



CHAIN FEEDING SYSTEM

Installation and Operation Guide

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Warranty

The chain feeding system has been designed to meet all known safety requirements. During normal operation, the chain feeding system presents no hazards to the operator or other personnel. However, in certain circumstances, the following potential hazards to operators and maintenance team personnel exist:

- Electrical shock (220 VAC)
- Mechanical hazard (moving parts, pinch points, etc.)
- Overhead hazard
- Heavy object hazard

The information and instructions presented in this document are intended to help personnel work with the chain feeding system in a safe, effective, and efficient manner.

1.2 Safety Conventions

Safety information is presented as follows:



Caution is the signal word used to indicate a potentially hazardous situation which, if not avoided, could result in minor or moderate injury. It may also be used alert against unsafe practices.



Warning is the signal word used to indicate a potentially hazardous situation which, if not avoided, could result in death or severe injury.



Danger is the signal word used to indicate an imminently hazardous situation which, if not avoided, will result in death or severe injury. This signal word is limited to the most extreme situations.

1.3 Cautions and Warnings

The following instructions and guidelines are necessary to ensure safe operation and long system life. Before performing any work on the system, become familiar with the following safety sections:

1.3.1 General Safety Cautions

CAUTION

- Read the installation and operation instructions prior to installing or before servicing the system.
- Before working on the system, read all safety standards and instructions to avoid injury or damage to equipment or property.
- Electrical connections must be serviced by a qualified electrician, using certified components only, and according to local regulations and standards.
- Shut off the system before conducting system maintenance.
- Proper operation of the system is not guaranteed if unauthorized parts are used.
- Clean up spills and leaks immediately.
- In case of unusual or irregular noise or vibration, it is necessary to switch off the system.

CAUTION

- Follow operation instructions and maintenance procedures to prevent mineral and scale build-up.
- Follow operation instructions and maintenance procedures to prevent algae growth on wet surfaces.
- DO NOT use water containing chlorine as it will cause corrosion.
- DO NOT use water containing chlorides content higher than 200 mg/L as it will cause corrosion.

1.3.2 General Warnings



WARNING

- **Hazardous Voltage:** Contact with electrical equipment can cause electric shock or burn if the power supply is turned on. Before starting any work on electrical equipment, disconnect the machine from the power socket.

1.4 Storage, Transport, and Installation



CAUTION

Storage safety:

- Ambient temperature must be between 5°C and 60°C.
- System must not be exposed to humidity, rain, condensation, dust, or direct sunlight during storage.

Transport safety:

- Move the system using appropriate lifting equipment.
- Avoid heavy vibration during transport.
- ???



CAUTION

Installation safety:

- The operator is responsible for the equipment and must not allow unauthorized persons to use the system or be in its vicinity.
- Whenever you handle or repair the equipment, turn off the power supply first.
- Maintenance and repairs must be carried out by qualified technicians authorized by Plasson.
- Always use Plasson components when replacing any defective components.
- All electrical parts must be grounded and installed by a qualified electrician.
- Pay close attention to the safety symbols on the components, as carelessness can lead to serious injury and even death.

1.5 EMC Safety

All chain feeding system components comply with IEC EN 61000-6-3, the emission standard for residential, commercial, and light industrial environments.

2. Introduction

The Chain Feeding System is a durable feeding line which enables fast and even distribution of feed in the chicken house. Multiple configurations are possible, and installation is quick and easy with minimal maintenance required.

This chapter introduces the Chain Feeding System and includes:

- [System Concept](#)
- [Major Components](#)
- [Hopper](#)
- [Direct Feed](#)
- [Trough Assembly](#)
- [Chain and Drive Unit](#)
- [Suspension System](#)
- [Common Layouts](#)



CAUTION

The system must be installed by a trained and qualified personnel authorized by Plasson.

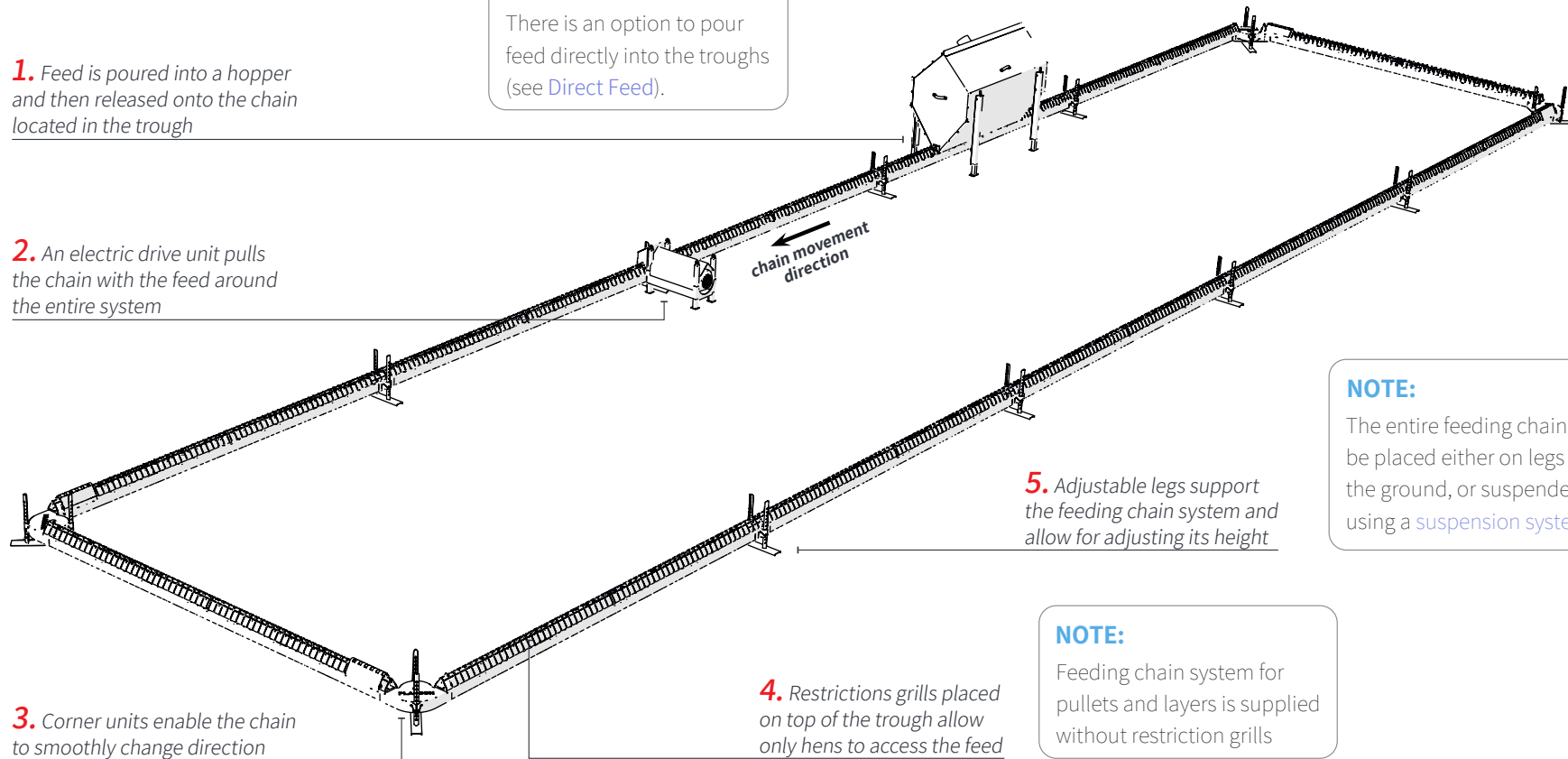
2.1 System Concept

1. Feed is poured into a hopper and then released onto the chain located in the trough

NOTE:

There is an option to pour feed directly into the troughs (see [Direct Feed](#)).

2. An electric drive unit pulls the chain with the feed around the entire system



5. Adjustable legs support the feeding chain system and allow for adjusting its height

NOTE:

The entire feeding chain system can be placed either on legs (shown), on the ground, or suspended in the air using a [suspension system](#).

3. Corner units enable the chain to smoothly change direction

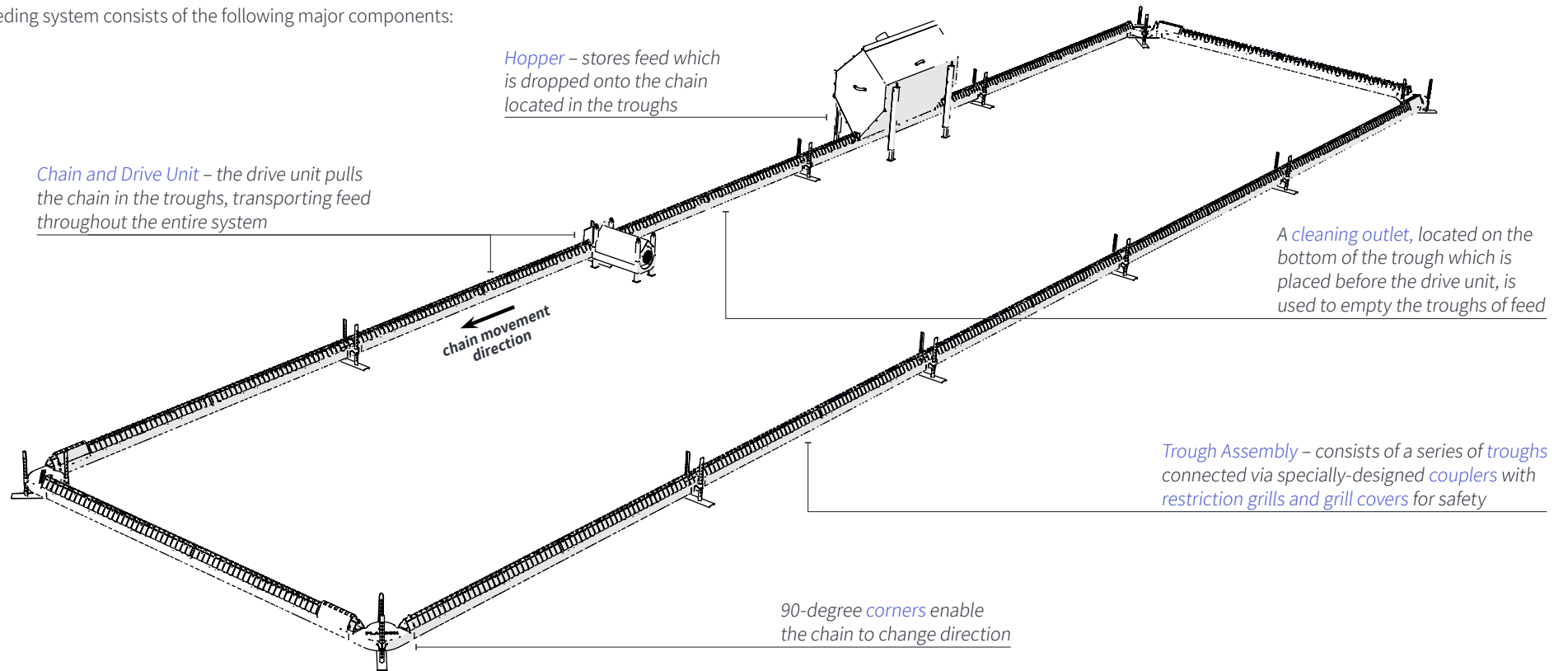
4. Restrictions grills placed on top of the trough allow only hens to access the feed

NOTE:

Feeding chain system for pullets and layers is supplied without restriction grills

2.2 Major Components

The chain feeding system consists of the following major components:



2.3 Hopper

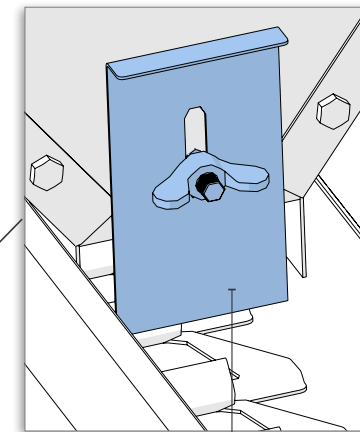
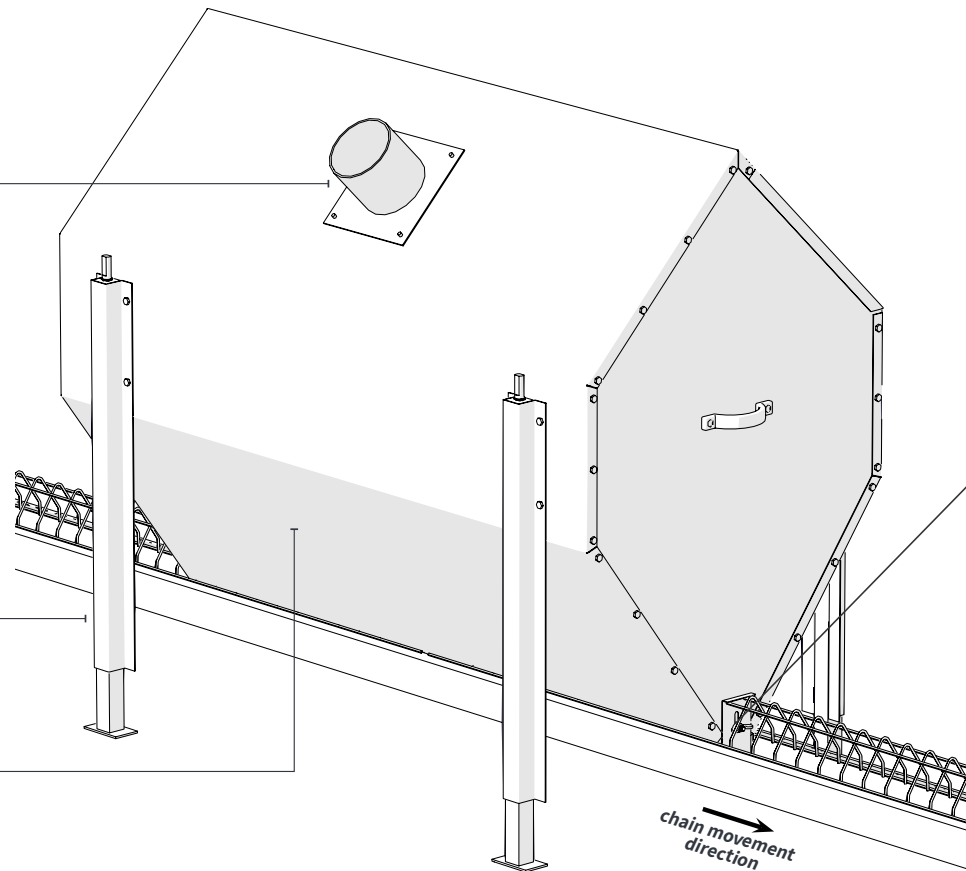
1. Feed is delivered automatically to the hopper opening via a hose

NOTE:

The hopper opening can be sealed with a metal plate if the feed is added manually

The hopper is supported by adjustable legs

2. The hopper can store 150 kg or 260 kg, depending on its size

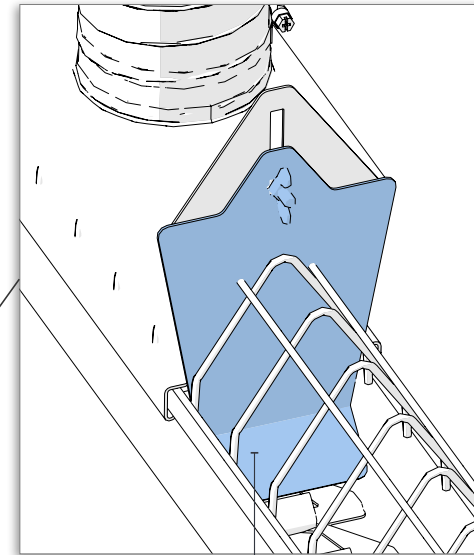
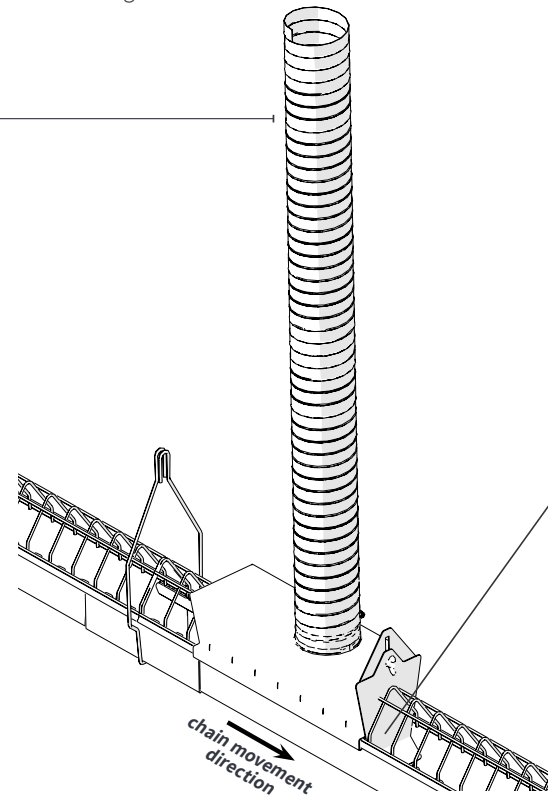


3. An adjustable shutter controls the amount of feed in the trough

2.4 Direct Feed

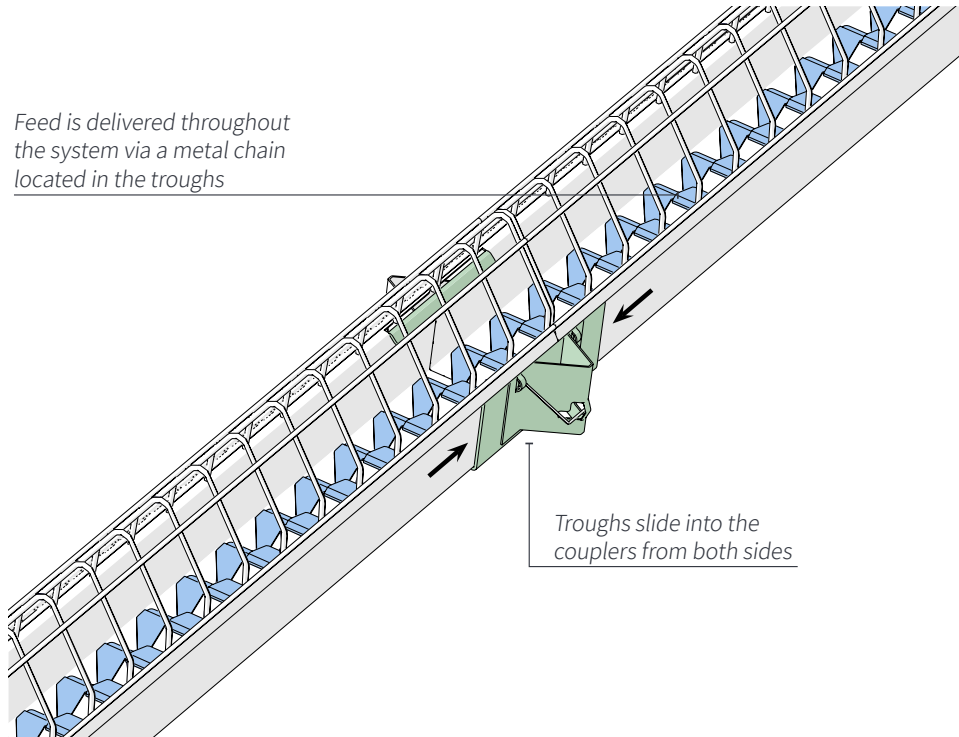
An optional setup allows for feed to be poured directly into the troughs as follows:

1. Feed is poured into the troughs via a duct hose



2. An adjustable shutter controls the amount of feed in the trough

2.5.1 Troughs and Couplers

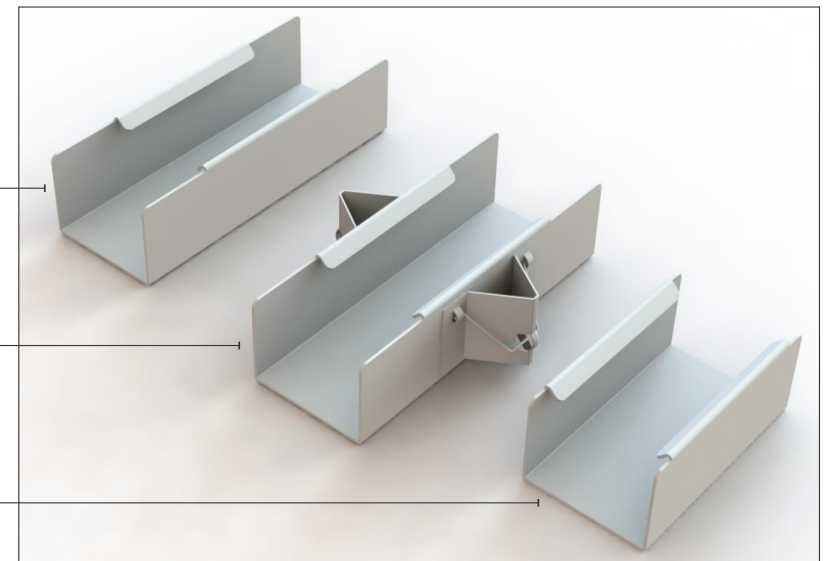
**NOTE:**

Choice of couplers depends on system configuration.

Coupler for suspension
system installation

Coupler for leg
support installation

Coupler for floor
installation



2.5.2 Corners

A corner unit is attached to the troughs whenever there is a need to change the chain direction.

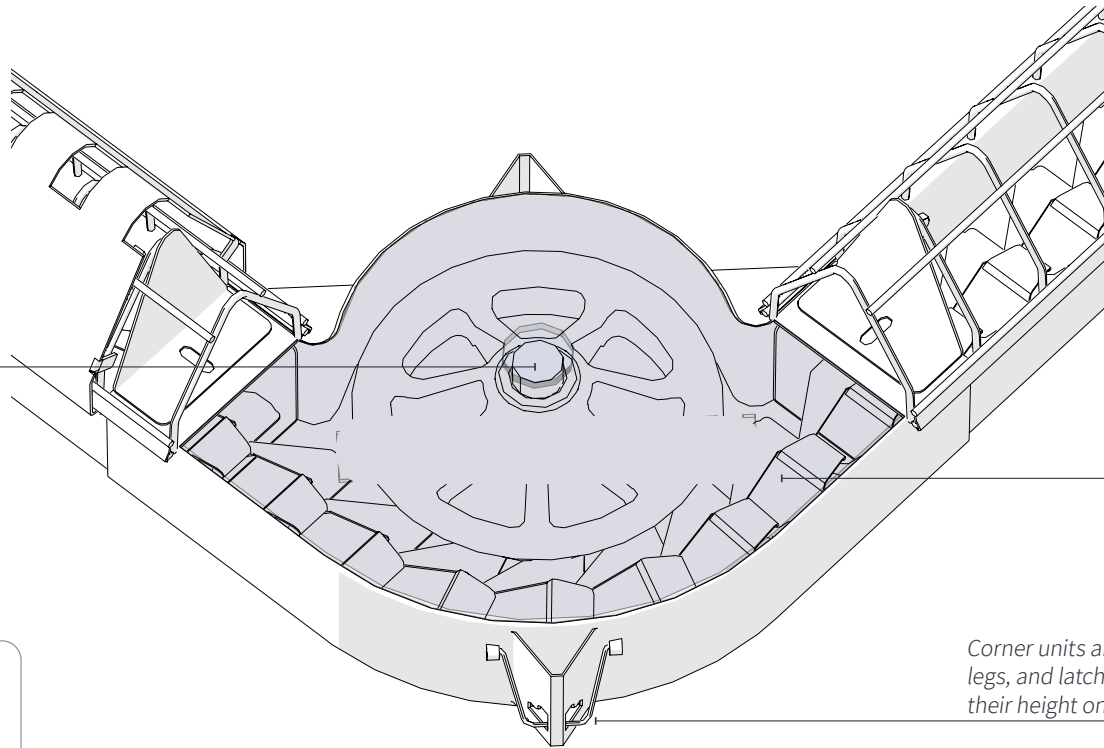
The chain is supported by a wheel which rotates freely to allow for smooth direction change

Transparent lid allows for observing chain movement, and can be removed for cleaning and maintenance purposes

NOTE:

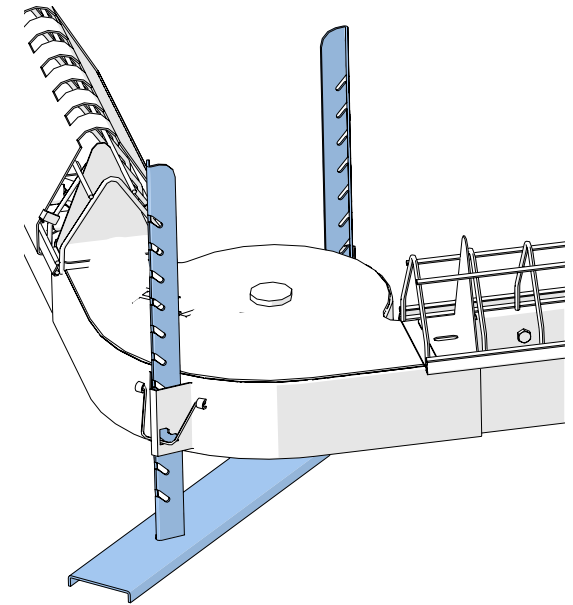
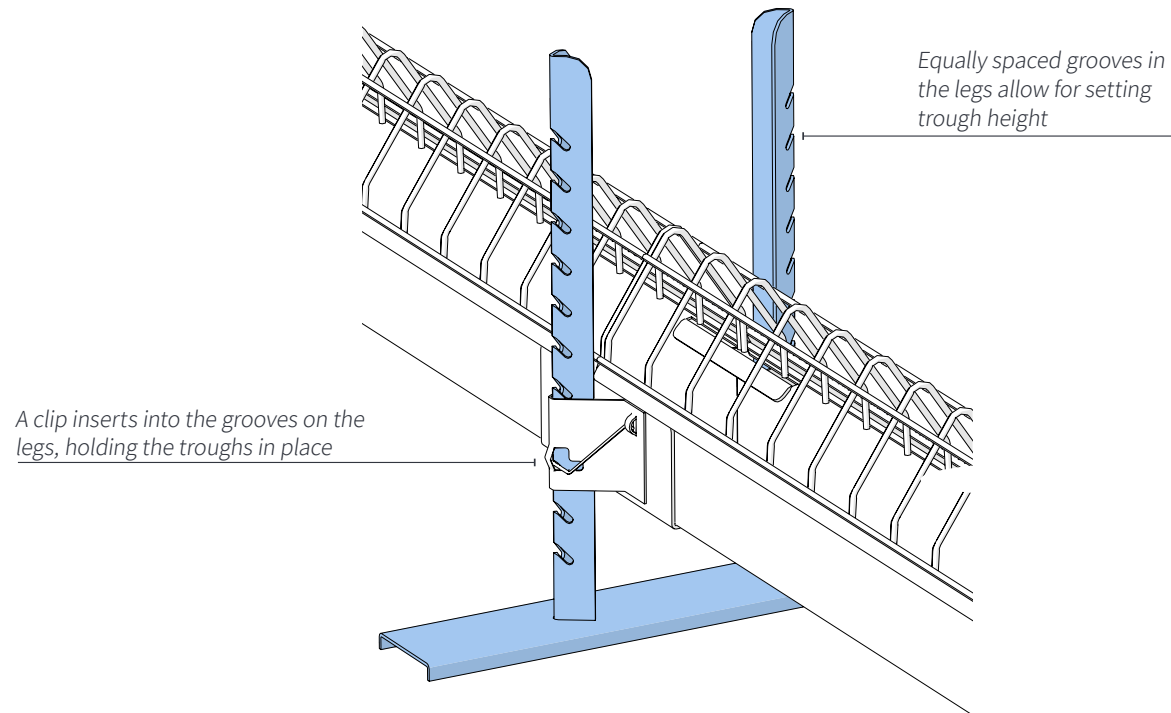
A high-corner option is also available. When using a high corner, the [grill cover](#) is not necessary

Corner units are supported by legs, and latches enable adjusting their height on the [legs](#)



2.5.3 Legs

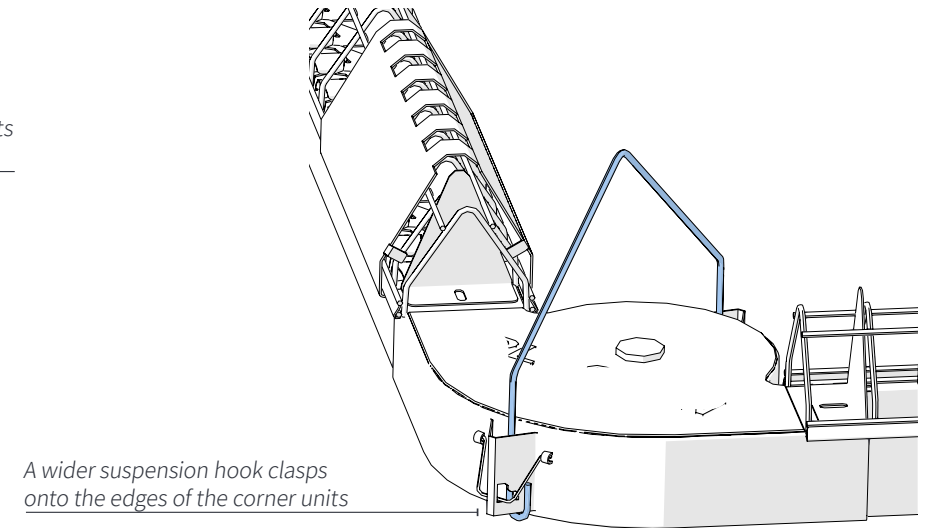
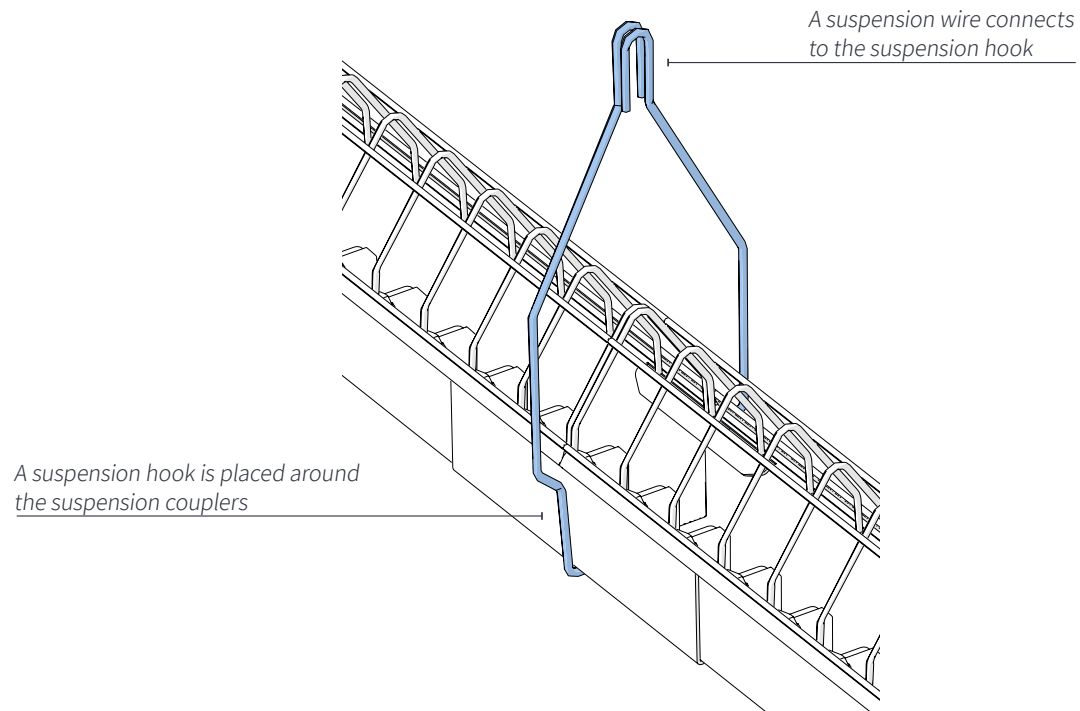
Adjustable legs attach to the couplers and corner units

**NOTE:**

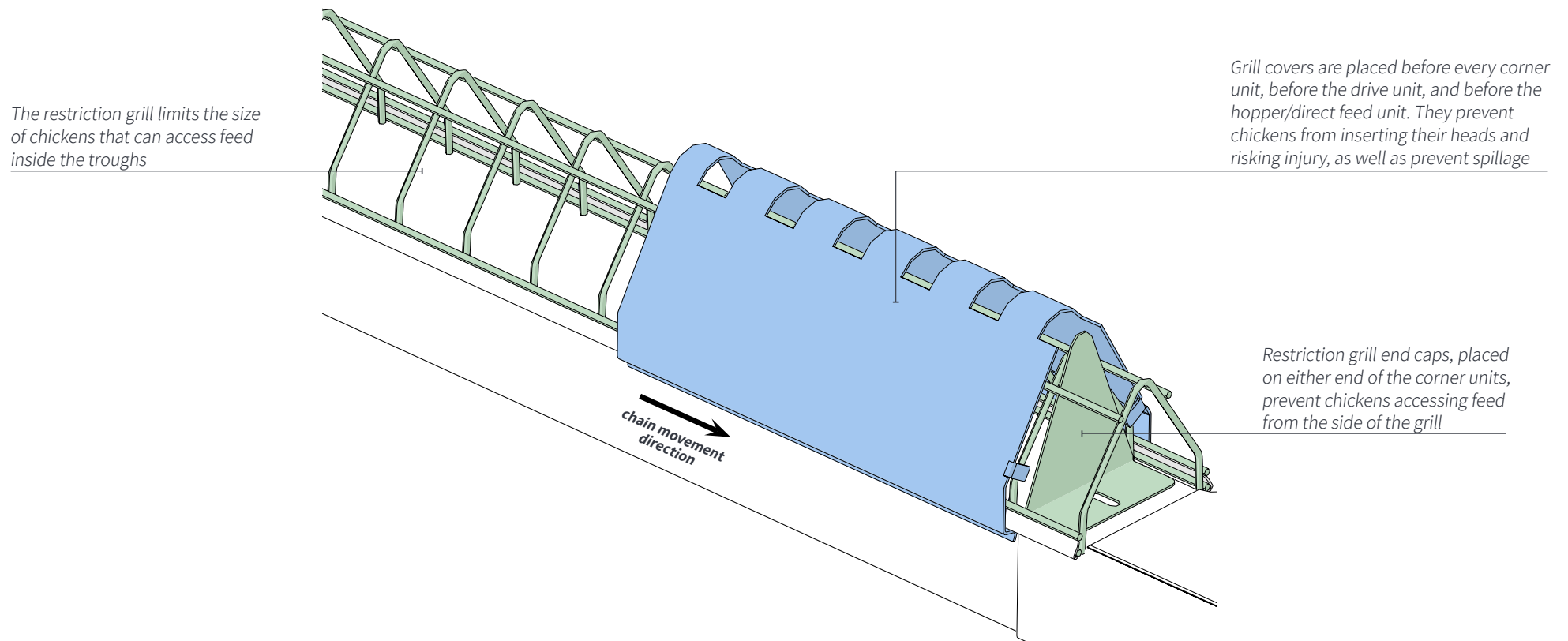
The corner unit legs are wider than the coupler legs

2.5.4 Suspension Hooks

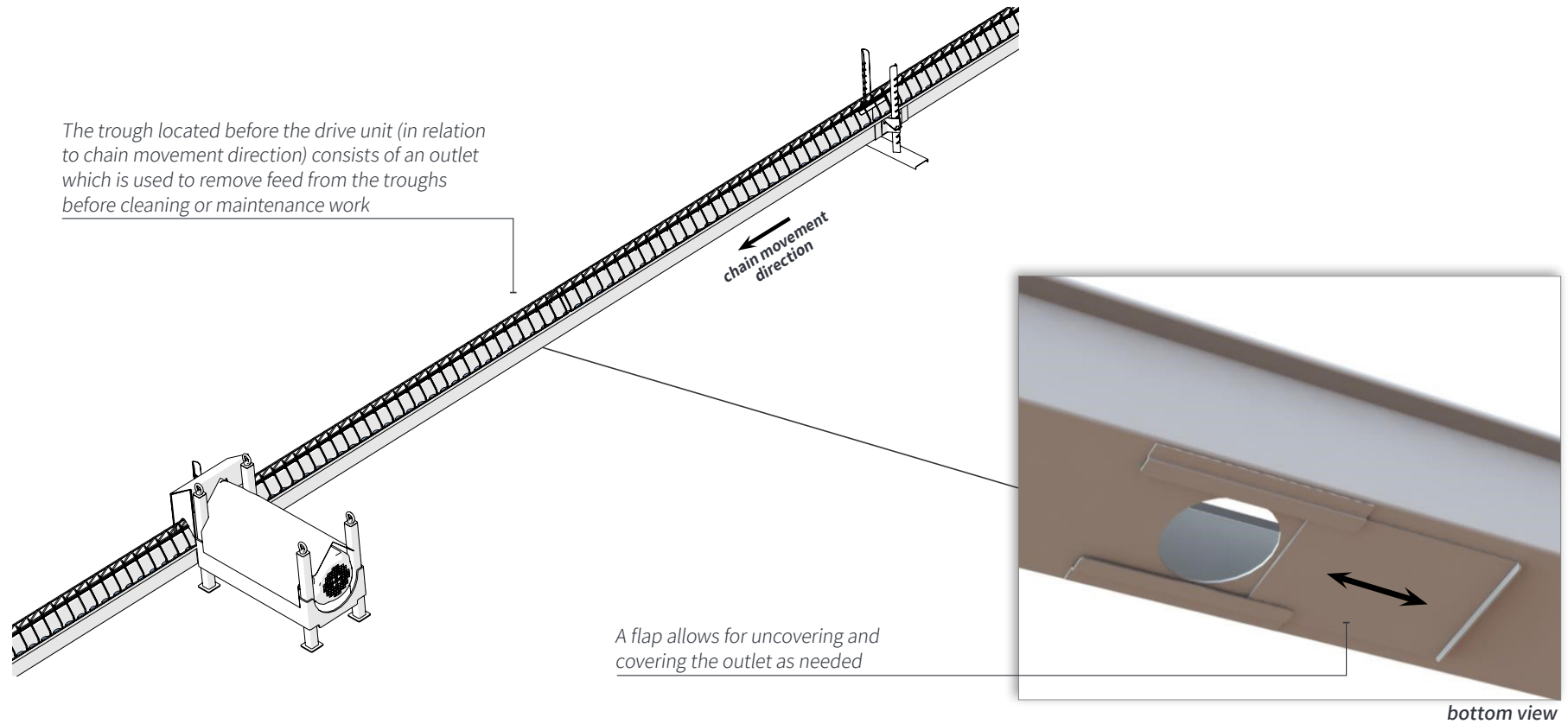
Suspension hooks are attached to the couplers and corner units when the feeding chain system is suspended via the [suspension system](#).



2.5.5 Restriction Grills and Grill Covers

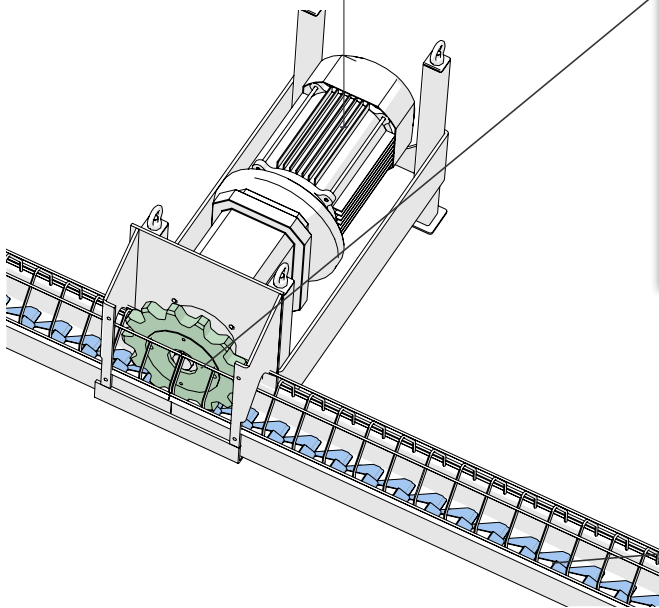


2.5.6 Cleaning Outlet

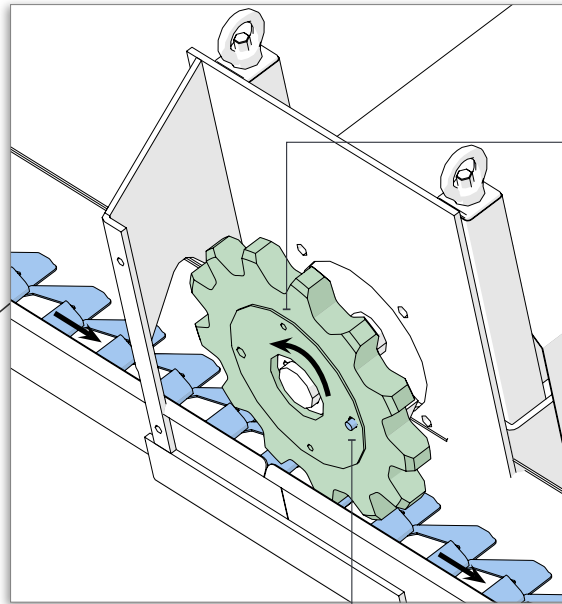


2.6 Chain and Drive Unit

1. An electric motor connected to a gearbox rotates the gear wheel



2. The gear wheel pulls the chain

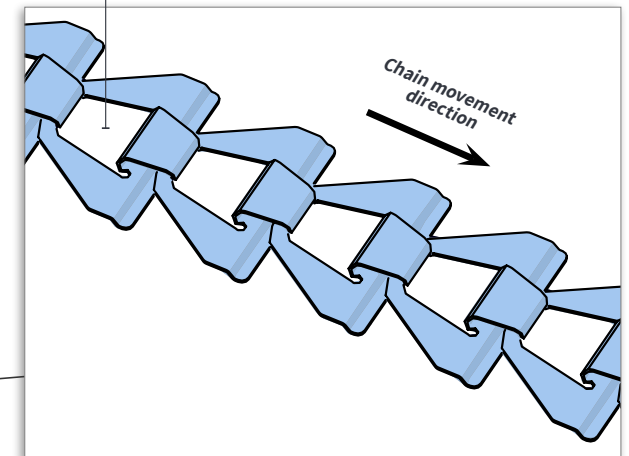


4. A shear pin located in the gear wheel brakes if the chain is stuck, thus protecting the system from damage

NOTE:

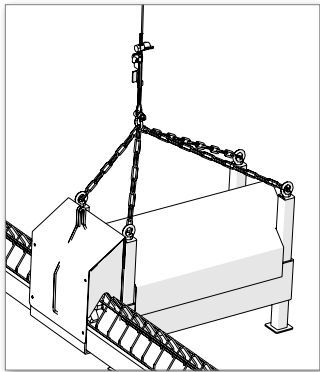
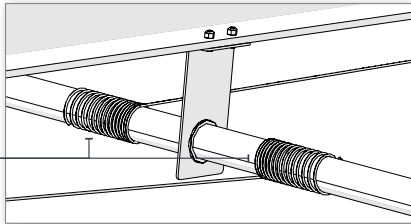
If the chain is between 80 and 150 meters, a second drive unit is installed

3. The chain moves the feed, transporting it throughout the entire trough system

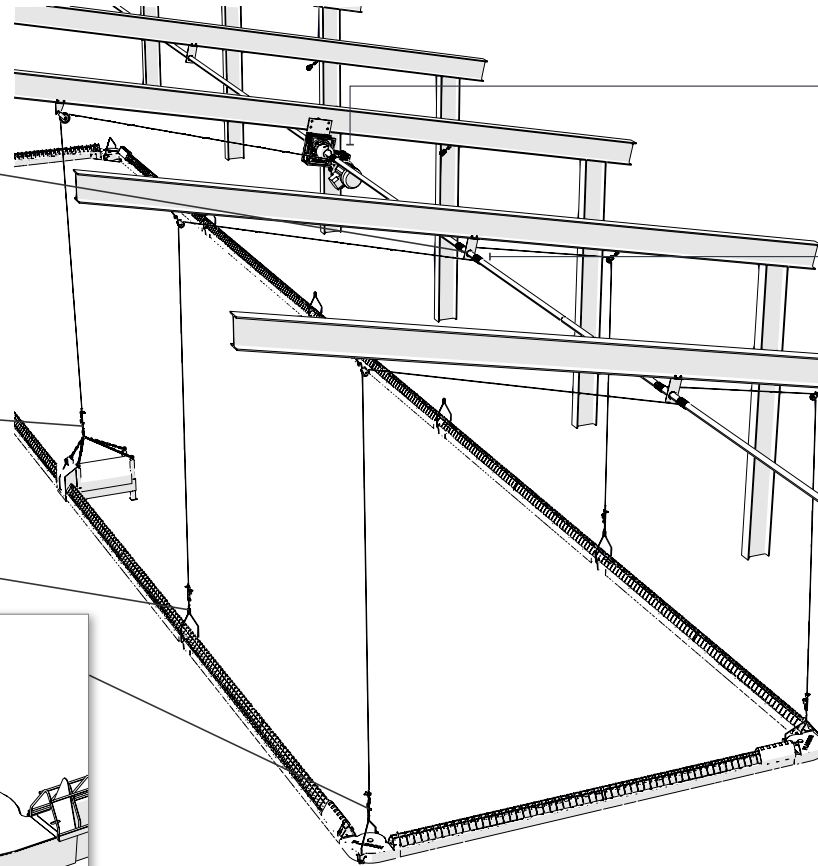
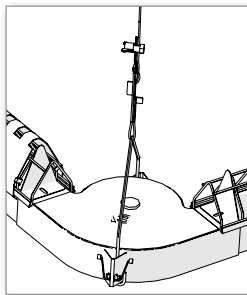
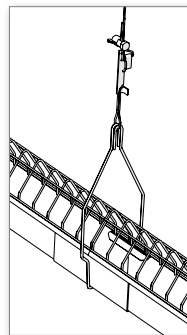


2.7 Suspension System

One end of the suspension wires is wrapped around a common axle



The other end of the suspension wires connect to several points around the system



1. A central drive unit attached to the rafters rotates the common axle

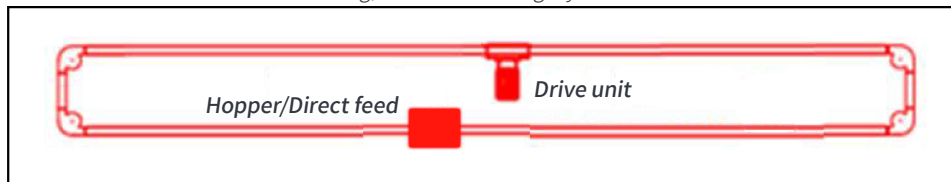
2. Wires wrapped around the common axle lift and lower the system as the axle rotates

3. Pulleys guide the wires to the suspensions points

2.8 Common Layouts

Following are common layouts of the Chain Feeding System:

If the chain is less than 80 meters long, use the following layout:

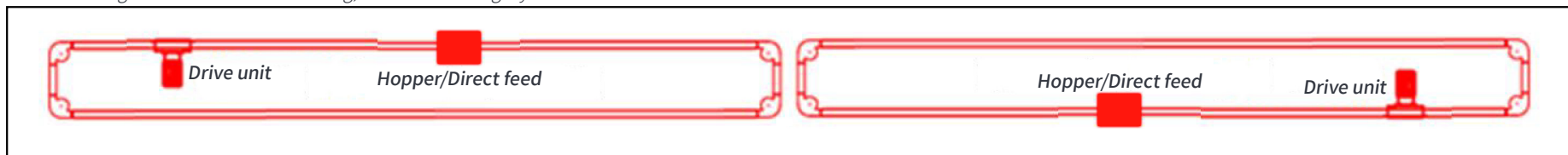
**NOTE:**

If the system is suspended, a direct feed unit is used. If the system is on legs or on the ground, either a hopper or direct feed unit may be used

If the chain is between 80 and 150 meters long, use the following layout:



If the chain is greater than 150 meters long, use the following layout:



2.9 Typical Installation Workflow

The typical chain feeding system installation workflow is as follows:

1. Mark the location of the chain feeder loops, using the designed layout as a guide.
2. If installing the suspended chain feeding system, mark the location of the suspension system parts. Mind the difference in the positions of the drive unit(s) and corners in relation to the trough along the loop.
3. Verify there are no conflicts with structural elements of the house (e.g., ensure that the suspension pipes have a continuous path with no interferences).
4. Verify there are no conflicts with the other systems in the house, such as the feeding, drinking, and nesting systems, the cross auger feeding line, and the cable troughs (e.g., when there is a drinking system positioned in the middle of a chain feeder loop, position the chain feeding system suspension pipes slightly away from the middle of the chain feeder loop in order to make room for the drinking suspension system).
5. Follow the [Assembly Instructions](#).

3.1 System Unpacking

Open the system package and verify that all the parts listed in the [Bill of Materials \(BOM\)](#) are located in the package and are intact. If any part is missing or damaged, contact us

NOTE:

Unpack the system in a clean and dry area.

3.2 Bill of Materials (BOM)

The following table displays the list of parts required to assemble a standard section of the system:

ID#	P/N	Description	QTY.
1	02340099	FEEDING CHAIN (PER 1M) PLTS	687
2	02340888	MEDIUM TROUGH FOR SUSPENSION/FLOOR 3M	
3	02340974	MEDIUM TROUGH FOR CLEANING 2.86M SET	
4	02340975	COUPLER MEDIUM TROUGH FOR LEG 155MM SET	
5	02340979	COUPLER MEDIUM TROUGH FOR FLOOR 155MM	
6	02349009	COUPLER MEDIUM TROUGH FOR HANGING 240MM	
7	02340500	CORNER 90 DEG. FOR CHAIN (TS) COM	
8	02340370	LEG FOR COUPLER	
9	02340385	LEG FOR 90 DEG CORNER	

ID#	P/N	Description	QTY.
10	02340976	RESTRICTION GRILL 4555 45 X 55MM 1474MM	
11	02386673	HEXAGON HEAD BOLT M6 X 15MM, SS	
12	02310428	ANTI-LOOSE NUT M6, SS	
13	02310459	WASHER M6, SS	
14	02349043	RESTRICTION GRILL END CAP	
15	02340977	FEED HOPPER 260 KG ON LEGS	
16	02341097	GRILL COVER FOR MEDIUM TROUGH	
17	02340639	CHAIN FEEDER DRIVE UNIT 3 PHASE 1.5HP 36 M/MIN 220/380V SET	
18	02340396	HOOK FOR CORNER 90°	
19	02340397	HOOK FOR MEDIUM TROUGH	
20	02341094	GEARMOTOR FOR C. FEEDER LIFTING 400 NM 7 RPM 1 HP 3PH W/ COUPLINGS 1.25" W/ FIXING PLATE SET	
21	02340664	SLIDE BEARING L SUPPORT PLATE 1.25" GAL. (120X40MM)	
22	02320019	DIN 933 M6X20 BOLT	
23	02323061	DIN 985 M6 NUT	
24	02353022	GALV PIPE 1.25" (2.65MM) (PER METER)	
25	02310359	NYLON PULLEY 1-7/8"	
26	02310020	STEEL PULLEY 3.1/2"	
27	02320003	STEEL CABLE 3/32" (2.4MM)	

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ID#	P/N	Description	QTY.
28	02320001	CABLE CLAMP 1/8"	
29	02310457	CABLE HEIGHT ADJUSTER	

3.3 Required Tools

Prepare the following tools before beginning assembly:

- Measuring tape
- Hacksaw
- Screwdrivers
- Wrenches
- Hex wrenches
- Socket set
- Hammer
- Chain tensioner
- Chain separator and assembly tool

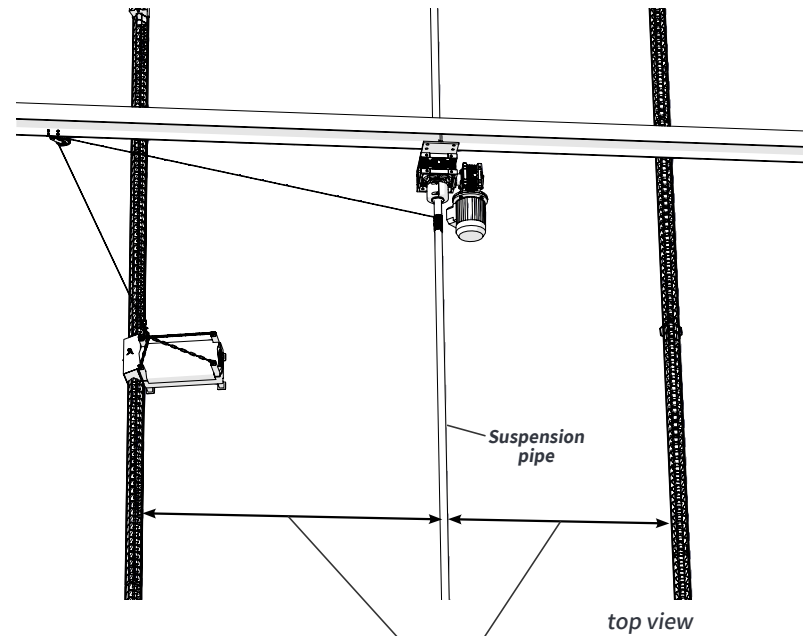
3.4 Assembly Instructions

This section reviews the steps required to assemble the system and includes:

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Step 1: Installing the Suspension System

Before installing the suspension system, note the following:

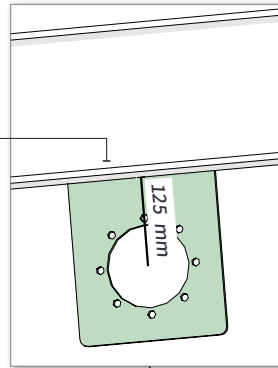
**NOTE:**

If needed, the feeding chain suspension pipe can be installed off-center. This may be the case, for example, if the drinking system is also being installed

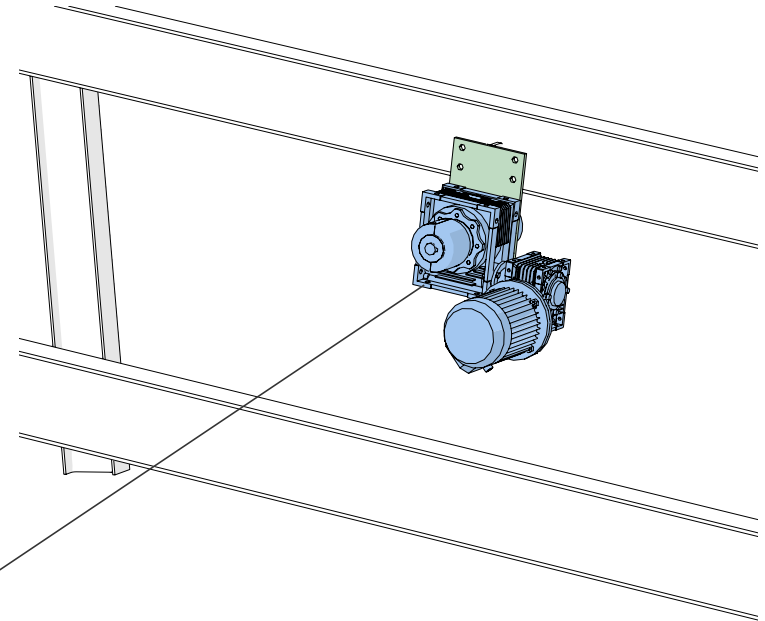
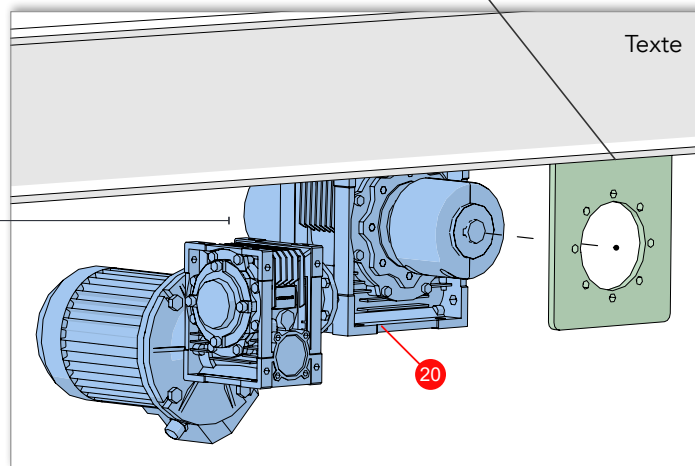
1. Weld the drive unit plate to the center roof beam

NOTE:

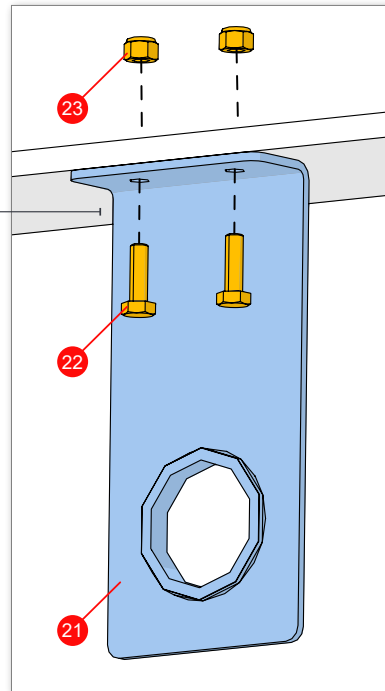
The center of the drive unit plate circle must be 125 mm from the bottom of the beam.



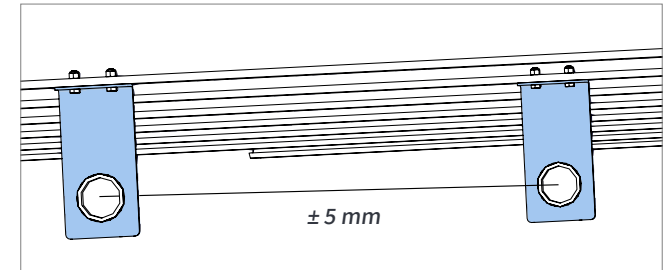
2. Attach the suspension drive unit (20) to the drive unit plate



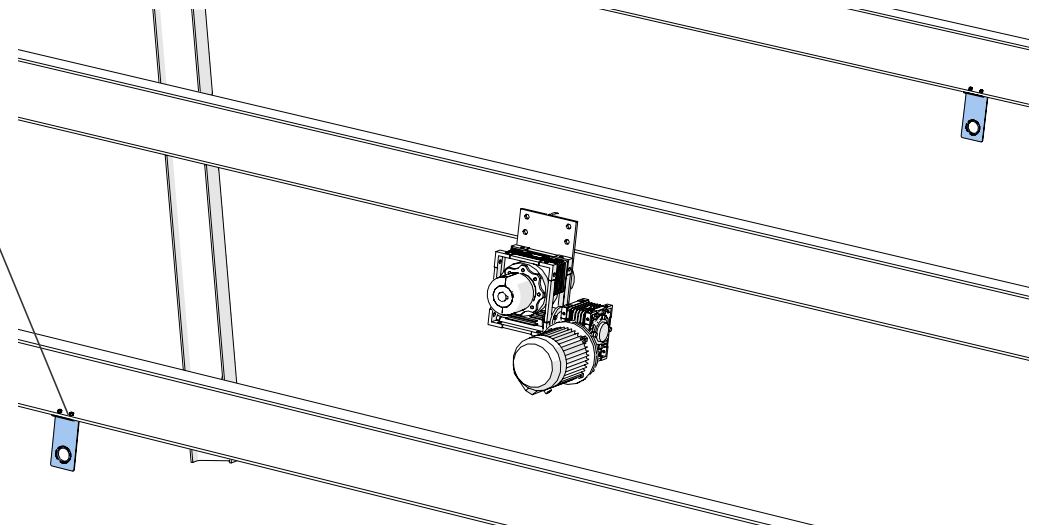
3. Attach the suspension pipe bearings (21) to the roof beams using two bolts (22) and two nuts (23)

**NOTE:**

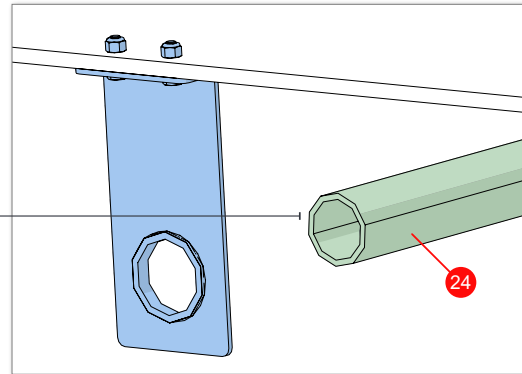
Tolerance between bearing centers is ± 5 mm vertically and horizontally

**NOTE:**

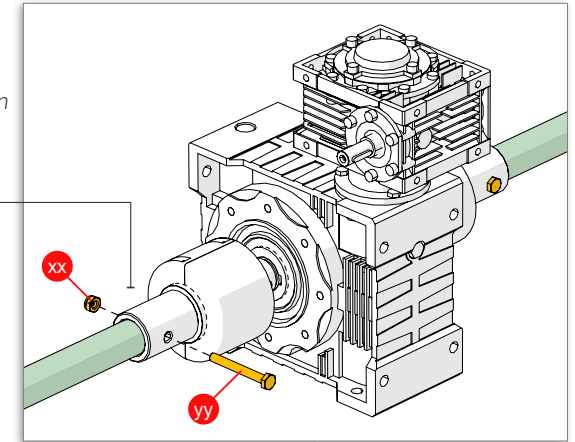
The distance between bearings should be 4 meters or less. For longer distances consult a Plasson representative.



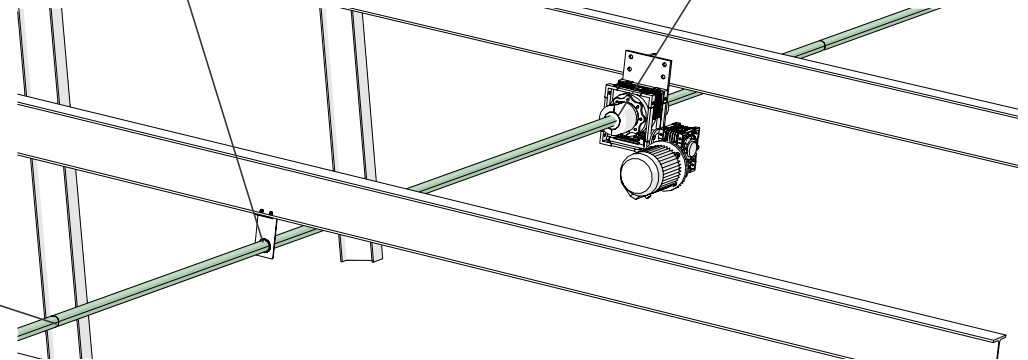
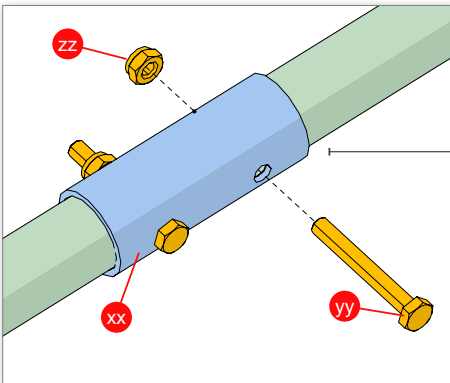
4. Insert the suspension pipes (24) into the bearings



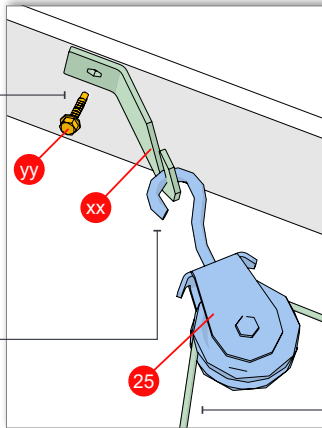
5. Attach the suspension pipes to the drive unit using one screw (xx) and one nut (yy) per pipe



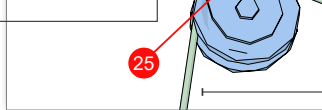
6. Connect suspension pipes to each other using a pipe connector (xx), two screws (yy), and two nuts (zz)



7. Attach brackets (xx) to the rafters over every coupler and corner unit using one self-drilling screw (yy)

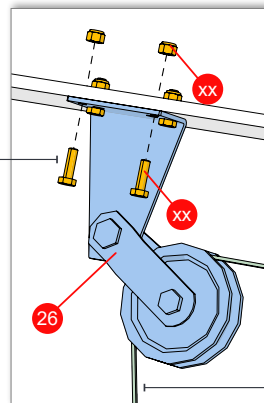


8. Hook a pulley (25) onto each bracket

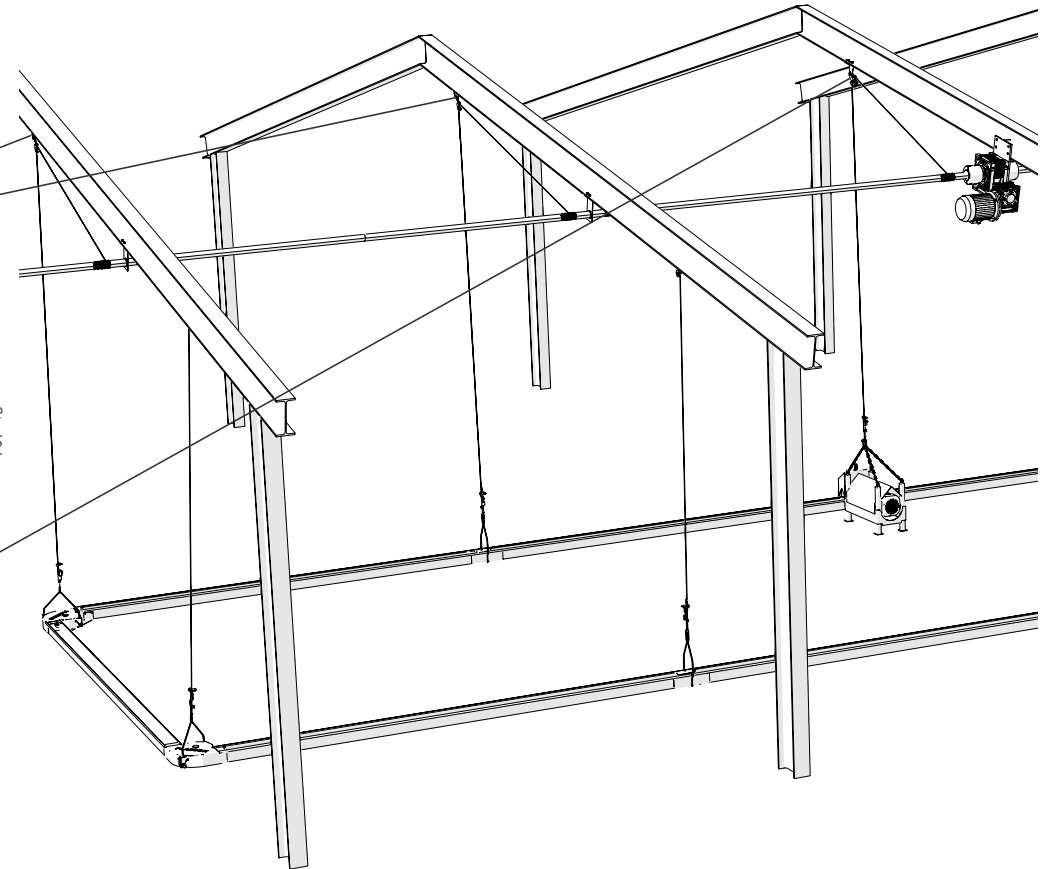


Vertical wire should be located exactly above the couplers and corner units

9. Attach the pulley (26) to the rafter over the drive unit using four screws (xx) and four nuts (xx)



Vertical wire should be exactly above the feeding chain drive unit

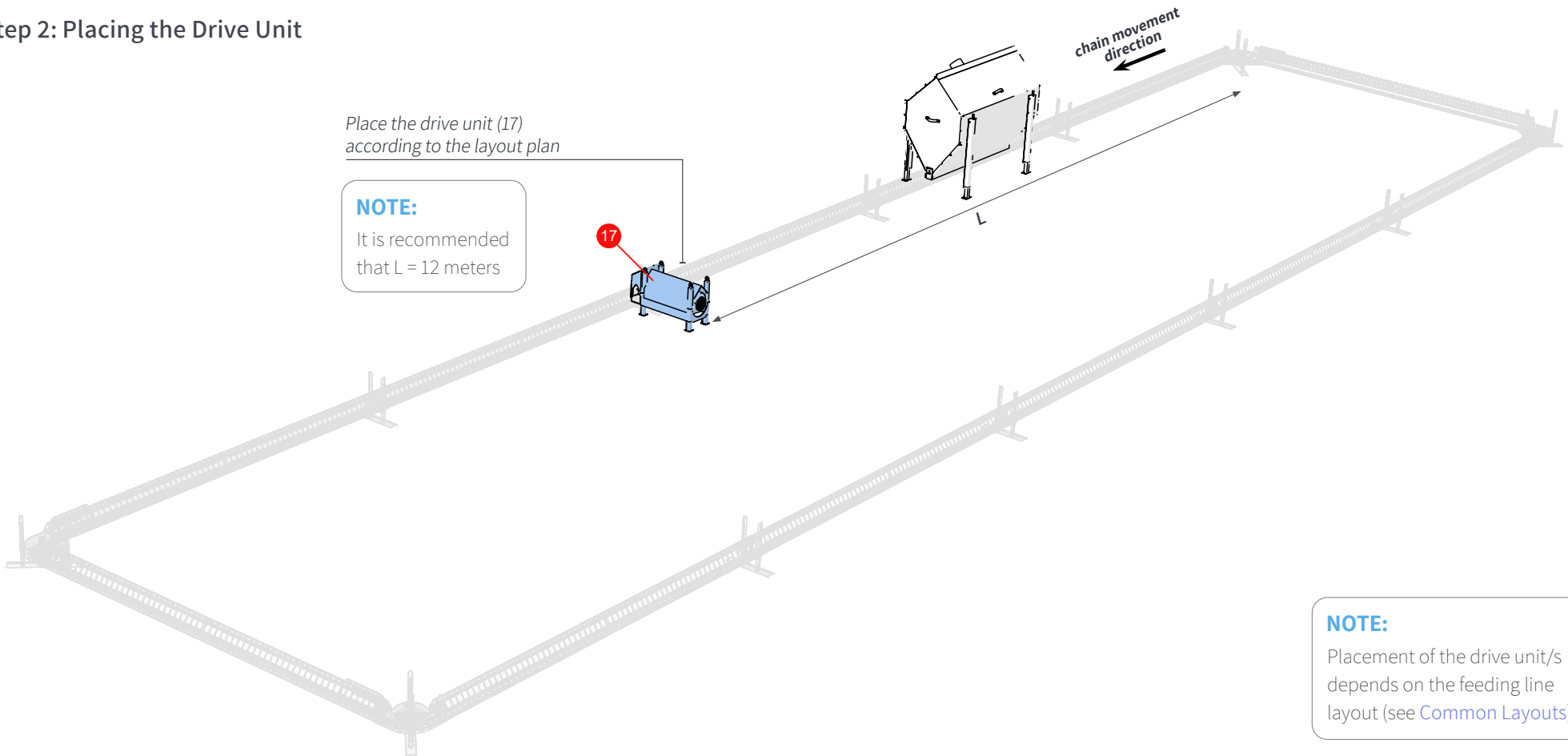


Step 2: Placing the Drive Unit

Place the drive unit (17)
according to the layout plan

NOTE:

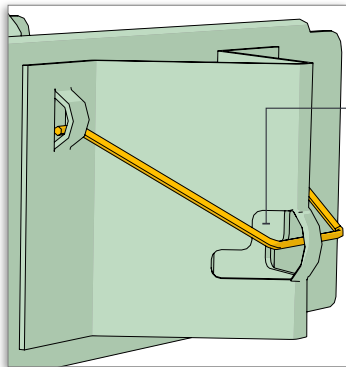
It is recommended
that $L = 12$ meters



NOTE:

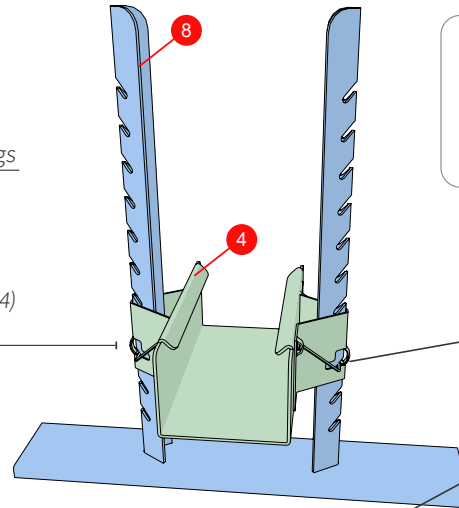
Placement of the drive unit/s
depends on the feeding line
layout (see [Common Layouts](#))

Step 3: Installing the Adjustable Legs



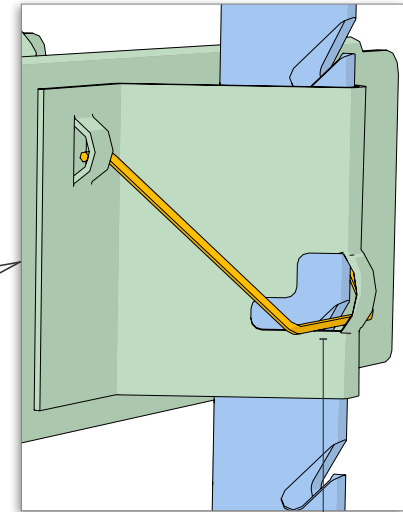
1. Pull the spring clip up to enable lowering the coupler and corner units onto the legs

2. Lower the coupler units (4) onto the coupler legs (8)

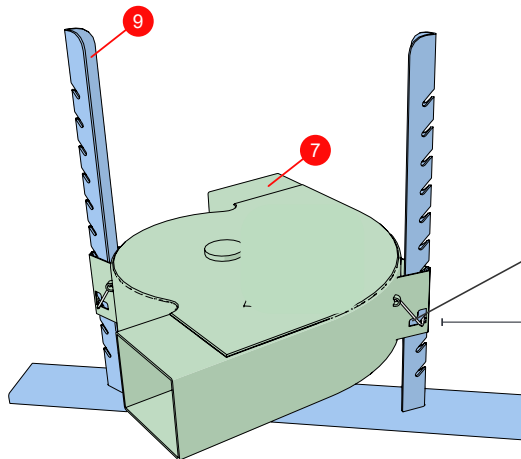


NOTE:

Verify all couplers and corner units are at the same height from the ground



4. Ensure the spring clips are securely positioned in the leg grooves



3. Lower the corner units (7) onto the corner legs (9)

NOTE:

When the system is suspended or situated on the floor, this step is not needed.

Step 4: Installing the Troughs

Connect the troughs (2) throughout the entire feeding chain system as follows:

1. Connect the troughs to the drive unit (see [step 5A](#))

2. Connect the troughs to the coupler units (see [step 5B](#))

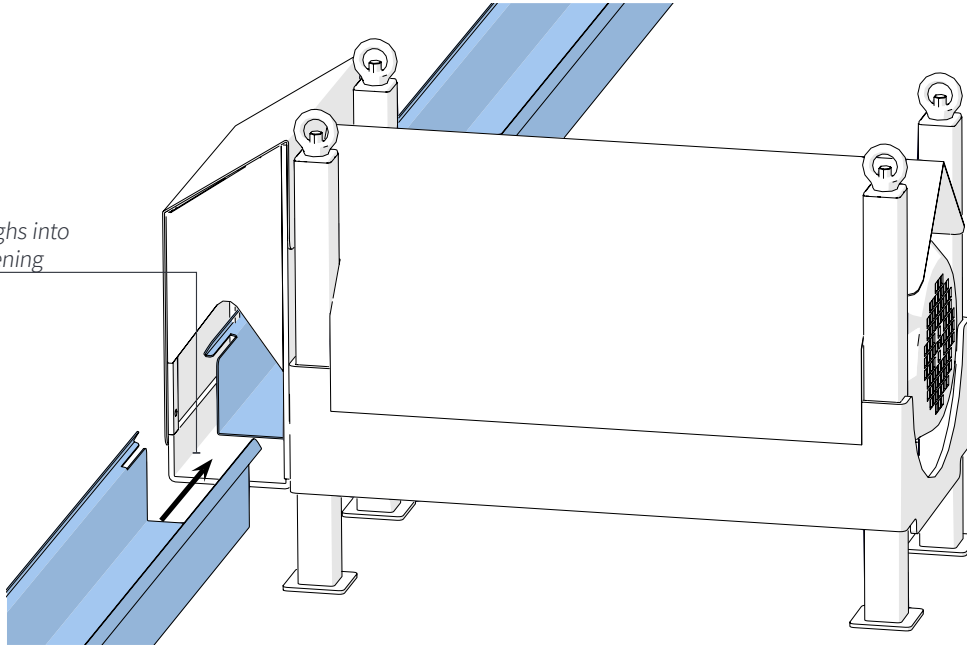
NOTE:

A trough is placed below the hopper but is not connected to it

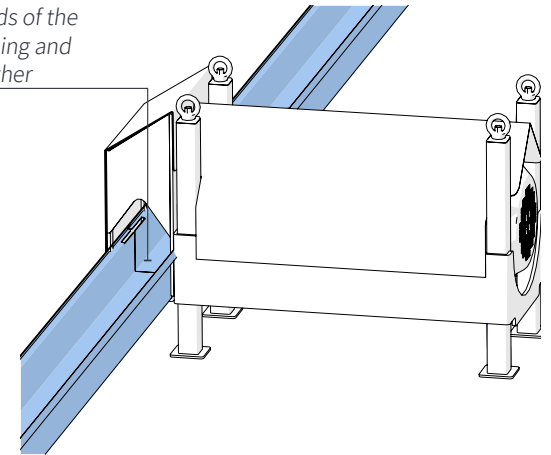
3. Connect the troughs to the corner units (see [step 5C](#))

Step 4A: Inserting Troughs into the Drive Unit

1. Slide the troughs into the drive unit opening

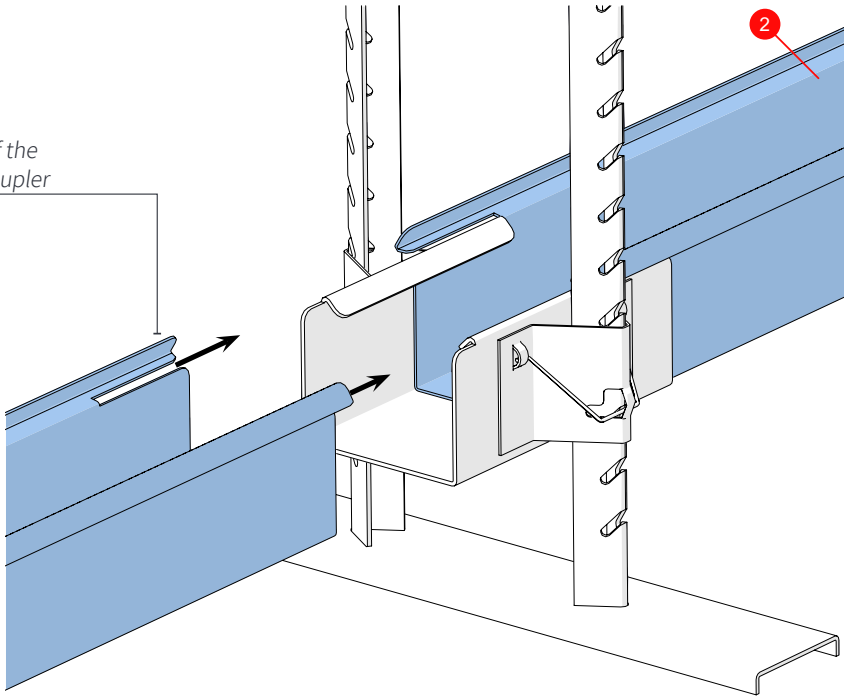


2. Ensure the ends of the troughs are touching and flush with each other

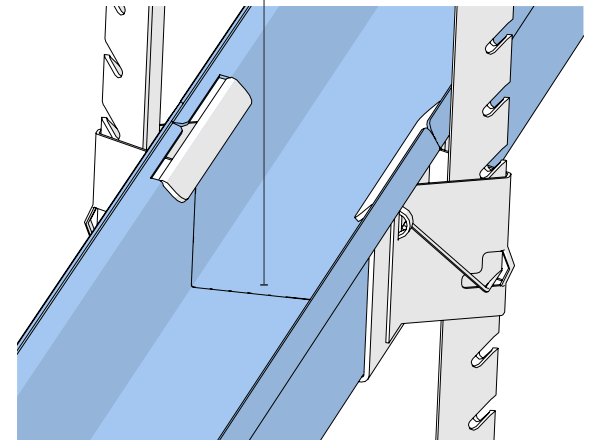


Step 4B: Inserting Troughs into Couplers

1. Slide the slits of the troughs into the coupler

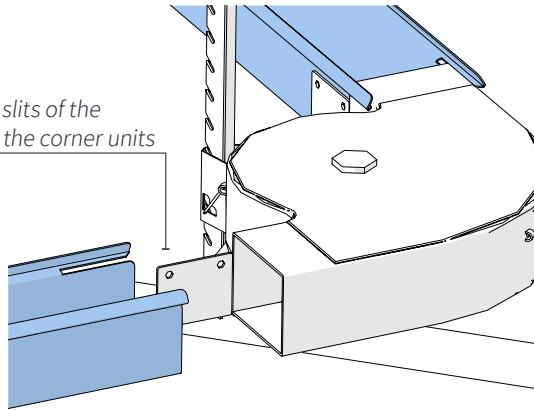


2. Ensure the ends of the two troughs are touching and flush with each other

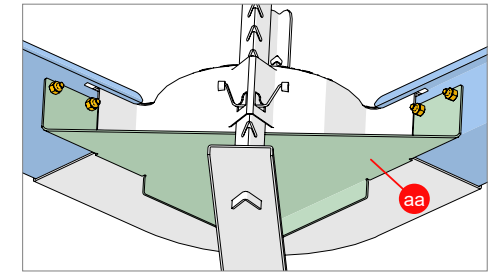
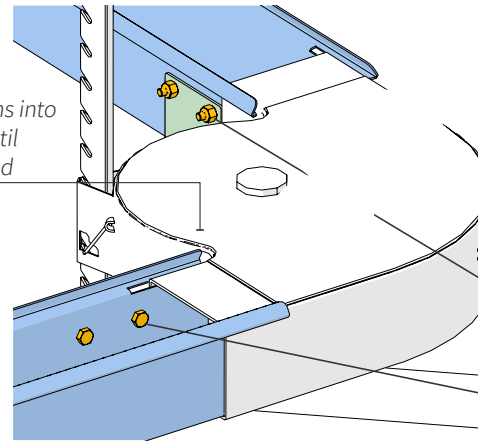


Step 4C: Inserting Troughs into Corners

- 1.** Slide the slits of the troughs into the corner units



- 2.** Push the troughs into the corner units until they're fully inserted



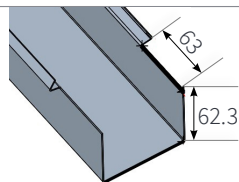
bottom view

NOTE:

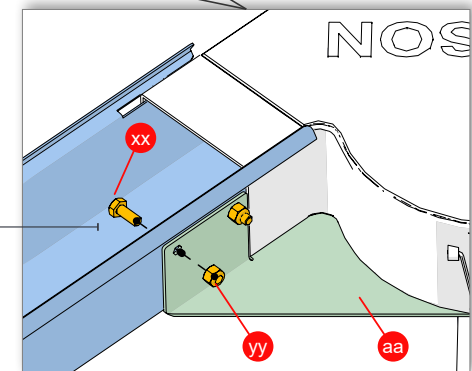
Corner support is not used when system is installed on the ground

NOTE:

If the trough is shorter than 3 meters, cut the ends according to the following dimensions (in mm):



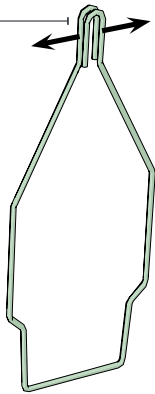
- 3.** Attach the troughs to the corner units via the corner support (aa), using two screws (xx) and two nuts (yy)



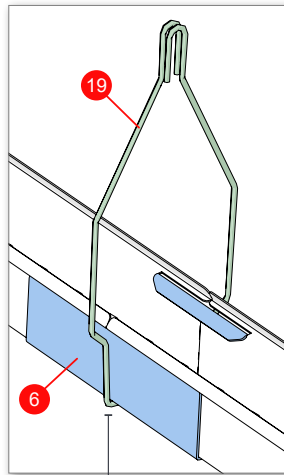
Step 5: Optional Installation – Suspended System

When the feeding chain system is suspended, do the following:

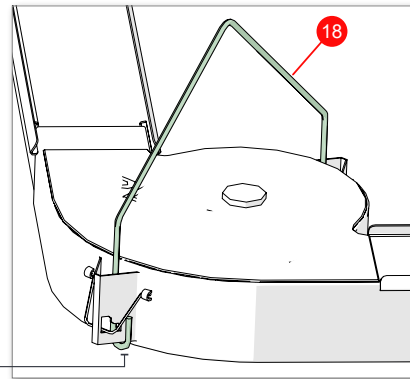
1. Pull both ends of the coupler suspension hook (19) apart



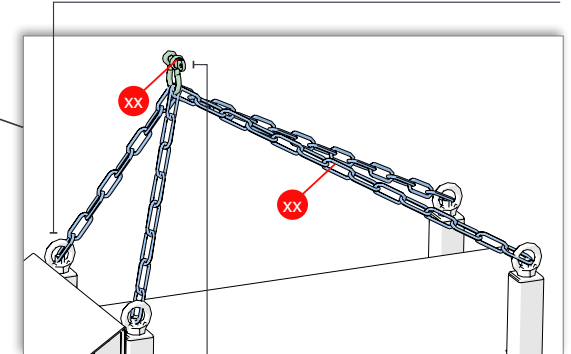
2. Wrap the suspension hook around the bottom of the suspension coupler (6)



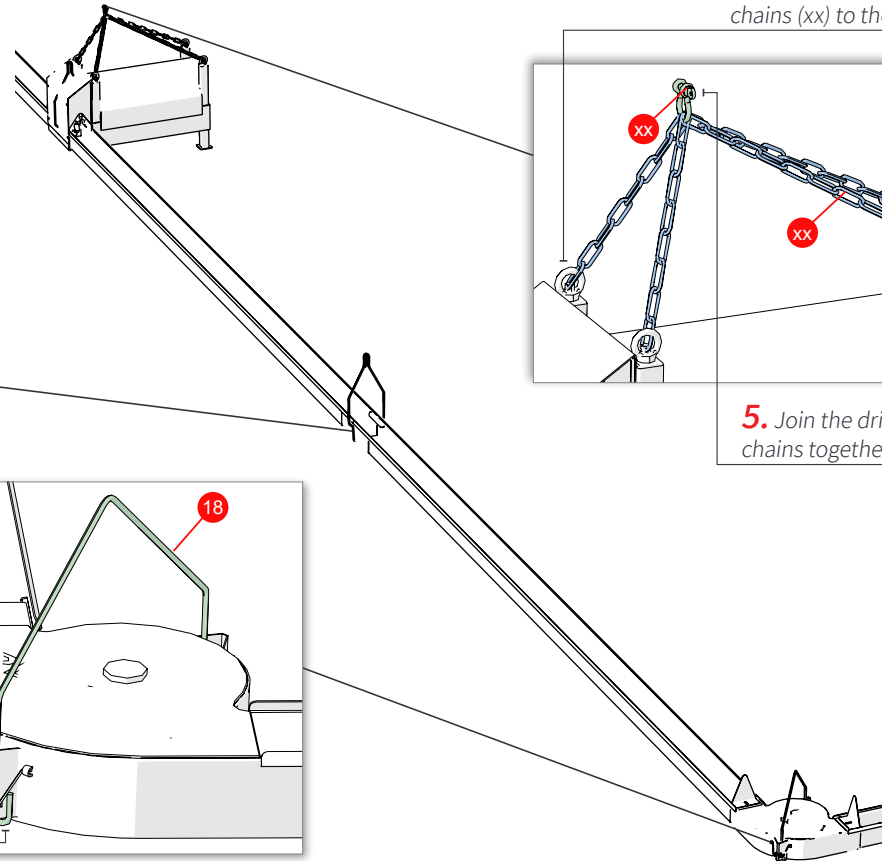
3. Clasp both ends of the corner unit suspension hook (18) to the edges of the corner unit



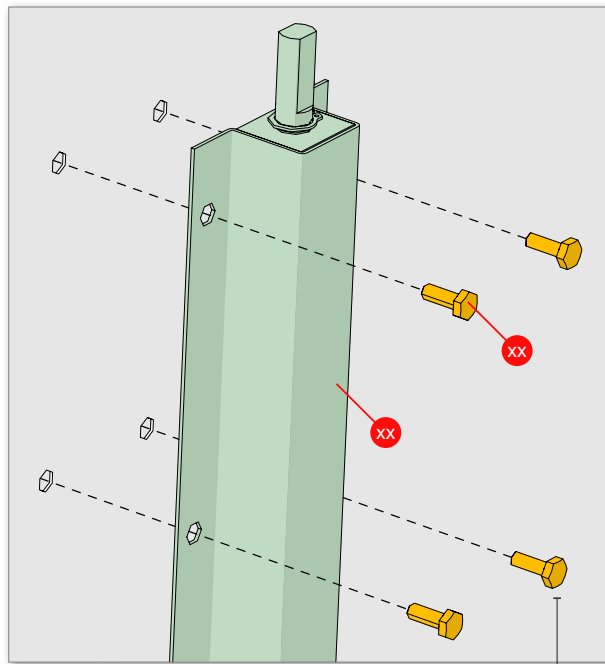
4. Attach the drive unit suspension chains (xx) to the drive unit



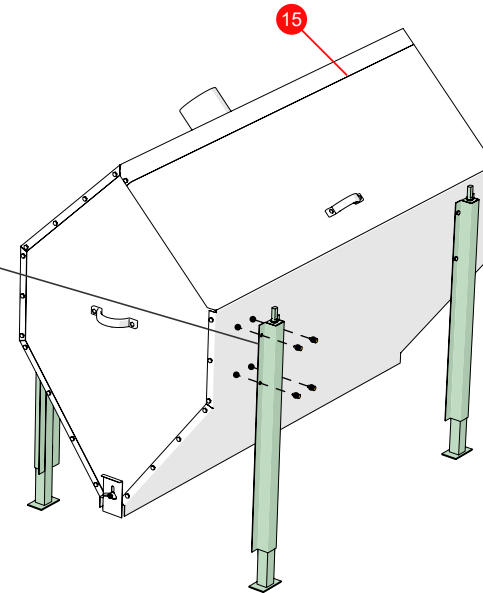
5. Join the drive unit suspension chains together using a shackle (xx)



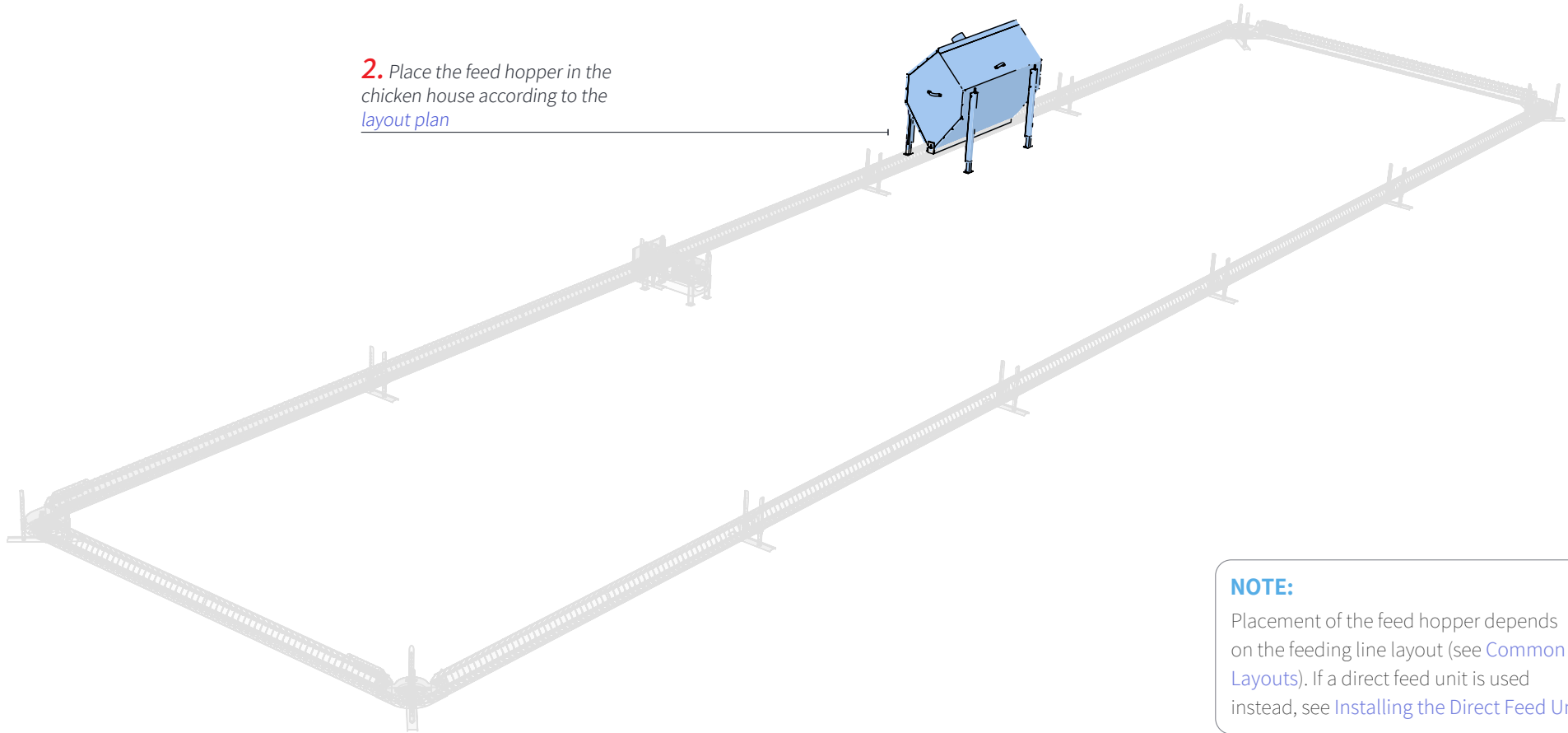
Step 6: Installing and Placing the Feed Hopper



1. Install four hopper legs (xx) onto the feed hopper (15) using four hex bolts (xx) per leg



2. Place the feed hopper in the chicken house according to the [layout plan](#)

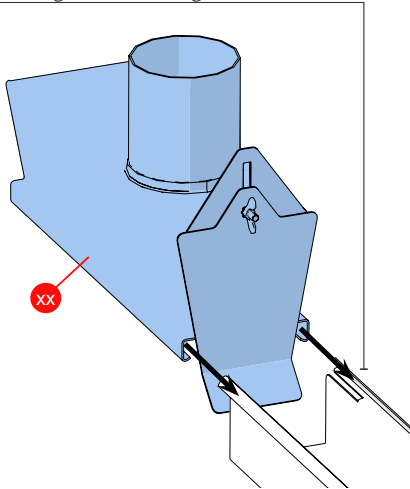


NOTE:

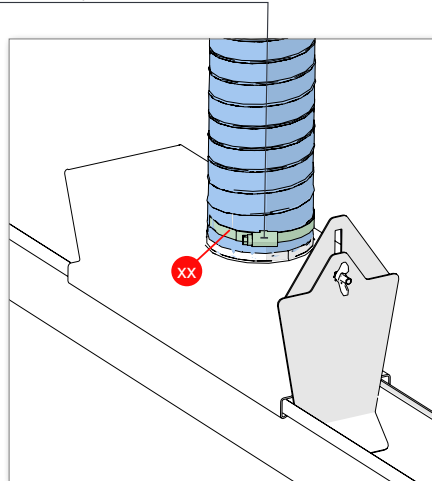
Placement of the feed hopper depends on the feeding line layout (see [Common Layouts](#)). If a direct feed unit is used instead, see [Installing the Direct Feed Unit](#)

Step 7: Installing the Direct Feed Unit

- 1.** Slide the direct feed unit (xx) onto the edges of the trough

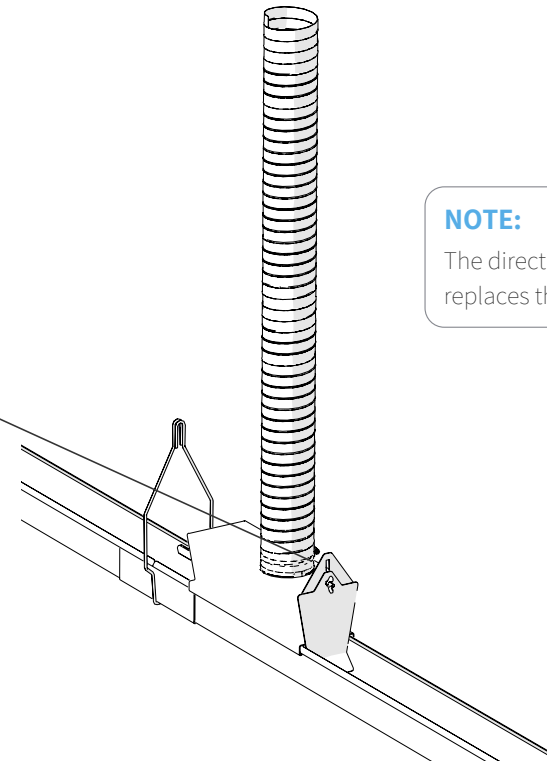


- 2.** Place the duct hose over the direct feed unit hole and attach with a hose clamp (xx)



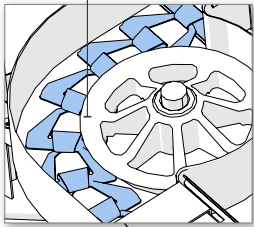
NOTE:

The direct feed unit replaces the hopper.

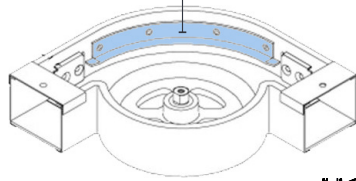


Step 8: Installing the Chain

Ensure the chain is inserted under the corner wheels and brackets



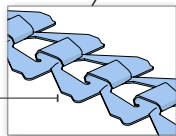
Verify the shear pin is not inserted into the drive unit gear wheel



Chain movement direction

Chain movement direction

Ensure the chain links are facing up and that the wider ends are pointing in the direction of chain movement



NOTE:

Use the tensioner at the long side of the system

3. Pull the two ends of the chain together using a tensioner



1. Insert 10-meter long chain segments into the troughs



2. Connect the chain segments together using a jig and hammer



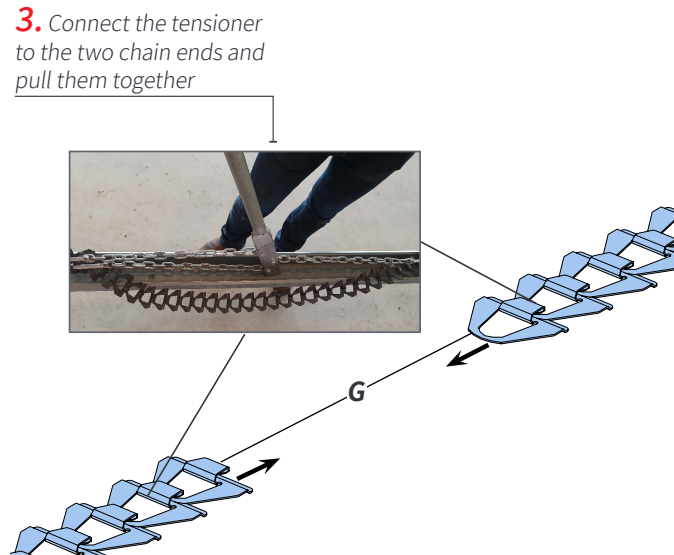
Step 9: Connecting the Chain Ends

1. Remove overlapping chain links until the two ends of the chain are not more than one link distance of each other.

2. Remove additional chain links until the gap (G) between the two ends of the chain conforms to the following table:

Circuit length (m)	# links to remove (G) – single drive system	# links to remove (G) – dual drive system
90	7	2
120	10	3
150	13	3
180	15	4
210	18	5
240	21	5
270	23	6
300	26	7
330	29	7
360	not recommended	8
390	not recommended	9

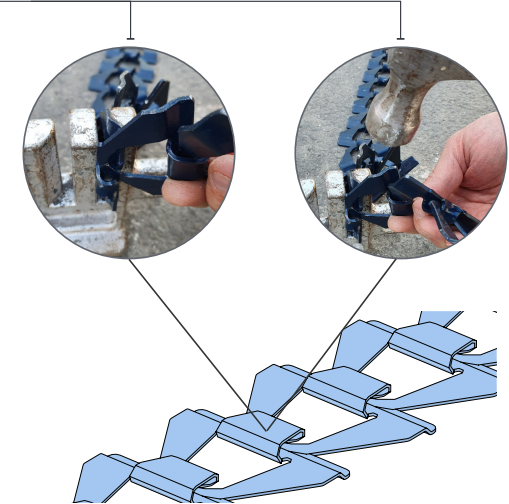
Example: If the circuit length is 240 meters long, remove 21 chain links (or 5 chain links for a dual drive system) so that the gap (G) between the two ends of the chain is 21 links long.



NOTE:

Chain tension is checked by observing chain slack at the point where the chain leaves the drive unit. The chain should pull downwards with a force of about 5 kg after it's lifted up

4. Connect the two chain ends using a jig and hammer



5. Operate the chain for one hour, then repeat 1-3

NOTE:

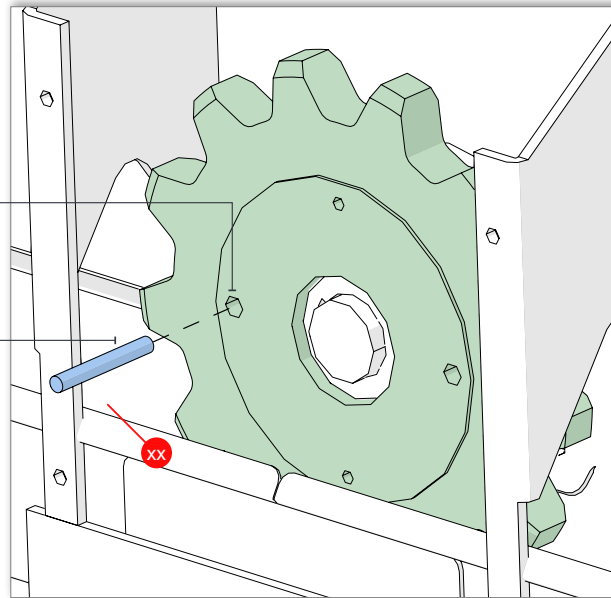
After two weeks of continuous operation, repeat this step

Step 10: Connecting the Drive Unit Gear Wheel

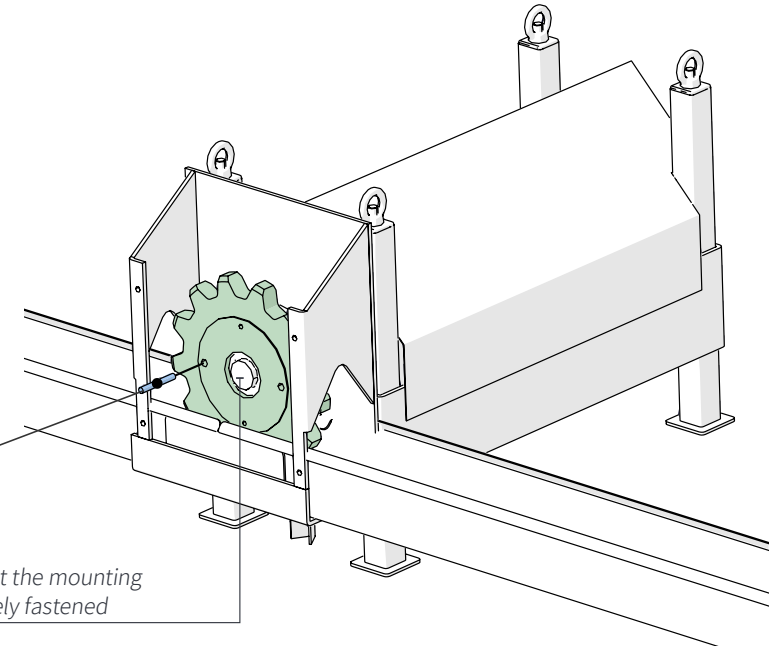
The drive unit gear wheel comes pre-attached to the drive unit but is able to rotate freely. Once the entire chain is connected, perform the following steps to connect the gear wheel with the drive unit axle:

1. Align the hole in the gear wheel with the hole in the drive unit axle

2. Insert the gear wheel shear pin (xx) into the gear wheel



3. Verify that the mounting bolt is securely fastened

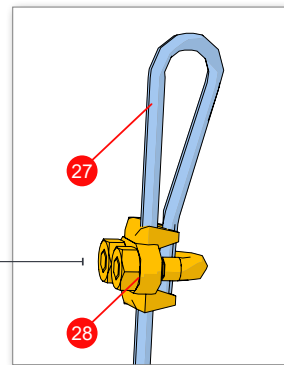


NOTE:

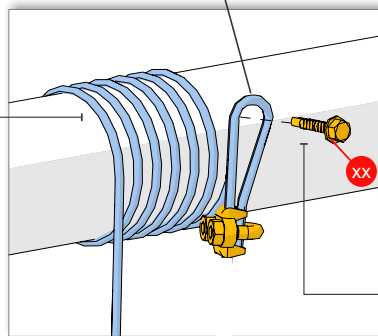
The gear wheel contains four holes, each with a different diameter. This allows shear pins of various thicknesses to be used, based on the drive unit overload rate. The system is delivered with the relevant shear pin.

Step 11: Connecting the Suspension Cables

1. Make a 10 mm loop on the end of 2.4 mm steel cable (27), and fasten using a cable clamp (28)



2. Wind the cable around the suspension pipe eight times

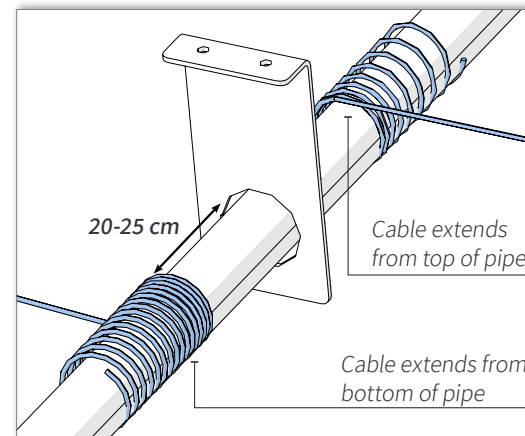


NOTE:

All cables are wound around the suspension pipe in the same direction

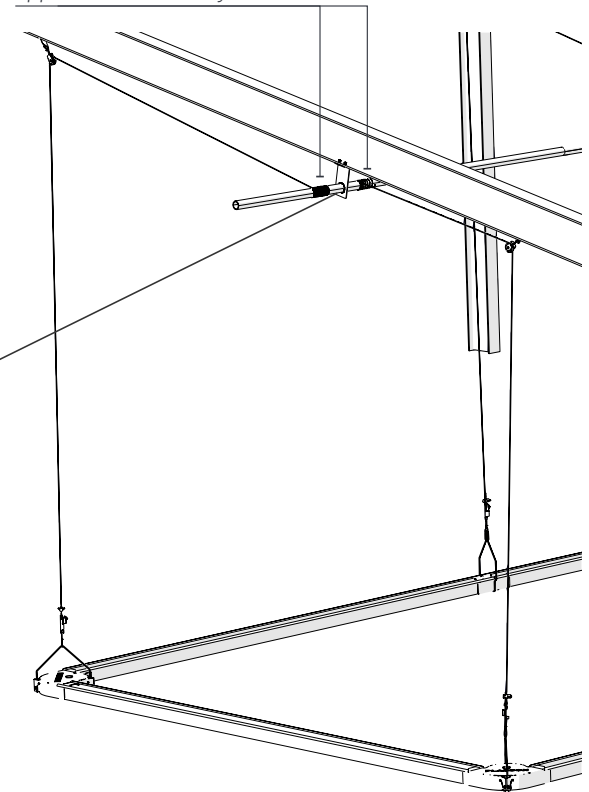
NOTE:

Cables must be 20-25 cm from the bracket

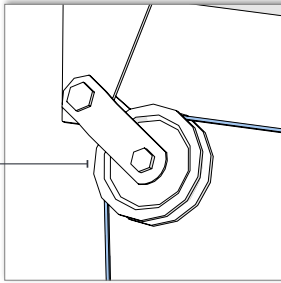


3. Attach the cable to the suspension pipe using a self-drilling screw and washer (xx)

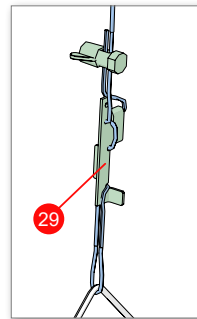
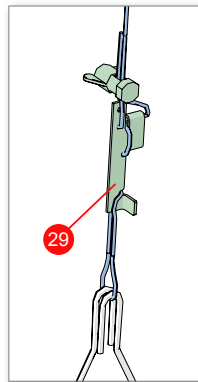
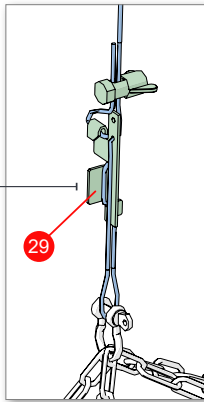
Two cables connect to the central axle, each going to the opposite side of the system



4. Pull the cables through the pulleys

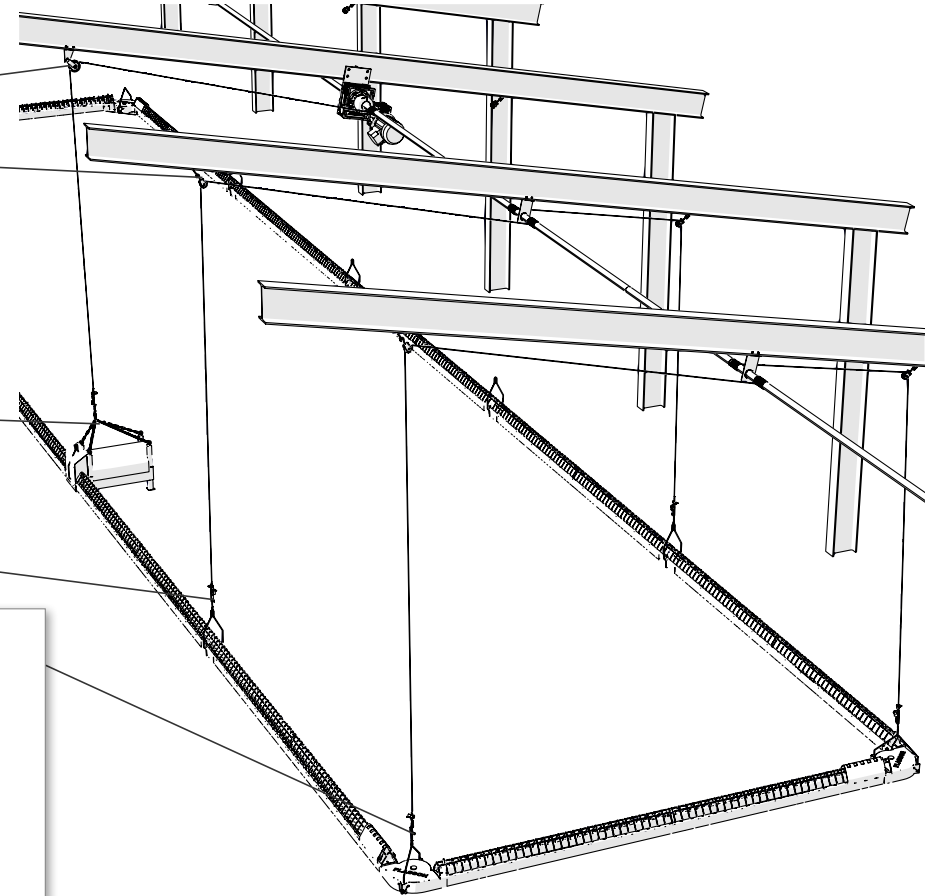


5. Connect the cables to the drive unit suspension chain and to the suspension hooks using cable height adjusters (29)



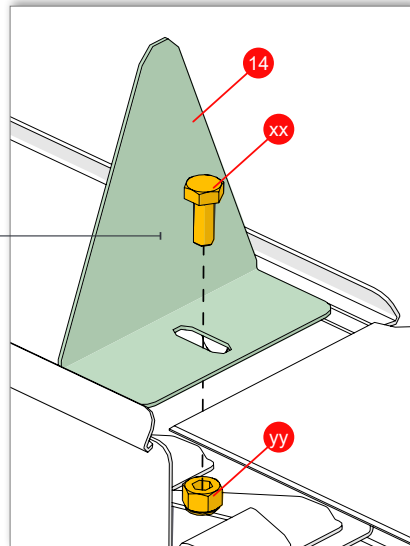
NOTE:

Verify all couplers and corner units are at the same height from the ground

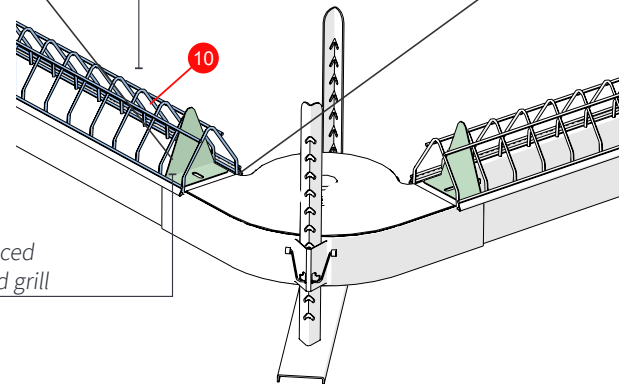


Step 12: Installing the Restriction Grills, Grill Covers, and End Caps

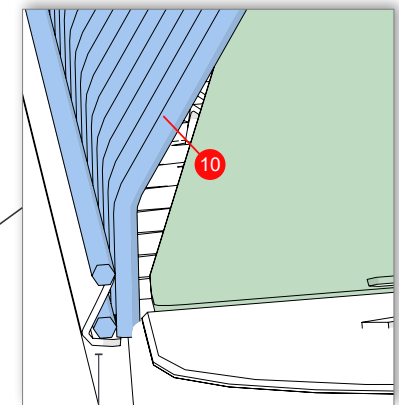
1. Attach restriction grill end caps (14) on either end of the corner units using a bolt (xx) and nut (yy)



2. Lower the restriction grills (10) onto the troughs



3. Ensure the end cap is placed between the first and second grill

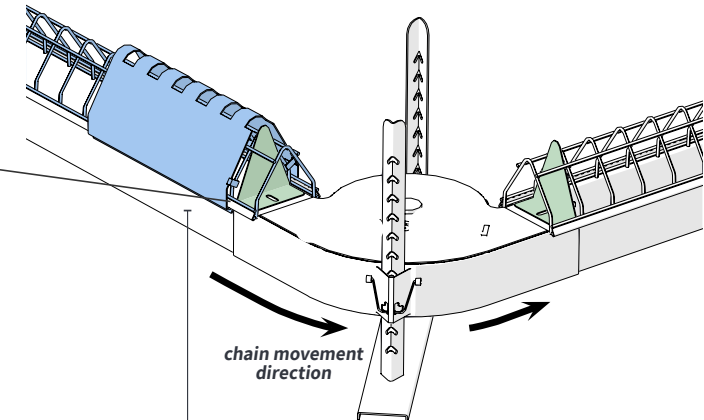
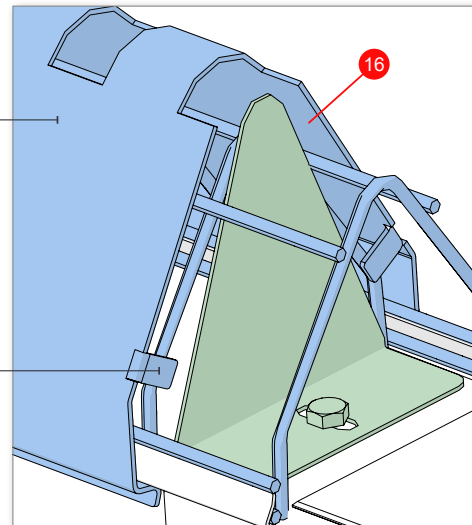


4. Snap the restriction grills into the inner edges of the troughs

5. Lower the restriction grill covers (16) onto the restriction grills

6. Ensure the stopper is between the first and second grills

7. Snap the restriction grill covers onto the outer edges of the troughs



NOTE:

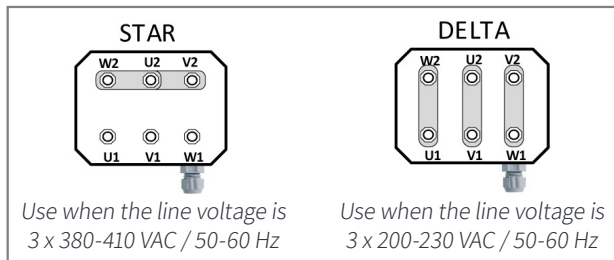
Grill covers are located only on the side of the corner unit from which the chain enters

3.5.1 Connecting the Chain Drive Unit

1. Connect the facility power supply to the control cabinet

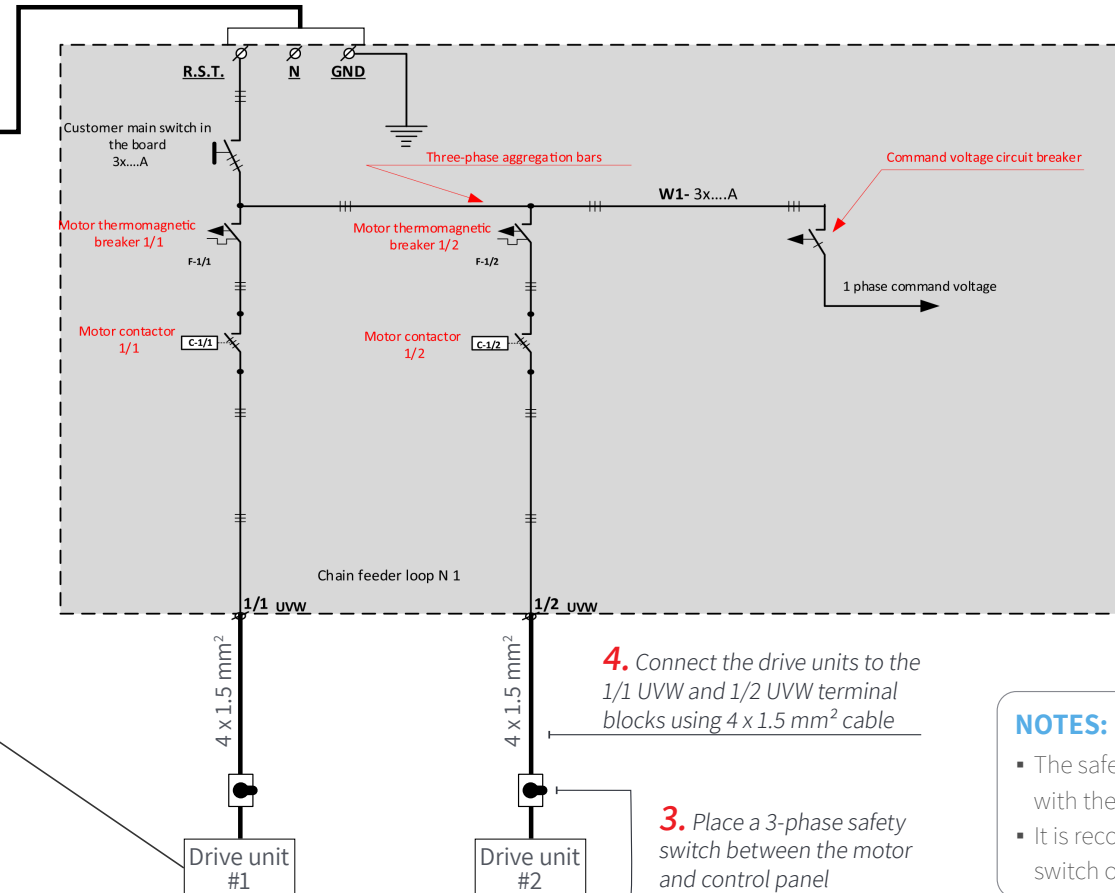
Facility power supply

2. Connect the drive unit(s) using either the STAR or DELTA connection system



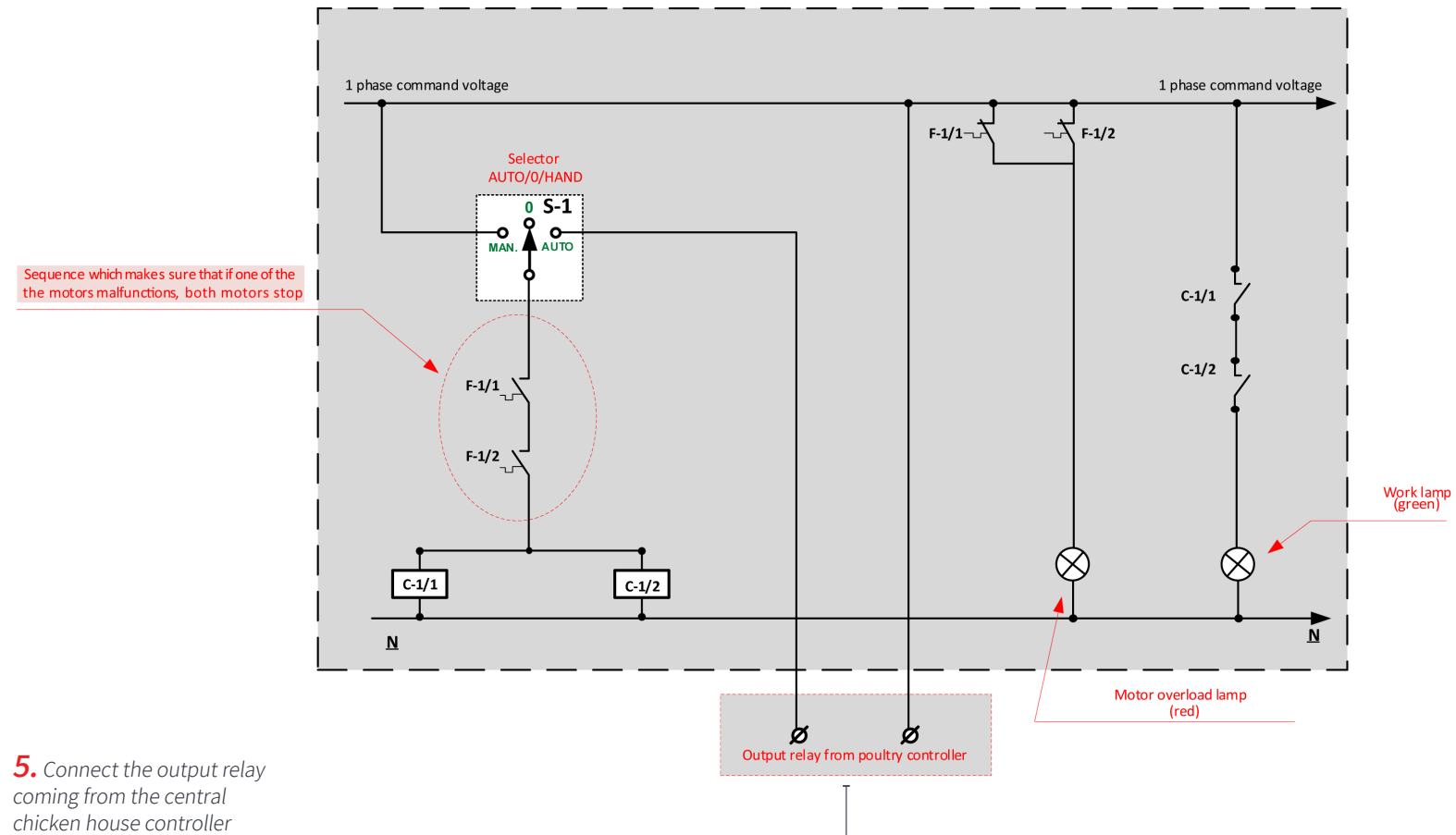
NOTE:

Number of drive units depends on the chain feeding system layout (see [Common Layouts](#))



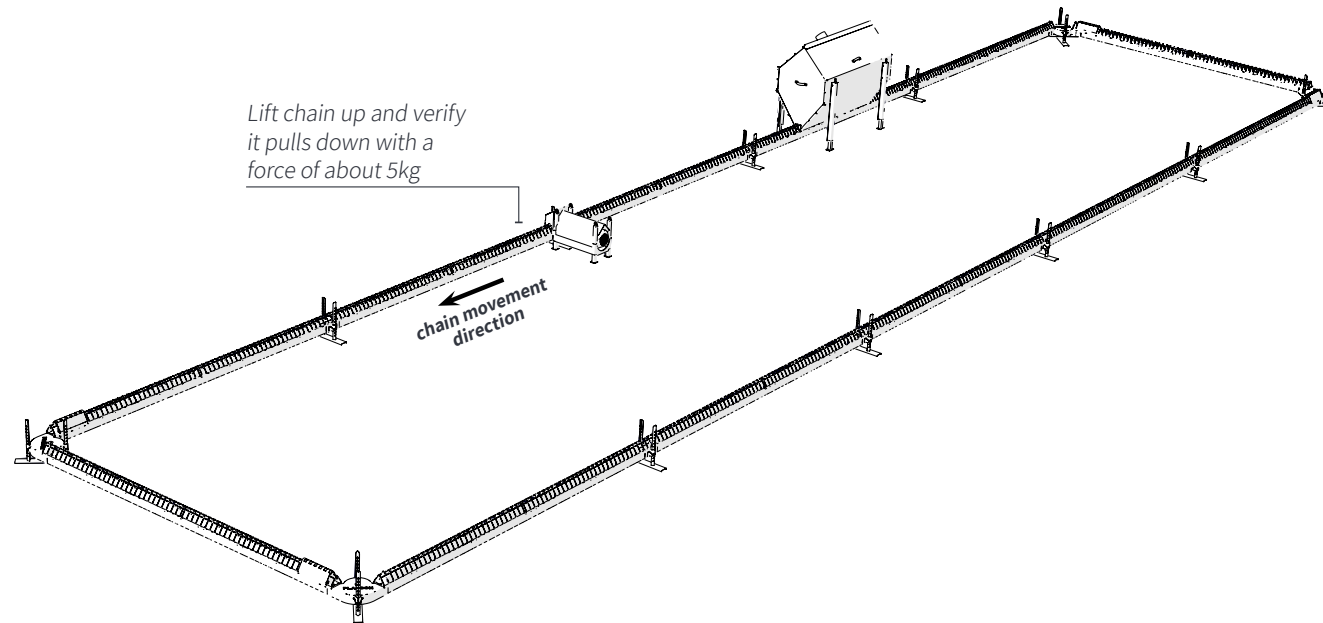
NOTES:

- The safety switch is not supplied with the chain feeding system
- It is recommended to install the switch on the drive unit cover



4.1 Checking Chain Tension

Once a week, check chain tension at the point where the chain leaves the drive unit.



5. Troubleshooting

This chapter reviews issues that may appear during operation of the system and suggests steps to resolve these issues.

Problem	Possible Cause	Solution
The motor is not working	Contactor or thermal relay have tripped	Replace or reset the contactor
	Wiring problem	Check all the wiring
	Motor is burned	Replace or repair the motor
The motor trips frequently	Thermal relay is not properly adjusted	Properly adjust the relay
	Trough is misaligned	Align the trough
	Foreign object in the line	Check all the lines
	Insufficient voltage	Contact the electrician to assess the power line
Gear overheating	Lack of lubrication	Fill the oil level
	No vent in the gear	Install a vent
	Conveyor chain excessively tensioned	Adjust chain tension
The chain does not turn, even when the motor is on	Shear pin is broken	Replace the shear pin

Problem	Possible Cause	Solution
Shear pin breaks frequently	Slack chain	Check the chain and tension it
	The chain is getting stuck at some point in the line	Check all points of the system: troughs, couplers, corners, and hopper
	Foreign objects in the line	Take care of the cleaning troughs
	The line circuit is too long	Shorten the line
	Drag coupling is far from the drive gear	Adjust the drag coupling close to the drive gear
	Shear pin is not the correct diameter	Insert the correct diameter shear pin
Damaged corner	System is misaligned and/or out of square	Align and/or square the system
	Excess dirt (litter) inside the troughs	Use the cleaning trough and replace it in case it is broken
Feed is building up in the hopper return or corners	Output regulator is excessively open	Adjust the output regulator on the hopper
	Input wheel is obstructed or is not in contact with the chain	Check what is obstructing the input wheel and correct

6. Technical Specifications

6.1 Suspension System

P/N	Part	Technical Specification
02341094	Motor (400 Nm)	7 RPM, 1 HP, 3-phase w/couplings, 1.25" w/fixing plate set
02341903	Motor (840 Nm)	7 RPM, 1.5 HP, 3-phase w/couplings, 1.25" w/fixing plate set
02341904	Motor (915 Nm)	7 RPM, 1.5 HP, 3-phase w/couplings, 220 V, 60 HZ, 1.25" COM
02312425	Slow lifting winch (up to 80 m)	450 Nm, 5.6 RPM, 3-phase, 220/380 V, 0.37 KW, COM
02312314	Slow lifting winch (up to 100 m)	450 Nm w/LS, 2.8 RPM, 3-phase, 220/380V, 0.37 KW, COM
02312426	Slow lifting winch (up to 120 m)	550 Nm, 3.7 RPM, 3-phase, 220/380V, 0.37 KW, 2P COM
02312315	Slow lifting winch (up to 140 m)	650 Nm w/LS, 2.0 RPM, 3-phase, 220/380 V, 0.37 KW, COM

6.2 Drive Unit

P/N	Technical Specification
02340639	1.5 HP, 3-phase, 36 m/min, 220/380 V, SET
02341095	1.5 HP, 3-phase, 18 m/min, 220/380 V, SET
02341112	1.5 HP, 3-phase, 36 m/min, 220 V, 60 HZ, SET