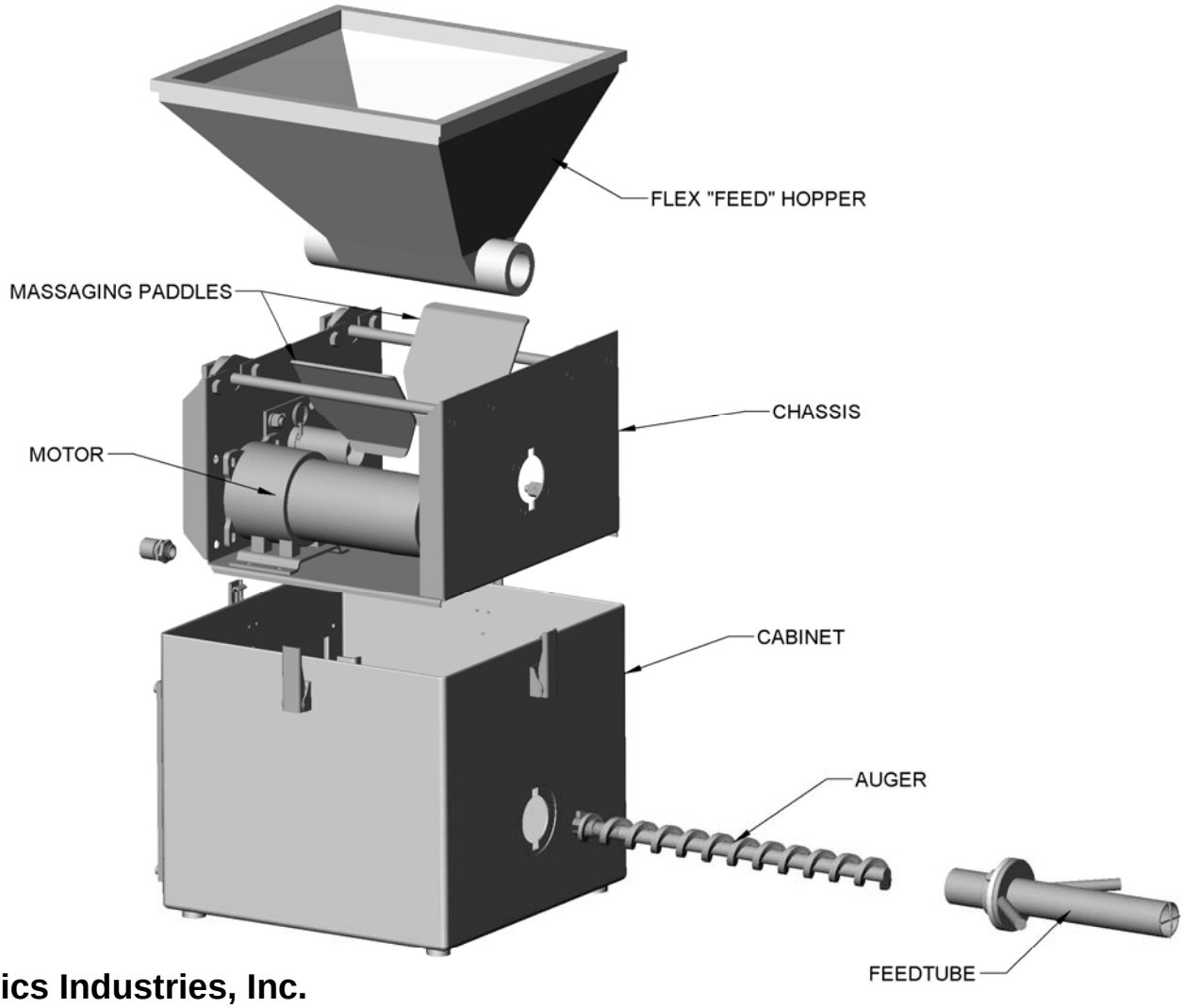
TECWEIGH®
Tecnetics Industries, Inc.

Installation, Operation and Maintenance Manual for Tecweigh® Volumetric Feeders

Models 5, 12, and 28 Series
Single and Dual Drive



Tecnetics Industries, Inc.
1811 Buerkle Rd.
St. Paul, MN 55110

800-536-4880
651-777-4780
FAX: 651 777-5582
http://www.tecweigh.com

Model: _____
Serial Number: _____

Manual Part Number: 20920000 Ver 2.0_3-2008

Table of Contents

Section	Title
1.00	**Safety** This section provides safety procedures that must be adhered to. Please read it carefully. It contains information that is vital for safe, trouble free feeder operation.
2.00	**Checklist Before Operation** This section will take you step by step through the pre-installation of the Tecweigh Volumetric Feeder.
3.00	**Operation, Calibration and Maintenance** The general operation procedures are outlined in this section. This includes basic start-up, shutdown, calibration and feed rate control. Disassembly for cleaning and reassembly is also well documented.
4.00	**SCR/PWM Controller Adjustments** This section provides basic information regarding the SCR or PWM speed control board(s).
5.00	**Troubleshooting** This section describes general problems, causes, and solutions for your feeder.
6.00	**Technical Data** This section is dedicated to listing the standard features, and components of the feeder. Also furnished is a complete listing of available construction types, and standard fabrication methods.
7.00	**Exploded View Assemblies & Parts Lists** This exploded drawing will provide you with a reference in case you need to discuss questions with the Tecnetics' Engineering Department or order parts.
8.00	**Control Features and Schematic Drawings** For your information the following are included: Standard and optional controls, Standard Control Enclosure Drawing, Standard Control Schematic, special control system summaries, and schematics specific to your individual feeder system.

Section 1.00
Safety

This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product.

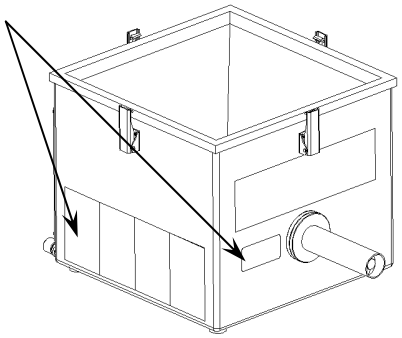
This symbol is intended to alert the user of the presence of uninsulated dangerous voltage within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock.

This symbol is intended to alert the user that moving parts can cut or crush. Keep hands clear. Lockout/tagout before servicing

1.01 **You are urged to study this manual carefully. Please read the safety instructions and warnings. Failure to heed these warnings and instructions could result in serious personal injury or death.**

1.02 The feeder is equipped with safety labels. Replace any that are not legible. Do not paint over labels. The decals shown above and below can be ordered like any other replacement part.

Safety Label Locations



1.03 The feeder includes four threaded mounts on the feeder's bottom. The mounts are threaded so bolts can be used to securely fasten the feeder. These are also to be used when lifting the equipment. The use of a crane or forklift is recommended with a spreader bar. If the equipment must be lifted manually a minimum of two people should lift the equipment.

1.04 **WARNING! – DANGER!** Do not extend hands into the hopper while the unit is running. The feeder must be installed so a person cannot reach into the hopper. This can be done by using a permanently mounted wire mesh over the top, or installing the optional cover. The operator should always lockout and tagout the equipment before servicing.

Section 1.00
Safety

1.05 **WARNING! – DANGER!** Follow all local electrical and safety codes as well as the National Electrical Code (NEC) and the Occupational Safety and Health Act (OSHA). Improper wiring or improper grounding could cause serious personal injury or death. Disconnect and lock out all power from the feeder before servicing. Only authorized service technicians should have access to the inside of the control panel. If the control panel has a key it should only be accessible to authorized personnel. Even with the equipment turned off live voltage can be inside the control panel.

1.06 **WARNING!** The standard feeder is not "explosion-proof". The standard feeder must not be run in an environment where conditions exist that could cause an explosion of dust or gas. Special built explosion proof feeders are available from Tecnetics.

1.08 Operate the feeder **only** when all parts and guards are in place. Use caution when touching the exterior of the operating motor. It could be hot enough to cause personal injury.

1.09 **WARNING!** Excessive loading of the feeder could result in damage to the feeder or personal injury. **Consult a Tecnetics applications engineer** before applying a concentrated or distributed load exceeding 200 lbs (90 kg) on top of the feeder. The feeder is designed to handle heavy loads, if the loads are applied correctly.

1.10 **All proper WARNINGS and SAFEGUARDS** must be included in the application design and properly placed during feeder installation to insure complete operator protection under all automatic start-up conditions.

1.11 Equipment should be operated in a dry environment within a temperature range of 40-110 degrees Fahrenheit (4-43 degrees Celsius) and a relative humidity less than 80%. Avoid contact with water unless your equipment has been designated a wash-down unit.

1.12 If equipment is to be stored for an extended period of time, lubricate chain, keep equipment in a cool dry area and do not expose the urethane flex hopper to sunlight.

Section 2.00
Checklist Before Operation

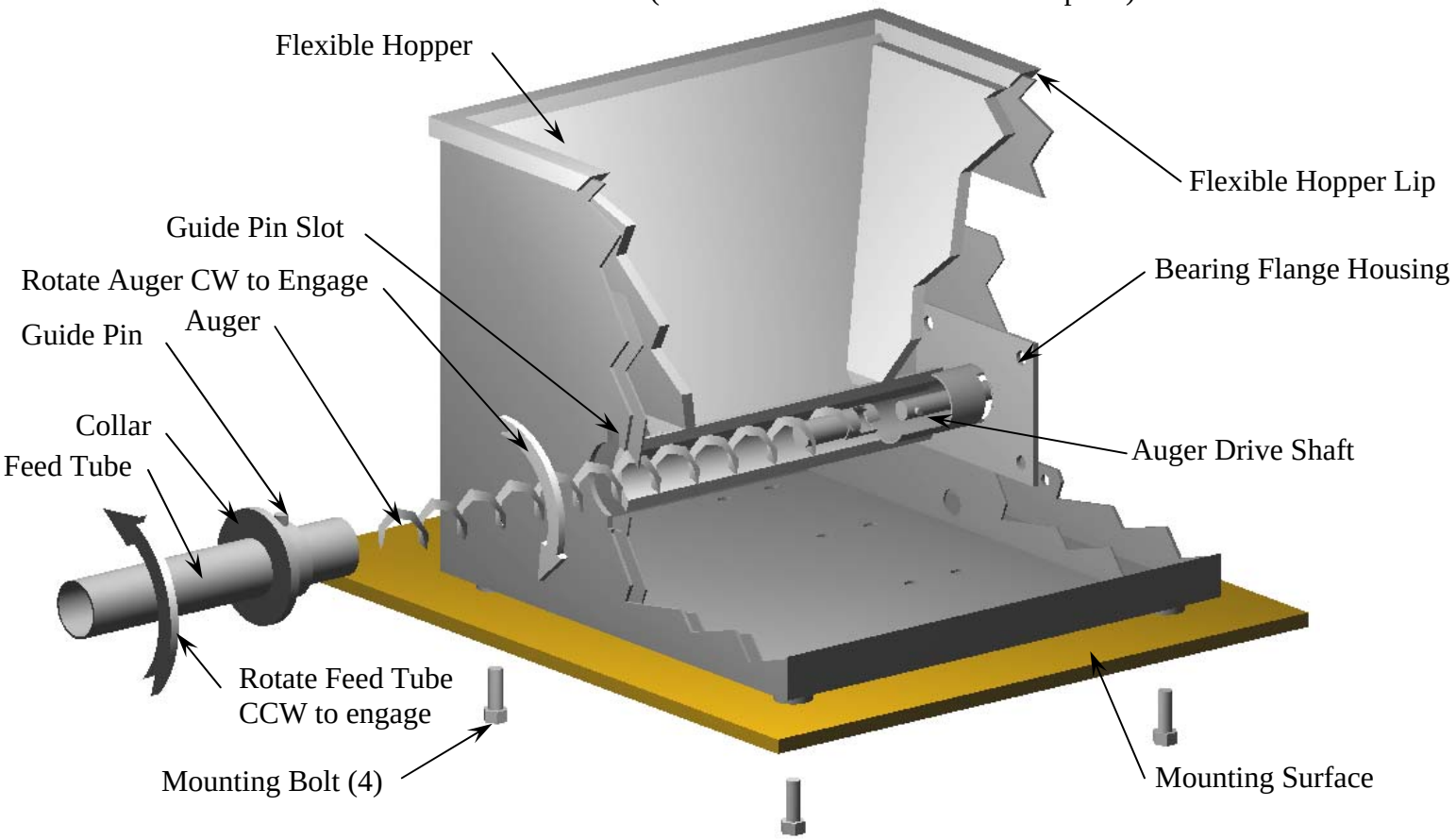
2.01 The Tecweigh Volumetric Feeder has components that are selected at the time of sale for specific performance depending on the material type and feed rate. **The factory must be consulted before any changes are made during the warranty period**. This is also recommended after the warranty period.

2.02 **CAUTION:** The feeder application should be considered carefully, if stoppage of the material flow could cause any property damage, losses, or personal injury. If any questions exist about an installation, please consult a Tecnetics applications engineer. Heed the safety instructions in Section 1.00.

2.03 The operator must always lockout and tagout equipment before cleaning. Be sure the upper edge of the flexible hopper is fully seated down onto the "lip" of the feeder cabinet.

2.04 Slide the auger through the front of the feeder until it stops. Slowly rotate the auger until it engages with the drive shaft, and then push the auger forward slightly more feeling the resistance of the spring. Press the auger into the spring firmly, and turn the auger about 1/4 turn clockwise until it stops, and then release. Finally, verify the auger is locked in place by jerking on it.

2.05 The feed tube is placed through the front of the feeder as shown below. The guide pins are guided through the guide pin slots on the cabinet. Finally, twist the feed tube about 1/4 turn counterclockwise until it stops. The feed tube collar does not require adjustment, since it is welded to the feed tube (a setscrew collar is an available option).



2.06 Have an authorized technician connect the line, neutral, and ground wire to control panel for standard 120-volt controls. Connect L1, L2, and ground input wires to the control panel for optional 230-volt controls. Use a minimum 14 AWG wires. Section 8.00 has the schematics and diagrams necessary to wire your equipment.

Section 3.00
Operation, Calibration, and Maintenance

3.01 A three position green pushbutton switch, start/enable/stop is mounted on the control panel. To START the feeder, PULL the GREEN knob two positions toward you, and then release it. The switch on the control panel will be illuminated when the feeder is running. Verify that the auger is rotating counter clockwise when unit is powered up. See Section 5.00 for troubleshooting suggestions if feeder will not run.

3.02 To STOP the feeder, PUSH the GREEN knob in completely.

3.03 The speed can be adjusted from 0 to 999 as required using the three-digit SPEED CONTROL selector (see figures on page 6). The speed range is linear (i.e. at 500 the feeder will be running at 50% speed). If the feeder control contains optional remote analog speed control capabilities, an "AUTO-MANUAL" selector switch will be present. In the "AUTO" position the feeder speed can be controlled by a 4-20ma or 0-10 VDC input signal. In the "MANUAL" position the three-digit speed control selector described above can control the feeder speed.

3.04 The speed, size of auger, and material will affect the feed rate. Calibration of the feeder must be done with the actual material that will be used. The calibration process:

a. Run the feeder for approximately five minutes prior to calibration.

b. Set the speed control selector at a setting of 500 and collect several one (1) minute samples. Determine the net weight of each sample.

c. Obtain the average weight of samples by adding the net weight of all samples taken and dividing by the number of samples taken. This is the average feed rate per minute. Multiply the average feed rate per minute by 60 to obtain the average fed rate per hour at the 500 setting.

d. On the calibration graph located on page 7, plot the average feed rate in pounds or kilograms per hour at the 500 setting. Repeat the same procedure at 100 and 900 settings. Draw a line connecting the three points plotted at 100, 500, and 900. If the line is straight, it can be used to determine feed rates at all other speed control settings on the line. If the line is a curve, it can help you determine the speed control setting for a desired feed rate. However, actual material test samples should be taken to determine the actual feed rate at a particular speed control setting.

3.05 The feeder can be easily disassembled for cleaning and inspection. The operator must always lockout and tagout equipment before cleaning.

a. Remove the feed tube by twisting it clockwise, causing it to unlock.

b. Remove the auger by pushing it firmly in and then twisting it counter-clockwise 1/4 turn until it stops. Then pull the auger towards yourself with a slight jerking motion. On food grade models loosen the auger drive bolt, and remove the auger drive shaft, then remove sanitary clamp, and remove auger drive housing and seal for cleaning and inspection

c. Free the flexible hopper from the bearing flange housing and lift the hopper out of the feeder. The chassis lifts out of the cabinet. Care must be used with the electrical connections when lifting the chassis from the cabinet.

d. All roller bearings are sealed and do not need to be greased. The drive chain and rod-end bearings should be lubricated annually with multi-purpose grease. Reverse the above procedures to reinstall the parts.

Section 3.00

Operating and Calibrating the Feeder

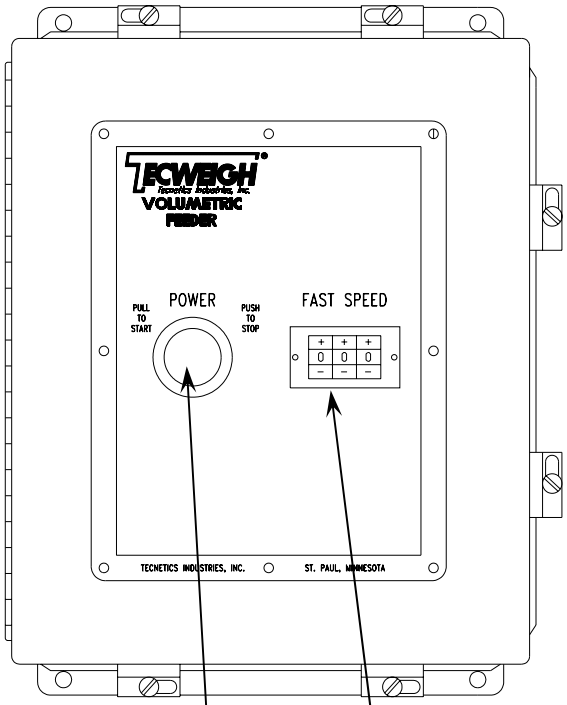
3.06 The motor is protected against overload by the control panel circuitry and a fuse. Every effort is made at the time of sale to determine the conditions that might lead to a motor overload. In general, higher speeds (particularly high ratios in the gearbox and drive train) and heavy materials will require more power.

3.07 A high temperature environment limits the motor horsepower output. If temperatures encountered are significantly higher than ambient, contact a factory representative.

3.08 The control panels shown below are examples, your equipment may have a separate emergency stop. See Section 8.00 of the manual for a schematic(s) and drawings specific to your system.

3.09 Dual drive feeders also have a paddle three digit speed control selector (shown below). Increase the paddle speed if material is bridging or rat-holing in hopper. Reduce the paddle speed if material is compacting around the auger.

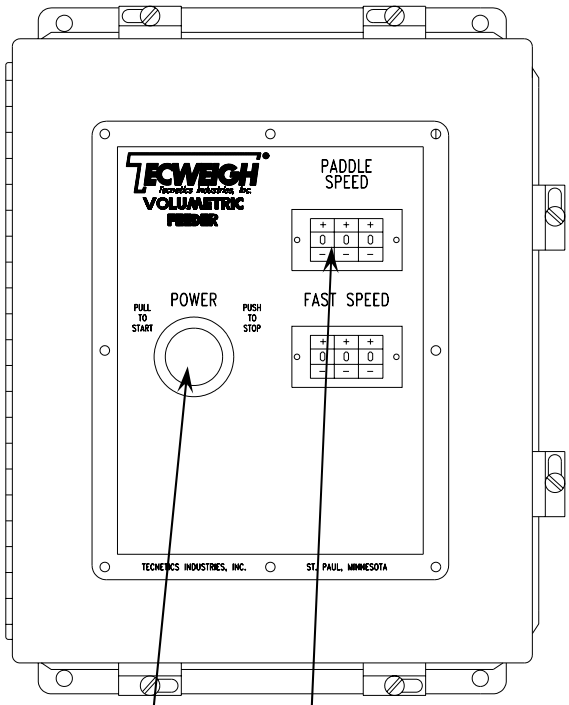
Single Drive Volumetric Feeder Control Panel



Auger and Paddle Speed Control Selector Single Drive

Three-position (Stop/Enable/Start) Illuminated Mushroom Head Push Pull Switch

Dual Drive Volumetric Feeder Control Panel



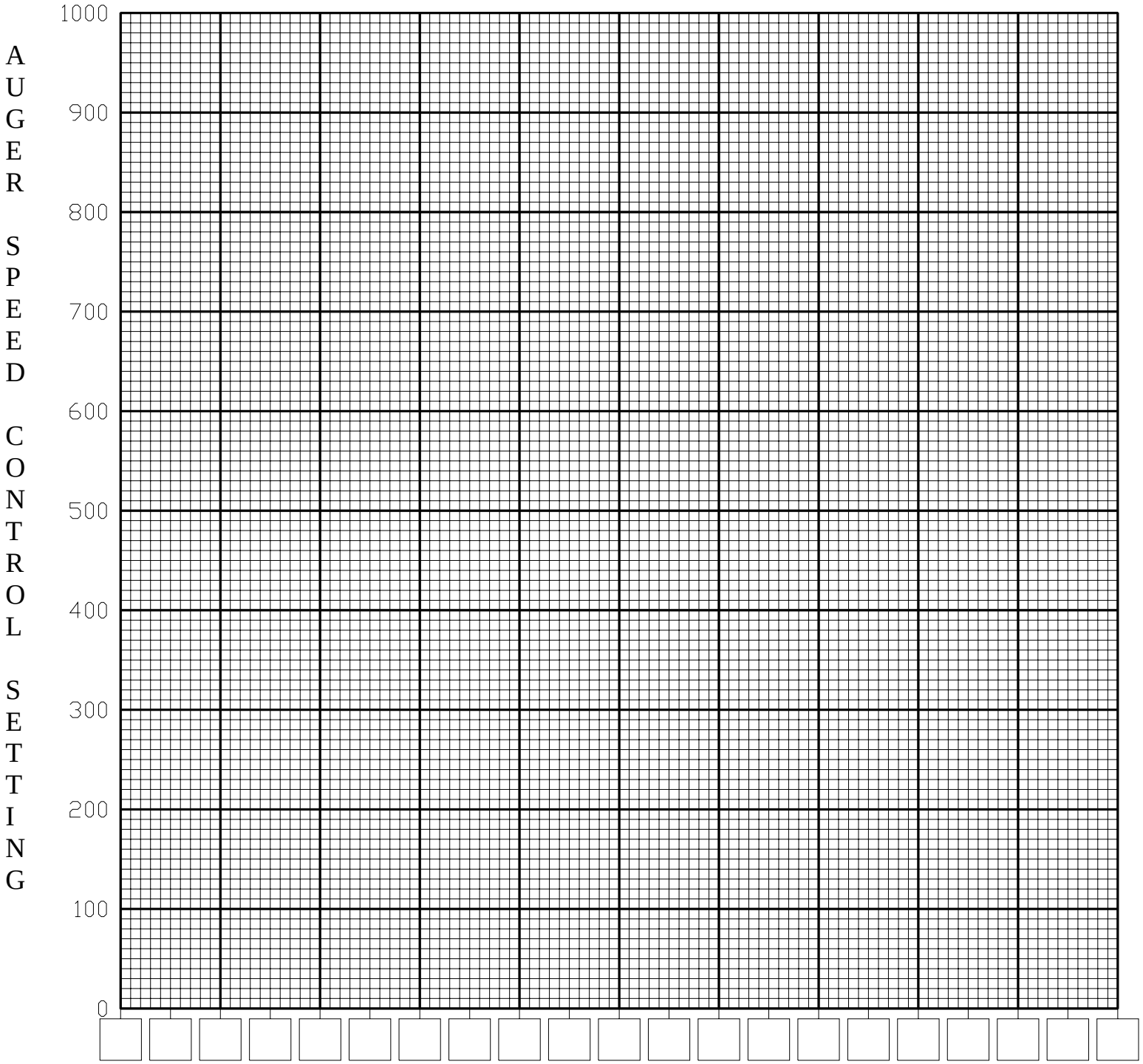
Auger Speed Control Selector Dual Drive

Paddle Speed Control Selector Dual Drive

Section 3.00
Operating and Calibrating the Feeder

CALIBRATION GRAPH

Auger Diameter _____ Feeder Serial No. _____
Feeder Drive _____ Calibrated By _____
Material Fed _____ Date _____
Feed Rate in _____ per _____



Section 4.00
SCR/PWM Controller Adjustments

4.01 A standard solid state SCR or PWM controller is provided with every standard model feeder for controlling the speed of the DC motor(s). The controller provides adjustments for motor speed limits, acceleration, deceleration, torque, and IR compensation. These adjustments should only be done by an authorized service technician.

4.02 All SCR/PWM speed control boards are pre-set at the factory for optimum performance; however, field adjustments can be made on the speed control board by using a small, non-metallic screwdriver on the appropriately labeled trimpot. The internal adjustments are:

a. **MIN SPD** Minimum Speed– This sets the minimum DC voltage (minimum speed) for the motor. It is typically set where the auger just begins to turn at a speed setting of "000".

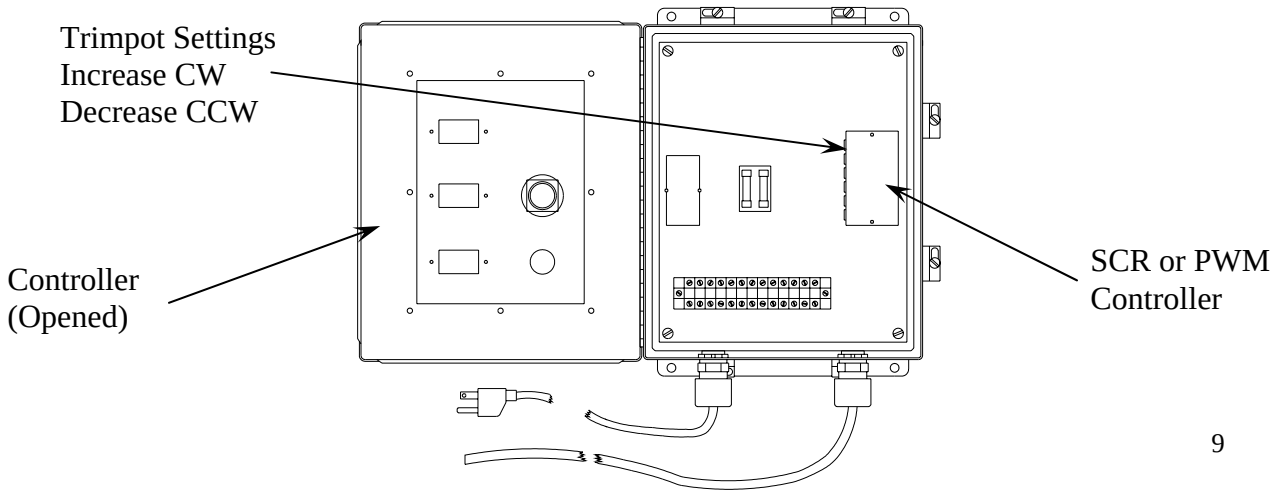
b. **MAX SPD** Maximum Speed – This sets the maximum DC voltage (maximum speed) for the motor. It is typically set at 90 VDC, at a speed setting of "999" (180 VDC for 230-volt controls).

c. **TORQUE** Torque Limit **– This is set at the factory**. This protects the SCR/PWM control board and motor against overloads. It limits the amount of current the motor is allowed to draw from the SCR/PWM speed controller. This setting must be set no more than 120% motor nameplate current. The motor must be stalled and motor current measurements made with an ammeter. If a new SCR/PWM control board, motor, or pot is installed in the field, the unit must be recalibrated or the warranty is voided. Calibration procedures are provided with every replacement board.

d. **IR COMP** IR Compensation – The trimpot setting determines the degree to which motor speed is held constant as the motor load changes. **This is to be set only at the factory, unless a new board is being installed. Refer to the calibration procedures provided with replacement board for setting instructions.**

e. **ACCEL Acceleration** – Adjusts the amount of time it takes the motor to change speed after adjusting the push button speed control. **This is to be set only at the factory, unless a new board is being installed. Refer to the calibration procedures provided with replacement board for setting instructions.**

f. **DECEL Deceleration** – Determines the time the motor takes to ramp to a lower speed. **This is to be set only at the factory, unless a new board is being installed. Refer to the calibration procedures provided with replacement board for setting instructions.**



Troubleshooting

PROBLEM	POSSIBLE CAUSE	SOLUTION
Unit does not operate. No indicator light. No voltage at motor terminals.	No power to the control panel, or fuse blown in the control panel.	Check the power source and control panel fuses.
Unit does not operate. Indicator light is on.	Defective SCR/PWM board. Speed control setting set too low. Motor fuse is blown.	Replace SCR/PWM board. Adjust to higher speed. Replace the fuse.
Unit does not operate. Indicator light is on. There is voltage at motor, but no current draw.	Motor is open-circuited by defective brushes or commutator.	Repair or replace the motor.
Unit does not operate. Indicator light is on and there is high current draw to motor.	Something is jammed and preventing rotation of the motor.	Disconnect power and check the auger and paddles for free movement. Second, check the drive train under the cover. Third, check the gearbox for broken parts.
Motor appears to operate, but the auger and/or paddles do not operate.	Something is broken in the drive train.	Disconnect power and check the auger and paddles. Second, check the drive train housing for a broken roller chain, sprocket, or sprocket to shaft connection. Third, check the gear case.
Intermittent rotation of auger and/or paddles.	Shaft sprocket connection slipping. Motor brushes worn. Commutator worn. Damaged gear in gear case.	Repair defective item. SCR/PWM could be defective, repair or replace.
The circuit breaker or fuse at the 120 volt (230 volt) source continually trips/blows.	Direct short in the control panel.	Disconnect power and check the components in the control panel for shorts to ground, and repair as necessary.
Feeder does not make desired rate.	Change in material or bulk density.	Consult applications engineer for a possible change in auger and feed tube.
Material bridges across the flexible hopper.	Increased moisture content in material. Insufficient paddle agitation.	Increase paddle amplitude on single drive feeders. Increase paddle speed on dual drive feeders.
Auger breaks.	Foreign objects caught in auger. Highly cohesive material.	Check feeder for foreign objects. Consult Tecnetics about adding a center rod to the auger for increased strength.
Material flows erratically out of feed tube.	Motor or SCR/PWM board failure.	Test and replace failed components.
Auger stalls and fuse doesn't blow.	Current limit set too low.	Adjust current limit as specified in Section 4.00

Section 6.00
Technical Data

Tecnetics Industries, Incorporated, reserves the right to make changes or improvements in its products without notice.

6.01 Electrical Requirements: (Std Single Drive Units)

5 Series– 120/240 VAC, 50/60 Single Phase 3/1.5 amps
12 Series– 120/240 VAC, 50/60 Single Phase 4/2 amps
28 Series– 120/240 VAC, 50/60 Single Phase 10/5 amps

6.02 Motor/RPM Selection:

5 Series– 1/8 HP TENV Motor 90 VDC
30, 50, 64, 94,or 167 RPM

12 Series– 1/4 HP TENV Motor 90 VDC 167 RPM
1/2 HP TENV Motor 90 VDC 172 RPM
1/2 HP TENV Motor 90 VAC
83, 103, 117, 135, or 160 RPM
*1/2 HP motors optional on 12 Series.

28 Series– 3/4 HP TENV Motor 90 VDC or 230/460 VAC
83, 103, 117, 135, or 160 RPM
1 HP TENV Motor 90 VDC or 230/460 VAC
83, 103, 117, 135, or 160 RPM
1-1/2 HP TENV Motor 180VDC or 230/460VAC
83, 103, 117, 135, or 160 RPM
*1 and 1-1/2 HP motors optional on 28 Series.

6.03 Control: Variable Speed SCR, PWM, or AC Variable Frequency Drive (VFD)

6.04 Contact Materials:
Hopper – 1/4” (6 mm) Thick Flexible Polyurethane
Auger – 304 Stainless Steel (standard)
Feed tube – 304 Stainless Steel (standard)

6.05 Non-Contact Materials:

E Style – 16 Gauge Cold Rolled Steel Cabinet “TGIC” Polyester coated, oven baked at 400° F (204 Celsius), 3 Mils thickness
16 Gauge Galvanized Chassis

CR Style – 16 Gauge 304 Stainless Steel Cabinet
16 Gauge Galvanized Chassis

S Style – 16 Gauge 304 Stainless Steel Cabinet
16 Gauge 304 Stainless Steel Chassis

6.06 Feeder Hopper Capacity:

5 Series– 0.5 Cubic Feet (.014 Cubic Meter)
12 Series– 1.2 Cubic Feet (.034 Cubic Meter)
28 Series– 2.8 Cubic Feet (.079 Cubic Meter)

6.07 Agitation:
Two 304 Stainless Steel Paddles for massaging flexible Hopper side walls.
5 Series Dual Drive 1/8 HP Motor
12 Series Dual Drive 1/4 HP Motor
28 Series Dual Drive 1/2 HP Motor

Section 6.00
Technical Data

6.08 Weight:

5 Series Single Drive =	90 pounds (41 Kg)
5 Series Dual Drive =	110 pounds (50 Kg)
12 Series Single Drive =	180 pounds (82 Kg)
12 Series Dual Drive =	210 pounds (95 Kg)
28 Series Single Drive =	355 pounds (161 Kg)
28 Series Dual Drive =	405 pounds (184 Kg)

6.09 Auger Size and Rates: From 20 RPM to 160 RPM

Note: These are normal rates given under ideal conditions. Rates will vary depending on bulk density, moisture content, and material.

0.25" (6 mm) with Centerrod	0.0075 – 0.06 Cubic Feet (212 – 1699 Cubic Cm) per Hour
0.38" (10 mm) with Centerrod	0.0260 – 0.21 Cubic Feet (736 – 5947 Cubic Cm) per Hour
0.50" (13 mm) with Centerrod	0.0600 – 0.48 Cubic Feet (.002 – .014 Cubic M) per Hour
0.50" (13 mm)	0.0680 – 0.55 Cubic Feet (.002 – .016 Cubic M) per Hour
0.75" (19 mm) with Centerrod	0.2000 – 1.60 Cubic Feet (.006 – .045 Cubic M) per Hour
0.75" (19 mm)	0.2300 – 1.84 Cubic Feet (.007 – .052 Cubic M) per Hour
1.00" (25 mm) with Centerrod	0.4100 – 3.27 Cubic Feet (.012 – .093 Cubic M) per Hour
1.00" (25 mm)	0.5500 – 4.36 Cubic Feet (.016 – .123 Cubic M) per Hour
1.25" (32 mm) with Centerrod	0.9300 – 7.43 Cubic Feet (.026 – .210 Cubic M) per Hour
1.25" (32 mm)	1.0700 – 8.52 Cubic Feet (.030 – .241 Cubic M) per Hour
1.50" (38 mm) with Centerrod	1.7000 – 13.6 Cubic Feet (.048 – .385 Cubic M) per Hour
1.50" (38 mm)	1.8400 – 14.7 Cubic Feet (.052 – .416 Cubic M) per Hour
1.75" (44 mm) with Centerrod	2.7900 – 22.3 Cubic Feet (.079 – .631 Cubic M) per Hour
1.75" (44 mm)	2.9200 – 23.4 Cubic Feet (.083 – .663 Cubic M) per Hour
2.00" (51 mm) with Centerrod	4.1300 – 33.1 Cubic Feet (.117 – .937 Cubic M) per Hour
2.00" (51 mm)	4.3600 – 34.9 Cubic Feet (.123 – .988 Cubic M) per Hour
2.25" (57 mm) with Centerrod	5.9800 – 47.9 Cubic Feet (.169 – 1.36 Cubic M) per Hour
2.25" (57 mm)	6.2100 – 49.7 Cubic Feet (.176 – 1.41 Cubic M) per Hour
2.63" (67 mm) with Centerrod	9.6900 – 77.5 Cubic Feet (.274 – 2.19 Cubic M) per Hour
2.63" (67 mm)	9.9200 – 79.4 Cubic Feet (.281 – 2.24 Cubic M) per Hour
3.00" (76 mm) with Centerrod	14.200 – 113 Cubic Feet (.402 – 3.20 Cubic M) per Hour
3.00" (76 mm)	14.700 – 118 Cubic Feet (.416 – 3.34 Cubic M) per Hour
4.00" (102 mm) with Centerrod	32.300 – 258 Cubic Feet (.915 – 7.31 Cubic M) per Hour
4.00" (102 mm)	34.900 – 279 Cubic Feet (.988 – 7.90 Cubic M) per Hour
5.00" (127 mm) with Centerrod	64.200 – 514 Cubic Feet (1.82 –14.55 Cubic M) per Hour
5.00" (127 mm)	68.200 – 545 Cubic Feet (1.93 –15.43 Cubic M) per Hour
6.00" (152 mm) with Centerrod	97.300 – 778 Cubic Feet (2.76 –22.00 Cubic M) per Hour
6.00" (152 mm)	118.00 – 942 Cubic Feet (3.34 –26.67 Cubic M) per Hour

6.10 Maximum Auger Size

5 Series	1.25" (32 mm)
12 Series	3.00" (76 mm)
28 Series	6.00" (152 mm)

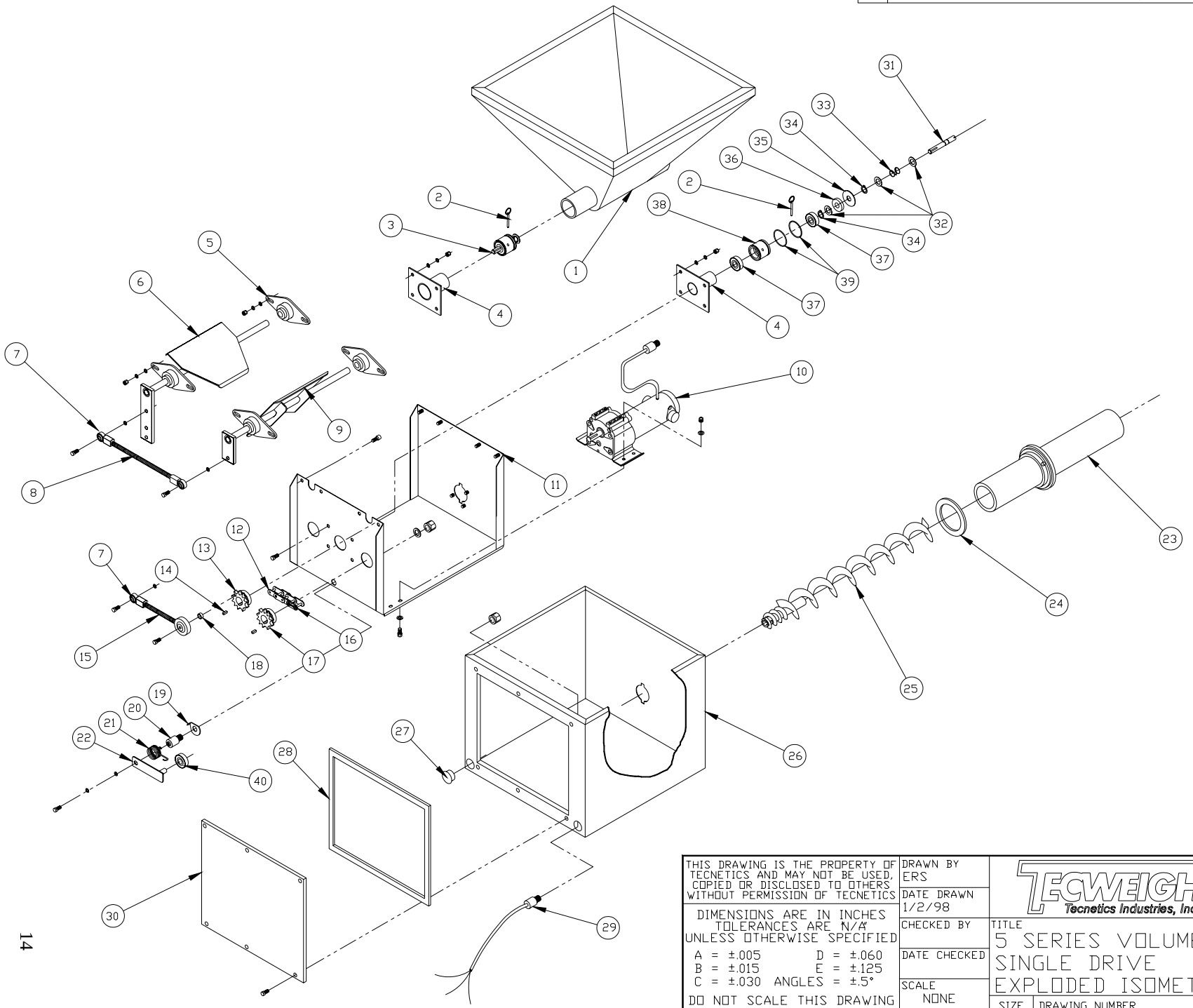
Section 7.00
Exploded View Assemblies & Parts Lists

5 Series Single Drive

ITEM	DESCRIPTION	PART NUMBER	QTY
1	Flexible Hopper, Food Grade	102482	1
1	Flexible Hopper, Industrial Grade	102483	1
1	Flexible Hopper, Chemical Resistant	102373	1
2	Pin, Quick Release	104517	1
3	Bearing Flange Drive Assembly	20505200	1
4	Bearing Flange Weldment	00258700	1
5	Paddle Bearing, Pillow Block	002557	2
6	Left Paddle Assembly	20250000	1
7	Rod End Bearing	002582	3
8	Upper Drive Rod	21096203	1
9	Right Paddle Assembly	20249900	1
10	Motor / Varies With Job	Varies	1
11	Chassis E/CR5 Single Drive	20186800	1
11	Chassis S5 Single Drive	20186900	1
12	#40 Roller Chain	002308	16
13	Auger Sprocket	20214000	1
14	3/16 x 3/16 x 7/8 SQ Key	002088	2
15	Heavy Duty Rod End Bearing	20438900	1
16	Master Connecting Link	002309	1
17	Motor Sprocket	002301	1
18	Crank Bearing Spacer	20104200	1
19	Chain Tensioner Plate	20022800	1
20	Spring Post	00249500	1
21	Torsional Spring	002571	1
22	Chain Tensioner Bar	002768	1
23	Feed Tube	Varies	1
24	Feed Tube Gasket	002574	1
25	Auger	Varies	1
26	E5 Painted Cabinet	20187601	1
26	E5 Painted Cabinet With Latch Package	20187601	1
26	E5 Painted Cabinet With Bolt Package	20195801	1
26	CR5 Cabinet	20194400	1
26	CR5 Cabinet With Latch Package	20194400	1
26	CR5 Cabinet With Bolt Package	20280902	1
26	S5 Cabinet	20194500	1
26	S5 Cabinet With Latch Package	20194500	1
26	S5 Cabinet With Bolt Package	20280903	1
27	Hole Plug, 3/4"	104192	1
28	Rubber Door Gasket	200219	3.5
29	Liquid Tight Cord Connector	107098	1
30	E5 Painted Gear Train Door	20195801	1
30	S/CR5 Gear Train Door	20196000	1
31	Bearing Flange Shaft	00256001	1
32	Spring Protector Spacer	20269501	3
33	Spring, Compression .72OD .063WI	103393	1
34	E-Retaining Ring	103014	2
35	Drive Shaft Seal	20235500	1
36	Oil Seal	002057	1
37	Ball Bearing	104070	2
38	Cartridge Style Bearing Flange Housing	20197701	1
39	O-Ring	104083	2
40	Ball Bearing	104070	1

DWG NUMBER 20709400

REV	DESCRIPTION	DATE	APP



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DIMENSIONS ARE IN INCHES
TOLERANCES ARE N/A
UNLESS OTHERWISE SPECIFIED
A = ±.005 D = ±.060
B = ±.015 E = ±.125
C = ±.030 ANGLES = ±.5°

DO NOT SCALE THIS DRAWING

REMOVE ALL BURRS AND UNNECESSARY SHARP EDGES

DRAWN BY	ERS
DATE DRAWN	1/2/98
CHECKED BY	
DATE CHECKED	
SCALE	NONE
JOB NUMBER	

TECWEIGH® Tecnetics Industries, Inc.
1811 BUERKLE RD
ST PAUL, MN 55110
PH 651-777-4780
FX 651-777-5582

TITLE
5 SERIES VOLUMETRIC FEEDER
SINGLE DRIVE
EXPLODED ISOMETRIC

SIZE	DRAWING NUMBER	SHEET	REV
A	20709400	1 OF 1	

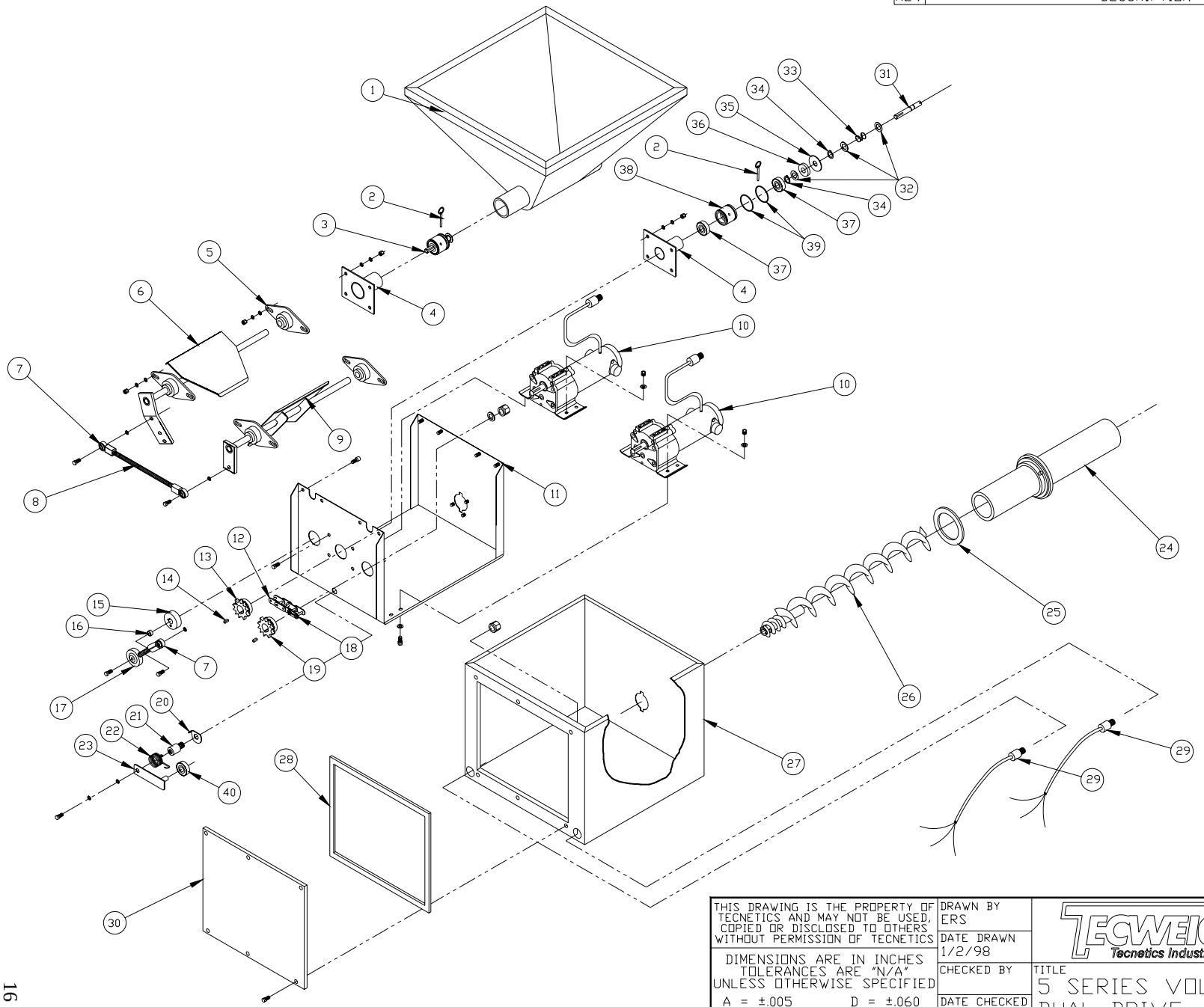
Section 7.00
Exploded View Assemblies and Parts List

5 Series Dual Drive

ITEM	DESCRIPTION	PART NUMBER	QTY
1	Flexible Hopper, Food Grade	102482	1
1	Flexible Hopper, Industrial Grade	102483	1
1	Flexible Hopper, Chemical Resistant	102373	1
2	Pin Quick Release	104517	1
3	Bearing Flange Drive Assembly	20505200	1
4	Bearing Flange Weldment	00258700	1
5	Paddle Bearing Pillow Block	002557	2
6	Left Paddle Assembly	20303700	1
7	Rod End Bearing	002582	3
8	Upper Drive Rod	20181602	1
9	Right Paddle Assembly	20249900	1
10	Motor/Varies with Job	Varies	2
11	Chassis E/CR5 Dual Drive	20654701	1
11	Chassis S5 Dual Drive	20654703	1
12	#40 Roller Chain	002308	16
13	Auger Sprocket	20214000	1
14	3/16 X 3/16 X 7/8 SQ Key	002088	2
15	Motor Sprocket No Teeth	20181500	1
16	Crank Bearing Spacer	20104200	1
17	Heavy Duty Rod End Bearing	20791700	1
18	Master Connecting Link	002309	1
19	Motor Sprocket	002301	1
20	Chain Tensioner Plate	20022800	1
21	Spring Post	00249500	1
22	Torsional Spring	002571	1
23	Chain Tensioner Bar	002768	1
24	Feed Tube	Varies	1
25	Feed Tube Gasket	002574	1
26	Auger	Varies	1
27	E5 Painted Cabinet	20187601	1
27	E5 Painted Cabinet with Latch Package	20187601	1
27	E5 Painted Cabinet with Bolt Package	20195801	1
27	CR5 Cabinet	20194400	1
27	CR5 Cabinet with Latch Package	20194400	1
27	CR5 Cabinet with Bolt Package	20280902	1
27	S5 Cabinet	20194500	1
27	S5 Cabinet with Latch Package	20194500	1
27	S5 Cabinet with Bolt Package	20280903	1
28	Rubber Door Gasket	200219	3.5
29	Liquid Tight Cord Connector	107098	2
30	E5 Painted Gear Train Door	20195801	1
30	S/CR5 Gear Train Door	20196000	1
31	Bearing Flange Shaft	00256001	1
32	Spring Protector Spacer	20269501	3
33	Spring, Compression .72OD .063WI	103393	1
34	E-Retaining Ring	103014	2
35	Drive Shaft Seal	20235500	1
36	Oil Seal	002057	1
37	Ball Bearing	104070	2
38	Cartridge Style Bearing Flange Housing	20197701	1
39	O-Ring	104083	2
40	Ball Bearing	104070	1

DWG NUMBER 20709500

REV	DESCRIPTION	DATE	APP



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TITLE
5 SERIES VOLUMETRIC FEEDER
DUAL DRIVE
EXPLODED ISOMETRIC

SIZE	DRAWING NUMBER	SHEET	REV
A	20709500	1 OF 1	

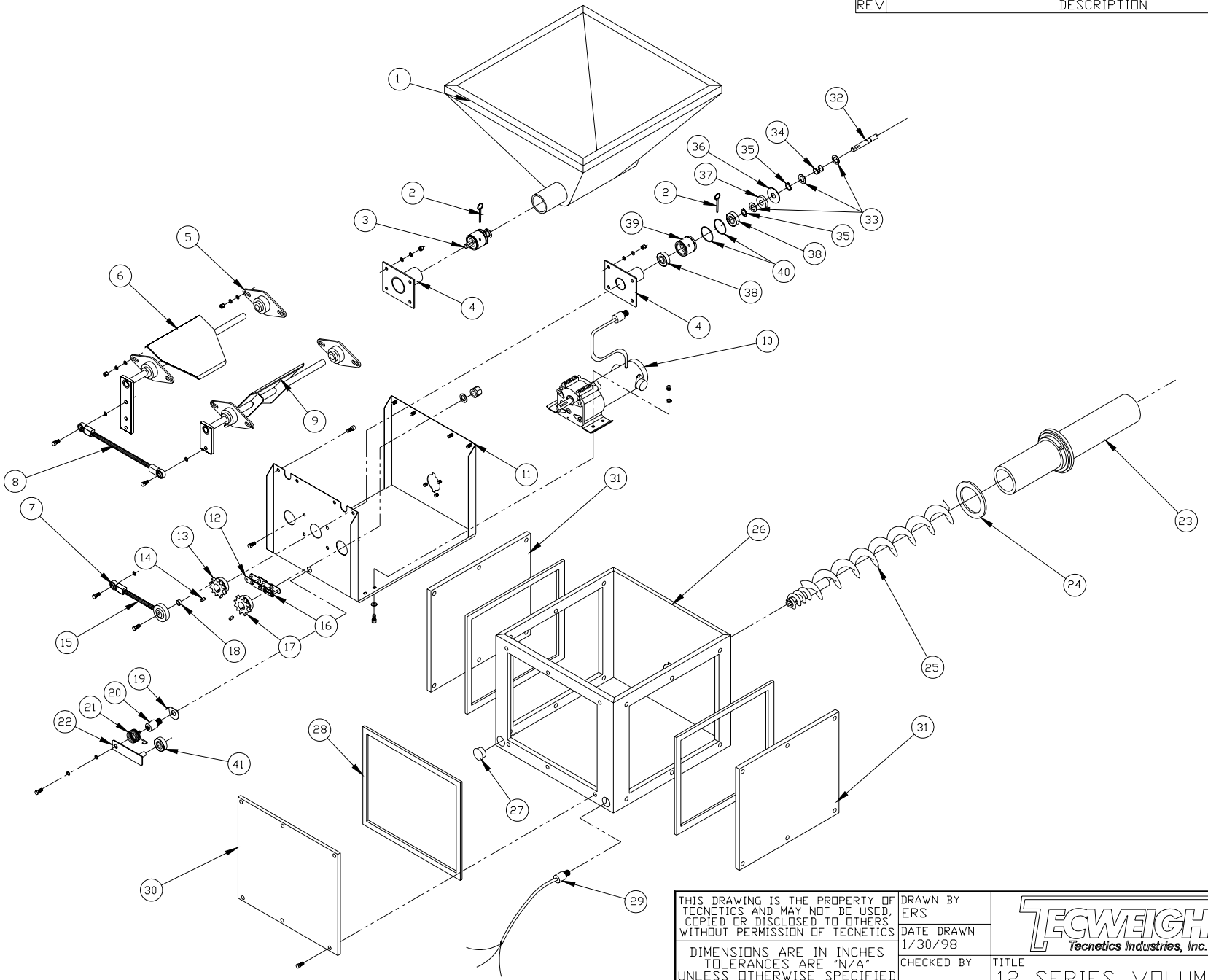
Section 7.00
Exploded View Assemblies and Parts List

12 Series Single Drive

ITEM	DESCRIPTION	PART NUMBER	QTY
1	Flexible Hopper, Industrial Grade	002625	1
1	Flexible Hopper, Food Grade	200796	1
1	Flexible Hopper, Chemical Resistant	104688	1
1	Flexible Hopper, Food Grade 3A Dairy.	20243600	1
2	Pin, Quick Release	104517	1
3	Bearing Flange Drive Assembly	20474600	1
4	Bearing Flange Weldment	00230500	1
5	Paddle Bearing, Pillow Block	002061	2
6	Left Paddle Assembly, Varies with Motor	Varies	1
7	Rod End Bearing	002065	3
8	Upper Drive Rod	21097401	1
9	Right Paddle Assembly Varies with Motor	Varies	1
10	Motor / Varies With Job	Varies	1
11	Chassis E/CR12 Single Drive	20183300	1
11	Chassis S12 Single Drive	00259801	1
12	#40 Roller Chain	002308	22
13	Auger Sprocket	20104400	1
14	3/16 x 3/16 x 7/8 SQ Key	002088	2
15	Heavy Duty Rod End Bearing	20388800	1
16	Master Connecting Link	002309	1
17	Motor Sprocket	002403	1
18	Crank Bearing Spacer	20104200	1
19	Chain Tensioner Plate	20022800	1
20	Spring Post	00249500	1
21	Torsional Spring	002571	1
22	Chain Tensioner Bar	002768	1
23	Feed Tube	Varies	1
24	Feed Tube Gasket	002626	1
25	Auger	Varies	1
26	S12 Cabinet	20243502	1
26	S12 Cabinet with Latch Package	20243502	1
26	S12 Cabinet With Bolt Package	20259301	1
26	CR12 Cabinet	20243501	1
26	CR12 Cabinet With Latch Package	20243501	1
26	CR12 Cabinet With Bolt Package	20259302	1
26	E12 Cabinet Painted	20243101	1
26	E12 Cabinet With Latch Package	20243101	1
26	E12 Cabinet With Bolt Package	20259300	1
27	Twist Lock Plug	002415	1
28	Rubber Door Gasket	200219	14.63
29	Liquid Tight Cord Connector	107098	1
30	E12 Gear Train Door	20183201	1
30	CR/S Gear Train Door	20179600	1
31	E12 Side Access Door	20243201	2
31	CR/S Side Access Door	20243400	2
32	Bearing Flange Shaft	002618	1
33	Spring Protector Spacer	20269502	3
34	Spring, Compression .85OD .668WIR	103319	1
35	E-Retaining Ring	103254	2
36	Drive Shaft Seal	20272600	1
37	Oil Seal	002050	1
38	Ball Bearing	102850	2
39	Cartridge Style Bearing Flange Housing	20220302	1
40	O-Ring	104583	2
41	Ball Bearing	104070	1

DWG NUMBER 20709600

REV	DESCRIPTION	DATE	APP



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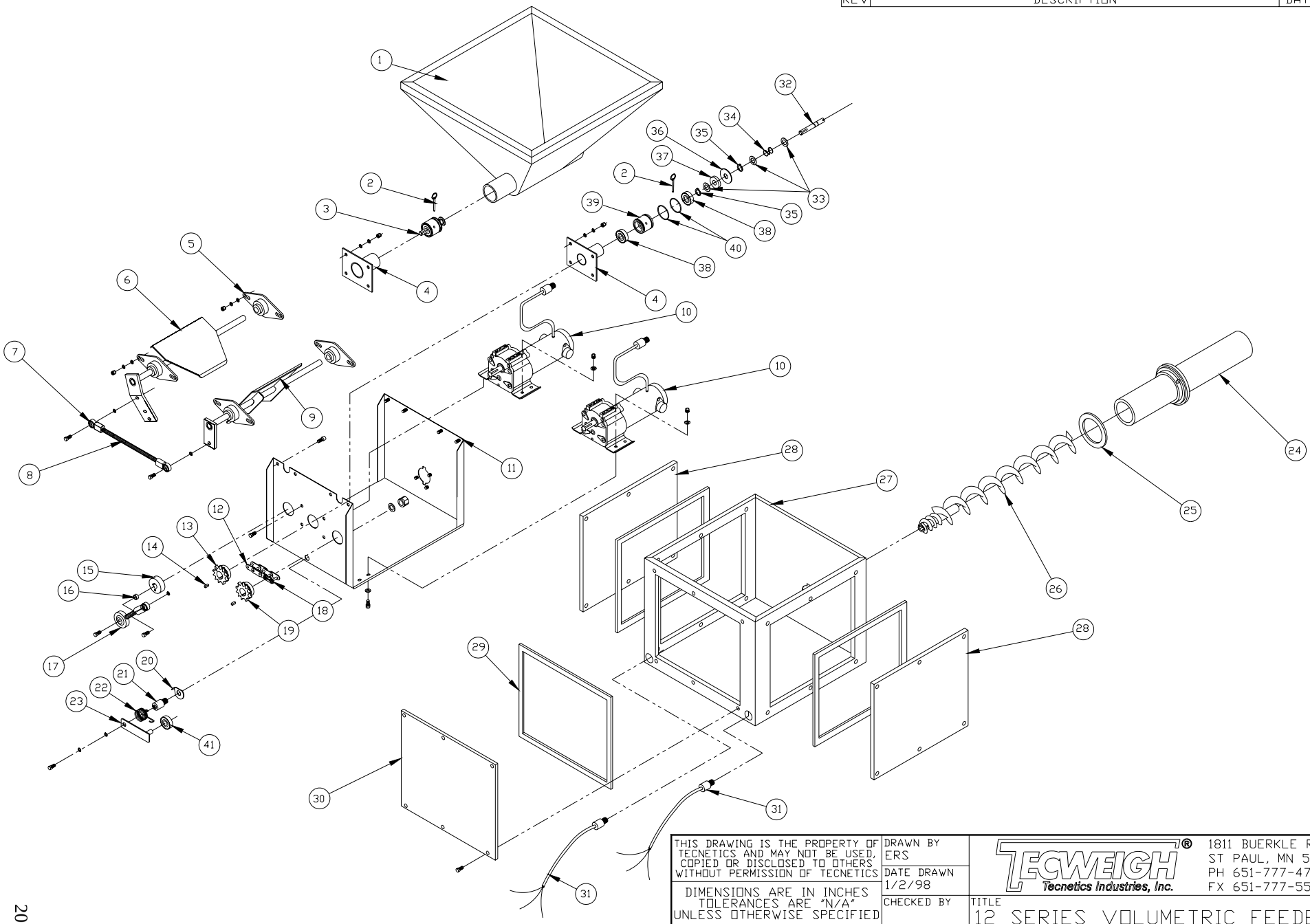
Section 7.00
Exploded View Assemblies and Parts List
12 Series Dual Drive

ITEM	DESCRIPTION	PART NUMBER	QTY
1	Flexible Hopper, Industrial Grade	002625	1
1	Flexible Hopper, Food Grade	200796	1
1	Flexible Hopper, Chemical Resistant	104688	1
1	Flexible Hopper, Food Grade 3A Dairy	20243600	1
2	Pin, Quick Release	104517	1
3	Bearing Flange Drive Assembly	20474600	1
4	Bearing Flange Weldment	00230500	1
5	Paddle Bearing, Pillow Block	002061	2
6	Left Paddle Assembly, Varies with Motor	Varies	1
7	Rod End Bearing	002065	3
8	Upper Drive Rod	21097407	1
9	Right Paddle Assembly, Varies with Motor	Varies	1
10	Motor / Varies With Job	Varies	2
11	Chassis E/CR12 Single Drive	20183300	1
11	Chassis S12 Single Drive	00259801	1
12	#40 Roller Chain	002308	22
13	Auger Sprocket	20104400	1
14	3/16 x 3/16 x 7/8 SQ Key	002088	2
15	Cam Agitator Drive	20180600	1
16	Crank Bearing Spacer	20104200	1
17	Heavy Duty Rod End Bearing	20791600	1
18	Master Connecting Link	002309	1
19	Motor Sprocket	002403	1
20	Chain Tensioner Plate	20022800	1
21	Spring Post	00249500	1
22	Torsional Spring	002571	1
23	Chain Tensioner Bar	002768	1
24	Feed Tube	Varies	1
25	Feed Tube Gasket	002626	1
26	Auger	Varies	1
27	S12 Cabinet	20243502	1
27	S12 Cabinet with Latch Package	20243502	1
27	S12 Cabinet With Bolt Package	20259301	1
27	CR12 Cabinet	20243501	1
27	CR12 Cabinet With Latch Package	20243501	1
27	CR12 Cabinet With Bolt Package	20259302	1
27	E12 Cabinet Painted	20243101	1
27	E12 Cabinet With Latch Package	20243101	1
27	E12 Cabinet With Bolt Package	20259300	1
28	E12 Side Access Door	20243201	2
28	CR/S Side Access Door	20243400	2
29	Rubber Door Gasket	200219	14.63.
30	E12 Gear Train Door	20183201	1
30	CR/S Gear Train Door	20179600	1
31	Liquid Tight Cord Connector	107098	2
32	Bearing Flange Shaft	002618	1
33	Spring Protector Spacer	20269502	3
34	Spring, Compression .85OD .668WIR	103319	1
35	E-Retaining Ring	103254	2
36	Drive Shaft Seal	20272600	1
37	Oil Seal	002050	1
38	Ball Bearing	102850	2
39	Cartridge Style Bearing Flange Housing	20220302	1
40	O-Ring	104583	2
41	Ball Bearing	104070	1

DWG NUMBER 20709700

REV	DESCRIPTION	DATE	APP



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TITLE
12 SERIES VOLUMETRIC FEEDER
DUAL DRIVE
EXPLODED ISOMETRIC

SIZE	DRAWING NUMBER	SHEET	REV
A	20709700	1 OF 1	

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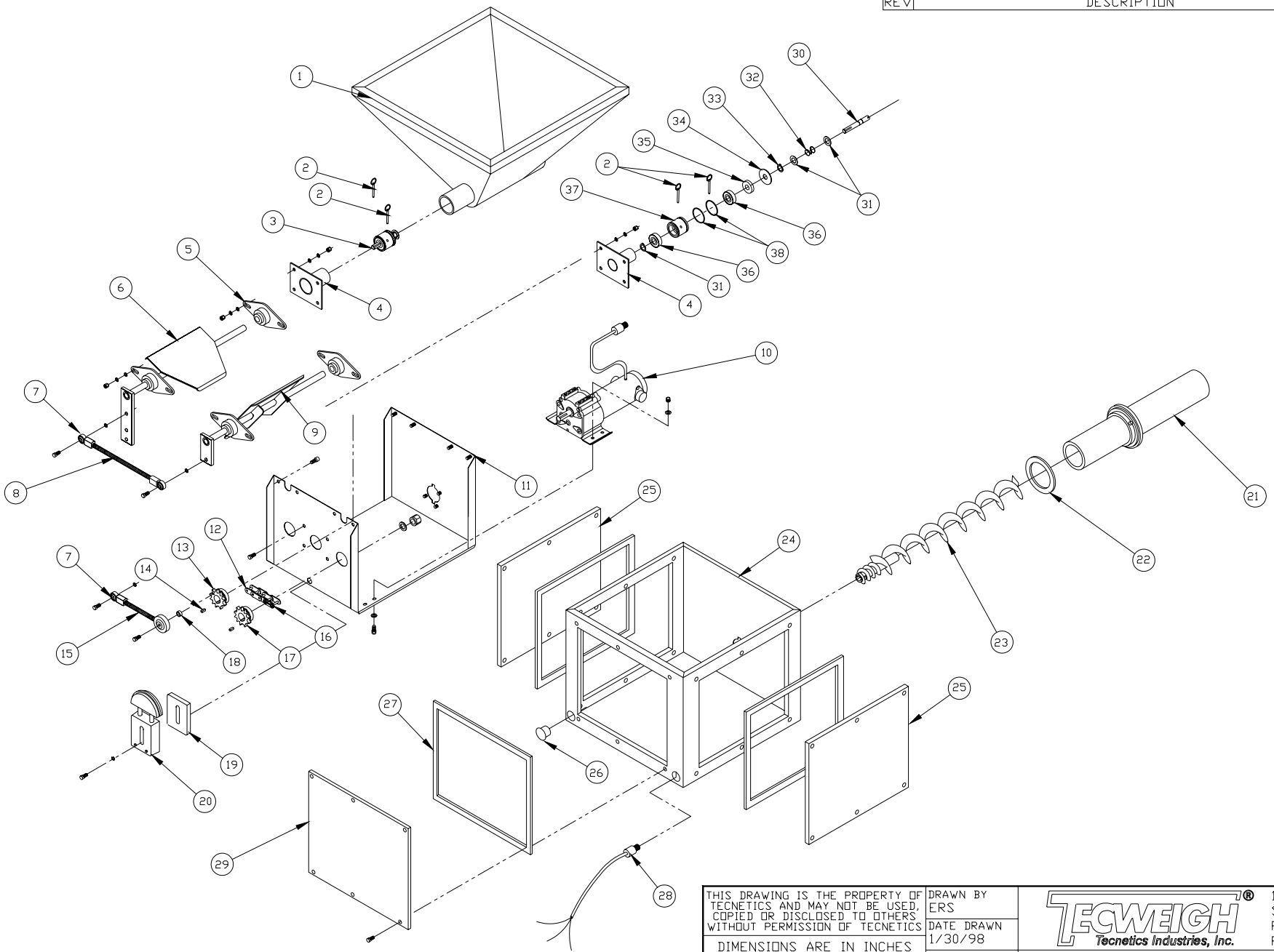
Section 7.00
Exploded View Assemblies and Parts List

28 Series Single Drive

ITEM	DESCRIPTION	PART NUMBER	QTY
1	Flexible Hopper, Industrial Grade	002685	1
1	Flexible Hopper, Food Grade	101915	1
1	Flexible Hopper, Antistatic Food Grade	102085	1
2	Pin, Quick Release	104517	2
3	Bearing Flange Drive Assembly	20774400	1
4	Bearing Flange Weldment	00266800	1
5	Paddle Bearing, Pillow Block	002656	2
6	Left Paddle Assembly, Varies with Motor	Varies	1
7	Rod End Bearing	002665	3
8	Upper Drive Rod	21170504	1
9	Right Paddle Assembly Varies with Motor	Varies	1
10	Motor / Varies With Job	Varies	1
11	Chassis E/CR28 Single Drive	20139300	1
11	Chassis S28 Single Drive	20139200	1
12	#60 Roller Chain	002755	36
13	Auger Sprocket	20103300	1
14	1/4 x 1/4 x 7/8 SQ Key	200761	2
15	Heavy Duty Rod End Bearing	20488100	1
16	Master Connecting Link	002762	1
17	Motor Sprocket	002753	1
18	Crank Bearing Spacer	20259517	1
19	Chain Tensioner Spacer	20243700	1
20	Chain Tensioner	102602	1
21	Feed Tube	Varies	1
22	Feed Tube Gasket	N/A	1
23	Auger	Varies	1
24	S28 Cabinet	20251702	1
25	S28 Cabinet with Latch Package	20251702	1
26	S28 Cabinet With Bolt Package	20259602	1
26	CR28 Cabinet	20251701	1
26	CR28 Cabinet With Latch Package	20251701	1
26	CR28 Cabinet With Bolt Package	20259603	1
26	E28 Cabinet Painted	20243801	1
26	E28 Cabinet With Latch Package	20243801	1
26	E28 Cabinet With Bolt Package	20259601	1
26	Twist Lock Plug	002415	1
26	Rubber Door Gasket	200219	14.63
27	Liquid Tight Cord Connector	107098	1
28	E28 Gear Train Door	00264501	1
28	CR/S28 Gear Train Door	002643	1
29	E28 Side Access Door	20245001	2
29	CR/S28 Gear Train Door	20251801	2
30	Bearing Flange Shaft	20759902	1
31	Spring Protector Spacer	20269503	3
32	Spring, Compression	103256	1
33	E-Retaining Ring	102664	2
34	Drive Shaft Seal	20228600	1
35	Oil Seal	104447	1
36	Ball Bearing	002673	2
37	Cartridge Style Bearing Flange Housing	20729102	1
38	O-Ring	104085	2

DWG NUMBER 20709800

REV	DESCRIPTION	DATE	APP



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TITLE
28 SERIES VOLUMETRIC FEEDER
SINGLE DRIVE
EXPLODED ISOMETRIC

SIZE	DRAWING NUMBER	SHEET	REV
A	20709800	1 OF 1	

Section 7.00
Exploded View Assemblies and Parts List

28 Series Dual Drive

ITEM	DESCRIPTION	PART NUMBER	QTY
1	Flexible Hopper, Industrial Grade	002685	1
1	Flexible Hopper, Food Grade	101915	1
1	Flexible Hopper, Antistatic Food Grade	102085	1
2	Pin, Quick Release	104517	2
3	Bearing Flange Drive Assembly	20774400	1
4	Bearing Flange Weldment	00266800	1
5	Paddle Bearing, Pillow Block	002656	2
6	Left Paddle Assembly, Varies with Motor	Varies	1
7	Rod End Bearing	002665	3
8	Upper Drive Rod	21097405	1
9	Right Paddle Assembly, Varies with Motor	Varies	1
10	Motor / Varies With Job	Varies	2
11	Chassis E/CR28 Dual Drive	20139300	1
11	Chassis S28 Dual Drive	20139200	1
12	#60 Roller Chain	002755	36.
13	Auger Sprocket	002753	1
14	1/4 x 1/4 x 7/8 SQ Key	200761	2
15	Cam Agitator Drive	20178900	1
16	Crank Bearing Spacer	20259517	1
17	Heavy Duty Rod End Bearing	20384000	1
18	Master Connecting Link	002762	1
19	Motor Sprocket	002753	1
20	Chain Tensioner Spacer	20243700	1
21	Chain Tensioner	102602	1
22	Feed Tube	Varies	1
23	Feed Tube Gasket	N/A	1
24	Auger	Varies	1
25	S28 Cabinet	20251701	1
25	S28 Cabinet with Latch Package	20251701	1
25	S28 Cabinet With Bolt Package	20259602	1
25	CR28 Cabinet	20251702	1
25	CR28 Cabinet With Latch Package	20251702	1
25	CR28 Cabinet With Bolt Package	20259603	1
25	E28 Cabinet Painted	20243801	1
25	E28 Cabinet With Latch Package	20243801	1
25	E28 Cabinet With Bolt Package	20259601	1
26	E28 Side Access Door	20245001	2
26	CR/S28 Gear Train Door	002643	1
27	Rubber Door Gasket	200219	14.63
28	Liquid Tight Cord Connector	107098	2
29	E28 Gear Train Door	00264501	1
29	CR/S28 Gear Train Door	002643	1
30	Bearing Flange Shaft	20759902	1
31	Spring Protector Spacer	20269503	3
32	Spring, Compression	103256	1
33	E-Retaining Ring	102664	2
34	Drive Shaft Seal	20228600	1
35	Oil Seal	104447	1
36	Ball Bearing	002673	2
37	Cartridge Style Bearing Flange Housing	20729102	1
38	O-Ring	104085	2

DWG NUMBER 20709900

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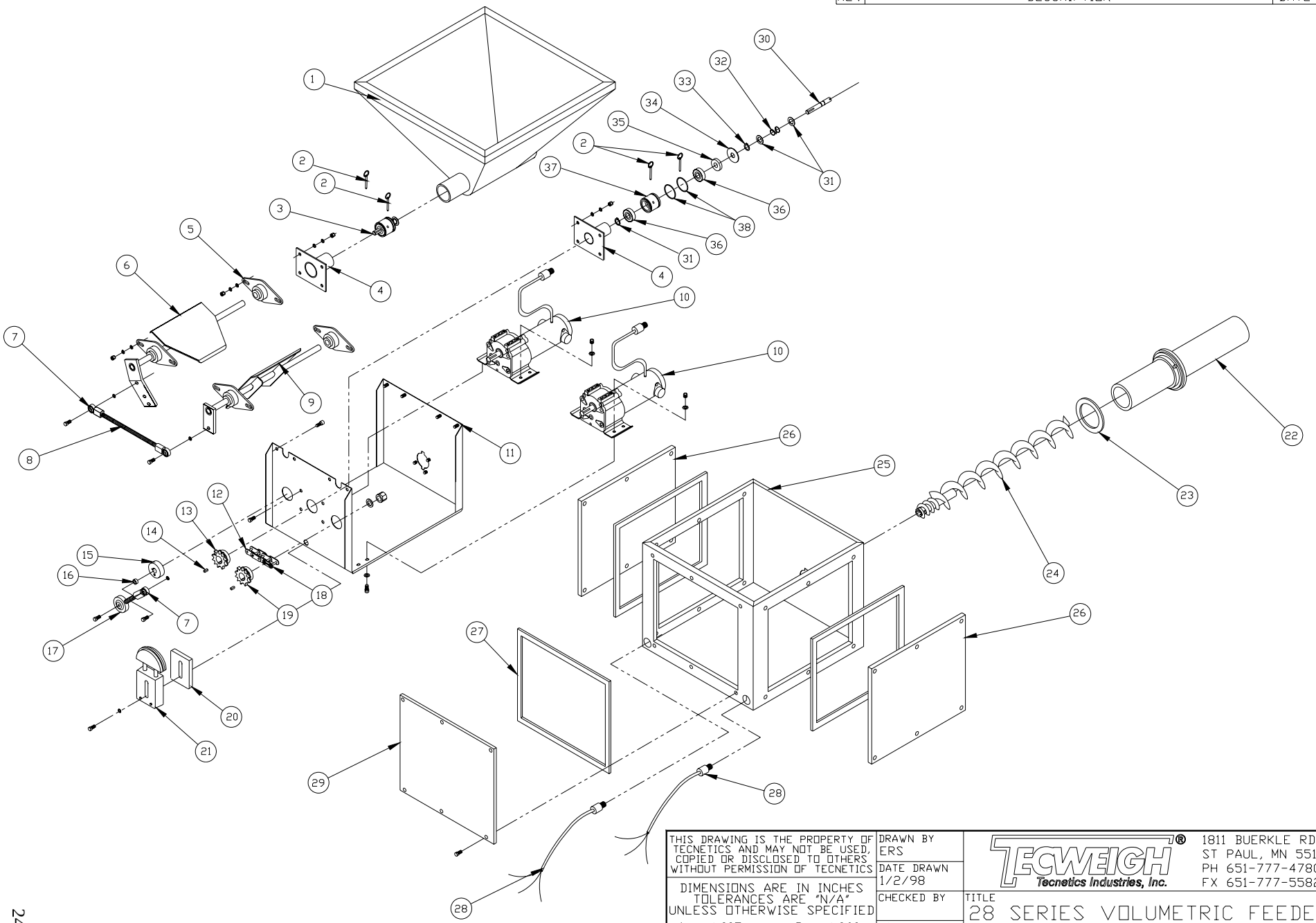

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TITLE
28 SERIES VOLUMETRIC FEEDER
DUAL DRIVE
EXPLODED ISOMETRIC

SIZE	DRAWING NUMBER	SHEET	REV
A	20709900	1 OF 1	

Section 8.00
Control Features and Schematic Drawings

8.01 **One Speed** (Standard Feeder) – This unit allows the operator to locally power-up and adjust the auger speed (volumetric rate). The three position "POWER" button allows the operator to power up and power down the unit. The three segment digital potentiometer (pot) designates what percentage (0-99%) of full speed the auger and paddles can run. The pot controls an SCR board, which generates a DC voltage output proportional to the pot setting.

8.02 **Remote Start/Stop** (Standard Feeder) – This feature allows a remote device (PLC, Start Switch, etc.) to power up and power down the unit. The remote device must use a two contact operation. One maintained closed for "REMOTE ENABLE/STOP" and one momentary (pulsed) closed for "REMOTE START".

8.03 **Remote Analog Speed Control** (Optional) – A remote analog speed signal from the customer's PLC controls the auger speed instead of the potentiometer. The input signal can either be a 4-20ma or a 0-10 VDC signal. This input signal is isolated by an input board and then fed to the SCR board. A "SPEED SOURCE" selector switch designates which speed input the SCR will read. If the switch is in "AUTO" the remote analog source provides the speed control. If the switch is in the "MANUAL" position, the potentiometer provides the speed control.

8.04 **Two Speed Control** (Optional) – By adding a "SLOW" speed pot and a means to switch between it and the "FAST" speed pot, remote two speed control is possible. This feature allows the system to be run at the "FAST" speed pot setting for the majority of a batch and then switched to the "SLOW" speed setting to dribble in the remaining portion. This method allows greater batch accuracy. A set of dry contacts from the customer's PLC or batching unit is needed to remotely switch from the "FAST" to the "SLOW" speed potentiometers. Open contact would be "FAST" and closed contact would be "SLOW".

8.05 **Paddle Speed Control** (Optional) – A separate "PADDLE SPEED" potentiometer and SCR board are added to allow local paddle agitation speed control. The pot allows the paddle agitation speed to be set between 0-99% of maximum. The potentiometer provides a speed signal to the SCR board, which in turn supplies a proportional DC voltage to the paddle motor.

WARRANTY & SERVICE POLICY
TECNETICS VOLUMETRIC FEEDERS

Statement of Limited Warranty – Tecnetics Industries, Inc.

Subject to the terms and conditions as stated herein, Tecnetics Industries, Inc. (hereafter referred to as Tecnetics) warrants its equipment to be free from defects in material and factory workmanship for a period of one year from the date of installation or eighteen months after shipment, whichever comes first, except for Flex Feed™ hoppers which carry a five year warranty.

Terms and Conditions of Limited Warranty

This obligation is limited exclusively to defective original equipment or supplied by Tecnetics and is subject to the inspection and analysis of Tecnetics to conclusively identify or confirm the nature and cause of failure.

During the product warranty period, defective components, mechanical or electrical, will be repaired or replaced, at the discretion and authorization of Tecnetics, providing equipment owner agrees to return the faulty components to the factory, freight prepaid.

Tecnetics is not responsible and will not be held liable for losses, injury or damage caused to persons, or property by reason of improper installation of Tecnetics products, or product.

This warranty is not applicable for expenses either direct or consequential that may arise from the use or failure of these products.

Tecnetics reserves the right to incorporate improvements in material and design of the products without notice and is not obligated to incorporate the same improvements in equipment previously manufactured.

Tecnetics shall not be obligated under any warranty different from its warranty as set forth herein. The Tecnetics warranty is limited to the initial customer and initial installation and is not intended to inure to the benefit of a secondary owner in the event of resale or subsequent installation.

Conditions Which Void Limited Warranty

This warranty shall not apply to equipment which:

A) Has had repairs or modification not authorized by Tecnetics which has affected the performance or reliability.

B) Has been subject to misuse, negligent handling, improper installation, accident, damage by fire, water, submersion, or an act of God.

C) Has had serial numbers altered, defaced or removed.

Freight Carrier Damage

Claims for equipment damaged in transit must be referred to the freight carrier. Visible damage should be reported immediately, and concealed damages as soon as possible, in any case, within fifteen (15) days of receipt of shipment, in accordance with freight carrier regulations.

THE FOREGOING IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING ANY WARRANTIES THAT EXTEND BEYOND THE DESCRIPTION OF THE PRODUCT. THIS WARRANTY STATEMENT SETS FORTH THE EXTENT OF OUR LIABILITY FOR BREACH OF ANY WARRANTY OR DEFICIENCY IN CONNECTION WITH THE SALE OR USE OF THE PRODUCT. IT IS UNDERSTOOD THAT WE WILL NOT BE LIABLE FOR CONSEQUENTIAL DAMAGES OF ANY NATURE, INCLUDING BUT NOT LIMITED TO, LOSS OR PROFITS, DELAYS OR EXPENSES WHETHER BASED ON TORT OR CONTRACT.