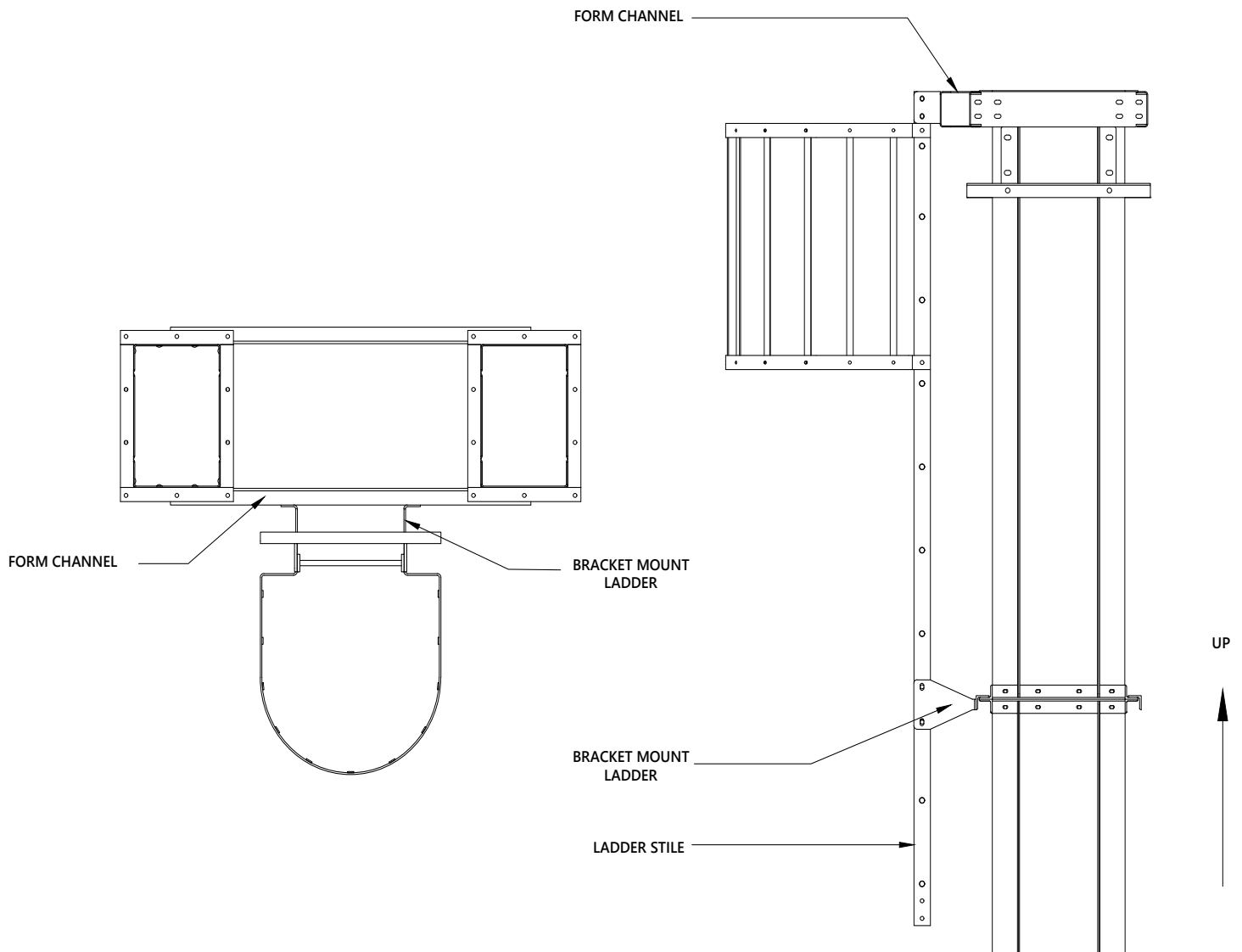


- Bolt 3" ladder hoop, to ladder section using 1/2" hex bolts and 1/2" serrated nut. Finger tighten only.
- Bolt two center, 1 1/2" ladder hoops to ladder section using 1/2" hex bolts and 1/2" serrated nut tighten only.
- Bolt top 1 1/2" ladder hoop and splice plates to ladder section using 1/2" hex bolts and serrated nut tighten only.
- Bolt 1" basket bars to ladder hoops using 3/8" hex bolts and serrated nut.
- Tighten all bolts.
- Assemble all 10 ft sections and short section in the same manner as above.

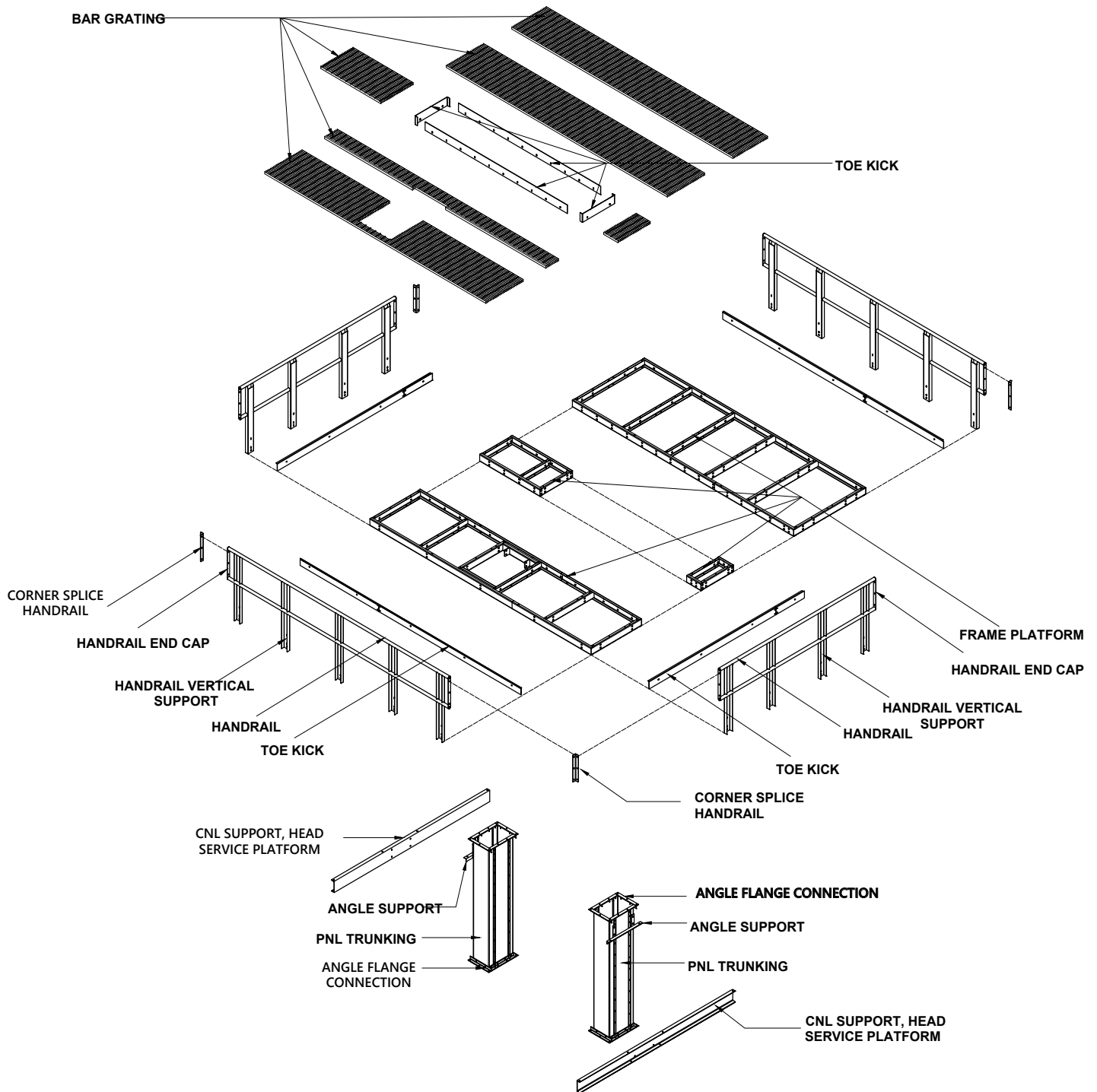
LADDER AND CAGE INSTALLATION

- Attach ladder and cage assemblies to bucket elevator as erection progresses.
- Determine which side of bucket elevator the ladder will be installed on.
- During assembly replace leg tie brace with ladder bracket tie braces on ladder side of bucket elevator.
- Bolt ladder brackets to ladder bracket tie braces.
- Install first ladder section with 3" basket hoop at bottom of assembly and splice plates at the top.
- Clamp ladder rails to ladder bracket tie braces.
- Bolt next ladder assembly to first section using splice plates.

Important note: Personnel must not use ladder assembly before permanent bracing is installed.



SERVICE PLATFOTM



- Mount Platform support channels to trunking sections with the platform mounting brackets.
- Bolt Center Deck to platform decks and mount deck on to support channels. (Field weld deck to support channels.)
- Bolt end rails and side rails to platform deck.
- Bolt corner post ties to rails.

Important note: Customer to field supply and locate knee braces from all four corners of platform back to trunking sections.

START-UP AND OPERATION

Prior to operating the elevator, check all areas for safety issues and machine damage which could occur during operation. Follow all manufacturers' pre-start up instructions for each individual component provided with your elevator. In addition verify the following:

- Leg properly plumbed.
- Head and boot pulley keys are in place.
- Secure set screws in drive sheaves, head and boot shafts, pulleys, shaft bearings and gear units
- Head pulley is level, centered, and squared in housing.
- Discharge baffle properly positioned and discharge clear of obstructions.
- All hardware is in place with correct torque.
- Elevator belt splice is square and belt properly tensioned.
- All debris is removed from the elevator boot. Frequently recheck the boot for debris during the first few days of operation. During construction debris can be left in other areas that feed to the bucket elevator, such as dump pits, bin unload conveyors or grain bins.
- Head hood, boot cleanouts, and inspection section panels in place and properly secured.
- Gear units installed to manufacturer specifications.
- Gear units has lubricant and is filled to proper level.
- Correct vehicle clearance to elevator.
- Safety restrictions on electric controls and climbing ladders.
- Safety restrictions on pits.
- Electrical equipment is installed to meet national electric code and/ or local safety codes, including explosion proof equipment where required.

After an initial pre-start inspection, operate the bucket elevator empty under power for a period of time to verify the belt is tracking on the center of the head and boot pulleys and that all buckets are traveling in the correct direction.

To complete an elevator system, material feed and discharge connections must be made to the bucket elevator. Complete these connections prior to placing the bucket elevator into service.

Since the elevator has been previously operated without material, it may now be tested under load. It is suggested that the flow systems be verified next. Allow only a small amount of material to enter the elevator while it is running. Verify that the material can flow through the system connections, valves, distributors, etc. for proper operation. Once all flow paths have been verified, the elevator may be loaded to capacity.

When the elevator is operating at full capacity verify the following:

- Back Legging (grain being returned inside the down leg).
- Slippage of the head pulley.
- Correct filling of the buckets.
- Electrical current draw on the motor (amperage).

After the first 8-10 hours of operation inspect the following:

- Verify all bolts attached to the buckets are tight and flush to the belt.
- Verify that the tracking of the belt is correctly centered in the leg inspection section.
- Check the drive components for correct tight fit (drive, pulleys, sprockets, belts, torque arm)
- Check gear reducer for overheating or oil leakage
- Check head pulley hub bolts and set screws for correct torque.

Maintenance

The following are guidelines for maintaining the elevator. Operators will have to determine what inspection and service intervals are necessary for their application. Factors to consider are the frequency of operation and the operating environment of the equipment.

Daily

- Always be aware of the normal operating sounds. If any abnormal sounds occur, stop the conveyor, find the source of the noise, then lock out power to conveyor and repair the problem.

Weekly

- Lubricate bearings according to manufacturer specifications.

Monthly

- Check that set screws in pulleys and bearings are tight. If necessary tighten to manufacturers' specifications.
- Check for missing or damaged buckets. Replace if necessary. Check bucket bolts for tightness.
- Check that the elevator belt is properly tensioned and is running in the center of the leg.
- Check oil level in gearbox and inspect seals for signs of leakage. Follow manufacturer's specifications for oil level and oil change periods.
- Check that the motor is clean and properly ventilated.
- Lubricate motor according to manufacturer's specifications and intervals.

Quarterly

- Check guy cables, turnbuckles and cable clamps for damage or loosening. Any change in cable tension may cause the leg to go out of plumb, resulting in the belt not running on center and/or damage to the leg.

Important Note: Never remove or loosen 1 or more cables without providing another form of support for the elevator.

Troubleshooting

Items shown below are an aide to troubleshooting when a problem is encountered. Some causes can be corrected by reviewing certain areas of the assembly instructions. When checking elevator capacities, note that rated capacities are calculated using 75% cup fill.

Problem: Measured capacity is reduced from the rated capacity

- a. Possible cause: Buckets or cups not filling correctly
 - i. Possible reason or solution
 - 1. Inlet opening too small
 - 2. Hopper installed incorrectly
 - 3. Buckets or cups running above inlet
 - 4. Material not feeding into hopper
- b. Possible cause: Material is back legging
 - i. Possible reason or solution
 - 1. Discharge spouting and /or distributor is inadequate or obstructed
 - 2. Incorrect belt speed
 - 3. Incorrect adjustment of baffle
 - 4. Incorrect bucket or cup design
 - 5. Over filling of bucket cups
- c. Possible cause: Incorrect belt speed
 - i. Possible reason or solution
 - 1. Incorrect motor speed
 - 2. Incorrect gear ratio
 - 3. Head pulley slipping
 - 4. Drive belt slipping
- d. Possible cause: Inadequate bucket or cup volume
 - i. Possible reason or solution
 - 1. Residual material inside buckets or cups
 - 2. Incorrect bucket or cup size for specific material

Problem: Elevator is being overload

- a. Possible cause: Buckets or cups filling
 - i. Possible reason or solution
 - 1. Inlet feed is exceeding capacity of the bucket elevator
 - 2. Belt speed is too slow
 - 3. Belt slipping on the head pulley
 - 4. Incorrect bucket or cup size for specific material

Problem: Motor starter shutting off

- a. Possible cause: Motor is overloaded
 - i. Possible reason or solution
 - 1. Leg is being overloaded
 - 2. Line voltage is low
- b. Possible cause: Incorrect equipment (too small of motor, starter incorrectly sized, or motor and or starter is defective)
 - i. Possible reason or solution
 - 1. Excessive current draw
 - 2. Incorrect size of heater

Problem: Motor cannot start belt

- a. Possible cause: Backstop is reversed
 - i. Possible reason or solution
 - 1. Backstop should be installed correctly
- b. Possible cause: Motor rotation reversed
 - i. Possible reason or solution
 - 1. Motor wiring incorrect
- c. Possible cause: Boot is filled with material
 - 1. Material not shut off prior to bucket elevator being emptied/shut off
- d. Possible cause: Damage gear unit
 - 1. Damage gears or bearings
- e. Possible cause: Bucket or cup caught in leg
 - i. Possible reason or solution
 - 1. Loose buckets or cups

Problem: Belt with not track correctly (rubbing on sides of the leg sections)

- a. Possible cause: Belt not centered on boot pulley
 - i. Possible reason or solution
 - 1. Belt too loose
 - 2. Boot pulley not level
 - 3. Material build up on boot pulley
- b. Possible cause: Belt not centered on head pulley
 - i. Possible reason or solution
 - 1. Elevator is out of plumb
 - 2. Head pulley not level
 - 3. Belt loose or slipping
 - 4. Bucket cups not filling evenly
 - 5. Belt splice is crooked or slipped

Problem: Excessive noise or vibration

- a. Possible cause: Buckets or cups hitting elevator
 - i. Possible reason or solution
 - 1. Obstruction in the leg section
 - 2. Bent or damaged bucket cups
 - 3. Belt loose
 - 4. Cups hitting the bottom of the boot section
 - 5. Excessive belt speed
- b. Possible cause: Motor or drive noise
 - i. Possible reason or solution
 - 1. Failed bearing in motor, head shaft or boot shaft
 - 2. Failed bearing or gears in drive
 - 3. Loose motor mount, torque arm, gear unit
 - 4. Insufficient oil in gear unit

Problem: Gear unit overheating

- a. Possible cause: Low or overfilled gear lubricant
 - i. Possible reason or solution
 - 1. Refer to manufacturers specification
- b. Possible cause: Incorrect grade or weight of lubricant
 - i. Possible reason or solution
 - 1. Refer to manufacturers specification
- c. Possible cause: Gear unit overloaded
 - 1. Incorrect size of gear unit
- d. Possible cause: Gear failing
 - 1. Worn gears or failed bearings

Problem: Excessive belt slippage or belt melting

- a. Possible cause: Belt slipping on head pulley
 - i. Possible reason or solution
 - 1. Belt too loose
 - 2. Worn lagging on head pulley