

CHORE-TIME®

Poultry Production Systems

MODEL C2® Plus & MODEL G™ Plus Feeding System

Installation and Operators Manual

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Chore-Time Warranty

Chore-Time Poultry Production Systems, a division of CTB, Inc., (“Chore-Time”), warrants each new CHORE-TIME® product manufactured by it to be free from defects in material or workmanship for one-year from and after the date of initial installation by or for the original purchaser. If such a defect is found by Chore-Time to exist within the one-year period, Chore-Time will, at its option, (a) repair or replace such product free of charge, F.O.B. the factory of manufacture, or (b) refund to the original purchaser the original purchase price, in lieu of such repair or replacement. Labor costs associated with the replacement or repair of the product are not covered by the Manufacturer.

Additional extended warranties for the equipment and/or systems listed below are provided to the original purchaser as follows (for all other CHORE-TIME® products purchased, the one-year warranty period shall apply):

1. TURBO™ and RLX™ fans, less motors - 3 years
2. TURBO™ fan fiberglass housings, polyethylene cones, and cast aluminum blades - for the life of the product
3. TURBO™ fan motors and bearings - 2 years
4. TURBO™ fan components (including plastic shutters) - 3 years
5. Poultry feeder pans that becomes unusable within five years from the date of installation - Warranty prorated after three years usage
6. Rotating center less augers, excluding applications involving high moisture feed stuffs (exceeding 18%), for ten years from the date of installation. Note: MULTIFLO® and applications involving high moisture feed stuffs are subject to a one-year warranty
7. Chore-Time manufactured roll-formed steel auger tubes for ten years from the date of installation
8. ULTRAFLO® Breeder Feeding System auger and feed trough are warranted for a period of five years from the date of original installation against repeated breakage of the auger or wear-through of the feed trough caused solely by the auger
9. ULTRAPAN® Feeding System augers are warranted for a period of five years from the date of installation againstlely by the auger

CONDITIONS AND LIMITATIONS

1. The product must be installed by and operated in accordance with the instructions published by the Manufacturer or Warranty will be void.
2. Warranty is void if all components of the system are not original equipment supplied by the Manufacturer.
3. This product must be purchased from and installed by an authorized distributor or certified representative thereof or the Warranty will be void.
4. Malfunctions or failure resulting from misuse, abuse, negligence, alteration, accident, or lack of proper maintenance shall not be considered defects under the Warranty.
5. This Warranty applies only to systems for the care of poultry and livestock. Other applications in industry or commerce are not covered by this Warranty.

Chore-Time shall not be liable for any consequential or special damage which any purchaser may suffer or claim to suffer as a result of any defect in the product. "Consequential" or special damages" as used herein include, but are not limited to, lost or damaged products or goods, costs of transportation, lost sales, lost orders, lost income, increased overhead, labor and incidental costs and operational inefficiencies.

THIS WARRANTY CONSTITUTES THE MANUFACTURER'S ENTIRE AND SOLE WARRANTY AND THIS MANUFACTURER EXPRESSLY DISCLAIMS ANY AND ALL OTHER WARRANTIES, INCLUDING, BUT NOT LIMITED TO, EXPRESS AND IMPLIED WARRANTIES AS TO MERCHANTABILITY, FITNESS FOR PARTICULAR PURPOSES SOLD AND DESCRIPTION OR QUALITY OF THE PRODUCT FURNISHED HEREUNDER.

Chore-Time Distributors are not authorized to modify or extend the terms and conditions of this Warranty in any manner or to offer or grant any other warranties for Chore-Time products in addition to those terms expressly stated above.

An officer of CTB, Inc. must authorize any exceptions to this Warranty in writing. Chore-Time reserves the right to change models and specifications at any time without notice or obligation to improve previous models.

Effective: **September 2004**

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Thank You

The employees of Chore-Time would like to thank your for your recent Chore-Time purchase. If a problem should arise, your Chore-Time distributor can supply the necessary information to help you.

***Chore-Time Poultry Feeder Pan Pro Rata Schedule**

Year from date of installation during which pan becomes unusable	Charge to be paid by the purchaser for replacement.
0 - 1 years	NO CHARGE
1 - 2 years	NO CHARGE
2 - 3 years	NO CHARGE
3 - 4 years	4/10 of then current list price
4 - 5 years	5/10 of then current list price

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About This Manual

The intent of this manual is to help you in two ways. One is to follow step-by-step in the order of assembly of your product. The other way is for easy reference if you have questions in a particular area.

Important: Read **ALL** instructions carefully before starting construction.

Important: Pay particular attention to all **SAFETY** information.

- *Metric measurements are shown in millimeters and in brackets, unless otherwise specified. “ ” equals inches and “ ’ ” equals feet in English measurements.*

Examples:

1" [25.4]

4' [1 219]

- Optional equipment contains necessary instructions for assembly or operation.
- Major changes from the last printing will be listed on the back cover.



- This Planning Symbol is used in areas where planning needs to take place before construction continues.

- Very small numbers near an illustration (*i.e.*, 1257-48) are identification of the graphic, not a part number.

Safety Information

Caution, Warning and Danger Decals have been placed on the equipment to warn of potentially dangerous situations. Care should be taken to keep this information intact and easy to read at all times. Replace missing or damaged safety decals immediately.

Using the equipment for purposes other than specified in this manual may cause personal injury and/or damage to the equipment.

Safety–Alert Symbol



This is a safety–alert symbol. When you see this symbol on your equipment, be alert to the potential for personal injury. This equipment is designed to be installed and operated as safely as possible...however, hazards do exist.

Understanding Signal Words

Signal words are used in conjunction with the safety–alert symbol to identify the severity of the warning.



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 hazardous situation which, if not avoided, **MAY** result in minor or moderate injury.

Safety Instructions

Follow Safety Instructions

Carefully read all safety messages in this manual and on your equipment safety signs. Follow recommended precautions and safe operating practices.

Keep safety signs in good condition. Replace missing or damaged safety signs.

Decal Descriptions

DANGER: Moving Auger

This decal is placed on the Panel Weldment.

Severe personal injury will result, if the electrical power is not disconnected, prior to servicing the equipment.



DANGER: Electrical Hazard

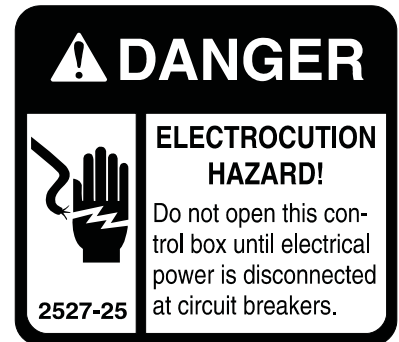
Disconnect electrical power before inspecting or servicing equipment unless maintenance instructions specifically state otherwise.

Ground all electrical equipment for safety.

All electrical wiring must be done by a qualified electrician in accordance with local and national electric codes.

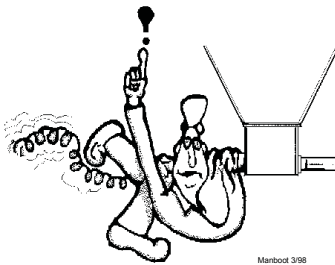
Ground all non-current carrying metal parts to guard against electrical shock.

With the exception of motor overload protection, electrical disconnects and over current protection are not supplied with the equipment.



CAUTION:

Use caution when working with the Auger—springing Auger may cause personal injury.



General

Information

The Chore-Time MODEL C2® Plus and MODEL G™ Plus Feeding Systems are designed to feed poultry feed types. Using this equipment for any other purpose or in a way not within the operating recommendations specified in this manual will void the warranty and may cause personal injury.

This manual is designed to provide comprehensive planning and installation information. The Table of Contents provides a convenient overview of the information in this manual.

Manufacturer's Recommendations: Birds per Pan

Type	Max weight and/or weeks of age	Feeders	Number of birds/pan
Broiler	4.5lbs/2kg.	Revolution 12, Models C2 Plus, C2Plus S, C, H2, H2 Plus	60 - 90
Broiler	7lbs/3.1kg	Revolution 8, C2 Plus, C2 Plus S, G Plus, G Plus S, C, H2, H2 Plus	55 - 75
Broiler	9lbs/4.0kg	Revolution 8, G Plus, G Plus S	45 - 65
Broiler Breeder Pullet – rearing	0 – 18 weeks	C2 Plus (Breeder), C2 Plus S (Breeder)	14 - 15
Broiler Breeder Pullet –rearing	0 – 18 weeks Hi-Yield	C2 Plus (Breeder), C2 Plus S (Breeder)	12-14
Broiler Breeder Male –rearing	0 -- 18 weeks	C2 Plus (Breeder), C2 Plus S (Breeder), G Plus (Breeder), G Plus s (Breeder)	11-13
Broiler Breeder Layer	17 + weeks	C2 Plus (Breeder), C2 Plus S (Breeder)	13 - 14
Broiler Breeder Layer	17 + weeks Hi-Yield	C2 Plus (Breeder), C2 Plus S (Breeder)	12 - 13
Broiler Breeder Male	17 + weeks	G Plus (Breeder), G Plus S (Breeder)	8-10
Commercial Layer Pullet – rearing	0 – 20 weeks	Revolution 12, C2Plus, H2, H2 Plus	40-60
Commercial Layer	18 + weeks	Revolution 12, C2 Plus, C, H2, H2 Plus	30 - 40
Turkey Poult	0 – 5 weeks	Revolution 8, H2 Plus, H2, G Plus, G Plus S	60 - 65
Turkey Poult	0 – 10 weeks	Revolution 8, G Plus, H2 Plus, H2	40 - 50
Turkey Female	5 + weeks	ATF, ATF Plus	60
Turkey Male	5 + weeks	ATF Plus	40 - 50
Ducks	0 – 3 weeks	G Plus, G Plus S	60 - 70
Ducks	4 – 8 weeks	G Plus, G Plus S	50 - 60

***Notice:** Please be advised that the maximum number of birds that may be successfully produced per feed pan may vary based upon such factors as climate, housing type or style, bird breeds, genetic factors of the birds at issue, grower management practices, etc. All other environmental and management circumstances, such as proper bird density per house, access to adequate nutrients in feed, access to adequate water supply, proper ventilation, adequate health care for the birds, and other similar factors, must meet industry standards and recommendations, if any, of applicable bird breeder companies.

*** NOTICE:** The above Manufacturer's recommendations do not constitute a product warranty and are in no way to be considered as a guarantee of performance for poultry production. In addition, the above information in no way alters or revises the terms and conditions of any applicable Chore-Time manufacturer's warranty.

Planning the Floor Feeding System

1. Select the House Layout.

A. Optional Mid Line Controls may be used for partial house brooding. See **Figure 1**.

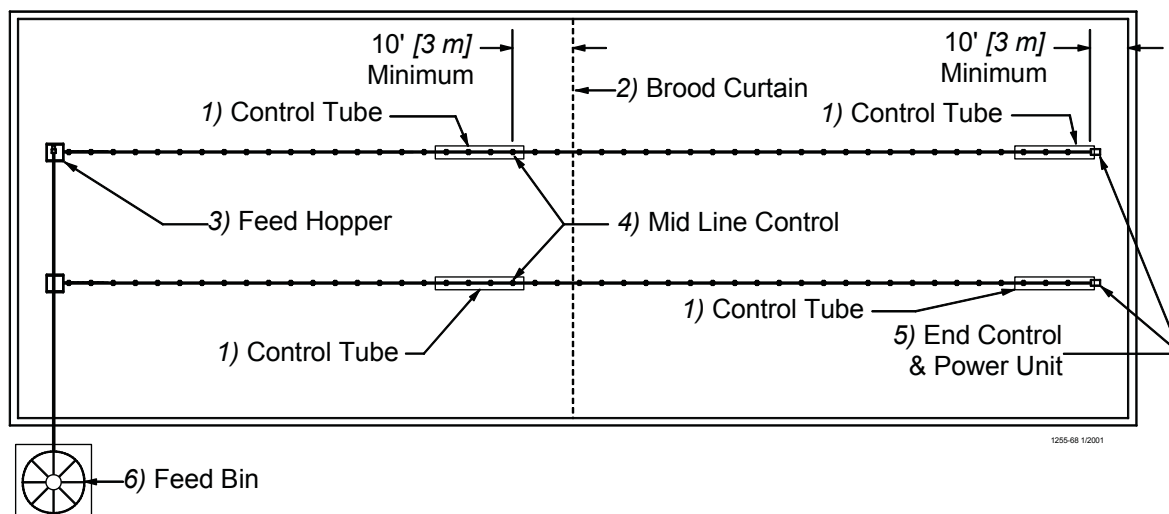


Figure 1. Component location diagram for systems up to 400 feet [122 m]. (Top View).

B. Systems with line lengths over 400' [122 m] should be split in the center, as shown in **Figure 2**. This will reduce auger running time and eliminate the need for Mid-Line Controls for partial house brooding.

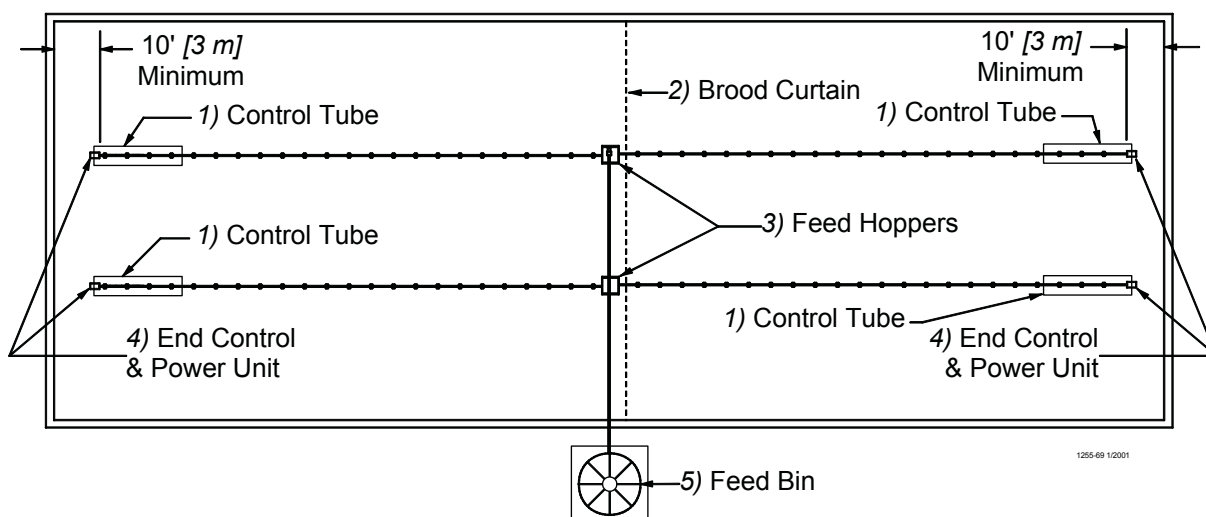


Figure 2. Component location diagram for systems over 400 feet [122 m]. (Top View).

2. Determine the Feed Bin location.
3. Determine the Brood Curtain location.
4. Determine the location for the End Control Pans, and if used the Mid Line Control Pans. **The Feeder Control Pans should be at least 10' [3 m] from the Wall or Brood Curtain.**
5. Determine the distance to the Feeder Line from the Side Wall.
6. Determine the distance from the Feed Hoppers to the End Wall for a Straight Line Feeding System.

General Installation Information

Please read the installation instructions in this manual prior to beginning the installation. This manual provides the necessary information on the installation, operation, and maintenance of the Chore-Time feeding equipment you have purchased.

The suspension, hopper assembly, feeder line installation, and anti-roost installation is the same for each system, except where noted otherwise. Please pay particularly close attention to insure proper assembly and installation of the equipment.

The Model C2 Plus and G Plus Control Units use a 348 RPM. Gearhead, delivering approximately 17 lbs [7.7 kg] per minute. This rating is based on feed with a density of 40 lbs per cubic foot [640 kg per cubic meter].

Single phase 60 Hz and single and three phase 50 Hz Power Units are available for the Model C2 Plus , G Plus Feeders.

Systems up to 300' [91 m] require 1/3 HP. Power Units. Systems over 300' [91 m] require 1/2 HP. Power Units.

Laying out the Suspension System

1. Select the Suspension type.
 - A. For systems up to 350' [107 m]

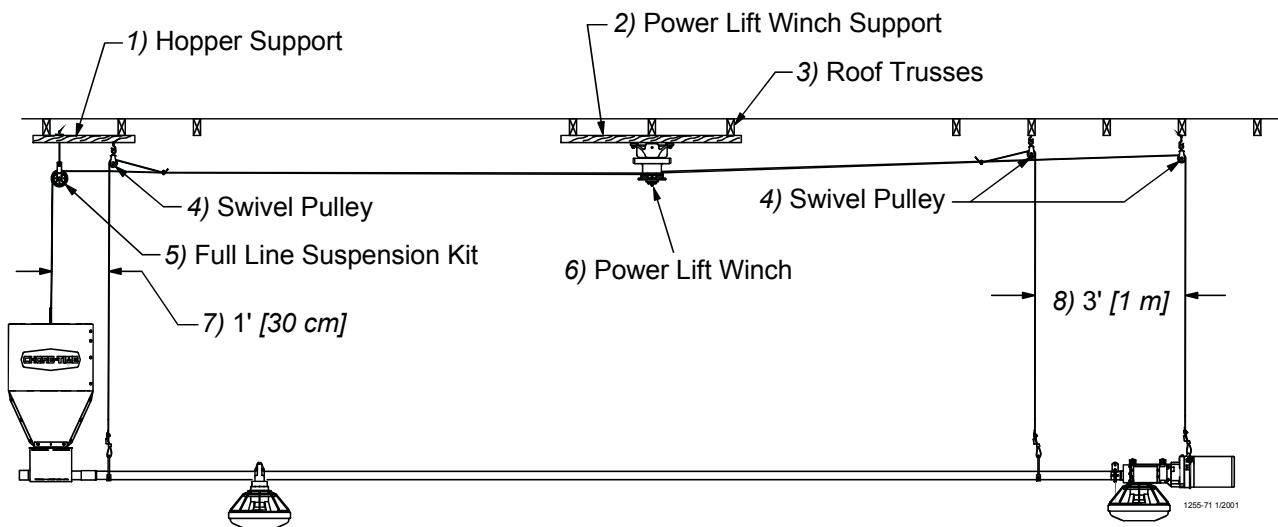


Figure 3. Suspension for systems up to 350' [107 m]

B. For systems over 350' [107 m]

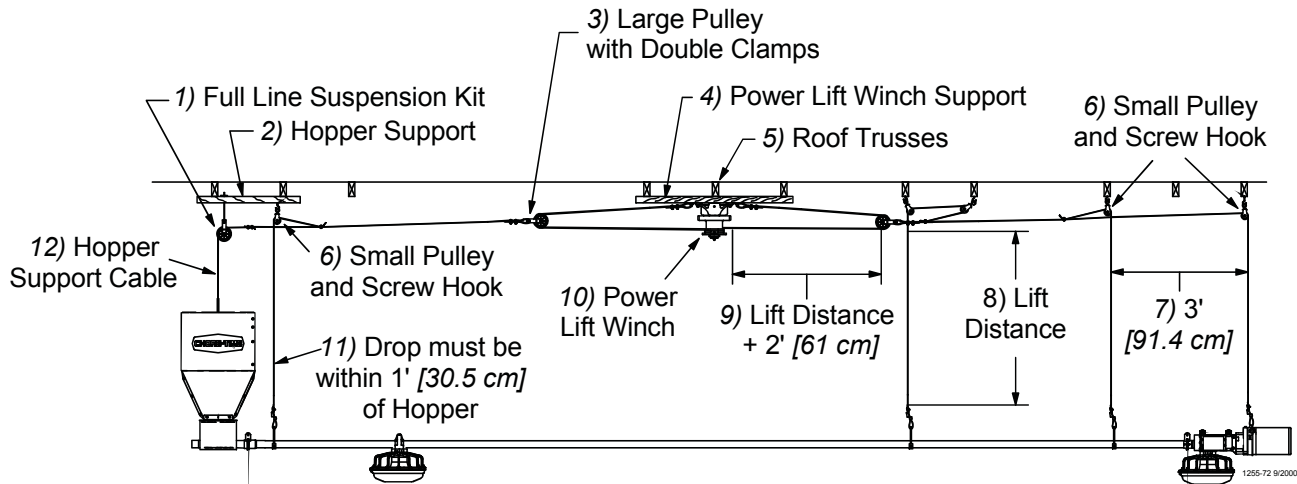


Figure 4. Suspension for systems over 350' [107 m]

2. Locate the Power Lift Winch. The Power Lift Winch requires a support that will span, in a wood frame house at least 3 rafters, and in a steel frame house at least 2 rafters.
3. Locate the Power Unit and Feed Hopper. Special support is required at each Power Unit and Feed Hopper location.
4. Determine the Drop Location and length. Suspension systems are based on ceiling heights of 14' [4.3 m] with suspension drop points every 8' [2.4 m]. DO NOT EXCEED 10' [3 m] BETWEEN SUSPENSION DROPS.
5. Determine the location for Screw Hooks. Mark a straight line or use cable to locate Screw Hooks. Use the offset of Screw Hooks where necessary.

Installing the Suspension System

Power Lift Winch Installation

1. Bolt the Power Winch, fully assembled, to the Power Lift Winch Support, either a 2" x 8" [50x200 mm] board that will span at least 3 rafters or a 3/8" [9.5 mm] thick steel plate welded to two pieces angle iron that are each long enough to span at least 2 rafters, using 5/16-18 hardware supplied in the Hardware Package. The brake mechanism will extend toward one side.

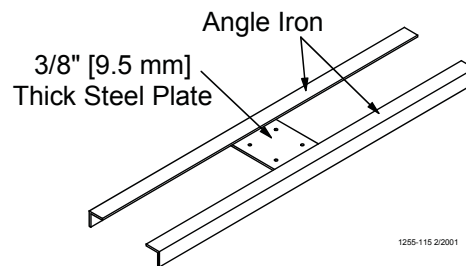


Figure 5. Optional Power Lift Winch support detail

Install a Cable Hook, supplied in Hardware Package, between the mounting bolt and Power Winch frame, as shown in **Figure 6**.

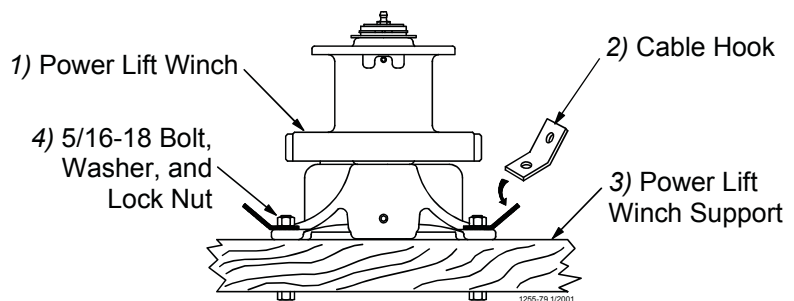


Figure 6. Assembling the Power Winch to the Rafters

- Attach the Power Lift Winch Support (with the Power Winch secured) to the ceiling at the center of the feeder line. See **Figure 7**. The Power Lift Winch Support must be parallel to the feeder line and must span at least 3 rafters in a wood frame house and 2 rafters in a steel frame house. If the hopper is located at the center of the feeder line, locate the Power Winch a few feet offset from the center of the feeder line. However, the Winch Drum must be directly in line with where the main cable is to be installed.

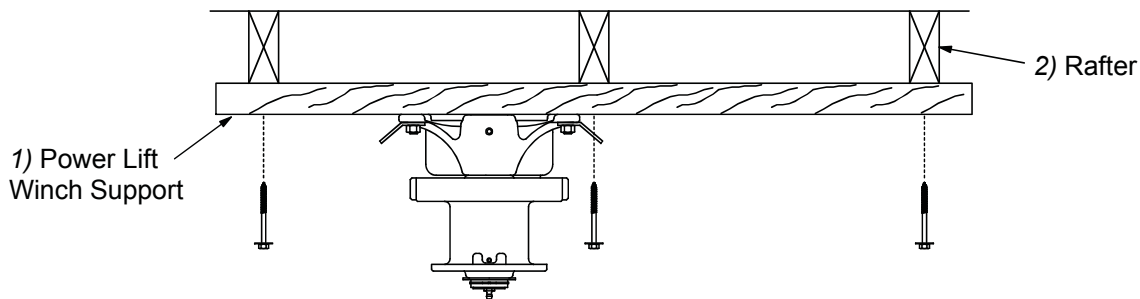


Figure 7. Mounting the Power Lift Winch and Support to the Rafters

Installing the Main Winch Cable

The Suspension Systems are based on ceiling heights of 14' [4.3 m] with Suspension Drop points every 8' [2.4 m]. DO NOT EXCEED 10' [3 m] BETWEEN SUSPENSION DROPS. Refer to suspension section in this manual for installation details.

Adequate overhead structure must be provided to support the weight of the feeders, hoppers, power units, etc. The Suspension System is the same for the Model C2 Plus and G Plus Feeders. The type of installation required depends on the feeder line length.

IMPORTANT: Special support is required at each Hopper location.

- Power Unit Locations: **The Feeder Line must be supported within 3' [0.9 m] of the Power Unit.** This is in addition to the required Power Unit suspension. If the Control Unit or Hopper does not come out directly under a truss, fasten a pulley to a 2" x 8" [50 x 200 mm] board or steel angle that will span 2 trusses and is capable of supporting 300 lbs [136 kg] for the Hopper and 75 lbs [34 kg] for the Control Unit.
 - Feed Hopper Locations: **The Feeder Line must be supported within 1' [30 cm] of the Feed Hopper.** This is in addition to the required Feeder Hopper suspension. After determining the type of suspension system required, decide where the Feeder Line is to be installed. Mark a straight line on the ceiling or rafters the full length of the Feeder Line. Use a string, chalk line, or the winch cable, temporarily attached with staples, to mark the line. Center the line directly over where the Feeder Line is to be installed.
- Extend the 3/16" [5 mm] Main Winch Cable the full length of the feeder line. Attach the cable temporarily to the ceiling with nails, staples, or some type of fasteners. **Figure 9** shows a double back arrangement for feed lines over 350' [107 m].

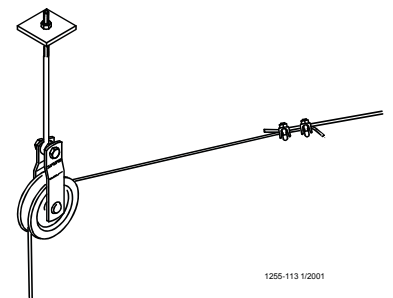


Figure 8. Full Line Suspension Kit

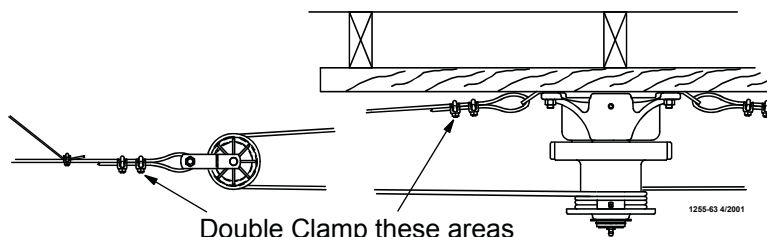


Figure 9. Double back arrangement for feed lines over 350' [107 m]

4. Route the cable through the Winch Drum Relief located near the bottom of the drum. Tighten the set screw to anchor the cable to the drum. See **Figure 10**.

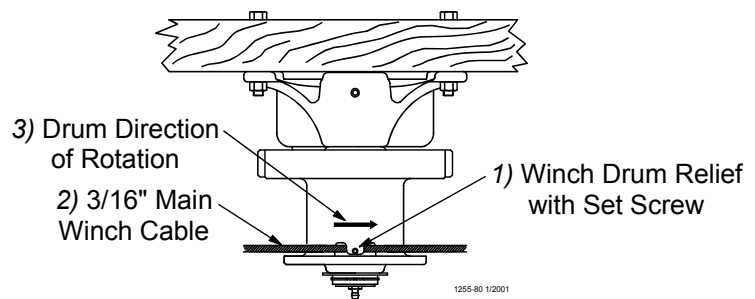


Figure 10. Attaching the Cable to the Power Winch

5. Turn the winch drum one full revolution. Guide the cable against the flange at the bottom of the winch drum. The cable must not wrap over itself on the drum, but should be wrapped as close as possible to each previous wrap. See **Figure 11**.

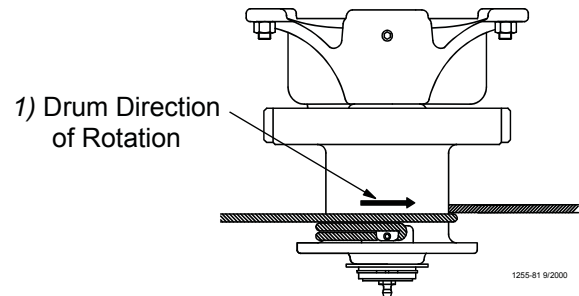


Figure 11. Power Winch Drum Rotation

Screw Hook Installation

The recommended distance between the drops for the Model C2 Plus & G Plus is 8' [2.4 m] on center. Do not exceed 10' [3 m] spacing on drop lines.

If the distance raised is greater than the distance between the drop spacings, offset the hooks 3" [7.6 cm] to each side of the line to prevent the cable clamps from catching the pulleys. See **Figure 12**.

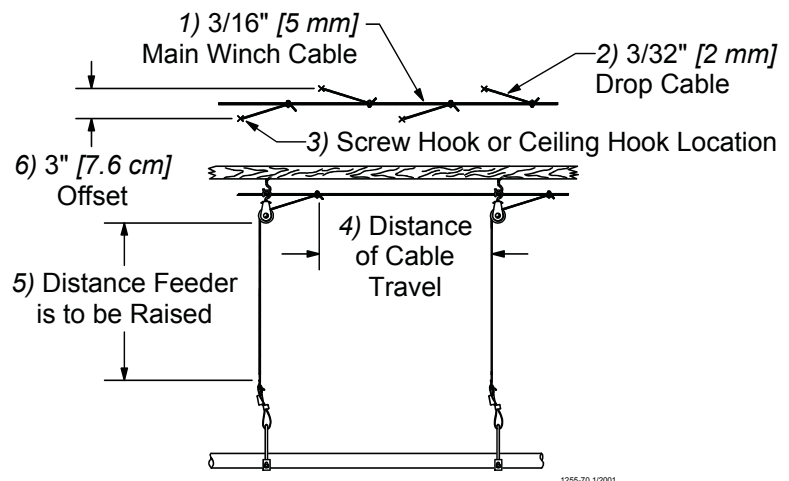


Figure 12. Drop Line Off Set Detail

Screw the hook into the truss the full length of the threads to prevent bending.

The openings of the screw hooks must be pointed away from the direction of travel when the Power Winch raises the feeder line. See **Figure 13**.

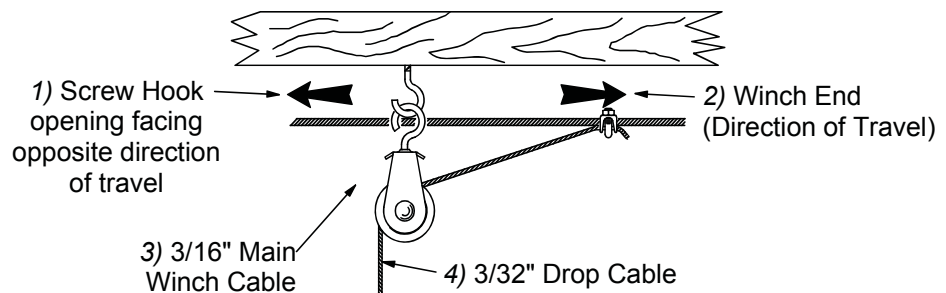


Figure 13. Screw Hook Installation

Ceiling Hook Installation

The ceiling hook may be used in a variety of installations. Depending on your ceiling or rafter type, install the Ceiling Hooks as shown in **Figures 14 - 17**.

Steel Truss Installations

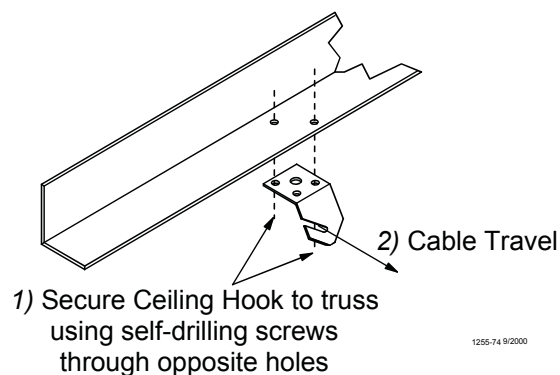


Figure 14. Steel Truss Ceiling Bracket Installation

Steel Truss Welded Installations

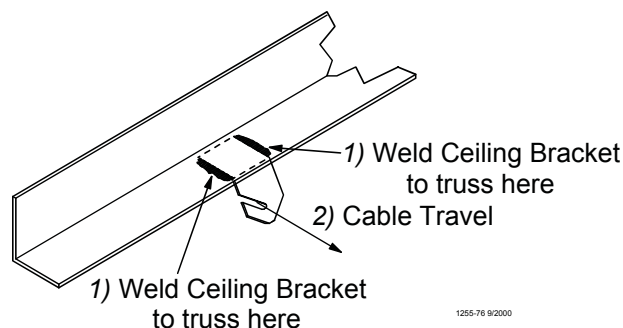


Figure 15. Welded Steel Truss Ceiling Bracket Installation

Wood Truss Installations

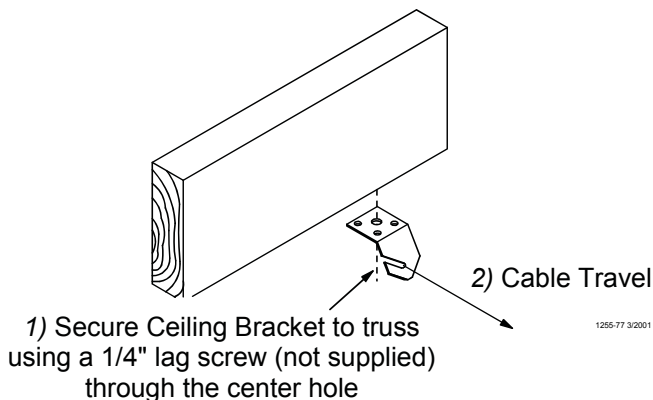


Figure 16. Wood Truss Ceiling Bracket Installation

6. After securing the Ceiling Hook to the truss, slide the hook of a Swivel Pulley into the slot, as shown in **Figure 17**.

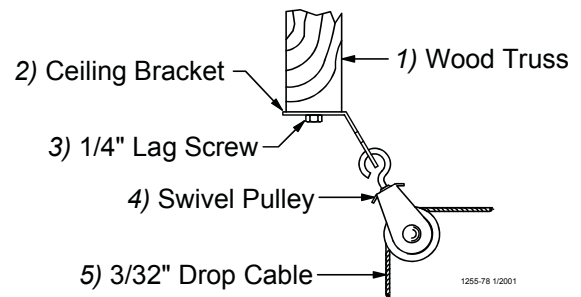


Figure 17. Pulley Installation

Drop Installation

Refer to **Figure 12** on page 11.

1. Attach a 3004 Pulley to each hook.
2. Thread the end of the 3/32" or 1/8" cable through the pulley toward the winch. Clamp this end to the 3/16" winch cable about 6" [150 mm] from the last pulley, using a 3/16" cable clamp. See applicable figure; **Figure 13 or 17**.
3. Allow enough cable length for installation of the Adjustment Leveler. Sufficient cable is included to provide "throwbacks" on drops located beneath and near the winch. **Figure 18** shows a "throwback" cable arrangement.

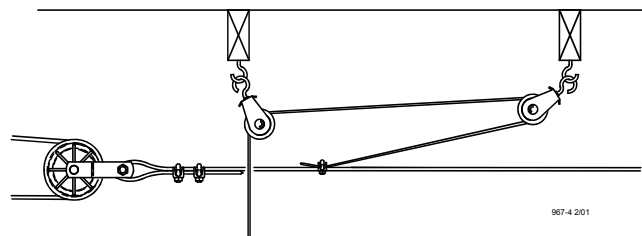


Figure 18. "Throwback" cable arrangement

4. **Begin installing suspension drops at the winch and proceed to the ends of the feeder line.** Keep the main cable tight between drops. It may be necessary to hang a weight on the end of the cable to maintain tension on the line.

Feeder Pan Assembly

All feeders assemble in the same manor. Refer to **Figure 19** below. Slide the Support Cone, the Adjustment Cone, and the Grill together as shown in **Figure 19**. Hook the loop of the Grill to the tab of the Feeder Pan. Rotate the Feeder Pan over on the top of the Grill and Cones. Seat the Feeder Pan in the ring of the Grill. With the Feeder Pan fully seated rotate the pan clockwise to lock in place. Assemble the remaining Feeders.

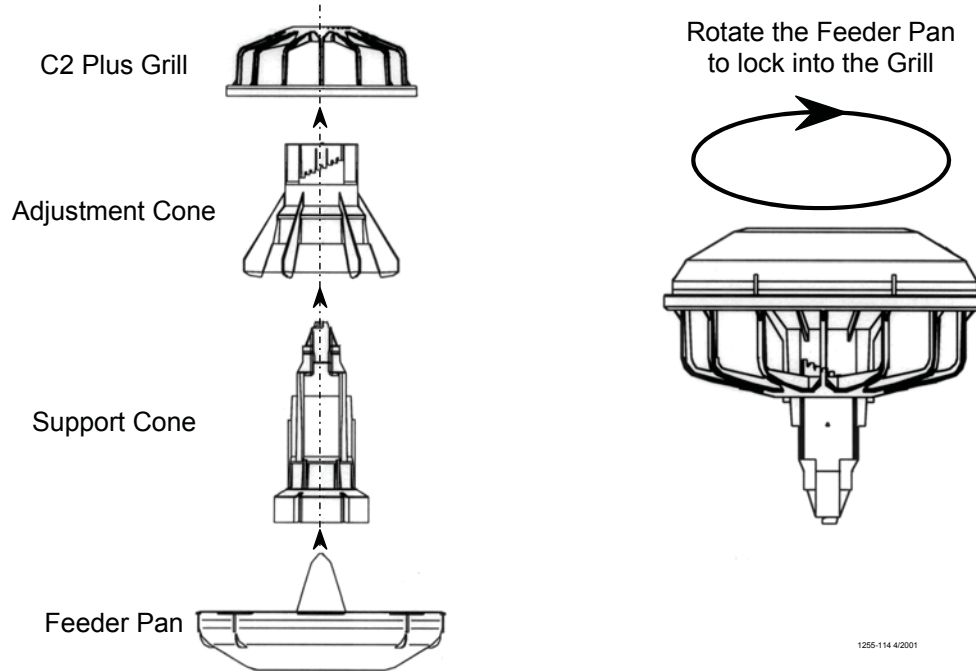


Figure 19. Assembling the Feeder Pan

Feeder Line Assembly and Suspension

Feeder Pan and Tube Assembly Process

- Slide one Feeder Pan Assembly per hole onto the auger tubes.
IMPORTANT: Install all the feeders on the tubes in the same orientation.
When sliding the feeders on the tubes, make sure the grill openings are on the same side of the tube.
- Rotate the auger tubes so that the seam is down, this holds the Pan Assemblies in place on the tubes.
See **Figure 20**.

1) With the Hem of the Feeder Tube up slide the Feeder Pan Assembly on the Feeder Tube.
Position one (1) Feeder Pan Assembly over each hole on the Feeder Tube.

3) Rotate the Feeder Tube after the Feeder Pan Assemblies are in place. This will lock the Feeder Pan Assemblies in place

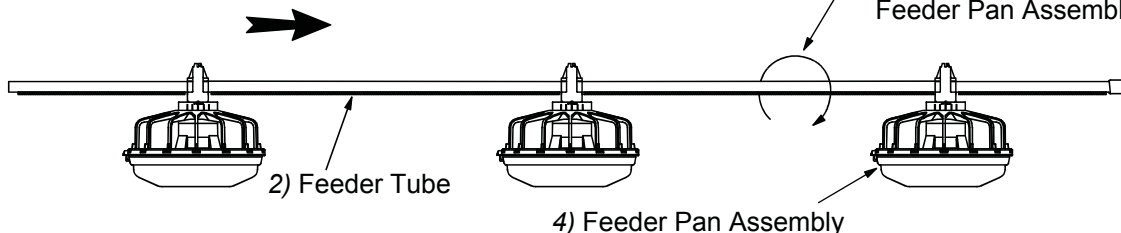


Figure 20. Assemble Feeders on tubes

Assemble and Suspend the Feeder Line

1. The auger tubes and feeders may be laid out end to end in approximately the final location of the line. **The belled end of each tube should be toward the Hopper end of the line.** See **Figure 21**.
2. Connect the individual feeder tubes together by inserting the straight end of one tube as far as possible into the belled end of the next tube. **The last Feeder Tube before the End Control Pan or Mid Line Control pan needs to be a Control Tube.**

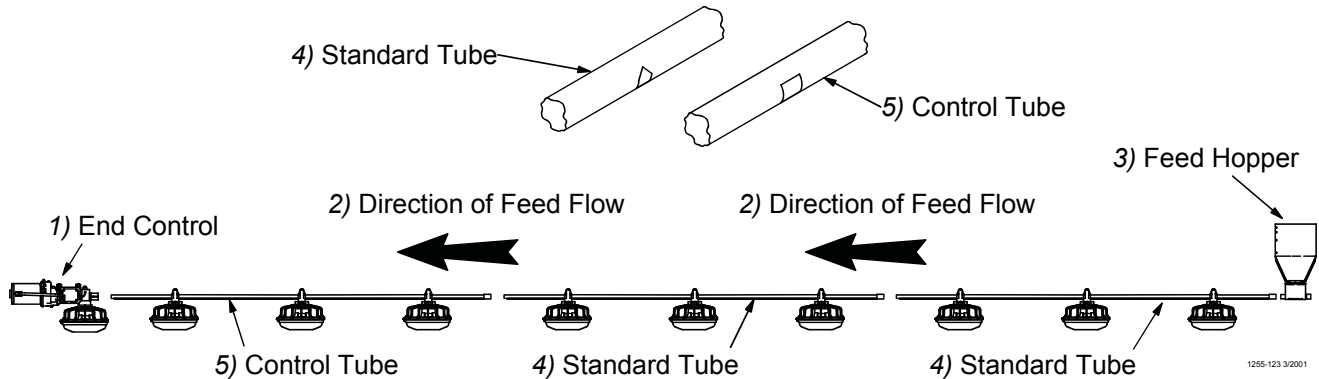


Figure 21. Attaching Feeder Tube Assemblies

3. To achieve total feed drop out all along the system, the Chore-Time Logo should be centered at the crown of the tubes and all the Hangers should be installed as shown in **Figure 22**.

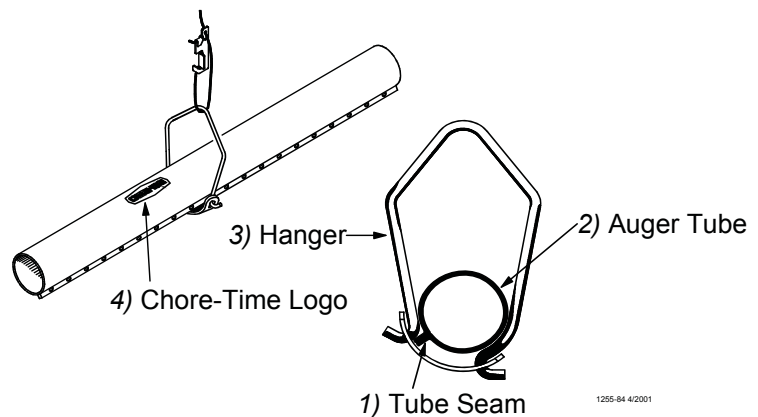


Figure 22. Hanger Installation

4. Place a Tube Clamp Assembly or Clamp/Anti-Roost Bracket at each joint. **Figure 23** shows the standard Clamp and Clamp/Anti-Roost Bracket. Systems using 9' or 10' tubes require a Clamp/Anti-Roost Bracket at every **fifth** joint. Systems using 12' tubes require a Clamp/Anti-Roost Bracket at every **fourth** joint. All other joints in the system use the standard Tube Clamp Assembly.

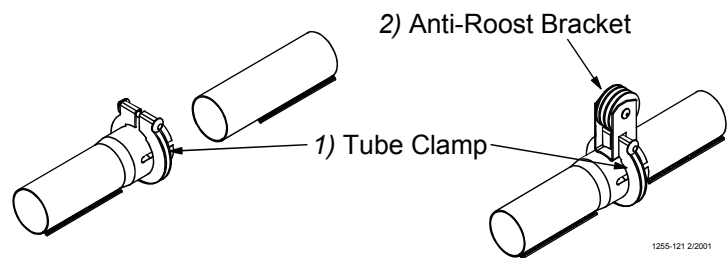


Figure 23. Tube Clamp and Tube Clamp with Anti-Roost Bracket

Continue down the entire length of the feeder line so that every joint is secured with a standard Clamp or Clamp/Anti-Roost Bracket. **Figure 24** shows the proper clamp location on the tube joint. *Do not tighten the clamp at this time.*

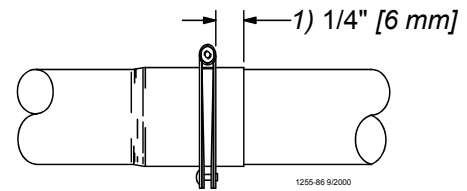


Figure 24. Clamp Installation

5. Install the Hangers on the feed line tube at the 8' [2.4 m] spacings determined by the suspension drop lines. **Figures 22 and 25** show the proper installation of the Hanger Assembly. Make sure the outlet drop hole is downward when the Hangers are installed, otherwise feed will not be allowed to drop into the feeder pan.

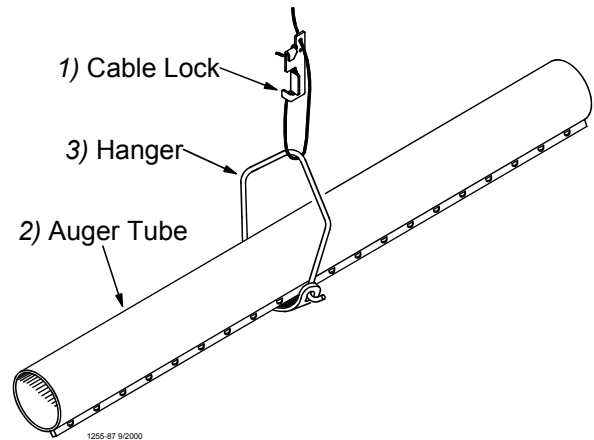


Figure 25. Hanger Installation

6. Install Adjustment Leveler within 6" [152 mm] of feeder line. **Figure 26** shows the proper cable routing around the Adjustment Leveler.
7. Following the installation of all drops, check drop cables before raising feeder line. Cable must be tracking properly on all pulleys before raising the feeder line.
8. Raise the feeder line to a convenient working height.
9. With the feeder line suspended, measure from the floor or ceiling to the auger tubes to level the system.
10. Before tightening each clamp:
 - make sure each tube is level (not sagging, sloping, etc.).

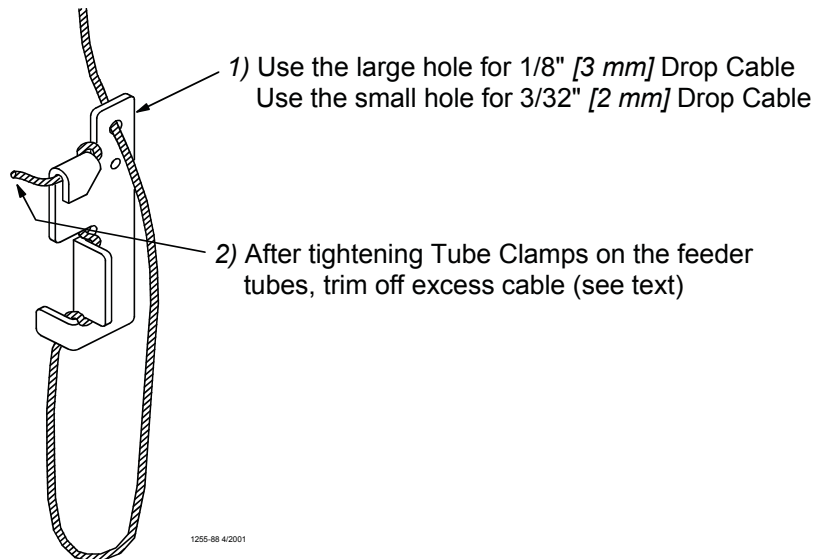


Figure 26. Cable Lock Threading

- make sure straight end of each tube is fully inserted in belled end of next tube.
- if providing total drop out, tubes should be rotated so that the Chore-Time Logo is on crown of tube.
- make sure the clamps are located, as shown in **Figure 24**.

Finally, tighten the Tube Clamps on the feeder tubes. Clamp the joints securely, but do not crush the tubes. Re-adjust all Adjustment Levelers as needed and trim off excess cable as shown in **Figure 26**.

Installing the End Control, Boot Assembly, and Auger

The End Control Unit must be at least 10 feet [3 m] from the end of the building to allow birds access around the end of the feeder line.

1. Assemble the End Control Unit to the Feeder Line Control Tube using a clamp/anti-roost bracket. See **Figure 27**. **DO NOT INSTALL THE POWER UNIT AT THIS TIME.**

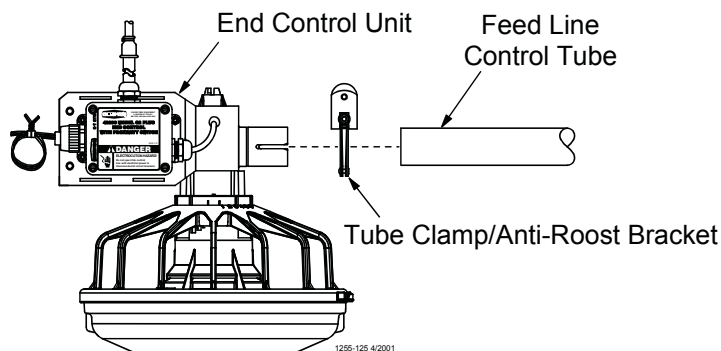


Figure 27. Connecting End Control Unit to the Feed Line Tube

2. Install the Feeder Boot by sliding the straight end of the Feeder Boot into the belled end of the Feeder Tube. Install a clamp/anti-roost bracket on the bell and tighten. The Feeder Boot must be level with the open top of the Feeder Boot flat. See **Figure 28**. **DO NOT INSTALL THE ANCHOR BEARING AND BEARING RETAINER AT THIS TIME.**

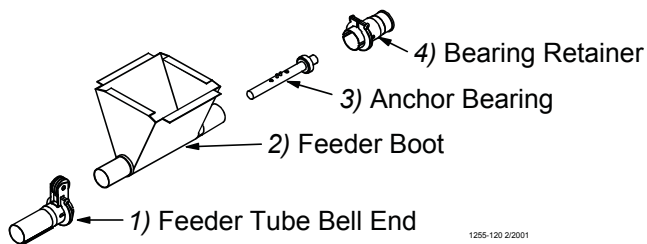
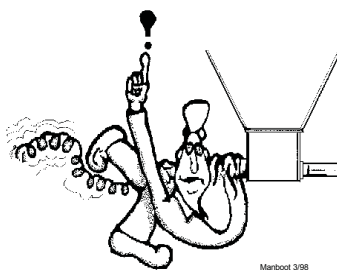


Figure 28. Installing the Feeder Boot

Auger Installation

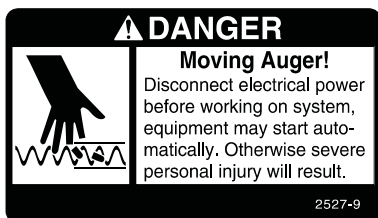
Note: Use extreme caution when working with the auger. The auger is under tension and may spring causing personal injury. Wear protective clothing, gloves, and safety glasses when working with the auger.



**BE CAREFUL WHEN
WORKING WITH THE
AUGER!**

To avoid kinking the auger, be careful not to drop the rolled auger when handling. Inspect the auger carefully as it is installed. Small kinks may be straightened. Large kinks must be removed and the auger brazed back together.

Cut the leading 18" [450 mm] and last 18" [450 mm] off each roll of auger. Also, cut out any other distorted auger sections and reconnect the auger as specified in the Auger Brazing section of this manual..



1. Use extreme caution when pushing the auger into the auger tubes. Keep your hand away from the end of the auger tube to avoid injury.
With the auger coiled about 6 feet [1.8 m] from the end of the boot, uncoil the auger from the outside and feed the auger through the boot into the tubes.
Push the auger into the tube in short strokes.
Uncoil and handle the auger carefully to avoid damaging or kinking the auger.
2. If more than one coil is required for each feeder line, the auger ends will have to be brazed together. Refer to the Brazing the Auger section in this manual.
3. Install the Anchor Bracket to the Power Unit/Gearhead, as shown in **Figure 29**, with the included 5/16-18 Bolts.

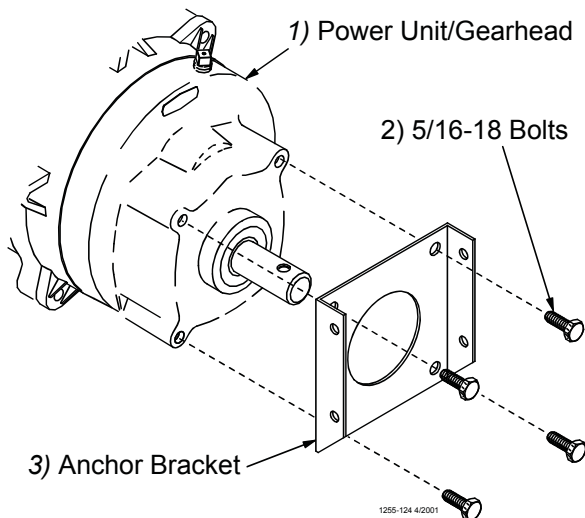


Figure 29. Assemble the Anchor Bracket to the Power Unit/Gearhead

4. Slide the Drive Tube and flat washer over the output shaft on the Power Unit, as shown in **Figure 30**.
5. Continue installing auger until the auger reaches the Control Unit end of the feeder line.
6. Turn the Drive Tube Weldment into the auger, then attach to the output shaft of the Power Unit, as shown in **Figure 30**. Use the Driver Block to secure the auger to the Output Shaft.

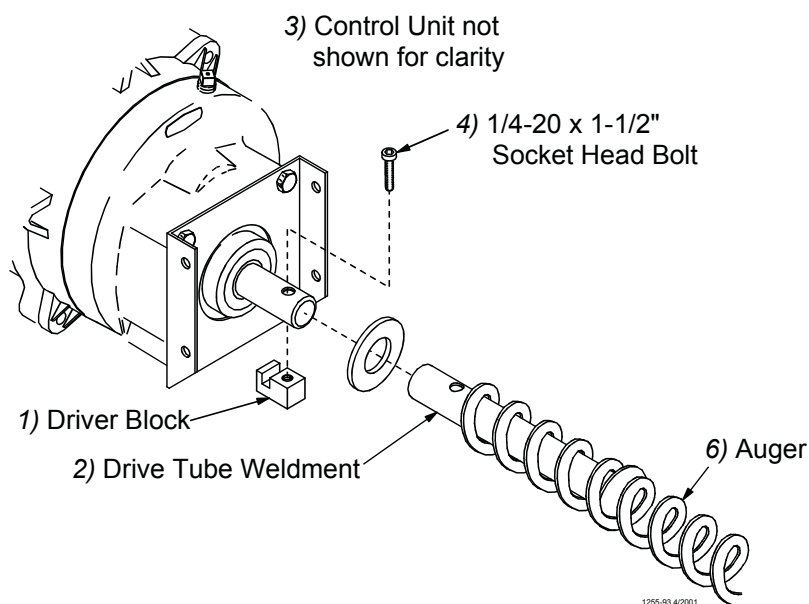


Figure 30. Auger Driver Components

7. Attach the Anchor Plate and Gearhead Assembly to the Control Unit Body using the included 1/4" Lock Washers and 1/4-20 x 1/2" Bolts. See **Figure 31**.

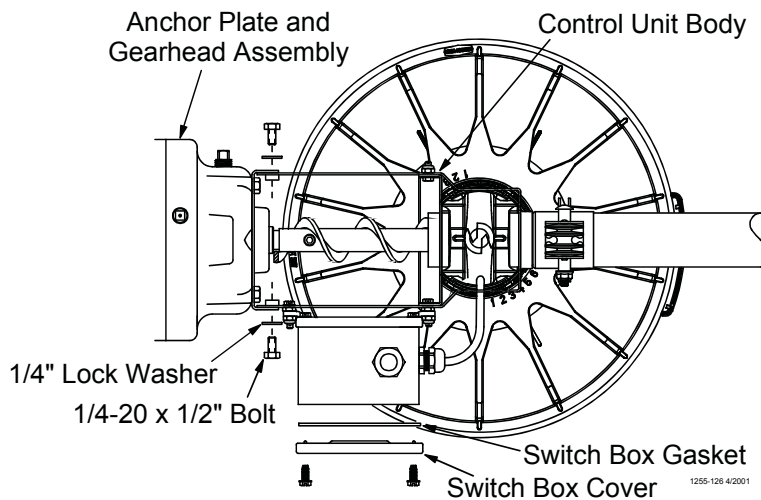


Figure 31. Attaching the Anchor Plate and Gearhead Assembly to the Control Unit Body

8. Install the Metal Water Tight Connector (item 1) in the Feed Line Motor (item 2). Cut the Flex Conduit (item 3) to length. Slide the wires from the end control through the Flex Conduit (item 3). Install the Flex Conduit (item 3) in the connectors. Connect the wires to the Feed Line Motor (item 2).

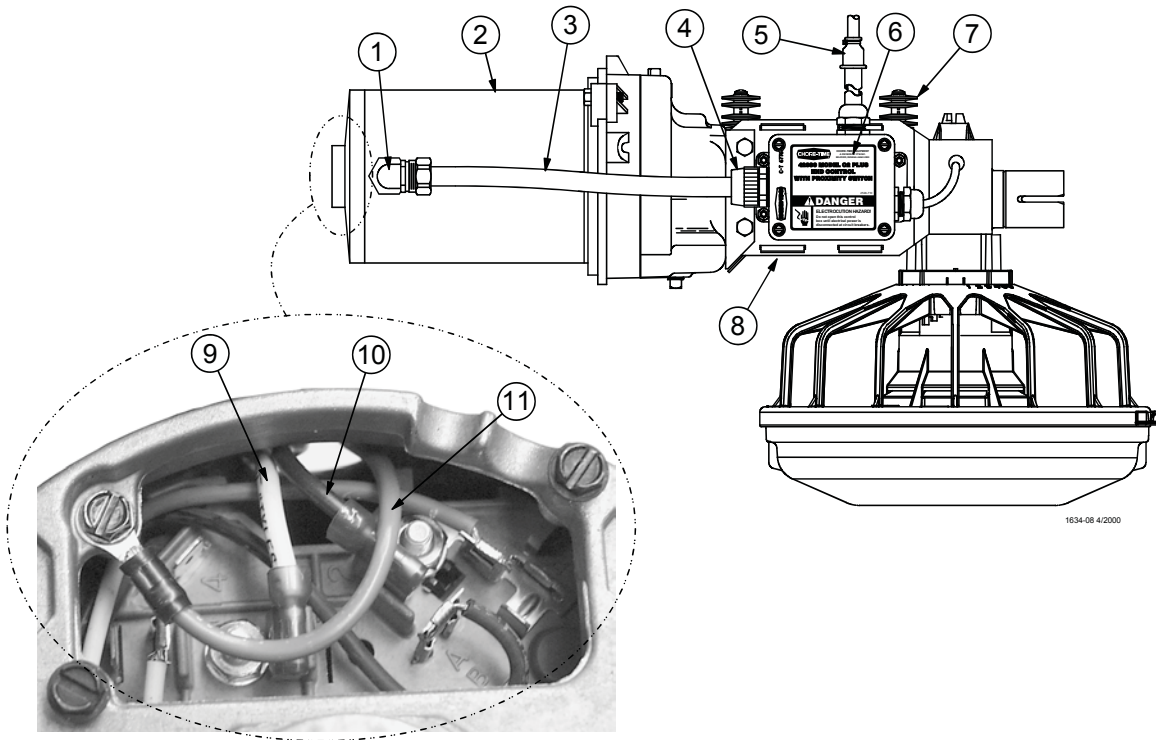


Figure 32. Wiring the Motor

9. Attach all covers and wire according to the wiring section of this manual.
 10. Pull the auger at the boot end until it begins stretching. Then let it relax. In the *relaxed* position, mark the auger at the end of the boot. See **Figure 33**.

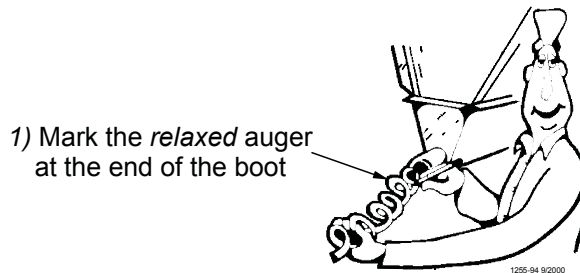


Figure 33. Measure the Auger from the relaxed position

11. Auger stretch:
 The auger needs to be stretched 7" [180 mm] per 100' [30 m]. Example: A 300' [90 m] feeder line requires 21" [500 mm] of stretch.
 Beginning at the *relaxed* position, measure the required amount of stretch. Mark the auger at that point.
 Grip the auger 8" [200 mm] ahead of this mark with locking pliers. Allow the auger to pull back into the boot so that the pliers rest against the end of the boot. See **Figure 34**.

Use a hacksaw or bolt cutters to cut the auger at the stretched auger mark.

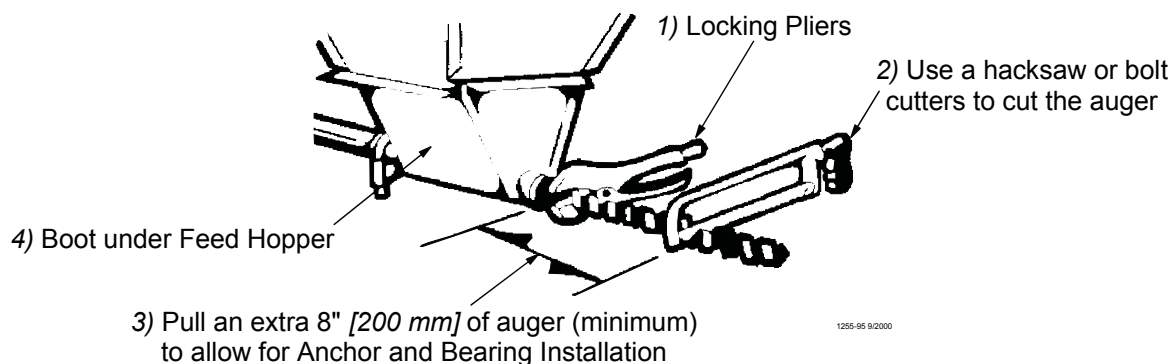


Figure 34. Cut the Auger with required stretch

12. Insert the Anchor Assembly into the auger until it touches the washer at the back of the anchor. Tighten the setscrews in the center of the anchor until they touch the auger, then tighten a maximum of 1/2 turn. See **Figure 35. DO NOT OVERTIGHTEN THE SET SCREWS.**

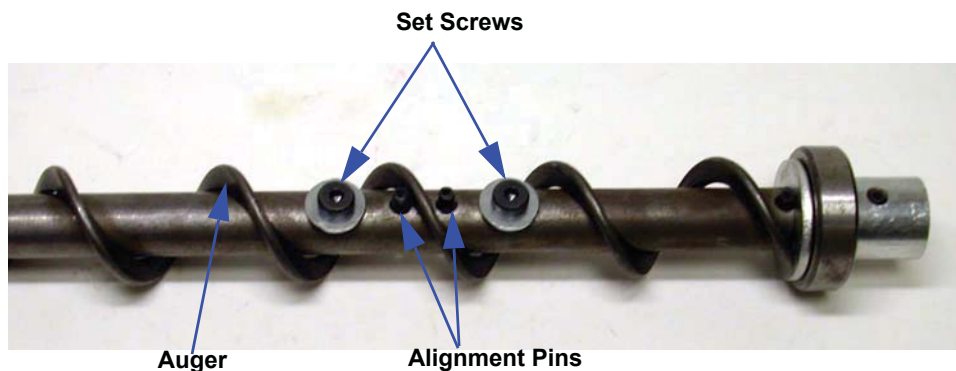
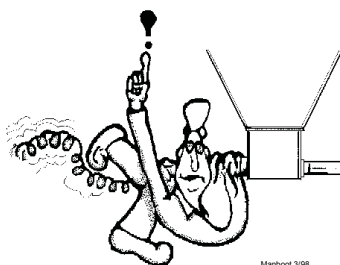


Figure 35. Auger and Anchor Bearing Connection

13. **Carefully** remove the locking pliers while holding onto the Anchor and Bearing Assembly and auger securely. **Slowly** ease the auger back into the tube. Use caution. If the auger is allowed to spring back, the bearing race may crack. Install the Bearing Retainer and fasten with a tube clamp. Keep the Bearing Retainer flush with the end of the anchor for safety.
14. Place the cannonball in the boot.



**BE CAREFUL WHEN
WORKING WITH THE
AUGER!**

Auger Brazing

The auger should be brazed if it is necessary to splice or lengthen it. A bronze, flux coated rod is recommended.

The ends of the auger should butt against each other, **DO NOT THREAD INSIDE EACH OTHER**. See **Figure 36**. The joint should be well filled with no sharp edges or rough corners to wear against the tube. To align the auger for brazing, lay it in angle or channel iron and clamp it firmly in place. Use low heat. Allow the joint to air cool; rapid cooling will cause the auger to become brittle.

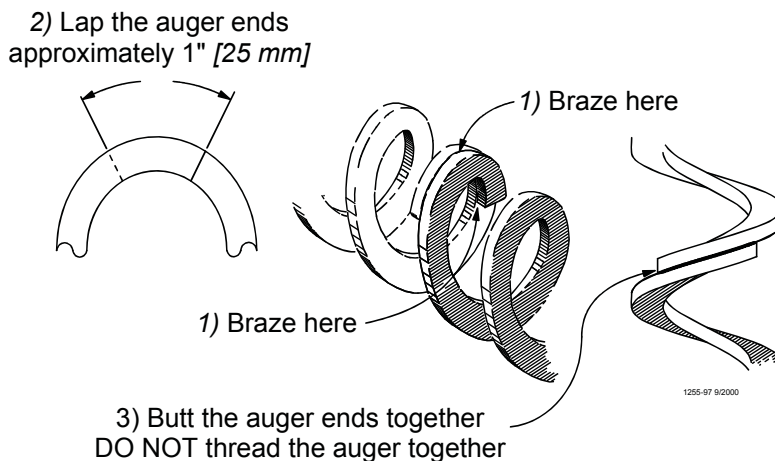


Figure 36. Auger Brazing

Anti-Roost Installation

1. Unroll the bulk anti-roost cable. Note: If the cable is unrolled as shown in **Figure 37**, taking 5 loops of the coil with one hand, then changing hands to remove 5 loops as it is unrolled, it will lie flat during installation.

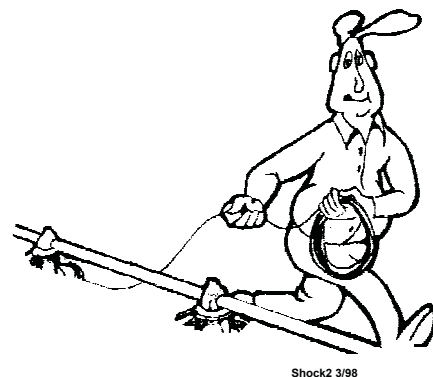


Figure 37. Unrolling the Cable

2. Start at the hopper end of the line and form a loop around the anti-roost bracket. For best results, make a double loop around the anti-roost insulator in the center groove of the insulator and fasten with a 1/16" cable clamp as shown in **Figure 38**.
3. Insert the cable in the insulator on the top of each Grill Support between the hopper and the next anti-roost bracket.

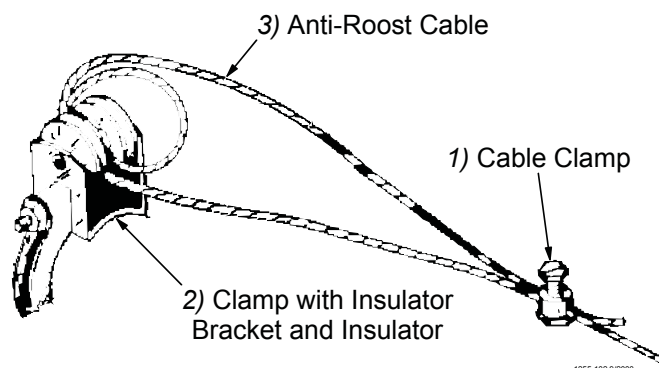


Figure 38. Anti-Roost Cable at the Hopper

4. Attach a spring in the center groove at the second anti-roost bracket and cut the cable at this point. See **Figure 39**.
5. Thread the ends of the cable through the end of the spring. Pull the cable tight so that there is 3/4" to 1" [20 to 25 mm] of stretch in the spring. Clamp the cable to form a loop and cut off any excess. See **Figure 39**.
6. Attach the cable to the insulator. For best results, make a double loop around the anti-roost insulator in the center groove of the insulator and fasten with a 1/16" cable clamp as shown in **Figure 39**.
7. Run the cable to the next insulator, attach a spring in the center groove at the anti-roost bracket and cut the cable at this point. The cable should be positioned in the insulator built into the top of each grill support along the feeder line.
8. Repeat this installation until the anti-roost cable is installed along the entire feeder line.

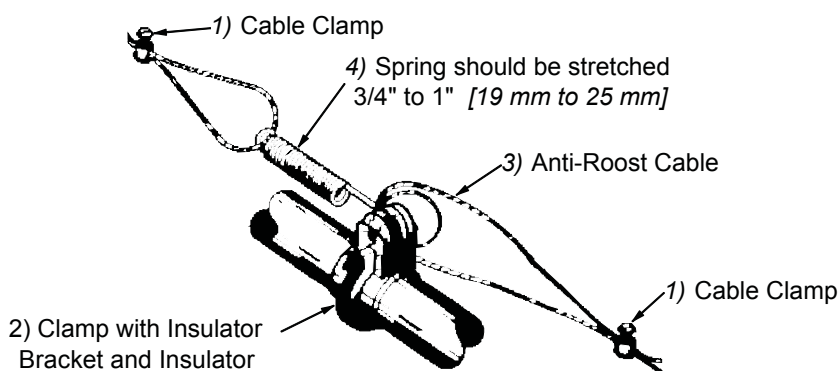


Figure 39. Anti-Roost Cable Mid-Line Connection

9. At the control unit, after clamping the cable to the spring, cut the cable about 8" to 10" [200 to 250 mm] longer than necessary. Feed the end of the cable through the center of the spring, around the first insulator on the control unit, and clamp the cable using the cable clamp supplied with the control unit. See **Figure 40**.
10. Install the wire form on the control unit insulators. Be sure the guard snaps into the retainers molded into the insulators. See **Figure 40**.

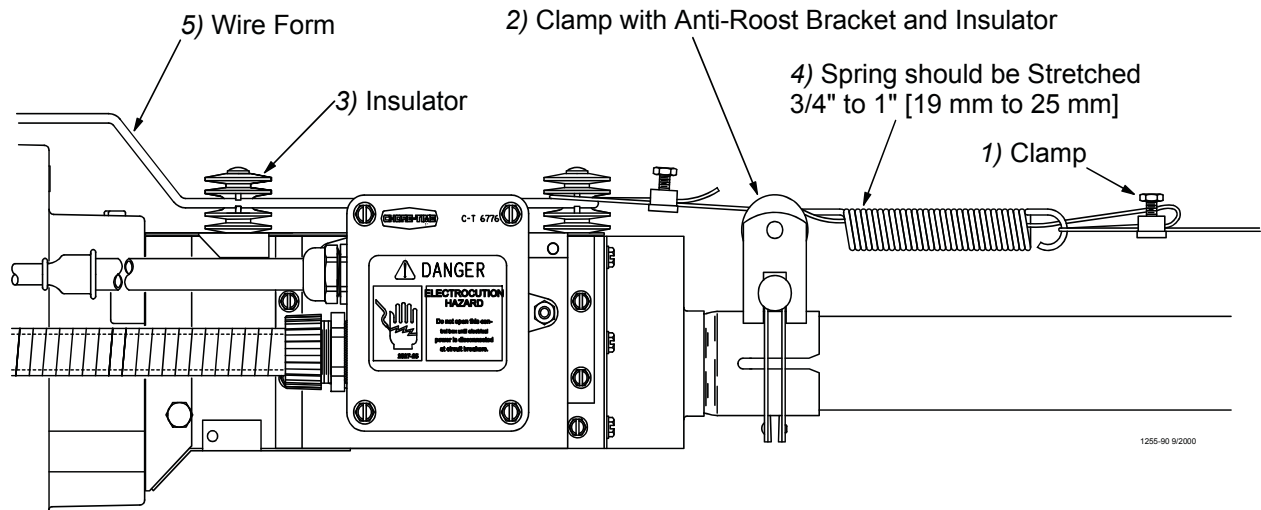


Figure 40. Anti-Roost Installation at the Control Unit

11. Install the Poultry Trainer or Line Charger, as shown in **Figure 41 or 42**.
 The Poultry Trainer is used to power all Anti-Roost lines in a house. See **Figure 41**.
 The Line Charger is used to power individual Anti-Roost lines in a house. See **Figure 42**.
 Route the charger wire from the Poultry Trainer or Line Charger to the Anti-Roost system. Secure the Charger Wire to the Anti-Roost cable, using a cable clamp.

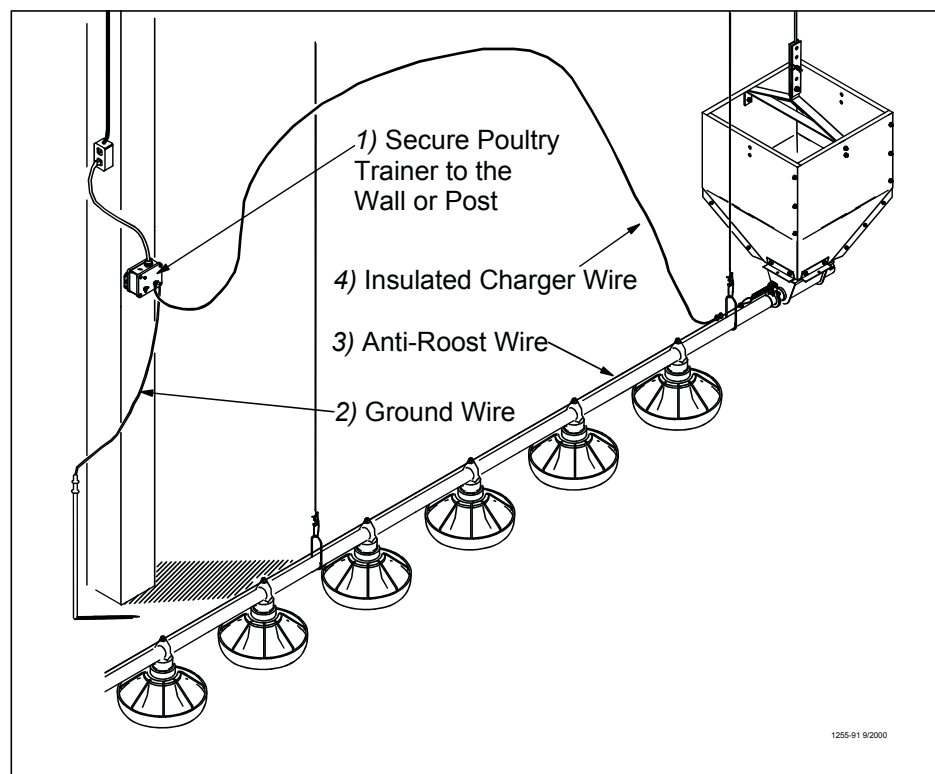


Figure 41. Poultry Trainer Installation

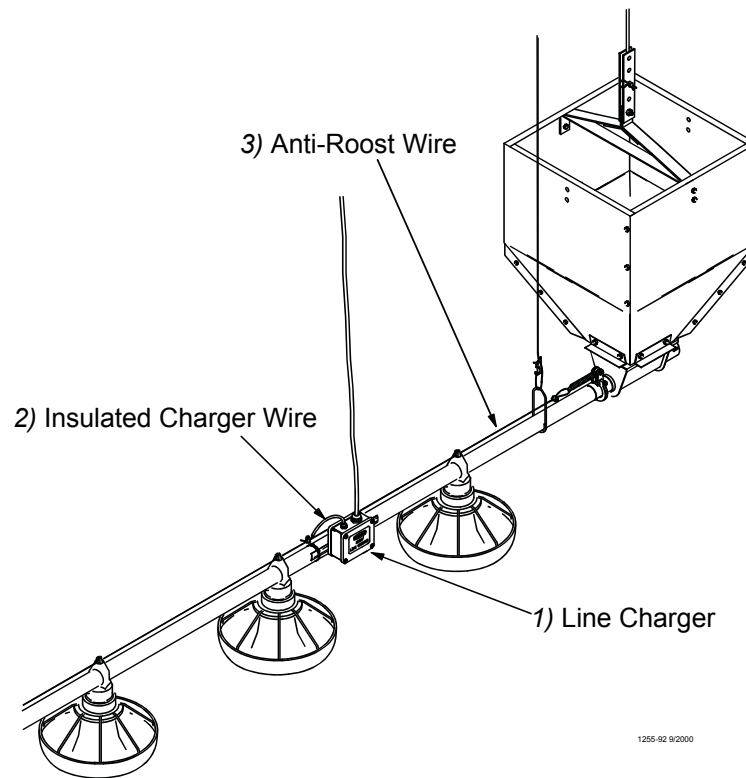
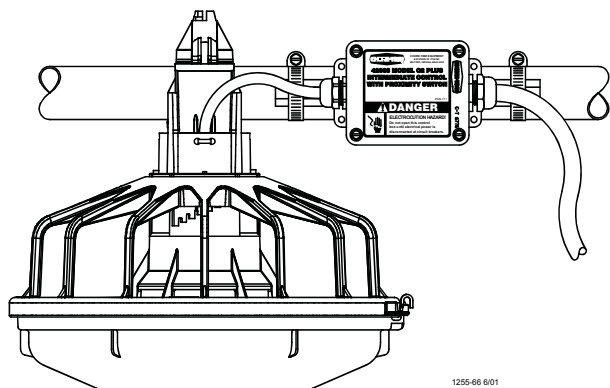


Figure 42. Line Charger Installation

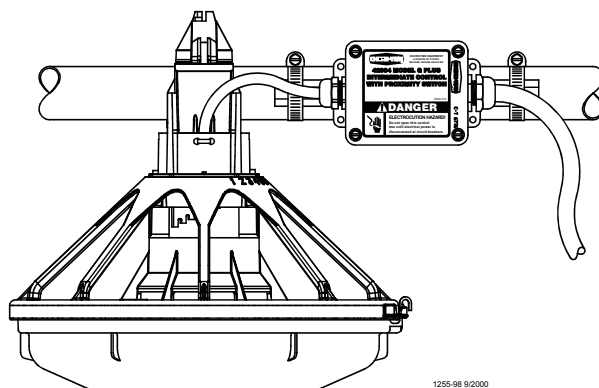
12. The **anti-roost system** *must* be on a **separate electrical circuit**, allowing the system to be **disconnected by a switch near the door**.
Remember, the anti-roost system should be **grounded through the poultry trainer**.

Mid-Line Control

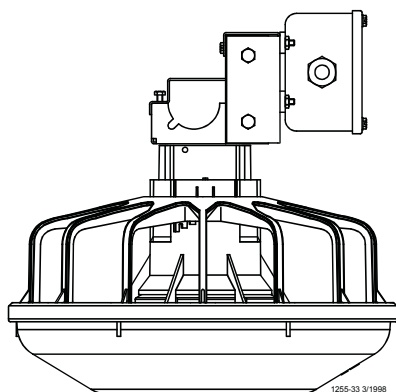
Mid-Line Control Units are available for the Model C2 Plus & G Plus Feeders. The Mid-Line Controls are shown in **Figure 43**.



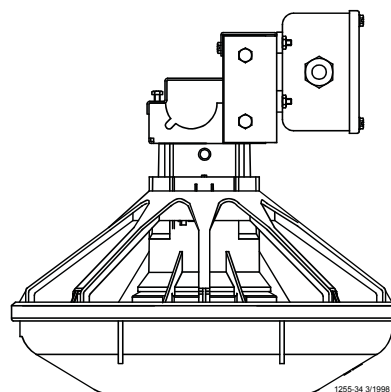
**Model C2 Plus Mid-Line Control with
Sensor Plus Proximity Switch**



**Model G Plus Mid-Line Control with
Sensor Plus Proximity Switch**



**Model C2 Plus Mid-Line Control with
Mechanical Switch and Windows**



**Model G Plus Mid-Line Control with
Mechanical Switch and Windows**

Figure 43. Mid-Line Controls

The Mid-Line Control makes it possible to operate the feeding system when birds are confined away from the End Control Unit. Chore-Time recommends placing the Mid-Line Control Feeder at least 2 pans away from the curtain or partition. See **Figure 44**.

1. **New Feeder Lines:** Leave one feeder pan assembly off the feeder control tube at the point where the Mid-Line Control needs to be placed. The feeder line can be assembled and suspended before attaching the Mid-Line Control; or the Mid-Line Control may be attached to the feeder tube when the other pans are installed.

Existing Feeder Lines: Cut the Grill Support and remove the feeder pan at the location where the Mid-Line Control will be installed.

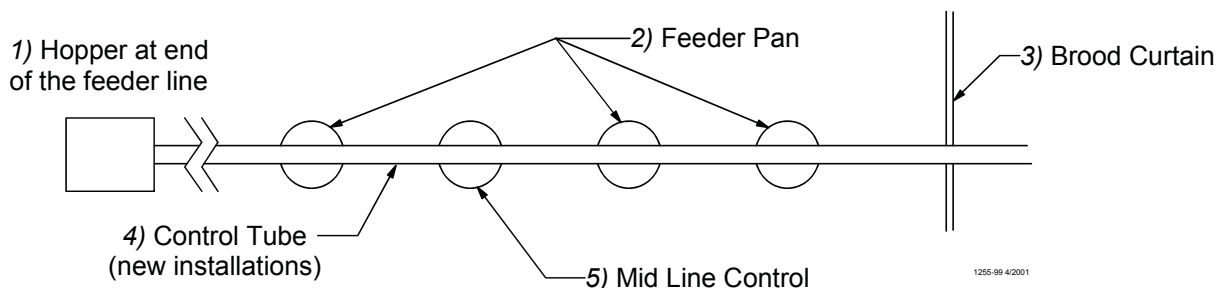


Figure 44. Mid-Line Control Location Diagram

2. **New Feeder Lines:** Go to step 3.

Existing Feeder Lines: Enlarge the outlet hole to approximately 1" [2.5 cm] diameter for the Mid-Line Control, plus enlarge (2) outlet holes in front (to the hopper end) of the Mid-Line Control. Use unibit to enlarge hole size. Be sure there are no burrs inside the tube to catch the auger.

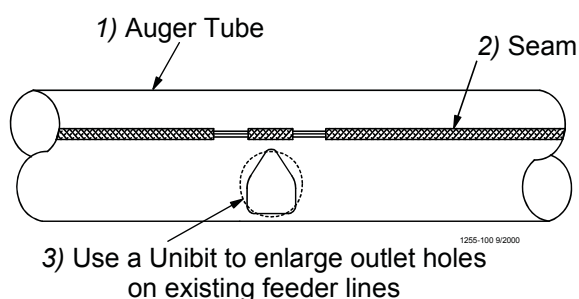


Figure 45. Enlarging Outlet Holes

3. Install the Mid-Line Control:

Mechanical Switch:

- a. Remove the two hex head screws on the control top.
- b. Lift off the control top.
- c. Cradle the feeder tube in the control housing. The feeder tube may have to be turned slightly to allow the pan to hang straight.
- d. Clamp the control in place by inserting tabs on the control top into the slots on the control body. Install and tighten the two hex head screws previously removed.

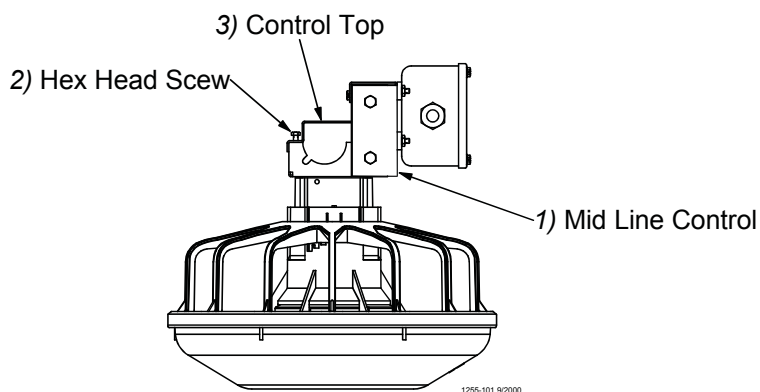


Figure 46. Mid-Line Control Installation

Sensor Plus Switch:

- a. Assemble the Mid-Line Control to the Feeder Tube as shown in **Figure 47**.
- b. Attach the Switch Box Assembly to the Feeder Tube with Hose Clamps as shown in **Figure 47**.

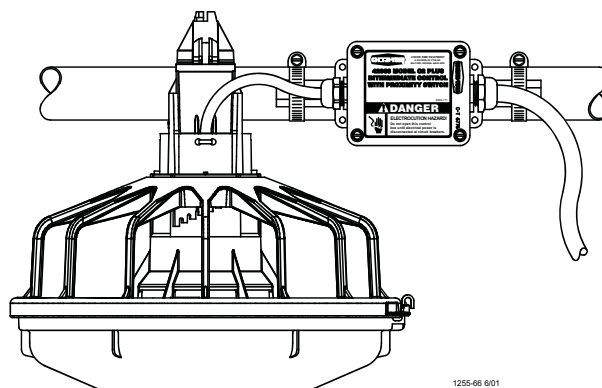


Figure 47. Installing the Sensor Plus Mid Line Control

4. Install a toggle switch, out of reach of the birds, to disconnect power to the Mid-Line Control. This allows the Mid-Line Control to serve as standard feeder when not used as a control feeder.
5. Wire the Mid-Line Control as shown in the wiring diagram section of this manual.

Feeder Management and Operation

This section provides you with valuable information concerning feeder operation and management. It is important that you read this information and understand how the feeding system was designed to operate. Once you become familiar with the system, you may *custom operate* it to fit your individual needs.

Initial Start-up of the Feeding System

The Feeding System should be operated prior to birds being housed to make sure the installation is correct, the switches function properly, and to fill the feeder lines with feed.

There are two typical layouts for the feeding system that was determined prior to the installation. Normally if the building is 400' [122 m] or over, a center house hopper set-up is used. See **Figure 48**. For buildings under 400' [122 m], the hopper is placed at one end and the control pan/power unit at the other end. See **Figure 49**.

It is common practice to use partial house brooding during the early days of broiler production. For buildings that have the feeder split in the center (center hopper set-up), normally only the feeders that are in the brood area are used during brood time. For buildings that have the hopper at one end, brooding can be done on the motor end or an optional mid line control pan(s) can be placed on the feeder line.

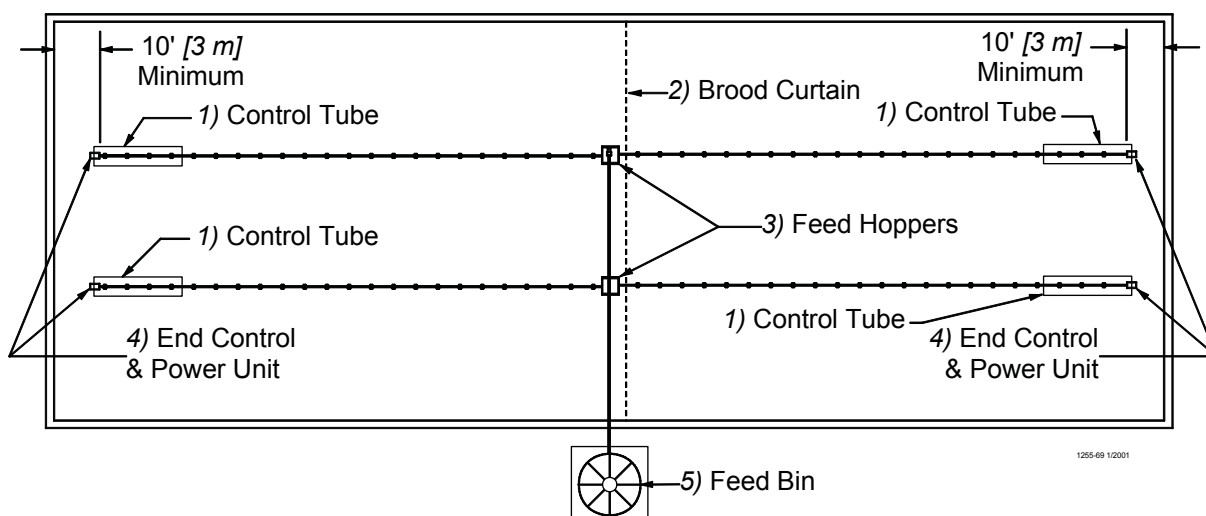


Figure 48. Component location diagram for systems over 400 feet [122 m]. (Top View).

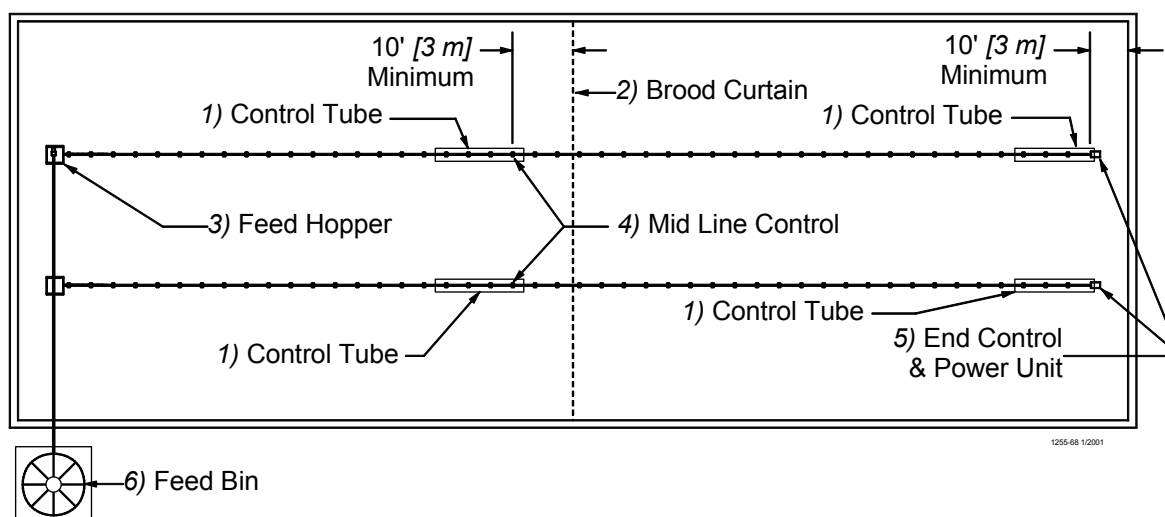


Figure 49. Component location diagram for systems up to 400 feet [122 m]. (Top View).

The feeder tubes and auger are supplied from the factory with a protective oil coating that will cause the system to deliver feed at a reduced rate. The oil coating will also create a larger load on the power unit (motor) until the system has been initially purged with feed, and becomes broken in.

To operate

1. Lower feeder lines so the feed pans are resting on the floor and the feed flood windows are completely open. Although the major weight of the feeder lines will be on the floor, do not remove all the weight from the suspension system and allow the cables to become slack.
2. Apply power to the feeder lines to check the operation. Allow to operate empty for 1-2 minutes.

NOTE: For feeder lines that have mid line controls, the recommended bypass switch(s) are wired into the system for selection of partial or full house control. Select the switch so the mid line control is functional. As the feeder operates, the feed will stop at the mid line control pan.

3. With the shut-off slide on the feed bin boot closed, energize the Flex-Auger® fill system. After operation of approximately 1-2 minutes, open the boot slide 1/2 way to allow feed to be conveyed to the feeders.
4. Once feed begins to be dispensed into the feed hopper(s), manually shut-off the fill system.
5. Apply power again to the feeder lines. Operate the fill system manually to dispense approximately 50 lb. [23 kg] increments of feed into the feed hopper(s). Allow the feed hopper to become empty for 30 seconds between each increment to reduce load on the feeder motor. Continue this procedure until feed has been dispensed to all the feeder pans. When the feed reaches the control pan, the feeder line will be shut-off.
6. Once the feeder lines have been initially filled with feed, manually dispensing feed in 50 lb. [23 kg] increments will no longer be necessary. The shut-off slide on the Flex-Auger® fill system may be completely opened. Refer to the Flex-Auger fill system Operator's Manual for information when multiple feed bins are used.

General Operation of the MODEL C2® PLUS and MODEL G™ PLUS Feeders

These recommendations are the guideline to aid producers with the use of the feeding system. With experience a feeding program will be developed to enhance the feeding systems performance. Several factors such as feed content, type of birds, climate, lighting programs, and etc. may dictate change from these recommendations.

The Model C2 Plus and G Plus feeders have a feed flood windows which allows the feeder pan, when lowered to the floor, to be filled with feed for the brooding of young birds. Start young birds with the feeder line lowered so the feed pans are resting on the floor and the feed flood windows are completely open. Although the major weight of the feeder lines will be on the floor, do not remove all the weight from the suspension system and allow the cables to become slack.

It is advisable to provide supplemental feed during the first few days for the young birds. This is especially true when partial house brooding is used (refer to page 31). Supplemental feeders such as the CHORE-TIME® E-Z START™ Chick Feeder, provide extra feeding space and access to the feed.

With the feeders lowered to the floor and the feed flood windows open, the operation of the feeder will allow a high level of feed to be placed into the feed pans making it easy for the birds to find feed, adapt to the feeder, and begin to eat.

Do not operate the feeding system on automatic (full demand feed) when the feed windows are open. Chore-Time recommends opening the feed windows for the first 8 to 14 days. The feeders will need to be operated at least 2 times a day for the first 5 days, and thereafter, 3 times a day or more as needed, while the windows are open. If it is not possible to operate the feeder manually 1-3 times a day during the brood time (windows open), then a time clock should be utilized to limit the number of times and length of time the feeder can operate. Failure to do one of the above will create the possibility of an excessive high feed level in the feed pans and the birds to waste feed.

DO NOT OPERATE THE FEEDING SYSTEM ON AUTOMATIC (FULL FEED) WHEN THE FEED WINDOWS ARE OPEN.

As the birds grow and become acclimated to the feeder pans, the feeder will need to be raised to the grow-out

position. Before raising the feeder, it is recommended to allow the birds to eat the feed level down below the feed flood windows. This will ease the process of the feed flood windows closing properly.

Use the suspension system to raise the feeder(s) line. As the feeder is raised the feed flood windows will close. Continue raising the feeder lines until the feed pans just begin to clear the floor or litter.

IMPORTANT: When raising the feeder to the grow-out position, make sure the feed pans are to the point of just clearing the floor.

This will insure the feed will properly flow out into the feeder pan. When the feeder is raised to just clear the litter, there may a few places where the litter is lower and the pans seem too high. Do not be concerned as the birds will level the litter and at this young bird age, there will be sufficient feeder space.

The feeder should be set on the #4 position for most applications. The adjustment settings are easy to understand and change. Setting numbers are embossed on both sides of the grill so they may be easily seen from either side of the feeder line. See **Figure 50**.

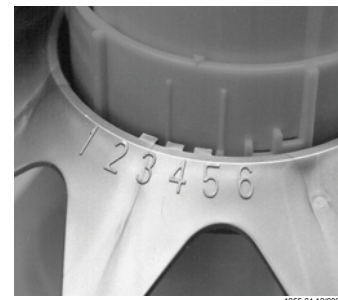


Figure 50. Feeder Pan Assembly adjustment

Feed texture and consistency, type of bird, or other variables may make it necessary to change to another feed setting position. The combination of proper pan height, feeder setting, and feeder operation will result in optimum feeder performance (refer to **Figure 51** for pan height information). The operator will learn what performs best for his/her situation with experience.

End Control and Mid Line Control Pans

At installation time, the end control pan of the feeder was placed to be 10 feet [3 m] from the end of the building to allow the birds access around the end of the feeder line. It is important the feed setting of the end control pan be the same as the rest of the feeder pans so the birds activate the feeder (see page 34 for adjustment of the control).

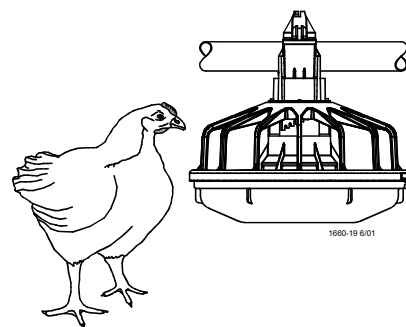


Figure 51. Feeder Pan Assembly height adjustment

The Mid Line Control is placed on the feeder line when partial house brooding is desired. It is important the mid line control be installed at least 2 feeder pans away from the curtain or partition so the birds will activate the feeder line. The feed setting for the mid line control should be the same as the rest of the feeder pans on the feeder line (see page 34 for adjustment information). A toggle switch or disconnect is used to bypass the power to the mid line control. This allows the mid line control to serve as a standard feeder after brooding. The feeder can be changed from full house operation to partial house brooding with the activation of the switch.

Controlling the Feeders (optional equipment)

A time clock control is used with the feeding system to reduce excessive feeder operation time and limit feed wastage. The basic use of a time clock control is to allow periods of time during the day for the birds to reduce the feed level in the feeder pans and to limit the possibility of the birds creating a high feed level and wasting feed. This is not to be confused with lighting programs that have become very common place. If lighting or intermittent lighting programs are to be used, the use of the time clock control will be limited to just the light period. **Caution should be used to not restrict the feed from the birds during the light period.** Experience with the feeding system will determine how the time clock control is used.

The MODEL C2 Plus and G Plus Feeding Systems may be controlled by the #34385 Control Panel or the #34574 Time Clock Control. Refer to the instructions supplied with each control for information.

Electro-guard Operation

The electro-guard chargers should be operated on a separate electrical circuit so the anti-roost system can be shut off using a switch next to the entrance door when someone enters the building. Birds are less likely to become wild and flighty if the anti-roost is off when people are in the building.

Optional Slide Shut-Off

An Optional Slide Shut-Off is available for Windowed and Non-Windowed Feeder Assemblies. The Slide Shut-Off may be used on either style of feeders.

To assemble the Slide Shut-Off to the Non-Window Feed Cone, remove the thinned area from the Non-Windowed Feed Cone, then insert the Slide Shut-Off into the slots, as shown in **Figure 52**.

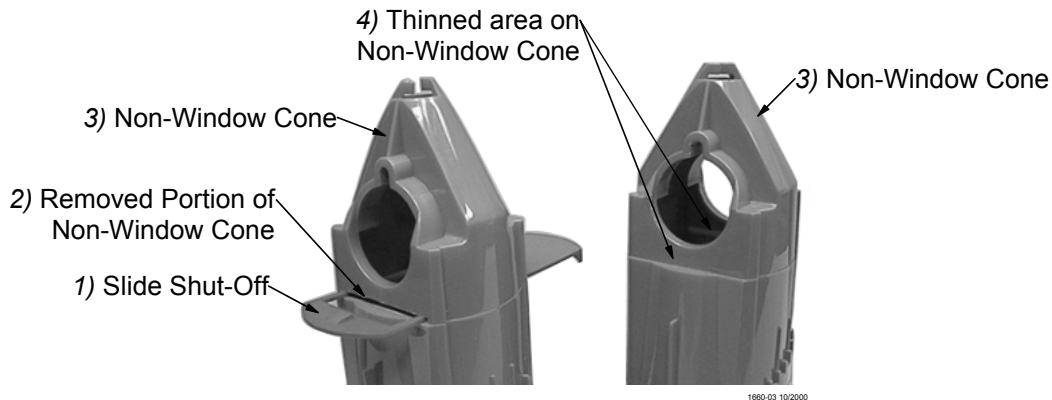


Figure 52. Optional Slide Shut-Off Assembly

Optional MODEL G Plus Pan Extension

An Optional Pan Extension is available for MODEL G Plus Feeder Pan Assemblies. The Pan Extension is used for Turkey Hens.

To assemble the Pan Extension on the MODEL G Plus Feeder Pan Assembly, place the Pan Extension around the MODEL G Plus Grill, as shown in **Figure 53**, and lock in place with the included carriage bolt and hex flange head nut.



Figure 53. MODEL G Plus Feed Pan Assembly with optional Pan Extension installed

Maintenance

Floor Feeding System Maintenance

The Model C2 Plus and Model G Plus Feeders require minimum maintenance. However, a routine periodic inspection of the equipment will prevent unnecessary problems.

Maintenance should be done by a qualified technician.

ALWAYS DISCONNECT POWER TO THE SYSTEM WHEN SERVICING OR MAINTAINING THE EQUIPMENT. FAILURE TO DISCONNECT POWER MAY CAUSE INJURY OR DEATH.

Gear Head Maintenance

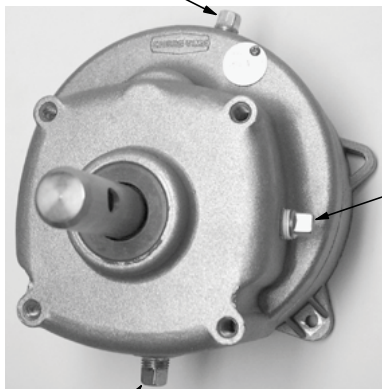
Refer to **Figure 54**.

Check the oil level in the gear heads at installation and every 6 months. The Pipe Plug, on the side of the gear head, indicates proper oil level. Add SAE 40W oil when necessary.

The oil in the gearheads should be replaced every 12 months with new SAE 40W oil

- A. Remove the bottom Pipe Plug to drain the oil. Discard used oil in accordance with local and national codes.
- B. Wipe any debris off the magnet on the bottom Pipe Plug and reinstall. Remove the side Pipe Plug and (top) Vent Plug.
- C. Set the power unit in the horizontal position.
- D. 2-Stage Gearheads: Add approximately 9 oz. (266 ml) of SAE 40W oil through top hole. This should be just enough oil to reach the side Pipe Plug.
3-Stage Gearheads (3261-9, 3261-12, 3261-14): Add approximately 13 oz. (384 ml) of SAE 40W oil through top hole. This should be just enough oil to reach the side Pipe Plug.
- E. Install the side Pipe Plug and (top) Vent Plug.

1)Vent/Oil Fill Plug



2)Oil Drain Plug

Check the oil level in the gear head at installation

Check the oil level every 6 months

3)Check the oil level at the side plug
If oil is needed use SAE 40W oil

Oil capacity for the 2 stage gear head is 9 oz [266 ml]

Oil capacity for the 3 stage gear head is 13 oz [384 ml]

The oil should be changed every 12 months

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Figure 54. Gearhead Maintenance

Check equipment for loose hardware after the first flock and then every 6 months--including the Anchor Block. Tighten if necessary.

Mechanical Switch Adjustment procedure for Control Units

Refer to **Figure 55**.

- A. Turn the adjustment nut counter-clockwise until the switch clicks.
- B. Turn the adjustment nut clockwise until the switch clicks.
- C. Turn the adjustment nut counter-clockwise 3/4 turn.

1) Adjustment Nut



Figure 55. Switch Adjustment

SENSOR PLUS™ Sensor Switch Adjustment for Control Units

Refer to **Figure 56**.

The SENSOR PLUS™ Pan Half Round Sensor Switch is adjusted at the factory to a sensitivity of .125" from the face of the sensor and a time delay of 15 seconds, the time delay adjustment is 0 seconds to 600 seconds.

To adjust the Time Delay:

- For less time — turn Time Delay Adjustment Screw counter-clockwise (Light blinks fast)
- For more time — turn Time Delay Adjustment Screw clockwise (Light blinks slow)

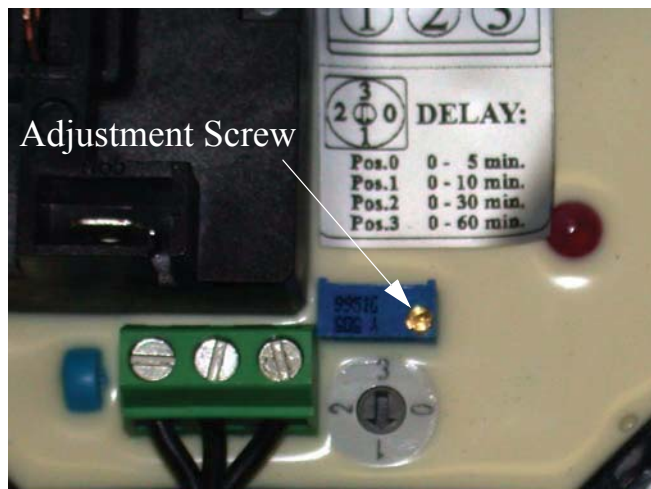


Figure 56. Adjusting the SENSOR PLUS Proximity Switch

Feeder Line

Keep anti-roost cables tightly stretched. This increases the effectiveness of the electro-guard anti-roost system and keep the pans from being tilted when birds push against them.

Remove all feed from the feeder when there are no birds in the house and when the building is washed and disinfected.

Turn the feeders off prior to removing the birds from the house. This will allow them to clean the feed out of the pans.

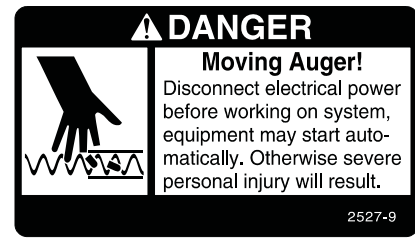
If the system is not to be used for an extended period of time, remove all the feed from the feeder lines and feeder pans.

Disconnect power to the system to prevent accidentally starting the system.

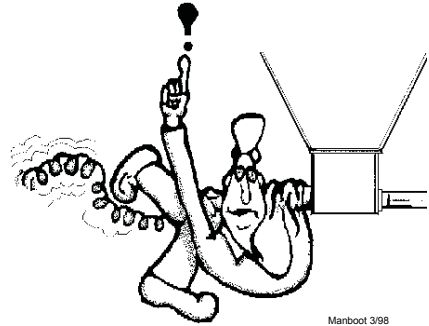
If the system must be disassembled, extreme caution must be used to prevent injury from springing auger. Refer to **Figure 57**.

1. Disconnect power to the entire system.
2. Loosen the Tube Clamp on the bearing at the hopper end of the system. Remove the Tube Clamp and Bearing Retainer.
3. Pull the Anchor and Bearing Assembly and approximately 18" [45 cm] of auger out of the boot.

CAUTION: Stand clear...the auger may spring back into the tube.



BE CAREFUL WHEN WORKING WITH AUGER!



4. Place a clamp or locking plier securely on the auger to prevent it from springing back into the auger boot.
5. Loosen the setscrew in the bearing assembly shaft and remove the Anchor and Bearing Assembly from the auger.

To reinstall the Anchor and Bearing Assembly:

1. Insert the Anchor Assembly into the auger, guide the tip of the auger between the two roll pins in the center of the anchor. Continue to guide the auger until the tip of the auger hits the flat washer. Tighten the setscrews in the center of the anchor until they touch the See **Figure 57**.

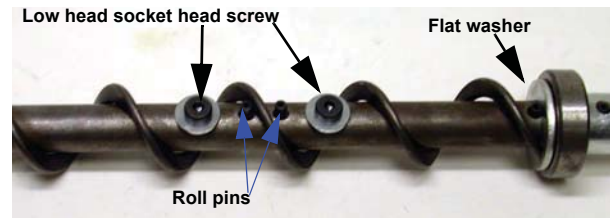


Figure 57. Auger and Anchor Bearing Connection

2. **Carefully** remove the locking pliers while holding onto the Anchor and Bearing Assembly and auger securely.

Slowly ease the auger back into the tube. Use caution. If the auger is allowed to spring back, the bearing race may crack.

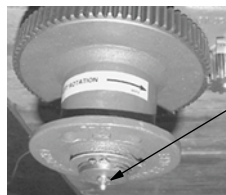
Install the Bearing Retainer and fasten with a tube clamp. Keep the Bearing Retainer flush with the end of the anchor for safety.

Power Lift Winch Maintenance

Refer to **Figure 58**.

Grease the winch every 6 months with 1 to 2 shots of common industrial or automotive grease.

DO NOT OVER GREASE THE WINCH.



1) Grease the Power Lift Winch every 6 months with 1 to 2 shots of common industrial or automotive grease
DO NOT OVER GREASE THE POWER LIFT WINCH

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Figure 58. Maintenance to the Power Lift Winch

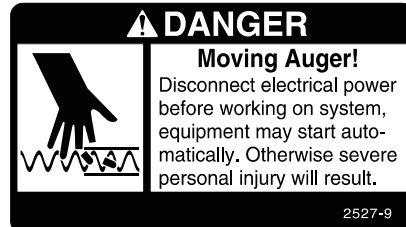
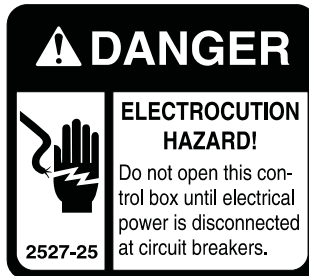
Remove any feed build-up in the Safety Switch Boxes in the Control Units.

It may be necessary to periodically retighten the shocker cable. Be sure to disconnect power to the shocker before servicing the equipment.

Trouble Shooting the Floor Feeding System

ALWAYS DISCONNECT POWER TO THE SYSTEM WHEN SERVICING OR MAINTAINING THE EQUIPMENT. FAILURE TO DISCONNECT POWER MAY CAUSE INJURY OR DEATH.

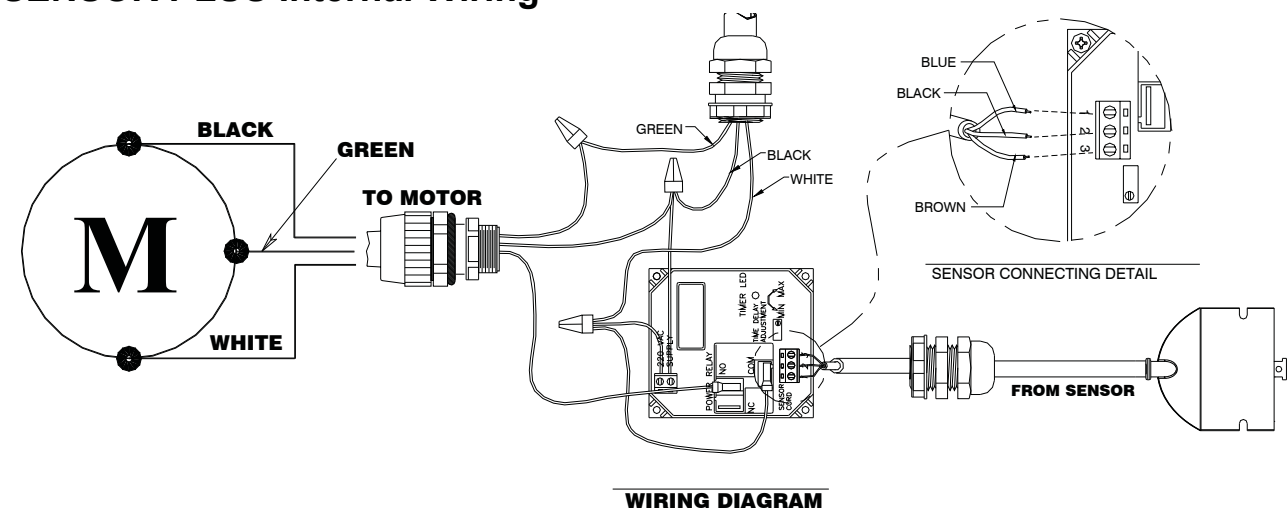
Service and maintenance work should be done by a qualified technician only.



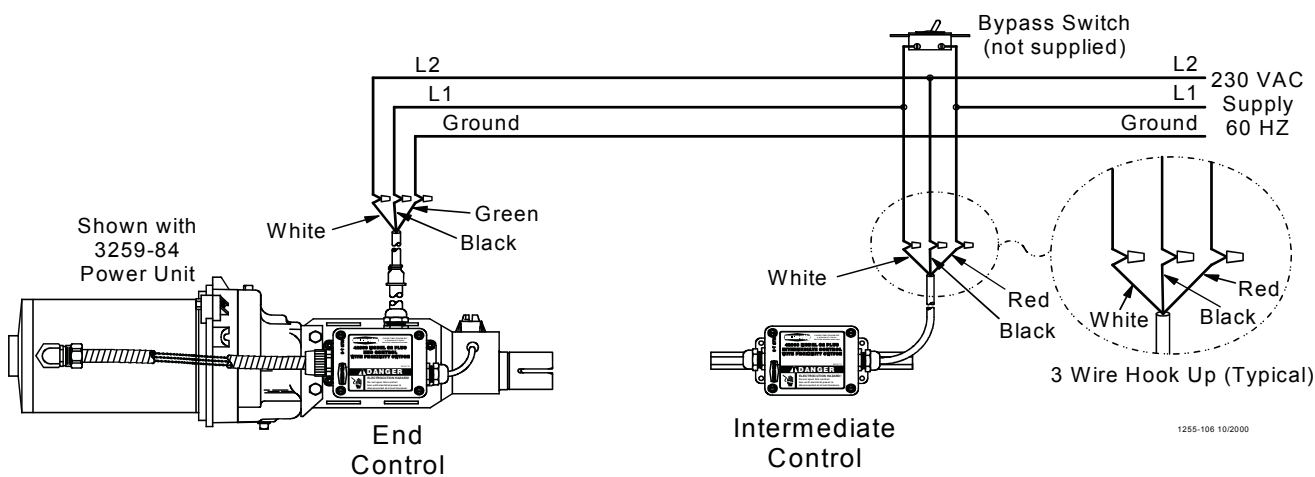
Problem	Possible Cause	Corrective Action
None of the feeder lines will operate	No power supplied to equipment	Replace burned fuses or reset circuit breaker Make sure voltage required is supplied
	Time Clock or relay defective	Replace Time Clock or relay
	Time Clock improperly programmed	Refer to Programming the Time Clock section and reprogram the Time Clock
Feeder line will not operate	Power unit cord not plugged in sufficiently to make contact	Check motor cord plug at control unit and control unit plug at outlet for connection
	Motor cord wires are broken at plug or where cord enters motor	Check cord for continuity Replace if defective
	Power Units thermal overload tripped	Push motor overload reset button to reset
	Control unit switch defective or out of adjustment	Adjust switch according to the Switch Adjustment Procedure in the maintenance section
Motor overloads frequently	Oil on new auger loads motor excessively when feed is carried for first time	Polish auger by running 50 lb (20 kg) increments of feed out to pans
	Inadequate power reaching motors	Check line voltage at the motors Check starting current draw at motors Wiring of adequate size is essential to feeder operation
	Object caught in the auger; motor runs, stalls, then auger spins in reverse	Check hopper boot, control unit and pan outlet holes for foreign objects Remove obstruction
Auger runs erratically	Frozen or cracked bearing at boot anchor	Replace bearing Slowly ease auger back into tube Be careful not to damage the bearing when reinserting the auger
	Insufficient stretch in auger	Shorten the auger
	Obstruction in the auger	Remove obstruction
Auger tube or boot wears out rapidly (Noisy feeder operation)	Auger is bent or kinked	Repair or replace damaged auger
	End of auger is riding up on anchor weldment	Auger must not be positioned over weld on anchor Check for bent or damaged auger
Oil leaking out of seals on power unit	Gearhead vent plug not installed	Replace plastic shipping plug with vent plug
	Defective gear head seal	Replace seal
Not enough feed supplied to the feeder pans	Insufficient time programmed on the time clock	Add more operating time to feeding period
	Feeder line control unit switch out of adjustment	Adjust switch according to the Switch Adjustment Procedure in the maintenance section

Wiring Diagrams

SENSOR PLUS Internal Wiring



SENSOR PLUS Control Wiring Diagram

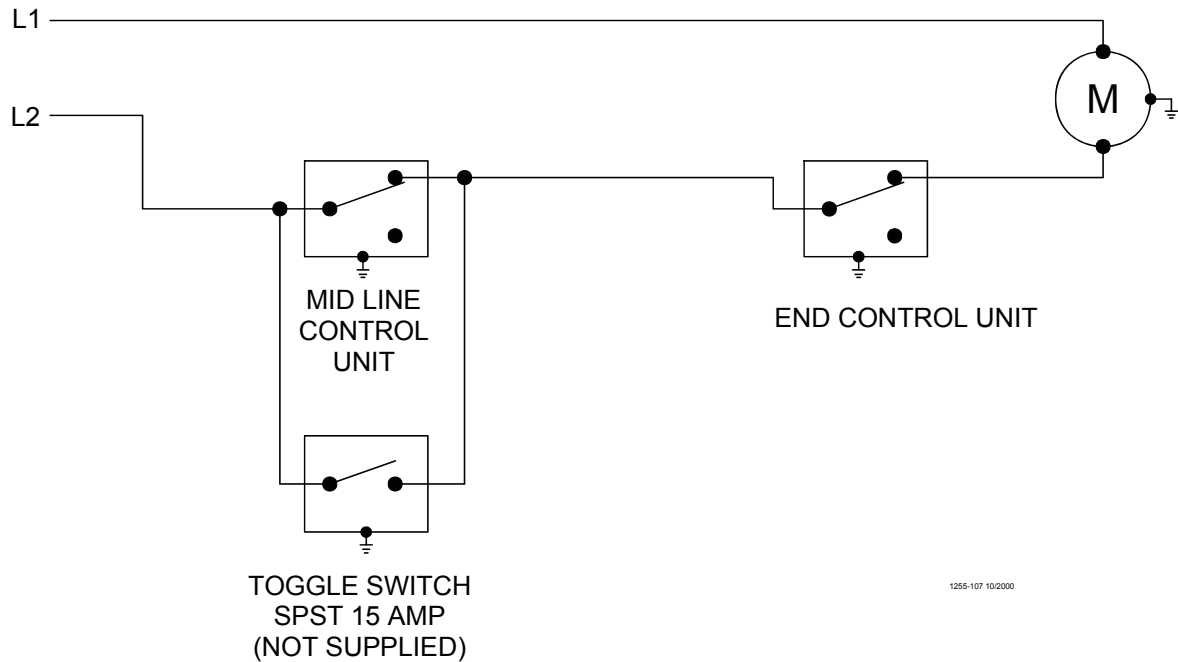


Mechanical Switch Single Phase(Ø) Wiring Diagram

FROM DISCONNECT OR
CONTROL DISCONNECT
220/230 VOLTS 50/60 HZ

SINGLE PHASE WIRING DIAGRAM

FEEDER LINE MOTOR
220/230 VOLTS 50/60 HZ
SINGLE PHASE

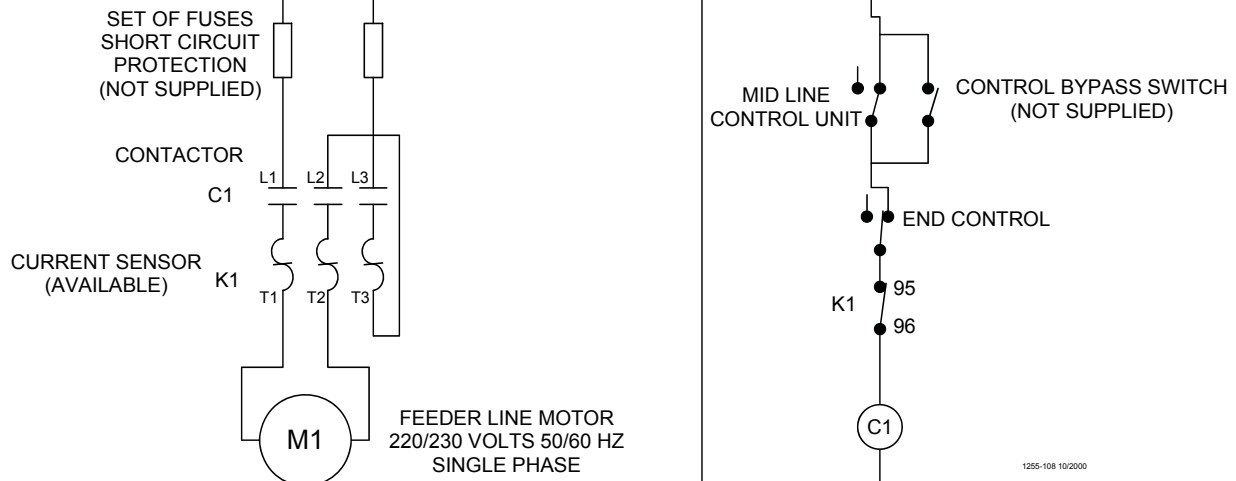


Mechanical Switch Single Phase(Ø) Wiring Diagram with Motor Starter

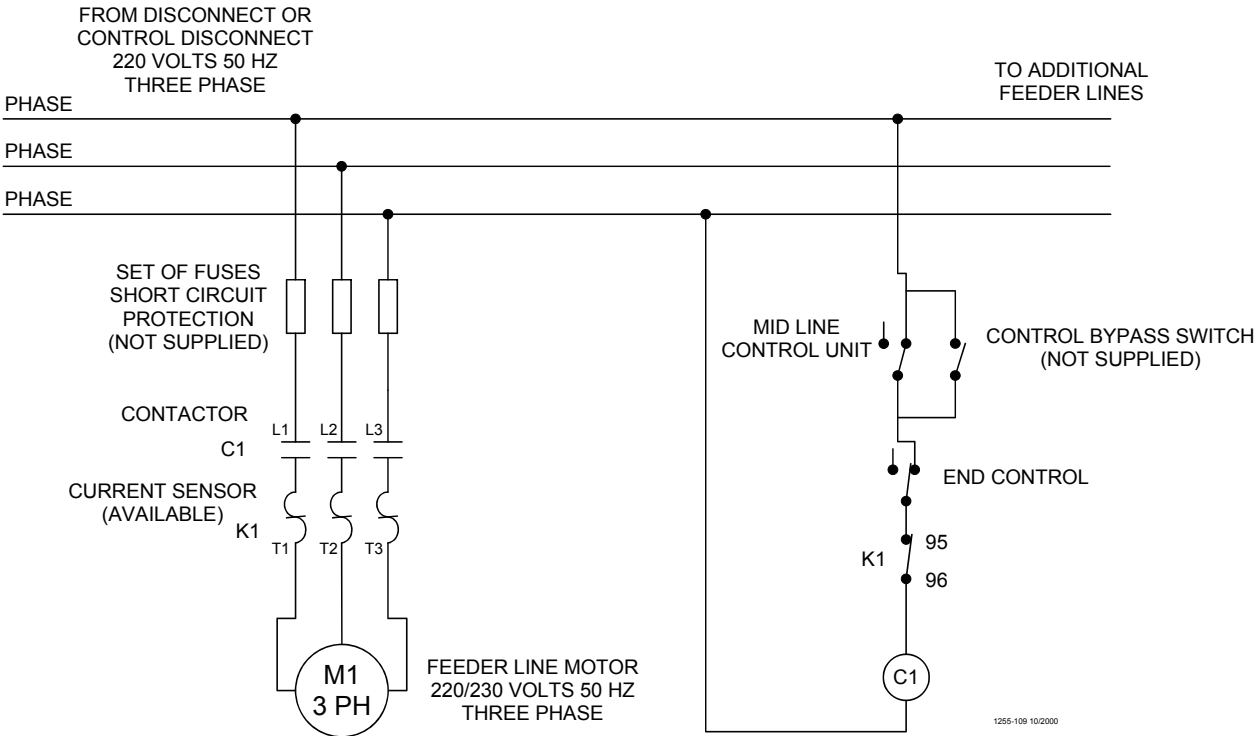
SINGLE PHASE

FROM DISCONNECT OR
CONTROL DISCONNECT
220/230 VOLTS 50/60 HZ

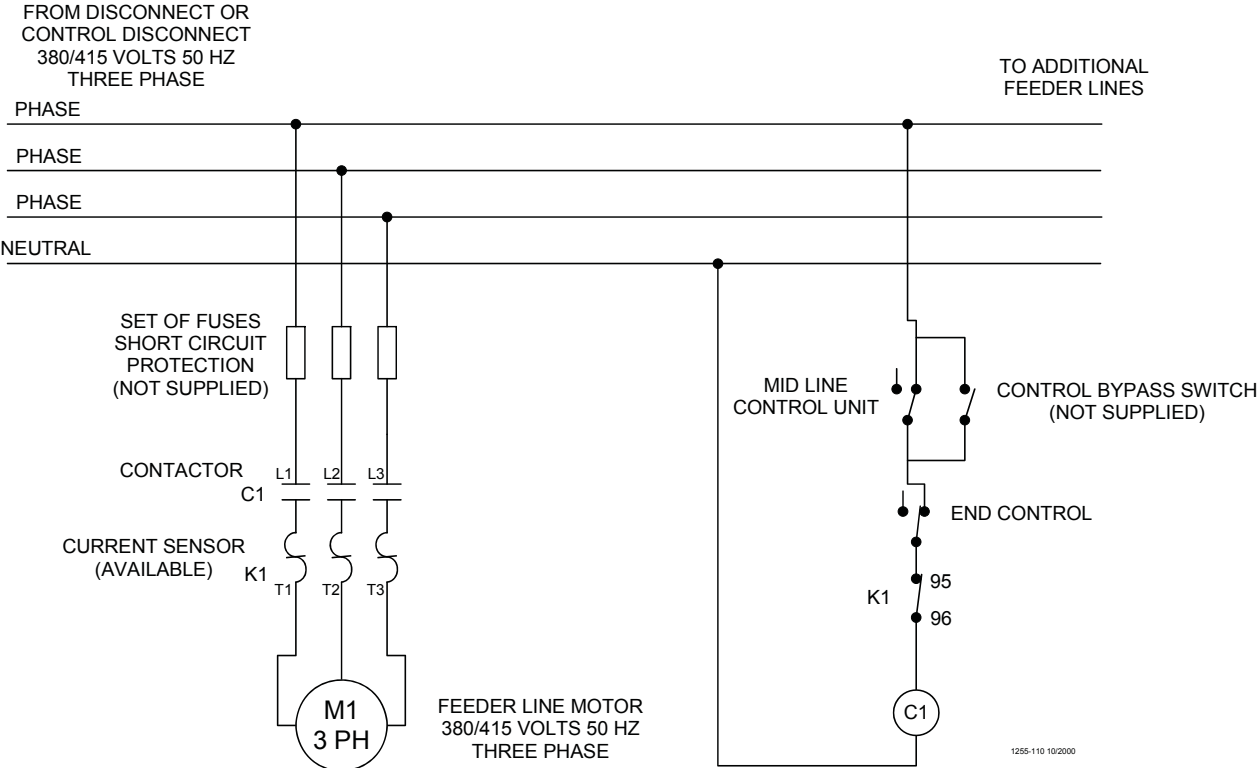
TO ADDITIONAL
FEEDER LINES



Mechanical Switch Three Phase(Ø) Wiring Diagram: 220 V.

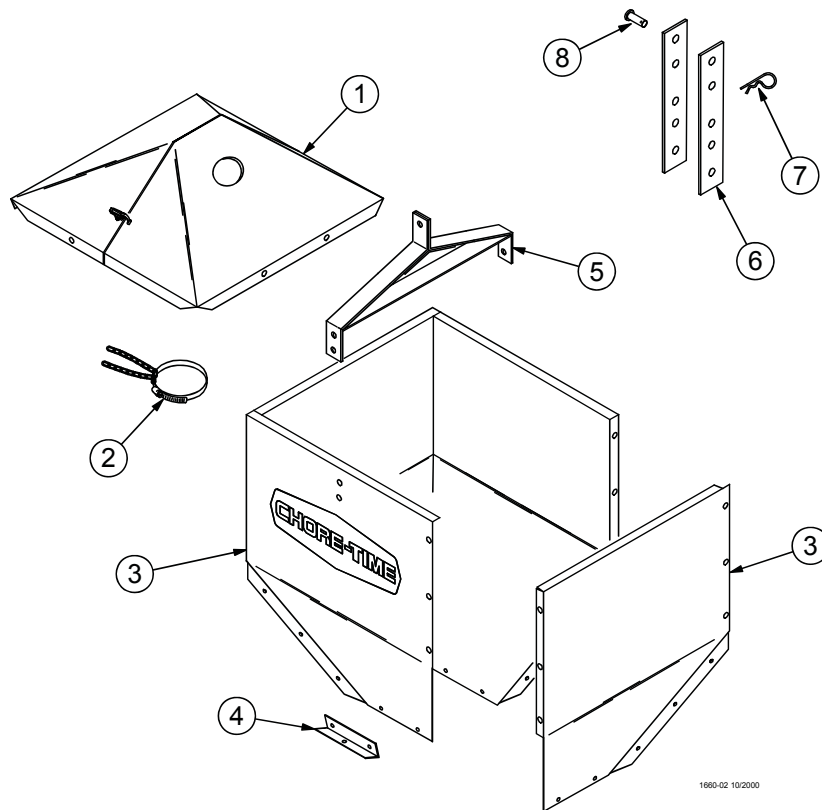


Mechanical Switch Three Phase(Ø) Wiring Diagram: 380/415 V.



Parts Listing

200# Hopper Components

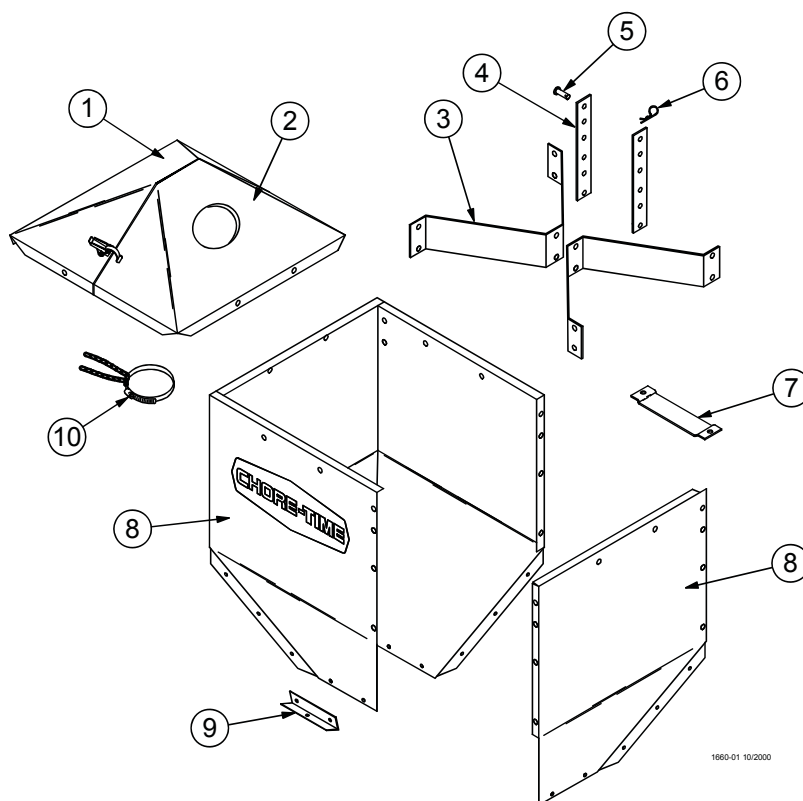


Item	Description	Part No.
1*	Hopper Cover (optional)	28206
2	Tube Support Assembly	14367
3	Hopper Side	2680
4	Boot Hanger	2671
5	Hanger Bracket Assembly	2681
6	Adjustment Bracket	2706
7	Hair Pin	2664
8	Clevis Pin, 5/16 x 1"	2797-1

*Hopper Cover not included. Must be ordered separately.

The 200# Hopper Assembly may be ordered under Part No. 7941. Hopper Cover must be ordered separately.

100 # Hopper Components



Key	Description	Part No.
1*	Hopper Cover (w/o hole)	28211
2*	Hopper Cover (w/ hole)	28212
3	Hopper Hanger	28165
4	Adjustment Bracket	2706
5	Clevis Pin, 5/16" x 1"	2797-1
6	Hair Pin	2664
7	H.L.C Mounting Bracket	28267
8	Hopper Side (w/ hole)	24241
9	Boot Hanger	28168
10	Tube Support Assembly	14367

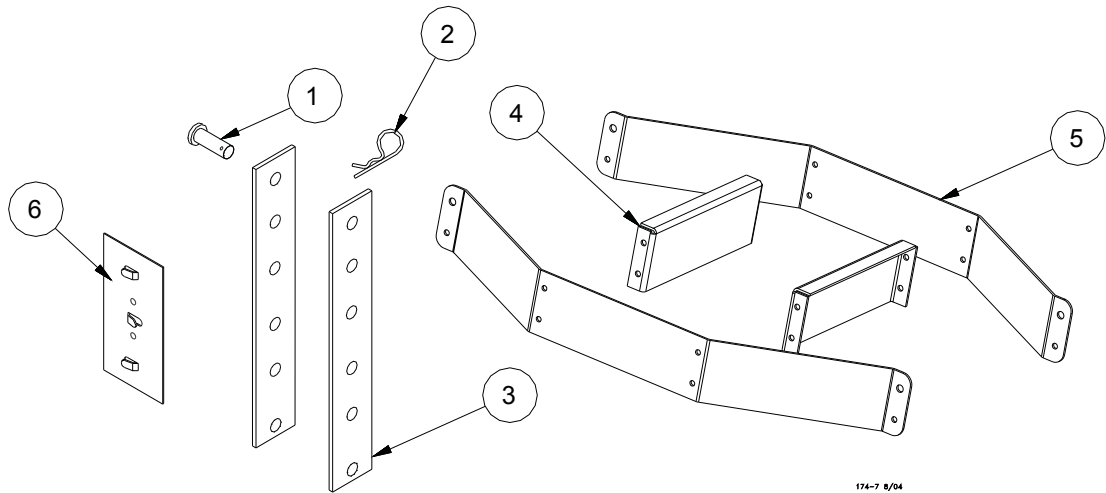
*These components may be ordered as an assembly under Part No. 28210.

The 100# Hopper Assembly may be ordered under Part No. 28220.

The 100# Hopper Assembly, including the Cover, may be ordered under Part No. 28240.

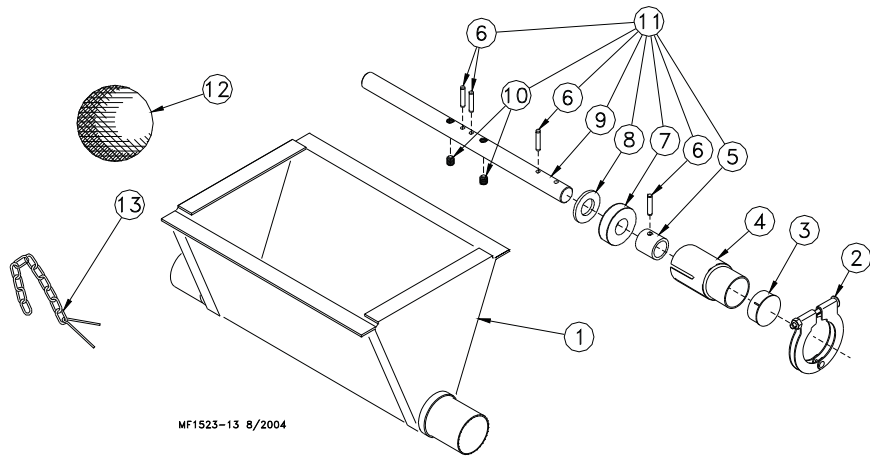
Hopper Mount Bracket (Optional)

Part Number 49358 - Hopper Suspension Kit



Item	Description	Part No. Single Boot Kit	Part No. Twin Boot Kit
1	Clevis Pin, 5/16" x 1"	2797-1	2797-1
2	Adjustment Bracket	2706	2706
3	Hair Pin	2664	2664
4	Suspension Brace	48680	48680
5	Suspension Angle	48679	48679
6	Cable Guide	34573	34573

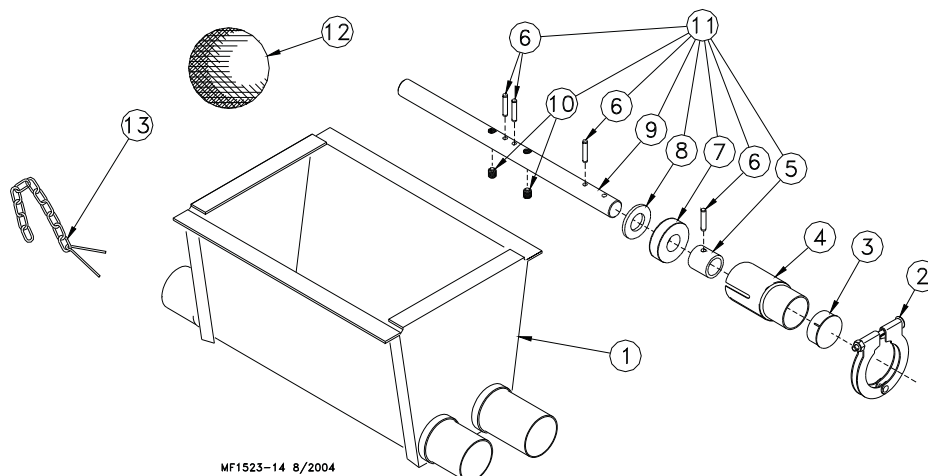
Single Boot Components Part No. 6822



Item	Description	Part No.
1	Boot Weldment	3760
2	Tube Clamp	24063
3	Cap	29373
4	Outlet Tube	4556
5	Sleeve	5648
6	3/16 x 1" Pin	2960-1
7	Bearing	2689
8	Washer	2955-14

Item	Description	Part No.
9	Anchor	38540
10	Setscrew	47867
11	Anchor and Bearing Ass'y	39372
12	Cannonball	3531
13	Latch Pin Ass'y	2683
--	Danger Decal	2527-9

Twin Boot Components Part No. 6824

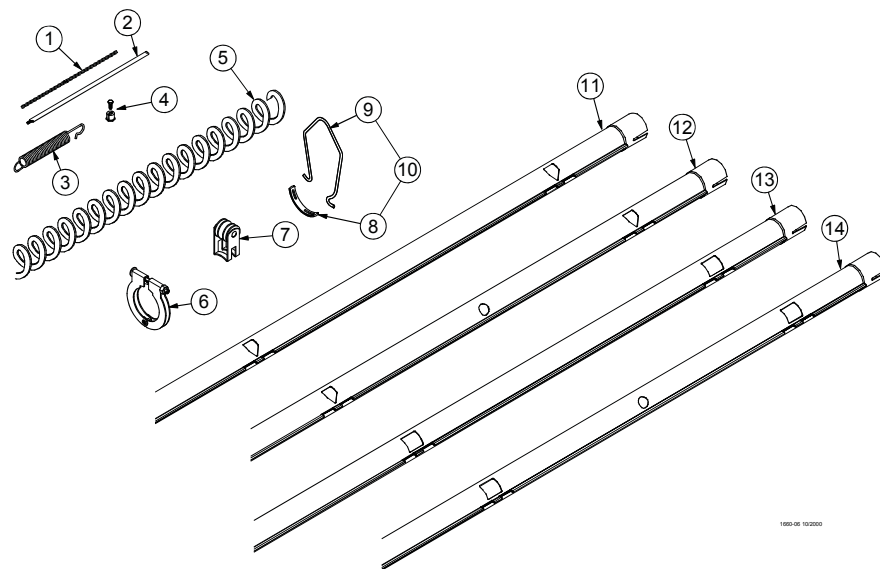


Item	Description	Part No.
1	Boot Weldment	3932
2	Tube Clamp	24063
3	Cap	29373
4	Outlet Tube	4556
5	Sleeve	5648
6	3/16 x 1" Pin	2960-1
7	Bearing	2689
8	Washer	2955-14
9	Anchor	38540

Item	Description	Part No.
10	Setscrew	47867
11	Anchor and Bearing Ass'y	39372
12	Cannonball	3531
13	Latch Pin Ass'y	2683
--*	Jumper Wire Kit	5960
--	Danger Decal	2527-9

*The Jumper Wire Kit includes an insulated piece of High-Voltage Wire (part no. 28994) and (2) cable clamps.



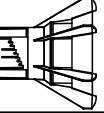
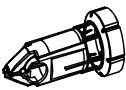
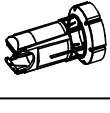
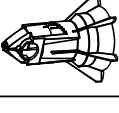
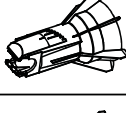
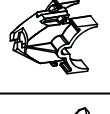
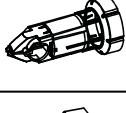
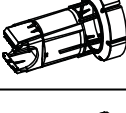
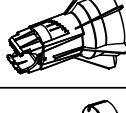
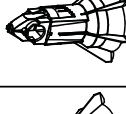

Feeder Line Components



Item	Description	Part No.
1	1/16" Cable	1922
2	Charger Wire (165') Charger Wire (330')	28994-165 28994-330
3	Spring	7551
4	1/16" Cable Clamp	1826
5*	Auger	6820-0
6	Tube Clamp	24063
7	Anti-Roost Bracket	24060
8	Hanger Bracket	7297
9	Hanger Strap	7298
10	Hanger Kit	7299
11	Standard Feeder Tube-1 3/4" Roll Form - 9', 4 Hole Tube - 10', 3 Hole Tube - 10', 4 Hole Tube - 12', 3 Hole Tube - 12', 4 Hole Tube - 12', 5 Hole Tube	6854-1 6854-5 6854-4 6854-8 6854-7 6854-6
12	Standard Feeder Tube-1 3/4" with Chick Holes (EZ. Holes) - 9', 4 Hole, 4 EZ. Holes - 10', 4 Hole, 4 EZ. Holes - 12', 4 Hole, 4 EZ. Holes - 12', 5 Hole, 5 EZ. Holes - 10', 3 Hole, 3 EZ. Holes - 9', 4 Hole, 2 EZ. Holes - 10', 4 Hole, 2 EZ. Holes - 12', 4 Hole, 2 EZ. Holes	6854-15 6854-16 6854-17 6854-18 6854-19 6854-20 6854-21 6854-22
13	Control Feeder Tube-1 3/4" Roll Form - 9', 4 Hole Tube - 10', 4 Hole Tube - 10', 3 Hole Tube - 12', 3 Hole Tube - 12', 4 Hole Tube - 12', 5 Hole Tube	43006-1 43006-4 43006-5 43006-8 43006-7 43006-6
14	Control Feeder Tube-1 3/4" with Chick Holes (EZ. Holes) - 9', 4 Hole, 4 EZ. Holes - 10', 4 Hole, 4 EZ. Holes - 12', 4 Hole, 4 EZ. Holes - 12', 5 Hole, 5 EZ. Holes	43006-15 43006-16 43006-17 43006-18



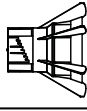
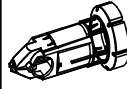

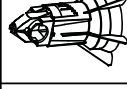

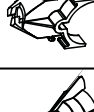
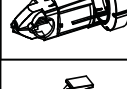




*Round up to the nearest 10'. Auger lengths from 50' to 500'. Example: 6820-200 would be a 200' roll of 6820 Auger.

Model C2 Plus Feeder Pan Assemblies

	Standard Cones				Shut-Off Cones								
	 38600	 39567	 38604	 38601	 38602	 39566	 39565	 38603	 42701	 42703	 42705	 42706	 39564
40687 Model C2 Plus Feeder Assembly	X	X	X	X									
40689 Model C2 Plus Feeder Assembly with Removeable Top	X	X	X		X			X					
40688 Model C2 Plus Feeder Assembly Non-Window	X	X				X							
40690 Model C2 Plus Feeder Assembly Non-Window and Removeable Top	X	X					X	X					
42697 Model C2 Plus Feeder Assembly with Shut-Off	X	X	X						X				X
42700 Model C2 Plus Feeder Assembly with Removeable Top and Shut-Off	X	X	X					X		X			X
42695 Model C2 Plus Feeder Assembly Non-Window and Shut-Off	X	X										X	X
42698 Model C2 Plus Feeder Assembly Non-Window and Removeable Top and Shut-Off	X	X						X			X		X



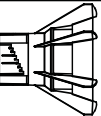
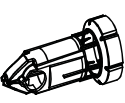
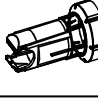
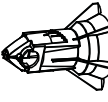
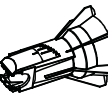

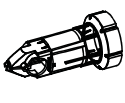
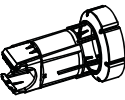
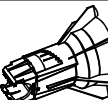
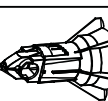

1669-07-10-2001

Model C2 Plus Shallow Feeder Pan Assemblies

				Standard Cones				Shut-Off Cones					
	 41500	 39567	 41504	 41502	 41503	 41505	 41892	 38603	 42237	 42238	 42678	 42677	 39564
42006 Model C2 Plus Shallow Feeder	X	X	X	X									
42007 Model C2 Plus Shallow Feeder with Removable Top	X	X	X		X			X					
42008 Model C2 Plus Shallow Feeder Non-Window	X	X				X							
42009 Model C2 Plus Shallow Feeder Non-Window and Removable Top	X	X					X	X					
43470 Model C2 Plus Shallow Feeder with Shut-Off	X	X	X						X				X
43472 Model C2 Plus Shallow Feeder with Removable Top and Shut-Off	X	X	X					X		X			X
42696 Model C2 Plus Shallow Feeder Non-Window and Shut-Off	X	X										X	X
42699 Model C2 Plus Shallow Feeder Non-Window and Removable Top and Shut-Off	X	X						X			X		X



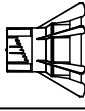
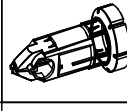
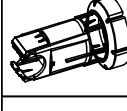
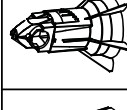
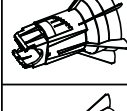

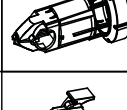
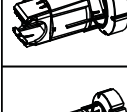
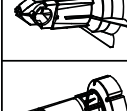
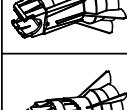

1662-0610-0000

Model G Plus Feeder Pan Assemblies

Standard Cones				Shut-Off Cones									
													
40683 Model G Plus Feeder Assembly	X	X	X	X									
40685 Model G Plus Feeder Assembly with Removeable Top	X	X	X		X			X					
40684 Model G Plus Feeder Assembly Non-Window	X	X				X							
40686 Model G Plus Feeder Assembly Non-Window and Removeable Top	X	X					X	X					
42694 Model G Plus Feeder Assembly with Shut-Off	X	X	X						X				X
42691 Model G Plus Feeder Assembly with Removeable Top and Shut-Off	X	X	X					X		X			X
42692 Model G Plus Feeder Assembly Non-Window and Shut-Off	X	X										X	X
42689 Model G Plus Feeder Assembly Non-Window and Removeable Top and Shut-Off	X	X						X			X		X

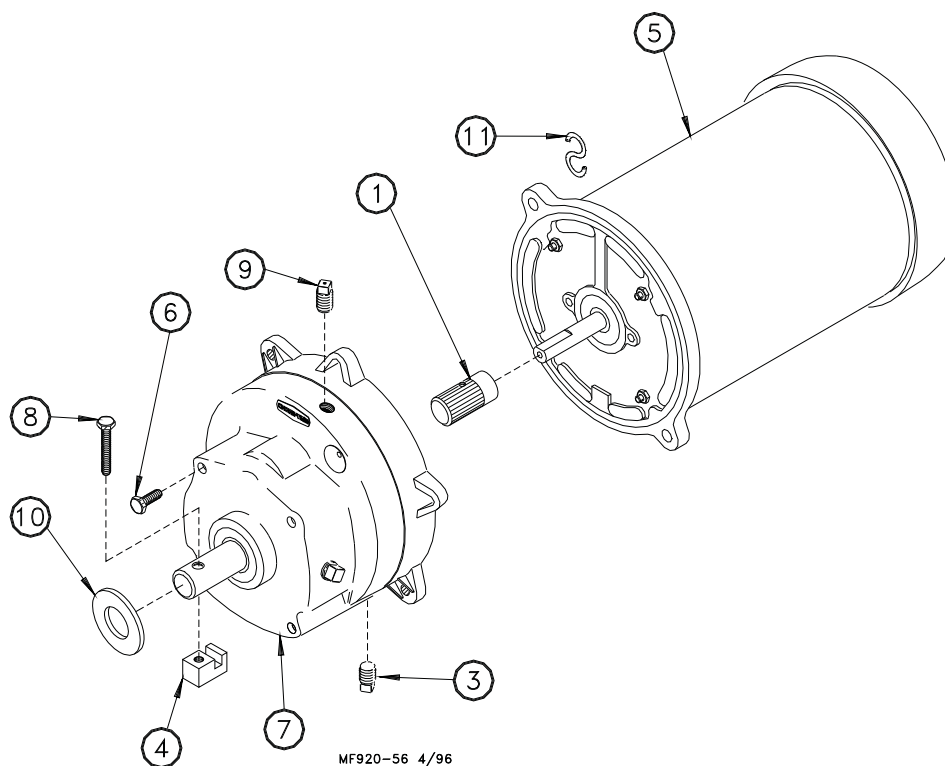
1602-03-10-2000

Model G Plus Shallow Feeder Pan Assemblies

	Standard Cones				Shut-Off Cones									
	 41500	 38599	 41504	 41502	 41503	 41505	 41892	 38603		 42237	 42238	 42678	 42677	 39564
42022 Model G Plus Shallow Feeder	X	X	X	X										
42023 Model G Plus Shallow Feeder with Removeable Top	X	X	X		X			X						
42024 Model G Plus Shallow Feeder Non-Window	X	X				X								
42025 Model G Plus Shallow Feeder Non-Window and Removeable Top	X	X					X	X						
42707 Model G Plus Shallow Feeder with Shut-Off	X	X	X						X					X
42708 Model G Plus Shallow Feeder with Removeable Top and Shut-Off	X	X	X					X		X				X
42693 Model G Plus Shallow Feeder Non-Window and Shut-Off	X	X										X		X
42690 Model G Plus Shallow Feeder Non-Window and Removeable Top and Shut-Off	X	X										X		X

1662-1010200

Power Unit Assemblies

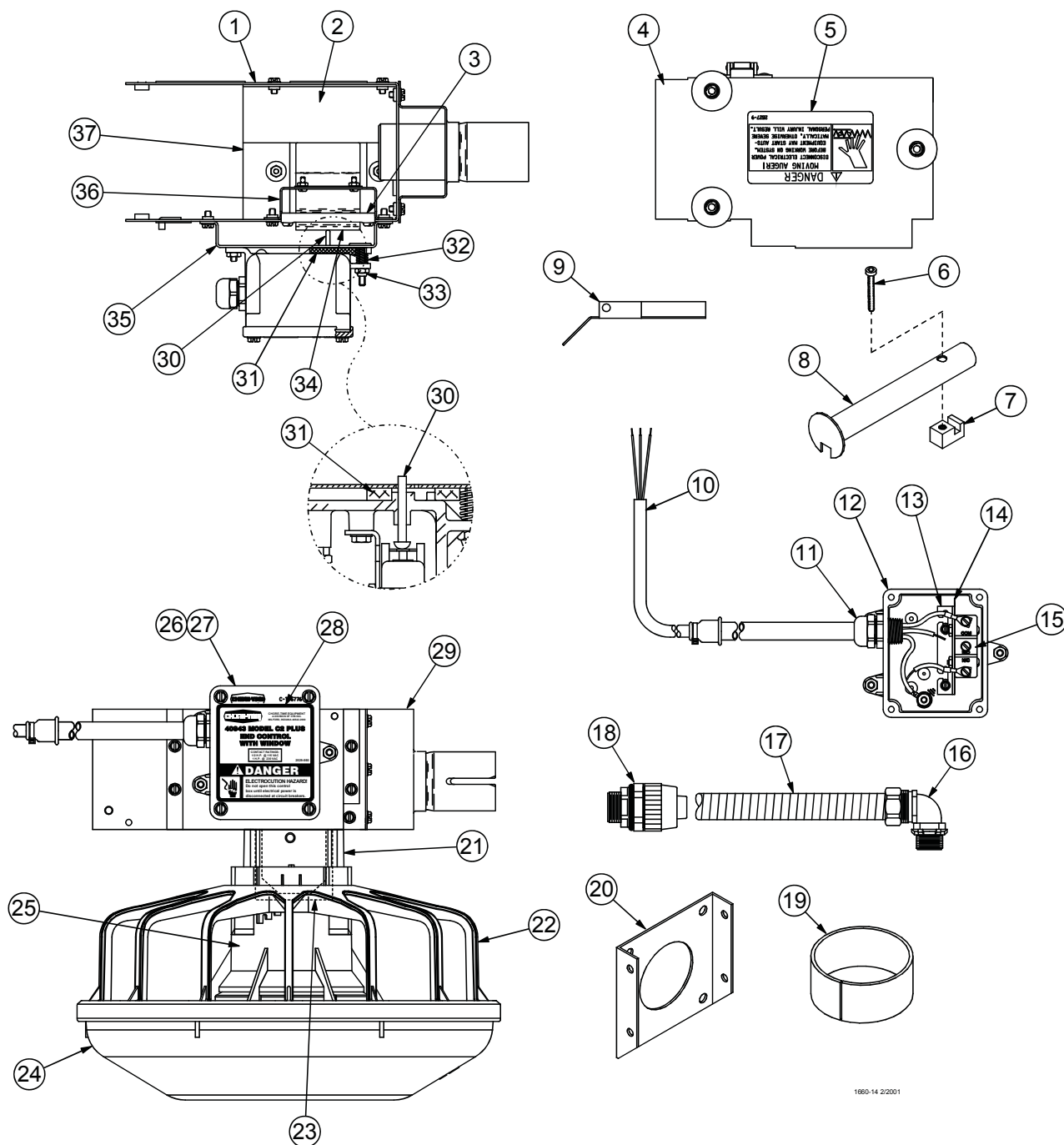


Item	Description	3259-8 Part No.	3259-25 Part No.	3259-84 Part No.	3259-85 Part No.	3259-98 Part No.	3259-100 Part No.	3259-128 Part No.
1	Pinion Assembly	5046	5046	5046	5046	5046	5046	5046
2	----	----	----	----	----	----	----	----
3	Pipe Plug (magnetic)	30160	30160	30160	30160	30160	30160	30160
4	Driver Block	4642	4642	4642	4642	4642	4642	4642
5	Motor	4229	5703	4229	5703	5977	28031	24624
6	5/16-18x5/8 Hex HD Screw	4412-1	4412-1	4412-1	4412-1	4412-1	4412-1	4412-1
7	Gearhead	3261-5	3261-5	3261-5	3261-5	3261-11	3261-11	3261-5
8	1/4-20x1-1/2 Socket Hd Screw	5083-8	5083-8	5083-8	5083-8	5083-8	5083-8	5083-8
9	Vent Plug	3516	3516	3516	3516	3516	3516	3516
10	Flat Washer	1484	1484	1484	1484	1484	1484	1484
11	"S" Hook	2805	2805	2805	2805	2805	2805	2805
--	Cord Assembly	4685	8299	----	----	28028	----	----
--	Connector (Romex)	1317	1317	----	----	----	----	----
--	Connector (90 Degree)	----	----	----	----	4228	----	----

Power Unit Assembly Part Numbers:

Part No.	HP	RPM	Phase	Hz	Voltage	Usages
3259-8	1/3 HP	348 RPM	Single Phase	60 Hz	230	Use with 1878-8 Control Unit ONLY
3259-25	1/2 HP	348 RPM	Single Phase	60 Hz	230	Use with 1878-8 Control Unit ONLY
3259-84	1/3 HP	348 RPM	Single Phase	60 Hz	230	Use with all Control Units except 1878 Control Units
3259-85	1/2 HP	348 RPM	Single Phase	60 Hz	230	Use with all Control Units except 1878 Control Units
3259-98	1/2 HP	348 RPM	Single Phase	50 Hz	230	Use with all Control Units
3259-100	1/2 HP	348 RPM	Three Phase	50 Hz	220/380	Use with all Control Units
3259-128	1/2 HP	348 RPM	Three Phase	60 Hz	230	Use with all Control Units

Mechanical End Control

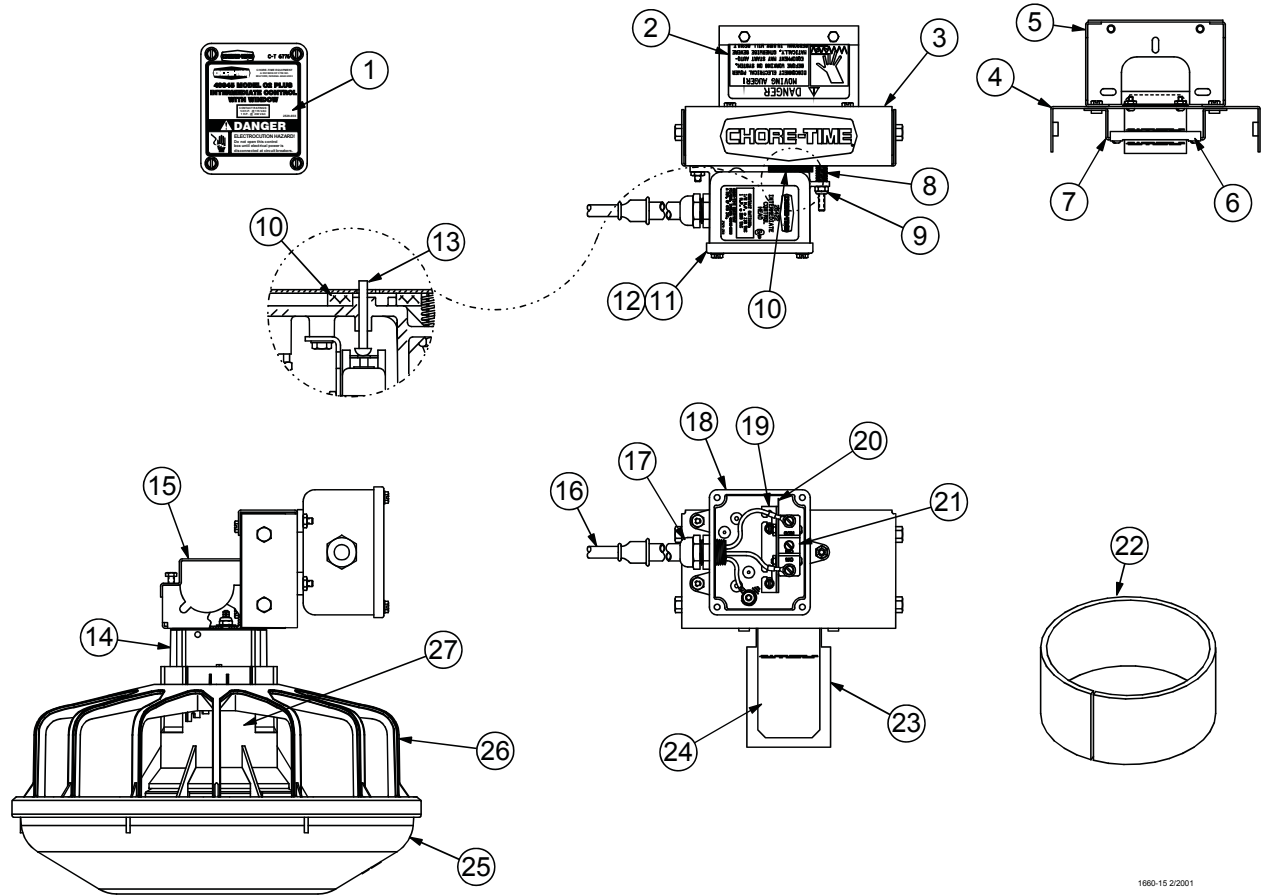


Item	Description	MODEL C2 Plus Standard Part No. 40943	MODEL C2 Plus Shallow Part No. 42012	MODEL G Plus Standard Part No. 40944	MODEL G Plus Shallow Part No. 42028
1	Control Body	14434	14434	14434	14434
2	Deflector Panel	41363	41363	41363	41363
3	Paddle Retainer	25045	25045	25045	25045
4	Control Cover Assembly	24682	24682	24682	24682
5	Danger Decal	2527-9	2527-9	2527-9	2527-9
6	1/4-20x1-1/2 Socket Hd Screw	5083-8	5083-8	5083-8	5083-8
7	Driver Block	4642	4642	4642	4642
8	Drive Tube Weldment	44794	44794	44794	44794
9	Bottom Cover	14432	14432	14432	14432
10	Control Cord Assembly	25495	25495	25495	25495
11	1/2" Liquid Tight Connector	24685	24685	24685	24685
12	Switch Box	24702	24702	24702	24702
13*	Switch Bracket	46122	46122	46122	46122
14*	Switch Insulation	1907-5	1907-5	1907-5	1907-5
15**	Actuator Switch	46091	46091	46091	46091
16	1/2" Liquid Tight Connector	23810	23810	23810	23810
17	14" Flexible Conduit	26982-1	26982-1	26982-1	26982-1
18	Straight Liquid Tight Connector	26980	26980	26980	26980
19	Cut Sleeve	43110	43110	43110	43110
20	Anchor Plate	4188	4188	4188	4188
21	Center Support Assembly	40947	37371	40947	37371
22	Feeder Grill	39567	39567	38599	38599
23	Mylar Assembly	25318	25318	25318	25318
24	Feeder Pan	41501	41500	41501	41500
25	Adjustment Cone	38604	41504	38604	41504
26	Switch Box Cover	6776	6776	6776	6776
27	Switch Box Gasket	6777	6777	6777	6777
28	Danger/Product Identification Decal	2529-660	2529-697	2529-659	2529-698
29	Support Bracket	24683	24683	24683	24683
30	Spring	6972	6972	6972	6972
31	#10-32 Lock Nut	6963	6963	6963	6963
32	Paddle	46123	46123	46123	46123
33	Gasket	6968-1	6968-1	6968-1	6968-1
34	Actuator Pin	8757	8757	8757	8757
35	Switch Box Mount	25084	25084	25084	25084
36	Stop Panel	25433	25433	25433	25433
37	Switch Bracket	40749	40749	40749	40749
--	Anti-Roost Guard	2798	2798	2798	2798
--	Parts Package	40809	40809	40809	40809

*These items are included in the Parts Package.

**Actuator Switch, Chore-Time part number 7114, is no longer available. When replacing, use 7114 Switch Replacement Kit Part Number 46678.

Mechanical Mid Line Control

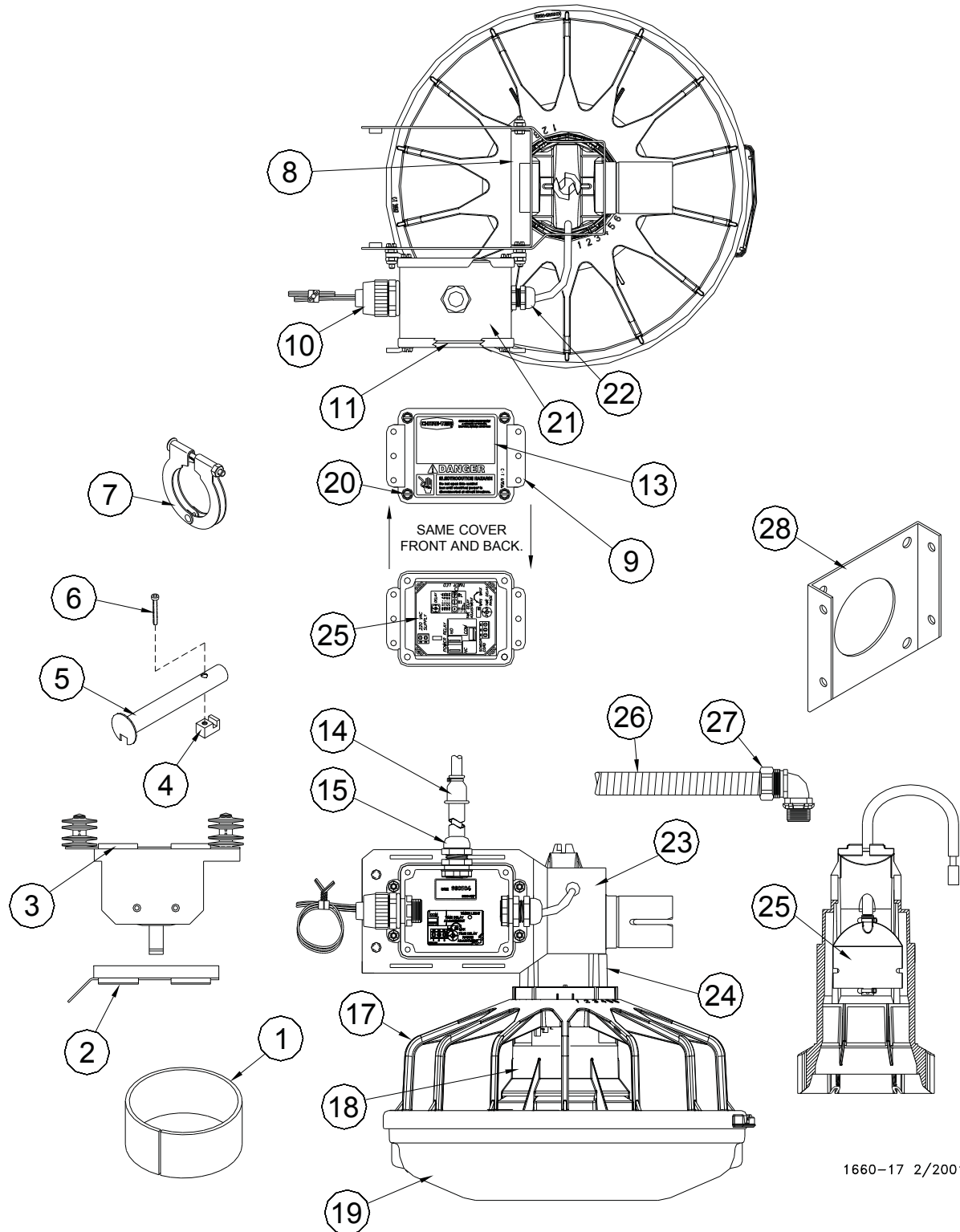


1660-15 2/2001

Item	Description	MODEL C2 Plus Standard Part No. 40945	MODEL C2 Plus Shallow Part No. 42013	MODEL G Plus Standard Part No. 40946	MODEL G Plus Shallow Part No. 42029
1	Danger/Product Identification Decal	2529-658	2529-248	2529-657	2529-694
2	Danger Decal	2527-9	2527-9	2527-9	2527-9
3	Back Cover	25047	25047	25047	25047
4	Front Panel	25046	25046	25046	25046
5	Tube Support	41364	41364	41364	41364
6	Paddle Retainer	25045	25045	25045	25045
7	Pivot Bracket	25048	25048	25048	25048
8	Spring	6972	6972	6972	6972
9	#10-32 Lock Nut	6963	6963	6963	6963
10	Gasket	6968-1	6968-1	6968-1	6968-1
11	Switch Box Cover	6776	6776	6776	6776
12	Gasket	6777	6777	6777	6777
13	Actuator Pin	8757	8757	8757	8757
14	Support Cone Assembly	40947	37371	40947	37371
15	Tube Retainer	14756	14756	14756	14756
16	Cord Assembly	4999-49	4999-49	4999-49	4999-49
17	1/2" Liquid Tight Connector	24685	24685	24685	24685
18	Machined Switch Box	34842	34842	34842	34842
19	Switch Bracket	46122	46122	46122	46122
20	Switch Insulation	1907-5	1907-5	1907-5	1907-5
21*	Actuator Switch	46091	46091	46091	46091
22	Cut Sleeve	43110	43110	43110	43110
23	Mylar Assembly	25318	25318	25318	25318
24	Switch Paddle	46123	46123	46123	46123
25	Feeder Pan	41501	41500	41501	41500
26	Feeder Grill	39567	39567	38599	38599
27	Adjustment Cone	38604	41504	38604	41504

*Actuator Switch, Chore-Time part number 7114, is no longer available. When replacing, use 7114 Switch Replacement Kit Part Number 46678.

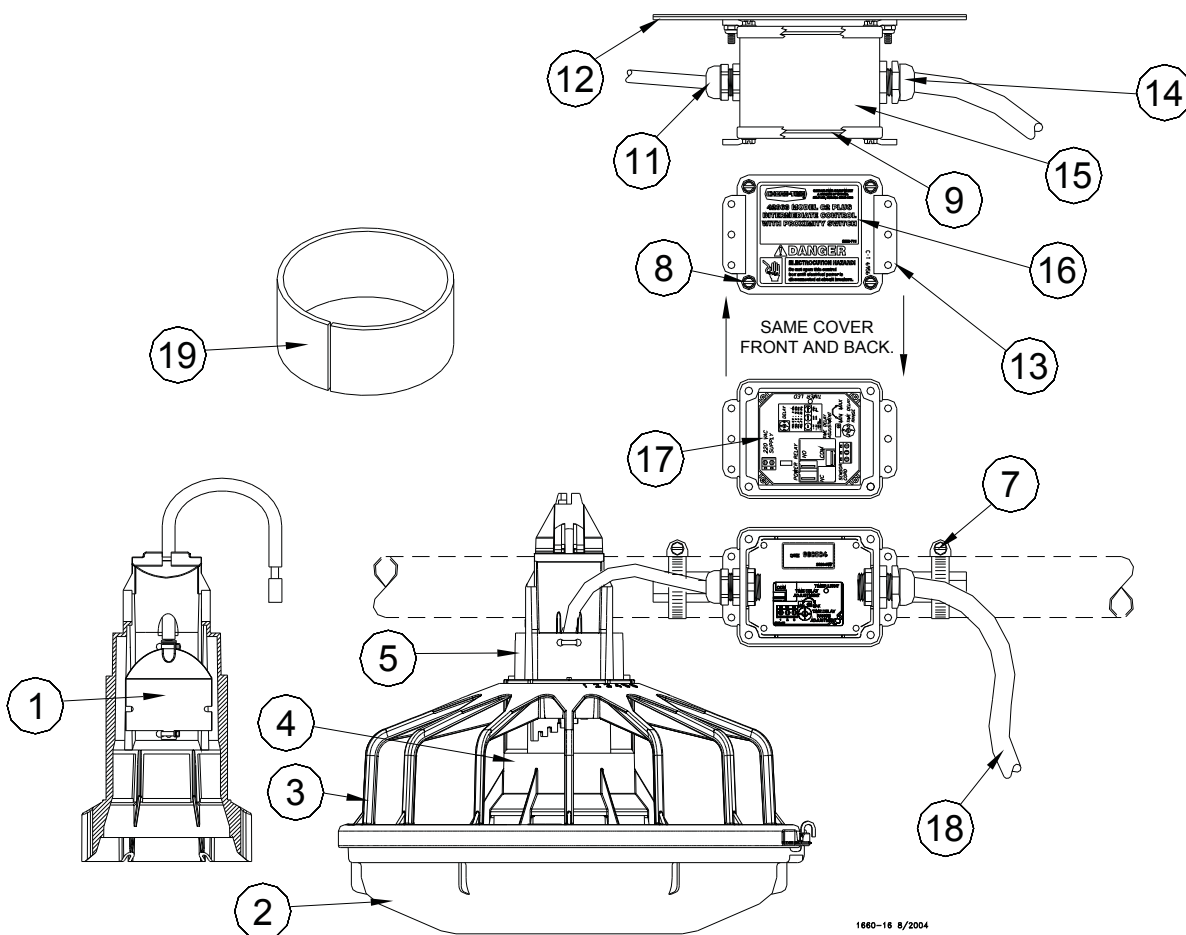
SENSOR PLUS End Control



1660-17 2/2001

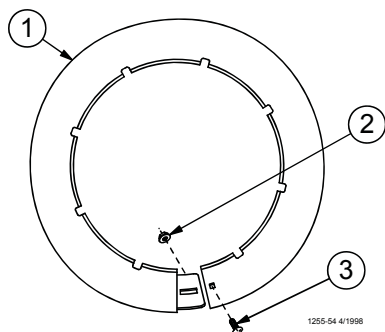
Item	Description	C2 Plus Standard Part No. 42680	C2 Plus Shallow Part No. 44880	G Plus Standard Part No. 42597	G Plus Shallow Part No. 44882
1	Cut Sleeve	43110	43110	43110	43110
2	Bottom Cover	42085	42085	42085	42085
3	Top Cover with Insulators	42082	42082	42082	42082
4	Driver Block	4642	4642	4642	4642
5	Drive Tube Weldment	44794	44794	44794	44794
6	1/4-20x1-1/2 Socket Hd Screw	5083-8	5083-8	5083-8	5083-8
7	Tube Clamp	24063	24063	24063	24063
8	Support Bracket	42081	42081	42081	42081
9	Terminal Box Mounting Cover	6956	6956	6956	6956
10	Straight Liquid Tight Connector	26980	26980	26980	26980
11	Switch Box Gasket	6777	6777	6777	6777
12	----	----	----	----	----
13	Danger/Product Identification Decal	2529-710	2529-731	2529-709	2529-729
14	Cord Assembly	4999-100	4999-100	4999-100	4999-100
15	Liquid Tight Connector	24685	24685	24685	24685
16	----	----	----	----	----
17	Grill	39567	39567	38599	38599
18	Adjustment Cone	38604	41504	38604	41504
19	Feeder Pan	41501	41500	41501	41500
20	#10 x 1/2 Hex Washer Head Screw	28075	28075	28075	28075
21	General Purpose Terminal Box	42627-3	42627-3	42627-3	42627-3
22	Liquid Tight Connector	23779	23779	23779	23779
23	Control Body Weldment	42080	42080	42080	42080
24	Support Cone	37077	44884	37077	44884
25	Pan Half Round Sensor	48200	48200	48200	48200
26	14" Flexible Conduit	26982-1	26982-1	26982-1	26982-1
27	Liquid Tight Connector	23810	23810	23810	23810
28	Anchor Plate	4188	4188	4188	4188

SENSOR PLUS Mid Line Control



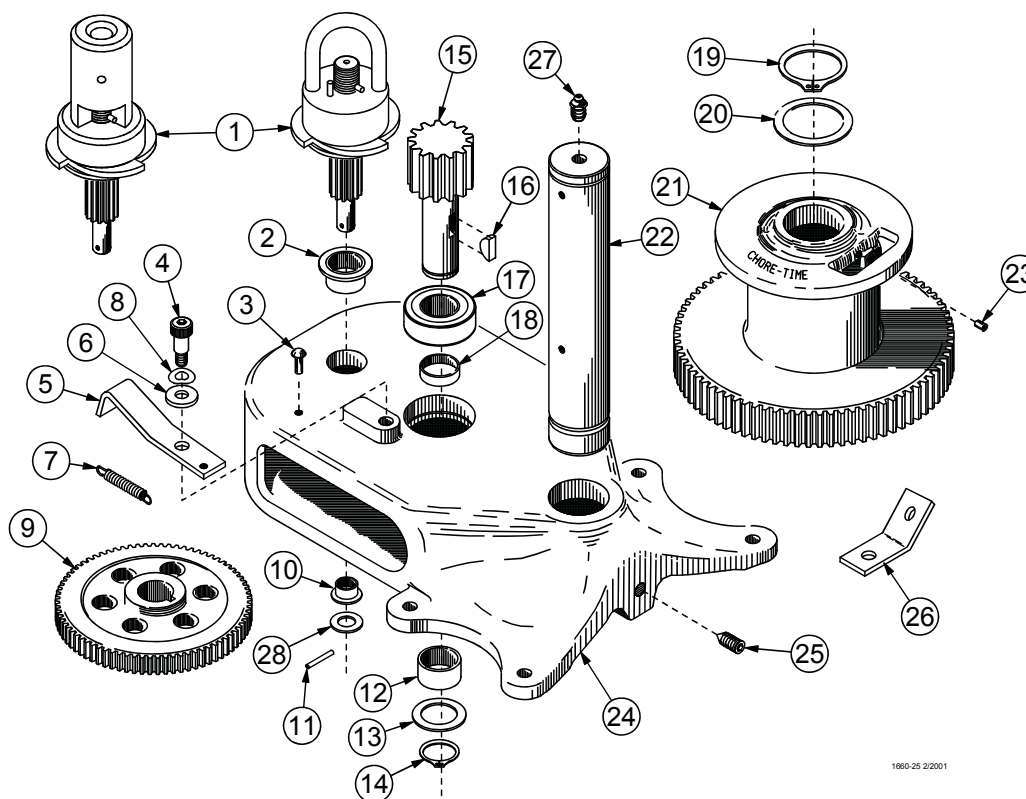
Item	Description	MODEL C2 Plus Standard Part No. 42663	MODEL C2 Plus Shallow Part No. 44881	MODEL G Plus Standard Part No. 42664	MODEL G Plus Shallow Part No. 44883
1	Pan Half Round Sensor	48200	48200	48200	48200
2	Feeder Pan	41501	41500	41501	41500
3	Feeder Grill	39567	39567	38599	38599
4	Adjustment Cone	38604	41504	38604	41504
5	Support Cone	377077	44884	37077	44884
6	Slide Top Cap	38603	38603	38603	38603
7	Hose Clamp	3527	3527	3527	3527
8	#10 x 1/2 Hex Washer Head Screw	28075	28075	28075	28075
9	Switch Box Gasket	6777	6777	6777	6777
10	----	----	----	----	----
11	Liquid Tight Connector	23779	23779	23779	23779
12	Tube Mount	42681	42681	42681	42681
13	Terminal Box Mounting Cover	6956	6956	6956	6956
14	Liquid Tight Connector	24685	24685	24685	24685
15	General Purpose Terminal Box	42627-2	42627-2	42627-2	42627-2
16	Danger/Product Identification Decal	2529-711	2529-728	2529-712	2529-730
17	Pan Half Round Sensor	48200	48200	48200	48200
18	Cord Assembly	4999-103	4999-103	4999-103	4999-103
19	Cut Sleeve	43110	43110	43110	43110

Model G Plus Pan Extension (Optional)



Item	Description	Part No.
1	Pan Extension	29510
2	Lock Nut	24208
3	1/4" Carriage Bolt	22692

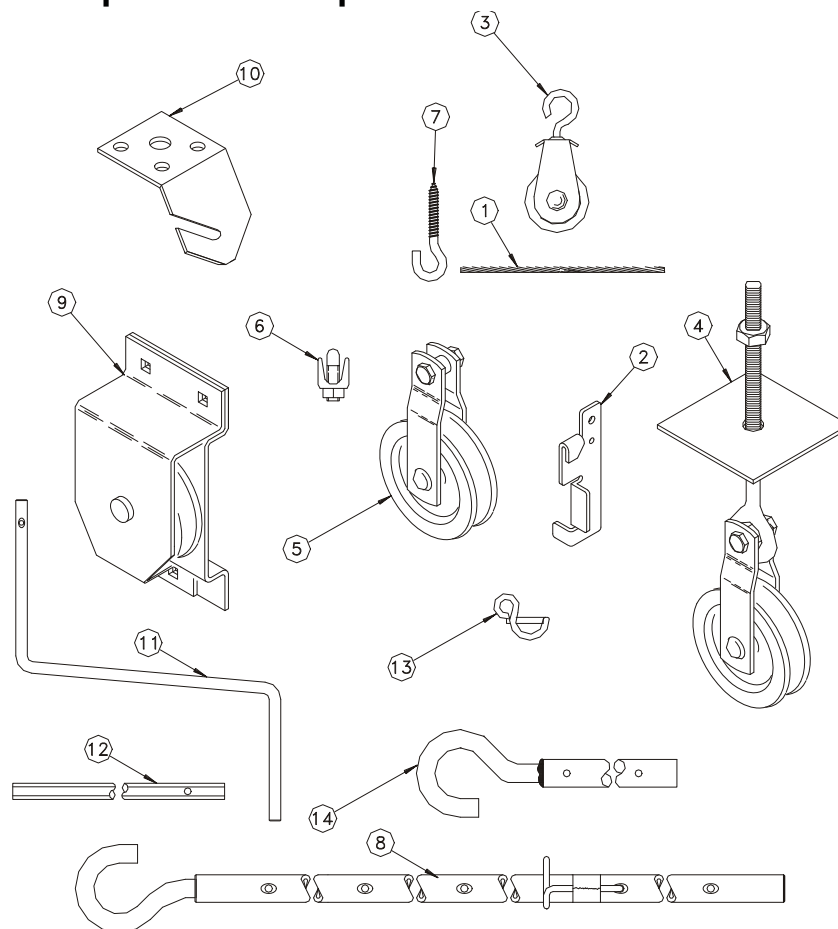
2883 Power Winch



Item	Description	Part No.
1	Input Shaft Assembly Manual Electric	42665 42666
2	Flange Bushing	2967-2
3	Drive Stud	4128-1
4	Shoulder Bolt	4022-2
5	Pawl	6672
6	5/16" Flat Washer	2255-44
7	Spring	1543
8	Spring Washer	4023
9	Intermediate Gear	2890
10	Flange Bushing	3252
11	Spirol Pin	2960-3
12	Bushing	2967-4
13	Washer	2955-1
14	Retaining Ring	2958-1

Item	Description	Part No.
15	Drive Pinion	2962
16	Woodruff Key	2959
17	1" Bearing	4937
18	Spacer	4936
19	Retaining Ring	3556
20	Washer	2955-2
21	Winch Drum	3723
22	Drum Shaft	3637
23	Setscrew	603
24	Winch Frame	3719
25	Setscrew	3727
26	Cable Hook	2985
27	Grease Zerker	24499
28	Washer	2499

Miscellaneous Suspension Components



MF232-5R 9/96

Miscellaneous Suspension Components

<u>Item</u>	<u>Description</u>	<u>Part No.</u>
1	3/16 Cable	1213
2	Cable Lock	14337
3	Pulley with Swivel	3004
4	Heavy Duty Pulley Assembly	2014
5	Pulley	2500
6	3/16" Cable Clamp	732
7	ATF Screw Hook	2041
8	Extendable drive tube	47637
9	Pulley Assembly	28429
10	Ceiling Hook	28550
11	Handle Shank	3148
12	Drill Adapter Shaft	2886
13	Winch Handle Pin	3761
14	Winch Drive Tube (4')	2884-1
	Winch Drive Tube (8')	2884-2
	Winch Drive Tube (2')	2884-4
--	Full Line Suspension Kit	7948

Item 11 and Item 13 may be ordered as a kit under Part No. 2885.

Item 12 and Item 13 may be ordered as a kit under Part No. 2886

Item 11, 13 and 8 may be ordered as a kit under Part No. 47638.

Item 10 and Item 12 may be ordered as a kit under part no. 2885. Item 11 and Item 12 may be ordered as a kit under part no. 2886.

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