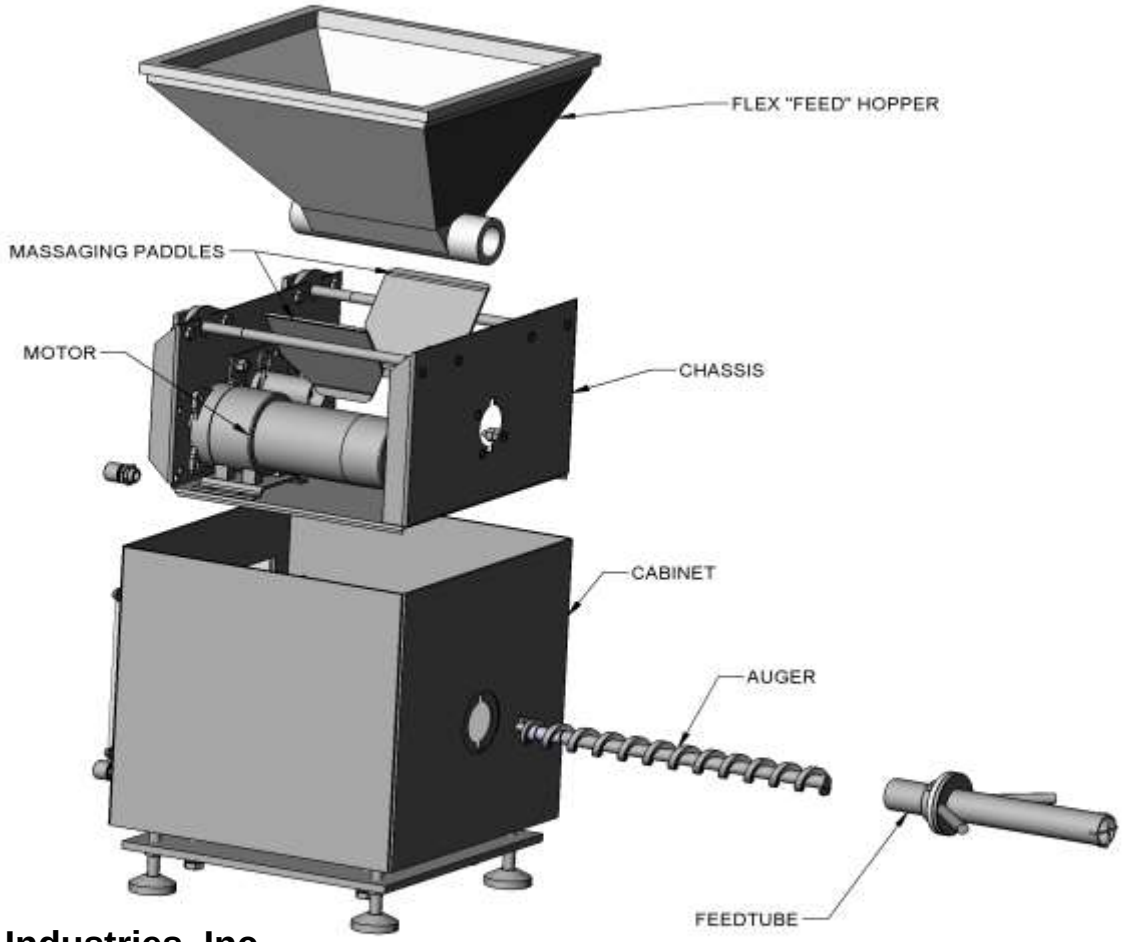
Installation, Operation and Maintenance Manual For Tecweigh® Gravimetric Feeder

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



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Model:_____
Serial Number:_____

Manual Part Number 20920010 Ver 1.0.0_11-2015

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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.

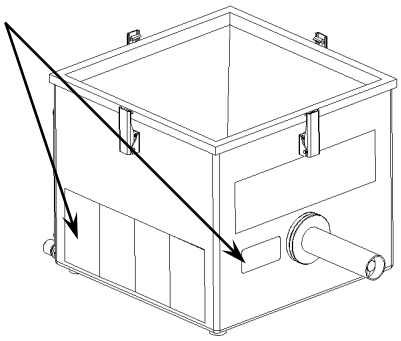
This symbol is intended to alert the user of the presence of uninsulated dangerous voltage within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock.

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

Check List Before Operation

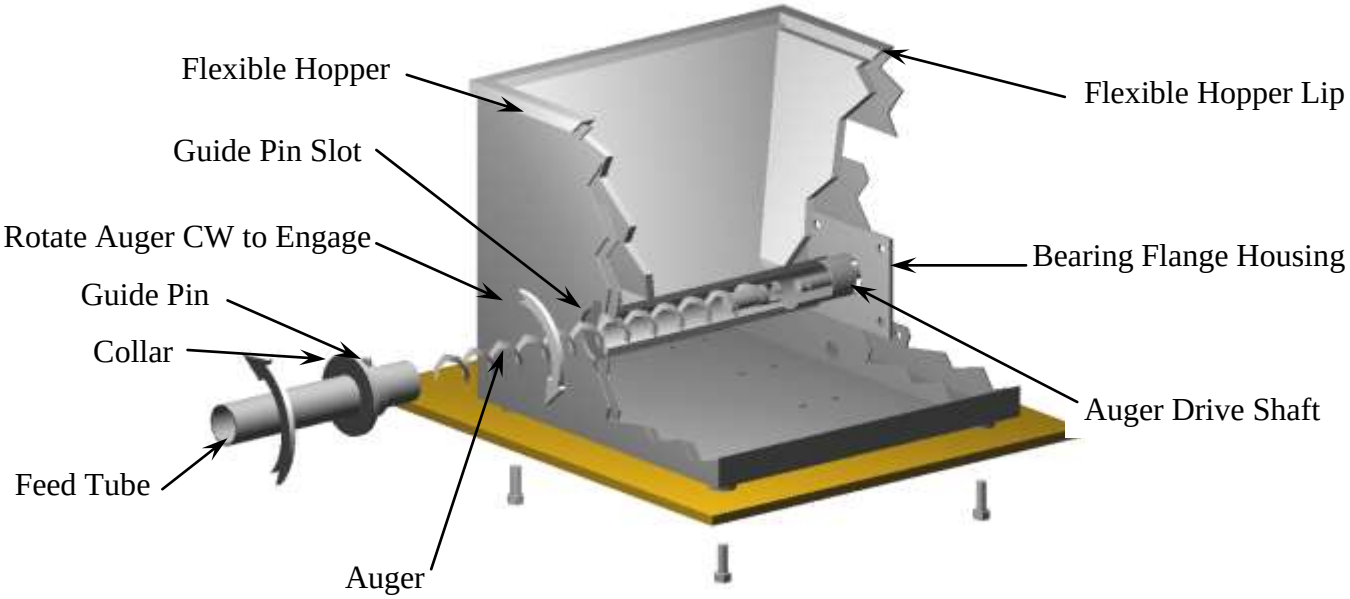
2.01 The Tecweigh Volumetric Feeder has components that are selected at the time of sale for specific performance depending on the material type and feed rate. **The factory must be consulted before any changes are made during the warranty period**. This is also recommended after the warranty period.

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 with multi-purpose grease. Reverse the above procedures to reinstall the parts.

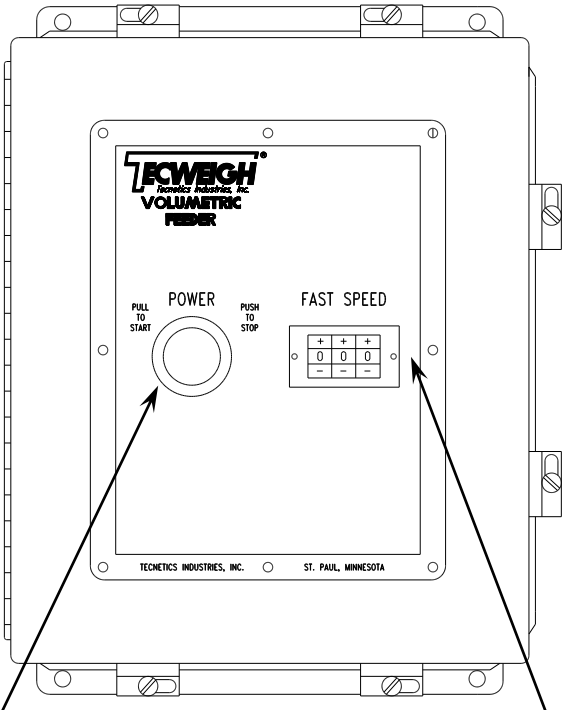
3.06 The motor is protected against overload by the control panel circuitry and a fuse. Every effort is made at the time of sale to determine the conditions that might lead to a motor overload. In general, higher speeds (particularly high ratios in the gearbox and drive train) and heavy materials will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

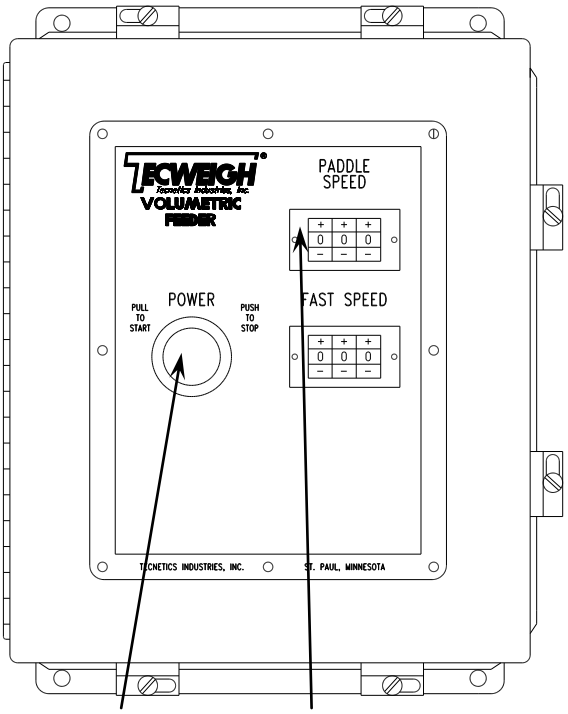
Single Drive Volumetric Feeder Control Panel



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

Auger and Paddle Speed Control Selector Single Drive

Dual Drive Volumetric Feeder Control Panel



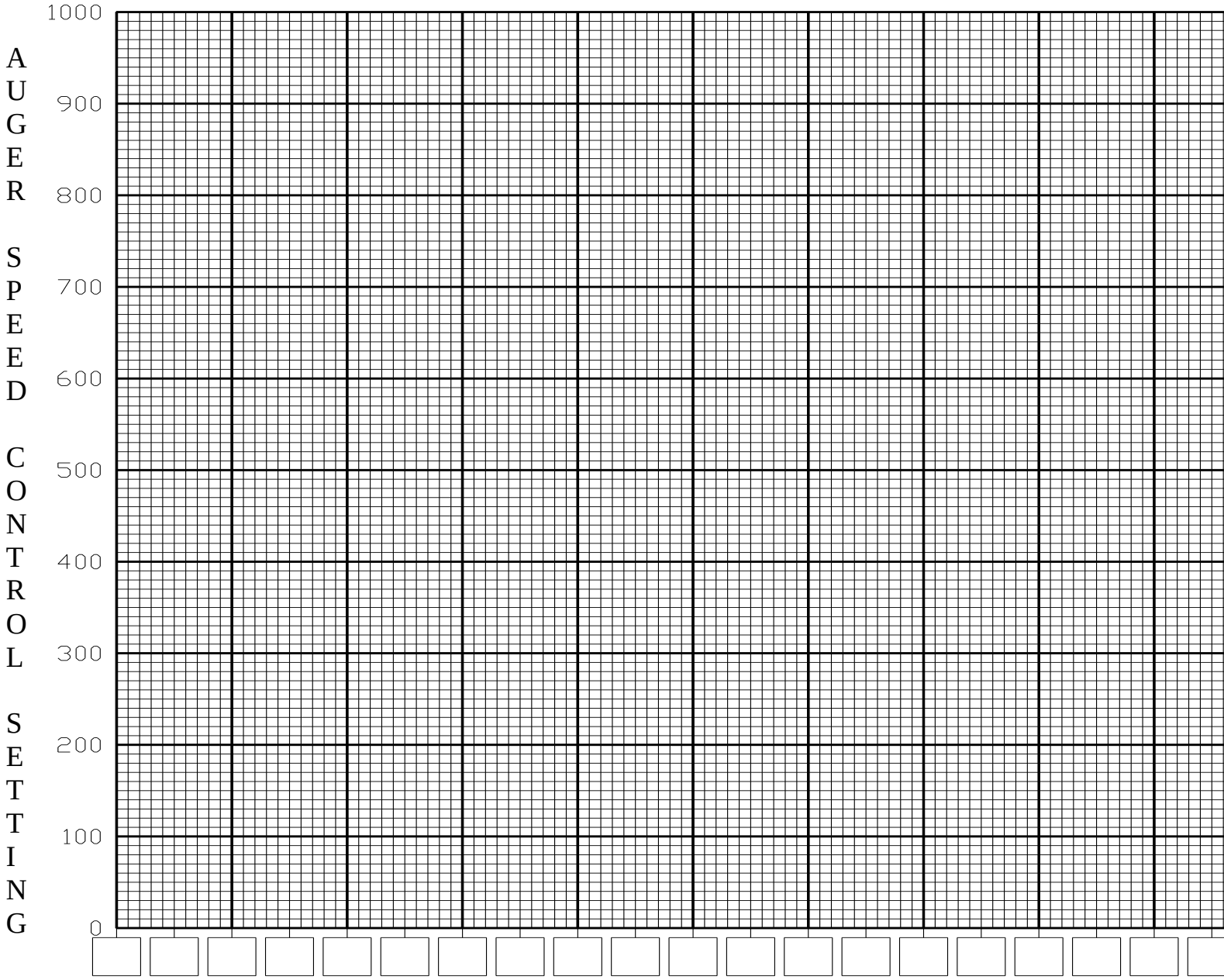
Auger Speed Control Selector Dual Drive

Paddle Speed Control Selector Dual Drive

Section 4.00
Operating and Calibrating the Feeder

CALIBRATION GRAPH

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



Section 5.00
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".

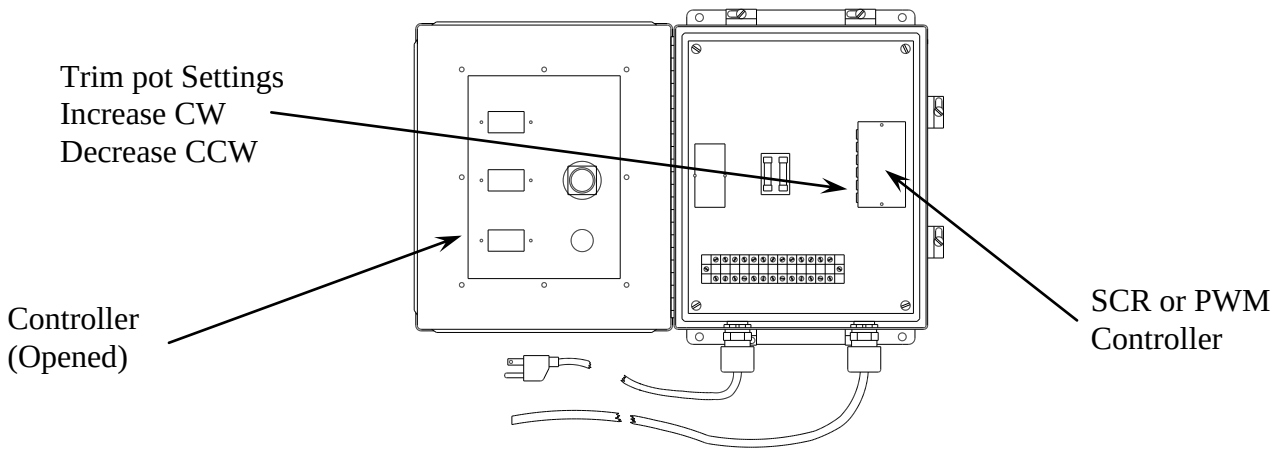
b. **MAX SPD** Maximum Speed – This sets the maximum DC voltage (maximum speed) for the motor. It is typically set at 90 VDC, at a speed setting of "999" (180 VDC for 230-volt controls).

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.**

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.



Section 5.00
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 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 ISB Single Drive = 100 pounds (41 Kg)
5 Series ISB Dual Drive = 120 pounds (50 Kg)
12 Series ISB Single Drive =195 pounds (82 Kg)
12 Series ISB Dual Drive = 225 pounds (95 Kg)
28 Series ISB Single Drive =370 pounds (161 Kg)
28 Series ISB Dual Drive = 420 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

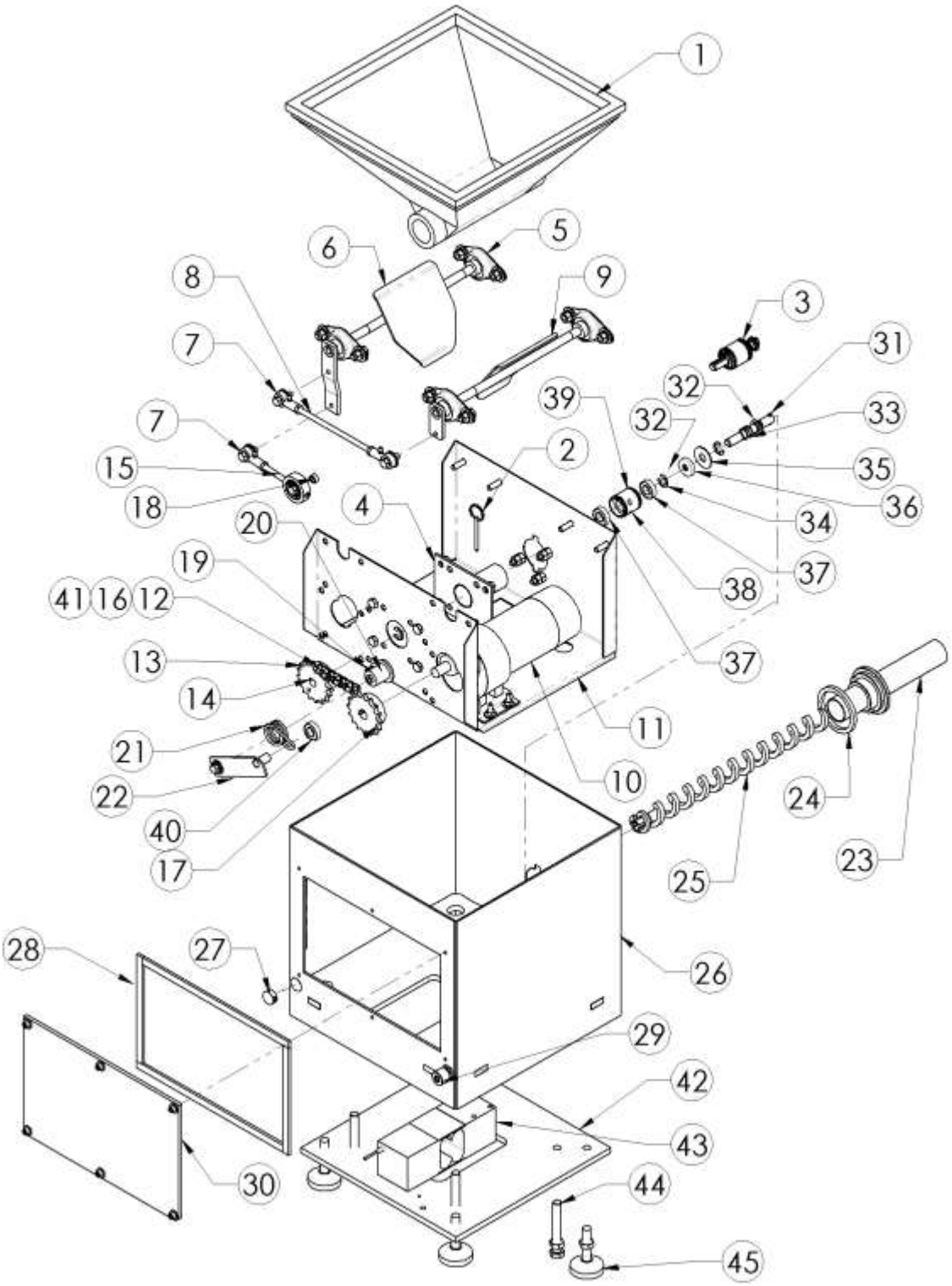
5 Series 1.25" (32 mm)
12 Series 3.00" (76 mm)
28 Series 6.00" (152 mm)

Section 7.00
Exploded View Assemblies and Parts List

05 SERIES ISB SINGLE DRIVE PARTS LIST

ITEM	PART NUMBER	DESCRIPTION	QTY
1	102483	HOPPER, FLEX 05SER INDUSTRIAL GRADE	1
1	102482	HOPPER, FLEX 05SER FOOD GRADE	1
1	102373	HOPPER, FLEX 05SER CHEMICAL RESISTANT (BROWN)	1
2	104517	PIN, QUICK RELEASE 3/16 DIA SS	1
3	20505200	ASSY, CARTRIDGE BEARING 05SER STD	1
4	00258700	WLDT, FLANGE CARTRIDGE BEARING 05SER	1
4	20910802	WLDT, FLANGE CARTRIDGE BEARING 05SER 1/4HP 3/8 HP MOTOR	1
5	002557	BEARING, FLANGE 2-BOLT 1/2" BORE	2
5	108407	BEARING, FLANGE 2-BOLT 1/2" BORE WASHDOWN	2
6	20250000	ASSY, PADDLE LH 05 SER	1
6	20250001	ASSY, PADDLE LH 05 SER WASHDOWN	1
7	002582	BRG, ROD END ROLLER 5/16-24	3
8	21096203	THR ROD SS 5/16-24 X 7.50	1
9	20249900	ASSY, PADDLE RH 05 SER	1
9	20249901	ASSY, PADDLE RH 05 SER WASHDOWN	1
10	VARIES	MOTOR, GEAR AC OR DC	1
11	20186800	CHASSIS, E5/CR5	1
11	20186900	CHASSIS, S5	1
12	21270000	CHAIN, #40 ROLLER 1/2 PITCH X 16.00" 15 LINKS	1
12	21270002	CHAIN, #40 ROLLER 1/2 PITCH X 16.00" 15 LINKS STAINLESS STEEL	1
13	20214000	SPROCKET, AUGER 05SER #40BS16-1/2"	1
13	20214001	SPROCKET, AUGER 05SER #40BS16-1/2" STAINLESS	1
14	002088	KEY, 3/16 X 3/16 X 7/8 CRS	1
15	20438900	ASSY, HEAVY DUTY ROD END BEARING 05 SER SD	1
15	20438901	ASSY, HEAVY DUTY ROD END BEARING 05 SER SD WASHDOWN	1
16	002309	LINK, CONNECTING #40 1/2 PITCH	1
16	108352	LINK, CONNECTING #40 1/2 PITCH STAINLESS STEEL	1
17	002301	SPROCKET, MOTOR #40BS16- 5/8"	1
17	107323	SPROCKET, MOTOR #40BS16- 5/8" STAINLESS	1
17	002403	SPROCKET, MOTOR #40BS16- 3/4" 1/4HP 3/8HP MOTOR	1
17	107140	SPROCKET, MOTOR #40BS16- 3/4" STAINLESS 1/4HP 3/8HP MOTOR	1
18	20104200	SPACER, CRANK BEARING 05&12 SER	1
19	20022801	PLATE, CHAIN TENSIONER SS	1
20	00249501	POST, SPRING 05 & 12 SER SS 303	1
21	00257101	SPRING TORSION	1
22	002768	WLDT, CHAIN TENSIONER BAR 5-12 SER	1
23	VARIES	FEEDTUBE 05 SER	1
24	002574	GASKET, FEEDTUBE 05 SER	1
25	VARIES	AUGER 05 SER	1
26	20652810	ASSY, CABINET CR5 PLAIN	1
26	20652811	ASSY, CABINET CR5 LATCH PACKAGE	1
26	20652812	ASSY, CABINET CR5 BOLT PACKAGE	1
27	104192	PLUG, HOLE 3/4" / 11/16	1
28	200219	GASKET, RUBBER ADHESIVE BACK 3/16X1/2	3
29	107098	CONN, CORD, ALUMINUM 3/8" NPT	1
30	20290200	DOOR, GEARTRAIN 05SER LEXAN .25"	1
30	20196000	DOOR, GEARTRAIN 05SER STAINLESS	1
31	00256001	WLDT, SHAFT CARTRIDGE BEARING 05SER	1
32	20269501	SPACER, SPRING PROTECTOR 5 SERIES	3
33	103393	SPRING, CMPRSSN 0.72OD 0.063WIRE	1
34	103014	RING, E-RETAINING 1/2" DIA SS 316	2
35	20235500	SEAL, DRIVE SHAFT 05SER UHMW .06	1
36	002057	SEAL, OIL .500 ID CR INDUSTRY 5068	1
37	10407001	BRG, BALL .500 BORE 1.125OD DB SEAL	2
38	20197701	HOUSING, CARTRIDGE BEARING 05SER	1
39	104083	O-RING #026 BUNA-N 05 SERIES	2
40	10407001	BEARING, 1/2" CHAIN TENSIONER	1
41	002726	LINK, HALF CONNECTING #40	1
41	108353	LINK, HALF CONNECTING #40 STAINLESS STEEL	1
42	21218001	SCALE BASE ISB	1
43	VARIES	LOAD CELL	1
44	110706	OVER LOAD BOLT	4
45	VARIES	FOOT	4

5 SERIES ISB SINGLE DRIVE FEEDER EXPLODED ISOMETRIC



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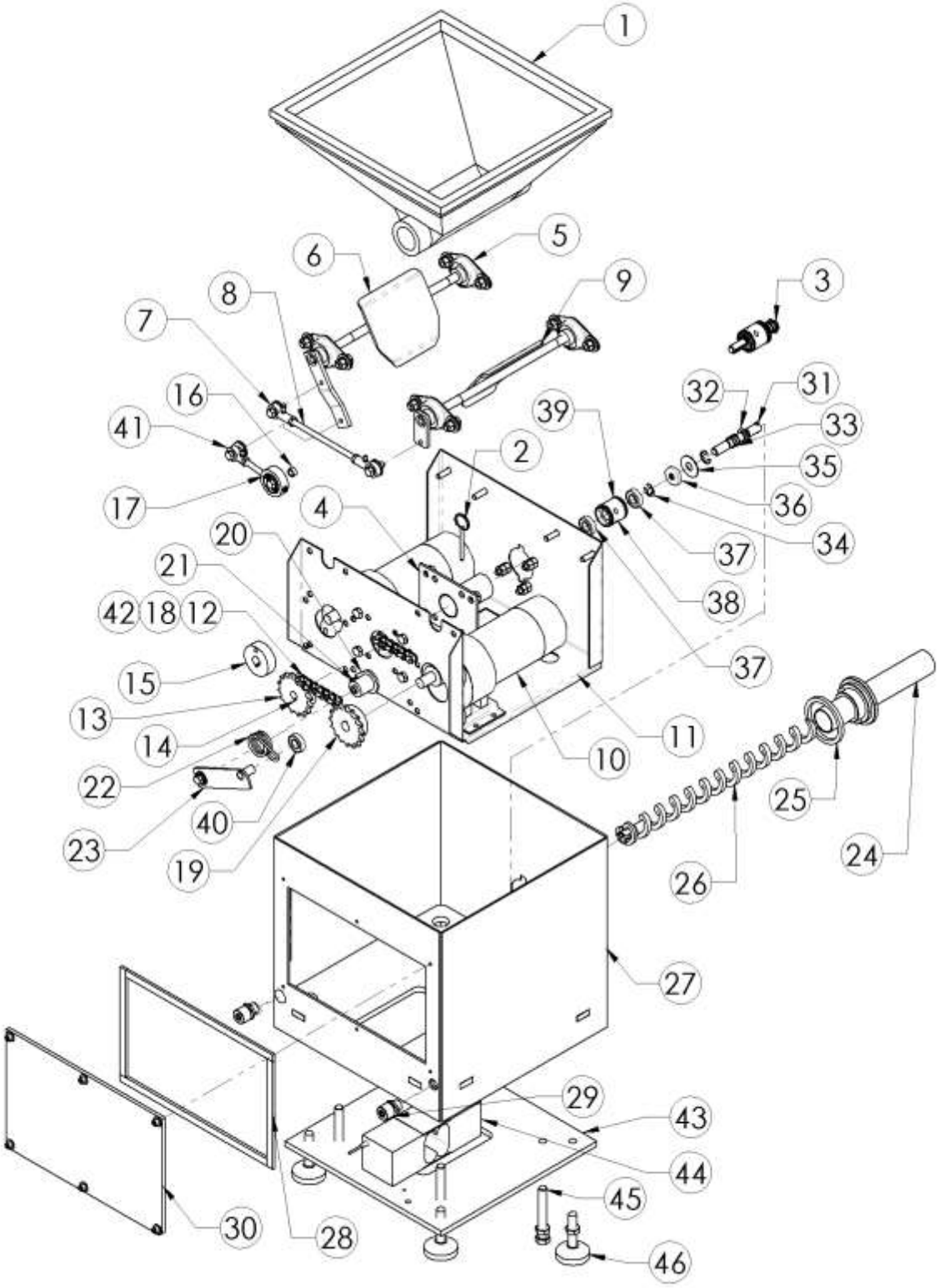
1	102482	HOPPER, FLEX 05SER FOOD GRADE	1
1	102373	HOPPER, FLEX 05SER CHEM RESISTANT (BROWN)	1
2	104517	PIN, QUICK RELEASE 3/16 DIA SS	1
3	20505200	ASSY, CARTRIDGE BEARING 05SER STD	1
4	00258700	WLDT, FLANGE CARTRIDGE BEARING 05SER	1
4	20910802	WLDT, FLANGE CARTRIDGE BEARING 05SER 1/4HP 3/8 HP MOTOR	1
5	002557	BEARING, FLANGE 2-BOLT 1/2" BORE	2
5	108407	BEARING, FLANGE 2-BOLT 1/2" BORE WASHDOWN	2
6	20303700	ASSY, PADDLE LH 05 SER DD	1
6	20303701	ASSY, PADDLE LH 05 SER DD WASHDOWN	1
7	002582	BRG, ROD END ROLLER 5/16-24	2
8	20181602	THR ROD SS 5/16-24 X 6.00	1
9	20249900	ASSY, PADDLE RH 05 SER	1
9	20249901	ASSY, PADDLE RH 05 SER WASHDOWN	1
10	VARIES	MOTOR, AC OR DC	2
11	20186800	CHASSIS, E5/CR5	1
11	20186900	CHASSIS, S5	1
12	21270000	CHAIN, #40 ROLLER 1/2 PITCH X 16.00" 15 LINKS	1
12	21270002	CHAIN, #40 ROLLER 1/2 PITCH X 16.00" 15 LINKS STAINLESS STEEL	1
13	102365	SPROCKET, AUGER 05SER #40BS16-1/2"	1
13	107141	SPROCKET, AUGER 05SER #40BS16-1/2" STAINLESS	1
14	002088	KEY, 3/16 X 3/16 X 7/8 CRS	1
15	20181500	CAM, AGITATOR DRIVE 05SER DD	1
15	20181501	CAM, AGITATOR DRIVE 05SER DD STAINLESS	1
16	20104200	SPACER, CRANK BEARING 05&12 SER	1
17	20791700	ASSY, HEAVY DUTY ROD END BEARING 05 SER DD	1
17	20791701	ASSY, HEAVY DUTY ROD END BEARING 05 SER DD WASHDOWN	1
18	002309	LINK, CONNECTING #40 1/2 PITCH	1
18	108352	LINK, CONNECTING #40 1/2 PITCH STAINLESS STEEL	1
19	002301	SPROCKET, MOTOR #40BS16- 5/8"	1
19	107323	SPROCKET, MOTOR #40BS16- 5/8" STAINLESS	1
19	002403	SPROCKET, MOTOR #40BS16- 3/4" 1/4HP 3/8HP MOTOR	1
19	107140	SPROCKET, MOTOR #40BS16- 3/4" STAINLESS 1/4HP 3/8HP MOTOR	1
20	20022801	PLATE, CHAIN TENSIONER SS	1
21	00249501	POST, SPRING 05 & 12 SER SS 303	1
22	00257101	SPRING TORSION	1
23	002768	WLDT, CHAIN TENSIONER BAR 5-12 SER	1
24	VARIES	FEEDTUBE 05 SER	1
25	002574	GASKET, FEEDTUBE 05 SER	1
26	VARIES	AUGER 05 SER	1
27	20652810	ASSY, CABINET CR5 PLAIN	1
27	20652811	ASSY, CABINET CR5 LATCH PKG STD	1
27	20652812	ASSY, CABINET CR5 BOLT PKG STD	1
28	200219	GASKET, RUBBER ADHESIVE BACK 3/16X1/2	3
29	107098	CONN, CORD, ALUMINUM 3/8" NPT	2
30	20290200	DOOR, GEARTRAIN 05SER LEXAN .25"	1
30	20196000	DOOR, GEARTRAIN 05SER STAINLESS	1
31	00256001	WLDT, SHAFT CARTRIDGE BEARING 05SER	1
32	20269501	SPACER, SPRING PROTECTOR 5 SERIES	3
33	103393	SPRING, CMPRSSN 0.72OD 0.063WIRE	1
34	103014	RING, E-RETAINING 1/2" DIA SS 316	2
35	20235500	SEAL, DRIVE SHAFT 05SER UHMW .06	1
36	002057	SEAL, OIL .500 ID CR INDUSTRY 5068	1
37	10407001	BRG, BALL .500 BORE 1.125OD DB SEAL	2
38	20197701	HOUSING, CARTRIDGE BEARING 05SER	1
39	104083	O-RING #026 BUNA-N 05 SERIES	2
40	10407001	BEARING, 1/2" CHAIN TENSIONER	1
41	21077700	BRG, ROD END ROLLER 5/16-24 05 SER DD	1
42	002726	LINK, HALF CONNECTING #40	1
42	108353	LINK, HALF CONNECTING #40 STAINLESS STEEL	1
43	21218001	SCALE BASE ISB	1
44	VARIES	LOAD CELL	1
45	10706	OVER LOAD BOLT	4

5 SERIES ISB DUAL DRIVE FEEDER EXPLODED ISOMETRIC

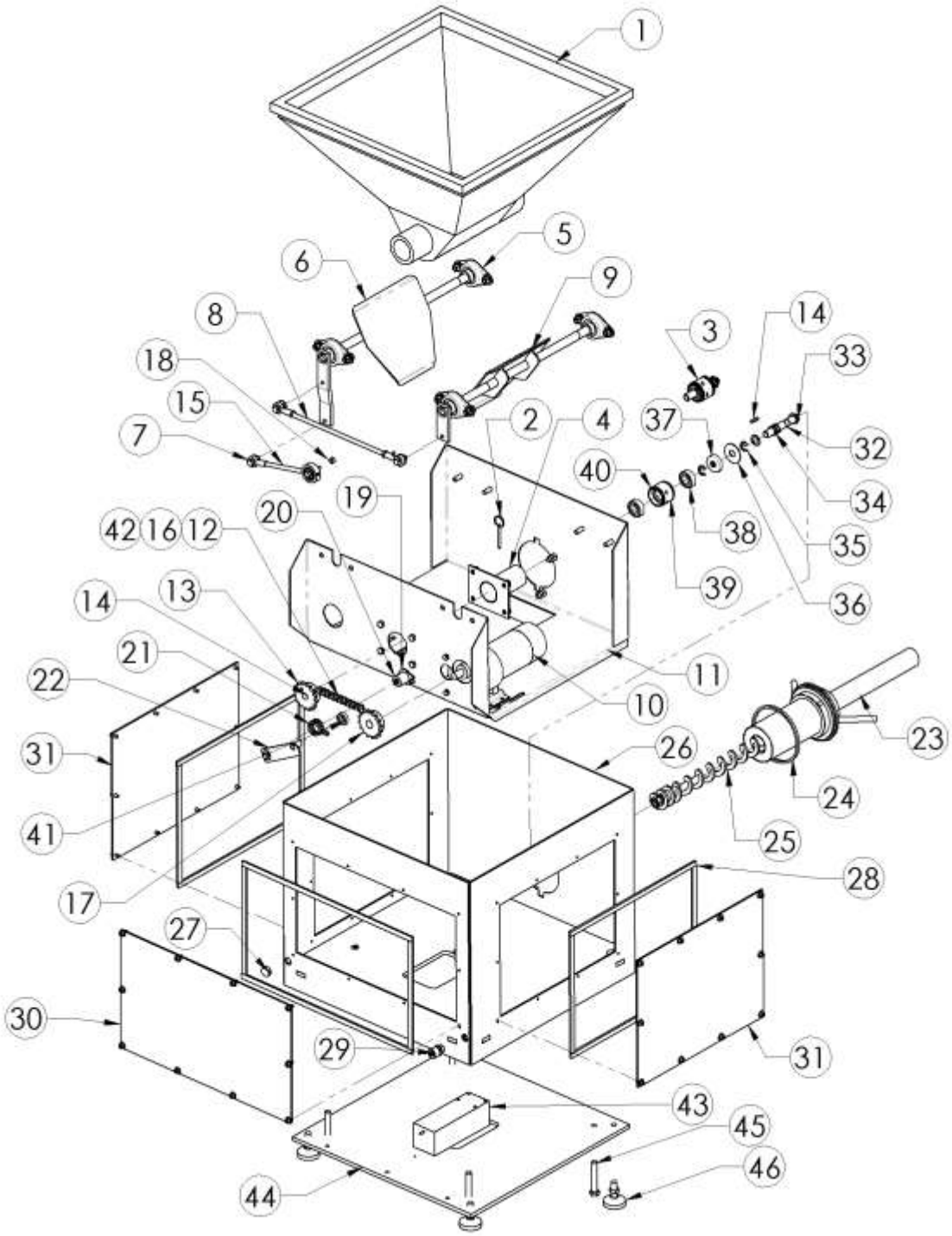


Section 7.00
Exploded View Assemblies and Parts List

12 SERIES ISB SINGLE DRIVE PARTS LIST

ITEM	PART NUMBER	DESCRIPTION	QTY
1	002625	HOPPER, FLEX 12SER INDUSTRIAL GRADE	1
1	200796	HOPPER, FLEX 12SER FOOD GRADE	1
1	104688	HOPPER, FLEX 12SER CHEM RESISTANT (BROWN)	1
2	104517	PIN, QUICK RELEASE 3/16 DIA SS	1
3	20474600	ASSY, CARTRIDGE BEARING 12SER STD	1
4	00230500	WLDT, FLANGE CARTRIDGE BEARING 12 SER	1
5	002061	BEARING, FLANGE 2-BOLT 3/4" BORE	2
5	10842101	BEARING, FLANGE 2-BOLT 3/4" BORE WASHDOWN	2
6	20228200	ASSY, PADDLE LH 12 SER	1
6	20228202	ASSY, PADDLE LH 12 SER WASHDOWN	1
7	002065	BRG, ROD END ROLLER 3/8-24	3
8	21097401	THR ROD SS 3/8-24 X 12.50	1
9	20228300	ASSY, PADDLE RH 12 SER	1
9	002606	ASSY, PADDLE RH 12 SER SHORT (USE WITH MTR-REDUCER)	1
9	20228302	ASSY, PADDLE RH 12 SER WASHDOWN	1
10	VARIES	MOTOR, GEAR	1
10	VARIES	MOTOR, AC OR DC	1
10	102945	REDUCER, 11:1	1
11	20183300	CHASSIS, E12/CR12	1
11	00259801	CHASSIS, S12	1
12	21270001	CHAIN, #40 ROLLER 1/2 PITCH X 23.00" 22 LINKS	1
12	21270003	CHAIN, #40 ROLLER 1/2 PITCH X 23.00" 22 LINKS STAINLESS STEEL	1
13	20104400	SPROCKET, AUGER 12SER #40BS16-5/8"	1
13	20104401	SPROCKET, AUGER 12SER #40BS16-5/8" STAINLESS	1
14	002088	KEY, 3/16 X 3/16 X 7/8 CRS	1
15	20388800	ASSY, HEAVY DUTY ROD END BEARING 12 SER SD	1
15	20388801	ASSY, HEAVY DUTY ROD END BEARING 12 SER SD WASHDOWN	1
16	002309	LINK, CONNECTING #40 1/2 PITCH	1
16	108352	LINK, CONNECTING #40 1/2 PITCH STAINLESS STEEL	1
17	002403	SPROCKET, MOTOR #40BS16- 3/4"	1
17	107140	SPROCKET, MOTOR #40BS16- 3/4" STAINLESS	1
18	20104200	SPACER, CRANK BEARING 05&12 SER	1
19	20022801	PLATE, CHAIN TENSIONER SS	1
20	00249501	POST, SPRING 05 & 12 SER SS 303	1
21	00257101	SPRING TORSION	1
22	002768	WLDT, CHAIN TENSIONER BAR 5-12 SER	1
23	VARIES	FEEDTUBE 12 SER	1
24	002626	GASKET, FEEDTUBE 12 SER	1
25	VARIES	AUGER 12 SER	1
26	20652840	ASSY, CABINET CR12 PLAIN	1
26	20652841	ASSY, CABINET CR12 LATCH PACKAGE	1
26	20652842	ASSY, CABINET CR12 BOLT PACKAGE	1
27	104192	PLUG, HOLE 3/4" / 11/16	1
28	200219	GASKET, RUBBER ADHESIVE BACK 3/16X1/2	14.63
29	107098	CONN, CORD, ALUMINUM 3/8" NPT	1
30	20257500	DOOR, GEARTRAIN 12SER LEXAN .25"	1
30	20179600	DOOR, GEARTRAIN 12SER STAINLESS	1
31	20243400	DOOR, SIDE ACCESS 12SER STAINLESS	2
31	21093001	DOOR, SIDE ACCESS EXTENSION 12 SER (USE WITH MTR-REDUCER)	1
31	20493700	DOOR, SIDE ACCESS 12SER LEXAN	2
32	002618	WLDT, SHAFT CARTRIDGE BEARING 12SER	1
33	20269502	SPACER, SPRING PROTECTOR 12 SERIES	3
34	103319	SPRING, CMPRSSN SS .85OD.068WIR.75"	1
35	103254	RING, RETAINING EXTERNAL SS	2
36	20272600	SEAL, DRIVE SHAFT 12SER UHMW .06	1
37	002050	SEAL, OIL .625 X 1.575 X.312	1
38	102850	BRG, BALL .625 BORE DOUBLE SEALED	2
39	20220302	HOUSING, CARTRIDGE BEARING 12SER	1
40	104583	O-RING #031 BUNA-N 12 SERIES	2
41	10407001	BEARING, 1/2" CHAIN TENSIONER	1
42	002726	LINK, HALF CONNECTING #40	1
42	108353	LINK, HALF CONNECTING #40 STAINLESS STEEL	1
43	VARIES	LOAD CELL	1
44	21218002	BASE, SCALE SS304 12SER IGS	1
45	110951	OVER LOAD BOLT	4
46	VARIES	FOOT	4

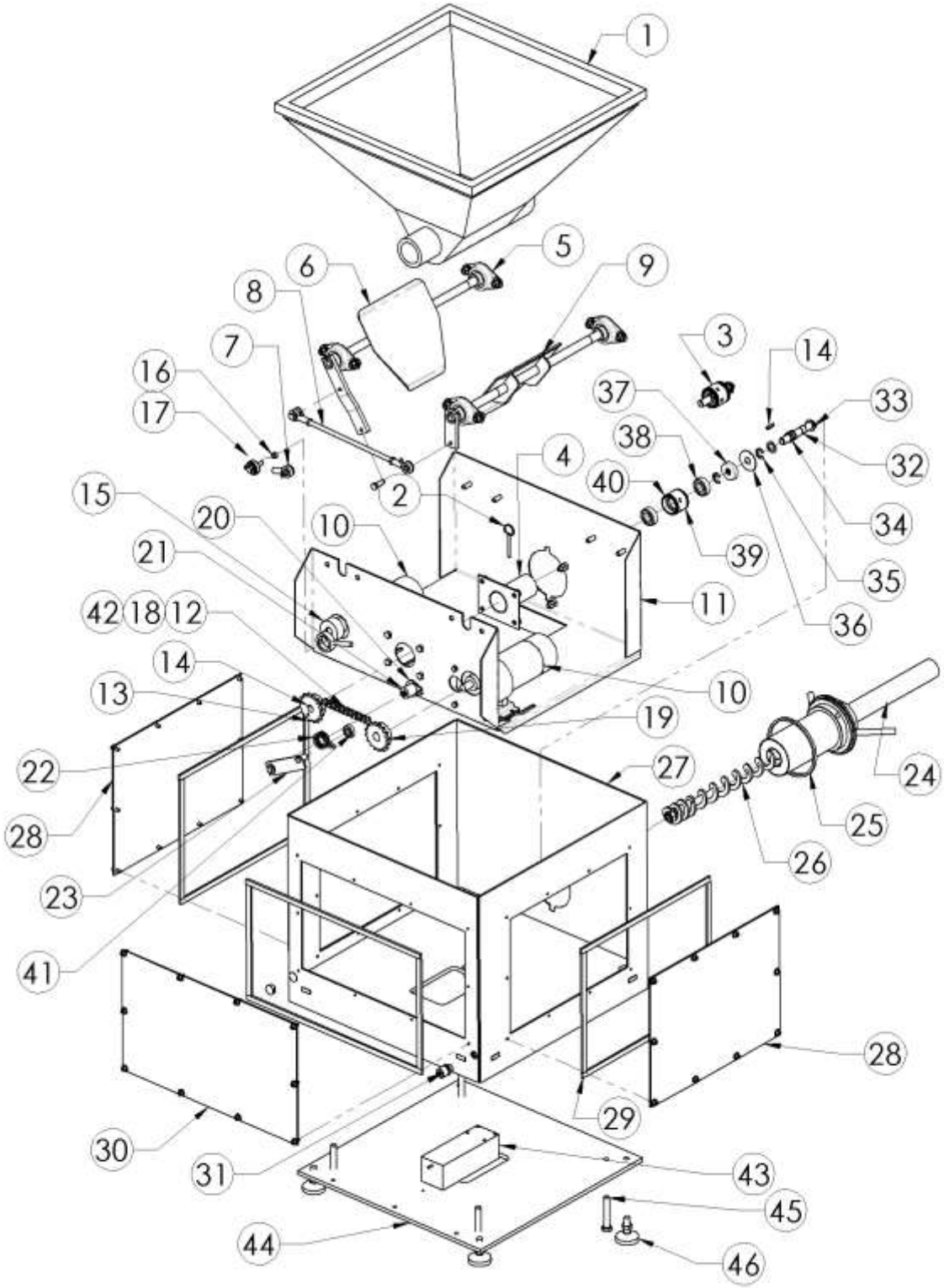
12 SERIES ISB SINGLE DRIVE FEEDER EXPLODED ISOMETRIC



Section 7.00
Exploded View Assemblies and Parts List
12 SERIES ISB DUAL DRIVE PARTS LIST

ITEM	PART NUMBER	DESCRIPTION	QTY
1	002625	HOPPER, FLEX 12SER INDUSTRIAL GRADE	1
1	200796	HOPPER, FLEX 12SER FOOD GRADE	1
1	104688	HOPPER, FLEX 12SER CHEM RESISTANT (BROWN)	1
2	104517	PIN, QUICK RELEASE 3/16 DIA SS	1
3	20474600	ASSY, CARTRIDGE BEARING 12SER STD	1
4	00230500	WLDT, FLANGE CARTRIDGE BEARING 12 SER	1
5	002061	BEARING, FLANGE 2-BOLT 3/4" BORE	2
5	10842101	BEARING, FLANGE 2-BOLT 3/4" BORE WASHDOWN	2
6	20303600	ASSY, PADDLE LH 12 SER DD	1
6	20180905	ASSY, PADDLE LH 12 SER DD WASHDOWN	1
7	002065	BRG, ROD END ROLLER 3/8-24	3
8	21097407	THR ROD SS 3/8-24 X 11.13	1
9	20228300	ASSY, PADDLE RH 12 SER	1
9	002606	ASSY, PADDLE RH 12 SER SHORT (USE WITH MTR-REDUCER)	1
9	00260602	ASSY, PADDLE RH 12 SER WASHDOWN	1
10	VARIES	MOTOR, GEAR	2
10	VARIES	MOTOR AC OR DC	2
10	102945	REDUCER, 11:1	2
11	20183300	CHASSIS, E12/CR12	1
11	00259801	CHASSIS, S12	1
12	21270001	CHAIN, #40 ROLLER 1/2 PITCH X 23.00" 22 LINKS	1
12	21270003	CHAIN, #40 ROLLER 1/2 PITCH X 23.00" 22 LINKS STAINLESS STEEL	1
13	20104400	SPROCKET, AUGER 12SER #40BS16-5/8"	1
13	20104401	SPROCKET, AUGER 12SER #40BS16-5/8" STAINLESS	1
14	002088	KEY, 3/16 X 3/16 X 7/8 CRS	1
15	20180600	CAM, AGITATOR DRIVE 12SER DD	1
15	20180602	CAM, AGITATOR DRIVE 12SER DD STAINLESS	1
16	20104200	SPACER, CRANK BEARING 05&12 SER	1
17	20791600	ASSY, HEAVY DUTY ROD END BEARING 12 SER DD	1
17	20791602	ASSY, HEAVY DUTY ROD END BEARING 12 SER DD WASHDOWN	1
18	002309	LINK, CONNECTING #40 1/2 PITCH	1
18	108352	LINK, CONNECTING #40 1/2 PITCH STAINLESS STEEL	1
19	002403	SPROCKET, MOTOR #40BS16- 3/4"	1
19	107140	SPROCKET, MOTOR #40BS16- 3/4" STAINLESS	1
20	20022801	PLATE, CHAIN TENSIONER SS	1
21	00249501	POST, SPRING 05 & 12 SER SS 303	1
22	00257101	SPRING TORSION	1
23	002768	WLDT, CHAIN TENSIONER BAR 5-12 SER	1
24	VARIES	FEEDTUBE 12 SER	1
25	002626	GASKET, FEEDTUBE 12 SER	1
26	VARIES	AUGER 12 SER	1
27	20652840	ASSY, CABINET CR12 PLAIN	1
27	20652841	ASSY, CABINET CR12 LATCH PACKAGE	1
27	20652842	ASSY, CABINET CR12 BOLT PACKAGE	1
28	20243400	DOOR, SIDE ACCESS 12SER STAINLESS	2
28	21093001	DOOR, SIDE ACCESS EXTENSION 12 SER (USE WITH MTR-REDUCER)	1
28	20493700	DOOR, SIDE ACCESS 12SER LEXAN	2
29	200219	GASKET, RUBBER ADHESIVE BACK 3/16X1/2	14.63
30	20257500	DOOR, GEARTRAIN 12SER LEXAN .25"	1
30	20179600	DOOR, GEARTRAIN 12SER STAINLESS	1
31	107098	CONN, CORD, ALUMINUM 3/8" NPT	2
32	002618	WLDT, SHAFT CARTRIDGE BEARING 12SER	1
33	20269502	SPACER, SPRING PROTECTOR 12 SERIES	3
34	103319	SPRING, CMPRSSN SS .85OD.068WIR.75"	1
35	103254	RING, RETAINING EXTERNAL SS	2
36	20272600	SEAL, DRIVE SHAFT 12SER UHMW .06	1
37	002050	SEAL, OIL .625 X 1.575 X.312	1
38	102850	BRG, BALL .625 BORE DOUBLE SEALED	2
39	20220302	HOUSING, CARTRIDGE BEARING 12SER	1
40	104583	O-RING #031 BUNA-N 12 SERIES	2
41	10407001	BEARING, 1/2" CHAIN TENSIONER	1
42	002726	LINK, HALF CONNECTING #40	1
42	108353	LINK, HALF CONNECTING #40 STAINLESS STEEL	1
43	VARIES	LOAD CELL	1
44	21218002	BASE, SCALE SS304 12SER IGS	1
45	110951	OVER LOAD BOLT	4

12 SERIES ISB DUAL DRIVE FEEDER EXPLODED ISOMETRIC

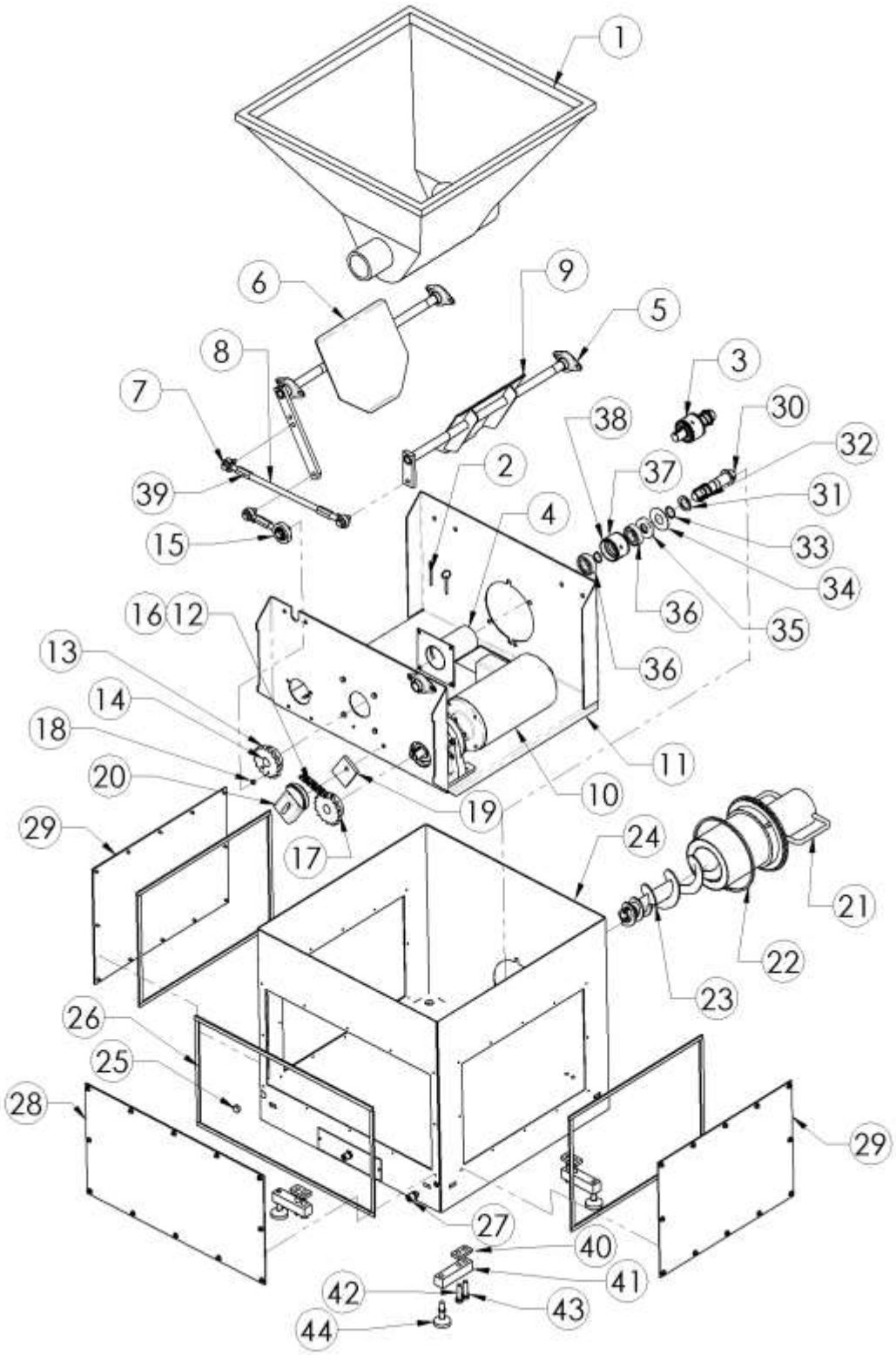


Section 7.00
Exploded View Assemblies and Parts List

28 ISB SERIES SINGLE DRIVE PARTS LIST

ITEM	PART NUMBER	DESCRIPTION	QTY
1	002685	HOPPER, FLEX 28SER INDUSTRIAL GRADE	1
1	101915	HOPPER, FLEX 28SER FOOD GRADE	1
1	20664800	HOPPER, FLEX 28SER CHEM RESISTANT (BROWN)	1
2	104517	PIN, QUICK RELEASE 3/16 DIA SS	2
3	20774400	ASSY, CARTRIDGE BEARING 28SER STD	1
4	00266800	WLDT, FLANGE CARTRIDGE BEARING 28 SER	1
5	002656	BEARING, FLANGE 2-BOLT 1" BORE	2
5	109597	BEARING, FLANGE 2-BOLT 1" BORE WASHDOWN	2
6	20198500	ASSY, PADDLE LH 28 SER	1
6	20198502	ASSY, PADDLE LH 28 SER WASHDOWN	1
7	002665	BRG, ROD END ROLLER 5/8-18 MALE	3
8	21170504	THR ROD SS 5/8-18 X 14.38	1
9	20198600	ASSY, PADDLE RH 28 SER	1
9	20198601	ASSY, PADDLE RH 28 SER WASHDOWN	1
10	VARIES	MOTOR AC OR DC	1
10	102949	REDUCER, 11:1	1
11	20139300	CHASSIS, E28/CR28	1
11	20139200	CHASSIS, S28	1
12	21270100	CHAIN, #60 ROLLER 3/4 PITCH	1
12	21270101	CHAIN, #60 ROLLER 3/4 PITCH STAINLESS	1
13	20103300	SPROCKET, AUGER 28SER #60BS16-1-1/8"	1
13	20103304	SPROCKET, AUGER 28SER #60BS16-1-1/8" STAINLESS	1
14	200761	KEY, 1/4 X 1/4 X 7/8 CRS	1
15	20488100	ASSY, HEAVY DUTY ROD END BEARING 28 SER SD	1
15	20488102	ASSY, HEAVY DUTY ROD END BEARING 28 SER SD WASHDOWN	1
16	002762	LINK, CONNECTING #60 3/4 PITCH	1
16	00276201	LINK, CONNECTING #60 3/4 PITCH STAINLESS	1
17	002753	SPROCKET, MOTOR #60BS16- 1-1/8"	1
17	00275301	SPROCKET, MOTOR #60BS16- 1-1/8" STAINLESS	1
18	20259517	SPACER, CRANK BEARING 28 SER	1
19	20243700	PLATE, CHAIN TENSIONER	1
19	20243701	PLATE, CHAIN TENSIONER STAINLESS	1
20	102602	TENSIONER, CHAIN 28 SERIES	1
21	VARIES	FEEDTUBE 28 SER	1
22	002686	GASKET, FEEDTUBE 28 SER	1
23	VARIES	AUGER 28 SER	1
24	20652860	ASSY, CABINET E28 PLAIN	1
24	20652861	ASSY, CABINET E28 LATCH PACKAGE	1
24	20652862	ASSY, CABINET E28 BOLT PACKAGE	1
25	104192	PLUG, HOLE 3/4" / 11/16	1
26	200219	GASKET, RUBBER ADHESIVE BACK 3/16X1/2	14.63
27	107098	CONN, CORD, ALUMINUM 3/8" NPT	1
28	20257600	DOOR, GEARTRAIN 28SER LEXAN .25"	1
28	002643	DOOR, GEARTRAIN 28SER STAINLESS	1
29	20251801	DOOR, SIDE ACCESS 28SER STAINLESS	2
29	21093000	DOOR, SIDE ACCESS EXTENSION 28 SER	1
29	20347400	DOOR, SIDE ACCESS 28SER LEXAN	2
30	20759902	WLDT, SHAFT CARTRIDGE BEARING 28SER	1
31	20269503	SPACER, SPRING PROTECTOR 28 SERIES	3
32	103256	SPRING, CMPRSSN SS	1
33	102664	RING, RETAINING EXT 1-1/8" SS	2
34	20228600	SEAL, DRIVE SHAFT 28SER UHMW	1
35	104447	SEAL, OIL 1.25 X 2.50 X .375	1
36	002673	BRG, BALL 1.125" BORE 2.500 O.D	2
37	20729102	HOUSING, CARTRIDGE BEARING 28 SER	1
38	104085	O-RING #039 BUNA-N 28 SERIES	2
39	101531	FST, NUT COUPLING ZP 5/8-18 X 2-1/8	3
40	110597	SPACER, LOAD CELL	4
41	VARIES	LOAD CELL	4
42	200882	FST, HHCS SS 1/2-13 X 2	4
43	101410	FST, WASHER LOCK SS 1/2	4
44	VARIES	FOOT	4

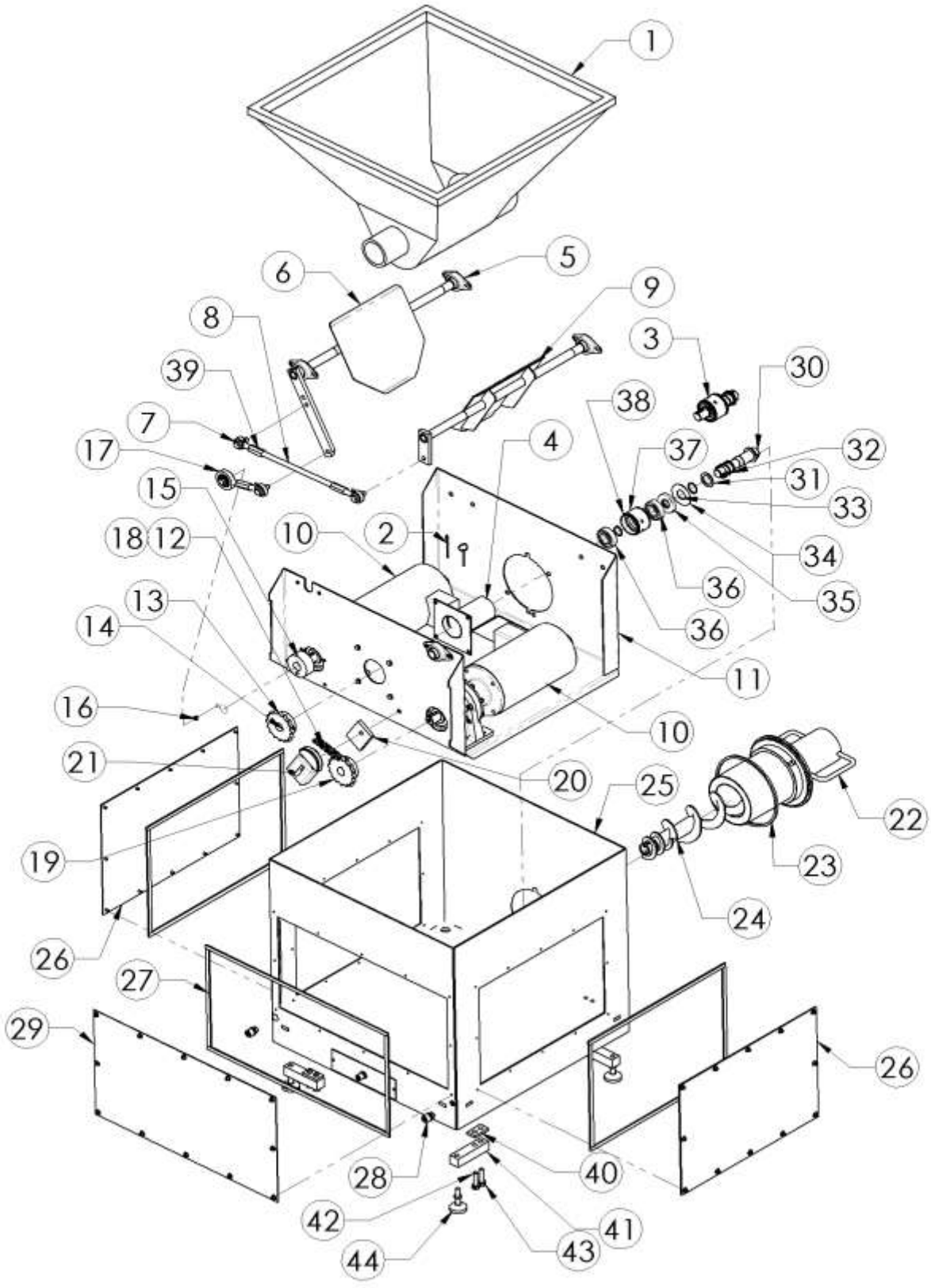
28 SERIES ISB SINGLE DRIVE FEEDER EXPLODED ISOMETRIC



Section 7.00
Exploded View Assemblies and Parts List
28 ISB SERIES DUAL DRIVE PARTS LIST

ITEM	PART NUMBER	DESCRIPTION	QTY
1	002685	HOPPER, FLEX 28SER INDUSTRIAL GRADE	1
1	101915	HOPPER, FLEX 28SER FOOD GRADE	1
1	20664800	HOPPER, FLEX 28SER CHEM RESISTANT (BROWN)	1
2	104517	PIN, QUICK RELEASE 3/16 DIA SS	2
3	20774400	ASSY, CARTRIDGE BEARING 28SER STD	1
4	00266800	WLDT, FLANGE CARTRIDGE BEARING 28 SER	1
5	002656	BEARING, FLANGE 2-BOLT 1" BORE	2
5	109597	BEARING, FLANGE 2-BOLT 1" BORE WASHDOWN	2
6	20179100	ASSY, PADDLE LH 28 SER DD	1
6	20179101	ASSY, PADDLE LH 28 SER DD WASHDOWN	1
7	002665	BRG, ROD END ROLLER 5/8-18 MALE	3
8	21170505	THR ROD SS 5/8-18 X 13.00	1
9	20198600	ASSY, PADDLE RH 28 SER	1
9	20198601	ASSY, PADDLE RH 28 SER WASHDOWN	1
10	VARIES	MOTOR AC OR DC	1
10	102949	REDUCER, 11:1	1
11	20139300	CHASSIS, E28/CR28	1
11	20139200	CHASSIS, S28	1
12	21270100	CHAIN, #60 ROLLER 3/4 PITCH	1
12	21270101	CHAIN, #60 ROLLER 3/4 PITCH STAINLESS	1
13	20103300	SPROCKET, AUGER 28SER #60BS16-1-1/8"	1
13	20103304	SPROCKET, AUGER 28SER #60BS16-1-1/8" STAINLESS	1
14	200761	KEY, 1/4 X 1/4 X 7/8 CRS	1
15	20178900	CAM, AGITATOR DRIVE 28 SER .750" BORE	1
15	20178902	CAM, AGITATOR DRIVE 28 SER .750" BORE STAINLESS	1
16	20259517	SPACER, CRANK BEARING 28 SER	1
17	20384000	ASSY, HEAVY DUTY ROD END 28 SER DD	1
17	20384001	ASSY, HEAVY DUTY ROD END 28 SER DD WASHDOWN	1
18	002762	LINK, CONNECTING #60 3/4 PITCH	1
18	00276201	LINK, CONNECTING #60 3/4 PITCH STAINLESS	1
19	002753	SPROCKET, MOTOR #60BS16- 1-1/8"	1
19	00275301	SPROCKET, MOTOR #60BS16- 1-1/8" STAINLESS	1
20	20243700	PLATE, CHAIN TENSIONER	1
20	20243701	PLATE, CHAIN TENSIONER STAINLESS	1
21	102602	TENSIONER, CHAIN 28 SERIES	1
22	VARIES	FEEDTUBE 28 SER	1
23	002686	GASKET, FEEDTUBE 28 SER	1
24	VARIES	AUGER 28 SER	1
25	20652860	ASSY, CABINET E28 PLAIN	1
25	20652861	ASSY, CABINET E28 LATCH PACKAGE	1
25	20652862	ASSY, CABINET E28 BOLT PACKAGE	1
26	20251801	DOOR, SIDE ACCESS 28SER STAINLESS	2
26	21093000	DOOR, SIDE ACCESS EXTENSION 28 SER	1
26	20347400	DOOR, SIDE ACCESS 28SER LEXAN	2
27	200219	GASKET, RUBBER ADHESIVE BACK 3/16X1/2	14.63
28	107098	CONN, CORD, ALUMINUM 3/8" NPT	2
29	20257600	DOOR, GEARTRAIN 28SER LEXAN .25"	1
29	002643	DOOR, GEARTRAIN 28SER STAINLESS	1
30	20759902	WLDT, SHAFT CARTRIDGE BEARING 28SER	1
31	20269503	SPACER, SPRING PROTECTOR 28 SERIES	3
32	103256	SPRING, CMPRSSN SS	1
33	102664	RING, RETAINING EXT 1-1/8" SS	2
34	20228600	SEAL, DRIVE SHAFT 28SER UHMW	1
35	104447	SEAL, OIL 1.25 X 2.50 X .375	1
36	002673	BRG, BALL 1.125" BORE 2.500 O.D	2
37	20729102	HOUSING, CARTRIDGE BEARING 28 SER	1
38	104085	O-RING #039 BUNA-N 28 SERIES	2
39	101531	FST, NUT COUPLING ZP 5/8-18 X 2-1/8	3
40	110597	SPACER, LOAD CELL	4
41	VARIES	LOAD CELL	4
42	200882	FST, HHCS SS 1/2-13 X 2	4
43	101410	FST, WASHER LOCK SS 1/2	4
44	VARIES	FOOT	4

28 SERIES ISB DUAL DRIVE FEEDER EXPLODED ISOMETRIC



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.