

Scaletron's VMF-90 series consists of a base model volumetric screw feeder that can be outfitted with a large selection of optional accessories. Using these additional accessories in combination with modifications to the base feeder's integral components allows the VMF-90 to meet a wide variety of industrial system demands.

OVERVIEW - The VMF-90 volumetric screw feeder from Scaletron Industries Ltd. is an automatic metering screw feeder that dispenses powdered, pelletized, or similar material into a secondary process dictated by the customer. The basic operation of the VMF-90 is described below in a brief step by step description.

- 1) The material or chemical that is to be fed at a certain measured rate is first dispensed into the primary hopper. The primary hopper relies on gravity and/or an optional agitation attachment to move the material towards the bottom of the primary hopper.
- 2) The material or chemical is dispensed via a horizontally rotating solid auger or open helix which is connected to a motor and gearing. The motor's speed is electronically controlled by an integrated electronic speed control.
- 3) The rotation of the auger or open helix then moves the material along the base of the primary hopper towards and into the feeder spout.
- 4) The material then exits the volumetric feeder at the operator's chosen rate and is dispensed into the process or container as determined by the user.

INSTALLATION AND SETUP ***Please inspect product upon delivery and report any damage to carrier immediately***

Step 1: UNPACKING THE FEEDER - After the volumetric screw feeder is unpacked, check all items against packing list to confirm that all parts described or required are present. This ensures that all parts have been received from Scaletron's manufacturing facility and confirms that no parts were accidentally discarded during the unpacking process.

Note: *If possible, all equipment should be unpacked at the location where the assembly and installation is to be conducted.*

Step 2: CHOOSING A LOCATION - The location for the volumetric feeder is completely decided upon by the owner of the equipment. However, Scaletron would like to make it clear that installing the volumetric feeder in locations that are primarily damp or subject to fluctuating environmental conditions may have an adverse effect on the material density and flow rate of the material to be fed. Also, locations that are subject to strong air currents should be avoided, so that dry powdered chemicals will not become airborne creating dust that may cause property damage and/or personal injury.

Step 3: MOUNTING THE FEEDER - The VMF-90 series is designed to be mounted in various configurations and it is the decision of the equipment owner to decide on mounting locations. However, Scaletron does recommend the following when considering mounting location priorities:

- When possible, use the correct accessories provided by Scaletron Industries, this will ensure that the volumetric feeder is properly secured per the factory requirements.
- If no standard Scaletron accessories or optional equipment are purchased, then ensure the structure that is to support the volumetric feeder is level and has a mounting surface that is equal to or larger than the overall feeder length and width dimensions. (See Figure 1, pg 5)
- Always make sure all fasteners used to permanently locate the volumetric feeder and any connecting components are correctly installed and completely tightened and secured.

WARNING!! Failure to correctly secure all fasteners used in installation of volumetric feeder may result in personal injury and/or property damage.

NOTE: Scaletron Industries recommends that there should be 36" of clearance around the perimeter of the volumetric feeder and accompanying components after proper installation in its permanent location. Maintaining adequate clearance room will allow much easier maintenance inspections and servicing in the future.

Step 4: MOUNTING THE SCR CONTROL BOX - Scaleton VMF-90 series volumetric feeders come standard with their SCR control boxes and optional scale indicator boxes. At the request of the customer, Scaleton will furnish the required extra components and accessories if the control box and/or optional scale indicator boxes must be mounted in a remote location separate from the feeder itself. Contact a Scaleton sales representative for more information.

Step 5: MOUNTING THE HOPPER - Many times, the built-in standard hopper on a volumetric feeder simply does not provide enough volume for the demand of material to be dispensed. For this reason, Scaleton provides optional hopper extensions. These extensions are the only accessories recommended for use on the VMF-90 series volumetric feeders. Please refer to the “Additional VMF-90 Series Accessories” section of this manual located on page 9. If the customer knows the volumetric feeder is or will be installed in a location where the built-in hopper will be fed from a separately supported primary hopper, then Scaleton also provides a customizable hopper connection lid accessory which can utilize a flexible mount connection for the transfer of the material from the primary hopper to the built-in hopper on the VMF series volumetric feeder.

WARNING!! Scaleton strongly advises against the utilization of any other directly mounted primary hopper extensions. The use of which may cause premature equipment failure and/or damage to property and personnel.

Step 6: CONNECTING THE POWER - Power and other electrical connections to the feeder are customizable to meet the owner’s specific needs. However, the correct procedures must be followed for safe and efficient operation. Scaleton insists that the customer refers to the electrical diagrams and procedure instructions in the hard copies of the Dart and/or other equipment operating manuals provided in conjunction with this manual upon the purchase of a VMF-90 series volumetric feeder from Scaleton Industries.

WARNING!! Serious injury or death may occur if proper and current electrical codes and procedures are not strictly adhered to during the installation, operation, and maintenance of this volumetric screw feeder.

Step 7: INITIAL STARTING OPERATIONS - The standard VMF-90 feeder from Scaleton Industries will arrive pre-calibrated and if applicable have the auger assembly correctly assembled. However, to ensure safe operating practices, refer to the “Safe Start Test Run” checklist below.

“Safe Start Test Run”

1. Ensure power is off!
2. Make sure all electrical connections and electrical enclosures are safely secured by correct methods
3. Ensure all vibration mount assemblies are tight and secure
4. Make sure the primary auger and overwind auger are tight and secured properly to drive shaft
5. Clear any debris or foreign materials from the hopper and feeder spout
6. Turn power on

NOTE: Please refer to Dart’s manual for advanced procedures and troubleshooting relating to the Dart® SCR Motor Control Unit. A copy of the purchased equipment is provided with each VMF Series volumetric feeder upon purchasing from Scaleton Industries Ltd.

Step 8: ADJUSTING THE CURRENT SET POINTS - To speed up the installation and operation of the volumetric feeder, Scaleton ships each VMF-90 series volumetric feeder from the factory pre-calibrated. The customer’s desired specifications are taken into consideration and then calculated with standard theoretical loads, environment, and dimensions. The resulting calibration is as close to the customer’s desired specifications as possible and may need no extra calibrating. However, volumetric feeders rely on other variables that can only be ascertained by real world “on site” experimentation. It is highly recommended that verification of the pre-calibration be made in the field at the installation site to establish the correct operating and calibration settings. Please refer the SCR controller manual equipped on your feeder.

IMPORTANT: Scaleton strongly insists that “on site” test readings be performed to correctly verify the calibration of the VMF series volumetric feeder. DO NOT solely rely on factory calibration settings, variables such as material characteristics, environment, and hopper feeding equipment WILL BE different at the installation site.

Step 9: ADJUSTING THE VIBRATORY AGITATION CYCLE - The optional vibratory agitator is directly mounted to the built-in hopper on the VMF-90 series feeder. Like SCR controls, the settings for the vibratory agitator are set to a factory standard obtained by calculating data supplied by customer's requirements and optimal theoretical operating conditions. The standard vibratory agitator is offered in a simple "on/off" configuration and will need expandable circuitry if feeding applications dictate a more complex vibrating cycle. Because finding the correct vibration setting in "real world" operating conditions can be difficult and most likely will be determined by trial-and-error experimentation. To shorten the process and length of agitation experiments, Scaletron does offer adjustable variable controls which allows vibration cycles to be set and executed automatically. For more information contact your Scaletron Industries' sales representative.

NOTE: Running the optional agitator constantly will have negative affects regarding, material feed rates and equipment longevity. It is highly recommended by Scaletron that the use of an automated vibratory agitation cycle be adopted.

MAINTENANCE - The VMF-90 has been designed to be as maintenance free as possible. However, to ensure operational longevity a scheduled maintenance cycle is recommended and should be conducted periodically. Below are certain aspects and areas that are recommended to be incorporated into a maintenance checklist.

WHILE POWER IS ON

- Visually inspect surrounding area for leaks or spills.
- Listen for abnormally loud sounds, such as clinks, clacks, squeaks, or grinding, that otherwise should not be present.
- Visually inspect base and exterior for deterioration of components due to rust or chemical corrosion.
- Visually inspect gaskets for cracking or failure.
- Visually inspect for loose fasteners.
- Ensure operating environment is kept tidy and clean.

WHILE POWER IS OFF!!

- Visually inspect interior of hopper for dents, deep gauges, thin walls, abnormal wear, weak joints, and cracks in welds.
- Inspect overwind auger for extreme disfigurement, bends, or cracks.
- Inspect primary auger for extreme disfigurement, bends, or cracks.
- Try to push and pull auger horizontally to check for excessive play in bearing components.
- Remove coupling safety shield and inspect coupling for wear, cracking, and loose or missing set screws.
- Visually inspect bearing assembly for signs of chemical leakage.
- Pull inspection plug out of the hub that is attached to the gearbox and hopper to see if the powder is penetrating bearing in the hub. ****SEE FIG. 2**** If so, ensure bearing assembly is seated completely.
- Visually inspect all externally exposed wires for tears, cuts, breaks, or missing protective coating.
- If a vibratory agitator is installed visually inspect mounting hardware and welds for cracks and loose fasteners.
- Visually inspect vibration mounts for cracks and wear, and then ensure that they are tightened completely.
- Grab hopper and attempt to shake back and forth in a sideways motion perpendicular to the primary auger and check for excessive movement and/or contacting metal sounds from vibration mounts.
- Ensure feed spout is completely tightened and inspect for excessive wear, chips, deep scratches, or cracks
- Make sure a periodic cleaning of all major components is carried out at a reasonable scheduled cycle relative to the amount of use the volumetric screw feeder is exposed to.



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IF MAINTENANCE IS REQUIRED *WARNING!! TO AVOID PERSONAL INJURY, ENSURE POWER TO SCREW FEEDER IS OFF AND MOTOR IS LOCKED OUT CORRECTLY PRIOR TO PERFORMING ANY MAINTENANCE PROCEDURES!*****

The following chart describes with detailed instructions common maintenance procedures:

MAJOR COMPONENT AND SUB PARTS	PROCEDURE	TOOLS AND/OR PARTS REQUIRED
Feeder Discharge Spout - Discharge Spout - Discharge Spout Gasket - Sanitary Fitting - Clamp	<p><u>Removal</u></p> <ol style="list-style-type: none"> 1. Remove all components that inhibit the removal of the discharge spout, such as a, wetting cone or other attachments which may prevent having proper clearance to fully unscrew the discharge spout. 2. Grip sanitary clamp of feeder discharge spout firmly 3. Loosen sanitary clamp bolt and remove the discharge spout and discharge spout gasket <p>**Follow the same steps in reverse for assembly**</p>	<p>NO TOOLS REQUIRED If replacement is required request the following parts: -Discharge Spout Gasket -Sanitary Clamp Fitting</p> <p>**The correct part number for the Discharge Spout will be relative to the original purchase order, refer to that documentation for replacement part number. **</p>
Auger Assembly - Primary Auger and Bayonet Fitting	<p><u>Removal & Disassembly</u></p> <ol style="list-style-type: none"> 1. Remove all components that inhibit the removal of the primary auger screw, such as a wetting cone. 2. Grasp primary auger and push towards motor. 3. Turn primary auger CW while maintain light inward pressure towards motor. 4. The primary auger will disengage from the driveshaft, then remove from hopper through the discharge spout hole. <p>**Follow the same steps in reverse for assembly**</p>	<p>NO TOOLS REQUIRED If replacement is required request the following parts:</p> <p>**The correct part number for the Primary Auger will be relative to the original purchase order, refer to that documentation for replacement part number.**</p>
- Access Hatch - Access Hatch Gasket - Access hatch Hardware (12)	<p><u>Disassembly</u></p> <ol style="list-style-type: none"> 5. Remove all components that inhibit access to inside of built-in hopper. 6. Remove all access hatch hardware fasteners that secure the access hatch 7. Remove the access hatch. 8. Remove the access hatch gasket. <p>**Follow the same steps in reverse for assembly**</p>	<p>Socket and/or wrench set is required If replacement is required request the following parts: - Access Hatch - Access Hatch Gasket - Access Hatch Hardware</p>

FIGURE 1: OVERALL DIMENSIONS

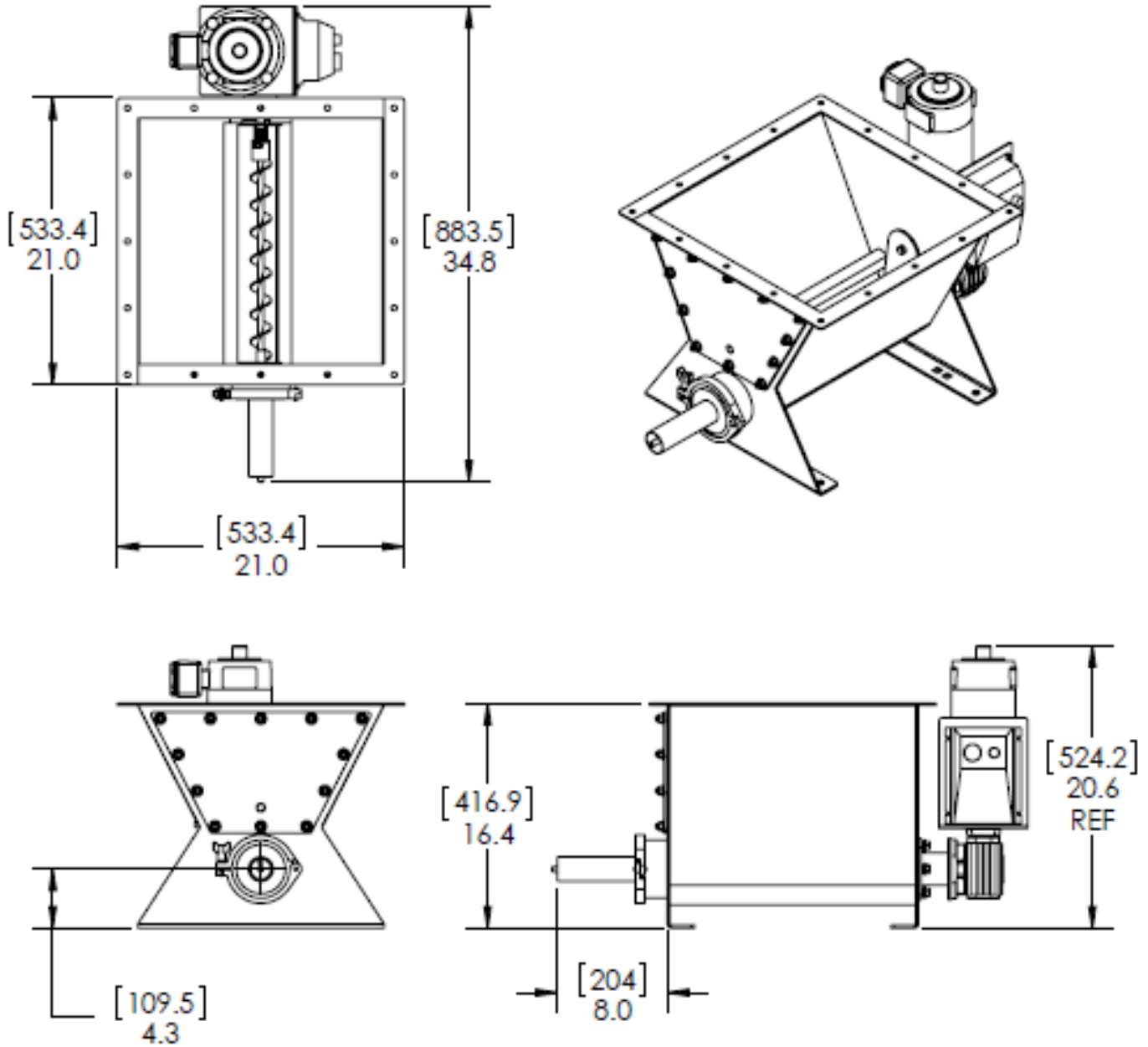


FIGURE 2: MAJOR COMPONENTS

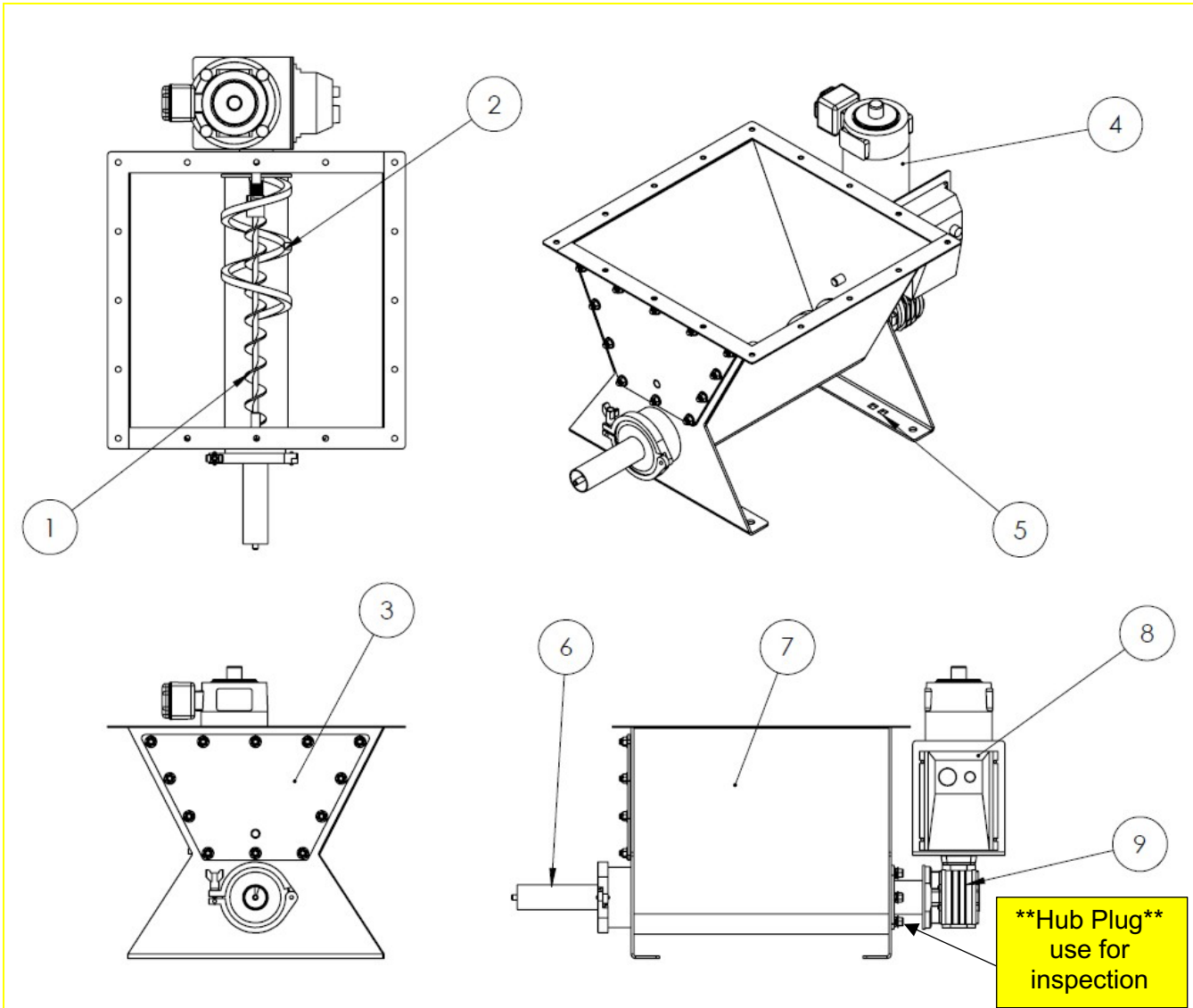


FIGURE TWO

ITEM #	DESCRIPTION	ITEM #	DESCRIPTION
1	Primary Auger	6	Discharge Spout
2	Overwind Auger	7	Primary Hopper
3	Access Hatch	8	SCR Motor Controller
4	Motor	9	Gearing Unit
5	Optional Load Cell Location Holes		

FIGURE 3: CUT AWAY VIEW

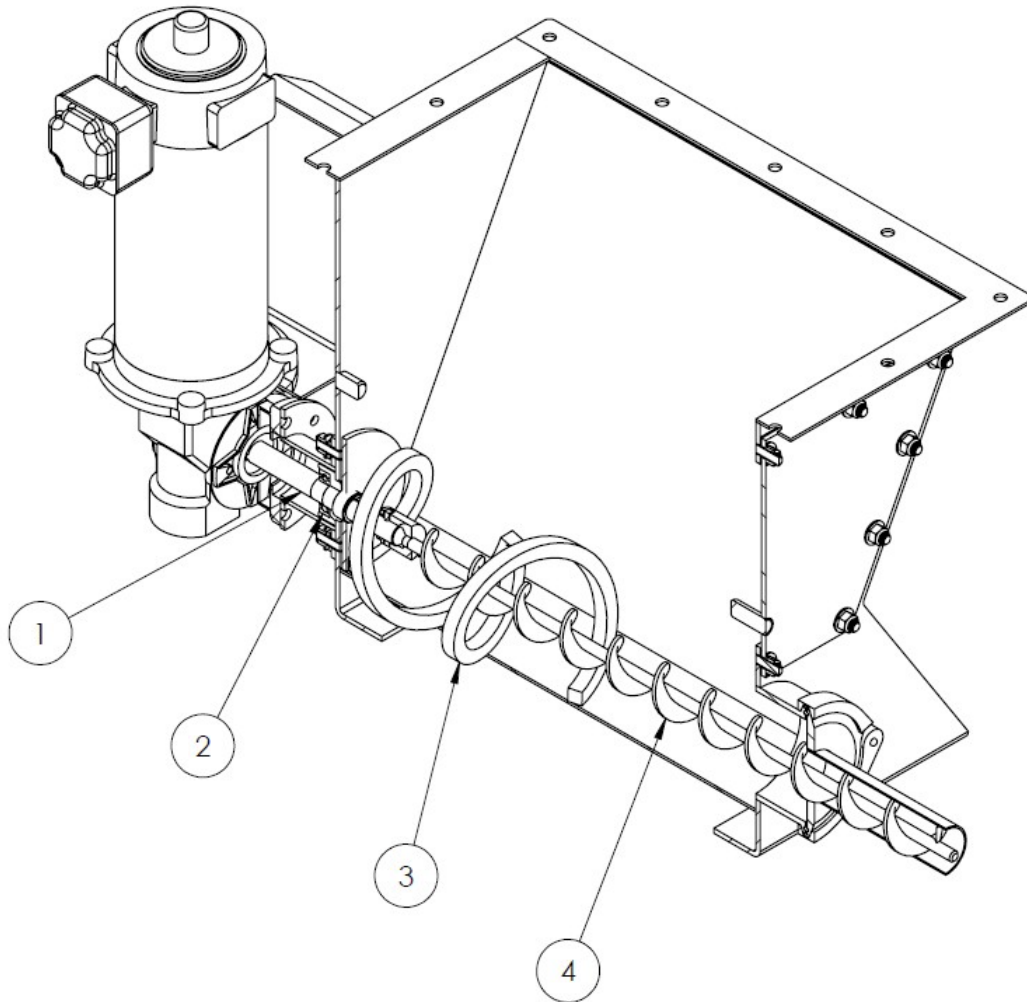


FIGURE THREE	
ITEM NUMBER	DESCRIPTION
1	Drive Shaft (Overwind Style Pictured)
2	Drive Shaft Bearing
3	Overwind Auger
4	Primary Auger (1.5" Diameter Solid Auger Pictured)

FIGURE 4: AUGER ASSEMBLY

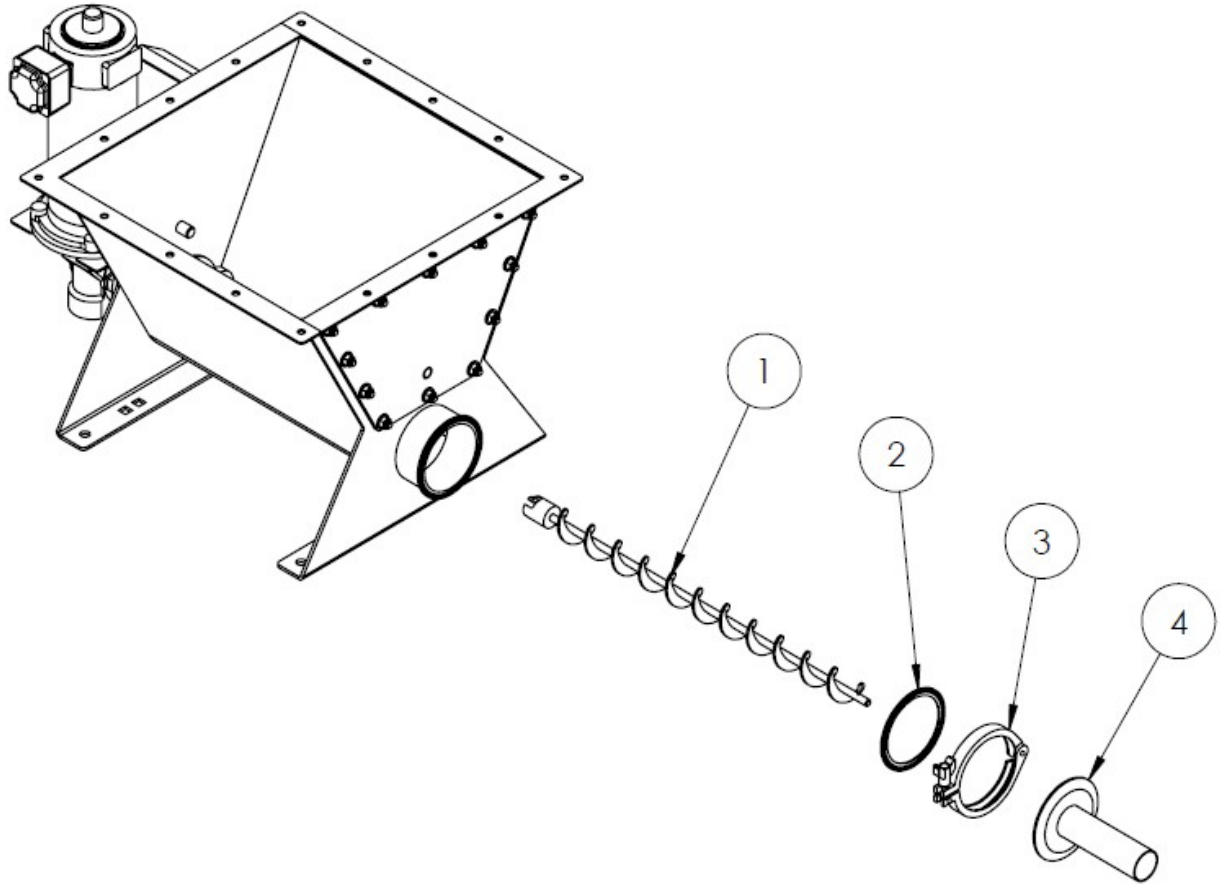


FIGURE FOUR	
ITEM NUMBER	DESCRIPTION
1	Primary Auger (1.5" Diameter Solid Auger Pictured)
2	Discharge Spout Gasket
3	Sanitary Fitting Clamp
4	Discharge Spout (1.5" Regular Style Pictured)

TROUBLE SHOOTING

The following chart is provided to help with common operational errors

Feeder has no output (motor is running but feed screw is not turning)	Auger bayonet connection is not correctly secured	Secure Bayonet fitting correctly
	Feed screw is jammed with foreign material or large masses of feed material	Remove feeder spout and try to clear screw or empty feeder and remove primary auger assembly
	Drive shaft key stock is missing	Find or replace drive shaft key stock
Slow feeder output	Motor is running in wrong direction	Reverse motor direction. Switch power leads connected to motor terminals
	Speed of feed screw rotation has changed	Adjust and correct speed setting
	Hopper has become empty	Fill hopper with feed material
	Material is forming a “cave” or “hollow area” around feeder screw	Consider need for feeder agitation and hopper vibration
	Foreign material or lumps are found in output material	Remove feed spout and try to clear screw or empty feeder and remove trough and feed screw assembly
Feeder has no material output (motor does not run)	Feeder has no power	Check for possible power connection issues and re-connect power
	Function switch on control box is in wrong position	Change switch to correct position
	Signals from remote location are interrupted	Check to see if feeder operates manually. Correct remote signal interrupts
	Fuse has blown	Consult operating manuals and replace fuse if necessary
	SCR controller is broken or malfunctioning	Review volumetric feeder documentation and contact Scaletron sales representative
	Motor brushes have become worn or misaligned	Contact Scaletron sales representative
NOTE: If feeder spout is removed while the feeder is full, contents of hopper may spill out quickly. Ensure proper measures are taken to avoid hazardous and/or unwanted chemical spills.		



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PARTS LIST AND ORDER FORM

NOTE: Scaleton Industries reserves the right to make or edit part numbers and part designs as needed. To ensure delivery of correct part always include your product serial number when engaging in correspondence with Scaleton Industries Ltd.

SERIAL NO: _____

FIGURE CALLED OUT	DESCRIPTION OF PART	SUPPLIED QTY.	ORDER QTY.
Figure 2	Primary hopper (1.5 cu. ft capacity)	1	
Figure 2,3 &4	Primary Auger	1	
Figure 3	Drive Shaft	1	
Figure 3	Drive Shaft Bearing	1	
Figure 4	Sanitary Fitting Clamp	1	
Figure 2	SCR Motor Controller	1	
Figure 2	Motor	1	
Figure 4	Discharge Spout	1	
Figure 4	Discharge Spout Gasket	1	
Figure 2	Access Hatch	1	
	Access Hatch Gasket	1	
Figure 2	Gearing Unit	1	
	Access Hatch Hardware	12	
	Gearing Unit Hardware	8	
	Motor Mount Hardware	4	
	Controller Mount Hardware	4	
OPTIONAL ACCESSORIES			
	Vibratory agitator	1	
	Load cell	4	
Figure 2	Overwind Auger	1	
	Cycle Timer	1	