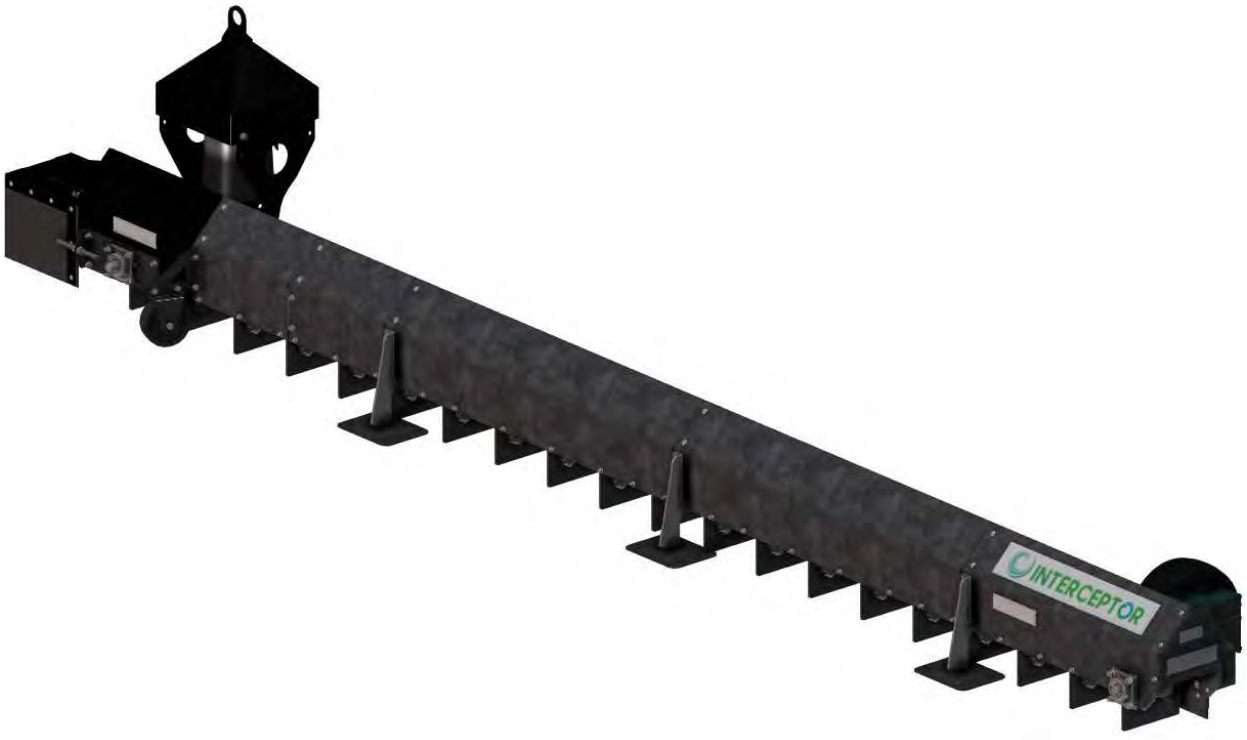
MANUAL NO. 701897 4/21/2022

OWNERS MANUAL

INTERCEPTOR



Introduction

- The purpose of this manual is to explain the operation and maintenance of the paddle sweep. It also contains a parts list for reference if replacement parts are needed.
- It is recommended that you read this manual in its entirety for the information available in order to provide the proper care and maintenance of the paddle sweep. The equipment is built to provide many years of dependable service when used properly. Reading this manual will also provide information on how to use the equipment correctly to prevent any accidents while using the system.
- If you have any further questions, comments, improvements, or suggestions regarding the contents of any of the manuals provided, please see the contact information below.
- This machine is covered by one or more United States patents. Refer to www.siouxsteel.com for current patent information. Or scan this QR Code to go directly to the patent area on the website.

ALL safety decals are no charge from the factory.
Please replace all safety decals if damaged or missing.
Your safety is important

WARNING! Anyone who will be operating or working around the equipment should first read this manual to familiarize themselves with the machinery.

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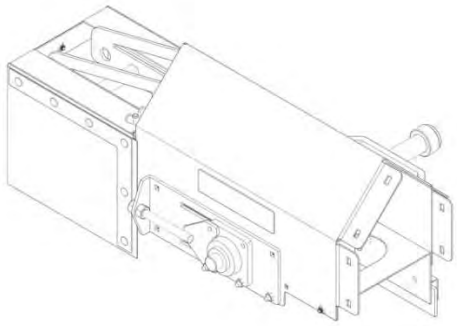
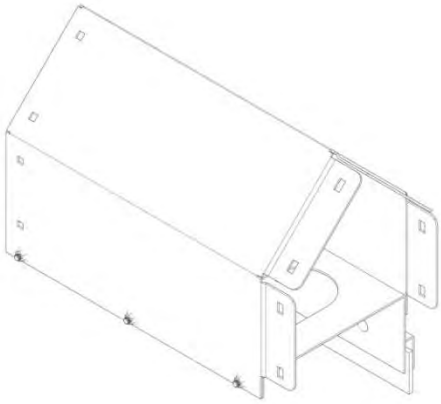
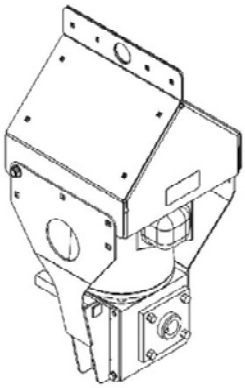
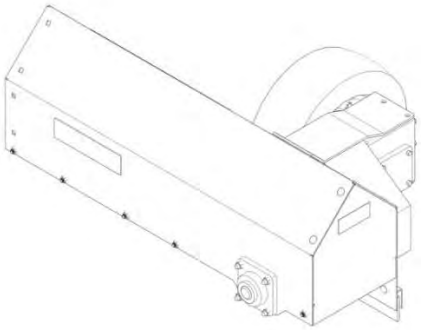
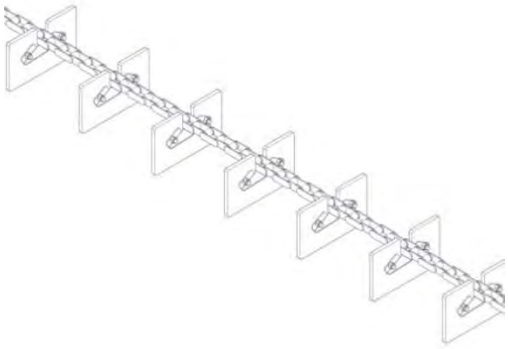
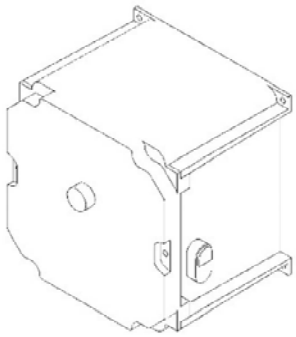
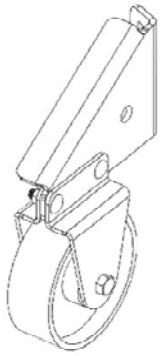
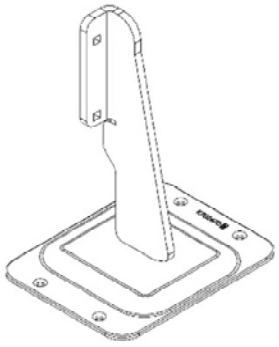
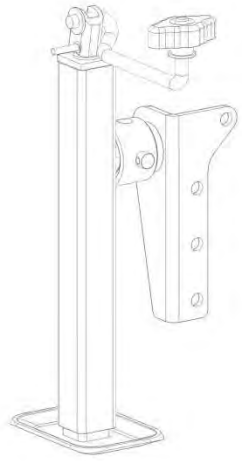
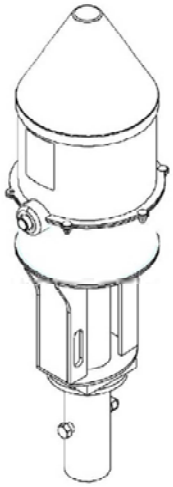
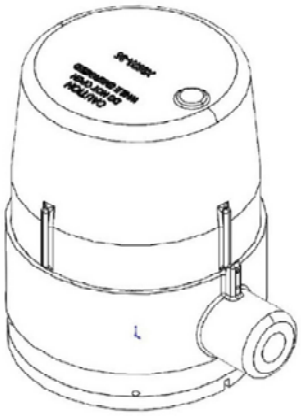
1 Sweep Terminology

Head Section 	Intermediate Section 
Motor/Gearbox Assembly 	Drive End 
Paddle Chain 	Motor Starter Box 

Caster 	Zero Entry 
Jack 	Collector Ring Assembly 
Slip Ring 	

2 Safety Information

- A careful operator is the best operator. Most accidents can be avoided by observing necessary precautions. To help prevent accidents, read the following precautions before operating this equipment. Equipment should be operated only by those who are responsible and instructed to do so. Carefully review the procedures given in this manual with all operators. It is important that all operators be familiar with and follows safety precautions. Improper use of the equipment can cause serious injury or death.
- Read the operator's manual before operating equipment.
- Only allow properly trained persons to operate the equipment.
- Keep hands and feet away from all pinch points.
- Keep bystanders away during operation. In an empty bin/silo, keep everyone rearward of the sweep during operation to validate installation or maintenance.
- Do not contact (i.e. push, stand, touch, etc.) any portion of the sweep during operation.
- Since the installation of this sweep takes place with in a confine space. Confine space awareness should be followed. Lockout/tag out awareness should be followed.
- A licensed electrician is recommended to wire the unit in accordance with local federal codes.
- **DO NOT** clean, lubricate or adjust the equipment while it is running. Disengage the machine prior to doing so.
- Install and ground slip collector ring and the entire unit in accordance with the National Electric Code (NEC) and local codes and/or ordinances.
- Always disconnect and lock out all power sources from the collector ring before attempting to perform any service function. Follow lockout/tag out procedures as outlined in OSHA section 1910.147 where appropriate.
- An explosion proof motor is required for use in a Class II, Group E, F, G dust environment.
- Refer to maintenance chart to check all fasteners and hardware to assure tightness.
- **CAUTION:** Too much oil will cause overheating and too little will result in gear failure. Check oil level regularly. More frequent oil changes are recommended when operating continuously, at high temperatures or under conditions of extreme dirt or dust. Check that the vent plug is clear.
- Contact the bin manufacturer for anchor design on grain bins 72 feet in diameter and larger for single pass sweep utilization. Failure to do so may cause damage to the grain bin.
- **REMEMBER: The manufacturer includes or provides all reasonable means for accident prevention except a safe and careful operator.**

2.1 Safety Alert Symbol

- The symbol shown below is used to call your attention to instructions concerning your personal safety. Watch for this symbol it points out important safety precautions. It means **ATTENTION! Be Alert! Your Personal Safety Is Involved!**

DANGER: Indicates an imminently hazardous situation that, if not avoided, will result in death or serious injury. The color associated with Danger is RED.

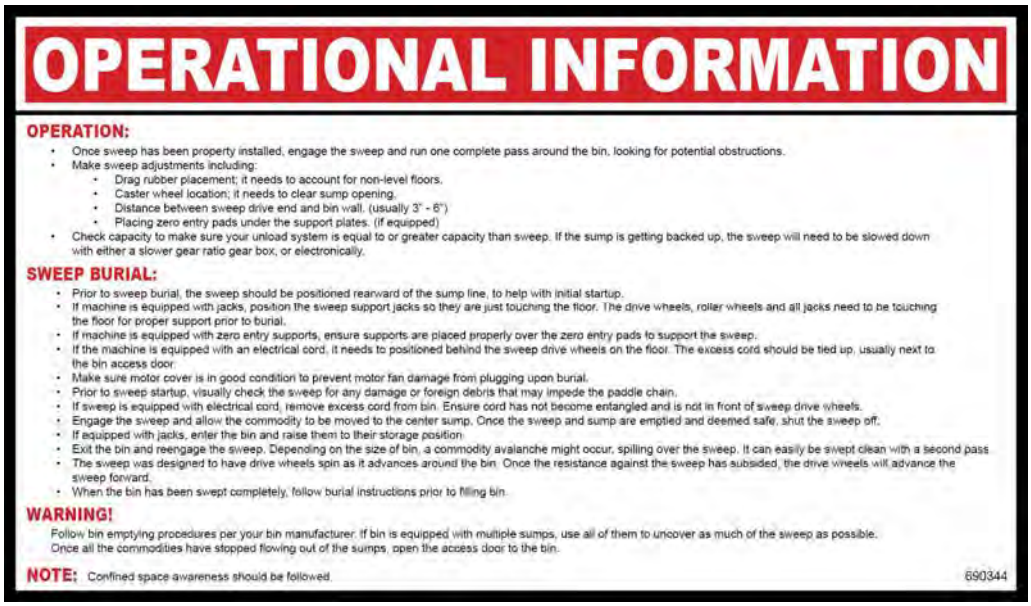
WARNING: Indicates a potentially hazardous situation that, if not avoided, could result in death or serious injury. The color associated with Warning is ORANGE.

CAUTION: Indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury. The color associated with Caution is YELLOW.

2.2 Safety & Logo Decals

- 686033 DANGER – Paddle chain may cause serious injury keep hands, feet and clothing away.

- 690344 – Operation Information



- 688462 DANGER - Electrical Hazard. Turn off power and lock out before servicing.

689771 WARNING – Rotating chain can crush and cut. Do NOT operate without guards in place.

3 Specifications

(Specifications are subject to change without notice and without liability)

3.1 Features

- **Farm Series**
  - **Theoretical Capacity:** 1,000 BPH (bushels per hour) and up to 5,500 BPH. **Note:** These values can fluctuate greatly depending on the varying conditions present, including but not limited to; moisture content, grain commodity type and flowability, amount of foreign matter present, and compaction rate. These all play a part in the performance of the paddle sweep. Paddle sweep capacity may also vary as the angle of the sloping grain varies. For optimal performance, dry flowable grain is recommended. The paddle sweep is not intended for use in high moisture grain storage applications or suitable for non-grain commodities including fertilizer, lime, etc. Also, grain that may have gone out of condition due to moisture or insect activity and has become hard or caked will result in diminished capacity.
  - Drive tire size: 5” x 8” -15” height segmented wheel
  - Drive wheel powered by a gearbox off the paddle chain.
  - Designed to be fully submersed in grain
  - Housing is made from 12 ga. Steel
  - Moves grain gently and evenly to sump
  - Adjustable chain mount
  - Flexible pivot joint allows sweep to move independently from gearbox to allow for variations in the bin floor
  - Adjustable stabilizer arms to accommodate variations in bin size and out of roundness
  - Rubber drag to clean the floor for less sweeping

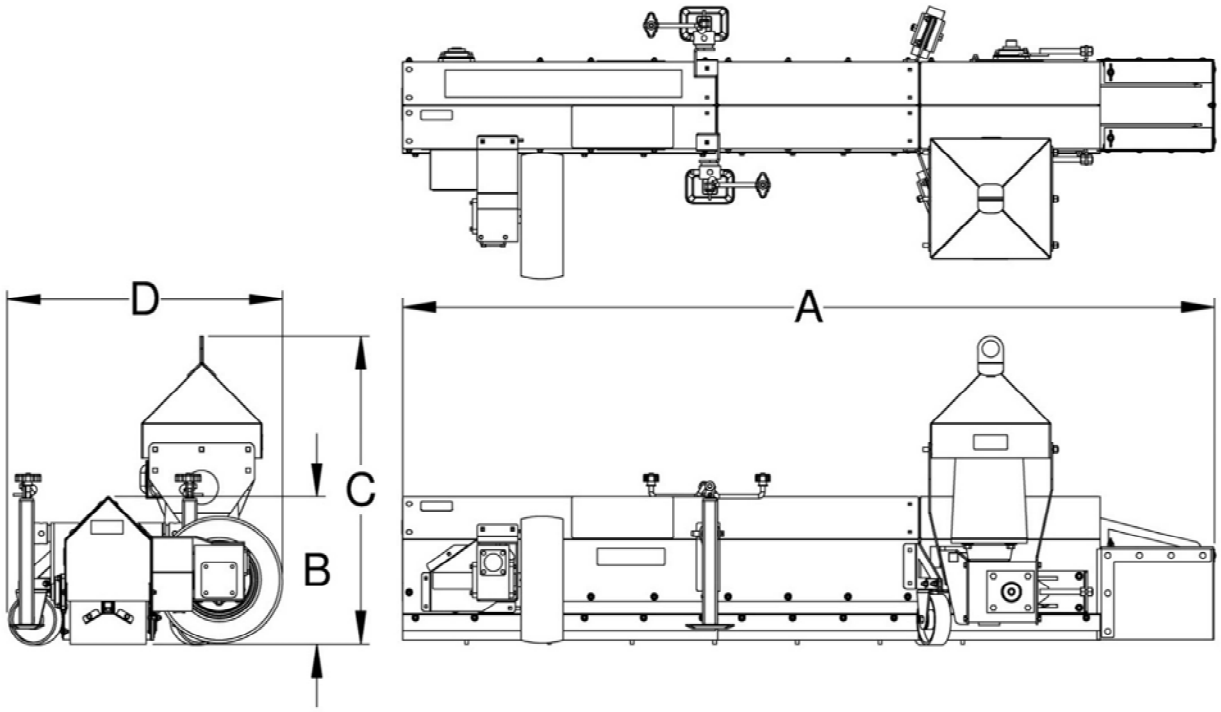
3.2 Burial Depth Chart

MAX. EAVE HEIGHT/BURIAL DEPTH CHART FOR PADDLE SWEEPS

Sweep Model	Bin/Silo Type	Support System	Bin/Silo Diameters																										
			15'	18'	21'	24'	27'	30'	33'	36'	42'	48'	54'	60'	66'	72'	75'	78'	90'	105'	116'	124'	132'	135'	139'
			Floor to Eave Height																						
Daay Power Farm	Corrugated Bin	Jacks	70'				40'					35'		30'	NA										
Daay Power Farm	Corrugated Bin	Zero Entry	70'										60'		NA										
Interceptor	Corrugated Bin	Jacks	70'				40'					35'			NA										
Interceptor	Corrugated Bin	Zero Entry	70'										60'		NA										
			Floor to Eave Height																						
Daay Bin Paddle & DPS G2	Corrugated Bin	Jacks	115'											105'	95'		90'		80'	75'	NA				
Daay Bin Paddle & DPS G2	Corrugated Bin	Zero Entry	150'													140'	135'	115'	106'	NA					
DPS 12K	Corrugated Bin	Zero Entry	NA								150'			139'	136'	125'	114'	106'	99'	95'	88'	88'	84'		
			Floor to Eave Height																						
Daay Bin Paddle & DPS G2	Concrete Silo	Jacks	160'										135'	115'	105'	100'	95'		85'	75'	NA				
Daay Bin Paddle & DPS G2	Concrete Silo	Zero Entry	160'													150'	125'	106'	NA						
DPS 12K	Concrete Silo	Zero Entry	NA								150'			139'	136'	125'	114'	106'	99'	95'	88'	88'	84'		

*If eave height is over the listed height, please contact manufacture.

3.3 Overall Dimensions & Weights



Sweep Unit for Bin Size	Length (Dim A)	Length (Dim B)	Height (Dim C)	Width (Dim D)	Unit Weight (lbs)
15’	8’	18”	37”	33”	663
18’	9’				688
21’	11’				733
24’	12’				758
27’	13’				793
30’	15’				848
33’	16’				882
36’	18’				930
42’	21’				1008
48’	24’				1083
54’	27’				1159
60’	30’				1394

4 Setup

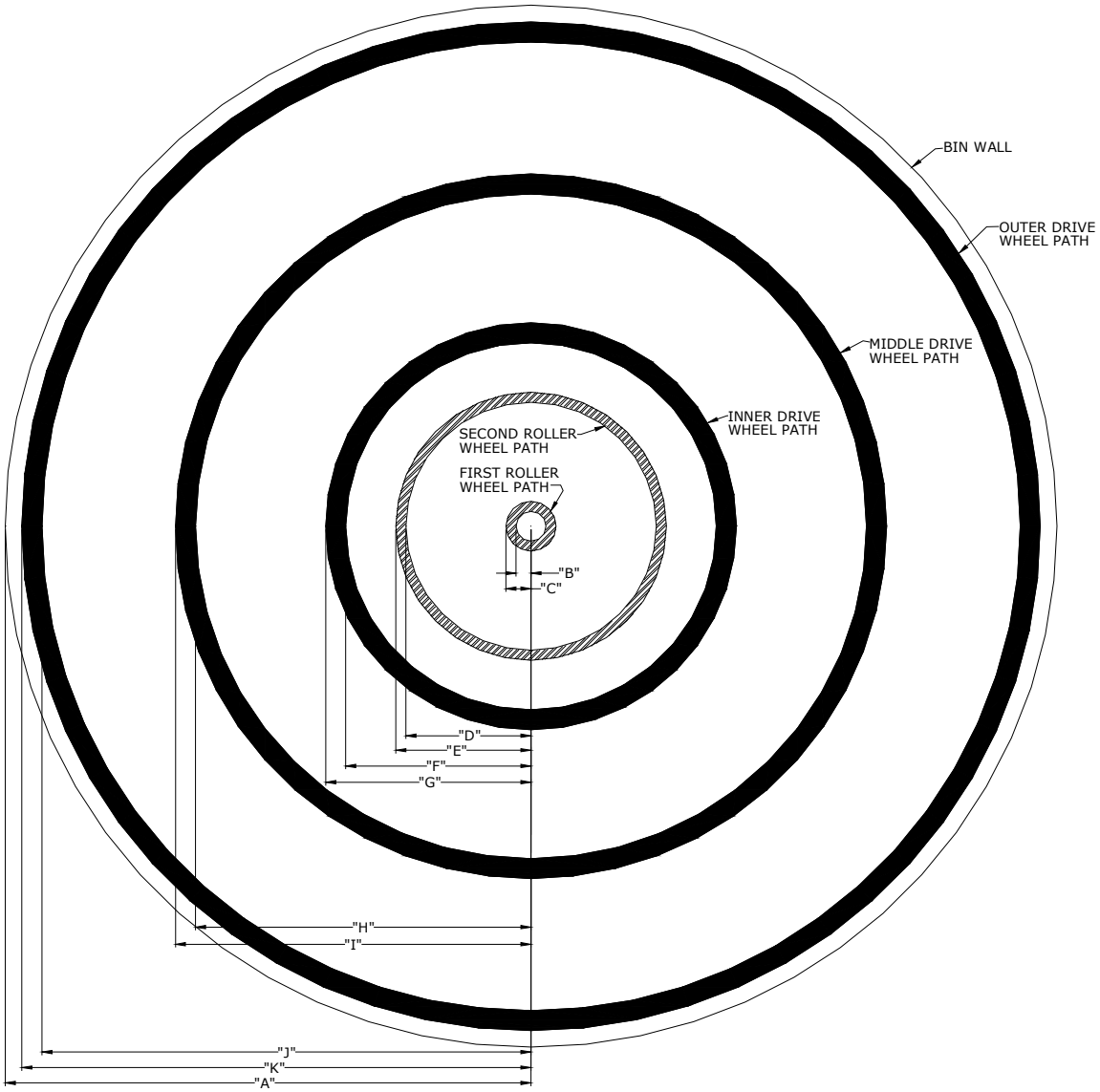
4.1 Prior to Installation

- Extra floor supports or structure will be required to support the sweep during burial if a full aeration floor is used. These supports or structure will need to be placed directly underneath the zero entry pads/jacks/caster wheels to support the sweep in the burial condition. **Failure to do so will result in damage to the paddle sweep, sweep accessories, and aeration floor.**
- When locating the sump locations in the bin foundation it is critical to consider where the wheel paths are going to be located. Below is a chart and illustration of these paths to match to your sweep model.
- If the sweep wheel path does interfere with a sump location the sump will need to be grated or covered to allow the wheel to cross without falling into the sump.

Interceptor - Wheel Paths

Nominal Bin Dia.	Sweep Length	Actual Bin Radius	First Roller Wheels Path Between Dim's (Head Section)		Outer Drive Wheel Path Between Dim's	
		A	B	C	J	K
Paddle Sweeps with Standard Configuration						
15'	7' 6"	7' 5.5"	1' 4"	2' 7"	4' 8"	6' 9"
18'	8' 6"	8' 11.5"	1' 4"	2' 7"	5' 8"	7' 9"
21'	10' 6"	10' 5.5"	1' 4"	2' 7"	7' 8"	9' 9"
24'	11' 6"	11' 11"	1' 4"	2' 7"	8' 8"	10' 9"
27'	12' 6"	13' 5"	1' 4"	2' 7"	9' 8"	11' 9"
30'	14' 6"	14' 11"	1' 4"	2' 7"	11' 8"	13' 9"
33'	15' 6"	16' 5"	1' 4"	2' 7"	12' 8"	14' 9"
36'	17'-6"	12' 11"	1' 4"	2' 7"	14' 8"	16' 9"
42'	20'-6"	20' 10.5"	1' 4"	2' 7"	17' 8"	19' 9"
48'	23'-6"	23' 10.5"	1' 4"	2' 7"	20'-8"	22' 9"
54'	26'-6"	26' 10"	1' 4"	2' 7"	23'-8"	25' 9"
60'	29'-6"	29' 10"	1' 4"	2' 7"	26'-8"	28' 9"

- Wheel Diagram

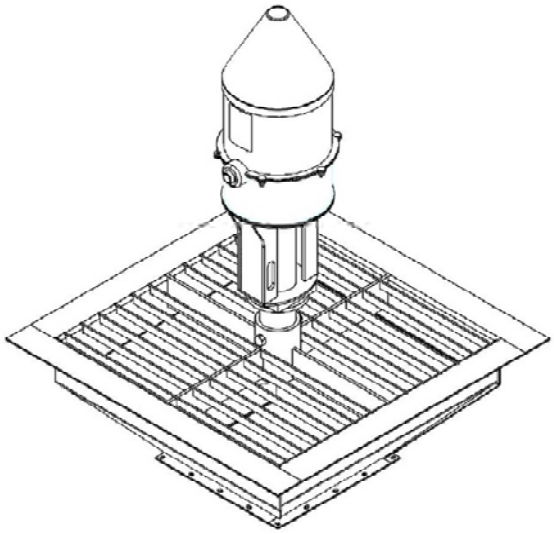
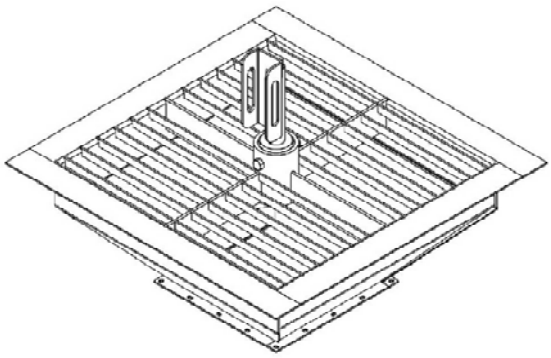
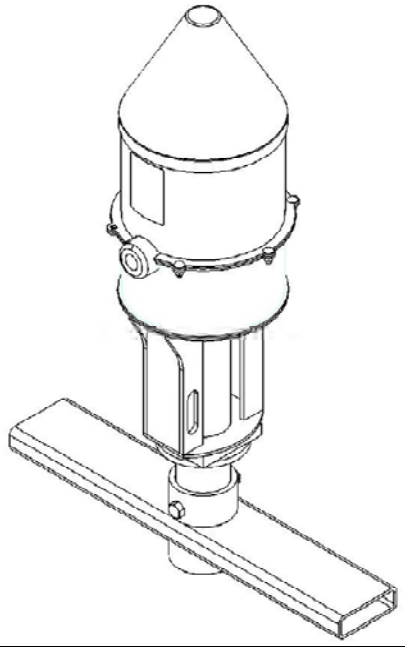


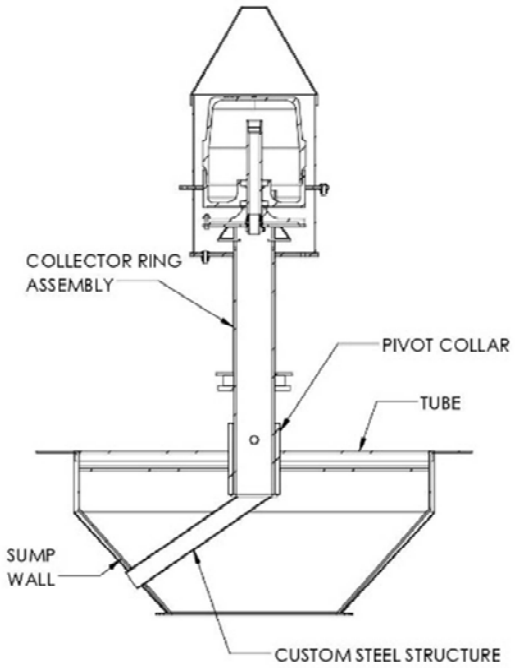
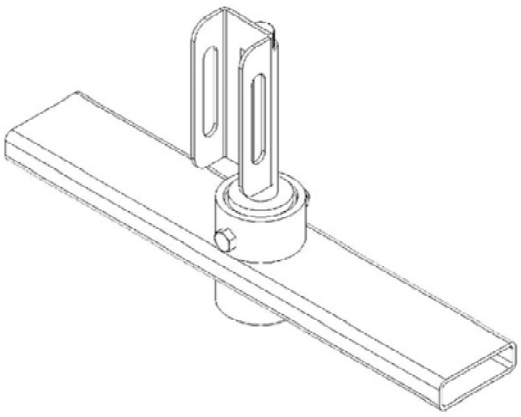
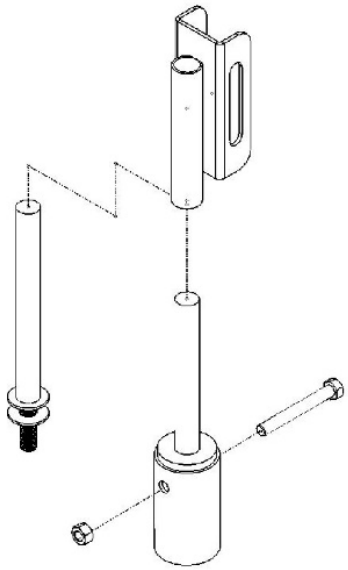
- Note: Wheel Diagram has additional information **NOT** relevant to setup of the interceptor sweep (“D” “E” “F” “G” “H” “I”) (Inner Drive Wheel Path) (Middle Drive Wheel Path)
- For the sweep to properly operate and not acquire unnecessary damage the floor must be smooth with no obstructions more than 3/16”.
- For the sweep to properly operate and not acquire unnecessary damage the floor gradient may not change more the ½” in height in a 5’ span
- The center sump of the grain bin will need to be reviewed to determine which bin center pivot section is going to be installed and what modifications may need to be made. The bin center pivot options can be viewed later in this manual.
- Warning! Since the installation of this sweep takes place in a confined space; confined space awareness should be followed in addition to any regulations and safety precautions.

4.2 Installation

- It is recommended that the bin be empty and free of grain when the sweep is installed. If this can't be achieved, then a large enough area must be cleared that the sweep can be installed on a clean floor and free from entrapment danger.
- We recommend the use of steel track pathways on any portion of aeration floor that the steel wheels on any of the sweeps and the drive wheel on the farm sweeps contact. **Failure to do so will result in damage to the paddle sweep, sweep accessories, and aeration floor.**
- It is recommended that at least three people install a sweep as the parts can be large and difficult to handle.
- A tripod kit is available to assist in lifting components and moving them across the bin floor. The tripod can be collapsed to fit through any size door.
- Tools Needed
    - Cordless Driver
    - Ratchet
    - 1/2", 9/16", 5/8" & 3/4" shallow socket
    - 1/2" & 9/16" deep socket
    - (1) 5/8" wrench
    - (1) 11/16" wrench
    - (2) 1 1/8" wrench (for tightening paddle chain)
    - (2) Alignment punches
    - Battery powered/Explosion proof light
    - Pliers/Needle Nose
    - 10' of wire (for pulling paddle chain through)
    - Standard Allen wrench set
    - Gloves
    - Hammer

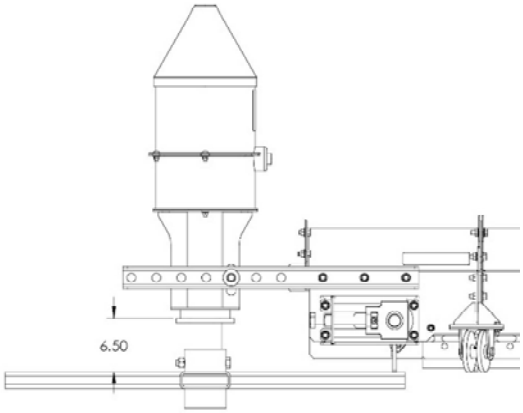
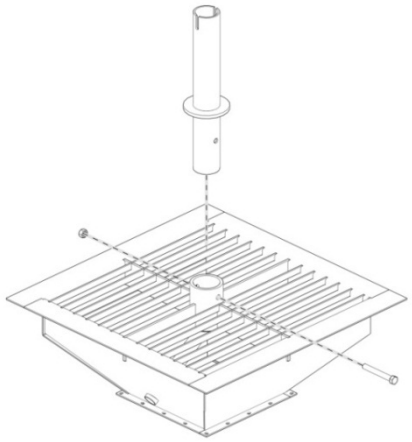
4.3 Bin Center Pivot Options

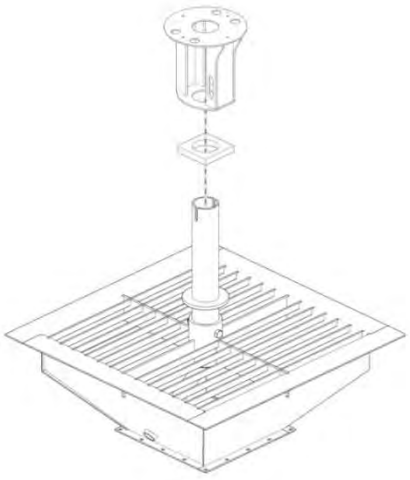
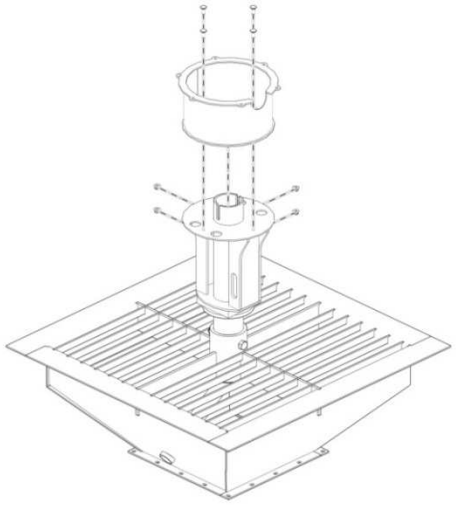
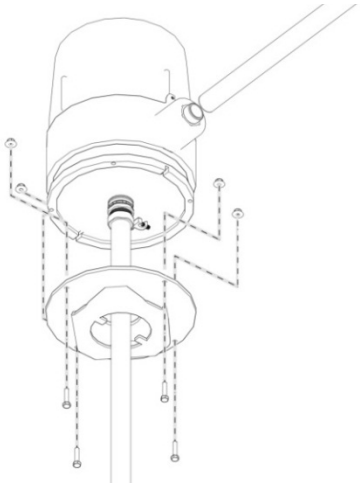
	**Sioux Steel Sump with Collector Ring Assembly:** The Sioux Steel sump can be ordered in advance and installed into the concrete foundation of the grain bin. One option is available for a 34”x34” sump. This sump offers a direct coupling to the collector ring and offer a protected route for the wiring to exit the sump.
	**Sioux Steel Sump without a Collector Ring Assembly:** If a Sioux Steel sump is used and a collector ring assembly is not, then this package provides an adaptor to fit into the Sioux Steel Sump and provides a place to pin the head section of the bin sweep.
	**Base Pivot Kit with Collector Ring Assembly:** The base pivot kit is designed to be used in bins where a pivot point does not exist or will be replaced. This kit includes a tube with a pivot collar that can be cut to fit and welded in place. The collector ring assembly then fits directly into the pivot collar.

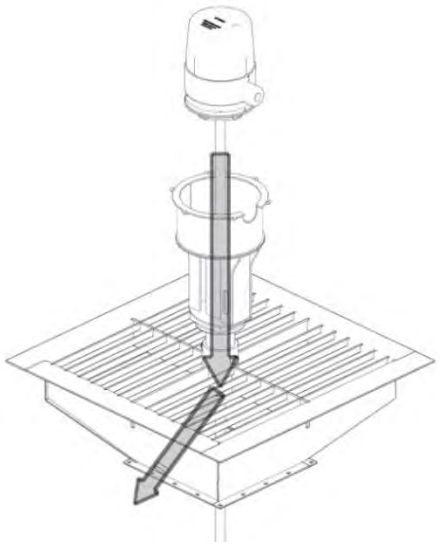
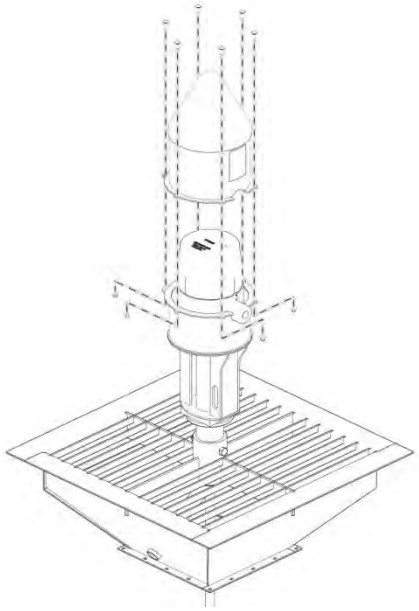
	A custom steel structure will also need to be added to the base pivot to route the electrical conduit out the side of the sump. **WARNING: If avoided, this could result in death or serious injury.**
	**Base Pivot Kit without Collector Ring:** If the base pivot kit is used and a collector ring is not, then this package provides an adaptor to fit into the base pivot kit and provides a place to pin the head section of the bin sweep.
	**Universal Pivot Kit:** If a pivot point already exists inside the bin and a collector ring assembly is not used, then this kit offers a variety of options to create a place to pin the head section of the sweep to. This kit may also require modification of the existing sump.

4.4 Collector Ring Assembly

Overview – If your sweep model is equipped with a Collector Ring Assembly, it will be delivered preassembled. If disassembly is not required to ease installation the pivot post may simply slide into the pivot collar and secured with the ¾" bolt. If disassembly is required; the following steps outline how to re-assemble the collector ring assembly.

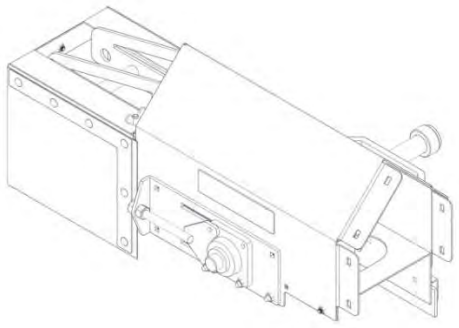
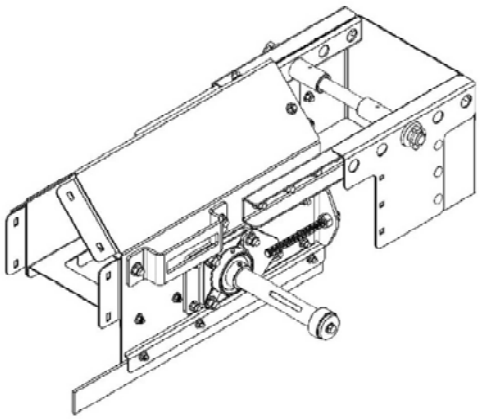
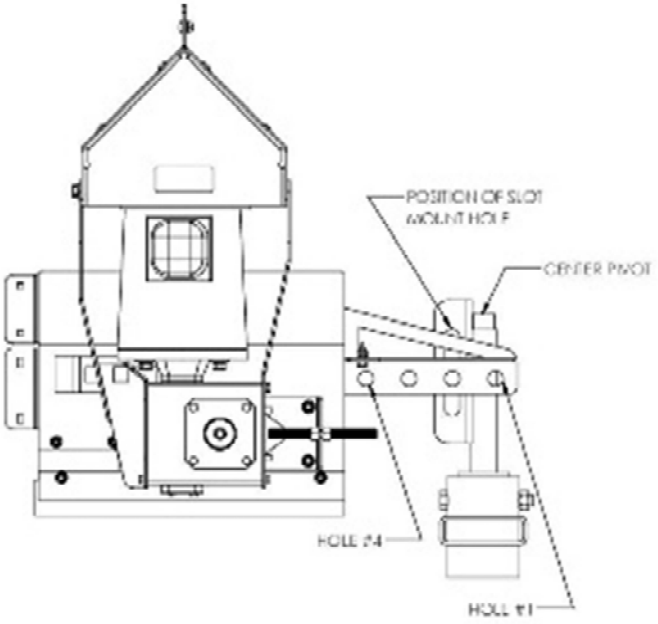
	A bin center pivot option will first need to be selected and installed. **No matter what option is chosen it is <u>critical</u> that the top of the stop plate for the collector ring assembly be installed 6 ½" from the top of the floor surface that the sweep will be moving across.** This may require raising or lowering the sump or base kit to obtain the correct height.
	Install the pivot post by sliding it into the bin center pivot and securing it with the supplied ¾" bolt and nut. **Note: If not using a Sioux Steel sump the pivot post must be unitized with the sump mount. The pivot post cannot rotate with the paddle sweep. Failure to do so can result in damage to the collector ring assembly and slip ring.**

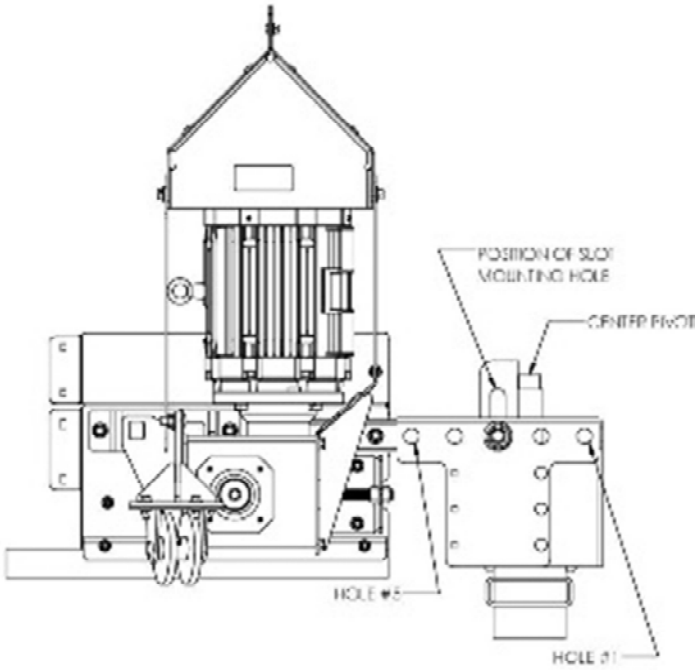
	Install the two-piece pivot bushing by first sliding on the UHMW block that will rest on the stop plate. The bushing assembly then slides onto the pivot post and rest on the UHMW block.
	Install the lower slip ring casing by fastening it to the bushing assembly with the four supplied carriage bolts and nuts. Note that the relief for the slip ring post should line up with the slot for the connector pin on the bushing.
	Before installing the slip ring into the collector ring assembly; bolt on the alignment plate as shown.

	Slide the slip ring, with attached alignment plate, into the lower slip ring casing. Feed the slip ring bottom exiting conduit & wiring through the pivot post and out the sump tube. **Note:** If not using a Sioux Steel sump the conduit must be protected by a metal tube. (not supplied) The alignment plate tabs will engage with the pivot post.
	Fasten the upper slip ring casing to the lower slip ring casing as shown.

4.5 Head Section Assembly

Overview – The head section assembly will deliver preassembled. The installation of the head section will determine the final location of the sweep. So, planning the pin location is critical to avoid having to move the entire sweep.

Head Section (Painted Black)	Head Section (Galvanized)
	
	Directions for positioning head section over sump opening. Refer to the diagram for orientation of universal pivot/collector ring components to the head section. **Note:** It's important to position the conduit (if collector ring is used) outlet towards the body of the sweep, to avoid potential damage during bin unloading. Refer to the diagram for a description of mount hole #1 through #4 on the head section.



Directions for positioning head section over sump opening. Refer to the diagram for orientation of universal pivot/collector ring components to the head section.

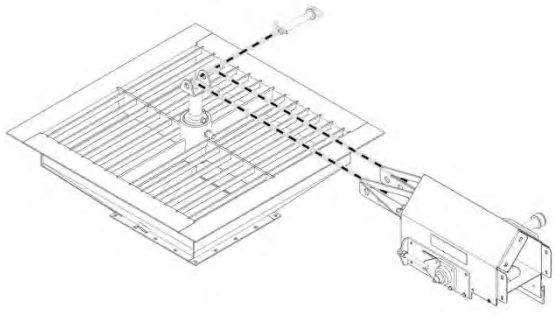
Note: It's important to position the conduit (if collector ring is used) outlet towards the body of the sweep, to avoid potential damage during bin unloading.

Refer to the diagram for a description of mount hole #1 through #5 on the head section.

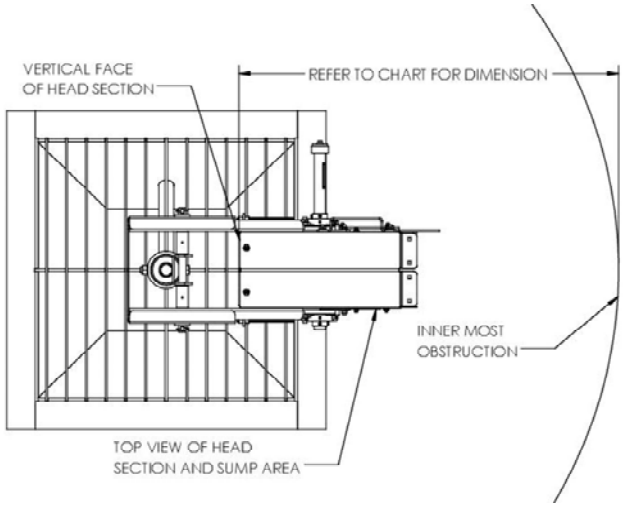
PIN POSITION CHART		
RADIUS	**DIAMETER**	**HOLE POSITION**
6"	**12"**	**5**
8"	**16"**	**4**
10"	**20"**	**4**
12"	**24"**	**3**
15"	**30"**	**2**
17"	**34"**	**1 OR 2**

Determine the "shortest" radius or diameter of the sump opening. Then refer to the chart to determine pin hole position for attaching head section to the universal pivot/collector ring.

Settings are based on maximum sweep capacity, and less capacities may need adjustment closer to center pivot.



Pin the head section to the pivot at the desired hole location previously shown. One pin will go through both tubes, or plates on the head section as well as two spacers and the pivot bushing (if equipped). The pin is then secured with one or two retaining pins.

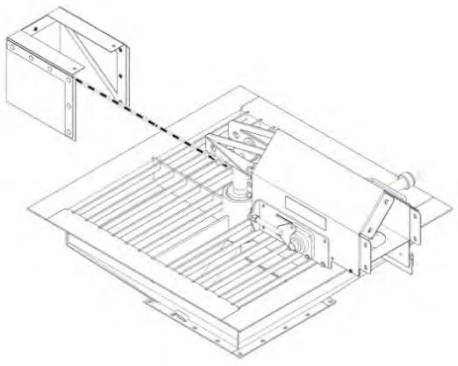


Rotate the head section so that it is facing the innermost obstruction inside the bin.

Refer to chart below for the dimension of your sweep for your bin size. Measure from the flange of the head section to this obstruction.

If this dimension causes the sweep to interfere with an obstruction, then an intermediate section will need to be removed to shorten the sweep to avoid.

Nominal Sweep Length	Bin Diameter	Distance from Head Section Flange to End of Sweep (inches)
7' 6"	15'	83
8' 6"	18"	95
10' 6"	21'	119
11' 6"	24'	131
12' 6"	27'	143
14' 6"	30'	167
15' 6"	33'	179
17' 6"	36'	203
20' 6"	42'	239
23' 6"	48'	275
26' 6"	54'	311
29' 6"	60'	347

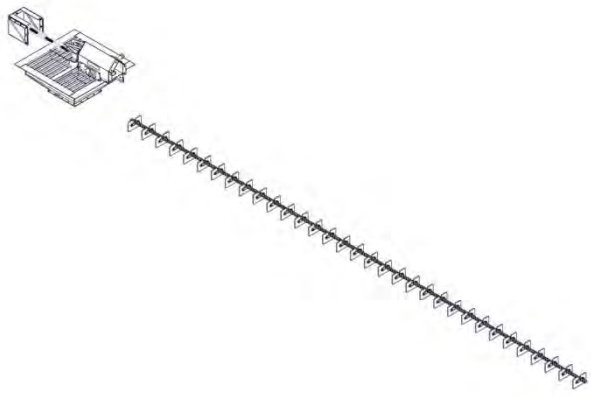
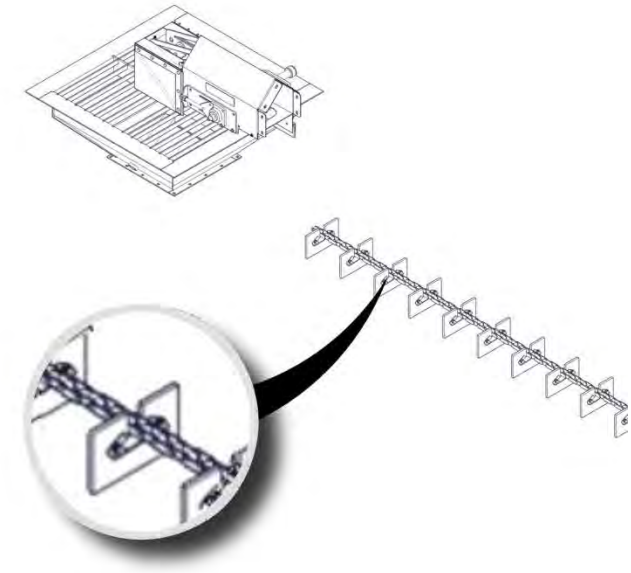


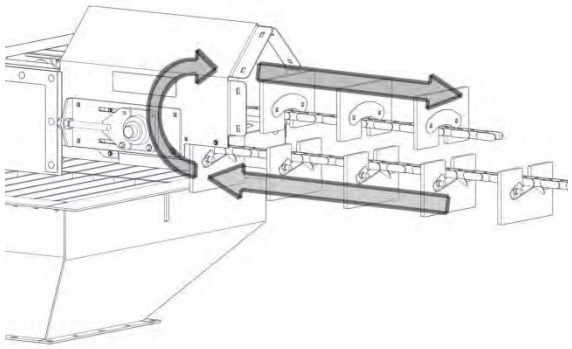
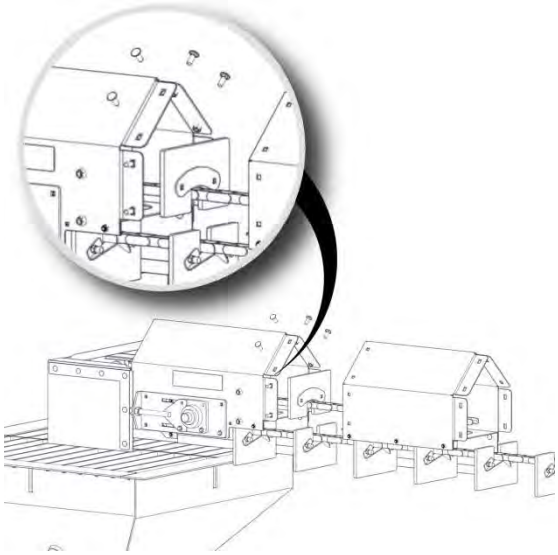
Once the final pin location is set the head section skirt can be installed.

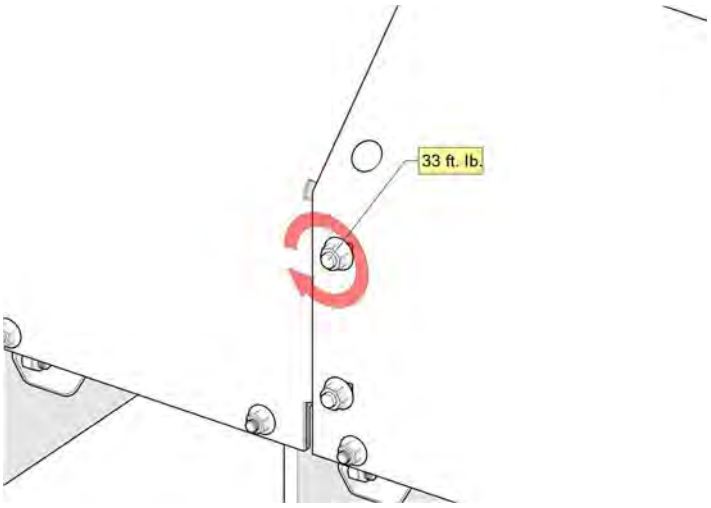
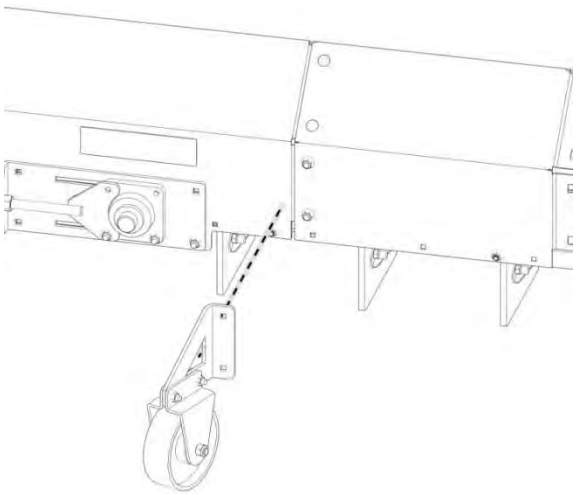
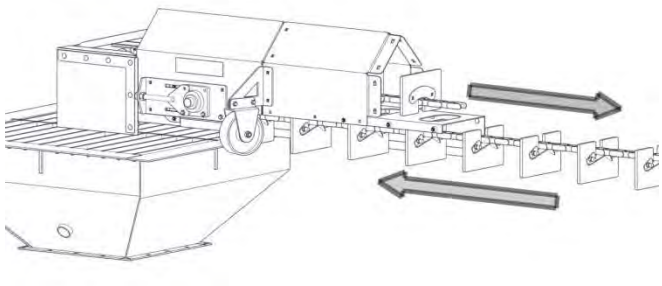
Standard head sections utilize wing nuts to attach the skirt to the head section.

4.6 Intermediate Sections and Paddle Chain Installation

Overview – Locate the parts diagram for your sweep model in the back of this manual to determine the order of intermediate section and their locations. Setting the sections on the ground in the order of installation can aid in the assembly process. Note: do not install the zero entry pads until noted to do so in this manual.

	Lay the paddle chain on the floor from the head section out to the bin wall.
	The chain should be orientated such that the chain tabs are on the bin wall side of the rubber paddles.

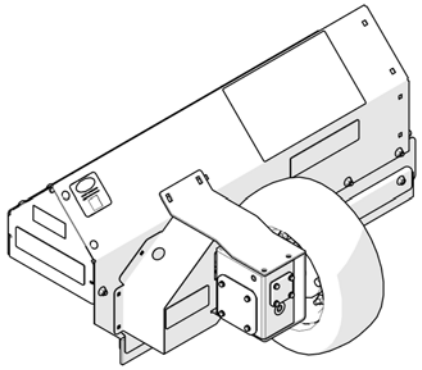
	Feed the chain through the bottom of the head section. Then over the sprocket and out the top.
	Begin installing the intermediate sections as shown in the parts list and diagrams section of the manual according to your sweep model. NOTE: Bolts shown facing inward to the left on the peak of the section. These bolts can be installed facing outward or inward, whatever is easier. NOTE: the side bolts on the housing **MUST** face out, or they will contact paddles during operation.

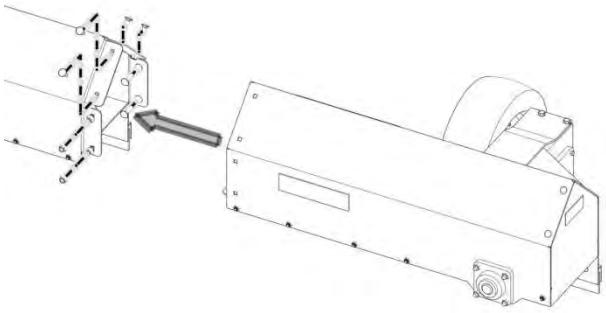
	All sweep section bolts (3/8” Grade 5) should be torqued to 33 lb. ft. without the use of an impact wrench.
	After the first intermediate section is installed the front and rear casters can be installed. This will help support the sweep as the rest of the sections are installed.
	Continue pulling the chain through the top portion of each section as you assemble them. Installing the jacks or zero entry stands as each section is installed will assist with supporting the sweep. Refer to your sweep model in the diagram section of this manual for correct section assembly / location. Tip: Be sure that the paddles do not get pinched between the flanges when bolting them together.

4.7 End Drive Section Installation

- Overview - The end drive will deliver preassembled. Disassembly may be required to move into an existing bin.

Drive End





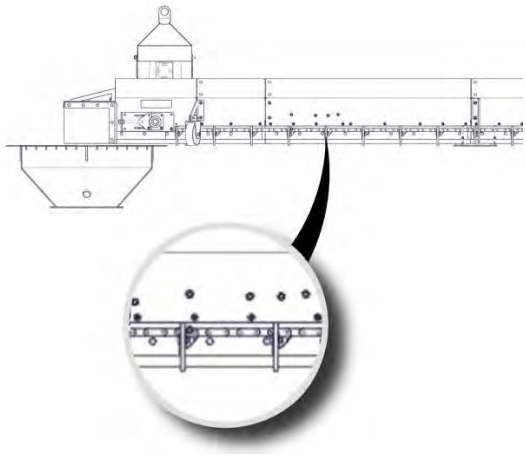
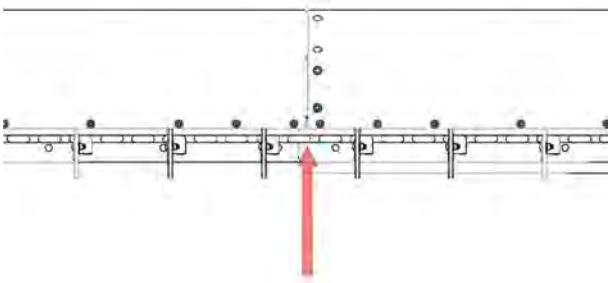
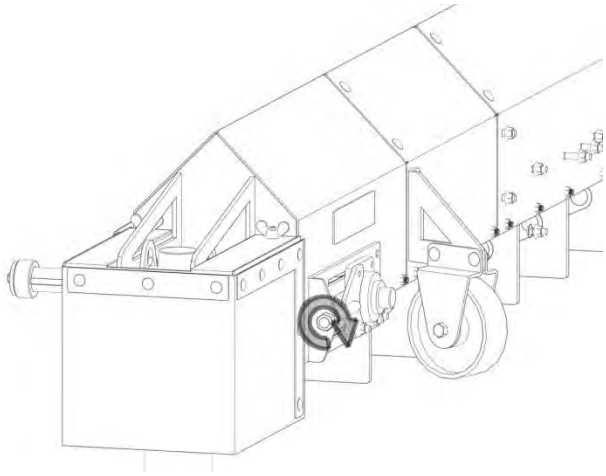
Once the end drive section is reached it can be bolted on.

Continue to feed the paddle chain through the top of the section and around the sprocket.

Connect the paddle chain using the supplied connecting link.

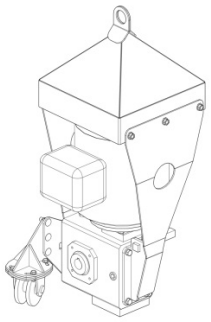
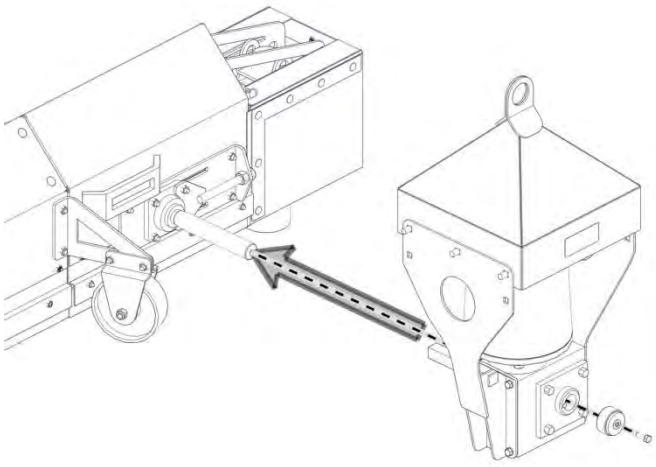
4.8 Paddle Chain Tensioning

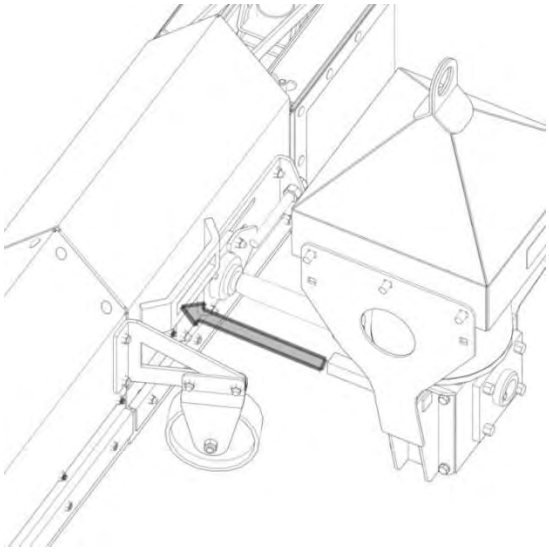
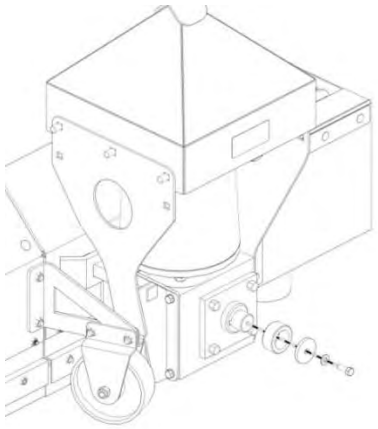
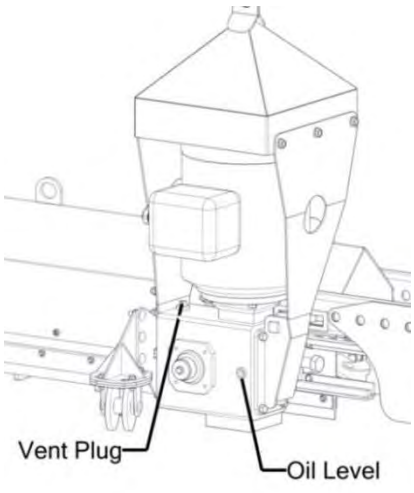
- Overview – The paddle chain will need to be tensioned twice before installation is complete. The initial tensioning will be prior to operation and tension must be checked again after operation. This will ensure proper tension upon startup under load**.**

	Access the chain via the front opening area where material enters.
	At the center of the sweep (i.e., 15 ft. from sump on 30 ft. sweep) check for tension by pushing up on chain. The chain should deflect approximately ¾", or half of the thickness of the chain. Less deflection indicates that the chain is too tight; more deflection indicates that the chain is too loose. The chain must not lift high enough to contact the sweep housing.
	To adjust the chain tension, use the two take-up assemblies on the head section of the bin sweep. Loosen the locking nuts on the adjuster bolt. Turn the adjuster bolt clockwise to increase chain tension or counterclockwise to reduce chain tension. Ensure that both adjusters are equally adjusted to maintain proper sprocket and chain engagement. Once the sweep is assembled and ready for operation, run the sweep for 5 minutes. Check the chain tension again and adjust as needed to achieve ¾" of deflection.

4.9 Motor and Gearbox Installation

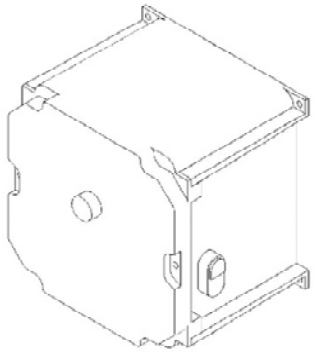
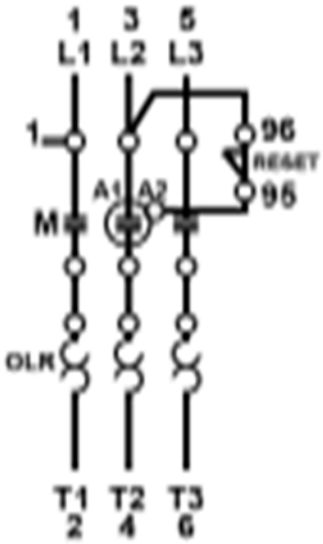
- Overview – The motor and gearbox will deliver preassembled. Disassembly may be required to move into an existing bin.

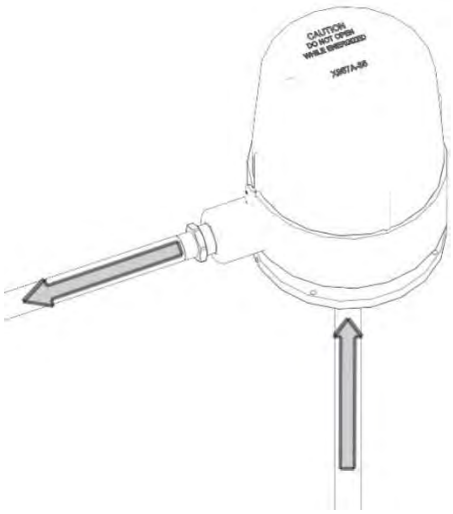
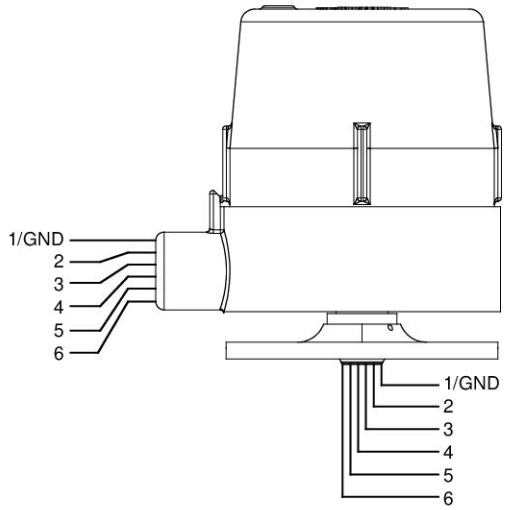
Motor/Gearbox Assembly 	
	Utilizing the supplied key, slide the gearbox onto the head section shaft.

	Ensure that the torque arm engages into the torque arm slot to keep the assembly pinned in position.
	Secure the motor and gearbox assembly using the bump stop and bolt threaded into the end of the head shaft. Note: The bump stop is not utilized on every sweep model. Then tighten the set screws on **each side** of the gearbox.
	Ensure the gearbox vent plug is in the proper location and that the gearbox has the correct amount of oil.

4.10 Electrical Installation

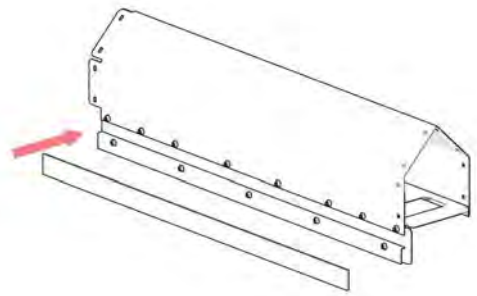
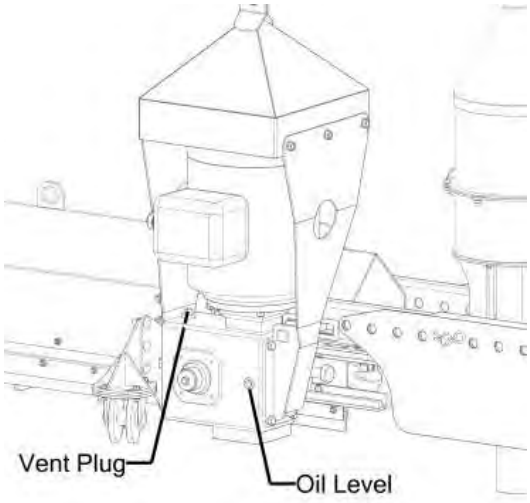
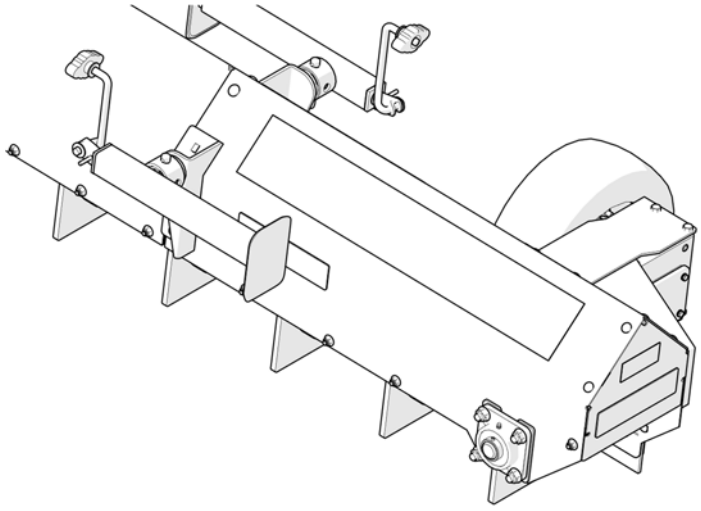
- Overview – All electrical installation should be done by a certified electrician and should comply with local codes and regulations. Any electrical equipment not provided is the responsibility of the installer.

	Motor starter panels are available to be purchased with the bin sweep. These panels offer Start, Stop, and Reset functionality. The panel includes overload adjustment to protect the motor and other components of the sweep.
	See wiring diagram for incoming and outgoing wiring terminations. The start, stop, and reset controls are pre-wired in the panel.

	The wiring to the motor will pass through the slip ring to allow rotation without twisting of the wiring.
	The slip ring is provided as a pre-wired unit with leads out of both sides labeled 1 through 6. Any of the leads may be used for any motor wires providing that they are matched on each end of the collector ring. **WARNING:** Do not remove the cap off the slip ring. Each slip ring has an O-ring that needs to be seated properly.

4.11 Final Check

- Overview – The final check is to complete installation and ensure the sweep is ready for operation. Checking these items is critical before an initial operation.

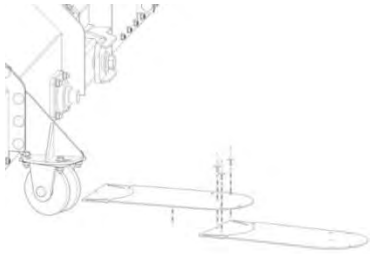
	Install the drag rubber on the back side of the sweep such that it lightly contacts the ground.
	Ensure that gearbox oil level and vent plug locations have been checked. Ensure that all electrical connections are secure, and that boxes and panels are sealed.
	If equipped with jacks, ensure that they are off the ground and rotated out of the way.

4.12 Initial Operation

- Overview – During initial operation in an empty bin, personal will have to be inside of the bin. It is critical that persons stay on the back side of the sweep and do not sit on, walk, stand, or touch the sweep as it is operating.
- READ FIRST - If track paths are being utilized, please refer to the track path section before operating the sweep.
- READ FIRST - If zero entry stand and pads are being utilized, please refer to the zero-entry pad section before operating the sweep.
- The sweep will need to be operated for two complete rotations before being set for burial.
- It is highly recommended that these first two passes be completed in an empty bin.
- If an empty bin is not possible, the grain pile needs to be consistent across the floor and engagement side of the sweep. An uneven grain pile can cause significant damage to the sweep.
- While operating, check for high or low spots in the floor that may cause obstructions and adjust the casters and drag rubber as necessary.
- Also check that the end drive section of the sweep does not contact any obstructions inside the bin such as stiffeners, doors, or ladders.

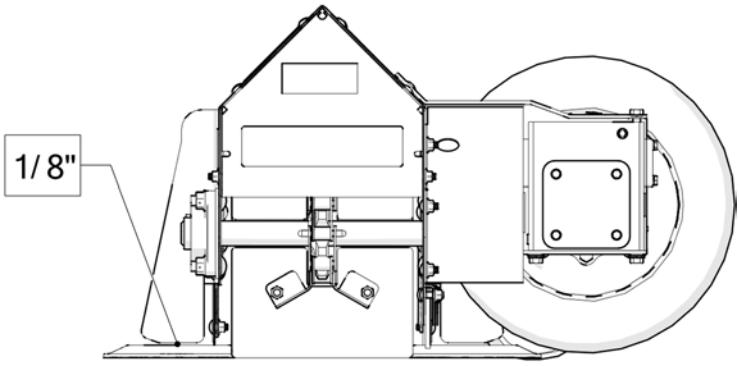
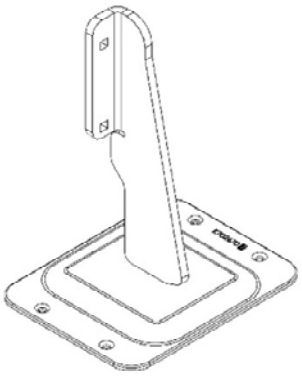
4.13 Track Pathway Installation

- Overview –If your floor is a full aeration floor or has aeration tunnels, track pathways are available to protect them from damage from the caster wheels and drive wheel. The track pathways are critical to preventing floor damage when the sweep is operated under load.

	To determine the location of the track pathways it is recommended that the sweep is operated to find the path. While the sweep is operating around an empty bin, follow the caster and mark the floor with paint or a marker.
	After the path is marked you can install the pathways in an overlapping fashion. Anchor the pathways down with the supplied rivets. The final pathway may have to be cut to fit properly.

4.14 Zero Entry Pad Installation

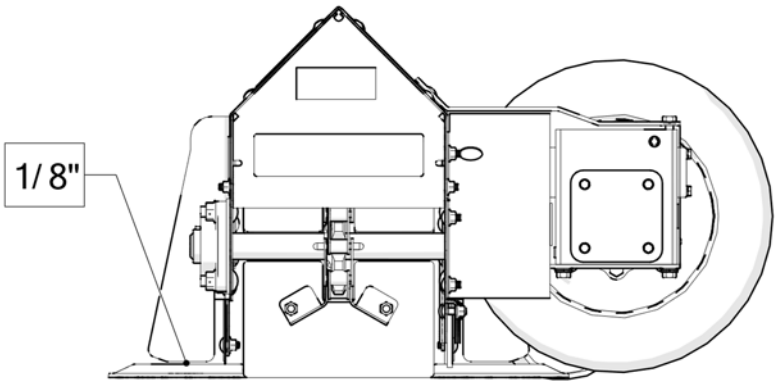
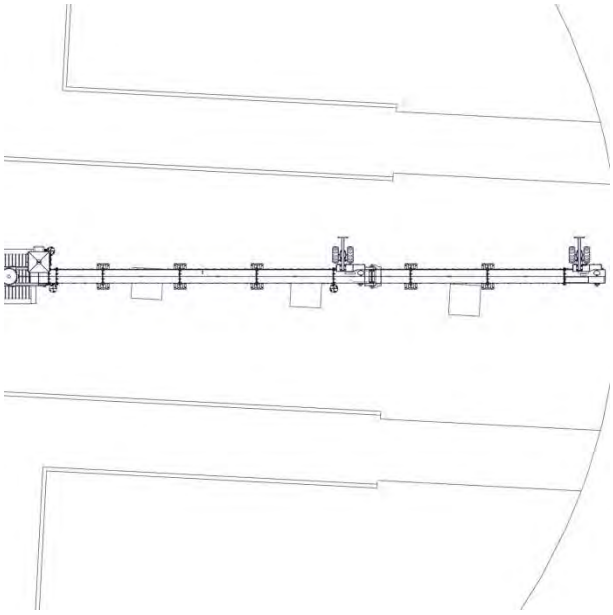
- Overview - Zero Entry pad installation should not occur until after the sweep has made at least one pass around the bin as the locations can change slightly. It is critical that the stands repeatedly land on the pads as not doing so can cause major damage to the sweep when buried.

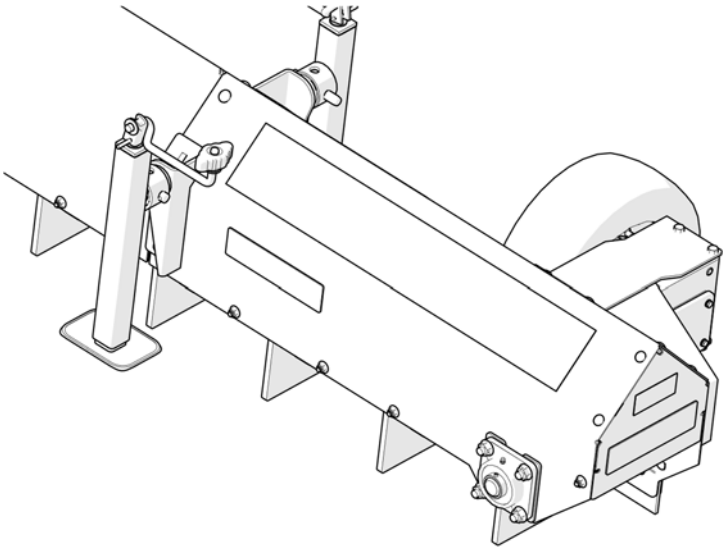
	After the first pass to check operation is completed the sweep can be stopped in the burial location. The burial location should be such that the sump locations are just in front of the sweep and that none of the zero entry stands are above a sump hole location. Once the sweep is set to this location. Place a zero-entry pad under each stand.
	Using the shims that are provided, elevate the pad so that each one has a 1/8” gap to the stand. If there is not enough room for the pad without a shim, then the zero-entry stand will need to be cut or ground to provide the 1/8” gap. Center each pad under the stand in the orientation shown and mark the location on the floor.
	While keeping track of each pad and shim location, move the shims to the rear of the sweep. Advance the sweep forward to gain access to all the pad locations that have been marked. Secure each pad and shim stack to the floor using the provided hardware.

4.15 Setting the sweep for Burial

- Overview – Once the second pass is nearly complete the sweep can be set for burial.

Improperly setting the sweep for burial can cause extensive damage to the sweep which can be very difficult and hazardous to repair when the bin is full of grain.

	If using zero entry stands, advance the sweep until the stands are centered above the zero entry pads. Verify that there is 1/8” clearance between the stand and the pad at each location. Failing to do so may result in major damage to the sweep.
	If using jacks, advance the sweep until it is located such that the sump locations are just in front of the sweep and that none of the jacks are above a sump hole location.

	Rotate the jacks down. Adjust the jacks downward so that the pad is making light contact with the floor. The jack pad should be touching the floor but should not be bearing so much weight that the pad does not have free play when pushed on.
	If the sweep is equipped with an electrical cord to the motor the cord should be placed on the floor behind the sweep and tractor drive wheels. Secure any excess cord so that it can be reached after the bin has been emptied.

5 Operation

- **Before Startup**
  - The paddle sweeps are not intended to be run if the grain bin has not been filled and drained down. The grain pile must be across the entire front of the sweep.
  - Failure to have a constant grain pile across the front of the sweep will result in the sweep bending or breaking at the sections as it tries to wrap around the pile of grain.
  - Prior to starting the sweep, the bin must be gravity drained as much as possible.
  - All sumps must be opened, and grain flow must stop prior to starting the sweep.
- **First Pass**
  - After the bin has been gravity drained the sweep should be visible in the grain pile if a man way is able to be opened.
  - If the sweep is equipped with jacks the sweep will need to be ran long enough to remove the sweep from the grain pile before entry is made to move the jacks to the operating position.
  - Once the sweep is started it will begin moving grain to the center sump. The sweep may not appear to advance until enough grain from the pile in front of the sweep is moved.
  - While the sweep is running the tractor wheels will be slipping on the floor as the sweep drives into the grain pile. This is normal and is designed to provide constant pressure on the grain pile to ensure the paddles are full.
  - Avalanches will occur in the grain and flow over the top of the sweep leaving grain behind the sweep. This is normal on the first pass and why a second pass is recommended to empty the bin.
  - During operation the user must ensure that grain is not backing up in the sump and being carried back through the top of the sweep. If the takeaway system does not have enough capacity, the sweep will incur damage from grain backing up.
- **Second pass**
  - Because the sweep must remain a set distance from the wall of the bin, a small amount of grain will remain on the outer wall. If desired, this grain can be moved away from the wall before the second pass begins.
  - Just before the first pass is completed the sweep can be stopped and grain moved away from the outer wall. Be sure to follow all lock out and bin entry procedures when entering the bin.
  - Again, moving this away from the wall is optional and does require entry into the bin.
  - The sweep can now be operated for a second pass.
  - As with the first pass, the tractor drive wheels will slip on the ground as the sweep pushes into the pile.
- **Additional Sweeping**
  - Depending on the level of grain removal desired, additional passes can be run.
- **Burial**
    - Refer to the earlier section for the procedure of setting the sweep for burial.

6 Preventative Maintenance

- Service Schedule

Service Description	After Initial Use	After 4 Operations or Every Year	After 12 Operations or Every 3 Years
Check oil level in gearboxes	X	X	X
Check Hardware	X	X	X
Visually Inspect Electrical Components	X	X	X
Check Paddle Chain Tension		X	X
Grease Fittings		X	X
Adjust Drag Rubber			X
Clean off excess debris			X
Change oil in gearboxes			X

- Grease fitting locations
  - Head section
    - Take-up bearings
    - Driving pivot section
  - Front bearing holder (paddle chain shaft)
  - Rear bearing holder (paddle chain shaft)
  - Rear bearing holder (shaft to gearbox)
    - End drive
  - Front bearing holder (paddle chain shaft)
  - Rear bearing holder (paddle chain shaft)
  - Rear bearing holder (shaft to gearbox)
    - Caster wheels
    - Front and Rear

- Periodically check all bolts for looseness and re-torque if necessary. (Torque ratings located on next page)
  - Section fasteners
  - Split sprockets and set screws
  - Wheel hubs
  - Nuts on ratchet drives (spring compression = 2.0”)
  - Split Sprockets (8 tooth – torque (2) ¼”-20 socket head screws to 30ft/lbs)
  - SAE Recommended Torque Settings

	Grade 5				Grade 8			
	Lubricated		Dry		Lubricated		Dry	
Size	N*m	Lb-ft	N*m	Lb-ft	N*m	Lb-ft	N*m	Lb-ft
1/4”	9.5	7	12	9	13.5	10	17	12.5
5/16”	20	15	25	18	28	21	35	26
3/8”	35	26	44	33	50	36	63	46
7/16”	55	41	70	52	80	58	100	75
1/2”	85	63	110	80	120	90	150	115
9/16”	125	90	155	115	175	130	225	160
5/8”	170	125	215	160	215	160	300	225
3/4”	300	225	375	280	425	310	550	400

- Paddle conveyor chain
- Tractor drive chain
- Check all external electric wiring or conduit for damage. A licensed electrician is recommended for repairs
- Check drag rubber for damage or adjustment.
- Clean any excess debris off electric motor.

- Gearbox Oil Level

  If low use specified oil listed below or equivalent for proper gearbox. Synthetic lubricant should be changed every 6,000 hours of operation or every two years, whichever comes first. Refer to the installation section for level and vent plug location.

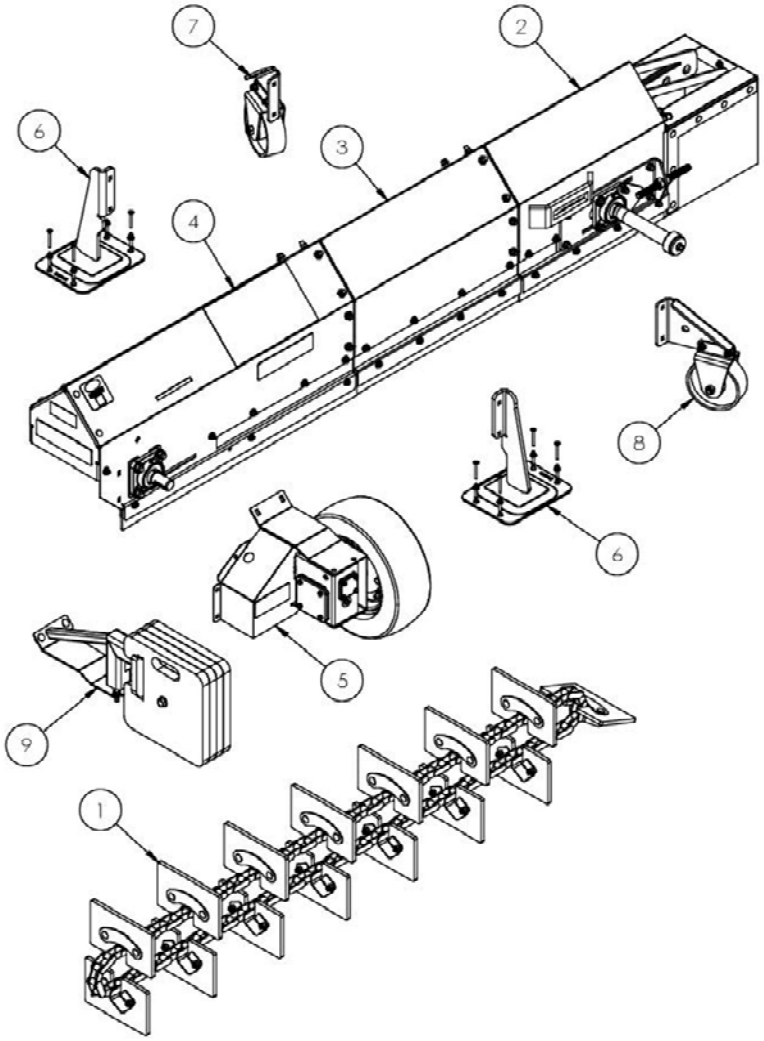
Make	Gearbox #	Oil Capacity	Recommended gear lube
Grove	GR826	48.0	Mobile Glygoyle 460 (Part # 688413)
Grove	GR830	72.0	
Grove	GR832	92.0	
Grove	GR842	128.0	
Worldwide	WWE206	19.4	Mobile SHC 634
Worldwide	WWE237	24.1	
Worldwide	WWE262	41.1	

- **CAUTION:** Too much oil will cause overheating and too little will result in gear failure. More frequent oil changes are recommended when operating continuously, at high temperatures or under conditions of extreme dirt or dust. Check that vent plug is clear.

7 Trouble Shooting

1. Motor starter trips or needs to be reset	Overloading take away system – Need to slow down the paddle sweep
2. Electric motor has high amp draw	Overloading take away system – Need to slow down the paddle sweep
3. Electric motor is hot	Drawing too many amps. If equipped with VFD, ensure VFD is not running below 30hertz.
4. Overheating gearbox	Overloading take away system – Need to slow down the paddle sweep or check that vent plug is installed and open
5. Farm sweep is over running the sump	A different sprocket combination in needed to slow the sweep down.
6. Sweep is too long or short or contacts bin/silo wall.	Adjust the sweep at the head section. The sweep is a modular unit consisting of intermediate sections in lengths of 6", 1', 3' or 5'. 6" and 1' extension kits are also available
7. Damage to head section, head shaft or motor torque arm	Sump may be too large for standard head section. Rear caster wheel is not attached to motor gearbox for added support
8. Damage to head section	Are take-up bearings tightened evenly
9. Breaking tail or head shafts	Chain tension is too tight. See chain tensioning section.
10. Paddle chain will not turn	Missing sprocket, missing keyway, motor/gearbox is not engaged on head shaft.
11. Tractor drive is not turning	Missing sprocket that cogs with paddle chain. Roller chain is loose or disconnected.
12. Sweep acts like it wants to "climb" the pile.	Center pivot/collector ring is mounted too high.
13. Sweep leave indentations or "tracks" on aeration panels or floor	Bin/Silo needs track pathways installed to the floor or areas with indentations.
14. After burial sweep has pushed through an aeration floor.	Additional floor supports are needed under load points of sweep during burial.
15. Bin/Silo has only single-phase power	A VFD or phase converter will need to be utilized.
16. Jack failed	Jack is to be set, so that it just touches the floor. Do not jack sweep up into air, as the caster and tractor drive wheels need to be touching the floor.
17. Steel caster wheel is cutting or marking the floor.	Ensure the front and rear casters are in the appropriate position on the sweep. Also ensure the adjustment of the wheel is turned to the radius of its path.
18. Front caster wheel falls into sump opening.	Move caster wheel to a different flange mount either inward or outward.
19. Gearbox is low on oil	See maintenance section for proper level and oil.
20. Conveyor/paddle chain do not clog correctly over sprocket on driving pivot sections	Loosen paddle chain tension.

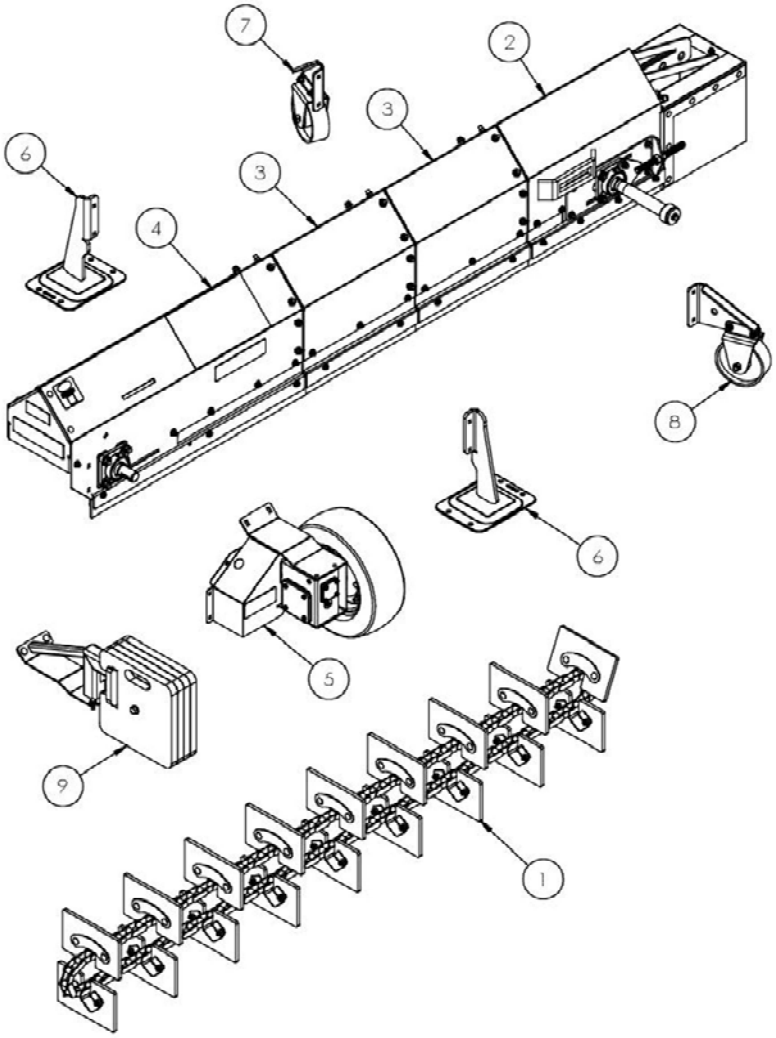
8 Parts Lists and Diagrams



PARTS DIAGRAM & LIST

7’ 6” SWEEP FOR 15’ BIN

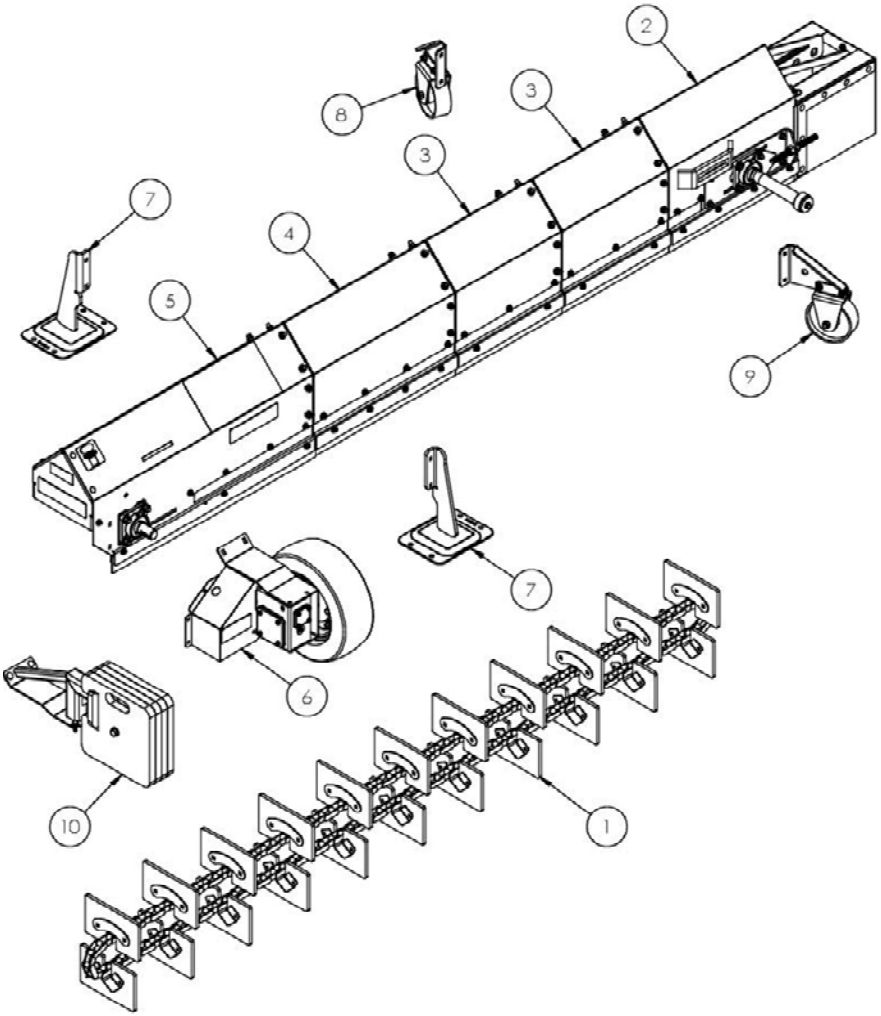
ITEM	PART #	DESCRIPTION	QTY
1	686382	PADDLE CHAIN	1
2	689969	HEAD SECTION	1
3	704802	INTERMEDIATE SECTION – 2’	1
4	711453	DRIVE END	1
5	704806	TRACTOR DRIVE	1
6	695135	ZERO ENTRY KIT	2
	704807	JACK KIT (NOT SHOWN)	2
7	689979	FRONT CASTER	1
8	689980	REAR CASTER	1
9	709983	WEIGHT KIT	1
	701898	HARDWARE BAG-DRIVE END	1
	701899	HARDWARE BAG-SECTION	2



PARTS DIAGRAM & LIST

8’ 6” SWEEP FOR 18’ BIN

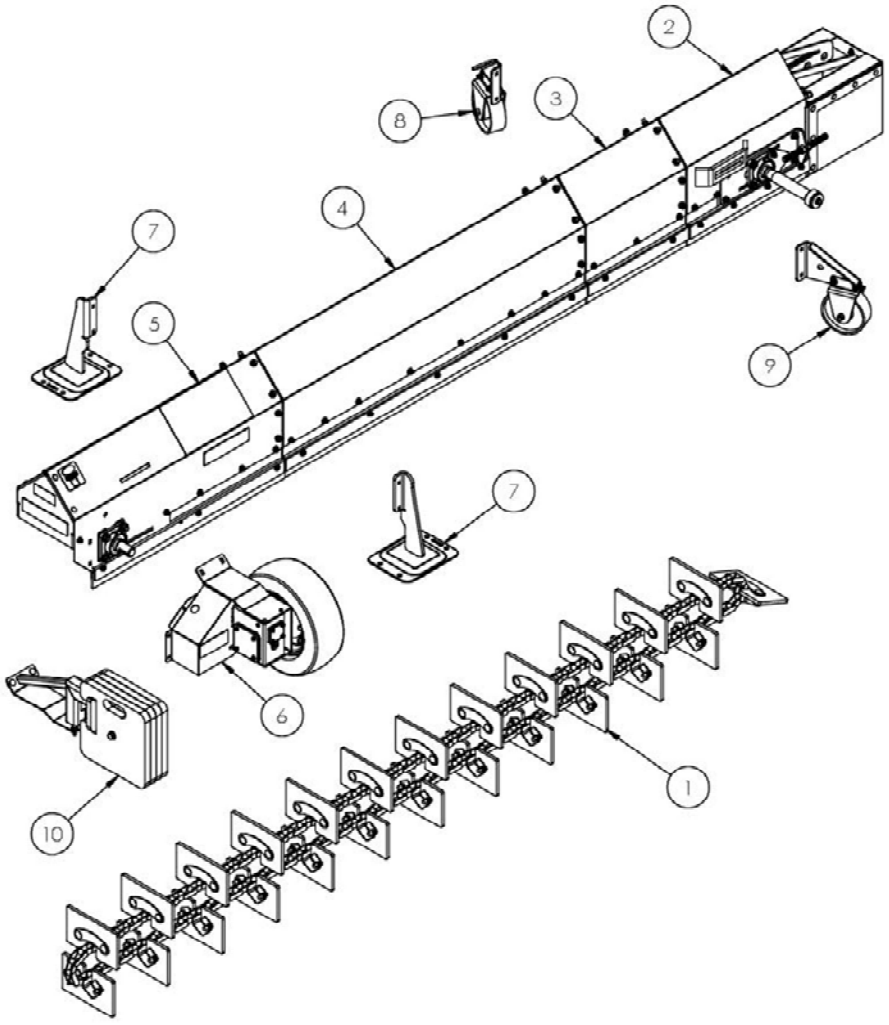
ITEM	PART #	DESCRIPTION	QTY
1	687931	PADDLE CHAIN	1
2	689969	HEAD SECTION	1
3	704801	INTERMEDIATE SECTION 1’ 6”	2
4	711453	DRIVE END	1
5	704806	TRACTOR DRIVE	1
6	695135	ZERO ENTRY KIT	2
	709807	JACK KIT (NOT SHOWN)	2
7	689979	FRONT CASTER	1
8	689980	REAR CASTER	1
9	709983	WEIGHT KIT	1
	701898	HARDWARE BAG-DRIVE END	1
	701899	HARDWARE BAG-SECTION	3



PARTS DIAGRAM & LIST

10’ 6” SWEEP FOR 21’ BIN

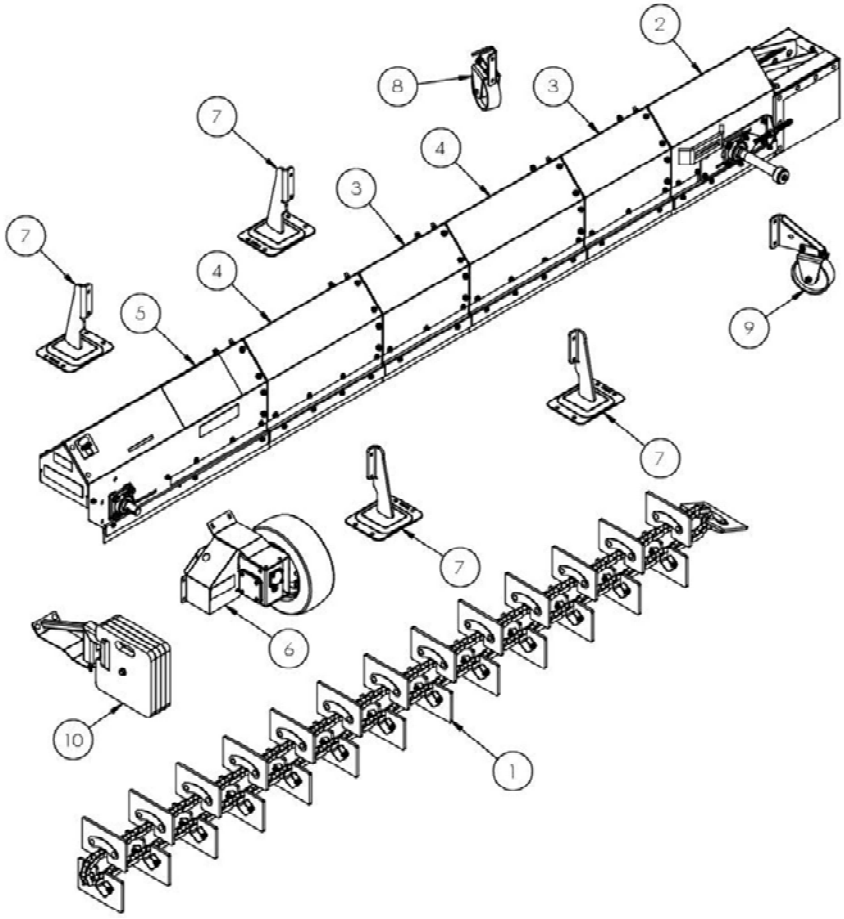
ITEM	PART #	DESCRIPTION	QTY
1	689732	PADDLE CHAIN	1
2	689969	HEAD SECTION	1
3	704801	INTERMEDIATE SECTION 1’ 6”	2
4	704802	INTERMEDIATE SECTION 2’	1
5	711453	DRIVE END	1
6	704806	TRACTOR DRIVE	1
7	695135	ZERO ENTRY KIT	2
	704807	JACK KIT (NOT SHOWN)	2
8	689979	FRONT CASTER	1
9	689980	REAR CASTER	1
10	709983	WEIGHT KIT	1
	701898	HARDWARE-DRIVE END	1
	701899	HARDWARE-SECTION	4



PARTS DIAGRAM & LIST

11’ 6” SWEEP FOR 24’ BIN

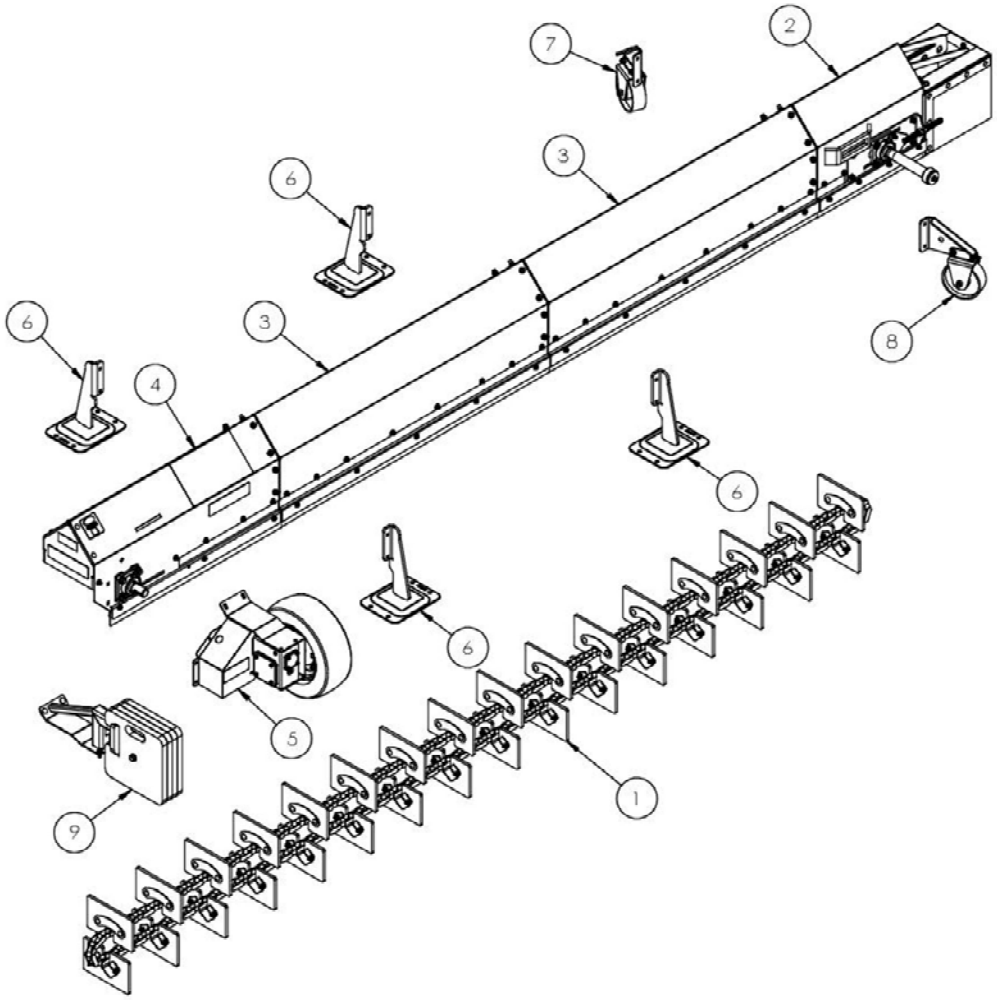
ITEM	PART #	DESCRIPTION	QTY
1	687933	PADDLE CHAIN	1
2	689969	HEAD SECTION	1
3	704801	INTERMEDIATE SECTION 1’ 6”	1
4	704803	INTERMEDIATE SECTION 4’ 6”	1
5	711453	DRIVE END	1
6	704806	TRACTOR DRIVE	1
7	695135	ZERO ENTRY KIT	2
	704807	JACK KIT (NOT SHOWN)	2
8	689979	FRONT CASTER	1
9	689980	REAR CASTER	1
10	709983	WEIGHT KIT	1
	701898	HARDWARE BAG-DRIVE END	1
	701899	HARDWARE BAG-SECTION	3



PARTS DIAGRAM & LIST

12’ 6” SWEEP FOR 27’ BIN

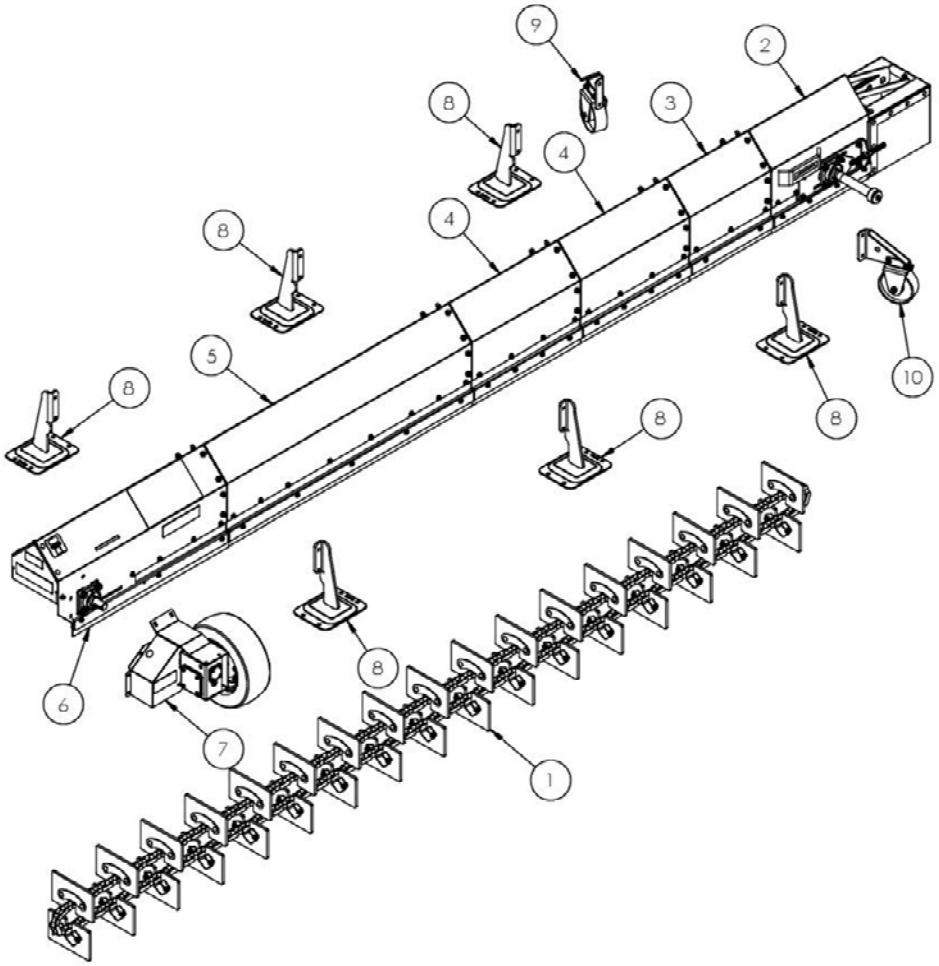
ITEM	PART #	DESCRIPTION	QTY
1	689734	PADDLE CHAIN	1
2	689969	HEAD SECTION	1
3	704801	INTERMEDIATE SECTION 1’ 6”	2
4	704802	INTERMEDIATE SECTION 2’	2
5	711453	DRIVE END	1
6	704806	TRACTOR DRIVE	1
7	695135	ZERO ENTRY KIT	4
	704807	JACK KIT (NOT SHOWN)	4
8	689979	FRONT CASTER	1
9	689980	REAR CASTER	1
10	709983	WEIGHT KIT – FARM PADDLE SWEEPS	1
	701898	HARDWARE BAG-DRIVE END	1
	701899	HARDWARE BAG-SECTION	5



PARTS DIAGRAM & LIST

14’ 6” SWEEP FOR 30’ BIN

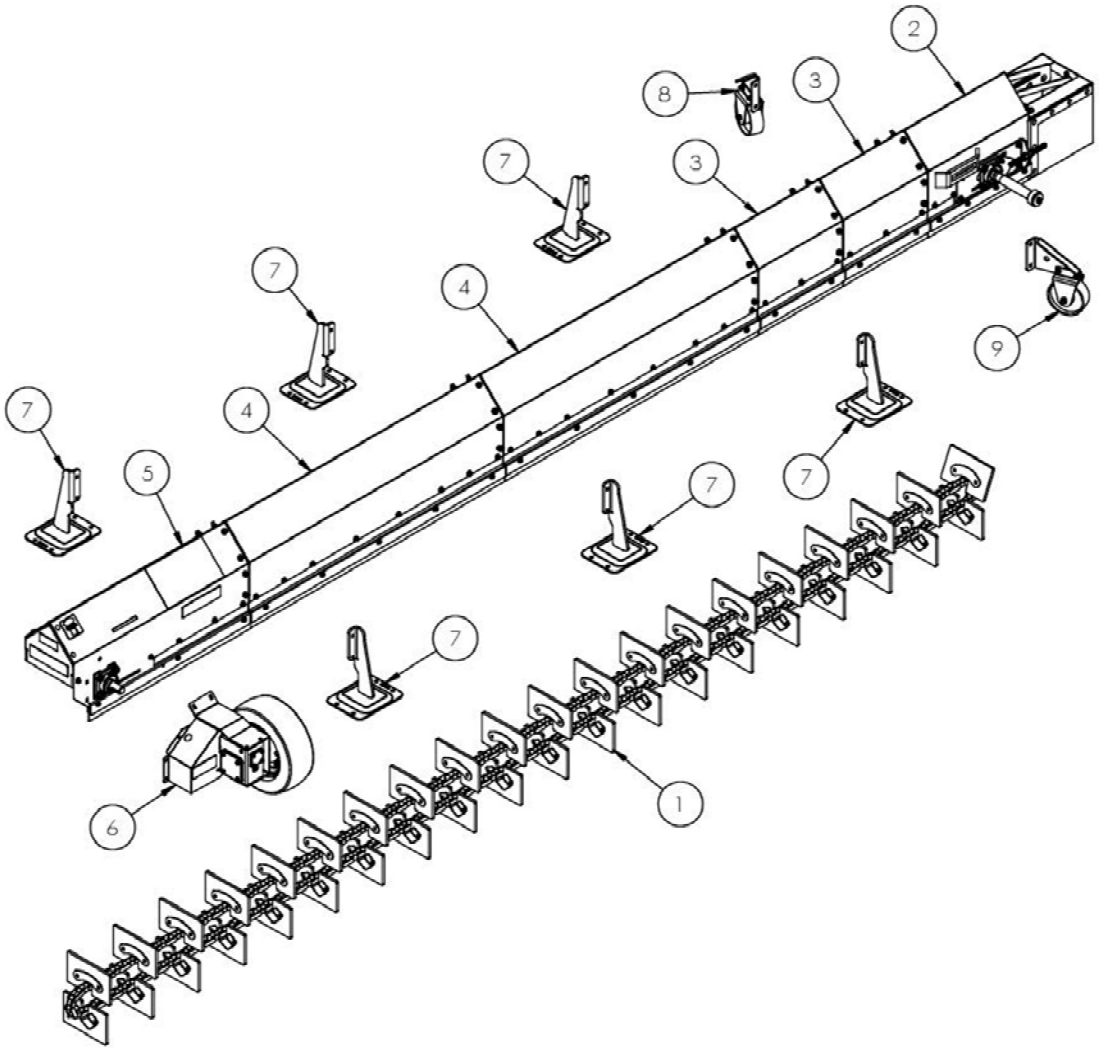
ITEM	PART #	DESCRIPTION	QTY
1	686162	PADDLE CHAIN	1
2	689969	HEAD SECTION	1
3	704803	INTERMEDIATE SECTION 4’ 6”	2
4	711453	DRIVE END	1
5	704806	TRACTOR DRIVE	1
6	695135	ZERO ENTRY KIT	4
	704807	JACK KIT (NOT SHOWN)	4
7	689979	FRONT CASTER	1
8	689980	REAR CASTER	1
9	709983	WEIGHT KIT	1
	701898	HARDWARE BAG-DRIVE END	1
	701899	HARDWARE BAG-SECTION	3



PARTS DIAGRAM & LIST

15’ 6” SWEEP FOR 33’ BIN

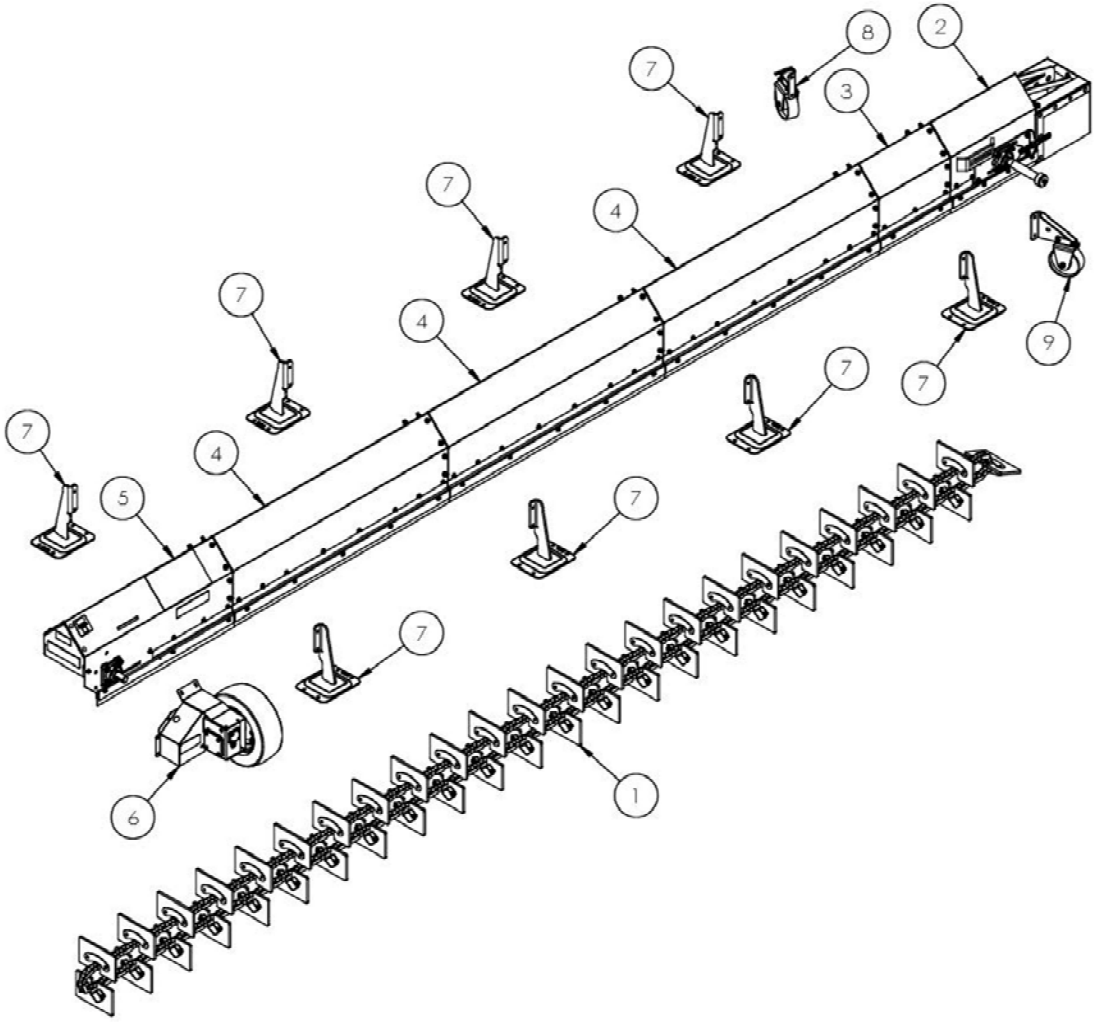
ITEM	PART #	DESCRIPTION	QTY
1	687935	PADDLE CHAIN	1
2	689969	HEAD SECTION	1
3	704801	INTERMEDIATE SECTION 1’ 6”	1
4	704802	INTERMEDIATE SECTION 2’	2
5	704803	INTERMEDIATE SECTION 4’ 6”	1
6	711453	DRIVE END	1
7	704806	TRACTOR DRIVE	1
8	695135	ZERO ENTRY KIT	6
	704807	JACK KIT (NOT SHOWN)	6
9	689979	FRONT CASTER	1
10	689980	REAER CASTER	1
	701898	HARDWARE BAG-DRIVE END	1
	701899	HARDWARE BAG-SECTION	5



PARTS DIAGRAM & LIST

17’ 6” SWEEP FOR 36’ BIN

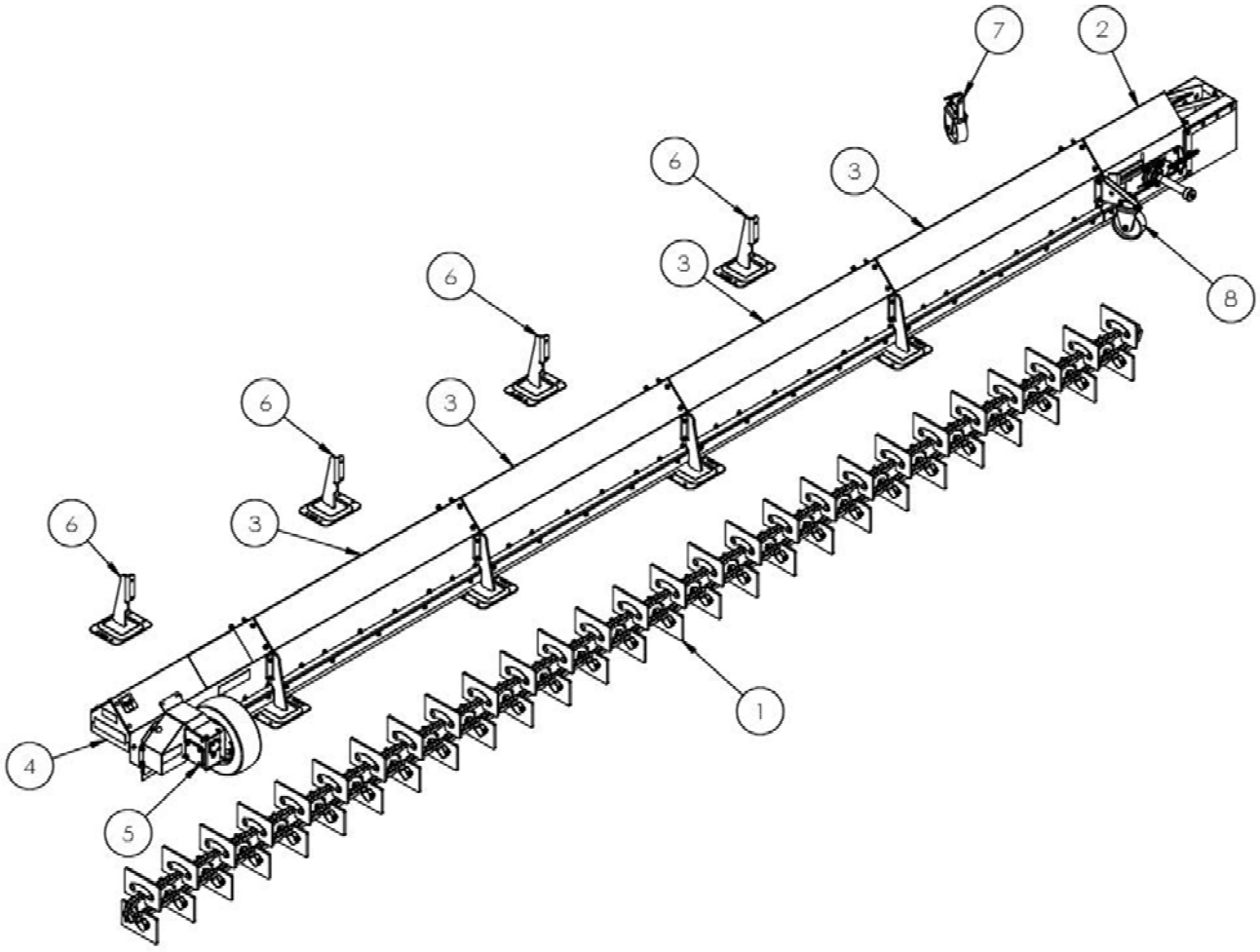
ITEM	PART #	DESCRIPTION	QTY
1	686220	PADDLE CHAIN	1
2	689969	HEAD SECTION	1
3	704801	INTERMEDIATE SECTION 1’ 6”	2
4	704803	INTERMEDIATE SECTION 4’ 6”	2
5	711453	DRIVE END	1
6	704806	TRACTOR DRIVE	1
7	695135	ZERO ENTRY KIT	6
	704807	JACK KIT (NOT SHOWN)	6
8	689979	FRONT CASTER	1
9	689980	REAR CASTER	1
	701898	HARDWARE BAG-DRIVE END	1
	701899	HARDWARE BAG-SECTION	5



PARTS DIAGRAM & LIST

20’ 6” SWEEP FOR 42’ BIN

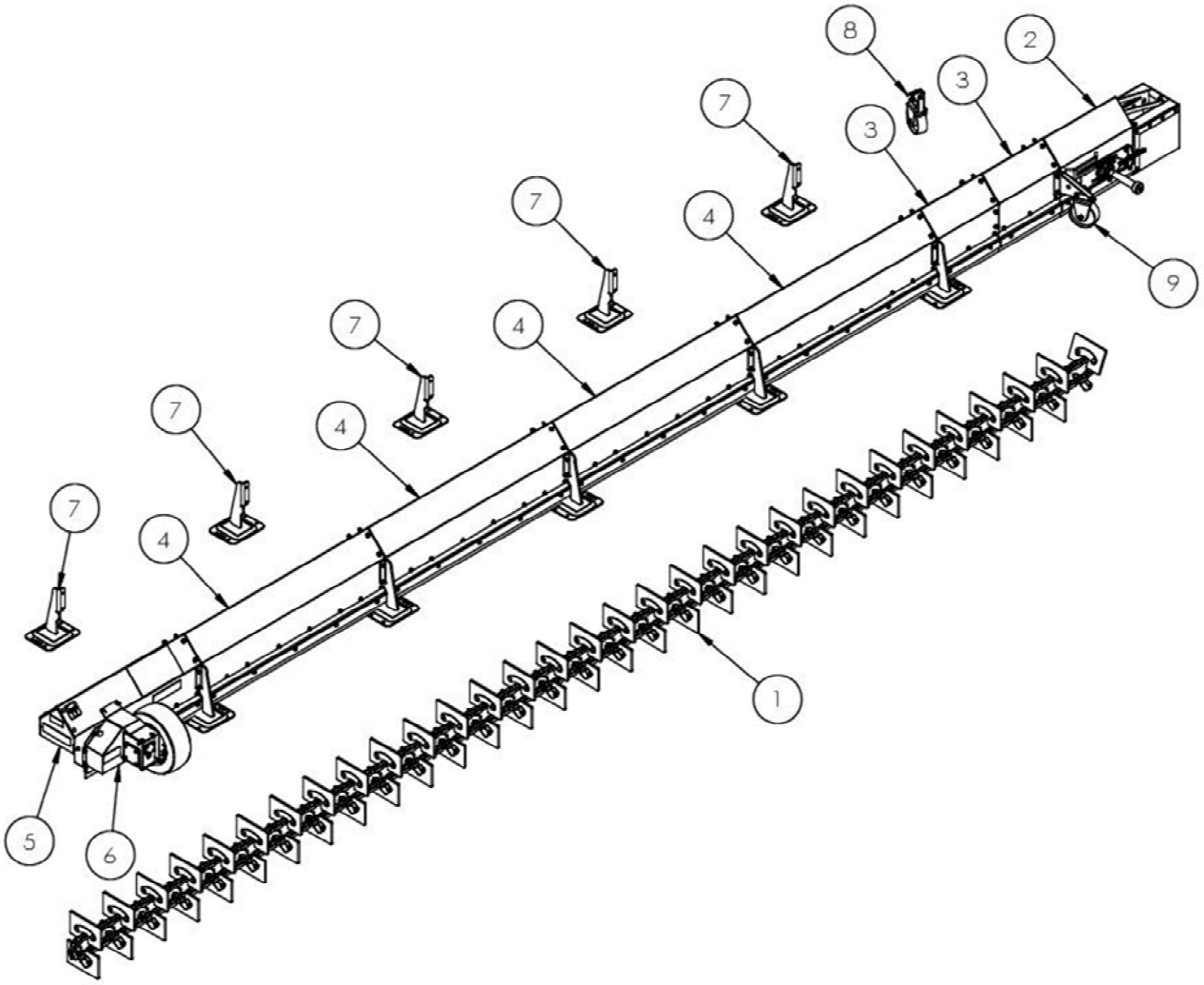
ITEM	PART #	DESCRIPTION	QTY
1	686222	PADDLE CHAIN	1
2	689969	HEAD SECTION	1
3	704801	INTERMEDIATE SECTION 1’ 6”	1
4	704803	INTERMEDIATE SECTION 4’ 6”	3
5	711453	DRIVE END	1
6	704806	TRACTOR DRIVE	1
7	695135	ZERO ENTRY KIT	8
	704807	JACK KIT (NOT SHOWN)	8
8	689979	FRONT CASTER	1
9	689980	REAR CASTER	1
	701898	HARDWARE BAG-DRIVE END	1
	701899	HARDWARE BAG-SECTION	5



PARTS DIAGRAM & LIST

23’ 6” SWEEP FOR 48’ BIN

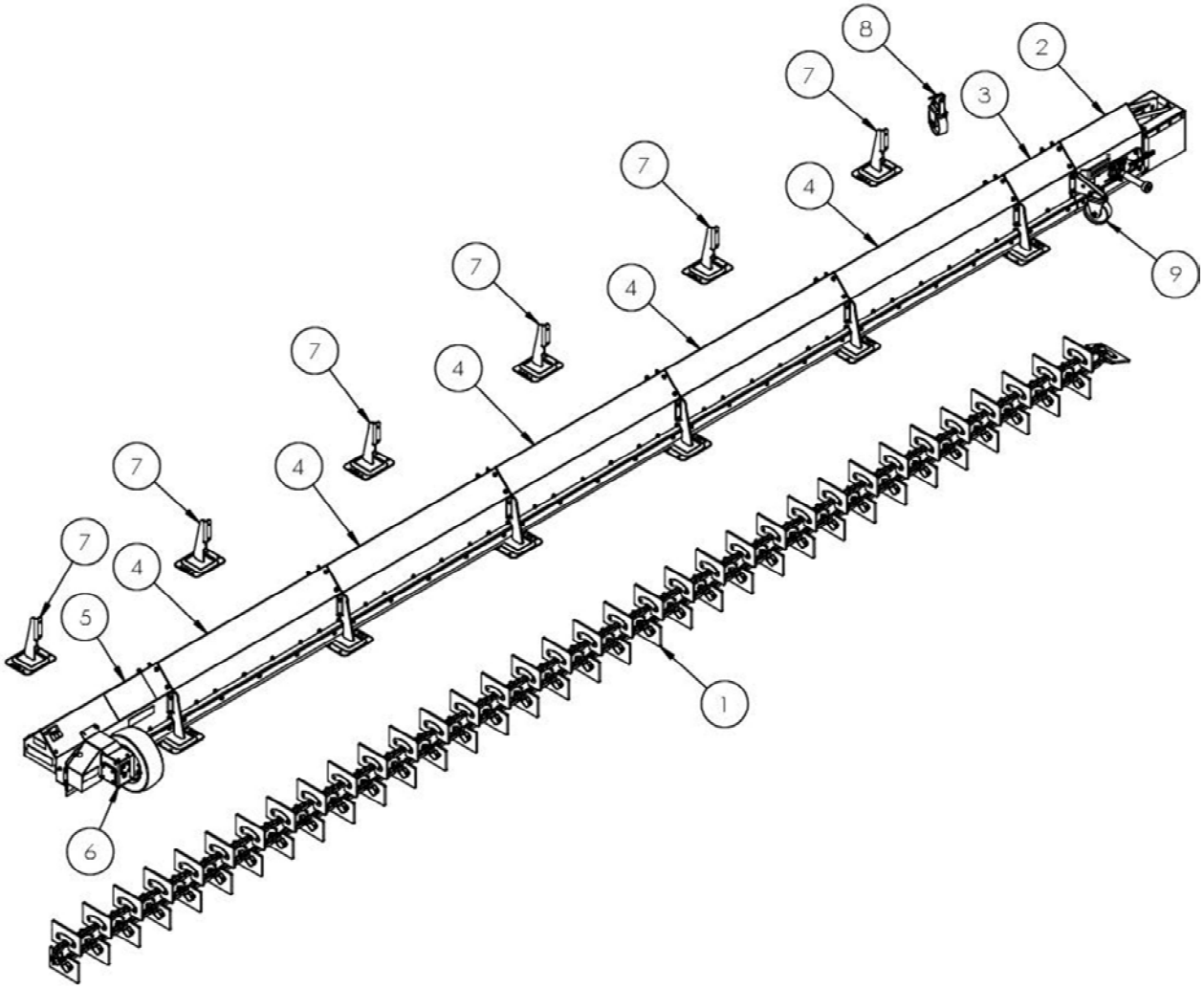
ITEM	PART #	DESCRIPTION	QTY
1	686088	PADDLE CHAIN	1
2	689969	HEAD SECTION	1
3	704803	INTERMEDIATE SECTION 4’ 6”	4
4	711453	DRIVE END	1
5	704806	TRACTOR DRIVE	1
6	695135	ZERO ENTRY KIT	8
7	689979	FRONT CASTER	1
8	689980	REAR CASTER	1
	701898	HARDWARE BAG-DRIVE END	1
	701899	HARDWARE BAG-SECTION	5



PARTS DIAGRAM & LIST

26’ 6” SWEEP FOR 54’ BIN

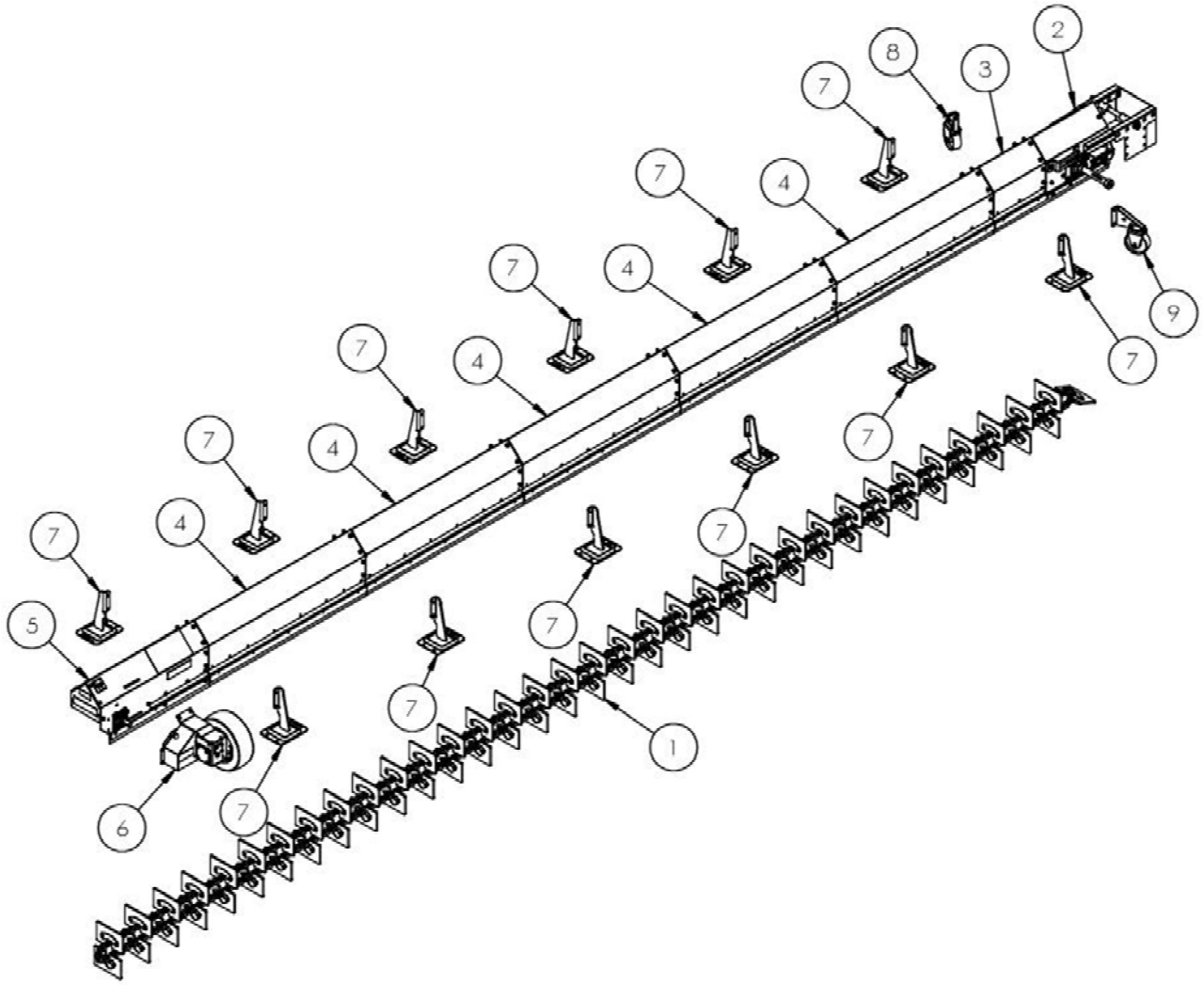
ITEM	PART #	DESCRIPTION	QTY
1	685900	PADDLE CHAIN	1
2	689969	HEAD SECTION	1
3	704801	INTERMEDIATE SECTION 1’ 6”	2
3	704803	INTERMEDIATE SECTION 4’ 6”	4
4	711453	DRIVE END ASSEMBLY	1
5	704806	TRACTOR DRIVE	1
6	695135	ZERO ENTRY KIT	10
	704807	JACK KIT (NOT SHOWN)	10
7	689979	FRONT CASTER	1
8	689980	REAR CASTER	1
	701898	HARDWARE BAG-DRIVE END	1
	701899	HARDWARE BAG-SECTION	7



PARTS DIAGRAM & LIST

29’ 6” SWEEP FOR 60’ BIN (1 7/16” HEADSHAFT)

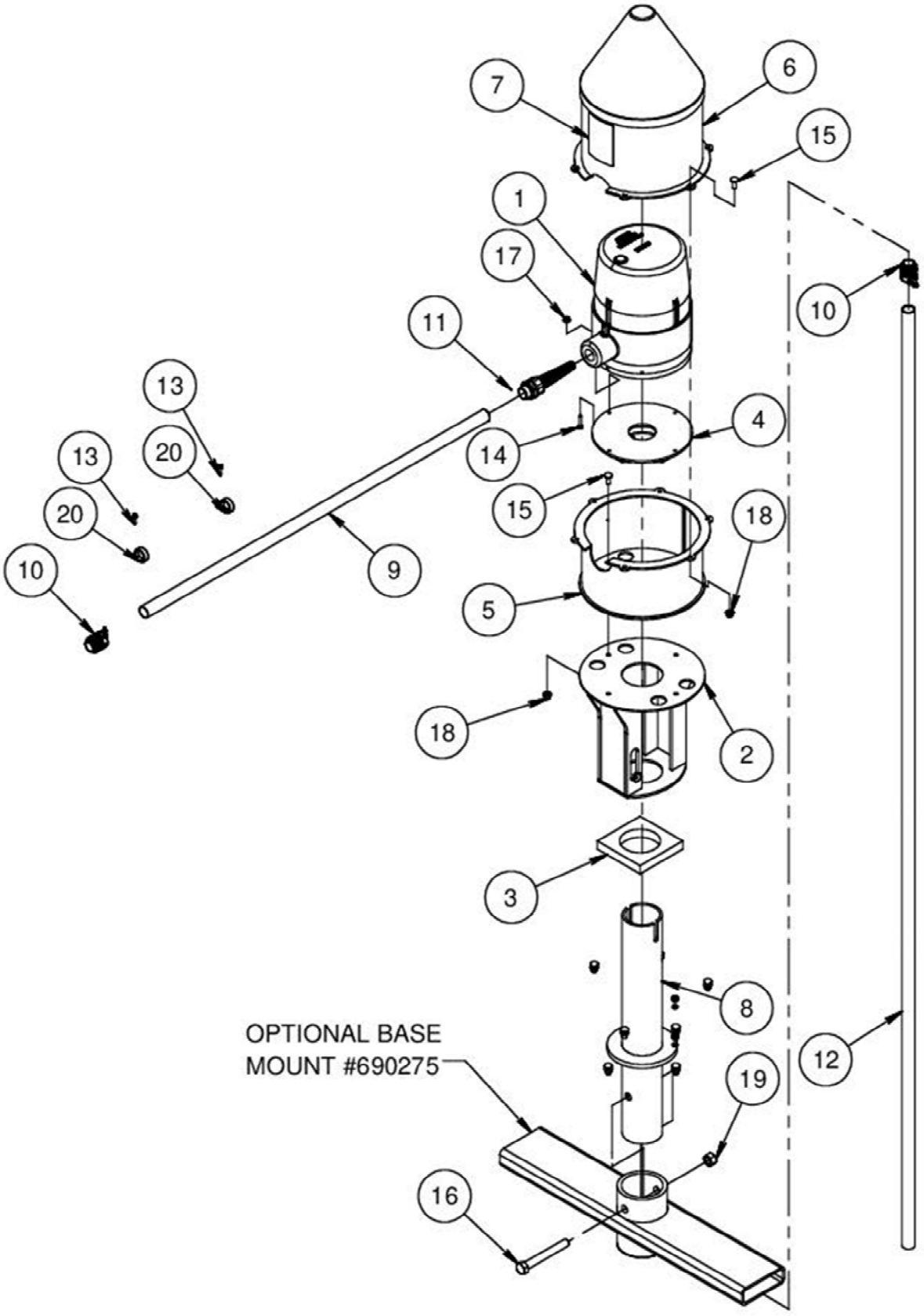
ITEM	PART #	DESCRIPTION	QTY
1	686156	PADDLE CHAIN	1
2	689969	HEAD SECTION	1
3	704801	INTERMEDIATE SECTION 1’ 6”	1
4	704803	INTERMEDIATE SECTION 4’ 6”	5
5	711453	DRIVE END ASSEMBLY	1
6	704806	TRACTOR DRIVE	1
7	695135	ZERO ENTRY KIT	12
	704807	JACK KIT (NOT SHOWN)	12
8	689979	FRONT CASTER	1
9	689980	REAR CASTER	1
	701898	HARDWARE BAG-DRIVE END	1



PARTS DIAGRAM & LIST

29’ 6” SWEEP FOR 60’ BIN (1 ½” HEADSHAFT)

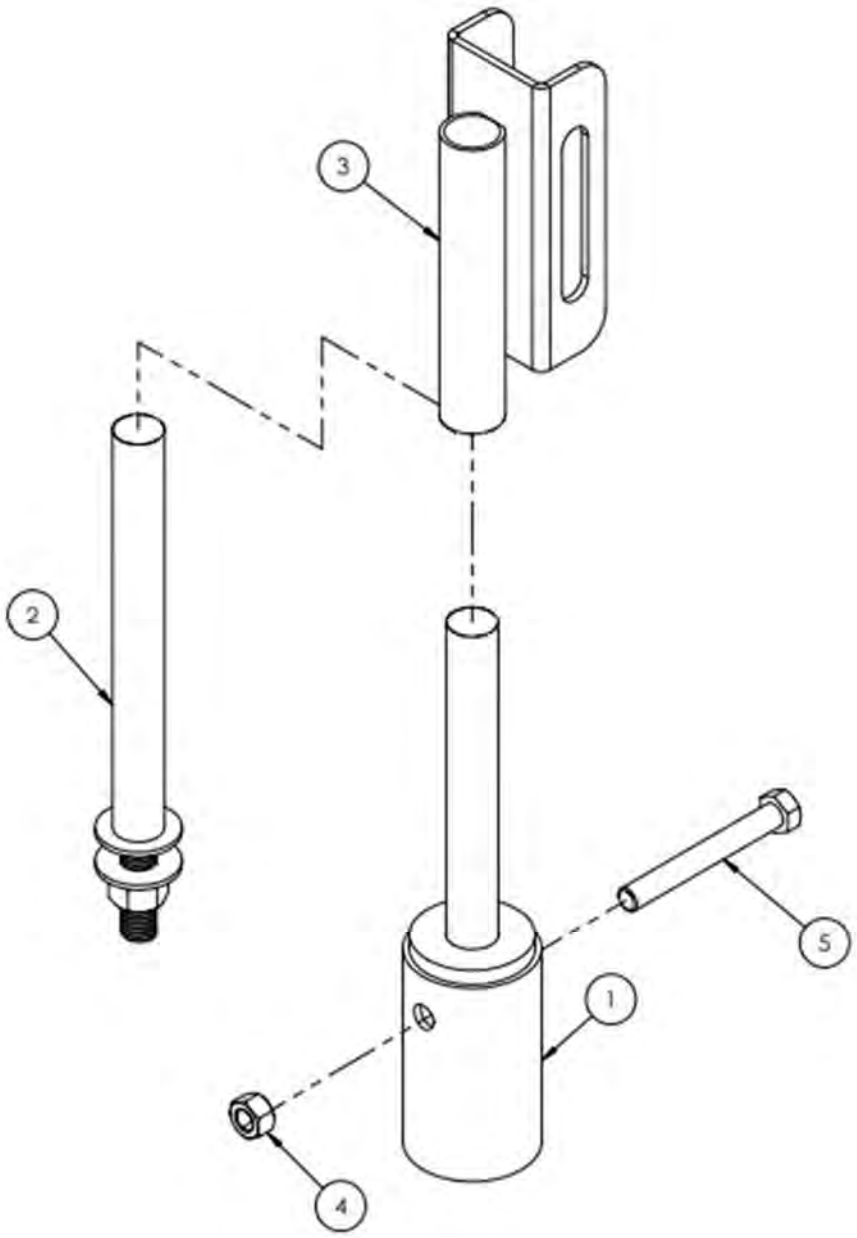
ITEM	PART #	DESCRIPTION	QTY
1	686156	PADDLE CHAIN	1
2	709960	HEAD SECTION	1
3	704801	INTERMEDIATE SECTION 1’ 6”	1
4	704803	INTERMEDIATE SECTION 4’ 6”	5
5	711453	DRIVE END ASSEMBLY	1
6	704806	TRACTOR DRIVE	1
7	695135	ZERO ENTRY KIT	12
	704807	JACK KIT (NOT SHOWN)	12
8	689979	FRONT CASTER	1
9	689980	REAR CASTER	1
	71898	HARDWARE BAG-DRIVE END	1
	701899	HARDWARE BAG-SECTION	7


7
6
15
1
17
10
11
13
20
4
14
13
20
15
18
10
9
5
18
2
3
8
OPTIONAL BASE
MOUNT #690275
12
19
16

PARTS DIAGRAM & LIST

(701595) COLLECTOR RING KIT

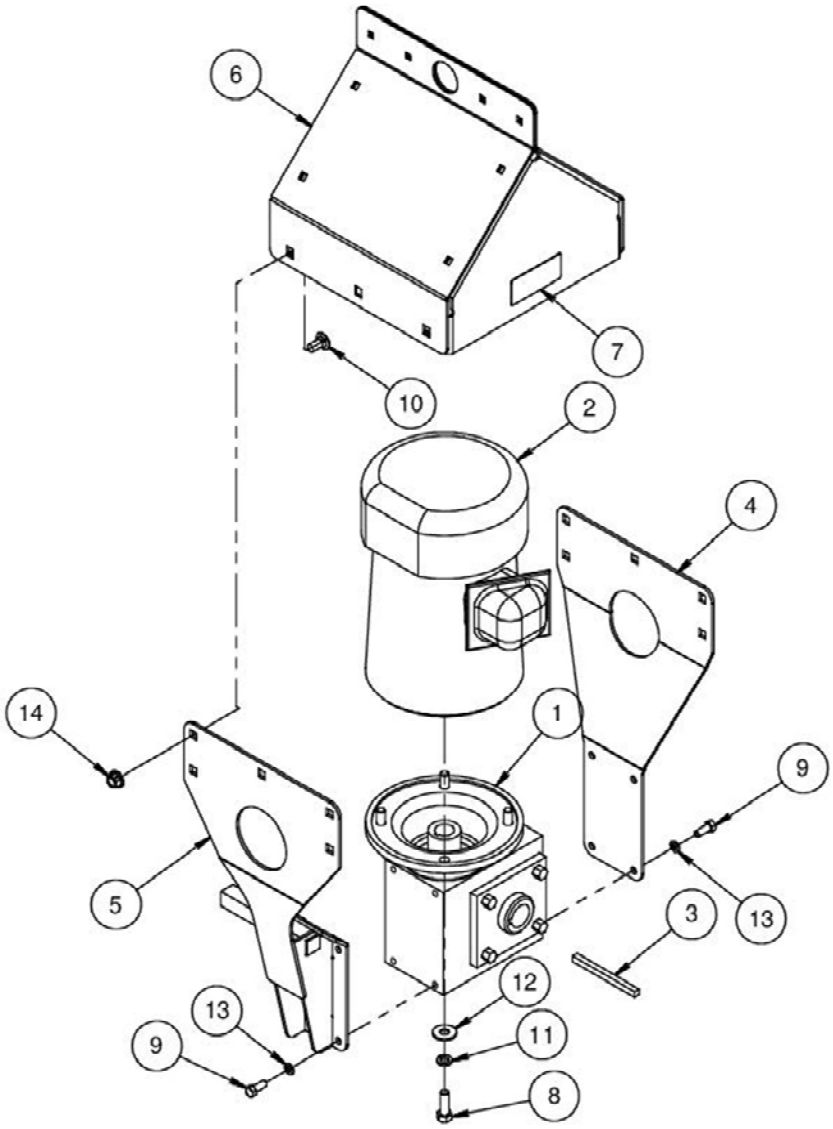
ITEM	PART #	DESCRIPTION	QTY
1	688281	COLLECTOR RING	1
2	688300	PIVOT MOUNT	1
3	688306	BUSHING	1
4	688307	LOCKING PLATE	1
5	688310	LOWER CASING	1
6	688315	TOP CASING	1
7	688462	SAFETY DECAL	1
8	690270	COLLECTOR RING MOUNT	1
9	695210	1” FLEXIBLE METAL CONDUIT; 48”	1
10	695211	LIQUIDTIGHT STRAIGHT CONNECTOR	2
11	701352	LEQUIDTIGHT STRAIGHT CONNECTOR W/MESH	1
12	701365	1” FLEXIBLE METAL CONDUIT; 114”	1
13	682441	SELF TAPPING SCREW; ¼” X 1 ¼”	2
14	654751	HH CAP SCREW; ¼” X 1 ¼”	4
15	640030	CARRIAGE BOLT; 3/8” X 1”	10
16	640109	HH CAP SCREW; ¾” X 6”	1
17	682523	SERRATED FLANGE NUT; ¼”	4
18	701182	CENTERLOCK FLANGE NUT; 3/8”	10
19	640146	HEXNUT; ¾”	1
20	702673	LOOP CLAMP	2



PARTS DIAGRAM & LIST

(704112) UNIVERSAL PIVOT KIT

ITEM	PART #	DESCRIPTION	QTY
1	704109	PIVOT ADAPTOR	1
2	704116	UNIVERSAL PIVOT ADAPTOR	1
3	704114	PIVOT BUSHING	1
4	640146	HEXNUT; ¾”	1
5	640109	HH CAP SCREW; ¾” X 6”	1

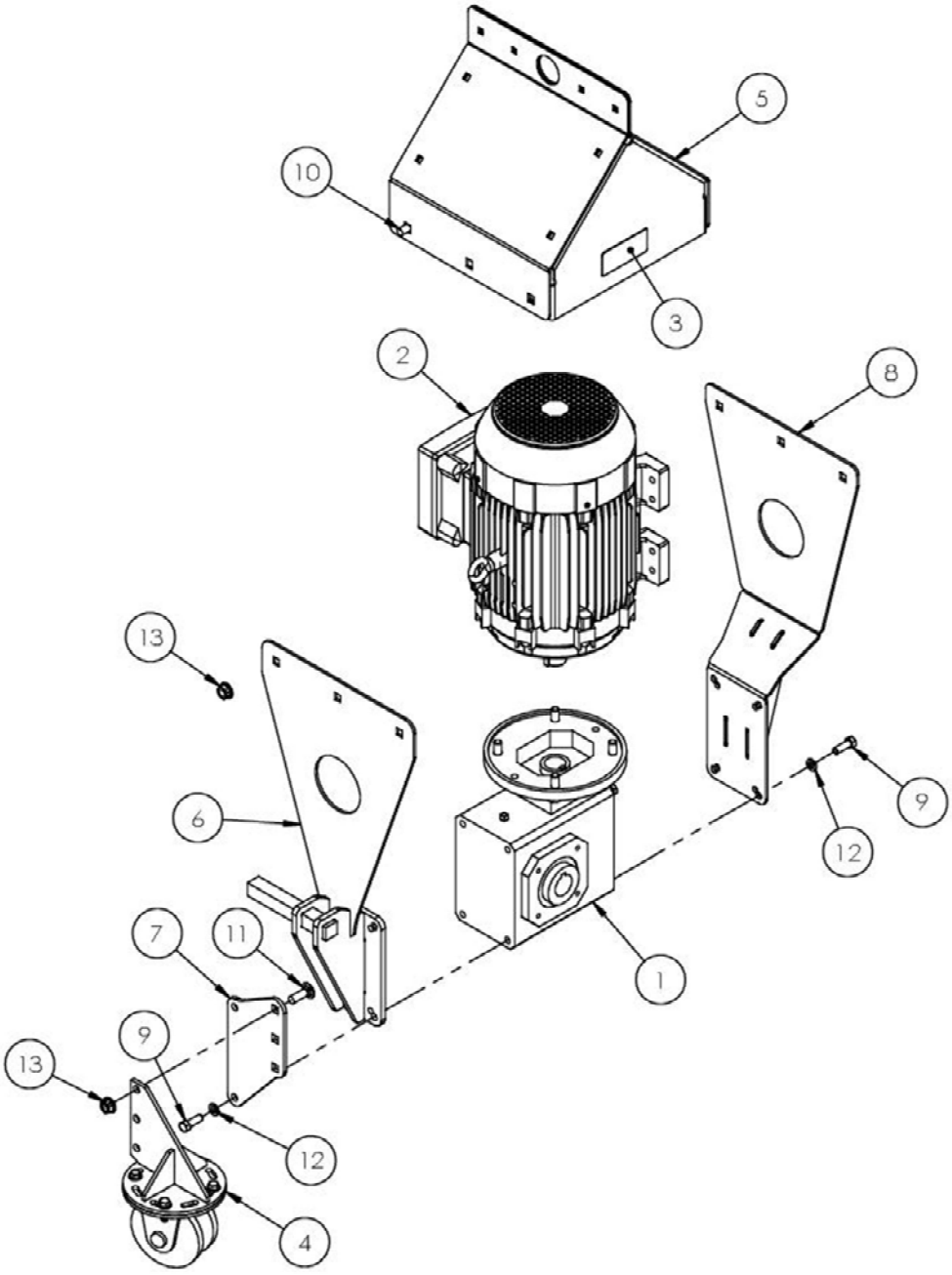


MOTOR & GEARBOX PARTS DIAGRAM

PARTS LIST

MOTOR & GEARBOX (2-5HP)

ITEM	PART #	DESCRIPTION	QTY
1	686182	GEARBOX - GROVE- 5:1	1
	698495	GEARBOX - GROVE- 7.5:1	1
	686180	GEARBOX - GROVE-10:1	1
	689394	GEARBOX - GROVE-15:1	1
	689396	GEARBOX - GROVE-20:1	1
	689398	GEARBOX - GROVE-30:1	1
2	689393	ELECTRIC MOTOR; 2HP – 230V – 460V	1
	704954	ELECTRIC MOTOR; 2HP – 575V	1
	686001	ELECTRIC MOTOR; 5HP – 230V – 460V	1
	689282	ELECTRIC MOTOR; 5HP – 575V	1
3	687609	KEY; 3/8” X 3/8” X 5”	1
4	686387	SUPPORT PLATE	1
5	689974	TORQUE ARM BRACKET	1
6	709573	ROOF COVER	1
7	688358	DECAL; IMPORTANT	1
8	640032	HH CAP SCREW; 3/8” X 1 ¼”	4
	640059	HH CAP SCREW; 1/2” X 1 1/2”	4
9	640028	HH CAP SCREW; 3/8” X 1”	8
10	683931	CARRIAGE BOLT; ½” X 1”	6
11	640153	LOCKWASHER; 3/8”	4
	640157	LOCKWASHER; 1/2”	4
12	640158	FLATWASHER; 1/2”	4
13	640153	LOCKWASHER; 3/8”	8
14	699010	FLANGE NUT; ½”	6
	698466	VENT PLUG; WORLDWIDE REDUCERS—MODEL 206-237-262	

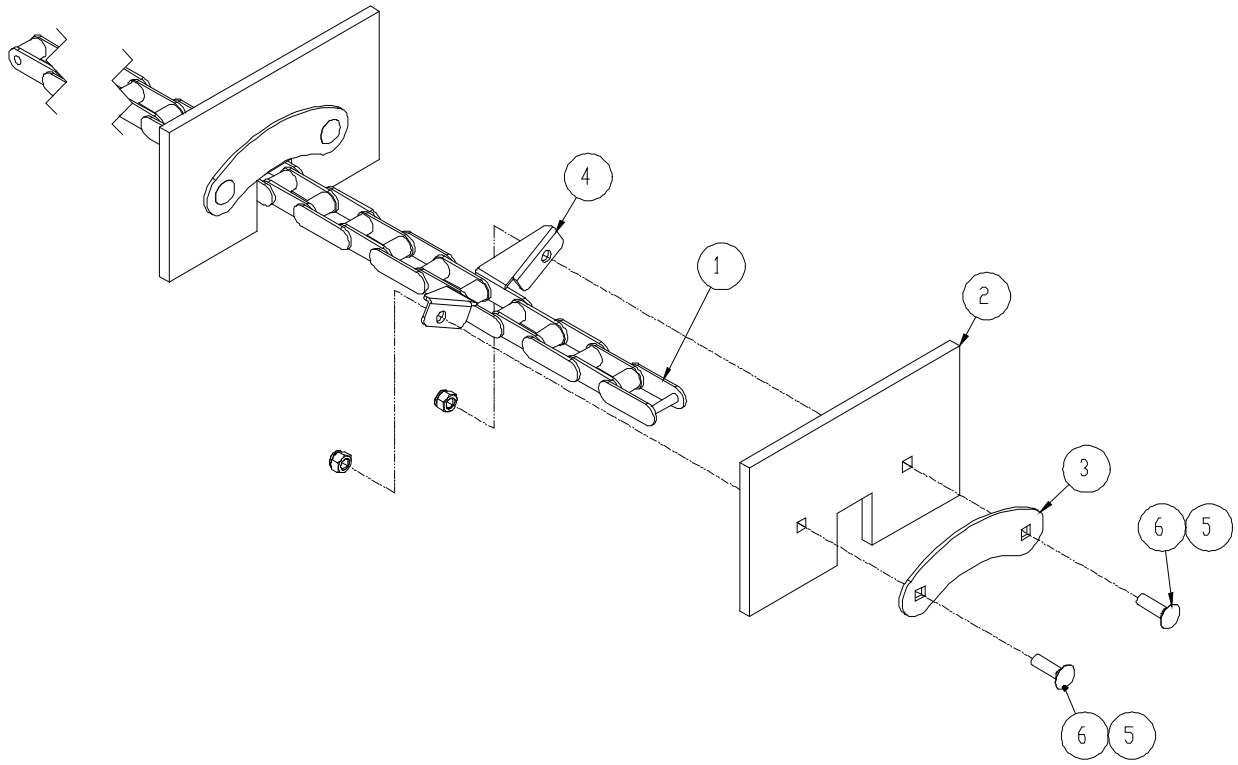


MOTOR & GEARBOX PARTS DIGRAM

PARTS LIST

MOTOR & GEARBOX (7.5HP)

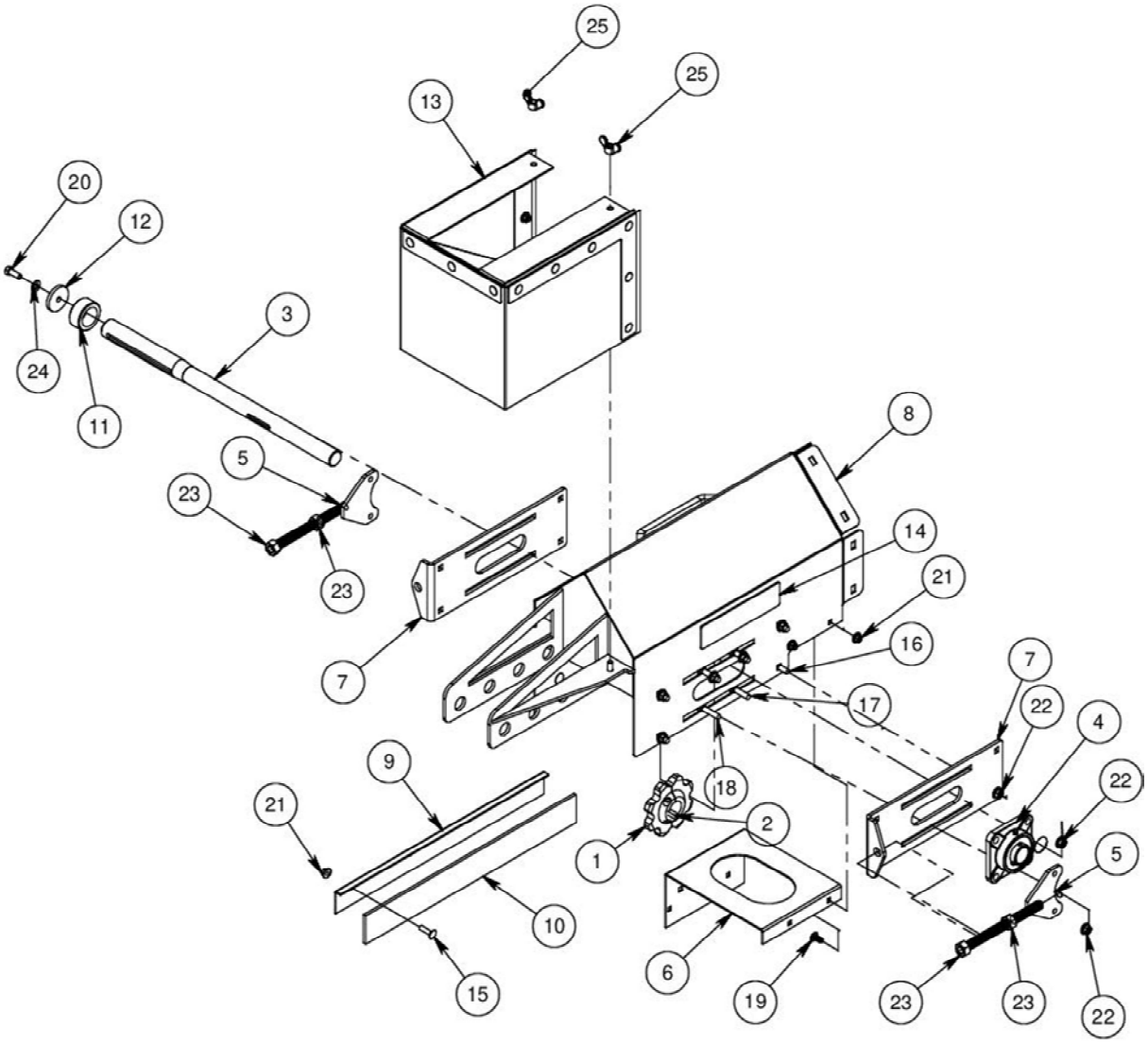
ITEM	PART #	DESCRIPTION	QTY
1	712216	GEARBOX - GROVE- 5:1	1
2	686246	ELECTRIC MOTOR; 7.5HP – 230V – 460V	1
	689285	ELECTRIC MOTOR; 7.5HP – 575V	1
3	688358	DECAL; IMPORTANT	1
4	702692	ROLLER WHEEL	1
5	709573	ROOF COVER	1
6	709956	TORQUE ARM BRACKET	1
7	709953	ADAPTER PLATE	1
8	709970	SUPPORT PLATE	1
9	640049	HH CAP SCREW; 7/16” X 1 ¼”	8
10	683931	CARRIAGE BOLT; ½” X 1”	3
11	701181	CARRIAGE BOLT; ½” X 1 ½”	3
12	640155	LOCKWASHER; 7/16”	8
13	699010	FLANGE NUT; ½”	9
	709666	VENT PLUG; GROVE REDUCERS	



PARTS DIAGRAM & LIST

PADDLE CHAIN PARTS LIST & DIAGRAM

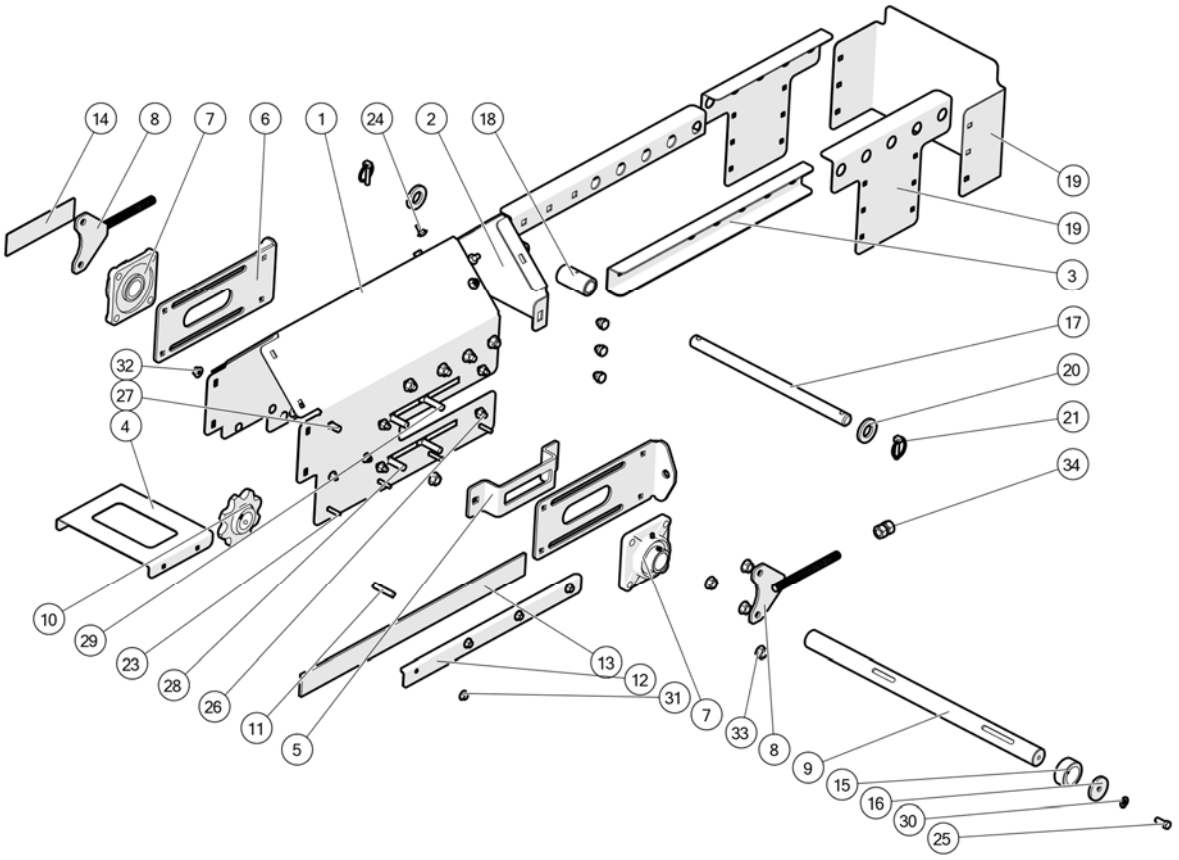
ITEM	PART #	DESCRIPTION	QTY
1	686010	MALE CONNECTOR LINK	NA
2	686081	RUBBER PADDLE	NA
3	686111	PADDLE BACKING PLATE	NA
4	688591	PADDLE CHAIN-CA550	50 FT
5	654121	LOCKNUT NYLON; 3/8”	NA
6	680140	CARRIAGE BOLT; 3/8” X 1 1/4”	NA
	688376	#550 HALF LINK	NA
		*FOR COMPLETE PADDLE CHAIN ASSEMBLY REFER TO SWEEP SIZE PARTS DIAGRAM & LIST	



(689969) HEAD SECTION PARTS DIGRAM

(689969) HEAD SECTION PARTS LIST

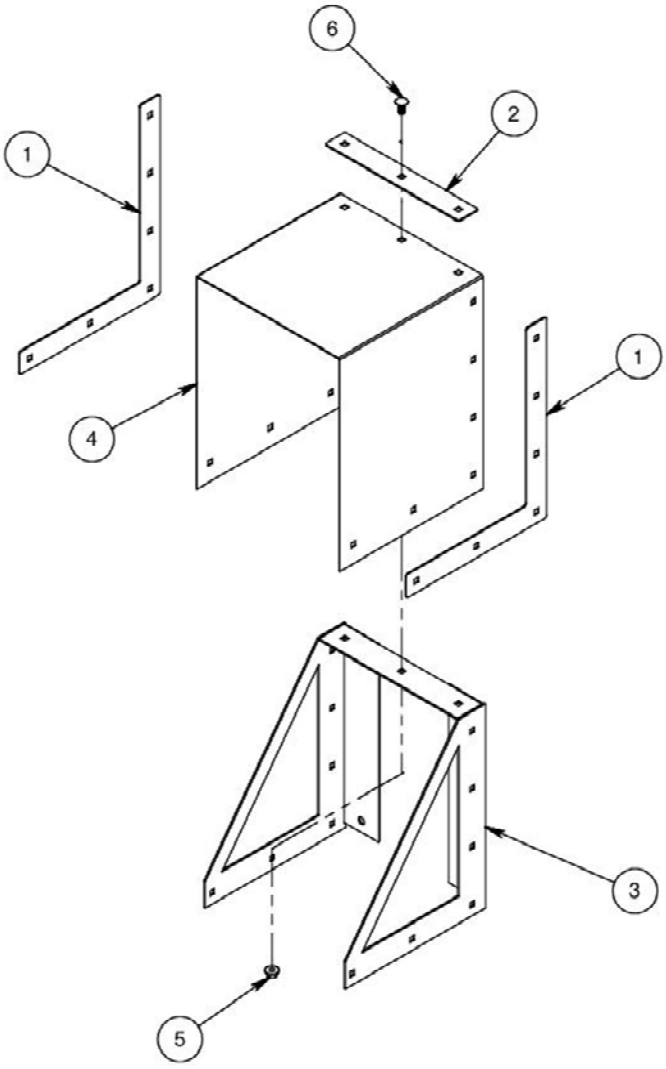
ITEM	PART #	DESCRIPTION	QTY
1	686008	SPROCKET; 8-TOOTH	1
2	686028	KEY; 5/16” X 5/16” X 2”	1
3	686068	MOTOR END SHAFT	1
4	686603	FLANGE BEARING	2
5	688922	TIGHTNER	2
6	689972	MOTOR END DIVIDER	1
7	688942	BEARING SLIDE PLATE	2
8	689966	MOTOR END WELDMENT	1
9	689970	DRAG RUBBER COVER PLATE	1
10	689971	DRAG RUBBER	1
11	701459	COLLAR	1
12	695897	FLATWASHER; 3/8”	1
13	686101	RUBBER SKIRT COVER	1
14	686033	DECAL; DANGER	1
15	686183	CARRIAGE BOLT; 5/16” X 1 ¼”	4
16	640030	CARRIAGE BOLT; 3/8” X 1”	8
17	700705	CARRIAGE BOLT; 3/8” X 1 ½”	4
18	686527	CARRIAGE BOLT; 3/8” 1 ¾”	4
19	683943	CARRIAGE BOLT; 5/16” X ¾”	4
20	640028	HH CAP SCREW; 3/8” X 1”	1
21	701467	CENTERLOCK FLANGE NUT; 5/16”	8
22	701182	CENTERLOCK FLANGE NUT; 3/8”	16
23	640142	HEXNUT; 5/8”	4
24	640154	FLATWASHER; 3/8”	1
25	154123	WINGNUT; 3/8”	2



(709960) HEAD SECTION PARTS DIAGRAM

(709960) HEAD SECTION PARTS LIST

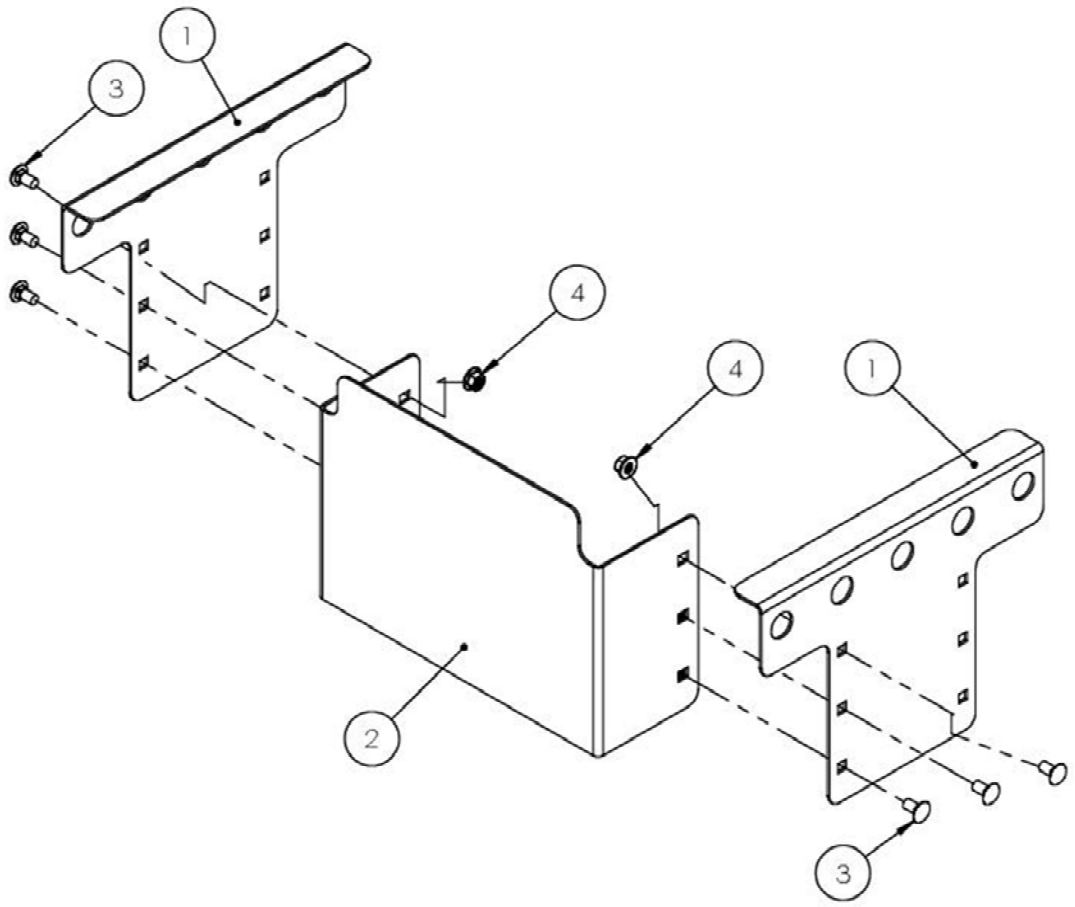
ITEM	PART #	DESCRIPTION	QTY
1	790961	HEAD SECTION COVER PLATE	1
2	709962	END PLATE	1
3	709963	PIVOT ARM PLATE	2
4	709964	HEAD SECTION DIVIDER PLATE	1
5	709965	MOTOR TORQUE ARM STOP PLATE	1
6	709966	TAKE-UP MOUNT PLATE	2
7	684864	1.5” – 4 BOLT FLANGE BEARING	2
8	709954	PADDLE CHAIN TIGHTNER WLDT	2
9	686248	SHAFT	1
10	686985	CA550 8 TOOTH SPROCKET	1
11	686985	3/8 X 2.00 KEY	1
12	709968	HEAD SECTION DRAG COVER PLATE	1
13	709744	DRAG RUBBER – 2.0 X 26.0	1
14	686033	DECAL – DANGER	1
15	701459	COLLAR	1
16	695897	WASHER – 3/8” FLAT	1
17	709628	PIVOT PIN (ZINC)	1
18	709691	SPACER	2
19	709957	METAL SKIRT ASEMBLY	1
20	709755	CHROMATE PLATED STEEL OVERSIZED WASHER 1”	2
21	709672	LYNCH PIN; .313 X 1.250	2
22	683943	SCREW - .3125 – 18 X .75 CARRIAGE	4
23	686183	SCREW - .3125 X 1.25 GR 5 CAR	4
24	683942	SCREW - .375 - 16 X 0.75 GR 5 CAR	2
25	640028	SCREW - .375 – 16 X 1.00 GR 5 HHC	1
26	640030	SCREW - .375 – 16 X 1.00 GR 5 CAR	8
27	683931	.50 – 13 X 1.00 GR 5 CARRIAGE BOLT	8
28	700638	.500 – 13 X 1.75 CARRIAGE BOLT	4
29	651557	SCREW - .500 – 13 X 2.00 GR 5 CAR	4
30	640154	WASHER – 3/8” FLAT	1
31	701467	NUT - .3125 X 18 FLANGE	8
32	701182	NUT - .375 X 16 FLANGE	10
33	699010	NUT - .50 X 13 CENTER LOCK FLANGE	16
34	640142	NUT - .625 – 11 GR 5 HEX	4



PARTS DIAGRAM & LIST

(686101) RUBBER SKIRT

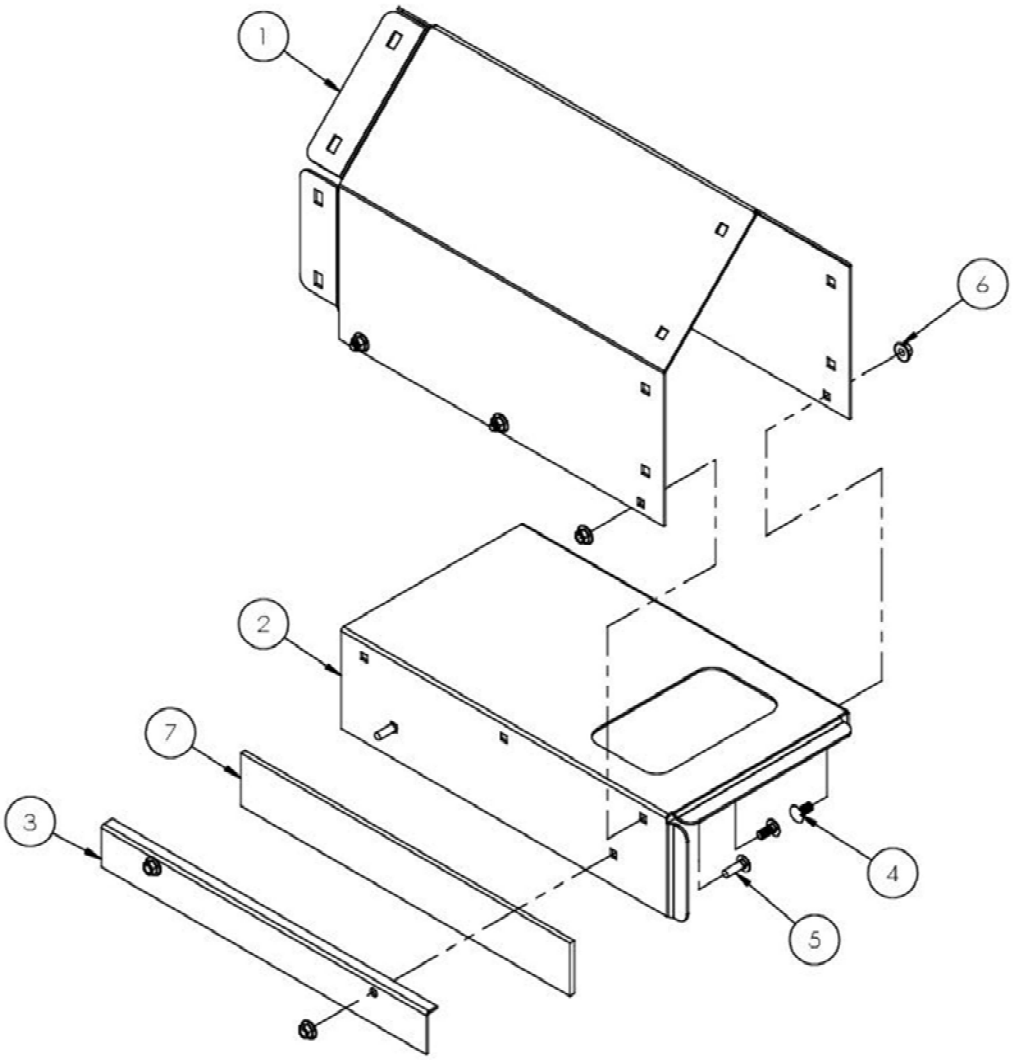
ITEM	PART #	DESCRIPTION	QTY
1	686087	RUBBER SKIRT SIDE BOLT PLATE	2
2	686134	RUBBER SKIRT END BOLT PLATE	1
3	686140	RUBBER SKIRT FRAME	1
4	686158	RUBBER END FLAP	1
5	701467	CENTERLOCK FLANGE NUT; 5/16”	15
6	683943	CARRIAGE BOLT; 5/16” X ¾”	15



PARTS DIAGRAM & LIST

(709957) METAL SKIRT

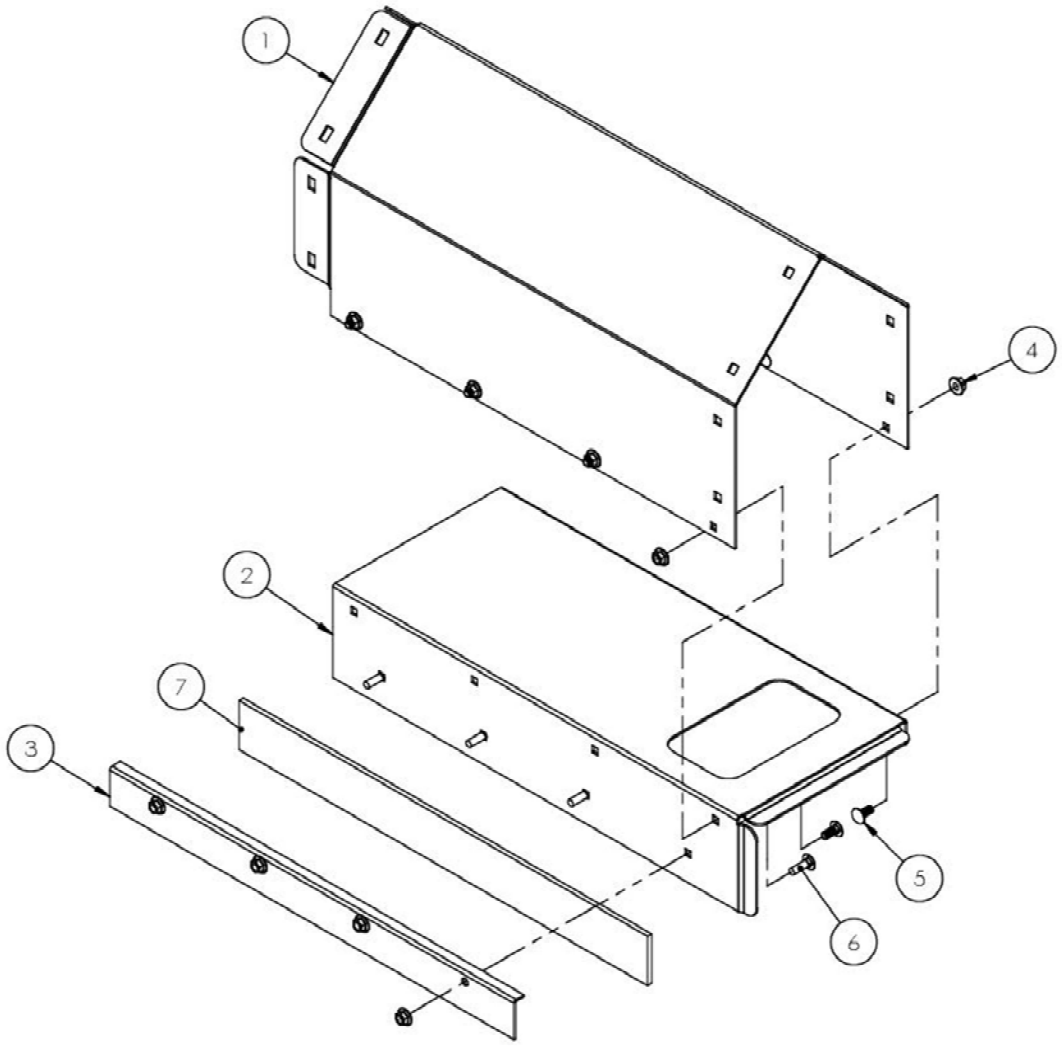
ITEM	PART #	DESCRIPTION	QTY
1	709958	SIDE PLATE	2
2	709959	END PLATE	1
3	683942	CARRIAGE BOLT; 3/8” X 3/4'”	6
4	701182	CENTERLOCK FLANGE NUT; 3/8”	6



PARTS DIAGRAM & LIST

(704801) 1’ 6” SECTION PARTS LIST & DIAGRAM

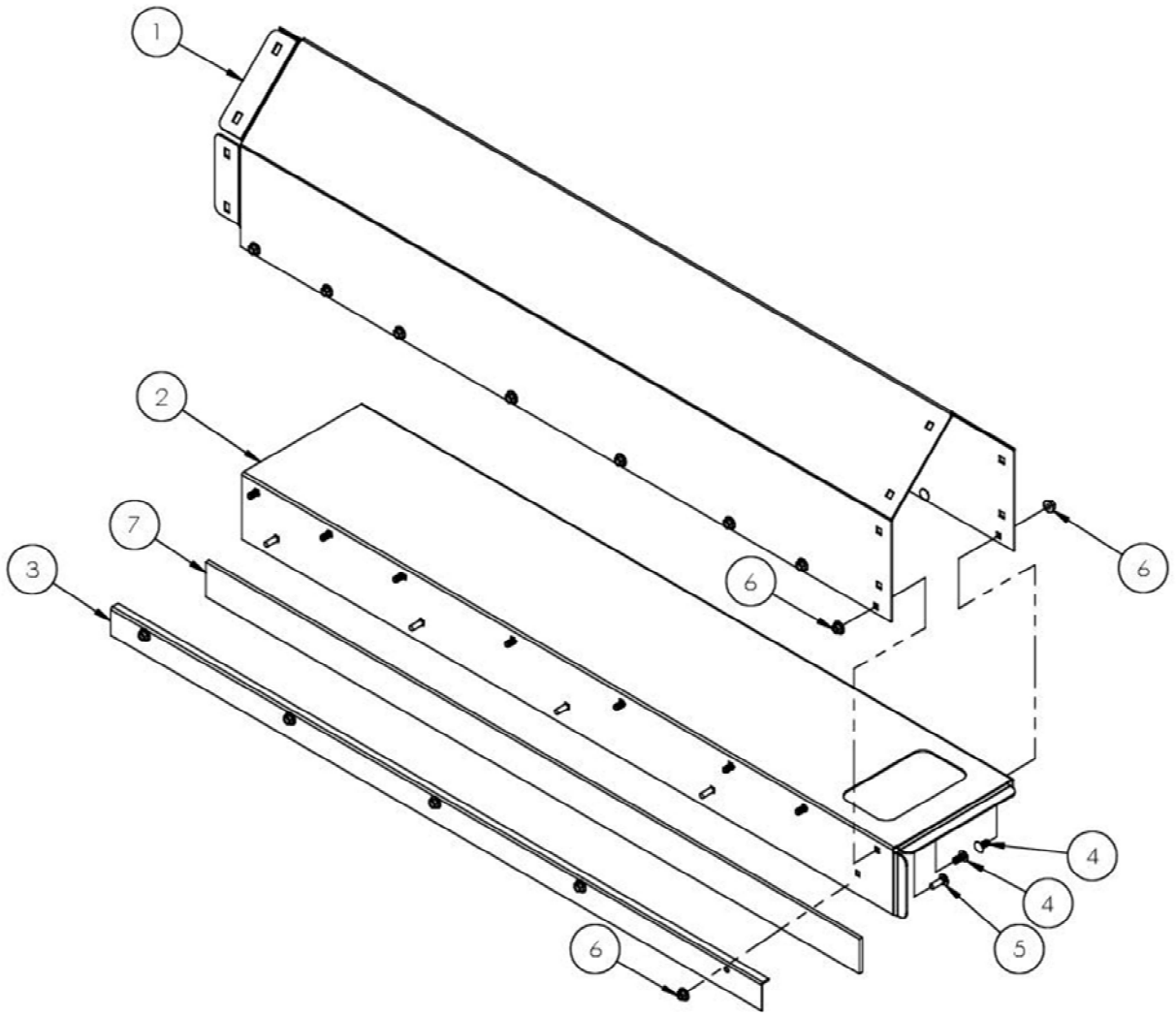
ITEM	PART #	DESCRIPTION	QTY
1	704820	1’ 6” COVER	1
2	704823	1’ 6” DIVIDER	1
3	704826	DRAG RUBBER CLAMP	1
4	683943	CARRIAGE BOLT; 5/16” X ¾”	6
5	640018	CARRIAGE BOLT; 5/16” X 1”	2
6	701467	CENTER FLANGE NUT; 5/16”	8
7	688947	DRAG RUBBER	1



PARTS DIAGRAM & LIST

(704802) 2’ SECTION PARTS LIST & DIAGRAM

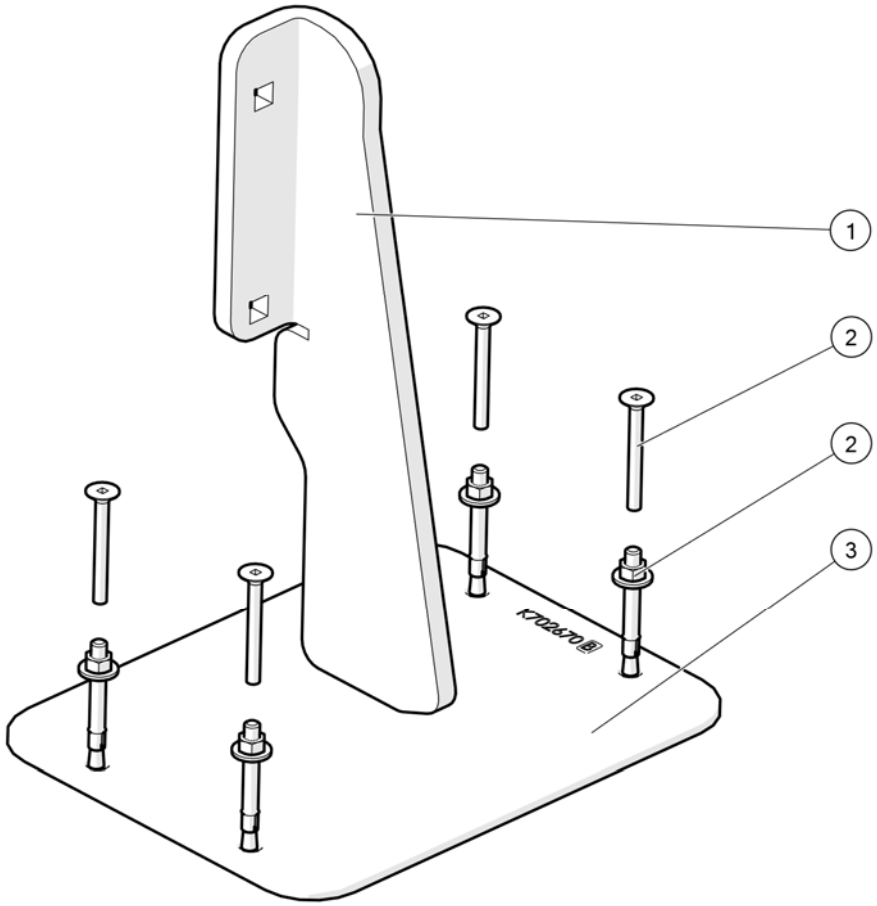
ITEM	PART #	DESCRIPTION	QTY
1	704821	2’ COVER	1
2	704824	2’ DIVIDER	1
3	704827	DRAG RUBBER CLAMP	1
4	701467	FLANGE NUT; 5/16”	12
5	683943	CARRIAGE BOLT; 5/16’ X ¾”	8
6	640018	CARRIAGE BOLT; 5/16” X 1”	4
7	701915	RUBBER DRAG	1



PARTS DIAGRAM & LIST

(704803) 4’ 6” SECTION PARTS LIST & DIAGRAM

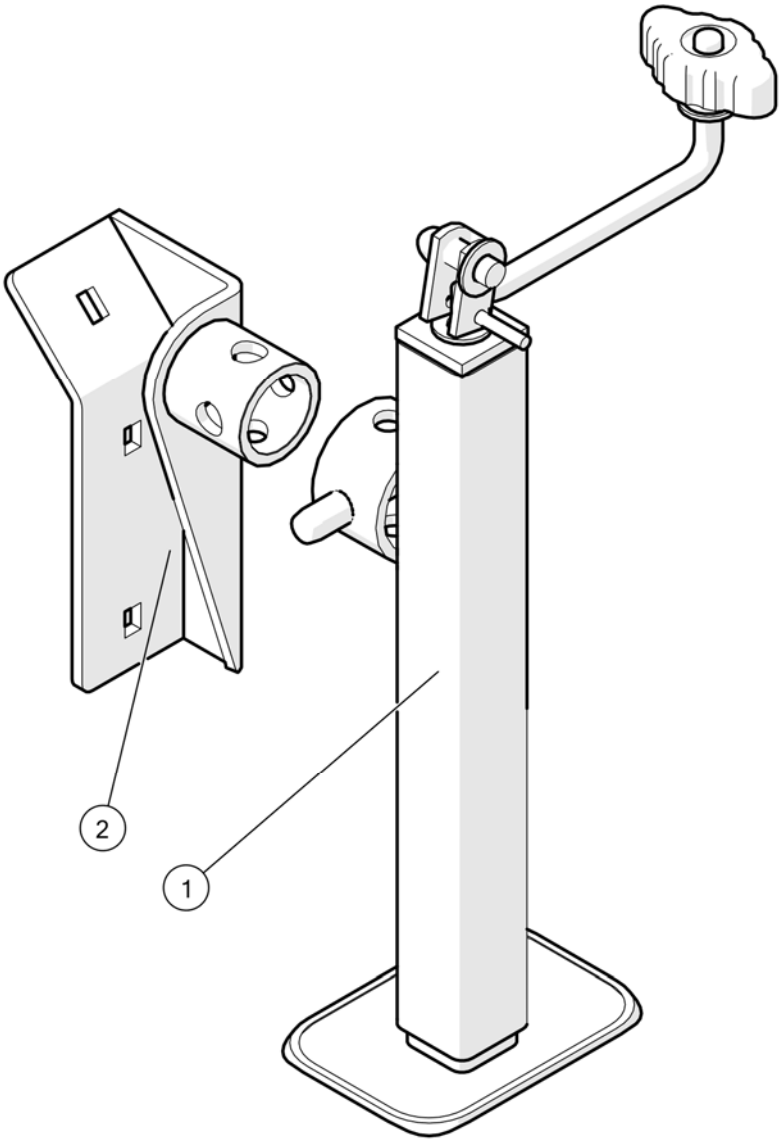
ITEM	PART #	DESCRIPTION	QTY
1	704822	4’ 6” COVER	1
2	704825	4’ 6” DIVIDER	1
3	704828	DRAG RUBBER CLAMP	1
4	683943	CARRIAGE BOLT; 5/16” X ¾”	16
5	640018	CARRIAGE BOLT; 5/16” X 1”	5
6	682524	CENTERLOCK FLANGE NUT; 5/16”	21
7	688948	RUBBER DRAG	1



PARTS DIAGRAM & LIST

(695135) ZERO ENTRY KIT

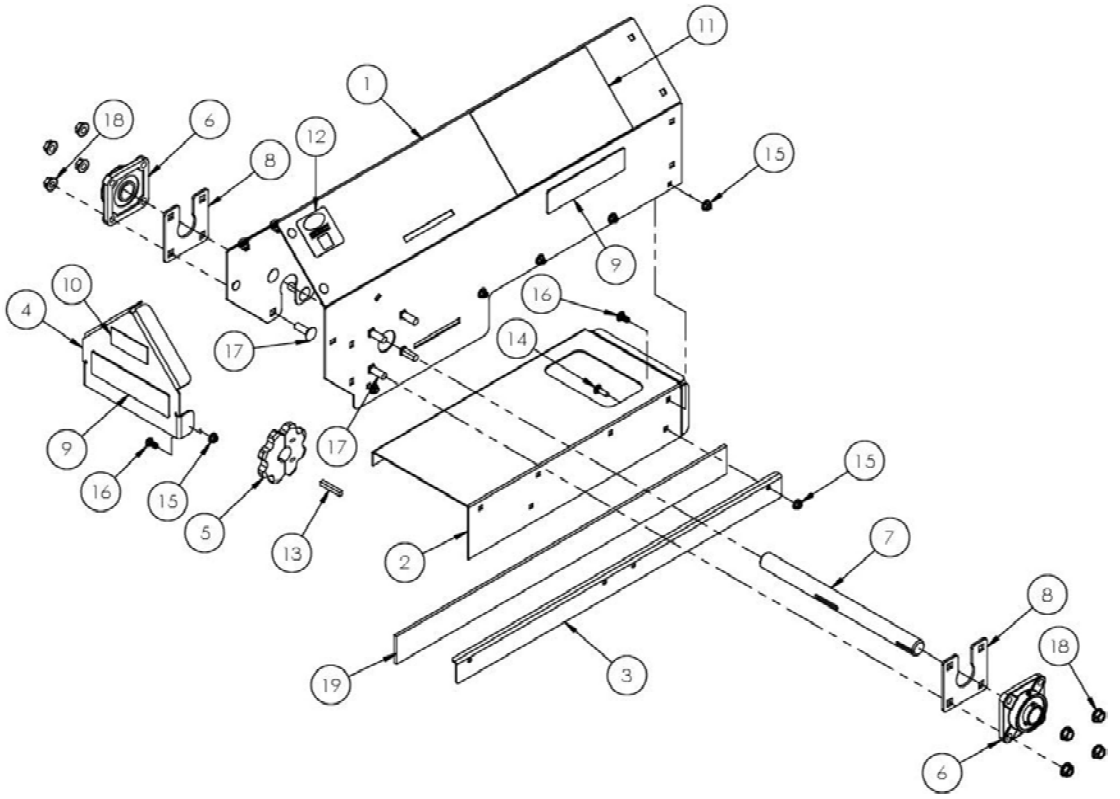
ITEM	PART #	DESCRIPTION	QTY
1	693277	SUPPORT PLATE	1
2	697999	BOLT BAG ANCHOR KIT	1
	695702	SQUARE WAFER HEAD SELF DRILLING SCREW; #12-24 X 2” (STEEL)	4
	695701	WEDGE ANCHOR; ¼” X 2 ¼” (CONCRETE)	4
3	702670	ZERO ENTRY PAD	1



PARTS DIAGRAM & LIST

(704807) JACK KIT

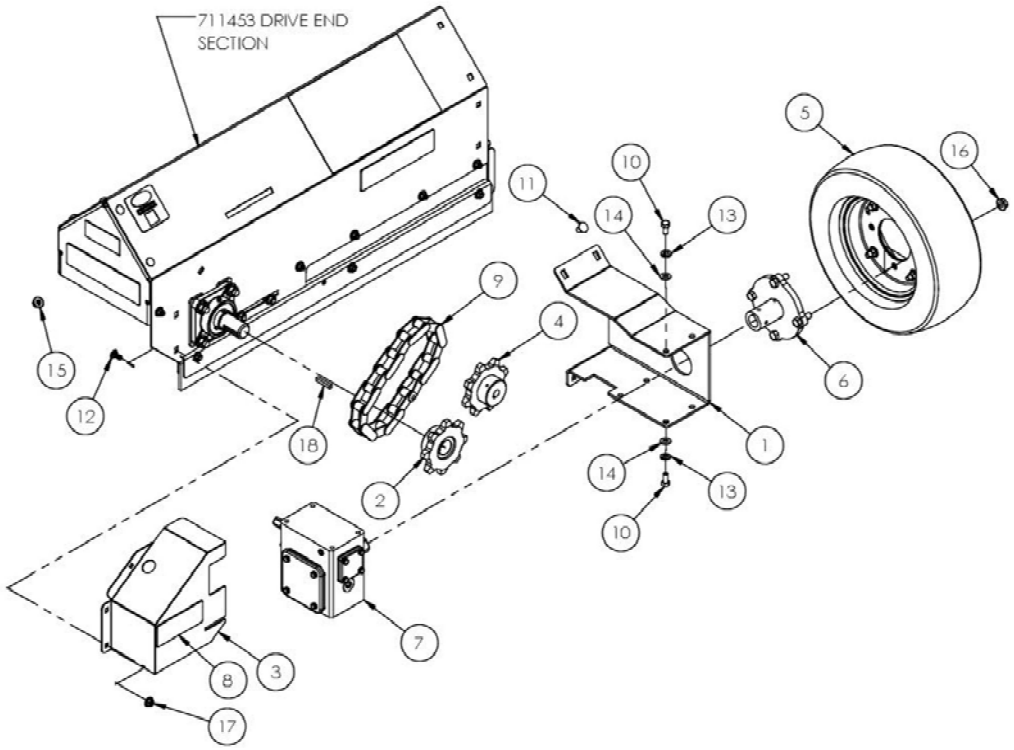
ITEM	PART #	DESCRIPTION	QTY
1	688594	JACK	1
2	688940	JACK MOUNT	1



PARTS DIAGRAM & LIST

(711453) DRIVE END

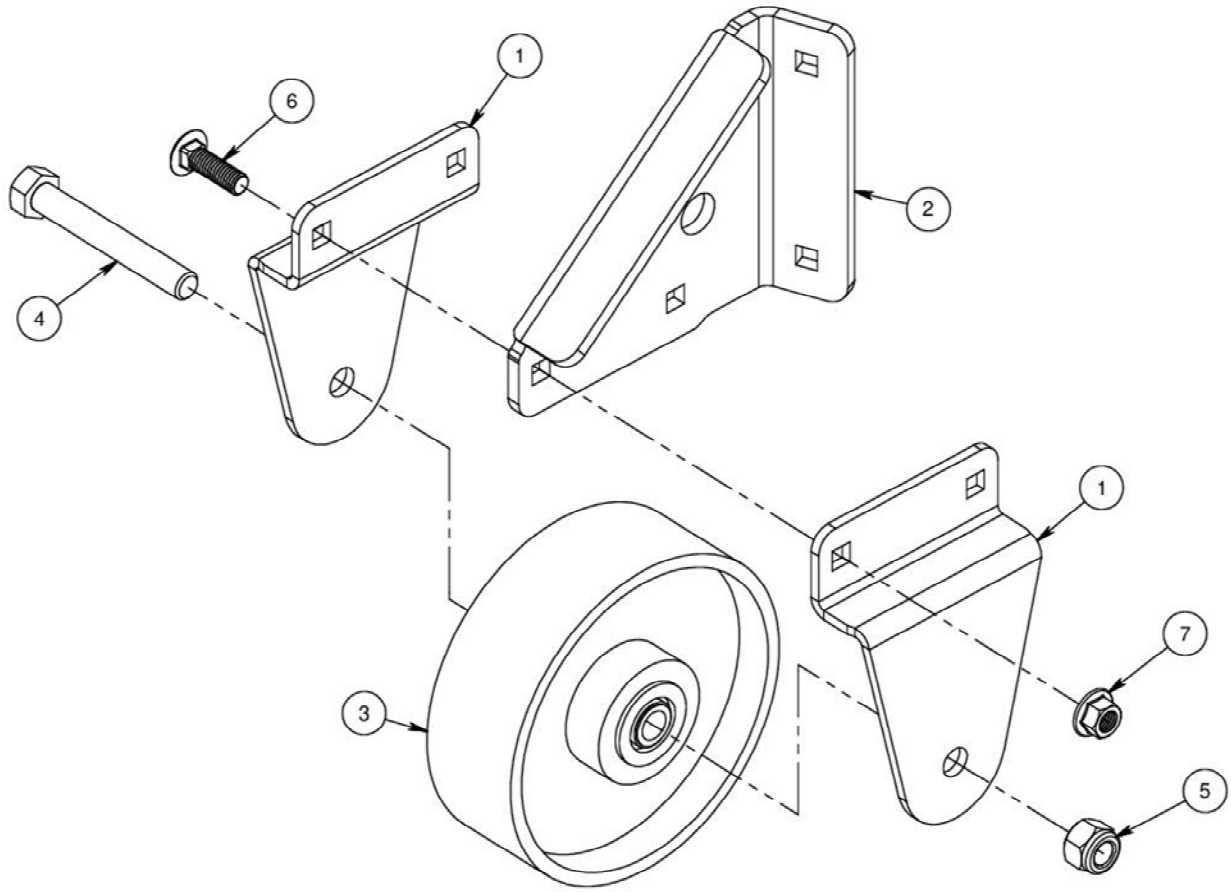
ITEM	PART #	DESCRIPTION	QTY
1	711454	DRIVE END COVER	1
2	704830	DRIVE END DIVIDER	1
3	711456	DRAG COVER PLATE	1
4	711455	DRIVE END COVER	1
5	686008	SPROCKET; 8-TOOTH	1
6	686603	1 ¼" FLANGE BEARING	2
7	711457	1 ¼" DRIVE SHAFT	1
8	711459	BEARING SPACER	2
9	686033	DECAL – DANGER	3
10	666941	DECAL – SERIAL NUMBER	1
11	690344	DECAL – OPERATIONS	1
12	704991	DECAL – VIRTUAL PATENT	1
13	686028	KEY; 5/16" X 2"	1
14	640018	CARRIAGE BOLT; 5/16" x 1"	3
15	701467	CENTERLOCK FLANGE NUT; 5/16"	17
16	683943	CARRIAGE BOLT; 5/16" X ¾"	14
17	711247	CARRIAGE BOLT; 7/16" X 1 ½"	8
18	682857	CENTERLOCK FLANGE NUT; 7/16"	8
19	711458	DRAG RUBBER	1



PARTS DIAGRAM & LIST

(704806) TRACTOR DRIVE

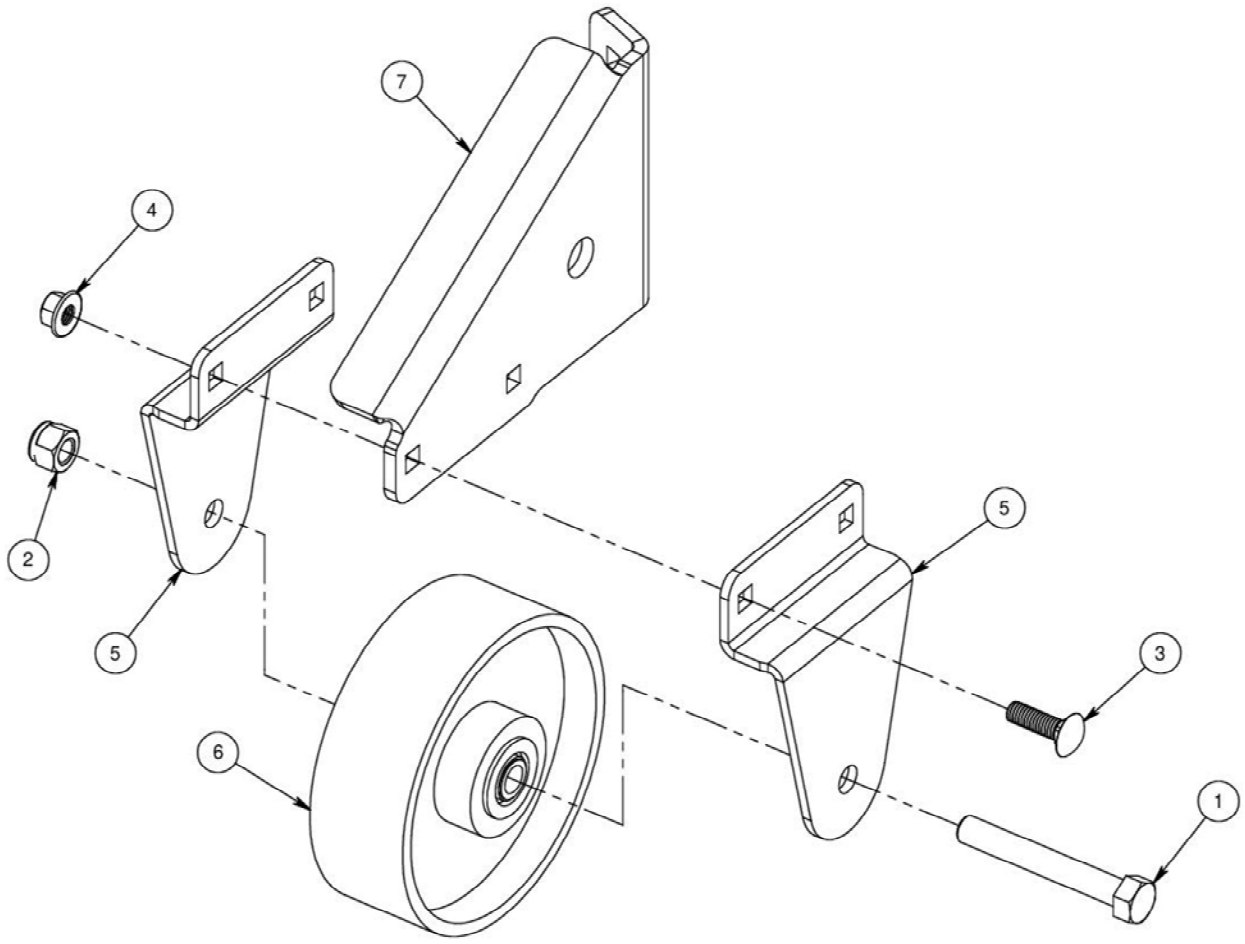
ITEM	PART #	DESCRIPTION	QTY
1	688924	DRIVE GEARBOX BRACKET WELDMENT	1
2	688929	550 8 TOOTH WELDED SPROCKET	1
3	688930	DRIVE CHAIN GUARD WELDMENT	1
4	688933	550 8 TOOTH WELDED SPROCKET	1
5	689095	15” SEGMENTED WHEEL	1
6	689204	WHEEL HUB WELDMENT – 1”	1
7	689837	206 REDUCTION GEAR	1
8	689871	DECAL – DANGER	1
9	688422	15 LINK CA550 CHAIN	1
		(701898) TRACTOR DRIVE HARDWARE BAG	
10	640025	SCREW- .375-16 X .75 GR 5 HHC	6
11	683942	CARRIAGE BOLT; 3/8” x ¾”	4
12	683943	CARRIAGE BOLT; 5/16” X ¾”	3
13	640155	LOCKWASHER; 7/16”	6
14	640154	FLATWASHER; 3/8”	6
15	701182	CENTERLOCK FLANGE NUT; 3/8”	4
16	682857	CENTERLOCK FLANGE NUT; 7/16”	4
17	701467	CENTERLOCK FLANGE NUT; 5/16”	3
18	686358	KEY; ¼” X ¼” X 1 ½”	1



PARTS DIAGRAM & LIST

(689979) FRONT CASTER

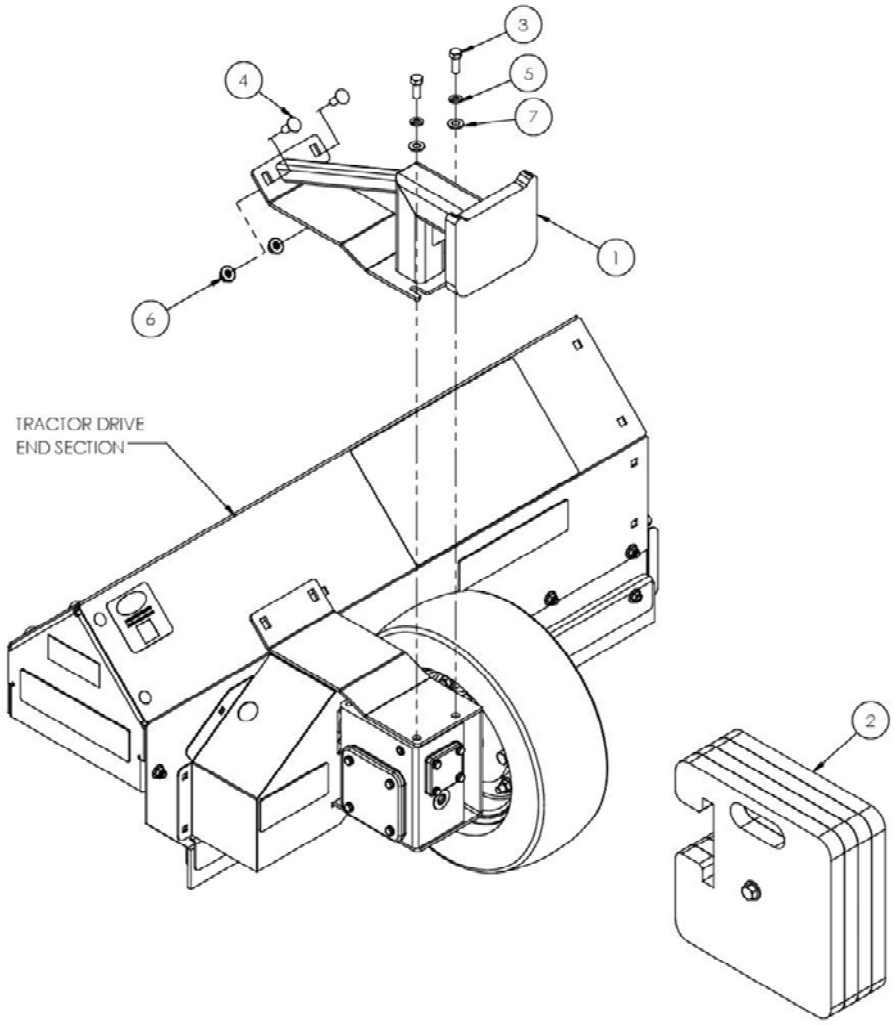
ITEM	PART #	DESCRIPTION	QTY
1	688969	CASTER PLATE	2
2	688977	FRONT CASTER PLATE	1
3	688997	GLASS FILLED NYLON WHEEL	1
4	640067	HH CAP SCREW; ½” X 3 ½”	1
5	660638	NYLON LOCKNUT; ½”	1
6	680140	CARRIAGE BOLT; 3/8” X 1 ¼”	2
7	701182	CENTERLOCK FLANGE NUT; 3/8”	2



PARTS DIAGRAM & LIST

(689980) REAR CASTER

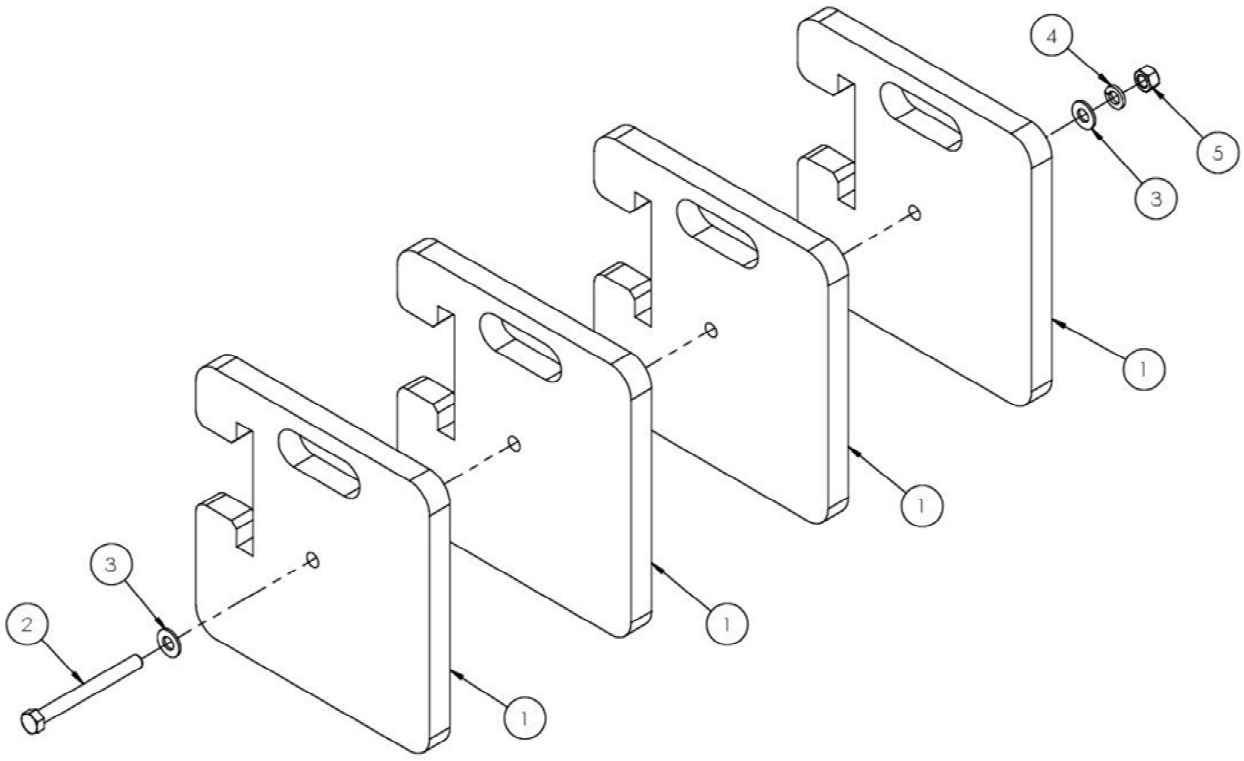
ITEM	PART #	DESCRIPTION	QTY
1	640067	HH CAP SCREW; ½" X 3 ½'	1
2	660638	NYLON LOCKNUT; ½"	1
3	680140	CARRIAGE BOLT; 3/8" x 1 ¼"	2
4	701182	CENTERLOCK FLANGE NUT; 3/8"	2
5	688969	CASTER PLATE	2
6	688997	GLASS FILLED NYLON WHEEL	1
7	689978	REAR CASTER PLATE	1



PARTS DIAGRAM & LIST

(709983) WEIGHT KIT

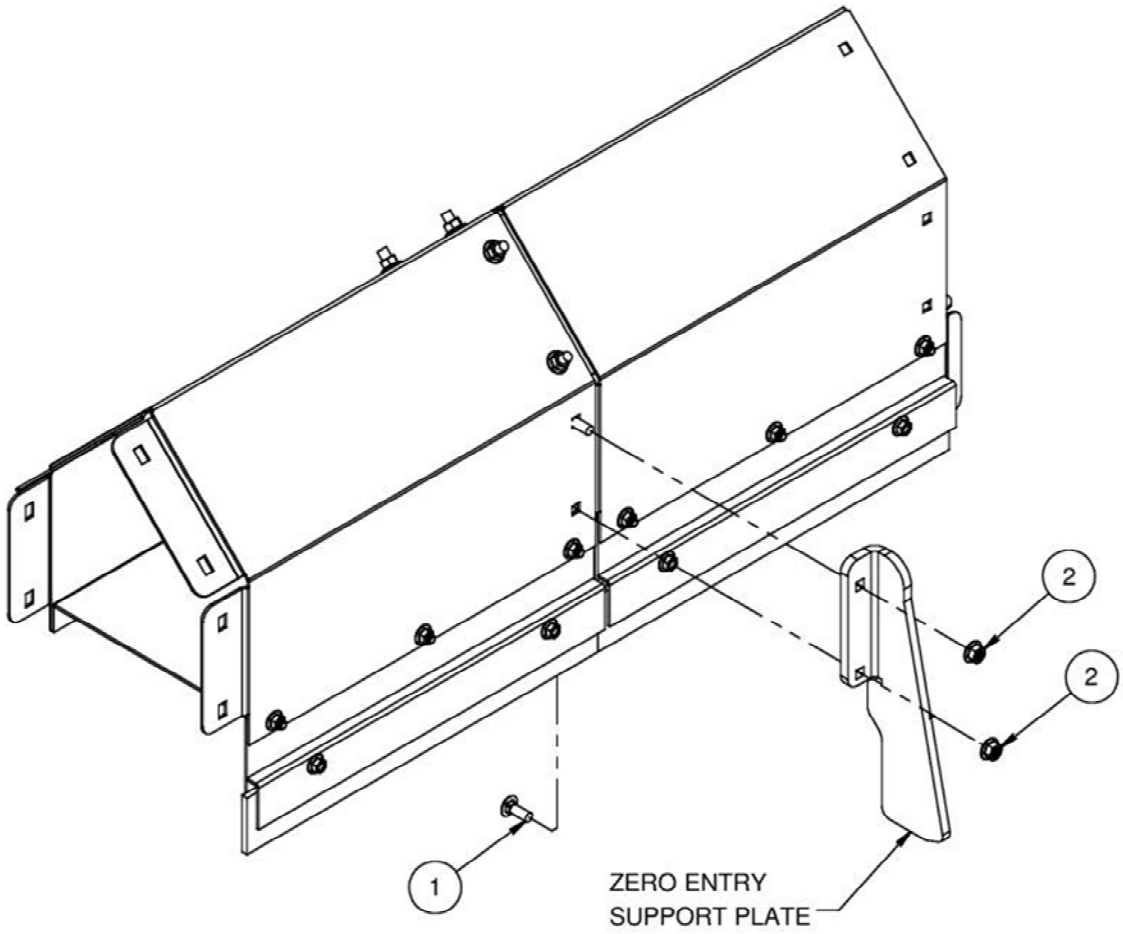
ITEM	PART #	DESCRIPTION	QTY
1	709980	WEIGHT BRACKET	1
2	711370	WEIGHT KIT (133LBS)	1
3	640028	HH CAP SCREW; 3/8” X 1”	2
4	640030	CARRIAGE BOLT; 3/8” X 1”	2
5	640153	LOCKWASHER; 3/8”	2
6	701182	CENTERLOCK FLANGE NUT; 3/8”	2
7	640154	FLATWASHER; 3/8”	2



PARTS DIAGRAM & LIST

(711370) WEIGHT KIT

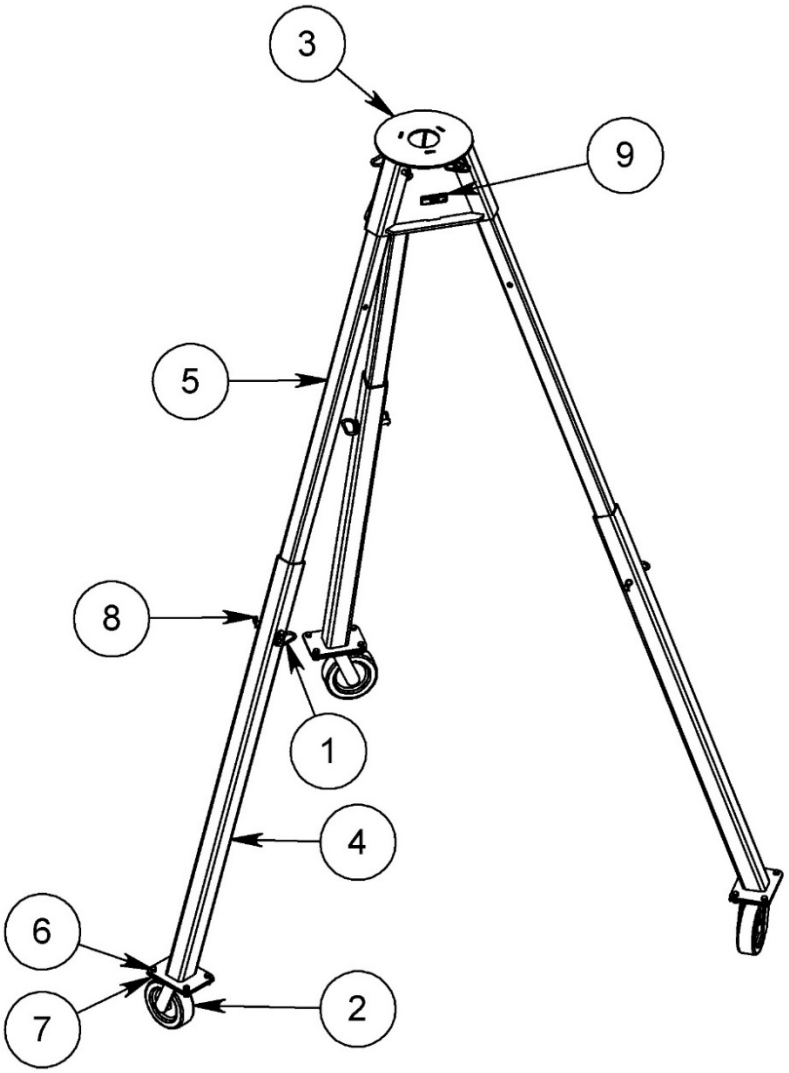
ITEM	PART #	DESCRIPTION	QTY
1	686267	WEIGHT PLATE	1
2	640070	HH CAP SCREW; ½" X 5"	1
3	653098	FLATWASHER; ½"	2
4	640157	LOCKWASHER; 1/2"	1
5	640139	HEXNUT; ½"	1



PARTS DIAGRAM & LIST

(701899) SECTION HARDWARE BAG

ITEM	PART #	DESCRIPTION	QTY
1	640030	CARRIAGE BOLT; 3/8” X 1”	8
2	701182	CENTERLOCK FLANGE NUT; 3/8”	8



PARTS DIAGRAM & LIST

(690121) TRIPOD LIFT FOR SWEEP ASSEMBLY (500 LB MAXINUM CAPACITY)

ITEM	PART #	DESCRIPTION	QTY
1	641119	LOCK PIN	6
2	681287	SWIVEL CASTER	3
3	690122	TOP MOUNT	1
4	690127	BOTTOM LEG	3
5	690128	TOP LEG	3
6	640028	HH CAP SCREW; 3/8” X 1”	12
7	682413	FLANGE NUT; 3/8”	12
8	640671	HITCH PIN	6
9	690179	DECAL – MAXIMUM CAPACITY	3