Flex-Flo

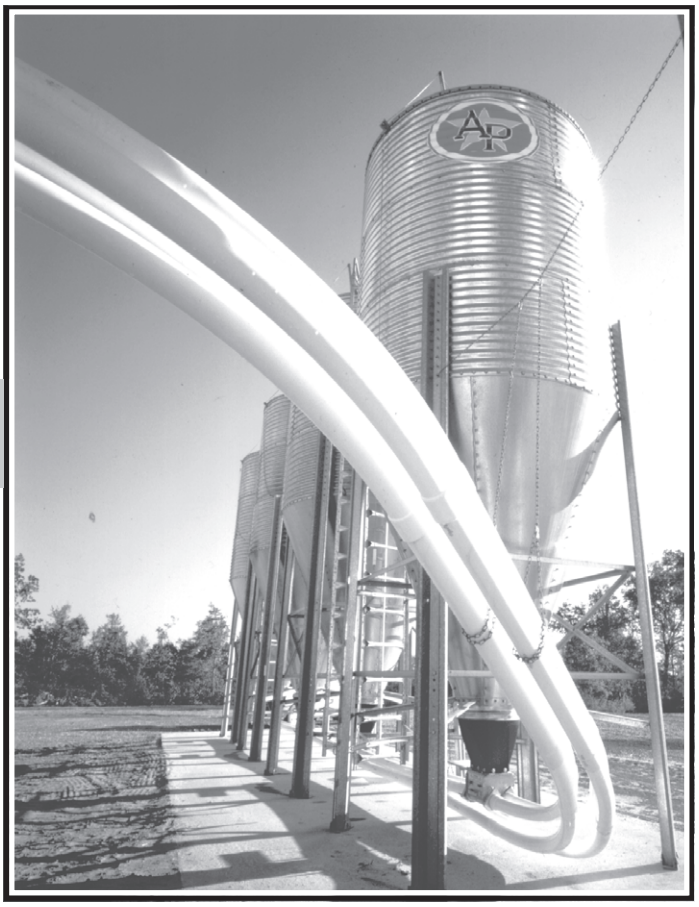
Model 220, 300 & 350, 500, and HR

Installation & Operation

Owner's Manual

Manual# PNEG-914

REVISED: 7/6/06



THE GSI GROUP

Table of Contents

SAFETY FIRST
General Safety Statements

The GSI Group Inc's Principal concern is your safety and the safety of others associated with grain handling equipment. We want to keep you as a customer. This manual is to help you understand safe operating procedures and some problems which may be encountered by the operator and other personnel.

As owner and/or operator, it is your responsibility to know what requirements, hazards and precautions exist and inform all personnel associated with, or in the area of the Fill/Feed System. Safety precautions may be required from the personnel. Avoid any alteration to the equipment. Such alterations may produce a very dangerous situation, where serious injury or death may occur.

This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

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

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

CAUTION indicates a potentially hazardous situation which, ifnot avoided, may result in minor or moderate injury.

CAUTION used without the safety alert symbol indicates a potentially hazardous situation which, if not avoided, may result in property damage.

Danger!
Electrical Safety

Provision of an adequate and safe power supply to the Flex-Flo unit is essential to your safety. The GSI Group, Inc. recommends that a competent and qualified electrician undertake all electrical wiring. All wiring is to be installed in accordance with all Local and National Standards and Regulations relevant to your Country and Region.

Electrical safety devices, Emergency Stops and Main Isolators are recommended with the Flex-Flo System and are essential for you safety. These should be installed as indicated in the enclosed installation instructions and in accordance with the relevant Directives in force.

User's Manaul

This manual contains information and instructions essential to the safe installation and use of this Flex-Flo System. The manual should be read thoroughly **before** attempting any installation or use of the Flex-Flo System. This manual should be kept with the Flex-Flo System, or in a location where it can be readily accessed. Failure to read this manual and its safety instructions is a misuse on the equipment.

Correct Uses of Your Flex-Flo System

The Flex-Flo System is designed for the sole purpose of conveying powered or granular, agricultural, animal feed. Use of the system in any other way is a misuse of the system and may endanger the health and safety of any and all person's.

In the installation and use of the Flex-Flo System, only genuine AP/GSI parts are to be used. Use of other non-genuine parts is a misuse of the system, and may lead to dangerous situations risking the safety and health of you and others.

This system is not designed for use in atmospheres where the risk of explosion is foreseen. Use in such an environment is prohibited. If in doubt conact your dealer or The GSI Group, Inc.

Safety Guards

The Flex-Flo System contains many moving and electrical parts, which would cause serious injury, even death if touched. Guards are placed on the machine to protect you. Operating the machine at any time with guards removed or incorrectly fitted is a serious misuse of the machine and endangers you and the safety of other's.

Safety in Handling the Flex-Flo System

The Flex-Flo Drive Unit weighs 48lbs. (22kgs.) All precautions should be taken when lifting and or moving the unit. Ideally mechanical lift equipment should be used. If manual handling is necessary assistance should be sought from other people.

CE Compliance

In accordance with European Union Directives, GSI has made every effort to ensure that this product complies with the essential requirements of the Machinery Directive, the Low Voltage Directive, and the Electromagnetic Compatibility Directive. As such, we have declared conformity and affixerd the CE Mark. Our declaration relates only to genuine GSI Flex Flo Systems installed as intended by GSI. We cannot and do not declare conformity for any modifications, additions or any systems whatsoever operating on or with GSI products that are not supplied by GSI or are in any way outside the control of GSI.

Safety in Maintenance

The Flex-Flo System is designed to keep maintenance to a minimum, however, some repairs will be necessary in the course of the life of the system. Do not attempt any repairs on the system unless you are competent to do so. Remember that the Flex-Flo operates under automatic control and will start without warning. ***Never attempt any work on the Flex-Flo system without first isolating the drive unit from the main power, and locking the isolator so that only you can turn the power back on.*** For your safety, follow the guidelines given in the maintenance section of this manual.

Before re-starting the Flex-Flo System, make sure that all electrical enclosures are locked closed, and all guards and other safety measures are correctly fitted. If in any doubt contact your dealer or The GSI Group, Inc. for assistance.

Dust

Under normalworking conditions little or no dust should be created by the Flex-Flo System. However, some dust may be created, which may be harmful to your health if inhaled. To prevent this, wear a suitable type dust mask.

Noise

Noise is not generally a hazard associated with the Flex-Flo System. Excessive noise may indicate a problem with the machines. Tests on this machine have indicated noise levels at a position 1 meter from the drive unit and 1.6 meters above the ground do not exceed 70 dBa, continuous "A" weighted sound pressure or 63 Pa, instantaneous "C" weighted sound pressure.

Sound Signs and Warnings

The following pages show you extactly where the safety and warning decals should be placed on your Flex-Flo System. If a decal is missing or unreadable, please contact your dealer or The GSI Group, Inc. for a free replacement.

For guidance or assistance on any issue relating to the safe use of your Flex-Flo System contact The GSI Group, Inc. at 1-217-226-4421 or fax us at 1-217-226-4420.

The GSI Group, Inc.
1004 East Illinois Street
Assumption, Il. 62510

THE GSI GROUP

FLX-4512
ELECTRICAL BOX ASSEMBLY

CONTACT RATING: 1 1/2 HP @ 240 VAC MAX., 25 FLA, 1 PHASE
COIL RATING: 208-240 VAC, 50/60 HZ.

⚠ DANGER
High voltage.
Will cause injury or death.
Lockout power before servicing.

THE GSI GROUP

FLX-4512-3
ELECTRICAL BOX ASSEMBLY

CONTACT RATING: 1 1/2 HP @ 240 VAC MAX., 25 FLA, 3 PHASE
COIL RATING: 208-240 VAC, 50/60 HZ.

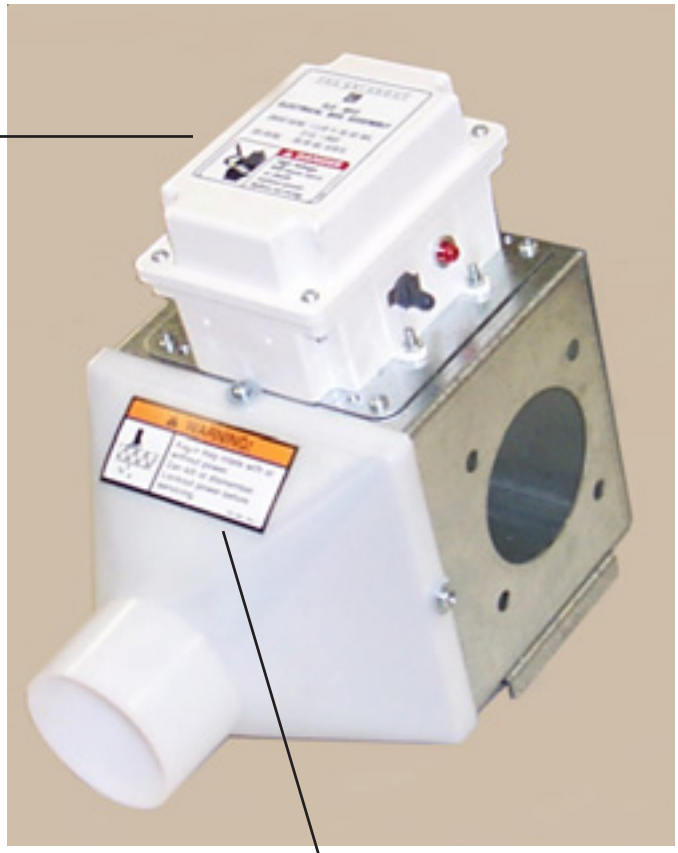
⚠ DANGER
High voltage.
Will cause injury or death.
Lockout power before servicing.

THE GSI GROUP

FLX-4511
ELECTRICAL BOX ASSEMBLY

CONTACT RATING: 1 HP @ 120 VAC MAX., 25 FLA, 1 PHASE
COIL RATING: 120 VAC, 50/60 HZ.

⚠ DANGER
High voltage.
Will cause injury or death.
Lockout power before servicing.



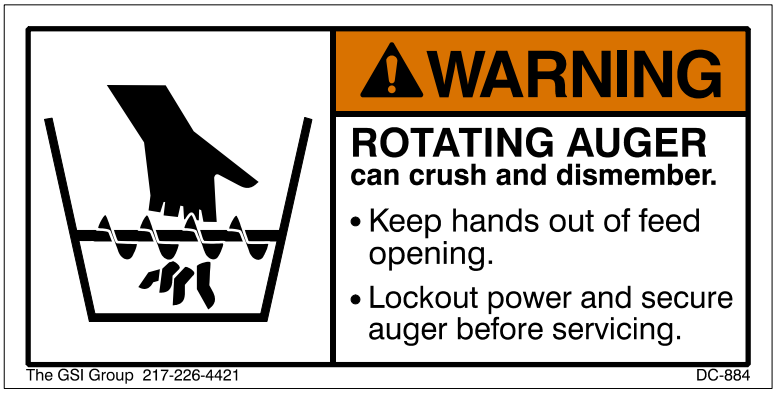
⚠ WARNING

ROTATING AUGER
can crush and dismember.

- Keep hands out of feed opening.
- Lockout power and secure auger before servicing.

The GSI Group 217-226-4421 DC-884


WARNING!
Auger may rotate with or without power.
Can kill or dismember.
Lockout power before servicing.


WARNING
ROTATING AUGER
can crush and dismember.
• Keep hands out of feed opening.
• Lockout power and secure auger before servicing.
The GSI Group 217-226-4421
DC-884

Introduction

Applications

In Poultry Application, Flex-Flo Fill System conveys feed from Bulk Feed Tank to hoppers inside the Poultry building as shown in Figure 1. Other feed systems (i.e. Cycle Plus, Chain Feeder etc.) take the feed from the hopper to the desired locations in the building. On this layout, hopper level switches may be placed in more than one hopper to assure that no hopper empties before the control unit hopper requires feed. (All switches must be wired in parallel so that any one switch can start the system.)

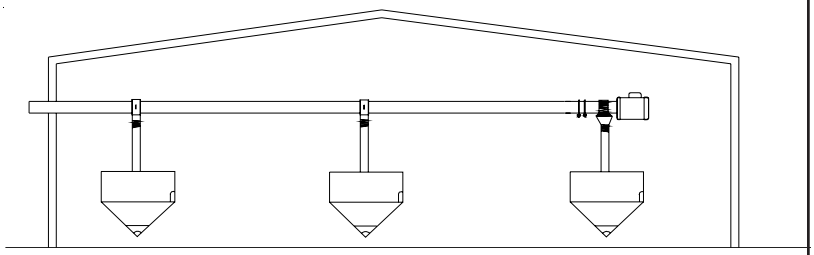


Figure 1: Poultry Application layout

In Swine applications, Flex-Flo Fill System conveys feed from Bulk Feed Tanks to each individual feeder (i.e. S.S. Hog Feeder, Drop Feeder etc.) Directly as shown in Figure 2. It is at this location that feed is being consumed. A feed level control is installed at the end to shut off the system after all feeders are filled.

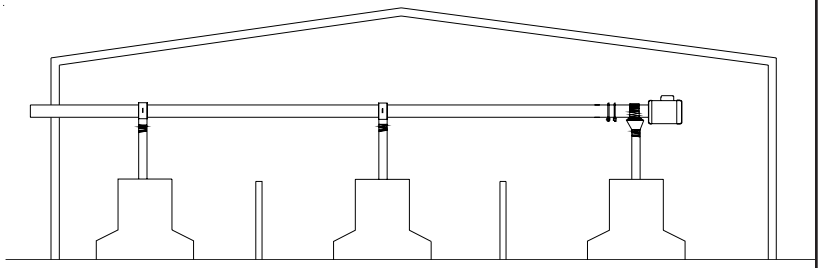


Figure 2: Swine Application layout

Background

The Flex-Flo fill system consists of a combination of PVC tubes and pre-formed PVC elbows. A special PVC cement is used to connect the tubes and elbows. The PVC tubes are available in 4 different sizes. The PVC tube contains a rotating auger which conveys the feed to the different outlet holes. The auger is driven by a direct drive power unit or a belt drive power unit.

Building Safety

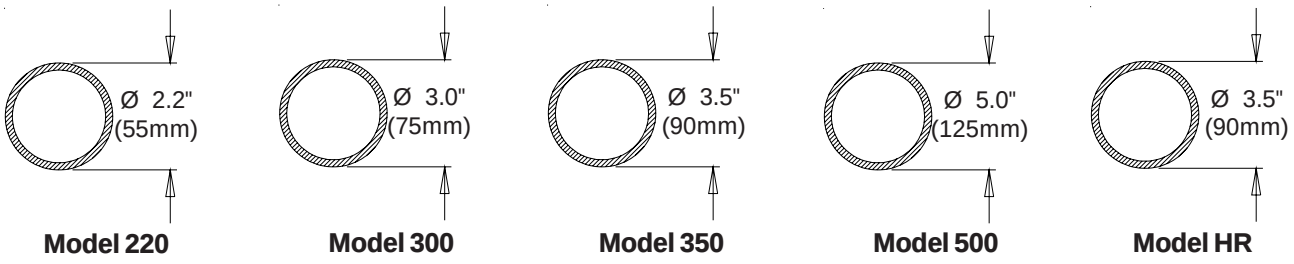
If you are intending to install the Flex-Flo System at high levels and/or suspended from a building structure, it is important that you check the structural integrity of your building to carry the additional load. For information on the imposed loads on your building by your Flex-Flo system, please contact your dealer or the GSI Group Inc.

Installation Sequence

This manual outlines the recommended order for the installation of the Flex-Flo System. Following this guideline will provide the safest and easiest method of installation. Above all, connection of the system to the electrical mains should be the final stage of installation. Failure to observe this could lead to a fatal accident.

Flex-Flo Systems Specifications

	Model 220	Model 300	Model 350	Model 500	Model HR
Auger Tube Diameter	2.2" 55mm	3" 75mm	3.5" 90mm	5" 125mm	3.5" 90mm
Carring Capacity based on 40 lbs./cubic ft.	15 lbs/min 7 kg/min 900 lbs/hr 420 kg/hr	50 lbs/min 22 kg/min 3,000 lbs/hr 1,400 kg/hr	100 lbs/min 45 kg/min 6,000 lbs/hr 2,700 kg/hr	220 lbs/min 100 kg/min 13,200 lbs/hr 6,000 kg/hr	50 lbs/min 22 kg/min 3,000 lbs/hr 1,400 kg/hr
Maximum Partical Size and Feed Type	1/8" (3.175mm) x 1/2" (12.7mm) L max moisture content 18%	crumble type feed mash	shelled corn or pellets 3/16" (4.76mm) x 1/2" (12.7mm) ground corn	larger feed fragments like shelled corn or pellets 3/8" (9.52mm) x 1" (25.4mm) L	High moisture shelled corn (up to 27%) or ground feed. 3/8" (9.52mm) dia x 3/4" (19.05mm) long

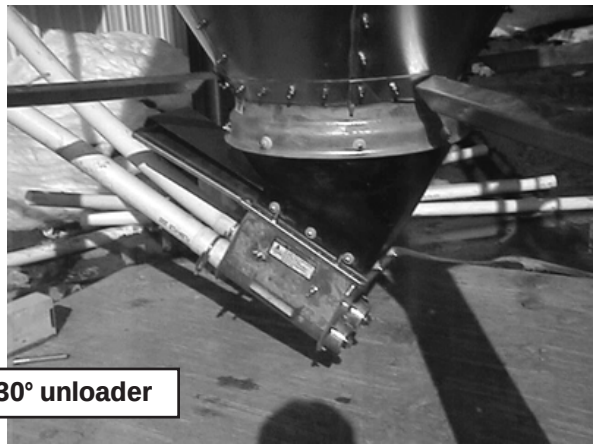


Model 220 | Model 300 | Model 350 | Model 500 | Model HR

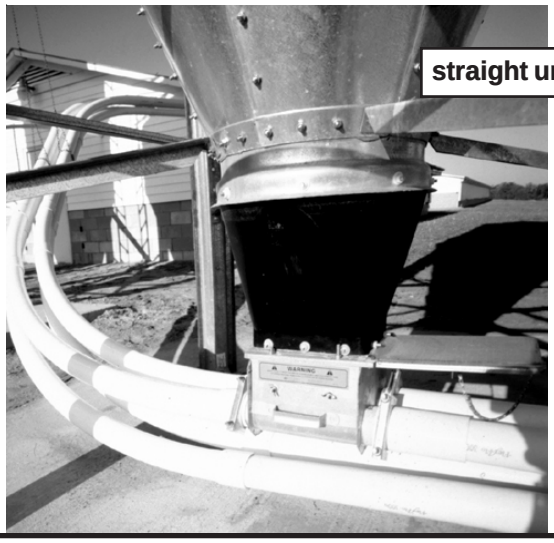
The Feed Tank Connections

Feed Tank Orientation

Positioning the feed tank in line with the Flex-Flo System will provide the most trouble-free operation possible. Avoid unneccessary elbows and curves to ease system installation. A feed tank with a 30° unloader is generally required to be at least 10 1/2' (3.2m) away from the building. With a straight unloader, the tank will be approximately 4' (1.22m) farther away from the building in order to make auger tube connections. The reference points are based upon the height where the system enters the building. Different unloaders with various elbows and curves used provide different entrance opportunities. The distances are achieved by modifying and adjusting the elbows and tubing as needed. See Table 1 on page 11 (English) or page 12 (Metric) for tank placement recommendations.



30° unloader



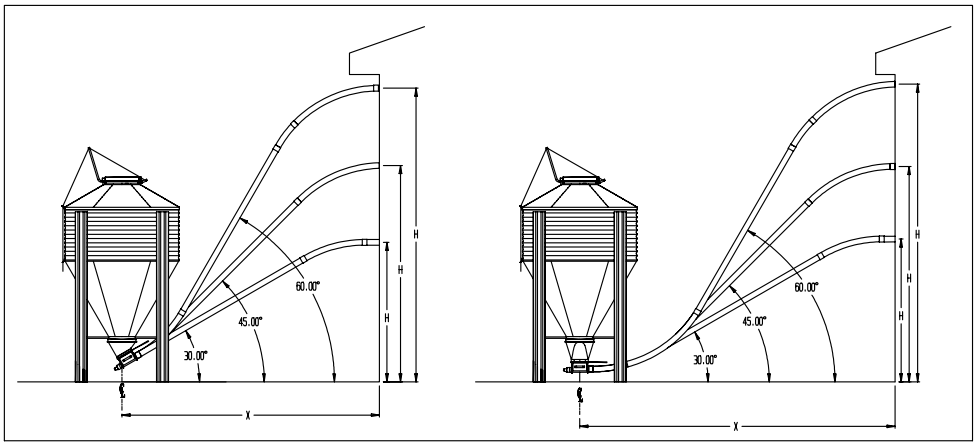
straight unloader

Table 1: (English) Tank centerline to building entrance distance “X” from given heigth “H”

Model 220 with 10' Radius Elbows						
	"X" for 30° boot (ft)			"X" for straight boot (ft)		
"H" (ft)	30°	45°	60°	30°	45°	60°
5	10.5	--	--	15.0	--	--
6	12.5	11.0	--	17.0	--	--
7	14.0	12.0	--	18.5	17.0	--
8	16.0	13.0	--	20.0	18.0	--
9	17.5	14.0	--	22.0	19.0	--
10	19.5	15.0	--	23.5	20.0	--
11	21.0	16.0	14.5	25.5	21.0	19.5
12	23.0	17.0	15.0	27.0	22.0	20.0
13	24.5	18.0	16.0	29.0	23.0	21.0
14	26.5	19.0	16.5	30.5	24.0	21.5
15	28.0	20.0	17.0	32.5	25.0	22.0
16	30.0	21.0	17.5	34.0	26.0	22.5
17	31.5	22.0	18.0	36.0	27.0	23.0
18	33.5	23.0	18.5	37.5	28.0	23.5
19	35.0	24.0	19.5	39.5	29.0	24.0
20	37.0	25.0	20.0	41.0	30.0	25.0

Model 500 with 6' Radius Elbow						
	"X" for 30° boot (ft)			"X" for straight boot (ft)		
"H" (ft)	30°	45°	60°	30°	45°	60°
5	9.0	--	--	12.0	10.0	--
6	10.5	8.0	7.5	13.5	11.0	10.0
7	12.0	9.0	8.0	15.5	12.0	11.0
8	14.0	10.0	8.5	17.0	13.0	11.5
9	15.5	11.0	9.0	19.0	14.0	12.0
10	17.0	12.0	9.5	20.0	15.0	12.5
11	19.0	13.0	10.0	22.5	16.0	13.0
12	20.5	14.0	11.0	23.5	17.0	13.5
13	22.5	15.0	11.5	26.0	18.0	14.0
14	24.0	16.0	12.0	27.0	19.0	15.0
15	26.0	17.0	12.5	29.5	20.0	15.5
16	27.5	18.0	12.5	30.5	21.0	16.0
17	29.5	19.0	13.5	33.0	22.0	16.5
18	31.0	20.0	14.0	34.5	23.0	17.0
19	33.0	21.0	15.0	36.0	24.0	17.5
20	34.5	22.0	15.5	37.5	25.0	18.5

MODEL 220,300,350,HR,WITH 5' RADIUS ELBOW						
	"X" FOR 30 BOOT (FT)			"X" FOR STRAIGHT BOOT (FT)		
"H" (FT)	30	45	60	30	45	60
5	9	--	--	12	10	--
6	10.5	8	7.5	13.5	11	10
7	12	9	8	15.5	12	11
8	14	10	8.5	17	13	11.5
9	15.5	11	9	18.5	14	12
10	17	12	9.5	20.5	15	12.5
11	19	13	10	22	16	13
12	20.5	14	11	24	17	13.5
13	22.5	15	11.5	25.5	18	14
14	24	16	12	27.5	19	15
15	26	17	12.5	29	20	15.5
16	27.5	18	12.5	31	21	16
17	29.5	19	13.5	32.5	22	16.5
18	31	20	14	34.5	23	17
19	33	21	15	36	24	17.5
20	34.5	22	15.5	38	25	18.5



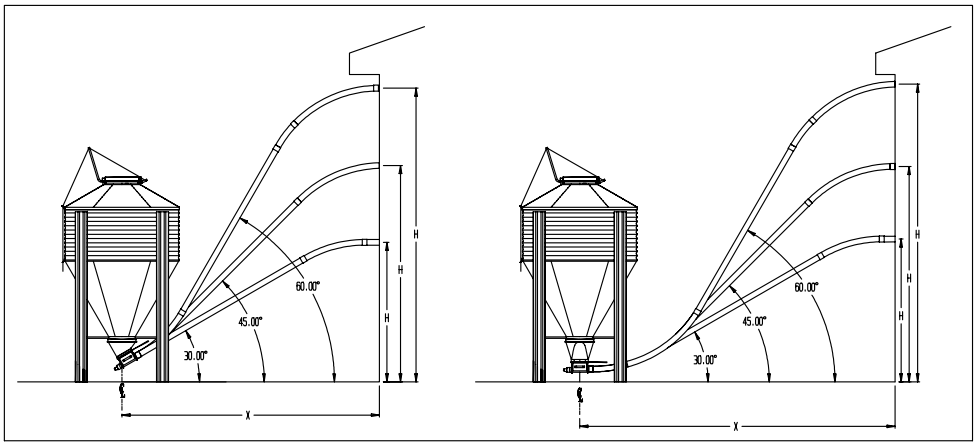
Equipment Orientation Charts.

Table 1: (Metric) Tank centerline to building entrance distance “X” from given heigth “H”

Model 220 with 10' Radius Elbows						
	"X" for 30° boot (m)			"X" for straight boot (m)		
"H" (m)	30°	45°	60°	30°	45°	60°
1.52	3.20	--	--	4.57	--	--
1.83	3.81	3.35	--	5.18	--	--
2.13	4.27	3.66	--	5.64	5.18	--
2.44	4.88	3.96	--	6.10	5.49	--
2.74	5.33	4.27	--	6.71	5.79	--
3.05	5.94	4.57	--	7.16	6.10	--
3.35	6.40	4.88	4.42	7.77	6.40	5.94
3.66	7.01	5.18	4.57	8.23	6.71	6.10
3.96	7.47	5.49	4.88	8.84	7.01	6.40
4.27	8.08	5.79	5.03	9.30	7.32	6.55
4.57	8.53	6.10	5.18	9.91	7.62	6.71
4.88	9.14	6.40	5.33	10.36	7.92	6.86
5.18	9.60	6.71	5.49	10.97	8.23	7.01
5.49	10.21	7.01	5.64	11.43	8.53	7.16
5.79	10.67	7.32	5.94	12.04	8.84	7.32
6.10	11.28	7.62	6.10	12.50	9.14	7.62

Model 500 with 6' Radius Elbow						
	"X" for 30° boot (m)			"X" for straight boot (m)		
"H" (m)	30°	45°	60°	30°	45°	60°
1.52	2.74	--	--	3.66	3.05	--
1.83	3.20	2.44	2.29	4.11	3.35	3.05
2.13	3.66	2.74	2.44	4.72	3.66	3.35
2.44	4.27	3.05	2.59	5.18	3.96	3.51
2.74	4.72	3.35	2.74	5.79	4.27	3.66
3.05	5.18	3.66	2.90	6.10	4.57	3.81
3.35	5.79	3.96	3.05	6.86	4.88	3.96
3.66	6.25	4.27	3.35	7.16	5.18	4.11
3.96	6.86	4.57	3.51	7.92	5.49	4.27
4.27	7.32	4.88	3.66	8.23	5.79	4.57
4.57	7.92	5.18	3.81	8.99	6.10	4.72
4.88	8.38	5.49	3.81	9.30	6.40	4.88
5.18	8.99	5.79	4.11	10.06	6.71	5.03
5.49	9.45	6.10	4.27	10.52	7.01	5.18
5.79	10.06	6.40	4.57	10.97	7.32	5.33
6.10	10.52	6.71	4.72	11.43	7.62	5.64

Model 220,300,350, and HR, with 5' Radius Elbow						
	"X" for 30° boot (m)			"X" for straight boot (m)		
"H" (m)	30°	45°	60°	30°	45°	60°
1.52	2.74	--	--	3.66	3.05	--
1.83	3.20	2.44	2.29	4.11	3.35	3.05
2.13	3.66	2.74	2.44	4.72	3.66	3.35
2.44	4.27	3.05	2.59	5.18	3.96	3.51
2.74	4.72	3.35	2.74	5.64	4.27	3.66
3.05	5.18	3.66	2.90	6.25	4.57	3.81
3.35	5.79	3.96	3.05	6.71	4.88	3.96
3.66	6.25	4.27	3.35	7.32	5.18	4.11
3.96	6.86	4.57	3.51	7.77	5.49	4.27
4.27	7.32	4.88	3.66	8.38	5.79	4.57
4.57	7.92	5.18	3.81	8.84	6.10	4.72
4.88	8.38	5.49	3.81	9.45	6.40	4.88
5.18	8.99	5.79	4.11	9.91	6.71	5.03
5.49	9.45	6.10	4.27	10.52	7.01	5.18
5.79	10.06	6.40	4.57	10.97	7.32	5.33
6.10	10.52	6.71	4.72	11.58	7.62	5.64



Equipment Orientation Charts.

Boot Installation

Slide the boot as far as possible into the tank collar opening. Align the boot with the Flex-Flo System that will be installed. Using the holes in the collar for guides, drill 11/32 inch holes into the boot rim. Mount the boot to the collar with the hardware provided. See Figure 5 for proper usage of hardware for mounting the boot and slide gate. All connections shall be tightened until they are "Snug".

Slide Gate Installation

Bolt the transfer plate to the boot. See Figure 3 for proper installation methods. Once the plate is properly installed insert the slide into the transfer plate. The slide must be in its operating position prior to attaching the slide shield to the transfer plate. Use two (2) 5/16 inch - 18 UNC by 3/4 inch truss head tap bolts to mount the slide shield.

Note: Slide gate & shield must be installed in the same direction that the Flex System is traveling.

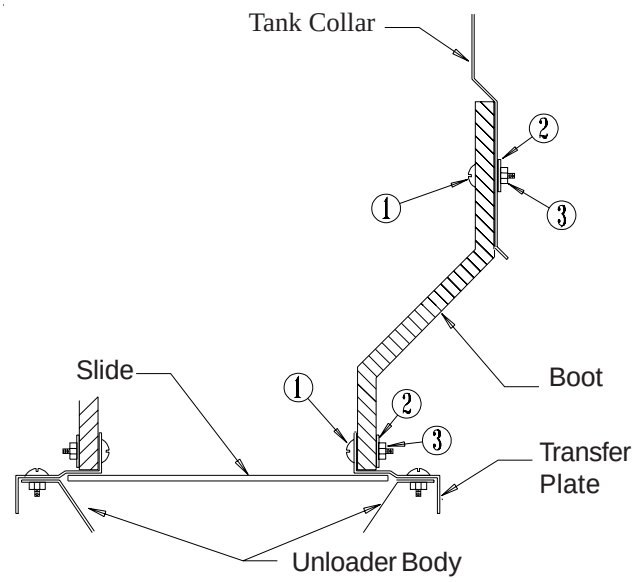


Figure 3: Boot and Slide Gate Installation

Key	Description	Part #
1	5/16" X 1" Truss Head Machine Screw	S-4336
2	5/16" Nylon Washer	S-4338
3	5/16" - 18 Nylon Hex Nut	S4337

Unloader Installation

The Unloader

Attach the unloader to the transfer plate. Use four (4) 5/16 inch 18UNC by 3/4 inch round head tap bolts. Once the installation of the auger tubes and auger is complete, insert the inspection/clean-out plate or the optional unloader switch in place.

Inspection/Clean-Out Plate Installation

The inspection/clean-out plate is to be installed per the following instructions:

1. Back off both wing nuts to the stud ends.
2. Slide the plate onto the lower side of the unloader opening.
3. Move the plate first against the side of the unloader then upward toward the top of the unloader. (See Figure 4.)
4. Tighten the wing nuts while holding the plate steady.

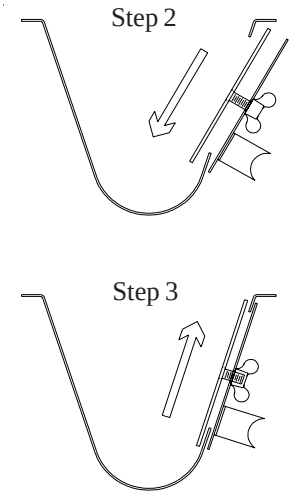


Figure 4: Clean-Out Plate Installation

Feed Tank Collar

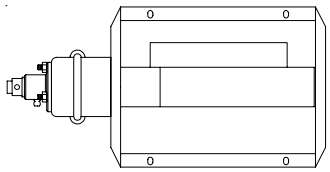
The standard Bulk Feed Tank is supplied with a 16" (40.64cm) hopper opening. If needed, 22" (55.88cm) hopper openings are also available. Consult your dealer for specific ordering instructions.

Restrictor Adjustment

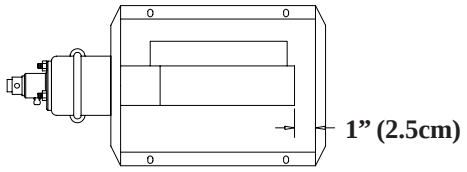
The restrictor may be adjusted to allow more feed flow. Do not modify the restrictor until the system is completely operational and the auger has been polished by running feed through the system.

Instructions:

1. Remove the restrictor tube from the unloader.
2. Cut 1" (2.5 cm) from the restrictor (See Figure 5).
3. Install the restrictor and the bearing assembly into the unloader.
4. Test the feed flow.
5. If the desired feed flow rate is not attained, repeat the above procedure until the desired rate is reached.



Restrictor as Manufactured, Installed in Unloader



Cut-off Restrictor for Increased Feed Flow

Figure 5: Restrictor Adjustment.

Straight-through Tandem Installation

The straight-through tandem system should be installed the same as a single tank system with the following exceptions:

1. Mount the boots on both tanks and the single or twin out unloader as instructed.
2. Install baffle plate (FLX-4310) in the single-through unloader as shown in Figure 6. *The twin unloader baffle is factory installed as shown in Figure 7.*
3. Slide the belled end of a straight tube onto the unloader outlet on the first tank. Hold the straight tubing in the desired mounting position. Mark and cut the straight tube at the point where the tube and the inlet of the straight-through unloader inlet intersect.
4. Slip the appropriate tube coupler over the cut end of the straight tube. Position the straight tube in its operating location. Slide and clamp the tube coupler over the straight-through unloader inlet. (See Figure 8).

   Note: The coupler should be equally distributed between the tubing and the unloader inlet.
5. Feed the auger through the single/twin-out unloader to the rest of the system and anchor as instructed.

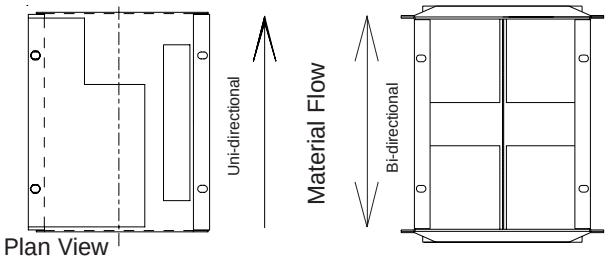


Figure 6: Straight Through Unloader.

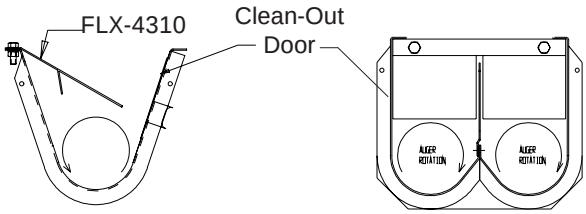


Figure 7: Twin Through Unloader.

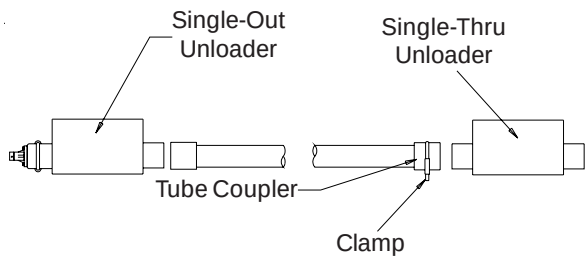


Figure 8: Tandem System Installation.

Figure 9: Seal Ring and Neoprene Seal Installtion

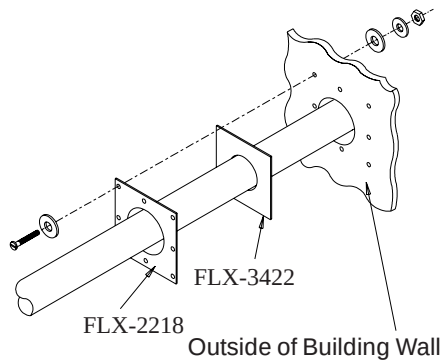
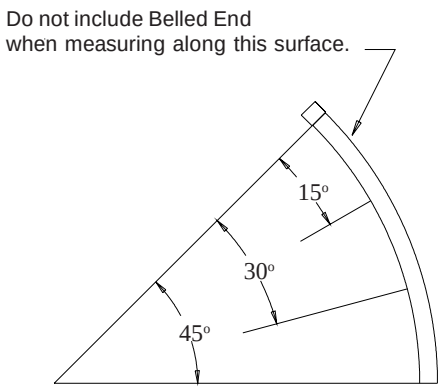


Figure 10: Cutting Chart for 45° elbow



5' (1.524m) Radius
15° Elbow - 15 3/4" (40.005cm)
30° Elbow - 31 1/2" (80.01cm)
45° Elbow - 47 1/4" (120.015cm)

6' (1.829m) Radius
15° Elbow - 20 3/16" (51.276cm)
30° Elbow - 40 5/16" (102.394cm)
45° Elbow - 60 1/2" (153.67cm)

10' (3.048m) Radius
15° Elbow - 32" (81.28cm)
30° Elbow - 64" (162.56cm)
45° Elbow - 96" (243.84cm)

Note: Align all outlet holes in proper functional posistions prior to gluing the tube joints together.

Auger Tubing

Auger Tubing Installation

The auger tubing is one of the most important parts of the Flex-Flo Fill System. Proper installation is very important. Dry fit ALL parts before cementing or clamping. Once the complete system is fitting properly, cement or clamp the entire system.

The following steps are to be performed in the exact order shown:

1. Establish the entry point where the auger tube will enter the building. Once the entry point is determined, cut a hole large enough to accommodate the tubing. A seal ring and a neoprene seal are provided to seal the excess area between the tube and the hole in the building. The seal ring and the neoprene seal shall be installed as shown in Figure 9.
2. Slide the elbow tubing through the hole in the building. Establish and cut (if necessary) the elbow at the desire length to ensure that the auger tubing will be horizontal. See Figure 10 for proper cutting dimensions of the elbows at specific degree angles.
3. Fit and clamp a second elbow around the unloader outlet.
4. Slide the non belled end of the straight tubing into the belled end of the "building" elbow. Hold the straight tubing in the desired mounting position. Mark and cut the "unloader" elbow at the point where it and the straight tubing intersect.
5. Remove the non-belled end of the straight tubing from the "building" elbow. Slide the belled end of the straight tubing over the freshly cut end of the "unloader" elbow. Mark and cut the straight tubing (as needed) so that it will fit inside the belled end of the "building" elbow.
6. Dry fit all of the outside tubing to ensure correct installation. Once satisfied, glue or clamp the tubing together per the instructions in the section titled "Cementing Procedure" pg 16
7. When the auger tubing between the unloader and the building is 15' (4.57m) or longer, the tubes should be supported.
8. Locate and cut the outlet holes needed in the remaining straight tubes. For the exact size of outlet holes, see section titled "Outlet Holes" pg 16. Once ALL of the outlet holes are made and the tubing is dry fitted, glue or clamp the tubes together per the instructions in the section entitled "Cementing Procedure" pg 16.
9. Suspend the auger tubes and elbows from the ceiling at least once every four (4) feet. If horizontal elbows are used, support them in at least two (2) places. Chain and lag screws are provided in each suspension kit. The tubes should be kept as straight and level as possible.

Cementing Procedure

Flex-Flo Systems have specially formulated PVC tubing. For strong tube connections, apply the PVC solvent cement per the instructions as follows:

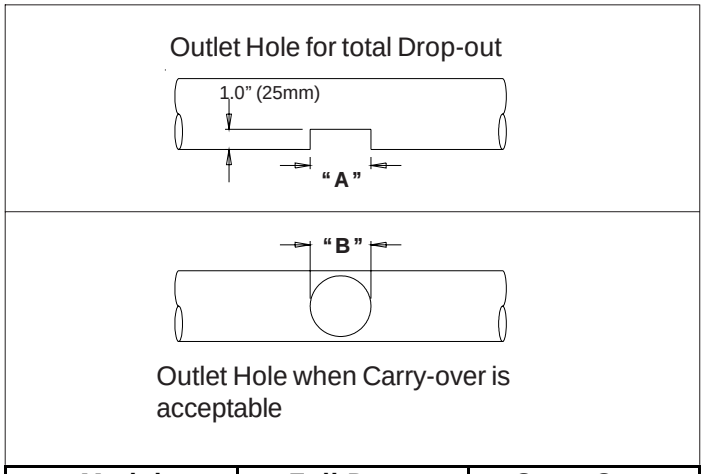
1. Square tube ends and remove all burrs and dirt.
2. Check dry-fit of tubes. The smaller end of the first tube should easily slide one-third of the way into the belled end of the second tube. The first tube end should be snug in the second tube once it is all the way in.
3. When the temperature is below 40˚F (4°C) or above 85°F (29°C), consult PVC solvent cement container.
4. Apply a liberal coat of cement in the belled end. Avoid puddling inside.
5. Apply a liberal coat of cement on the smaller end, leaving no voids.
6. Assemble parts quickly! CEMENT MUST BE FLUID! If not fluid, re-coat both parts.
7. Push the smaller end into the belled end using a quarter turning motion until the small end bottoms.
8. Hold tubes together for 30 seconds, wipe off excess cement with cloth. Completed joints should not be disturbed until they have cured enough to withstand handling.

Keep container closed when not in use.

Outlet Holes

Establish where the outlet drops are to be. Once this is done, cut holes for the outlet drops. See Figure 11 below for hole size recommendations. If total dropout is necessary, it is recommended that the holes are cut using a saber saw or hacksaw. When carry-over is desired, it is recommended that the outlet holes are cut with a holesaw.

Figure 11: Outlet Hole Cutting Chart



Model	Full Drop	Carry Over
	Variable **"A"**	Variable **"B"**
220	1.5" (38mm)	1.5" (38mm)
300	2.5" (63mm)	2.5" (63mm)
350	3" (76mm)	3" (76mm)
500	4" (102mm)	4" (102mm)
HR	3" (76mm)	2.5" (63mm)

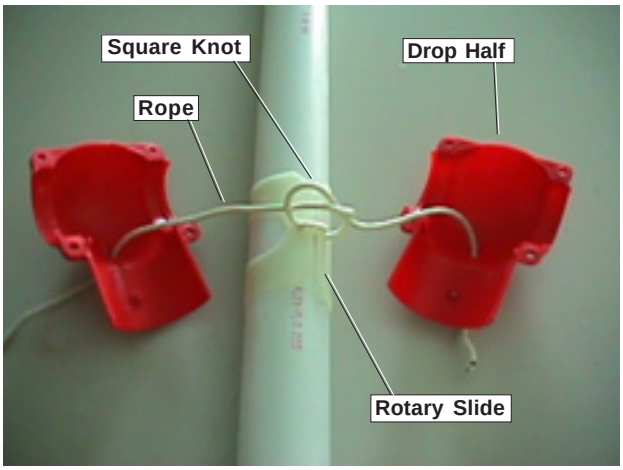


Figure 12: Drop Kit Installation

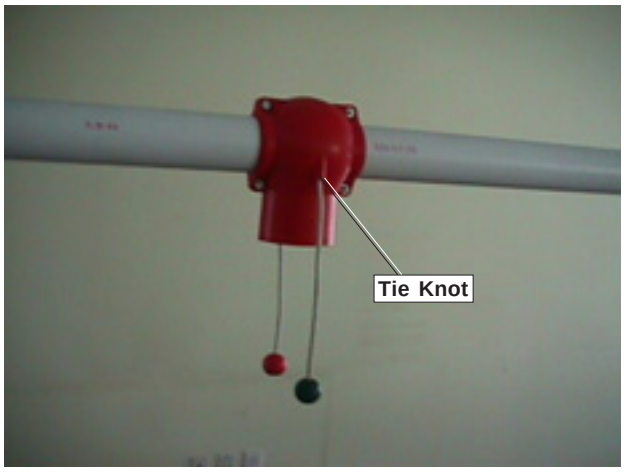


Figure 13: Drop Kit Installation on Flex Flo Tube

Figure 14: Drop Kit installation w/ Drop Tube

Drop Kit Installation

1. Wrap the rotary slide over the outlet hole and around the auger tube. Position the slides with cutout facing in the same direction for all drops so that the slides will operate the same when the ropes are pulled.
2. Thread the rope through the ends of the rotary slide as shown in Figure 12 and tie the slide ends together so that the ends of the rope are the same length.
3. Slide rope through molded guide holes in drop halves.
4. Position the drop halves around the rotary slide and attach both halves together with the hardware provided as shown in Figure 13
5. Test the rotary slide. Pull on one rope at a time. Check the rotary slide to be sure it is centered over the outlet hole.
6. Slide the rotary slide to its open position by pulling the appropriate rope. Mark the short rope end at the point where it enters the guide hole. Tie a knot on the rope at the mark. The location of the knot will show at a glance if the slide is open or closed.
7. Thread the short rope end through the red ball and tie a knot in the rope to hold the ball in place. Install the green ball the same way on the other rope end.
8. Apply a small amount of PVC cement around the drop to prevent it from moving around on the auger tube.
9. Two screws are supplied for attaching an optional drop tube (See Fig. 14). Use both screws to attach the drop tube securely to the drop kit.

Kwik-Attach Drop Kit Installation

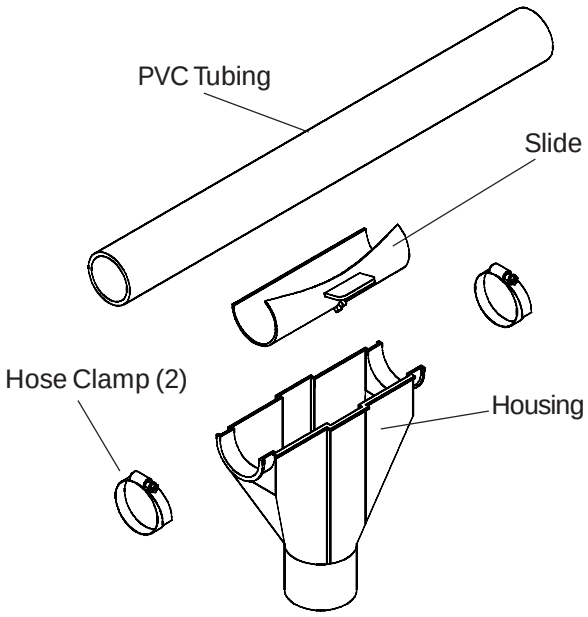


Figure 15: Drop Kit Installation

1. Snap the slide around the tube over the outlet hole. (Fig. 15)
2. Fasten the housing to the tube using two hose clamps. Make sure the outlet hole is in the middle of the housing.
3. Slide can be rotated from side to side to open and close the drop kit.

CAUTION

Caution: The safety switch on the control unit is provided as a backup swich in case the hopper level or the drop tube switch does not operate properly. This switch is not intended to be used for controlling the Flex-Flo System, but as a safety backup switch only.

Power Unit and Control Unit

Flex-Flo offers two different types of power units, direct drive unit and belt drive power unit, along with the control unit. Installation instructions are provided with each power unit.

Horsepower requirements are based on length, type of Flex-Flo System installed, number of turns, tandem systems etc. Table 2 shows maximum line lengths for Flex-Flo Systems plus maximum lengths for entensions hopper installion, using various power units.

Reduction of the maximum line lengths in the chart should be allowed for if the system's incline is greater than 45^0 and/or the rise of the system is higher than 8' (2.44m). For each additional 90^o (2 elbows) used beyond chart, reduce the maximum line length for each drive unit by 30' (9.14m). For each straight-out to straight-thru tandem system, decrease the maximum line length for each drive unit size by 50' (15.24m).

Maximum Line Length

	Model 220		Ext. Pitch	Model 300		Model 350		Model 500				Model HR	
Motor Size	Max. Length	Max. Extension		Max. Length	Max. Extension	Max. Length	Max. Extension	Max. Length	Max. Extension	Max. Length	Max. Extension	Max. Length	Max. Extension
1/3 hp	150'	180'		--	--	--	--	Dry feed stuffs moisture levels below 18%		High-moisture Systems moisture level from 18% - 27%		--	--
.246 kW	46m	91m		--	--	--	--					--	--
1/2 hp	250'	300'	300'	80'	80'	30'	65'					30'	50'
.373 kW	24m	38m	38m	24m	38m	9m	20m					7.6m	12.7m
3/4 hp	--	--	400'	150'	150'	90'	90'	50'	50'	25'	25'	90'	90'
.559 kW	--	--		46m	56m	27m	38m					20.3m	25.4m
1 hp	--	--		200'	245'	150'	185'	100'	100'	50'	65'	150'	180'
.746 kW	--	--		61m	75m	46m	56m					38.1m	457m
1 1/2 hp	--	--		--	--	--	--	150'	180'	75'	90	--	--
	--	--		--	--	--	--					--	--

Table 2: The maximum length is for a system with three elbows.

Direct Drive Power Unit/Control Unit

1. Bolt the tube anchor to the control unit body with a flat washer on each of the four (4) 5/16 inch by 3/4 inch bolts. (See Figure 16 for more details.)
2. Slide the driver assembly onto the power unit drive shaft. Place the 5/16 inch hex socket bolt (supplied with the driver assembly) into the untapped hole of the driver through the drive shaft and tighten the bolt into threaded portion of the driver.
3. Mount the control unit to the gearbox unit with four (4) 5/16" x 3/4" bolts and four (4) flat washers, which are supplied with the power unit. (See Figure 17)

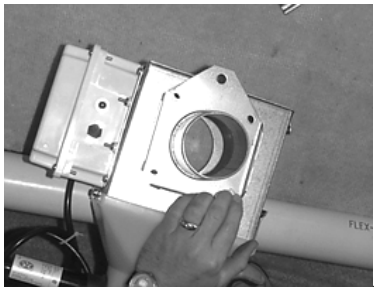


Figure 16: Assembly of tube anchor to the control unit

Figure 17: Assebly of the control unit to the drive unit

4. The control unit and power unit require hard wiring. The supply line wires into L1 & L2/N of the relay in the control unit. The motor leads wire into the M1 & M2 of the relay in the control unit. Auxiliary switch is wired into the male & female spade terminal of the control unit (See back of manual for wiring diagram).
5. Slide and clamp a tube coupler on the tube anchor.
6. Attach the power/control unit to the Flex-Flo tubing.
7. Suspend power/control unit firmly from the ceiling as shown in Figure 18. Support holes are provided on the power unit and the control unit.

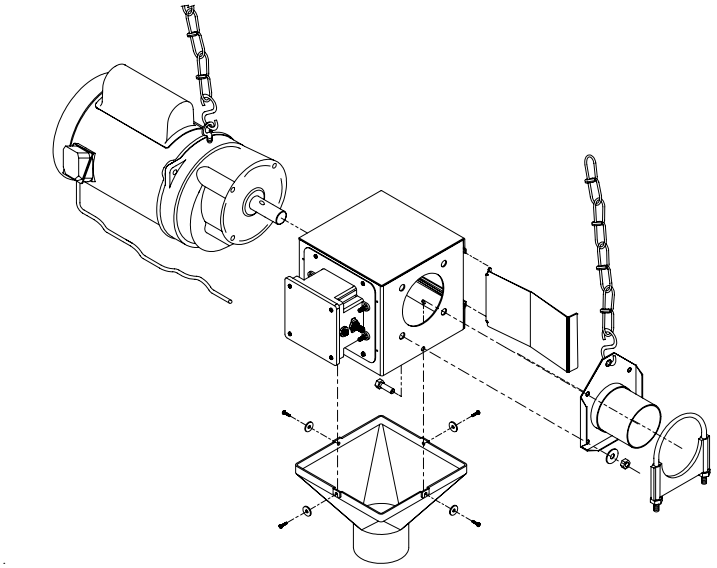


Figure 18: Direct Drive/Power Unit

Belt Drive Power/Control Unit

1. Bolt the tube anchor to the control unit body with a flat washer on each of the four (4) 5/16" x 3/4" bolts. (See Figure 16 for more detail.)
2. Insert the driver shaft through the bearing assembly. The bearing mounting plate should be mounted in between. Tighten the set screw on the bearing down to the shaft.
3. Bolt the two mounting brackets together with the four (4) bolts and washers provided.
4. Attach the motor support assembly to the control unit with the four (4) bolts already in the mounting bracket and belt guard. Secure with the four (4) lockwashers and hex nuts provided. If necessary, motor orientation can be reversed by rotating the motor mount 180°.
5. Slide and clamp a tube coupler on the anchor.

6. Mount the motor onto the motor mount base with four (4) bolts and washers.
7. Mount the belt pulleys. The two pulleys must be positioned in line with each other to prevent from binding the belt.
8. Install the belt.
9. Adjust the belt tension by extending and retracing the two mounting brackets. Resecure the bolts after adjustment.
10. Install belt guard cover.
11. Attach the power/control unit to the Flex-Flo tubing.
12. Suspend the power/control unit firmly from the ceiling using the chains provided.
13. The control unit and the power unit must be wired as shown in the wiring diagram .
14. Install the auger.

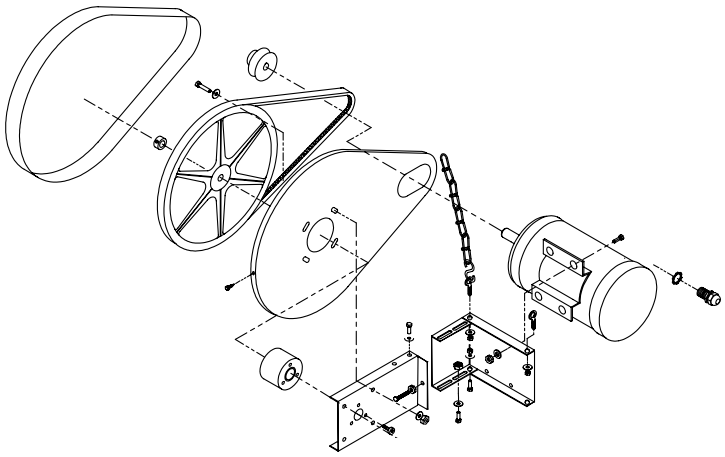


Figure 19: Belt Drive/Power Unit

Auger

The auger should be handled with great care. Do not install the auger until the kinks have been removed. The kink may be removed by straightening the auger. A kink may cause extensive wear on the system and premature part replacement. In the event that the kink cannot be removed by straightening, the kink must be cut out and the auger welded (See Brazing recommendations in Figure 22).

Auger Installation

Two persons are required to install the auger. One person feeds the auger into the tubing while the other makes sure the auger is not damaged. Make sure no metal wires or loose ends enter the system.

1. The auger must be fed into the Flex-Flo system through the unloader. Remove the anchor from the unloader. Remove the control unit cover plate as well.

2. Feed the auger carefully into the Flex-Flo system through the unloader. Remove the anchor from the unloader and remove the control unit cover plate.
3. Push the auger in until it reaches the control unit at the other end. Fasten the end of the auger to the clamp pin in the control unit driver assembly. If the auger end is not in the appropriate orientation for connection, the driver assembly may be rotated by turning the motor drive shaft.
4. Pull and release the free end of the auger gently a few times. This action should relax the auger into its natural position.
5. A certain mechanical stress must be applied when installing the auger; therefore stretching the auger is very important. This is performed by drawing the auger out of the tubing. An important factor is the total system length. The auger should be drawn out of the tubing 2" (5cm) for every 50ft (15m) of length.
6. While the auger is in the relaxed state, mark the auger at the unloader inlet.
7. Draw the auger out of the tubing as far as required. Measure the length between the mark and the unloader inlet. Mark the auger again at the unloader inlet when properly stretched (see Figure 20). Stretching the auger too far will cause premature wear at the inside bends of the PVC tubing. Stretching the auger not far enough will cause premature wear at the outside bends of the PVC tubing.

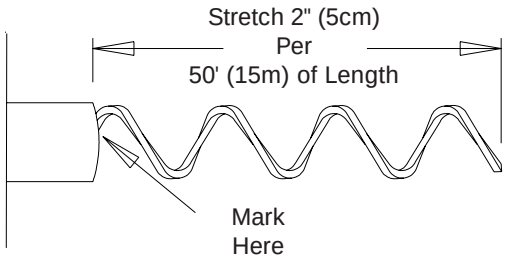


Figure 20: Stretching the Auger.

8. For ease of trimming the auger, pull the auger out an additional 8" (20cm) past the mark and clamp it at the unloader. This clamping releases tension at the mark and thus eases cutting (see Figure 21).
9. Twist the unloader anchor into the auger and clasp the auger end in the clamp pin.
10. Mount the anchor in the unloader.
11. Place the cannonball inside the unloader.
12. Mount the cover on the control unit.
13. Place the inspection/clean-out plate in the unloader.

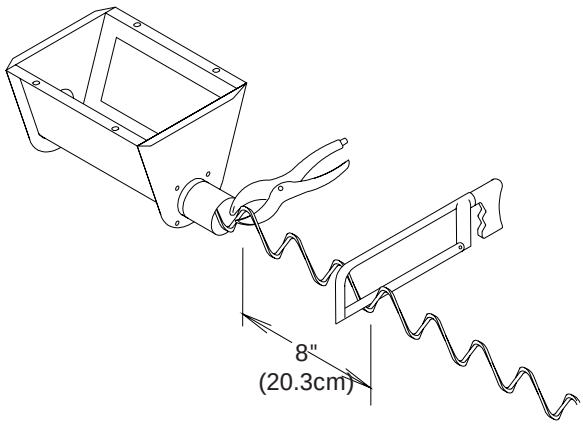


Figure 21: Cutting the Auger.

Brazing the Auger

1. Make sure both ends are cleaned.
2. Position the auger in an angle iron and clasp it securely to align it for brazing (see Figure 22).
3. Braze both ends together. Use a bronze flux-coated rod. Make sure the auger doesn't get too hot which might cause the auger to warp.
4. After the brazing is performed, the joint should be allowed to air cool.
5. Once the auger has cooled, install the auger with the brazed joint closer to the power unit.

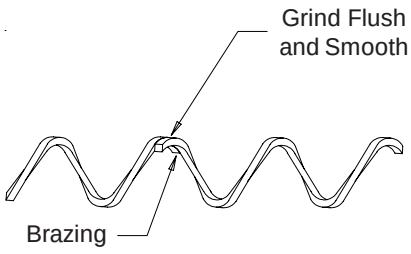


Figure 22: Brazing the Auger.

Extension Hopper

Installation

1. To ease the installation, mount the extension hopper top section to the Flex-Flo tubing.
   Note: A) Slide the tube clamp on the hopper tube anchor prior to attaching it to the tubing. B) Make certain when mounting the power unit and the tubing that they are attached to the access slide side. When mounted in this orientation, the incoming auger is positioned as far away as possible to allow the upper control switch to operate properly.
2. Suspend the top section from the ceiling as shown in Figure 23. Support holes are provided on the top section for mounting. When mounting, make allowance for future adjustments of the top section after the bottom section has been connected.
   Note: Any additional support given to the extension hopper makes for a more solid system, and is desirable. Take special care if or when the support is modified that the operation of the system and the ability to do a general maintenance are not hindered.
3. Mount the unloader under the control unit. The control unit should be assembled together prior to mounting. This assembly includes the driver assembly. Suspend the control unit firmly from the ceiling. Support holes are provided on the tube anchor.

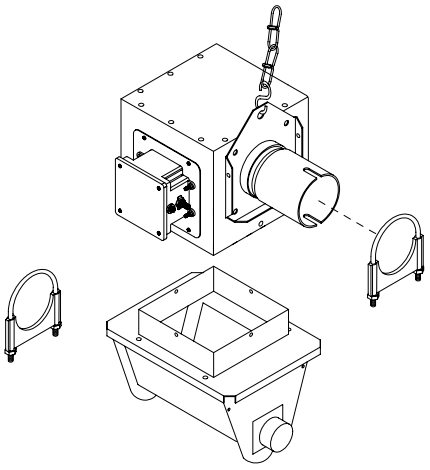


Figure 23: Extension Hopper

4. Fasten the end of the auger to the anchor in the control unit driver assembly. If the auger end is not in the appropriate orientation for connection, the driver assembly may be rotated by either turning the motor shaft with a wrench or by turning the large pulley to rotate the driver assembly.
5. Remove the anchor assembly and the rear access panel from the bottom section of the extension hopper. Mount the bottom section to the top section with 1/4-20 machine screws provided with the hopper. The bottom section may be mounted in three various directions (see Figure 24).

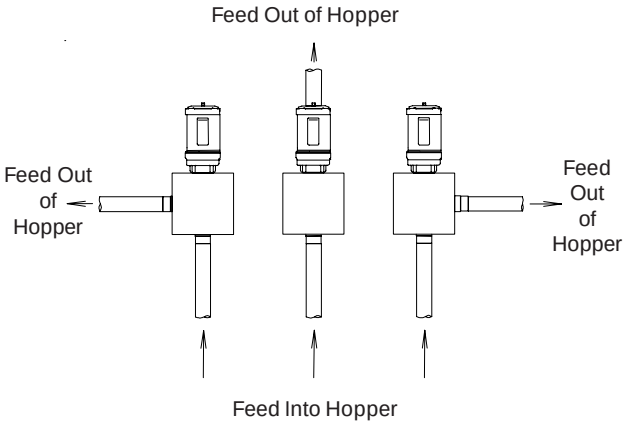


Figure 24: Extension mounting directions.

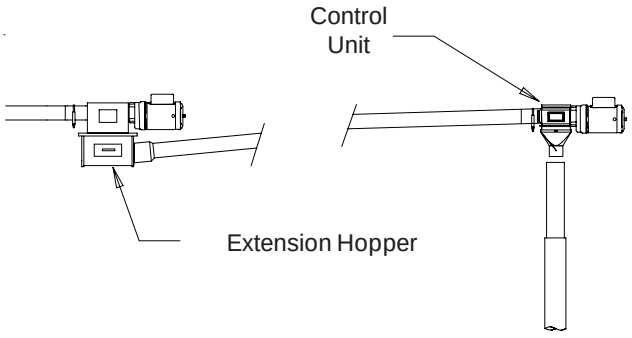


Figure 25: Extension System.

6. Install the auger for the system that is connected from the tank(s) to the extension hopper. Install as a standard system. The auger for the second part of the system should connect to the power/ control unit at the other end.
7. Clamp the auger ends to their applicable anchors and mount the bearing assemblies in place.
8. The extension unit switch should actuate prior to "bottoming out" when pressed in and return back to its original position after it is released.

Operation Guidelines

1. Open the unloader slide completely for the delivery system operation except on tandem system.
2. Do not operate the Flex-Flo system empty. Utilize a time clock with the system whenever possible because:
   A) It lessens short cycling by operating on a set schedule versus on demand
   B) It prohibits the system from running excessively when empty if the tank should go dry. When the optional unloader switch is used, it should be wired so that if the feed tank goes empty the power unit will stop.
3. The time clock should be programmed to start the Flex-Flo System often. By running the system often, long running periods are eliminated and the feeders are kept full. When the Flex-Flo System is used for filling poultry feeders, a time clock should be utilized to ensure that all feeders are filled at the same time. The Flex-Flo System will have a better opportunity to keep up. Position the hopper level control low in the last hopper.
4. A safety switch is provided on the control unit to trip out the motor in the event that feed is packed inside. If feed does get packed, dislodge the feed from the drop tube and clean out the inside of the control unit which will allow the switch to close. The hopper level control needs to maintain vertical positioning to keep the paddle swinging freely. Check the adjustment regularly. The control unit safety switch does not replace the hopper level control.
5. When the Flex-Flo System is used to convey high-moisture feed, the auger line should be completely emptied after each running to prevent feed from jamming in the tubes.
6. Operate the manual outlets several times each week to free them of feed debris.
7. The restrictor on the unloader anchor controls the feed that is flowing into the auger. When starting a new system, the restrictor should be installed at full length and flush with the front of the unloader. Permit the system to polish out the inside of the tubing before modifying the feed flow. When the restrictor tube is in the unloader, maxi-

mum restriction is reached. When increased feed flow is desired, the length of the restrictor tube should be decreased.

8. When a multi-story building is supplied by one auger solely, obtain total drop out at each outlet. A time clock MUST be utilized to ensure that all of the feeders are filled at the same time. In the last hopper on every level, install a hopper level control.
9. With the Straight-Through Tandem System, open only ONE tank slide at a time when feeding. Operating the system with both unloader slides open is not recommended since horsepower consumption increases considerably.

Table 3: Wire Size by Type.

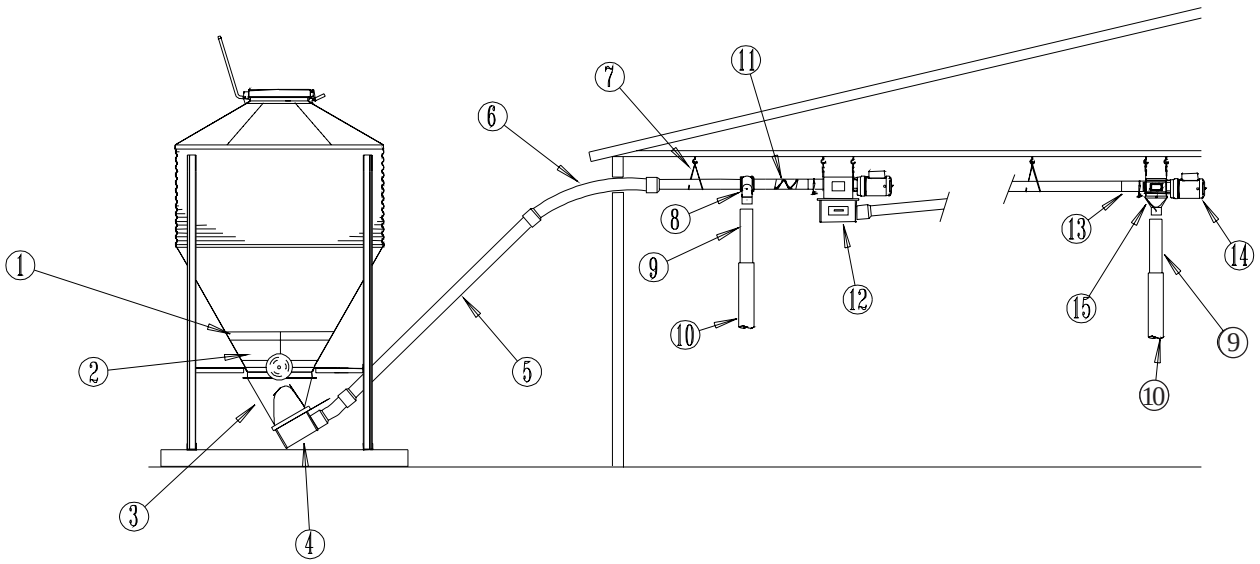
Motor HP	Full Load Amps	Minimum Allowable Wire Size		
		In Cable, Conduit or Earth		Overhead in Air
		Type: R, T, W	Type: RH, RHW, THW	Bare & Covered Conductors
1/2	4.9	12	12	10
3/4	6.9	12	12	10
1	8	12	12	10
1 1/2	10	12	12	10

Copper Conductors, Single Phase 230 V., 3% Voltage Drop
In case of conductors supplying several motors on one circuit, the wire size is determined by taking 125% of the full load current of the largest motor and 100% for all others.

Table 4: Wire Size by Length of Run.

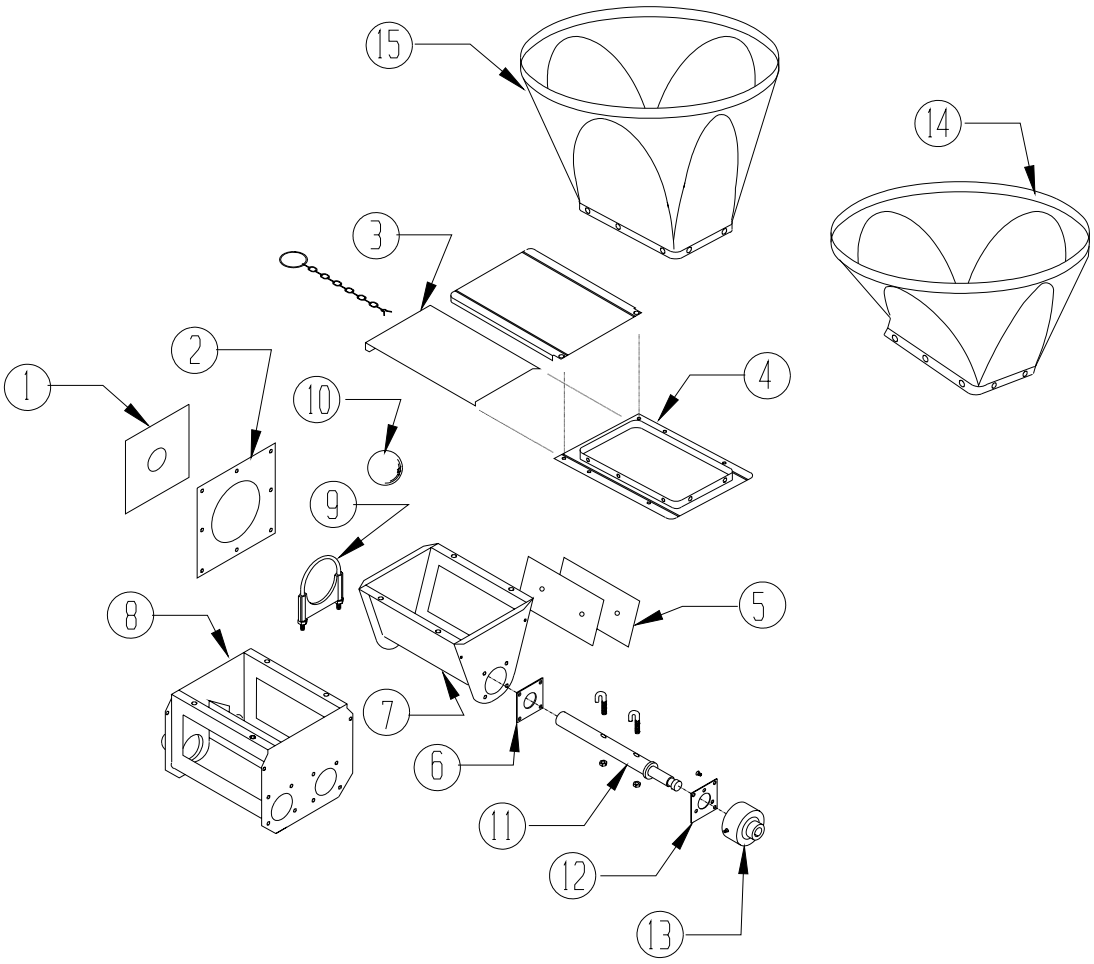
	Length of Run - Ft. (m)														
Motor Size	50 (15)	75 (22.5)	100 (30)	150 (45)	200 (60)	250 (75)	300 (90)	350 (105)	400 (120)	500 (150)	600 (180)	700 (210)	800 (240)	900 (270)	1000 (300)
1/2 hp	12	12	12	12	12	12	12	12	12	10	10	8	8	8	8
3/4 hp	12	12	12	12	12	12	12	10	10	8	8	8	6	6	6
1 hp	12	12	12	12	12	10	10	8	8	8	6	6	6	6	6
1 1/2 hp	12	12	12	10	10	8	8	8	6	6	6	6	4	4	4

NEC Sec. 225-6/: Conductors in overhead spans must be at least No. 10 for spans up to 50 feet and No. 8 for longer.



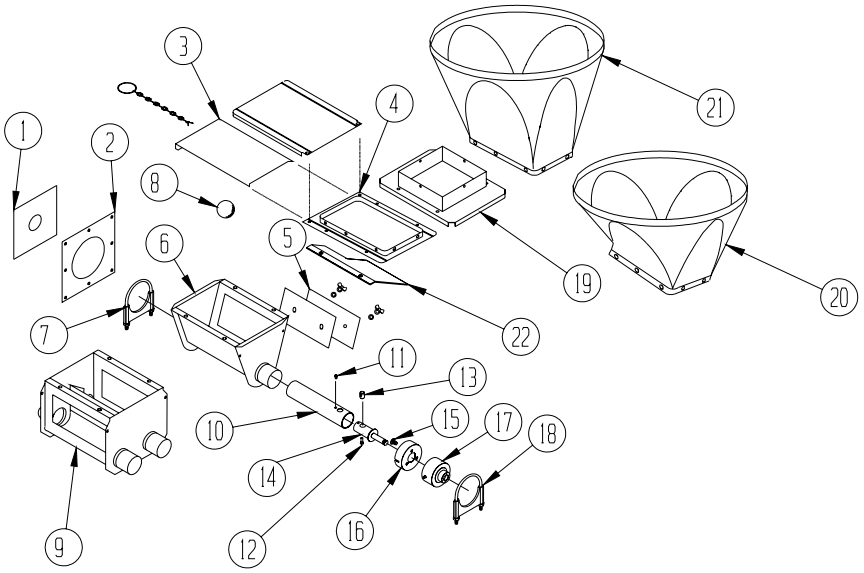
Flex-Flo Feed Line Components

Key	Model 220	Model 300	Model 350	Model 500	Model HR	Description
1	BLK-10847	BLK-10847	BLK-10847	BLK-10847	BLK-10847	45° Hopper Extension Kit w/Collar
1	BLK-10587	BLK-10587	BLK-10587	BLK-10587	BLK-10587	60° Hopper Extension Kit w/Collar
1	BLK-10591	BLK-10591	BLK-10591	BLK-10591	BLK-10591	67° Hopper Extension Kit w/Collar
3	FLX-2194	FLX-2194	FLX-2194	FLX-2194	FLX-2194	30° Plastic Boot
NS	FLX-2195	FLX-2195	FLX-2195	FLX-2195	FLX-2195	Straight Plastic Boot
4	FLX-3423	FLX-2228	FLX-2296	FLX-3425	FLX-3426	Single-Out Unloader (no anchor)
NS	FLX-3424	FLX-2215	FLXX-2295		FLX-3427	Twin-Out Unloader (no anchor)
5	PVC-1004	PVC-1005	PVC-1006	PVC-1007	PVC-1006	10' PVC Straight Tube
6	PVC-1000	PVC-1001	PVC-1002	PVC-1003	PVC-1002	45° PVC Elbow
6	PVC-1101					10' Radius Elbow
7	S-4694	S-4694	S-4694	S-4694	S-4694	Chain
7	S-7313	S-7313	S-7313	S-7313	S-7313	1/4 Eye Bolt
8	FLX-2432	FLX-2433	FLX-2434	FLX-2435	FLX-2434	Drop Kit
9	FLX-2425	FLX-2425	FLX-2427	FLX-2429	FLX-2427	12' Drop Tube
10	FLX-2426	FLX-2426	FLX-2428	FLX-2430	FLX-2428	6' Telescoping Drop Tube
11	FLXA-1520	FLXA-2390	FLXA-2710	FLXA-3800	FLXA-2390	Flex-Flo Auger
12	FLX-4142	FLX-4143	FLX-4144	FLX-2542	FLX-4145	Extension Hopper
13	FLX-2537	FLX-2538	FLX-2539	FLX-2540	FLX-2539	PVC Tube Coupler
14	FLX-2459	FLX-2459	FLX-2459		FLX-2459	1/2 HP Direct Drive Power Unit (230V AC/60Hz)
14		FLX-2460	FLX-2460	FLX-2460	FLX-2460	3/4 HP Direct Drive Power Unit (230V AC/60Hz)
14		FLX-2461	FLX-2461	FLX-2461	FLX-2461	1 HP Direct Drive Power Unit (230V AC/60Hz)
NS	012-1	012-1	012-1		012-1	1/2 HP 1725 RPM TEFC (230V AC/60Hz)
NS		034-1	034-1	034-1	034-1	3/4 HP 1725 RPM TEFC (230V AC/60Hz)
NS		100-1	100-1	100-1	100-1	1 HP 1725 RPM TEFC (230V AC/60Hz)
15	FLX-4496	FLX-4496	FLX-4496	FLX-4497	FLX-4496	Direct Drive Control Unit
NS	FLX-4179	FLX-4179	FLX-4179	FLX-4179	FLX-2395	Belt Drive Control Unit



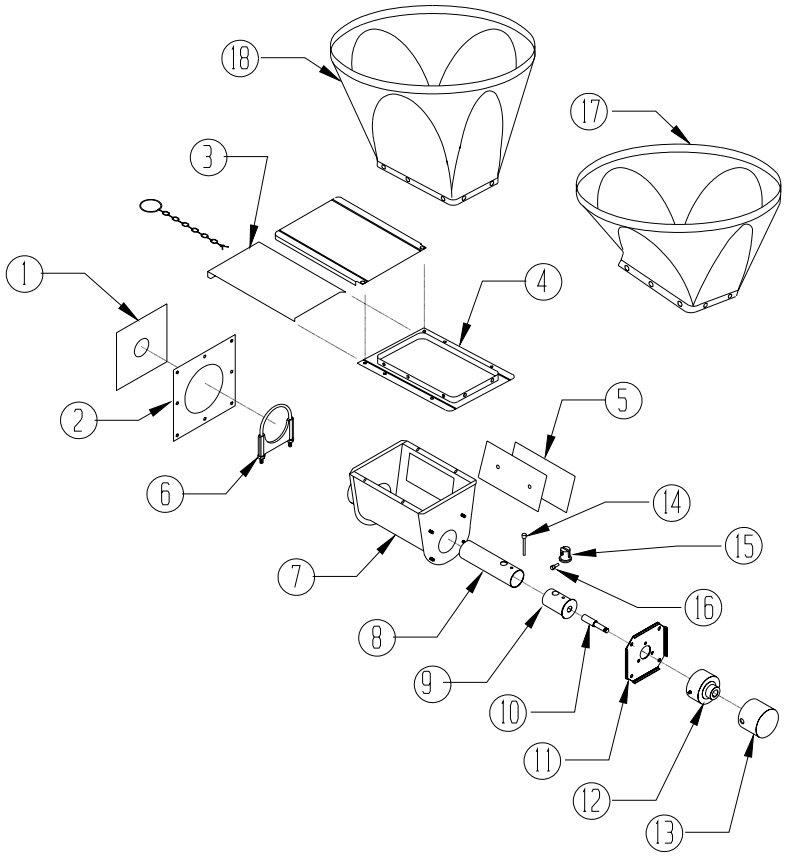
Model 220 Unloader & Anchor Assembly

Key	Part #	Description
	FLX-3423	M220 S.O. Unloader (w/o Anch. & Brg. assy.)
	FLX-3424	M220 T.O. Unloader (w/o Anch. & Brg. assy.)
	FLX-2189	M220 Anchor & Bearing Assembly
1	FLX-3422	Neoprene Seal
2	FLX-2217	Model 220, 300, 350 Flex Seal Ring
3	FLX-2159	Slidegate & Shield Assembly
4	FLX-2155	Transfer Plate Assembly
5	FLX-4239	Clean-out Plate Assembly
6	FLX-4558	220 Unloader Bearing Seal
7	FLX-2047	Model 220 Single-out Unloader Body
8	FLX-2117	Model 220 Twin-out Unloader Body
9	S-4490	2 1/4" Tube Clamp
10	00404238	3" Cannonball Agitator
11	FLX-2985	220 Anchor Spindle
12	FLX-2210	220 Bearing Plate
13	FLX-2734	Unloader Bearing Assembly
14	S-8169	Roll Pin, 3/16" x 1"
15	FLX-2194	30 degree Plastic Boot
16	FLX-2195	Straight Plastic Boot
NS	FLX-4456	Unloader Hardware



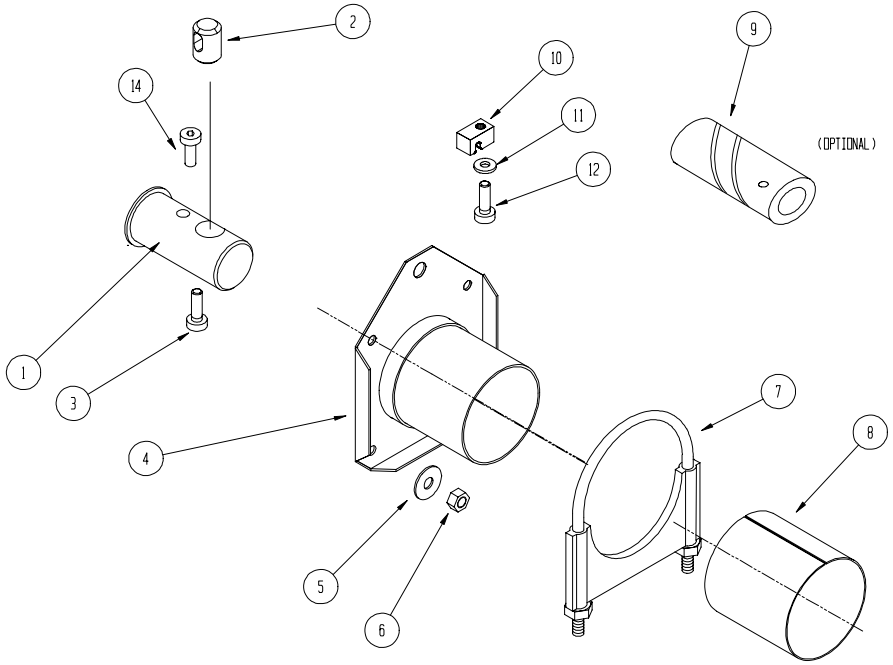
Model 300, 350 & HR Unloader & Anchor Assembly

Key	Part #	Description
	FLX-2228	M300 S.O, Unloader (w/o Anch. & Brg. assy.)
	FLX-2215	M300 T.O. Unloader (w/o Anch. & Brg. assy.)
	FLX-2227	Model 300 Anchor & Bearing Assembly
	FLX-2296	M350 S.O. Unloader (w/o Anch. & Brg. assy.)
	FLX-2295	M350 T.O. Unloader (w/o Anch. & Brg. assy.)
	FLX-2191	Model 350 Anchor & Bearing Assembly
	FLX-3426	HR S.O. Unloader (w/o Anch. & Brg. Assy.)
	FLX-3427	HR T.O. Unloader (w/o Anch. & Brg. Assy.)
	FLX-2604	Model HR Anchor & Bearing Assembly
1	FLX-3422	Neoprene Seal
2	FLX-2217	Model 220, 300, 350 Flex Seal Ring
3	FLX-2159	Slidegate & Shield Assembly
4	FLX-2155	Transfer Plate Assembly
5	FLX-4239	Clean-out Plate Assembly
6	FLX-2168	Model 300 Single Unloader Body
6	FLX-2053	Model 350 Single Unloader Body
6	FLX-2605	Model HR Single Unloader Body
7	S-4320	3" Tube Clamp
7	S-4443	4" Tube Clamp
8	00404238	3" Cannonball Agitator
9	FLX-2115	Model 300 Twin-out Unloader Body
9	FLX-2116	Model 350 Twin-out Unloader Body
9	FLX-2606	Model HR Twin-out Unloader Body
10	FLX-2948	Model 300 Restrictor Tube
10	FLX-2953	Model 350 Restrictor Tube
11	S-4309	1/4"-20 x 5/8" Round Head Allen Bolt
12	S-7225	5/16"-18 x 1 1/4" Hex Socket Capscrew
12	S-6482	5/16"-18 x 1 3/4" Hex Socket Capscrew
13	FLX-4571	Model 300 & 350 Auger Lock Clamp Pin
14	FLX-4577	Model 350 Anchor Spindle
14	FLX-4576	Model 300 Anchor Spindle
15	S-4309	1/4"-20 x 5/8" Round Head Allen Bolt
16	FLX-3483	Model 300 Bearing Cap
16	FLX-2068	Model 350 Bearing Cap
16	FLX-2625	Model HR Bearing Cap
17	FLX-2734	Unloader Bearing Assembly
NS	S-8169	Roll Pin, 3/16" x 1"
18	S-4319	3 1/2" Tube Clamp
18	S-4320	3" Tube Clamp
19	FLX-2741	Adapter Plate Assembly (Extension Unit)
20	FLX-2194	30 Degree Plastic Boot
21	FLX-2195	Straight Plastic Boot
22	FLX-4310	Single Restrictor Baffle
NS	FLX-4279	Twin Restrictor Baffle
NS	FLX-2634	Model 300 Tube Spacer
NS	FLX-4456	Unloader Hardware



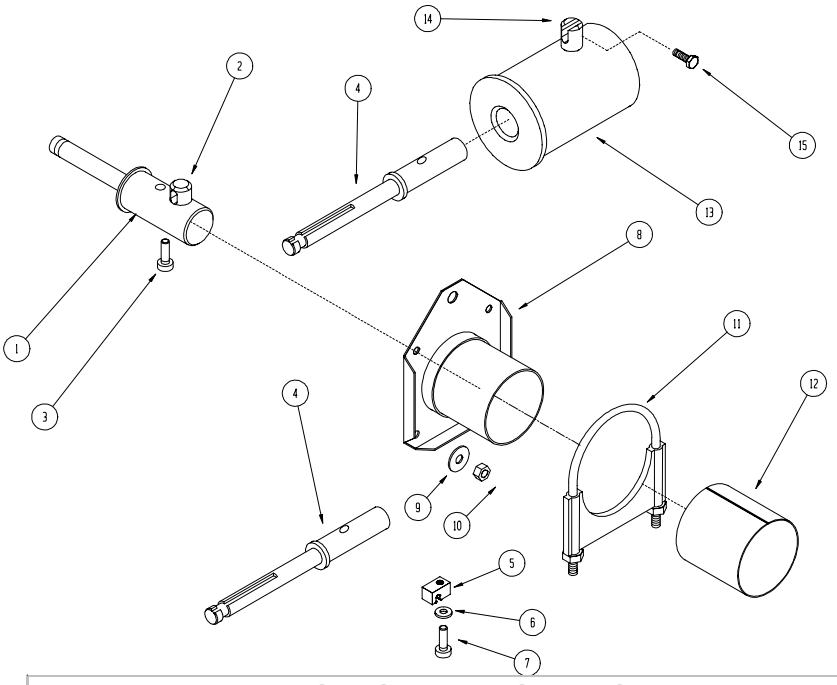
Model 500 Unloader & Anchor Assembly

Key	Part #	Description
	FLX-3425	M500 S.O. Unloader (w/o Anch. & Brg. assy.)
	FLX-2192	Model 500 Anchor & Bearing Assembly
1	FLX-3422	Neoprene Seal
2	FLX-2218	Model 500 Flex Seal Ring
3	FLX-2159	Slidegate & Shield Assembly
4	FLX-2155	Transfer Plate Assembly
5	FLX-4239	Clean-out Plate Assembly
6	S-4494	5 1/2" Tube Clamp
7	FLX-2065	Model 500 Single-out Unloader Body
8	FLX-2978	Model 500 Restrictor Tube
9	FLX-2976	Model 500 Anchor Spindle
10	FLX-2977	Model 500 Anchor Shaft
11	FLX-2035	4 - 5" Bearing Plate
12	FLX-2734	Unloader Bearing Assembly
NS	S-8169	Roll Pin, 3/16" x 1"
13	S-6483	5/16"-18 x 2 1/2" Hex Head Screw
14	FLX-2974	Model 500 Clamp Pin
15	S-4312	5/16" x 1/2" Square Head Set Screw
16	FLX-2194	30 Degree Plastic Boot
17	FLX-2195	Straight Plastic Boot
NS	FLX-4456	Unloader Hardware



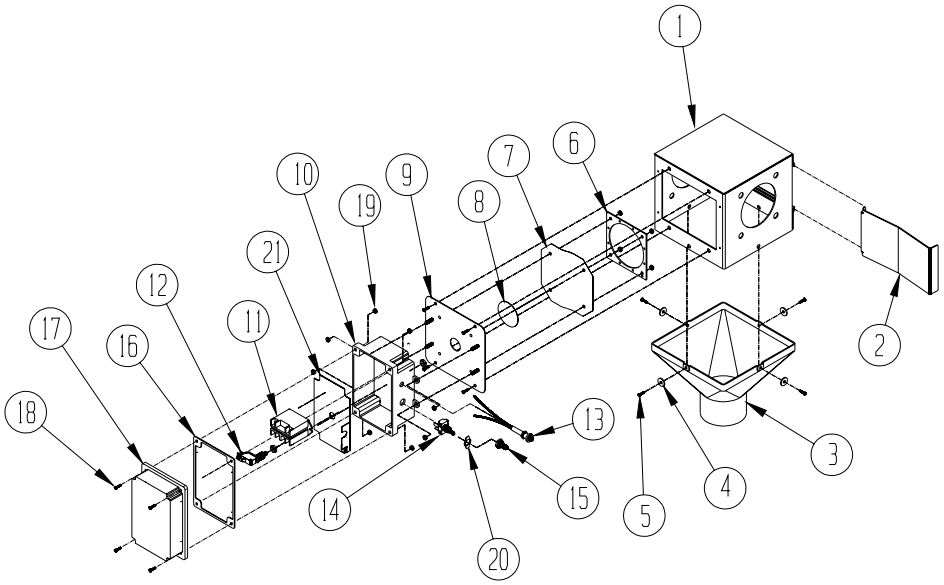
Direct Drive & Tube Anchor

Key	Part #	Description
	FLX-2699	220 D.D. Driver & Tube Anchor
	FLX-2696	300 D.D. Driver & Tube Anchor
	FLX-2697	350 D.D. Driver & Tube Anchor
	FLX-2698	500 D.D. Driver & Tube Anchor
1	FLX-4572	Model 300 Direct Drive Spindle
1	FLX-4577	Model 350 Direct Drive Spindle
1	FLX-2975	Model 500 Direct Drive Spindle
2	FLX-4571	Model 300/350 Auger Lock Clamp Pin
2	FLX-2974	Model 500 Auger Lock Clamp Pin
3	S-6481	5/16"-18 x 1 1/2" Hex Socket Capscrew
3	S-6482	5/16"-18 x 1 3/4" Hex Socket Capscrew
3	S-6483	5/16"-18 x 2 1/2" Hex Socket Capscrew
4	FLX-2316	Model 220 Tube Anchor Plate
4	FLX-2317	Model 300 Tube Anchor Plate
4	FLX-2318	Model 350 Tube Anchor Plate
4	FLX-2319	Model 500 Tube Anchor Plate
5	S-845	5/16" Standard Washer
6	S-4310	1/4"-20 Hex Nut
7	S-4490	2 1/4" Tube Clamp
7	S-4320	3" Tube Clamp
7	S-4443	4" Tube Clamp
7	S-4494	5 1/2" Tube Clamp
8	FLX-2634	Model 300 Tube Spacer
9	FLXDF-1183	Drop Feed Control Anchor Package
10	FLX-4543	Auger Lock 220 Direct Drive
11	FLX-2685	Model 220 Direct Drive Anchor Washer
12	S-8039	Bolt 1/4-20 x 1 1/4" Socket Head



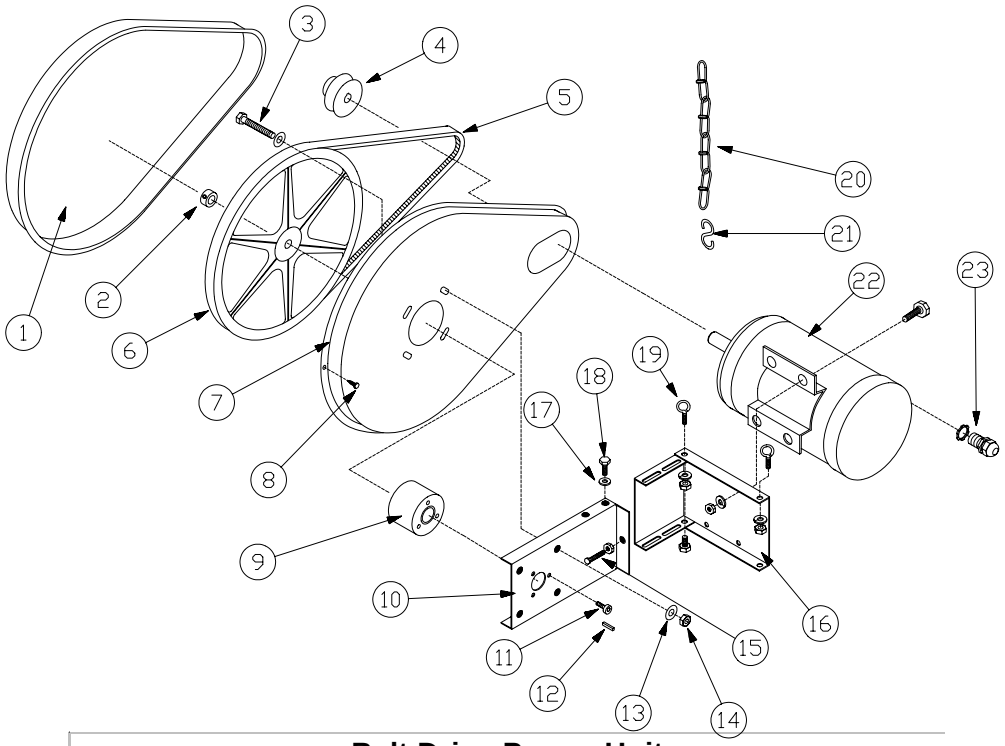
Belt Drive & Anchor Tube

Key	Part #	Description
	FLX-2695	220 B.D. Driver & Tube Anchor
	FLX-2692	300 B.D. Driver & Tube Anchor
	FLX-2693	350 B.D. Driver & Tube Anchor
	FLX-2694	500 B.D. Driver & Tube Anchor
1	FLX-4578	Model 300 Belt Driver
1	FLX-4579	Model 350 Belt Driver
1	FLX-2975	Model 500 Belt Driver
2	FLX-4571	Model 300 & 350 Clamp Pin
3	S-6481	5/16-18 x 1 1/2" Hex Socket Capscrew
3	S-6482	5/16-18 x 1 3/4" Hex Socket Capscrew
4	FLX-2979	Model 220 Belt Driver
5	FLX-4543	Auger Lock 220 Belt Drive
6	S-845	5/16" Standard Washer
7	S-8039	Bolt 1/4-20 x 1 1/4" Socket Head
8	FLX-2316	Model 220 Tube Anchor Plate
8	FLX-2317	Model 300 Tube Anchor Plate
8	FLX-2318	Model 350 Tube Anchor Plate
8	FLX-2319	Model 500 Tube Anchor Plate
9	S-845	5/16" Standard Washer
10	S-396	5/16"-18 Hex Nut
11	S-4490	2 1/4" Tube Clamp
11	S-4320	3" Tube Clamp
11	S-4443	4" Tube Clamp
11	S-4494	5 1/2" Tube Clamp
12	FLX-2634	Model 300 Tube Spacer
13	FLX-2975	Model 500 Belt & Direct Drive Spindle
14	FLX-2974	Model 500 Clamp Pin
15	S-4312	5/16" x 1/2" Square Head Setscrew



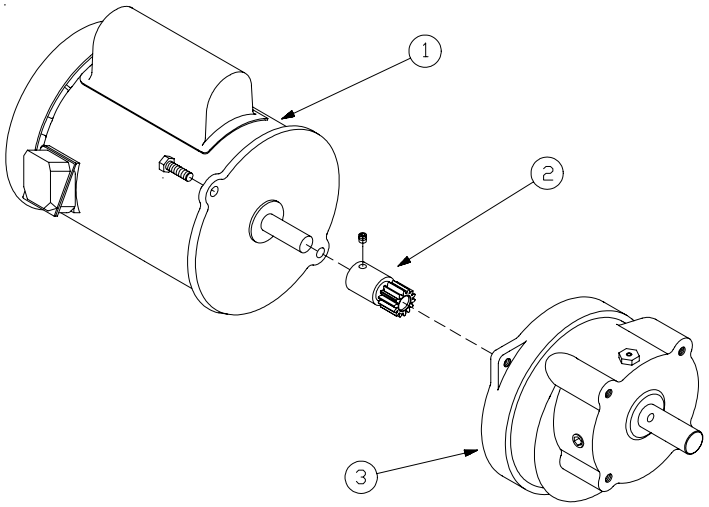
Control Unit

Key	Part #	Qty.	Description
1-21	FLX-4496	1	220, 300, 350, Control Unit - 220V
1-21	FLX-4497	1	500 Control Unit - 220V
1-21	FLX-4520	1	220, 300, 350 Control Unit - 110V
1-21	FLX-4521	1	500 Control Unit - 110V
6-21	FLX-4512	1	Control Unit Electrical Box - 220V
6-21	FLX-4511	1	Control Unit Electrical Box - 110-V
1	FLX-4260	1	220, 300, 350 Control Unit Body Assy.
1	FLX-3819	1	500 Control Unit Body Assembly
2	FLX-4261A	1	Access Door w/ Decal (includes Key #1)
3	FLX-2017	1	220, 300, 350 Power Head Drop
3	FLX-2309	1	500 Power Head Drop
4	FLX-3486	4	Power Head Drop Washer
5	S-1396	8	#10-32 x 1/2" Phillips Pan Head Screw
6	FLX-2380	1	Small Diaphragm Retainer
7	FLX-2386	1	Small Rubber Diapragm
8	FLX-2006	1	2" Plunger Plate
9	FLX-4510	1	Base Plate
10	FLX-4516	1	Control Box Electrical Box (bottom) Drill
11	E260-1020	1	Relay - with 110V Coil
11	E260-1021	1	Relay - with 240V Coil
12	S-7707	1	Limit Switch
13	S-7604	1	Red Light
14	20-5060	1	Toggle Switch
15	70-0129	1	Boot for Toggle Switch
16	FLX-4561	1	Gasket
17	FLX-4517	1	Lid for Control Box with Decal
18	S-1396	4	Screw #10-32 x 1/2"
19	S-4334	8	Nut #10-32
20	S-6622	1	On/Off Plate for Toggle Switch
21	FLX-4569	1	Backplate
NS	20-5041	1	Ground Screw
NS	S-4694	1	#2 Weldless Chain
NS	S-4692	1	#62 S-Hook



Belt Drive Power Unit

Key	Part #	Description
	FLX-4179	14" Belt Drive Power Unit (Less Motor)
1	FLX-2986	Belt Guard Cover
2	S-4307	.625 I.D. Locking Collar
3	S-7149	5/16 - 1 3/4" Tap Bolt, Full Thread
4	S-6242	2.7" A-Belt Single Groove Pulley
5	BLK-11086	AX51 Gripnotch Belt
6	S-6240	14" A-Belt Single Groove Pulley
7	FLX-2987	Belt Guard Back
8	S-280	#10-16 x 5/8" Self Drill Screw
9	FLX-2734	Control Unit Bearing Assembly
10	FLX-4162	Inner Belt Drive Motor Bracket
11	S-4309	1/4"-20 x 5/8" Allen Head Bolt
12	FLX-2377	3/16" x 3/16" x 1" Key
13	S-845	5/16" Standard Washer
14	S-396	5/16"-18 Hex Nut
15	S-7299	5/16-18 x 2 1/2" Hex Head Bolt
16	FLX-4163	Outer Belt Drive Motor Bracket
17	S-1147	5/16" Medium Lock Washer
18	S-4275	5/16"-18 x 3/4" Tap bolt
19	S-6263	5/16"-18 x 2 1/8" Eyebolt
20	S-4694	#2 Weldless Chain
21	S-4692	#62 S-Hook
22	013-1	1/3 H.P. Farm Duty 1Ph Motor
22	012-1	1/2 H.P. Farm Duty 1Ph Motor
22	034-1	3/4 H.P. Farm Duty 1Ph Motor
22	100-1	1 H.P. Farm Duty 1Ph Motor
22	112-1	1 1/2 H.P. Farm Duty 1Ph Motor
23	S-6381	Heyco 1247 BLK Strain Relief

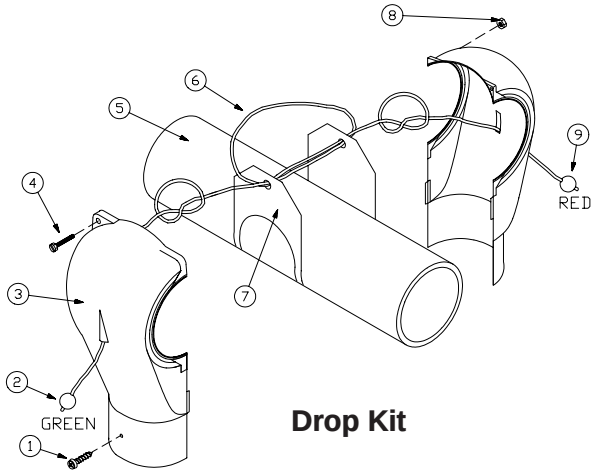


Direct Drive Power Unit

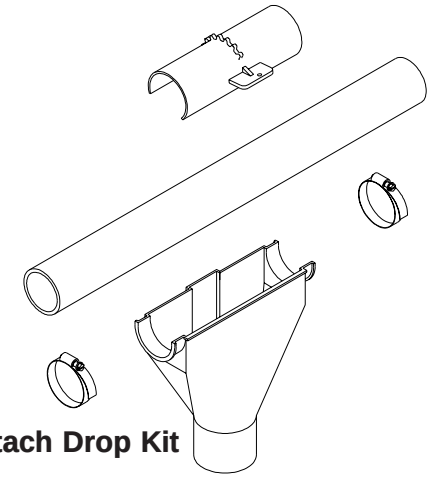
Key	Part #	Description
1	FLX-2349	1/3 H.P. 60Hz Auger Drive Motor
1	FLX-2350	1/2 H.P. 60Hz Auger Drive Motor
1	FLX-2351	3/4 H.P. 60Hz Auger Drive Motor
1	FLX-2352	1 H.P. 60Hz Auger Drive Motor
1	FLX-2473	1 1/2 H.P. 60Hz Auger Drive Motor
2	FLX-4275	Pinion Gear, 1/2" Dia. Bore x 2.466" Length w/ 14 Teeth
2	FLX-4276	Pinion Gear, 5/8" Dia. Bore x 2.466" Length w/ 14 Teeth
2	FLX-4542	Pinion Gear, 5/8" Dia. Bore x 3" Length w/ 14 Teeth
2	FLX-2983	Pinion Gear, 1/2" Dia. Bore x 1.812" Length w/ 14 Teeth
2	FLX-2973	Pinion Gear, 5/8" Dia. Bore x 2.25" Length w/ 14 Teeth
3	FLX-4277	4.81:1 Ratio Gear Reducer (358 RPM)
3	FLX-4400	11.1:1 Ratio Gear Reducer (156 RPM)
3	FLX-4403	6.48:1 Ratio Gear Reducer (250 RPM)
3	FLX-4405	3.91:1 Ratio Gear Reducer (441 RPM)
3	FLX-4406	3.20:1 Ratio Gear Reducer (539 RPM)
NS	FLX-4358	Aluminum C-Face Adapter Plate
NS	FLX-4407	1 Ph Power Unit Hardware, Oil & Misc.
NS	FLX-4414	3 Ph Power Unit Hardware, Oil & Misc.

Drop Kit

Key	Part #	Description
	FLX-2432	Model 220 Drop Kit (Nylon)
	FLX-2433	Model 300 Drop Kit (Nylon)
	FLX-2434	Model 350 Drop Kit (Nylon)
	FLX-2435	Model 500 Drop Kit (Nylon)
1	S-280	10-16 x 5/8" Self Drill Screw
2	FLX-2441	Green Indicator Ball
3	FLX-200	Model 220 Drop Half
3	FLX-300	Model 300 Drop Half
3	FLX-350	Model 350 Drop Half
3	FLX-500	Model 500 Drop Half
4	S-8174	10-24 x 5/8" Hex Head Machine Screw Stainless Steel
5		Model 220, 300, 350, 500 10' Straight Tube
6	FLX-2436	#5 Solid Braided Utility Cord
7	FLX-2437	Model 220 Nylon Slide
7	FLX-2438	Model 300 Nylon Slide
7	FLX-2439	Model 350 Nylon Slide
7	FLX-2440	Model 500 Nylon Slide
8	S-8173	10-24 Hex Nut Stainless Steel
9	FLX-2442	Red Indicator Ball



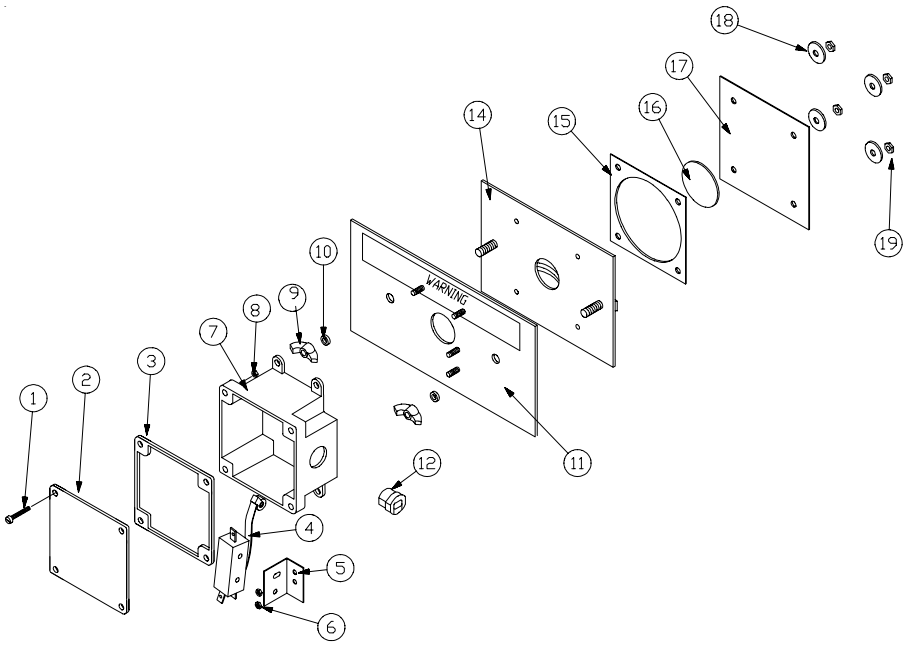
Drop Kit



Kwik-Attach Drop Kit

Kwik-Attach Drop Kit

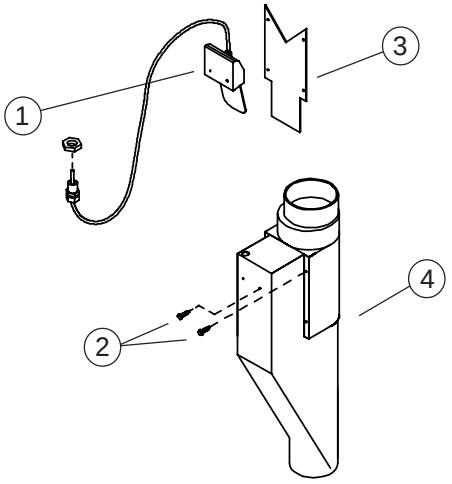
Key	Part #	Description
	APCD-109	Kwik-Attach Drop Kit for Model 220/236 (Single)
	AP-2276	Kwik-Attach Drop Kit for Model 300 Flex-Flo (Single)
	APCD-110	Kwik-Attach Drop Kit for Model 220/236 (Box of 10)
	AP-2277	Kwik-Attach Drop Kit for Model 300 Flex-Flo (Box of 10)
1	APCD-058	Shut-Off Slide for Kwik-Attach M220 Drop Kit
1	AP-1764	Shut-Off Slide for Kwik-Attach M300 Drop Kit
2	PVC-1004	Model 220 10ft Straight Flex-Flo Tubing
2	PVC-1005	Model 300 10ft Straight Flex-Flo Tubing
3	AP-0583	Model Clamp 1 3/4" - 2 3/4" Stainless Steel
3	AP-0584	Hose Clamp 3" - 4" Stainless Steel
4	APCD-059	Main Housing for Kwik-Attach M220 Drop Kit
4	AP-1763	Main Housing for Kwik-Attach M300 Drop Kit



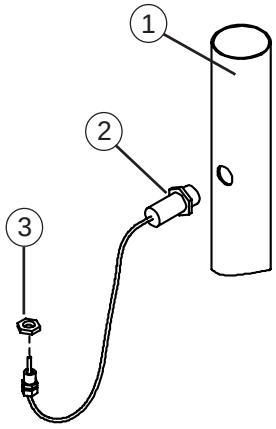
Unloader Switch

Key	Part #	Description
	FLX-4160	Unloader Switch w/o Cord Set
	FLX-4300	Proximity Unloader Switch w/Relay
	FLX-4530	Proximity Unloader Switch, 220V (w/o Relay)
	FLX-4531	Proximity Unloader Switch, 110V (w/o Relay)
1	S-1396	10-32 x 1/2 Phillips Pan Head Machine Screw
2	FLX-2689	Electrical Box Lid
3	FLX-2690	Electrical Box Gasket
4	FLX-2128	Boot Switch
5	FLX-3493	Control Unit Switch Bracket
6	S-7162	#10-32 Plated Locknut
7	FLX-2688	Electrical Switch Box
8	S-4334	#10-32 Plated Hex Nut
9	S-4301	5/16-18 Wing Nut
10	S-3558	Neoprene Washer
11	FLX-4158	Cover Plate
12	S-6381	Heyco 1247 Strain Relief
14	FLX-4157	Back Plate
15/16	FLX-4410	Diaphragm Assembly
17	FLX-2386	Small Rubber Diaphragm
18	S-7279	3/16" Backing Washer
19	S-4334	#10-32 Plated Hex Nut

Micro Drop Tube Switch



Proximity Switch



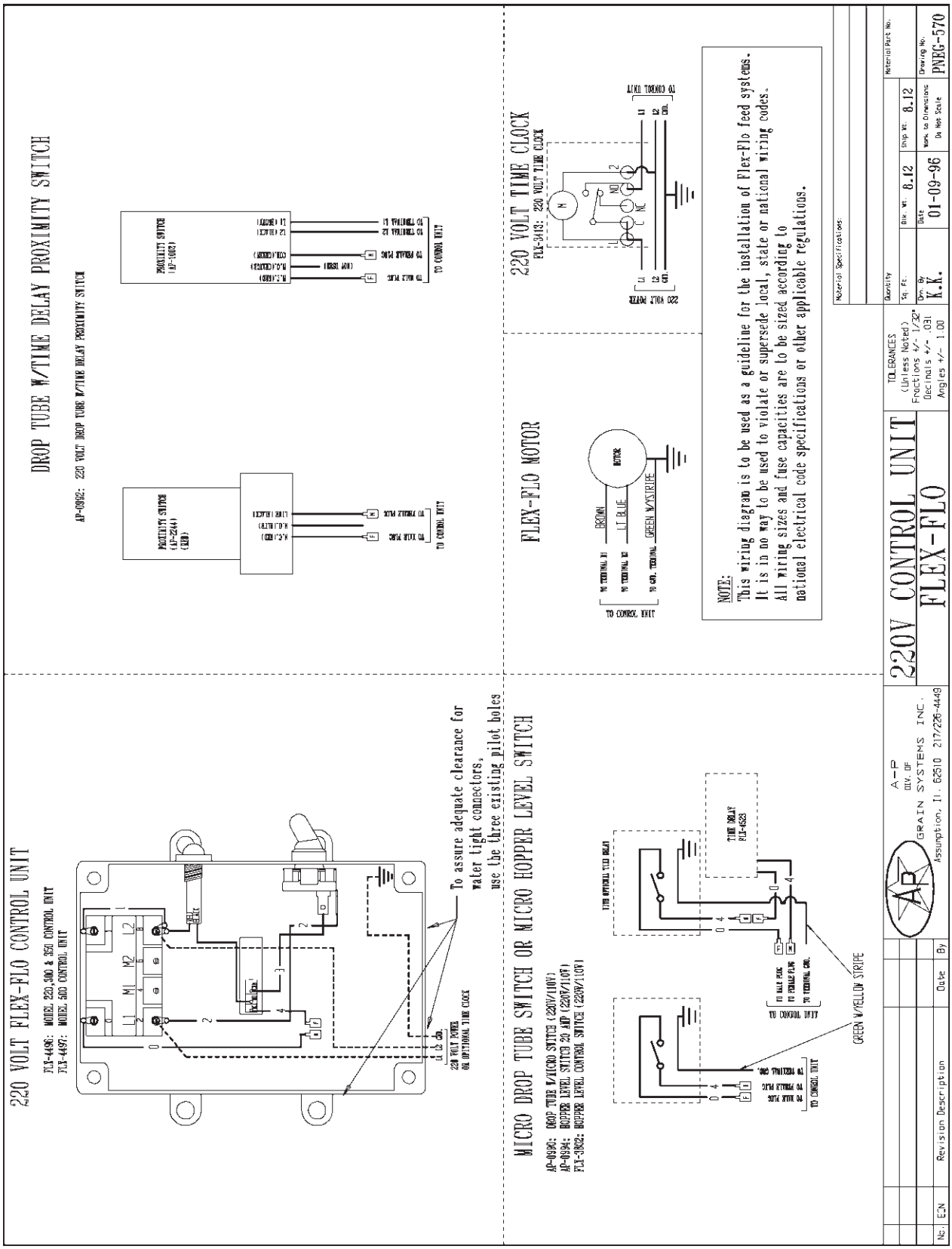
Micro Drop Tube Switch

Key	Part No.	Qty	Description
	AP-0990		Micro Drop Tube Switch
1	FLX-3489	1	Micro Switch Box Assembly w/Cord, 1/2" Connector and Micro Switch
2	S-7466	6	Screw, #10-16 x 3/4" Hex head Washerhead Self Drilling
3	FLX-3448	1	Drop Tube Switch Baffle Plate
4	FLX-3451	1	Drilled Drop Tube Housing

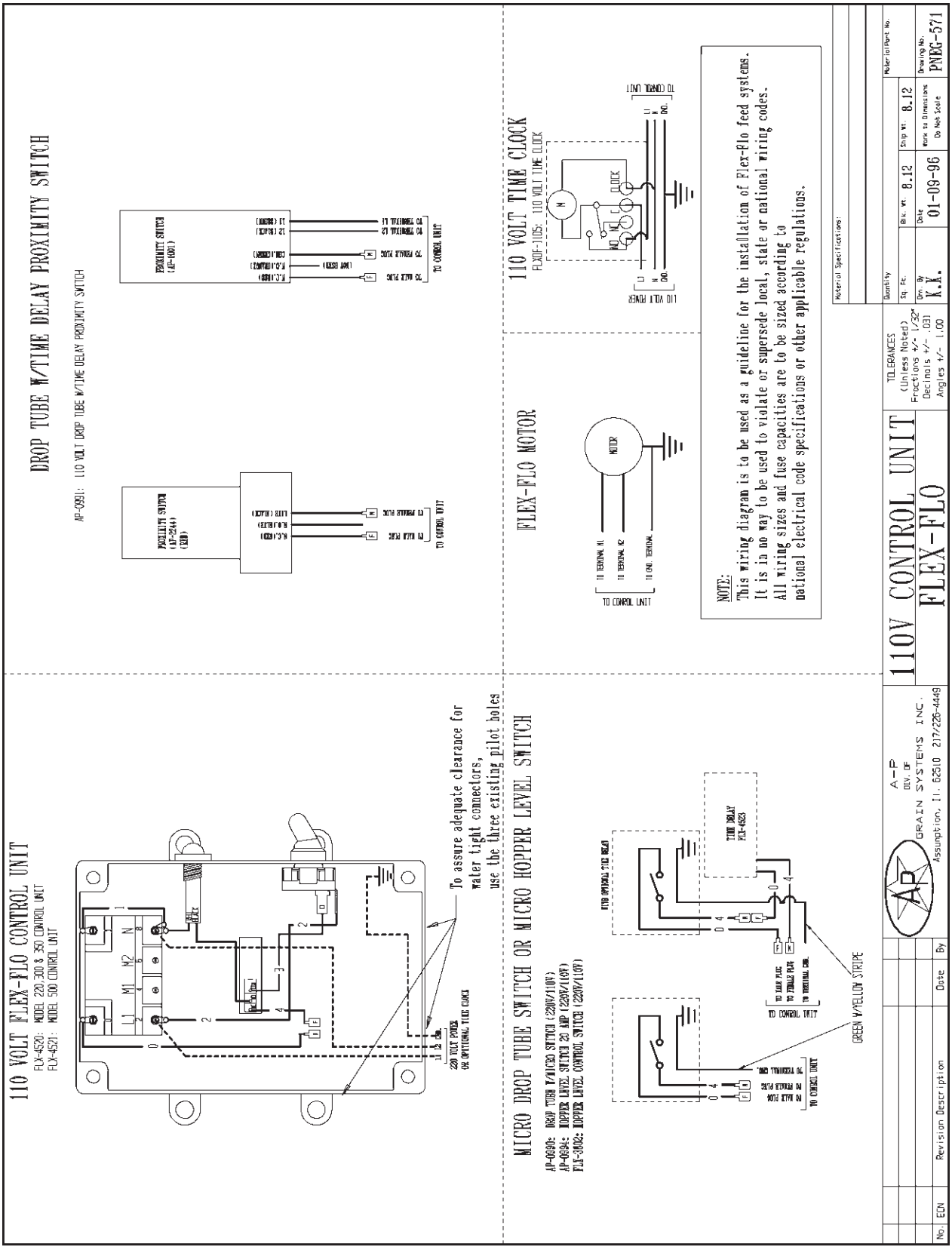
Proximity Switch

Key	Part No.	Qty	Description
1	FLX-2425	1	Drop Tube, 3" I.D. x 3.188" O.D. x 12ft
2	FLXDF-1172	1	Proximity Switch, Normally Closed, 20V DC - 250V AC
3	S-7906	1	1/2" Cord Connector

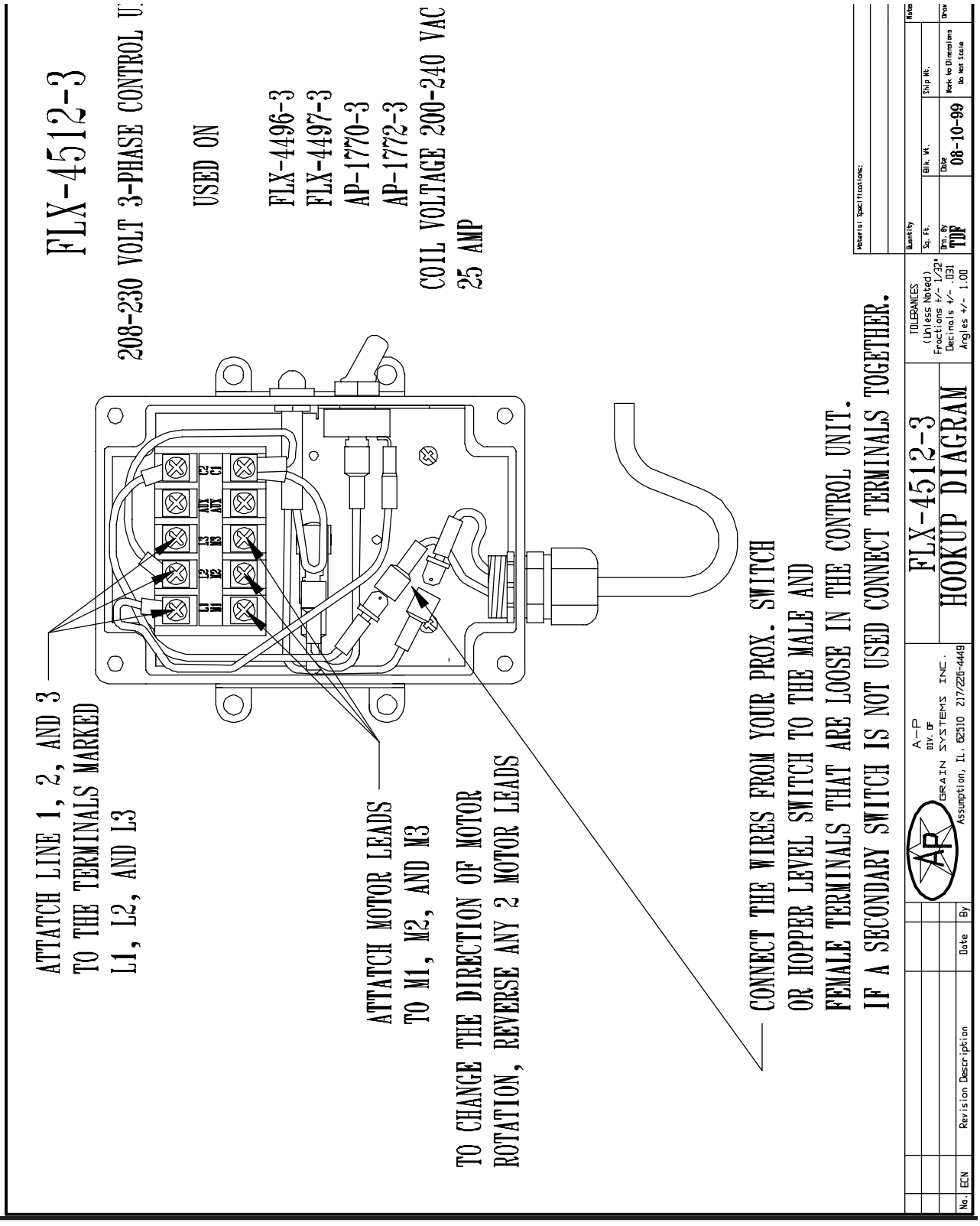
Wiring Diagram for 110V Control Unit



Wiring Diagram for 110V Control Unit



Wiring Diagram for 208-230V 3-Phase Control Unit



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THE GSI GROUP

The GSI Group, Inc.
P.O. Box 20
1004 East Illinois Street
Assumption, Illinois 62510

Phone: 217.226.4421
Fax: 217.226.4420
e-mail: gsisales@grainsystems.com
internet: http://www.grainsystems.com