



## **Bucket Elevator**

**1600, 2400 and 3000 Series Models**



## **Owner/Operator's Manual and Installation/Maintenance Guide**

# NORSTAR INDUSTRIES LIMITED WARRANTY

Norstar Industries expressly warrants each new Bucket Elevator to be free from defects in material and workmanship under normal use and service for a period of one year after delivery to the original retail purchaser or first user of the product.

Norstar Industries Bucket Elevators are designed for free flowing materials and are not warranted for other distribution or substances. Other use will void the warranty.

Our obligation under this warranty is limited to repairing and/or replacing, at our option, any part or parts within the applicable one year period, as set out above, which shall be returned by the owner to any authorized dealer or to the factory and which upon examination shall prove to be defective. Labour costs associated with the replacement or repair of the Bucket Elevator is not covered by the Manufacturer.

We may, as an option, elect to grant adjustments in the field through an authorized representative and may thereby elect to waive the requirement that parts be returned to our factory.

A new warranty period is not established for replacements. Replacements are warranted for the remaining portion of the one-year original warranty period.

The provisions of this warranty do not apply to any product or parts, which have been subject to misuse, negligence or accident, or which have been repaired or altered outside of the manufacturer. Neither does this warranty apply to normal maintenance service and parts, or to normal deterioration due to wear and exposure.

The Manufacturer shall not be liable for any consequential or special damage which any purchaser may suffer or claim to suffer as a result of any defect in the product. "Consequential" or "special damages" as used herein include, but are not limited to, lost or damaged products or goods, costs of transportation, lost sales, lost orders, lost income, increased overhead, labour and incidental costs and operational inefficiencies.

The foregoing is in lieu of all other warranties, expressed or implied, including any warranty of merchantability is expressly excluded.

**WARRANTY VOID IF NOT REGISTERED  
WITHIN 30 DAYS OF PURCHASE DATE**

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### Support Information

Norstar Industries products are designed for **free flowing** materials. **Using this equipment for any other purpose or in a way not within the operating recommendations specified in this Manual will void the Warranty and may cause injury or death.** This Manual is designed to provide comprehensive planning and construction information for the Norstar Industries product. The Table of Contents provides a convenient overview of the information in this Manual.

**Please keep this Manual in a clean, dry place for future reference.**

#### NORSTAR INDUSTRIES BUCKET ELEVATOR

#### WARRANTY REGISTRATION FORM & INSPECTION REPORT

##### WARRANTY REGISTRATION

This form must be filled out by the dealer and signed by, both, the dealer and the customer at the time of delivery.

Customer's Name \_\_\_\_\_ Dealer's Name \_\_\_\_\_

Address \_\_\_\_\_ Address \_\_\_\_\_

City, Prov/State, Code \_\_\_\_\_ City, Prov/State, Code \_\_\_\_\_

Phone Number (\_\_\_\_) \_\_\_\_\_

Elevator Model \_\_\_\_\_

Delivery Date \_\_\_\_\_

##### DEALER INSPECTION REPORT

##### SAFETY REPORT

- All Sections/Fasteners Tightened
- Oil in Gearbox(s)
- Lubricate Machine
- Belting Tight and Secure

- Belt Guard Installed
- All Decals Installed
- Review Operating and Safety Instructions

**Form must be completed with dealer inspection and signature as well as owner's signature. By not completing the form, you may be voiding the warranty.**

I have thoroughly instructed the buyer on the above described equipment which review included the Operator's Manual content, equipment care, adjustments, safe operation and applicable warranty policy.

Date \_\_\_\_\_ Dealer's Rep. Signature \_\_\_\_\_

The above equipment and Operator's Manual have been received by me and i have been thoroughly instructed as to care, adjustments, safe operation and applicable warranty policy.

Date \_\_\_\_\_ Owner's Signature \_\_\_\_\_

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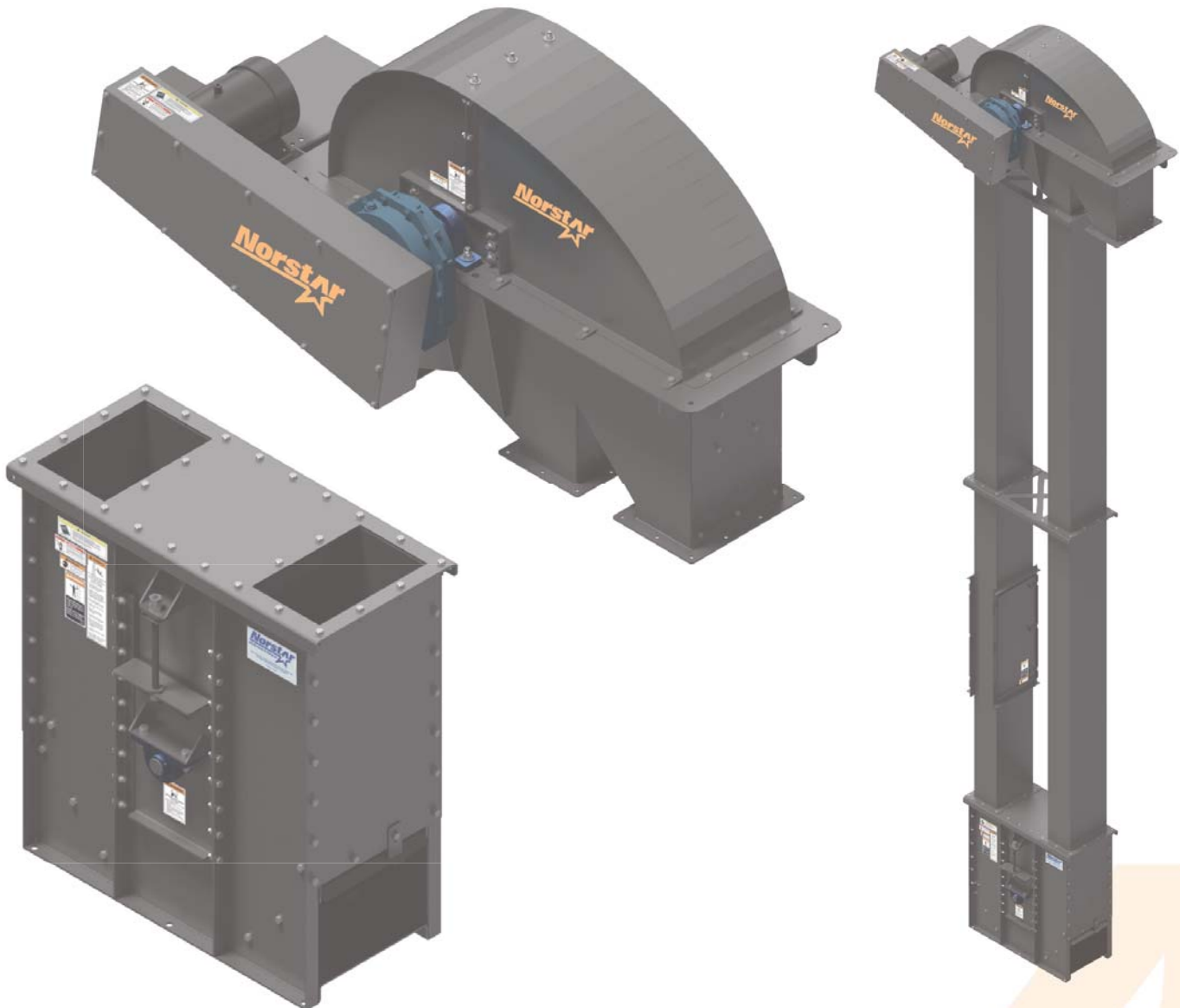
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## Introduction

Congratulations on your purchase of a Norstar Industries Bucket Elevator to complement your grain handling and storage system. This equipment has been designed and manufactured to meet the needs of the farm and commercial users for the efficient cleaning out of grain bins.

Safe, efficient and trouble free operation of your Bucket Elevator requires that you and anyone else who will be operating or maintaining the Bucket Elevator, read and understand the Safety, Operation, Maintenance and Troubleshooting information contained within the Operator's Manual.



This manual covers the 16, 24 and 30 inch Bucket Elevators distributed by Norstar Industries. Use the Table of Contents to find specific information.

Keep this manual handy for frequent reference and to pass on to new operators or owners. Call your Norstar dealer or distributor if you need assistance, information or additional copies of the manual.

**OPERATOR ORIENTATION** - The directions left and right, as mentioned throughout the manual, are as seen when standing facing the Bucket Elevator Head discharge.

# About This Manual and Your Shipment

The purpose of this manual is to help in the following areas regarding your Norstar Industries Bucket Elevator.

- Instructions for safe installation, operation and maintenance
- step-by-step installation procedures
- easy reference if you have questions in a particular area
- parts identification



**It is important to read all instructions in this Manual, carefully, BEFORE starting the installation. Particularly, pay attention to all safety information on pages 10-20 of this Manual**

**Unsafe practices could result in equipment damage and serious injury or death. Failure to read this Manual is considered a misuse of the equipment.**

Warranty information is included on the inside front cover of this Manual.

## Definition of Terms and Pictures

- "Front," "rear/back," and "top" refer to the Bucket Elevator as it is standing.
- The directions left and right, as mentioned throughout the manual, are as seen when standing facing the Bucket Elevator Head discharge.
- Names of components and parts have been capitalized throughout the Manual (i.e. Trunking, 1/2" Nylon Locknut) to call attention to them in the installation.
- Some Guards have been removed from the pictures for illustrative purposes only. Figures/Illustrations may vary slightly from actual models.
- An asterisk (\*) and arrow/line may be used in an image to reference a particular hole or position mentioned in the accompanying text.

## Identification of Parts and Hardware

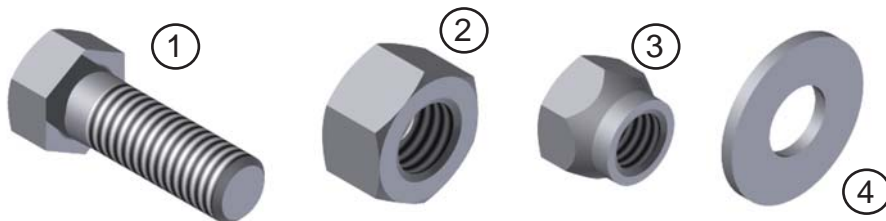


**IMPORTANT! No hardware substitutions are permitted unless noted.**

Diagrams are provided throughout the Manual to identify Parts and Hardware used in that application. Parts and basic components are identified in Figures and their accompanying Tables as "Items" with a black number in a white circle. A Description field will accompany the item number to aid in identifying a component. When necessary, quantities of items may be listed in the instructions. When this occurs, quantity will be listed as a word followed by a bracketed letter or number (i.e. A, B, two (2), three (3)).



**IMPORTANT! ALL NUTS & BOLTS USED ARE GRADE 5 UNLESS OTHERWISE STATED!**



Item	Description
1	1/2" x 1 1/2" Bolt
2	5/8" Hex Nut
3	1/2" Nylon Locknut
4	1/2" Flatwasher

**Figure 1  
Hardware Identification**

## Measurements

The symbol (") equals inches and (') equals feet in English measurements. Metric measurements, in millimeters, may be shown in italics and square brackets following.

For example: 15' [4 572] 90' [27 542]

Metric equivalents are not always repeated throughout the Manual.

## Inspect Your Bucket Elevator Shipment

Be sure to check all components and assemblies to your packing slip, ensuring that all components are present. Any discrepancies should be taken care of immediately. If any components are missing or damaged in transit, a claim should be filed or the issue reported to the carrier as soon as possible. Norstar Industries' responsibility for damaged equipment ends with your acceptance of the delivery. It is recommended to save all paperwork and documentation with any of the elevator components.

Your Bucket Elevator shipment should include all the assemblies in **Figure 2**:

1. Head Assembly
2. Trunking (quantity varies according to elevator height)
3. Boot Assembly
4. Service Trunking
5. Parts Box
6. other
- etc.



**IMPORTANT!** The Serial Number Sticker is located \*insert the location of the sticker here\*.

INSERT PICTURE HERE

**Figure 2**  
**Shipment Parts Identification**

If your Bucket Elevator requires a Ladder Package, the following items from **Figure 3** will/may be included:

1. Head Platform Assembly
2. Ladder Section (quantity varies according to elevator height)
3. Platform Trunking
4. Rest Platform
5. Head Platform Ladder
6. Bottom Ladder
7. Parts Box/Bolt Package Box

INSERT PICTURE HERE

**Figure 3**  
**Ladder Shipment Parts Identification**



## Tools and Equipment Needed for Installation

- Safety Glasses
- Steel-toe safety shoes
- Gloves
- Hard Hat
- Forklift truck (to lift components)
- Crane/Hoist (to lift/raise components)
- Wrench Set
- Ratchet Set
- Air Ratchet
- Impact Wrench
- Deepwell Sockets
- Shallow-well Sockets



**CAUTION!** *Inventory all tools and pieces of hardware near the Construction Site during installation or servicing. Tools lost in the Bucket Elevator may cause damage or injury at a later time. Use the proper tools to prevent injury.*

# Safety

## Recognize SAFETY Information



This is the Safety-Alert Symbol. When you see this symbol on your equipment or in this Manual, be alert to the potential for personal injury.

Signal words **DANGER**, **WARNING**, or **CAUTION**, are used with the Safety-Alert Symbol.

Be sure to follow **all** National and Local SAFETY Standards governing each installation site.



This is the Attention-Alert Symbol. When you see this symbol in this Manual, be alert to information that could be pertinent to the Safety of personnel or the Operation of the Equipment.

Signal words **IMPORTANT** or **ATTENTION** are used with the Attention-Alert Symbol.

Be sure to follow all notices during the installation and operation of your equipment.

## Understand Signal Words



**DANGER** indicates an imminently hazardous situation which, if not avoided, **WILL** result in death or serious injury.



**WARNING** indicates a potentially hazardous situation which, if not avoided, **COULD** result in death or serious injury.



**CAUTION** indicates a general hazardous situation which, if not avoided, **MAY** result in minor or moderate injury.



**ATTENTION** or **IMPORTANT** indicates vital information or instructions, highly recommended and/or pertinent, for the safe installation or operation of your equipment.



**ATTENTION! Work Site Contractor, Installer, Owners, Operators: Read and Follow This Manual - Especially This SAFETY Section!**

*Do NOT operate this equipment before reading and understanding this Operations Manual. For operation, maintenance and servicing of your Bucket Elevator, read and understand this Manual. Untrained operators subject themselves and others to serious risks. Read and follow all precautions and recommended SAFETY practices. Failure to read this Manual by owners, operators and supervisors is a misuse of the equipment and could result in death, serious injury, and/or equipment damage.*

*Read this Manual carefully before servicing or repairing! This Manual is supplementary to any law or code covering fire or health regulations.*

It is the **responsibility** of the Contractors, Installers, Operators, Owners and Supervisors to:

- Read this Manual, SAFETY Instructions, and SAFETY Decals herein
- **Know** proper operating precautions, practices and requirements to comply with all federal, state/provincial and local laws and ordinances and applicable safety codes
- **Make the above known** to all who may work with the equipment or be in the working area.

Keep this Manual in a safe, dry place where the Bucket Elevator Operator can easily obtain it. Contact your Norstar Industries Dealer or Norstar Industries to replace this Manual should it become lost or damaged.

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# Safety

## Introduction to Safety

**YOU** are responsible for the **SAFE** operation and maintenance of your Norstar Industries Bucket Elevator. **YOU** must ensure that you and anyone else who is going to operate, maintain or work around the Bucket Elevator be familiar with the operation and maintenance procedures and related **SAFETY** information contained in this Manual. This Manual will take you step-by-step through your working day and alert you to good safety practices that should be adhered to while operating the Elevator.

Remember, **YOU** are the key to safety. Good safety practices not only protect you but also the people around you. Make these practices a working part of your safety program. Be certain that **EVERYONE** operating this equipment is familiar with the recommended operating and maintenance procedures and follows all the safety precautions. Most accidents can be prevented. Do not risk injury or death by ignoring good safety practices.

- Bucket Elevator owners must give operating instructions to operators or employees before allowing them to operate the machine, and at least annually thereafter per OSHA (Occupational Safety and Health Administration) regulation 1928.57.
- The most important safety device on this equipment is a **SAFE** operator. It is the operator's responsibility to read and understand ALL Safety and Operating instructions in the Manual and to follow them. All accidents can be avoided.
- A person who has not read and understood all operating and safety instructions is not qualified to operate the machine. An untrained operator exposes himself and bystanders to possible serious injury or death.
- Do not modify the equipment in any way. Unauthorized modification may impair the function and/or safety, could affect the life of the equipment, and will void the warranty.
- Think **SAFETY!** Work **SAFELY!**

## General Safety

1. Read and understand the Operator's Manual and all safety signs before operating, maintaining, adjusting or unplugging the Bucket Elevator.
2. Only trained, competent persons shall operate the Elevator. An untrained operator is not qualified to operate the machine.
3. Wear appropriate protective gear. This list includes but is not limited to:



Hard Hat



Protective Eye-wear



Protective Foot-wear



Hearing Protection



Work/Heavy Gloves



Respirator or Filter Mask

4. Have a first-aid kit available for use should the need arise and know how to use it.
5. Do not allow children, spectators or bystanders within the hazard area of the machine.
6. Stop the motor, turn off all controls and wait for all moving parts to stop before servicing, adjusting, repairing, or unplugging the machine.
7. Establish a **Lock-out Tag-out** policy for the work site. Be sure all personnel are trained in and follow all procedures.
8. Review safety related items annually with all personnel who will be operating or maintaining the Elevator.

## Safety

9. Feed/Grain openings for shovel, front loaders or other manual/mechanical equipment should be covered by a grating. In the case that a grating cannot be used, the exposed section of the Bucket Elevator should be guarded by a railing or fence with a warning sign posted.
10. Do not place hands, feet, or any part of your body into the Bucket Elevator while it is running. Long hair should be tied back and loose clothing should not be worn in close proximity to any moving components on the Bucket Elevator.
11. Do not walk on Bucket Elevator covers or guards.
12. Do not poke or prod material in the Bucket Elevator with a bar or stick inserted through the openings.

## Operation Safety

Refer also to the Operation section on Page 86 of this Manual

Norstar Industries Bucket Elevators are built with your Safety in mind. However, accidents can happen with improper installation or use.

**Anyone who will be operating or working around this equipment should be trained in the proper operational and safety procedures required.** It is recommended to read and understand the Operator's Manual and all safety signs before using the equipment. Only Operators completely familiar with both the Bucket Elevator and this Manual and its Safety/Operational practices should be permitted to operate this Bucket Elevator. Always operate the Bucket Elevator in accordance with the instructions in this Manual and Bucket Elevator Safety Decals.

Always ensure that all covers and guards are in place and secured on the Bucket Elevator before operation.



**WARNING!** Do NOT attempt to clear a Bucket Elevator jam until power has been LOCKED OUT.



**DANGER!** If the Bucket Elevator is to be opened for inspection, cleaning, servicing, adjusting or observation, all Bucket Elevator motors are to be LOCKED OUT electrically in such a way that they CANNOT be restarted by anyone remote from the area. If applicable, eliminate all sources of stored power to ensure that no components will move while being without main power.

Never operate the Bucket Elevator if intoxicated or under the influence of alcohol or drugs.

Any worker who is tired and/or under pressure is more apt to have an accident. Give extra breaks and/or varied jobs to all workers. If necessary, delay operation of this equipment until the Operator is adequately rested.

Never start the Bucket Elevator until all persons are clear of the equipment.

Make certain a **qualified operator** is in attendance at all time while the Bucket Elevator is operating. Never leave the Bucket Elevator running unattended.



**CAUTION!** Under no circumstances should horseplay be permitted near the Bucket Elevator. Do not run around or climb on the Bucket Elevator. To do so may cause injury.

Schedule and maintain a Safety training and operations program for all Bucket Elevator Operators. All Operators should perform periodic reviews of those procedures. Initially, and periodically thereafter, insist that all operating personnel review the Safety sections of this Manual.

Do not adjust, service, lubricate, clean, unclog or move this equipment while in operation.

The Norstar Industries Bucket Elevator is not manufactured or designed to handle materials that are hazardous. Hazardous materials are those that are explosive, flammable, toxic or otherwise dangerous to personnel if they are not completely and thoroughly contained in the Bucket Elevator. Do not overload the Bucket Elevator or use it for anything except its intended use. The Bucket Elevator is designed for free flowing, dry materials. Using the machine for any other purpose may break or damage the Bucket Elevator.

Bucket Elevator equipment shall be used to convey only the specified commodities or materials within the rated capacity and the rated speed. Where special use is not indicated, or ratings are not available, good industry practice shall be used.



**WARNING!** Using this equipment for any other purpose or in a way not within the operating recommendations specified in this Manual will void the Warranty and could cause injury or death.

# Safety

## Maintenance Safety



**DANGER!** Use extreme **CAUTION** around electrical components. Always shut off, disconnect and **LOCK OUT** and **TAG OUT** all power before adjusting, servicing, cleaning, repairing or doing any maintenance on the Bucket Elevator. If applicable, eliminate all sources of stored power. Failure to follow these instructions will result in death or serious injury.

Review the Operator's Manual and all safety items before working with, maintaining or operating the Elevator.

Follow good shop practices. Keep the service area clean and dry. Be sure electrical outlets and tools are properly grounded. Use adequate light for the job at hand.

Visually inspect the Elevator prior to operation. Correct any hazardous situation. Repair any faulty equipment.

Use suitable precautionary measures when repairing or replacing equipment parts to prevent injury.

Ensure that motors are operating at the proper speed.

Mount controls for any electric motor at a convenient place, at a safe distance from the machine. Make sure controls are readily accessible in the event of an emergency.

Schedule and keep a Maintenance Checklist to ensure optimum Bucket Elevator operation.

Before resuming work, install and secure all guards when maintenance work is completed.



**IMPORTANT!** Refer to the more detailed Maintenance section in Pages 87-89 of this Manual.

## Bucket Elevator Area Safety

Entrance to **enclosed areas** may expose persons to operational or environmental hazards and should only be entered by authorized personnel with proper safety equipment. Provide adequate fencing and security of restricted areas. Prohibit untrained personnel, visitors, and children from entering the Bucket Elevator area. Designate a **SAFETY Zone** for unauthorized personnel or visitors.

Bucket Elevator Ladders should be closed off/locked to prevent unauthorized access.

Keep children and other unqualified personnel out of the working area at **all times**.

Post signs, clearly, in areas where there are points of **access**.

Be sure the designated area is clear before turning power on to the Bucket Elevator.

## Proper Wiring by Qualified Electricians

**DANGER!** All electrical wiring should be done by a Qualified Electrician.



Use extreme Caution around electrical components. Your Installer should have your electric company check the transformer and lead wires. Be sure the wires are an adequate gauge to carry the load of your Bucket Elevator's Motor, including starting and full load operating conditions. Failure to follow these instructions will result in death or serious injury.

Norstar Industries assumes no responsibility for the electrical wiring used with this Bucket Elevator. Norstar Industries will not be liable for failure of the Bucket Elevator because of improper electrical installation or use.

Motor overload protection, electrical disconnects and over-current protection are not supplied with the equipment.

**IMPORTANT!** In selecting Electrical Control Equipment to be used with any installation, the purchaser must use equipment conforming to applicable Local and National codes or regulations.



A **LOCK-OUT/TAG-OUT DEVICE** must be installed on Control enclosures containing hazardous voltage. This should be done at the time of the Bucket Elevator installation to prevent the machine from starting during a Safety check, maintenance, etc.

All electrical equipment must be **grounded**.

## Safety

### Install Emergency Start and Shut-off Devices

All Safety devices, including wiring of electrical devices, shall be arranged to operate such that a power failure or failure of the device itself will not result in a hazardous condition.

An **emergency shut-off** switch with power **LOCK OUT / TAG OUT provisions** must be provided at the Bucket Elevator Access points such as the Head Section viewports, the Service Trunking section, the Boot Section inlets, etc.



**WARNING!** *To prevent a hazardous condition, the machine **MUST** be prevented from restarting on its own after a power failure when power returns. Failure to follow this instruction could cause death or serious injury.*

Bucket Elevator controls shall be so arranged that, in case of Emergency Stop, manual reset or start at the location where the Emergency Stop initiated shall be required for the Bucket Elevator(s) and associated equipment to resume operation.



**IMPORTANT!** *It is the responsibility of the Contractor, Installer, Owner and Operator to supplement the Bucket Elevator furnished by Norstar Industries with any necessary electrical or structural items to make the Bucket Elevator installation comply with Local and Federal codes, laws and ordinances.*

*Disconnect electrical power, LOCK OUT and TAG OUT power, BEFORE inspecting or servicing the Bucket Elevator.*

*Components supplied for the system but not manufactured by Norstar Industries, and added as a part of the Bucket Elevator system, are not the responsibility of Norstar Industries.*

**Determine the cause of stoppage before restarting the Bucket Elevator.** The starting device shall be LOCKED OUT and TAGGED OUT before any attempt is made to remove the cause of the stoppage, unless operation is necessary to determine the cause or to safely remove the stoppage.

To ensure positive performance and minimum maintenance, it is the Manufacturer's recommendation that this equipment be observed by an operator during the complete unloading operation.

Routine inspections and corrective maintenance measures shall be conducted to ensure that all Guards and safety features are retained and function properly.

Personnel should be alerted to the potential hazard of entanglement in Bucket Elevators cause by items such as long hair, loose clothing, and jewelry.

Bucket Elevators shall not be maintained or serviced while in operation unless proper maintenance or service requires the Bucket Elevator to be in motion. In which case, personnel shall be made aware of the hazards and how the task may be safely accomplished.



# Safety

## Safety Decals



**IMPORTANT!** Along with your shipment will be DANGER, WARNING and CAUTION Decals which will be placed on the Bucket Elevator. Read and follow all Safety Decal information in this Manual. Confirm that all Safety Decals are in place and secure before operating the Bucket Elevator. To replace lost or missing Decals, contact your local dealer or Norstar Industries.

Safety information has been provided by the Manufacturer to help ensure the safe and proper use of this product. This Safety information has been placed on components throughout the structure to provide proper access and instruction to the user.

Ensure that Safety Decals are clean and legible at all times. Replace damaged or missing Decals immediately.

The following Safety Decals are located on the Bucket Elevator as shown in the Manual drawings.

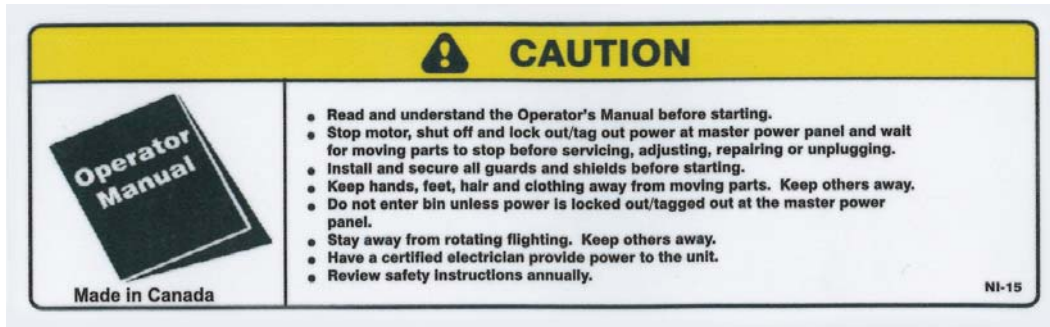


Figure 4  
Operator's Manual  
Decal NI-15

### Operator's Manual

The Operator's Manual Decal NI-15 in **Figure 4** is located on the Top of the Belt Guard, the inspection side of the Head Section as well as on both sides of the Bucket Elevator Boot Section. It states some information found within this Manual, but, otherwise recommends to read and understand the information and instructions within the Manual before operating the machine.

### Electrocution Hazard



**DANGER!** Use extreme Caution around electrical components. SHUT OFF, LOCK OUT and TAG OUT electrical power BEFORE inspecting or servicing the Bucket Elevator. Failure to do so will result in death or serious injury.

The Electrocution Hazard Decal NI-20 in **Figure 5** is located on the Top of the Belt Guard as well as on both sides of the Bucket Elevator Boot Section. In addition, this decal should be placed at any and all locations where there is potential exposure to electric power for the Bucket Elevator.



Figure 5  
Electrocution Hazard Decal NI-20

### Missing Guard Hazard



**DANGER!** Before starting or operating the machine, ensure that all guards or covers are in place and secure.

The Missing Guard Hazard Decal NI-17 in **Figure 6** is located inside the Belt Guard. Operation of the Bucket Elevator with Guards off exposes parts that could cause severe personal injury. DO NOT operate the equipment without these Guards properly secured.



Figure 6  
Missing Guard Hazard Decal NI-17



**IMPORTANT!** If Safety Decals have been damaged, removed, become illegible or parts replaced without decals, new decals must be applied. New decals are available from your authorized dealer



# Safety

## Exposed Buckets and Rotating Part Hazard



**WARNING!** *DO NOT allow the Bucket Elevator to run while and adjustments are being made. SHUT OFF, LOCK OUT and TAG OUT all electrical power BEFORE workign on our near the Bucket Elevator. Keep hands, feet, hair and clothing away from buckets and other moving parts. Failure to shut off, LOCK OUT and TAG OUT power to the Bucket Elevator could lead to personal injury or death.*

The Exposed Bucket Decal NI-50 in **Figure 7** is located on both Bucket Elevator Head Section Access Panels, on both sides of the Bucket Elevator Boot Section, and on the bottom right corner of each Bucket Elevator Service Trunking Access Doors. This Decal should be placed at any location where Bucket Elevator buckets are exposed. A Decal should also be placed at feed/grain openings for shovel, front loaders or other manual/mechanical equip-

ment. Additionally, these areas should be covered by a grating. In the case that a grating cannot be used, the exposed section of the Bucket Elevator should be guarded by a railing or fence with a warning sign posted.



**Figure 7**  
Exposed Buckets  
Decal NI-50



**Figure 8**  
Rotating Part Hazard  
Decal NI-16

The Rotating Part Hazard Decal NI-16 in **Figure 8** is located on both sides of the Bucket Elevator Boot Section, above the two (2) bearings holding the Head Shaft, and on the top of the Belt Guard. This decal should, additionally, be placed at any location where there is a rotating or moving part that could cause injury or death.

Avoid contact with moving parts while the Bucket Elevator is in operation. Never wear loose-fitting clothing or flowing scarves/jewelry around moving parts or equipment.

## Gearbox Oil



**WARNING!** *DO NOT operate the Bucket Elevator without gear oil. Gearboxes are shipped dry or without gear oil. Refer to page 89 for proper filling and maintenance. Failure to add the proper type/amount of lubricant BEFORE STARTING the Bucket Elevator will cause permanent damage to the Gearbox and will void the Warranty.*



**Figure 9**  
Gearbox Oil Decal NI-31

The Gearbox Oil Decal NI-31 in **Figure 9** is located above the Gearbox on the Bucket Elevator Head Section. Always ensure the the Gearbox has oil in it before operating the Bucket Elevator. Failure to do so could result in damage to the machine.



**IMPORTANT!** If Safety Decals have been damaged, removed, become illegible or parts replaced with-out decals, new decals must be applied. New decals are available from your authorized dealer

# Safety

## Flying Material Hazard



**WARNING!** *Eye protection should be worn at all times when in proximity to the Bucket Elevator. Failure to wear protective equipment could result in serious injury.*

The Flying Material Hazard Decal NI-28 in **Figure 10** is located on the inspection side of the Bucket Elevator Head Section, the bottom right corner of each Bucket Elevator Service Trunking Access Doors, as well as on both sides of the Bucket Elevator Boot Section. In addition, this decal should be placed at any and all locations where there is potential for flying material to make human contact.



**Figure 10**  
Flying Material Hazard Decal NI-28



**Figure 12**  
Ladder Safety Decal NI-27

## Platform Safety

The Platform Safety Decal NI-26 in **Figure 11** is located on the inspection side of the Bucket Elevator Head Section. It is important not to exceed the weight restrictions. Failure to comply will result in serious injury or death. Additionally, this decal should be placed on the Bucket Elevator Trunking Sections at a Distributor Platform, if applicable.

## Ladder Safety

The Ladder Safety Decal NI-27 in **Figure 12** is located on both sides of the Bucket Elevator Boot Section. It is important not to exceed the weight restriction. Failure to comply will result in serious injury or death.

## Bucket Elevator Height Safety

The Height Safety Decal NI-25 in **Figure 13** Should be located on the inspection side of the Bucket Elevator Head Section. It is important to follow the instructions on this decal. Failure to comply will result in serious injury or death.



**Figure 11**  
Platform Safety Decal NI-26



**Figure 13**  
Falling From Heights Decal NI-25



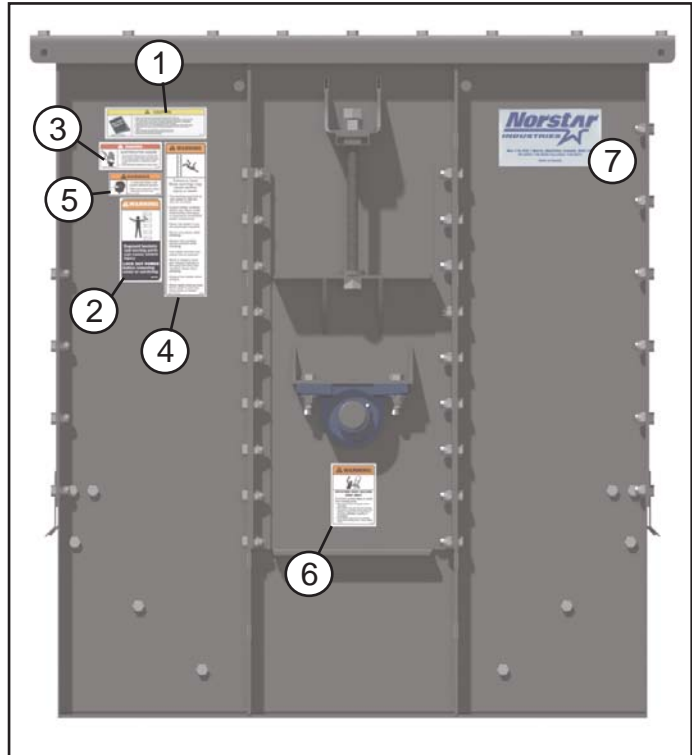
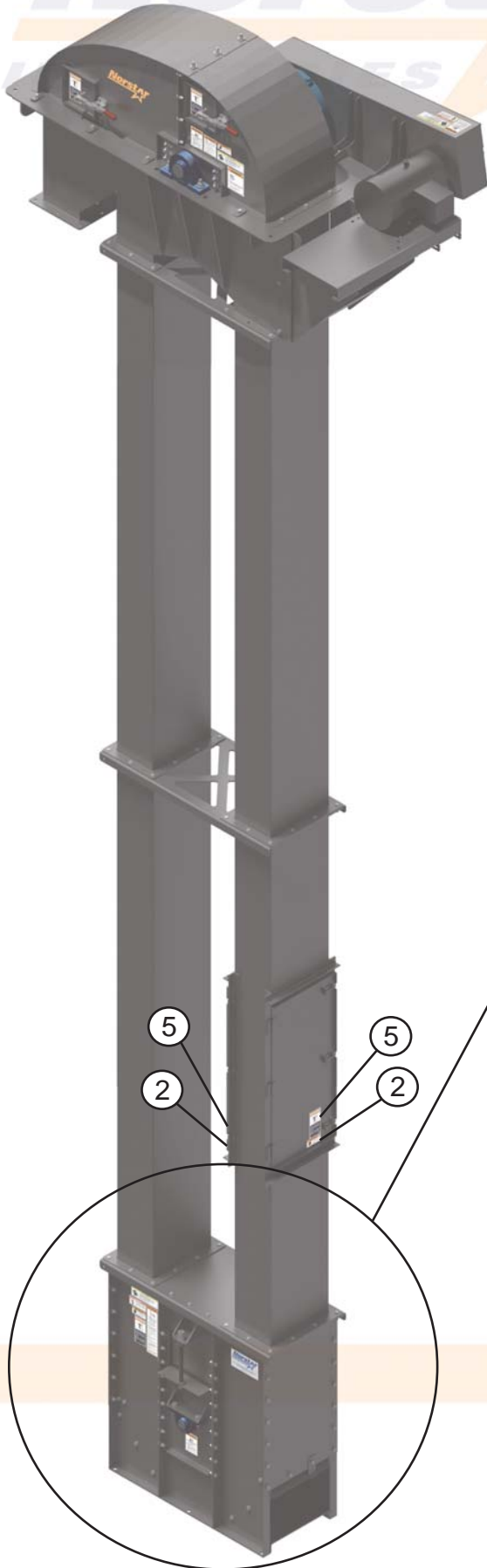
**IMPORTANT!** If Safety Decals have been damaged, removed, become illegible or parts replaced without decals, new decals must be applied. New decals are available from your authorized dealer

# Safety

## Safety Decal Placement



**IMPORTANT!** Check equipment for **WARNING, DANGER and CAUTION** decals and their proper placement, **BEFORE** equipment is operated. **NEVER** use equipment if signs are missing, hidden, improperly placed, damaged or altered. Keep them clean and grease-free. Contact your Norstar Dealer for replacements.



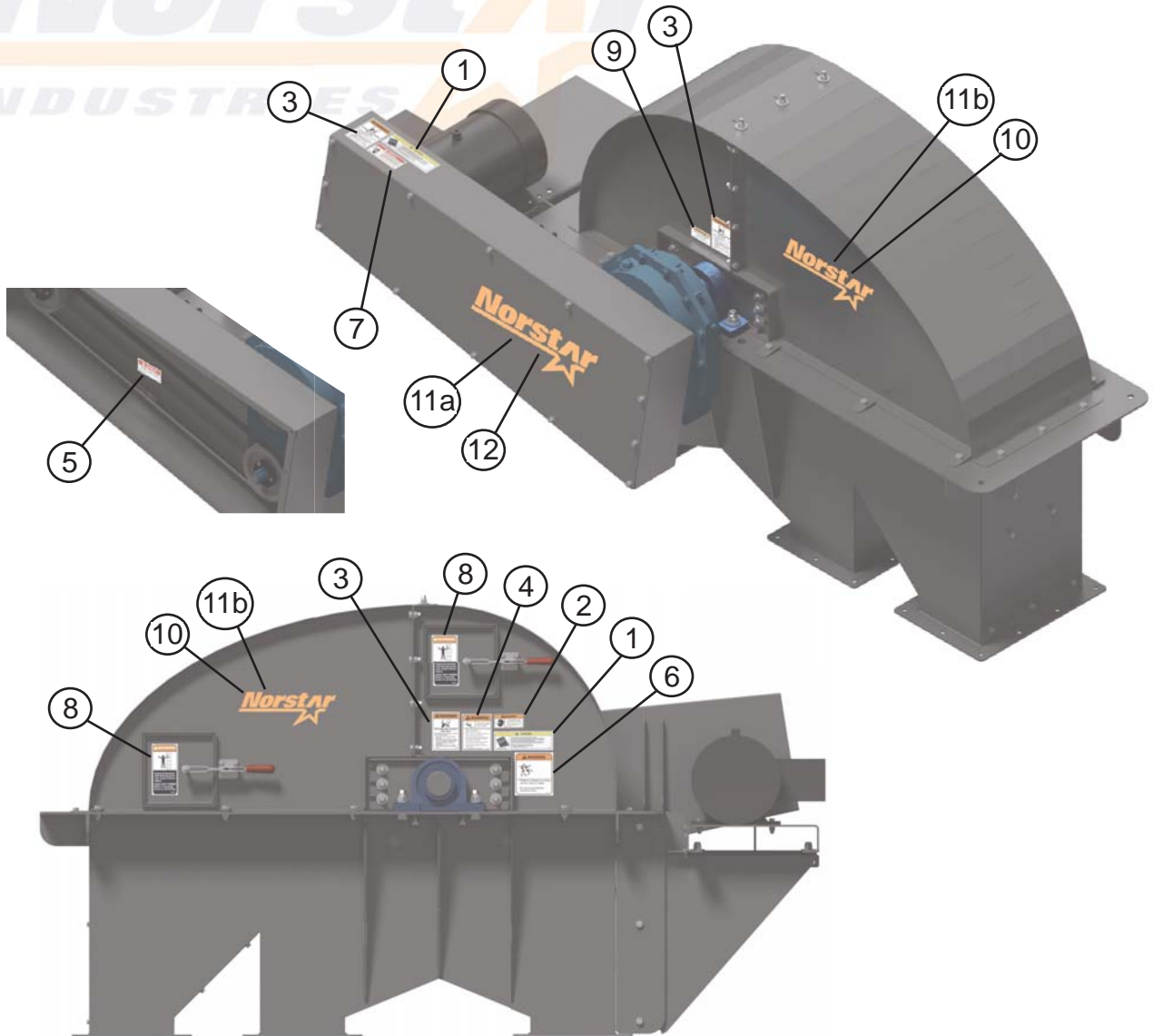
Item	Decal Description
1	<b>CAUTION</b> Read Operator's Manual <b>NI-15</b>
2	<b>WARNING</b> Exposed Buckets <b>NI-50</b>
3	<b>DANGER</b> Electrocutation Hazard <b>NI-20</b>
4	<b>WARNING</b> Ladder Safety <b>NI-27</b>
5	<b>WARNING</b> Flying Material Hazard <b>NI-28</b>
6	<b>WARNING</b> Rotating Part Hazard <b>NI-16</b>
7	Norstar Information Decal <b>NI-30</b>

**Figure 14**  
**Boot and Trunking Decal Locations**




**IMPORTANT!** If Safety Decals have been damaged, removed, become illegible or parts replaced without decals, new decals must be applied. New decals are available from your authorized dealer

# Safety



Item	Decal Description
1	<b>CAUTION</b> Read Operator's Manual <b>NI-15</b>
2	<b>WARNING</b> Flying Material Hazard <b>NI-28</b>
3	<b>WARNING</b> Rotating Part Hazard <b>NI-16</b>
4	<b>WARNING</b> Falling from Heights <b>NI-25</b>
5	<b>DANGER</b> Missing Guard Hazard <b>NI-17</b>
6	<b>WARNING</b> Platform Safety <b>NI-26</b>
7	<b>DANGER</b> Electrocutation Hazard <b>NI-20</b>

Item	Decal Description
8	<b>WARNING</b> Exposed Buckets <b>NI-50</b>
9	<b>WARNING</b> Gearbox No Oil <b>NI-31</b>
10	Norstar Decal <b>NI-01</b> (16"+24")
11a	Norstar Decal <b>NI-03</b> (16"+24")
11b	Norstar Decal <b>NI-03</b> (30")
12	Norstar Decal <b>NI-04</b> (30")

 24" Head Section is pictured.  
Actual decal orientation may differ.

**Figure 15**  
Head Decal Locations



**IMPORTANT!** If Safety Decals have been damaged, removed, become illegible or parts replaced without decals, new decals must be applied. New decals are available from your authorized dealer

# Bucket Elevator Overview

## Bucket Elevator Features

- Twin Trunking
- Low impact design
- Laser Aligned flanges and jiggig
- Ladders, cages and platforms as per OSHA standards
- Heavy guage steel design
- Easy to clean Boot

## Standard Specifications

Items	1600 Series	2400 Series	3000 Series
Drum Size	16" Crowned	24" Crowned	30" Crowned
Capacity Range	2500-3000 BPH	3000-5600 BPH	4000-6000 BPH
Trunking Size	10" x 16"	10" x 16"	12" x 18"
Head Shaft RPM	95 RPM	73 RPM	67 RPM
Gearbox Ratio	15:1	25:1	25:1
Belt Size(s)	10" 2-ply / 11" 2-ply	12" 2 or 3-ply	12" 2-ply / 14" 2 or 3-ply

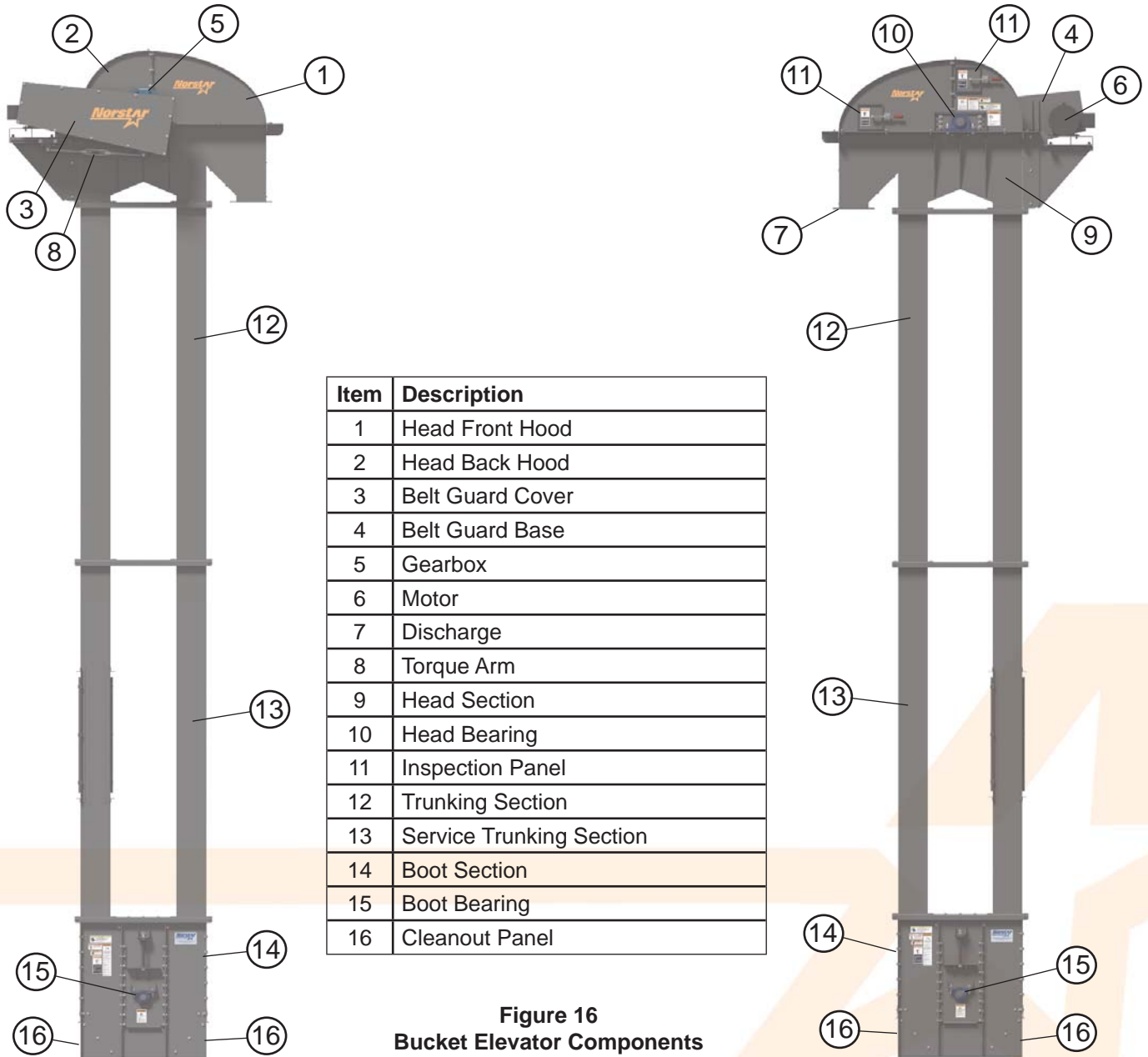


Figure 16  
Bucket Elevator Components

# Bucket Elevator Planning



**IMPORTANT!** *Norstar Industries Bucket Elevators are designed to be vertically self-supporting when erected but are required, in all situations, to be supported or guyed for additional loads such as wind, distributors, cleaners, spouting, etc. Separate structures or adequate support must be provided for any accessory equipment.*

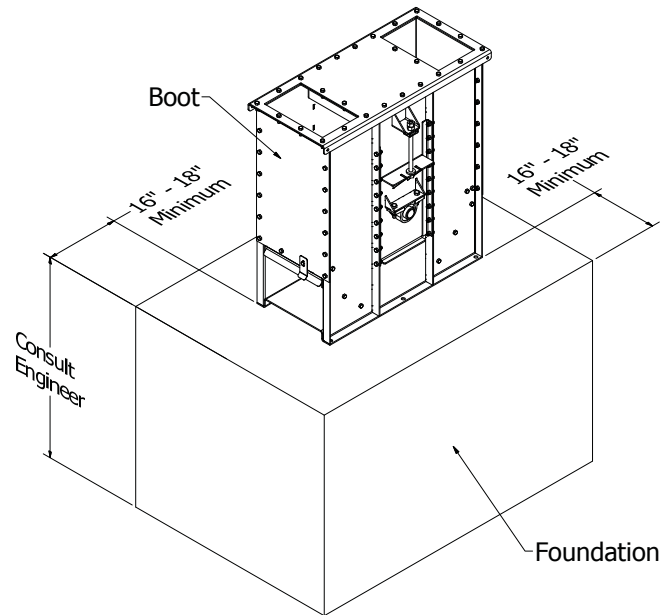
*Norstar Industries does not assume responsibility for installation by any other vendor than ours. The installation recommendations within this manual are for consideration only. The owner should consult a qualified civil or structural engineer regarding the design, construction and supervision of the installation, including the foundation and bracing systems. The most important part of the installation is retaining qualified personnel to plan, and erect the elevator as well as its accompanying equipment.*

**Consult a qualified engineer or contractor for recommendations on concrete reinforcing for the elevator foundation.**

The design must take consideration into dead loads, live loads, wind loads, and soil bearing capacity. The boot should be installed on a foundation that provides for adequate drainage to ensure that it stays dry.

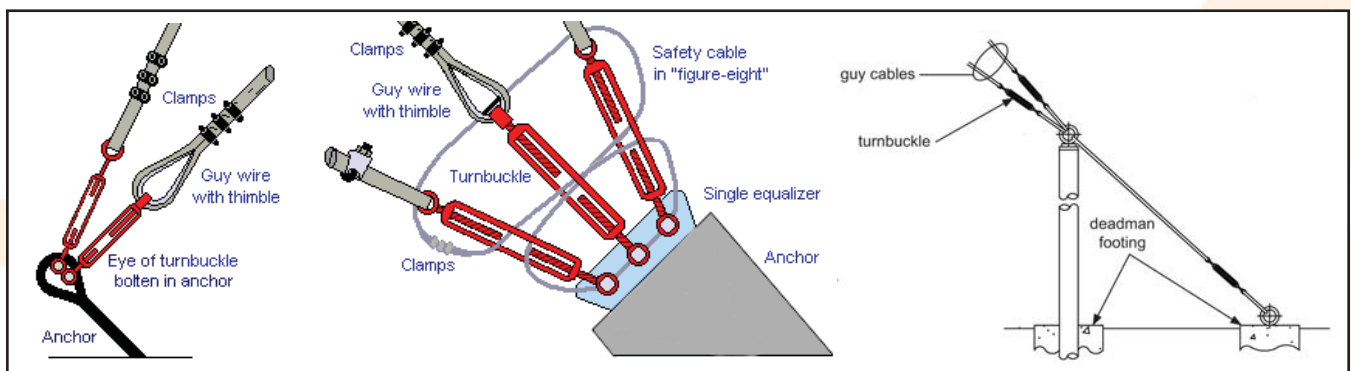
Pictured, to the right, is a Boot foundation mock-up.

**Due to various situations, this drawing should NOT be used without further insight to your specific application by a qualified engineer.**



**Figure 17**  
**Bucket Elevator Foundation**

A concrete foundation is required to house a guy wire anchor which will support the cable tension. Guy cables should run from each corner of the elevator at equal angles to the guy anchors on the ground. The guy cables are adjusted to plumb the Bucket Elevator. Due to various elevator sizes, geographical locations and conditions in which our elevators are erected, Norstar industries cannot take any liability for results arising from these recommendations. It is the installer's responsibility to ensure that proper guying or bracing is installed for their specific application. **It is highly recommended that a qualified civil or structural engineer be consulted for this part of the installation.** It is also recommended that guy wire anchor locations are pre-determined before installation.



**Figure 18**  
**Guy Wire Anchors**

# Bucket Elevator Installation/Assembly

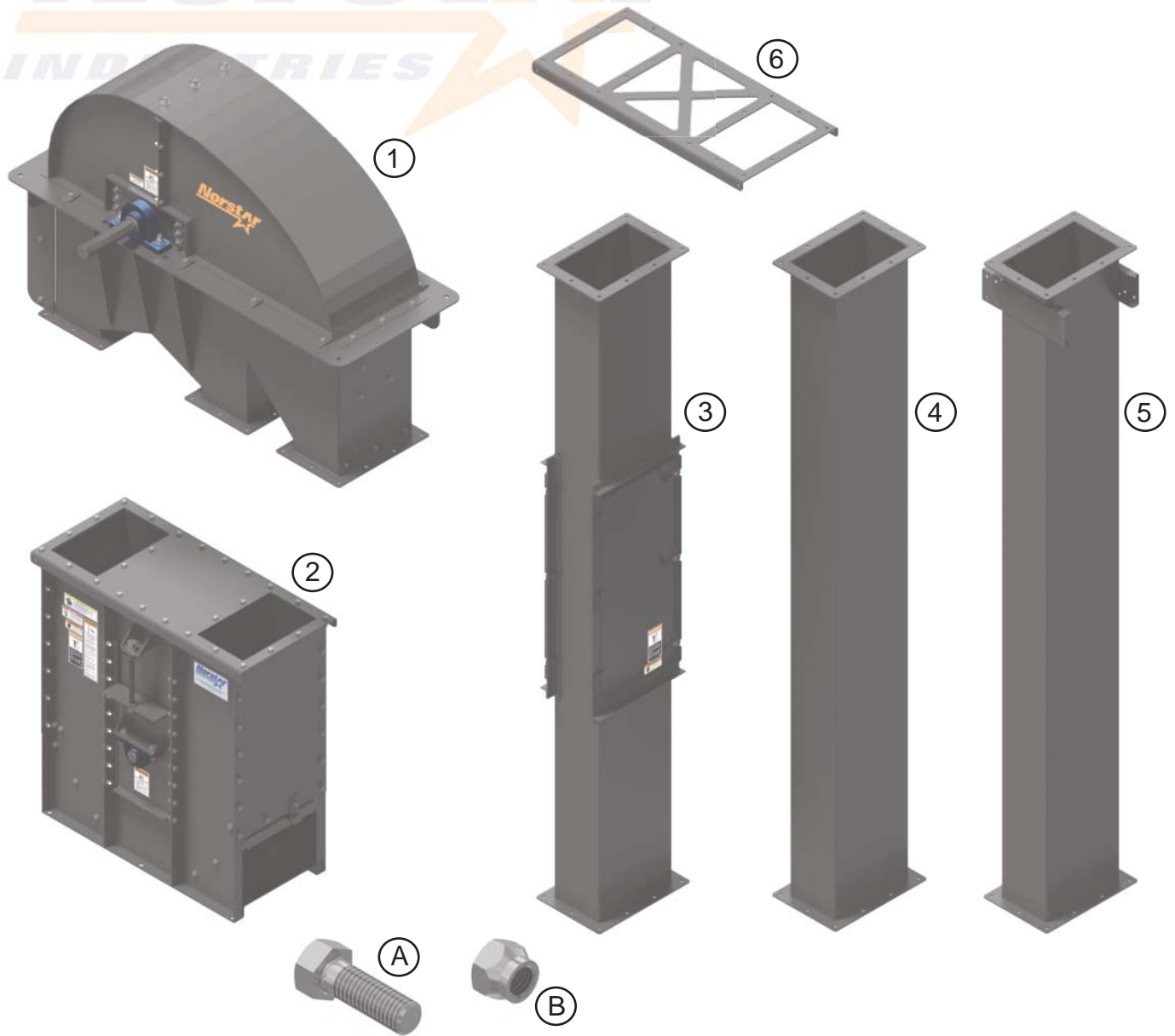


Figure 19  
Bucket Elevator Components

Item	Description	Qty
1	Head Assembly	1
2	Boot Assembly	1
3	Service Trunking Section	1
4	Trunking Section	n/a
5	Platform Trunking <i>only with Ladders</i>	2
6	Trunking Connector Plate	n/a
A	1/2" x 1 1/2" Bolt	n/a
B	1/2" Nylon Locknut	n/a

Locate the items that will be joined together.



**Figure 20**  
**Boot Anchoring**



**IMPORTANT!** *The Boot must be set on a firm and level foundation. If the Boot is not level, it is very difficult for the Bucket Elevator to be plumb.*

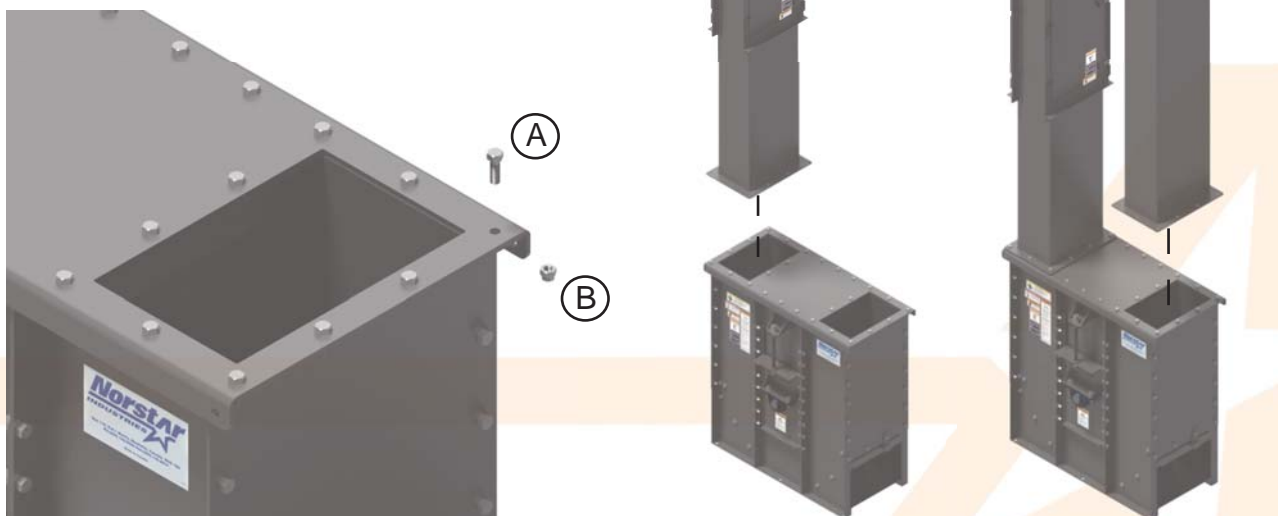
Once the Boot has been positioned and levelled, it will need to be anchored to the foundation to prevent shifting or movement. The holes on the base plate of the Boot can be used to anchor the Boot. Metal shims should be used if the Boot is not level. Using Hilti bolts, secure the Boot to the foundation.

Once the Boot has been anchored, the Boot should be checked again to make sure that it is still level. If the Boot is not level, make the appropriate adjustments so that it is.

At this point, it is probably the best time to decide which sides of the Boot will be the 'up leg' and 'down leg'.

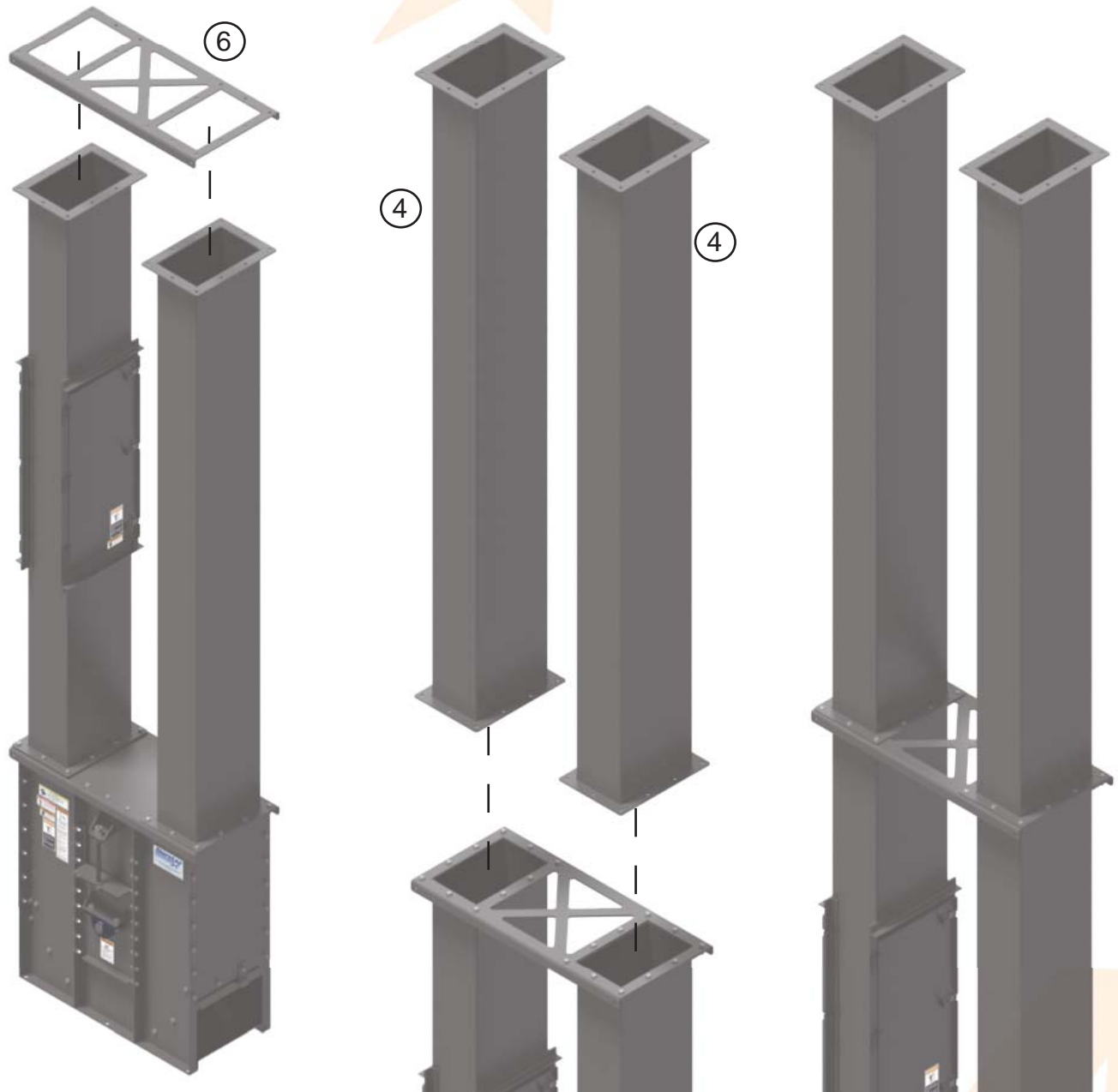
Once the Boot has been secured, the Inlet can be installed. Norstar Industries has four (4) Inlet variations that are sold separately; up leg hopper, up leg flanged hopper, down leg hopper, and down leg flanged hopper.

Before installing the trunking sections, the bolts need to be removed from around the rectangular holes on the top of the Boot. Once the bolts are removed, locate one (1) Service Trunking section and one (1) Trunking section. The Service Trunking section **MUST BE INSTALLED ON THE UP LEG SIDE**. When the Trunking Sections are positioned, re-attach the bolts to secure the Trunking sections to the Boot section.



**Figure 21**  
**Service Trunking Installation**





**Figure 22**  
**Trunking Installation**

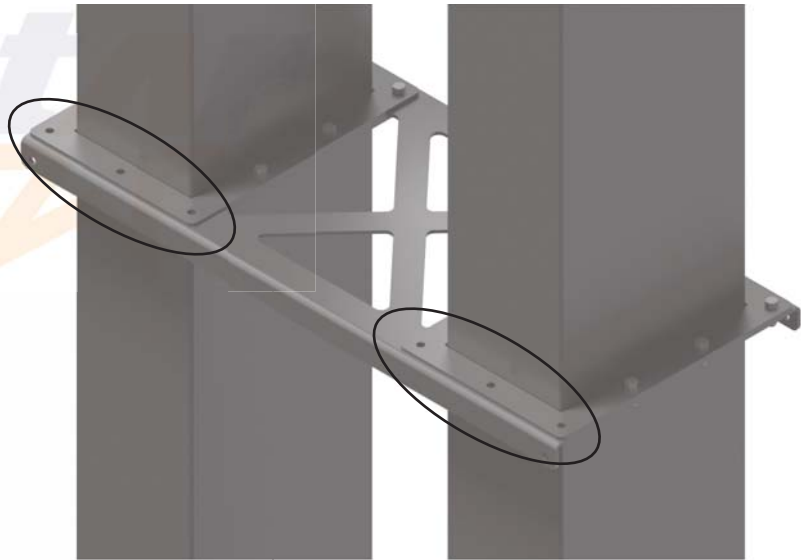
Locate a Trunking Connector Plate and place it onto the tops of the Trunking Sections. Locate two (2) Trunking sections and place them on top of the Trunking Connector Plate.



**ATTENTION!** *The following instructions are valid only if attaching a Platform and Ladder system to your Bucket Elevator.*

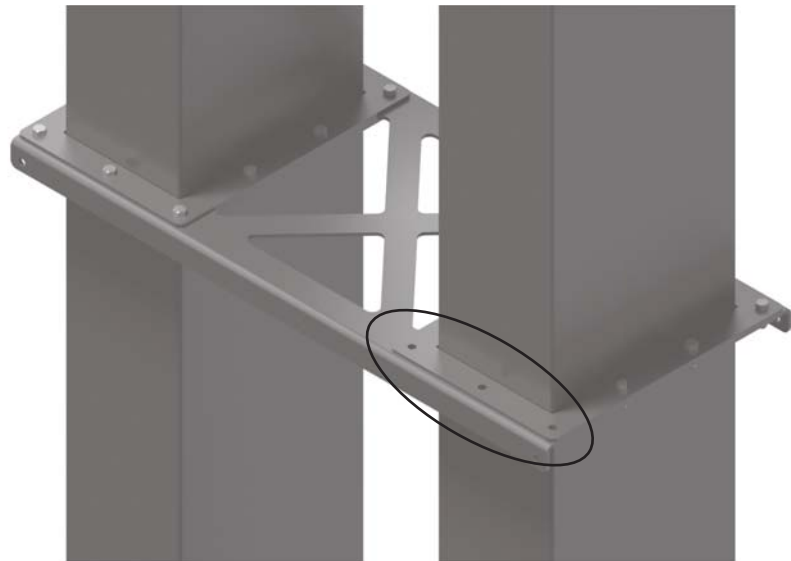
When securing Trunking together, it is important to plan ahead where Ladder sections are going to be installed.

For a Rest Platform, all six (6) holes should remain open as they will be used later when attaching the Rest Platform.



**Figure 23**  
**Rest Platform Bolting**

For a Centered Ladder, centered meaning running vertically in line with the entrance of the Head Platform, the back right holes should be left open as they will be used later when attaching a Ladder Section.

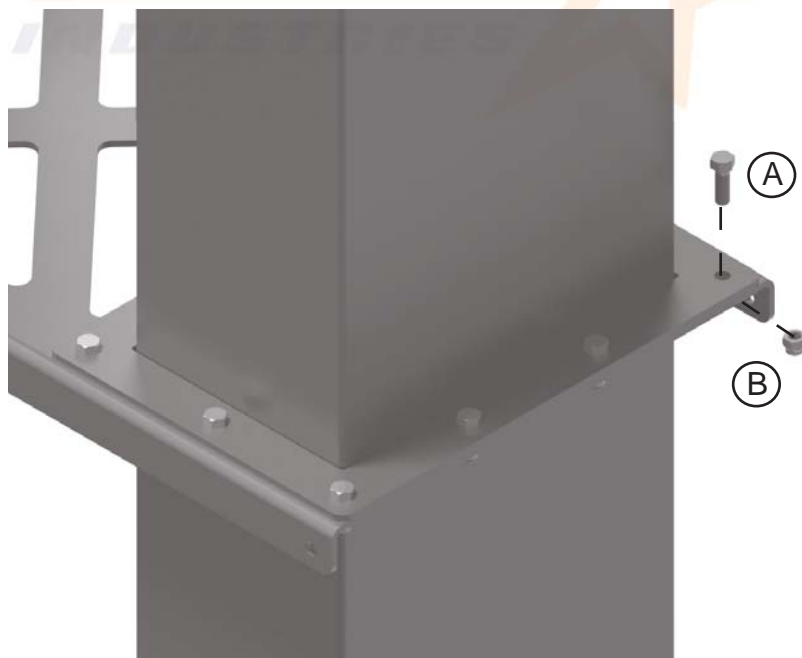


**Figure 24**  
**Centered Ladder Bolting**

For an Offset Ladder, offset meaning running parallel but not in line with the entrance of the Head Platform, the front right holes should be left open as they will be used later when attaching a Ladder Section.

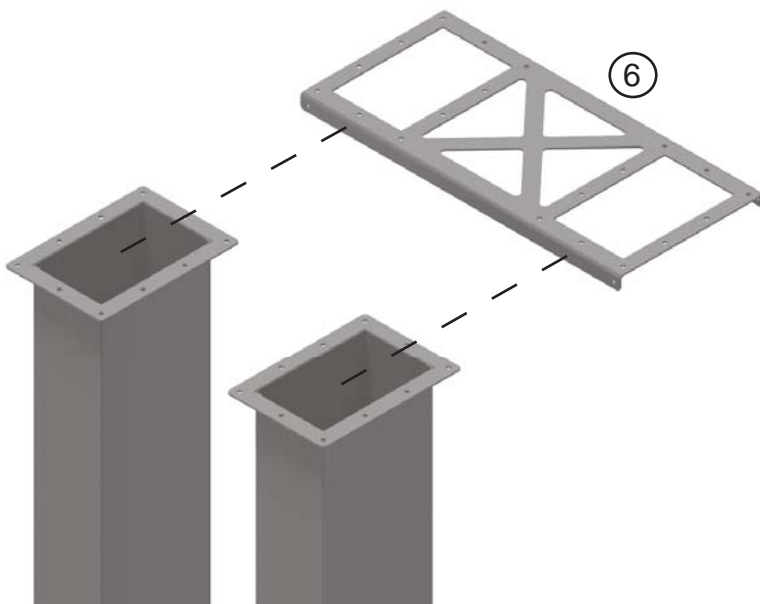


**Figure 25**  
**Offset Ladder Bolting**



Using 1/2 x 1 1/2" Bolts and 1/2" Nylon Locknuts, secure the Trunking sections together.

**Figure 26**  
Trunking Bolts



Locate another Trunking Connector Plate and place it onto the tops of the Trunking Sections.

Continue adding Trunking sections until the desired height has been reached.

**Figure 27**  
Trunking Connector Plate



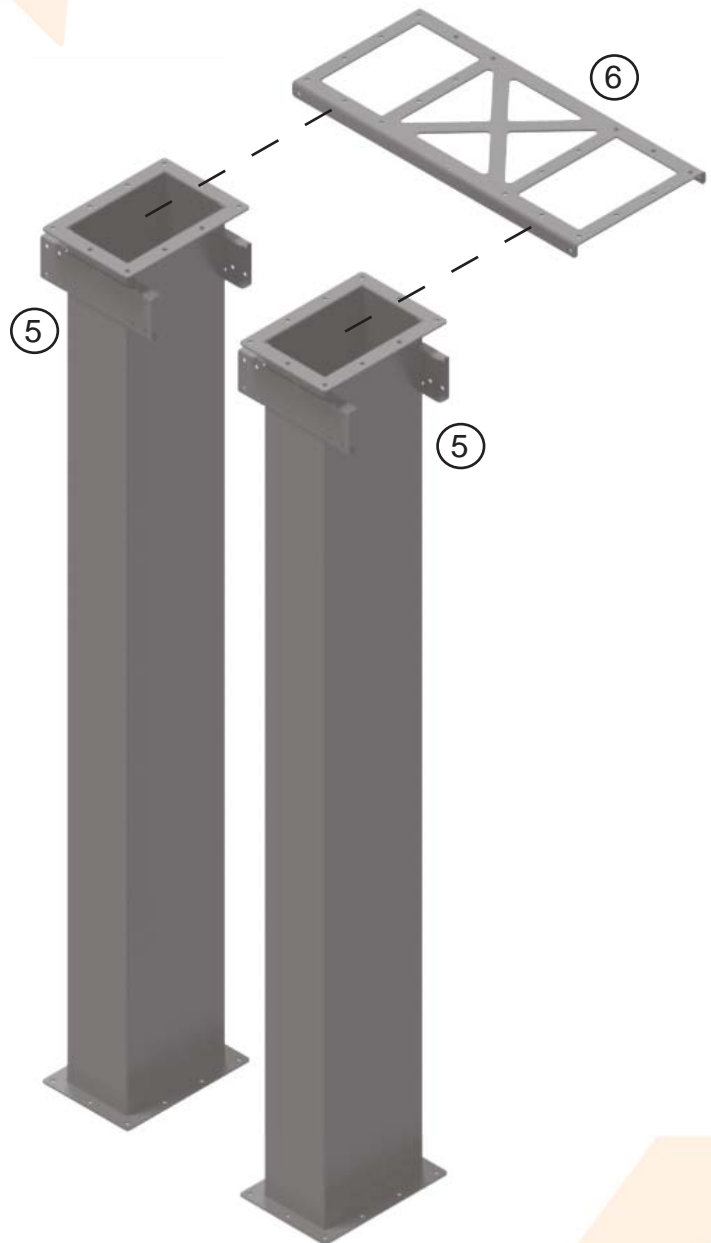
**IMPORTANT!** *Platform Trunking sections are only used on Bucket Elevator systems that have a Platform and Ladder package.*

Locate two (2) Platform Trunking sections and one (1) Trunking Connector Plate. Place the Connector Plate onto the tops of the Platform Trunking sections.

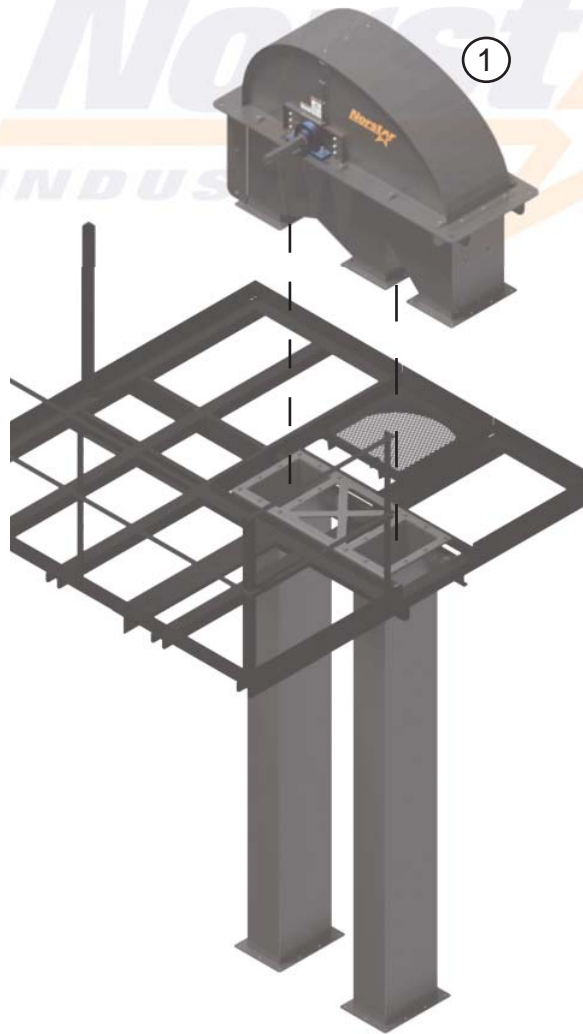


**IMPORTANT!** *Before installing the Bucket Elevator Head, the Platform Trunking should be attached to the Head Platform Assembly.*

It is recommended to use a few 1/2 x 1 1/2" Bolts and 1/2" Nylon Locknuts to keep the Connector Plate attached to the Platform Trunking sections while assembling and installing the Head Platform.



**Figure 28**  
**Platform Trunking**

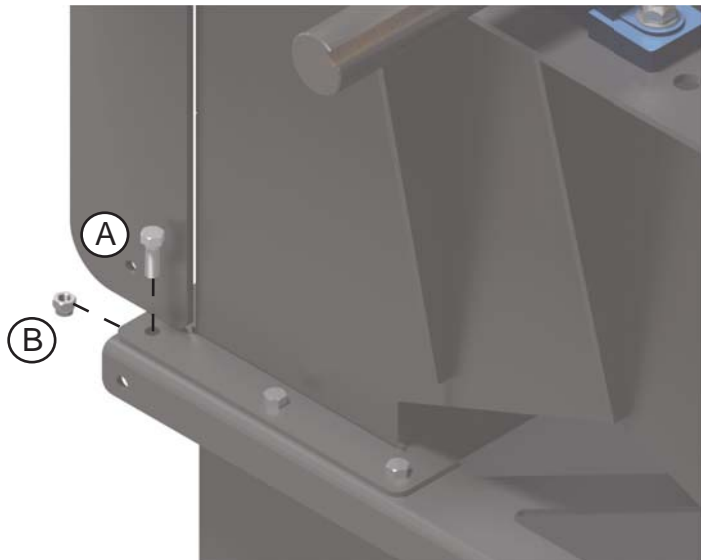


On Bucket Elevators with a Ladder package, the Head section should be attached **AFTER** the Head Platform has been assembled and installed. Once that has happened, lower the Head section onto the Platform Trunking section.

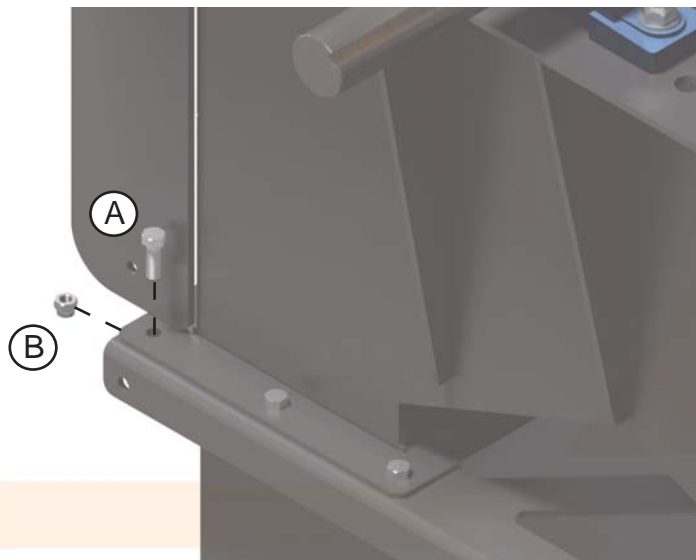
With 1/2 x 1 1/2" Bolts and 1/2" Nylon Locknuts, secure the Head section to the Trunking.



**\*NOTE\* RAILINGS HAVE BEEN REMOVED FOR CLARITY.**



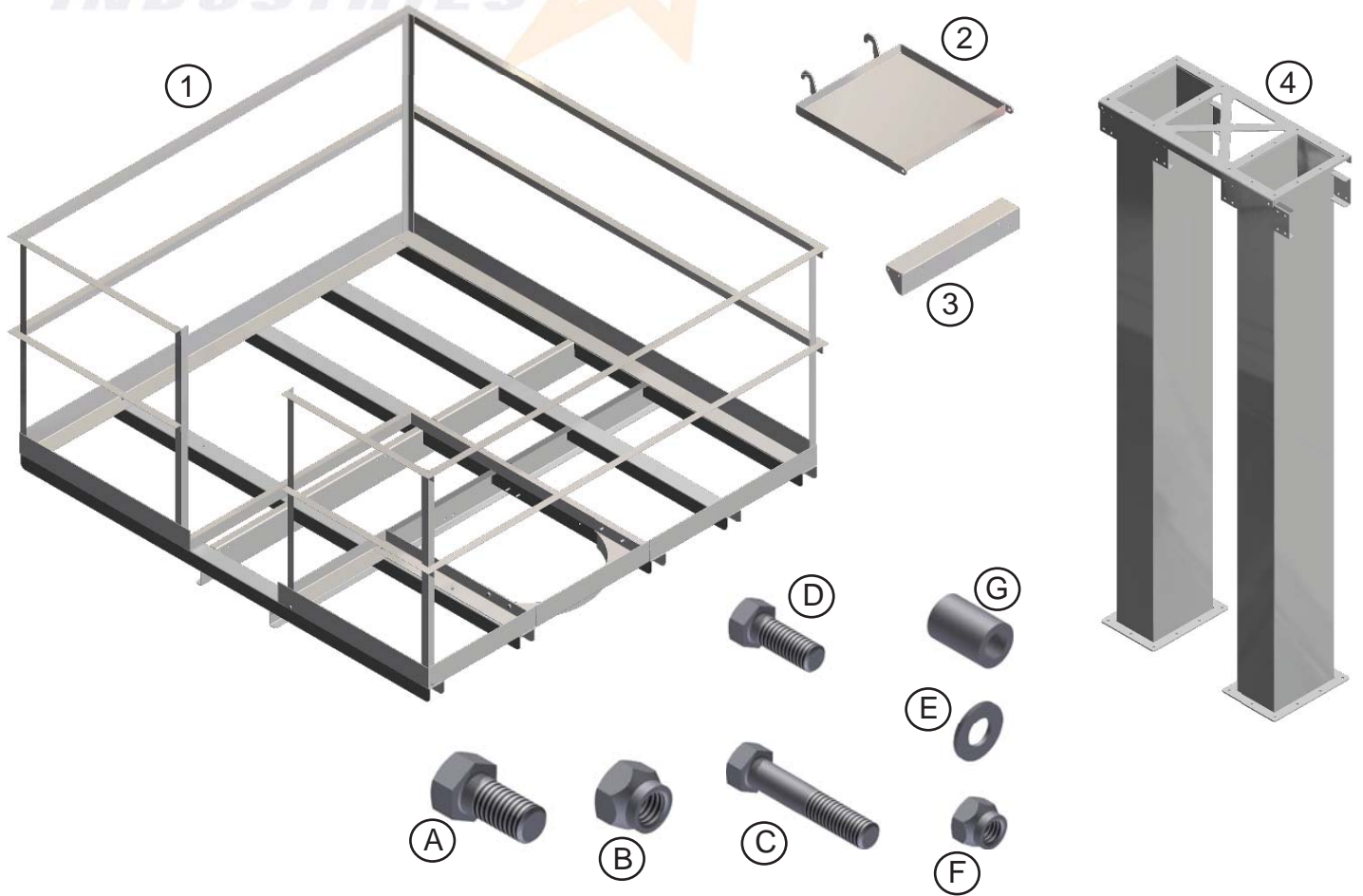
**Figure 29**  
**Platform Head Installation**



**Figure 30**  
**Head Installation**

On Bucket Elevators without a Ladder package, lower the Head section onto the Trunking section. With 1/2 x 1 1/2" Bolt and 1/2" Nylon Locknuts, secure the Head section to the Trunking.

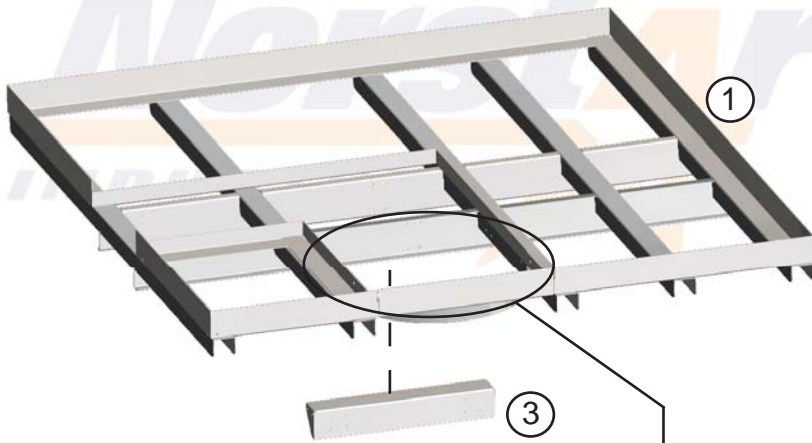
# 16" Head Platform Assembly and Installation



**Figure 31**  
16" Head Platform Components

Locate the items that will be joined together.

Item	Description	Qty
1	Head Platform Base	1
2	Trapdoor Weldment	1
3	Ladder Mount Weldment	1
4	Platform Trunk Weldment	1
A	1/2" x 1" Bolt	16
B	1/2" Nylon Locknut	16
C	3/8" x 2" Bolt	2
D	3/8" x 1" Bolt	4
E	3/8" Flatwasher	4
F	3/8" Nylon Locknut	6
G	Pivot Spacer	2

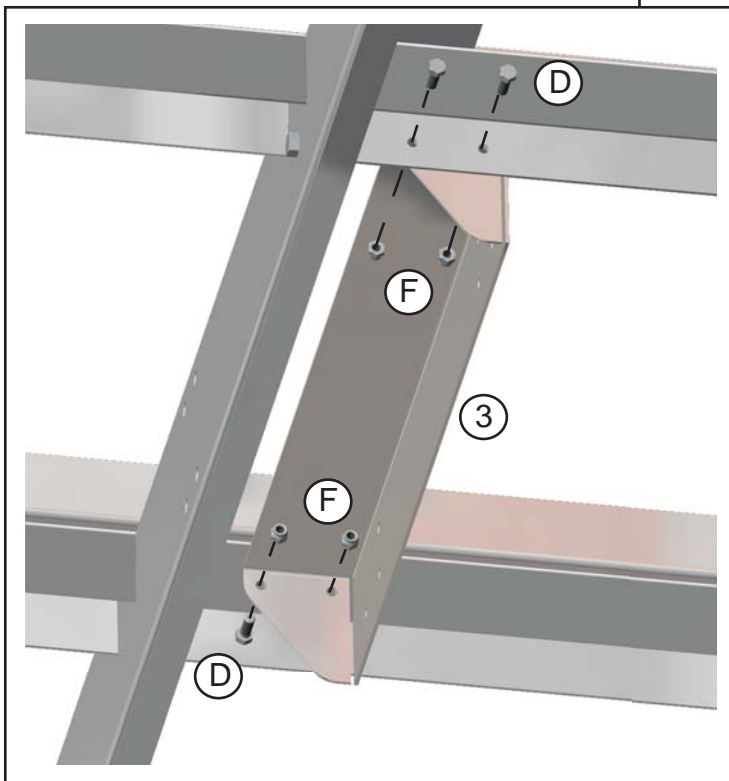


Locate the Head Platform Assembly and the Ladder Mount weldment. Move the Ladder Mount weldment into its position in the manhole gap.



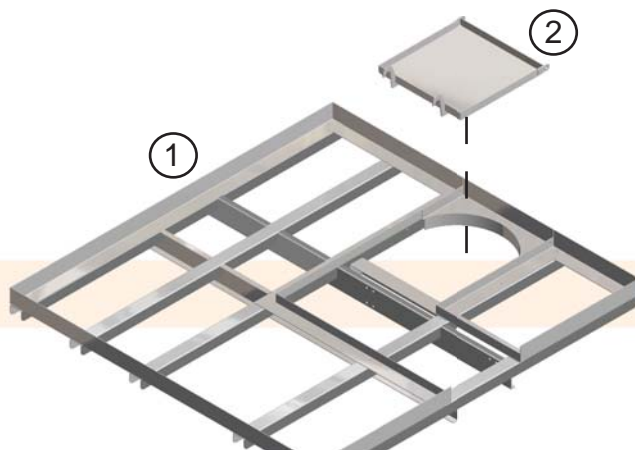
**\*NOTE\* RAILINGS HAVE BEEN REMOVED FOR CLARITY.**

**Figure 32**  
Ladder Mount Location



Locate four (4) 3/8" x 1" Bolts and four (4) 3/8" Nylon Locknuts. Align the Ladder Mount weldment with the four (4) holes, attach and tighten with the nuts and bolts.

**Figure 33**  
Ladder Mount Installation

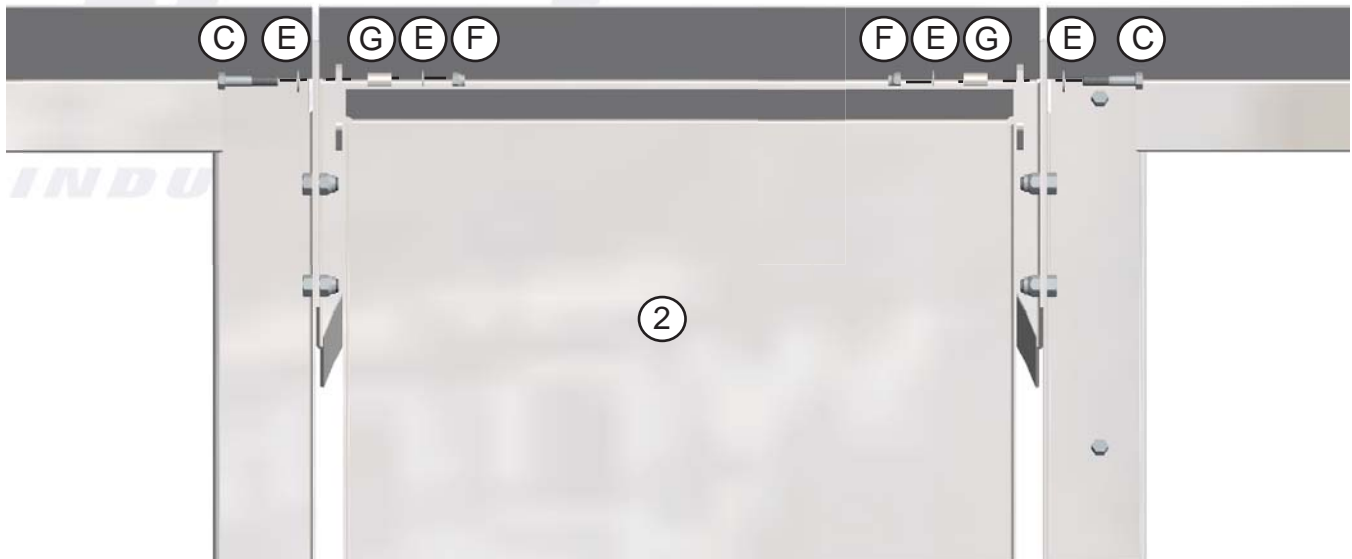


Locate the Trapdoor Weldment and place it into the manhole gap. ensure that the hooks are facing the center of the Head Platform Assembly.



**\*NOTE\* RAILINGS HAVE BEEN REMOVED FOR CLARITY.**

**Figure 34**  
Trapdoor Location

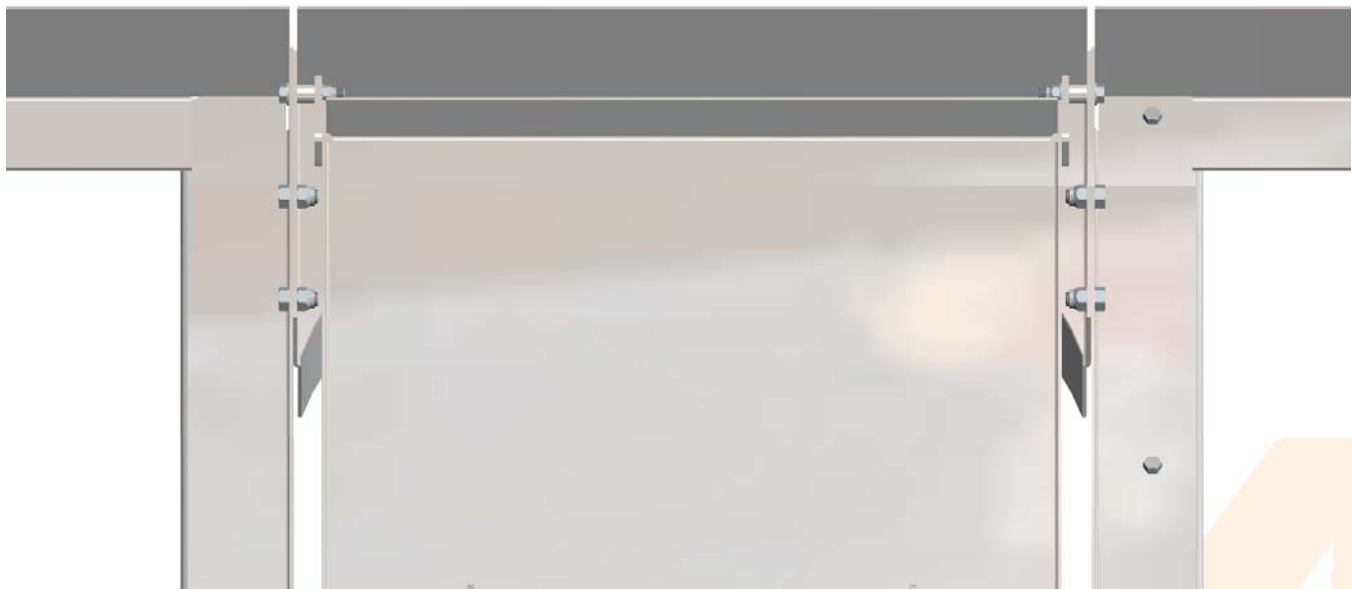


**Figure 35**  
**Trapdoor Installation**

Locate two (2) 3/8" x 2" Bolts, four (4) 3/8" Flatwashers, two (2) 3/8" Nylon Locknuts and two (2) Pivot Spacers. Tighten the nuts and bolts to secure the Trapdoor Weldment to the Head Platform Assembly.



**\*NOTE\* RAILINGS HAVE BEEN REMOVED FOR CLARITY.**



**Figure 36**  
**Trapdoor Installation**



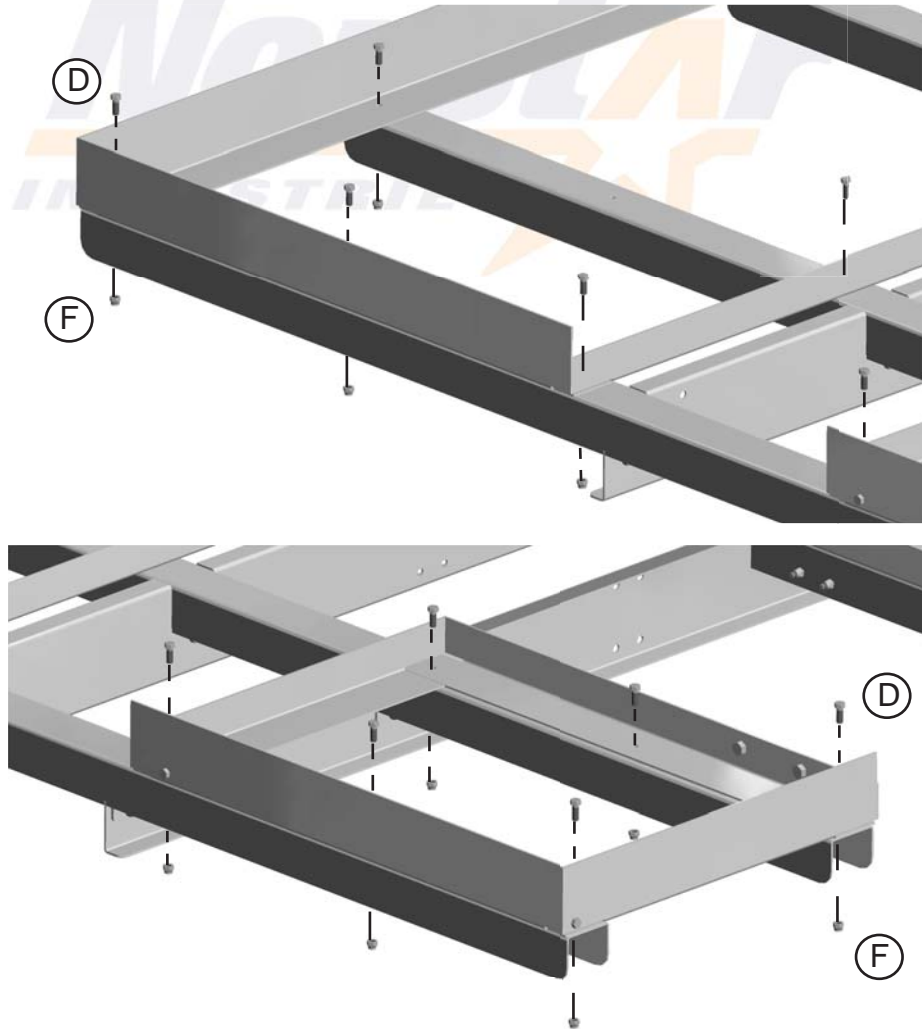


Figure 37  
Channel Removal

Remove the thirteen (13) 3/8" x 1" Bolts and 3/8" Nylon Locknuts holding the Bolt-in Channels in place. Set these nuts and bolts aside to be used later.



**\*NOTE\* RAILINGS HAVE BEEN REMOVED FOR CLARITY.**

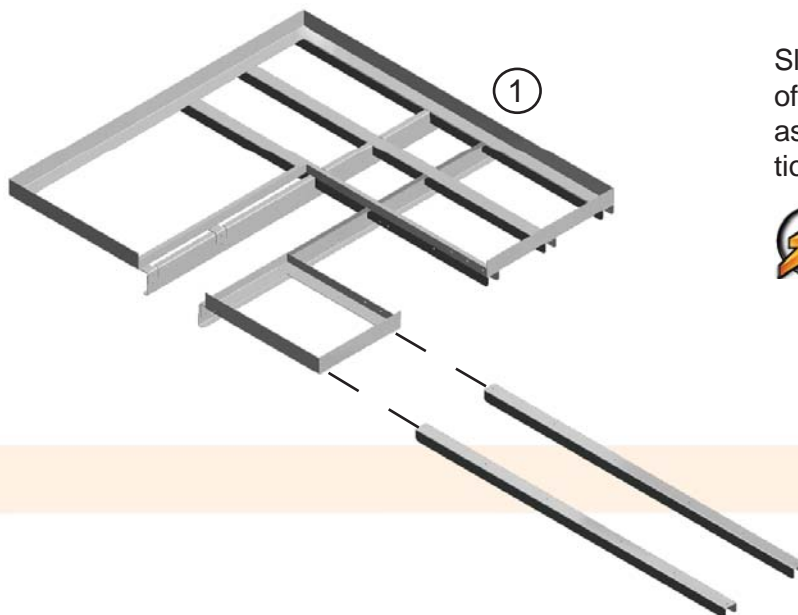
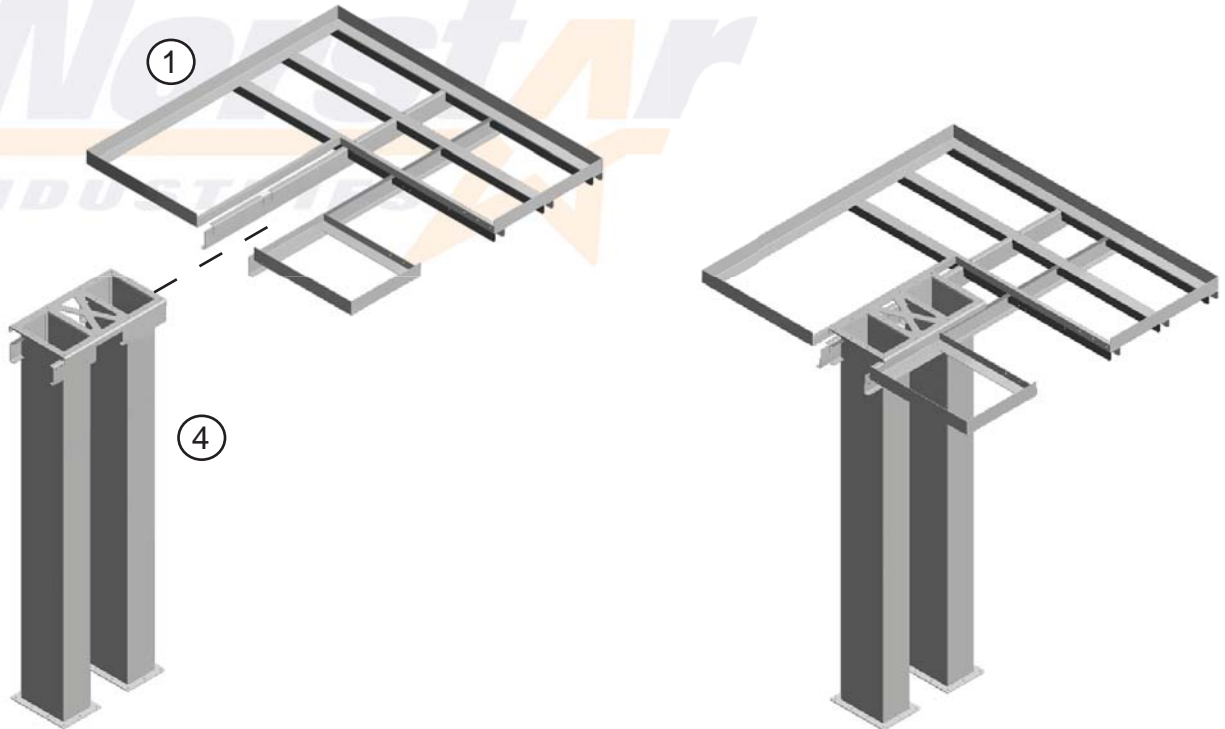


Figure 38  
Channel Removal

Slide the two (2) Bolt-in Channels out of the Head Platform Assembly and set aside for later. Do **NOT** mix up the locations of each channel.



**\*NOTE\* RAILINGS HAVE BEEN REMOVED FOR CLARITY.**

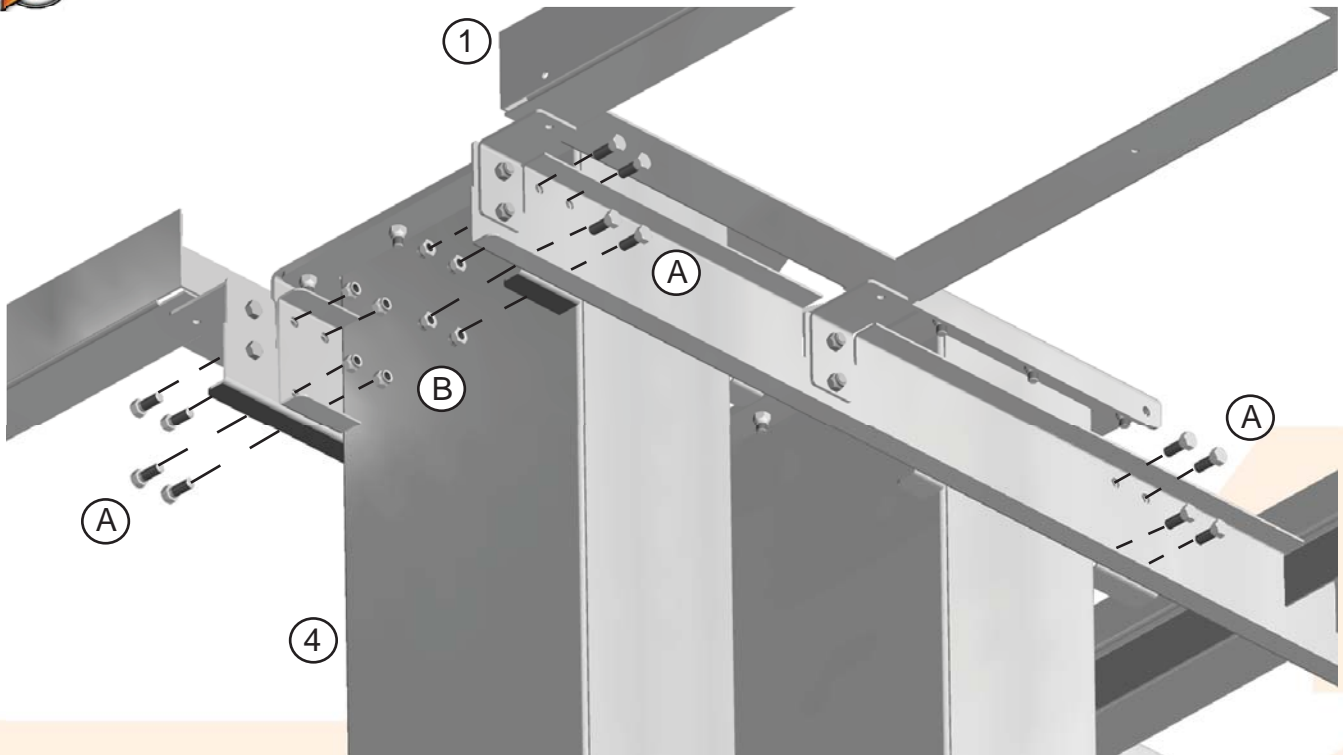


**Figure 39**  
**Platform Trunking Location**

Locate the Platform Trunking Section and slide it into the gap on the Head Platform Assembly.

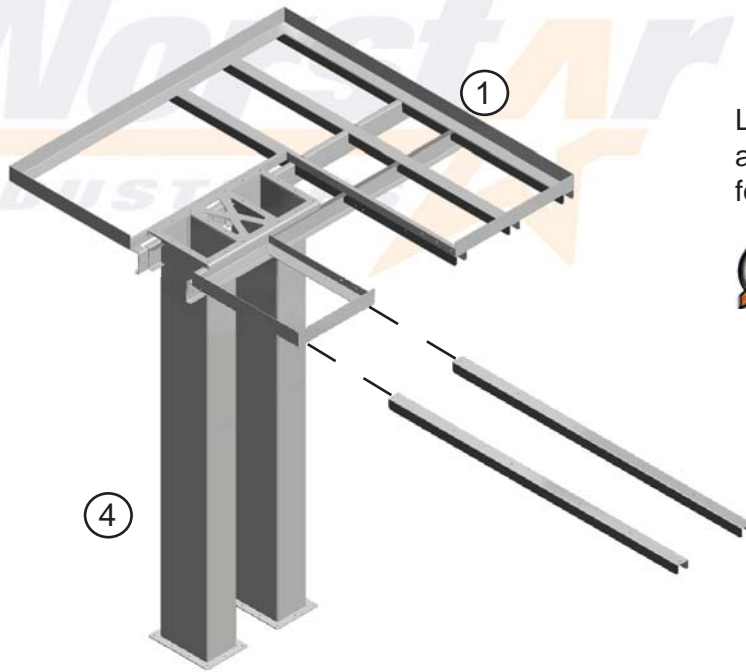


**\*NOTE\* RAILINGS HAVE BEEN REMOVED FOR CLARITY.**



**Figure 40**  
**Platform Trunking Installation**

Locate sixteen (16) 1/2" x 1" Bolts and 1/2" Nylon Locknuts. Align the Platform Trunking with the holes and tighten the nuts and bolts to secure the Trunking section to the Head Platform Assembly.

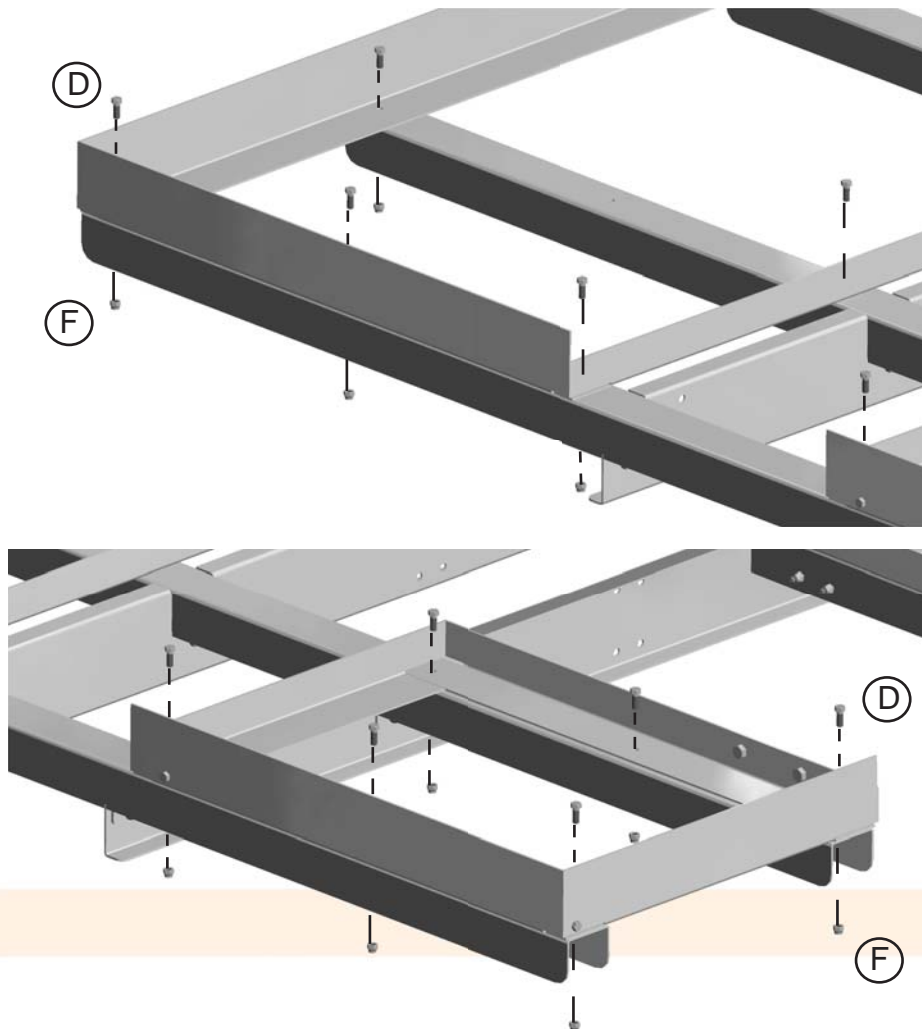


Locate the two (2) Bolt-in Channels and slide them back into the Head Platform Assembly.



**\*NOTE\* RAILINGS HAVE BEEN REMOVED FOR CLARITY.**

**Figure 41**  
**Channel Replacement**



Locate the thirteen (13) 3/8" x 1" Bolts and 3/8" Nylon Locknuts from step 6. Place and tighten the nuts and bolts to re-attach the Bolt-in Channels to the Head Platform Assembly.



**\*NOTE\* RAILINGS HAVE BEEN REMOVED FOR CLARITY.**

**Figure 42**  
**Channel Installation**



Completely assembled 16" Platform Assembly.

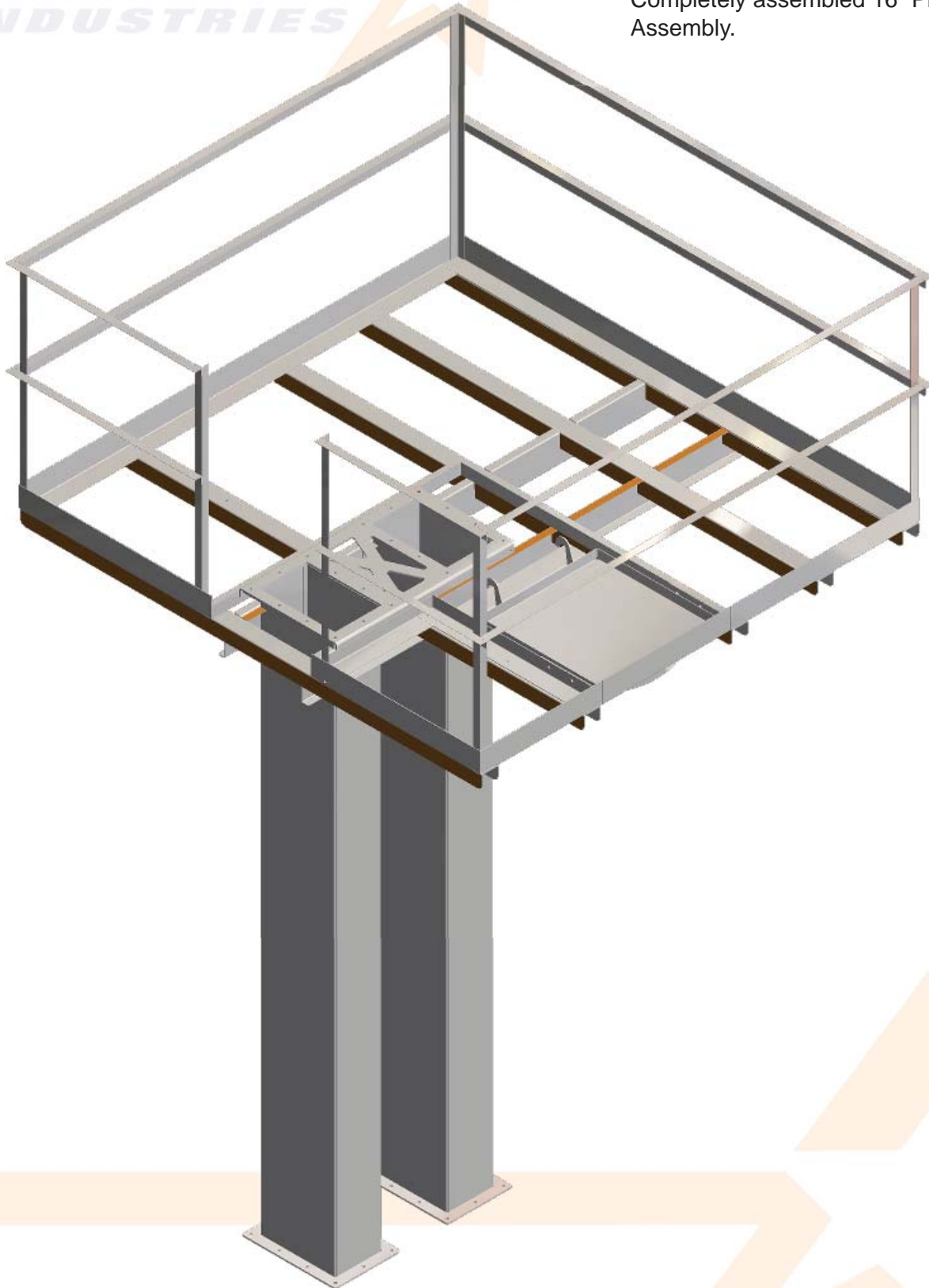
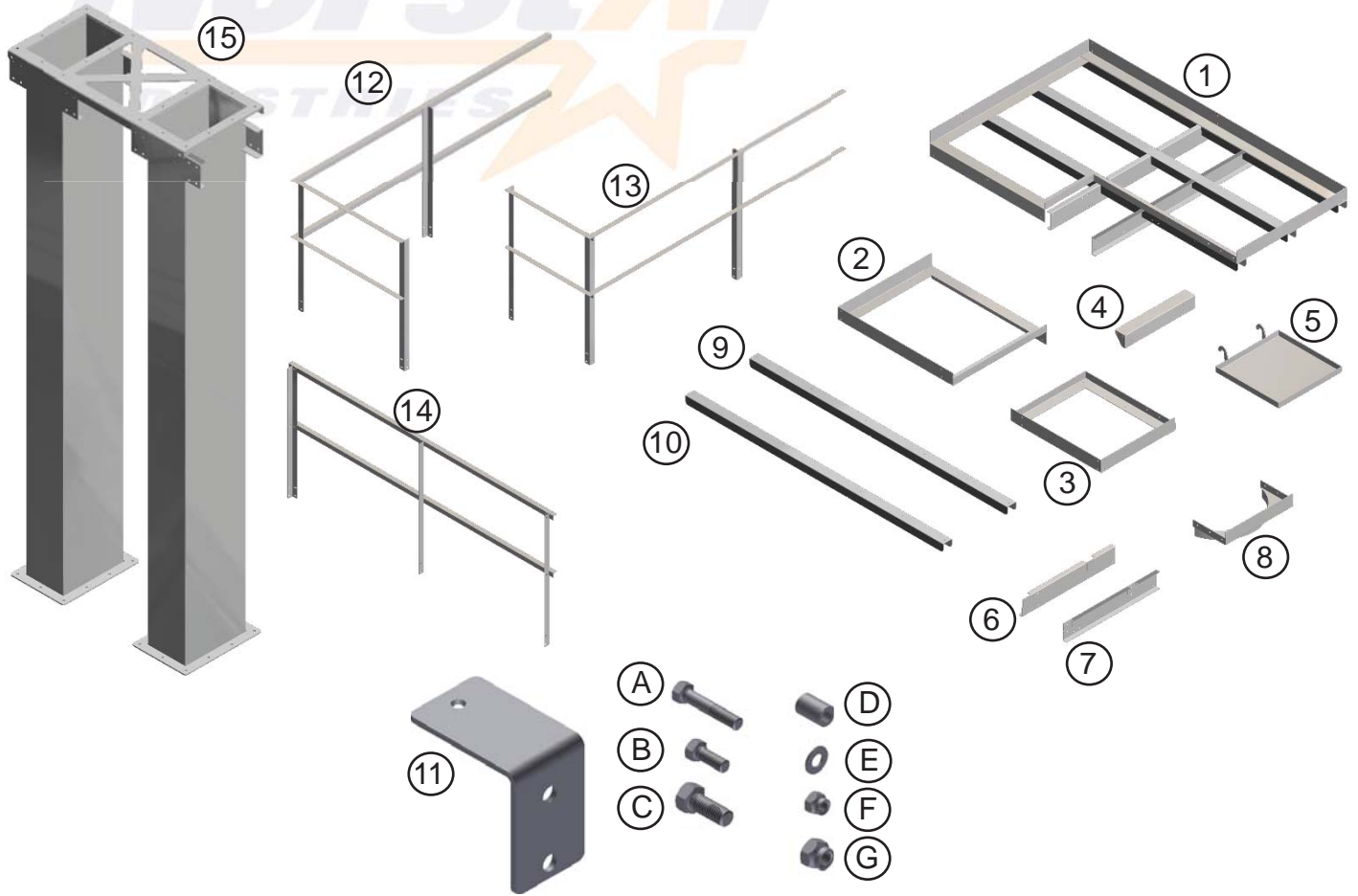


Figure 43  
16" Platform

# 24" + 30" Head Platform Assembly and Installation

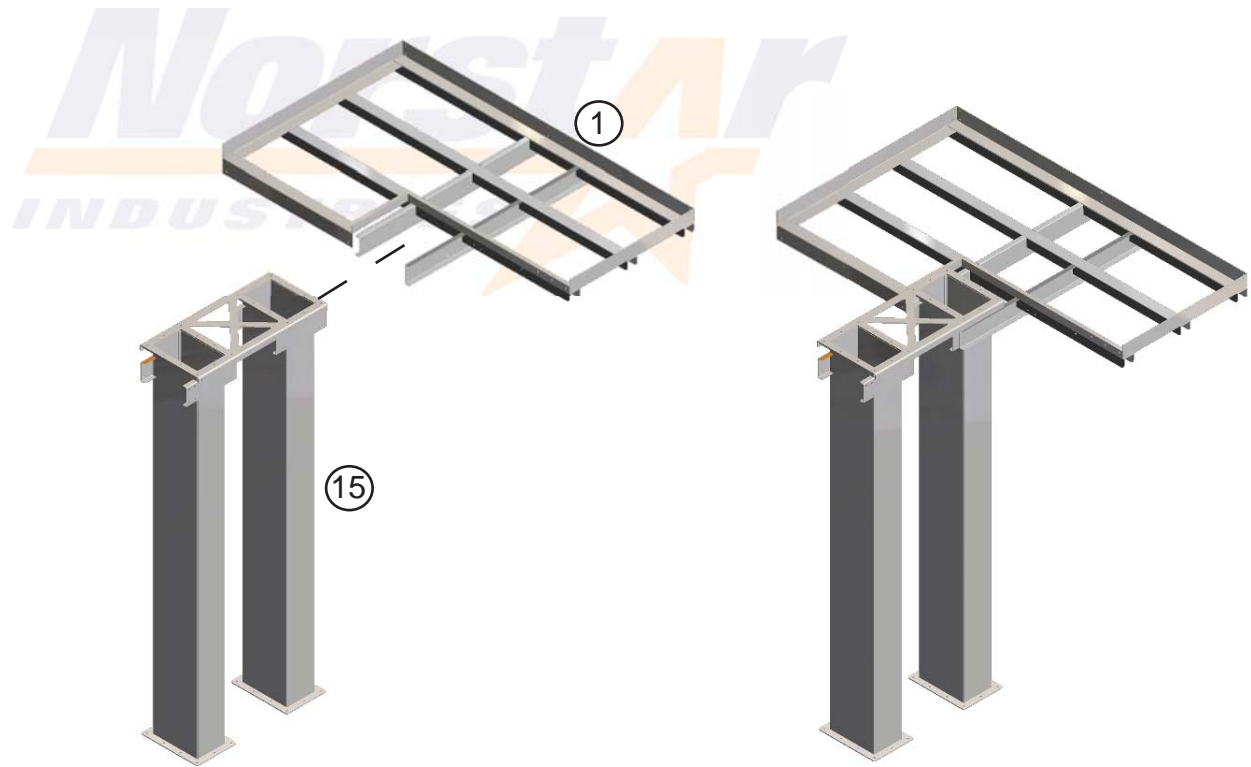


**Figure 44**  
24" + 30" Platform Components

Locate the items that will be joined together.

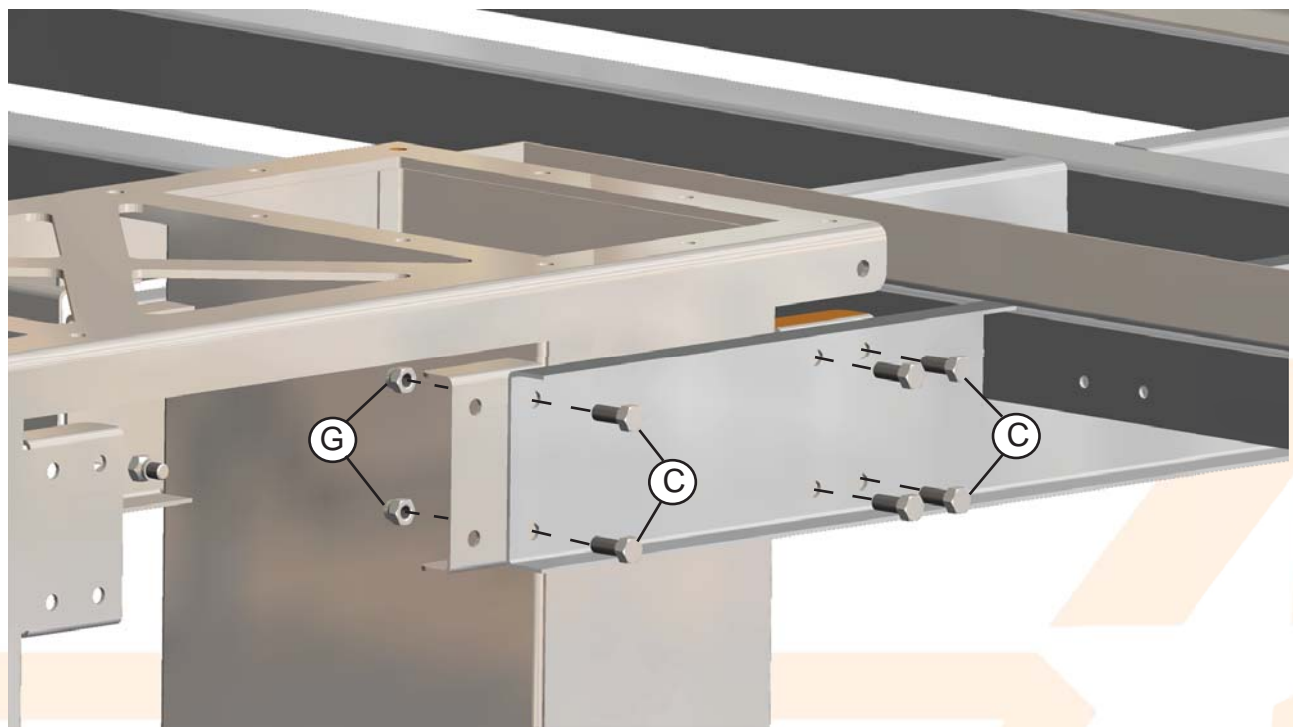
Item	Description	Qty
1	Main Platform Weldment	1
2	Secondary Platform Weldment	1
3	Tertiary Platform Weldment	1
4	Top Ladder Bracket	1
5	Trapdoor Weldment	1
6	Right Platform Beam	1
7	Left Platform Beam	1
8	Entrance Weldment	1
9	Back Platform Channel	1
10	Front Platform Channel	1
11	Bolt-in Angle	4

Item	Description	Qty
12	Right Rail Weldment	1
13	Left Rail Weldment	1
14	Back Rail Weldment	1
15	Platform Trunking Weldment	1
A	3/8 x 2" Bolt	2
B	3/8 x 1" Bolt	48
C	1/2 x 1" Bolt	36
D	Pivot Spacer Tube	2
E	3/8 Flatwasher	34
F	3/8" Nylon Locknut	50
G	1/2" Nylon Locknut	36



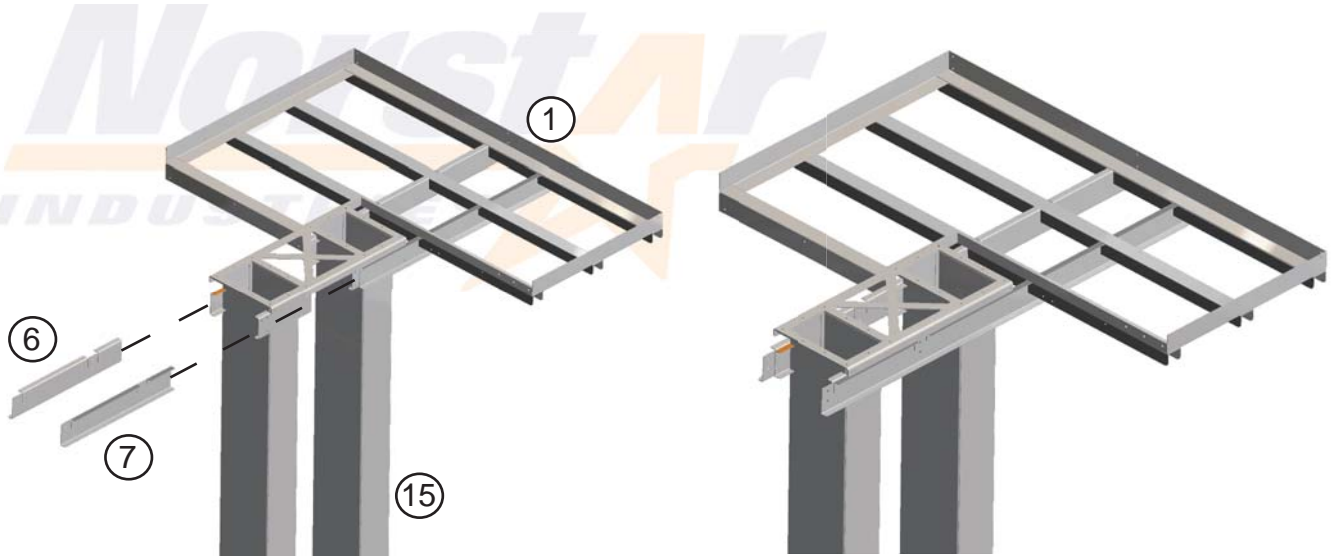
**Figure 45**  
**Platform Trunking Location**

Locate the Platform Trunking Section and slide it into the gap on the Main Platform Weldment.



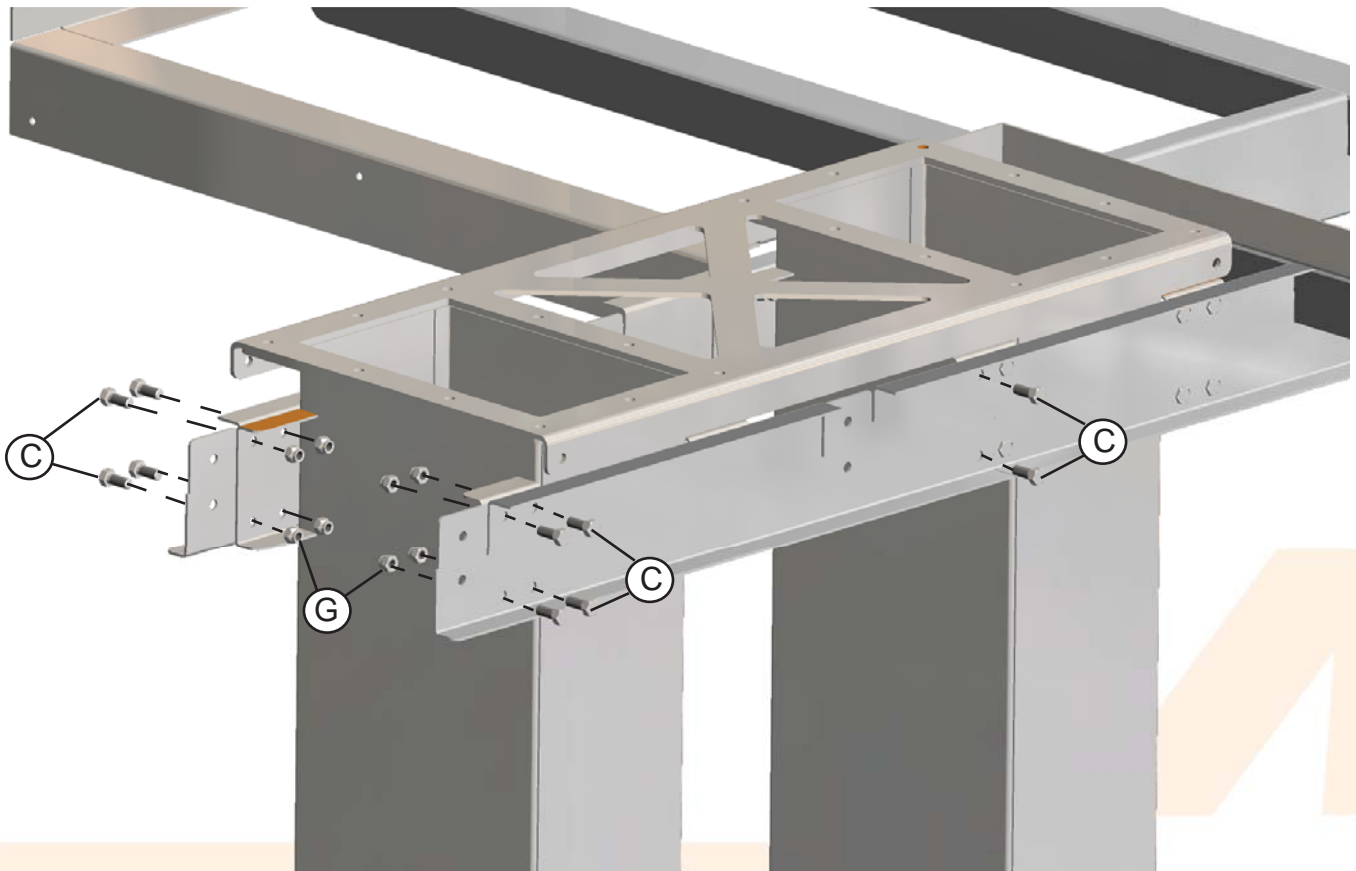
**Figure 46**  
**Platform Trunking Installation**

Using twelve (12) 1/2 x 1" Bolts and 1/2" Nylon Locknuts, secure the Main Platform Weldment to the Platform Trunking.



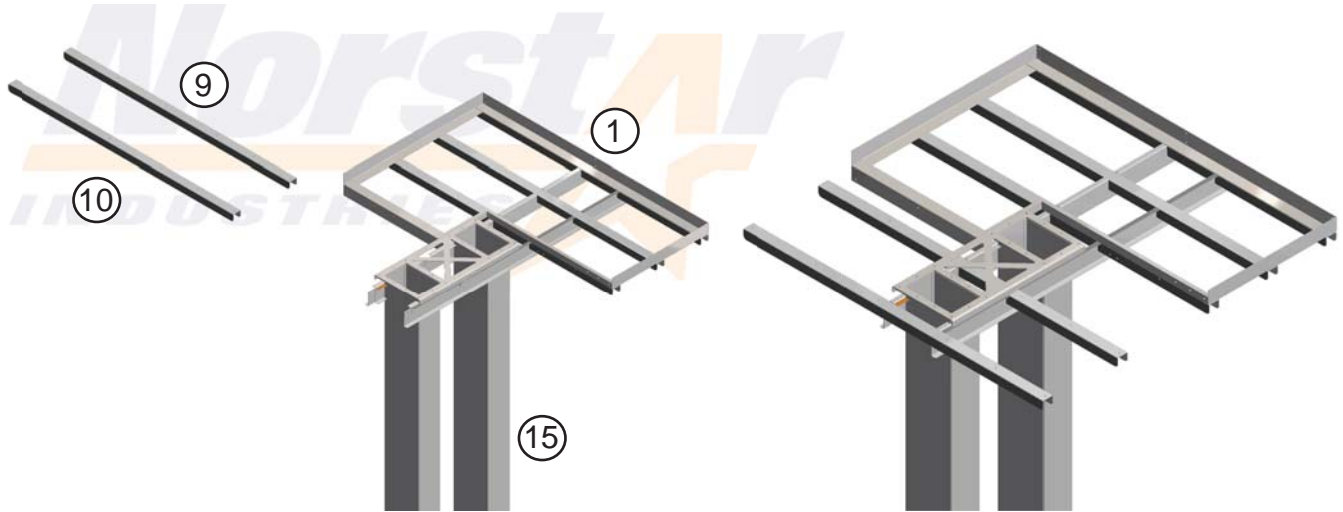
**Figure 47**  
**Platform Beams**

Locate the Left and Right Platform Beams and place them against the Platform Trunking and flush up to the beam portion of the Main Platform Weldment.



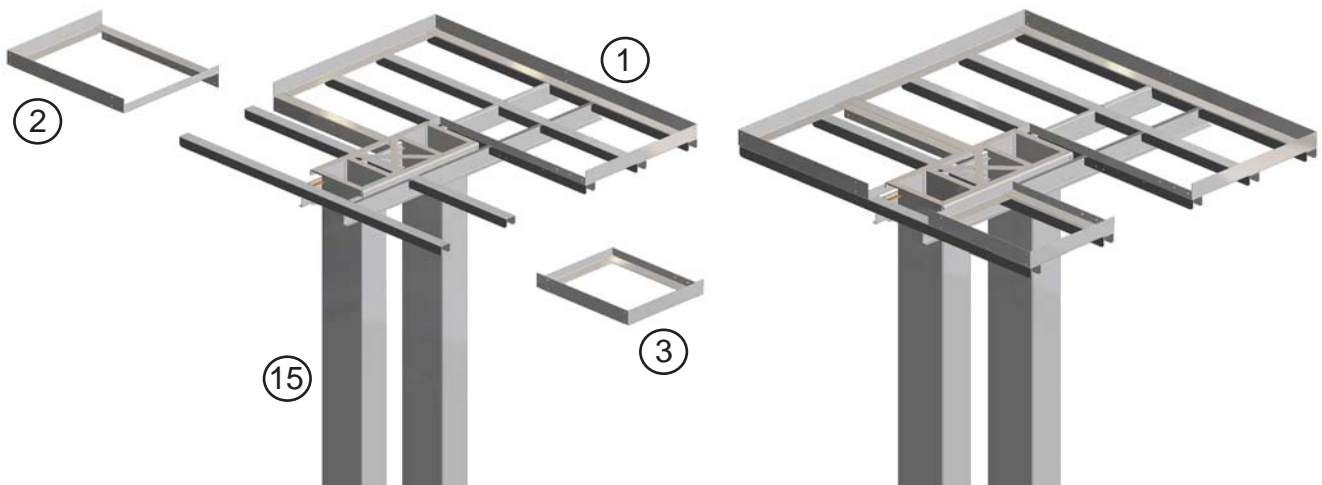
**Figure 48**  
**Platform Beam Installation**

Using twelve (12) 1/2 x 1" Bolts and 1/2" Nylon Locknuts, secure the Left and right Platform Beams to the Platform Trunking.



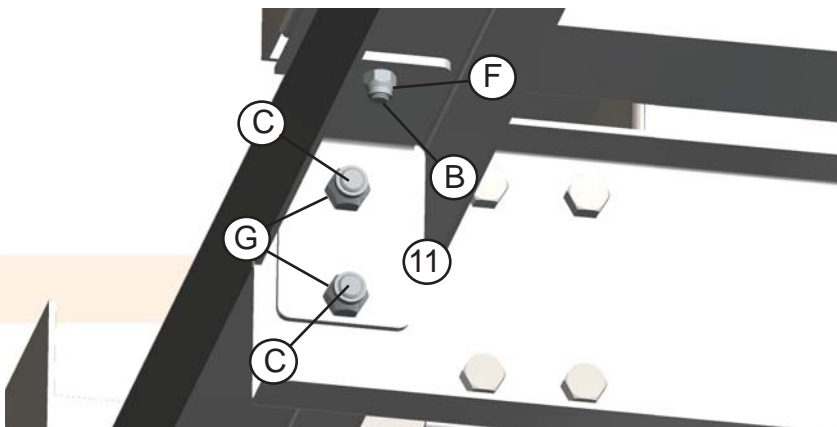
**Figure 49**  
**Channel Placement**

Locate the Front and Back Platform Channels. Slide them into the grooves of the Platform Beams.



**Figure 50**  
**Intermediate Platform Placement**

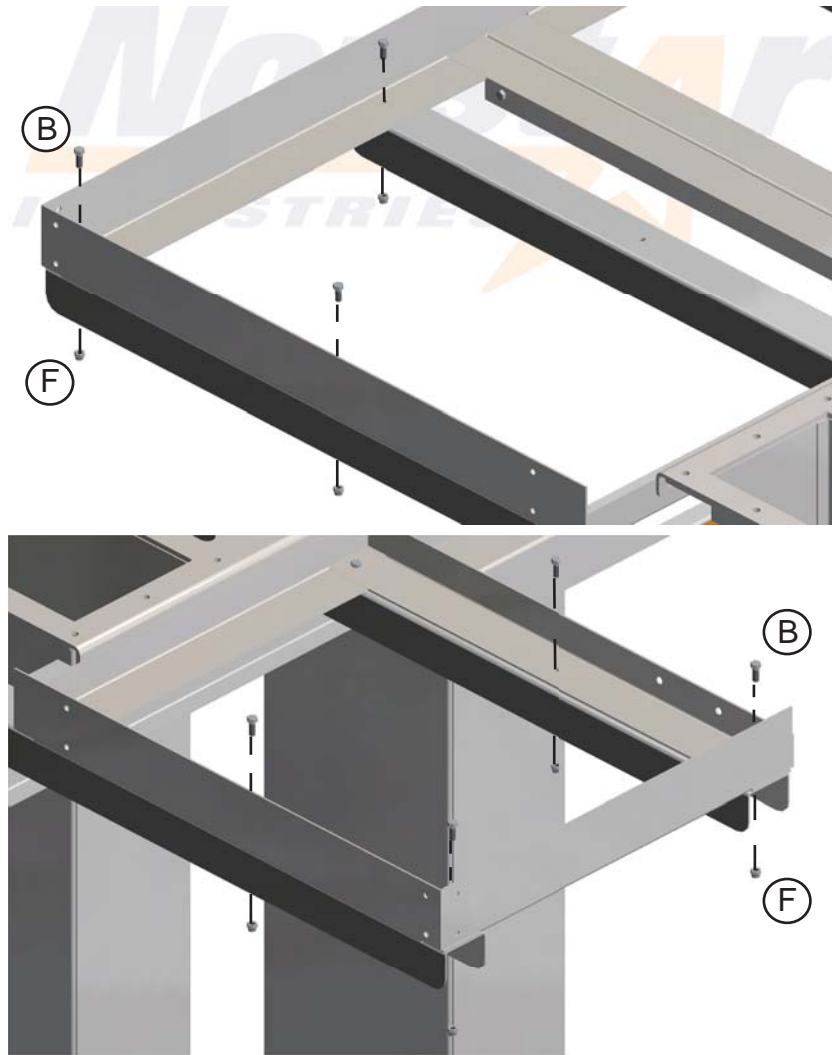
Locate the Secondary and Tertiary Platform Weldments. Place them onto the Platform Channels.



**Figure 51**  
**Bolt-in Angle Installation**

Place the four (4) Bolt-in Angles into the locations at the joints of the Platform Channels and the Platform Beams. Per connection, use two (2) 1/2 x 1" Bolts, two (2) 1/2" Nylon Locknuts, one (1) 3/8 x 1" Bolt and one (1) 3/8" Nylon Locknut to secure the Angle to the Platform Assembly.

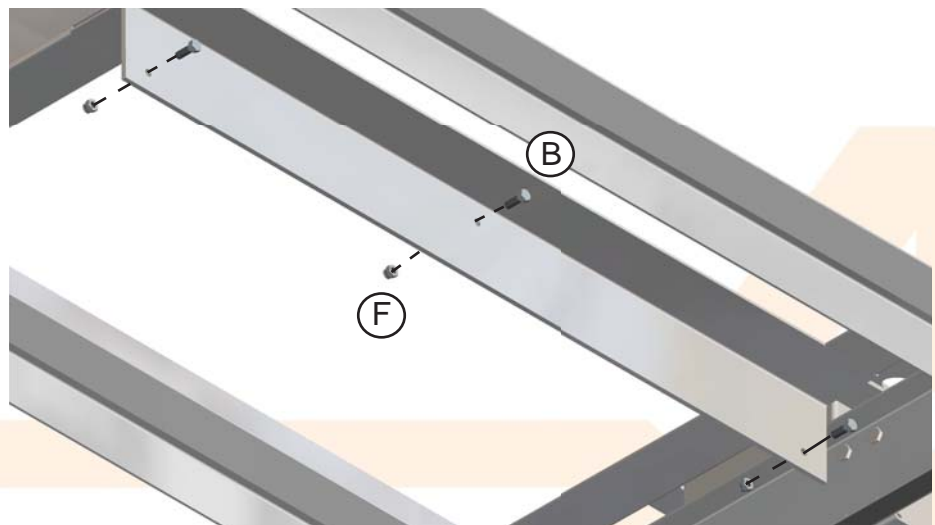




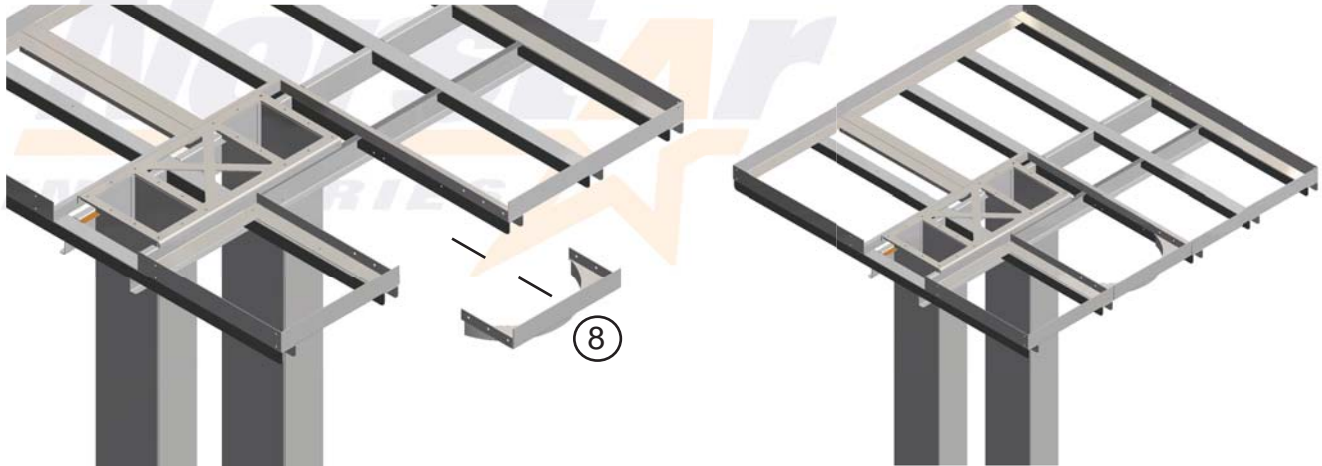
Using seven (7) 3/8 x 1" Bolts and 3/8" Nylon Locknuts, secure the Secondary and Tertiary Platform Weldments to the Platform Channels. Three (3) nuts and bolts are required for the Secondary Platform and four (4) nuts and bolts are required for the Tertiary Platform.

**Figure 52**  
Intermediate Platform Installation

Using three (3) 3/8 x 1" Bolts and 3/8" Nylon Locknuts, secure the Secondary Platform to the Main Platform. The connection location is on the underside of the platforms.

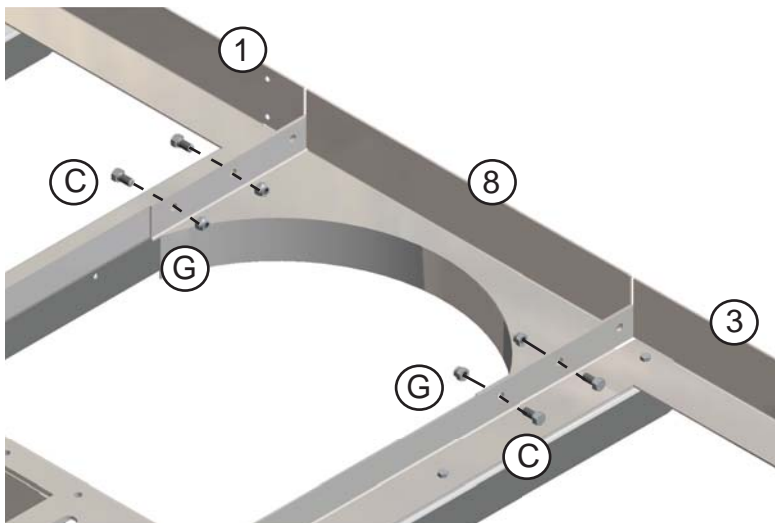


**Figure 53**  
Platform Tethering



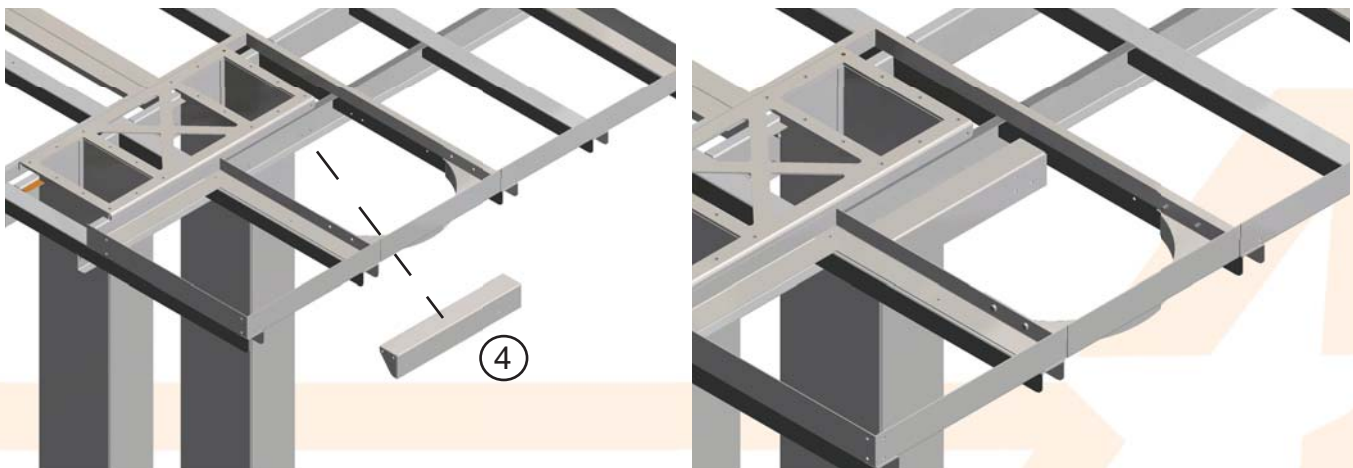
**Figure 54**  
**Entrance Weldment Placement**

Locate the Entrance Weldment and move it into its position between the Tertiary and Main Platform Weldments.



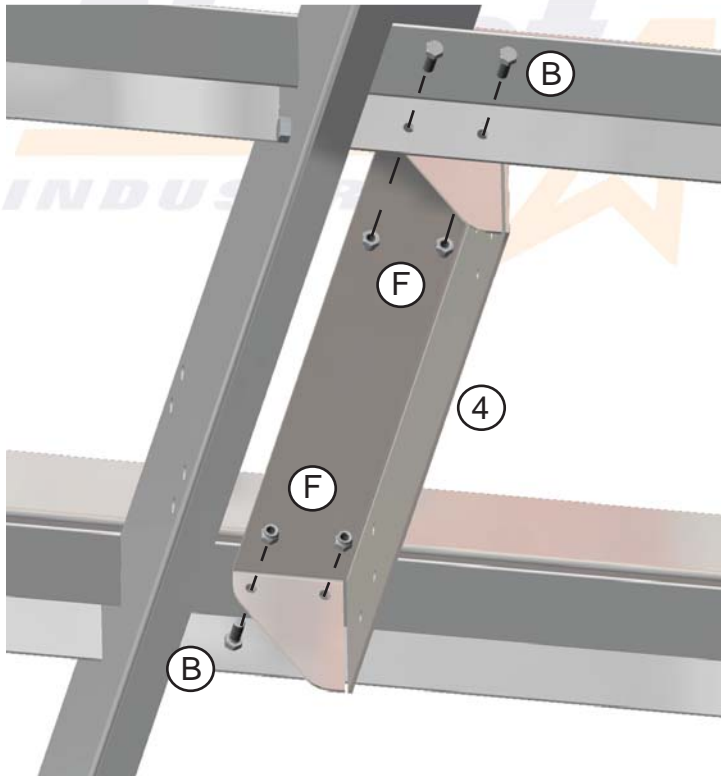
Using four (4) 1/2 x 1" Bolts and 1/2" Nylon Locknuts, secure the Entrance Weldment to the Platforms.

**Figure 55**  
**Entrance Weldment Installation**



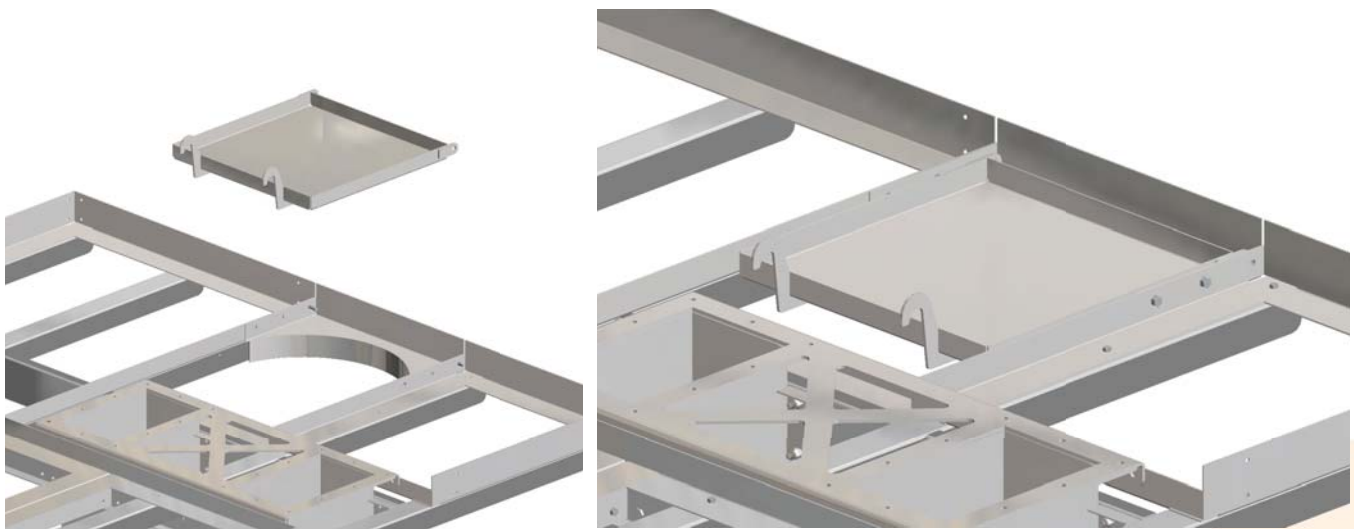
**Figure 56**  
**Ladder Mounting Bracker Placement**

Locate the Top Ladder Mouting Bracket and move it into its position between the Tertiary and Main Platform Weldments close to the Platform Trunking.



Locate four (4) 3/8" x 1" Bolts and four (4) 3/8" Nylon Locknuts. Align the Ladder Mount weldment with the four (4) holes, attach and tighten with the nuts and bolts.

**Figure 57**  
**Ladder Mounting Bracket Installation**



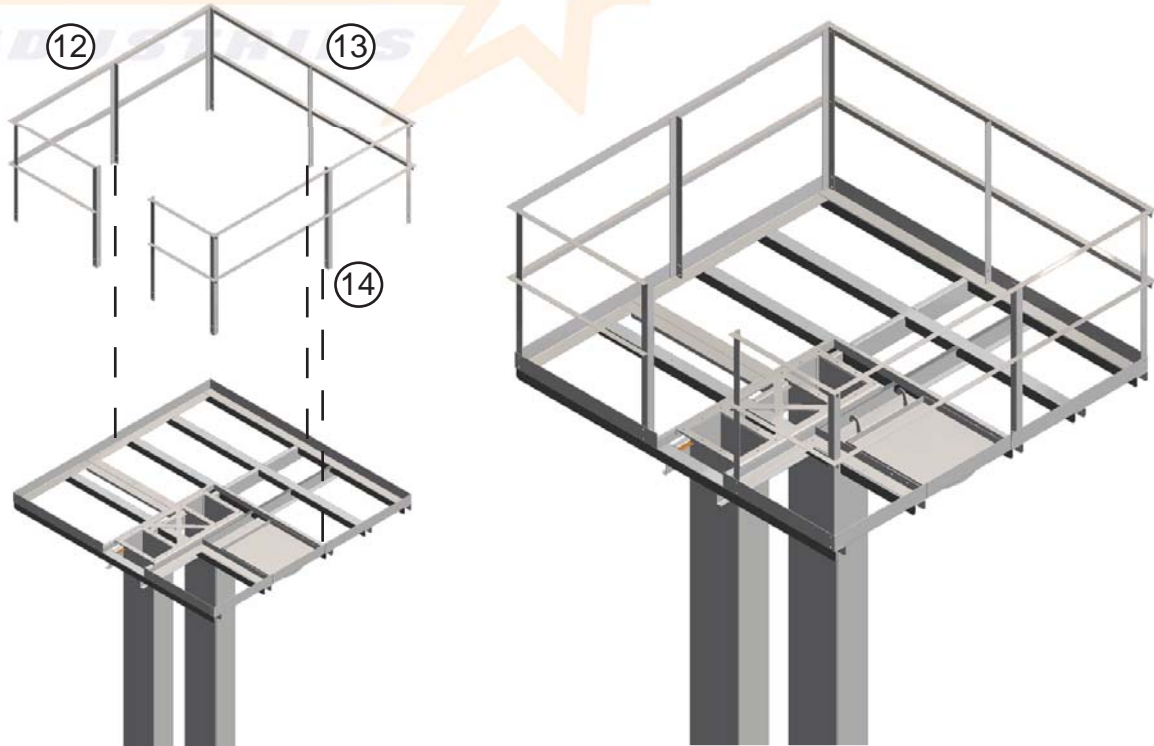
**Figure 58**  
**Trapdoor Placement**

Locate the Trapdoor Weldment and move it into its position between the Tertiary and Main Platform Weldments.



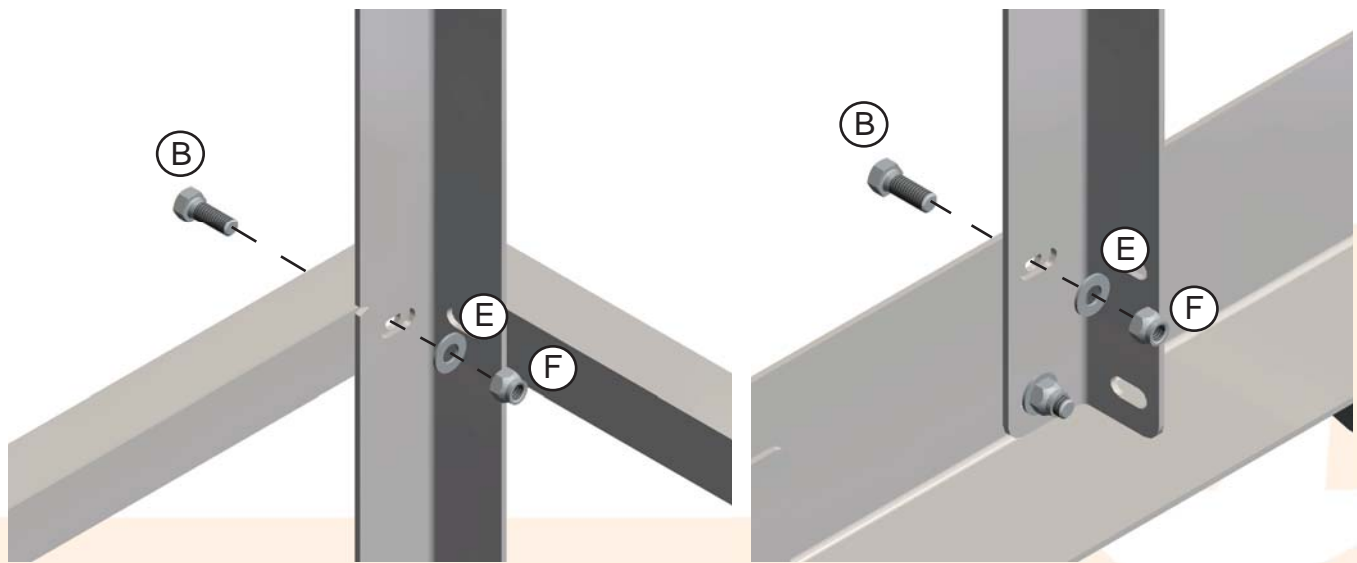
**Figure 59**  
**Trapdoor Installation**

Locate two (2) 3/8" x 2" Bolts, four (4) 3/8" Flatwashers, two (2) 3/8" Nylon Locknuts and two (2) Pivot Spacers. Tighten the nuts and bolts to secure the Trapdoor Weldment to the Head Platform Assembly.



**Figure 60**  
**Railing Placement**

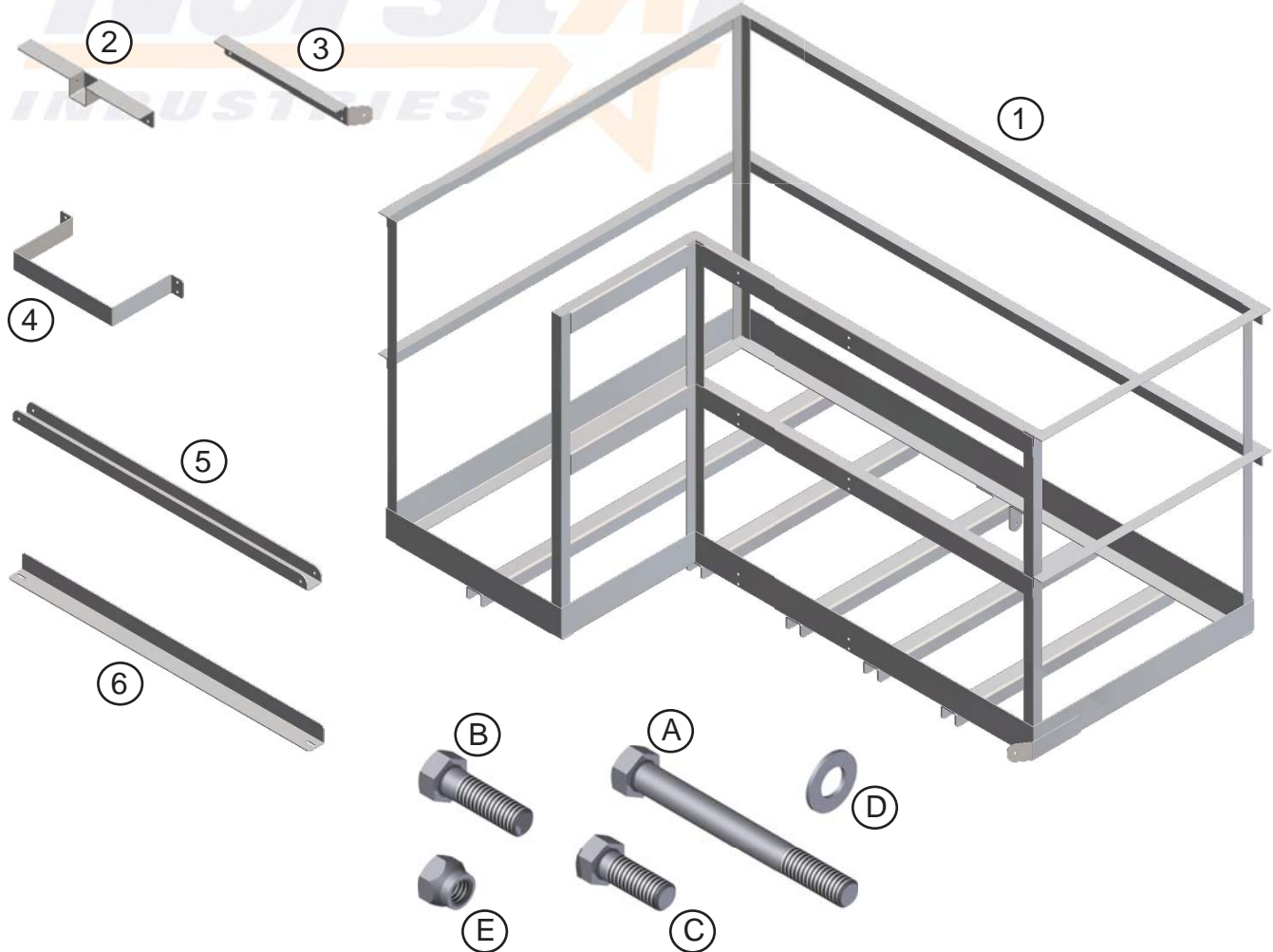
Locate the Right, Left and Back Rail Weldments and place them onto the Platform Assembly.



**Figure 61**  
**Railing Installation**

Using one (1) 3/8 X 1" Bolt, 3/8" Flatwasher and 3/8" Nylon Locknut, per connection, attach and secure the Railing Weldments to each other as well as to the Platform Assembly.

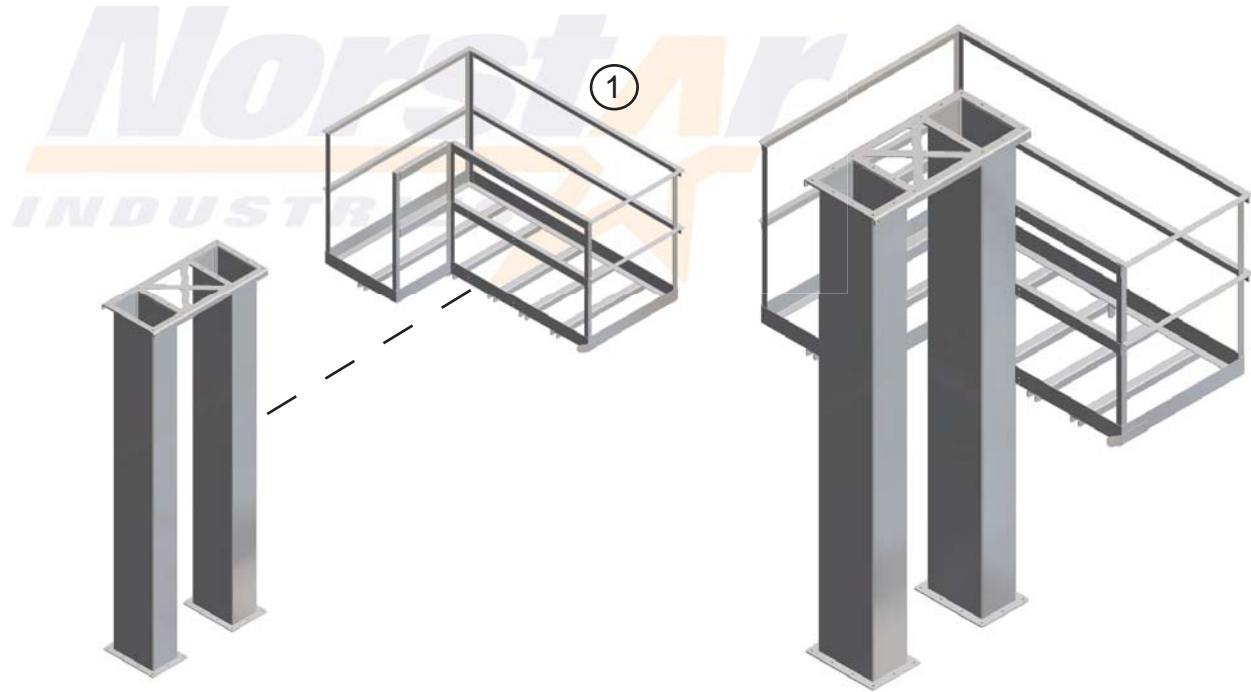
# Distributor Platform Assembly and Installation



**Figure 62**  
Distributor Platform Components

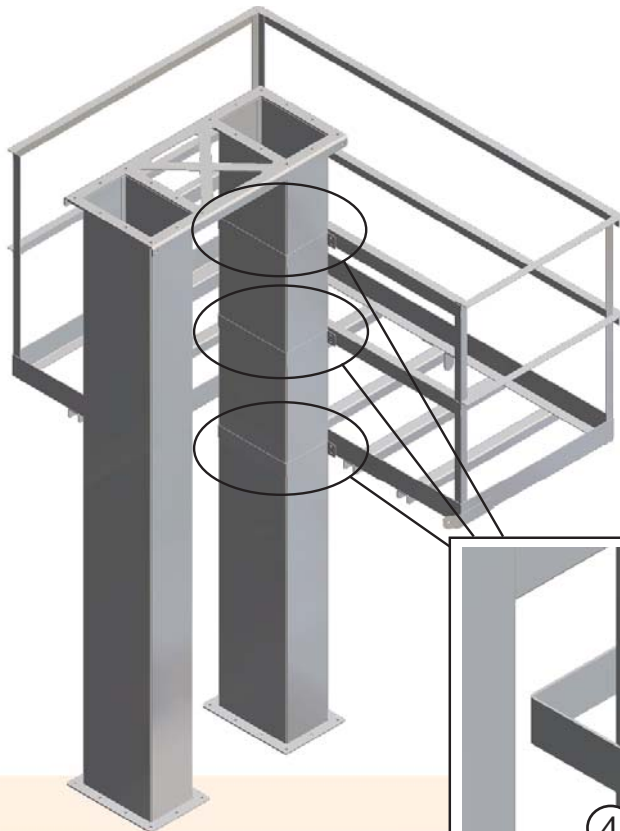
Locate the items that will be joined together.

Item	Description	Qty
1	Distributor Platform Base	1
2	Bottom Brace Clamp	1
3	Stabilizer Clamp	1
4	Trunk Clamp	5
5	Bottom Brace Beam	1
6	Stabilizer Angle	1
A	3/8" x 3 1/2" Bolt	2
B	3/8" x 1 1/4" Bolt	20
C	3/8" x 1" Bolt	2
D	3/8" Flatwasher	22
E	3/8" Nylon Locknut	24

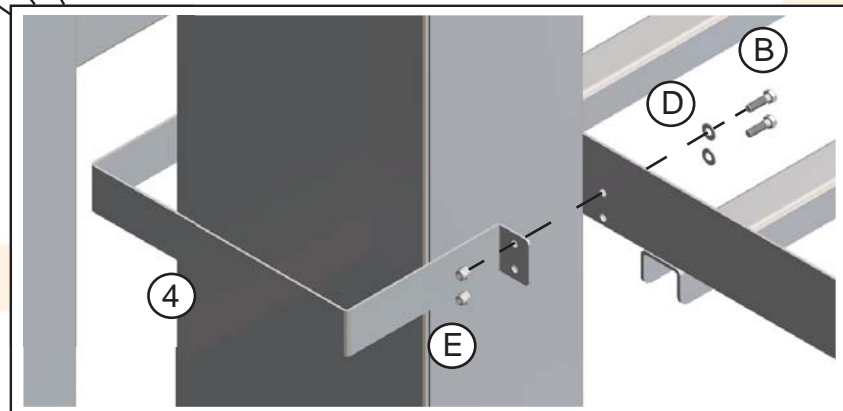


**Figure 63**  
**Distributor Platform Placement**

Locate the Distributor Platform Base and place it against the Bucket Elevator Trunking section in the desired location.



Three connections are required to secure the Distributor Platform Base to the Trunking. Per connection, use one (1) Trunking Clamp, four (4) 3/8" x 1 1/4" Bolts, four (4) 3/8" Flatwashers and four (4) 3/8" Nylon Locknuts. **The trunking clamps are wider than they are long.** Tighten the nuts and bolts to secure the Distributor Platform Base.



**Figure 64**  
**Distributor Platform Clamps**



Locate the Bottom Brace Beam, the Bottom Brace Clamp, one (1) 3/8" x 3 1/2" Bolt and one (1) 3/8" Nylon Locknut. Place the Beam into the Cradle of the Clamp, making sure that the flat of the Beam is facing downward. Attach the two (2) items with the 3/8" x 3 1/2" Bolt and 3/8" Nylon Locknut. **DO NOT** tighten, yet, to ensure flexibility.

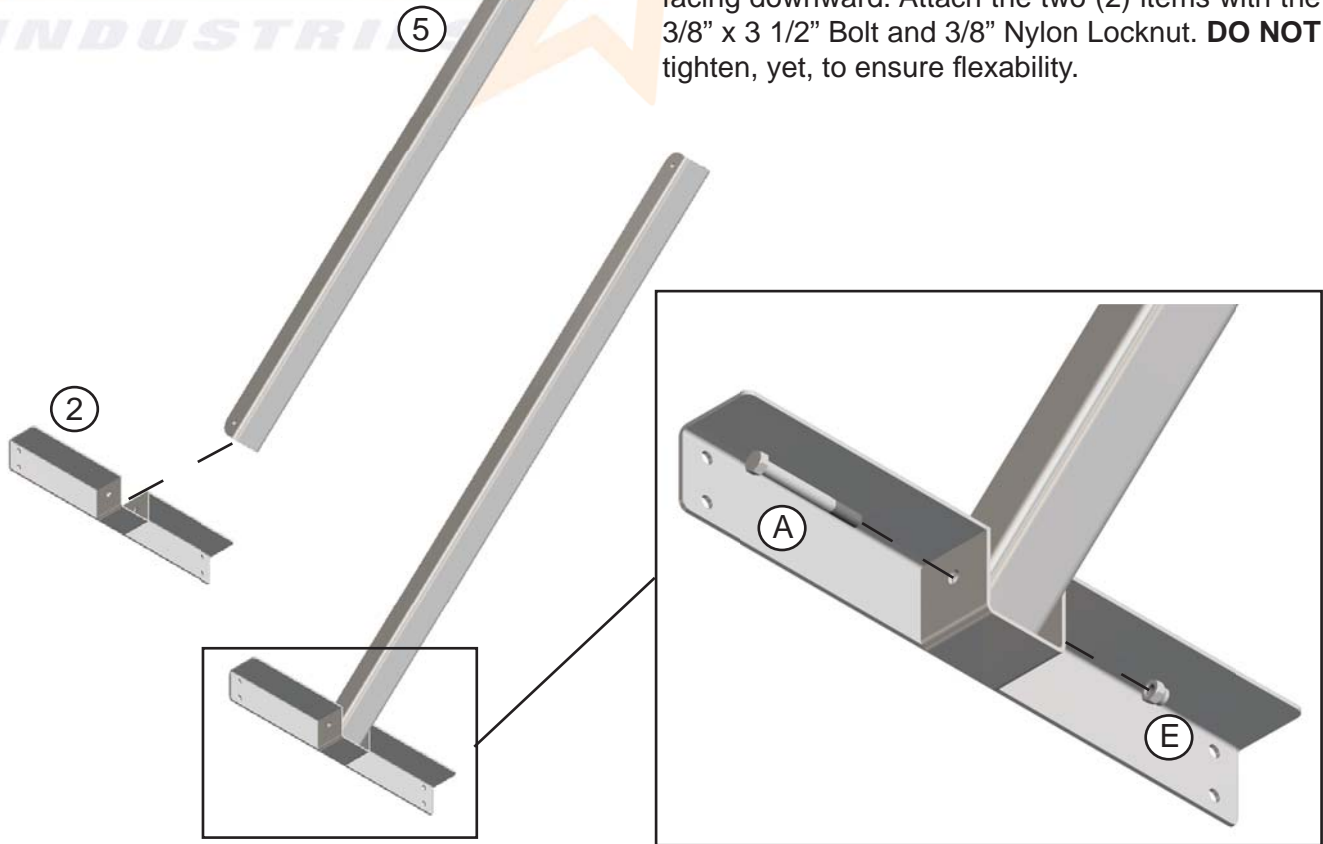


Figure 65  
Bottom Brace Assembly

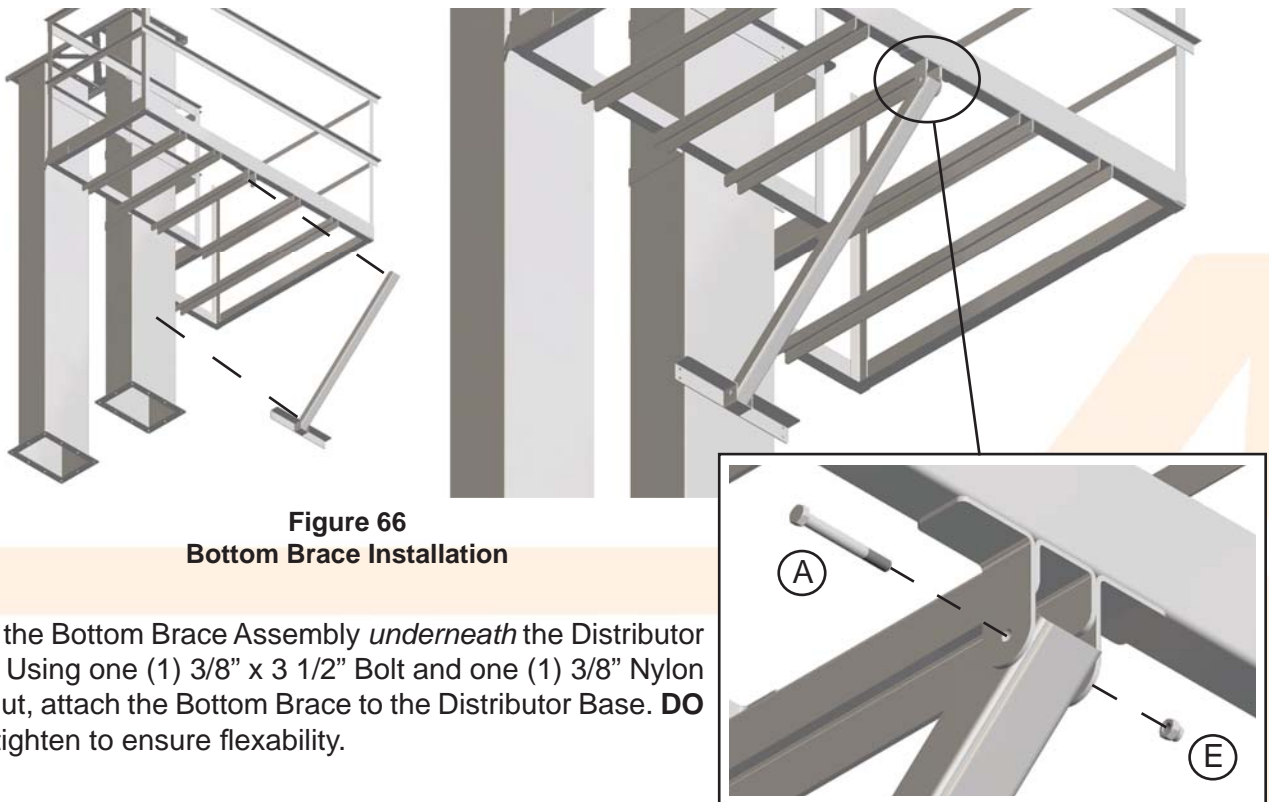
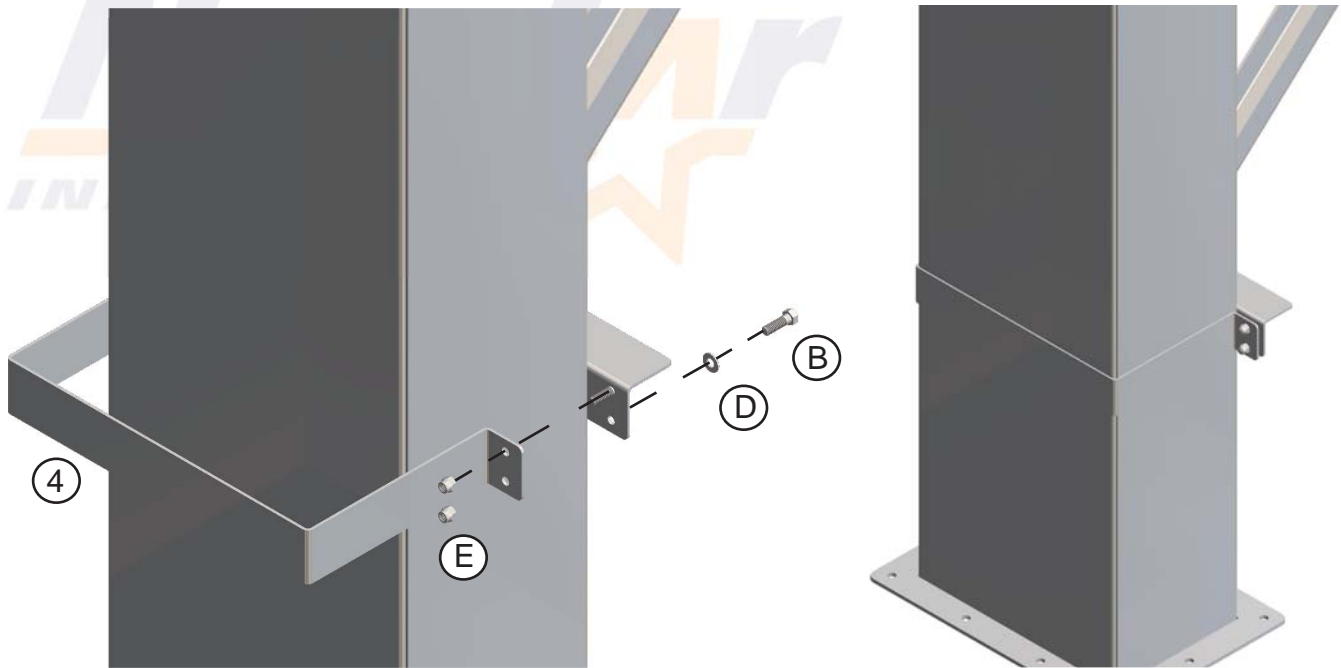


Figure 66  
Bottom Brace Installation

Place the Bottom Brace Assembly *underneath* the Distributor Base. Using one (1) 3/8" x 3 1/2" Bolt and one (1) 3/8" Nylon Locknut, attach the Bottom Brace to the Distributor Base. **DO NOT** tighten to ensure flexibility.

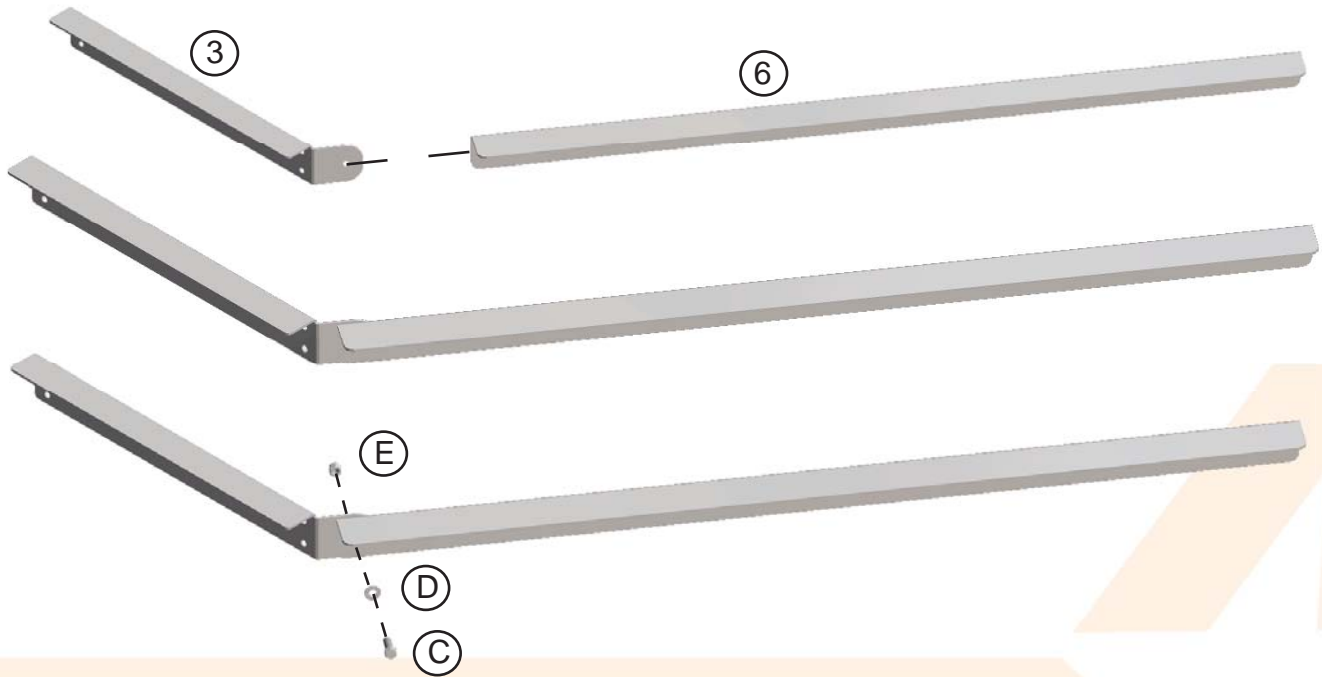




**Figure 67**  
**Bottom Brace Clamp**

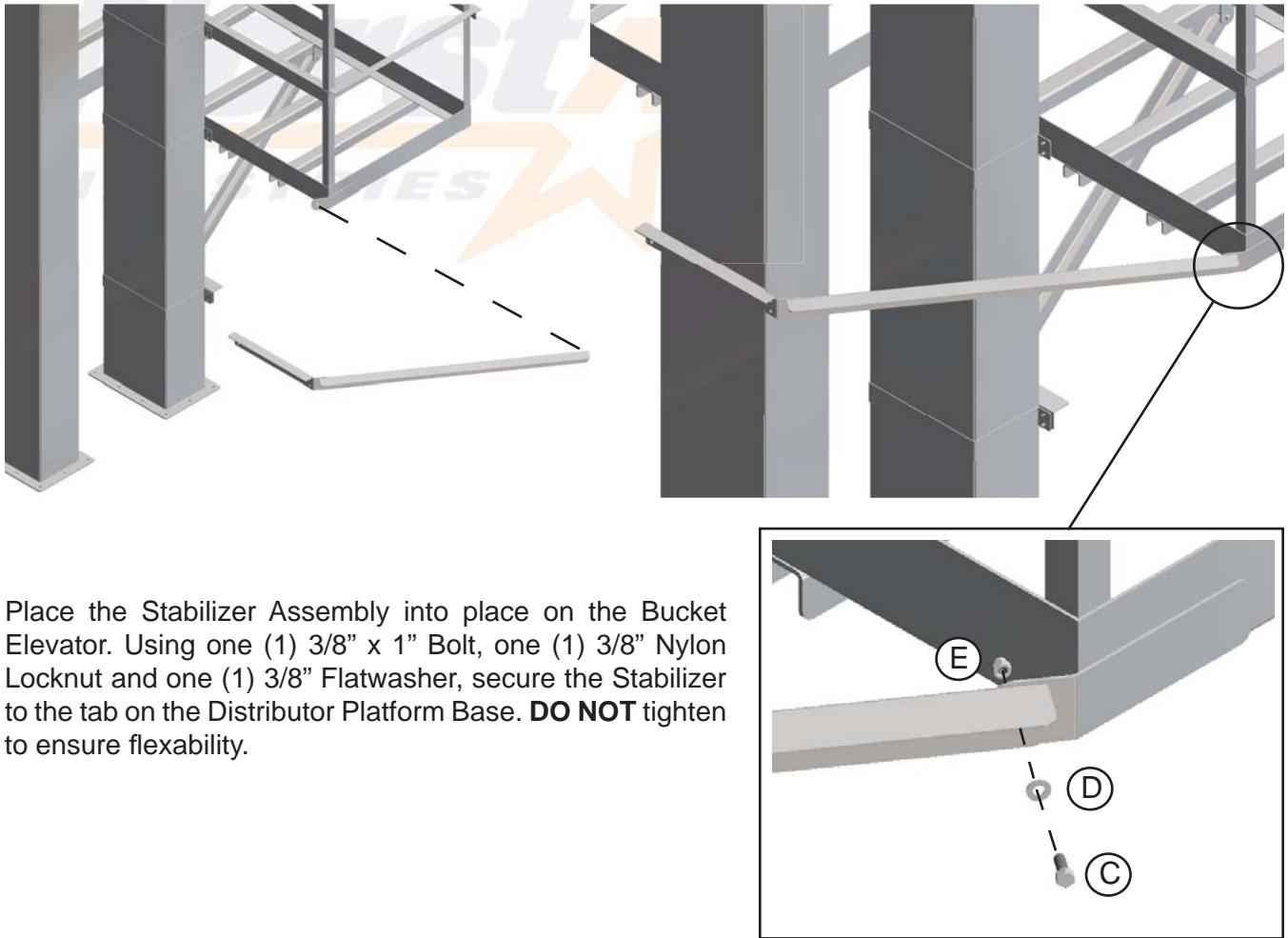
Locate one (1) Trunking Clamp, four (4) 3/8" x 1 1/4" Bolts, four (4) 3/8" Flatwashers, and four (4) 3/8" Nylon Locknuts. **The trunking clamps are wider than they are long.** Place the Trunking Clamp around the Bucket Elevator Trunk and, with the nuts and bolts, secure it to the Bottom Brace Clamp.

Completely tighten the bolts on the Bottom Brace Assembly.



**Figure 68**  
**Stabilizer Assembly**

Locate the Stabilizer Clamp, the Stabilizer Angle, one (1) 3/8" x 1" Bolt, one (1) 3/8" Flatwasher, and one (1) 3/8" Nylon Locknut. Place the Angle onto the outside of the Clamp tab and attach with the nuts and bolts. **DO NOT** tighten to ensure flexibility.



Place the Stabilizer Assembly into place on the Bucket Elevator. Using one (1) 3/8" x 1" Bolt, one (1) 3/8" Nylon Locknut and one (1) 3/8" Flatwasher, secure the Stabilizer to the tab on the Distributor Platform Base. **DO NOT** tighten to ensure flexibility.

Figure 69  
Stabilizer Installation

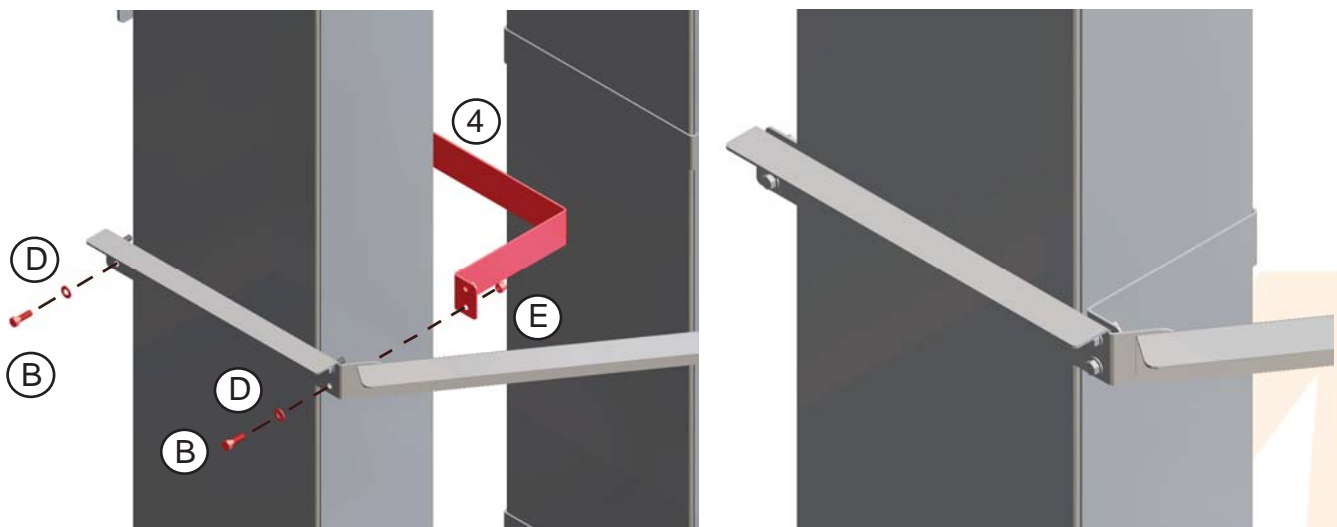


Figure 70  
Stabilizer Clamp

Locate one (1) Trunking Clamp, four (4) 3/8" x 1 1/4" Bolts, four (4) 3/8" Flatwashers, and four (4) 3/8" Nylon Locknuts. **The trunking clamps are wider than they are long.** Place the Trunking Clamp around the Bucket Elevator Trunk and, with the nuts and bolts, secure it to the Stabilizer Clamp.

Completely tighten the bolts for the Stabilizer Assembly.



Completely assembled Distributor Platform Assembly.

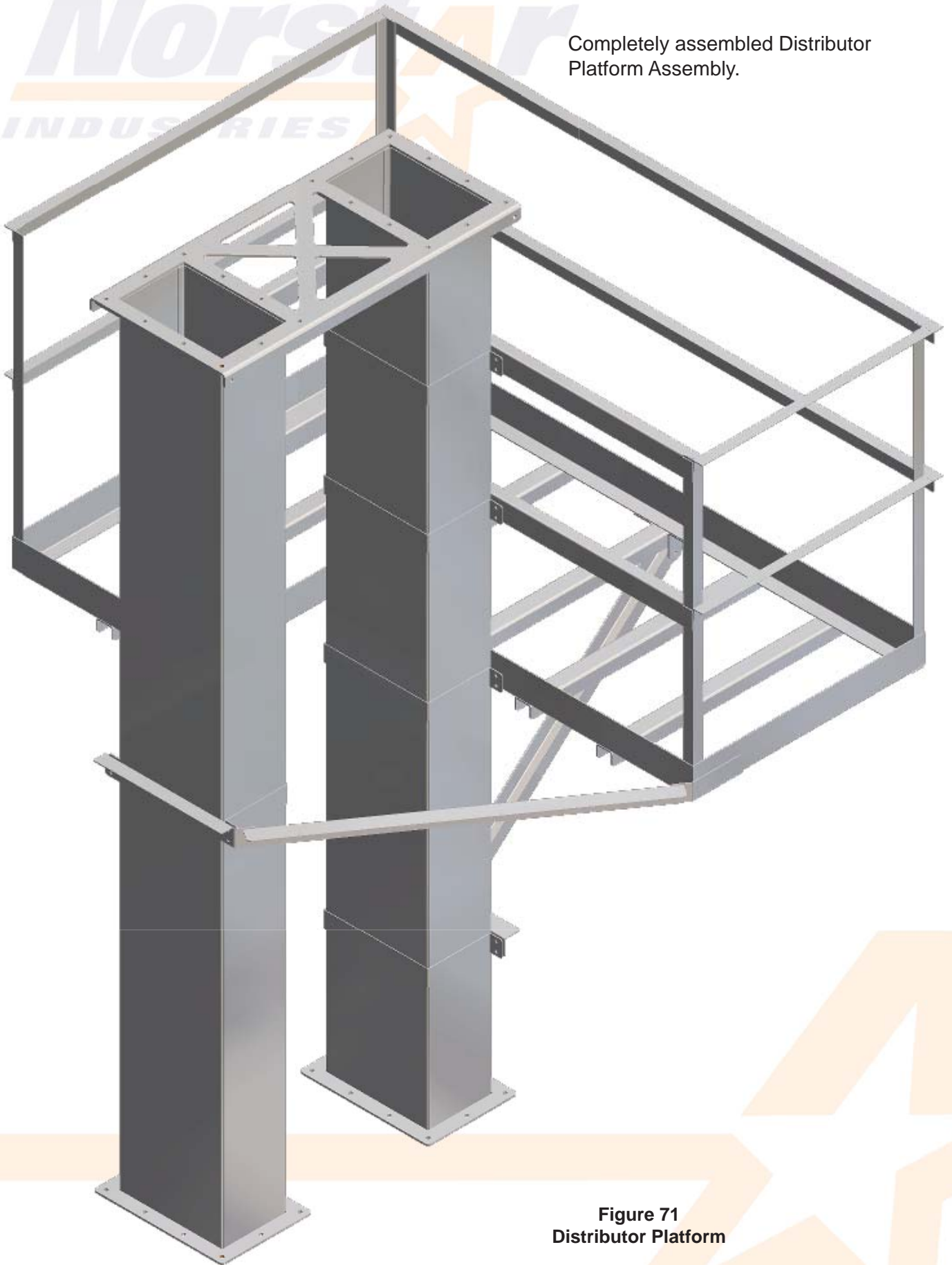


Figure 71  
Distributor Platform

# Top Ladder Assembly

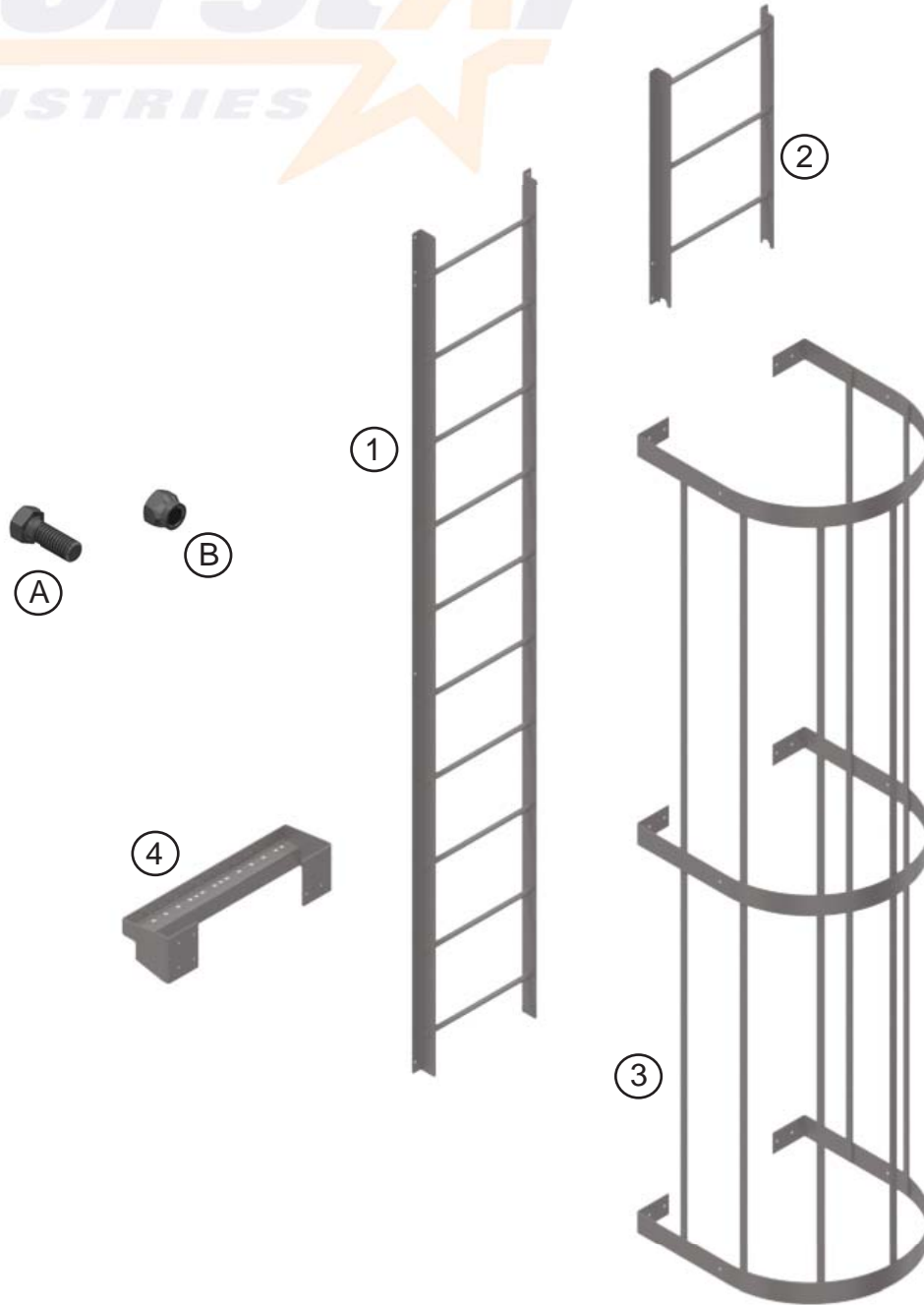
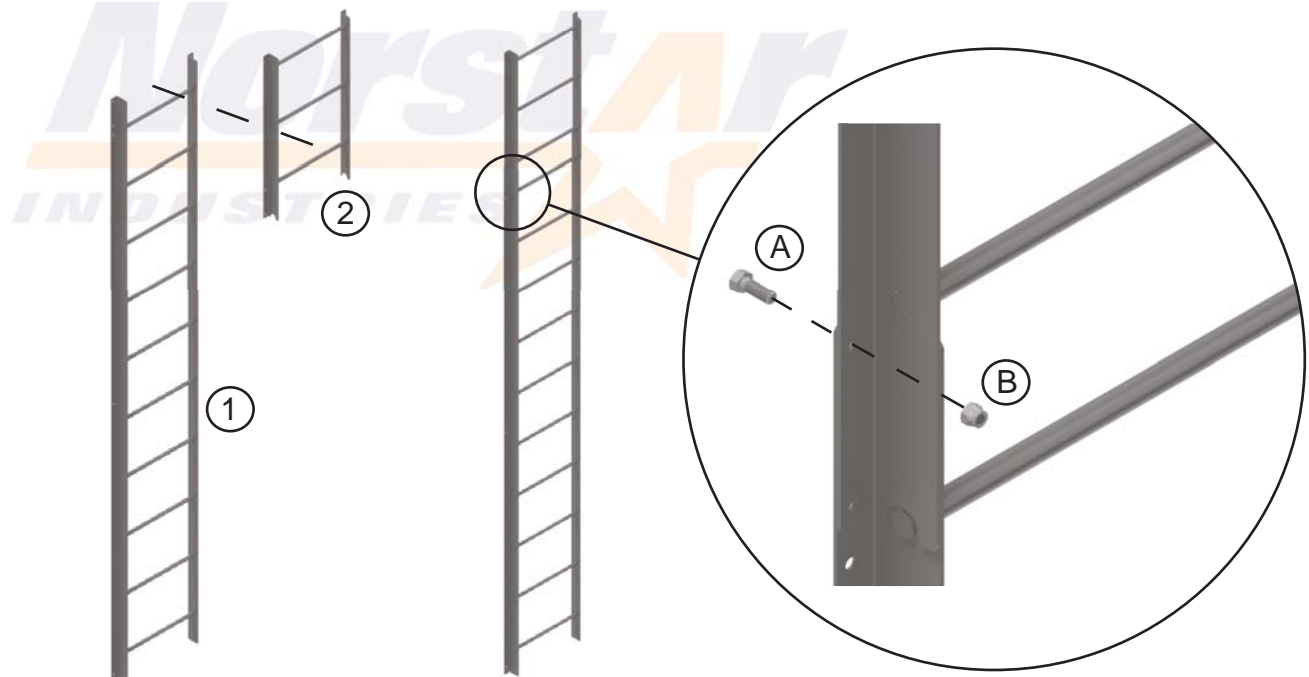


Figure 72  
Top Ladder Components

Locate the items that will be joined together.

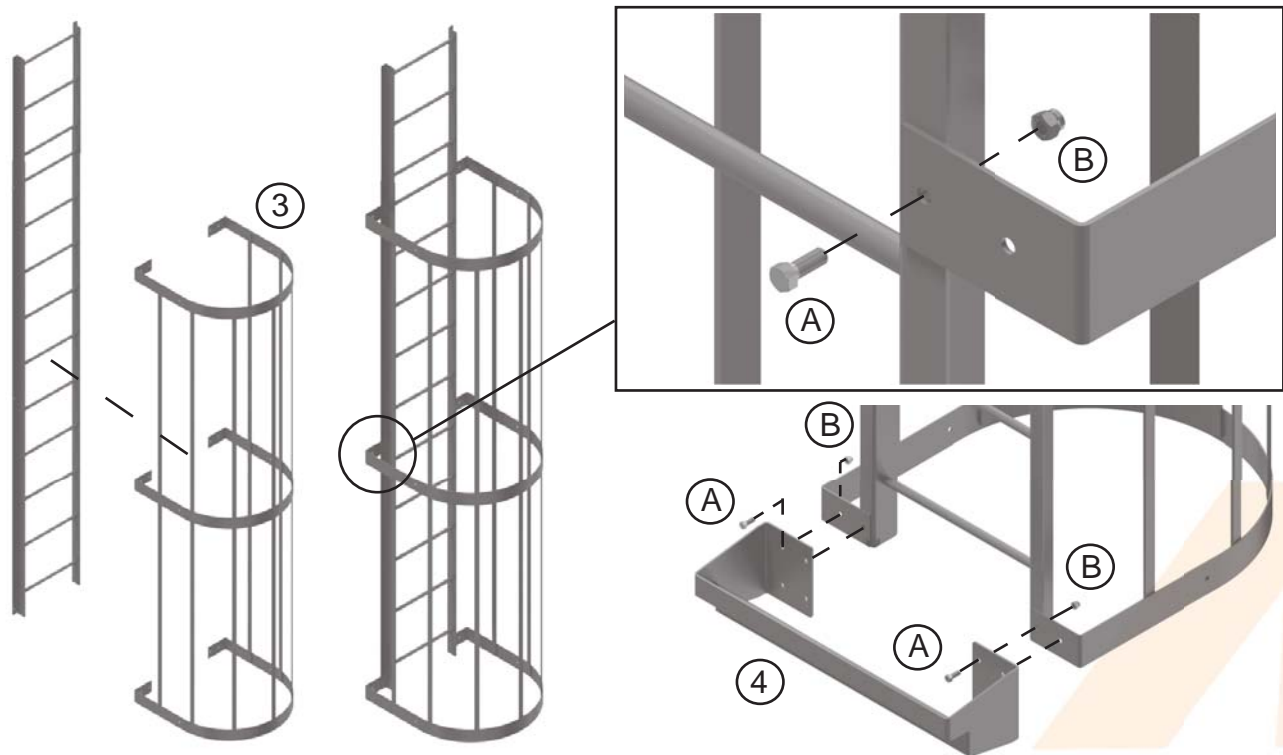
Item	Description	Qty
1	Top Ladder Section	1
2	Top Ladder Stub	1
3	Top Ladder Cage Weldment	1
4	Mounting Bracket	1
A	3/8" x 1" Bolt	8
B	3/8" Nylon Locknut	8



**Figure 73**  
**Ladder Assembly**

Locate the Top Ladder Section and the Top Ladder Stub and align the holes on the sides. With two (2) 3/8 x 1" Bolts and 3/8" Nylon Locknuts, secure the Ladder sections together.

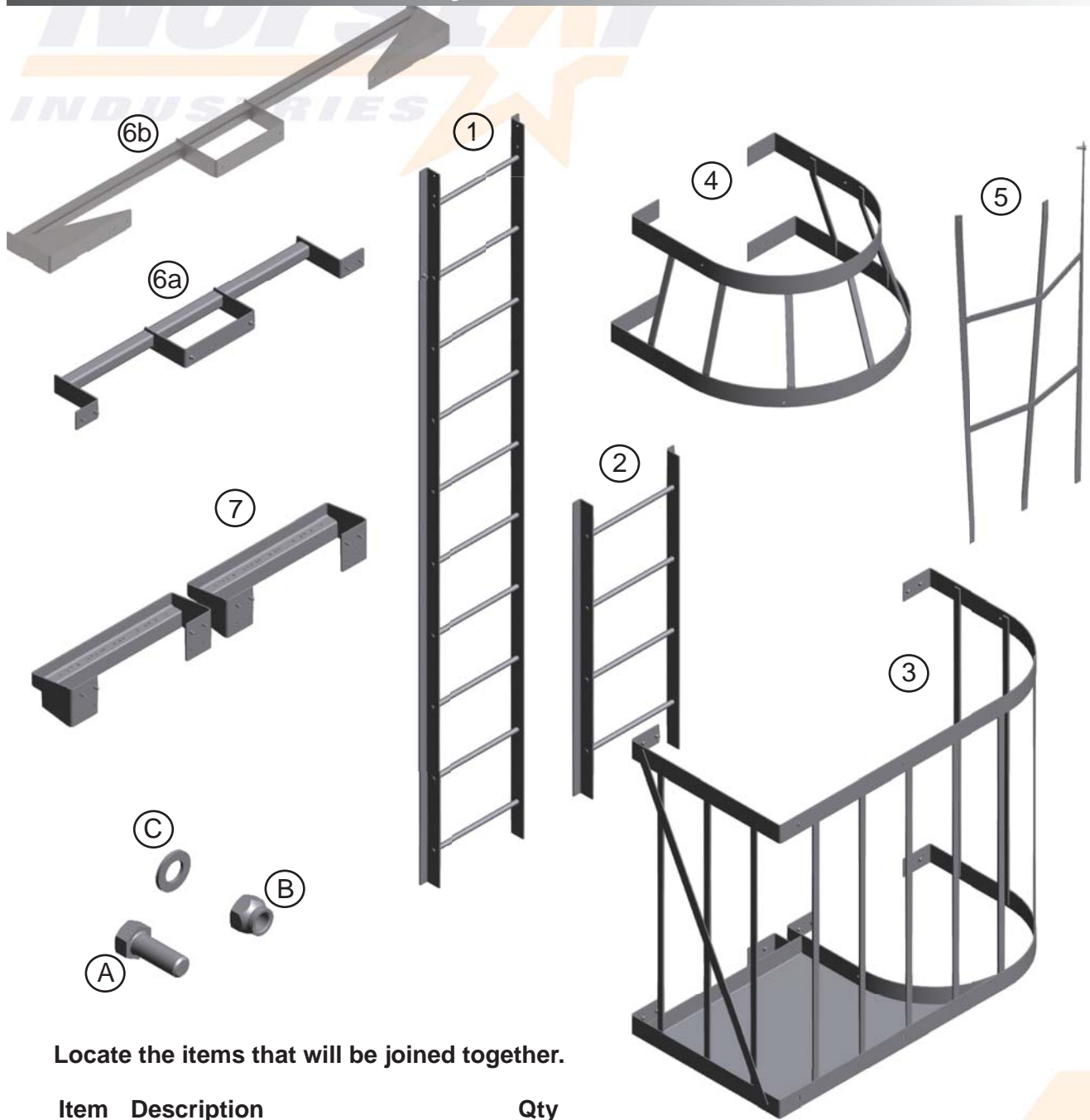
**ONLY CONNECT AT THE TOP HOLE AS THE BOTTOM HOLE WILL BE USED LATER.**



**Figure 74**  
**Cage and Bracket Installation**

Locate the Top Ladder Cage and place the Ladder Assembly into it **MAKING SURE THE LADDER IS ON THE INSIDE OF THE CAGE FLANGES**. Attach the Cage to the Ladder at the middle holes with two (2) 3/8 x 1" Bolts and 3/8" Nylon Locknuts. **THE TOP HOLES WILL BE USED LATER**. Locate the Ladder Mounting Bracket and attach it to the **BOTTOM** of the Ladder with four (4) 3/8 x 1" Bolts and 3/8" Nylon Locknuts

# Rest Platform Assembly



Locate the items that will be joined together.

Item	Description	Qty
1	10' Ladder Section	1
2	Rest Platform Ladder Section	1
3	Rest Platform Weldment	1
4	Cage Flare	1
5	Warp Cage	1
6a	16"/24" Trunking Clamp Bar	1
6b	30" Trunking Clamp Bar	1
7	Mounting Bracket	2
A	3/8" x 1" Bolt	20
B	3/8" Nylon Locknut	20
C	3/8" Flatwasher	2

**Figure 75**  
Rest Platform Components



Locate the Rest Platform, 10' Standard Ladder Section and the Rest Platform Ladder Section

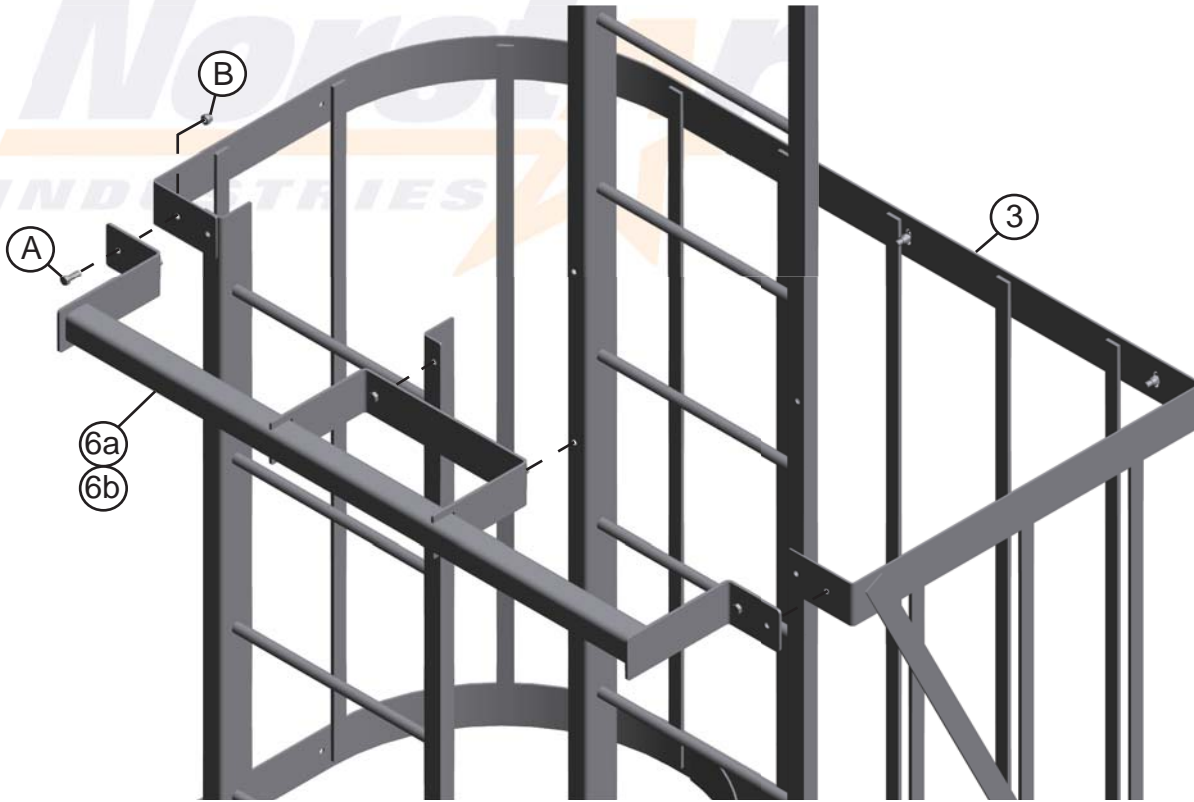


Figure 76  
Ladder Placement



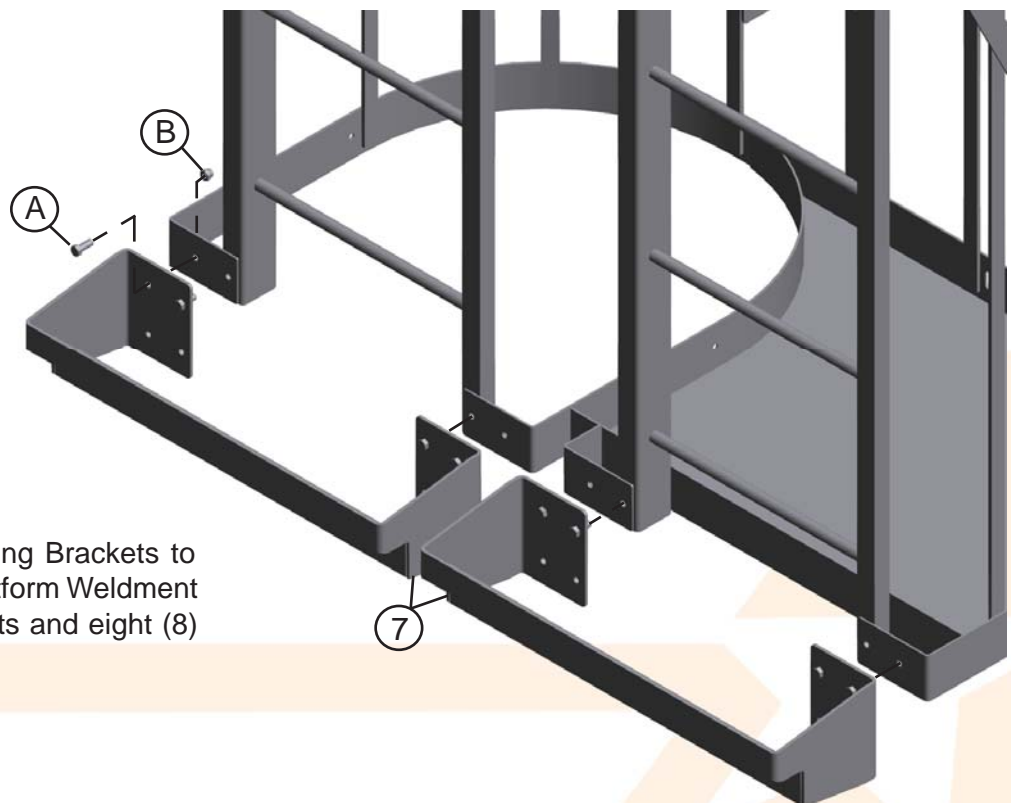
Figure 77  
Ladder Placement

Place the Ladder sections **ON THE INSIDE** of the rest platform flanges.



**Figure 78**  
**Trunking Clamp Bar Installation**

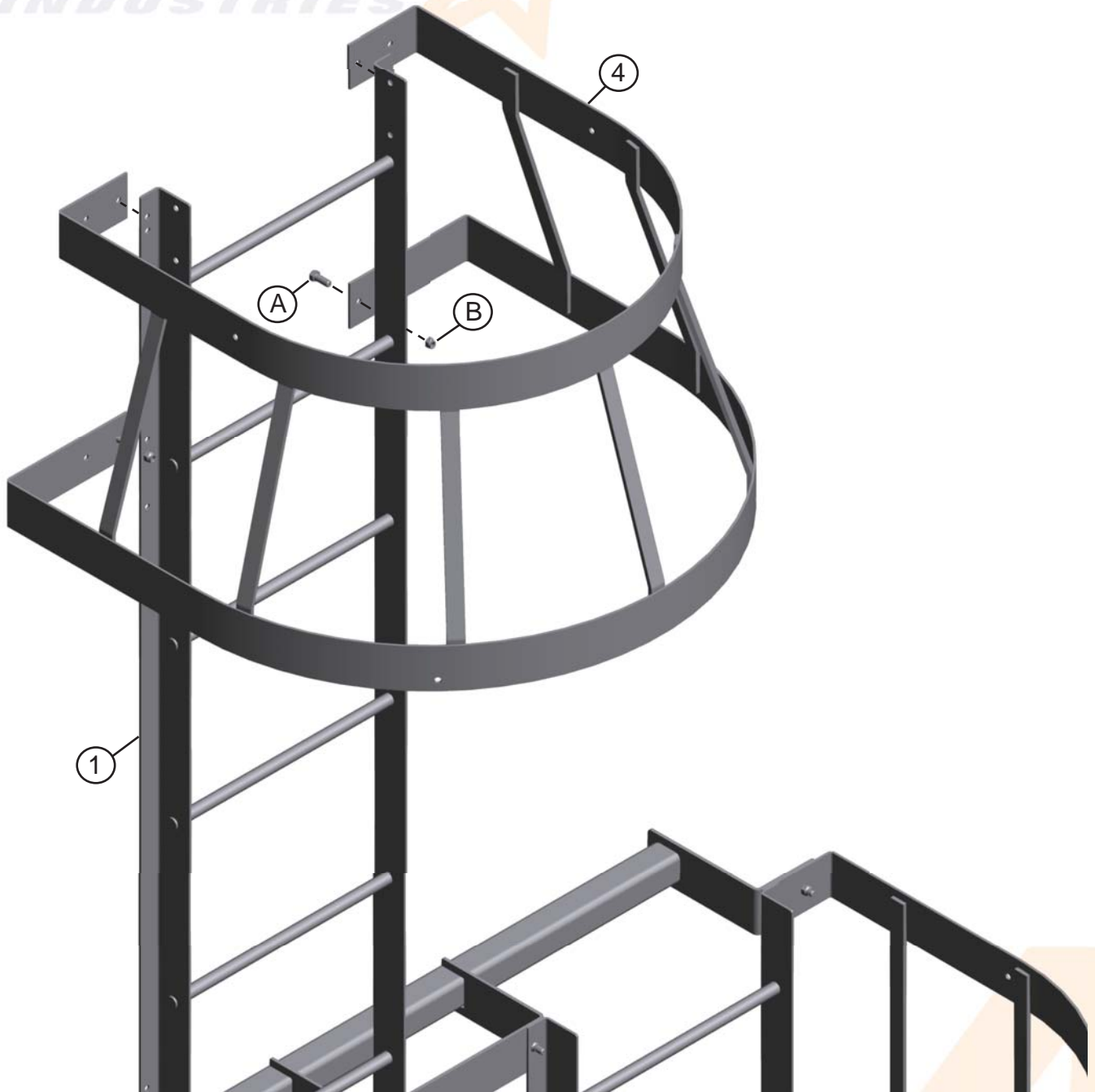
Attach the Trunking Clamp Bar to the Rest Platform Weldment and the Ladder Sections with six (6) 3/8 x 1" Bolts and six (6) 3/8" Nylon Locknuts.  
**\*16" and 24" Model Shown**



**Figure 79**  
**Mounting Bracket Installation**

Attach both of the Mounting Brackets to the bottom of the Rest Platform Weldment with eight (8) 3/8 x 1" Bolts and eight (8) 3/8" Nylon Locknuts.



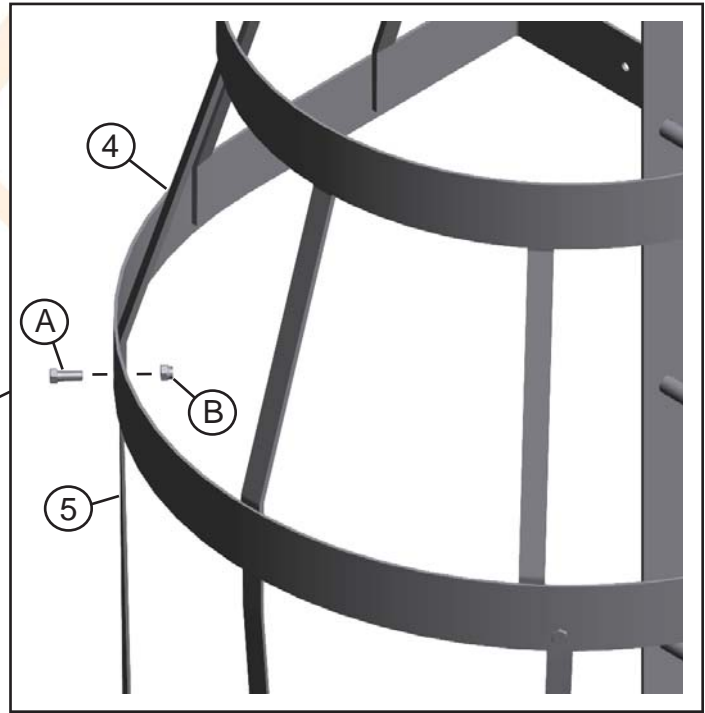


**Figure 80**  
**Cage Flare Installation**

Place the Cage Flare against the outside of the 10' Ladder Section and ***only attach the bottom holes*** with two (2) 3/8 x 1" Bolts and two (2) 3/8" Nylon Locknuts

With two (2) 3/8 x 1" Bolts and two (2) 3/8" Nylon Locknuts, attach the wide section of the Warp Cage to the bottom ring of the Cage Flare.

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Attach the thin section of the Warp Cage to the slotted holes on the Rest Platform Weldment with two (2) 3/8 x 1" Bolts, two (2) 3/8" Flatwashers and two (2) 3/8" Nylon Locknuts.

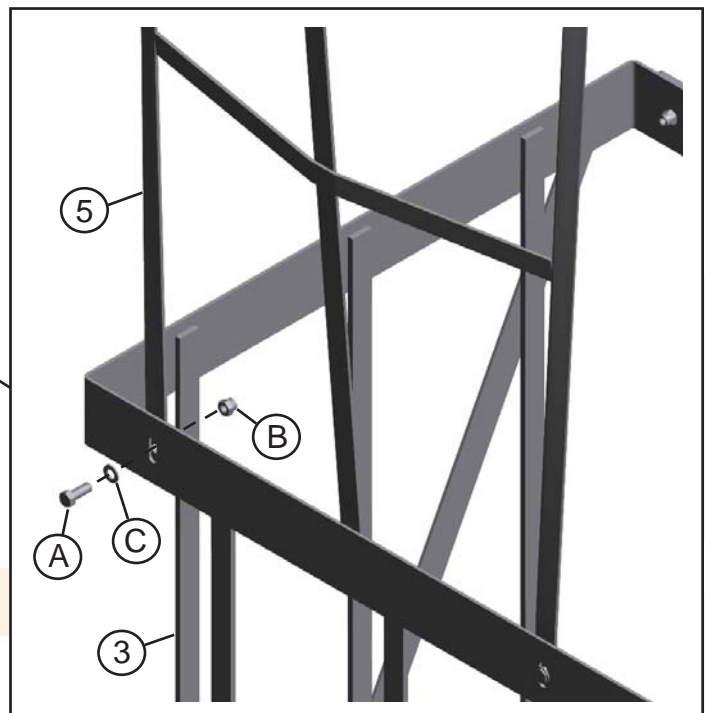
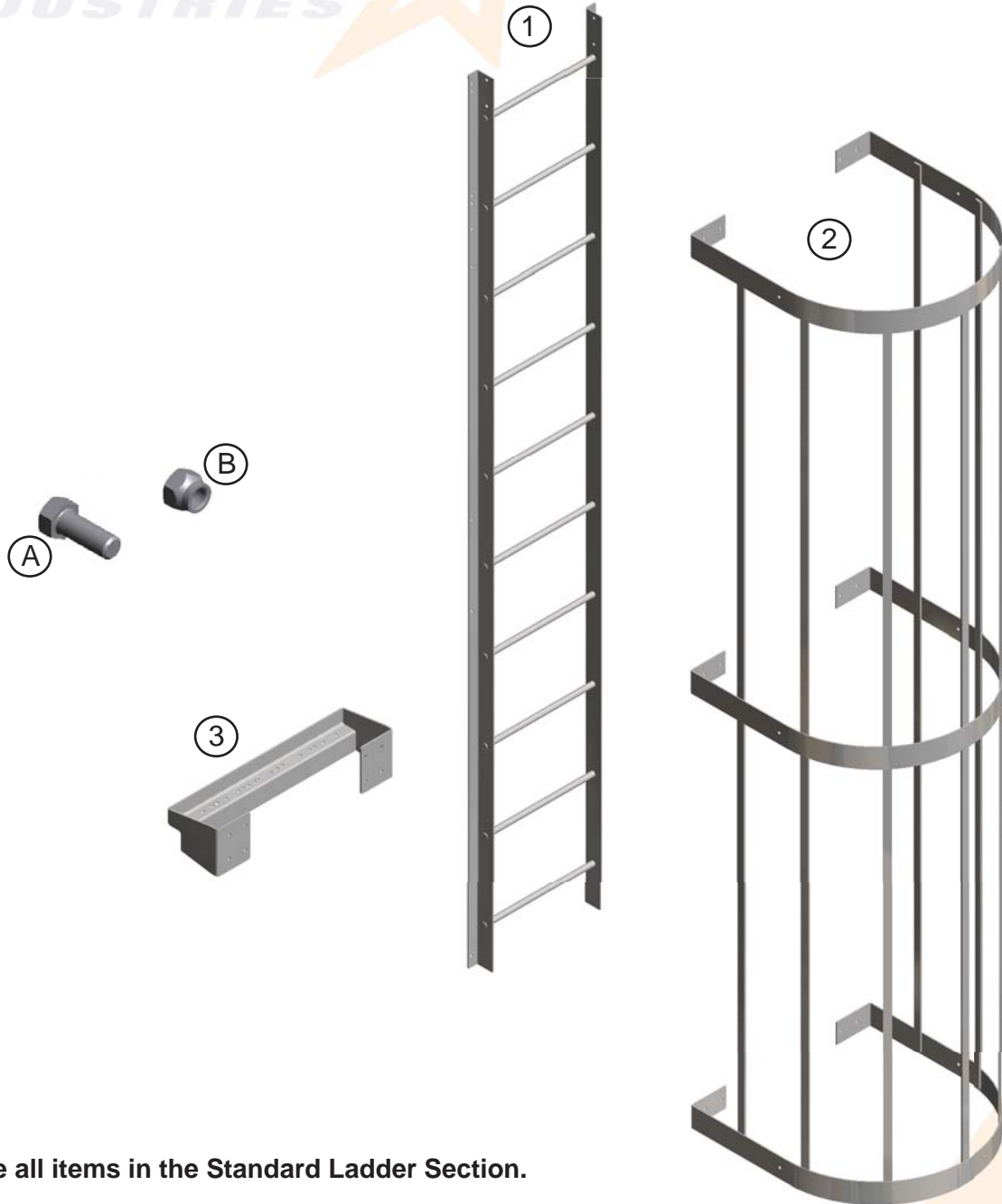


Figure 81  
Warp Cage Installation

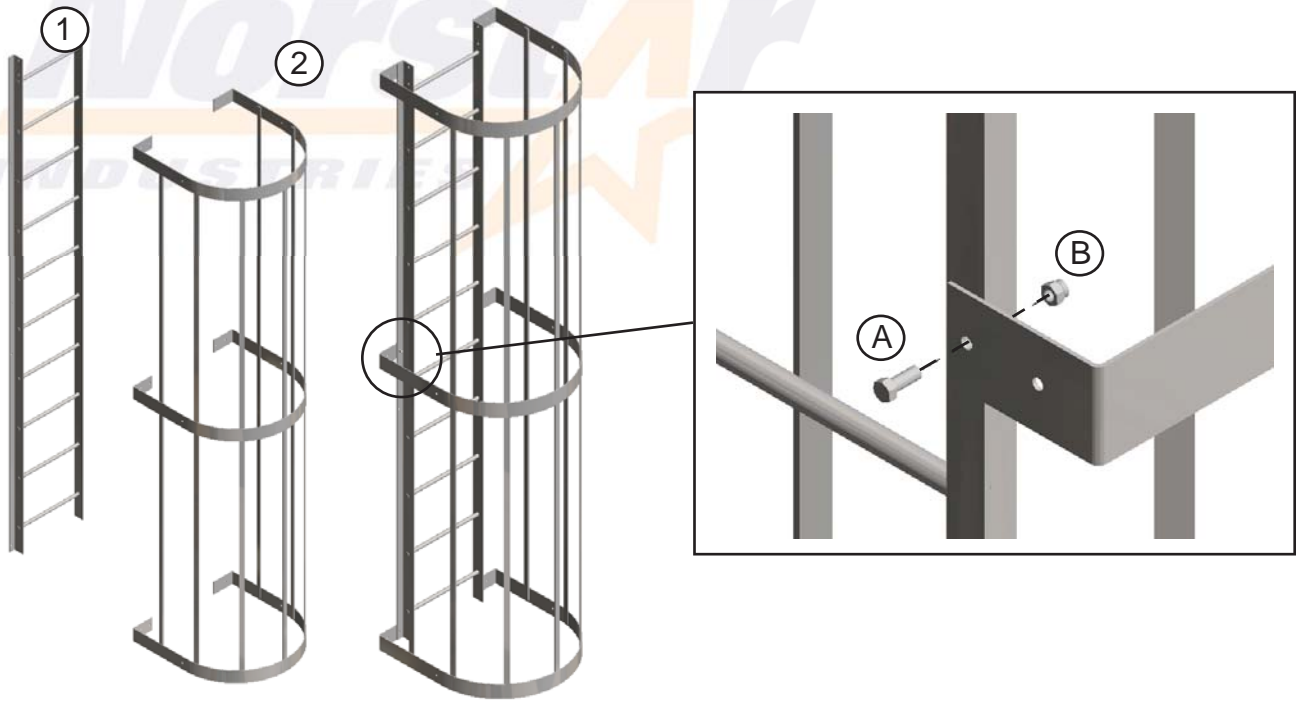
# Standard Ladder Assembly



Locate all items in the Standard Ladder Section.

Item	Description	Qty
1	10' Ladder Section	1
2	10' Cage Weldment	1
3	Mounting Bracket	1
A	3/8" x 1" Bolt	6
B	3/8" Nylon Locknut	6

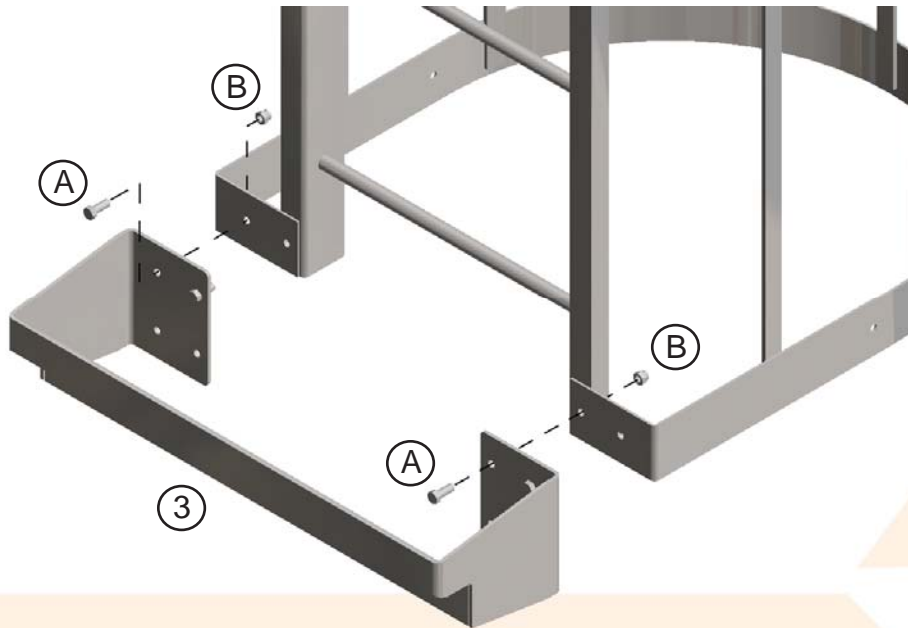
Figure 82  
Standard Ladder Components



**Figure 83**  
**Ladder Installation**

Locate the 10' Cage Weldment and the 10' Ladder Weldment. Place the Ladder on the **INSIDE** of the Cage Weldment flanges. Attach the two pieces using two (2) 3/8 x 1" Bolts and two (2) 3/8" Nylon Locknuts.

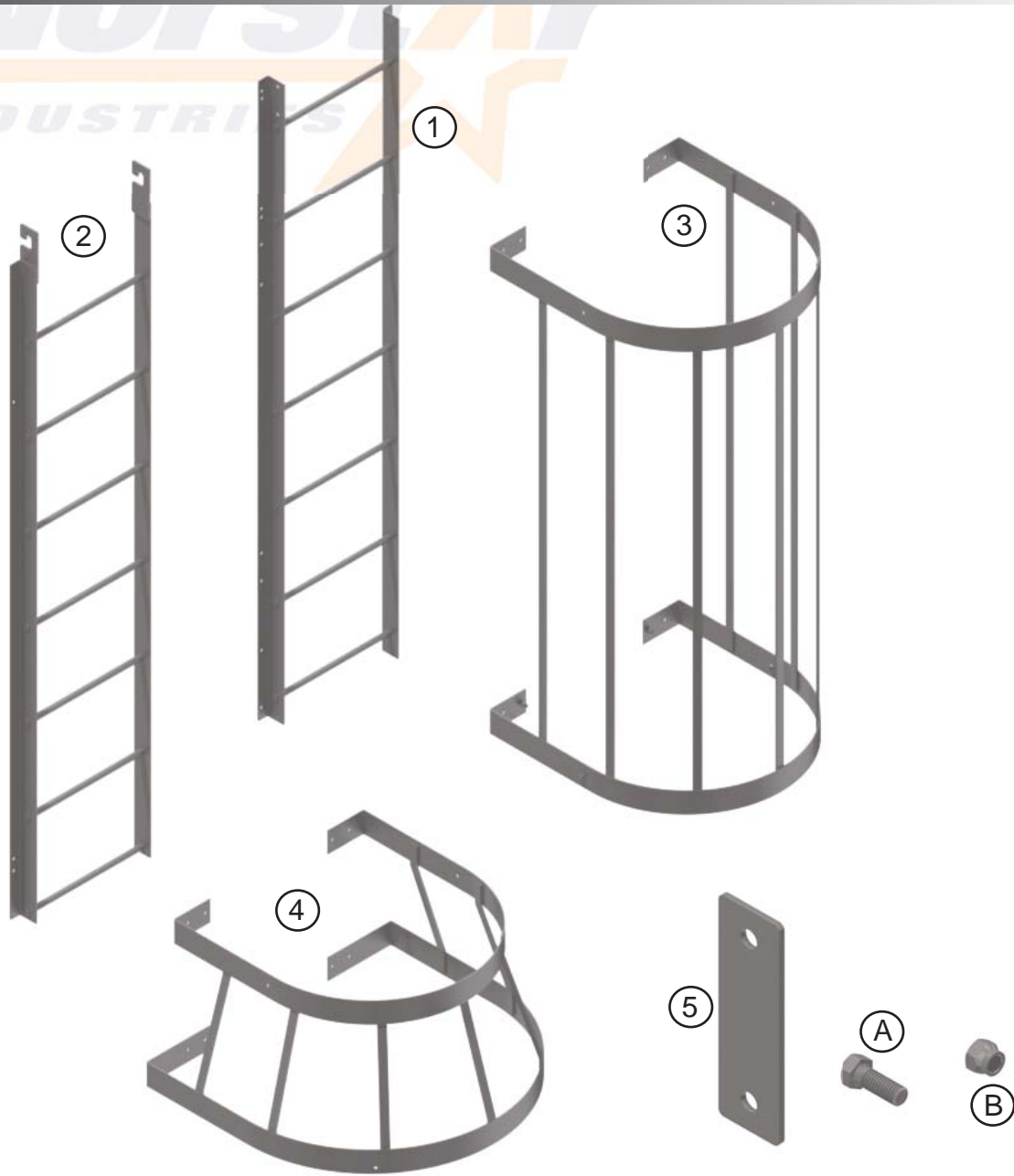
**DO NOT attach at the bottom or top of the ladder as these holes will be used later.**



**Figure 84**  
**Mounting Bracket Installation**

Locate the Mounting Bracket and attach it to the bottom of the Ladder Assembly using four (4) 3/8" x 1" Bolts and four (4) 3/8" Nylon Locknuts.

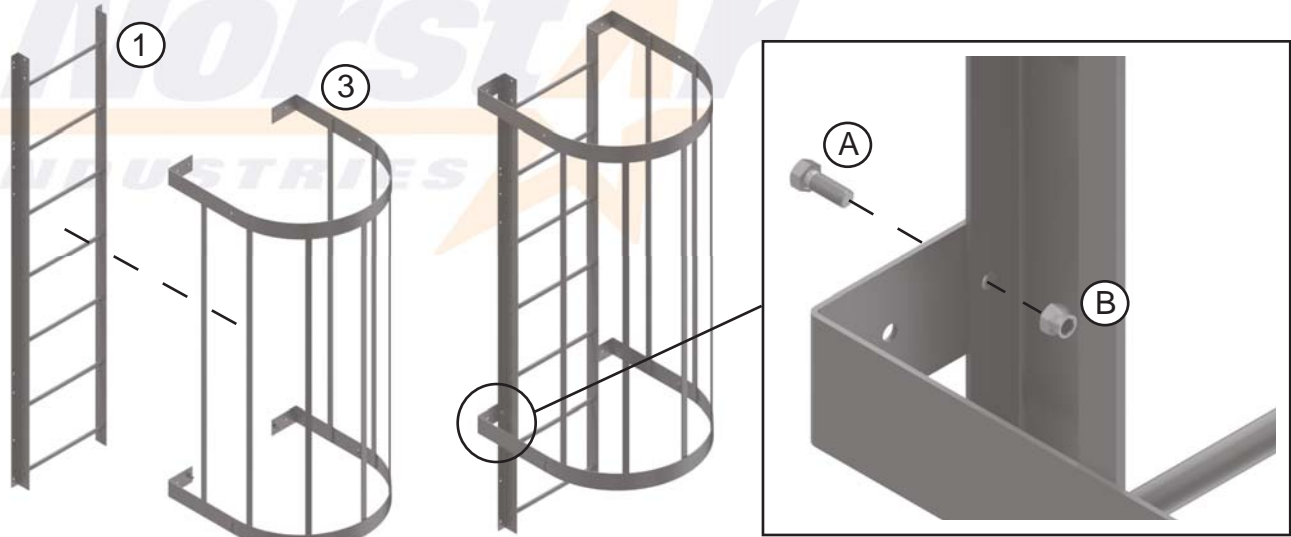
# Bottom Ladder Assembly



**Figure 85**  
**Bottom Ladder Components**

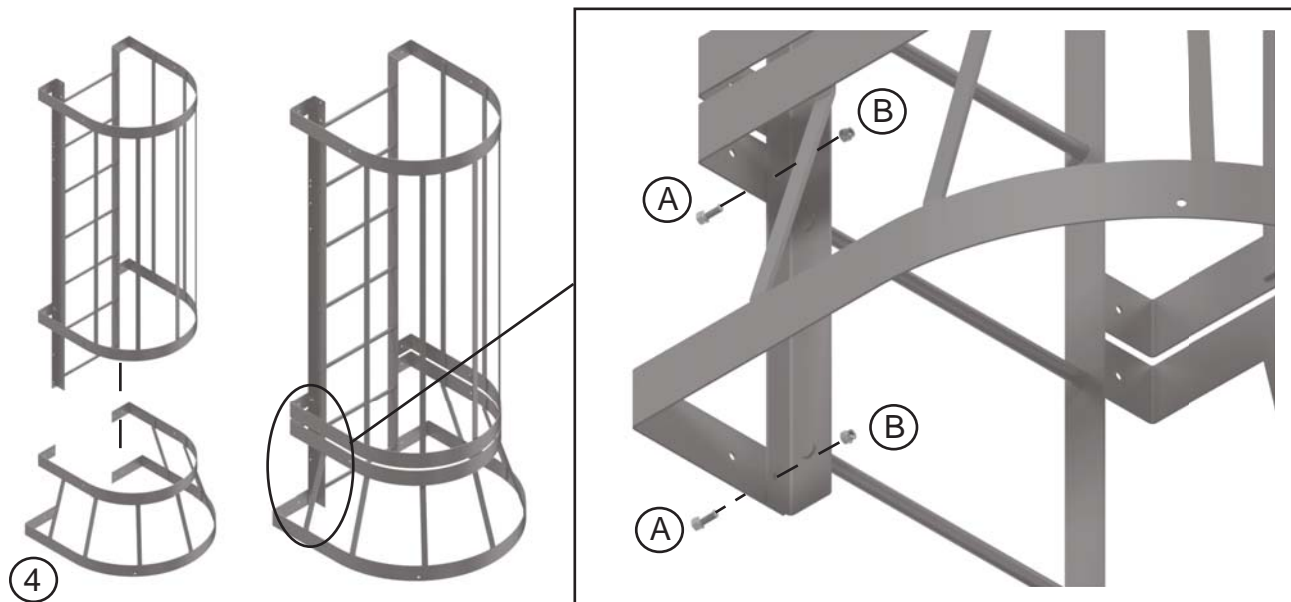
Locate the items that will be joined together.

Item	Description	Qty
1	Bottom Ladder Section	1
2	Hanging Ladder Section	1
3	Bottom Ladder Cage	1
4	Cage Flare	1
5	Ladder Connector Plate	2
A	3/8" x 1" Bolt	10
B	3/8" Nylon Locknut	10



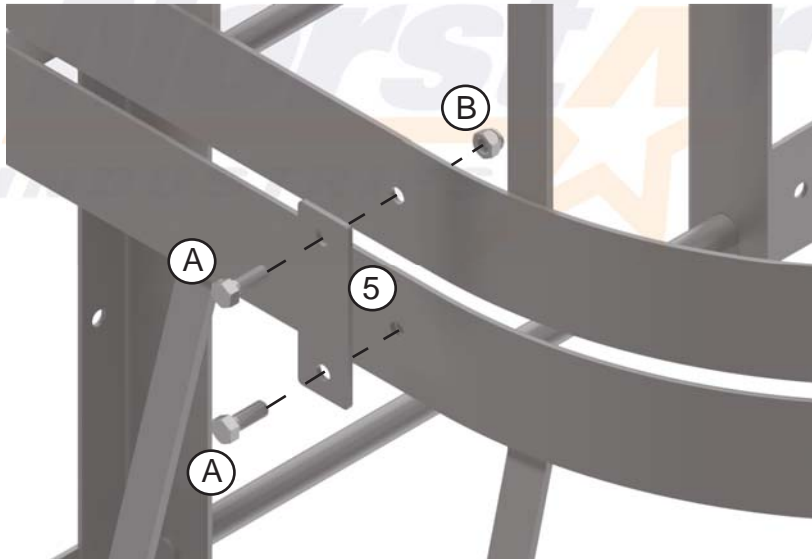
**Figure 86**  
**Ladder Installation**

Locate the Bottom Ladder Section and place it on the **INSIDE** of the Bottom Ladder Cage Section. Then, using two (2) 3/8 x 1" Bolts and 3/8" Nylon Locknuts, secure the sections together at the Cage's bottom holes. **DO NOT USE THE TOP HOLES, THEY WILL BE USED LATER.**



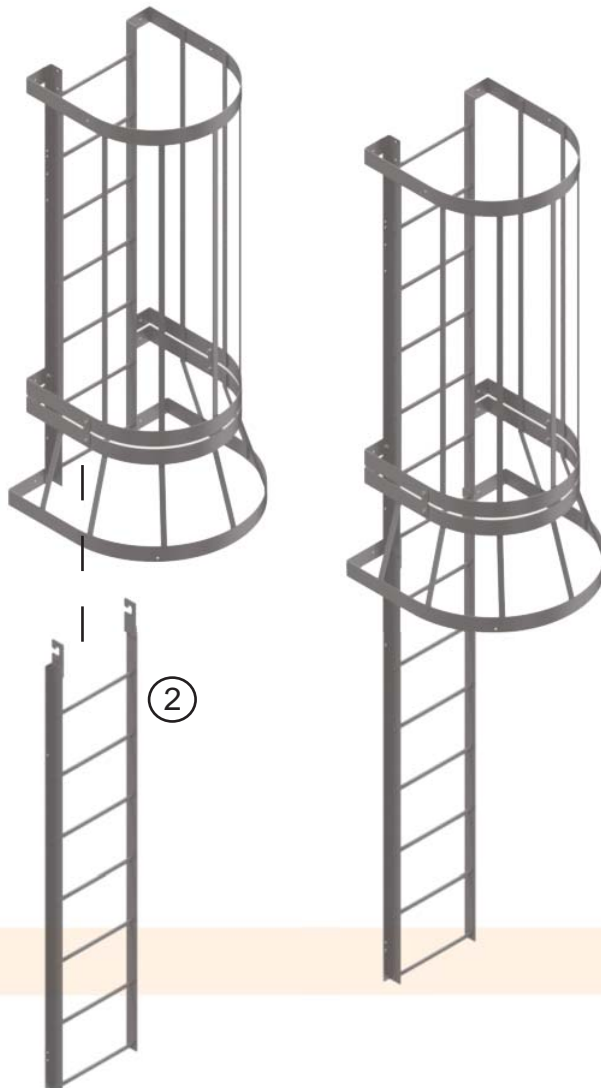
**Figure 87**  
**Cage Flare Installation**

Locate the Cage Flare Weldment and place it under the Bottom Ladder Cage. Using four (4) 3/8 x 1" Bolts and 3/8" Nylon Locknuts, secure the Cage Flare to the Bottom Ladder Assembly.



To entirely secure the Cage Flare Weldment to the Bottom Ladder Assembly, locate two (2) Ladder Connector Plates, four (4) 3/8 x 1" Bolts and four (4) 3/8" Nylon Locknuts. With two (2) nuts and bolts per side, secure the Connector Plate to the Bottom Ladder Assembly.

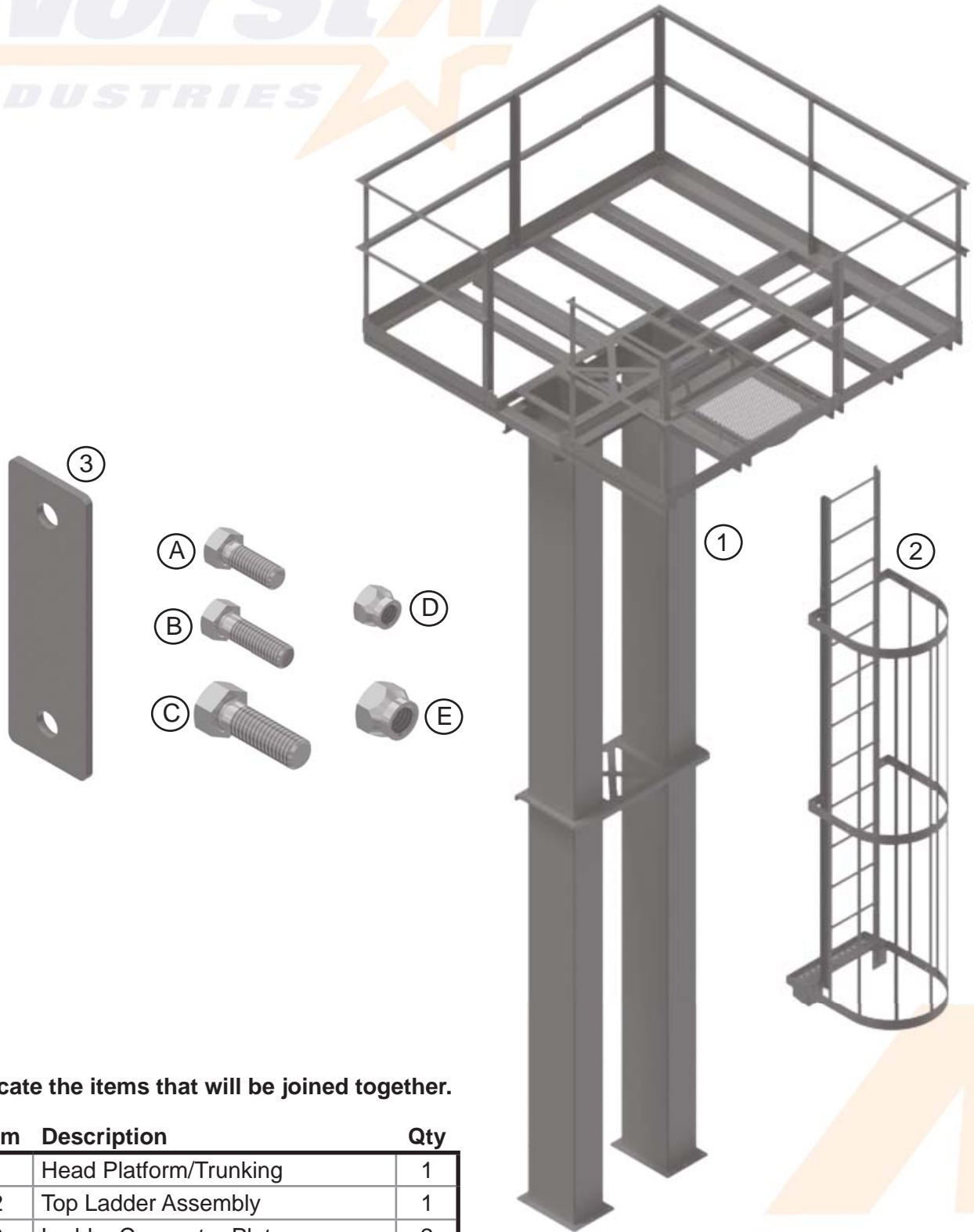
Figure 88  
Connector Plates



Locate the Hanging Ladder Section and hook it onto the bottom of the Bottom Ladder Assembly.

Figure 89  
Hanging Ladder

# Top Ladder Installation

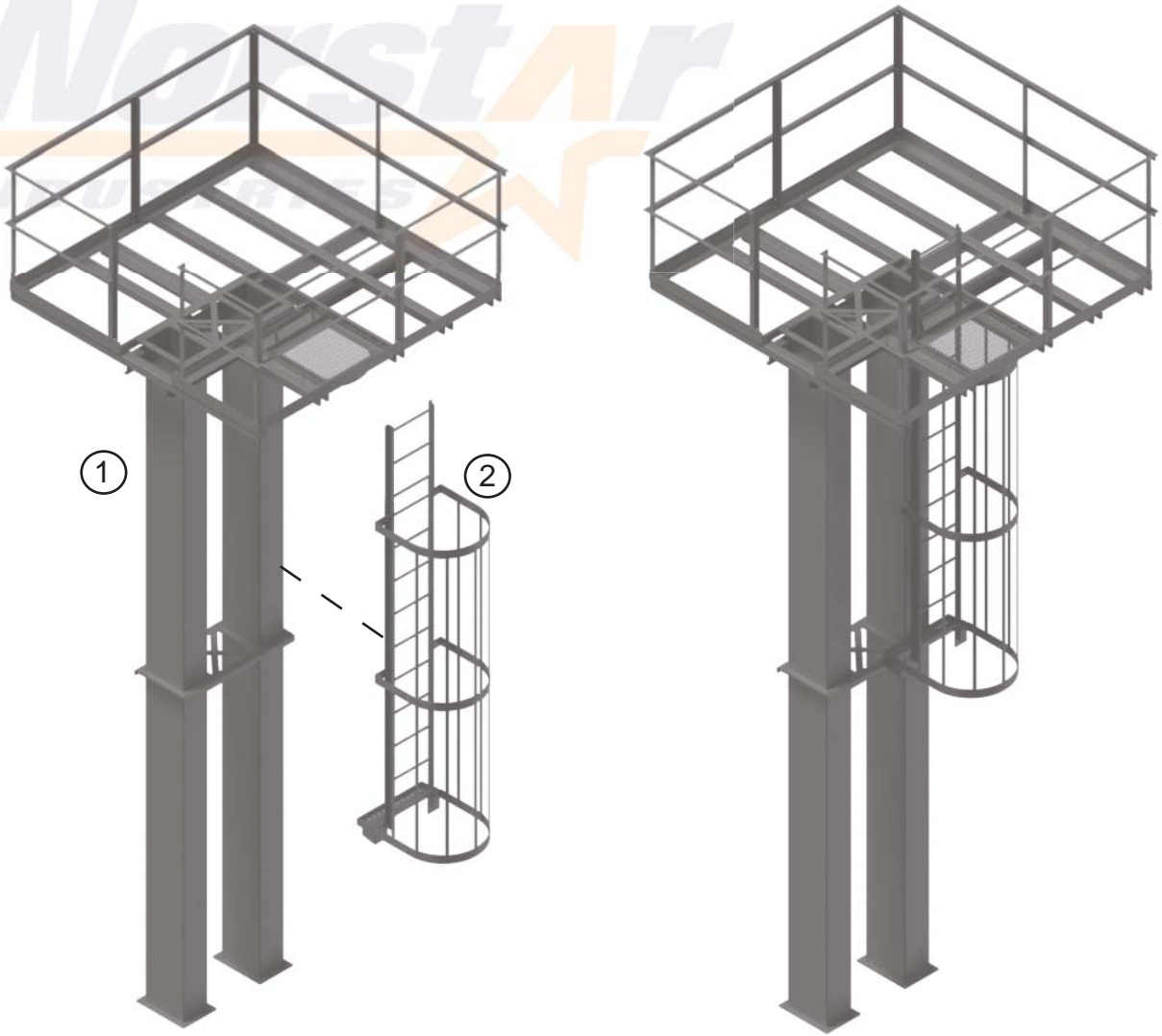


Locate the items that will be joined together.

Item	Description	Qty
1	Head Platform/Trunking	1
2	Top Ladder Assembly	1
3	Ladder Connector Plate	2
A	3/8" x 1" Bolt	8
B	3/8" x 1 1/4" Bolt	2
C	1/2" x 1 1/2" Bolt	3
D	3/8" Nylon Locknut	10
E	1/2" Nylon Locknut	3

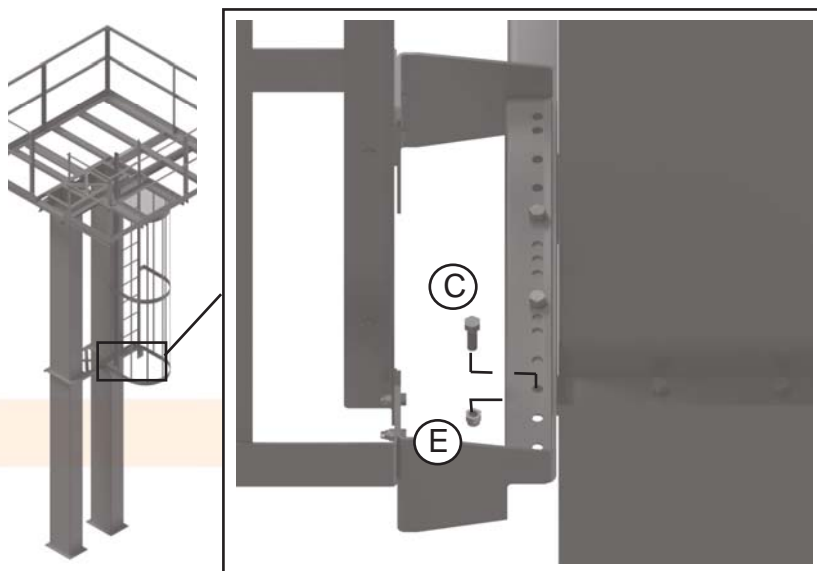
**Figure 90**  
Top Ladder Installation Components





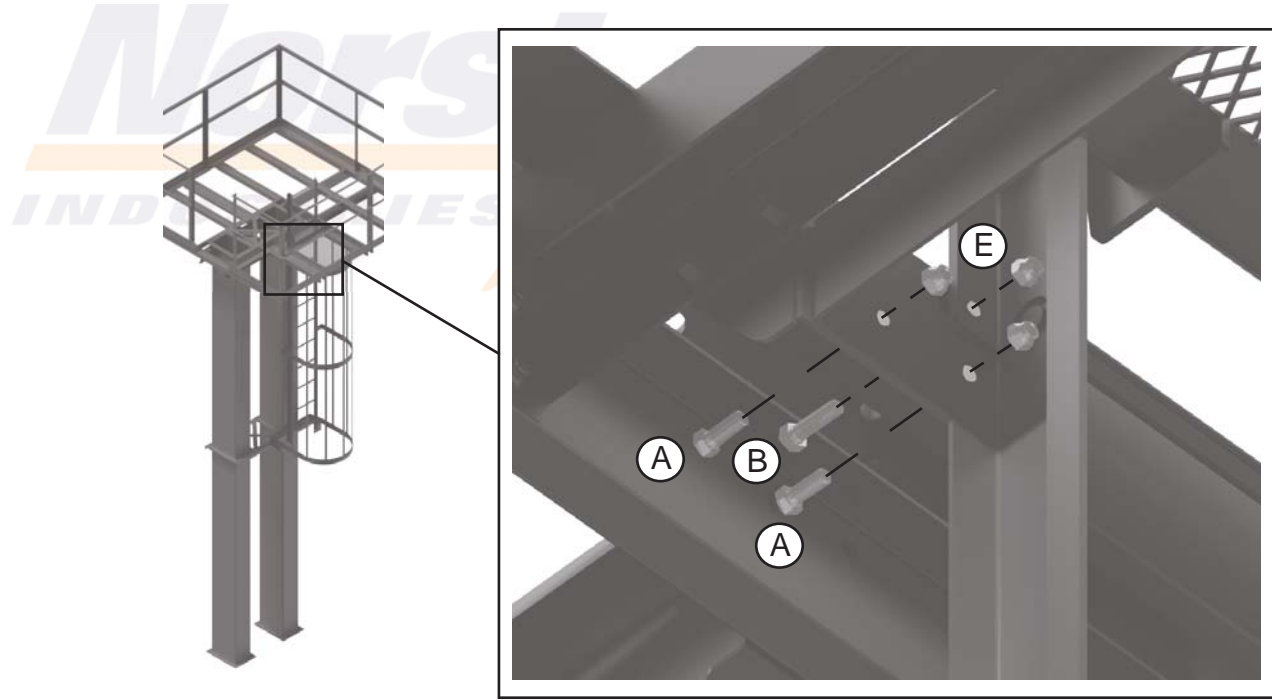
**Figure 91**  
**Top Ladder Placement**

Locate the Head Platform/Platform Trunking Assembly and the Top Ladder Assembly. Place the Top Ladder Assembly into the gap by the Trapdoor Weldment and align the mounting holes.



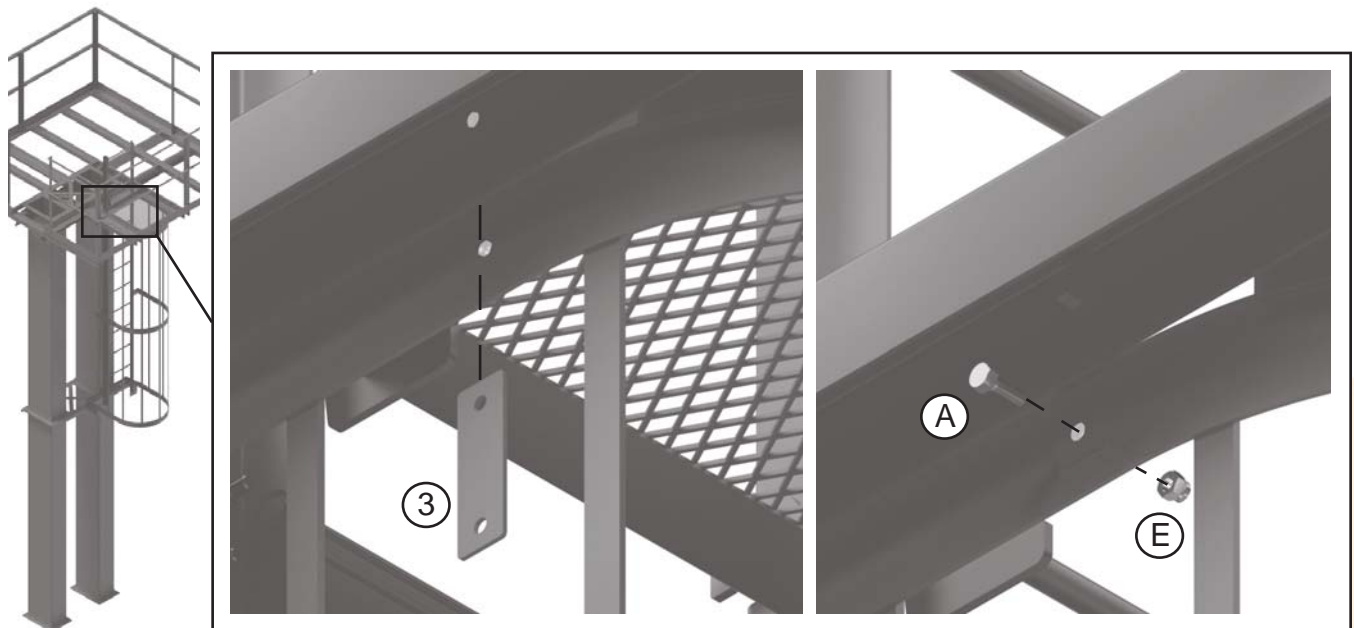
**Figure 92**  
**Top Ladder Bottom Mounting**

Ensure the Top Ladder Assembly is vertically level. Using three (3) 1/2 x 1 1/2" Bolts, secure the base of the Top Ladder to the Trunking Assembly.



**Figure 93**  
**Top Ladder Top Mounting**

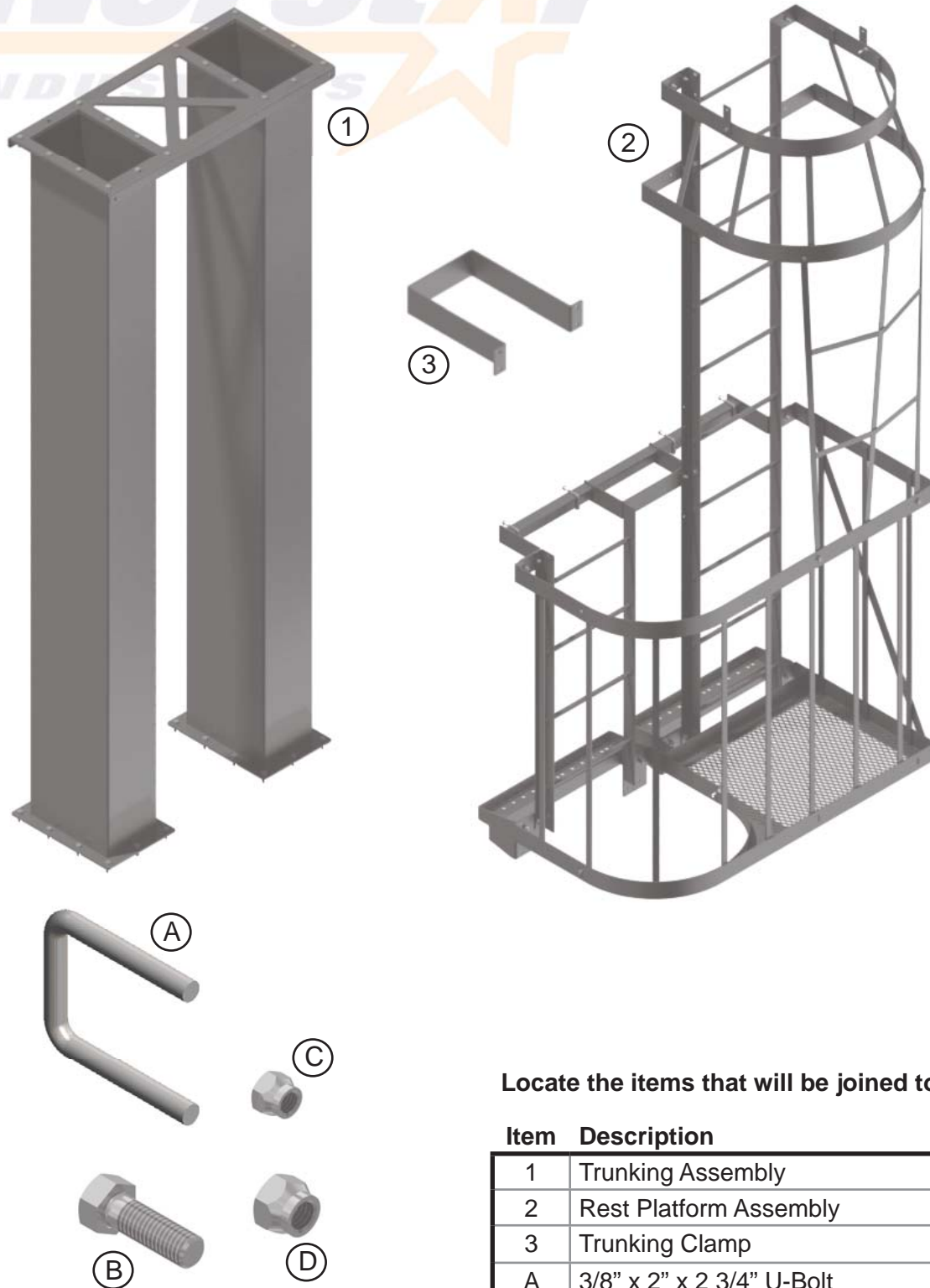
On the top portion of the Top Ladder, align the holes on the Head Platform's Ladder Mounting Bracket. Using four (4) 3/8 x 1" Bolts and 3/8" Nylon Locknuts, attach the ladder using the bottom two (2) holes. Using two (2) 3/8 x 1 1/4" Bolts and 3/8" Nylon Locknuts, secure the ladder at the top holes.



**Figure 94**  
**Connector Plate**

Locate the Ladder Connector Plates and place them at the top of the Top Ladder Assembly. Using two (2) 3/8 x 1" Bolts and 3/8" Nylon Locknuts, per side, secure the plate to the Ladder and the Platform.

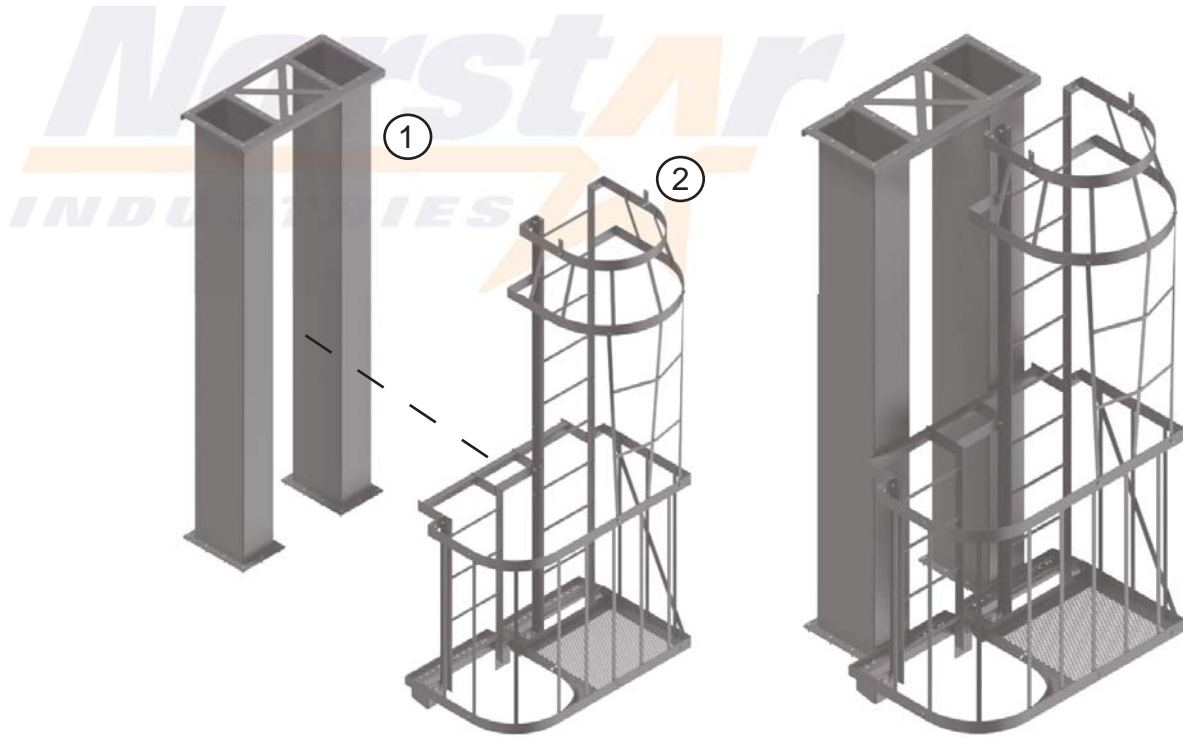
# Rest Platform Installation



Locate the items that will be joined together.

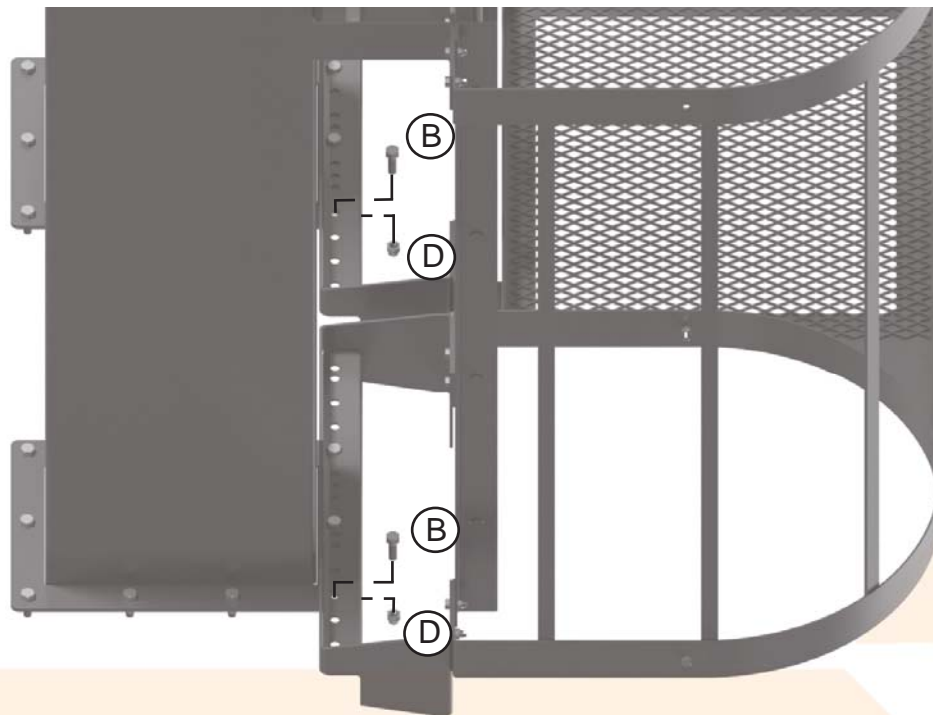
Item	Description	Qty
1	Trunking Assembly	1
2	Rest Platform Assembly	1
3	Trunking Clamp	2
A	3/8" x 2" x 2 3/4" U-Bolt	4
B	1/2" x 1 1/2" Bolt	6
C	3/8" Nylon Locknut	8
D	1/2" Nylon Locknut	6

**Figure 95**  
Rest Platform Installation Components



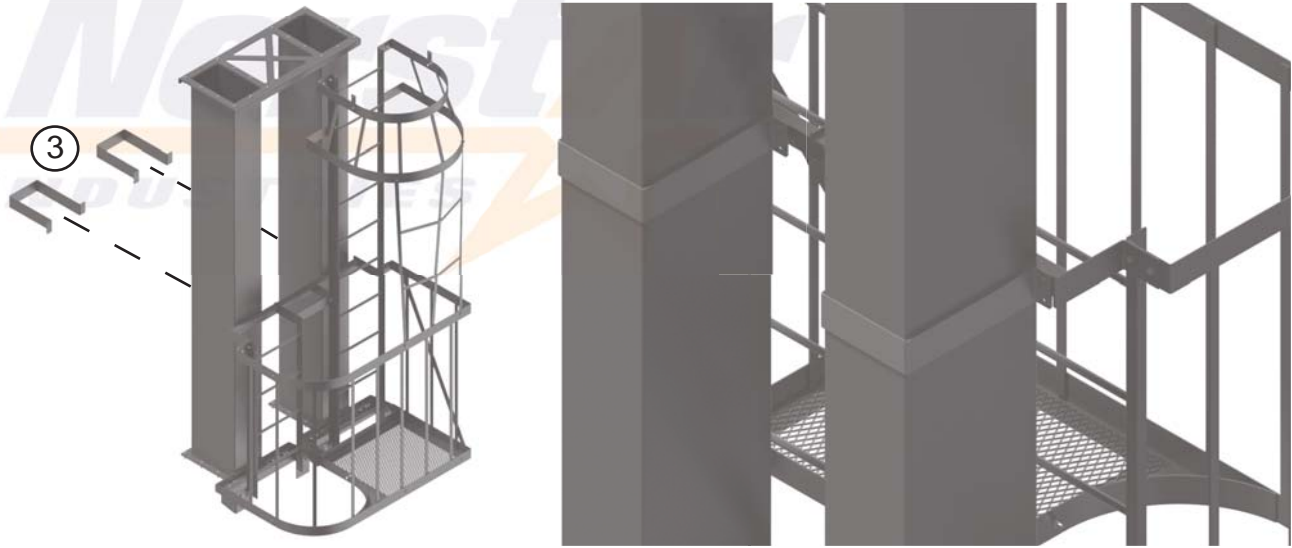
**Figure 96**  
**Rest Platform Placement**

Locate the Rest Platform Assembly to be installed and place it on the Trunking Assembly.



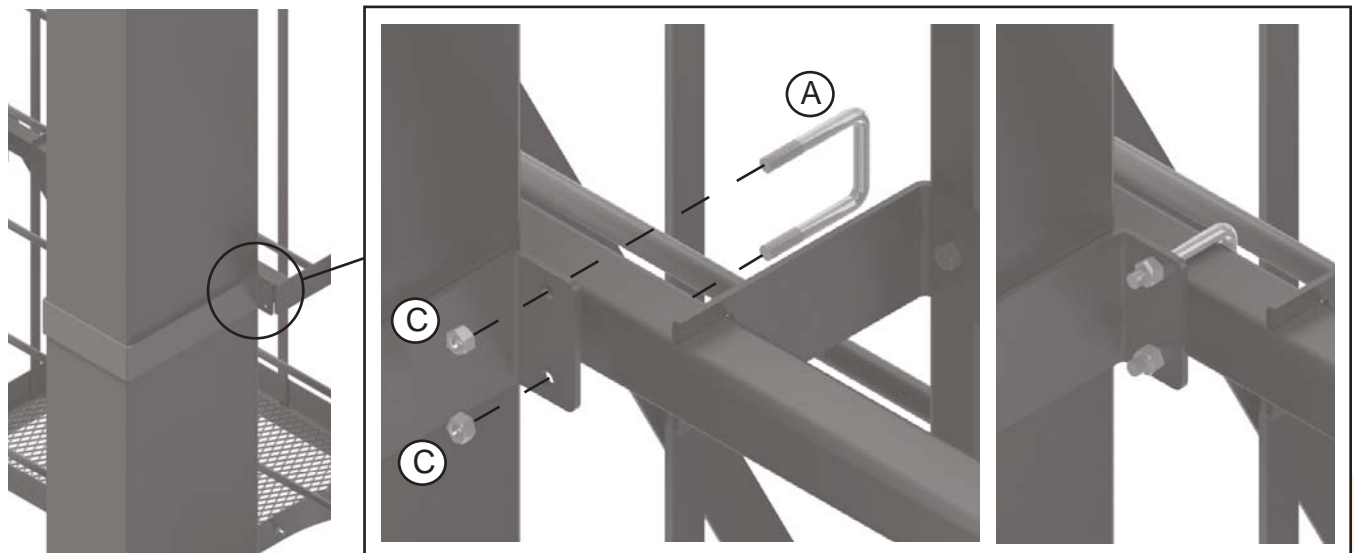
**Figure 97**  
**Rest Platform Mounting**

Center the Rest Platform Assembly on the Trunking Assembly and align the holes on the Trunking Flanges and the Ladder Mounting Brackets. Using six (6) 1/2 x 1 1/2" Bolts and 1/2" Nylon Locknuts, Secure the base of the Rest Platform to the Trunking.



**Figure 98**  
**Rest Platform Clamps**

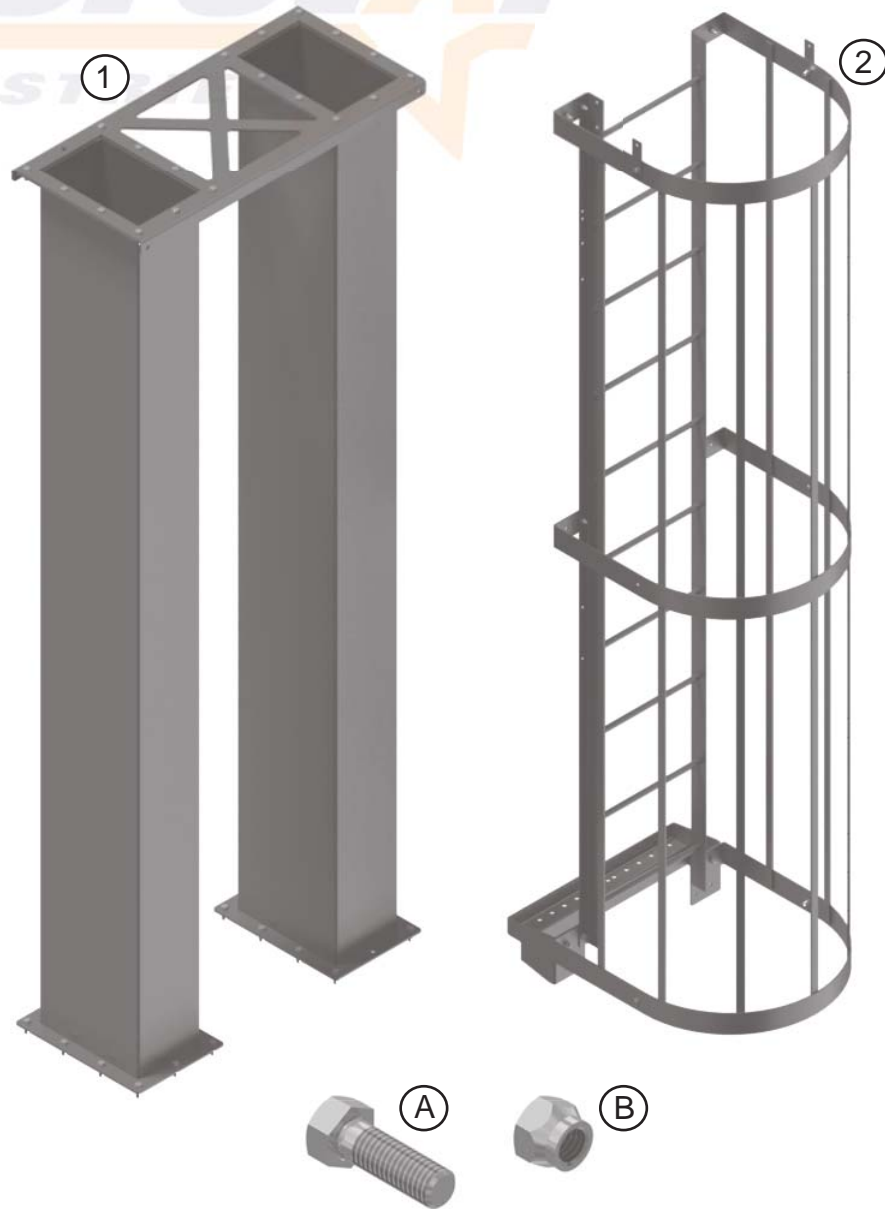
Locate the Trunking Clamps for the Rest Platform. **The trunking clamps are longer than they are wide.** Place them against the Elevator Trunking, aligned with the Clamp Bar on the Rest Platform.



**Figure 99**  
**Clamp Security**

Using two (2) 3/8" U-Bolts and four (4) 3/8" Nylon Locknuts, per Trunking Clamp, secure the middle of the Rest Platform to the Trunking.

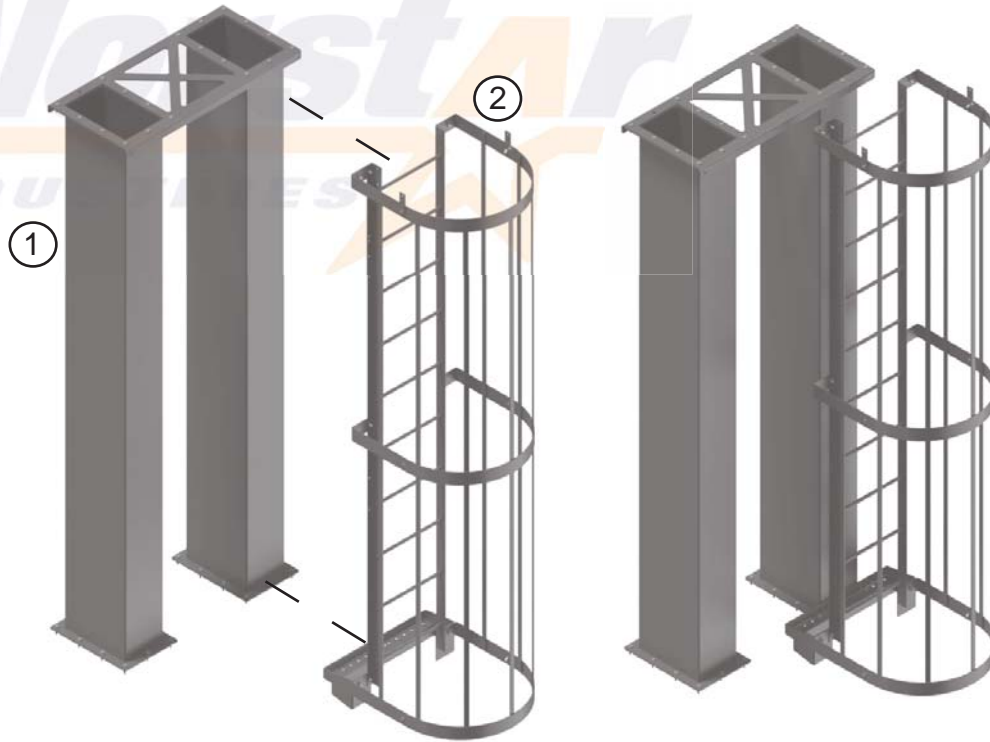
# Ladder Installation



**Figure 100**  
Ladder Installation Components

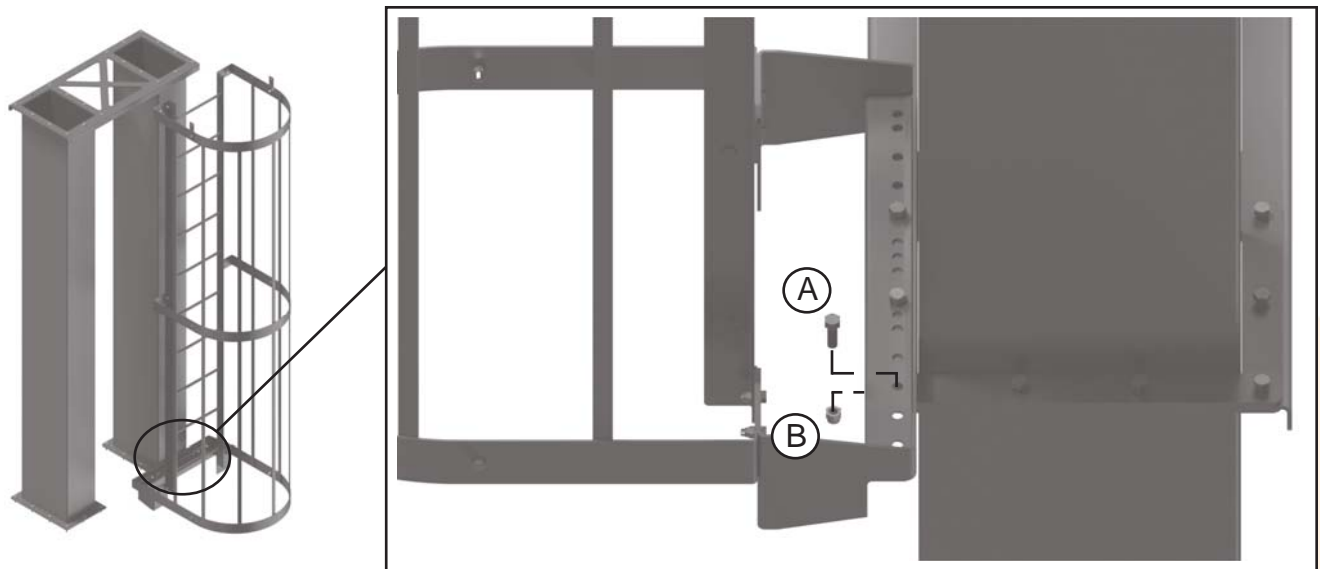
Locate the items that will be joined together.

Item	Description	Qty
1	Trunking Assembly	1
2	Ladder Assembly	1
A	1/2" x 1 1/2" Bolt	3
B	1/2" Nylon Locknut	3



**Figure 101**  
**Ladder Placement**

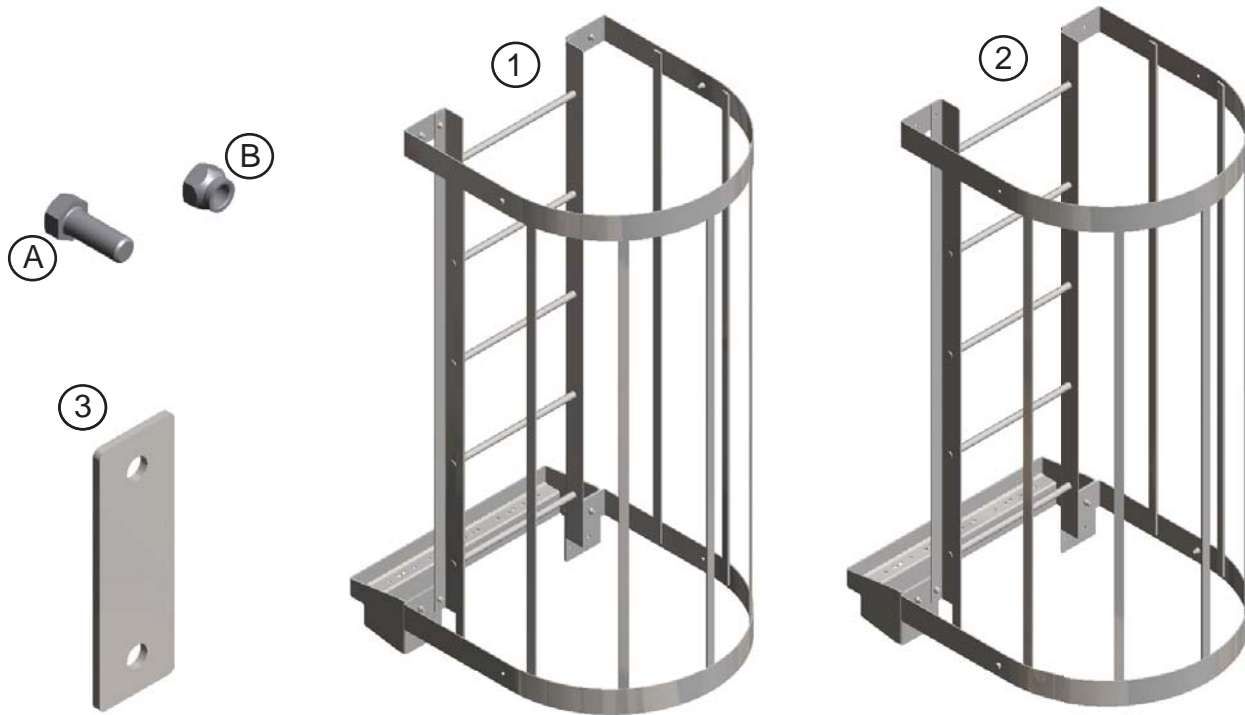
Locate the Ladder to be attached to the Bucket Elevator Trunking. Place the Ladder against the trunking and align the holes on the Ladder Mounting Bracket to the Trunking Flange.



**Figure 102**  
**Ladder Mounting**

Using three (3) 1/2 x 1 1/2" Bolts and 1/2" Nylon Locknuts, secure the Ladder Section to the Bucket Elevator Trunking.

# Ladder to Ladder Installation

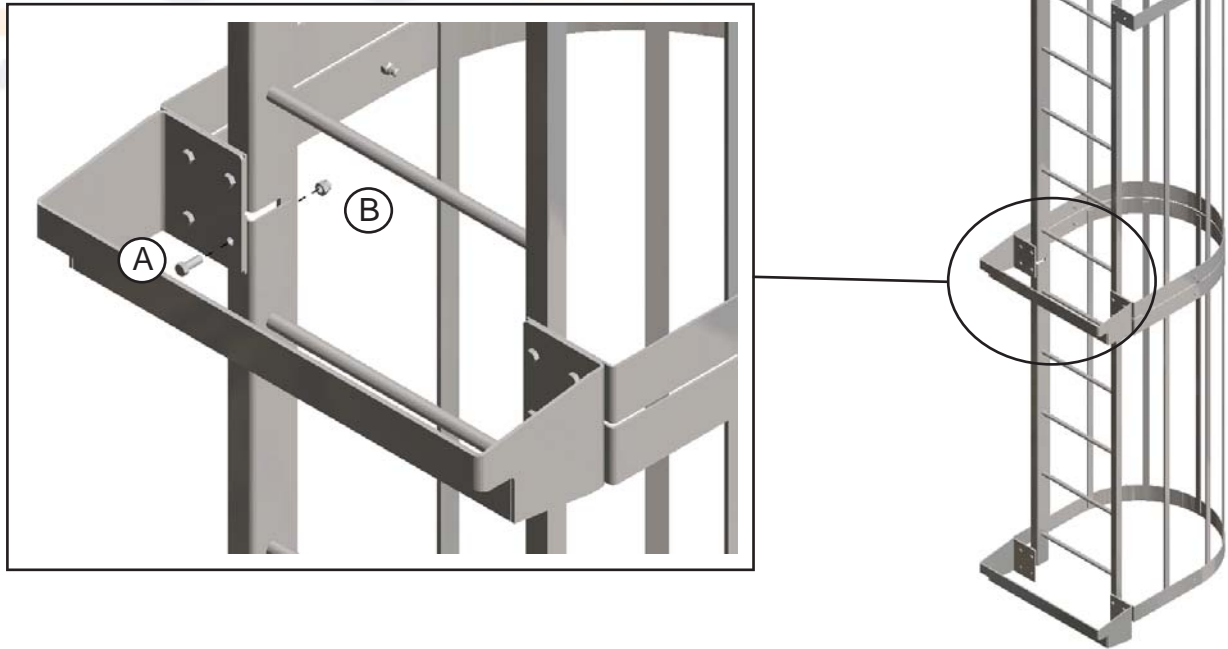


**Figure 103**  
Ladder to Ladder Components

Locate the items that will be joined together. Items may not appear as shown.

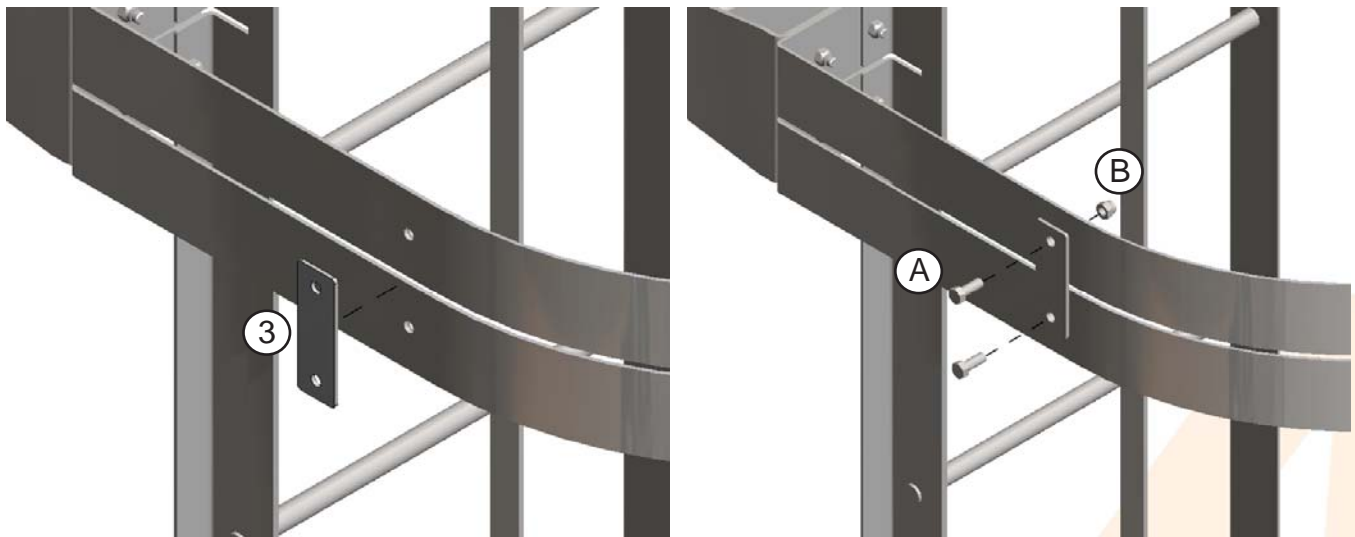
Item	Description	Qty
1	First Ladder Section	1
2	Second Ladder Section	1
3	Ladder Connector Plate	2
A	3/8" x 1" Bolt	4
B	3/8" Nylon Locknut	4





**Figure 104**  
**Ladder Tethering**

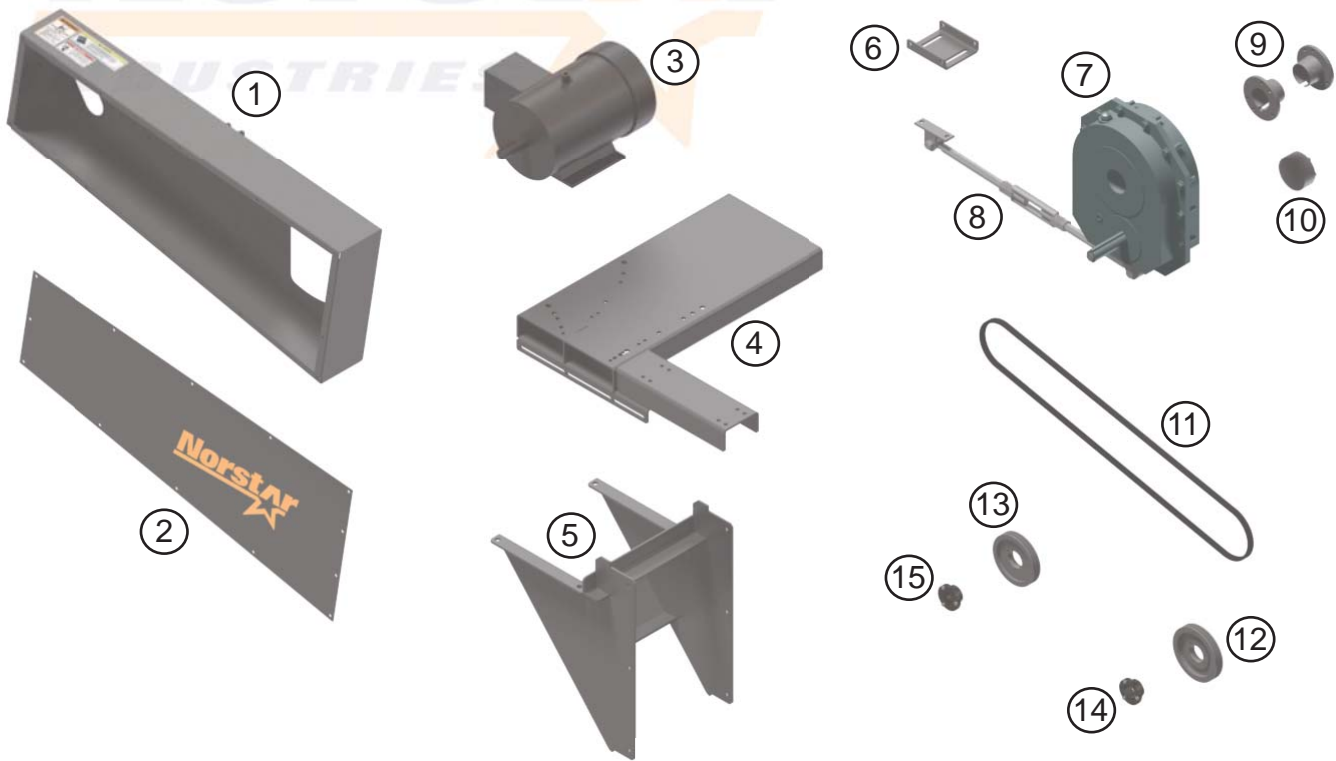
Locate the two ladder sections that will be joined together. Align the holes on the top of the Bottom Ladder Section and the bottom holes on the Top Ladder Mounting Bracket. Attach the two Ladder Sections using four (4) 3/8" x 1" Bolts and four (4) 3/8" Nylon Locknuts.



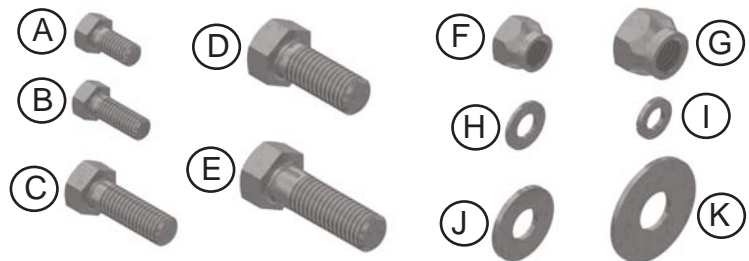
**Figure 105**  
**Connector Plates**

Locate the Ladder Connector Plates and align them with the holes on both sides of the Ladder's connection points. Per Connector Plate, attach the Ladder Connector Plates to the Ladder Section using two (2) 3/8" x 1" Bolts and two (2) 3/8" Nylon Locknuts.

# Drive Assembly



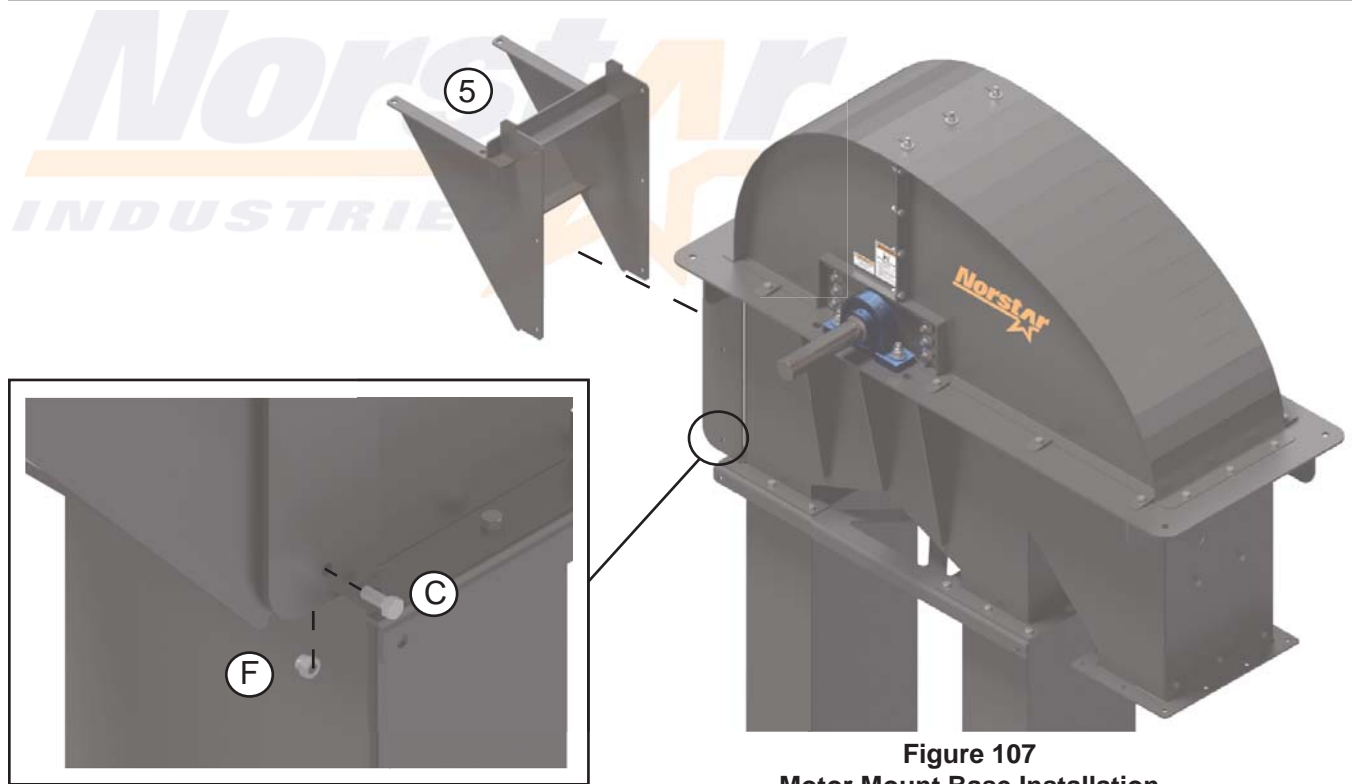
**Figure 106**  
Head Drive Components



Locate the items that will be joined together. Items may not appear as shown.

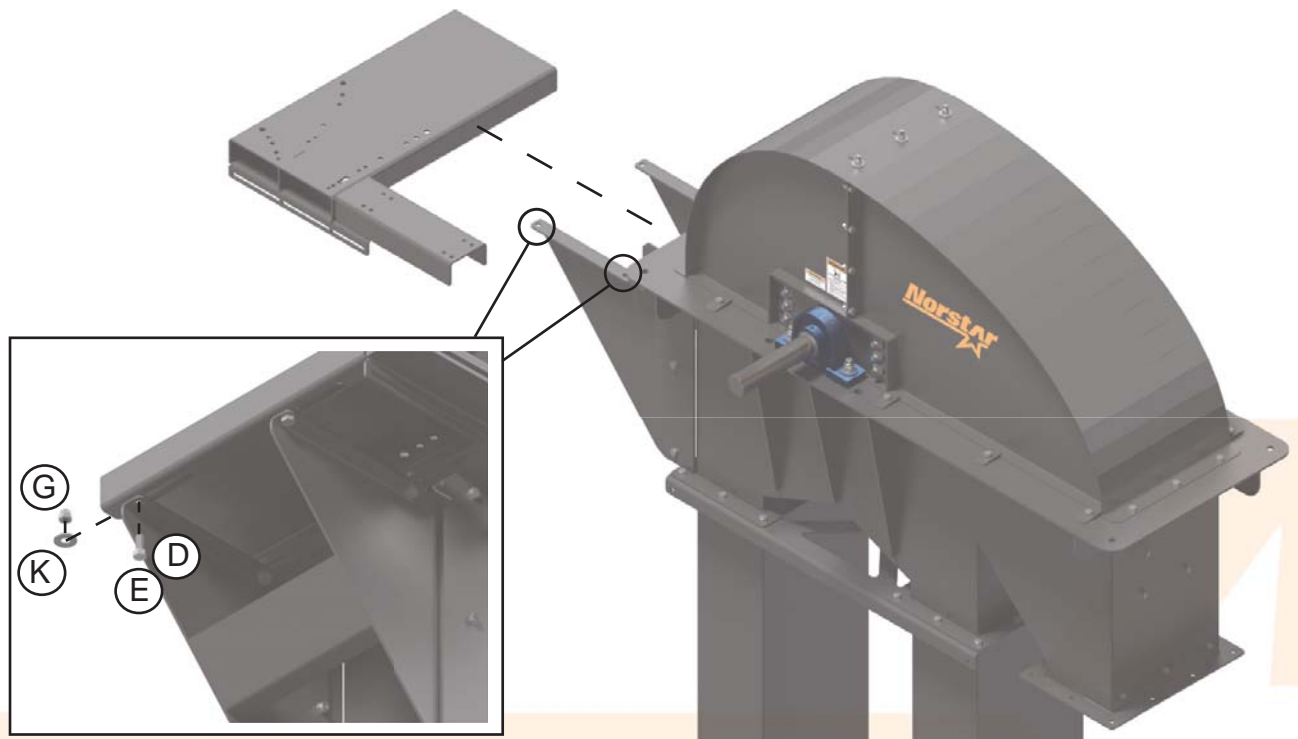
Item	Description	Qty
1	Belt Guard Base	1
2	Belt Guard Cover	1
3	Motor	1
4	Motor Mount	1
5	Motor Mount Base	1
6	Torque Arm Mount	1
7	Gearbox	1
8	Torque Arm Kit	1
9	Gearbox Bushing Kit	1
10	Gearbox Backstop (optional)	1
11	Belt	n/a
12	Gearbox Pulley	1
13	Motor Pulley	1

Item	Description	Qty
14	Gearbox Pulley Hub	1
15	Motor Pulley Hub	1
A	3/8 x 3/4" Bolt	n/a
B	3/8 x 1" Bolt	n/a
C	1/2 x 1 1/2" Bolt	n/a
D	5/8 x 1 1/2" Bolt	n/a
E	5/8 x 2" Bolt	n/a
F	1/2" Nylon Locknut	n/a
G	5/8" Nylon Locknut	n/a
H	3/8" Flatwasher	n/a
I	3/8" Lockwasher	n/a
J	1/2" Flatwasher	n/a
K	5/8" Flatwasher	n/a



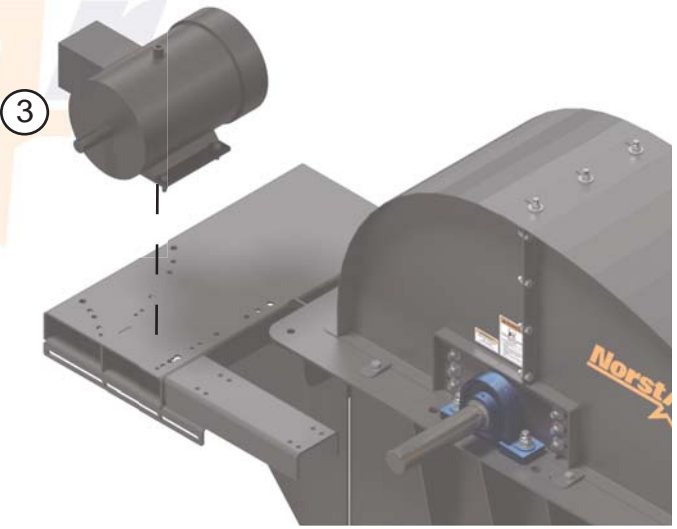
**Figure 107**  
**Motor Mount Base Installation**

Locate the Motor Mount Base weldment and place it in between the rear gussets on the Bucket Elevator Head section. **For 16" and 24" Models**, use six (6) 1/2 x 1 1/2" Bolts and 1/2" Nylon Locknuts and for **30" Models**, use ten (10) 1/2 x 1 1/2" Bolts and 1/2" Nylon Locknuts to secure the weldment to the Head.



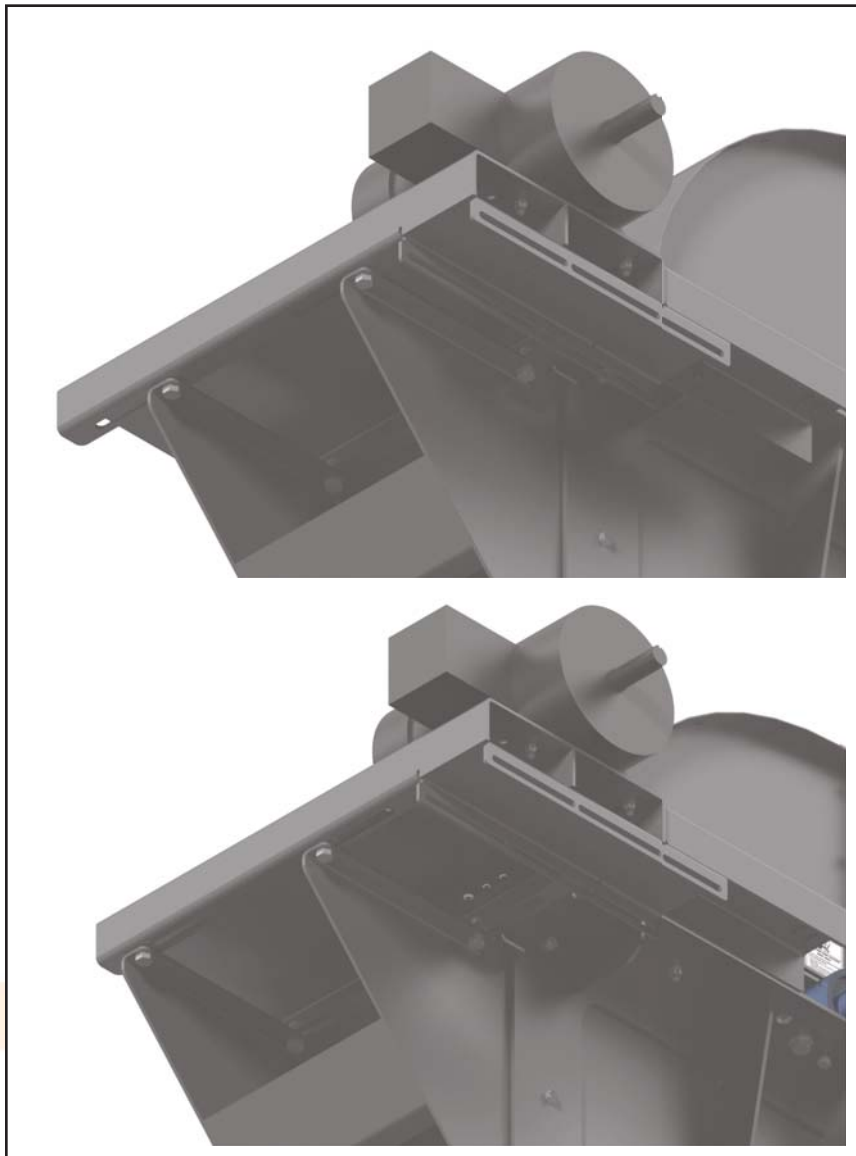
**Figure 108**  
**Motor Mount Weldment Installation**

Locate the Motor Mount Weldment and place it on top of the Motor Mount Base weldment. **For 16" and 24" Models**, use four (4) 5/8 x 1 1/2" Bolts, 5/8" Flatwashers, and 5/8" Nylon Locknuts and for **30" Models**, use four (4) 5/8 x 2" Bolts, 5/8" Flatwashers, and 5/8" Nylon Locknuts to attach the weldment to the Head section. **FOR ADJUSTMENT PURPOSES, DO NOT TIGHTEN BOLTS YET.**



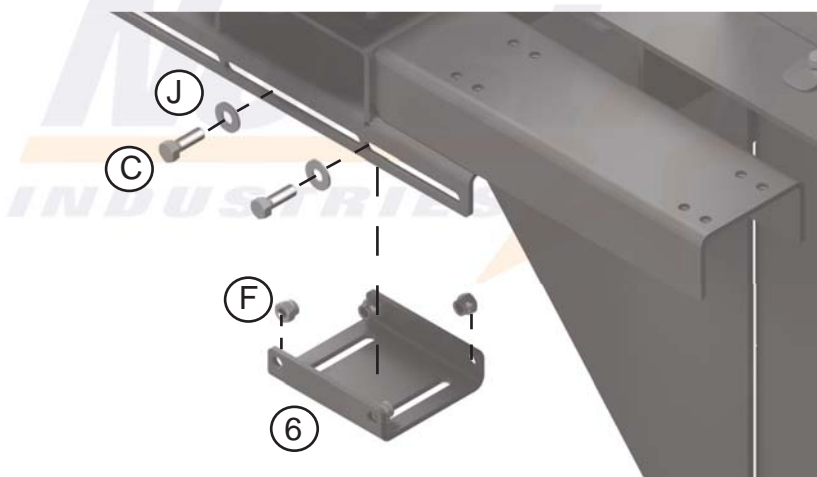
Locate the Motor and lower it onto the Motor Mount weldment. Secure the motor to the Motor Mount weldment with the correct bolt and nuts.

**Figure 109**  
**Motor Installation**



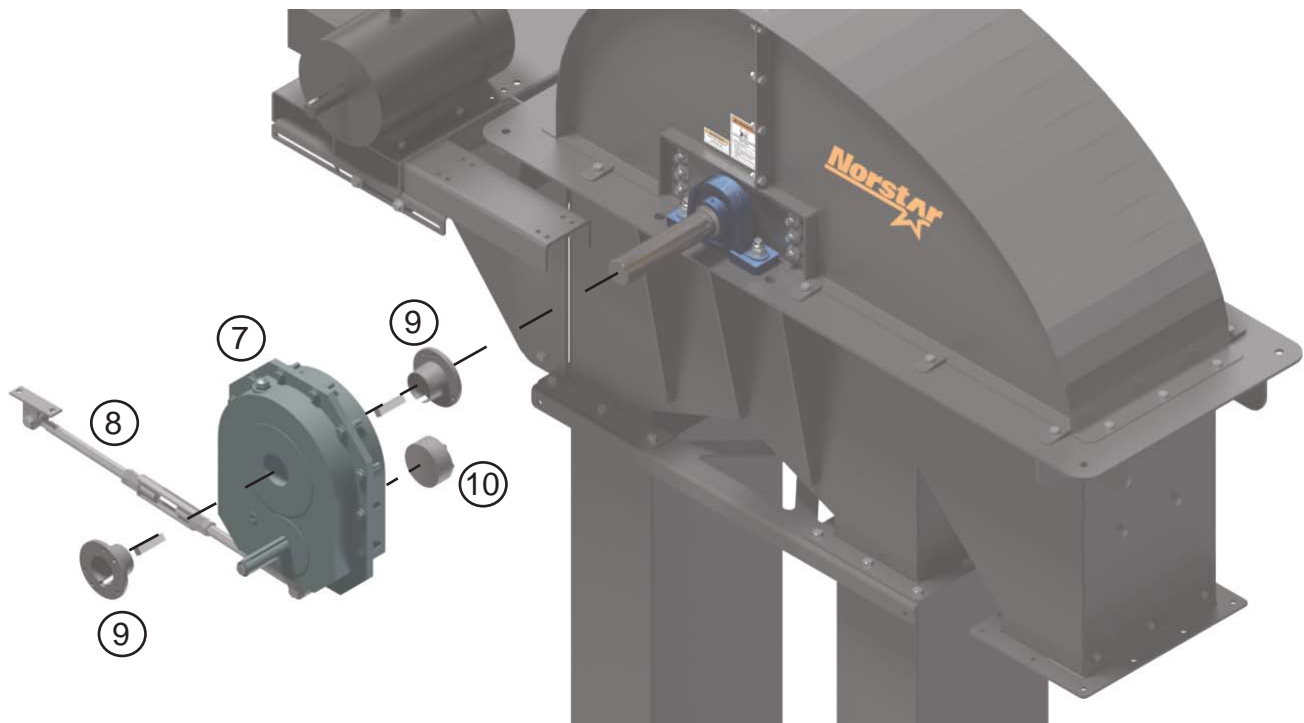
As long as the bolts securing the Motor Mount weldment are loose, the weldment will be able to move back and forth along the slots. It is important to keep the Motor Mount weldment mobile so that it can be positioned when the gearbox is attached.

**Figure 110**  
**Adjustable Motor Mount**



Locate the Torque Arm mount and place it in the 'track' on the underside of the Motor Mount weldment. Using four (4) 1/2 x 1 1/2" Bolts, 1/2" Nylon Locknuts, and 1/2" Flatwashers, attach the Torque Arm Mount to the Head Assembly. **FOR ADJUSTMENT PURPOSES, DO NOT TIGHTEN BOLTS YET.**

**Figure 111**  
**Torque Arm Mount Installation**



**Figure 112**  
**Gearbox Assembly and Installation**

Locate the Gearbox, the Gearbox Bushing kit, the Gearbox Torque Arm kit and the Gearbox Backstop. Follow the instructions that came with those items before installing them on the Bucket Elevator Head Assembly.

Once the Gearbox is assembled, slide one half of the Bushing kit with key onto the Driveshaft followed by the Gearbox Assembly and the second half of the Bushing kit with key.

Using the bolts that came with the Bushing kit, secure the Bushings to the Gearbox, thus securing the Gearbox to the Head Driveshaft.

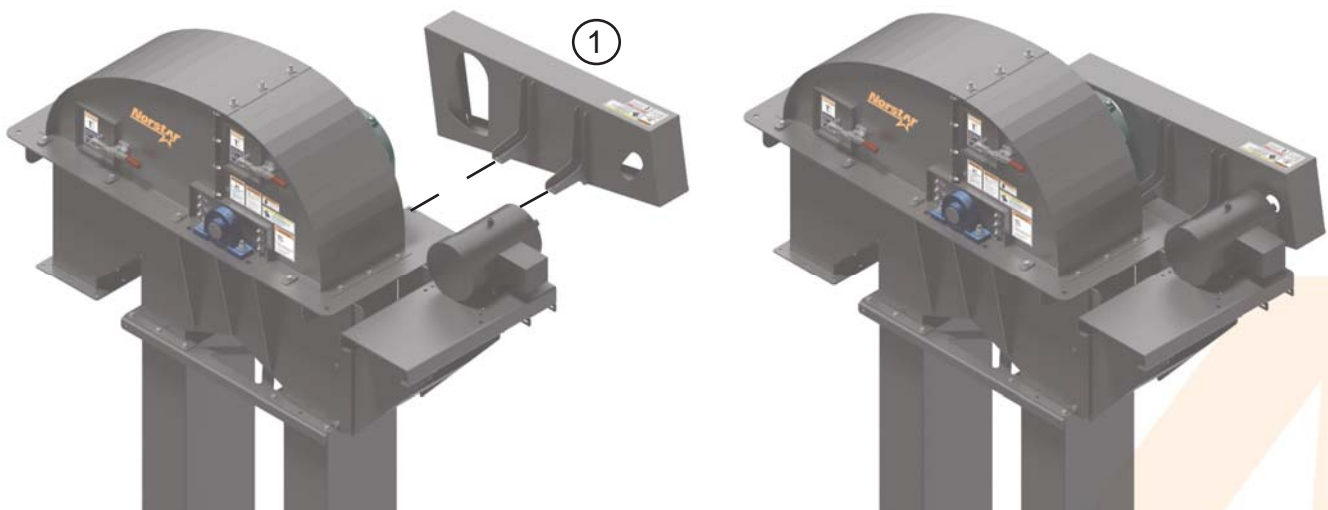


**Figure 113**  
Torque Arm Mounting

Gearbox	Bolt	Locknut	Washer
TA1107	3/8" x 1 1/4"	3/8"	3/8"
TA2115	7/16" x 1 1/4"	7/16"	7/16"
TA3203	7/16" x 1 1/4"	7/16"	7/16"
TA4207	1/2" x 1 1/2"	1/2"	1/2"
TA5215	1/2" x 1 1/2"	1/2"	1/2"
TA6307	5/8" x 2"	5/8"	5/8"
TA7315	3/4" x 2 1/2"	3/4"	3/4"

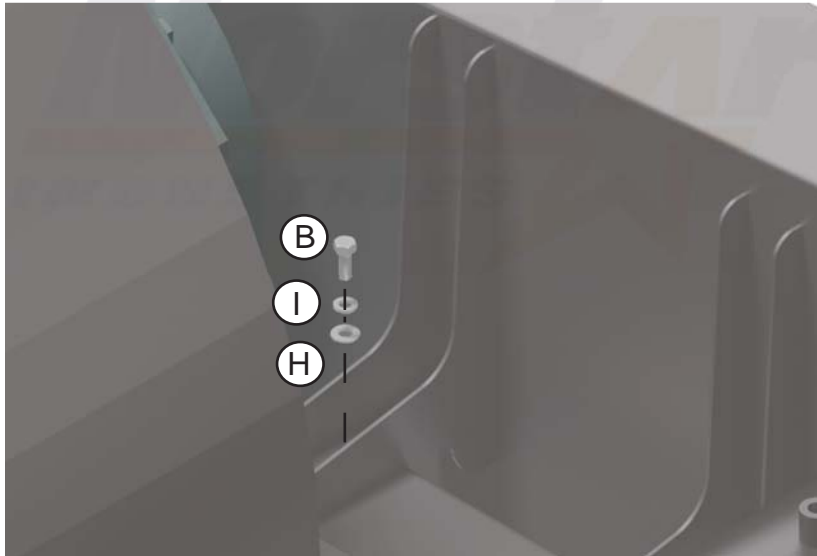
Using the associated Bolts, Nuts and Washers (as shown in the table to the left) secure the Torque Arm assembly to the Torque Arm Mount.

To determine what Bolts, Nuts and Washers to use, determine what Model of Gearbox is on the Bucket Elevator and cross-reference with the chart.



**Figure 114**  
Belt Guard Placement

Locate the Belt Guard Base weldment and place it onto the Belt Guard mounting arm on the Motor Mount weldment.



**Figure 115**  
Belt Guard Installation

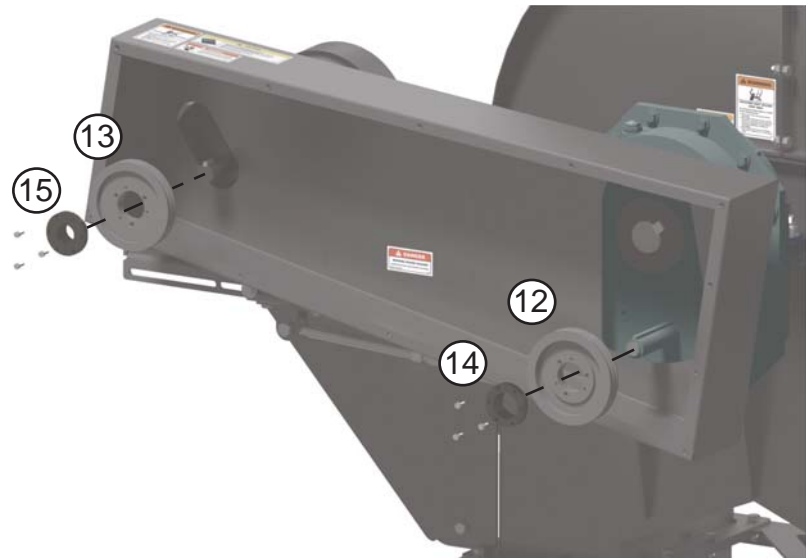
Using eight (8) 3/8 x 1" Bolts, 3/8" Washers and 3/8" Lockwashers, secure the Belt Guard base to the Head Assembly.

Once the Belt Guard has been secured, position the Motor Mount weldment so that the Gearbox is up against the Belt Guard. Once this has been achieved, the Motor Mount bolts can be tightened.

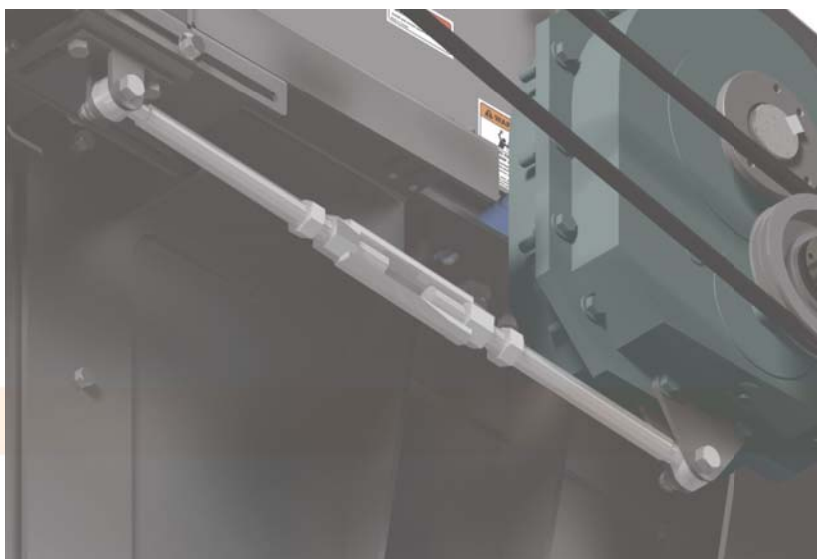
Locate the Head and Gearbox Pulleys as well as the Hubs for each of the Pulleys. Using the Key and Bolts that come with the Hub, secure each Pulley to their respective shaft.



**IMPORTANT!** *It is important to check with the Parts List to ensure the right Pulleys are being used.*



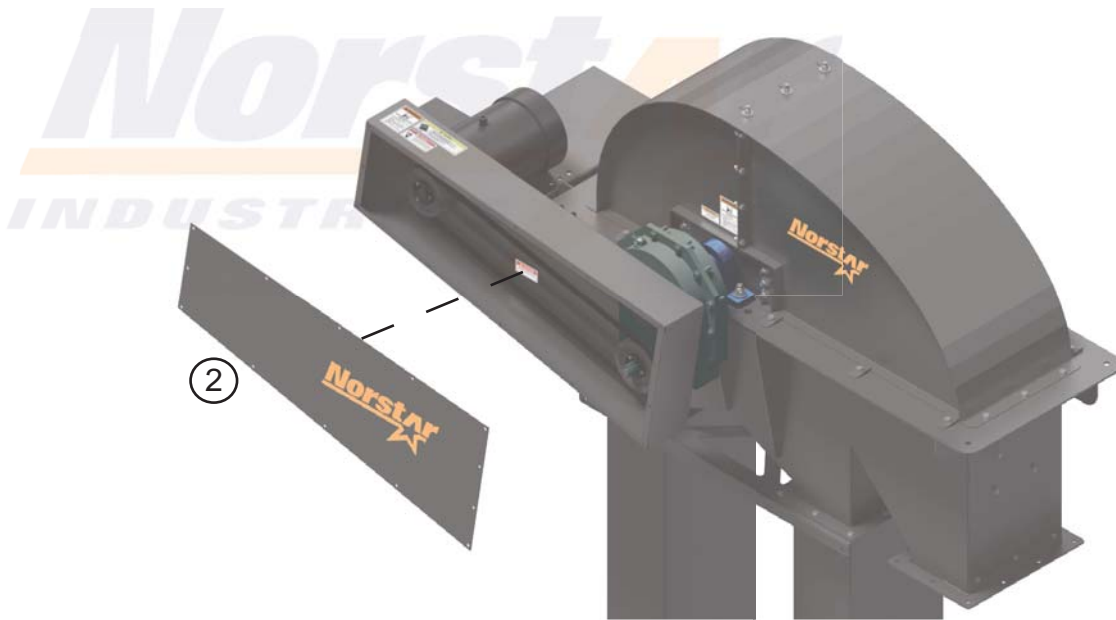
**Figure 116**  
Pulley Installation



**Figure 117**  
Drive Belt Tensioning

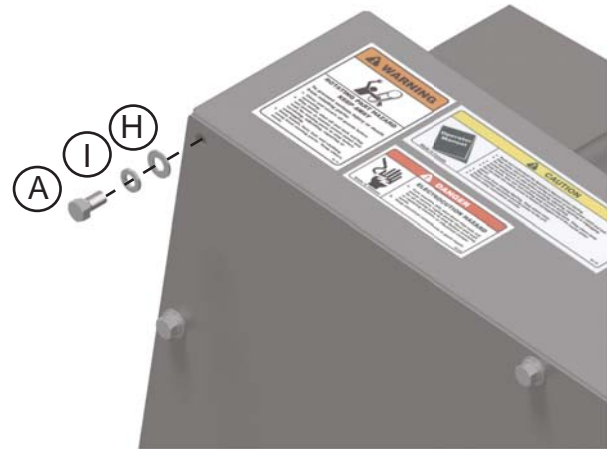
Locate the Belt(s) and place them onto the Pulleys. If the Belt(s) are not able to fit, initially, adjust the Torque Arm to rock the Gearbox to bring the Pulleys closer together. To do this, loosen the Jam Nuts on the Torque Arm and rotate the Turnbuckle.

Once the Belt is on the Pulleys, adjust the Torque Arm, again, to rock the Gearbox so the Pulleys move away from each other. Once the Belt is at the optimal tension, tighten the Jam Nuts to secure the Torque Arm.



**Figure 118**  
Belt Guard Cover

Locate the Belt Guard Cover and place it up against the Belt Guard Base. With thirteen (13) 3/8" x 3/4" Bolts, 3/8" Lockwashers, and 3/8" Flatwashers, secure the Belt Guard Cover to the Belt Guard Base.



**Figure 119**  
Belt Guard Cover Installation



**Figure 120**  
Assembled Head Section



# Bucket Elevator Belt Installation

The Bucket Elevator Belt can be installed with or without buckets already attached to it, though it is advised to attach the buckets later.

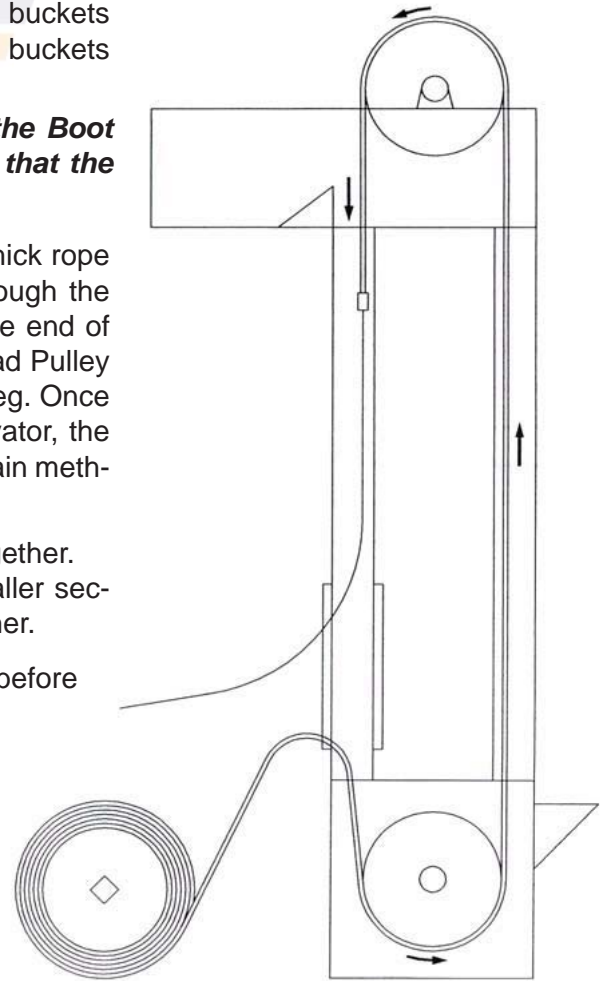


**IMPORTANT!** Before installing the Belting, the **Boot Pulley** should be at the highest position so that the Belt can be tensioned once installed.

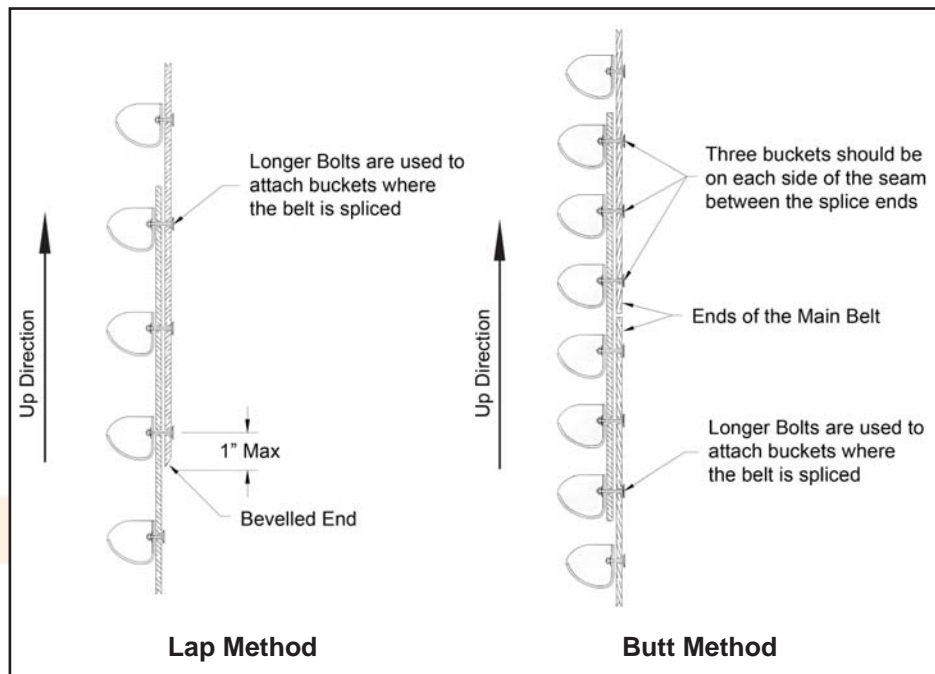
To install the belt, remove the Head Hoods and drop a thick rope or cable down the up leg. Taking the rope or cable through the Boot section or Service Trunking section, secure it to the end of the Belt. Pull the Belt up the Elevator, curve over the Head Pulley and lower the Belt down the Elevator through the down leg. Once the Length of the Belting has been fed through the Elevator, the Belting needs to be spliced together. There are two (2) main methods (see **Figure 122**):

- **Lap Method:** Belting is overlapped and secured together.
- **Butt Method:** Belting is butted together and a smaller section of Belting is placed over top and secured together.

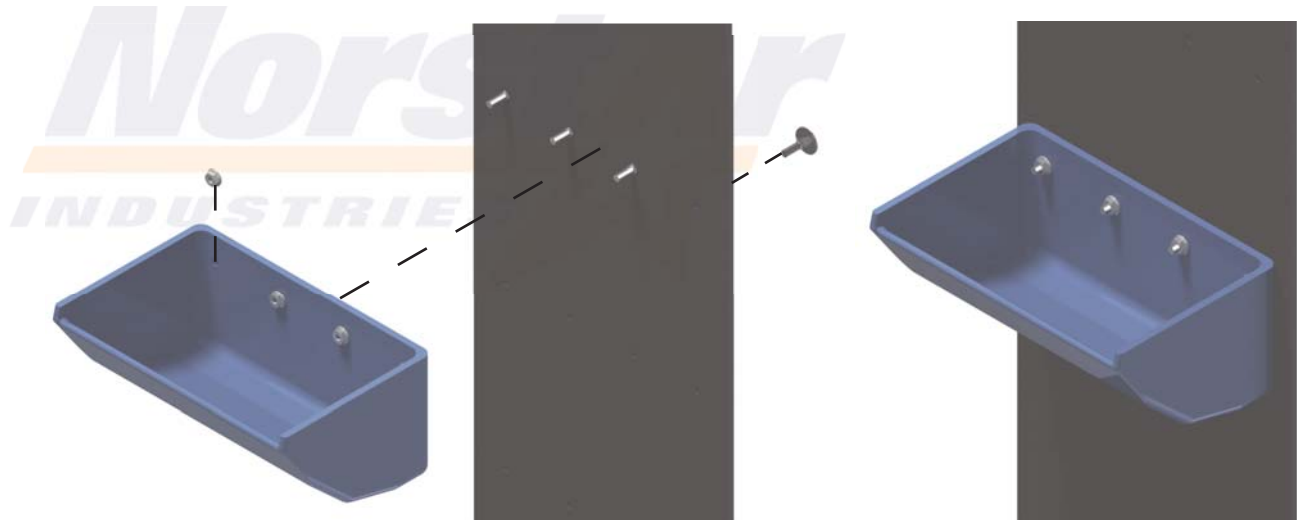
It is important that as much slack is removed as possible before splicing the Belting.



**Figure 121**  
**Belt Feed**

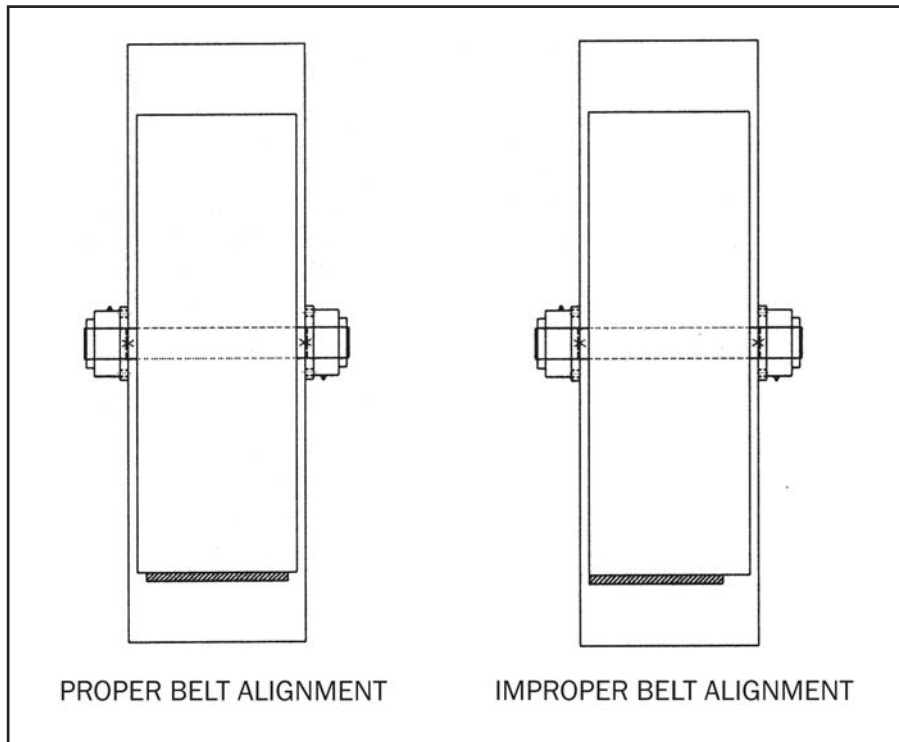


**Figure 122**  
**Belt Splicing**



**Figure 123**  
**Bucket Installation**

Using Elevator Bolts and Flanged Nuts, secure the Buckets to the Belting. It is **HIGHLY** recommended that the buckets are not, initially, attached at consecutive mounting holes in order to keep each leg of the Belt more nearly in balance and making it easier to move. Attach one bucket at ten (10) to twenty (20) bolt row intervals for the first complete Belt revolution. On the second revolution, cut the interval in half. Repeat this process on each revolution until all the Buckets have been attached. This procedure helps balance the weight load during Bucket installation, especially on taller Elevators.



**Figure 124**  
**Belt Alignment**

Once the Belting has been spliced together and the Buckets installed, it needs to be tensioned. Tensioning the Belting is obtained by lowering the Boot Pulley. Once the Belting has been installed into the Bucket Elevator and tensioned, it is important to make sure that the Belting is running in the center of the Elevator. If the Belting is running to one side of the Boot or Head Pulley, that side of the Pulley Shaft needs to be adjusted to properly align the Belting.

# Bucket Elevator Adjustment

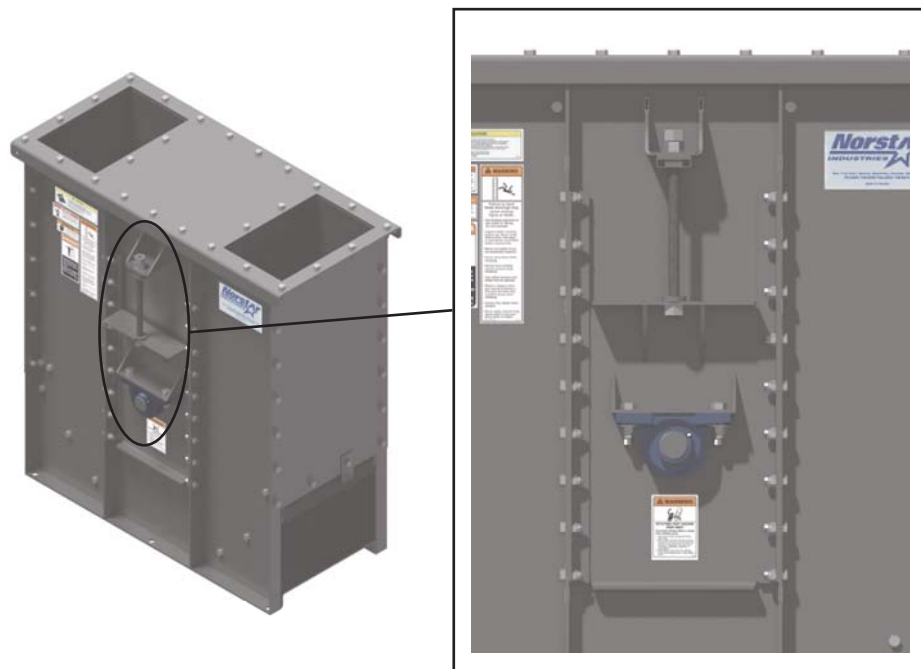
## Gearbox Adjustment

The Gearbox will need to be adjusted in order to tension or replace the Belt. The Torque Arm Turnbuckle on the Gearbox is used to rock the Gearbox back and forth.

To adjust or rock the Gearbox, the Jam Nuts at the turnbuckle need to be loosened. Then, using a wrench or other device, the Turnbuckle is turned to either push the Gearbox backwards or pull the Gearbox forwards. Once the Gearbox is in the correct position, the Jam Nuts should be tightened again to secure the Turnbuckle.



**Figure 125**  
Drive Belt Tensioning



**Figure 126**  
Elevator Belt Tensioning

## Boot Pulley Adjustment

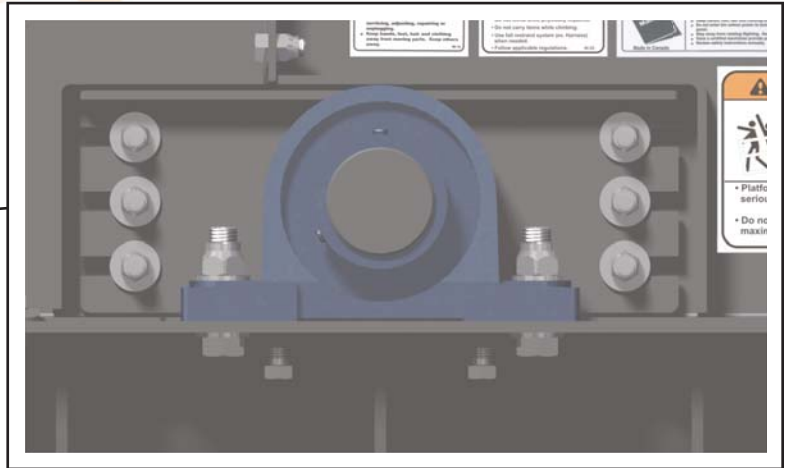
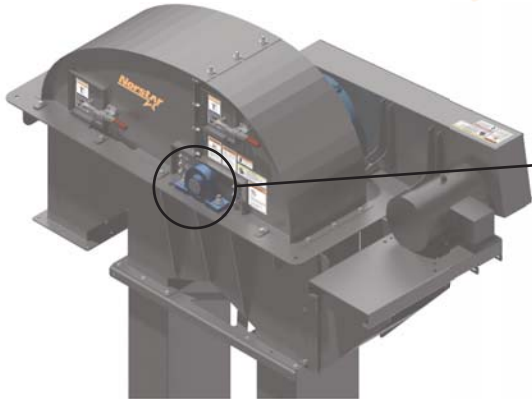
The Boot Pulley may need to be adjusted to either keep the belting aligned to the center of the pulley or to tension the belting.

At the top of the threaded rod on the sides of the Boot are two (2) Hex Nuts. Loosen or remove the top nut to allow the bottom nut to move. By turning the bottom nut, the Side Bearing Assembly will either rise or lower. Once the Pulley is in the correct position, replace and/or tighten the top Jam Nut to secure the Bearing Assembly.

### Head Pulley Adjustment

The Head Pulley may need to be adjusted to keep the belting aligned to the center of the pulley.

In order to adjust the Head Pulley, the bolts securing the Bearing will need to get cracked a little to allow the Bearing to move. Once the Bearing is loose, screw in the jack bolts on the underside of the Bearing to raise the Bearing. Once the belting is centered, tighten the bolts on the Bearing to re-secure it.

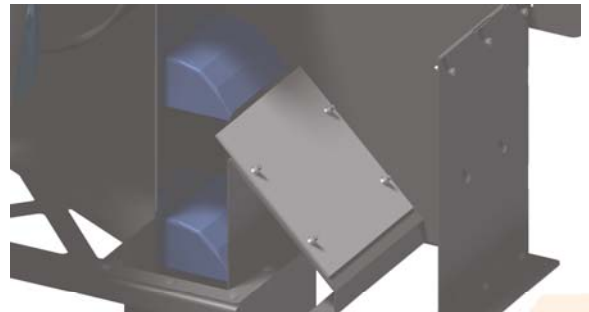
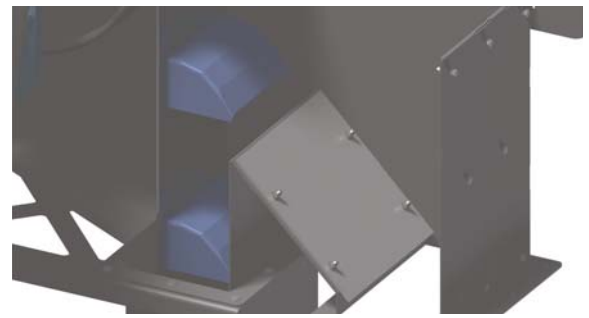


**Figure 127**  
Head Pulley Adjustment

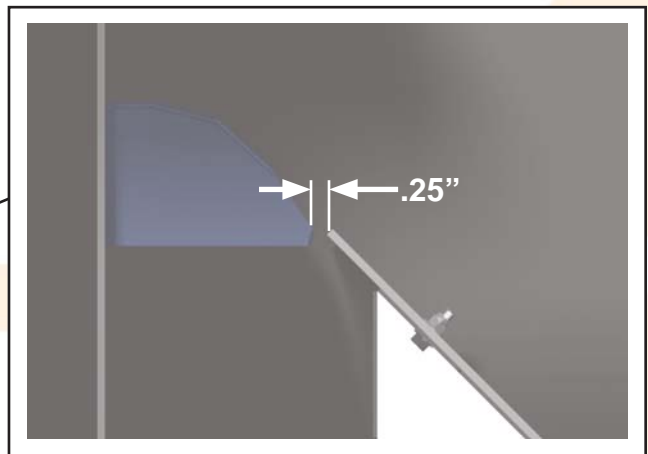
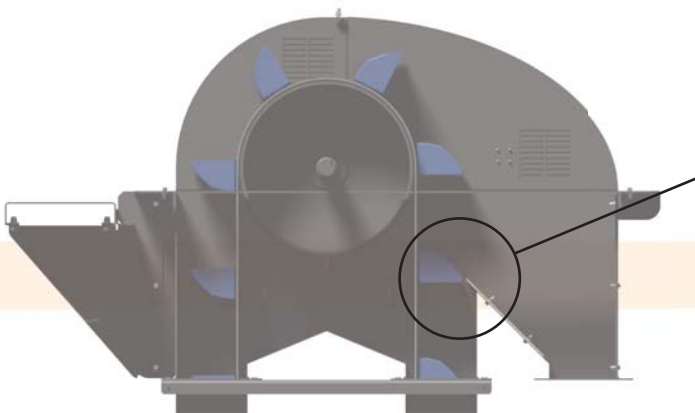
### Discharge Wear Plate Adjustment

The Discharge Wear Plate provides additional protection from downlegging as well as providing a layer of protection from steel wear in the discharge throat.

To adjust the plate, crack the bolts holding it tight. This should allow the plate to slide up and down the throat. Adjust the plate so that it is approximately 1/4" from the buckets. Tighten the bolts to secure the plate in place.



**IMPORTANT!** *It is extremely important that the Throat Plate is set to the Buckets at the Belt Splice. Failure to do this will result in equipment damage.*



**Figure 128**  
Discharge Wear Plate

## Electrical Installation



**IMPORTANT!** *Inclusion of these electrical procedures is a precaution by the Manufacturer to help ensure that safety requirements are met both for the country of manufacture and the countries of usage. Inclusion of these procedures, outside the normal OPERATION of this equipment by a trained USER, does NOT in any way imply that these procedures are to be used BY unqualified personnel or in substitution FOR qualified electrical or service personnel.*



**DANGER!** *Electricity can KILL! Use extreme CAUTION around electrical components. Have the providing electric company check the transformer and lead wires to be sure they are an adequate gauge to carry the starting requirements and full load of your Bucket Elevator Motor.*

### Controls

The Owner must provide for appropriate electrical controls (ex. motor controller, etc.) that meet all specifications of the Norstar Industries Bucket elevator. The Manufacturer does not provide or take any responsibility for electrical controls or safety devices.

### Wiring

All electrical wiring must be installed by a qualified and/or certified electrician in accordance with all applicable local and national electrical codes.



**IMPORTANT!** *To guard against electrical shock, all Bucket Elevators shall have a GROUND connection. Make sure electrical equipment and the Bucket Elevator are properly installed and grounded by a qualified and/or certified electrician according to the National Electrical Code and all other applicable codes and regulations. Parts should be purchased locally.*



**IMPORTANT!** *Norstar Industries will not be liable for the electrical wiring used with this Bucket Elevator or failure of equipment due to improper electrical installation.*

*All electrical devices used with this Bucket Elevator shall be arranged to operate in a "FAIL SAFE" manner; that is, if power failure or failure of device occurs, a hazardous condition must not result. The machine must not restart by itself after a power failure, etc., when power returns, or the jam is cleared.*

### Switch Box (not supplied by Norstar Industries)

This should be located with stop button and lock-out and/or tag-out features to supply power to the Motor that drives the Bucket Elevator. The Switch Box should be kept away from livestock, but placed at a location as convenient as possible for the operator. The operator should be able to view the entire Bucket Elevator from the Switch Box location. The Switch Box area must remain unobstructed. The Switch Box must be clearly marked as to its function.

## Operation

### Operator Instruction

Operator training must include:

- The reading of this Manual, with particular emphasis on the section “**Safety**” on pages 10-14 of this Manual.
- The reading and following of all SAFETY notices in this Manual and any other applicable local, regional or national regulations.
- Instruction in Bucket Elevator operation under normal conditions.
- Instruction in Bucket Elevator stopping / location in emergency situations.

Personnel should be alerted to the potential hazard of entanglement in the Bucket Elevator caused by items such as long hair, loose clothing and jewelry.



**IMPORTANT! Make sure applicable SAFETY Signs are posted in all conspicuous areas. If SAFETY Signs become damaged or unreadable, contact the manufacturer immediately for replacements.**

### Start-up



**DANGER! Make certain power is OFF, LOCKED OUT and TAGGED OUT before working on or inside the Bucket Elevator. Failure to heed this warning will result in serious injury or death.**

It is advisable to have two (2) trained persons (one to operate the Bucket Elevator and one for Safety) present during each start-up of the Bucket Elevator.

### Operation Requirements

To ensure positive performance and minimum maintenance, it is the Manufacturer’s recommendation that this equipment be observed by one (1) Operator during the Bucket Elevator operation.

Use the Bucket Elevator only for loads it is designed to handle safely. Bucket Elevator equipment shall be used to convey only the specified commodities or materials within the rated capacity and the rated speed. Where special use is not indicated, or ratings are not available, consult the Manufacturer.

- Do **NOT** leave the Bucket Elevator running unattended.
- Should any damage to the Bucket Elevator occur, shut off, lock out and tag out power immediately.
- Do **NOT** restart the Bucket Elevator until necessary inspections and repairs have been made.
- Shut off, lock out and tag out all power after using the Bucket Elevator.

### Operation Procedure

1. Start the Bucket Elevator.
2. Start grain/material flow into the Bucket Elevator inlet.
3. Run the Bucket Elevator until the desired amount of grain/material has been moved.
4. Stop grain/material flow.
5. Allow all grain/material to run through the Bucket Elevator until no more grain/material exits through the discharge.
6. Stop the Bucket Elevator.



**IMPORTANT! If the Bucket Elevator is to be inoperative for a prolonged period of time, before shutting down, operate the Bucket Elevator until material no longer discharges. This is very important as the conveyed material may become hard over a period of time.**

## Maintenance

Cleanliness is essential. Material build-up causes tracking problems and edge damage. Routine inspections and corrective maintenance measures shall be conducted to ensure that all Guards and safety features are retained and function properly.

***Establish a MAINTENANCE SCHEDULE to prolong the life and SAFETY of your Bucket Elevator. Practice safe maintenance.***

Check for dirt around the Head and Boot Pulleys at least bi-weekly. Dirt/material build-up is one of the biggest reason that Bucket Elevator Belts, chains/sprockets and buckets become worn and need replacement.

### Instruction of Personnel

Only qualified and trained personnel should service the Bucket Elevator. Maintenance training must include:

- The reading of the Manual, with particular emphasis on the section “**Safety**” on pages 10-14 of this Manual.
- The reading and following of all SAFETY notices in this Manual and any other applicable local, regional or national regulations.

***It is a requirement to be properly trained and to have read and understand this Installation/Operator’s Manual before operating, servicing, or otherwise handling this Bucket Elevator.***

Bucket Elevators shall not be maintained or serviced while in operation unless proper maintenance or service requires the Bucket Elevator to be in motion. In either case, personnel shall be made aware of the hazards and how the task may be safely accomplished.

### Basic Maintenance Rules



**DANGER!** *Disconnect, LOCK OUT and TAG OUT electrical power before inspecting, adjusting, or servicing equipment unless maintenance instructions specifically state otherwise. Failure to heed this warning will result in serious injury or death.*



**IMPORTANT!** *Comply with all applicable SAFETY WARNINGS discussed in this Manual.*



**WARNING!** *The Motor and all moving parts must stop BEFORE any adjustments are made to the equipment or before it is left unattended. Failure to follow this warning may lead to personal injury or death, particularly at the Head, Service Trunking and Inlet.*



**IMPORTANT!** *DO NOT attempt to remove adhering material manually unless the Bucket Elevator has been STOPPED and the power LOCKED OUT and TAGGED OUT. Wear safety glasses when cleaning or servicing the Bucket Elevator. Debris and dust associated with grain transport can damage sight or cause blindness.*

### Electrical Wear



**IMPORTANT!** *Make sure any electrical wiring is not frayed or cracked and meets proper codes and requirements. Check the Power Cord lead for any twisting. Replace it if any damage is apparent. Make sure to check wear at the Bucket Elevator Head Motor.*



**DANGER!** *Electricity can kill.*

## Material Build-up, Wear and Damage

Make sure to check for wear at these various points. Maintain proper adjustments on Chains or Belts. Replace the Chain/Belt Guards after adjustments or maintenance. Tighten hardware. Guards and Covers must be secured before the Bucket Elevator is restarted for normal operation. See **Figure 129**.

The belting will stretch after installation and may need further adjustment. Some stretching is expected withing the first few weeks of operation. Belt tension should be maintained by adjusting the belt tensioner on the Boot Section. Once the belt tensioners have been fully used, the belt will need to be re-spliced. Good belt tension is critical for proper tranction on the pulleys and optimum performance.

Make sure all material has been removed from the Boot prior to winter freezing or severe damage could occur.

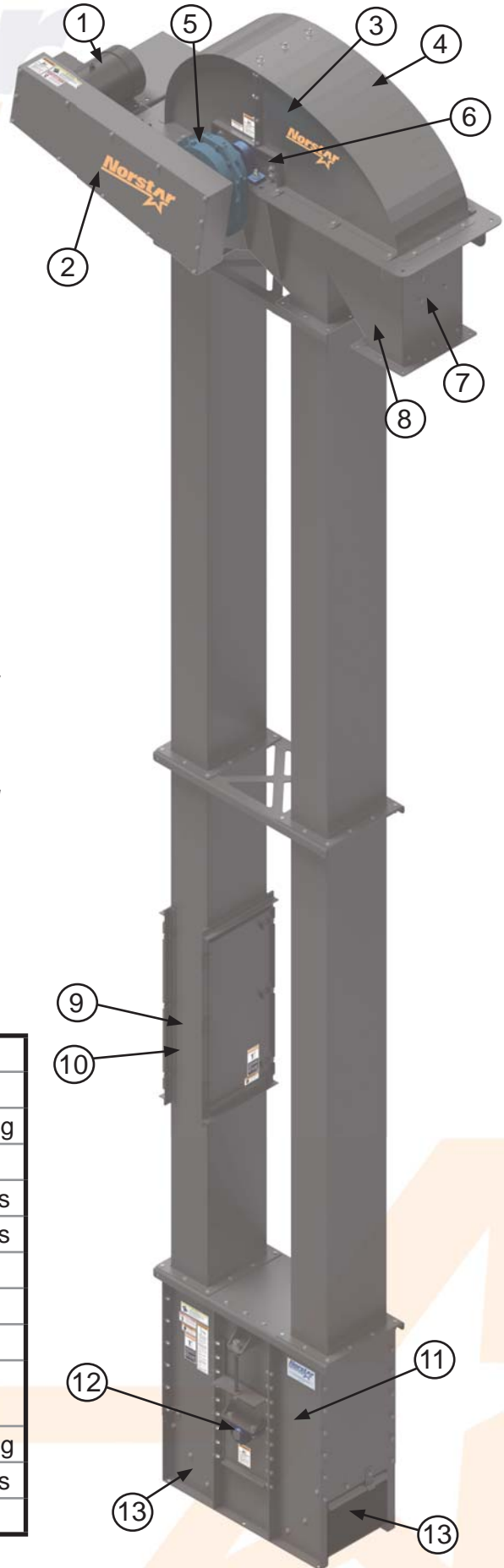
Before finishing, make sure all SAFETY signs are readable and tightly attached.



**DANGER! Electricity can kill! Disconnect, LOCK OUT and TAG OUT electrical power BEFORE inspecting, adjusting or servicing equipment unless maintenance instructions specifically state otherwise. Comply with all applicable SAFETY warning discussed in this Manual. Failure to heed this warning will result in serious injury or death.**



**IMPORTANT! Replace all Guards and Covers. Do NOT run the Bucket Elevator with any Guards or Covers off.**



Item	Description	Inspect For:
1	Motor	good wiring, tight bolts
2	Drive Belt	wear and damage
3	Head Pulley	material buildup, belt tracking
4	Head Hood Cover	wear and damage
5	Gearbox/Torque Arm	wear and damage, tight bolts
6	Head Bearing	wear and damage, tight bolts
7	Discharge Wear Plate	wear and damage
8	Throat Wear Plate	wear and damage
9	Elevator Belting	wear, damage, belt tracking
10	Buckets	material buildup, wear and damage, tight bolts
11	Boot Pulley	material buildup, belt tracking
12	Boot Bearing	wear and damage, tight bolts
13	Boot Clean-out	material buildup

**Figure 129**  
Inspection Locations



## Lubricants

Check these points weekly or every fifty (50) hours of operation. Check oil levels in gearboxes and add oil as required (**USE ONLY 80/90 GEAR OIL**). To avoid equipment damage, lubricate all Bearings according to the instructions in this Manual. When anti-friction bearings are used, check for proper lubrication. Too much or too little lubricant will cause high operating temperatures that may damage the Bucket Elevator.



**WARNING! DO NOT operate the Bucket Elevator without gear oil. GEARBOXES are shipped DRY or WITHOUT GEAR OIL. Refer to specifications above for proper filling and maintenance of the gearbox. Failure to add the proper amount of lubricant BEFORE STARTING the Bucket Elevator will cause permanent damage to the Gearbox and will void the Warranty.**

To fill the gearbox, remove the plug from the gearbox. See **Figure 132**. On the Bucket Elevator gearbox, fill up to the hole. **Gearboxes are not shipped with oil, so immediate filling is required.** Check these points weekly or every fifty (50) hours of operation.

Grease all bearings every 800 - 1000 hours. See **Figure 131**.



**Figure 131**  
Bearing Grease Zerk



**Figure 130**  
Gearbox Oil Decal



**Figure 132**  
Gearbox Oil Plug

## Additional Maintenance Tips

- Check for deterioration or looseness of any bolts or fasteners and continued secure attachment of all ladders and platforms.
- Check the Pulley hub bolts and set screws after the first 8 - 10 hours of operation.
- Check for wear in the spouting.
- Make sure no tools get left in the Bucket Elevator after maintenance.

# Troubleshooting

## General Troubleshooting

Trouble	Possible Cause	Solution
<b>Backlegging</b> <i>Material falling down the 'up' or 'down' leg</i>	Obstruction in discharge, spouting or distributor	Inspect the head for any foreign material that may be blocking grain flow. Also check for missing buckets. If one is missing, it could be found in the discharge transition or in the distributor turnspout.
	Head Throat Wear Plate is out of place	Remove the head cover and adjust the wear plate.
	Buckets are being overfilled	Check to see if the buckets are being overfilled. Buckets should be NEAR full, but not overflowing. Make adjustments at inlet.
	Head shaft running too fast or too slow	Check packing list and/or exploded view parts list to be sure the correct pulleys are installed. Also check to see if pulleys are reversed.
	Spouting size too small for leg capability Spouting installed at too shallow of an angle Spouting has a sharp bend, restricting flow	Correct by using a proper spouting size and good design engineering.
	Pressure build-up in bins/spouting	Add vents
	Loose buckets	Tighten all bucket bolts, securely.
	Full bin or tank	Monitor bin levels carefully.
<b>Belt Rub</b> <i>Not tracking in the center of the pulley and/or rubbing side of head, trunking or boot.</i>	Loose belt	Adjust the belt take-up or shorten the belt.
	Boot pulley improperly adjusted	Adjust tensioning screws on boot to level pulley and align belt to the center of the pulley.
	Head pulley not level	Adjust the jacking bolts to level the head pulley.
	Leg out of plumb or twisted	Check to see if the Bucket Elevator is plum. Adjust the turnbuckles on the guy lines to straighten.
	Material build-up on pulleys	Inspect the Head and Boot pulleys to see if any material has built up. Remove any built-up material.
<b>Belt Slip</b> <i>Excessive belt slippage or burning</i>	Worn bearing	Replace bearing.
	Head pulley lagging worn or loose	Replace with factory recommended lagging.
	Drive motor too large	Use the proper horse power motor.
	Loose belt	Re-tension belt or shorten the belt.
	Ice/moisture on head pulley	Remove significant build-up. Run elevator until its dry.

<b>Belt Looseness</b> <i>Excessive belt slack</i>	Belt has stretched	Adjust the boot pulley tensioner to tighten the belt.
		Shorten and/or re-splice the belt.
<b>Elevator Overload</b> <i>Bucket Elevator is being overloaded</i>	Inlet conveyor/auger running too fast	Check/reduce conveyor/auger speed
	Head Pulley running too slow	Check the pulley speed and/or the reducer speed for correct gear ratio.
	Charging inlet from several sources at once	Check conveyor/auger capacities and cross reference with Bucket Elevator capacities.
	Drive Motor too small	Use the proper horse power motor.
	Low motor voltage	Check voltage
	Under size wiring	Use the correct wire guage on motor.
<b>Low Capacity</b> <i>Material not unloading at full capacity</i>	Head shaft speed too slow	Check pulley speed. Check pulleys, speed reducer and motor to determine cause of slow speed. Correct as required.
	Inlet conveyor/auger too slow	Check conveyor/auger speed. Check pulleys, speed reducer and motor to determine cause of slow speed. Correct as required.
	Loose belt	Check to see if belt is slipping. Tighten if necessary.
		Check Head Pulley lagging. Replace if necessary.
	Buckets caked or damaged	Visually inspect and clean and/or replace buckets as necessary.
Obstruction in discharge, spouting or distributor	Inspect the head for any foreign material that may be blocking grain flow. Also check for missing buckets. If one is missing, it could be found in the discharge transition or in the distributor turnspout.	

### Electrical Troubleshooting

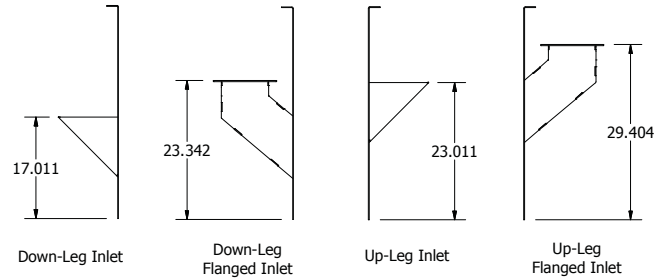
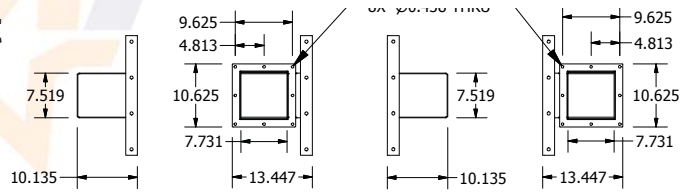
Trouble	Possible Cause	Solution
<b>Low Capacity</b> <i>Material not unloading at full capacity</i>	Low voltage in power source	Check voltage at the motor input. Voltage in power lines may be low. Consult an electrician and/or power company.
<b>Slow Speed</b> <i>Bucket Elevator and/or conveyor/auger are operating below normal speed</i>	Blown fuse on three phase circuit	Check and replace fuses.
<b>High Amperage</b>	Defective motor	check the motor for short or open circuited condition. Repair or replace motor.

### Speed Reducer Troubleshooting

Trouble	Possible Cause	Solution
<b>Overheating</b>	Load exceeds drive capacity	Check the rated capacity of drive. Replace with drive of sufficient capacity or reduce load.
	Insufficient oil	Check the oil level and increase as needed.
	Too much oil in the drive caused churning and excessive heat is generated by the fluid friction of the churning oil	Check the oil level and remove as needed.
	Wrong grade of oil	Flush and refill to the indicated oil level with the grade specified.
<b>Noise and Vibration</b>	Improper torque arm installation	Check mounting bolts and tighten.
	Failing/worn out bearings	Replace worn bearings.
	Excessively worn gears	Determine if the load exceeds name plate rating. If overloaded, reduce load or replace with reducer of sufficient capacity. Replace gearbox.
	A low oil level reduces the muffling effect of the oil	Check the oil level and increase as needed.
	Loose parts	Inspect drive for broken parts, loose bolts, nuts and screws. Check all keys for proper size and fit. Replace parts as necessary.
<b>Oil leakage</b>	Excessive oil	Check oil level and drain to the indicated oil level
	Clogged breather	Clean or replace breather. Clean breather hole with pipe cleaner and a suitable non-flammable solvent.
	Worn seals	Replace seals.
<b>Shaft Slippage</b>	Missing key or loose bushing	Replace key and/or tighten bushing.
<b>Excessive Shaft End Play</b>	Worn bearings	Worn bearing balls and raceways have a dulled appearance. Replace worn bearings. Clean and flush drive and replace oil.
<b>Excessive Backlash</b>	Worn gears or loose parts	Replace worn gears and keys. Tighten loose screws.

# Spec Sheets

## Bucket Elevator Spec Sheet 1600 Series

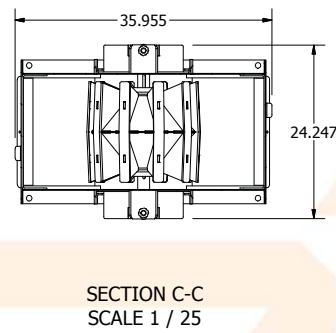
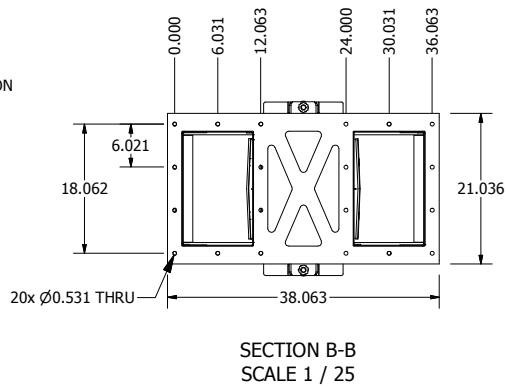
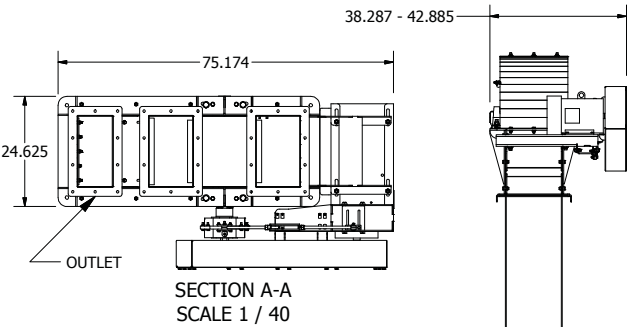
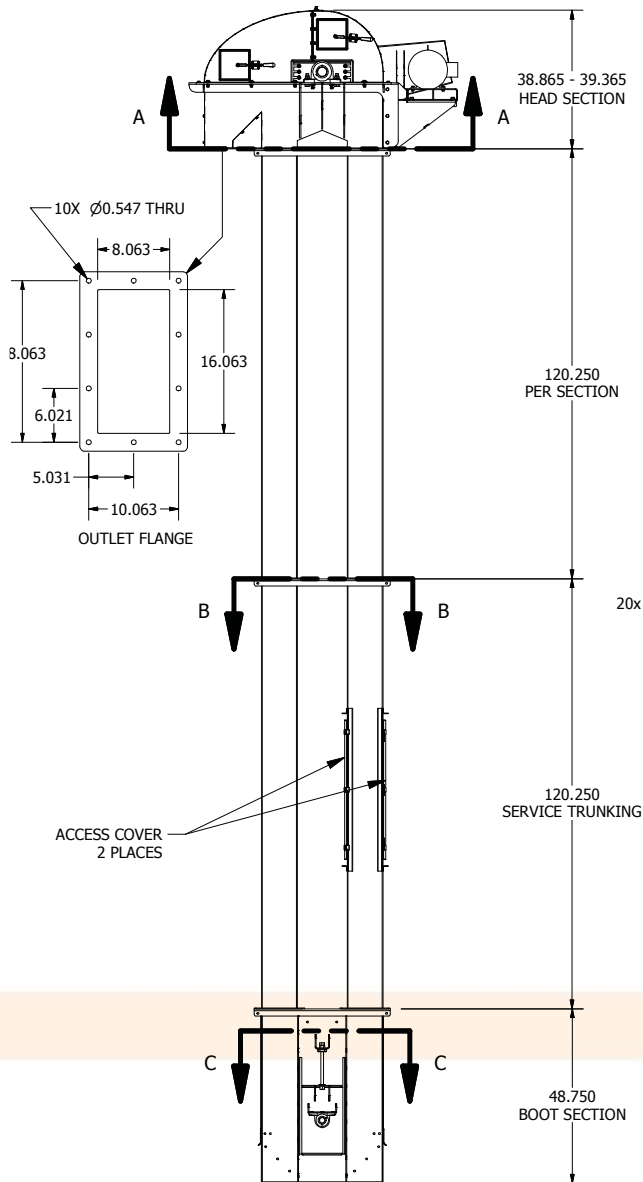


Down-Leg Inlet

Down-Leg Flanged Inlet

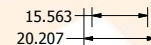
Up-Leg Inlet

Up-Leg Flanged Inlet



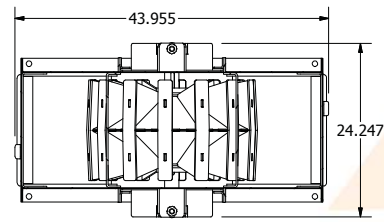
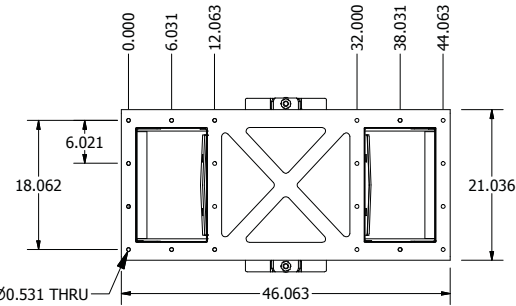
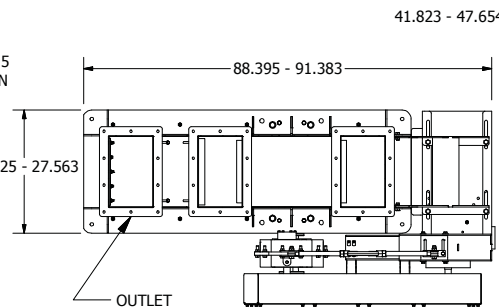
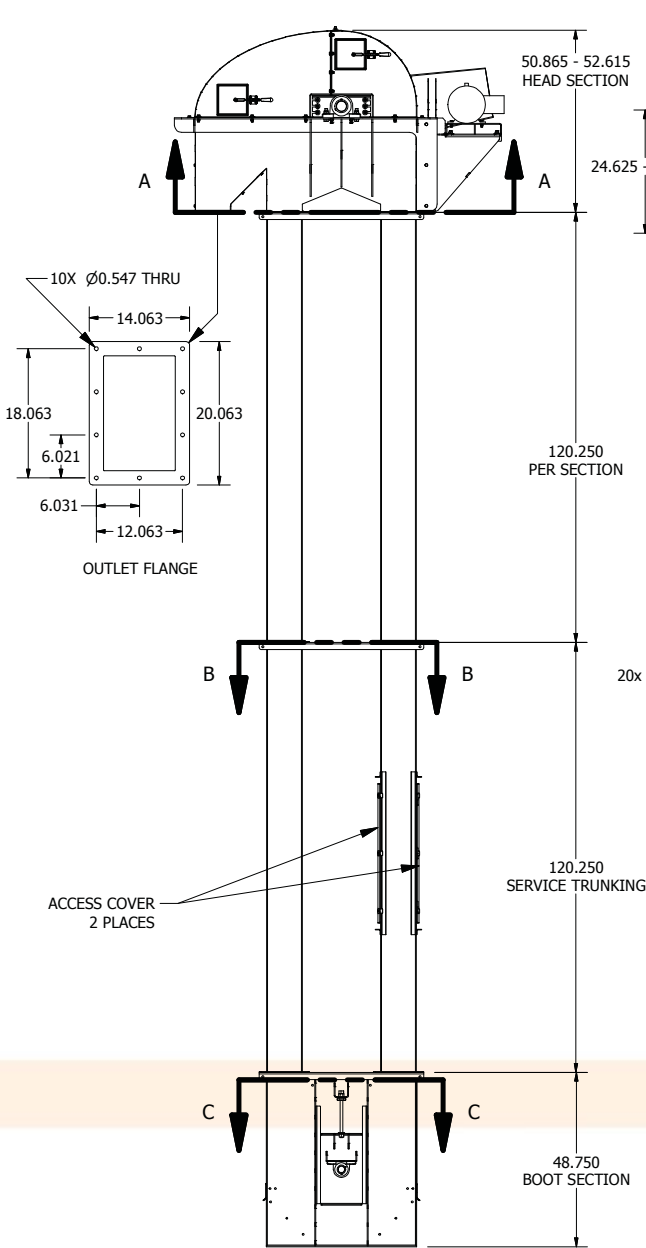
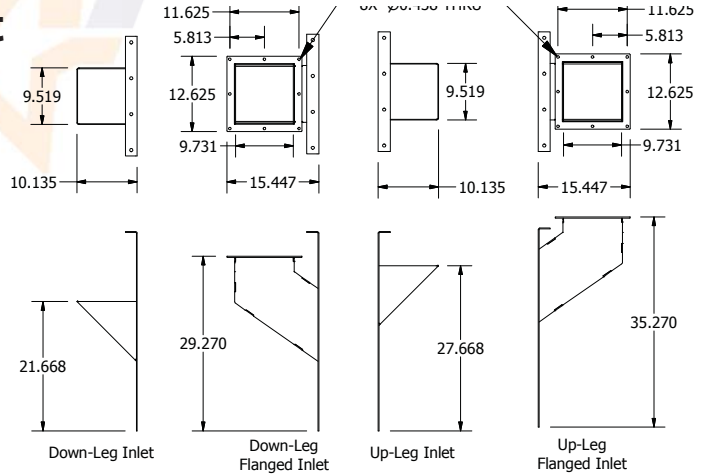
16" Drum x 14" Wide

CLEAN OUT DOOR BOTH SIDES



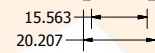
# Spec Sheets

## Bucket Elevator Spec Sheet 2400 Series



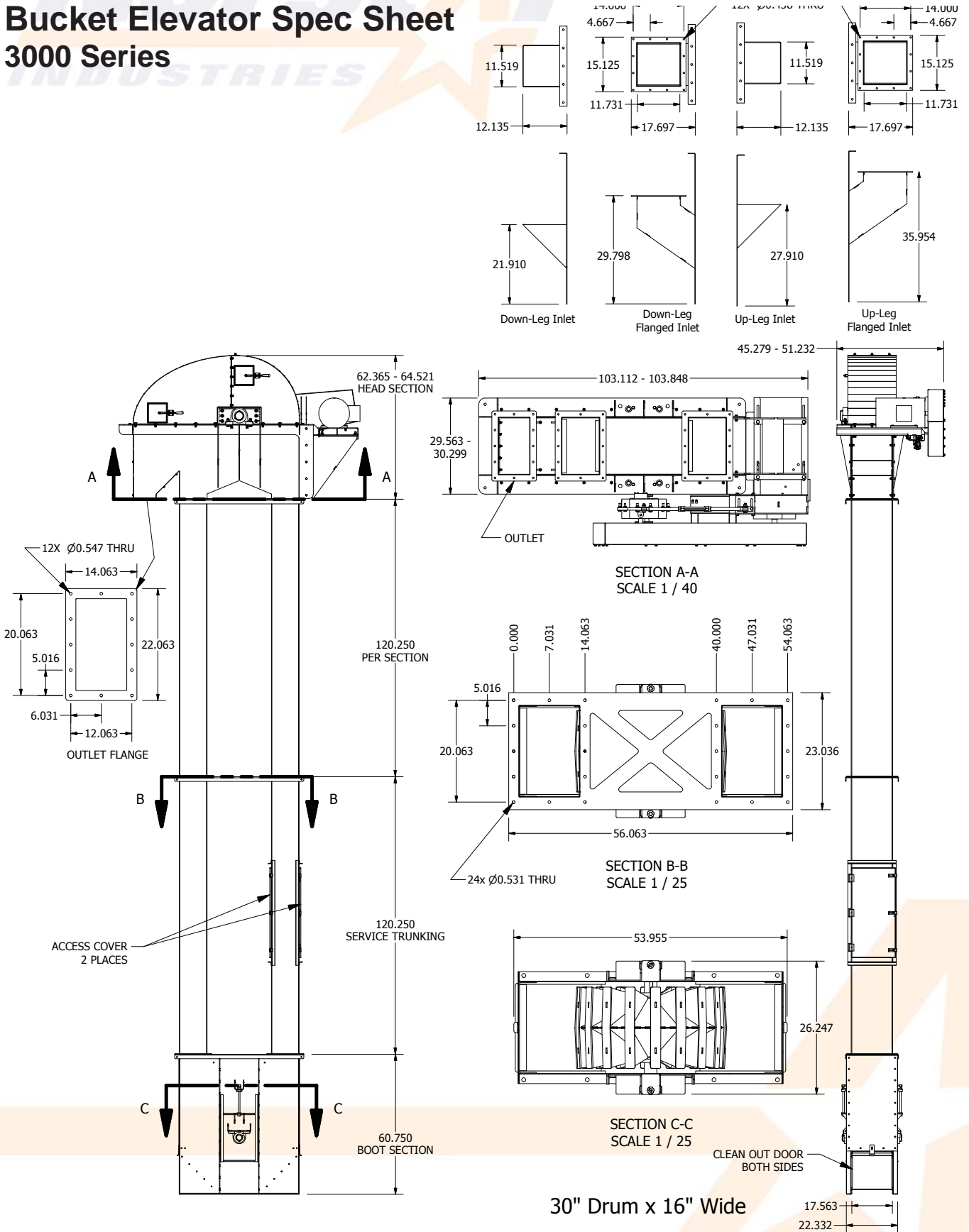
24" Drum x 14" Wide

CLEAN OUT DOOR  
BOTH SIDES



# Spec Sheets

## Bucket Elevator Spec Sheet 3000 Series



# Bolt Torque

## CHECKING BOLT TORQUE

The tables shown below give correct torque values for various bolts and capscrews. Tighten all bolts to the torques specified in chart unless otherwise noted. Check tightness of bolts periodically, using bolt torque chart as a guide. Replace hardware with the same strength bolt.

## ENGLISH TORQUE SPECIFICATION

Bolt Diameter "A"	Bolt Torque*					
	SAE 2		SAE 5		SAE 8	
	N.m.	(lb-ft)	N.m.	(lb-ft)	N.m.	(lb-ft)
1/4"	8	(6)	12	(9)	17	(12)
5/16"	13	(10)	25	(19)	36	(27)
3/8"	27	(20)	45	(33)	63	(45)
7/16"	41	(30)	72	(53)	100	(75)
1/2"	61	(45)	110	(80)	155	(115)
9/16"	95	(70)	155	(115)	220	(165)
5/8"	128	(95)	215	(160)	305	(220)
3/4"	225	(165)	390	(290)	540	(400)
7/8"	230	(170)	570	(420)	880	(650)
1"	345	(225)	850	(630)	1320	(970)



Torque figures indicated above are valid for non-greased or non-oiled threads and heads unless otherwise specified. Therefore, do not grease or oil bolts or capscrews unless otherwise specified in this manual. When using locking elements, increase torque values by 5%.

\*Torque value for bolts and capscrews are identified by their head markings.

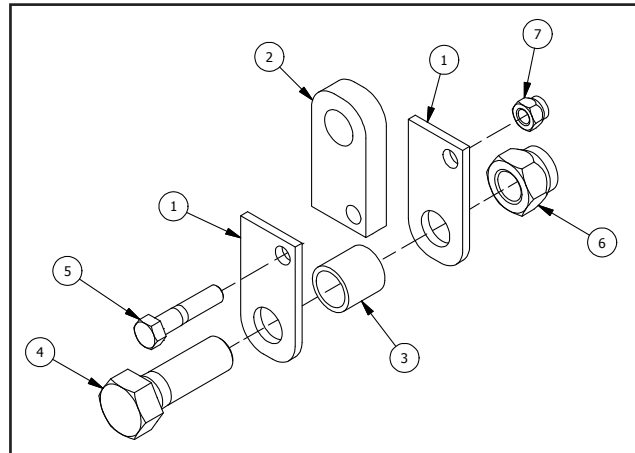


# Exploded Views and Parts Lists

The manual contains a parts list and exploded view for your machine. It is separated into major sections which correspond to the groups shown in the Table of Contents and the accompanying illustrations.

The first page of each major section lists the contents of that section, each of which consists of exploded views and related tabular listings.

#s	DESCRIPTION	PART #	QTY
1	Bracket	00001	2
2	Pivot Bracket	00002	1
3	Spacer	00003	1
4	3/4 x 2 1/4" Bolt	00004	1
5	3/8 x 1 3/4" Bolt	00005	1
6	3/4" Nylon Locknut	00006	1
7	3/8" Nylon Locknut	00007	1



## WHEN ORDERING PARTS

Always give your dealer the model and Serial Number of your machine to assist him in ordering and obtaining the correct parts. Use the exploded view and tabular listing of the area of interest to exactly identify the required part.

## USING THE MANUAL

Parts data consists of exploded view illustrations and associated parts list tables which are read as follows:

### ITEM

The item number is the identifier number from the illustration. For example, number 3 on an illustration points to a component which is item 3 on the accompanying table.

### DESCRIPTION

This column contains the name or description of the part.

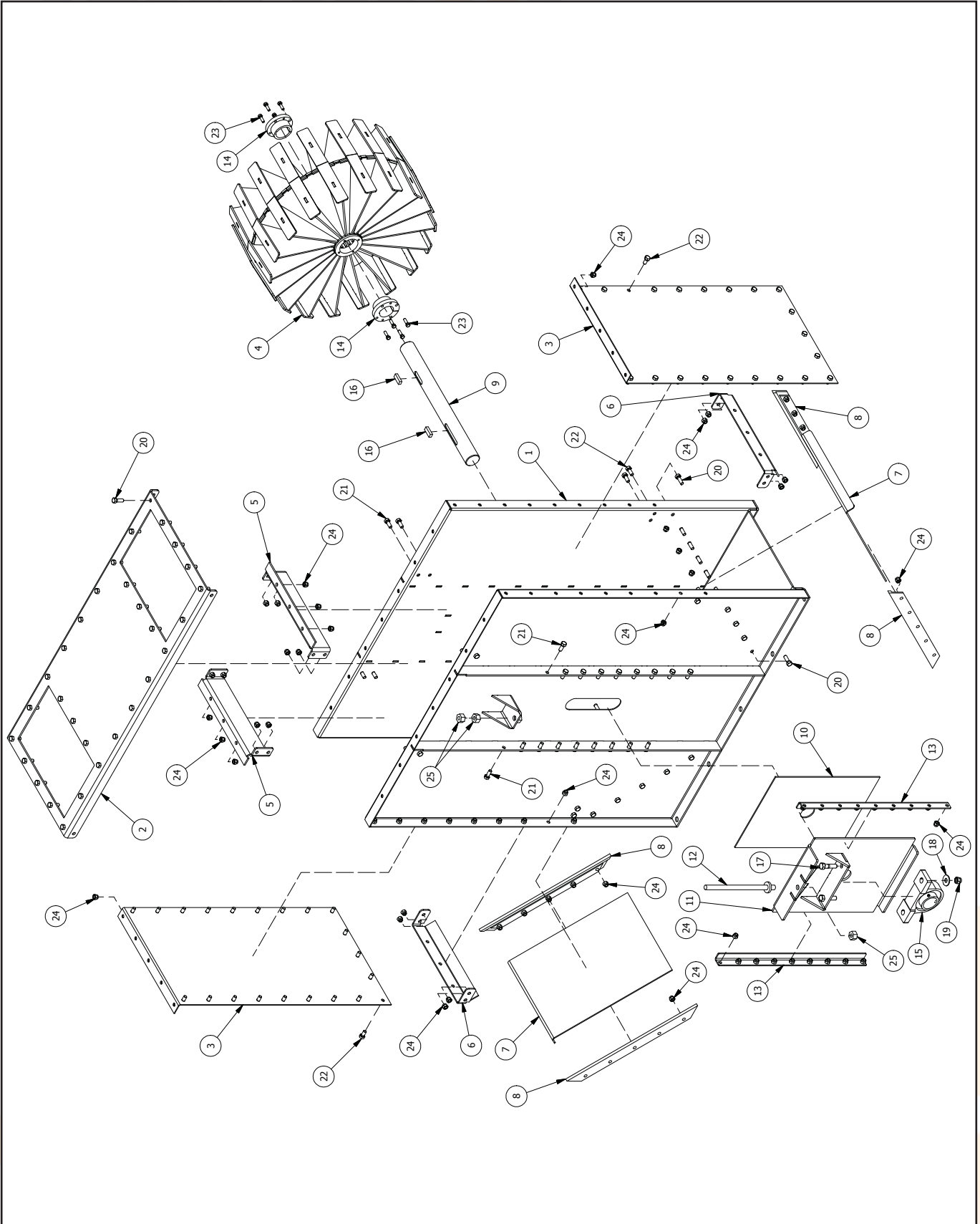
### PART NUMBER

The part number is the number by which the component may be identified and ordered from your dealer.

### QUANTITY

This column contains the quantity of the items in the assembly.

#s	DESCRIPTION	1600 SERIES	QTY	2400 SERIES	QTY	3000 SERIES	QTY
1	Main Boot Weldment	15812	1	15813	1	15814	1
2	Boot Cap	15866	1	15867	1	15868	1
3	Boot Side Plate	17211	2	17212	2	17213	2
4	Wing Pulley Weldment	15902	1	15903	1	15904	1
5	Boot Top Angle	15846	2	15846	2	15847	2
6	Boot Side Angle	16100	2	16101	2	16102	2
7	Cleanout Plate	15884	2	15885	2	15886	2
8	Plastic Cleanout Slide	16094	4	16095	4	16096	4
9	Boot Shaft	16106	1	16107	1	16108	1
10	Plastic Shaft Seal	16060	2	16061	2	16062	2
11	Shaft Tension Weldment	16032	2	16033	2	16034	2
12	Threaded Rod Weldment	16066	2	16067	2	16068	2
13	Tensioner Retaining Angles	16088	4	16089	4	16090	4
14	Wing Pulley Bushing	17761	2	16847	2	16848	2
15	Bearing	17760	2	17194	2	17195	2
16	Key	c/w bushing	2	c/w bushing	2	c/w bushing	2
17	Bearing Bolt	-	-	-	-	-	-
	1/2 x 2" Bolt	10359	4	-	-	-	-
	5/8 x 2 1/4" Bolt	-	-	17199	4	-	-
	5/8 x 2 1/2" Bolt	-	-	-	-	15047	4
	3/4 x 2 3/4" Bolt	-	-	-	-	-	-
	7/8 x 3" Bolt	-	-	-	-	-	-
	1 x 4" Bolt	-	-	-	-	-	-
18	Bearing Washer	-	-	-	-	-	-
	1/2" Flatwasher	10297	4	-	-	-	-
	5/8" Flatwasher	-	-	10323	4	10323	4
	3/4" Flatwasher	-	-	-	-	-	-
	7/8" Flatwasher	-	-	-	-	-	-
	1" Flatwasher	-	-	-	-	-	-
19	Bearing Nylon Locknut	-	-	-	-	-	-
	1/2" Nylon Locknut	10318	4	-	-	-	-
	5/8" Nylon Locknut	-	-	10313	4	10313	4
	3/4" Nylon Locknut	-	-	-	-	-	-
	7/8" Nylon Locknut	-	-	-	-	-	-
	1" Nylon Locknut	-	-	-	-	-	-
20	1/2 x 1 1/2" Bolt	10294	34	10294	38	10294	50
21	1/2 x 1 1/4" Bolt	10964	44	10964	44	10964	44
22	1/2 x 1" Bolt	10302	36	10302	40	10302	50
23	Bushing Bolt	c/w bushing	8	c/w bushing	8	c/w bushing	8
24	1/2" Nylon Locknut	10318	114	10318	122	10318	144
25	3/4" ACME Hex Nut	16892	6	16892	6	16892	6



10ga TRUNKING

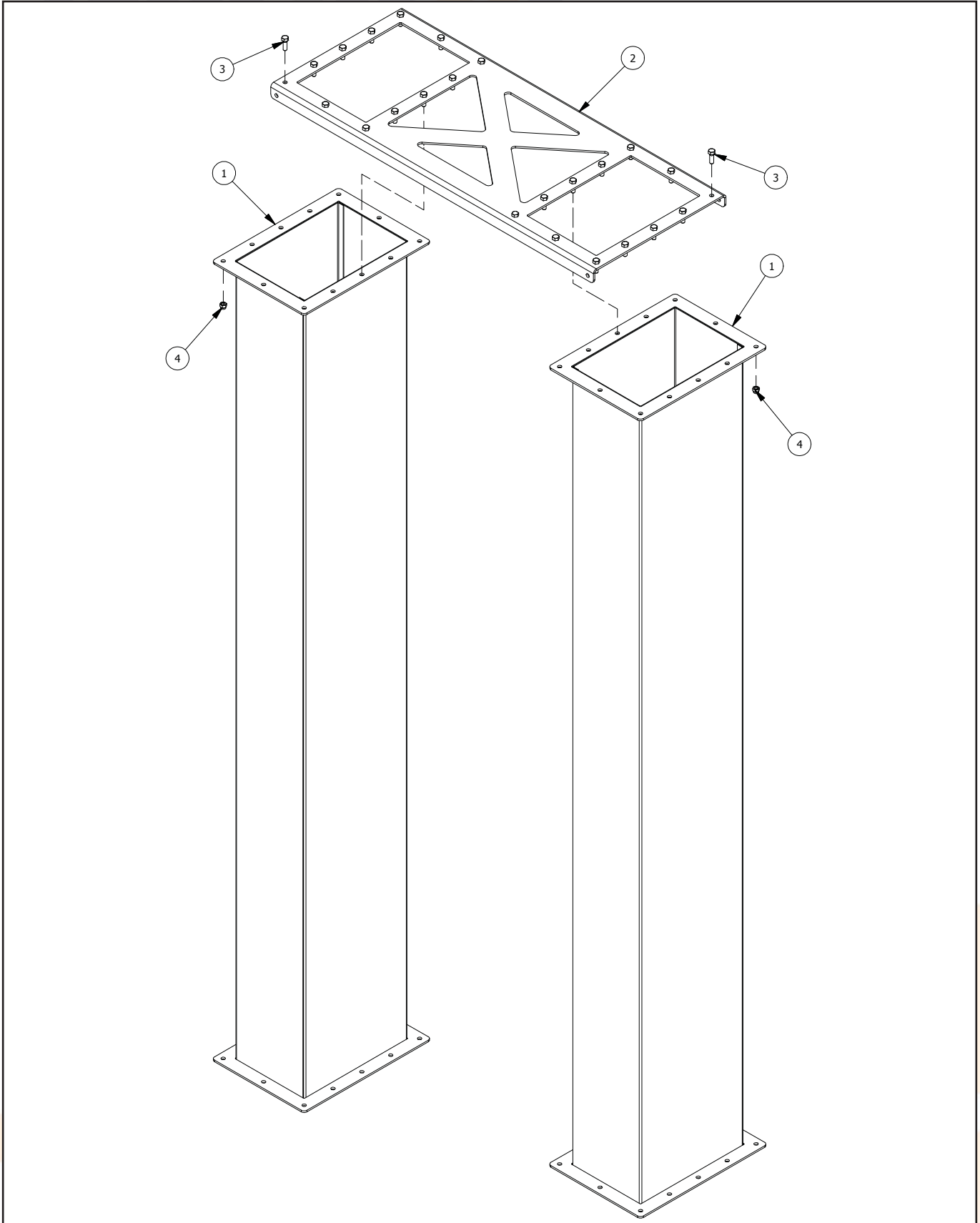
#s	DESCRIPTION	1600 SERIES	QTY	2400 SERIES	QTY	3000 SERIES	QTY
1	Trunk Weldment	16824	2	16824	2	16825	2
2	Trunking Cap	15860	1	15861	1	15862	1
3	1/2 x 1 1/2" Bolt	10294	20	10294	20	10294	24
4	1/2" Nylon Locknut	10318	20	10318	20	10318	24

12ga TRUNKING

#s	DESCRIPTION	1600 SERIES	QTY	2400 SERIES	QTY	3000 SERIES	QTY
1	Trunk Weldment	16124	2	16124	2	16125	2
2	Trunking Cap	15860	1	15861	1	15862	1
3	1/2 x 1 1/2" Bolt	10294	20	10294	20	10294	24
4	1/2" Nylon Locknut	10318	20	10318	20	10318	24

14ga TRUNKING

#s	DESCRIPTION	1600 SERIES	QTY	2400 SERIES	QTY	3000 SERIES	QTY
1	Trunk Weldment	19359	2	19359	2	19360	2
2	Trunking Cap	15860	1	15861	1	15862	1
3	1/2 x 1 1/2" Bolt	10294	20	10294	20	10294	24
4	1/2" Nylon Locknut	10318	20	10318	20	10318	24



10ga TRUNKING

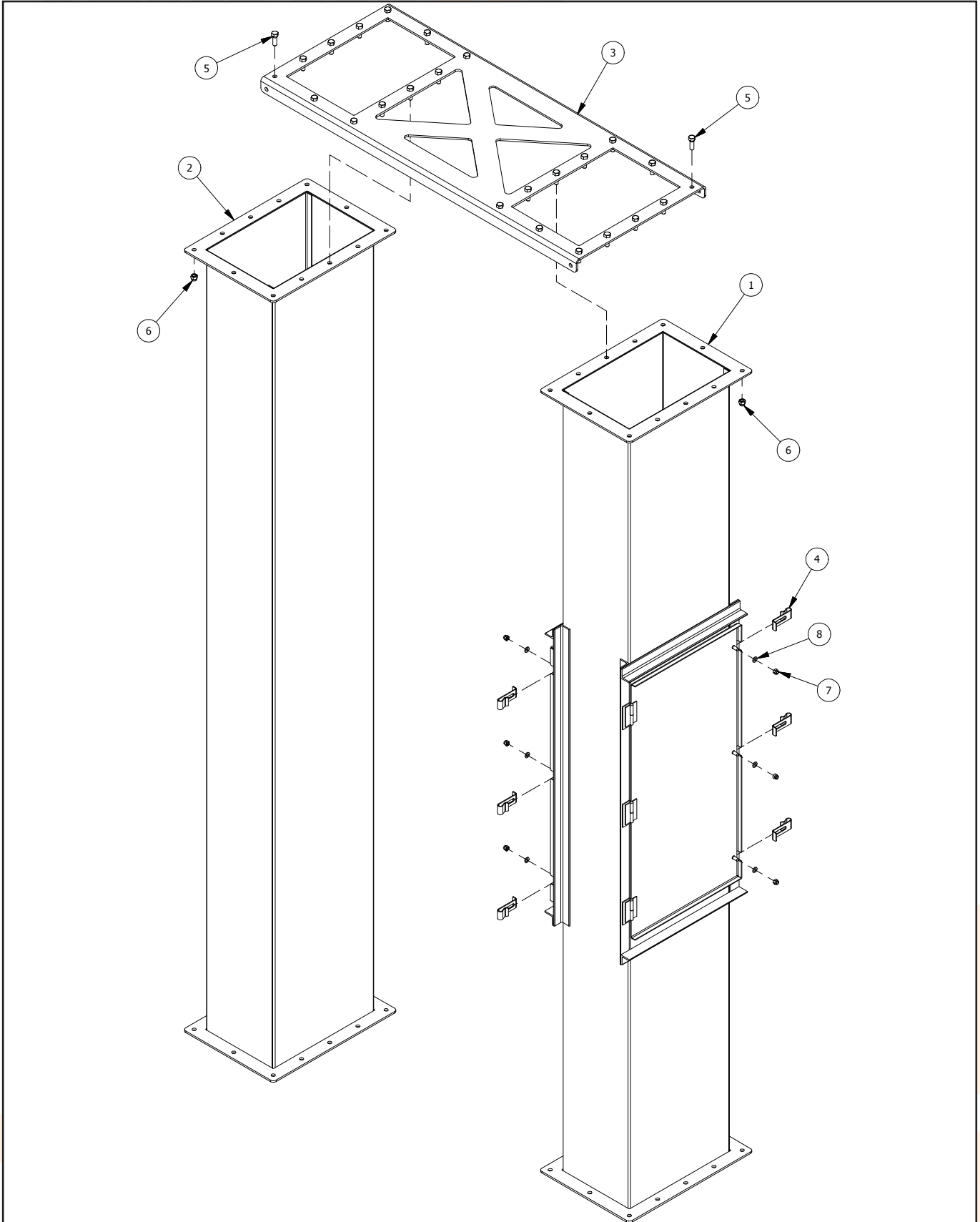
#s	DESCRIPTION	1600 SERIES	QTY	2400 SERIES	QTY	3000 SERIES	QTY
1	Service Trunk Weldment	16828	1	16828	1	16829	1
2	Trunk Weldment	16824	1	16824	1	16825	1
3	Trunking Cap	15860	1	15861	1	15862	1
4	Service Door Latch	16154	6	16154	6	16154	6
5	1/2 x 1 1/2" Bolt	10294	20	10294	20	10294	24
6	1/2" Nylon Locknut	10318	20	10318	20	10318	24
7	3/8" Nylon Locknut	10274	6	10274	6	10274	6
8	3/8" Flatwasher SM OD	10275	6	10275	6	10275	6

12ga TRUNKING

#s	DESCRIPTION	1600 SERIES	QTY	2400 SERIES	QTY	3000 SERIES	QTY
1	Service Trunk Weldment	16128	1	16128	1	16129	1
2	Trunk Weldment	16124	1	16124	1	16125	1
3	Trunking Cap	15860	1	15861	1	15862	1
4	Service Door Latch	16154	6	16154	6	16154	6
5	1/2 x 1 1/2" Bolt	10294	20	10294	20	10294	24
6	1/2" Nylon Locknut	10318	20	10318	20	10318	24
7	3/8" Nylon Locknut	10274	6	10274	6	10274	6
8	3/8" Flatwasher SM OD	10275	6	10275	6	10275	6

14ga TRUNKING

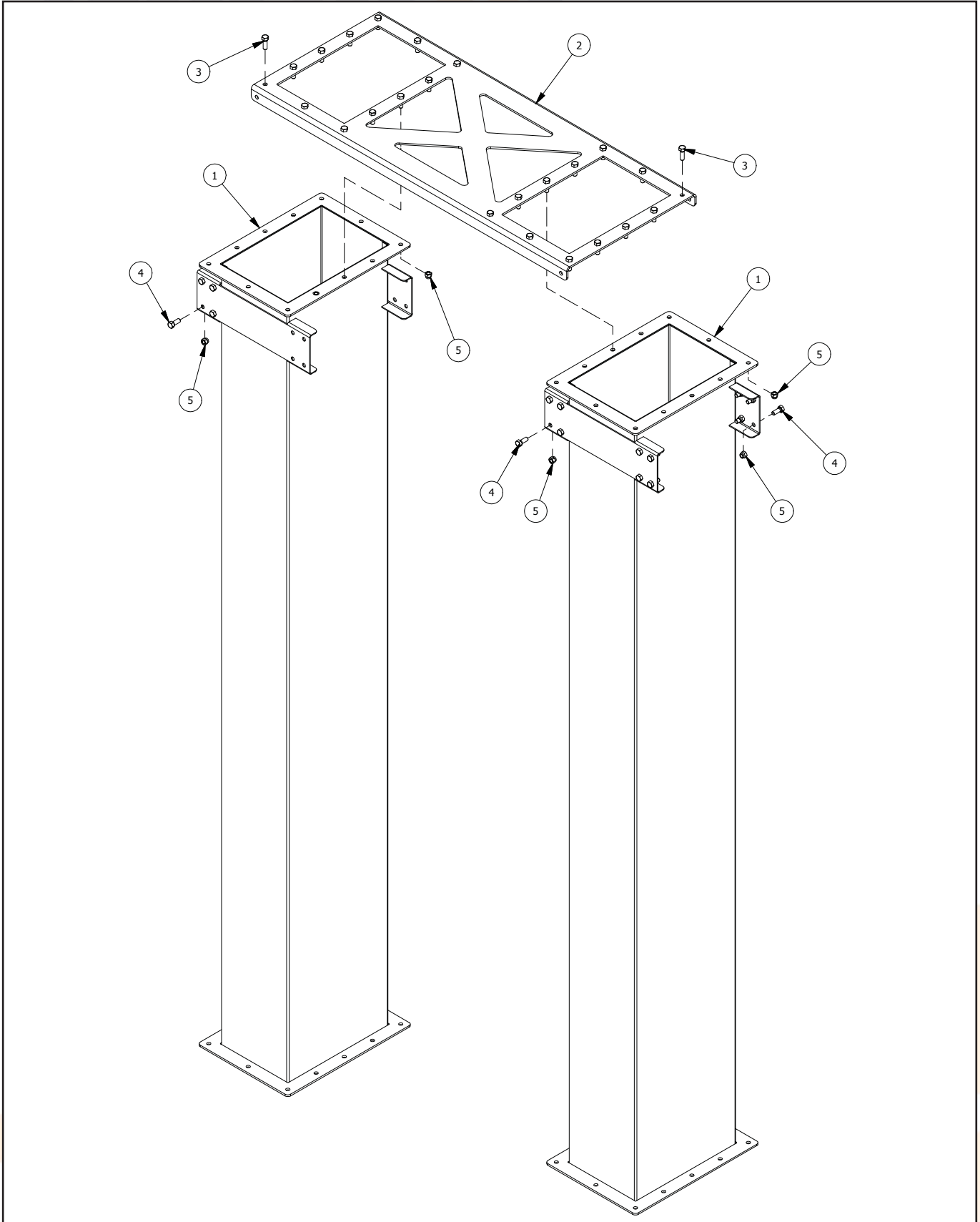
#s	DESCRIPTION	1600 SERIES	QTY	2400 SERIES	QTY	3000 SERIES	QTY
1	Service Trunk Weldment	19363	1	19363	1	19364	1
2	Trunk Weldment	16824	1	16824	1	16825	1
3	Trunking Cap	15860	1	15861	1	15862	1
4	Service Door Latch	16154	6	16154	6	16154	6
5	1/2 x 1 1/2" Bolt	10294	20	10294	20	10294	24
6	1/2" Nylon Locknut	10318	20	10318	20	10318	24
7	3/8" Nylon Locknut	10274	6	10274	6	10274	6
8	3/8" Flatwasher SM OD	10275	6	10275	6	10275	6



## 12ga TRUNKING

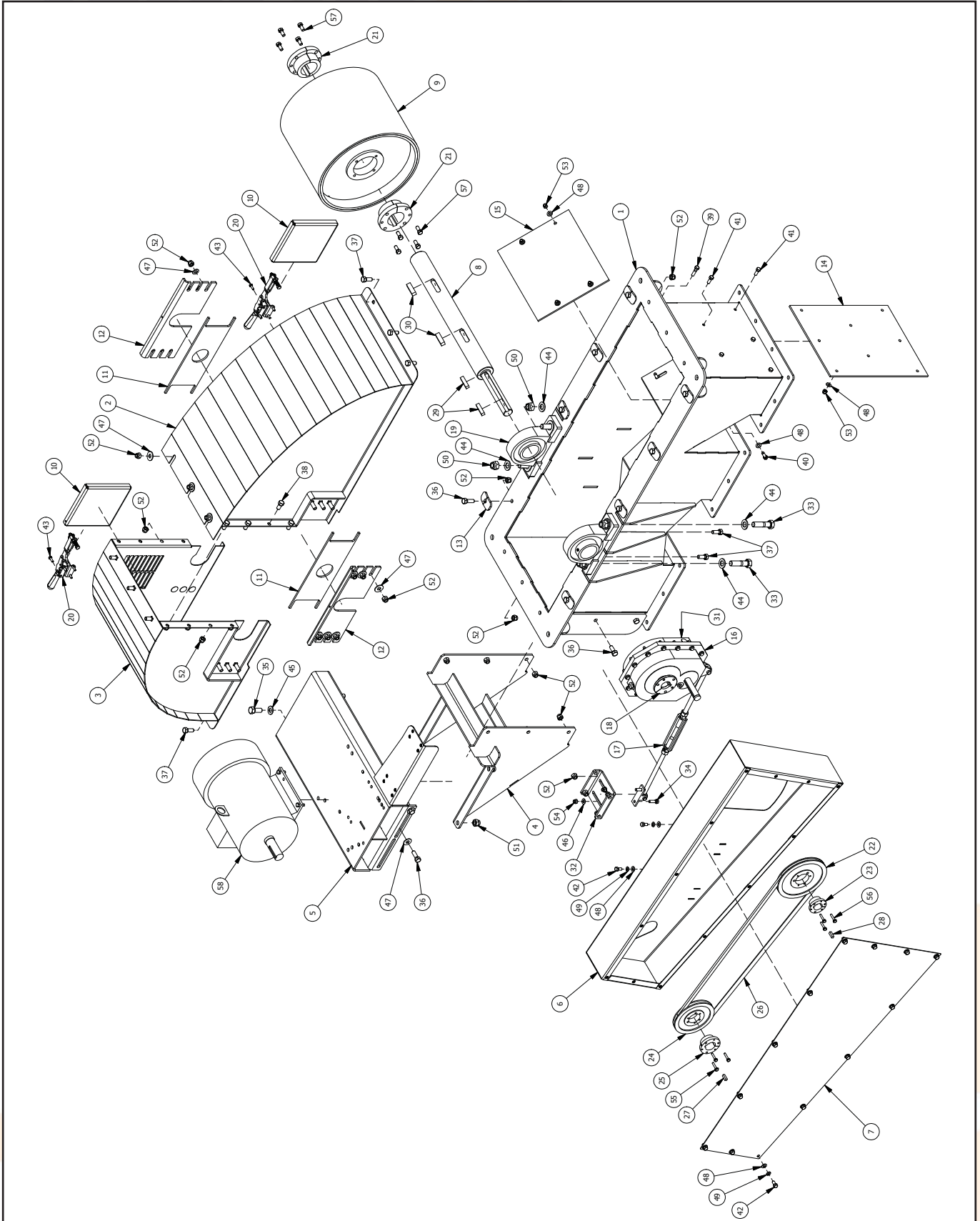
#s	DESCRIPTION	1600 SERIES	QTY	2400 SERIES	QTY	3000 SERIES	QTY
1	Trunk Weldment	18114	2	18115	2	18116	2
2	Trunking Cap	15860	1	15861	1	15862	1
3	1/2 x 1 1/2" Bolt	10294	20	10294	20	10294	24
4	1/2 x 1 1/4" Bolt	10964	16	10964	24	10964	24
5	1/2" Nylon Locknut	10318	36	10318	44	10318	48





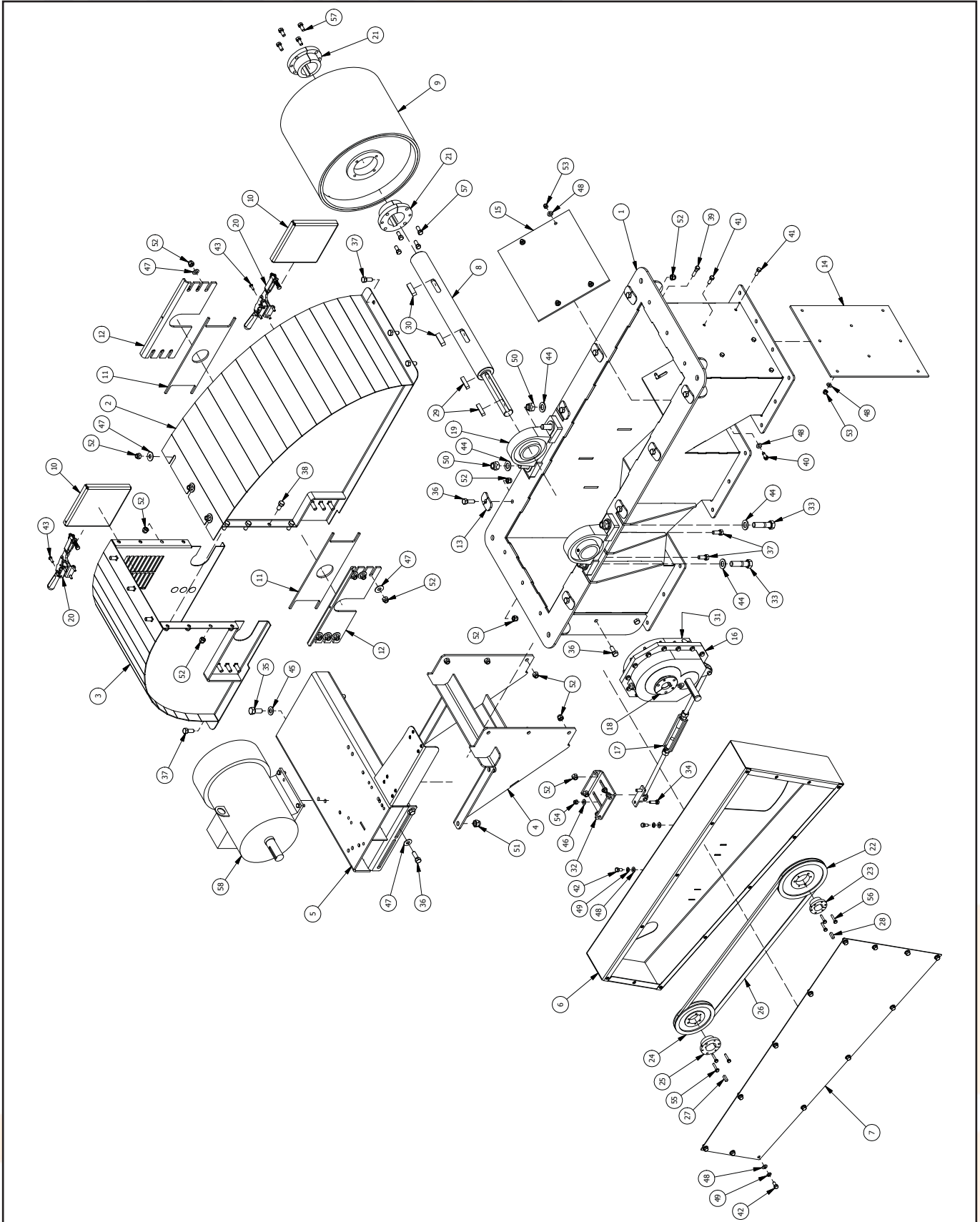
#s	DESCRIPTION	PART #	QTY
<b>Head Discharge Weldment</b>			
1	<b>Heads:</b> 16893, 16894, 16895, 16896, 16897, 16898, 16899, 16900, 16901, 16902, 16903, 16904, 16905, 19765, 19766	16191	1
	<b>Heads:</b> 16906, 16907, 16908, 16909, 16910, 16911, 16913, 16914, 16915, 16916, 16917, 16918, 16920, 16921, 16923, 16924	16192	1
<b>Head Front Hood Weldment</b>			
2	<b>Heads:</b> 16893, 16894, 16895, 16896, 16897, 16898, 16899, 19765, 19766	16413	1
	<b>Heads:</b> 16906, 16907, 16908, 16909, 16910, 16911, 16913, 16914	16414	1
	<b>Heads:</b> 16900, 16901, 16902, 16903, 16904, 16905, 16915, 16916, 16917, 16918, 16920, 16921, 16923, 16924	16424	1
<b>Head Rear Hood Weldment</b>			
3	<b>Heads:</b> 16893, 16894, 16895, 16896, 16897, 16898, 16899, 19765, 19766	16606	1
	<b>Heads:</b> 16906, 16907, 16908, 16909, 16910, 16911, 16913, 16914	16607	1
	<b>Heads:</b> 16900, 16901, 16902, 16903, 16904, 16905, 16915, 16916, 16917, 16918, 16920, 16921, 16923, 16924	16617	1
4	Motor Mount Base Weldment	17600	1
5	Motor Mount Slider Weldment	17656	1
6	Inner Belt Guard	19560	1
7	Outer Belt Guard	19544	1
<b>Driveshaft</b>			
8	<b>Heads:</b> 16893, 16894	17697	1
	<b>Heads:</b> 16895, 16896, 16897, 16898	17698	1
	<b>Heads:</b> 16899, 19765, 19766	17699	1
	<b>Heads:</b> 16900, 16901	17700	1
	<b>Heads:</b> 16902, 16903, 16904, 16905	17701	1
	<b>Heads:</b> 16906, 16907	17702	1
	<b>Heads:</b> 16908, 16909, 16910, 16911	17703	1
	<b>Heads:</b> 16913, 16914	17704	1
	<b>Heads:</b> 16915, 16916	17705	1
	<b>Heads:</b> 16917, 16918	17706	1
9	<b>Heads:</b> 16920, 16921	17707	1
	<b>Heads:</b> 16923, 16924	17708	1
<b>Head Pulley</b>			
9	<b>Heads:</b> 16893, 16894, 16895, 16896, 16897, 16898, 16899, 19765, 19766	16295	1
	<b>Heads:</b> 16906, 16907, 16908, 16909, 16910, 16911, 16913, 16914	16296	1
	<b>Heads:</b> 16900, 16901, 16902, 16903, 16904, 16905, 16915, 16916, 16917, 16918, 16920, 16921, 16923, 16924	16297	1
10	Head Inspection Panel	16702	2

#s	DESCRIPTION	PART #	QTY
<b>Shaft Plastic Seal Plate</b>			
11	<b>Heads:</b> 16893, 16894, 16895, 16896, 16897, 16898, 16899, 19765, 19766	16678	2
	<b>Heads:</b> 16906, 16907, 16908, 16909, 16910, 16911, 16913, 16914	16679	2
	<b>Heads:</b> 16900, 16901, 16902, 16903, 16904, 16905, 16915, 16916, 16917, 16918, 16920, 16921, 16923, 16924	16689	2
<b>Shaft Seal Clamp Plate</b>			
12	<b>Heads:</b> 16893, 16894, 16895, 16896, 16897, 16898, 16899, 19765, 19766	16654	2
	<b>Heads:</b> 16906, 16907, 16908, 16909, 16910, 16911, 16913, 16914	16655	2
	<b>Heads:</b> 16900, 16901, 16902, 16903, 16904, 16905, 16915, 16916, 16917, 16918, 16920, 16921, 16923, 16924	16665	2
13	Hood Clamp Tab	16703	8
14	Head End Wear Plate	16717	1
15	Head Throat Wear Plate	16235	1
<b>Gearbox</b>			
16	<b>Heads:</b> 16893, 16894, 16906, 16907	19696	1
	<b>Heads:</b> 16895, 16896, 16897, 16898, 16908, 16909, 16910, 16911	19698	1
	<b>Heads:</b> 16899, 16900, 16901, 16913, 16914, 16915, 16916, 19765, 19766	19700	1
	<b>Heads:</b> 16902, 16903, 16904, 16905, 16917, 16918, 16920, 16921	19702	1
	<b>Heads:</b> 16923, 16924	19704	1
<b>Torque Arm Assembly</b>			
17	<b>Heads:</b> 16893, 16894, 16906, 16907	19711	1
	<b>Heads:</b> 16895, 16896, 16897, 16898, 16908, 16909, 16910, 16911	19712	1
	<b>Heads:</b> 16899, 16900, 16901, 16913, 16914, 16915, 16916, 19765, 19766	19713	1
	<b>Heads:</b> 16902, 16903, 16904, 16905, 16917, 16918, 16920, 16921	19714	1
	<b>Heads:</b> 16923, 16924	19715	1
<b>Gearbox Bushing Kit</b>			
18	<b>Heads:</b> 16893, 16894, 16906, 16907	19721	1
	<b>Heads:</b> 16895, 16896, 16897, 16898, 16908, 16909, 16910, 16911	19722	1
	<b>Heads:</b> 16899, 16900, 16901, 16913, 16914, 16915, 16916, 19765, 19766	19723	1
	<b>Heads:</b> 16902, 16903, 16904, 16905, 16917, 16918, 16920, 16921	19724	1
	<b>Heads:</b> 16923, 16924	19725	1
<b>Bearing</b>			
19	<b>Heads:</b> 16893, 16894, 16895, 16896, 16897, 16898, 16899, 19765, 19766	17195	2
	<b>Heads:</b> 16906, 16907, 16908, 16909, 16910, 16911, 16913, 16914	17838	2
	<b>Heads:</b> 16900, 16901, 16902, 16903, 16904, 16905, 16915, 16916, 16917, 16918, 16920, 16921, 16923, 16924	17848	2



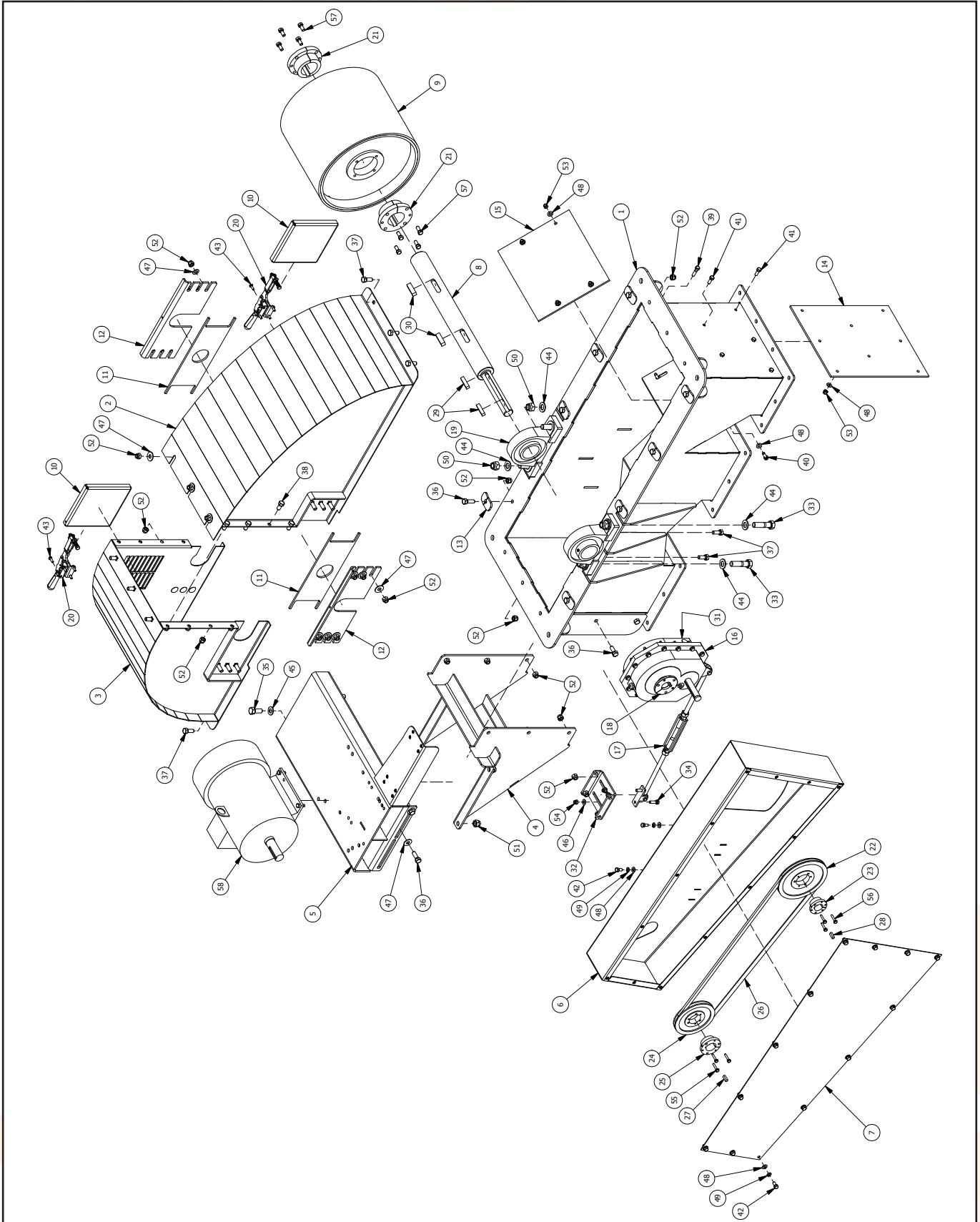
#s	DESCRIPTION	PART #	QTY
20	Toggle Clamp	17846	2
<b>Head Pulley Bushing</b>			
	<b>Heads:</b> 16893, 16894, 16895, 16896, 16897, 16898, 16899, 19765, 19766	16848	2
21	<b>Heads:</b> 16906, 16907, 16908, 16909, 16910, 16911, 16913, 16914	17234	2
	<b>Heads:</b> 16900, 16901, 16902, 16903, 16904, 16905, 16915, 16916, 16917, 16918, 16920, 16921, 16923, 16924	16711	2
22	Pulley	see next page	
23	Hub	see next page	
24	Motor Pulley	see next page	
25	Motor Hub	see next page	
26	Belts	see next page	
27	Motor Pulley Key	c/w motor hub	1
28	Pulley Key	c/w hub	1
29	Gearbox Bushing Key	c/w bushing kit	2
30	Head Pulley Key	c/w head bushing	2
<b>Gearbox Backstop</b>			
	<b>Heads:</b> 16893, 16894, 16906, 16907	19731	1
	<b>Heads:</b> 16895, 16896, 16897, 16898, 16908, 16909, 16910, 16911	19732	1
31	<b>Heads:</b> 16899, 16900, 16901, 16913, 16914, 16915, 16916, 19765, 19766	19733	1
	<b>Heads:</b> 16902, 16903, 16904, 16905, 16917, 16918, 16920, 16921	19734	1
	<b>Heads:</b> 16923, 16924	19735	1
<b>Torque Arm Mount</b>			
	<b>Heads:</b> 16893, 16894, 16906, 16907	19521	1
32	<b>Heads:</b> 16895, 16896, 16897, 16898, 16899, 16900, 16901, 16908, 16909, 16910, 16911, 16913, 16914, 16915, 16916, 19765, 19766	19522	1
	<b>Heads:</b> 16902, 16903, 16904, 16905, 16917, 16918, 16920, 16921, 16923, 16924	19523	1
33	3/4 x 3" Bolt	18943	4
	<b>3/8 x 1 1/4" Bolt</b>	10311	2
	<b>Heads:</b> 16893, 16894, 16906, 16907		
	<b>7/16 x 1 1/4" Bolt</b>	19755	2
34	<b>Heads:</b> 16895, 16896, 16897, 16898, 16899, 16900, 16901, 16908, 16909, 16910, 16911, 16913, 16914, 16915, 16916, 19765, 19766		
	<b>1/2 x 1 1/2" Bolt</b>	10294	2
	<b>Heads:</b> 16902, 16903, 16904, 16905, 16917, 16918, 16920, 16921, 16923, 16924		

#s	DESCRIPTION	PART #	QTY
35	5/8 x 1 1/2" Bolt	10355	4
36	1/2 x 1 1/2" Bolt	10294	18
37	1/2 x 1 1/4" Bolt	10964	10
38	1/2 x 1" Bolt	10302	8
39	3/8 x 1 1/2" Bolt	10293	3
40	3/8 x 1 1/4" Bolt	10311	4
41	3/8 x 1" Bolt	10277	5
42	3/8 x 3/4" Bolt	10369	21
43	1/4 x 3/4" Self-tapping Screw	10299	8
44	3/4" Flatwasher	10296	8
45	5/8" Flatwasher	10314	4
	<b>3/8" Flatwasher SM OD</b>	10275	2
	<b>Heads:</b> 16893, 16894, 16906, 16907		
	<b>7/16" Flatwasher</b>	19756	2
46	<b>Heads:</b> 16895, 16896, 16897, 16898, 16899, 16900, 16901, 16908, 16909, 16910, 16911, 16913, 16914, 16915, 16916, 19765, 19766		
	<b>1/2" Flatwasher</b>	10297	2
	<b>Heads:</b> 16902, 16903, 16904, 16905, 16917, 16918, 16920, 16921, 16923, 16924		
47	1/2" Flatwasher	10297	19
48	3/8" Flatwasher SM OD	10275	37
49	3/8" Lockwasher	10276	21
50	3/4" Nylon Locknut	14198	4
51	5/8" Nylon Locknut	10313	4
52	1/2" Nylon Locknut	10318	47
53	3/8" Nylon Locknut	10274	12
	<b>3/8" Nylon Locknut</b>	10274	2
	<b>Heads:</b> 16893, 16894, 16906, 16907		
	<b>7/16" Nylon Locknut</b>	15779	2
54	<b>Heads:</b> 16895, 16896, 16897, 16898, 16899, 16900, 16901, 16908, 16909, 16910, 16911, 16913, 16914, 16915, 16916, 19765, 19766		
	<b>1/2" Nylon Locknut</b>	10318	2
	<b>Heads:</b> 16902, 16903, 16904, 16905, 16917, 16918, 16920, 16921, 16923, 16924		
55	Motor Hub Bolt	c/w motor hub	3
56	Hub Bolt	c/w hub	3
57	Head Pulley Bushing Bolt	c/w head bushing	4
58	Motor	customer supplied	1





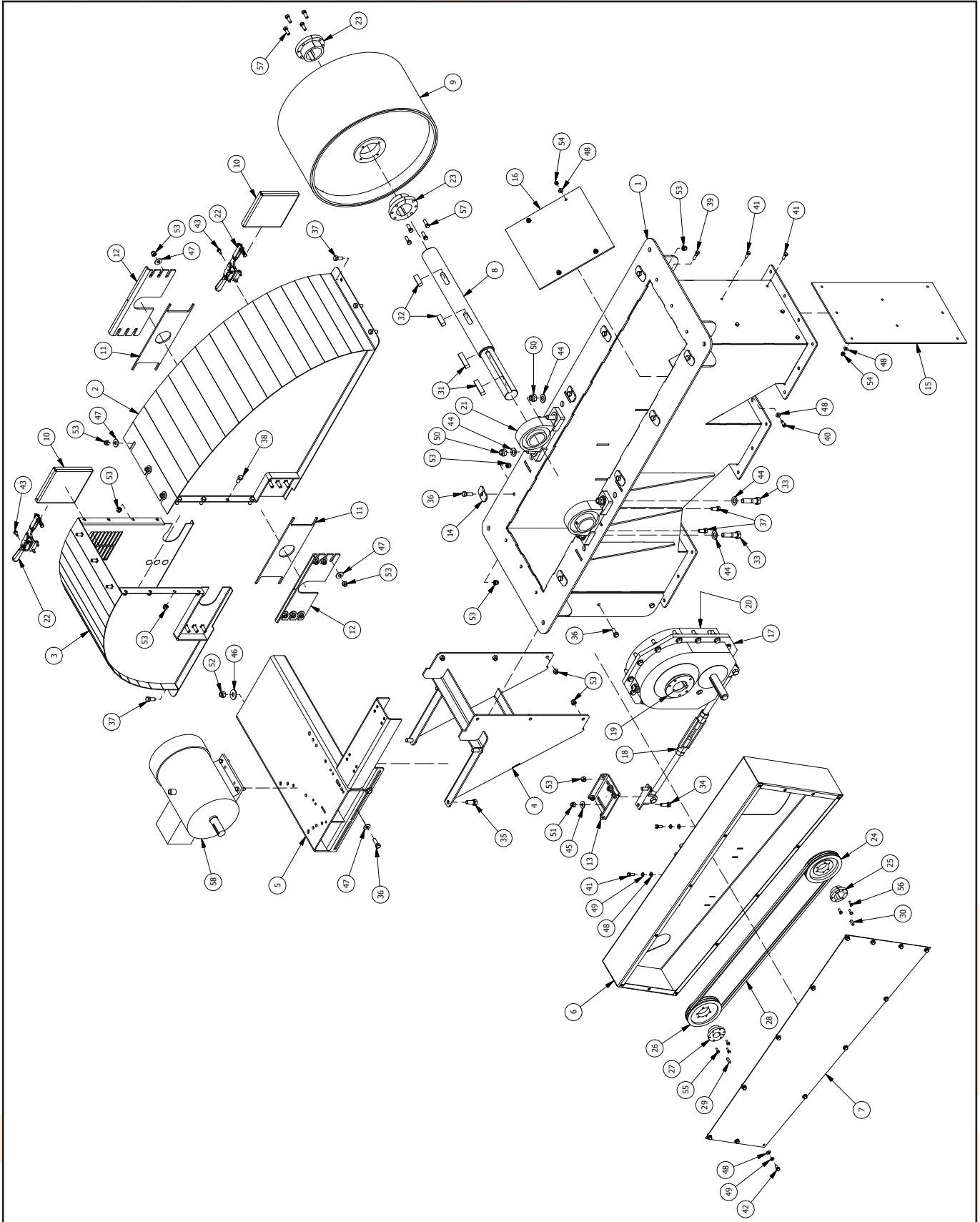
Head Part #	Item 24 - Pulley			Item 25 - Hub			Item 26 - Motor Pulley			Item 27 - Motor Hub			Item 28 - Belts		
	SIZE	PART #	QTY	SIZE	PART #	QTY	SIZE	PART #	QTY	SIZE	PART #	QTY	SIZE	PART #	QTY
16893	3V801	17896	1	SDS1	19746	1	3V651	17888	1	SH118	17932	1	3VX800	13866	1
16894	3V801	17896	1	SDS1	19746	1	3V651	17888	1	SH138	17933	1	3VX850	17942	1
16895	3V801	17896	1	SDS118	17922	1	3V651	17888	1	SH118	17932	1	3VX800	13866	1
16896	3V801	17896	1	SDS118	17922	1	3V651	17888	1	SH138	17933	1	3VX850	17942	1
16897	3V802	17897	1	SDS118	17922	1	3V652	17889	1	SDS138	17923	1	3VX850	17942	2
16898	3V802	17897	1	SDS118	17922	1	3V652	17889	1	SDS158	13839	1	3VX850	17942	2
16899	3V802	17897	1	SDS138	17923	1	3V652	17889	1	SDS158	13839	1	3VX850	17942	2
16900	3V802	17897	1	SDS138	17923	1	3V652	17889	1	SDS158	13839	1	3VX850	17942	2
16901	3V803	17898	1	SK138	13833	1	3V653	17890	1	SDS158	13839	1	3VX850	17942	3
16902	3V802	17897	1	SDS1716	17925	1	3V652	17889	1	SDS158	13839	1	3VX850	17942	2
16903	3V803	17898	1	SK1716	17938	1	3V653	17890	1	SDS158	13839	1	3VX850	17942	3
16904	3V803	17898	1	SK1716	17938	1	3V653	17890	1	SDS178	17924	1	3VX900	17943	3
16905	3V803	17898	1	SK1716	17938	1	3V653	17890	1	SDS178	17924	1	3VX900	17943	3
16906	3V801	17896	1	SDS1	19746	1	3V651	17888	1	SH118	17932	1	3VX800	13866	1
16907	3V801	17896	1	SDS1	19746	1	3V651	17888	1	SH138	17933	1	3VX800	13866	1
16908	3V801	17896	1	SDS118	17922	1	3V651	17888	1	SH118	17932	1	3VX800	13866	1
16909	3V801	17896	1	SDS118	17922	1	3V651	17888	1	SH138	17933	1	3VX800	13866	1
16910	3V802	17897	1	SDS118	17922	1	3V652	17889	1	SDS138	17923	1	3VX800	13866	2
16911	3V802	17897	1	SDS118	17922	1	3V652	17889	1	SDS158	13839	1	3VX850	17942	2
16913	3V802	17897	1	SDS138	17923	1	3V652	17889	1	SDS138	17923	1	3VX850	17942	2
16914	3V802	17897	1	SDS138	17923	1	3V652	17889	1	SDS158	13839	1	3VX850	17942	2
16915	3V802	17897	1	SDS138	17923	1	3V652	17889	1	SDS158	13839	1	3VX850	17942	2
16916	3V803	17898	1	SK138	13833	1	3V653	17890	1	SDS158	13839	1	3VX850	17942	3
16917	3V802	17897	1	SDS1716	17925	1	3V652	17889	1	SDS158	13839	1	3VX850	17942	2
16918	3V803	17898	1	SK1716	17938	1	3V653	17890	1	SDS158	13839	1	3VX850	17942	3
16920	3V803	17898	1	SK1716	17938	1	3V653	17890	1	SDS178	17924	1	3VX900	17943	3
16921	3V804	13814	1	SK1716	17938	1	3V654	13811	1	SK178	17937	1	3VX900	17943	4
16923	3V803	17898	1	SK158	18810	1	3V653	17890	1	SDS178	17924	1	3VX900	17943	3
16924	3V804	13814	1	SK158	18810	1	3V654	13811	1	SK178	17937	1	3VX900	17943	4
19765	3V801	17896	1	SDS138	17923	1	3V651	17888	1	SH138	17933	1	3VX850	17942	1
19766	3V802	17897	1	SDS138	17923	1	3V652	17889	1	SDS138	17923	1	3VX850	17942	2



#s	DESCRIPTION	PART #	QTY
<b>Head Discharge Weldment</b>			
	<b>Heads:</b> 16925, 16926, 16927, 16928, 16929, 16930, 16931, 16932, 16933, 16934, 16935, 16936, 16937, 16938, 19767, 19768	16193	1
1	<b>Heads:</b> 16939, 16940, 16941, 16942, 16943, 16944, 16946, 16947, 16948, 16949, 16950, 16951, 16952, 16953, 16954, 16955, 16956	16194	1
	<b>Heads:</b> 16957, 16958, 16959, 16960, 16961, 16962, 16963, 16964, 16965, 16966, 16967, 16968, 16969, 16970, 16971, 16972, 16973, 16974, 16975, 16976, 19769, 19770, 19771	16195	1
<b>Head Front Hood Weldment</b>			
	<b>Heads:</b> 16925, 16926, 16927, 16928, 16929, 16930, 16931, 16932, 16933, 16939, 16940, 16941, 16942, 16943, 16944, 16946, 16947, 19767, 19768	16415	1
2	<b>Heads:</b> 16957, 16958, 16959, 16960, 16961, 16962, 16963, 16964, 16965, 16966, 16967, 16968, 19769, 19770	16416	1
	<b>Heads:</b> 16934, 16935, 16936, 16937, 16938	16425	1
	<b>Heads:</b> 16948, 16949, 16950, 16951, 16952, 16953, 16954, 16955, 16956, 16969, 16970, 16971, 16972, 16973, 16974, 16975, 16976, 19771	16426	1
<b>Head Rear Hood Weldment</b>			
	<b>Heads:</b> 16925, 16926, 16927, 16928, 16929, 16930, 16931, 16932, 16933, 16939, 16940, 16941, 16942, 16943, 16944, 16946, 16947, 19767, 19768	16608	1
3	<b>Heads:</b> 16957, 16958, 16959, 16960, 16961, 16962, 16963, 16964, 16965, 16966, 16967, 16968, 19769, 19770	16609	1
	<b>Heads:</b> 16934, 16935, 16936, 16937, 16938	16618	1
	<b>Heads:</b> 16948, 16949, 16950, 16951, 16952, 16953, 16954, 16955, 16956, 16969, 16970, 16971, 16972, 16973, 16974, 16975, 16976, 19771	16619	1
4	Motor Mount Base Weldment	17601	1
5	Motor Mount Slider Weldment	17657	1
<b>Inner Belt Guard</b>			
	<b>Heads:</b> 16925, 16926, 16927, 16939, 16940, 16941, 16942, 16943, 16944, 16957, 16958, 16959, 16960, 16961, 16962, 16963, 16964, 19767, 19768	19562	1
6	<b>Heads:</b> 16928, 16929, 16930, 16931, 16932, 16933, 16934, 16935, 16936, 16937, 16938, 16946, 16947, 16948, 16949, 16950, 16951, 16952, 16953, 16954, 16955, 16956, 16965, 16966, 16967, 16968, 16969, 16970, 16971, 16972, 16973, 16974, 16975, 16976, 19769, 19770, 19771	19561	1

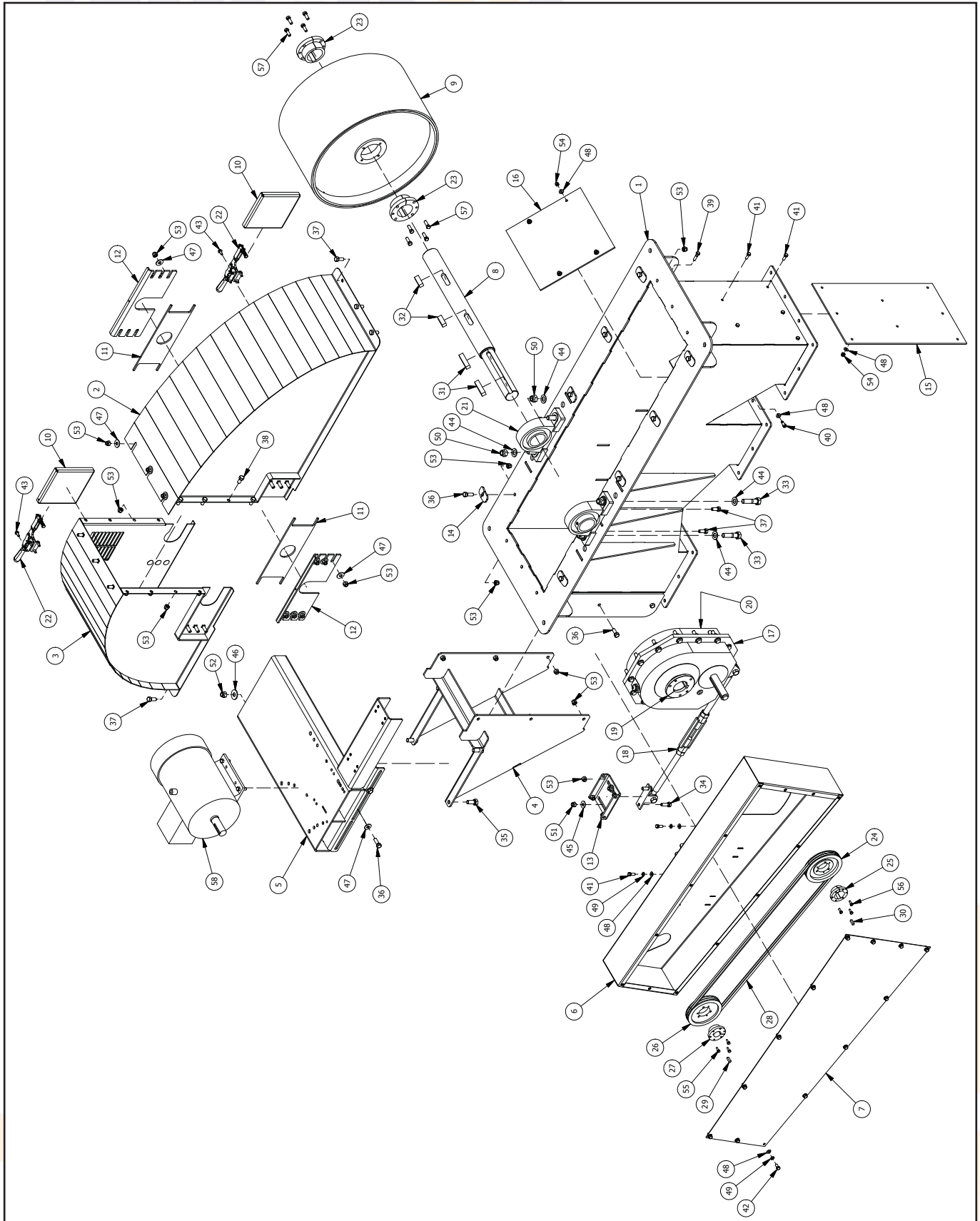
#s	DESCRIPTION	PART #	QTY
<b>Outer Belt Guard</b>			
	<b>Heads:</b> 16925, 16926, 16927, 16939, 16940, 16941, 16942, 16943, 16944, 16957, 16958, 16959, 16960, 16961, 16962, 16963, 16964, 19767, 19768	19546	1
7	<b>Heads:</b> 16928, 16929, 16930, 16931, 16932, 16933, 16934, 16935, 16936, 16937, 16938, 16946, 16947, 16948, 16949, 16950, 16951, 16952, 16953, 16954, 16955, 16956, 16965, 16966, 16967, 16968, 16969, 16970, 16971, 16972, 16973, 16974, 16975, 16976, 19769, 19770, 19771	19545	1
<b>Driveshaft</b>			
	<b>Heads:</b> 16925, 16926	17709	1
	<b>Heads:</b> 16927, 19767, 19768	17710	1
	<b>Heads:</b> 16928, 16929, 16930	17711	1
	<b>Heads:</b> 16931, 16932, 16933, 16946, 16947	17712	1
	<b>Heads:</b> 16934, 16935, 16936, 16961, 16962, 16963, 16964, 16965, 16966, 16967	17713	1
8	<b>Heads:</b> 16937, 16938, 16968, 19769, 19770	17714	1
	<b>Heads:</b> 16939, 16940, 16941	17715	1
	<b>Heads:</b> 16942, 16943, 16944	17716	1
	<b>Heads:</b> 16948, 16949, 16950	17717	1
	<b>Heads:</b> 16951, 16952, 16953, 16954, 16973, 16974	17718	1
	<b>Heads:</b> 16955, 16956, 16972, 19771	17719	1
	<b>Heads:</b> 16957, 16958, 16959, 16960	17720	1
	<b>Heads:</b> 16969, 16970, 16971	17721	1
	<b>Heads:</b> 16975, 16976	17722	1
<b>Head Pulley</b>			
	<b>Heads:</b> 16925, 16926, 16927, 16928, 16929, 16930, 16931, 16932, 16933, 16939, 16940, 16941, 16942, 16943, 16944, 16946, 16947	16298	1
9	<b>Heads:</b> 16934, 16935, 16936, 16937, 16938, 16957, 16958, 16959, 16960, 16961, 16962, 16963, 16964, 16965, 16966, 16967, 16968, 19769, 19770	16299	1
	<b>Heads:</b> 16948, 16949, 16950, 16951, 16952, 16953, 16954, 16955, 16956, 16969, 16970, 16971, 16972, 16973, 16974, 16975, 16976, 19771	16300	1
10	Head Inspection Panel	16702	2





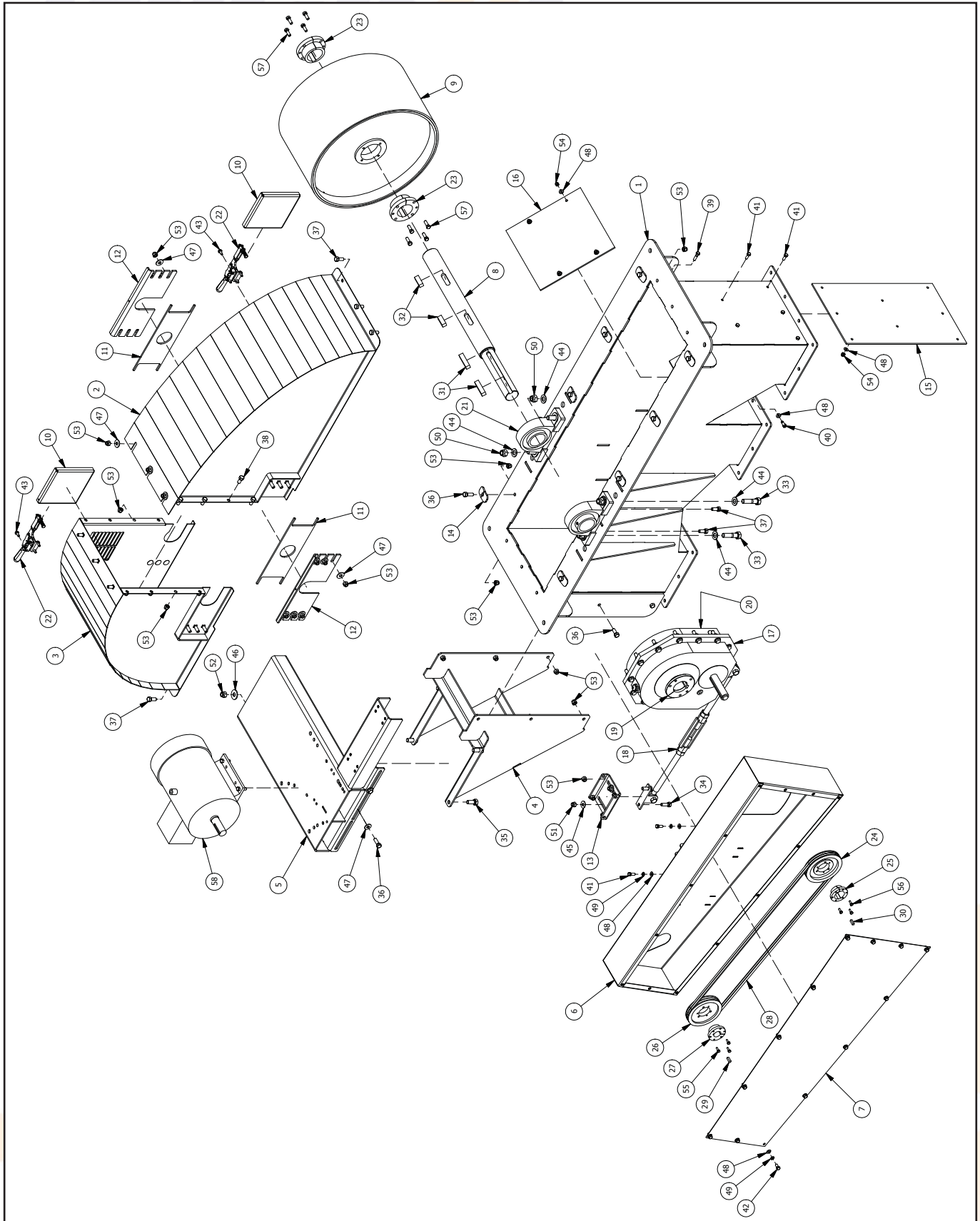
#s	DESCRIPTION	PART #	QTY
<b>Shaft Plastic Seal Plate</b>			
11	<b>Heads:</b> 16925, 16926, 16927, 16928, 16929, 16930, 16931, 16932, 16933, 16939, 16940, 16941, 16942, 16943, 16944, 16946, 16947, 19767, 19768	16680	2
	<b>Heads:</b> 16957, 16958, 16959, 16960, 16961, 16962, 16963, 16964, 16965, 16966, 16967, 16968, 19769, 19770	16681	2
	<b>Heads:</b> 16934, 16935, 16936, 16937, 16938	16690	2
	<b>Heads:</b> 16948, 16949, 16950, 16951, 16952, 16953, 16954, 16955, 16956, 16969, 16970, 16971, 16972, 16973, 16974, 16975, 16976, 19771	16691	2
<b>Shaft Seal Clamp Plate</b>			
12	<b>Heads:</b> 16925, 16926, 16927, 16928, 16929, 16930, 16931, 16932, 16933, 16939, 16940, 16941, 16942, 16943, 16944, 16946, 16947, 19767, 19768	16656	2
	<b>Heads:</b> 16957, 16958, 16959, 16960, 16961, 16962, 16963, 16964, 16965, 16966, 16967, 16968, 19769, 19770	16657	2
	<b>Heads:</b> 16934, 16935, 16936, 16937, 16938	16666	2
	<b>Heads:</b> 16948, 16949, 16950, 16951, 16952, 16953, 16954, 16955, 16956, 16969, 16970, 16971, 16972, 16973, 16974, 16975, 16976, 19771	16667	2
<b>Torque Arm Mount</b>			
13	<b>Heads:</b> 16925, 16926	19521	1
	<b>Heads:</b> 16927, 16928, 16929, 16930, 16939, 16940, 16941, 16942, 16943, 16944, 16957, 16958, 16959, 16960, 19767, 19768	19522	1
	<b>Heads:</b> 16931, 16932, 16933, 16934, 16935, 16936, 16937, 16938, 16946, 16947, 16948, 16949, 16950, 16951, 16952, 16953, 16954, 16961, 16962, 16963, 16964, 16965, 16966, 16967, 16968, 16969, 16970, 16971, 16973, 16974, 19769, 19770	19523	1
	<b>Heads:</b> 16955, 16956, 16972, 16975, 16976, 19771	19524	1
14	Hood Clamp Tab	16703	8
15	Head End Wear Plate	16718	1
16	Head Throat Wear Plate	16236	1

#s	DESCRIPTION	PART #	QTY
<b>Gearbox</b>			
17	<b>Heads:</b> 16925, 16926	19697	1
	<b>Heads:</b> 16927, 16939, 16940, 16941, 19767, 19768	19699	1
	<b>Heads:</b> 16928, 16929, 16930, 16942, 16943, 16944, 16957, 16958, 16959, 16960	19701	1
	<b>Heads:</b> 16931, 16932, 16933, 16934, 16935, 16936, 16946, 16947, 16948, 16949, 16950, 16961, 16962, 16963, 16964, 16965, 16966, 16967	19703	1
<b>Heads:</b> 16937, 16938, 16951, 16952, 16953, 16954, 16968, 16969, 16970, 16971, 16973, 16974, 19769, 19770	19705	1	
<b>Heads:</b> 16955, 16956, 16972, 16975, 16976, 19771	19706	1	
<b>Torque Arm Assembly</b>			
18	<b>Heads:</b> 16925, 16926	19711	1
	<b>Heads:</b> 16927, 16939, 16940, 16941, 19767, 19768	19712	1
	<b>Heads:</b> 16928, 16929, 16930, 16942, 16943, 16944, 16957, 16958, 16959, 16960	19713	1
	<b>Heads:</b> 16931, 16932, 16933, 16934, 16935, 16936, 16946, 16947, 16948, 16949, 16950, 16961, 16962, 16963, 16964, 16965, 16966, 16967	19714	1
<b>Heads:</b> 16937, 16938, 16951, 16952, 16953, 16954, 16968, 16969, 16970, 16971, 16973, 16974, 19769, 19770	19715	1	
<b>Heads:</b> 16955, 16956, 16972, 16975, 16976, 19771	19716	1	
<b>Gearbox Bushing Kit</b>			
19	<b>Heads:</b> 16925, 16926	19721	1
	<b>Heads:</b> 16927, 16939, 16940, 16941, 19767, 19768	19722	1
	<b>Heads:</b> 16928, 16929, 16930, 16942, 16943, 16944, 16957, 16958, 16959, 16960	19723	1
	<b>Heads:</b> 16931, 16932, 16933, 16934, 16935, 16936, 16946, 16947, 16948, 16949, 16950, 16961, 16962, 16963, 16964, 16965, 16966, 16967	19724	1
<b>Heads:</b> 16937, 16938, 16951, 16952, 16953, 16954, 16968, 16969, 16970, 16971, 16973, 16974, 19769, 19770	19725	1	
<b>Heads:</b> 16955, 16956, 16972, 16975, 16976, 19771	19726	1	



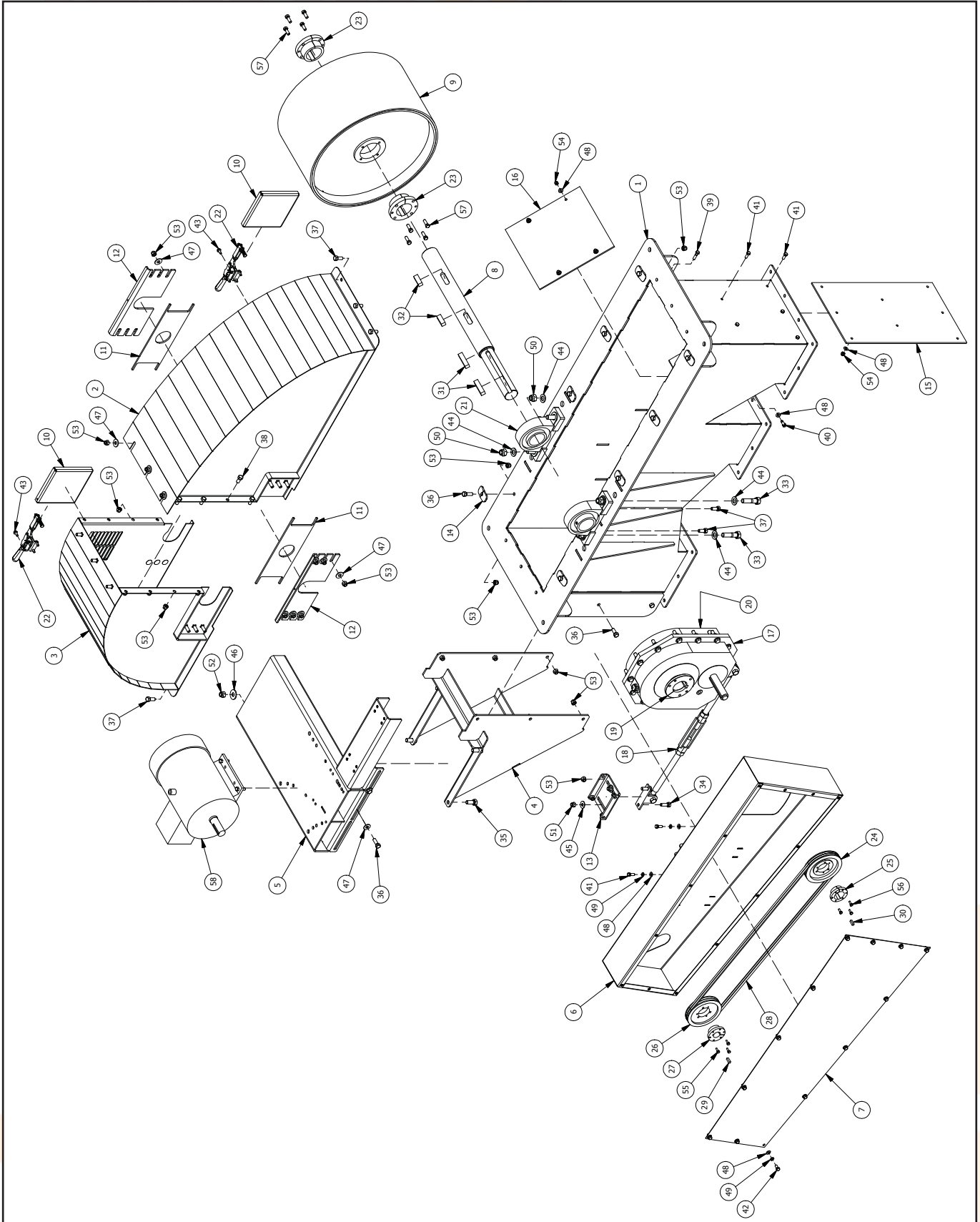
#s	DESCRIPTION	PART #	QTY
<b>Gearbox Backstop</b>			
	<b>Heads:</b> 16925, 16926	19731	1
	<b>Heads:</b> 16927, 16939, 16940, 16941, 19767, 19768	19732	1
	<b>Heads:</b> 16928, 16929, 16930, 16942, 16943, 16944, 16957, 16958, 16959, 16960	19733	1
20	<b>Heads:</b> 16931, 16932, 16933, 16934, 16935, 16936, 16946, 16947, 16948, 16949, 16950, 16961, 16962, 16963, 16964, 16965, 16966, 16967	19734	1
	<b>Heads:</b> 16937, 16938, 16951, 16952, 16953, 16954, 16968, 16969, 16970, 16971, 16973, 16974, 19769, 19770	19735	1
	<b>Heads:</b> 16955, 16956, 16972, 16975, 16976, 19771	19736	1
<b>Bearing</b>			
	<b>Heads:</b> 16925, 16926, 16927, 16928, 16929, 16930, 16931, 16932, 16933, 16939, 16940, 16941, 16942, 16943, 16944, 16946, 16947, 19767, 19768	17196	2
21	<b>Heads:</b> 16934, 16935, 16936, 16937, 16938, 16957, 16958, 16959, 16960, 16961, 16962, 16963, 16964, 16965, 16966, 16967, 16968, 19769, 19770	17848	2
	<b>Heads:</b> 16948, 16949, 16950, 16951, 16952, 16953, 16954, 16955, 16956, 16969, 16970, 16971, 16972, 16973, 16974, 16975, 16976, 19771	17198	2
22	Toggle Clamp	17846	2
<b>Head Pulley Bushing</b>			
	<b>Heads:</b> 16925, 16926, 16927, 16928, 16929, 16930, 16931, 16932, 16933, 16939, 16940, 16941, 16942, 16943, 16944, 16946, 16947, 19767, 19768	17235	2
23	<b>Heads:</b> 16934, 16935, 16936, 16937, 16938, 16957, 16958, 16959, 16960, 16961, 16962, 16963, 16964, 16965, 16966, 16967, 16968, 19769, 19770	16711	2
	<b>Heads:</b> 16948, 16949, 16950, 16951, 16952, 16953, 16954, 16955, 16956, 16969, 16970, 16971, 16972, 16973, 16974, 16975, 16976, 19771	17229	2
24	Pulley	see next page	
25	Hub	see next page	
26	Motor Pulley	see next page	
27	Motor Hub	see next page	
28	Belts	see next page	
29	Motor Pulley Key	c/w motor hub	1
30	Pulley Key	c/w hub	1
31	Gearbox Bushing Key	c/w bushing kit	2
32	Head Pulley Key	c/w head bushing	2

#s	DESCRIPTION	PART #	QTY
	<b>1 x 3 1/2" Bolt</b>	18947	4
	<b>Heads:</b> 16948, 16949, 16950, 16951, 16952, 16953, 16954, 16955, 16956, 16969, 16970, 16971, 16972, 16973, 16974, 16975, 16976, 19771		
	<b>3/4 x 3"</b>	18943	4
33	<b>Heads:</b> 16925, 16926, 16927, 16928, 16929, 16930, 16931, 16932, 16933, 16934, 16935, 16936, 16937, 16938, 16939, 16940, 16941, 16942, 16943, 16944, 16946, 16947, 16957, 16958, 16959, 16960, 16961, 16962, 16963, 16964, 16965, 16966, 16967, 16968, 19767, 19768, 19769, 19770		
	<b>5/8 x 2" Bolt</b>	12167	2
	<b>Heads:</b> 16955, 16956, 16972, 16975, 16976, 19771		
	<b>1/2 x 1 1/2" Bolt</b>	10294	2
	<b>Heads:</b> 16931, 16932, 16933, 16934, 16935, 16936, 16946, 16947, 16948, 16949, 16950, 16951, 16952, 16953, 16954, 16961, 16962, 16963, 16964, 16965, 16966, 16967, 16968, 16969, 16970, 16971, 16973, 16974, 19769, 19770		
34	<b>7/16 x 1 1/4" Bolt</b>	19755	2
	<b>Heads:</b> 16927, 16928, 16929, 16930, 16939, 16940, 16941, 16942, 16943, 16944, 16957, 16958, 16959, 16960, 19767, 19768		
	<b>3/8 x 1 1/4" Bolt</b>	10311	2
	<b>Heads:</b> 16925, 16926		
35	5/8 x 1 1/2" Bolt	10355	4
36	1/2 x 1 1/2" Bolt	10294	18
37	1/2 x 1 1/4" Bolt	10964	10
38	1/2 x 1" Bolt	10302	8
39	3/8 x 1 1/2" Bolt	10293	3
40	3/8 x 1 1/4" Bolt	10311	4
41	3/8 x 1" Bolt	10277	13
42	3/8 x 3/4" Bolt	10369	13
43	1/4 x 3/4" Self-tapping Screw	10299	8
	<b>1" Flatwasher</b>	10312	8
	<b>Heads:</b> 16948, 16949, 16950, 16951, 16952, 16953, 16954, 16955, 16956, 16969, 16970, 16971, 16972, 16973, 16974, 16975, 16976, 19771		
	<b>3/4" Flatwasher</b>	10296	8
44	<b>Heads:</b> 16925, 16926, 16927, 16928, 16929, 16930, 16931, 16932, 16933, 16934, 16935, 16936, 16937, 16938, 16939, 16940, 16941, 16942, 16943, 16944, 16946, 16947, 16957, 16958, 16959, 16960, 16961, 16962, 16963, 16964, 16965, 16966, 16967, 16968, 19767, 19768, 19769, 19770		



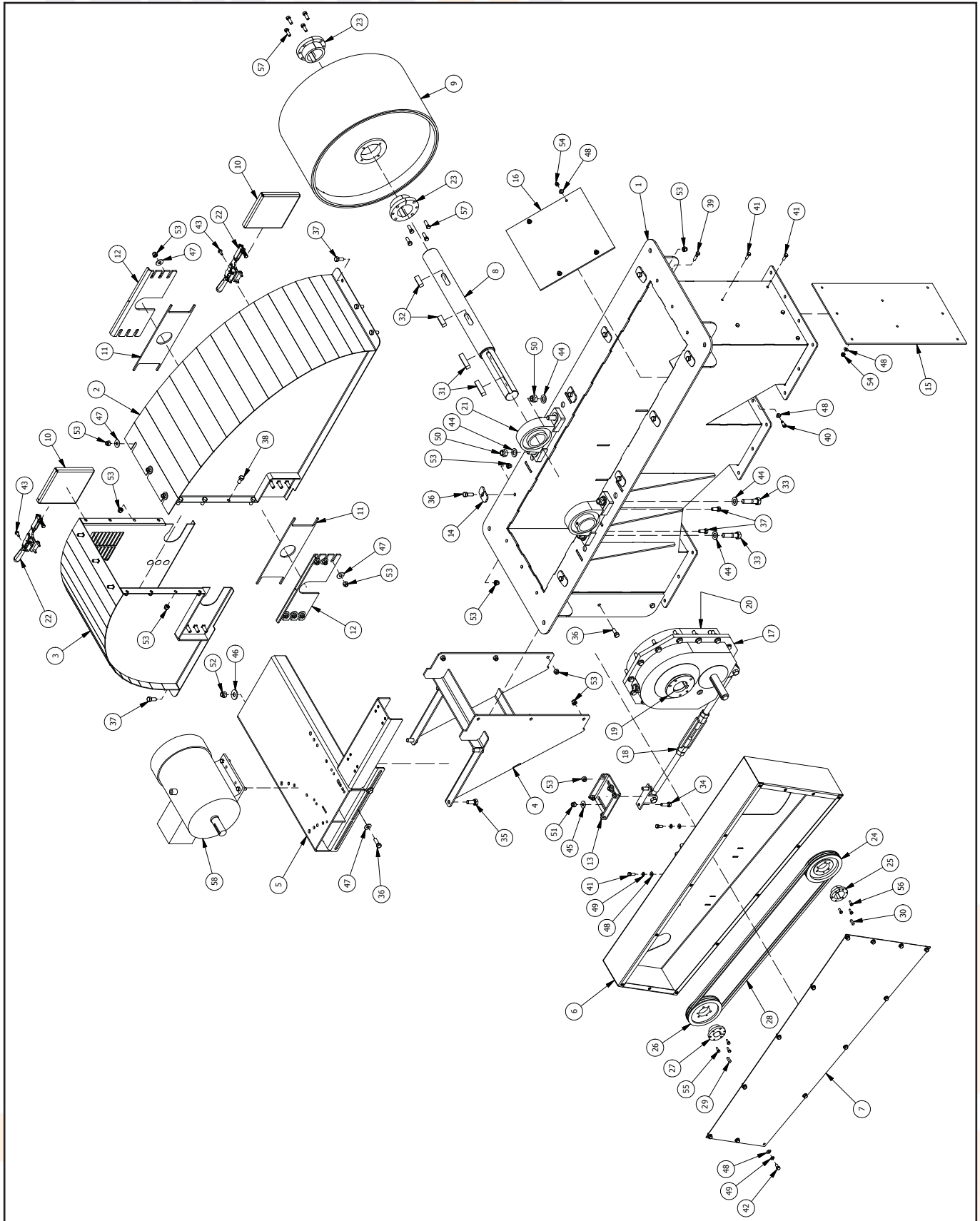
#s	DESCRIPTION	PART #	QTY
	<b>5/8" Flatwasher</b>	10314	2
	<b>Heads:</b> 16955, 16956, 16972, 16975, 16976, 19771		
	<b>1/2" Flatwasher</b>	10297	2
	<b>Heads:</b> 16931, 16932, 16933, 16934, 16935, 16936, 16946, 16947, 16948, 16949, 16950, 16951, 16952, 16953, 16954, 16961, 16962, 16963, 16964, 16965, 16966, 16967, 16968, 16969, 16970, 16971, 16973, 16974, 19769, 19770		
45	<b>7/16" Flatwasher</b>	19756	2
	<b>Heads:</b> 16927, 16928, 16929, 16930, 16939, 16940, 16941, 16942, 16943, 16944, 16957, 16958, 16959, 16960, 19767, 19768		
	<b>3/8" Flatwasher SM OD</b>	10275	2
	<b>Heads:</b> 16925, 16926		
46	5/8" Flatwasher	10314	4
47	1/2" Flatwasher	10297	19
48	3/8" Flatwasher SM OD	10275	37
49	3/8" Lockwasher	10276	21
	<b>1" Nylon Locknut</b>	17204	4
	<b>Heads:</b> 16948, 16949, 16950, 16951, 16952, 16953, 16954, 16955, 16956, 16969, 16970, 16971, 16972, 16973, 16974, 16975, 16976, 19771		
50	<b>3/4" Nylon Locknut</b>	14198	4
	<b>Heads:</b> 16925, 16926, 16927, 16928, 16929, 16930, 16931, 16932, 16933, 16934, 16935, 16936, 16937, 16938, 16939, 16940, 16941, 16942, 16943, 16944, 16946, 16947, 16957, 16958, 16959, 16960, 16961, 16962, 16963, 16964, 16965, 16966, 16967, 16968, 19767, 19768, 19769, 19770		

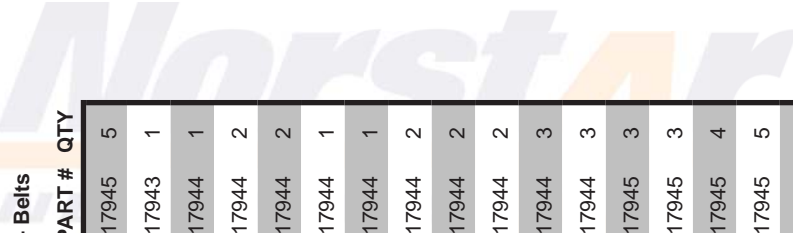
#s	DESCRIPTION	PART #	QTY
	<b>5/8" Nylon Locknut</b>	10313	2
	<b>Heads:</b> 16955, 16956, 16972, 16975, 16976, 19771		
	<b>1/2" Nylon Locknut</b>	10318	2
	<b>Heads:</b> 16931, 16932, 16933, 16934, 16935, 16936, 16946, 16947, 16948, 16949, 16950, 16951, 16952, 16953, 16954, 16961, 16962, 16963, 16964, 16965, 16966, 16967, 16968, 16969, 16970, 16971, 16973, 16974, 19769, 19770		
51	<b>7/16" Nylon Locknut</b>	15779	2
	<b>Heads:</b> 16927, 16928, 16929, 16930, 16939, 16940, 16941, 16942, 16943, 16944, 16957, 16958, 16959, 16960, 19767, 19768		
	<b>3/8" Nylon Locknut</b>	10274	2
	<b>Heads:</b> 16925, 16926		
52	5/8" Nylon Locknut	10313	4
53	1/2" Nylon Locknut	10318	47
54	3/8" Nylon Locknut	10274	12
55	Motor Hub Bolt	c/w motor hub	3
56	Hub Bolt	c/w hub	3
57	Head Pulley Bushing Bolt	c/w head bushing	4
58	Motor	customer supplied	1



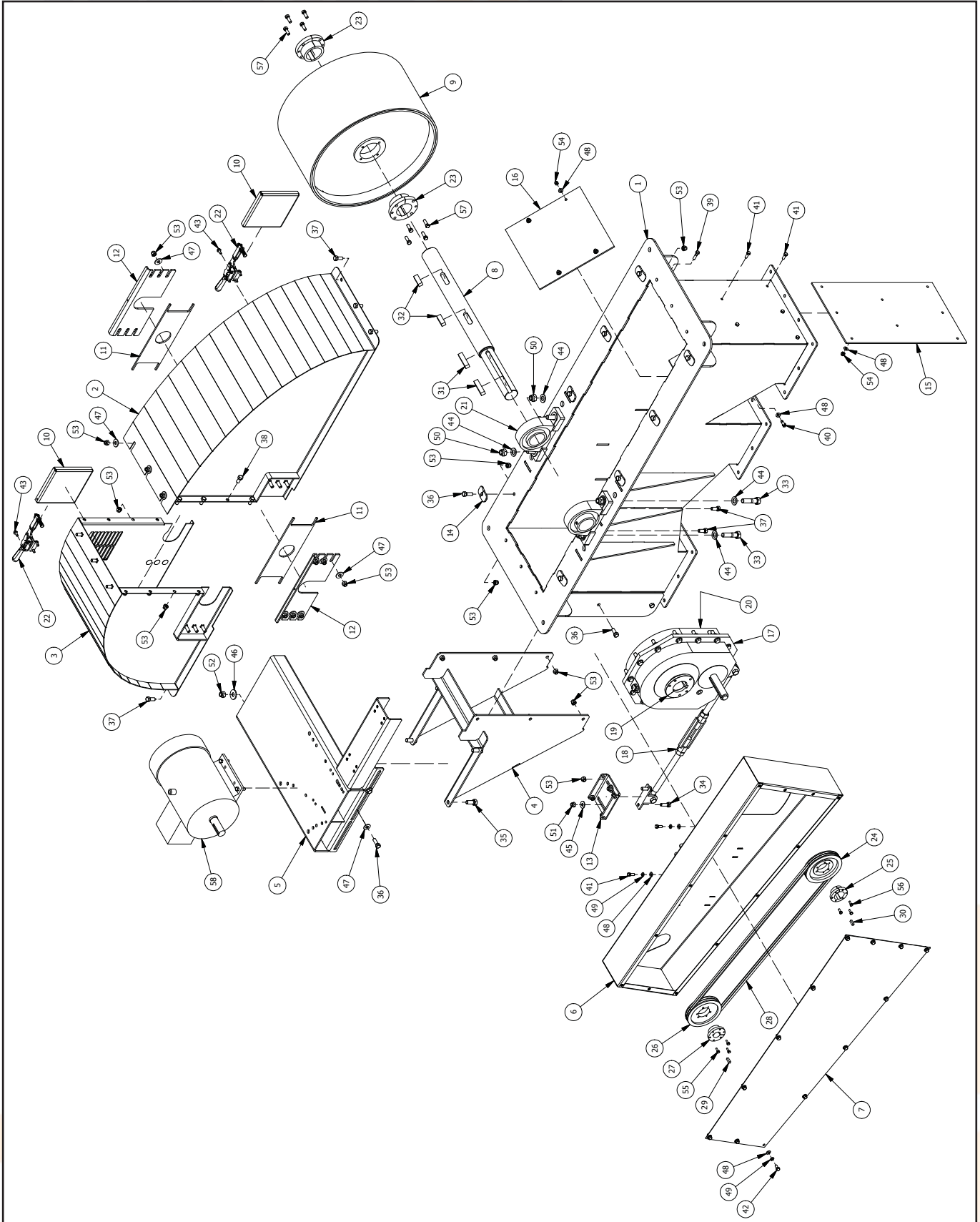
Head Part #	Item 24 - Pulley			Item 25 - Hub			Item 26 - Motor Pulley			Item 27 - Motor Hub			Item 28 - Belts		
	SIZE	PART #	QTY	SIZE	PART #	QTY	SIZE	PART #	QTY	SIZE	PART #	QTY	SIZE	PART #	QTY
16925	3V651	17888	1	SH1	19757	1	3V691	17892	1	SH118	17932	1	3VX900	17943	1
16926	3V651	17888	1	SH1	19757	1	3V691	17892	1	SH138	17933	1	3VX900	17943	1
16927	3V651	17888	1	SH118	17932	1	3V691	17892	1	SH138	17933	1	3VX900	17943	1
16928	3V651	17888	1	SH138	17933	1	3V691	17892	1	SH138	17933	1	3VX950	17944	1
16929	3V652	17889	1	SDS138	17923	1	3V692	17893	1	SDS138	17923	1	3VX950	17944	2
16930	3V652	17889	1	SDS138	17923	1	3V692	17893	1	SDS158	13839	1	3VX950	17944	2
16931	3V651	17888	1	SH1716	17935	1	3V691	17892	1	SH138	17933	1	3VX950	17944	1
16932	3V652	17889	1	SDS1716	17925	1	3V692	17893	1	SDS138	17923	1	3VX950	17944	2
16933	3V652	17889	1	SDS1716	17925	1	3V692	17893	1	SDS158	13839	1	3VX950	17944	2
16934	3V652	17889	1	SDS1716	17925	1	3V692	17893	1	SDS158	13839	1	3VX950	17944	2
16935	3V653	17890	1	SDS1716	17925	1	3V693	17894	1	SDS158	13839	1	3VX950	17944	3
16936	3V653	17890	1	SDS1716	17925	1	3V693	17894	1	SDS178	17924	1	3VX950	17944	3
16937	3V653	17890	1	SDS158	13839	1	3V693	17894	1	SDS158	13839	1	3VX1000	17945	3
16938	3V653	17890	1	SDS158	13839	1	3V693	17894	1	SDS178	17924	1	3VX1000	17945	3
16939	3V651	17888	1	SH118	17932	1	3V691	17892	1	SH118	17932	1	3VX900	17943	1
16940	3V651	17888	1	SH118	17932	1	3V691	17892	1	SH138	17933	1	3VX900	17943	1
16941	3V652	17889	1	SDS118	17922	1	3V692	17893	1	SDS138	17923	1	3VX900	17943	2
16942	3V651	17888	1	SH138	17933	1	3V691	17892	1	SH118	17932	1	3VX900	17943	1
16943	3V651	17888	1	SH138	17933	1	3V691	17892	1	SH138	17933	1	3VX950	17944	1
16944	3V652	17889	1	SDS138	17923	1	3V692	17893	1	SDS138	17923	1	3VX950	17944	2
16946	3V652	17889	1	SDS1716	17925	1	3V692	17893	1	SDS158	13839	1	3VX950	17944	2
16947	3V653	17890	1	SDS1716	17925	1	3V693	17894	1	SDS158	13839	1	3VX950	17944	3
16948	3V653	17890	1	SDS1716	17925	1	3V693	17894	1	SDS158	13839	1	3VX950	17944	3
16949	3V653	17890	1	SDS1716	17925	1	3V693	17894	1	SDS178	17924	1	3VX950	17944	3
16950	3V654	13811	1	SK1716	17938	1	3V694	13812	1	SK178	17937	1	3VX950	17944	4
16951	3V653	17890	1	SDS158	13839	1	3V693	17894	1	SDS158	13839	1	3VX950	17944	3
16952	3V653	17890	1	SDS158	13839	1	3V693	17894	1	SDS178	17924	1	3VX1000	17945	3
16953	3V654	13811	1	SK158	18810	1	3V694	13812	1	SK178	17937	1	3VX1000	17945	4
16954	3V655	13810	1	SK158	18810	1	3V695	13813	1	SK218	13842	1	3VX1000	17945	5
16955	3V654	13811	1	SK2316	17940	1	3V694	13812	1	SK178	17937	1	3VX1000	17945	4





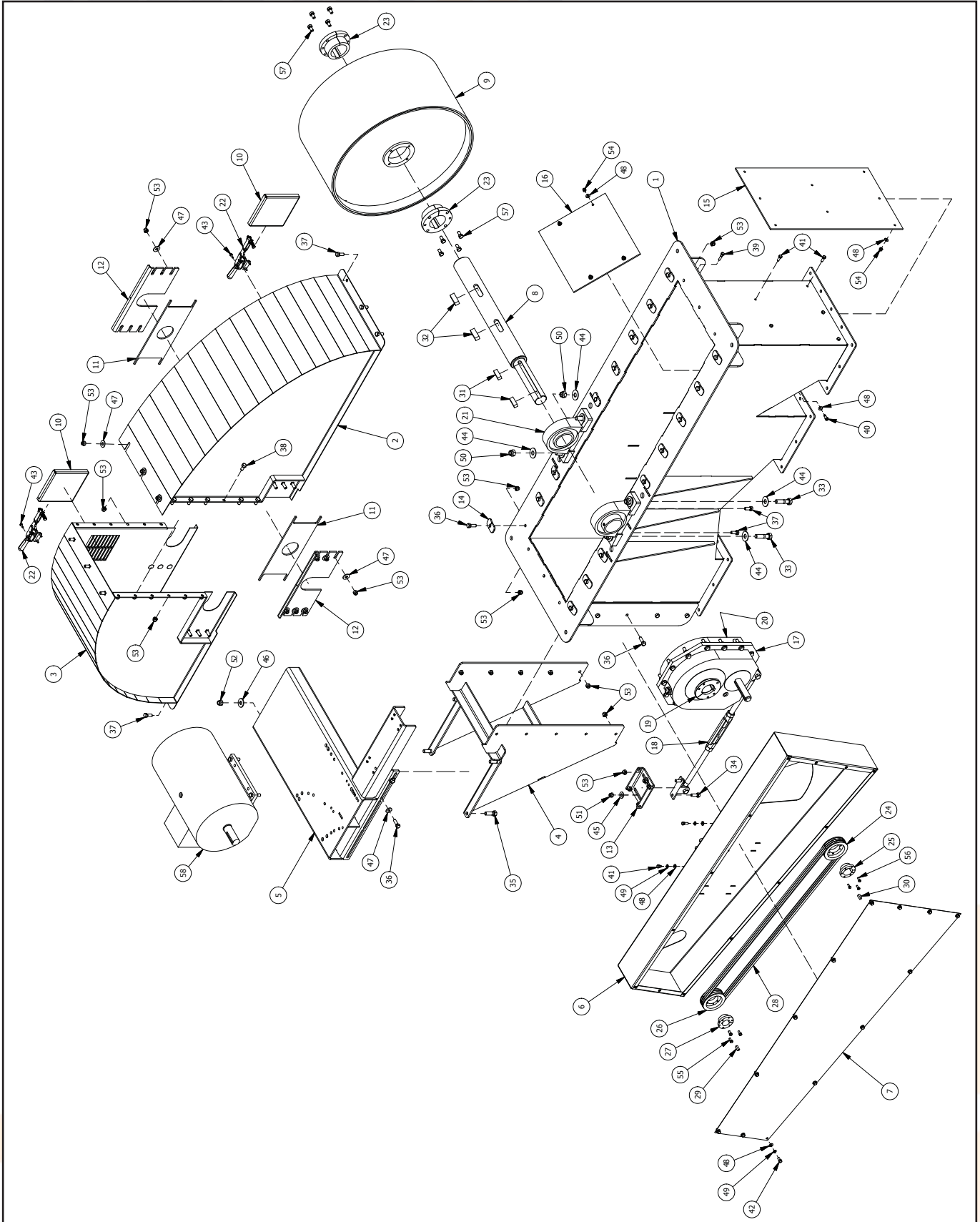


Head Part #	Item 24 - Pulley			Item 25 - Hub			Item 26 - Motor Pulley			Item 27 - Motor Hub			Item 28 - Belts		
	SIZE	PART #	QTY	SIZE	PART #	QTY	SIZE	PART #	QTY	SIZE	PART #	QTY	SIZE	PART #	QTY
16956	3V655	13810	1	SK2316	17940	1	3V695	13813	1	SK218	13842	1	3VX1000	17945	5
16957	3V651	17888	1	SH138	17933	1	3V691	17892	1	SH118	17932	1	3VX900	17943	1
16958	3V651	17888	1	SH138	17933	1	3V691	17892	1	SH138	17933	1	3VX950	17944	1
16959	3V652	17889	1	SDS138	17923	1	3V692	17893	1	SDS138	17923	1	3VX950	17944	2
16960	3V652	17889	1	SDS138	17923	1	3V692	17893	1	SDS158	13839	1	3VX950	17944	2
16961	3V651	17888	1	SH1716	17935	1	3V691	17892	1	SH118	17932	1	3VX950	17944	1
16962	3V651	17888	1	SH1716	17935	1	3V691	17892	1	SH138	17933	1	3VX950	17944	1
16963	3V652	17889	1	SDS1716	17925	1	3V692	17893	1	SDS138	17923	1	3VX950	17944	2
16964	3V652	17889	1	SDS1716	17925	1	3V692	17893	1	SDS158	13839	1	3VX950	17944	2
16965	3V652	17889	1	SDS1716	17925	1	3V692	17893	1	SDS158	13839	1	3VX950	17944	2
16966	3V653	17890	1	SDS1716	17925	1	3V693	17894	1	SDS158	13839	1	3VX950	17944	3
16967	3V653	17890	1	SDS1716	17925	1	3V693	17894	1	SDS178	17924	1	3VX950	17944	3
16968	3V653	17890	1	SDS158	13839	1	3V693	17894	1	SDS178	17924	1	3VX1000	17945	3
16969	3V653	17890	1	SDS158	13839	1	3V693	17894	1	SDS178	17924	1	3VX1000	17945	3
16970	3V654	13811	1	SK158	18810	1	3V694	13812	1	SK178	17937	1	3VX1000	17945	4
16971	3V655	13810	1	SK158	18810	1	3V695	13813	1	SK218	13842	1	3VX1000	17945	5
16972	3V655	13810	1	SK2316	17940	1	3V695	13813	1	SK218	13842	1	3VX1000	17945	5
16973	3V655	13810	1	SK158	18810	1	3V695	13813	1	SK218	13842	1	3VX1000	17945	5
16974	3V656	17891	1	SK158	18810	1	3V696	17895	1	SK218	13842	1	3VX1000	17945	6
16975	3V655	13810	1	SK2316	17940	1	3V695	13813	1	SK218	13842	1	3VX1000	17945	5
16976	3V656	17891	1	SK2316	17940	1	3V696	17895	1	SK218	13842	1	3VX1000	17945	6
19767	3V4751	17869	1	SH118	17932	1	3V501	17874	1	SH118	17932	1	3VX850	17942	1
19768	3V4751	17869	1	SH118	17932	1	3V501	17874	1	SH118	17932	1	3VX850	17942	1
19769	3V4753	17871	1	SDS158	13839	1	3V503	17876	1	SDS158	13839	1	3VX900	17943	3
19770	3V4754	17872	1	SDS158	13839	1	3V504	17877	1	SDS158	13839	1	3VX900	17943	4
19771	3V654	13811	1	SK2316	17940	1	3V694	13812	1	SK178	17937	1	3VX1000	17945	4



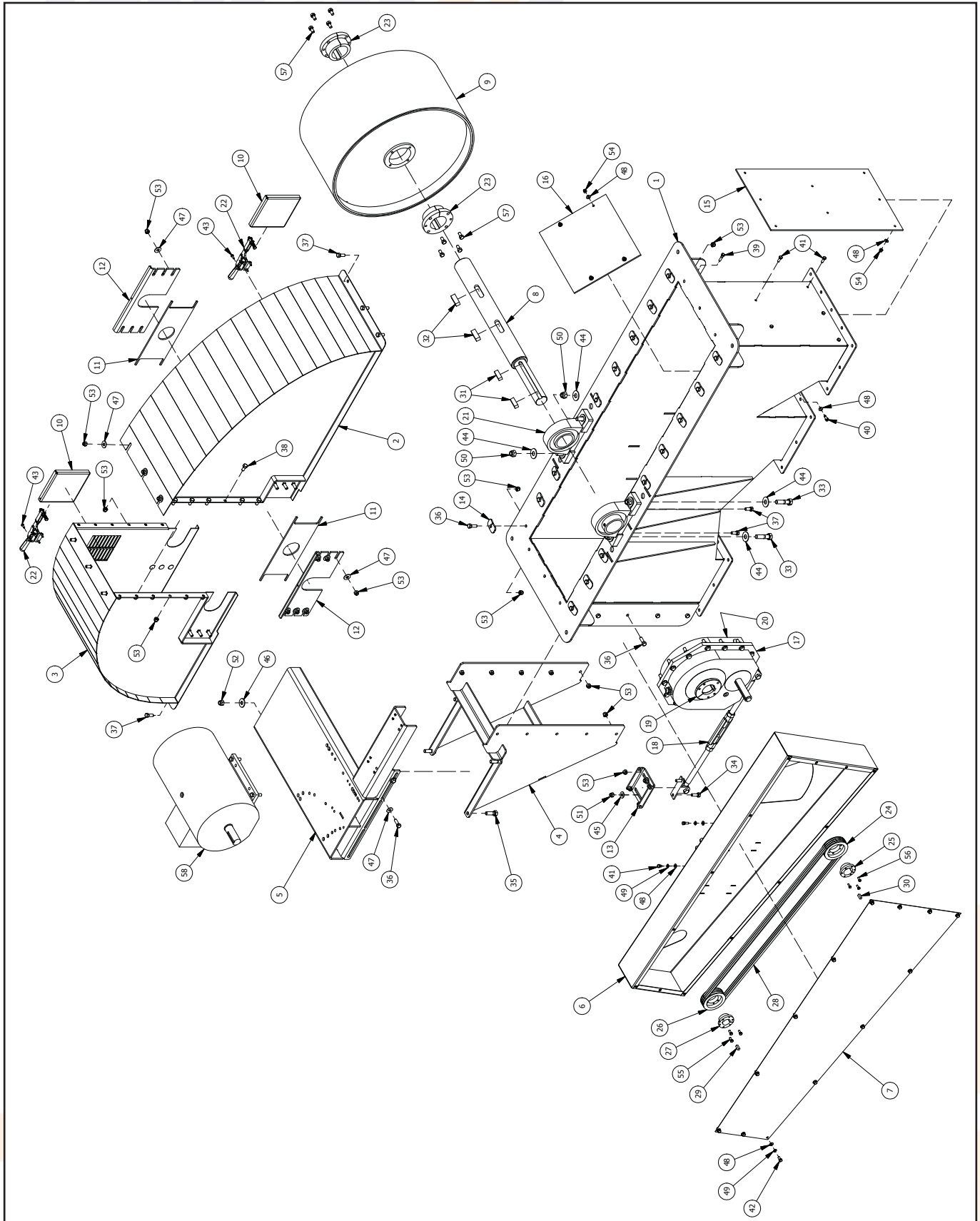
#s	DESCRIPTION	PART #	QTY
<b>Head Discharge Weldment</b>			
	<b>Heads:</b> 16977, 16978, 16979, 16980, 16981, 16982, 16983, 16984, 16986, 16987, 16989, 16990, 16991, 16992	16197	1
1	<b>Heads:</b> 16993, 16994, 16995, 16996, 16997, 16998, 16999, 17000, 17001, 17002, 17003, 17004, 17005, 17006, 17007, 17008, 17009, 17010, 17011, 17012, 17013, 17014, 17015, 17016, 17017, 17018, 17019, 17020, 17022, 17023, 19772, 19773	16198	1
<b>Head Front Hood Weldment</b>			
	<b>Heads:</b> 16977, 16978, 16979, 16980, 16981, 16982, 16983, 16984, 16993, 16994, 16995, 16996, 16997, 16998, 16999, 17000, 17001, 17002, 17010, 17011, 17012, 17013, 17014, 17015	16417	1
2	<b>Heads:</b> 16986, 16987, 16989, 16990, 16991, 16992	16428	1
	<b>Heads:</b> 17003, 17004, 17005, 17006, 17007, 17008, 17009, 17016, 17017, 17018, 17019, 17020, 17022, 17023, 19772, 19773	16429	1
<b>Head Rear Hood Weldment</b>			
	<b>Heads:</b> 16977, 16978, 16979, 16980, 16981, 16982, 16983, 16984, 16993, 16994, 16995, 16996, 16997, 16998, 16999, 17000, 17001, 17002, 17010, 17011, 17012, 17013, 17014, 17015	16610	1
3	<b>Heads:</b> 16986, 16987, 16989, 16990, 16991, 16992	16621	1
	<b>Heads:</b> 17003, 17004, 17005, 17006, 17007, 17008, 17009, 17016, 17017, 17018, 17019, 17020, 17022, 17023, 19772, 19773	16622	1
4	Motor Mount Base Weldment	17602	1
5	Motor Mount Slider Weldment	17658	1
<b>Inner Belt Guard</b>			
	<b>Heads:</b> 16977, 16978, 16979, 16980, 16993, 16994, 16995, 16996, 17010, 17011	19564	1
6	<b>Heads:</b> 16981, 16982, 16983, 16984, 16986, 16987, 16989, 16990, 16991, 16992, 16997, 16998, 16999, 17000, 17001, 17002, 17003, 17004, 17005, 17006, 17007, 17008, 17009, 17012, 17013, 17014, 17015, 17016, 17017, 17018, 17019, 17020, 17022, 17023, 19772, 19773	19563	1
<b>Outer Belt Guard</b>			
	<b>Heads:</b> 16977, 16978, 16979, 16980, 16993, 16994, 16995, 16996, 17010, 17011	19547	1
7	<b>Heads:</b> 16981, 16982, 16983, 16984, 16986, 16987, 16989, 16990, 16991, 16992, 16997, 16998, 16999, 17000, 17001, 17002, 17003, 17004, 17005, 17006, 17007, 17008, 17009, 17012, 17013, 17014, 17015, 17016, 17017, 17018, 17019, 17020, 17022, 17023	19548	1

#s	DESCRIPTION	PART #	QTY
<b>Driveshaft</b>			
	<b>Heads:</b> 16977, 16978	17723	1
	<b>Heads:</b> 16979, 16980, 16981, 16982	17724	1
	<b>Heads:</b> 16983, 16984	17725	1
	<b>Heads:</b> 16986, 16987	17726	1
	<b>Heads:</b> 16989, 16990, 16991, 16992	17727	1
	<b>Heads:</b> 16993, 16994	17728	1
8	<b>Heads:</b> 16995, 16996, 16997, 16998, 16999	17729	1
	<b>Heads:</b> 17000, 17001, 17002, 17012, 17013, 17014, 17015	17730	1
	<b>Heads:</b> 17003, 17004, 17005, 17016	17731	1
	<b>Heads:</b> 17006, 17007, 17019, 17020, 19772, 19773	17732	1
	<b>Heads:</b> 17008, 17009	17733	1
	<b>Heads:</b> 17010, 17011	17734	1
	<b>Heads:</b> 17017, 17018	17735	1
	<b>Heads:</b> 17022, 17023	17736	1
<b>Head Pulley</b>			
	<b>Heads:</b> 16977, 16978, 16979, 16980, 16981, 16982, 16983, 16984, 16993, 16994, 16995, 16996, 16997, 16998, 16999, 17000, 17001, 17002, 17010, 17011, 17012, 17013, 17014, 17015	16302	1
9	<b>Heads:</b> 16986, 16987, 16989, 16990, 16991, 16992	16303	1
	<b>Heads:</b> 17003, 17004, 17005, 17006, 17007, 17008, 17009, 17016, 17017, 17018, 17019, 17020, 17022, 17023, 19772, 19773	16304	1
10	Head Inspection Panel	16702	2
<b>Shaft Plastic Seal Plate</b>			
	<b>Heads:</b> 16977, 16978, 16979, 16980, 16981, 16982, 16983, 16984, 16993, 16994, 16995, 16996, 16997, 16998, 16999, 17000, 17001, 17002, 17010, 17011, 17012, 17013, 17014, 17015	16682	2
11	<b>Heads:</b> 16986, 16987, 16989, 16990, 16991, 16992	16693	2
	<b>Heads:</b> 17003, 17004, 17005, 17006, 17007, 17008, 17009, 17016, 17017, 17018, 17019, 17020, 17022, 17023, 19772, 19773	16694	2
<b>Shaft Seal Clamp Plate</b>			
	<b>Heads:</b> 16977, 16978, 16979, 16980, 16981, 16982, 16983, 16984, 16993, 16994, 16995, 16996, 16997, 16998, 16999, 17000, 17001, 17002, 17010, 17011, 17012, 17013, 17014, 17015	16658	2
12	<b>Heads:</b> 16986, 16987, 16989, 16990, 16991, 16992	16669	2
	<b>Heads:</b> 17003, 17004, 17005, 17006, 17007, 17008, 17009, 17016, 17017, 17018, 17019, 17020, 17022, 17023, 19772, 19773	16670	2



#s	DESCRIPTION	PART #	QTY
<b>Torque Arm Mount</b>			
	<b>Heads:</b> 16977, 16978, 16979, 16980, 16981, 16982, 16993, 16994	19522	1
13	<b>Heads:</b> 16983, 16984, 16986, 16987, 16989, 16990, 16991, 16992, 16995, 16996, 16997, 16998, 16999, 17000, 17001, 17002, 17003, 17004, 17005, 17010, 17011, 17012, 17013, 17014, 17015, 17016	19523	1
	<b>Heads:</b> 17006, 17007, 17017, 17018, 17019, 17020, 19772, 19773	19524	1
	<b>Heads:</b> 17008, 17009, 17022, 17023	19525	1
14	Hood Clamp Tab	16703	16
15	Head End Wear Plate	16719	1
16	Head Throat Wear Plate	16237	1
<b>17 Gearbox</b>			
	<b>Heads:</b> 16977, 16978	19699	1
	<b>Heads:</b> 16979, 16980, 16981, 16982, 16993, 16994	19701	1
	<b>Heads:</b> 16983, 16984, 16986, 16987, 16995, 16996, 16997, 16998, 16999, 17010, 17011	19703	1
	<b>Heads:</b> 16989, 16990, 16991, 16992, 17000, 17001, 17002, 17003, 17004, 17005, 17012, 17013, 17014, 17015, 17016	19705	1
	<b>Heads:</b> 17006, 17007, 17017, 17018, 17019, 17020, 19772, 19773	19706	1
	<b>Heads:</b> 17008, 17009, 17022, 17023	19707	1
<b>Torque Arm Assembly</b>			
	<b>Heads:</b> 16977, 16978	19712	1
	<b>Heads:</b> 16979, 16980, 16981, 16982, 16993, 16994	19713	1
18	<b>Heads:</b> 16983, 16984, 16986, 16987, 16995, 16996, 16997, 16998, 16999, 17010, 17011	19714	1
	<b>Heads:</b> 16989, 16990, 16991, 16992, 17000, 17001, 17002, 17003, 17004, 17005, 17012, 17013, 17014, 17015, 17016	19715	1
	<b>Heads:</b> 17006, 17007, 17017, 17018, 17019, 17020, 19772, 19773	19716	1
	<b>Heads:</b> 17008, 17009, 17022, 17023	19717	1
<b>Gearbox Bushing Kit</b>			
	<b>Heads:</b> 16977, 16978	19722	1
	<b>Heads:</b> 16979, 16980, 16981, 16982, 16993, 16994	19723	1
19	<b>Heads:</b> 16983, 16984, 16986, 16987, 16995, 16996, 16997, 16998, 16999, 17010, 17011	19724	1
	<b>Heads:</b> 16989, 16990, 16991, 16992, 17000, 17001, 17002, 17003, 17004, 17005, 17012, 17013, 17014, 17015, 17016	19725	1
	<b>Heads:</b> 17006, 17007, 17017, 17018, 17019, 17020, 19772, 19773	19726	1
	<b>Heads:</b> 17008, 17009, 17022, 17023	19727	1

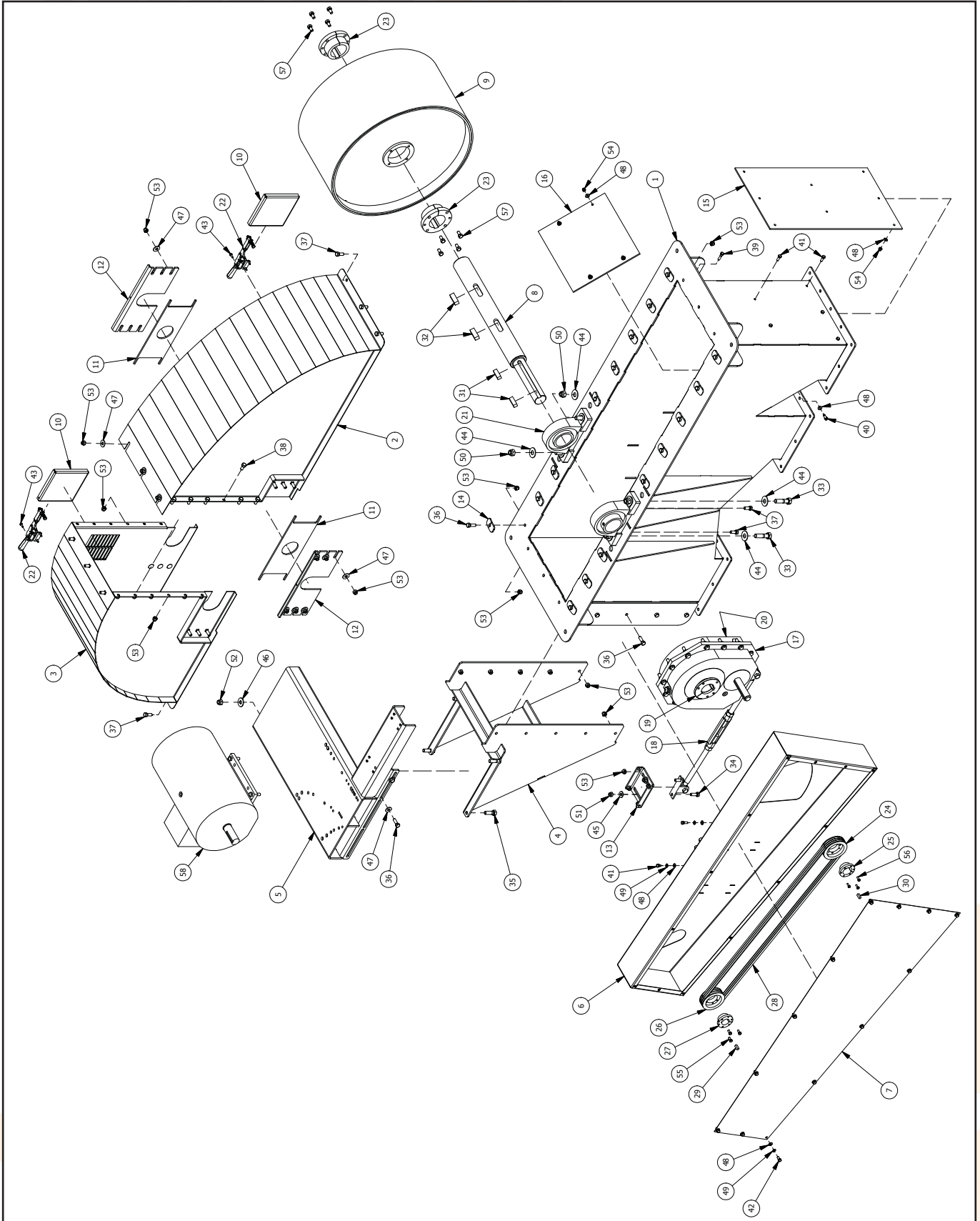
#s	DESCRIPTION	PART #	QTY
<b>Gearbox Backstop</b>			
	<b>Heads:</b> 16977, 16978	19732	1
	<b>Heads:</b> 16979, 16980, 16981, 16982, 16993, 16994	19733	1
20	<b>Heads:</b> 16983, 16984, 16986, 16987, 16995, 16996, 16997, 16998, 16999, 17010, 17011	19734	1
	<b>Heads:</b> 16989, 16990, 16991, 16992, 17000, 17001, 17002, 17003, 17004, 17005, 17012, 17013, 17014, 17015, 17016	19735	1
	<b>Heads:</b> 17006, 17007, 17017, 17018, 17019, 17020, 19772, 19773	19736	1
	<b>Heads:</b> 17008, 17009, 17022, 17023	19737	1
<b>Bearing</b>			
21	<b>Heads:</b> 16977, 16978, 16979, 16980, 16981, 16982, 16983, 16984, 16993, 16994, 16995, 16996, 16997, 16998, 16999, 17000, 17001, 17002, 17010, 17011, 17012, 17013, 17014, 17015	17848	2
	<b>Heads:</b> 16986, 16987, 16989, 16990, 16991, 16992	17198	2
	<b>Heads:</b> 17003, 17004, 17005, 17006, 17007, 17008, 17009, 17016, 17017, 17018, 17019, 17020, 17022, 17023, 19772, 19773	17840	2
22	Toggle Clamp	17846	2
<b>Head Pulley Bushing</b>			
23	<b>Heads:</b> 16977, 16978, 16979, 16980, 16981, 16982, 16983, 16984, 16993, 16994, 16995, 16996, 16997, 16998, 16999, 17000, 17001, 17002, 17010, 17011, 17012, 17013, 17014, 17015	16711	2
	<b>Heads:</b> 16986, 16987, 16989, 16990, 16991, 16992	17229	2
	<b>Heads:</b> 17003, 17004, 17005, 17006, 17007, 17008, 17009, 17016, 17017, 17018, 17019, 17020, 17022, 17023, 19772, 19773	17236	2
24	Pulley	see next page	
25	Hub	see next page	
26	Motor Pulley	see next page	
27	Motor Hub	see next page	
28	Belts	see next page	
29	Motor Pulley Key	c/w motor hub	1
30	Pulley Key	c/w hub	1
31	Gearbox Bushing Key	c/w bushing kit	2
32	Head Pulley Key	c/w head bushing	2



#s	DESCRIPTION	PART #	QTY
	<b>1 x 4" Bolt</b>	17202	4
	<b>Heads:</b> 16986, 16987, 16989, 16990, 16991, 16992, 17003, 17004, 17005, 17006, 17007, 17008, 17009, 17016, 17017, 17018, 17019, 17020, 17022, 17023, 19772, 19773		
33	<b>3/4 x 3" Bolt</b>	18943	4
	<b>Heads:</b> 16977, 16978, 16979, 16980, 16981, 16982, 16983, 16984, 16993, 16994, 16995, 16996, 16997, 16998, 16999, 17000, 17001, 17002, 17010, 17011, 17012, 17013, 17014, 17015		
	<b>3/4 x 2 1/2" Bolt</b>	19758	2
	<b>Heads:</b> 17008, 17009, 17022, 17023		
	<b>5/8 x 2" Bolt</b>	12167	2
	<b>Heads:</b> 17006, 17007, 17017, 17018, 17019, 17020, 19772, 19773		
	<b>1/2 x 1 1/2" Bolt</b>	10294	2
34	<b>Heads:</b> 16983, 16984, 16986, 16987, 16989, 16990, 16991, 16992, 16995, 16996, 16997, 16998, 16999, 17000, 17001, 17002, 17003, 17004, 17005, 17010, 17011, 17012, 17013, 17014, 17015, 17016		
	<b>7/16 x 1 1/4" Bolt</b>	19755	2
	<b>Heads:</b> 16977, 16978, 16979, 16980, 16981, 16982, 16993, 16994		
35	<b>5/8 x 2" Bolt</b>	12167	4
	<b>1/2 x 1 1/2" Bolt</b>	10294	
	<b>Heads:</b> 16977, 16978, 16979, 16980, 16981, 16982, 16983, 16984, 16986, 16987, 16989, 16990, 16991, 16992, 16993, 16994, 16995, 16996, 16997, 16998, 16999, 17000, 17001, 17002, 17003, 17004, 17005, 17006, 17007, 17010, 17011, 17012, 17013, 17014, 17015, 17016, 17017, 17018, 17019, 17020, 19772, 19773		30
	<b>Heads:</b> 17008, 17009, 17022, 17023		32
37	<b>1/2 x 1 1/4" Bolt</b>	10964	10
38	<b>1/2 x 1" Bolt</b>	10302	12
39	<b>3/8 x 1 1/2" Bolt</b>	10293	3
40	<b>3/8 x 1 1/4" Bolt</b>	10311	4
41	<b>3/8 x 1" Bolt</b>	10277	13
42	<b>3/8 x 3/4" Bolt</b>	10369	13
43	<b>1/4 x 3/4" Self-tapping Screw</b>	10299	8

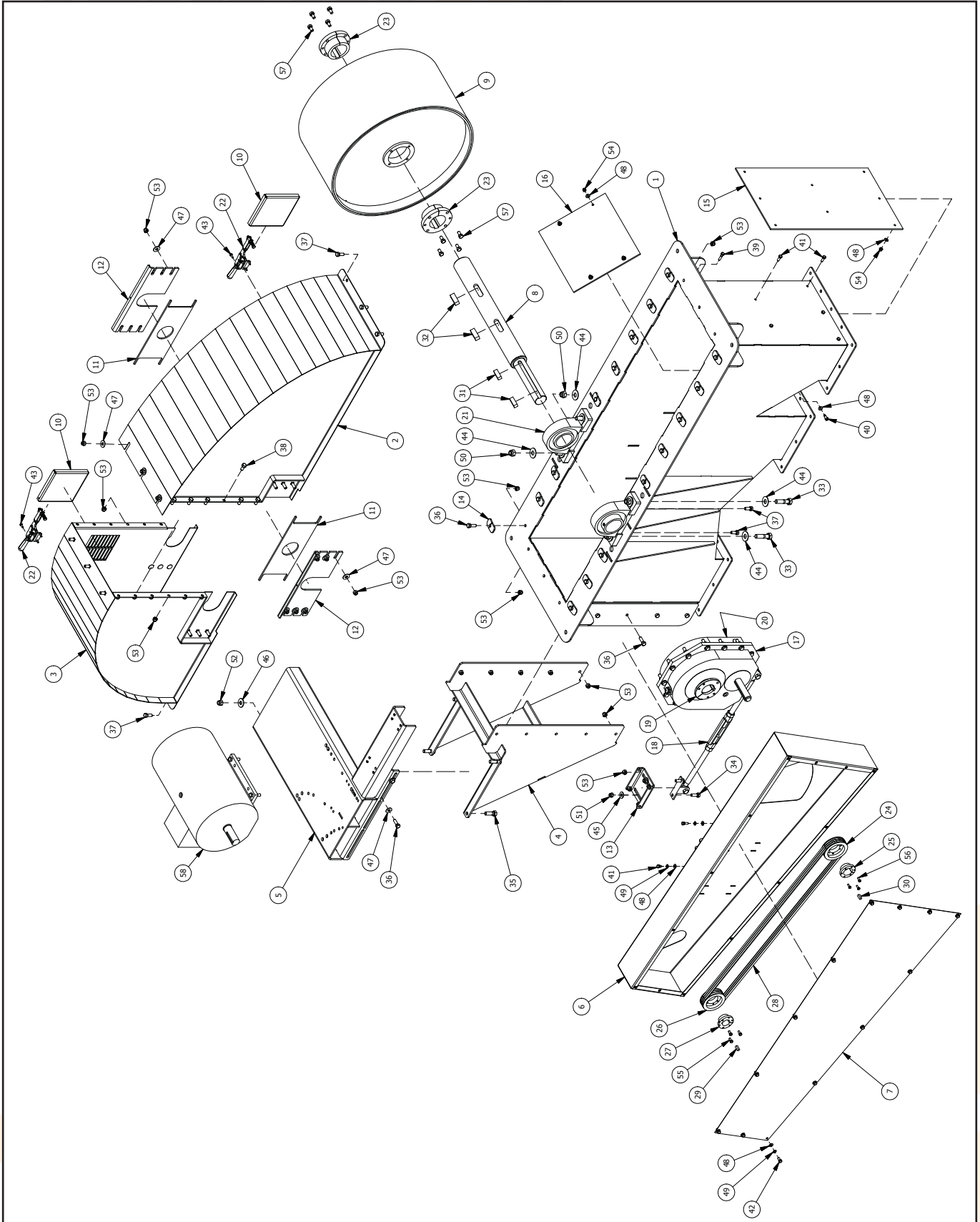
#s	DESCRIPTION	PART #	QTY
	<b>1" Flatwasher</b>	10312	8
	<b>Heads:</b> 16986, 16987, 16989, 16990, 16991, 16992, 17003, 17004, 17005, 17006, 17007, 17008, 17009, 17016, 17017, 17018, 17019, 17020, 17022, 17023, 19772, 19773		
44	<b>3/4" Flatwasher</b>	10296	8
	<b>Heads:</b> 16977, 16978, 16979, 16980, 16981, 16982, 16983, 16984, 16993, 16994, 16995, 16996, 16997, 16998, 16999, 17000, 17001, 17002, 17010, 17011, 17012, 17013, 17014, 17015		
	<b>3/4" Flatwasher</b>	10296	2
	<b>Heads:</b> 17008, 17009, 17022, 17023		
	<b>5/8" Flatwasher</b>	10314	2
	<b>Heads:</b> 17006, 17007, 17017, 17018, 17019, 17020, 19772, 19773		
	<b>1/2" Flatwasher</b>	10297	2
45	<b>Heads:</b> 16983, 16984, 16986, 16987, 16989, 16990, 16991, 16992, 16995, 16996, 16997, 16998, 16999, 17000, 17001, 17002, 17003, 17004, 17005, 17010, 17011, 17012, 17013, 17014, 17015, 17016		
	<b>7/16" Flatwasher</b>	19756	2
	<b>Heads:</b> 16977, 16978, 16979, 16980, 16981, 16982, 16993, 16994		
46	<b>5/8" Flatwasher</b>	10314	4
	<b>1/2" Flatwasher</b>	10297	
	<b>Heads:</b> 16977, 16978, 16979, 16980, 16981, 16982, 16983, 16984, 16986, 16987, 16989, 16990, 16991, 16992, 16993, 16994, 16995, 16996, 16997, 16998, 16999, 17000, 17001, 17002, 17003, 17004, 17005, 17006, 17007, 17010, 17011, 17012, 17013, 17014, 17015, 17016, 17017, 17018, 17019, 17020, 19772, 19773		19
	<b>Heads:</b> 17008, 17009, 17022, 17023		21
48	<b>3/8" Flatwasher SM OD</b>	10275	37
49	<b>3/8" Lockwasher</b>	10276	21
	<b>1" Nylon Locknut</b>	17204	4
	<b>Heads:</b> 16986, 16987, 16989, 16990, 16991, 16992, 17003, 17004, 17005, 17006, 17007, 17008, 17009, 17016, 17017, 17018, 17019, 17020, 17022, 17023, 19772, 19773		
50	<b>3/4" Nylon Locknut</b>	14198	4
	<b>Heads:</b> 16977, 16978, 16979, 16980, 16981, 16982, 16983, 16984, 16993, 16994, 16995, 16996, 16997, 16998, 16999, 17000, 17001, 17002, 17010, 17011, 17012, 17013, 17014, 17015		



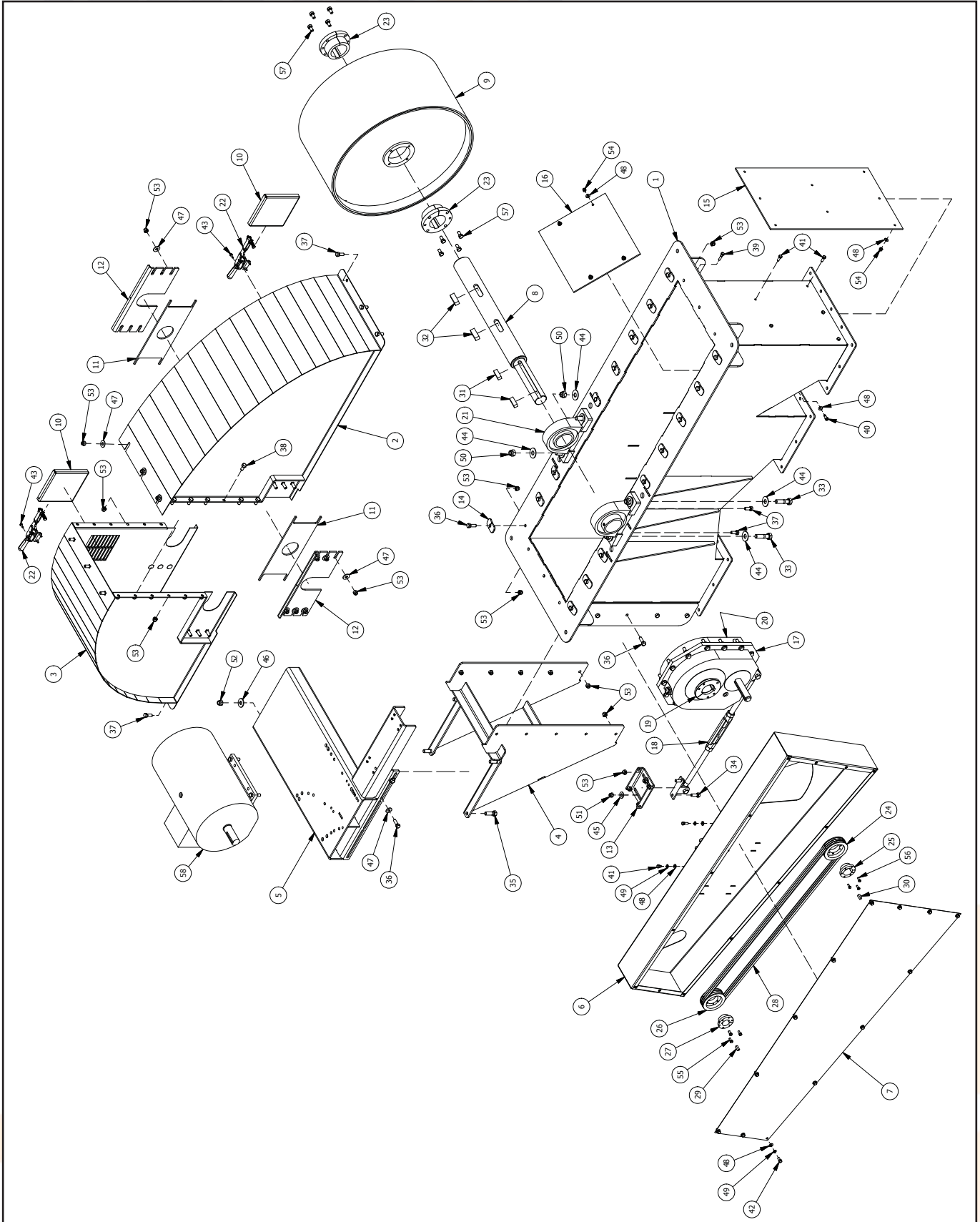


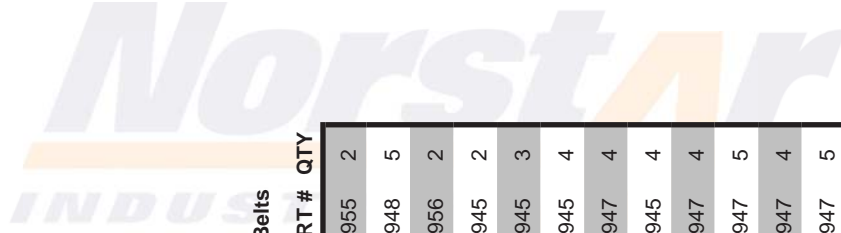


#s	DESCRIPTION	PART #	QTY
	<b>3/4" Nylon Locknut</b>	14198	2
	Heads: 17008, 17009, 17022, 17023		
	<b>5/8" Nylon Locknut</b>	10313	2
	Heads: 17006, 17007, 17017, 17018, 17019, 17020, 19772, 19773		
	<b>1/2" Nylon Locknut</b>	10318	2
51	Heads: 16983, 16984, 16986, 16987, 16989, 16990, 16991, 16992, 16995, 16996, 16997, 16998, 16999, 17000, 17001, 17002, 17003, 17004, 17005, 17010, 17011, 17012, 17013, 17014, 17015, 17016		
	<b>7/16" Nylon Locknut</b>	15779	2
	Heads: 16977, 16978, 16979, 16980, 16981, 16982, 16993, 16994		
52	5/8" Nylon Locknut	10313	4
	<b>1/2" Nylon Locknut</b>	10318	
	Heads: 16977, 16978, 16979, 16980, 16981, 16982, 16983, 16984, 16986, 16987, 16989, 16990, 16991, 16992, 16993, 16994, 16995, 16996, 16997, 16998, 16999, 17000, 17001, 17002, 17003, 17004, 17005, 17006, 17007, 17010, 17011, 17012, 17013, 17014, 17015, 17016, 17017, 17018, 17019, 17020, 19772, 19773		63
53	Heads: 17008, 17009, 17022, 17023		65
54	3/8" Nylon Locknut	10274	12
55	Motor Hub Bolt	c/w motor hub	3
56	Hub Bolt	c/w hub	3
57	Head Pulley Bushing Bolt	c/w head bushing	4
58	Motor	customer supplied	1

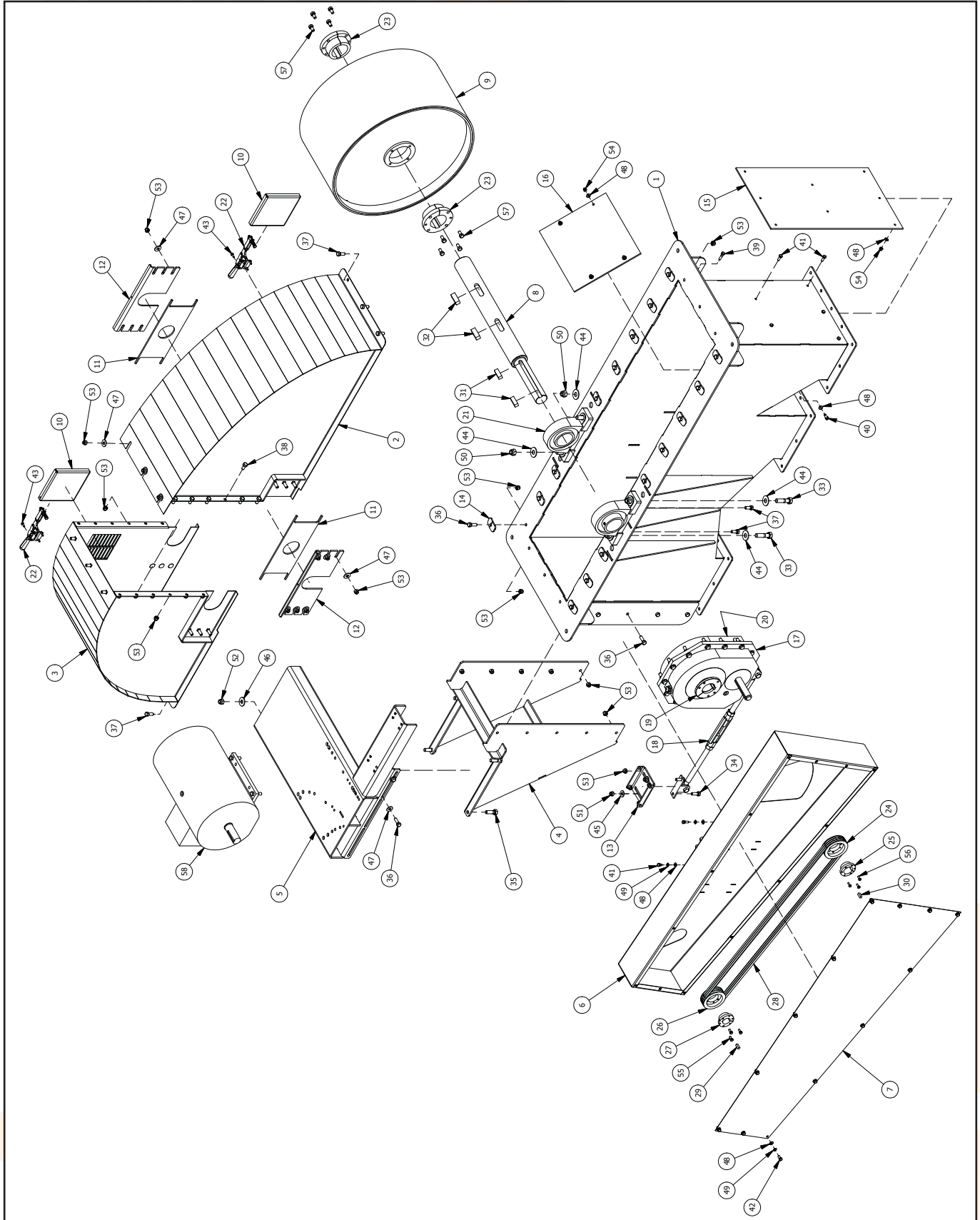


Head Part #	Item 24 - Pulley			Item 25 - Hub			Item 26 - Motor Pulley			Item 27 - Motor Hub			Item 28 - Belts		
	SIZE	PART #	QTY	SIZE	PART #	QTY	SIZE	PART #	QTY	SIZE	PART #	QTY	SIZE	PART #	QTY
16977	3V501	17874	1	SH118	17932	1	3V4751	17869	1	SH118	17932	1	3VX950	17944	1
16978	3V502	17875	1	SH118	17932	1	3V4752	17870	1	SH138	17933	1	3VX950	17944	2
16979	3V501	17874	1	SH138	17933	1	3V4751	17869	1	SH118	17932	1	3VX950	17944	1
16980	3V502	17875	1	SH138	17933	1	3V4752	17870	1	SH138	17933	1	3VX950	17944	2
16981	3V502	17875	1	SH138	17933	1	3V4752	17870	1	SH138	17933	1	3VX950	17944	2
16982	3V503	17876	1	SDS138	17923	1	3V4753	17871	1	SDS158	13839	1	3VX1000	17945	3
16983	3V502	17875	1	SH1716	17935	1	3V4752	17870	1	SH138	17933	1	3VX1000	17945	2
16984	3V503	17876	1	SDS1716	17925	1	3V4753	17871	1	SDS158	13839	1	3VX1000	17945	3
16986	3V504	17877	1	SDS1716	17925	1	3V4754	17872	1	SDS158	13839	1	3VX1000	17945	4
16987	3V505	17878	1	SDS1716	17925	1	3V4755	17873	1	SDS178	17924	1	3VX1000	17945	5
16989	3V504	17877	1	SDS158	13839	1	3V4754	17872	1	SDS158	13839	1	3VX1000	17945	4
16990	3V505	17878	1	SDS158	13839	1	3V4755	17873	1	SDS178	17924	1	3VX1060	17946	5
16991	3V694	13812	1	SK158	18810	1	3V654	13811	1	SK178	17937	1	3VX1060	17946	4
16992	3V694	13812	1	SK158	18810	1	3V654	13811	1	SK178	17937	1	3VX1060	17946	4
16993	3V502	17875	1	SH138	17933	1	3V4752	17870	1	SH138	17933	1	3VX950	17944	2
16994	3V503	17876	1	SDS138	17923	1	3V4753	17871	1	SDS158	13839	1	3VX1000	17945	3
16995	3V502	17875	1	SH1716	17935	1	3V4752	17870	1	SH138	17933	1	3VX1000	17945	2
16996	3V503	17876	1	SDS1716	17925	1	3V4753	17871	1	SDS158	13839	1	3VX1000	17945	3
16997	3V503	17876	1	SDS1716	17925	1	3V4753	17871	1	SDS158	13839	1	3VX1000	17945	3
16998	3V504	17877	1	SDS1716	17925	1	3V4754	17872	1	SDS158	13839	1	3VX1000	17945	4
16999	3V505	17878	1	SDS1716	17925	1	3V4755	17873	1	SDS178	17924	1	3VX1000	17945	5
17000	3V503	17876	1	SDS158	13839	1	3V4753	17871	1	SDS158	13839	1	3VX1000	17945	3
17001	3V504	17877	1	SDS158	13839	1	3V4754	17872	1	SDS158	13839	1	3VX1000	17945	4
17002	3V505	17878	1	SDS158	13839	1	3V4755	17873	1	SDS178	17924	1	3VX1060	17946	5
17003	3V505	17878	1	SDS158	13839	1	3V4755	17873	1	SDS178	17924	1	3VX1060	17946	5
17004	3V694	13812	1	SK158	18810	1	3V654	13811	1	SK178	17937	1	3VX1120	17947	4
17005	3V695	13813	1	SK158	18810	1	3V655	13810	1	SK218	13842	1	3VX1120	17947	5
17006	3V695	13813	1	SK2316	17940	1	3V655	13810	1	SK218	13842	1	3VX1120	17947	5



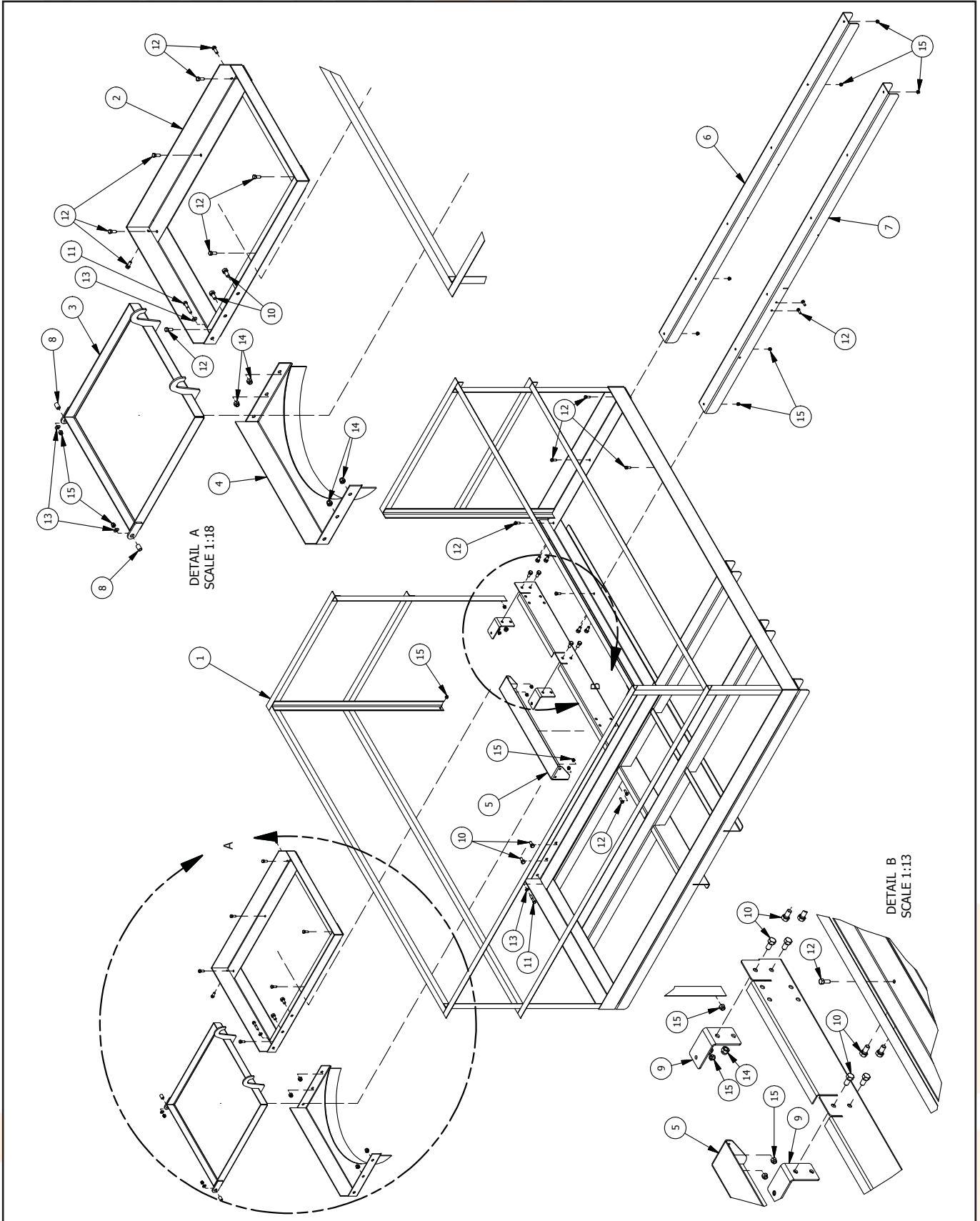


Head Part #	Item 24 - Pulley			Item 25 - Hub			Item 26 - Motor Pulley			Item 27 - Motor Hub			Item 28 - Belts		
	SIZE	PART #	QTY	SIZE	PART #	QTY	SIZE	PART #	QTY	SIZE	PART #	QTY	SIZE	PART #	QTY
17007	5V1182	17906	1	SK2316	17940	1	5V1132	17903	1	SK218	13842	1	5VX1250	17955	2
17008	3V695	13813	1	SK2716	17941	1	3V655	13810	1	SK218	13842	1	3VX1180	17948	5
17009	5V1182	17906	1	SK2716	17941	1	5V1132	17903	1	SK218	13842	1	5VX1320	17956	2
17010	3V502	17875	1	SH1716	17935	1	3V4752	17870	1	SH138	17933	1	3VX1000	17945	2
17011	3V503	17876	1	SDS1716	17925	1	3V4753	17871	1	SDS158	13839	1	3VX1000	17945	3
17012	3V504	17877	1	SDS158	13839	1	3V4754	17872	1	SDS158	13839	1	3VX1000	17945	4
17013	3V694	13812	1	SK158	18810	1	3V654	13811	1	SK178	17937	1	3VX1120	17947	4
17014	3V504	17877	1	SDS158	13839	1	3V4754	17872	1	SDS158	13839	1	3VX1000	17945	4
17015	3V694	13812	1	SK158	18810	1	3V654	13811	1	SK178	17937	1	3VX1120	17947	4
17016	3V695	13813	1	SK158	18810	1	3V655	13810	1	SK218	13842	1	3VX1120	17947	5
17017	3V694	13812	1	SK2316	17940	1	3V654	13811	1	SK178	17937	1	3VX1120	17947	4
17018	3V695	13813	1	SK2316	17940	1	3V655	13810	1	SK218	13842	1	3VX1120	17947	5
17019	5V1182	17906	1	SK2316	17940	1	5V1132	17903	1	SK218	13842	1	5VX1250	17955	2
17020	5V1182	17906	1	SK2316	17940	1	5V1132	17903	1	SK238	17939	1	5VX1250	17955	2
17022	5V1182	17906	1	SK2716	17941	1	5V1132	17903	1	SK218	13842	1	5VX1320	17956	2
17023	5V1182	17906	1	SK2716	17941	1	5V1132	17903	1	SK238	17939	1	5VX1320	17956	2
19772	3V505	17878	1	SK2316	17940	1	3V4755	17873	1	SDS178	17924	1	3VX1120	17947	4
19773	3V694	13812	1	SK2316	17940	1	3V654	13811	1	SK178	17937	1	3VX1120	17947	4



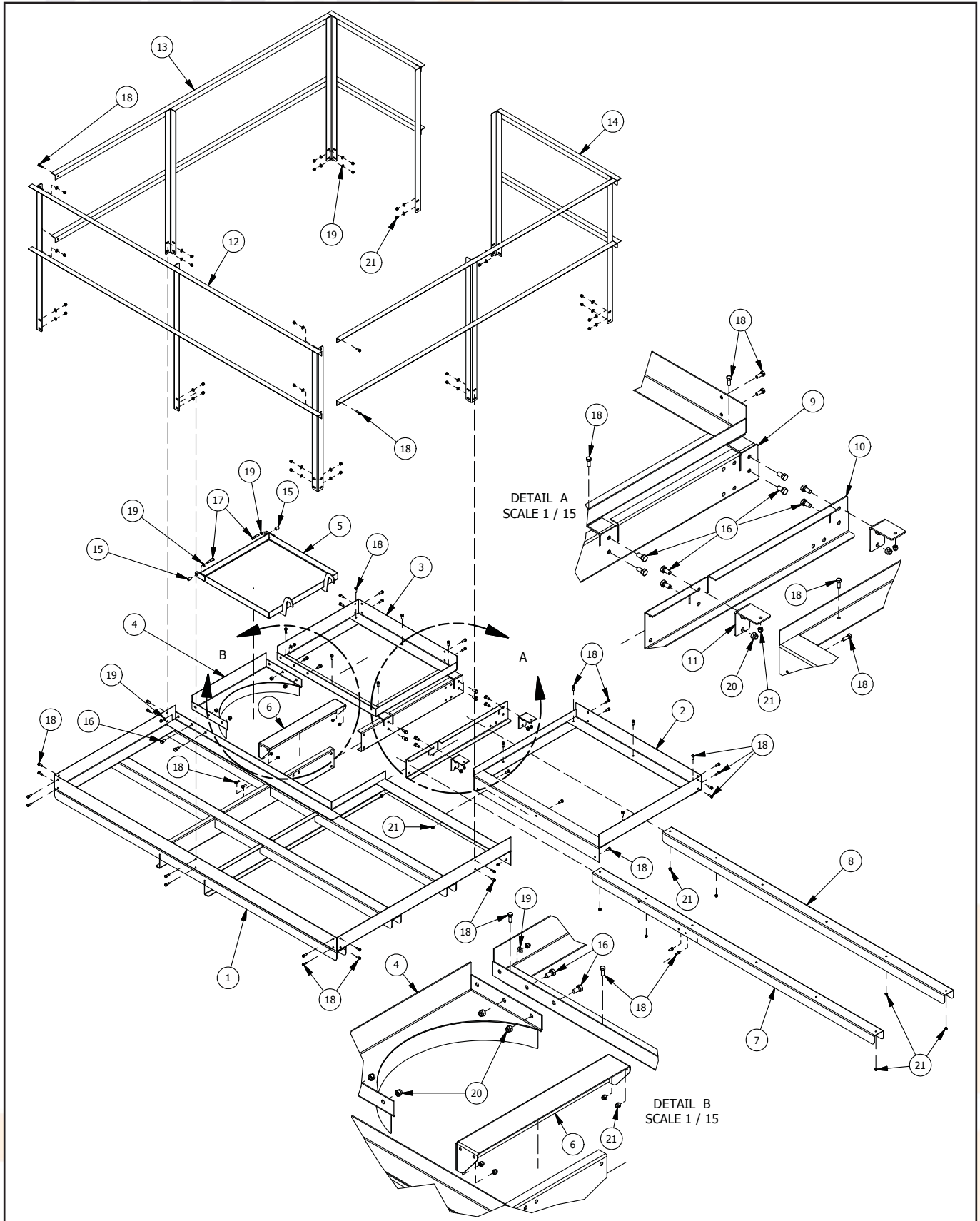
#s	DESCRIPTION	PART #	QTY
1	MAIN HEAD PLATFORM WELDMENT	18424	1
2	SECONDARY PLATFORM BOLT-IN SECTION	18410	1
3	TRAPDOOR WELDMENT	12624	1
4	PLATFORM ENTRANCE WELDMENT	18403	1
5	TOP LADDER MOUNTING BRACKET	18421	1
6	HEAD PLATFORM BOLT-IN CHANNEL	18371	1
7	HEAD PLATFORM LADDER BOLT-IN CHANNEL	18372	1
8	TRAPDOOR PIVOT TUBE	12623	2
9	HEAD PLATFORM BOLT-IN ANGLE	18409	4
10	1/2 x 1" BOLT	10302	12
11	3/8 x 2" BOLT	10305	2
12	3/8 x 1" BOLT	10277	17
13	3/8" FLATWASHER SM OD	10275	4
14	1/2" NYLON LOCKNUT	10318	12
15	3/8" NYLON LOCKNUT	10274	19





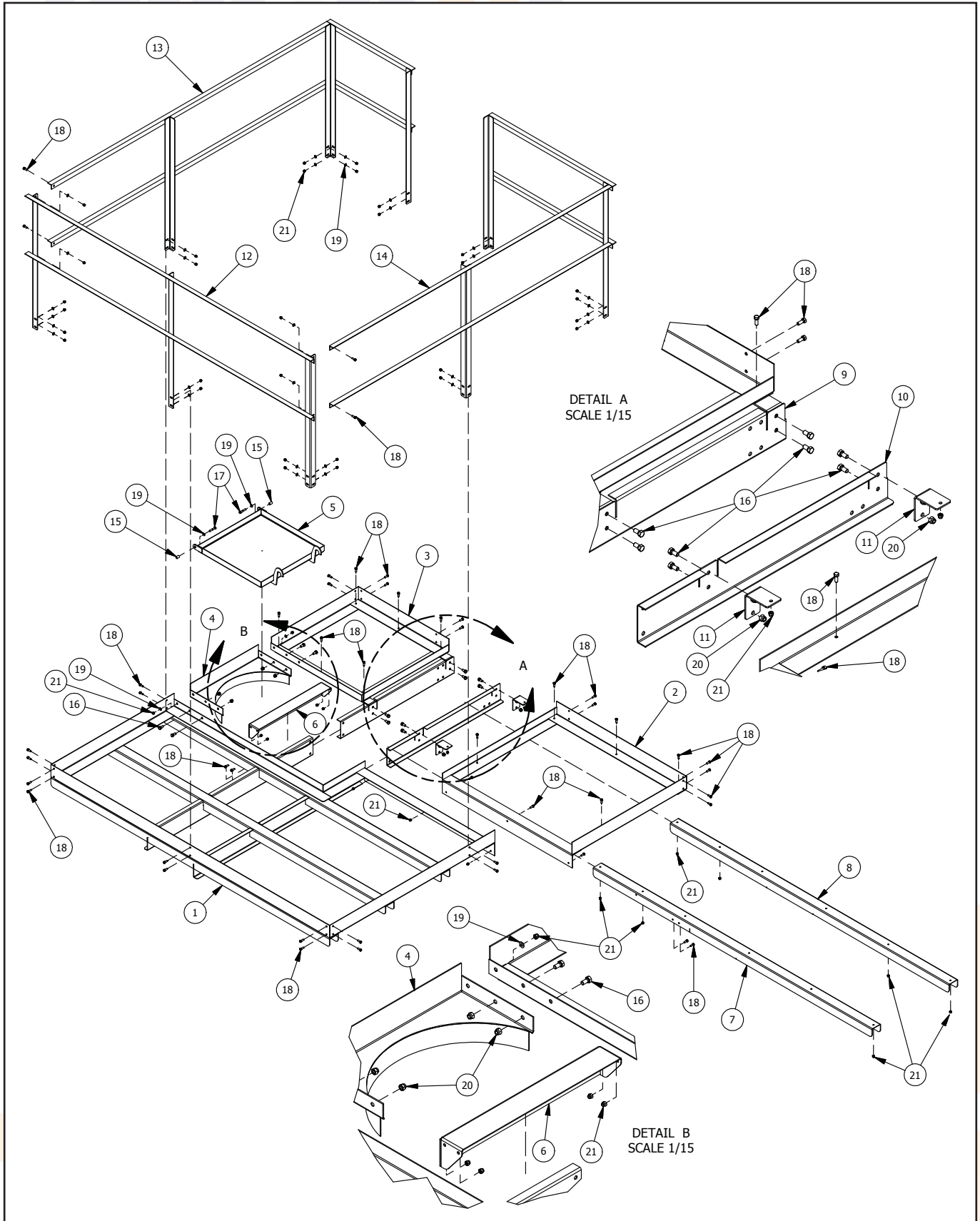


#s	DESCRIPTION	PART #	QTY
1	MAIN HEAD PLATFORM WELDMENT	18425	1
2	RIGHT SECONDARY PLATFORM BOLT-IN SECTION	18411	1
3	LEFT SECONDARY PLATFORM BOLT-IN SECTION	18412	1
4	PLATFORM ENTRANCE WELDMENT	18404	1
5	TRAPDOOR WELDMENT	12624	1
6	TOP LADDER MOUNTING BRACKET	18421	1
7	HEAD PLATFORM LADDER BOLT-IN CHANNEL	18372	1
8	HEAD PLATFORM BOLT-IN CHANNEL	18371	1
9	LEFT PLATFORM MOUNTING BEAM	18447	1
10	RIGHT PLATFORM MOUNTING BEAM	18436	1
11	HEAD PLATFORM BOLT-IN ANGLE	18409	4
12	BACK RAILING WELDMENT	18484	1
13	LEFT RAILING WELDMENT	18486	1
14	RIGHT RAILING WELDMENT	18485	1
15	TRAPDOOR PIVOT TUBE	12623	2
16	1/2 x 1" BOLT	10302	12
17	3/8 x 2" BOLT	10305	2
18	3/8 x 1" BOLT	10277	48
19	3/8" FLATWASHER SM OD	10275	34
20	1/2" NYLON LOCKNUT	10318	12
21	3/8" NYLON LOCKNUT	10274	50

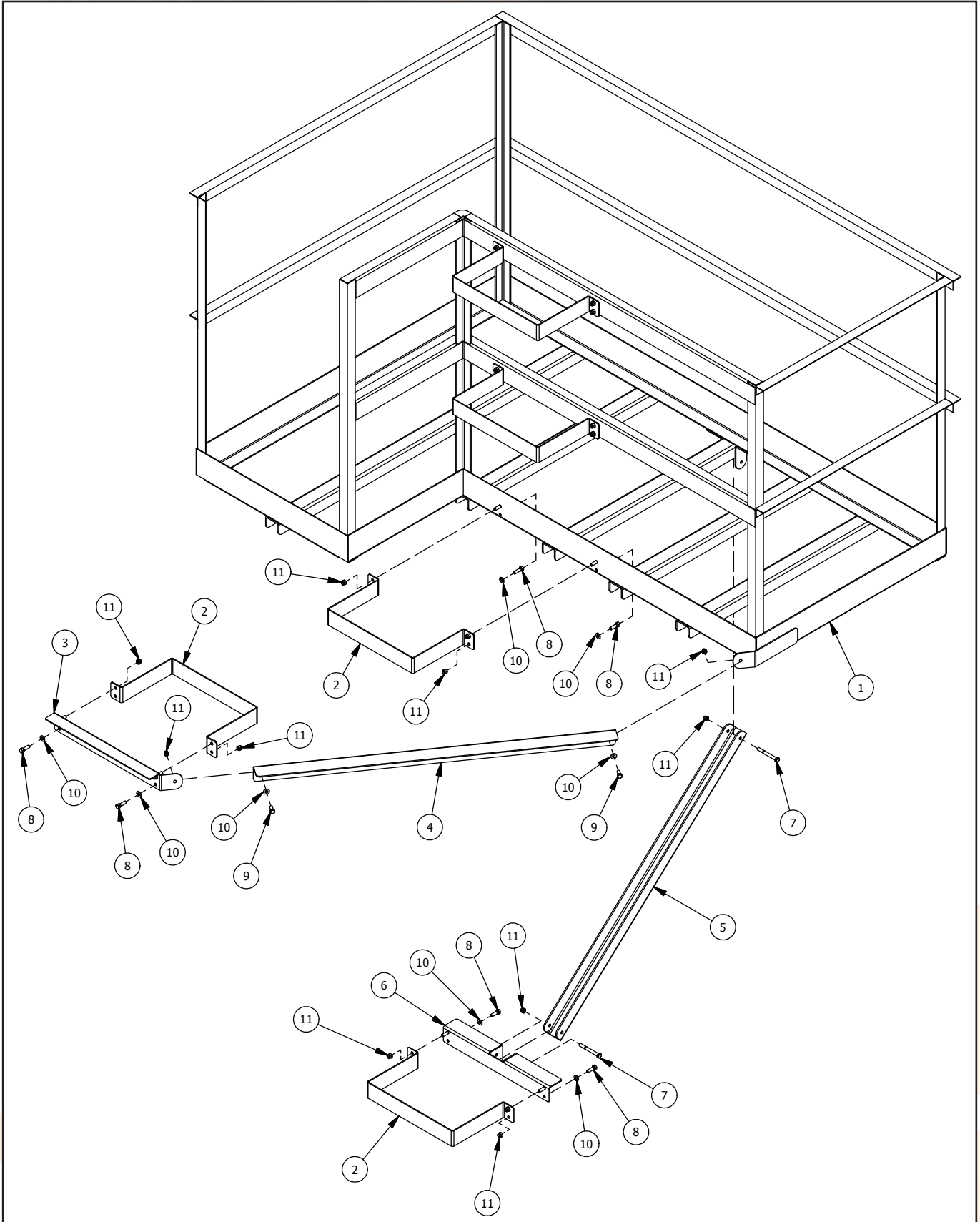


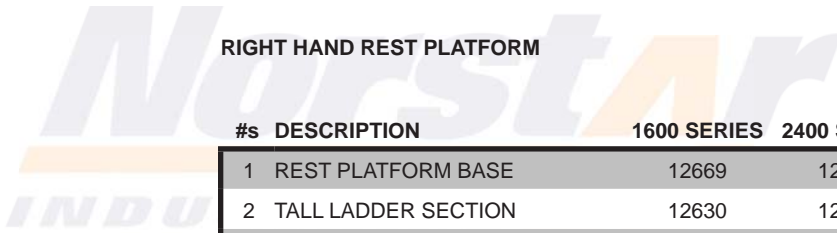


#s	DESCRIPTION	PART #	QTY
1	MAIN HEAD PLATFORM WELDMENT	18426	1
2	RIGHT SECONDARY PLATFORM BOLT-IN SECTION	18413	1
3	LEFT SECONDARY PLATFORM BOLT-IN SECTION	18414	1
4	PLATFORM ENTRANCE WELDMENT	18405	1
5	TRAPDOOR WELDMENT	12624	1
6	TOP LADDER MOUNTING BRACKET	18422	1
7	HEAD PLATFORM LADDER BOLT-IN CHANNEL	18380	1
8	HEAD PLATFORM BOLT-IN CHANNEL	18379	1
9	LEFT PLATFORM MOUNTING BEAM	18448	1
10	RIGHT PLATFORM MOUNTING BEAM	18437	1
11	HEAD PLATFORM BOLT-IN ANGLE	18409	4
12	BACK RAILING WELDMENT	18487	1
13	LEFT RAILING WELDMENT	18489	1
14	RIGHT RAILING WELDMENT	18488	1
15	TRAPDOOR PIVOT TUBE	12623	2
16	1/2 x 1" BOLT	10302	12
17	3/8 x 2" BOLT	10305	2
18	3/8 x 1" BOLT	10277	48
19	3/8" FLATWASHER SM OD	10275	34
20	1/2" NYLON LOCKNUT	10318	12
21	3/8" NYLON LOCKNUT	10274	50



#s	DESCRIPTION	1600 SERIES	2400 SERIES	3000 SERIES	QTY
1	PLATFORM BASE	18175	18176	18177	1
2	TRUNK CLAMP	18351	18351	18352	5
3	STABILIZER CLAMP	18357	18358	18359	1
4	STABILIZER ANGLE	18861	18862	18863	1
5	BOTTOM BRACE	15080	15080	15080	1
6	BRACE CLAMP	18867	18867	18868	1
7	3/8 x 3 1/2" BOLT	10280	10280	10280	2
8	3/8 x 1 1/4" BOLT	10311	10311	10311	20
9	3/8 x 1" BOLT	10277	10277	10277	2
10	3/8" FLATWASHER SM OD	10275	10275	10275	22
11	3/8" NYLON LOCKNUT	10274	10274	10274	24





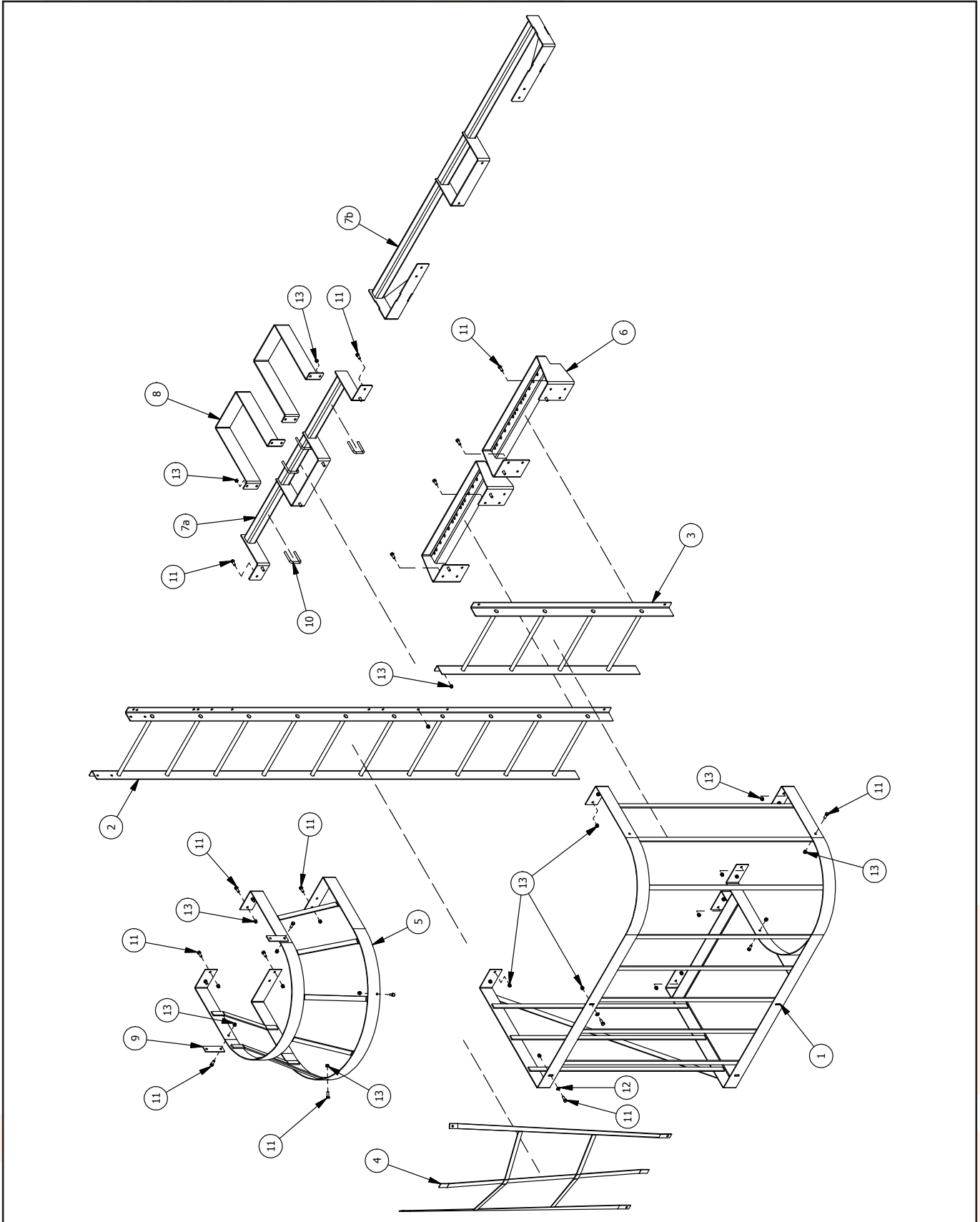
**RIGHT HAND REST PLATFORM**

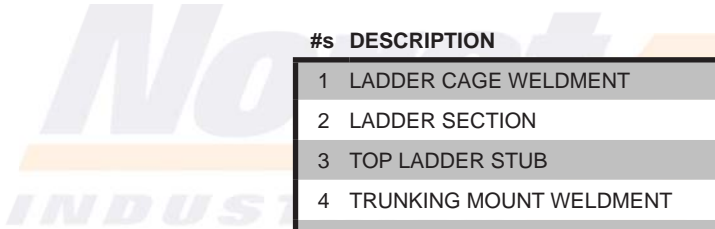
#s	DESCRIPTION	1600 SERIES	2400 SERIES	3000 SERIES	QTY
1	REST PLATFORM BASE	12669	12669	12669	1
2	TALL LADDER SECTION	12630	12630	12630	1
3	SHORT LADDER SECTION	12632	12632	12632	1
4	WARP CAGE	12699	12699	12699	1
5	CAGE FLARE	18152	18152	18152	1
6	LADDER MOUNT BRACKET	18153	18153	18153	2
7a	TRUNK CLAMP WELDMENT	12677	12677	n/a	1
7b	TRUNK CLAMP WELDMENT	n/a	n/a	18134	1
8	TRUNK CLAMP WRAP	18145	18145	18146	2
9	LADDER CONNECTOR TAB	18126	18126	18126	2
10	U-BOLT	12683	12683	12683	4
11	3/8 x 1" BOLT	10277	10277	10277	28
12	3/8" FLATWASHER SM OD	10275	10275	10275	2
13	3/8" NYLON LOCKNUT	10274	10274	10274	36

**LEFT HAND REST PLATFORM**

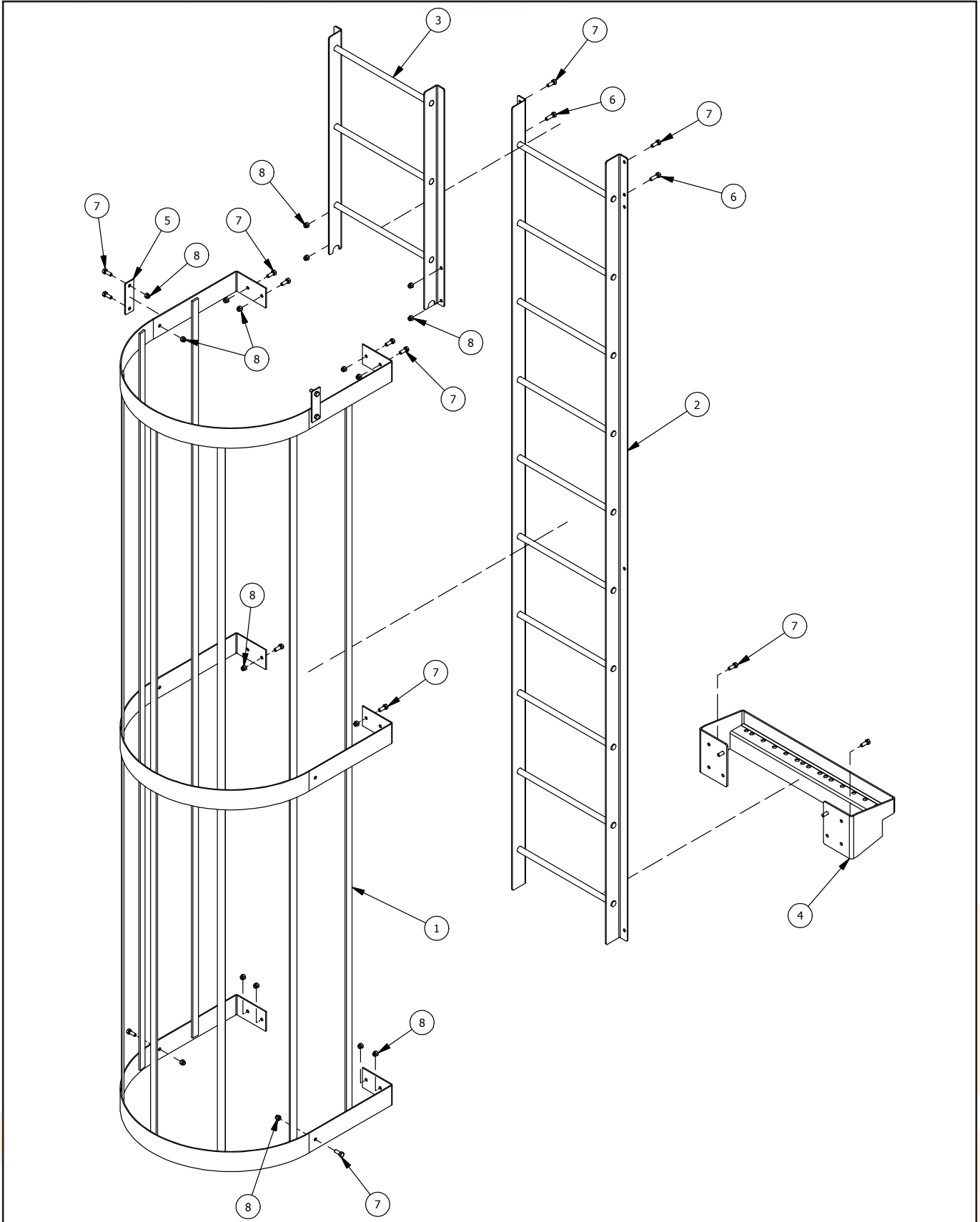
#s	DESCRIPTION	1600 SERIES	2400 SERIES	3000 SERIES	QTY
1	REST PLATFORM BASE	12668	12668	12668	1
2	TALL LADDER SECTION	12630	12630	12630	1
3	SHORT LADDER SECTION	12632	12632	12632	1
4	WARP CAGE	12699	12699	12699	1
5	CAGE FLARE	18152	18152	18152	1
6	LADDER MOUNT BRACKET	18153	18153	18153	2
7a	TRUNK CLAMP WELDMENT	12677	12677	n/a	1
7b	TRUNK CLAMP WELDMENT	n/a	n/a	18134	1
8	TRUNK CLAMP WRAP	18145	18145	18146	2
9	LADDER CONNECTOR TAB	18126	18126	18126	2
10	U-BOLT	12683	12683	12683	4
11	3/8 x 1" BOLT	10277	10277	10277	28
12	3/8" FLATWASHER SM OD	10275	10275	10275	2
13	3/8" NYLON LOCKNUT	10274	10274	10274	36







#s	DESCRIPTION	1600-3000 SERIES	QTY
1	LADDER CAGE WELDMENT	18130	1
2	LADDER SECTION	18161	1
3	TOP LADDER STUB	18162	1
4	TRUNKING MOUNT WELDMENT	18153	1
5	LADDER CONNECTOR PLATE	12649	2
6	3/8 x 1 1/4" BOLT	10964	2
7	3/8 x 1" BOLT	10277	18
8	3/8" NYLON LOCKNUT	10274	20

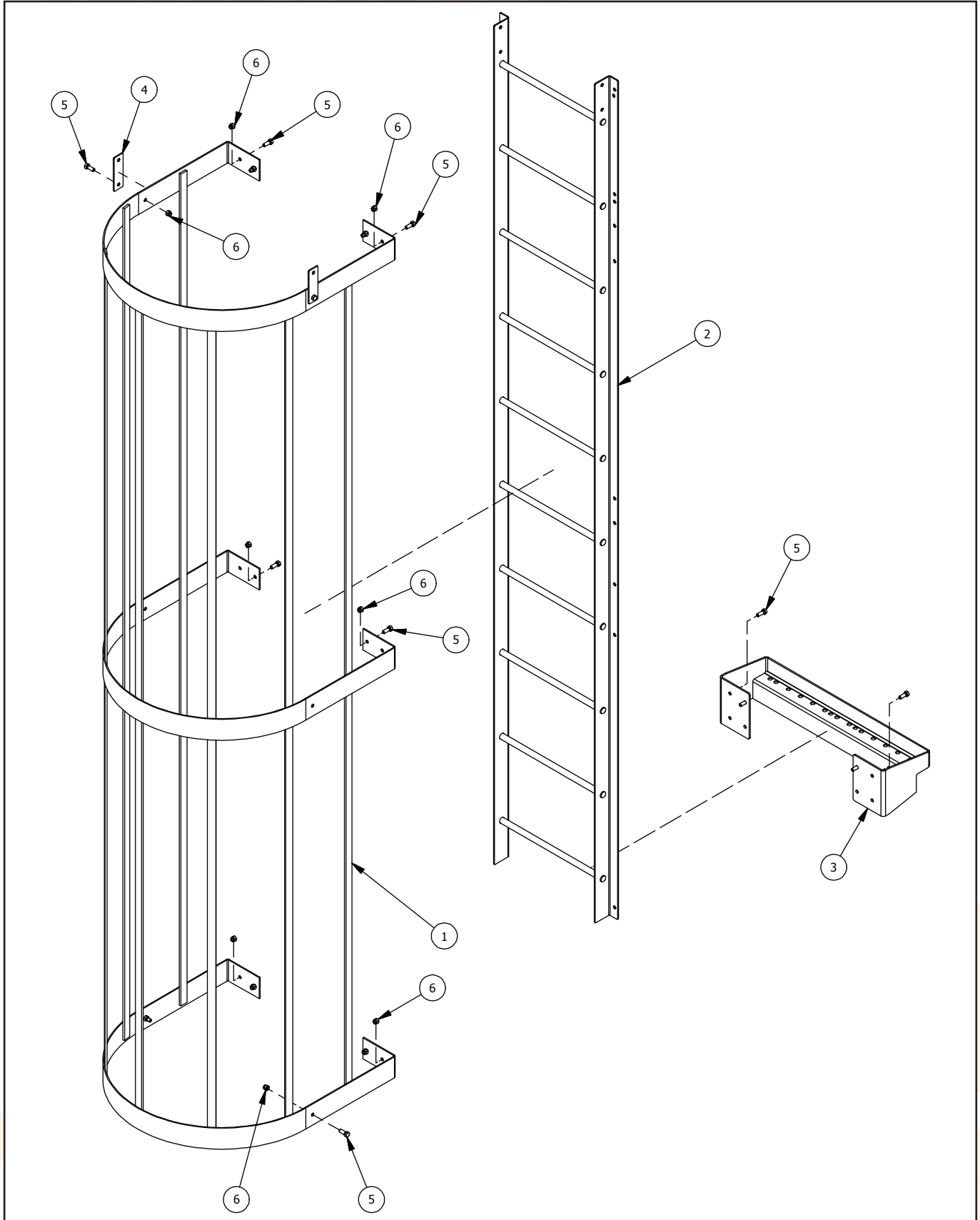



## 10' LADDER SECTION

#s	DESCRIPTION	1600-3000 SERIES	QTY
1	LADDER CAGE WELDMENT	12716	1
2	LADDER SECTION	12630	1
3	TRUNKING MOUNT WELDMENT	18153	1
4	LADDER CONNECTOR PLATE	18126	2
5	3/8 x 1" BOLT	10277	14
6	3/8" NYLON LOCKNUT	10274	14

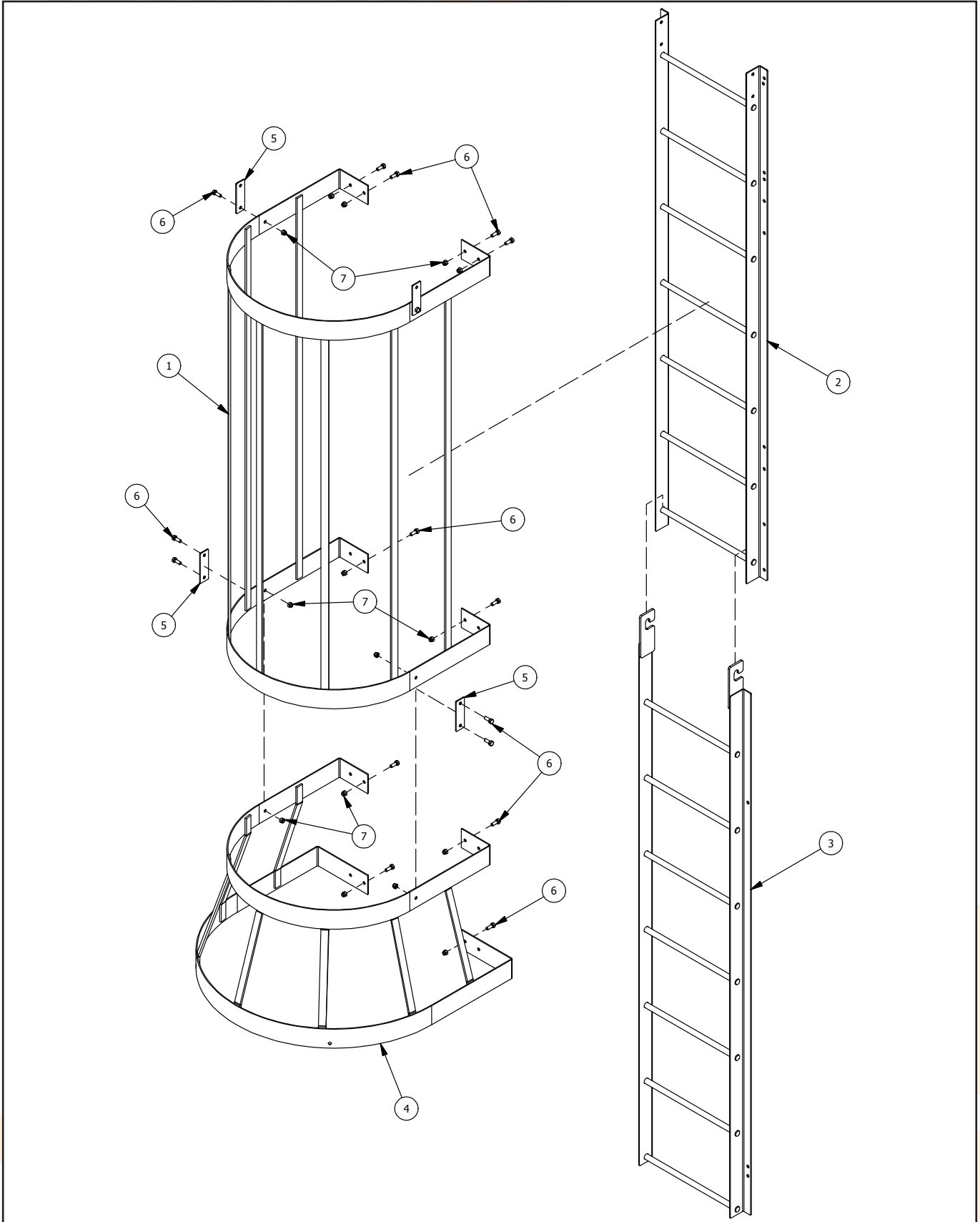
## 5' LADDER SECTION

#s	DESCRIPTION	1600-3000 SERIES	QTY
1	LADDER CAGE WELDMENT	12755	1
2	LADDER SECTION	12751	1
3	TRUNKING MOUNT WELDMENT	18153	1
4	LADDER CONNECTOR PLATE	18126	2
5	3/8 x 1" BOLT	10277	12
6	3/8" NYLON LOCKNUT	10274	12





#s	DESCRIPTION	PART #	QTY
1	LADDER CAGE WELDMENT	18131	1
2	LADDER SECTION	18127	1
3	HANGING LADDER SECTION	18876	1
4	CAGE FLARE WELDMENT	18152	1
5	LADDER CONNECTOR PLATE	18126	4
6	3/8 x 1" BOLT	10277	16
7	3/8" NYLON LOCKNUT	10274	16





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