Cable Alley Scraper

Free Stall Cleaners

Operation Manual / Installation Instructions
(Original instructions)

2005-9015-001
09-2016

engineering for
a better world

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Contents

1 Preface

This is a GEA product. GEA is the manufacturer of the Houle product line. This product was formerly known under HOULE trademark.

1.1 About the instructions

The manufacturer reserves the right to make changes due to technical developments in the data and images given in this manual.

This manual is not subject to an amendment service. The most recent version can be obtained through the dealer or directly from the manufacturer.

Reproductions, translations and copies of any kind, even of extracts, require written authorization from the manufacturer.

Required documents:

This product documentation consists of the following manuals:

Part No.	Name
2005-90 . . -001	Cable alley scraper system instruction manual
2005-90 . . -008	Design guide (Cable alley scraper system)

Pictograms used

This pictogram indicates information to better understand the working processes.

A correction bar in the margin indicates changes to the previous edition. The character string "!!" in the search field of the PDF document locates the correction bar.

This pictogram indicates another document or section to refer to.

All manuals have a part number. The 4 middle digits specify the language of the instruction manual:

	language		language		language
-9000-	German	-9013-	Dutch	-9032-	Serbian
-9001-	English (United Kingdom)	-9015-	English (North America)	-9034-	Slovak
-9002-	French (France)	-9016-	Polish	-9035-	Chinese
-9003-	Italian	-9018-	Japanese	-9036-	Lithuanian
-9004-	Romanian	-9021-	Danish	-9038-	Portuguese (Brazil)
-9005-	Spanish (Spain)	-9022-	Hungarian	-9039-	French (Canada)
-9007-	Swedish	-9023-	Czech	-9040-	Latvian
-9008-	Norwegian	-9024-	Finnish	-9041-	Estonian
-9009-	Russian	-9025-	Croatian	-9043-	Spanish (Central America)
-9010-	Greek	-9027-	Bulgarian		
-9012-	Turkish	-9029-	Slovenian		
The instruction manuals may not be available in all the listed languages.					

1.2 Manufacturer's address

GEA Farm Technologies Canada Inc. / Division GEA Houle
4591 boul. St-Joseph
Drummondville, Qc, J2A 0C6

☎ +1 819 477 - 7444
🖷 +1 819 477 - 5565
✉ geahoule@gea.com
@ www.gea.com

1.3 Customer service

Dealer

If necessary, please contact your nearest dealer.

There is a comprehensive dealer Internet search function on our website at the following address:

www.gea.com

European contact information:

GEA Farm Technologies GmbH
Siemensstraße 25-27
D-59199 Bönen

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✉ contact_us@gea.com
@ www.gea.com

1.4 Declaration of conformity

Manufacturer:	**GEA Farm Technologies Canada Inc. / Division GEA Houle** **4591 boul. St-Joseph** **Drummondville, Qc, J2A 0C6**
Product category:	**Free stall cleaner**
Type of product:	**Cable alley scraper system**

The product referred to complies with the provisions of the following European directives:

2006/42/EC	Machinery Directive
2006/95/EC	Low voltage guideline

Conformity with the requirements of these directives is testified by complete adherence to the following standards:

- Harmonized European standards

EN 953 + A1 (2009-07)	Safety of machinery Guards
EN 12100 (2010-12)	Machine safety, General principles of design - Risk assessment and risk reduction
EN ISO 13857 (2008-06)	Safety of machinery - Safety distances to prevent hazard zones being reached by upper and lower limbs
EN 349 + A1 (2008-08)	Safety of machinery - Minimum gaps to avoid crushing of parts of the human body
EN 1088 + A2 (2008-10)	Safety of machinery - Interlocking devices associated with guards - Principles for design and selection
En 1037 + A1 (2008-06)	Safety of machinery - Prevention of unexpected start-up
En 60204-1	Safety of machinery - Electrical equipment of machines
En 61439-2	Low-voltage switchgear and control gear assemblies

Person responsible for compiling the relevant technical documents:

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Drummondville, 01 Sept 2016

Yann Desrochers
(Head of Research and Development)

The undersigned is acting by virtue of power of attorney from the management of:
GEA Farm Technologies Canada Inc. / Division GEA Houle, 4591 boul. St-Joseph, Drummondville, Qc, J2A 0C6

This declaration certifies compliance with the guidelines indicated, but does not establish any guarantee in the sense of paragraphs 443, 444 BGB.
This declaration of conformity becomes invalid if design changes are made which affect the technical data given in the instructions and the correct use of the product, thereby significantly altering the machine!

1.5 GEA Farm Technologies Canada Inc. / Division GEA Houle - General Equipment Warranty

☞ **Important notice!**
THIS GENERAL WARRANTY APPLIES TO ALL EQUIPMENT SOLD UNDER THE GEA HOULE TRADEMARK.

1.5.1 Limited Warranty

GEA Farm Technologies Canada Inc. / Division GEA Houle (hereinafter referred to as ”the Company”) warrants to the original buyer and end user (hereinafter referred to as the ”Purchaser”) that the parts of all equipment sold under the Company trademark are free from defects in material or workmanship for a period of twelve (12) months from the date of delivery of the equipment to the Purchaser. This written warranty takes precedence over any other written warranty included in previous versions of the Company's manuals. Any equipment used for commercial usage, commercial lease on one or more farms is warranted for a reduced period of thirty (30) days only.

Components from third-party manufacturers that are not built by the Company, and which are accessory to the equipment sold under the Company trademark (including, without limitation, the motors and tires), are subject to such third-party manufacturers' specific warranty coverage.

THIS WARRANTY EXTENDS ONLY TO THE PURCHASER AND DOES NOT APPLY IN THE EVENT THAT THE EQUIPMENT IS SOLD OR OTHERWISE TRANSFERRED.

1.5.2 Condition of the Limited Warranty

The Company, through its GEA authorized dealers only (hereinafter referred to as ”Dealer”, reserves the right to either repair or replace all parts deemed defective under the following conditions:

1. That the equipment is installed, operated and maintained in accordance with the Company directives;
2. That the Purchaser uses the equipment in accordance with specific instructions, under normal conditions, for the sole purpose for which the equipment was designed;
3. That the Purchaser notifies in writing his Authorized Dealer or the Company (whichever the case may be) of any defect of the equipment. In either case the notification must be made within the twelve (12) months following the date of the delivery to the Purchaser;
4. The Purchaser or the Authorized Dealer must keep the defective parts or equipment for inspection by the Company and return such defective parts or equipment prepaid to the Company, if requested;
5. That the Purchaser does not modify the equipment, nor attempts to repair any equipment or parts without proper authorization from the Company;
6. Depending on the nature of the equipment involved and whether it is fixed or transportable, the Company will repair or replace the defective parts of the equipment free of charge where installed, or at the business place of the Authorized Dealer or the Company, at its sole discretion.

1.5.3 Extent of Limited Warranty

This limited warranty DOES NOT cover:

- Defects caused by negligence of the Purchaser in the maintenance of the equipment, improper use resulting from failure to adhere strictly to the Company's manuals or non-compliance with prescribed maintenance instructions provided by the Company (including, without limitation, lack of lubrication of the equipment), as well as damages arising from non-conforming installation of the equipment, or ambient temperature or conditions of storage of the equipment that do not comply with the Company's recommendations (including, without limitation, any damages resulting from storage or operation of the equipment at a temperature equal or below (5°C/41°F));
- Damages to equipment due to normal wear and tear or to external causes, including issues of power or inadequate electrical conditions (including, without limitation, inadequate tension (neutral/ground), abnormal mechanical or environmental conditions (including, without limitation, damages caused by fire, lightning, flood or other natural disaster), damages caused by the use of sand litter or other abrasive or inadequate material (including, without limitation, damages caused by solids in the manure, such as stone, wood, iron, concrete, and strings), as well as damages caused by ice or frozen manure blocking the evacuation line of the equipment or the introduction of such solids in the equipment;
- Freight and shipping associated with repair or replacement of equipment under this limited warranty, as well as all costs relating to removal or replacement of any equipment that is welded or affixed permanently to the ground or a building (including, without limitation, labor costs, and costs related to concrete or excavation);
- Claims arising from repairs or replacements made by the Purchaser without the prior written consent of the Company. The Purchaser shall not remove or alter any safety device, guard, or warning sign.

If the Purchaser fails to comply with any of its obligations referred to in this paragraph, the Purchaser agrees to save the Company and the Authorized Dealer harmless in respect of any liability or obligation incurred by the Company or the Authorized Dealer resulting from such failure of the Purchaser.

1.5.4 Warranty Limitations and Exclusion

NO WARRANTY, ORAL OR WRITTEN, EXPRESS OR IMPLIED, OTHER THAN THE ABOVE WARRANTY IS PROVIDED IN RESPECT OF THE EQUIPMENT SOLD.

Some states (or jurisdictions) do not allow the exclusion of implied warranties so it is possible that this limitation may not apply.

THE COMPANY DISCLAIMS ALL IMPLIED WARRANTIES, INCLUDING THE WARRANTIES OF MERCHANTABILITY, ADAPTABILITY OR OF PERFORMANCE, PROVIDED THAT SUCH EXCLUSION OF LIABILITY COMPLIES WITH THE LAWS HAVING APPLICABLE REGULATORY JURISDICTION.

THE LIABILITY OF THE COMPANY AND ITS AUTHORIZED DEALERS UNDER THIS WARRANTY IS LIMITED TO REPAIR OR REPLACEMENT OF DEFECTIVE PARTS UP TO THE CONTRACT VALUE FOR THE PURCHASED EQUIPMENT. IN NO EVENT SHALL THE COMPANY BE LIABLE FOR ANY SPECIAL, INDIRECT, CONSEQUENTIAL, INCIDENTAL, PUNITIVE OR EXEMPLARY DAMAGES IN ANY KIND OR CHARACTER, INCLUDING INDIRECT COSTS, LOSS OF PRODUCTION, LOSS OF REVENUES OR PROFITS, AND OTHER DISBURSEMENTS WHICH MAY OCCUR.

Some states (or jurisdictions) do not allow the exclusion or limitation of incidental or consequential damages and so it is possible that these limitations or exclusions may not apply.

1.5.5 General Statements

THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS AND YOU MAY ALSO HAVE OTHER RIGHTS THAT VARY BY JURISDICTION.

THE DEALER IS NOT AUTHORIZED TO MAKE ANY ADDITIONAL REPRESENTATIONS OR PROMISES THAT DIFFER IN ANY WAY FROM THE TERM OF THIS LIMITED WARRANTY, OR MODIFY THE PROVISIONS, DURATION AND CONDITIONS OF THIS LIMITED WARRANTY. NO WAIVER OR MODIFICATION OF THIS LIMITED WARRANTY IS VALID UNLESS AGREED TO IN WRITING AND SIGNED BY THE AUTHORIZED REPRESENTATIVES OF THE COMPANY.

IN THE EVENT OF ANY CONFLICT BETWEEN THE ENGLISH LANGUAGE VERSION AND ANY OTHER TRANSLATED VERSION OF THIS LIMITED WARRANTY (WITH THE EXCEPTION OF THE FRENCH LANGUAGE VERSION) THE ENGLISH VERSION SHALL PREVAIL.

1.6 Specific Limited Warranty for Cable Alley Scraper

This specific limited warranty extends to the Purchaser of all free stall cleaners with cable (individually, the ”Cleaner System”) sold by the Company. All conditions stated in this specific limited warranty are in addition to the General Equipment Warranty that applies to all equipment sold by the Company (see section 1.5 above).

1.6.1 Extent of Specific Limited Warranty

This specific limited warranty DOES NOT cover:

- Cable wear and tear and cable breaking that may arise after the installation. Warranty on cable is limited to manufacturing defects detectable at the time of installation;
- Wear and tear of corner wheels;
- Wear and tear of scrapers and all their components.

2 Safety

2.1 Owner's obligation of care

This product is designed for agricultural purposes only. Make sure to follow the local rules and regulations in relation with the use of this product.

This product is designed and constructed while taking into account a risk assessment, a selection of harmonized standards and other technical specifications to be complied with in order to guarantee a maximum level of safety.

If component(s)/equipment not manufactured by GEA is/are added to this GEA product, consider that new risk(s) may arise from this addition. Make sure the equipment and the environment surrounding the equipment remain safe.

Since agitated manure produces heavy toxic gases, make sure to follow the safety procedures for confined spaces before operating or servicing this equipment in such environment. Look at the corresponding Web site below to make sure the local safety procedures for confined spaces are followed.

Location	Administrated by	Web site
Canada	Canadian Centre for Occupational Health and Safety	www.ccohs.ca
USA	Occupational Safety and Health Administration	www.osha.gov
European Union	European Agency for Safety and Health at Work	www.osha.europa.eu

Safety is achieved when the safety instructions are followed. It is part of the owner's obligation of care to implement these safety measures and make sure they are carried out at all times.

The owner must ensure a safe environment by providing:

- this instruction manual with this product. Everyone performing activities in connection with this product must read this instruction manual and follow those instructions;
- all required personal safety gear such as hearing, eye, feet protection, etc;
- adequate training for employee(s) working or performing activities in connection with this product;
- the tools listed in this manual to perform activities in connection with this product;
- locally purchased components and/or products that comply with the technical requirements mentioned in section Technical data, if applicable;
- new parts to replace any defective, worn or damaged parts on this product;
- adequate lighting in all areas where activities in connection with this product are performed.

2.2 Explanation of the safety symbols

The safety symbols draw attention to the importance of the adjacent text.

They are based on ISO 3864-2 and ANSI535.6.

Safety symbols and key words

Danger!
The indication ”Danger” signals immediate danger to life or health of personnel.
Death or serious injury will result if the danger is not avoided.

Warning!
The indication ”Warning” signals potential danger to life or health of personnel.
Death or serious injury may result if the danger is not avoided.

Caution!
The indication ”Caution” signals dangerous situations.
Minor or moderate injury may result if the danger is not avoided.

Attention!
The word ”Attention” signals important information on risks for the product or the environment.

2.3 Basic safety instructions

- Only trained personnel can operate this product to ensure safe operating methods. Make sure the personnel performing activities in connection with this product have the skills when special qualifications are required. Read the section Safety - Personnel qualifications.
- Wear appropriate personal safety gear such as hearing, eye, feet protection, etc. when performing activities in connection with this product. Inspect the personal gear and replace if worn and/or defective.
- Familiarize yourself with the environment surrounding the working area. Locate the elements that can be dangerous in order to avoid them.
- No one stands near this product unless they are performing instructions included in this manual. When near this product, keep body parts such as hands, feet, hair as well as clothing away from dangerous parts such as rotating parts, articulated parts, sharp edges, etc.
- Use this product only when in perfect working condition. Do not use damaged, worn or defective parts on this product, replace immediately to avoid serious damages and injuries.
- The use of any tool or lubricant is subject to certain risks. Follow the manufacturer's recommendations and wear appropriate personal safety gear.
- Never remove the safety devices such as guards, covers, chains, labels, etc. from this product to ensure safety unless otherwise indicated in this instruction manual. Refer to section 2.5 Safety - Protective devices. Read and follow the instructions of the safety labels affixed on this product and make sure the safety labels are legible at all times.

2.4 Personnel qualification

The manufacturer intends to determine the difference between trained personnel and qualified personnel.

Trained personnel

The operator was trained by the manufacturer or its legal representative to follow all safety rules, cleaning method, general maintenance as well as the operating methods.

It is the operator's responsibility to inform the farm workers of those rules, maintenance and methods.

Qualified personnel

Qualified personnel refers to those having obtained the academic knowledge of a specific field of work.

This personnel has followed a training and subsequently obtained a certification, diploma or any other official document provided by a recognized academic facility in the country of study.

An equivalence may be required when operating in other countries.

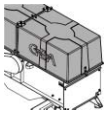
The special qualifications required will be specified in each section.

2.5 Protective devices

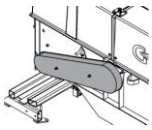
This product is equipped with safety parts protecting the user against dangerous elements.

Those parts must be in perfect working condition and remain in place at all times.

Replace if damaged, worn and/or defective. Refer to the part number.



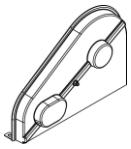
Drive unit protective hood
SW300 (part no. 2005-7600-380) 2 required per drive unit
SW450 (part no. 2005-7600-390) 2 required per drive unit
SW650 (part no. 2005-7600-390) 2 required per drive unit



#40 chain guard
SW300 (part no. 2005-7700-260 and 2005-7700-270)
SW450 (part no. 2005-7700-260 and 2005-7700-270)
SW650 (part no. 2005-7700-550 and 2005-770-560)

Safety guards for corner wheel
16” [406mm] model (part no. 2005-7508-090)
21” [533mm] model (part no. 2005-7508-100)

Safety guard for scraper cable tensioner
Single tensioner (part no. 2005-2005-180)
Double tensioner (part no. 2005-2005-170)



Pulley safety guard
(part no. 2005-3901-810)

Transformer finger safe device

Control panel emergency stop button

2.6 Safety labels

The labels affixed on this product inform the user of the potential dangers, the prohibited manoeuvres, the proper procedures and applications when performing activities in connection with this product.

The labels must remain in place and legible at all times.

Replace when damaged. Refer to the part number for the appropriate label.

Refer to section 13: Appendix - Label position.

3 Description (overview)

3.1 Product applications

The cable alley scraper system is exclusively designed to:

- Scrape manure in a free stall barn alleys;
- Scrape manure having limited quantity of bedding;
- Operate within the limitations of the layout chosen in the Cable alley scraper system design guide;

☞ **Note!**
This product and its equipment are designed for agricultural purposes only. Any applications not listed above are considered as improper use.

Please note that the following is prohibited:

- Scraping other material than manure and/or waste water;
- Running over the cable with machinery;
- Repairing the cable using sharp or clinging fastener;
- Operating the cleaning system while the load fluctuation parameters are deactivated;
- Operating the cleaning system while the load fluctuation parameters are improperly set;
- Operating the cleaning system although the control panel continuously triggers alarms.

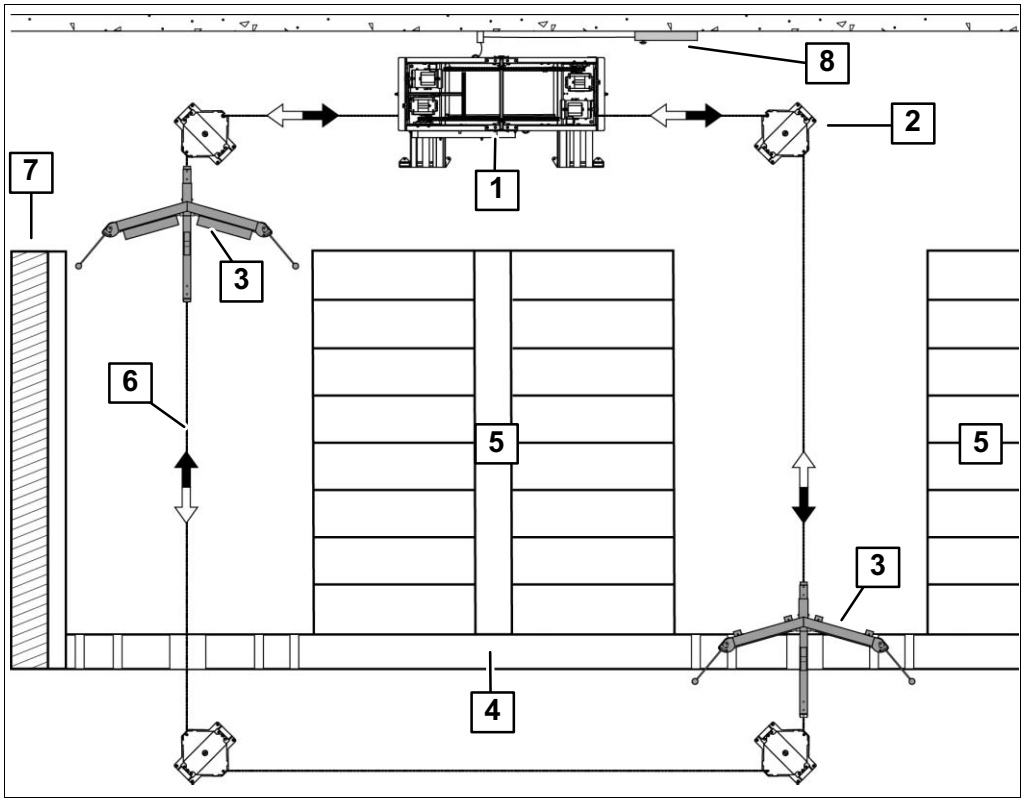
The manufacturer is not liable for any resulting damages due to improper use of this product. The user carries the risk. Proper use also includes reading and following the instructions of this instruction manual.

- Original GEA Houle parts and accessories are specially designed for GEA Houle products and equipment.
- The manufacturer expressly points out that only original parts and original accessories supplied by GEA Houle are adapted, tested and authorized to be used with this product or equipment. Do not use other supplier's parts or equipment with GEA Houle product unless otherwise approved in writing by GEA Houle.
- The manufacturer does not accept any liability toward injured people or animals or damaged products and equipment caused by the use of other manufacturers products.

3.2 Functional description

The cable alley scraper system consists of a drive unit, corner wheels, scrapers, a cable and a control panel.

The system operates by means of a control panel which powers the drive unit motor(s) upon command. Subsequently, the scrapers move in the alleys as they are linked together by a cable which ties to the drive unit drum. As the drive unit drum rotates, one scraper moves forward while the other moves backwards. When a scraper reaches the cross gutter, the system operates in opposite motion. The changeover allows the other scraper to clean its alley.



Legend:			
1	Drive unit	5	Stalls
2	Corner wheel	6	Cable (nylon or steel)
3	Scraper	7	Feeding alley
4	Cross gutter	8	Control panel

3.3 Modification made to this product

For safety reasons, do not carry out any unauthorized modification to this product!

4 Technical data

4.1 Acoustic emission

Noise level	Less than 65 dBA

4.2 Operating temperature

Operating temperature	Over 5°C [41°F]

4.3 Bolt torque chart

Note!
Refer to the bolt torque chart below unless otherwise specified in this manual.

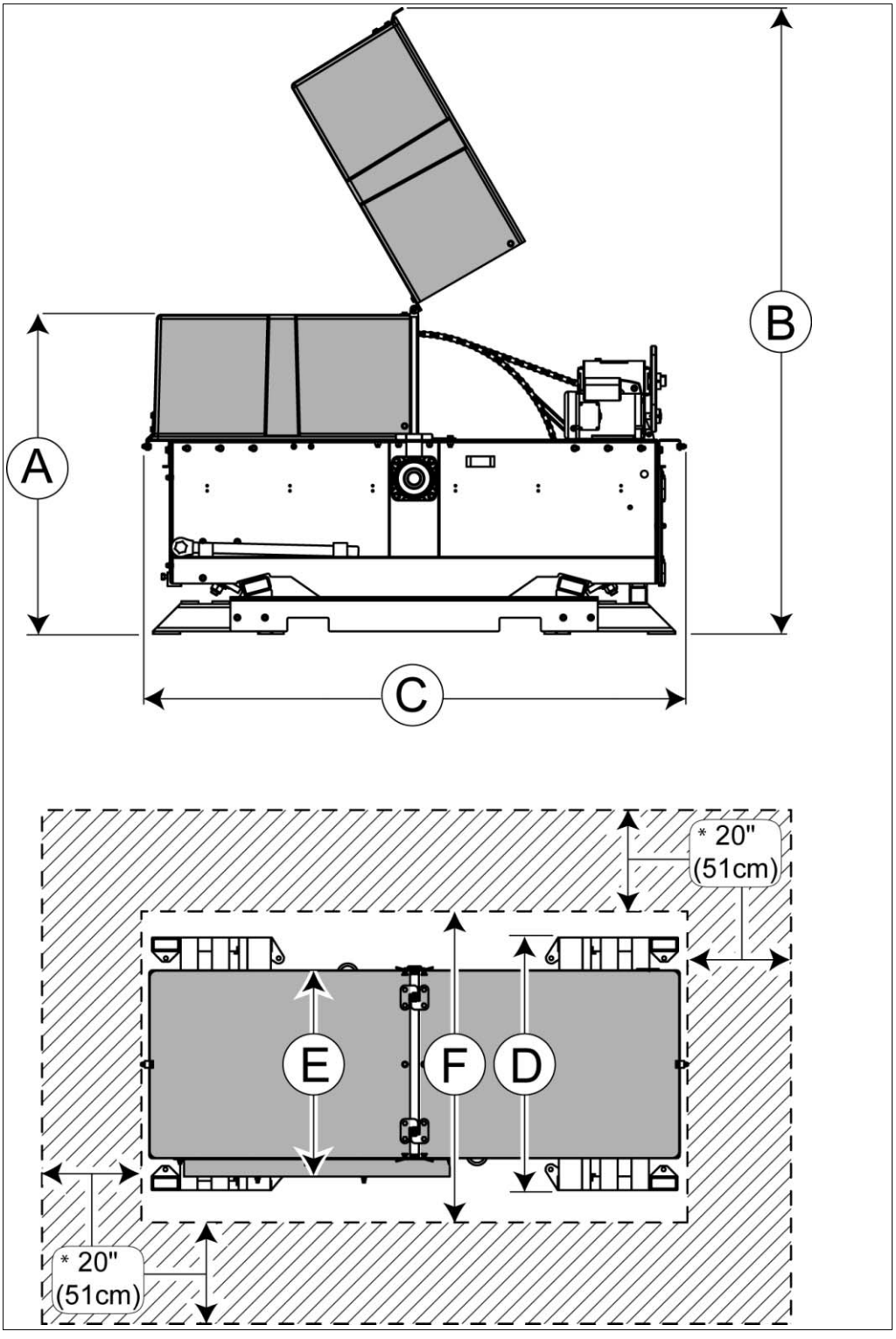
Bolt	Mat.	Bolt diameter									
		1/4”	5/16”	3/8”	7/16”	1/2”	9/16”	5/8”	3/4”	7/8”	1”
SAE 2 	LCS	6 ft-lb 8Nm	12ft-lb 16Nm	20ft-lb 27Nm	32ft-lb 44Nm	47ft-lb 64Nm	69ft-lb 94Nm	96ft-lb 130Nm	155ft-lb 210Nm	206ft-lb 279Nm	310ft-lb 420Nm
SAE 5 	MCS HT	10ft-lb 14Nm	19ft-lb 26Nm	33ft-lb 45Nm	54ft-lb 73Nm	78ft-lb 106Nm	114ft-lb 155Nm	154ft-lb 209Nm	257ft-lb 349Nm	382ft-lb 518Nm	587ft-lb 796Nm
SAE 8 	MCAS	14ft-lb 19Nm	29ft-lb 39Nm	47ft-lb 64Nm	78ft-lb 106Nm	119ft-lb 161Nm	169ft-lb 229Nm	230ft-lb 312Nm	380ft-lb 515Nm	600ft-lb 814Nm	700ft-lb 949Nm
Socket Head Cap Screw	AS HT	16ft-lb 22Nm	33ft-lb 45Nm	54ft-lb 73Nm	84ft-lb 114Nm	125ft-lb 170Nm	180ft-lb 244Nm	250ft-lb 339Nm	400ft-lb 542Nm	640ft-lb 868Nm	970ft-lb 1315Nm

4.4 Lubricant specifications

Lubricant type	Product name	Grade	Purpose
Grease	PRECISION™ XL5 MOLY EP2	2	• General lubrication of the equipment • To grease corner wheels • To grease the bearings of the drive unit • Stroke limit threaded rod • Threaded rod • Scraper hinges
Synthetic oil	Petro canada Ultima G220	AW32	• To fill the speed reducer
High performance chain lubricant	Chain gang		• To lubricate the chain #40 and #80.

5 Geometric data

5.1 Drive unit



***** Safety standards require having a 20” [51 cm] clearance zone around the drive unit. The clearance zone must take into consideration the drive unit displacement (F).

Important!
A clearance zone around the drive unit is mandatory to prevent crushing hazard. If the barn configuration does not allow keeping a clearance zone around the drive unit, the owner must restrain access by means of safety fences.

Model	Weight	Drum		Height		Length	Width		
							Base	Unit	Disp. (max)
		Dia.	Width	A	B	C	D	E	F (1)
SW300	1500 lbs 680 kg	38 3/4” [99cm]	18” [46cm]	46 1/2” [118cm]	90” [229cm]	80” [203cm]	40” [102cm]	30 7/8” [78cm]	46 5/8” [119cm]
SW300-HD	1725 lbs 785 kg								
SW450	1750 lbs 798 kg	38 3/4” [99cm]	26” [66cm]	65 1/2” [166cm]	113” [287cm]	80” [203cm]	56” [142cm]	38 7/8” [99cm]	62 5/8” [159cm]
SW450-HD	2000 lbs 910 kg								
SW650-HD	2750 lbs 1250 kg	56 1/4” [143cm]	26” [66cm]	65 1/2” [166cm]	113” [287cm]	97” [246cm]	56” [142cm]	38 7/8” [99cm]	62 5/8” [159cm]

1. Maximum drive unit displacement.

   The maximum displacement is reached when the drive unit uses its maximum stroke.

   When the drive unit uses less than its maximum stroke, displacement is reduced.

   Use the following formula to evaluate the real displacement in order to define the 20” [51cm] clearance zone around the drive unit:

Formula (SAE units)			
	Formula		Real displacement (in)
SW300 / SW300-HD	Scraper stroke (ft) X 15.75” ÷ 300 + 30.875”	=	
SW450 / SW450-HD	Scraper stroke (ft) X 23.75” ÷ 450 + 38.875”	=	
SW650-HD	Scraper stroke (ft)X 23.75” ÷ 650 + 38.875”	=	

Formula (Metric units)			
	Formula		Real displacement (cm)
SW300 / SW300-HD	Scraper stroke (m) X 40cm ÷ 91.44 + 78cm	=	
SW450 / SW450-HD	Scraper stroke (m) X 60.33cm ÷ 137.16 + 99cm	=	
SW650-HD	Scraper stroke (m) X 60.33cm ÷ 198.12 + 99cm	=	

6 Handling and installation

6.1 Special qualifications required for handling and installation

Handling must be performed by a qualified forklift operator and/or qualified overhead crane or hoist operator.

Installation work must be performed by trained personnel in accordance with the safety instructions.

Electric work must be performed by a qualified electrician.

Welding work must be performed by a qualified welder.

Refer to section 2.4: Safety - Personnel qualifications.

6.2 Safety instructions for handling and installation

Warning!
Risk of fall!
Be aware of the surroundings when working near areas such as a storage pit, a cross gutter, a transfer pump hopper, etc.

Caution!
Risk of stumble!
Be aware of the cable in the free stall alleys.

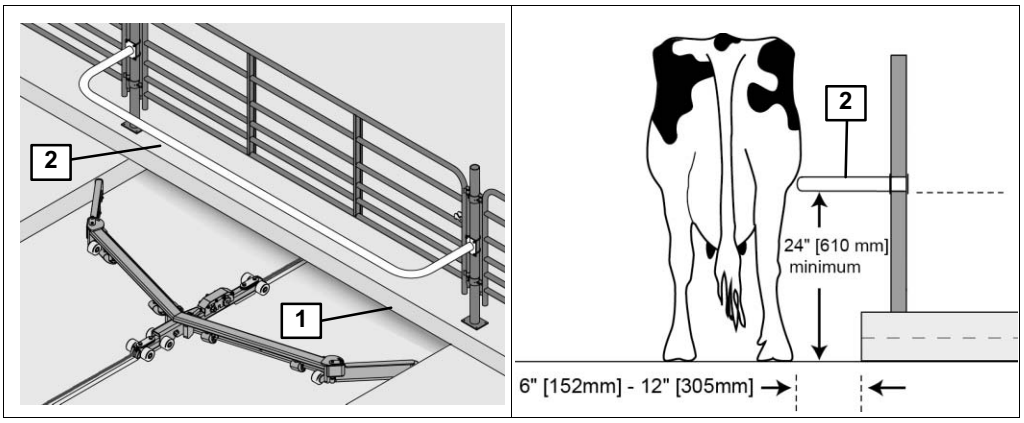
Caution!
Slippery floor!
Manure makes the floor slippery, be aware.
Use the walkways when possible.

Important!
Always remove livestock from the work zone area before performing the handling and installation steps

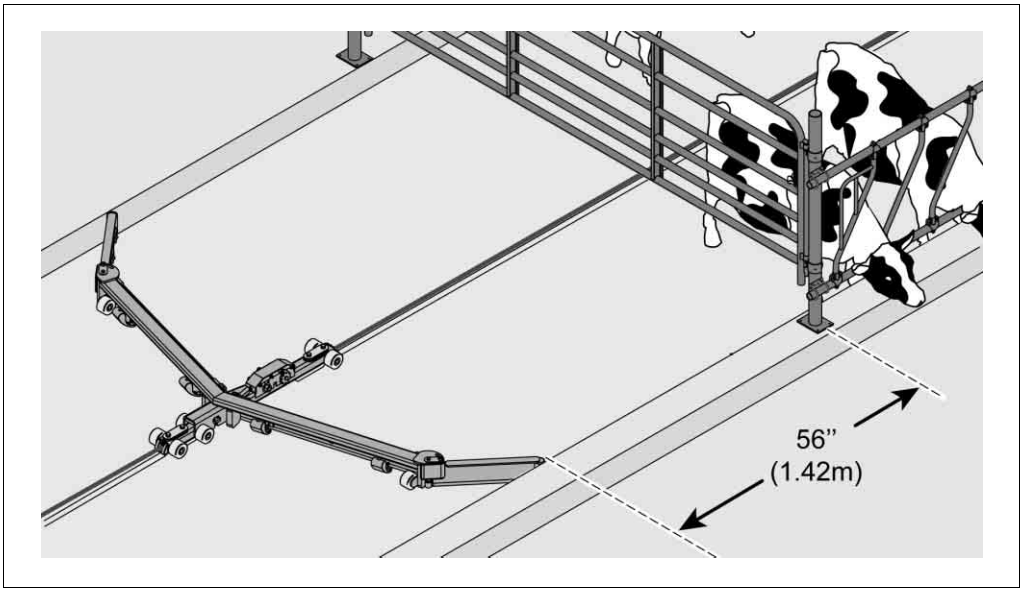
Read the section: Safety.

6.3 Environment requirements

- This product must be installed in a frost-free environment;
- The concrete of each alley must be levelled, free from imperfections such as holes, cracks, bumps, etc;
- All access to storage pit, cross gutter and transfer pump hopper must be fenced to prevent falls.
- Each bridging (1) over alleys must be safe for livestock.
  A guard (2) must be installed to keep the livestock away from the shearing zone.
  Refer to picture below.



- The barn design must allow the scrapers to be parked out of the free stall area at a minimum distance of 56” [1.42m].
  During the first 15 seconds of each stroke, the control panel does not perform detection since it only collects load fluctuation values.



6.4 Installation requirements

6.4.1 Visual inspection

> **Note!**
> Inspect all equipment and component.
> Do not install if damaged.

6.4.2 Necessary documents

- Barn layout;
- Electric wiring diagram supplied with the control panel;

6.4.3 Handling tools

	Description	Purpose
	Fork lift truck	To lift equipments such as drive unit, scraper, etc.
	Chain	To lift equipment/component.
	Chain hoist with safety chains	To lift equipment/component.
	Overhead hoist or crane	To lift equipment/component.

6.4.4 Installation tools

	Description	Purpose
	Key set	To tighten bolts.
	Ratchet tool set	To tighten bolts.
	Hammer drill	To drill holes in the concrete floor.
	Concrete drill bit	To drill holes in the concrete floor.
	Hammer	To insert anchor bolts.
	Allen key set	To tighten set screws on the motor pulleys.
	Torque wrench	To tighten bolts and anchor bolts at specific torque.
	Non-conductive screwdrivers	Tighten the electric connections
	Crimping tool	Cut and strip wires.

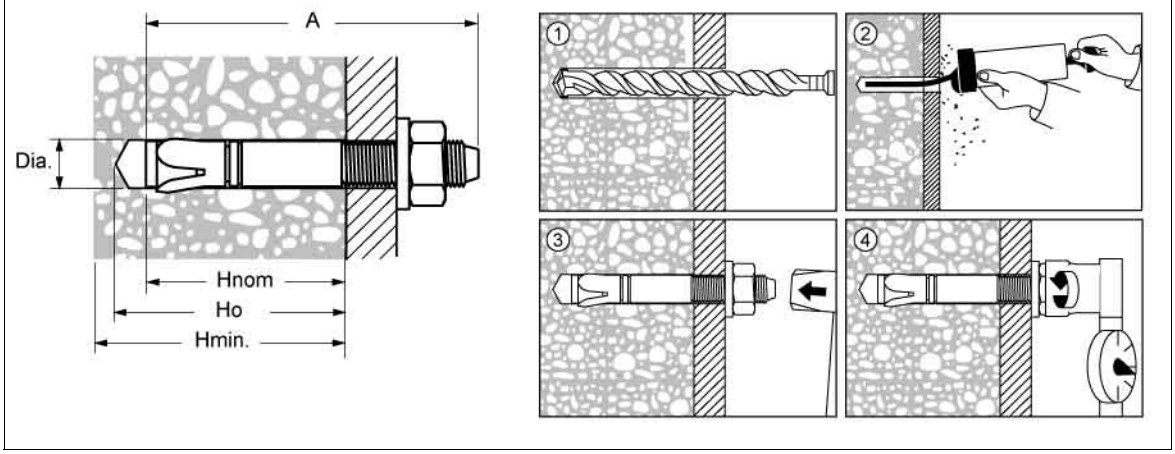
6.5 Packing material disposal

Handle the packing material properly and dispose according to your local rules and regulations on waste disposal.

6.6 Anchor bolt installation procedure

Caution!
Risk of injury!
Wear personal protective gear.

Attention!
Risk of concrete damage!
Wait at least 7 days before drilling into concrete so that the slab can harden sufficiently.



Bolt diameter	3/8” [10mm]	1/2” [13mm]			3/4” [19mm]
Bolt length **(A)**	3” [76mm]	2 3/4” [70mm]	3 3/4” [95mm]	3 3/4” [95mm]	5 1/2” [140mm]
Material	Steel	Steel	Steel	SS 304	Steel
Minimum hole depth **(Ho)**	2 5/8” [67mm]	2” [51mm]	2 5/8” [67mm]	2 1/2” [63.5mm]	4 1/2” [114mm]
Hnom	2 3/8” [60mm]	1 3/4” [45mm]	2 1/4” [57mm]	2 1/4” [57mm]	4 1/4” [108mm]
Hmin	4” [101mm]	4” [101mm]	4” [101mm]	4” [101mm]	6” [152mm]
Concrete drill bit diameter **(Dia.)**	3/8” [10mm]	1/2” [13mm]	1/2” [13mm]	1/2” [13mm]	3/4” [19mm]
Torque	20ft-lb (25Nm)	40ft-lb (54Nm)	40ft-lb (54Nm)	40ft-lb (54Nm)	110ft-lb (150Nm)

- Position the component on the concrete surface.
- Drill through the holes of the component (1).
- Remove the concrete particles from inside the holes (2).
- Insert the anchor bolts. Keep 1 ½” of length exceeding from the concrete surface.
- Place a washer (3) and a nut on each anchor bolt. Screw the anchor bolt until it is even with the top of the bolt (3).
- Tap the anchor bolt using a hammer until it firmly secures the component.
- Tighten the assembly to appropriate torque, refer to the following table or apply the specified torque indicated in the step.

6.7 Drive unit handling

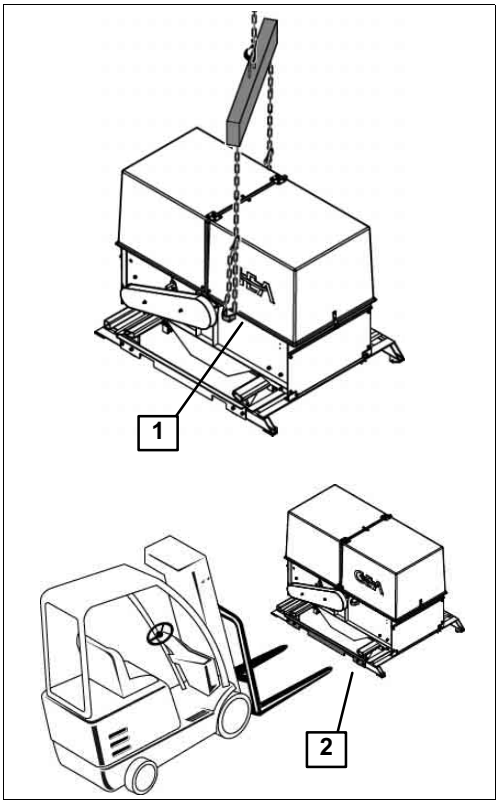
Warning!
Risk of injury or death!
Do not stand under or near a lifted load, a falling load can cause death.

Warning!
Risk of injury or death!
Use a lifting device with a minimum lifting capacity of 3000 lb [1500 kg] to handle the drive unit.

Note!
Before handling the equipment, protect the hoisting lugs with rubber or clothing material to avoid damaging the paint. If any paint damage is made, repair immediately to prevent fast corrosion of the equipment.

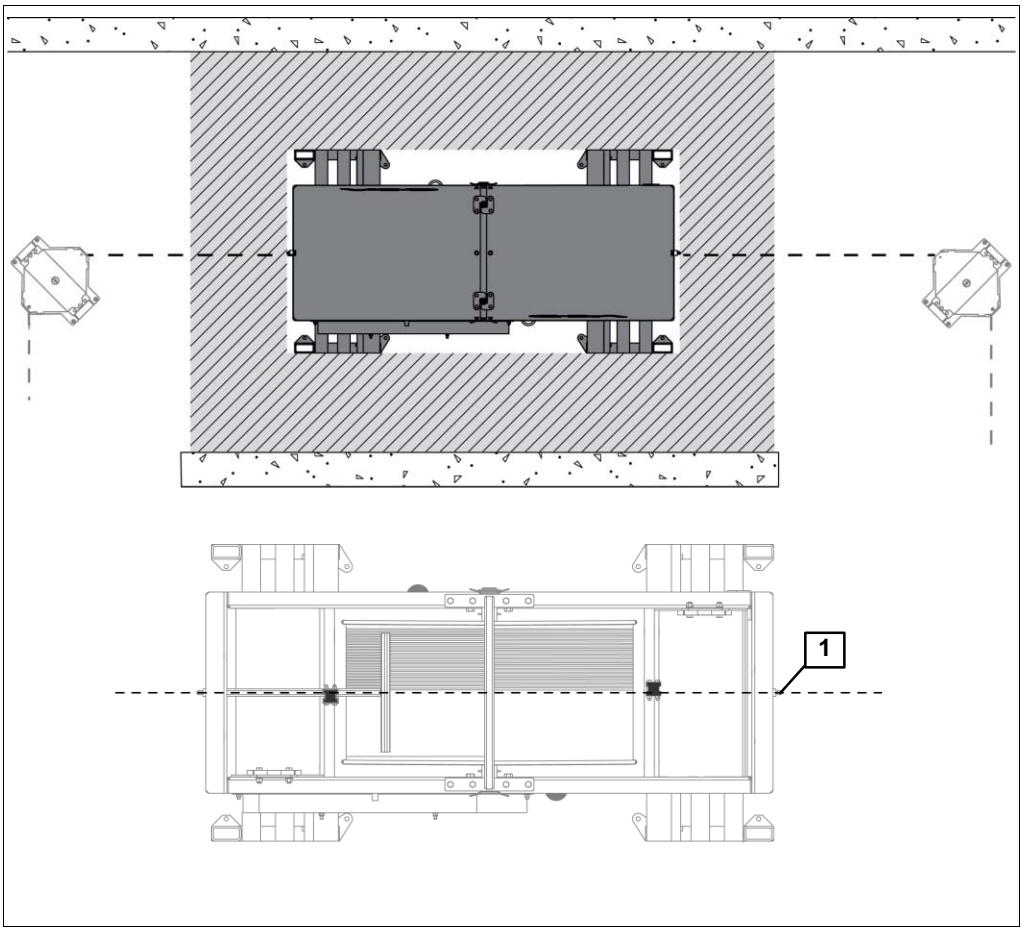
Important!
Keep the grey lifting supports bolted to the drive unit, remove only when the drive unit is properly anchored on the concrete floor.

- Attach safety chains/cables to the lifting rings (1) located on each side of the drive unit.
- Insert the forks of a forklift truck under the grey lifting supports (2).
- Move the drive unit to the installation area.



6.8 Drive unit positioning

Important!
A clearance zone around the drive unit is mandatory to prevent crushing hazard.
Refer to section 5.1 : Geometric data - Drive unit.



- Refer to the layout to determine the drive unit position.
- Draw a chalk line where the drive unit should be centered.
- Center the drive unit over the chalk line (1).

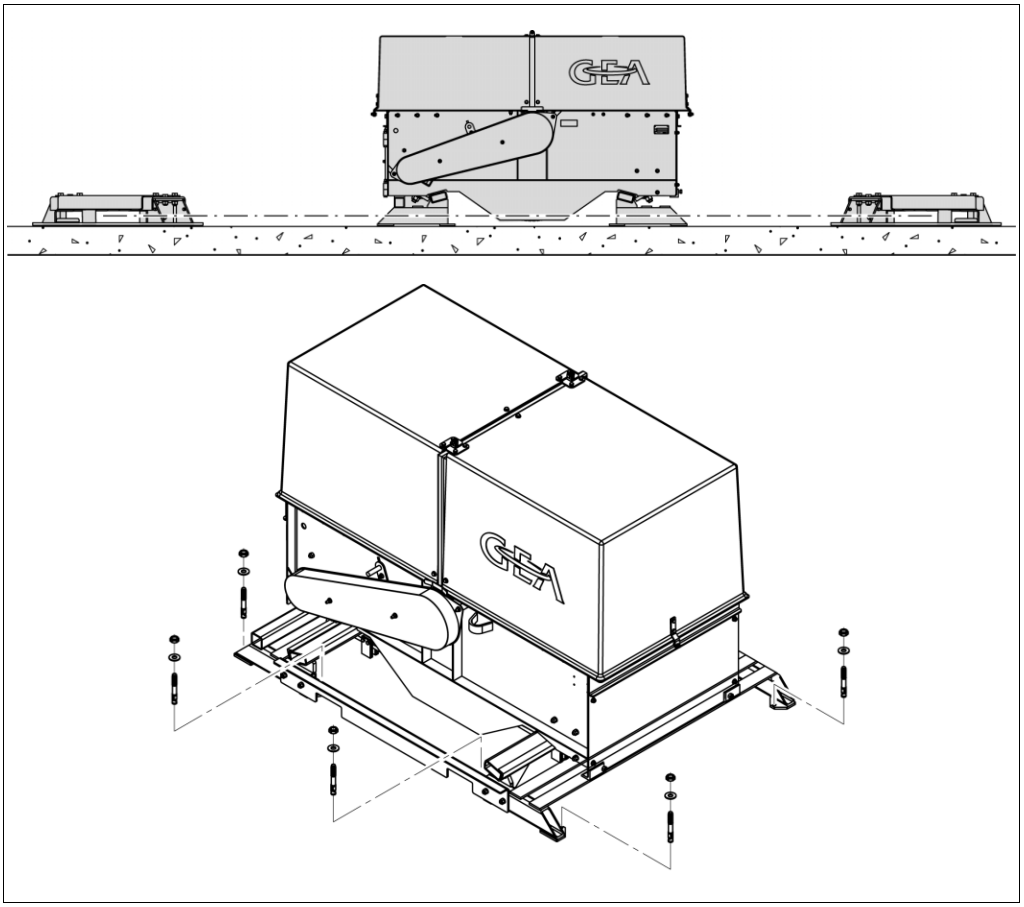
Note!
To prevent manure build up under the drive unit, make sure manure can naturally flow in a swale, a drain, on a slope, etc.

6.9 Drive unit anchoring

6.9.1 Drive unit leveling

Caution!
Risk of injury!
Wear personal protective gear.

Attention!
Risk of concrete damage!
Wait at least 7 days before drilling into concrete so that the slab can harden sufficiently.



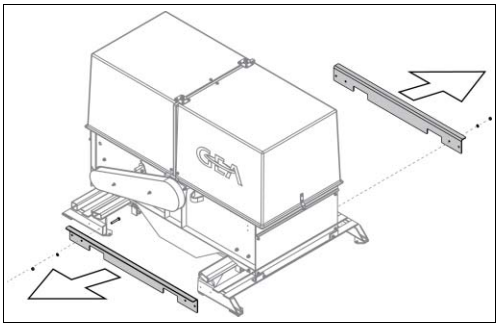
- Level the drive unit in all directions. Use shims, if necessary.
- Drill through the holes of the drive unit base.
- Remove concrete particles from the drilled holes.
- Mount the drive unit with 8 stainless steel anchor bolts: 1/2" x 3 3/4" [13 x 95mm]

Follow the anchor bolt installation procedure included in this section.

6.9.2 Grey lifting supports removal

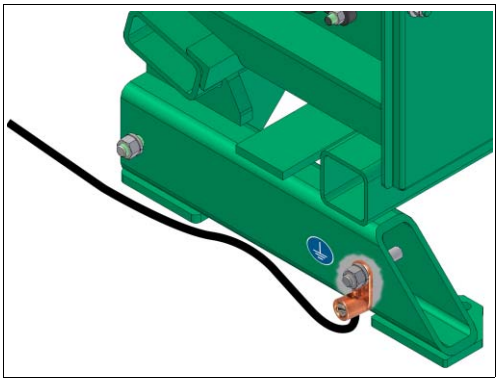
Warning!
Risk of crushing and shearing!
There is a crushing and shearing zone between the drive unit and the grey lifting supports. Remove the grey lifting supports from the drive unit.

- When the drive unit is anchored on the concrete floor, remove the grey lifting supports, as illustrated.
- Keep and store the supports until it requires moving the drive unit to decommission the product.



6.9.3 Drive unit grounding

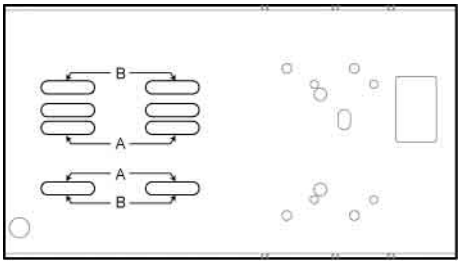
- Connect all conductive equipments to an equipotential bond to eliminate potential electrostatic shock.
- Remove paint around a bolt hole on the drive unit base.
- Apply electrically conductive grease around the bold hole.
- Ground the drive unit frame to the equipotential bond, as illustrated.

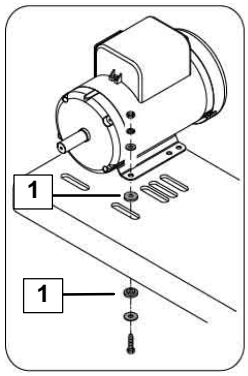


	This symbol indicates that the terminal must be connected to earth ground.

6.10 Electric motor installation

Bolt pattern





	Motor			
	Power		Type	
	HP	KW	NEMA	IEC
B	1	0.75	56H	90
	1 1/2	1	143T, 145T	90

Caution!
Risk of finger pinching!
Wear protective gloves when handling the electric motor.

- Position the motor in the right bolt pattern.
- Bolt the motor in place with the hardware provided. Make sure the nylon washers (1) are placed directly on each side of the motor table.
- Do not tighten the assembly yet.
- Install the second motor, if applicable.

6.11 Control panel installation

☞ **Important!**
The control panel must not be connected at this step.

☞ **Note!**
Follow the local regulations on where and how to position properly a control panel.

Step #1: Check the control panel electric components

- Before performing any electric connection, tighten the screws of all the electric components inside the control panel.
- Make sure all wires are properly connected and secured.

Step #2: Locate the control panel

Make sure the control panel is installed:

- On a solid wall, at a convenient height, sheltered from sun ray and weather conditions;
- In a convenient area for the operator;
- Near the cable alley scraper system;
- Near the external cut-off switch;
- In an area having free space around the control panel for aeration purposes.

Step #3: Wall mount the control panel

- Place the control panel on the wall and use the holes to sketch the drill pattern.
- Drill through the bolt pattern.
- Secure the control panel in place. DO NOT OVERTIGHTEN.

Step #4: Install the thermostat (If applicable)

Make sure the thermostat is installed in the free stall area.

6.12 Electric connections

Electric work must be performed by a qualified electrician.

6.12.1 Connecting the electric motor

Warning!
Inadvertent start causing injuries!

Never connect an external cut-off switch directly to the motor(s). The external cut-off switch must be connected to the control panel to shutdown or energize the entire cleaning system through the control panel only.

Attention!
Improper wiring of a motor can cause motor failure.

Important!
Connect the control panel and all conductive equipments to an equipotential bond.

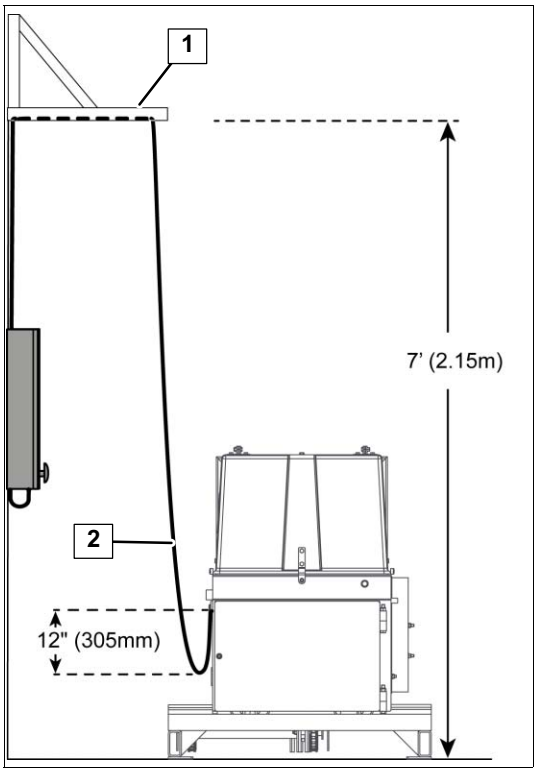
This symbol indicates that the terminal must be connected to earth ground.

Note!
GEA provides specifications and wiring diagrams related to Baldor motor(s). For any other motor brand, contact the manufacturer.

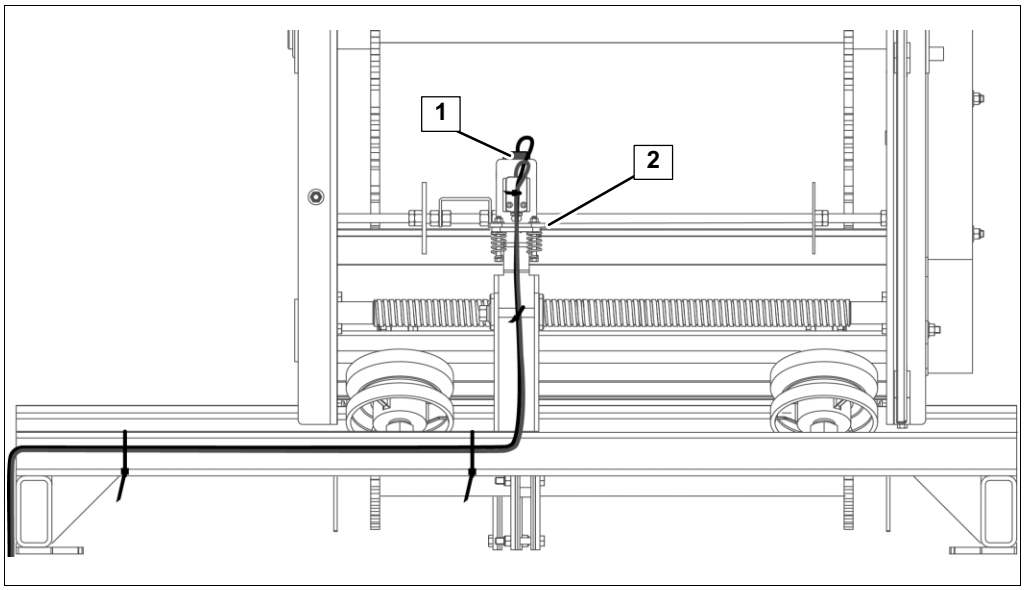
Danger!
Risk of electric shock!
Shutdown is required! shut the main power supply and lock with a locking device. Post a sign on the panel stating: ”Do not turn on, electric work in progress” in order to prevent an inadvertent energizing of the main electric supply.

Warning!
Risk of electric shock!
Keep a 12” (305mm) loop of cable for the drive unit displacement. Make sure the cable loop does not touch the ground or any objects.

- Shutdown and lock the main power supply.
- Run the electric motor cable through a post (1) over 7' [2.15m] high.
- When the drive unit is centered on the frame, keep a 12” [30.5cm] loop of cable (2) beside the drive unit, as illustrated.
- Connect the electric motor to the control panel as indicated in the wiring diagram supplied inside the control panel box.



6.12.2 Connecting the drive unit limit switch and auxiliary switch



Note!
The manure apron/gradual discharge/external start signal limit switch is compatible only with the IVR Pro Max@ccess control panel.

Warning!
Inadvertent start!
Shutdown is required! Shut the main power supply and lock with a locking device. Post a sign on the panel stating: ”Do not turn on, electric work in progress” in order to prevent an inadvertent energizing of the main electric supply.

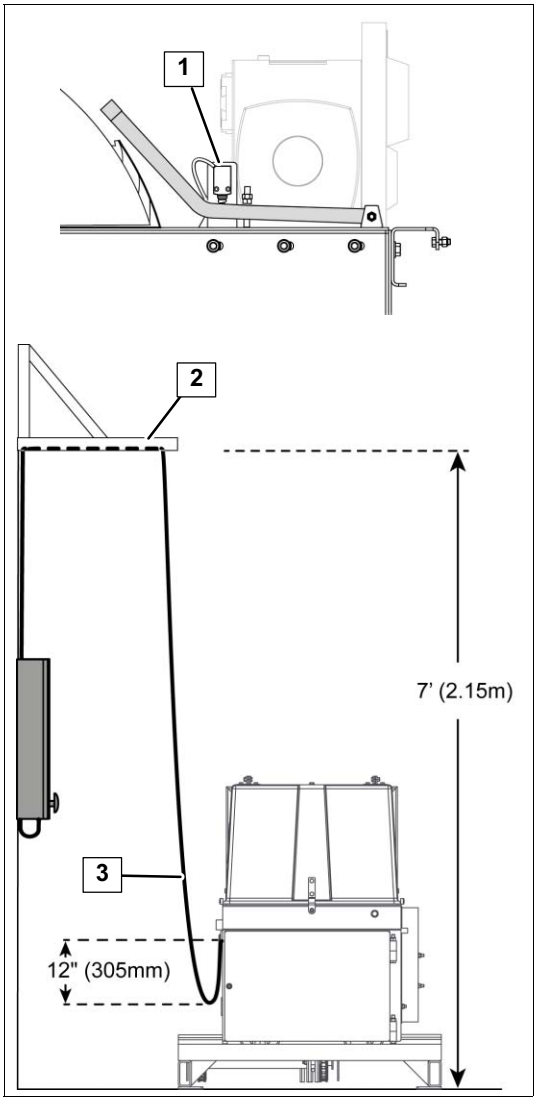
- Shutdown and lock the power supply.
- Secure cables (1) to the drive unit frame using tie wraps, as illustrated above. Make sure the cables does nt touch the sliding plate (2).
- Connect the switches to the control panel as indicated in the wiring diagram supplied inside the control panel box.

6.12.3 Connecting the misrolled cable limit switch

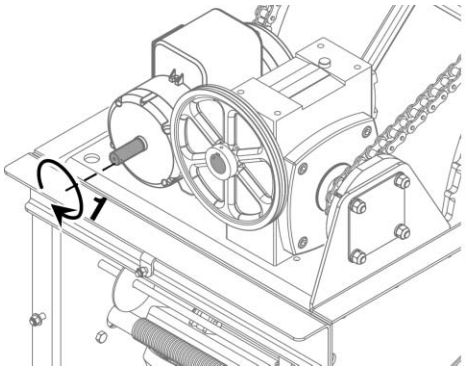
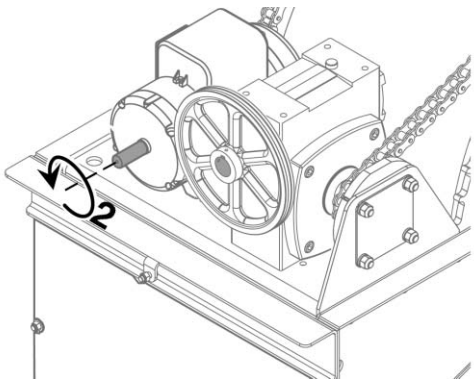
Warning!
Inadvertent start!
Shutdown is required! Shut the main power supply and lock with a locking device. Post a sign on the panel stating: ”Do not turn on, electric work in progress” in order to prevent an inadvertent energizing of the main electric supply.

Warning!
Risk of electric shock!
Keep a 12” (305mm) loop of cable for the drive unit displacement. Make sure the cable loop does not touch the ground or any objects.

- Shutdown and lock the main power supply.
- Run the cable of the misrolled cable limit switch (1) through a post (2) over 7' [2.15m] high.
- When the drive unit is centered on the frame, keep a 12” [30.5cm] loop of cable (3) beside the drive unit, as illustrated.
- Connect the cable to the control panel as indicated in the wiring diagram supplied inside the control panel box.

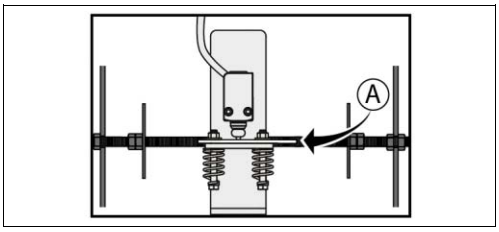


6.12.4 Checking the motor direction of rotation and stroke limit switch connection

Motor (1)	Motor (2)
	

Warning!
Risk of injury!
Be aware of the rotating motor pulley.

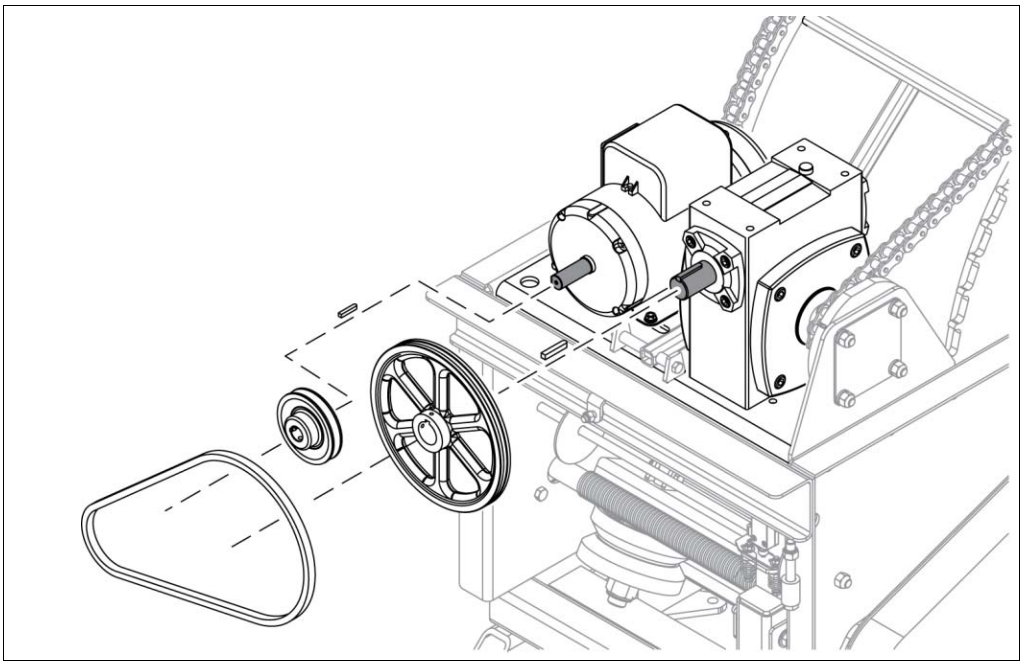
- Open the drive unit hood and remove the pulley guard.
- Open the drive unit access door under motor (1).
- Toggle the limit switch by pushing the sliding plate to the left (A).



- Turn on the main power supply.
- Use the instant start function to engage the drive unit motor (s). Refer to section 7: Programming.
- Check the rotation of each motor. Motor 1 must rotate clockwise and motor 2 must rotate counterclockwise. See illustration above.

Note!
The IVR Pro Max@ccess screen should display ”FORWARD”.
The IVR Pro screen should display ”FOR”.

6.13 Installing the motor belt, pulleys and guard



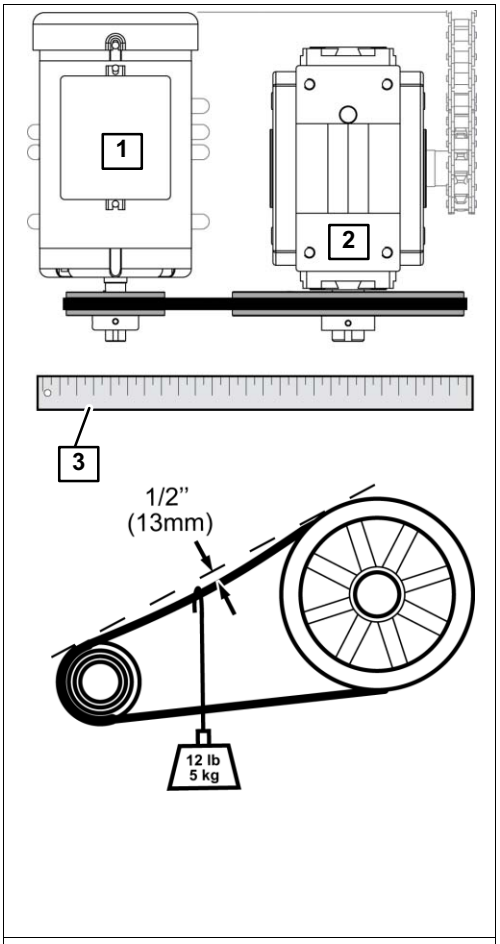
Warning!
Risk of inadvertent start resulting in finger entanglement!
Shutdown is required! Shut the main power supply and lock with a locking device. Post a sign on the panel stating: ”Do not turn on, electric work in progress” in order to prevent an inadvertent energizing of the main electric supply.

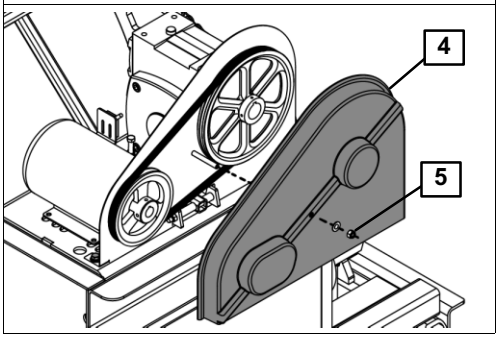
Caution!
Pinch point hazard!
Wear protective gloves when handling belts and pulleys.

- Shutdown and lock the power supply.
- Place a key over the motor shaft.
- Install the pulley on the shaft.
- Hold the assembly using a set screw. Do not tighten yet.
- Install the belt over the motor pulley and reducer pulley.

Attention!
Risk of damage!
Improper alignment of the pulley can cause damages to the equipment, align both pulleys perfectly.

- Hand pull the motor (1) while making sure the motor stays parallel to the speed reducer (2).
- Hold position by securing the motor bolts, do not tighten yet.
- Apply a 12 lb [5 kg] of pressure halfway between the pulleys. Measure the deflection. The deflection must be 1/2” (13mm).
- If required, reposition the motor until proper belt tension is obtained.
- Place a straight edge (3) on the side of both pulleys to check the alignment.
- To align the pulleys, reposition the motor or move the pulley on the shaft.
- When aligned, tighten the set screw of the pulley.
- Verify the belt tension and the alignment again.
- Tighten the motor bolts on the motor table.
- Reinstall the guard (4) using the hardware (5).
- Close and lock the drive unit hood.





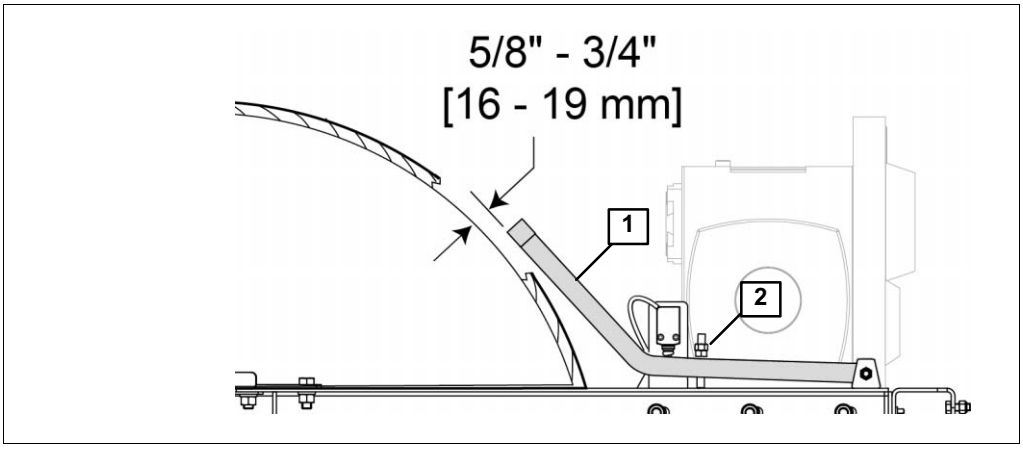
6.14 Testing the electric connections

6.14.1 Testing the auxiliary switch (IVR PRO Max@ccess only)

- Program the control panel. Refer to section 7: Programming - Manure apron or gradual discharge or external start signal.
- Open the drive unit front access door.
- Using the instant start function, engage the control panel.
- Manually toggle the limit switch inside the drive unit.
- Open the control panel door.
- The i1 LED of the FIO module must be lighted. If not, toggle the drive unit limit switch in the opposite direction.
- When the solid green light is lighted, close and lock the control panel door.
- Press the emergency stop button to stop the drive unit.

6.14.2 Testing the misrolled cable limit switch

- Press the emergency stop button on the control panel door.
- Unlock and open the drive unit hood.
- Check the detection arm (1) adjustment and make sure the measurement corresponds to the type of cable or rope:
  - ⅝” [16mm] from the drum when using a 3/8” [10mm] cable.
  - ¾” [19mm] from the drum when using a 1/2” [13mm] cable.
  - ⅝” [16mm] from the drum when using a nylon rope.
- If necessary, adjust the detection arm using the bolt (2). Lock the bolt.
- Once the detection arm is adjusted, check the switch adjustment. The switch must trigger when the detection arm is lifted. If required, adjust accordingly.



- Rearm the control panel.
- Using the instant start function, engage the control panel.

Caution!
Risk of injury!
Be aware of the rotating elements when accessing the misrolled cable limit switch.

- Lift the misrolled cable detection arm, the drive unit must stop operating.
- Close and lock the drive unit hood.

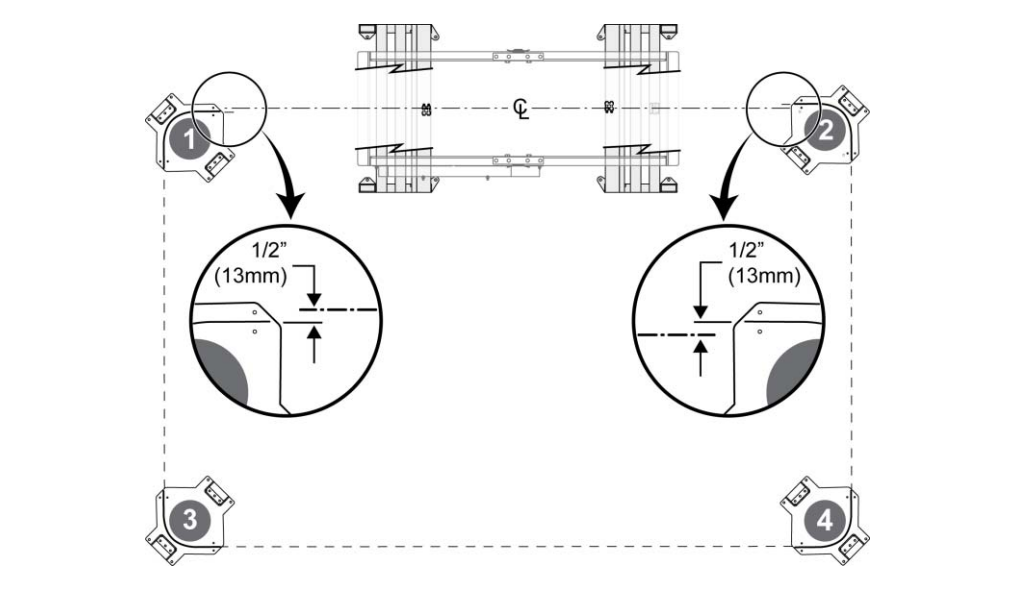
6.15 Corner wheels installation

6.15.1 Positioning the corner wheels

Attention!
Risk of concrete damage!
Wait at least 7 days before drilling into concrete so that the slab can harden sufficiently.

Attention!
Risk of concrete breakage!
A minimum concrete thickness of 6” [152 mm] under the corner wheels is required.

Attention!
Risk of premature wear!
Make sure the corner wheels are level with the cable drive unit to prevent premature wear of the cable and corners.

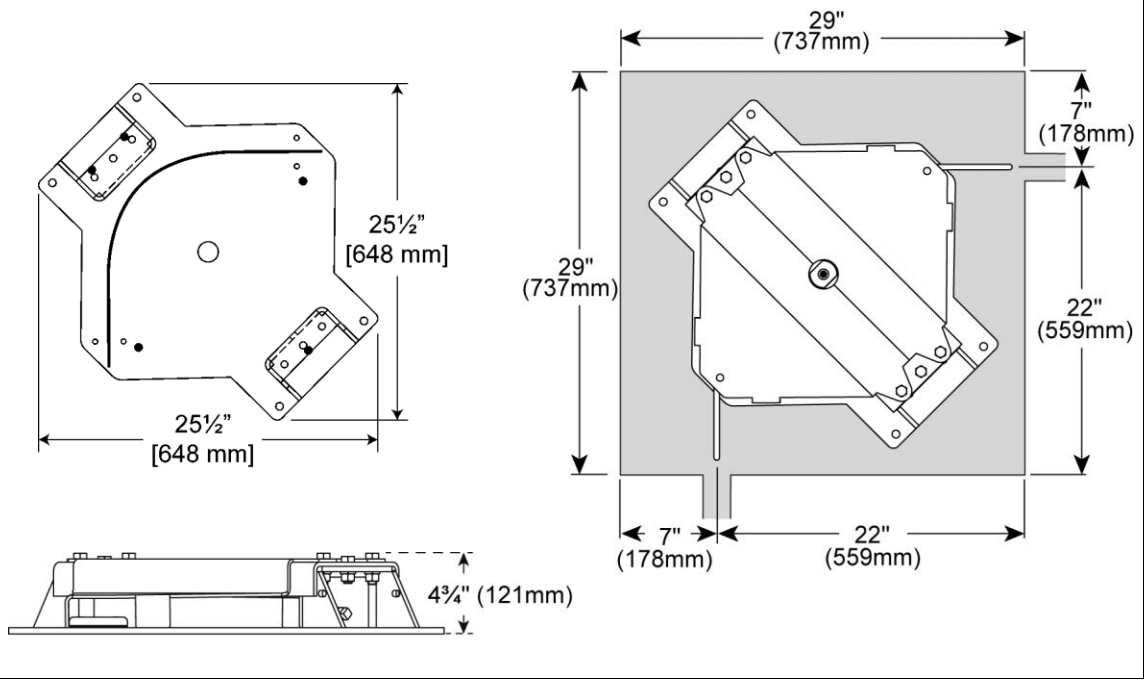


Caution!
Risk of injury!
Wear protective gloves.

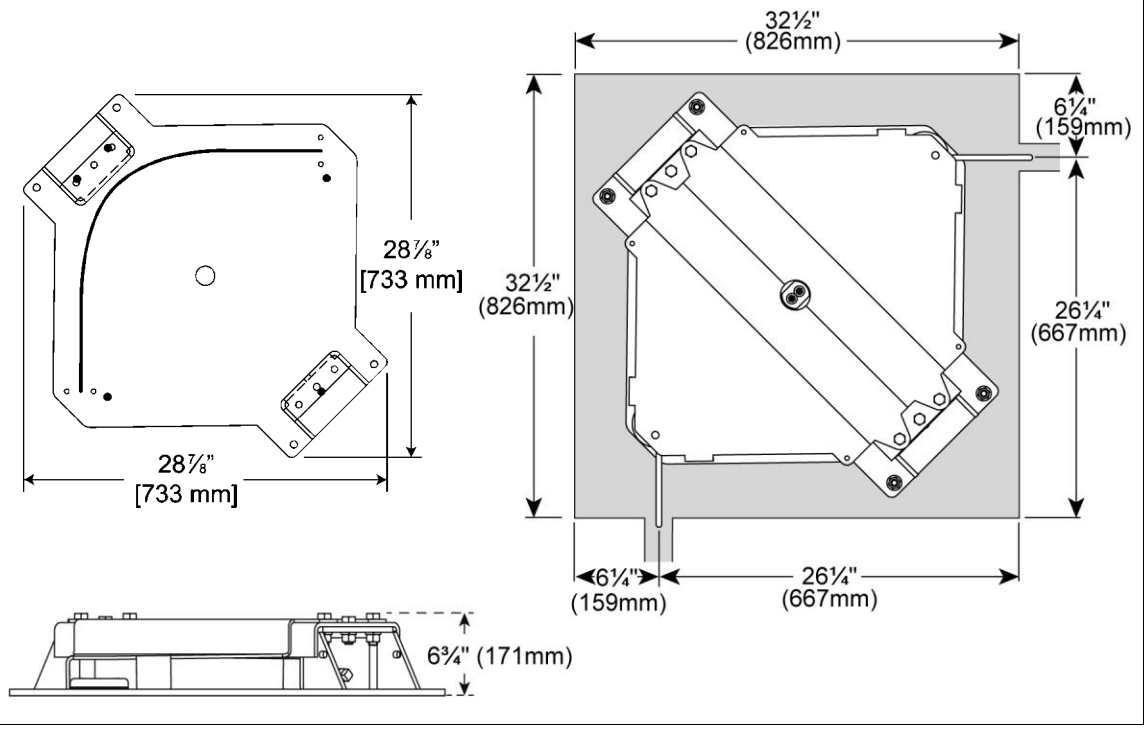
- Position the corner wheel #1 at ½” [13 mm] below the chalk line marked for positioning the drive unit.
- Position the corner wheel #2 at ½” [13 mm] above the chalk line.
- All other corner wheels must align perfectly and be parallel to each other.

6.15.2 90° corner wheel assembly and installation

16” [406mm] corner wheel



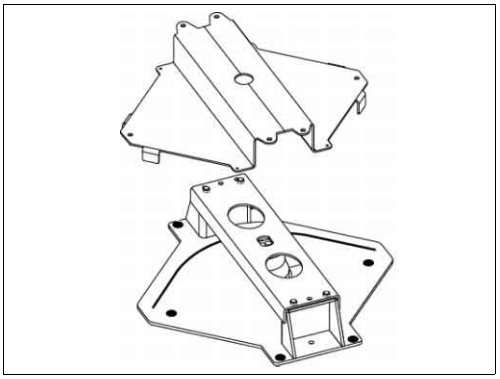
21” [533mm] corner wheel



Caution!
Risk of injury!
Wear personal protective gear.

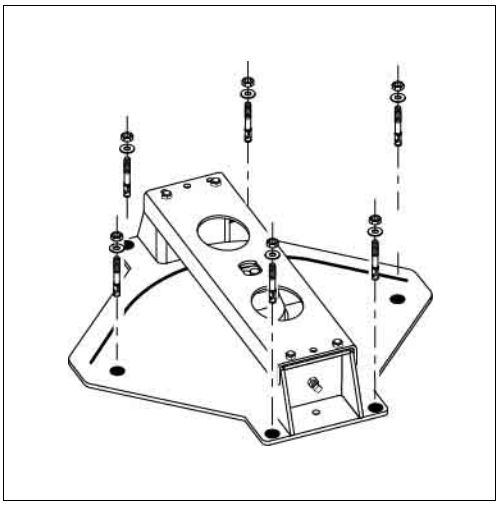
Step 1: Corner wheel disassembly

- Disassemble the corner wheel, as illustrated.



Step 2: Corner wheel anchoring

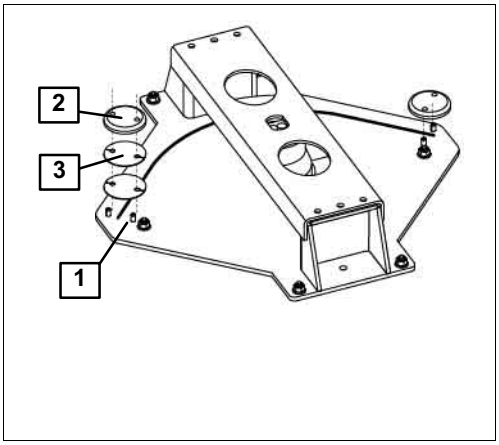
- Align the corner box on the ground. Follow the black line painted inside the corner wheel to align the box to the cable path.
- Make sure the corner box is levelled.
- Drill through the 6 holes of the corner box.
- Mount the corner box on the concrete floor using 6 stainless steel anchor bolts 1/2” x 3 3/4” [13 x 95mm].



Follow the anchor bolt installation procedure included in this section.

Step 3: Cable supports installation (if applicable)

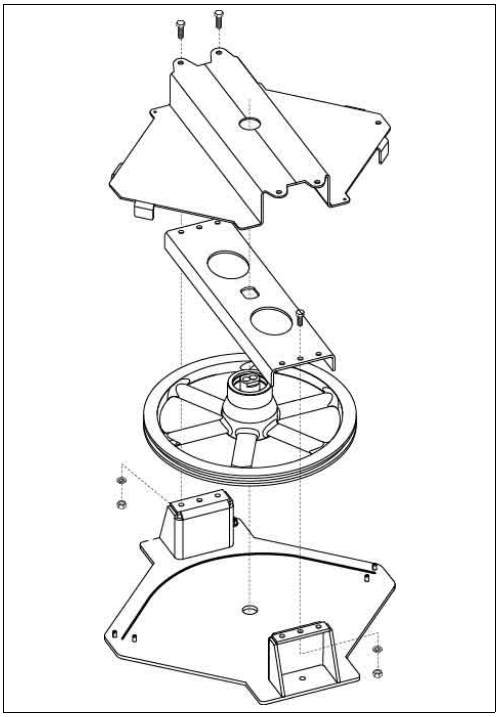
- Following the cable/rope used, install the cable support with proper shim quantity per cable support. Refer to the table below.
- With a hammer, insert the spring pins (1) in the wheel plate.
- Install cable support (2) and shim(s) (3) on the spring pins. Refer the table below.



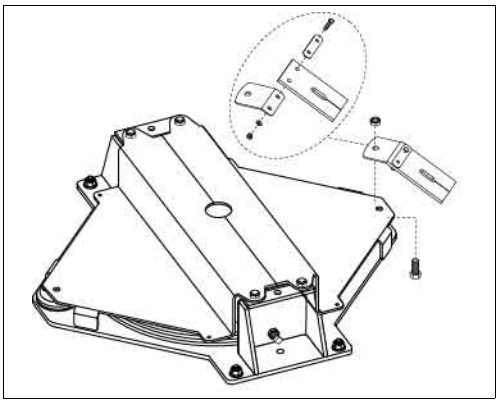
	Spring pin (1)	Shim (2)	Support (3)
Nylon Rope	0	0	0
1/2” [13mm] cable	2	1	1
3/8” [10mm] cable	2	2	1

Step 4: Corner wheel assembly

- Assemble the corner wheel, as illustrated.



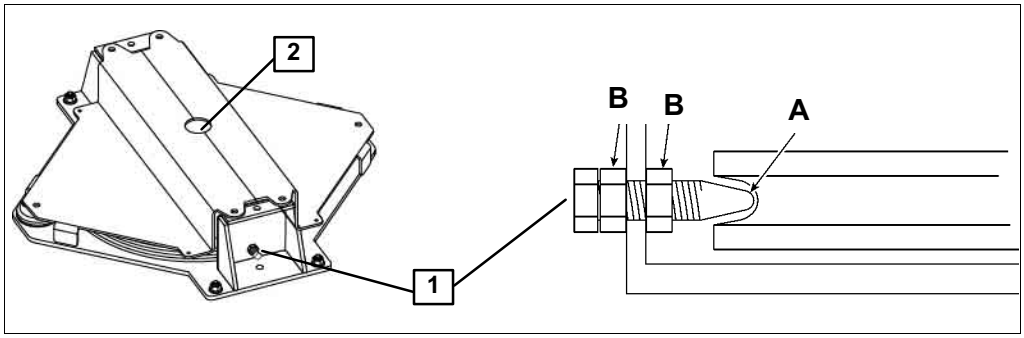
Step 5: Rope cleaner installation



- When using a nylon rope, install a rope cleaner on each corner wheel located next to the dive unit.
- Position the rope cleaner in order to remove most of the liquid manure from the cable before it enters the corner wheel.
- Assemble, as illustrated.

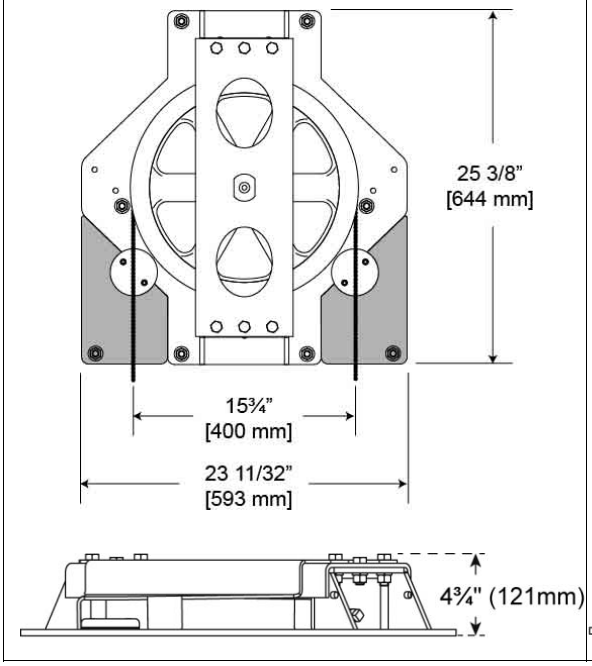
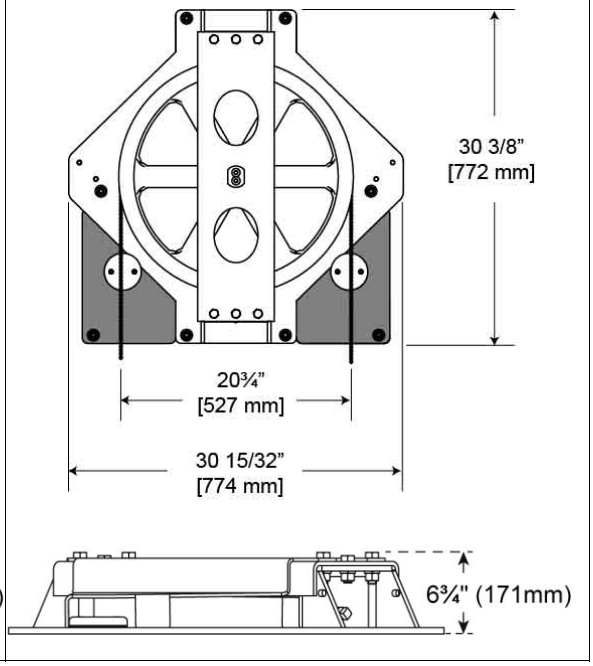
Step 6: Wheel cleaner adjustment

Caution!
Risk of skin irritation!
Wear protective gloves.



- Assemble the wheel cleaner (1) to the corner wheel frame using two lock nuts (B).
- Position the tip (A) of the cleaner as near as possible to the wheel.
- Rotate the wheel to make sure it turns freely.
- Tighten the lock nuts (B).
- Using a grease gun, lubricate the corner wheel through the grease fitting (5). Use grade 2 PRECISION XL5 MOLY EP2 grease.

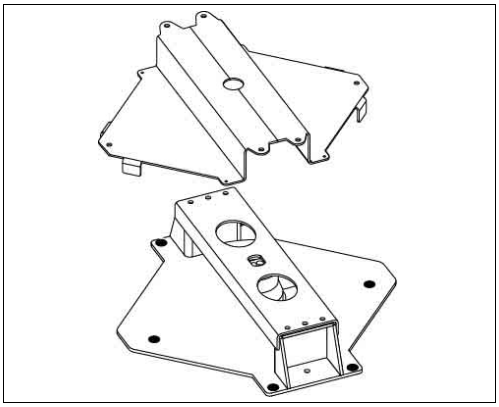
6.15.3 180° corner wheel installation

16” [406mm] corner wheel	21” [533mm] corner wheel
	

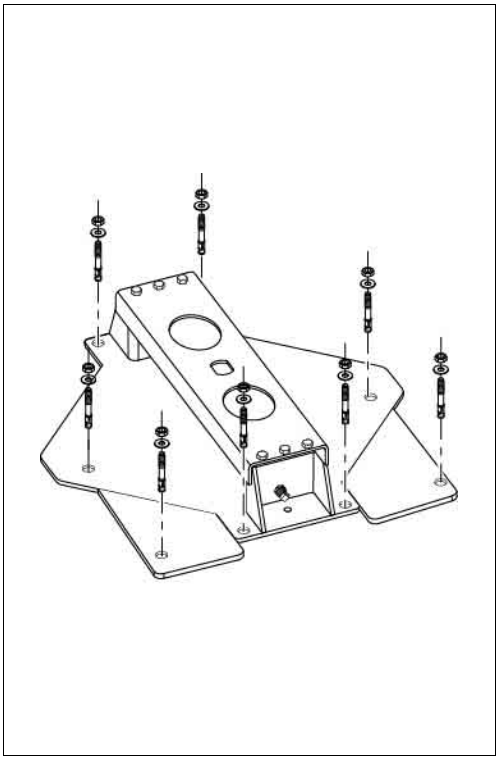
Caution!
Risk of injury!
Wear personal protective gear.

Step 1: Corner wheel disassembly

- Disassemble the corner wheel, as illustrated.



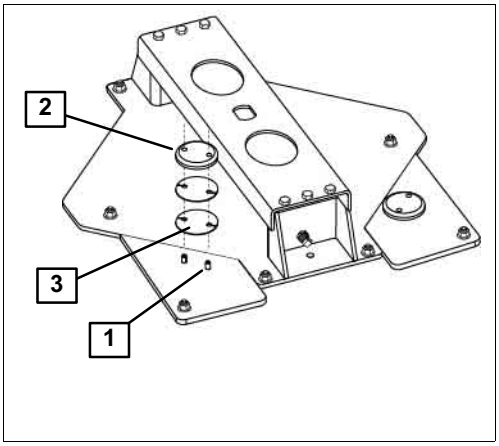
Step 2: Corner wheel anchoring



- To align the corner box to the cable path. Refer to the illustrations in the table of the previous page. Follow the measurements indicated.
- Make sure the corner box is levelled.
- Drill through the 6 holes of the corner box.
- Mount the corner box on the concrete floor using 6 stainless steel anchor bolts 1/2” x 3 3/4” [13 x 95mm].
- Position the plates next to the corner box, as illustrated.
- Drill through the hole in each plate.
- Mount the plates using stainless steel anchor bolts 1/2” x 3 3/4”[13 x 95mm].

Follow the anchor bolt installation procedure included in this section.

Step 3: Cable supports installation (if applicable)

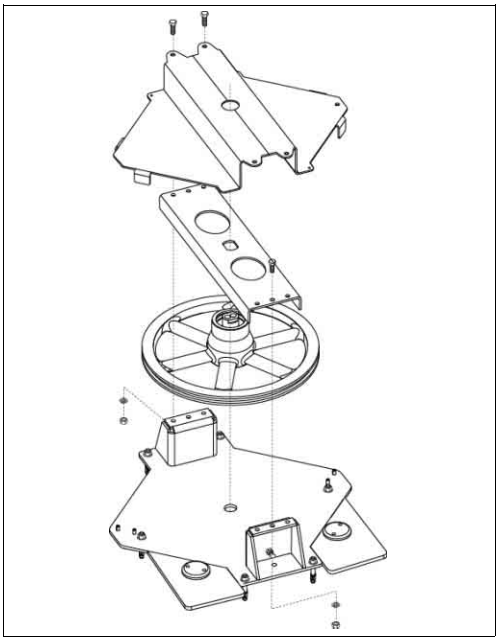


- Following the cable/rope used, install the cable support with proper shim quantity per cable support. Refer to the table below.
- With a hammer, insert the spring pins (1) in the wheel plate.
- Install cable support (2) and shim(s) (3) on the spring pins. Refer the table below.

	Spring pin (1)	Shim (2)	Support (3)
Nylon Rope	0	0	0
1/2” [13mm] cable	2	1	1
3/8” [10mm] cable	2	2	1

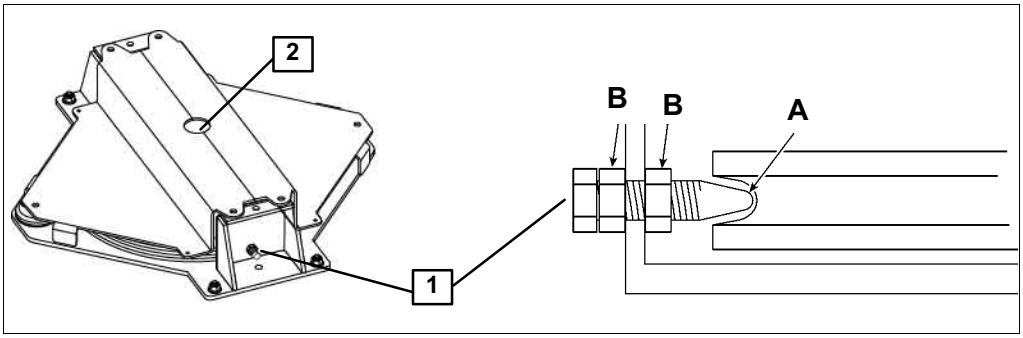
Step 4: Corner wheel assembly

- Assemble the corner wheel, as illustrated.



Step 5: Wheel cleaner (4) adjustment

Caution!
Risk of skin irritation!
Wear protective gloves.

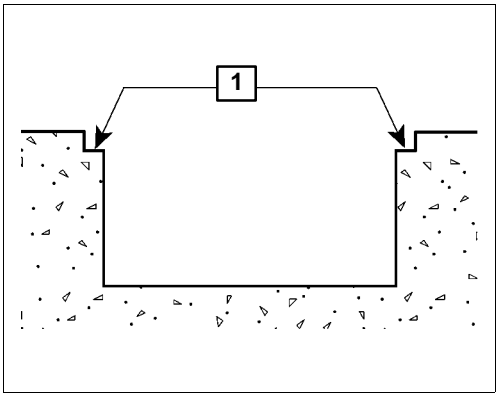


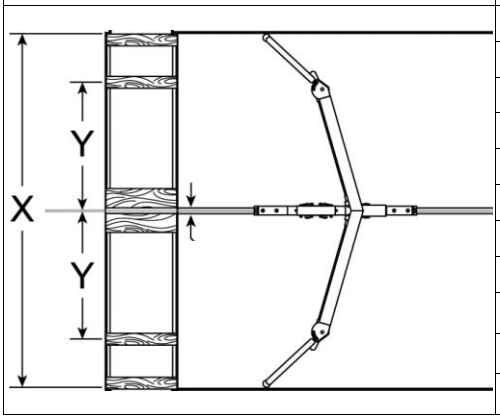
- Assemble the wheel cleaner (1) to the corner wheel frame using two lock nuts (B).
- Position the tip (A) of the cleaner as near as possible to the wheel.
- Rotate the wheel to make sure it turns freely.
- Tighten the lock nuts (B).
- Using a grease gun, lubricate the corner wheel through the grease fitting (5). Use grade 2 PRECISION XL5 MOLY EP2 grease.

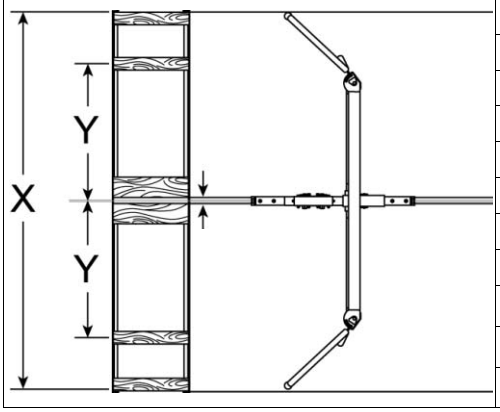
6.16 The cross gutter supports installation

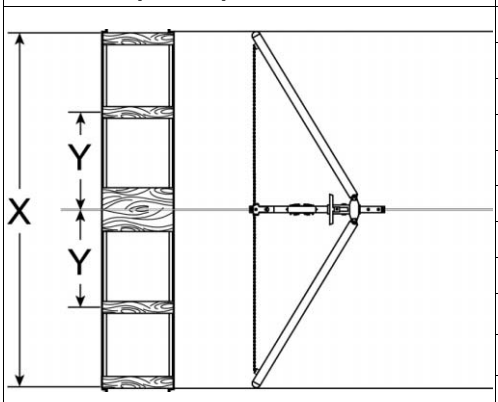
Warning!
Risk of fall!
Be aware of the surroundings when working near areas such as a storage pit, a cross gutter, a transfer pump hopper, etc.

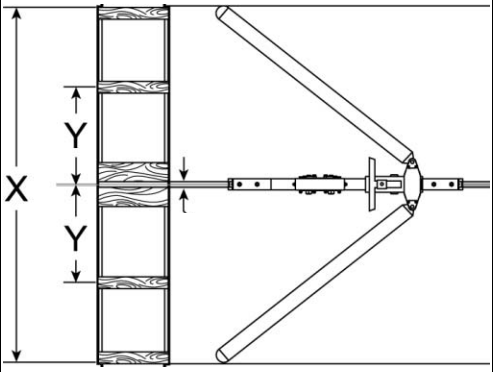
- Cut 6 pieces of 2” x 4” [51mm x 102mm] of treated lumber to fit in the notches (1) of the gutter.
- Position the pieces as specified in the table corresponding to the scraper model.
- For a grooved guided scraper, keep space in the center for the scraper to pass. Refer to the specifications of the scraper.



16° scraper	Alley width X	Intermediate Y
	6'1”-7' [185-213cm]	23” [58cm]
	7'1”-8' [216-244cm]	29” [74cm]
	8'1”-9' [246-274cm]	35” [89cm]
	9'1”-10' [277-305cm]	41” [104cm]
	10'1”-11' [307-335cm]	47” [119cm]
	11'1”-12' [338-366cm]	53” [135cm]
	12'1”-13' [368-396cm]	59” [150cm]
	13'1”-14' [399-427cm]	65” [165cm]
	14'1”-15' [429-457cm]	71” [180cm]
	15'1”-16' [459-488cm]	77” [196cm]
	16'1”-17' [492-518cm]	83” [211cm]

Straight scraper	Alley width X	Intermediate Y
	6'6”-7'5” [198-226cm]	22” [56cm]
	7'6”-8'5” [229-257cm]	28” [71cm]
	8'6”-9'5” [259-287cm]	34” [86cm]
	9'6”-10'5” [290-318cm]	40” [101cm]
	10'6”-11'5” [320-348cm]	46” [117cm]
	11'6”-12'5” [351-378cm]	52” [132cm]
	12'6”-13'5” [381-409cm]	58” [147cm]
	13'6”-14'5” [411-439cm]	64” [162cm]
	14'6”-15'5” [442-470cm]	70” [178cm]
	15'6”-16'5” [472-500cm]	76” [193cm]
	16'6”-17'5” [503-531cm]	82” [208cm]

V-shape scraper floor mounted	Alley width X	Intermediate Y
	6'1”-7' [185-213cm]	11” [28cm]
	7'1”-8' [216-244cm]	13” [33cm]
	8'1”-9' [246-274cm]	15” [38cm]
	9'1”-10' [277-305cm]	18” [46cm]
	10'1”-11' [307-335cm]	21” [53cm]
	11'1”-12' [338-366cm]	23” [58cm]
	12'1”-13' [368-396cm]	25” [64cm]
	13'1”-14' [399-427cm]	28” [71cm]
	14'1”-15' [429-457cm]	31” [78cm]
	15'1”-16' [459-488cm]	34” [86cm]
	16'1”-17' [492-518cm]	37” [94cm]

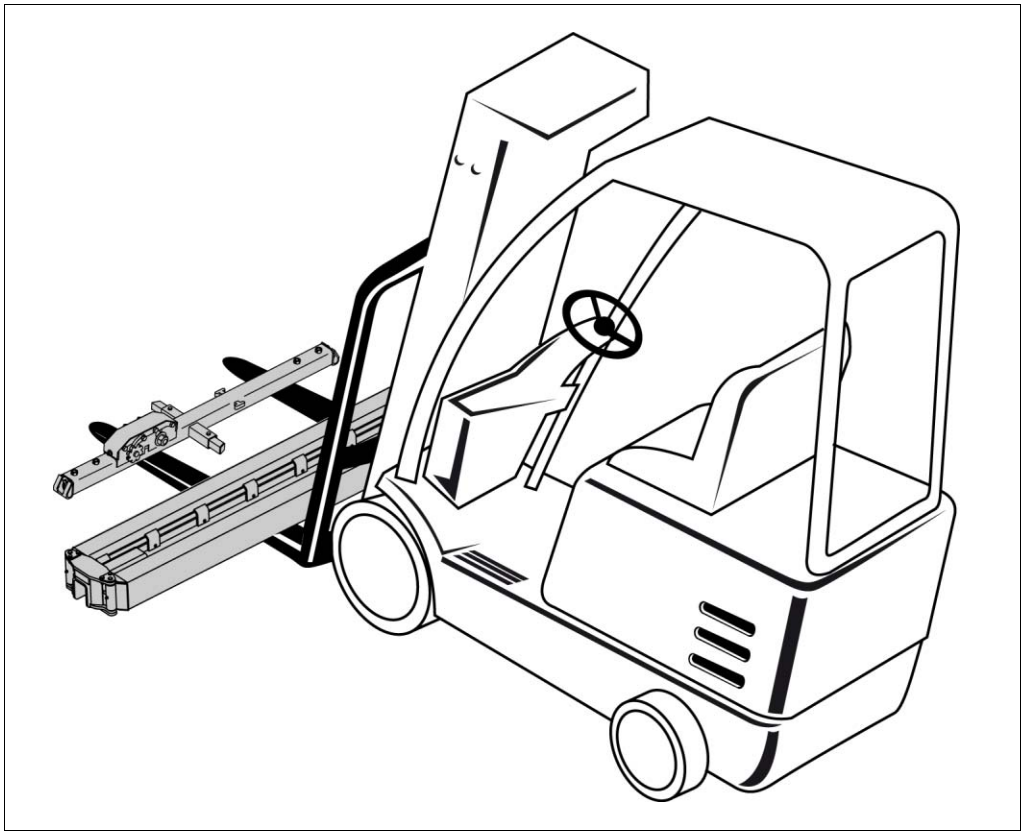
V-shape scraper groove guided	Alley width X	Intermediate Y
	6'1”-7' [185-213cm]	16” [41cm]
	7'1”-8' [216-244cm]	19” [48cm]
	8'1”-9' [246-274cm]	22” [56cm]
	9'1”-10' [277-305cm]	25” [64cm]
	10'1”-11' [307-335cm]	28” [71cm]
	11'1”-12' [338-366cm]	32” [81cm]
	12'1”-13' [368-396cm]	35” [89cm]
	13'1”-14' [399-427cm]	38” [97cm]
	14'1”-15' [429-457cm]	41” [104cm]
	15'1”-16' [459-488cm]	44” [112cm]
	16'1”-17' [492-518cm]	47” [119cm]

6.17 Scraper handling

Warning!
Risk of injury or death!
Do not stand under or near a lifted load.

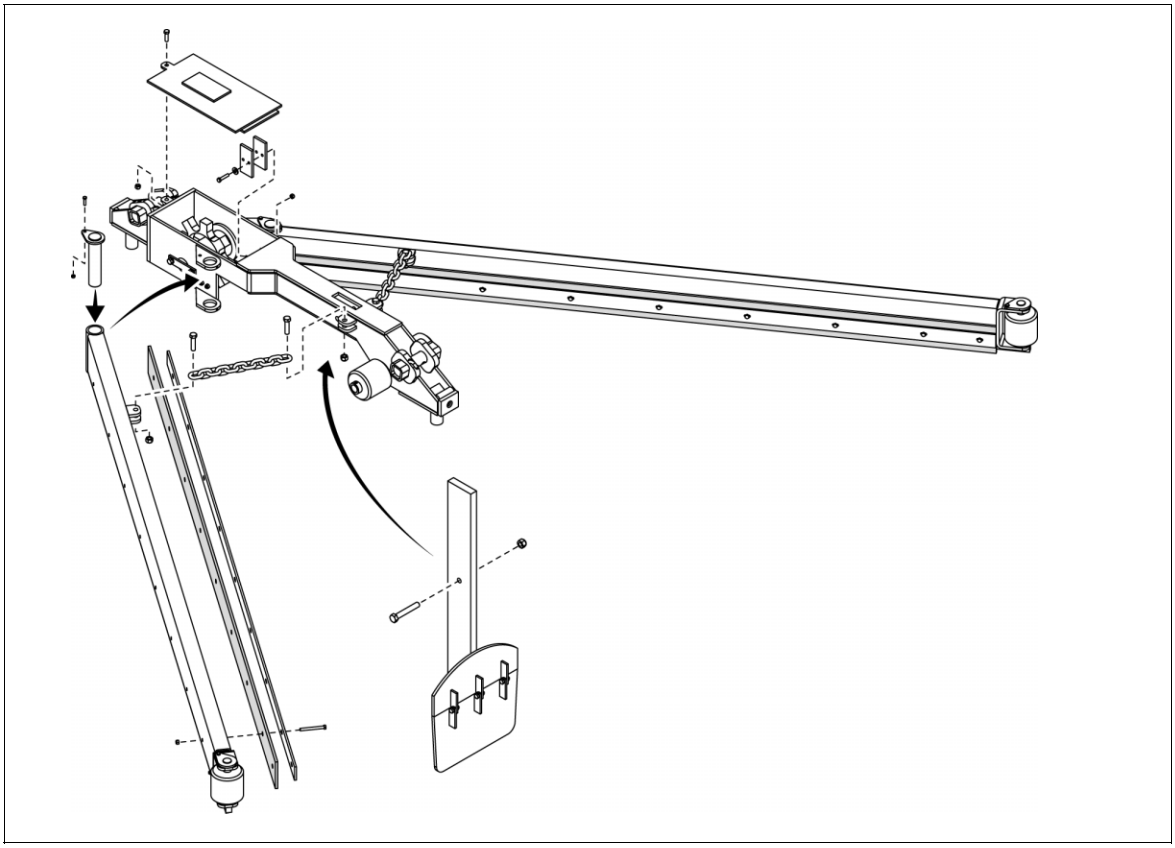
Warning!
Risk of injury or death!
Use a lifting device with a minimum lifting capacity of 550 lb [250 kg] to handle the scraper(s).

Caution!
Risk of finger pinching, cuts and skin irritation!
Wear protective gloves.



6.18 Tube scraper assembly

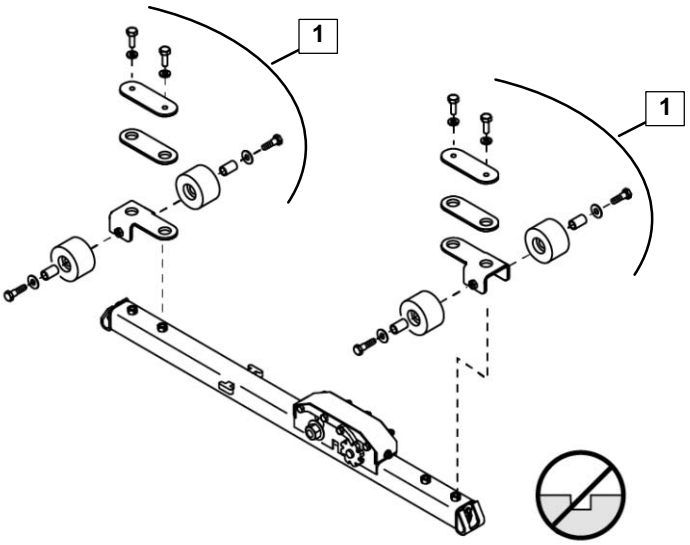
Caution!
Risk of finger pinching, cuts and skin irritation!
Wear protective gloves.



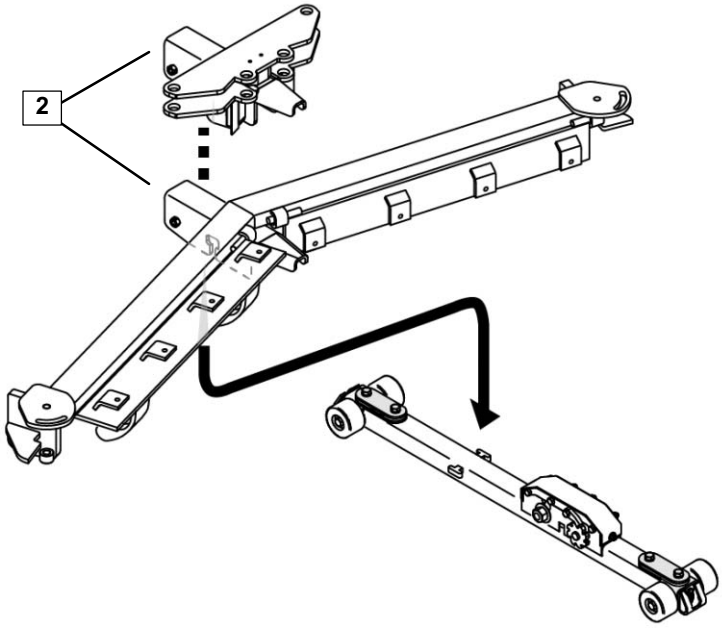
1	Insert the paddle inside the channel through the drop end of the alley.
2	Place the scraper draw bar over the paddle arm. Make sure the draw bar is oriented properly
3	Drill a 9/16” [14 mm] hole through the paddle arm to hold the paddle at proper height inside the channel. The paddle must be positioned at ⅛” [3 mm] from the bottom of the channel. Make sure the paddle clears the entire channel bottom.
4	Hold the paddle in the draw bar using a bolt and lock nut.
5	Cut the lever exceeding out of the scraper draw bar.
6	Place the urethane extensions inside the draw bar.
7	Secure the cover.
8	Bolt the urethane blades on the scraper wings.
9	Install the wings using the hinges. Notice the side in which the blades must be positioned. Lubricate the hinges with grease.
10	Install the chains, as illustrated. Adjust the position of the scraper wings. Cut the exceeding shackles.

6.19 16° adjustable scraper with urethane blades assembly

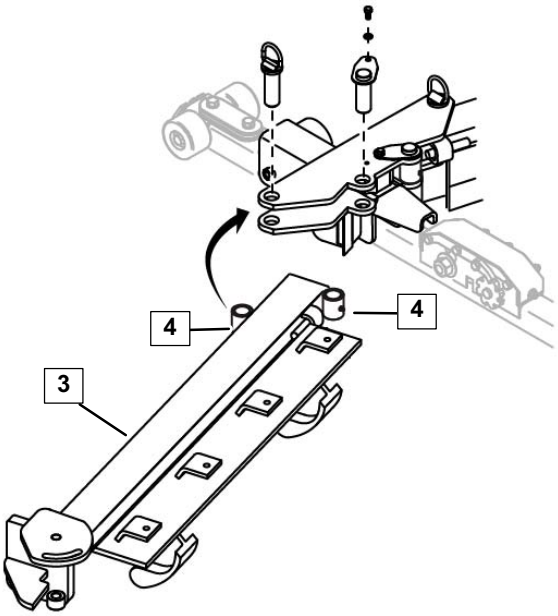
Caution!
Risk of finger pinching, cuts and skin irritation!
Wear protective gloves.



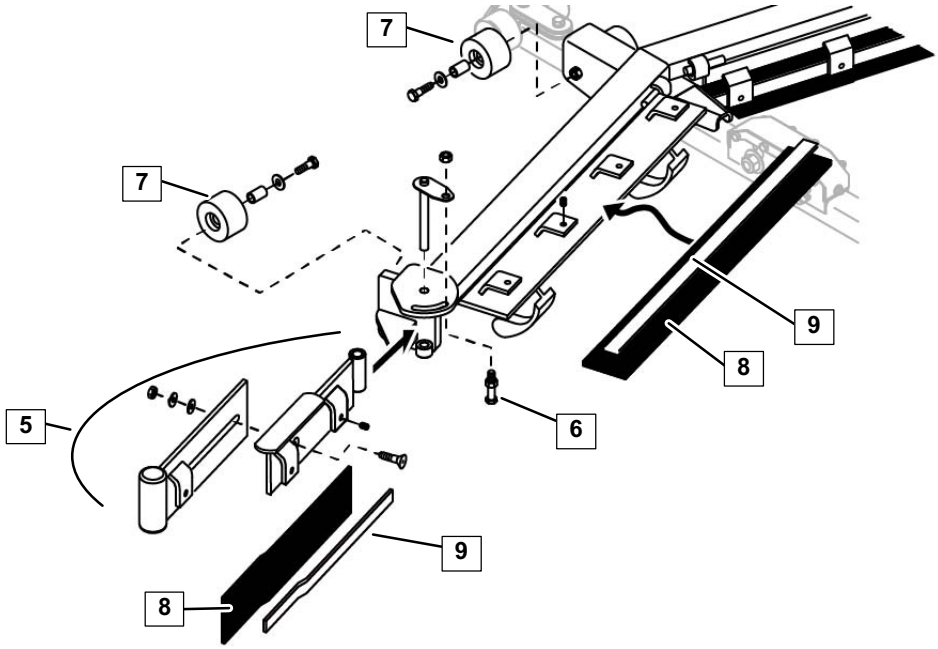
1	Position the draw bar in the alley and assemble the accessories, if applicable.



2	Place the scraper or the hinge block over the draw bar.



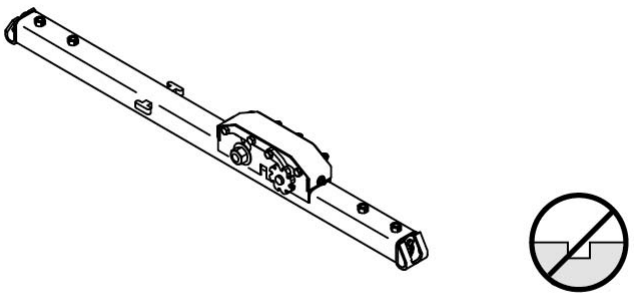
3	Assemble the folding arms, if applicable.
4	Using a grease gun, lubricate the hinges.



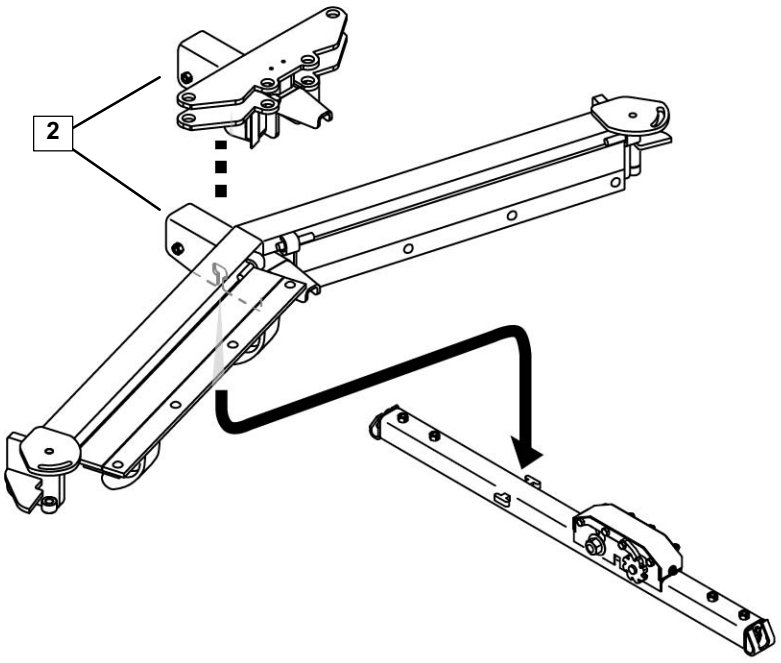
5	Assemble the adjustable ends to the scraper arms. Using a brush and grease, lubricate the hinge pins.
6	Install the adjustable end stopper holding the hinge pin.
7	Assemble the 4 wheels on the scraper.
8	Cut the urethane blades to the scraper arm length.
9	Assemble the blade to the scraper arm with the flat bar.

6.20 16° adjustable scraper with steel blades assembly

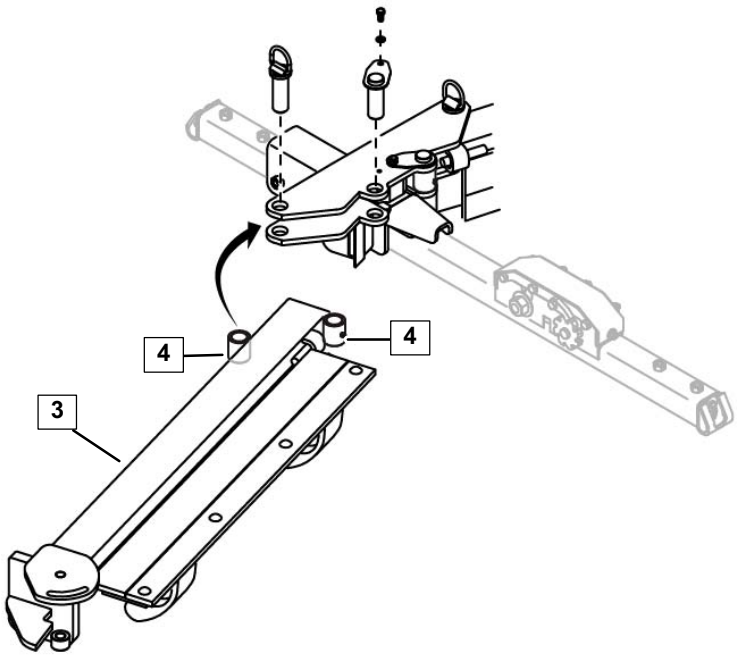
Caution!
Risk of finger pinching, cuts and skin irritation!
Wear protective gloves.



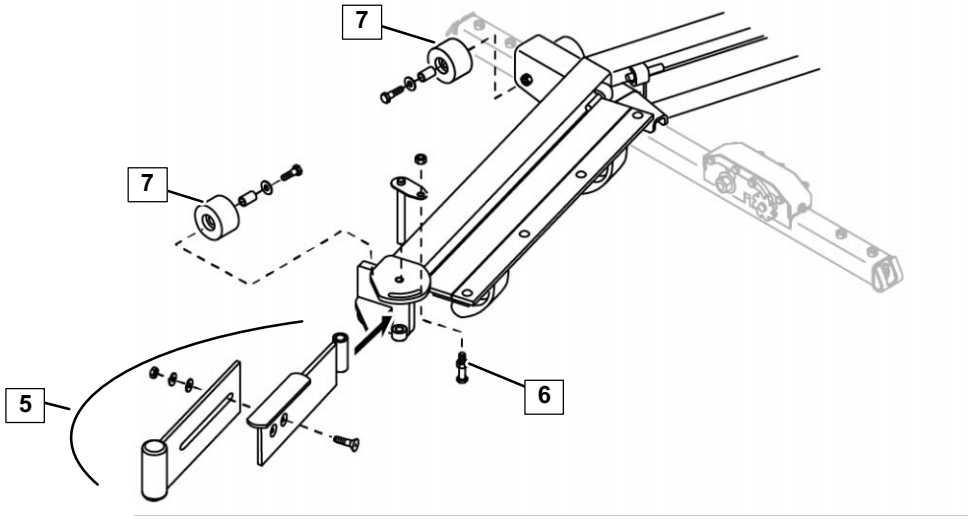
1	Position the draw bar in the alley.



2	Place the scraper or the hinge block over the draw bar.



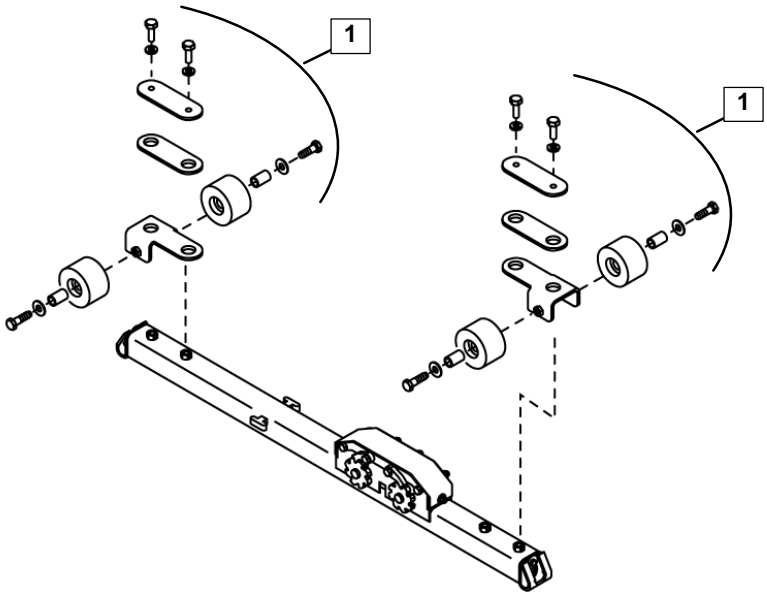
3	Assemble the folding arms, if applicable.
4	Using a grease gun, lubricate the hinges.



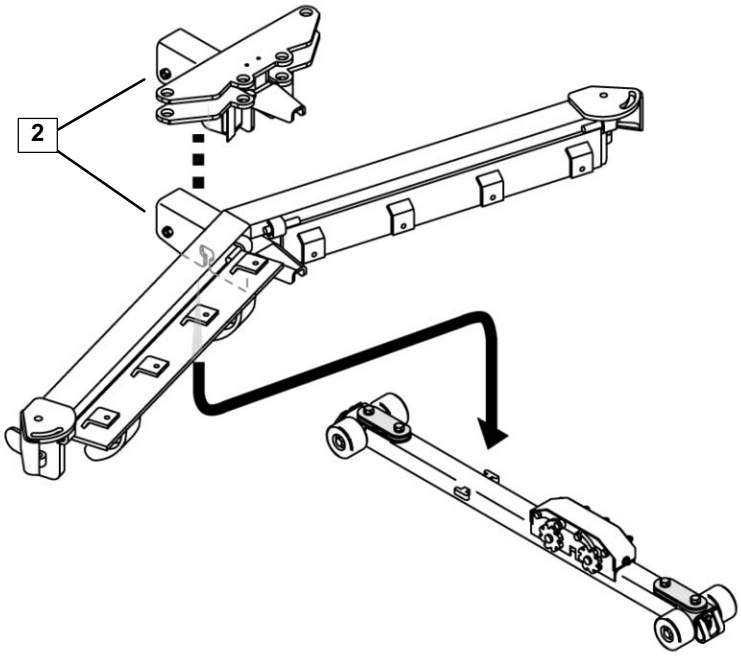
5	Assemble the adjustable ends to the scraper arms. Using a brush and grease, lubricate the hinge pins.
6	Install the adjustable end stopper holding the hinge pin.
7	Assemble the 4 wheels on the scraper.

6.21 16° scraper with urethane blades assembly

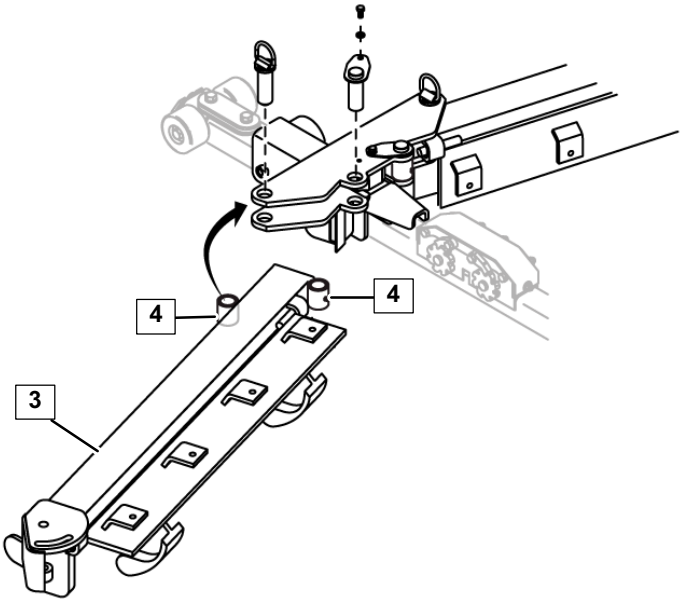
Caution!
Risk of finger pinching, cuts and skin irritation!
Wear protective gloves.



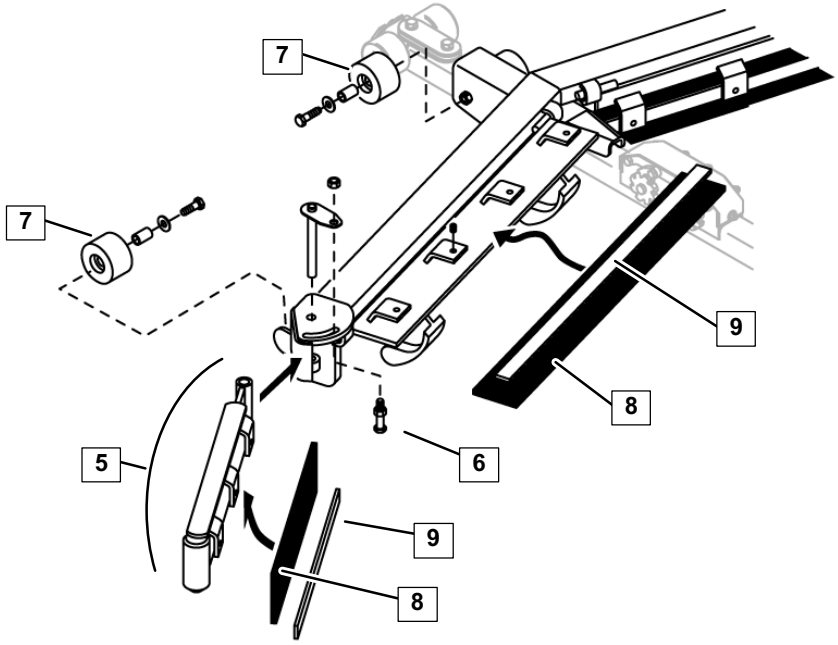
1	Position the draw bar in the alley and assemble the accessories, if applicable.



2	Place the scraper or the hinge block over the draw bar.



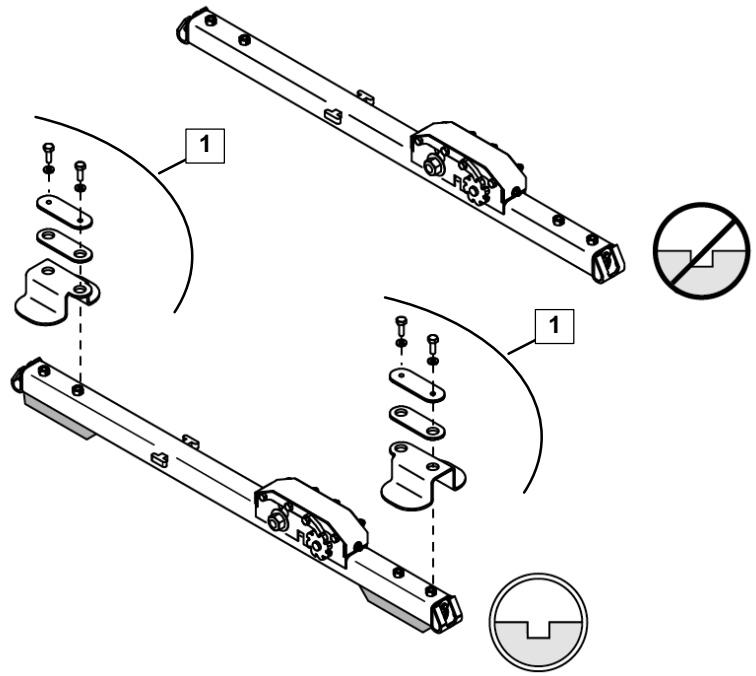
3	Assemble the folding arms, if applicable.
4	Using a grease gun, lubricate the hinges.



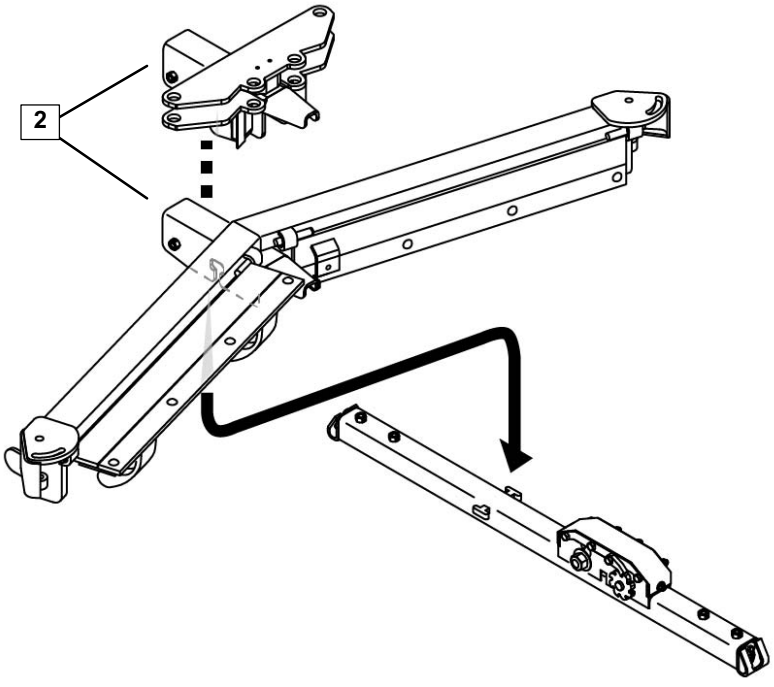
5	Assemble the adjustable ends to the scraper arms. Using a brush and grease, lubricate the hinge pins.
6	Install the adjustable end stopper holding the hinge pin.
7	Assemble the 4 wheels on the scraper.
8	Cut the urethane blades to the scraper arm length.
9	Assemble the blade to the scraper arm with the flat bar.

6.22 16° scraper with steel blades assembly

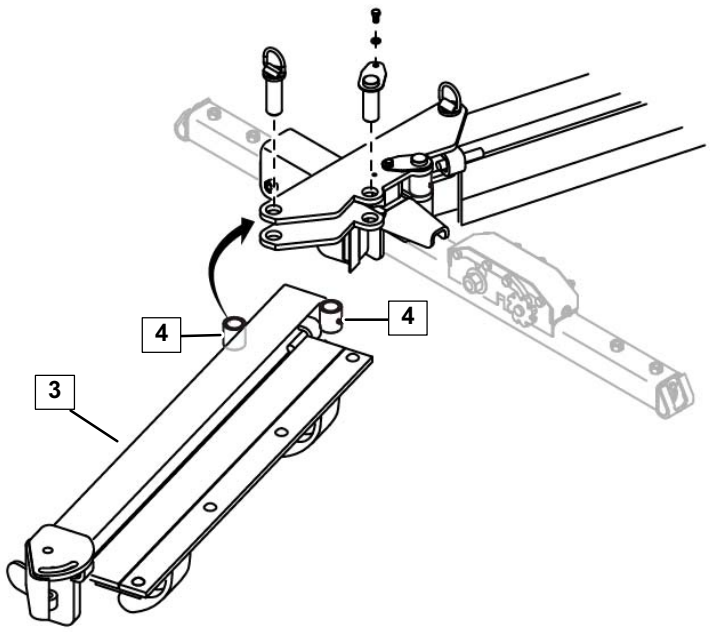
Caution!
Risk of finger pinching, cuts and skin irritation!
Wear protective gloves.



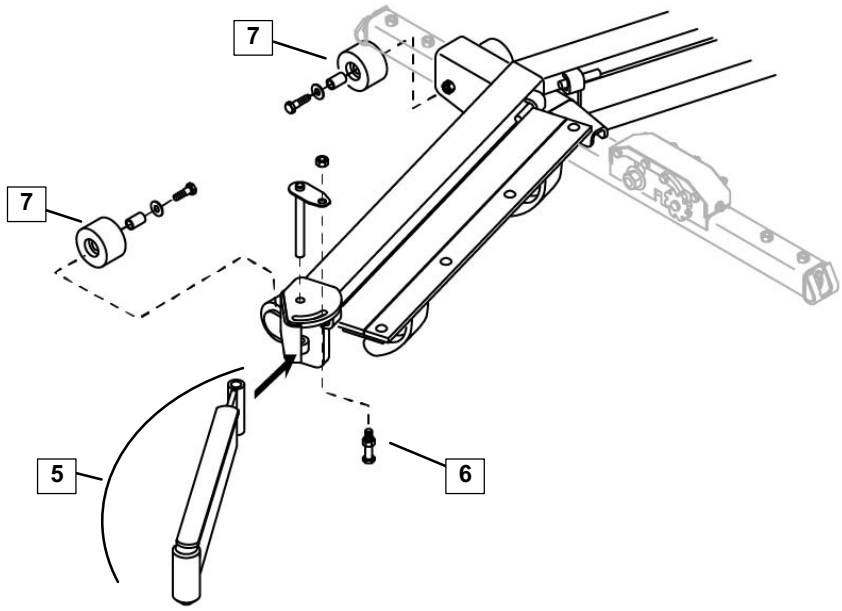
1	Position the draw bar in the alley and assemble the accessories, if applicable.



2	Place the scraper or the hinge block over the draw bar.



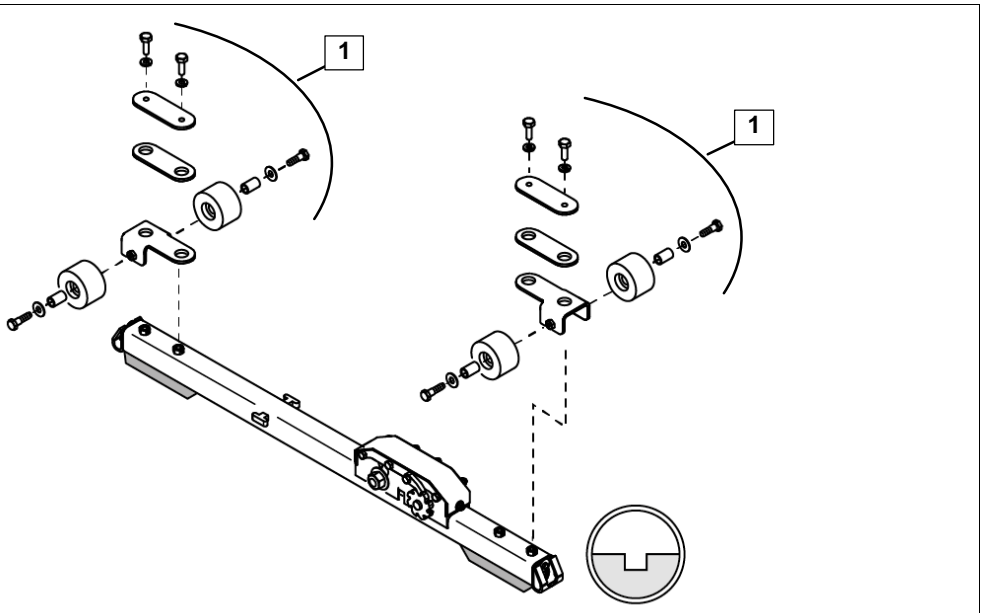
3	Assemble the folding arms, if applicable.
4	Using a grease gun, lubricate the hinges.



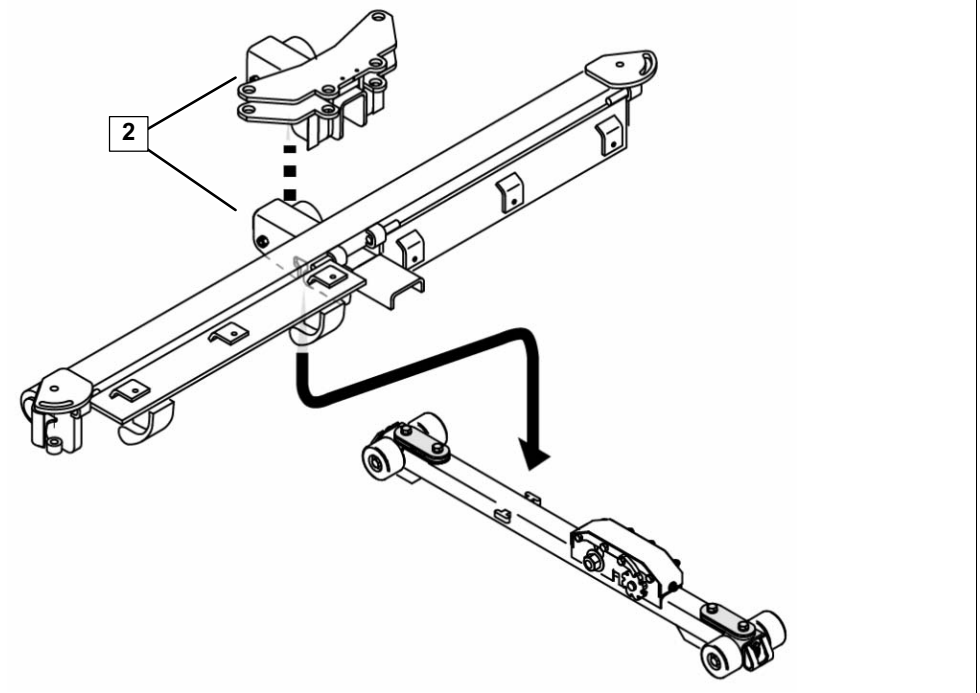
5	Assemble the adjustable ends to the scraper arms. Using a brush and grease, lubricate the hinge pins.
6	Install the adjustable end stopper holding the hinge pin.
7	Assemble the 4 wheels on the scraper.

6.23 Straight scraper with urethane blades assembly

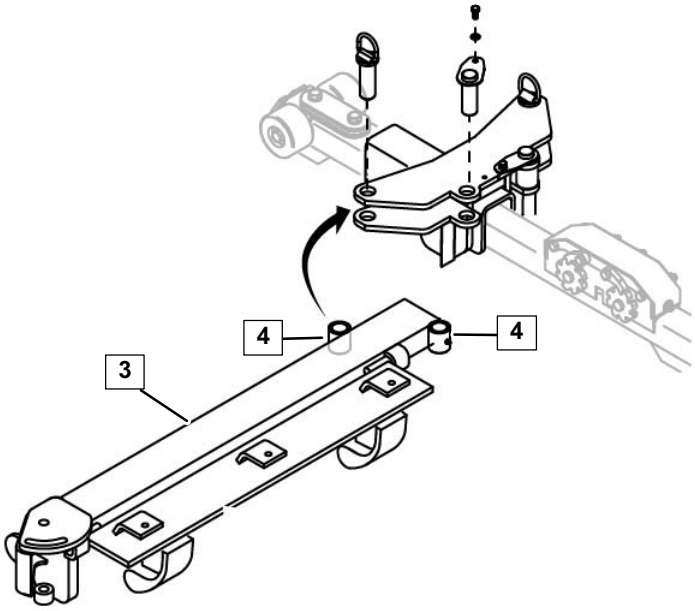
Caution!
Risk of finger pinching, cuts and skin irritation!
Wear protective gloves.



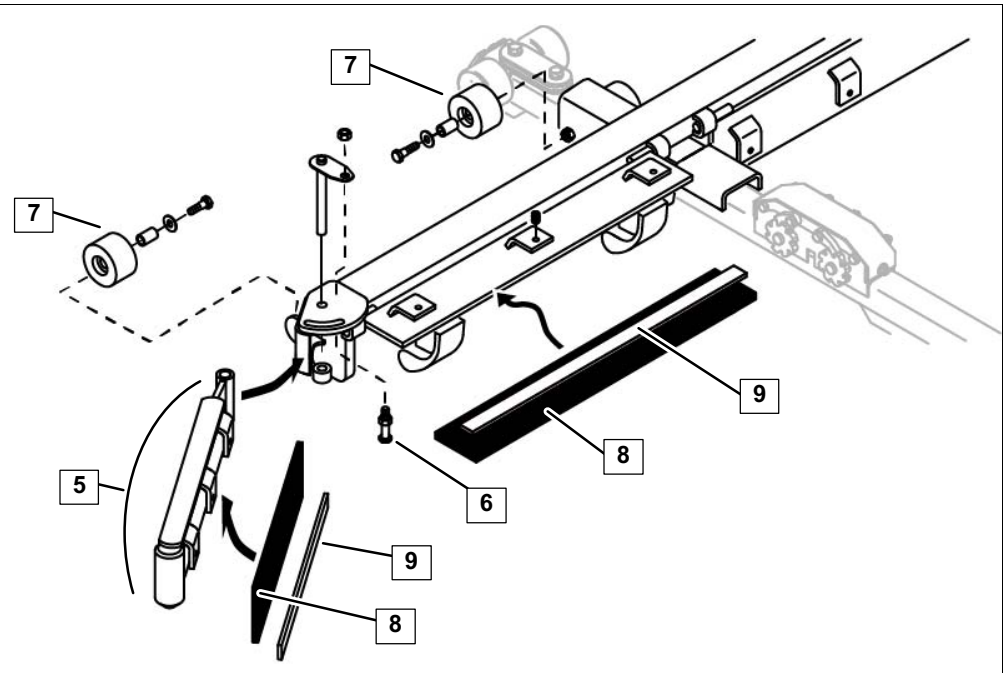
1	Position the draw bar in the alley and assemble the accessories, if applicable.



2	Place the scraper or the hinge block over the draw bar.



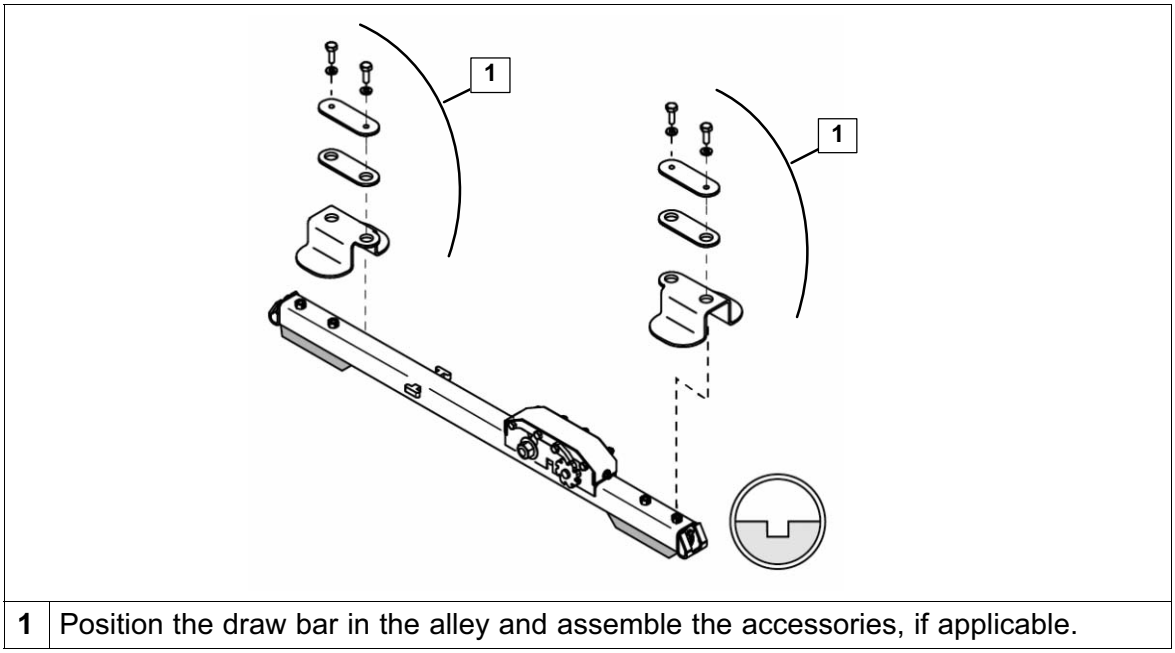
3	Assemble the folding arms, if applicable.
4	Using a grease gun, lubricate the hinges.



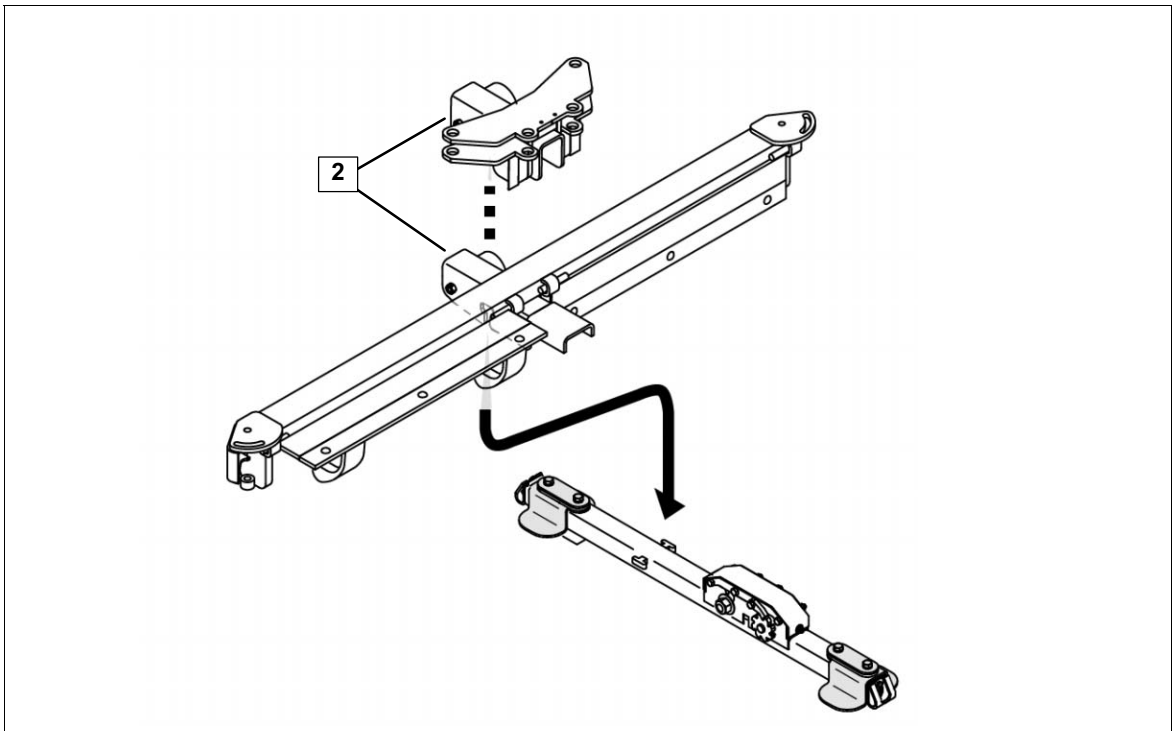
5	Assemble the adjustable ends to the scraper arms. Using a brush and grease, lubricate the hinge pins.
6	Install the adjustable end stopper holding the hinge pin.
7	Assemble the 4 wheels on the scraper.
8	Cut the urethane blades to the scraper arm length.
9	Assemble the blade to the scraper arm with the flat bar.

6.24 Straight scraper with steel blades assembly

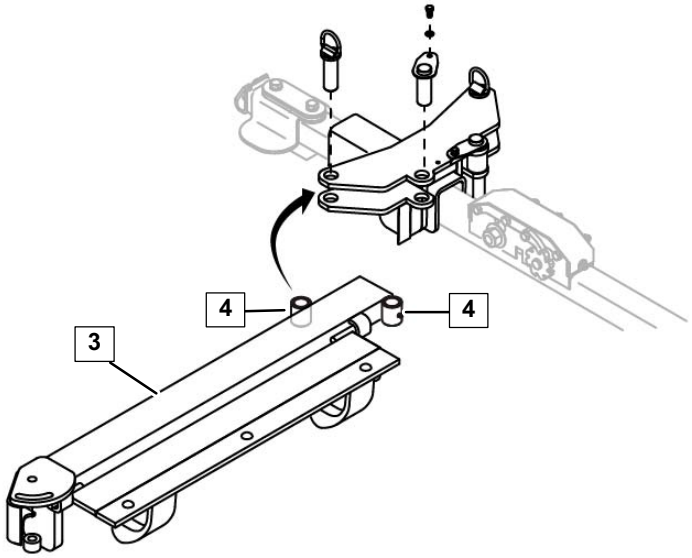
Caution!
Risk of finger pinching, cuts and skin irritation!
Wear protective gloves.



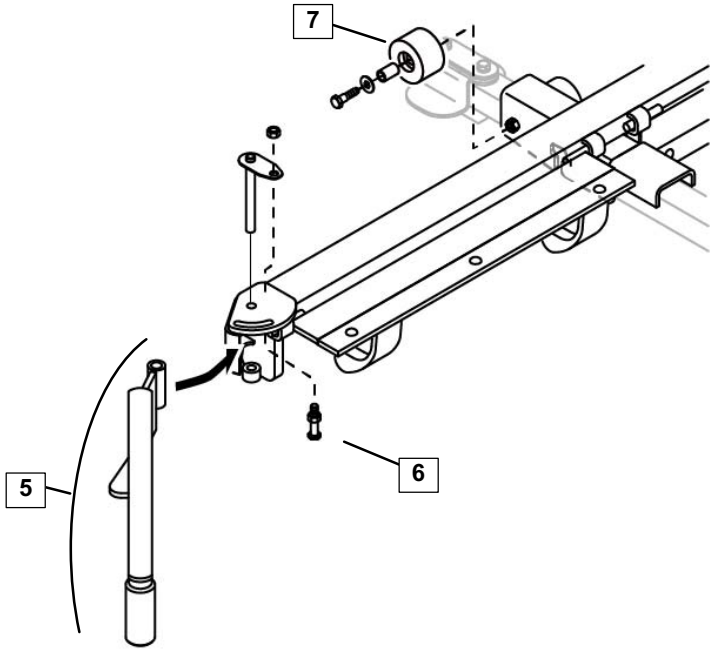
1	Position the draw bar in the alley and assemble the accessories, if applicable.



2	Place the scraper or the hinge block over the draw bar.



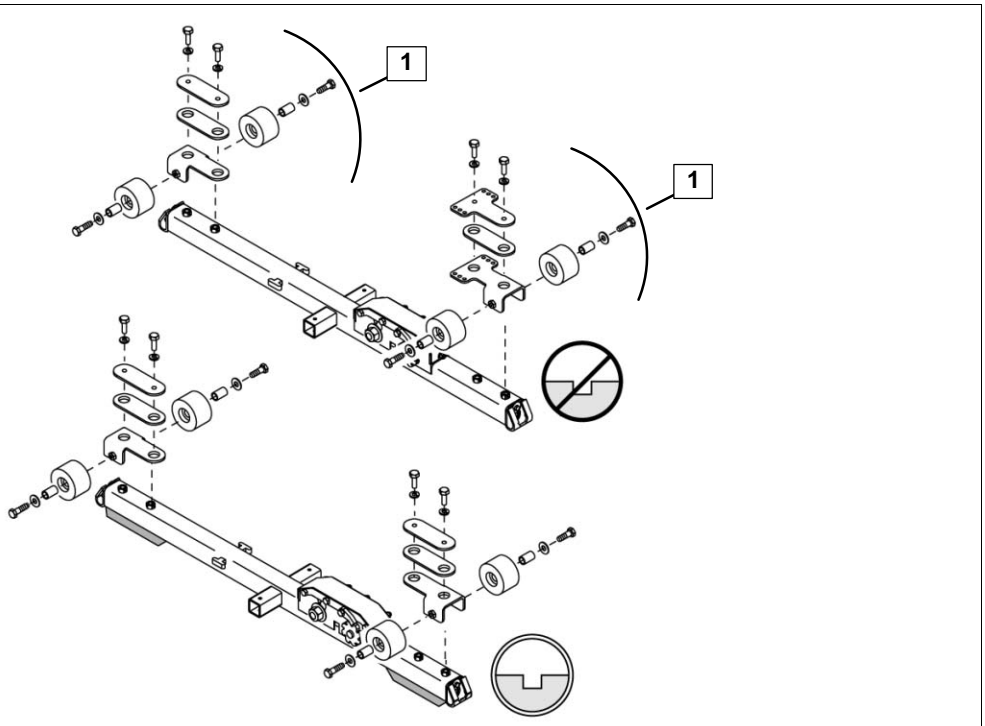
3	Assemble the folding arms, if applicable.
4	Using a grease gun, lubricate the hinges.



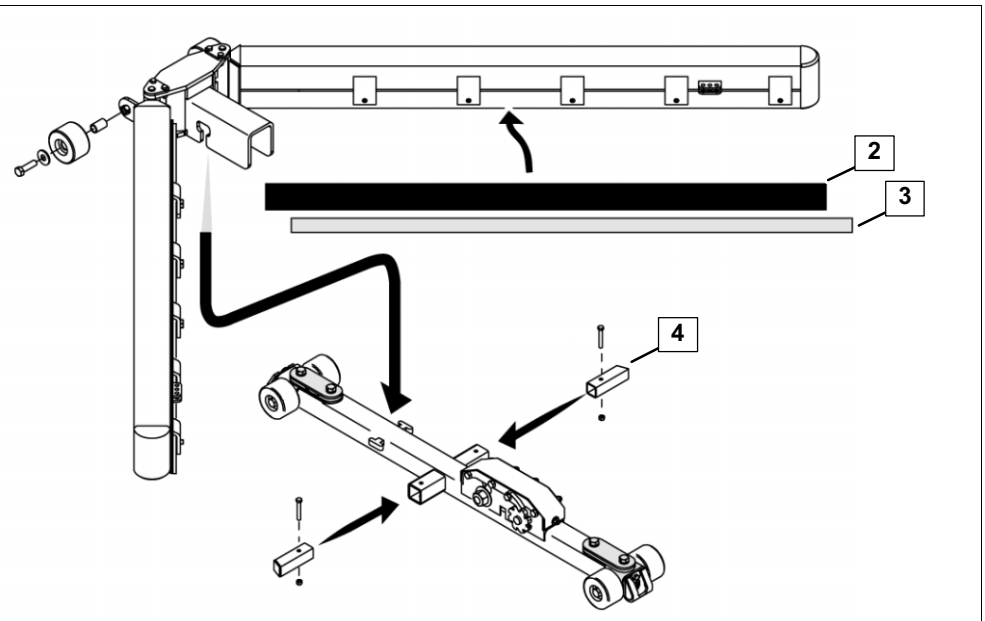
5	Assemble the adjustable ends to the scraper arms. Using a brush and grease, lubricate the hinge pins.
6	Install the adjustable end stopper holding the hinge pin.
7	Assemble the wheels on the scraper.

6.25 V-shape scraper with urethane blades assembly

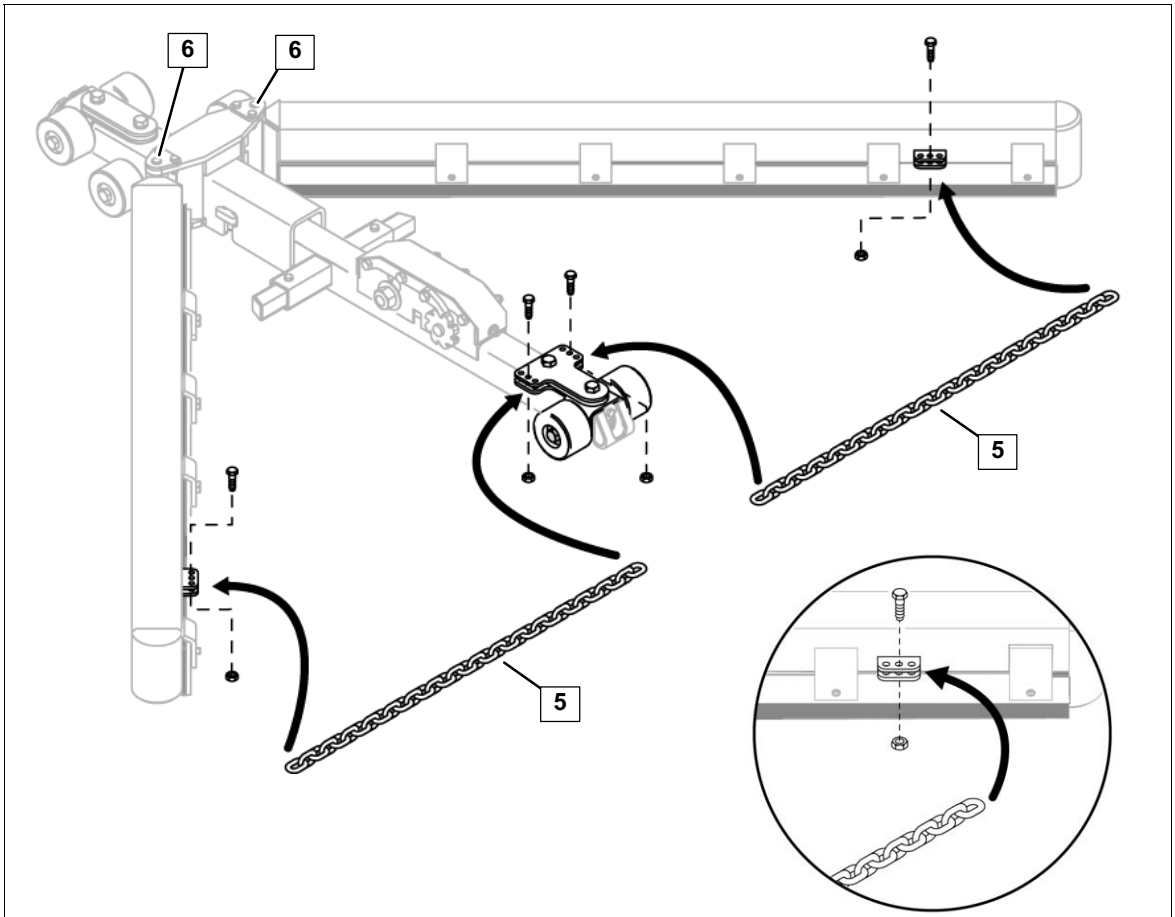
Caution!
Risk of finger pinching, cuts and skin irritation!
Wear protective gloves.



1	Position the draw bar in the alley and assemble the accessories, if applicable.



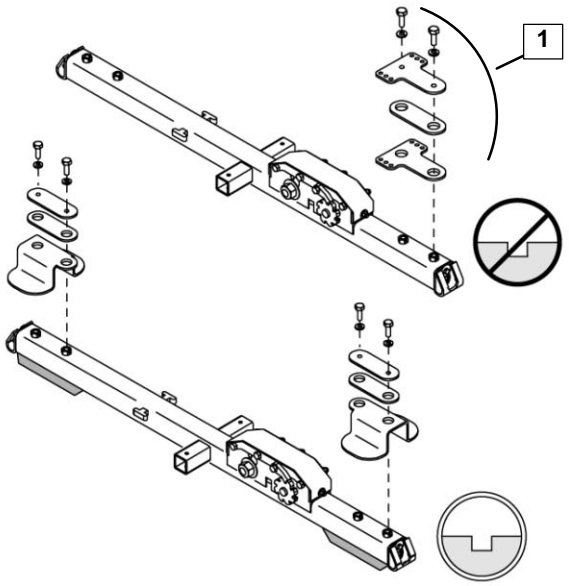
2	Cut the urethane blade to the scraper arm length.
3	Assemble the blade to the scraper arm with the flat bar.
4	Assemble the two stoppers. Place the scraper over the draw bar.



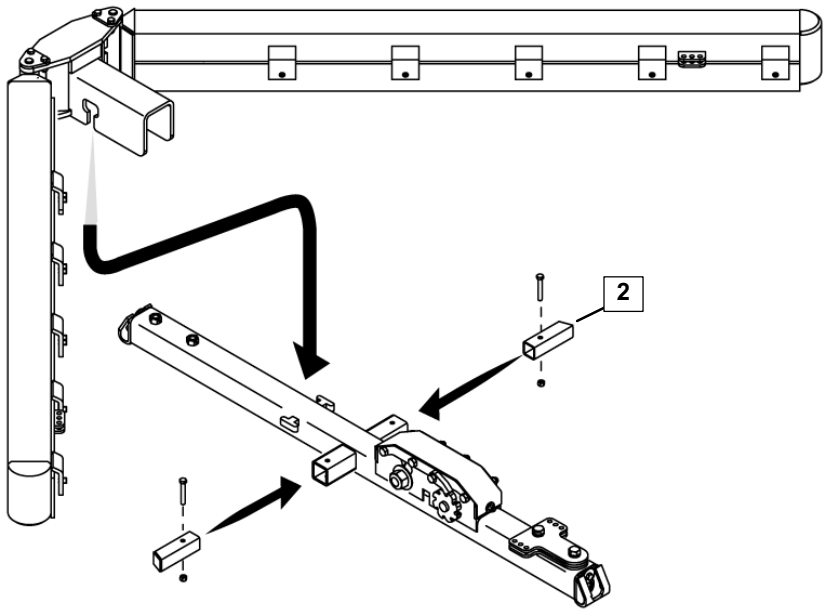
5	This step is applicable for scrapers equipped with chains. Open the scraper arms to the alley width. Keep ½" (13mm) gap between the curb and the scraper end. Assemble the chains to fit the distance between brackets. For proper adjustment, cut the extra length of chain and/or use the bracket adjustment holes.
6	Using a brush and grease, lubricate the hinges.

6.26 V-shape scraper with steel blades assembly

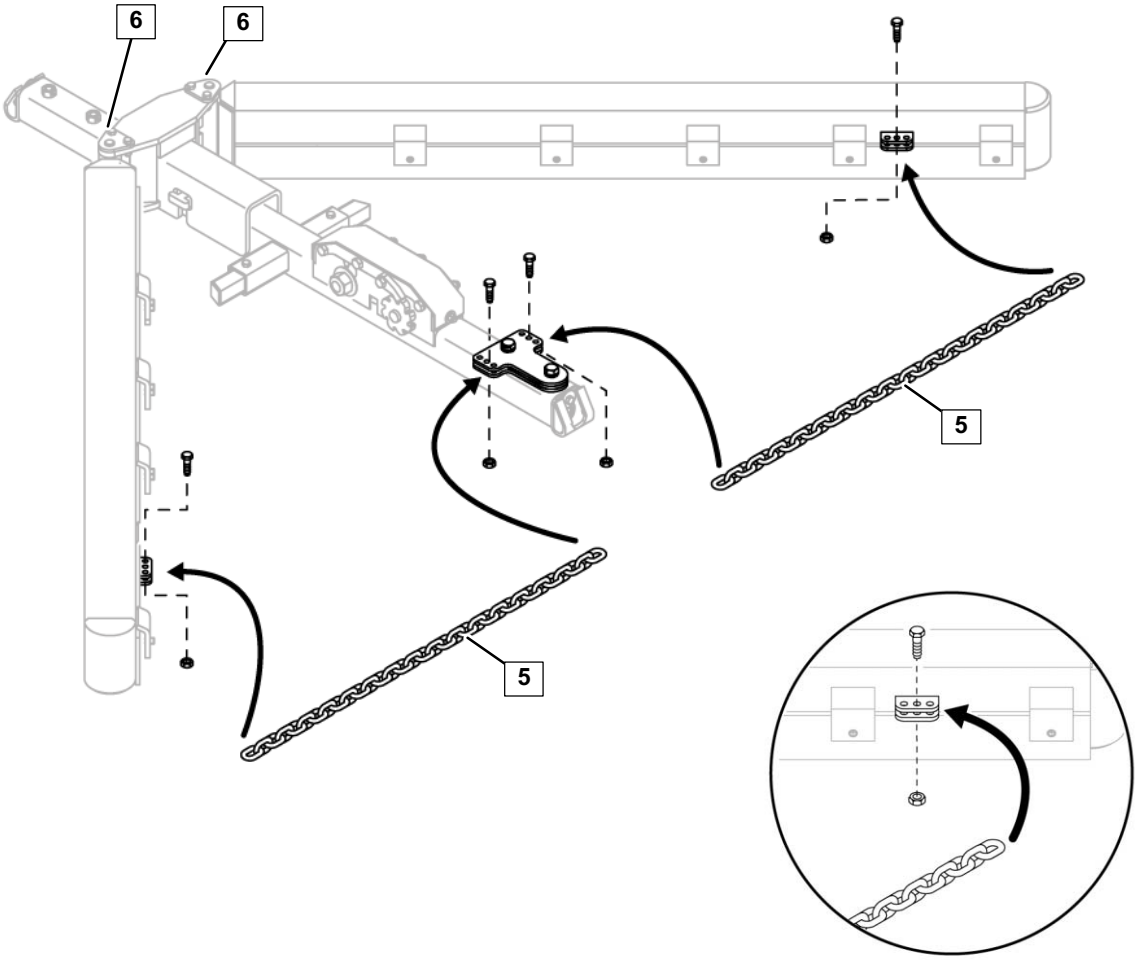
Caution!
Risk of finger pinching, cuts and skin irritation!
Wear protective gloves.



1	Position the draw bar in the alley and assemble the accessories, if applicable.



2	Assemble the two stoppers. Place the scraper over the draw bar.



5	This step is applicable for scrapers equipped with chains. Open the scraper arms to the alley width. Keep ½" (13mm) gap between the curb and the scraper end. Assemble the chains to fit the distance between brackets. For proper adjustment, cut the extra length of chain and/or use the bracket adjustment holes.
6	Using a brush and grease, lubricate the hinges.

6.27 Urethane scraper blade adjustment

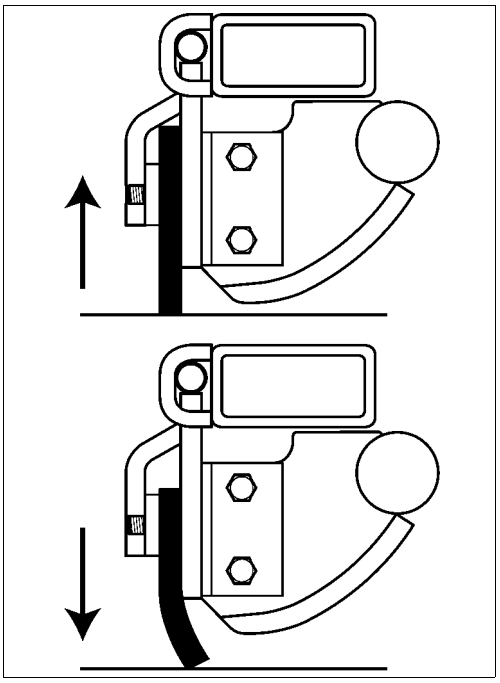
Caution!
Risk of finger pinching, cuts and skin irritation!
Wear protective gloves.

Fully adjusted upward:

- When positioned as illustrated, the urethane blade stiffness is maximized. Therefore, it cleans the alley similarly to a steel blade.

Fully adjusted downward:

- When positioned as illustrated, the urethane blade cleans the alley more gently, such as a squeegee.



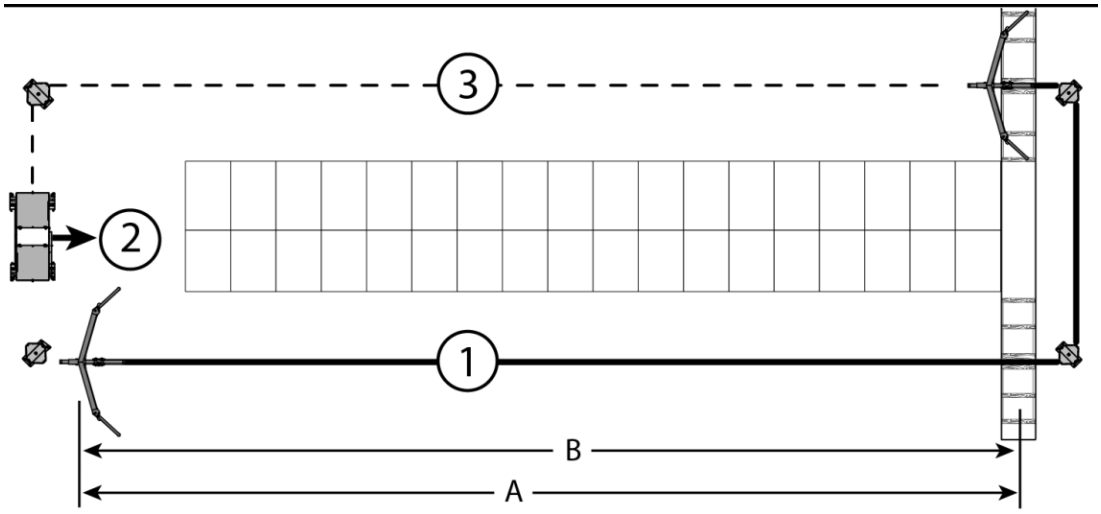
6.28 Cable installation

6.28.1 Step 1: Positioning the scrapers

Caution!
Risk of injury!
Wear protective gloves and eye wear for all steps.

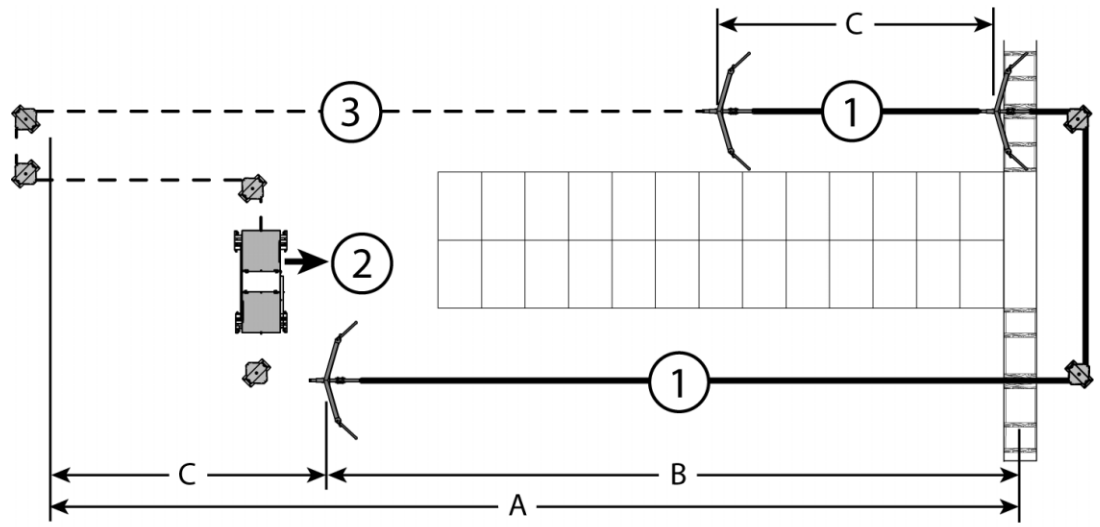
- Choose among the layouts illustrated below.
- Referring to the layout, position the scrapers in the alleys as illustrated.
  - Note the position of the drive unit versus the scrapers.
  - For a scraper positioned near a corner wheel, make sure there is at least 6” [152mm] between the corner box and the scraper draw bar.
  - For shuttle scrapers, position the scrapers as per the calculation formula indicated on the layout.

2 alleys with a single scraper per alley



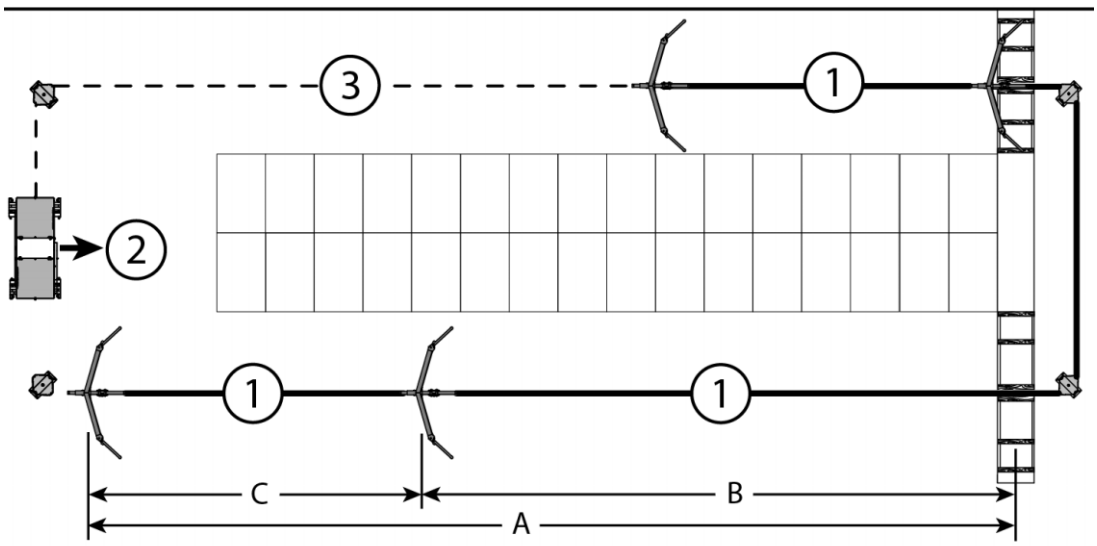
A	Alley length
B	Stroke length

2 alleys having one alley with shuttle scrapers



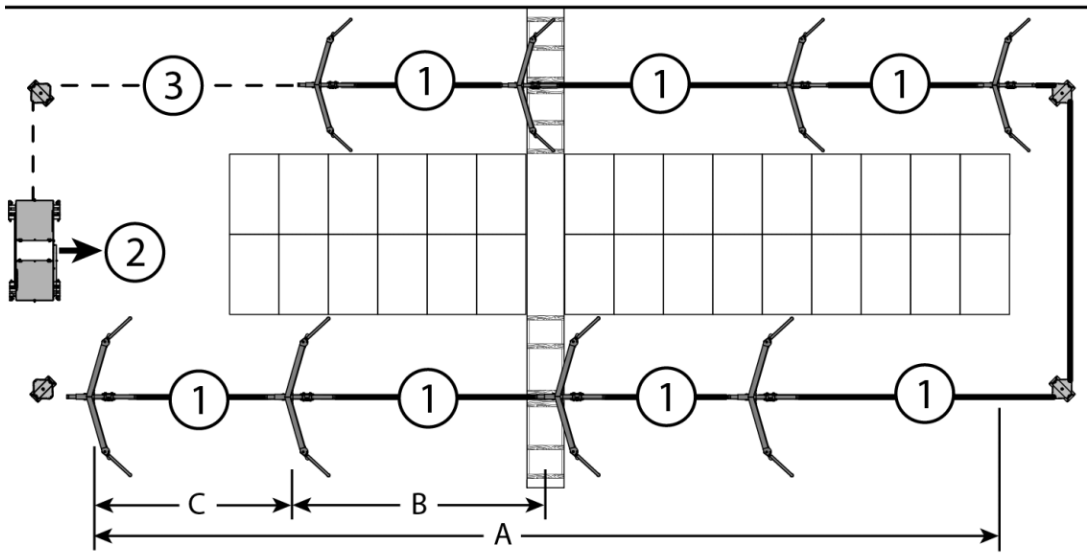
A	Alley length	
B	Stroke length	B = A + 15ft ÷ 2
C	Distance between shuttle scrapers	C = B - 15ft

2 alleys with shuttle scrapers



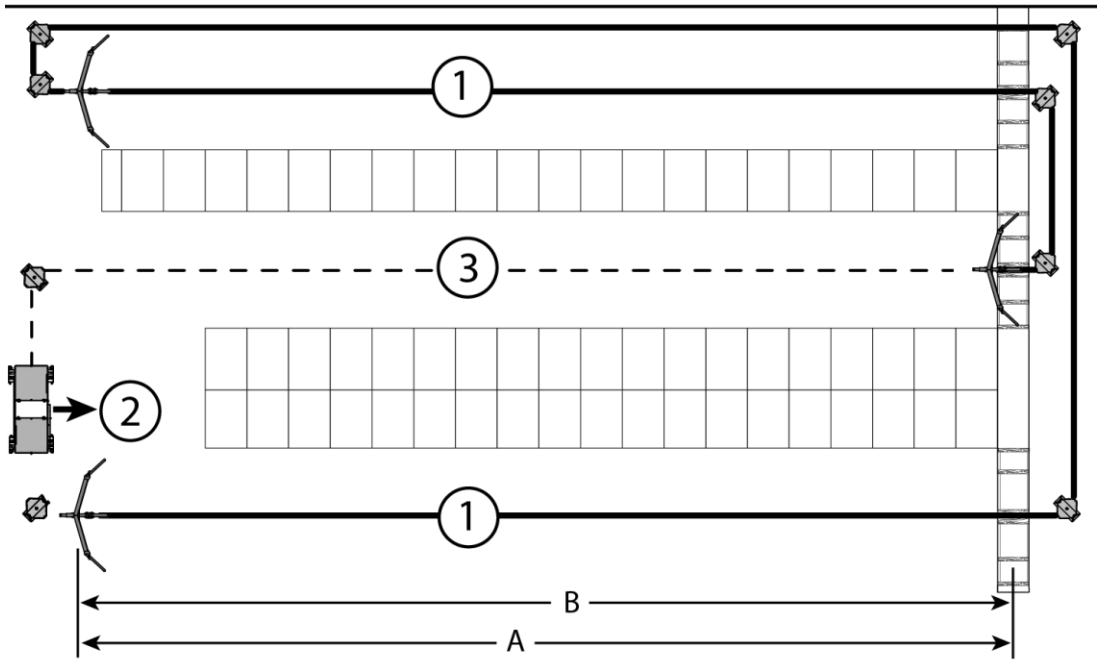
A	Alley length	
B	Stroke length	B = A + 15ft ÷ 2
C	Distance between shuttle scrapers	C = B - 15ft

2 alleys with 2 sets of shuttle scrapers per alley



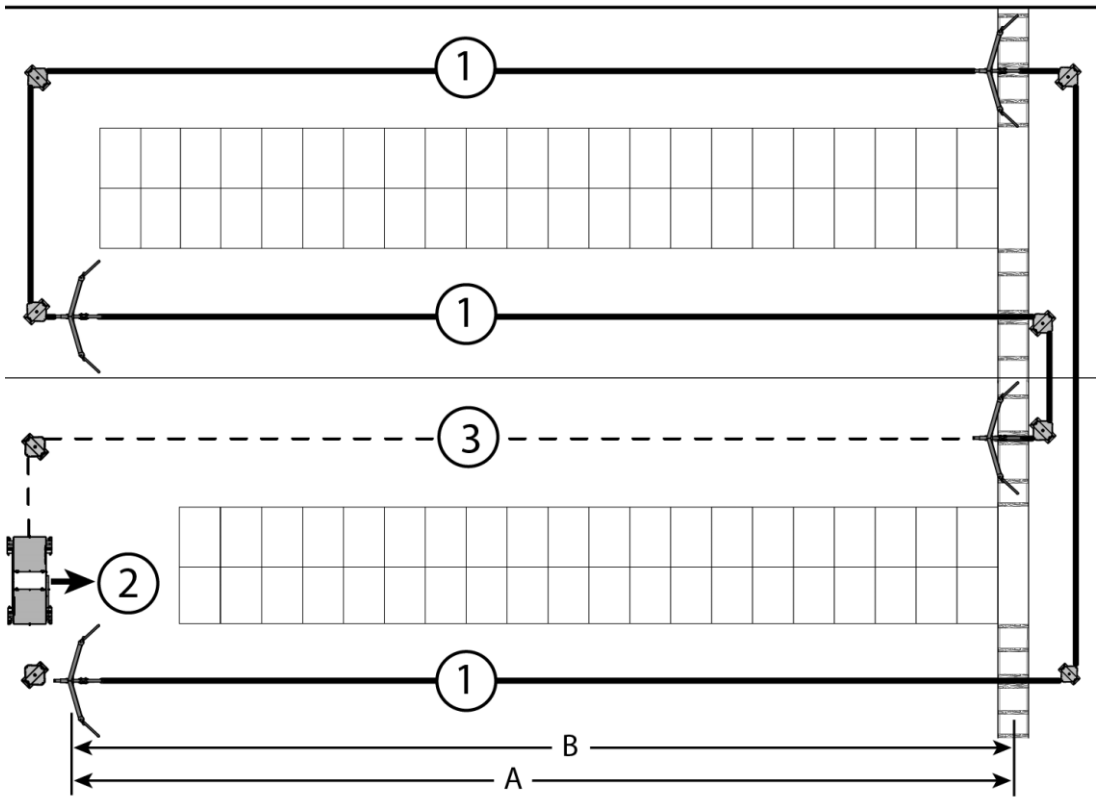
A	Alley length	
B	Stroke length	B = (A ÷ 2 + 15ft) ÷ 2
C	Distance between shuttle scrapers	C = B - 15ft

3 alleys with a single scraper per alley



A	Alley length
B	Stroke length

4 alleys with a single scraper per alley



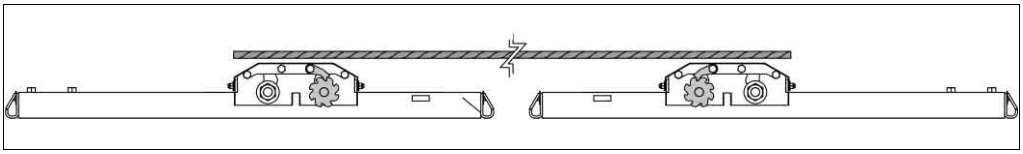
A	Alley length
B	Stroke length

6.28.2 Step 2: Linking the scrapers

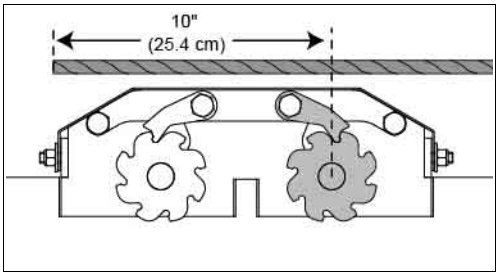
Caution!
Risk of injury!
Wear protective gloves and eye wear for all steps.

Attention!
Do not run a nylon rope through a piping. Manure builds up inside the piping which causes premature failure of the rope.

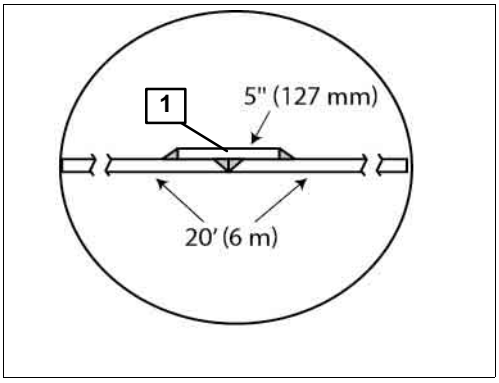
- Complete cable path (1), as illustrated in the chosen layout.
- First, start by running the cable between the scrapers that must be linked together. Do not forget to insert the cable through the corner wheel(s).



- Before cutting the cable sections, make sure the cable overlaps each scraper tensioner at least 10” [25.4 cm].
- To prevent split ends, add tape to the cable before cutting. For steel cables, use a cutting disk.

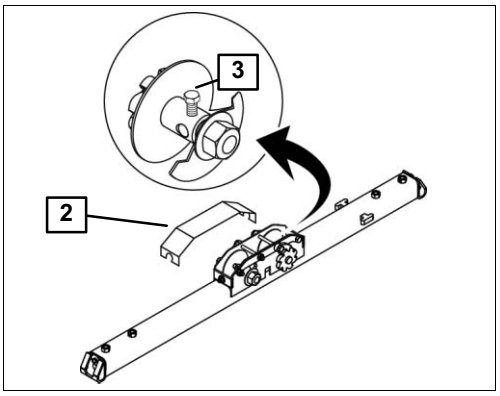


- For shuttle scrapers, the cable between scrapers can be replaced by a 3/8” [76mm] x 1½” [38mm] flat bar.
- When using several flat bars, weld them together using a short flat bar section (1) overlapping each joint. Flat bars are not recommended for the following layout: 6 scrapers in 2 alleys with center drop.

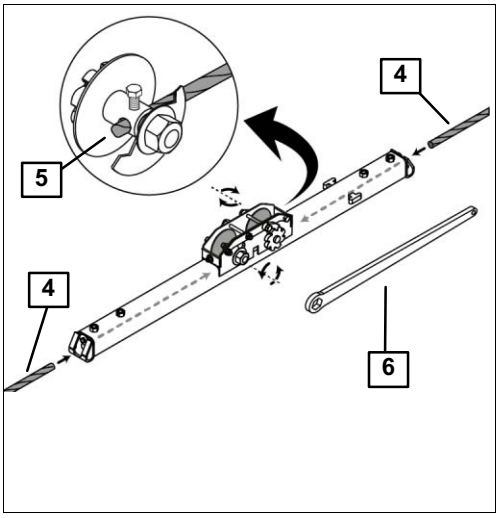


Note!
When using flat bars to link groove guided scrapers, install a piece of wood over the flat bars. Make sure the piece of wood clears the scrapers and that is it even with the floor for the cow safety.

- After cutting all cable sections, remove each tensioner cover (2) from the scrapers.
- Loosen each tensioner bolt (3).



- To proceed with the cable installation, start by inserting the cable end through scraper draw bar (4) and through the tensioner.
- Keep ½" [13 mm] of cable out of the tensioner (5). Tighten the tensioner bolt to secure the cable.
- Using the wrench (6) located on the side of the drive unit, wind 2 rolls on each tensioner. Make sure the scrapers remain in position.
- Repeat steps to link the scrapers together.

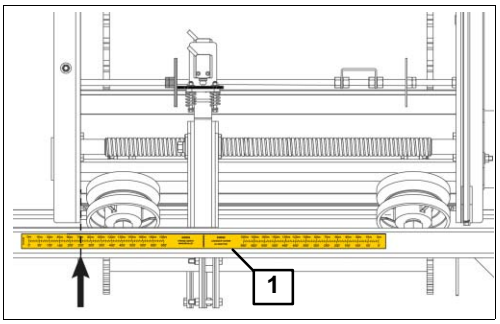


6.28.3 Step 3: Set the stroke limit of the drive unit

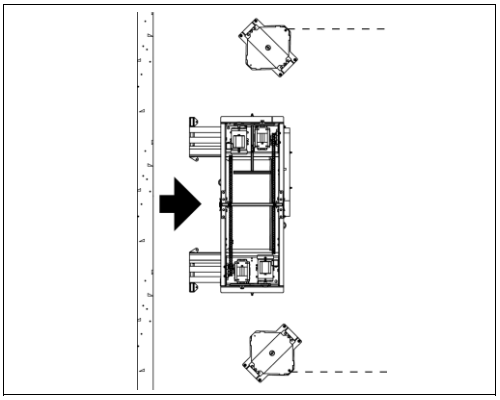
Important!
Keep one person stationed at the control panel during all steps in order to stop the control panel, when required.

- Measure the stroke length of the alley. Refer to letter (B) in the chosen layout.
  - When having alleys of different length, always measure the shortest cleaning stroke.

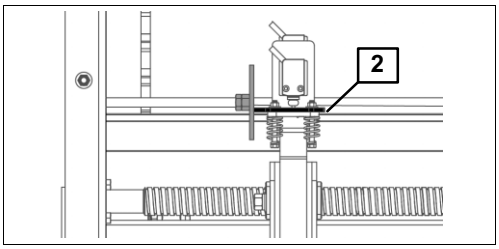
- Unlock and open the drive unit front access door.
- Locate the ruler (1) on the drive unit frame.



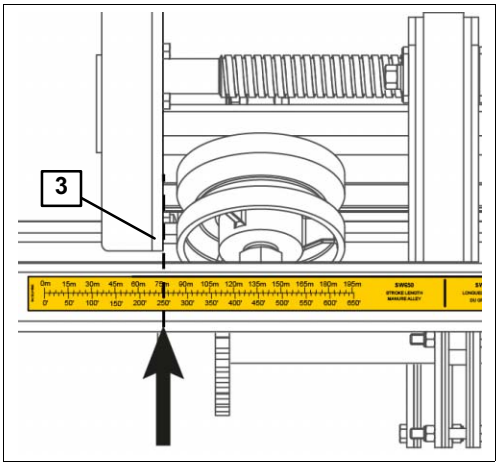
- Using the instant start function, engage the control panel. Refer to section 7: Programming.
- The drive unit must move toward the scrapers.



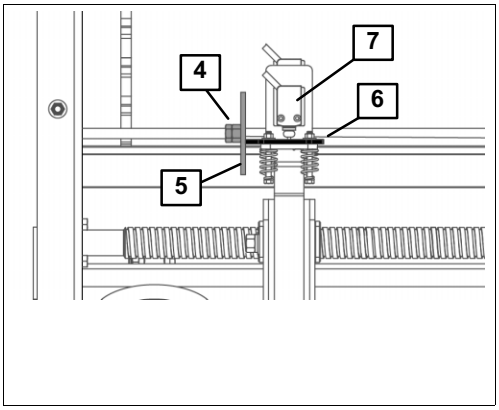
- To engage the drive unit in the opposite direction, push the sliding plate (2).



- Press the emergency stop button located on the control panel front door when the drive unit frame (3) aligns to the corresponding stroke length (B) of the layout.



- Set the stroke of the scraper(s). First, loosen the nuts (4) holding the stroke washer.
- Move the stroke washer (5) until the sliding plate (6) toggles the limit switch (7).
- Lightly tighten the nuts (4) to secure the stroke washer in place.
- Close and lock the drive unit access door.

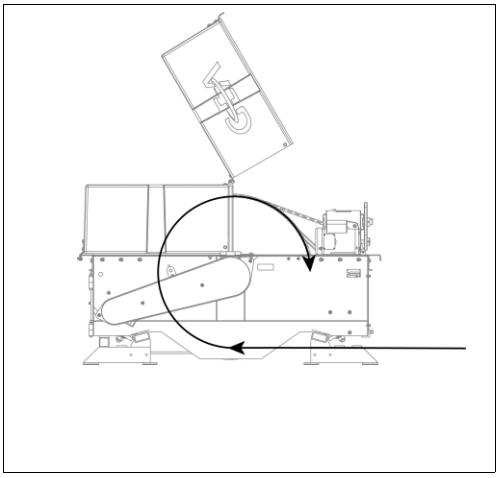


6.28.4 Step 3: Link the scrapers to the drive unit

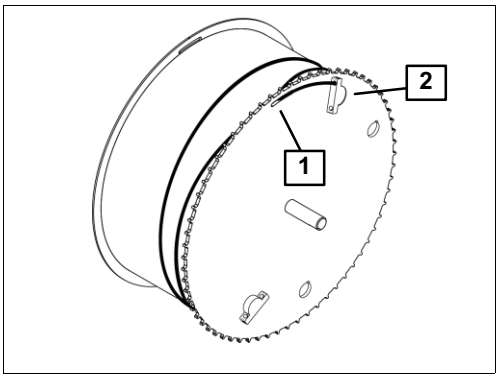
Warning!
Inadvertent start!
Shutdown is required! Shut the main power supply and lock with a locking device. Post a sign on the panel stating: ”Do not turn on, electric work in progress” in order to prevent an inadvertent energizing of the main electric supply.

Caution!
Risk of injury!
Wear protective gloves and eye wear for all steps.

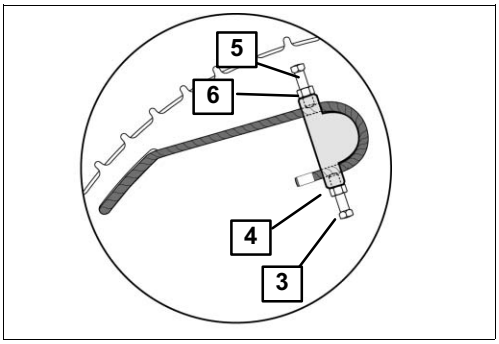
- Shutdown and lock the main power supply.
- Open the drive unit hood.
- Complete cable path (3), as illustrated in the chosen layout.
- Start by placing the cable roll next to the scraper.
- Pass the cable through the corner wheel.
- Run the cable end under the drive unit and over the drum.



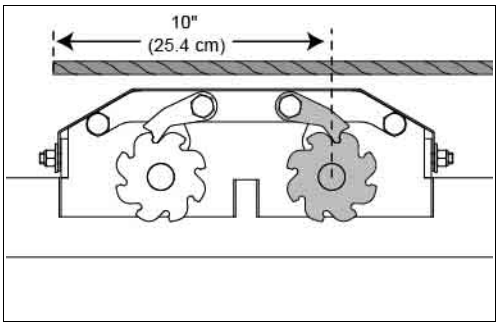
- Roll the cable 1 ½ turns on the drum. while making sure the rolls do not touch each other.
- Insert the cable in the slot (1) located on the side of the drum.
- Pass the cable through the cable attachment (2).
- Keep 2” [51 mm] of cable out of the attachment.



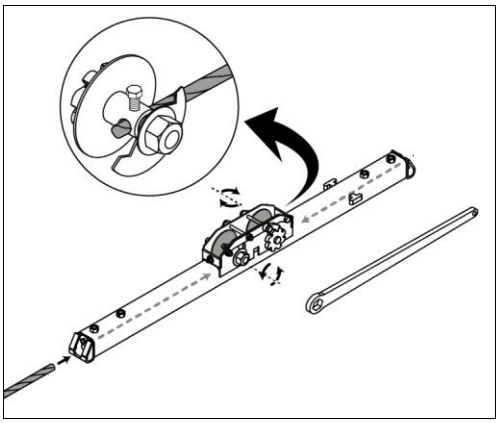
- Hold the cable in place by tightening bolt (3). Lock the position with nut (4).
- Firmly pull the cable to remove any loose.
- Tighten bolt (5) and lock the position with nut (6).
- Close and lock the drive unit hood.



- When standing next to the scraper, firmly pull the cable.
- Cut the cable while keeping 10” [25.4 cm] of cable over the tensioner.
- To prevent split ends, add tape to the cable before cutting. For steel cables, use a cutting disk.



- Pass the cable through the scraper draw bar.
- Complete the cable installation on the scraper tensioner. Keep ½” [13 mm] of cable out of the tensioner.
- Use the wrench to wind 2 rolls on the tensioner. Make sure the scrapers remain in position.

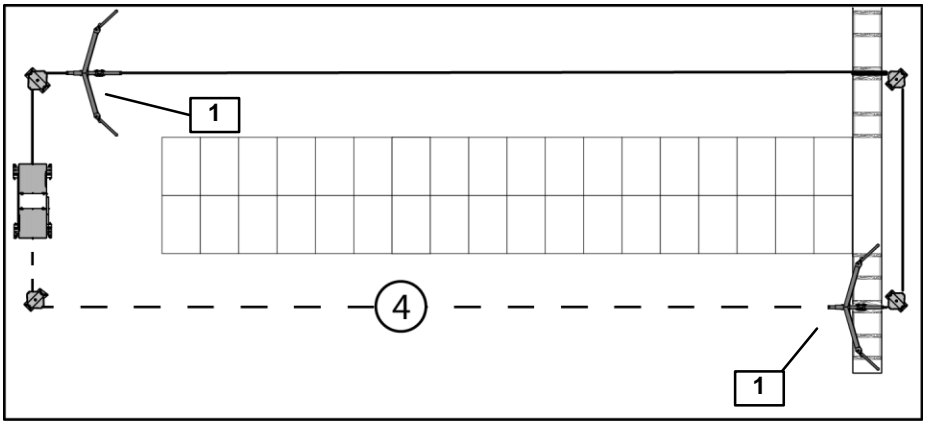


6.28.5 Step 5: Close the cable path

Caution!
Risk of injury!
Wear protective gloves and eye wear for all steps.

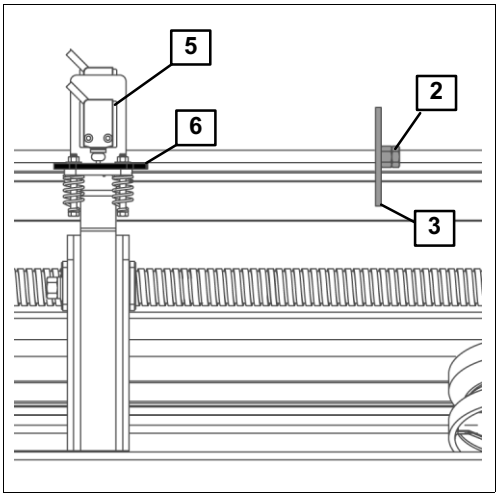
Important!
Keep one person stationed at the control panel during all steps in order to stop the control panel, when required.

Example for a 2 alleys layout



- Reset the control panel by pulling the stop button and rearming the control panel.
- Using the instant start function, engage the drive unit.
- Press the emergency stop button when the scrapers (1) reach the opposite end of the alleys, as illustrated above.

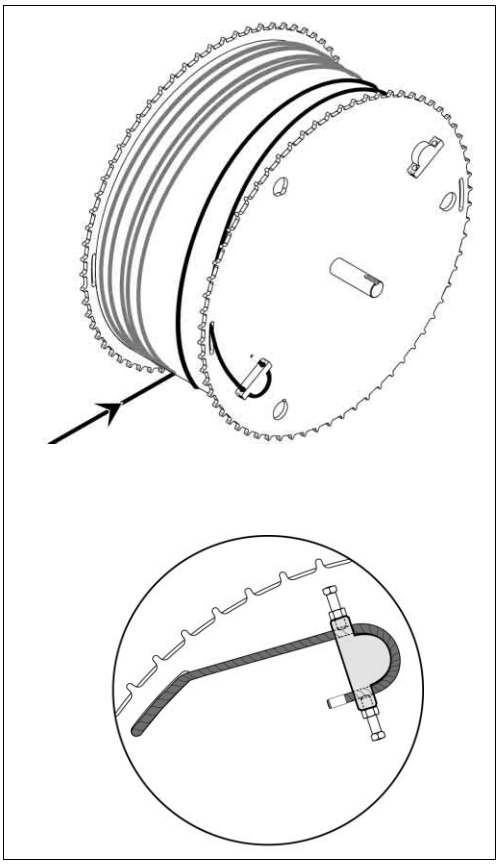
- Unlock and open the drive unit front access door.
- Set the stroke of the scraper(s). First, loosen the nuts (2) holding the stroke washer.
- Move the stroke washer (3) until the sliding plate (6) toggles the limit switch (5).
- Lightly tighten the nuts (2) to secure the stroke washer in place.
- Close and lock the drive unit access door.



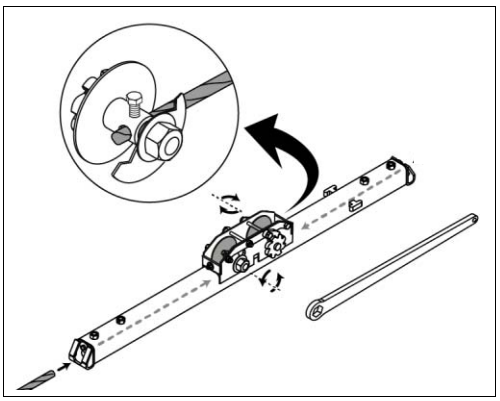
Warning!
Inadvertent start!
Shutdown is required! Shut the main power supply and lock with a locking device. Post a sign on the panel stating: ”Do not turn on, electric work in progress” in order to prevent an inadvertent energizing of the main electric supply.

- Install the last cable (4), as illustrated above.

- Shutdown and lock the power supply.
- Open the drive unit hood.
- Install the last cable (4) to close the cable path.
- Start by placing the cable roll next to the scraper.
- Pass the cable through the corner wheel.
- Run the cable end under the drive unit and over the drum.
- Roll the cable 1 ½ turns on the drum. while making sure the rolls do not touch each other.
- When securing the cable, keep 2” [51 mm] of cable out of the attachment.
- Close and lock the drive unit hood.



- Complete the cable installation on the scraper tensioner. Keep ½” [13 mm] of cable out of the tensioner and lock it with the bolt.
- Using the wrench, wind 2 rolls on the tensioner. Make sure the scrapers remain in position.



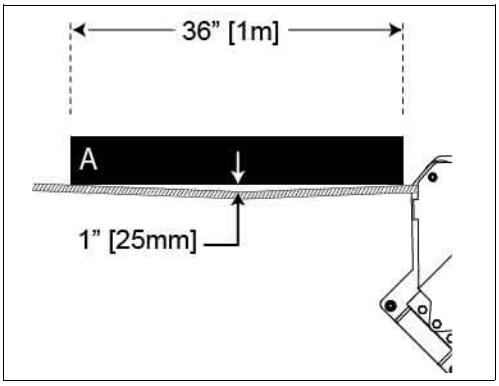
6.28.6 Step 6: Tensioning the cables

Caution!
Risk of injury!
Wear protective gloves and eye wear for all steps.

Attention!
Always apply equal tension on all cables to prevent the scrapers from shifting position.

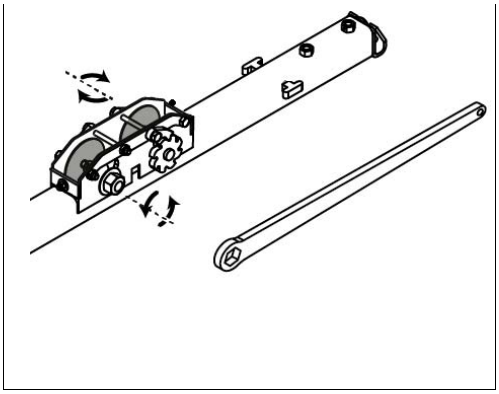
Attention!
Improper cable tension will cause malfunction of the control panel load detection system.

- To finish the cable installation, check the cable tension on the corner wheels located next to the drive unit.
- Position a 36” (1m) straight edge (A) on the floor next to the cable.
- Pull by hand the cable to measure the tension in the center of the straight edge (A). The cable must roughly deflect 1” (25mm).



Warning!
Risk of injury!
Be careful when using the wrench, the cable is under tension.

- If the deflection is greater than 1” (25 mm), roll one catch on each scraper tensioner using the wrench. Proceed scraper by scraper. Make sure the cable tensioner is correctly locked.
- Repeat steps until the deflection is obtained on each corner wheel located next to the drive unit.
- Install the scrapers tensioner cover.



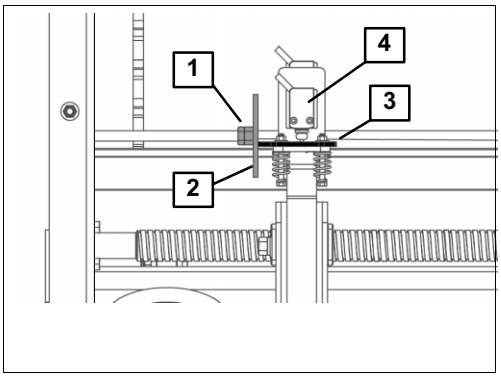
6.29 Stroke washers fine tuning

Attention!
Be ready to stop the control panel! If the stroke washers are not adjusted properly, the scrapers can pass beyond their stop point causing damages to the corner wheels.

Important!
Keep one person stationed at the control panel during all steps in order to stop the control panel, when required.

- Using the instant start function, start a cleaning cycle.
- Monitor the scraper position in the alley.
- Press the emergency stop button when the scraper(s) have reached the end of alley.

- Unlock and open the drive unit access door.
- Unlock the nut (1) holding the stroke washer (2).
- Move the stroke washer (2) until the sliding plate (3) toggles the limit switch (4).
- Lightly tighten the nuts (1) to secure the stroke washer in place.



- Reset the control panel by pulling the stop button and rearming the control panel.
- Using the instant start function, start a cleaning cycle.
- Press the emergency stop button once the scrapers has backed off 10 feet (3m).
- Manually push the sliding plate (3) in the opposite direction.
- Reset the control panel by pulling the stop button and rearming the control panel.
- Using the instant start function, start a cleaning cycle.
- Check if the scraper(s) stops at the proper stop point. Reposition the stroke washer if necessary.
- Secure the stroke washers by tightening the nut (1).
- Repeat all steps to set the second stroke washer.
- Close and lock the access door.

7 Programming

7.1 Special personnel qualification required for programming

Programming must be performed by trained personnel in accordance with the safety instructions.

Read the section Safety - Personnel qualifications.

7.2 Safety instructions for programming

Warning!
Risk of injury or death of animals!
Always set the detection parameters accurately.
The control panel can only reduce the probability of occurrence related to injuries and/or death but it cannot eliminate the risks.

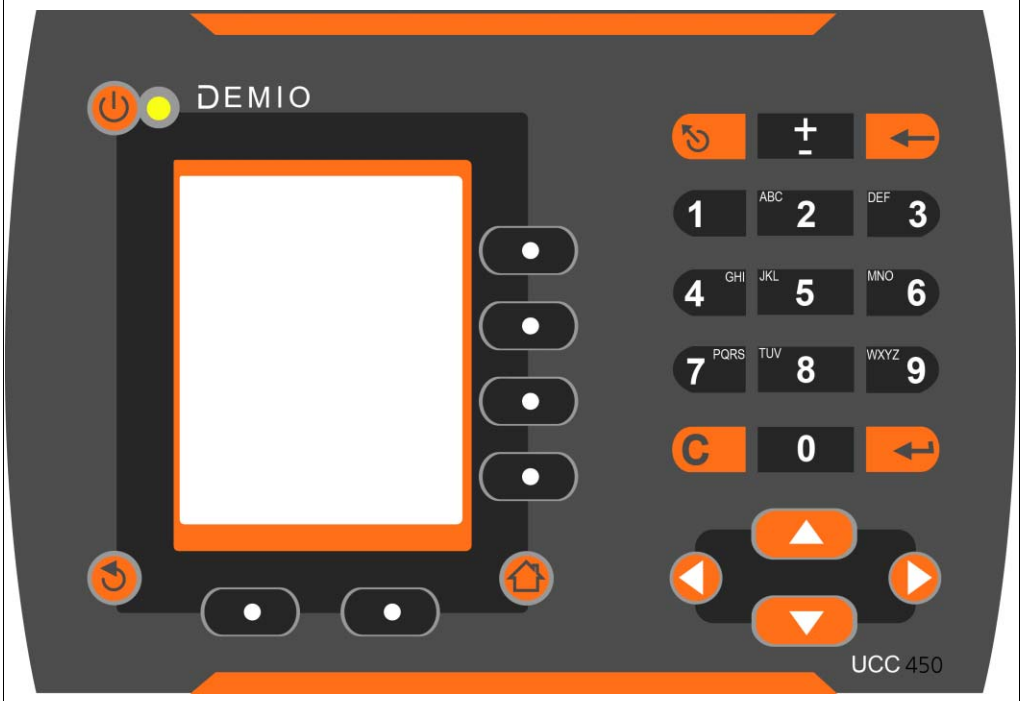
Refer to section 7 : Programming – Detection parameters

7.3 General settings

7.3.1 Programmable module

IVR PRO


Legend:	
	Para: Parameter menu.
	Scroll: Scroll down
	Scroll: Scroll up
	Select: Select the parameter or value.

IVR PRO Max@ccess


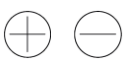
Legend:	
	Power button: Reset the screen when holding the button for 5 seconds or maintain the screen on standby.
	Default value button: Reset to default value.
	Negative value button: Enter a negative value or change a negative value for a positive value.
	Correction button: Correct a value.
	Keypad: Enter numeric values.
	Menu or sub-menu buttons : Access the different menus and sub-menus.
	Erase button: Erase a value.
	Enter button: Confirm the value entered.
	Return button: Return to the previous screen.
	Home page button: Access the home page.
	Arrow buttons: Navigate through the pages and tables

7.3.2 Language

IVR PRO
THIS FEATURE IS NOT AVAILABLE

IVR PRO Max@ccess
• Press ”SYSTEM”; • Press ”CONSOLE”; • Press ”LANGUAGE” to choose among the different languages.

7.3.3 Clock / Date

IVR PRO	
	key
• Press key until (Prog) appears;	
• Press key to select;	
• Press key to access the (HOUr) or (dAtE) parameter;	
• Press key to select;	
• Use keys to enter the actual time or to navigate through the sub menus to set the date, (d01) day, (d02) month or (d03) year;	
• Press key to select the day, month or year;	
• Press key to change the value;	
• Press key to return back to the menu.	

IVR PRO Max@ccess
• Press ”SYSTEM”; • Press ”CONSOLE”; • Press ”TIME AND DATE”; • Choose ”TIME” or ”DAY” or ”MONTH” or ”YEAR”; • Use the keypad to enter the time, day, month or year.

Note!
The clock does not adjust automatically.

7.3.4 Password

IVR PRO
THIS FEATURE IS NOT AVAILABLE

IVR PRO Max@ccess
To create a password: ● Press ”SYSTEM”; ● Press ”CONSOLE”; ● Press ”PASSWORD”; ● Press ”CHANGE PASSWORD”; ● Enter a new code using the keypad; ● Press ”VALIDATE”; ● Press ”YES” to continue. To disable a password: ● Press ”SYSTEM”; ● Press ”CONSOLE”; ● Press ”PASSWORD”; ● Press ”CHANGE PASSWORD”; ● Enter the value ”0” to disable password; ● Press ”VALIDATE”; ● Press ”YES” to continue. Lock the parameters: ● Create a password first by following the previous steps; ● Press ”SYSTEM”; ● Press ”CONSOLE”; ● Press ”PASSWORD”; ● Press ”LOCK”. Unlock the parameters: ● Press ”SYSTEM”; ● Press ”CONSOLE”; ● Enter the password to unlock; ● Press return on keypad.

7.3.5 Alarm buzzer

IVR PRO
THIS FEATURE IS NOT AVAILABLE

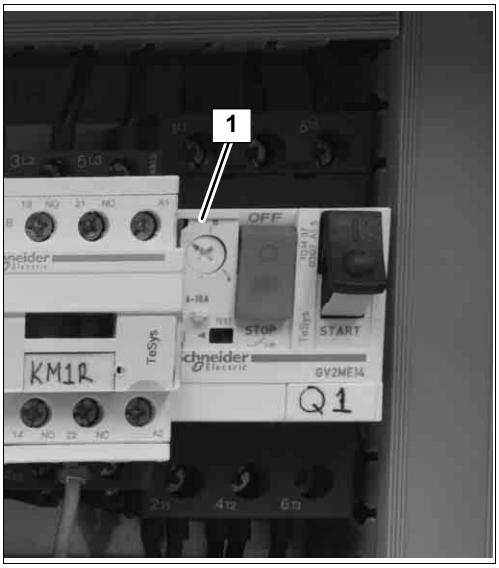
IVR PRO Max@ccess
The buzzer alarm advises when an alarm occurs. ● Press ”SYSTEM”; ● Press ”CONSOLE”; ● Press ”ALARM BUZZER” to set the buzzer ”ON” or ”OFF”.

7.4 Motor initial settings

7.4.1 Overload relay setting

Attention!
Risk of motor failure!
Improper overload relay setting can cause motor failure.

- Adjust the overload relay (1) according to the amperage indicated on the motor rating plate.



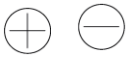
7.4.2 Volts

IVR PRO	
	key
• Press key until (ParA) appears;	
• Press key to select;	
• Press key until (P06) appears;	
• Press key to select;	
• Press keys to enter the voltage as per the value indicated on the motor rating plate. Hold the button for fast change.	

IVR PRO Max@ccess
• Press ”SYSTEM”;
• Press ”MOTOR SETTINGS”;
• Use the keypad arrows to select the parameter;
• Use the keypad to enter the voltage as per the value indicated on the motor rating plate.

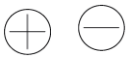
7.4.3 Amps

> **Note!**
> Improper setting of the ”AMPS” parameter or an excessive load in front the scraper(s) can trigger the A3 ”MAXIMUM LOAD EXCEEDED (AMP)” alarm.

IVR PRO	
	key
• Press key until (ParA) appears;	
• Press key to select;	
• Press key until (P07) appears;	
• Press key to select;	
• Press keys to enter the amperage as per the value indicated on the motor rating plate. Hold the button for fast change.	

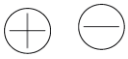
IVR PRO Max@ccess
• Press ”SYSTEM”;
• Press ”MOTOR SETTINGS”;
• Use the keypad arrows to select the parameter;
• Use the keypad to enter the amperage as per the value indicated on the motor rating plate (0.5 - 20.0).

7.4.4 Nema nominal efficiency (%)

IVR PRO	
	key
• Press key until (ParA) appears;	
• Press key to select;	
• Press key until (P08) appears;	
• Press key to select;	
• Press keys to enter the nominal efficiency as per the value indicated on the motor rating plate (0-100%). Hold the button for fast change.	

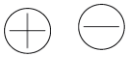
IVR PRO Max@ccess
• Press ”SYSTEM”;
• Press ”MOTOR SETTINGS”;
• Use the keypad arrows to select the parameter;
• Use the keypad to enter the nominal efficiency as per the value indicated on the motor rating plate (0-100%).

7.4.5 Power factor (%)

IVR PRO	
	key
• Press key until (ParA) appears;	
• Press key to select;	
• Press key until (P09) appears;	
• Press key to select;	
• Press keys to enter the power factor as per the value indicated on the motor rating plate (10%-100%). Hold the button for fast change.	

IVR PRO Max@ccess
• Press ”SYSTEM”; • Press ”MOTOR SETTINGS”; • Use the keypad arrows to select the parameter; • Use the keypad to enter the power factor as per the value indicated on the motor rating plate (10-100%).

7.4.6 Number of phases

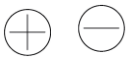
IVR PRO	
	key
• Press key until (ParA) appears;	
• Press key to select;	
• Press key until (P10) appears;	
• Press key to select;	
• Press keys to enter the number of phases of the electric supply (1 or 3). Hold the button for fast change.	

IVR PRO Max@ccess
• Press ”SYSTEM”;
• Press ”MOTOR SETTINGS”;
• Use the keypad arrows to select the parameter;
• Use the keypad to enter the number of phases of the electric supply (1 or 3).

7.4.7 Motor capacity (HP)

Warning!
Improper setting of this parameter can cause injuries!
To properly set the ”MOTOR CAPACITY” perform the fine tuning steps as soon as the free stall or cross gutter cleaner is installed and functional.

Attention!
Setting the ”MOTOR CAPACITY” beyond the value indicated by the manufacturer causes heating, overload and damages to the motor.

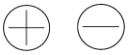
IVR PRO	
	key
• Press key until (ParA) appears;	
• Press key to select;	
• Press key until (P04) appears;	
• Press key to select;	
• Press keys to enter the motor capacity (HP) as per the value indicated on the motor rating plate. Hold the button for fast change;	
• Perform the fine tuning step in section 8.5.	

IVR PRO Max@ccess
• Press ”SYSTEM”;
• Press ”MOTOR SETTINGS”;
• Use keypad arrows to select the parameter;
• Use the keypad to enter the motor capacity (HP) as per the value indicated on the motor rating plate. When having a two motor drive unit, sum both motor capacity ratings;
• Perform the fine tuning step in section 8.5.

7.4.8 Minimum load (HP)

The purpose of the ”MINIMUM LOAD (HP)” is to indicate if a mechanical failure has occurred.

Note!
When the ”MINIMUM LOAD” is achieved during 15 seconds, the control panel stops all operations and displays the A4 ”NO LOAD DETECTED” alarm.

IVR PRO	
	key
• Press key until (ParA) appears;	
• Press key to select;	
• Press key until (P05) appears;	
• Press key to select;	
• Press keys to set the minimum load (HP) to 0.10. Hold the button for fast change;	
• Perform the fine tuning step in section 8.6.	

IVR PRO Max@ccess
• Press ”SYSTEM”;
• Press ”MOTOR SETTINGS”;
• Use the keypad arrows to select the parameter;
• Use the keypad to set the minimum load (HP) to 0.10;
• Perform the fine tuning step in section 8.6.

7.5 Motor capacity (HP) fine tuning

Warning!
Risk of injury!
Improper setting of the ”MOTOR CAPACITY” parameter impairs the control panel to acknowledge properly a motor capacity increase caused by an obstacle. Set this parameter accurately.
The fine tuning steps must be performed under normal operating conditions.

Attention!
Setting the ”MOTOR CAPACITY” beyond the value indicated by the manufacturer causes heating, overload and damages to the motor.

IVR PRO	
• Start the control panel by pressing for 2 seconds the ”START/RESET” button. Observe the HP reading on the DEMIO UCC100 until the cleaning cycle is completed.	
• Read the ”MOTOR CAPACITY HP” by accessing the read time reading parameter. • Press key until (rtr) appears;	**key** 
• Press key to select;	
• Press keys until (F02) appears:	
• Press key to select;	
• Note the highest reading and add 0.15 to the reading;	
• Stop the control panel by pressing the emergency stop button;	
• Press key until (ParA) appears;	
• Press key to select;	
• Press key until (P04) appears;	
• Press key to select;	
• Press keys to enter the motor capacity (HP) to the value obtained. Hold the button for fast change.	

IVR PRO Max@ccess
• Press ”INSTANT START” and observe the ”TOTAL HP” reading on the screen until the cleaning cycle is completed. Note the highest reading and add 0.15 to the reading; • Press ”SYSTEM”; • Press ”MOTOR SETTINGS”; • Use keypad arrows to select the parameter; • Use the keypad to enter the motor capacity (HP) to the value obtained.

7.6 Minimum load (HP) fine tuning

The purpose of the ”MINIMUM LOAD (HP)” is to indicate if a mechanical failure has occurred.

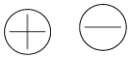
Note!
When the ”MINIMUM LOAD” is achieved during 15 seconds, the control panel stops all operations and displays the A4 ”NO LOAD DETECTED” alarm.

Warning!
Risk of entanglement, cutting and crushing!
Shutdown is required! Shut the main power supply and lock with a locking device. Post a sign on the panel stating: ”Do not turn on, electric work in progress” in order to prevent an inadvertent power of the main electric supply.

Warning!
Risk of finger pinching!
Be aware of the pulleys and belt.

Follow these steps:

- Shut down and lock the main electric power supply;
- Open the drive unit safety guard;
- Remove the drive unit belt from the motor(s). Read the steps in section: Handling and installation - Electric connections - Installing the motor belt, pulleys and guard;
- Close and lock the drive unit hood;
- Unlock and turn on the main electric power supply;
- Next, perform the steps indicated in the table corresponding to the control panel model.

IVR PRO	
● Start the control panel by pressing for 2 seconds the ”START/RESET” button on the control panel door. Note the ”MINIMUM LOAD HP” reading by accessing the ;	
● Read the ”MINIMUM LOAD HP” by accessing the read time reading parameter. ● Press key until (rtr) appears;	**key** 
● Press key to select;	
● Press keys until (F02) appears:	
● Press key to select;	
● Note the reading and add 0.1 HP to the reading;	
● Stop the control panel by pressing the emergency stop button;	
● Disconnect and lock the main electric power supply;	
● Unlock and open the drive unit hood;	
● Install the drive belt and safety guard. Perform the steps in section: Handling and installation - Electric connections - Installing the motor belt, pulleys and guard;	
● Close and lock the drive unit hood;	
● Unlock and turn on the main electric power supply;	
● Release the emergency stop button by turning the knob to the right. Rearm the control by pressing this key.	
● Press key until (ParA) appears;	
● Press key to select;	
● Press key until (P05) appears;	
● Press key to select;	
● Press keys to enter the minimum load (HP) to the value obtained. Hold the button for fast change;	

IVR PRO Max@ccess
● Start the scraper(s) using ”INSTANT START” function. Monitor the ”TOTAL HP” reading displayed on the screen. Note the reading. ● Add 0.1 HP to the reading. ● Stop the control panel by pressing the emergency stop button; ● Shut down and lock the main electric power supply; ● Unlock and open the drive unit safety guard; ● Install the drive belt. Perform steps in section: Handling and installation - Electric connections - Installing the motor belt, pulleys and guard; ● Close and and lock the drive unit hood; ● Unlock and turn on the main electric power supply; ● Release the emergency stop button by turning the knob to the right. Rearm the control by pressing ”REARM”. ● Press ”SYSTEM”; ● Press ”MOTOR SETTINGS”; ● Use the keypad arrows to select the parameter; ● Use the keypad to enter the minimum load (HP) to the value obtained.

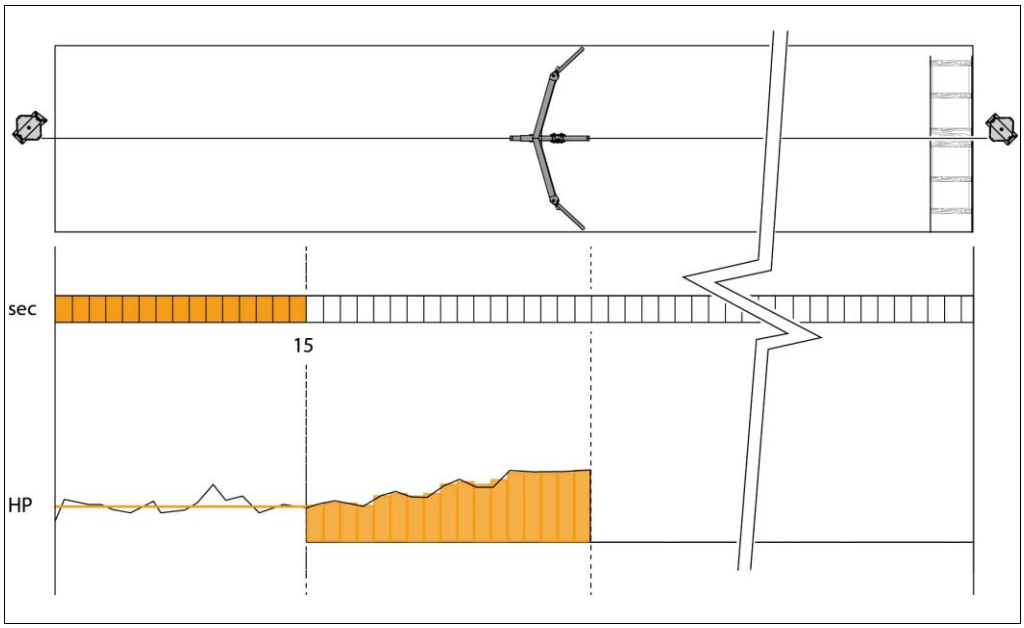
7.7 Detection parameters

The following parameters work together setting the sensitivity level of detection:

- Maximum load fluctuation (HP);
- Detection time (sec);
- Number of restarts.

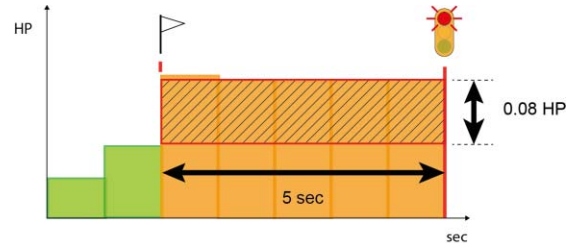
Warning!
Risk of injury or death of animals!
A high ”MAX FLUCTUATION” setting combined to a high ”DETECTION TIME” reduces load detection sensitivity.
Keep these parameters set as low as possible.

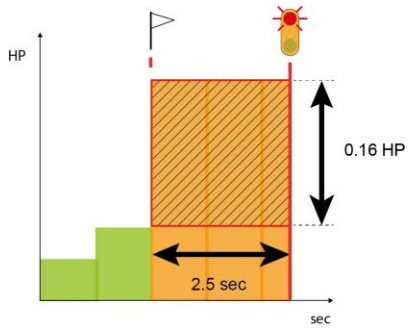
Note!
During the first 15 seconds of each stroke, the control panel does not perform detection since it only collects load fluctuation values.
It is strongly recommended to park the scraper(s) outside the free stall area at a minimum distance of 56” [1.42m]. See below.

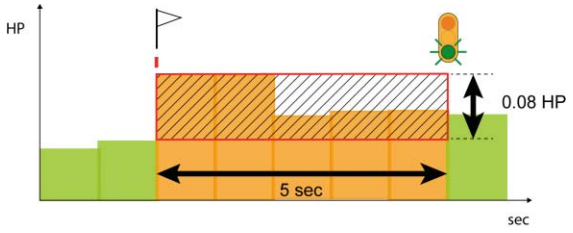


7.7.1 Maximum load fluctuation (HP)

The maximum load fluctuation parameter sets the maximum fluctuation allowed during operation. When a fluctuation exceeds the programmed value, the control panel starts monitoring a detection. See examples below.

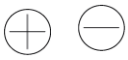
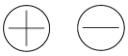
Example A	
Detection settings: ● MAX FLUCTUATION: 0.08 HP ● DETECTION TIME: 5.0 sec.	
If the fluctuation reading is 0.08 HP, the control panel stops operation after 5 seconds.	

Example B	
Detection settings: ● MAX FLUCTUATION: 0.08 HP ● DETECTION TIME: 5.0 sec.	
If the fluctuation reading is 0.16 HP (twice), the control panel stops operation after 2.5 seconds (twice faster).	

Example C	
Detection settings: ● MAX FLUCTUATION: 0.08 HP ● DETECTION TIME: 5.0 sec.	
When a peak occurs, the control panel starts monitoring. If next readings are lower and the detection range is not filled, the control ignore detection and continue operation.	

☞ **Note!**
If concrete imperfection is significant, the maximum load fluctuation can trigger easily and stop the system. Do not increase the maximum load fluctuation parameter, repair the concrete imperfections, adjust the cable/rope tension, etc.

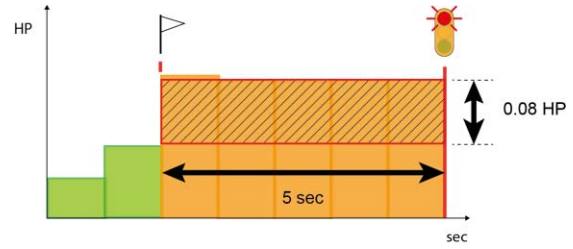
☞ **Note!**
A 30 kg (66 lbs) load placed on a smooth surface reads approximately 0.01 HP. A minor flaw on the surface causes a fluctuation over 0.05 HP. ”Fluctuation” should be set between 0.05 and 0.12 HP.

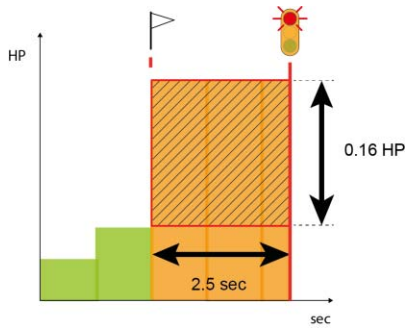
IVR PRO	
	key
• Press key until (ParA) appears;	
• Press key to select;	
• Press key until (P01) appears;	
• Press key to select;	
• Press keys to enter the maximum load fluctuation (HP) between 0.05 to 0.12 HP. Hold the button for fast change;	

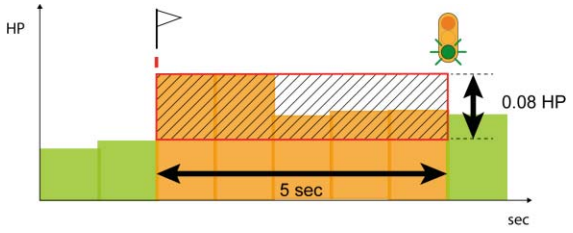
IVR PRO Max@ccess
• Press ”USER”;
• Press ”DETECTION SETTINGS”;
• Press ”MAX FLUCTUATION (HP)”;
• Use the keypad to enter maximum load fluctuation (HP) between 0.05 and 0.12HP.

7.7.2 Detection time

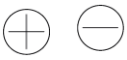
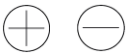
The detection time parameter sets the time reaction of the detection. When a detection is monitored, the control panel monitors the following readings to determine if there is a detection or not. See examples below.

Example A	
Detection settings: ● MAX FLUCTUATION: 0.08 HP ● DETECTION TIME: 5.0 sec.	
If the fluctuation reading is 0.08 HP, the control panel stops operation after 5 seconds.	

Example B	
Detection settings: ● MAX FLUCTUATION: 0.08 HP ● DETECTION TIME: 5.0 sec.	
If the fluctuation reading is 0.16 HP (twice), the control panel stops operation after 2.5 seconds (twice faster).	

Example C	
Detection settings: ● MAX FLUCTUATION: 0.08 HP ● DETECTION TIME: 5.0 sec.	
When a peak occurs, the control panel starts monitoring. If next readings are lower and the detection range is not filled, the control ignore detection and continue operation.	

Note!
The control panel does not perform detection at the beginning of each stroke during the first 15 seconds since it collects load fluctuation values only. It is strongly recommended to park the scraper(s) outside the free stall area at a minimum distance of 56” [1.42m].

IVR PRO	
	key
• Press key until (ParA) appears;	
• Press key to select;	
• Press keys until (P02) appears;	
• Press key to select;	
• Press keys to enter the detection time between 1 to 15 seconds.	

IVR PRO Max@ccess
• Press ”USER”;
• Press ”DETECTION SETTINGS”;
• Press ”DETECTION TIME (s)”;
• Use the keypad to enter the detection time between 1 and 15 seconds.

7.7.3 Number of restarts

This parameter is used when a detection occurs. It sets the number of attempts resuming the cleaning cycle.

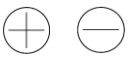
When a detection occurs, the control panel stops and backs up the scrapers for 30 seconds. Then, the control panel will try to resume the cleaning cycle.

If the obstacle remains in place, the control panel will detect the obstacle again and repeat the same process until the number of restarts value is reached.

If the obstacle remains detected after exceeding the number of restarts, the control panel ceases operation and displays the A1 ”OVERLOAD DETECTED” alarm.

☞ **Note!**
The ”NUMBER OF RESTARTS” parameter is active only when the scraper(s) has operated for at least 40 seconds since the beginning of the stroke.
When active and detection occurs, the scraper(s) backs up for 30 seconds and stops.
Then, the control panel switches to the ”NUMBER OF RESTARTS” mode attempting to complete the cleaning cycle.

☞ **Note!**
The ”NUMBER OF RESTARTS” parameter resets if the scraper(s) operates normally for 60 seconds after exceeding ”MAX FLUCTUATION” and the ”DETECTION TIME” or if the scraper(s) it is at the end of a stroke.

IVR PRO	
	key
• Press key until (ParA) appears;	
• Press key to select;	
• Press key until (P03) appears;	
• Press key to select;	
• Press keys to enter the number of restarts between 0 and 25 attempts.	

IVR PRO Max@ccess
• Press ”USER”;
• Press ”DETECTION SETTINGS”;
• Press ”NUMBER OF RESTARTS”;
• Use the keypad to enter the number of restarts between 0 and 25 attempts.

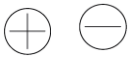
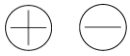
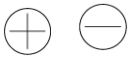
7.8 Automatic cleaning mode using starting hours

The control panel can perform up to 36 different starting hours per day.

For each starting hour programmed, the scraper(s) performs the number of strokes set in the ”NUMBER OF STROKES” (automatic mode) parameter.

Note!
Scrapers can perform up to 10 strokes per cleaning.
Between strokes, the scrapers stop for 10 seconds.

Note!
A standard stroke configuration requires the scraper(s) to perform two strokes to complete a cleaning cycle and return to start position.
A shuttle stroke configuration requires the scraper(s) to perform 4 strokes to complete a cleaning cycle and return to start position.

IVR PRO	
	key
• Press key until (ProG) appears;	
• Press key to select;	
• Press keys to navigate through the different starting hours (H01 to H30);	
• Press key to select;	
• Press keys to change the starting hour.	
• To erase the hour, decrease the time until 0:00 displays on the screen;	
• To set the number of stroke, press key until (ProG) appears;	
• Press key to select;	
• Press key until (nbor) appears;	
• Press key to select;	
• Press keys to increase or decrease the value.	

IVR PRO Max@ccess
● Press ”USER”; ● Press ”START HOURS / DELAY BETWEEN CLEANING”; ● Press ”MODE” to toggle from ”START HOURS” to ”DELAY BETWEEN CLEANINGS”; ● Press ”YES” to confirm; ● Select a cell using the keypad arrows; ● Use the keypad to enter the starting hour; ● To erase an hour, press the clear button ”C” on the keypad. ● To enter the number of strokes, press ”USER”; ● Press ”WORKING SETTINGS”; ● Press ”NUMBER OF STROKES” (AUTOMATIC MODE); ● Use the keypad to enter the number of strokes.

☞ **Note!**
When activating the ”STARTING HOUR” mode, the ”DELAY BETWEEN CLEANINGS” mode is deactivated.

7.9 Automatic cleaning mode using delay between cleanings

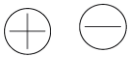
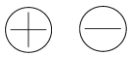
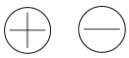
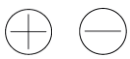
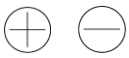
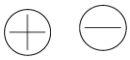
The control panel activates the scrapers and performs cleanings as per a periodic cycle.

It operates the scrapers by performing the number of strokes programmed in the parameter ”NUMBER OF STROKES” (automatic mode).

Once completed, the control stops the scrapers and waits according to the time sets in the parameter ”DELAY BETWEEN CLEANINGS”.

☞ **Note!**
Scrapers can perform up to 10 strokes per cleaning.
Between strokes, the scrapers stop for 10 seconds.

☞ **Note!**
A standard stroke configuration requires the scraper(s) to perform 2 strokes to complete a cleaning cycle and return to start position. A shuttle stroke configuration requires the scraper(s) to perform 4 strokes to complete a cleaning cycle and return to start position.

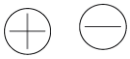
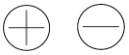
IVR PRO	
	key
• Press key until (ProG) appears;	
• Press key to select;	
• Press keys until (TYPE) appears:	
• Press key to select;	
• Press key to toggle between ”hr” and ”bt”;	
• Press key to select ”bt”;	
• Press key to select the (dbc) sub menu;	
• Press key to select;	
• Press keys to enter the delay between cleaning.	
• To set the number of strokes, press key until (ProG) appears;	
• Press key to select;	
• Press keys until (nbor) appears;	
• Press key to select;	
• Press keys to increase or decrease the value.	

IVR PRO Max@ccess
● Press ”USER”; ● Press ”START HOURS / DELAY BETWEEN CLEANING”; ● Press ”MODE” to toggle from ”START HOURS” to ”DELAY BETWEEN CLEANINGS”; ● Press ”YES” to confirm; ● Press key to select the time; ● Use the keypad to enter the delay between cleanings; ● To erase an hour, press the clear button ”C” on the keypad. ● Press ”USER”; ● Press ”WORKING SETTINGS”; ● Press ”NUMBER OF STROKES” (AUTOMATIC MODE); ● Use the keypad to enter the number of strokes.

☞ **Note!**
When activating the ”DELAY BETWEEN CLEANINGS” mode, the ”STARTING HOUR” mode is deactivated.

7.10 Scraper parking function

The ”SCRAPER PARKING” parameter allows the scraper(s) to park at a specific position after completing its cleaning cycle.

IVR PRO	
	key
• Press key until (ParA) appears;	
• Press key to select;	
• Press keys until (P11) appears:	
• Press key to select;	
• Press keys to toggle between (OFF), (FOR) or (rE);	

IVR PRO Max@ccess
• Press ”USER”;
• Press ”WORKING SETTINGS”;
• Press ”SCRAPER PARKING”;
• Press ”SCRAPER PARKING” to toggle from ”FOR” for forward parking, ”REV” for reverse parking or ”OFF” for no parking.

7.11 Scraper withdrawal function

The ”SCRAPER WITHDRAWAL” parameter positions the scraper(s) at the end of a stroke in order to clear the passageway.

IVR PRO
THIS FEATURE IS NOT AVAILABLE

IVR PRO Max@ccess
• Press ”USER”; • Press ”WORKING SETTINGS”; • Press ”SCRAPER WITHDRAWAL”; • Use the keypad to enter the time (0.0 to 999) seconds.

Note!
”SCRAPER PARKING” parameter must be set to ”FOR” or ”REV” for the ”SCRAPER WITHDRAWAL” parameter to operate.

7.12 Gradual discharge mode

The ”GRADUAL DISCHARGE” mode is used to gradually discharge manure inside a gutter, storage pit, or other means of storage.

Once the scrapers are in the discharge area and the gradual discharge mode is activated, the scrapers perform an ”ON/OFF” motion until the manure is completely discharged.

☞ **Note!**
The gradual discharge mode is activated by a limit switch installed in the drive unit. The trigger point is set by the adjustable cams.
Refer to section 8.3.8: Auxiliary switch fine tuning - Gradual discharge.

☞ **Note!**
The ”COLD WEATHER” function can be combined to the ”GRADUAL DISCHARGE” mode to prevent the scraper(s) from freezing in between cleaning hours.

IVR PRO
THIS FEATURE IS NOT AVAILABLE

IVR PRO Max@ccess
● Press ”USER”; ● Press ”ADVANCED OPTIONS”; ● Press ”PUMP INPUT SIGNAL”; ● Press ”EXT START” or ”MANURE APRON” until ”GRADUAL DISCHARGE” appears; ● Enter the running time and the waiting time. See below; ● Adjust the gradual discharge starting point. Follow the steps in section: 9.3.6.
Running time ● Press ”USER”; ● Press ”ADVANCED OPTIONS”; ● Press ”PUMP INPUT SIGNAL”; ● Press ”RUNNING TIME”; ● Use the keypad to enter the running time in seconds (2-250)
Waiting time ● Press ”USER”; ● Press ”ADVANCED OPTIONS”; ● Press ”PUMP INPUT SIGNAL”; ● Press ”WAITING TIME”; ● Use the keypad to enter the waiting time in seconds (2-250)

7.13 Manure apron mode

The ”MANURE APRON” mode is used to pile up manure on a concrete slab located outside the free stall area.

Once the scrapers are in the manure apron area and the mode is activated, the control panel deactivates the load detection to allow to push a significant amount of manure.

Warning!
Risk of injury or death for animals!
The detection parameters do not operate when the manure apron mode is activated. When setting the control panel on manure apron mode, make sure the adjustable cam of the drive unit engages the limit switch only when the scraper has passed the manure apron fence.

Attention!
Never leave objects/equipments in the manure apron area.

Note!
The manure apron mode is activated by a limit switch installed in the drive unit. The trigger point is set by the adjustable cams.
Refer to section 8.3.7: Auxiliary switch fine tuning - Manure apron application.

Note!
The ”COLD WEATHER” function can be combined to the ”MANURE APRON” mode to prevent the scraper(s) from freezing in between cleaning hours.

IVR PRO
THIS FEATURE IS NOT AVAILABLE

IVR PRO Max@ccess
• Press ”USER”; • Press ”ADVANCED OPTIONS”; • Press ”PUMP INPUT SIGNAL”; • Press ”EXT START” or ”GRADUAL DISCHARGE” until ”MANURE APRON” appears; • Enter the dripping time. See below; • Adjust the manure apron starting point. Follow the steps in section: 9.3.6.
Dripping time • Press ”USER”; • Press ”ADVANCED OPTIONS”; • Press ”PUMP INPUT SIGNAL”; • Press ”DRIPPING TIME”; • Use the keypad to enter the running time in minutes (0:00-99:00)

7.14 External start signal mode

The ”EXTERNAL START SIGNAL” mode is used to start an external equipment when the scraper(s) is near the discharge area.

For example: When using a power flume system, a flush pump should start pumping before the scrapers start dropping manure in the gutter.

☞ **Note!**
The external start signal mode is activated by a limit switch installed in the drive unit. The trigger point is set by the adjustable cams.
Refer to section 8.3.8: Auxiliary switch fine tuning - Gradual discharge.

☞ **Note!**
The ”COLD WEATHER” function can be combined to the ”EXTERNAL START SIGNAL” mode to prevent the scraper(s) from freezing in between cleaning hours.

IVR PRO
THIS FEATURE IS NOT AVAILABLE

IVR PRO Max@ccess
• Press ”USER”; • Press ”ADVANCED OPTIONS”; • Press ”PUMP INPUT SIGNAL”; • Press ”MANURE APRON” or ”GRADUAL DISCHARGE” until ”EXT START” appears; • Adjust the external start signal starting point. Follow the steps in section: 9.3.6.

7.15 Cold weather function

The ”COLD WEATHER” function is used to prevent scrapers from freezing when temperature is cold.

When ”COLD WEATHER” function is ”ON”, the scraper operates in ”ON/OFF” motion between cleaning cycles.

☞ **Note!**
The ”COLD WEATHER” function is compatible with all operating modes.

IVR PRO
THIS FEATURE IS NOT AVAILABLE

IVR PRO Max@ccess
• Press ”USER”; • Press ”ADVANCED OPTIONS”; • Press ”COLD WEATHER”; • Select ”ON/OFF”; • If a thermostat is connected to the control panel, press ”THERMOSTAT” and select ”YES”; • Enter the running time and the waiting time. See below.
Running time • Press ”USER”; • Press ”ADVANCED OPTIONS”; • Press ”COLD WEATHER”; • Press ”RUNNING TIME”; • Use the keypad to enter the running time in seconds (1-250)
Waiting time • Press ”USER”; • Press ”ADVANCED OPTIONS”; • Press ”COLD WEATHER”; • Press ”WAITING TIME”; • Use the keypad to enter the waiting time in minutes (1-1000)

7.16 Manual parking function

Manual parking mode allows to manually position the scraper(s) at the alley end.

IVR PRO
THIS FEATURE IS NOT AVAILABLE

IVR PRO Max@ccess
• Access the main menu; • Press ”PARKING (MANUAL)”; • Choose either ”FORWARD START” or ”REVERSE START”.

☞ **Note!**
The system remains inactive as long as the manual mode is activated. Press the emergency stop button to disable the manual mode.
To reset the emergency button, turn the knob to the right. Press ”REARM”.

7.17 Instant start function

IVR PRO
The scraper(s) performs a single stoke regardless of the number of strokes set in the ”automatic cleaning mode using the starting hours” or ”automatic cleaning mode using delay between cleanings”. ● Press and hold the ”START/RESET” button for 2 seconds;

IVR PRO Max@ccess
The instant start mode manually starts a complete cleaning cycle without affecting the programmed automatic cleaning mode. When activated, the scraper(s) performs the number of strokes programmed in the ”NUMBER OF STROKES (START BUTTON)” parameter. ● Access the main menu; ● Press ”INSTANT START”; ● Select ”YES” to start immediately; ● Set the ”NUMBER OF STROKES (START BUTTON)”. Follow the next step.

7.17.1 Number of strokes (Start Button)

☞ **Note!**
A standard stroke configuration requires the scraper(s) to perform two strokes to complete a cleaning cycle and return to start position. A shuttle stroke configuration requires the scraper(s) to perform 4 strokes to complete a cleaning cycle and return to start position.

☞ **Note!**
Scrapers can perform up to 10 strokes per cleaning.
Between strokes, the scrapers stop for 10 seconds.

Each time the start button is pressed or ”INSTANT START” is activated, scraper(s) performs the ”NUMBER OF STROKES” programmed.

IVR PRO
THE SYSTEM PERFORMS 1 STROKE ONLY.

IVR PRO Max@ccess
● Press ”USER”; ● Press ”WORKING SETTINGS”; ● Select ”NUMBER OR STROKES (START BUTTON)”; ● Set the number of strokes using the keypad; ● To deactivate the external start button, enter ”0”.

7.18 Backup and recovery files

IVR PRO
THIS FEATURE IS NOT AVAILABLE

IVR PRO Max@ccess
Create a file to save the actual control panel settings. ● Press ”SYSTEM”; ● Press ”BACKUP FILES”; ● Press ”CREATE A FILE”; ● Enter a title for the file using the keypad; ● Press ”VALIDATE”.
Retrieve the control panel settings from a file previously saved. ● Press ”SYSTEM”; ● Press ”BACKUP FILES”; ● Press ”RETRIEVE A FILE”; ● Choose the file using the arrows; ● Press ”LOAD”.
Erase permanently a file. ● Press ”SYSTEM”; ● Press ”BACKUP FILES”; ● Press ”ERASE A FILE”; ● Choose the file to erase; ● Press ”ERASE FILE”.

Caution!
Improper setting of the control parameters reduces load detection sensibility. To maximize human and livestock safety and prevent equipment failure and damage, follow the instructions!

Overwrite the actual settings to replace with the factory settings. The factory settings overwrite the actual settings of the control panel. Create a backup file to save the actual settings of the control panel before proceeding with the factory settings.

IMPORTANT! After proceeding with the factory settings, setup each control panel parameter.

- Press ”SYSTEM”;
- Press ”BACKUP FILES”;
- Press ”FACTORY SETTINGS”;
- Press ”YES”.

7.19 Diagnosis

IVR PRO
THIS FEATURE IS NOT AVAILABLE

IVR PRO Max@ccess
Alarm log displays the last 20 alarms and errors registered by the control panel. ● Press ”SYSTEM”; ● Press ”DIAGNOSIS”; ● Press ”ALARM LOG”; ● Set the alarm using the keypad arrows; ● Press ”DETAIL” to get more information on the alarm.
”I/O STATUS” enables real time reading of each input-output. ● Press ”SYSTEM”; ● Press ”DIAGNOSIS”; ● Press ”INPUT/OUTPUT STATUS”;
The hour meter purpose is to program preventive maintenance interval on an hour basis. When the ”PARTIAL HOUR” value reaches the ”MAINTENANCE INTERVAL” value, a warning message displays ”MAINTENANCE REQUIRED”. ● Press ”SYSTEM”; ● Press ”DIAGNOSIS”; ● Press ”HOUR METER”; ● Press ”MAINTENANCE INTERVAL” and set the value (hour); ● To reset ”PARTIAL HOUR” after maintenance has been preformed, press ”RESET (PARTIAL)”; ● To disable the hour meter, set ”MAINTENANCE INTERVAL” to 0.
”SYSTEM STATUS” displays information of the system such as the network information, I.P. address, MAC address, software version and real time reading of voltage, frequency and P.F. ● Press ”SYSTEM”; ● Press ”DIAGNOSIS”; ● Press ”SYSTEM STATUT”;

7.20 Real time reading

IVR PRO	
	key
• Press key until (rtr) appears;	
• Press key to select;	
• Press key until (F01-F07) appears:	
• Press key to select either; F01: HP fluctuation F02: HP F03: Voltage F04: Amperage F05: Power efficiency F06: Frequency F07: Positions in seconds	

IVR PRO Max@ccess
THE REAL TIME READING DISPLAYS ON THE SCREEN WHEN THE SYSTEM OPERATES.

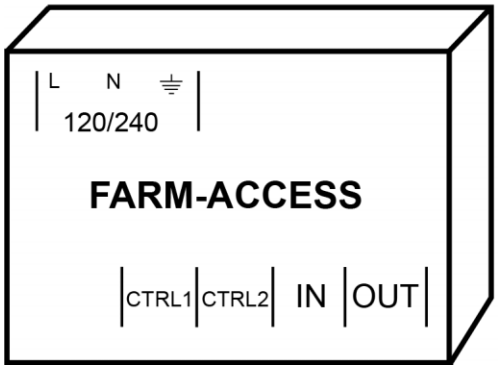
7.21 Farm-access

7.21.1 Requirements

- A wired LAN;
- A 120V/240V power source;
- Standard Ethernet cables having a maximum length of 300 feet [100m].

7.21.2 Electric connection

Danger!
Risk of electric shock!
Shutdown is required! Shut the main power supply and lock with a locking device. Post a sign on the panel stating: ”Do not turn on, electric work in progress” in order to prevent an inadvertent power of the main electric supply.

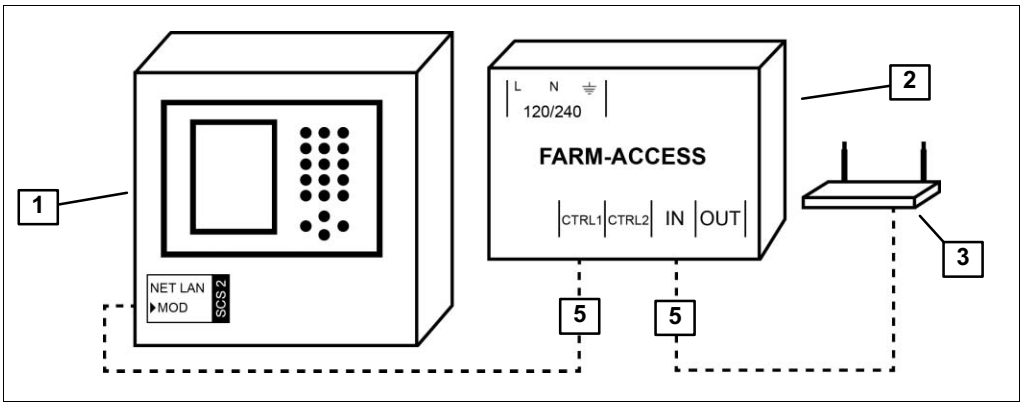


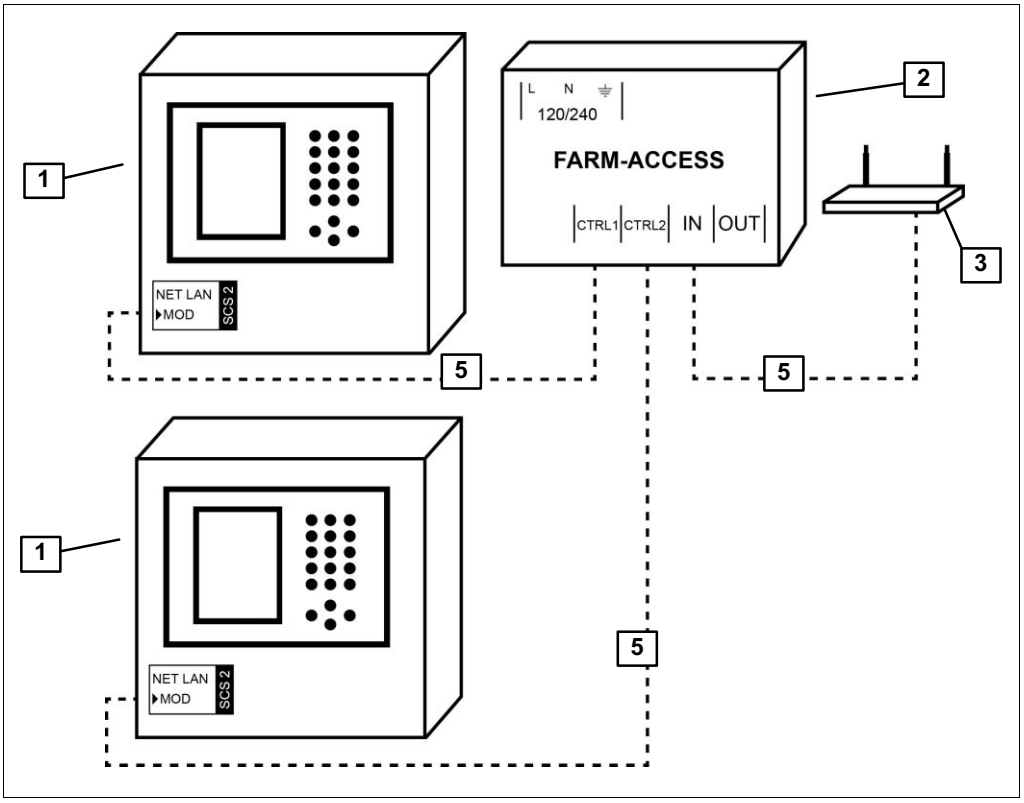
120/240	Power source for the Farm-access module
CTRL1	Port to connect the Max@ccess control panel
CTRL2	Port to connect an additional the Max@ccess control panel
IN	Ethernet port to connect the customer's network
OUT	Ethernet port to connect another equipment [camera, computer]

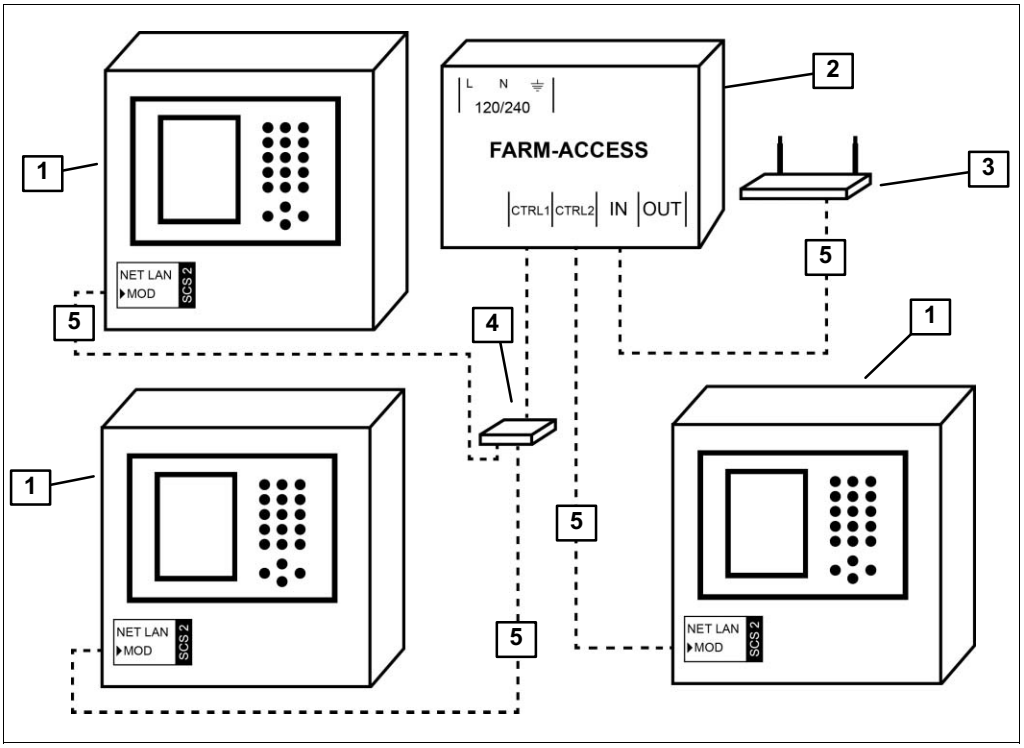
Attention!
Do not disconnect PI, SWITCH and PI 5VDC connections of the farm-access module.

- Perform the electric power connection of the farm-access module.

7.21.3 Wiring


L N
120/240
FARM-ACCESS
CTRL1 CTRL2 IN OUT
NET LAN
MOD
SCS 2
1
2
3
5
5


L N
120/240
FARM-ACCESS
CTRL1 CTRL2 IN OUT
NET LAN
MOD
SCS 2
1
2
3
5
5
1
5



1	IVR PRO Max@ccess control panel
2	Farm-access module
3	Router
4	Ethernet switch
5	Ethernet cable

Note!
The farm-access panel does not require configuration. It gives access to the IVR PRO Max@ccess without needing to set a router or modem.

- Referring to the previous illustrations, choose the corresponding configuration.
- Using standard Ethernet cables, complete the connections as illustrated.

7.21.4 Configuration

> **Note!**
> After completing the connections, it can take up to 15 minutes before the network appears on the server.

- Go to https://www.farm-access.com;
- Click on Login;
- Enter the username and password provided when buying the farm-access module;
- Click on Login;
- Click on Authorized dealer, the network should be added to the list.

7.21.5 Mobile phone application

- Access the App store or Google play store;
- Search for ”max access” application;
- Click ”Install”;
- After the installation has been completed, open the application and enter the user name and password provided.

7.21.6 Mobile phone notifications

> **Note!**
> Notifications can be sent on a mobile phone when a control panel is in alarm mode.

Iphone

- Access the Iphone settings;
- Access the notifications tab;
- Find the max access applications;
- Select and activate the notifications.

Android

- Open the configuration menu of the application;
- Set the notifications switch to ON.

8 Starting for the first time

8.1 Special qualification required for initial commissioning

Initial commissioning must be performed by trained personnel in accordance with the safety instructions.

Read the section: Safety - Personnel qualifications.

8.2 Safety instructions for initial commissioning

Warning!
Risk of injury and/or death!
A discomforted animal may not be able to avoid or move away from an operating scraper. Keep all discomforted animals away from the free stall area.

Warning!
Risk of injury or death of animals!
A high settings of the detection parameters reduces load detection sensitivity.
Keep these parameters set as low as possible.

Warning!
Risk of fall!
Be aware of the surroundings when working near areas such as a storage pit, a cross gutter, a transfer pump hopper, etc.

Caution!
Slippery floor!
Manure makes the floor slippery, be aware.
Use the walkways when possible.

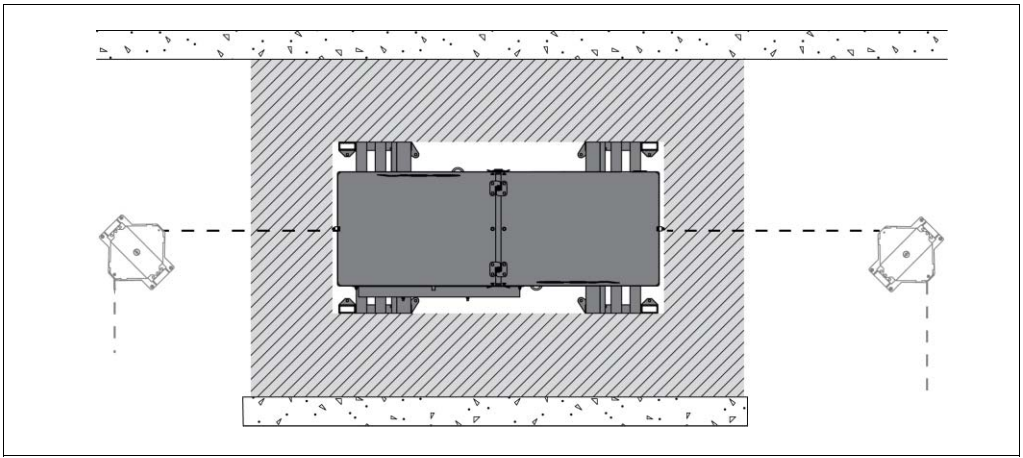
Caution!
Risk of stumble!
Be aware of the cable in the free stall alleys.

Attention!
Remove all unnecessary tools, objects, lifting devices, etc, from the initial commissioning area.

8.3 Steps before initial commissioning

8.3.1 Drive unit safety space

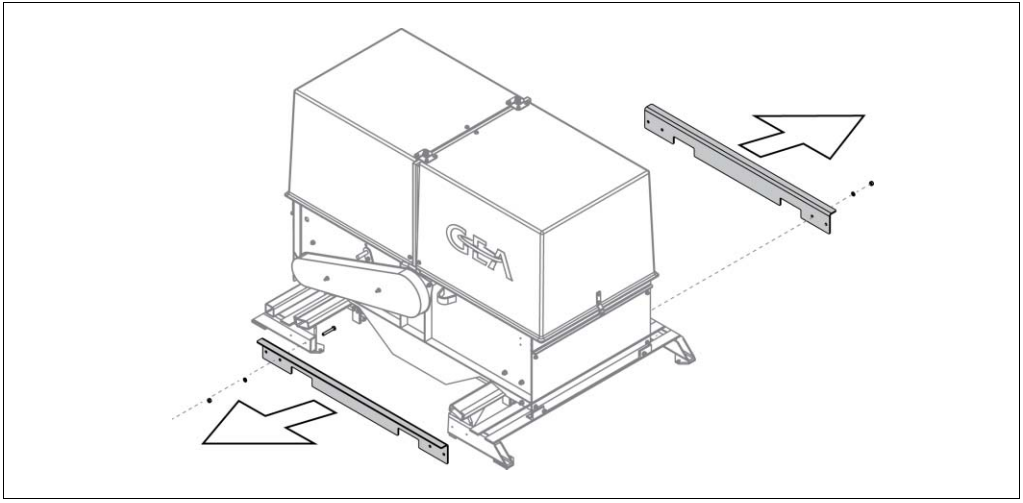
Warning!
Risk of crushing!
Make sure the clearance zone around the drive unit meets the requirements.



Refer to section 5.1: Geometric data - Drive unit.

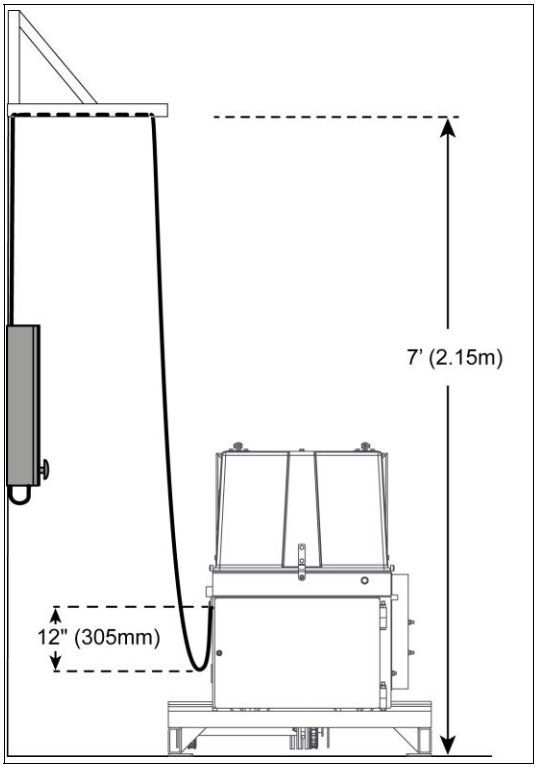
8.3.2 Grey lifting supports

Warning!
Risk of crushing and shearing!
Make sure the grey lifting support are removed from the drive unit.



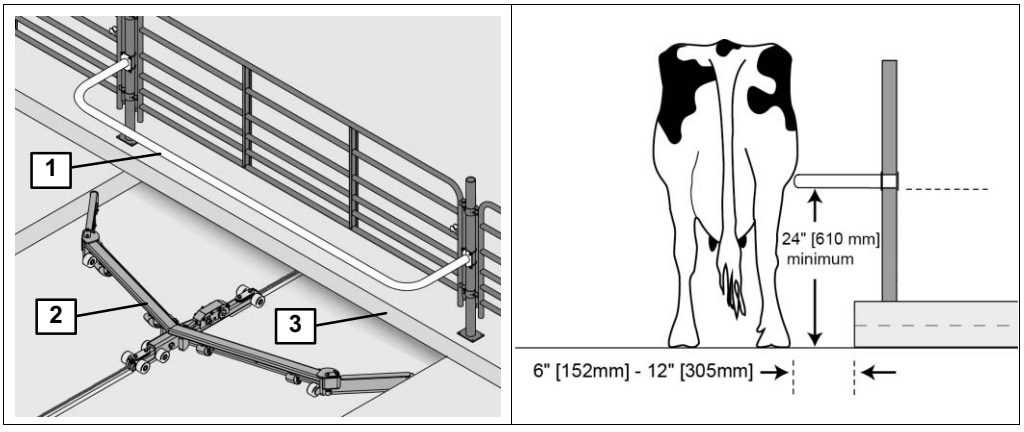
8.3.3 Wires

- Make sure the misrolled cable limit switch and the electric motor have additional cable length near the drive unit to prevent cable disconnection when the drive unit performs full displacement.

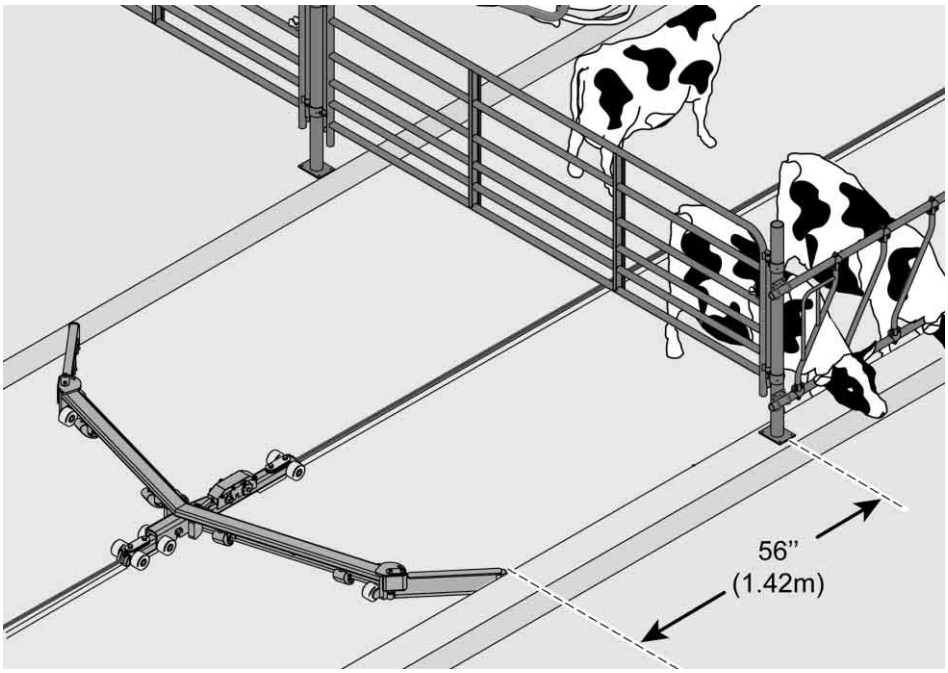


8.3.4 Environment requirements

Warning!
Risk of injury!
Make sure a guard (1) is installed on each bridging. It prevents livestock from accessing the shearing zone between the scraper (2) and the bridging (3).

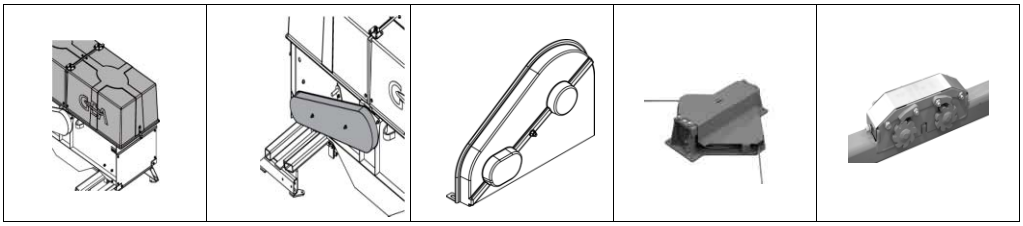


Warning!
Risk of injury!
During the first 15 seconds of each stroke, the control panel does not perform detection since it only collects load fluctuation values.
Make sure the scrapers park out of the free stall area at minimum distance of 56” [1.42m].



8.3.5 Safety guards

Warning!
Risk of injury!
Make sure all safety guards are installed.

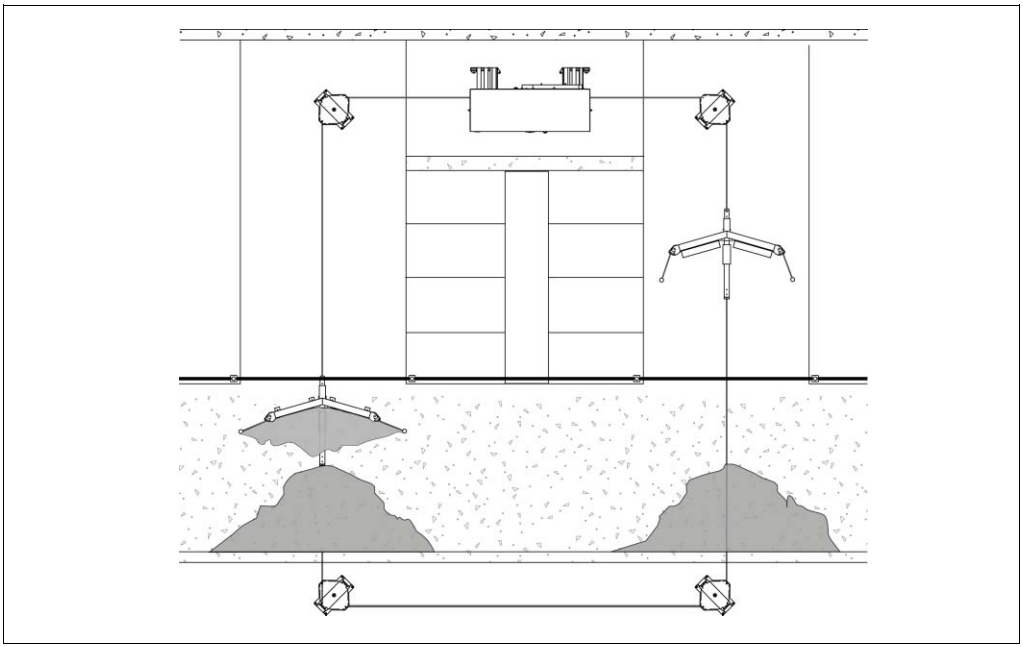


8.3.6 Programming the control panel

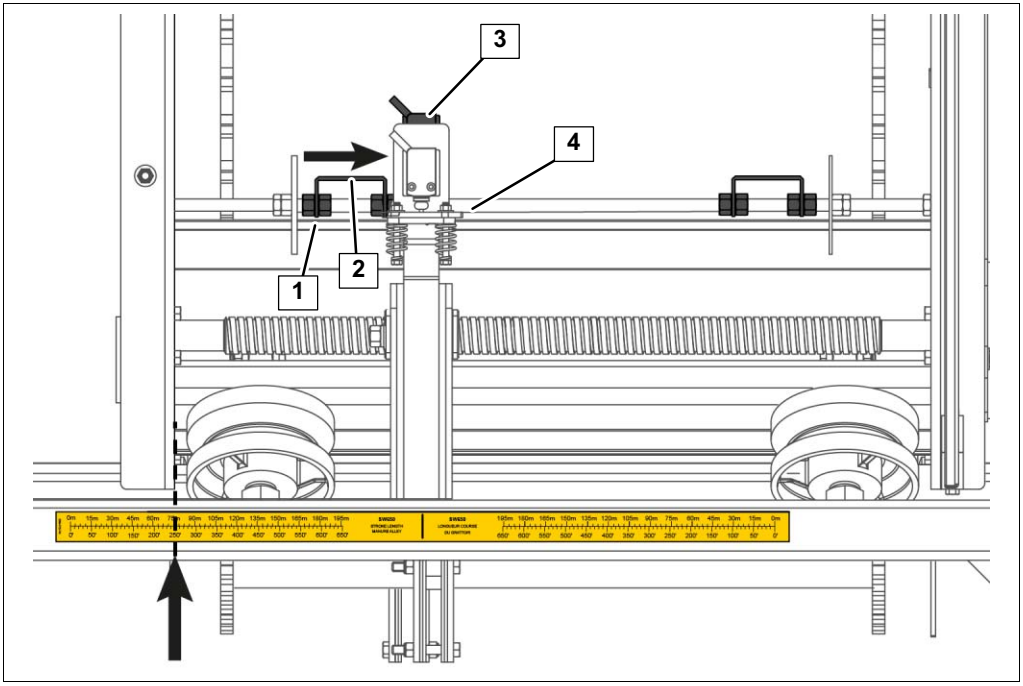
Warning!
Risk of injury or death of animals!
Always set the detection parameters accurately.
The control panel can only reduce the probability of occurrence related to injuries and/or death but it cannot eliminate the risks.

Refer to section 7.7: Programming – Detection parameters

8.3.7 Auxiliary switch fine tuning - Manure apron application



- Using the instant start function, start a cleaning cycle.
- Monitor the scraper in the alley.
- Press the emergency stop button when the scraper is located where the manure apron mode should start.



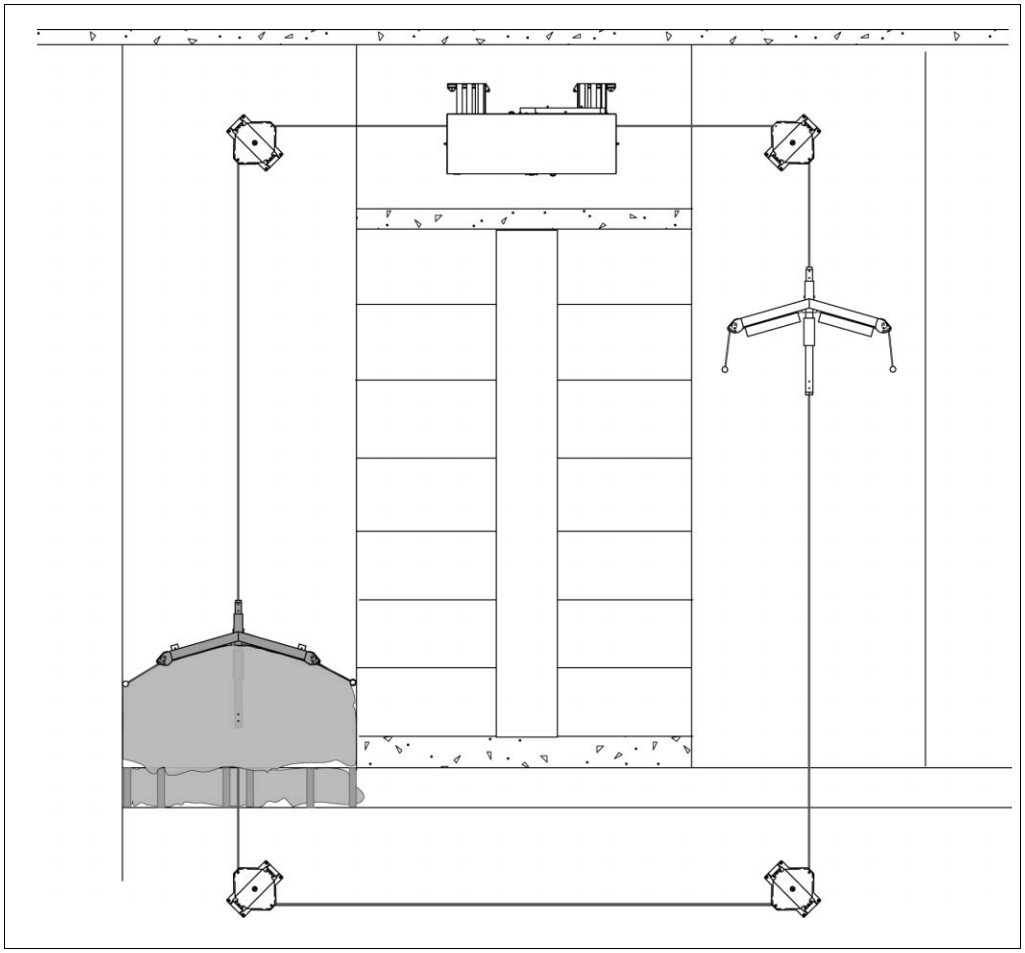
Warning!
Risk of injury or death!
Make sure the adjustable cam engages the limit switch only when the scraper has passed the manure apron fence.

- Unlock and open the drive unit access door.

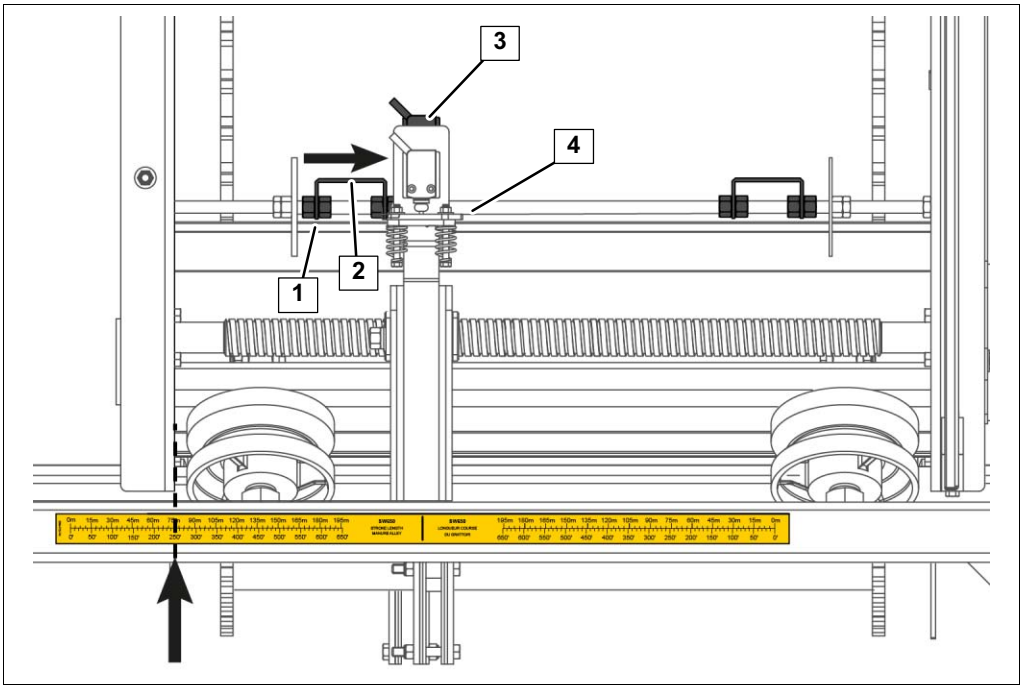
- Unlock the nuts (1) holding the cam (2).
- Move the adjustable cam (2) until the auxiliary switch (3) toggles.
- Lightly tighten the nuts (1).
- Reset the control panel by pulling the stop button and rearming the control panel.
- Manually push the sliding plate (4) in the opposite direction.
- Using the instant start function, start a cleaning cycle.
- Wait until the scraper(s) has backed off a few feet.
- Press the emergency stop button once the scrapers has backed off 10 feet (3m).
- Manually push the sliding plate (4) in the opposite direction.
- Reset the control panel by pulling the stop button and rearming the control panel.
- Using the instant start function, start a cleaning cycle.
- Check if the manure apron mode starts at the proper position in the alley. Make sure the manure apron mode engages only when the scraper (s) has passed the manure apron fence.
- Secure the adjustable cam (2) by tightening the nuts (1).
- Repeat all steps to set the second adjustable cam.
- Close and lock the access door.

8.3.8 Auxiliary switch fine tuning - Gradual discharge/ External signal application

Note!
The external start signal mode used to operate a power flume pump should engage when the scraper is at 40ft [12m] from the cross gutter.



- Using the instant start function, start a cleaning cycle.
- Monitor the scraper in the alley.
- Press the emergency stop button when the scraper is located where the gradual discharge or external start signal mode should start.



- Unlock and open the drive unit access door.
- Unlock the nuts (1) holding the cam (2).
- Move the adjustable cam (2) until the auxiliary switch (3) toggles.
- Lightly tighten the nuts (1).
- Reset the control panel by pulling the stop button and rearming the control panel.
- Manually push the sliding plate (4) in the opposite direction.
- Using the instant start function, start a cleaning cycle.
- Wait until the scraper(s) has backed off a few feet.
- Press the emergency stop button once the scrapers has backed off 10 feet (3m).
- Manually push the sliding plate (4) in the opposite direction.
- Reset the control panel by pulling the stop button and rearming the control panel.
- Using the instant start function, start a cleaning cycle.
- Check if the gradual discharge or the external start signal mode starts at the proper position in the alley.
- Secure the adjustable cam (2) by tightening the nuts (1).
- Repeat all steps to set the second adjustable cam.
- Close and lock the access door.

8.4 Initial commissioning checklist

This checklist must be completed by the dealer and the customer to validate that the product is assembled and/or installed according to the manufacturer's instructions and that it is safe for use.

The dealer along with the customer must operate the product to ensure functionality and efficiency before handing it over to the customer.

General	**DONE**	**N/A**
The owner received the instruction manual from the dealer and commits to read it.		
Items provided by the owner comply with the specifications indicated in the technical data section of the instruction manual and the design guide.		

Facility	**DONE**	**N/A**
All concrete alleys are smooth, free from imperfections.		
The manure apron area is fenced.		
Guards protecting the bridging areas are installed.		

Inspection	**DONE**	**N/A**
A visual inspection was performed. There are no sign of leaks, distortion or defective parts.		
All bolts are tightened.		
The safety guards and safety labels are installed.		
All electric connections are connected and secured.		
The lubrication points are lubricated.		

Control panel	**DONE**	**N/A**
The control panel is connected to a cut-off switch.		
All electric components and wires are secured.		
The control panel door is closed and locked.		
All control panel parameters has been programmed accurately.		
The emergency stop button(s) is functional.		
The electric motor parameters are entered in the control panel.		
The motor capacity HP value was obtained by performing the fine tuning steps included in the control panel instruction manual.		
The motor minimum load value was obtained by performing the fine tuning steps included in the control panel instruction manual.		
The control panel is programmed to operate according to the requirements of the owner.		

Drive unit	**DONE**	**N/A**
The drive unit has 20” [51cm] of space around for safety purposes. If not, there are fences surrounding the drive unit to restrain access to the drive unit. Refer to section 5.1: Geometric data - Drive unit. All warning signs notifying of a potential risk of crushing are visible.		
The drive unit is anchored on the concrete floor.		
The grey lifting supports are removed from the drive unit.		
All drive unit limit switch are connected to the control panel.		
The wire of the misrolled cable switch is correctly installed to a post and is long enough to allow full displacement of the drive unit.		
The cable of the electric motor is correctly installed to a post and is long enough to allow full displacement of the drive unit.		
The stroke limit switch and the end of stroke washers are adjusted.		
Misrolled cable limit switch is adjusted.		
The manure apron switch is set and adjusted to engage only when the scraper has passed the manure apron fence. If applicable.		
The external start signal limit switch is set and adjusted to start at proper point. If applicable.		
The gradual discharge limit switch is set and adjusted to start at proper point. If applicable.		
The #40 and #80 chain are lubricated.		
The electric motor (s) can be shut down only when activating the control panel external cut-off switch.		
The electric motor rotates in the proper direction.		
The belt tension is adequate.		
The motor belt and pulley safety guard is installed and secured.		

Cable	**DONE**	**N/A**
The cable is installed and secured on the drum.		
The cable tension is adjusted.		
The cable does not contact the floor, objects, etc.		

Scraper	DONE	N/A
Each scraper is assembled and installed in the alleys.		
The folding ends of the scrapers are adjusted.		
The scraper blades are adjusted.		

Corner wheel	DONE	N/A
The corner wheels are anchored.		
The corner wheels cover are installed.		

General	DONE	N/A
The owner is instructed by the dealer on how to operate and maintain the product.		
The owner is instructed on how to adjust/program the components of the system.		

Note!
The dealer and the owner must fill the warranty registration form when the checklist is completed.

Dealer's signature: _____

Owner's signature: _____

Date: _____

8.5 Checks after initial commissioning

The owner must make sure that:

- all elements are in perfect working condition and safe to operate;
- all elements are operational.
- the scrapers stop at their respective stop points;
- the scrapers clean the alleys properly;
- the system operates as per the owner's requirements;
- the product works perfectly;

8.6 Handing over to the owner

Hand over warranty registration form

The warranty registration form must be completed and signed by the customer and the authorized dealer. The warranty registration form must be returned to GEA Farm Technologies Canada Inc. / Division GEA Houle to validate the warranty.

9 Operating

9.1 Special qualification required for operating

Operating must be performed by trained personnel in accordance with the safety instructions.

Read the section: Safety - Personnel qualifications.

9.2 Safety instructions for operation

Warning!
Risk of injury and/or death!
A discomforted animal may not be able to avoid or move away from an operating scraper. Keep all discomforted animals away from the free stall area.

Warning!
Risk of injury or death!
Improper setting of the control panel parameters reduces load detection sensitivity. Always set the control panel parameters accurately by following the steps in section: Programming.

Warning!
Inadvertent start!
The system can operate at any moment.
Be aware of the surrounding elements.

Warning!
Risk of cutting!
The scraper steel blades become sharp. Beware, especially when the scraper moves in reverse motion and when parked. The blades stay in upright position exposing the sharp edges.

Warning!
Risk of injury!
Keep all safety guards in place.

Warning!
Risk of injury!
Always inspect and find the element that triggered the alarm before rearming the control panel.

Caution!
Slippery floor!
Manure makes the floor slippery, be aware.
Use the walkway when possible.

Caution!
Risk of stumble!
Be aware of the cable in the free stall alleys.

Attention!
In case of emergency, press the emergency stop button. Make sure to know where the emergency stop button is located.

Read the section Safety.

9.3 Automatic mode operation

9.3.1 Automatic mode using starting hours

☞ **Note!**
By default, the control panel operates in automatic mode according to the ”STARTING HOURS” or the ”DELAY BETWEEN CLEANINGS” parameters.
The period during which the control panel operates is set by the ”NUMBER OF STROKES (automatic)” parameter.

☞ **Note!**
To operate in automatic mode, disengage the manual mode by releasing the emergency stop button and re-arming the control panel.

Control panel modes		
No advanced cleaning mode selected	Cold weather function: OFF	The system operates automatically on scheduled hours. After completing the cleaning strokes, the system stops until the next scheduled hour.
	Cold weather function: ON	The system operates automatically on scheduled hours. After completing the cleaning strokes, the system operates in ”COLD WEATHER” function until the next scheduled hour.
Manure apron mode*	Cold weather function: OFF	The system operates automatically on scheduled hours. The ”MANURE APRON” mode starts when the limit switch is triggered. After completing the cleaning strokes, the system stops until the next scheduled hour.
	Cold weather function: ON	The system operates automatically on scheduled hours. The ”MANURE APRON” mode starts when the limit switch is triggered. When the cleaning strokes are completed, the system operates ”COLD WEATHER” function until the next scheduled hour.
Gradual discharge mode*	Cold weather function: OFF	The system operates automatically on scheduled hours. The ”GRADUAL DISCHARGE” mode starts when the limit switch is triggered. After completing the cleaning strokes, the system stops until the next scheduled hour.
	Cold weather function: ON	The system operates automatically on scheduled hours. The ”GRADUAL DISCHARGE” mode starts when the limit switch is triggered. When the cleaning strokes are completed, the system operates in ”COLD WEATHER” function until the next scheduled hour.
External start signal*	Cold weather function: OFF	The system operates automatically on scheduled hours. The ”EXTERNAL START SIGNAL” starts when the limit switch is triggered. After completing the cleaning strokes, the system stops until the next scheduled hour.
	Cold weather function: ON	The system operates automatically on scheduled hours. The ”EXTERNAL START SIGNAL” starts when the limit switch is triggered. When the cleaning strokes are completed, the system operates in ”COLD WEATHER” function until the next scheduled hour.

* Available only for the Max@ccess.

☞ **Note!**
When the ”COLD WEATHER” function operates by means of a thermostat, the mode operates only if the temperature drops below the set temperature.

9.3.2 Automatic mode using delay between cleanings

Control panel modes		
No advanced cleaning mode selected	Cold weather function: OFF	The system operates continuously until the cleaning strokes are completed. The system stops according to the delay between cleanings.
	Cold temperature function: ON	The system operates continuously until the cleaning strokes are completed. When the cleaning strokes are completed, the system operates in ”COLD WEATHER” function until the delay between cleanings is reached.
Manure apron mode*	Cold weather function: OFF	The system operates continuously until the cleaning strokes are completed. The ”MANURE APRON” mode starts when the limit switch is triggered. After completing the cleaning strokes, the system stops until the delay between cleanings is reached.
	Cold weather function: ON	The system operates continuously until the cleaning strokes are completed. The ”MANURE APRON” mode starts when the limit switch is triggered. After completing the cleaning strokes, the system stops. The ”COLD WEATHER” function operates until the delay between cleanings is reached.
Gradual discharge mode*	Cold weather function: OFF	The system operates continuously until the cleaning strokes are completed. The ”GRADUAL DISCHARGE” mode starts when the limit switch is triggered. After completing the cleaning strokes, the system stops until the delay between cleanings is reached.
	Cold weather function: ON	The system operates continuously until the cleaning strokes are completed. The ”GRADUAL DISCHARGE” mode starts when the limit switch is triggered. After completing the cleaning strokes, the system stops. The ”COLD WEATHER” function operates until the delay between cleanings is reached.
External start signal*	Cold weather function: OFF	The system operates continuously until the cleaning strokes are completed. The ”EXTERNAL START SIGNAL” mode starts when the limit switch is triggered. After completing the cleaning strokes, the system stops until the delay between cleanings is reached.
	Cold weather function: ON	The system operates continuously until the cleaning strokes are completed. The ”EXTERNAL START SIGNAL” mode starts when the limit switch is triggered. After completing the cleaning strokes, the system stops. The ”COLD WEATHER” function operates until the delay between cleanings is reached.

* Available only for the Max@ccess.

☞ **Note!**
When the ”COLD WEATHER” function operates by means of a thermostat, the mode operates only if the temperature drops below the set temperature.

9.4 Manual mode operation

Control panel mode	
Instant start	The instant start mode manually starts the cleaning system. The number of strokes performed corresponds to the value entered in parameter ”NUMBER OF STROKES (START BUTTON)”. Refer to section 7.17: Programming - Instant start. function

9.5 Requirements while operating

9.5.1 Maintenance work in the free stall alleys

Warning!
Inadvertent start!
Shutdown is required! Shut the main power supply and lock with a locking device. Post a sign on the panel stating: ”Do not turn on, electric work in progress” in order to prevent an inadvertent energizing of the main electric supply.

- At all time before performing work in the free stall alleys, shutdown the main power supply and lock with a locking device to prevent start.

9.5.2 Control panel alarms

Warning!
Risk of injury!
Always inspect and find the element that triggered the alarm before rearming the control panel.

- Inspect the environment where the scraper stopped.
- Remove the element that triggered the alarm.
- Refer to section 10: Troubleshooting to understand the nature of the alarm. Follow the indications to correct the situation.

9.5.3 Environment changes

Any environment change can affect the manure consistency as well as the cleaning requirements, etc.

Therefore the control panel parameters must be adjusted whenever and whatever the change (bedding, feed, seasons, etc).

Warning!
Risk of injury or death!
Improper setting of the control panel parameters reduces load detection sensitivity. Always set the control panel parameters accurately by following the steps in section: Programming.

- Adjust the cleaning schedule to operate less or more often the cable alley scrapers.
- Adjust the control panel ”MAXIMUM HP FINE TUNING” parameter. Follow the instructions in section: Programming.
- Make sure the ”DETECTION PARAMETERS” are set properly.

10 Troubleshooting

10.1 Special qualification required for troubleshooting

Troubleshooting must be performed by specially qualified personnel in accordance with the safety instructions.

Electric work must be performed by a qualified electrician.

Read the section: Safety - Personnel qualifications.

10.2 Safety instructions for troubleshooting

Warning!
Risk of injury or death!
Improper setting of the control panel parameters reduces the load detection sensitivity. Always set the control panel parameters accurately by following the steps in section: Programming.

Warning!
Risk of fall!
Be aware of the surroundings when working near areas such as a storage pit, a cross gutter, a transfer pump hopper, etc.

Warning!
Risk of injury!
Always inspect and find the element that triggered the alarm before rearming the control panel.

Warning!
Risk of injury!
Keep all safety guards in place. When necessary to remove the guard, reinstall the guard after completing the troubleshooting steps.

Caution!
Risk of stumble!
Be aware of the cable in the free stall alleys.

Caution!
Risk of injury!
Wear protective boots, eye wear and gloves.

Caution!
Slippery floor!
Manure makes the floor slippery, be aware.
Use the walkways when possible.

Read the section: Safety.

10.3 Troubleshooting possible faults

Fault	Possible cause	Solution
All scrapers operate in one direction. After completing one stroke, they stop.	Improper programming of the control panel.	Refer to section 7: Programming.
	The control panel has detected a fault.	Find the fault number indicated on the control panel. Refer to the fault indicated further in this table.
	The sliding plate of the stroke limit switch does not toggle.	Manually engage the sliding plate to check operation, repair.
	The stroke limit switch does not operate properly.	Manually engage the stroke limit switch to check operation. Have an electrician reconnect or change the electric wire or change defective switch.
	A disconnected or damaged electric wire.	Have an electrician reconnect or change the electric wire.

Fault	Possible cause	Solution
The scrapers do not reach their stop point or suddenly stop.	The control panel has detected a fault.	Find the fault number indicated on the control panel. Refer to the fault indicated further in this table.
	Improper programming of the control panel.	Refer to the instruction manual of the control panel. Refer to section 7: Programming.
	The misrolled cable switch is activated.	Check if the switch is properly adjusted. Refer to section 6.14.2: Handling and installation - Test the electric connections - Test the misrolled cable limit switch. In case of a misrolled cable, refer to section 10.5: Maintenance - Misrolled cable procedure.
	The stroke washers are not adjusted properly.	Proceed with the steps included in section 7.28: Handling and installation - Stroke washers fine tuning.
	A disconnected or broken cable and/or improper cable tension.	Change or reconnect the cable. Refer to section 6.28: Handling and installation - Cable installation.
	A disconnected or damaged electric wire.	Have an electrician reconnect or change the wire.
	The circuit protection is defective.	Have an electrician replace the defective circuit.
The scraper does not clean the alley properly.	The scraper blade is not well adjusted.	Adjust the blade. Refer to section 11.13: Maintenance - Check and adjust the scraper blades.
	The scraper blade is worn.	Replace the blade. Refer to section 11.13: Maintenance - Check and adjust the scraper blades.
	The scraper carries too much manure on each cleaning	Have the scraper clean the alley more often. Reprogram the control panel. Refer to sections 7 and 9: Programming and Operating.

Fault	Possible cause	Solution
Nothing operates.	The power supply is shutdown.	Turn on the power supply.
	The emergency stop button of the control panel is activated or the control panel is turned off.	Deactivate the emergency stop button. Turn on the control panel.
	The control panel has detected a fault.	Find the fault number indicated on the control panel. Refer to the fault indicated further in this table.
	Improper programming of the control panel.	Refer to sections 7 and 9: Programming and Operating.
	The misrolled cable detection switch is activated.	Check if the switch is properly adjusted. Refer to section 10.5: Troubleshooting - Misrolled cable procedure.
The control panel displays alarm A1 Maximum fluctuation	An obstacle in front of the scraper(s). The ”NUMBER OF RESTARTS” is reached. Improper setting of the ”MAXIMUM FLUCTUATION” and/or the ”DETECTION TIME” parameter.	Remove the obstacle; If required, refer to section 7.7.1 and 7.7.2: Programming, to adjust the ”MAXIMUM FLUCTUATION” and/or the ”DETECTION TIME” parameters; Reset the alarm.
The control panel displays alarm A2 Maximum load exceeded (HP)	Excessive load in front of the scraper(s). Improper setting of the ”MOTOR CAPACITY” parameter.	Remove the load in the alley; If required, refer to section 7.4.7: Programming, to adjust the ”MOTOR CAPACITY (HP)” parameter; Reset the alarm.
The control panel displays alarm A3 Maximum load exceeded (AMP)	Excessive load in front of the scraper(s). Defective motor Improper setting of the ”AMPS” parameter.	Remove the excessive load; If required, refer to section 7.4.3: Programming, to adjust the ”AMPS” parameter according to the manufacturer's rating plate; Reset the alarm.
The control panel displays alarm A4 No load detected	Mechanical failure (belt, cable, chain, gearbox). Improper setting of the ”MINIMUM LOAD” parameter.	Repair mechanical failure. Refer to section 6: Handling and installation; If required, refer to section 7.6: Programming, to fine tune the ”MINIMUM LOAD (HP)”; Reset the alarm.

Fault	Possible cause	Solution
The control panel displays alarm A5 Double winding on drive unit drum	Double winding of the cable on the cable drive unit. A faulty limit switch. Faulty wiring between the control panel and the drive unit.	Check for electrical failure and repair; MAKE SURE the manure apron switch is properly adjusted. Refer to section .8.3.7: Starting for the first time - Steps before initial commissioning - Auxiliary switch fine tuning - Manure apron application. To adjust the stroke limit switch, follow the instructions in section 7.28: Handling and installation - Stroke washers fine tuning. To adjust the double winding switch of the cable drive unit, follow the instructions in section 7.13.2: Handling and installation - Testing the electric connections - Misrolled cable limit switch. Reset the alarm.
The control panel displays alarm A6 End of stroke detection	Load detection at the end of a stroke	Check for manure accumulation in non-visible places; Check the stroke limit switch. To adjust the stroke limit switch, follow the instructions in section 7.28: Handling and installation - Stroke washers fine tuning; Reset the alarm.
The control panel displays alarm A7 Significant current gap between motors.	Significant current gap between the 2 motors.	Check for motor defects. Check current of each motor; Reset the alarm; Contact your dealer if the problem persists.

Fault	Possible cause	Solution
The control panel displays alarm A8 - A9 Defective sensor PWR-030	Bad connection on the PWR030. Faulty PWR030 defective sensor: sensor 1 or 2.	Check wiring inside the control panel; Shut power off for 30 seconds to reset the control panel. Contact your dealer if the problem persists.
The control panel displays alarm A10 - A12 Voltage phase loss sensor 1 on line 1-2 or 3. (PWR030-1)	Voltage phase lost Wiring Power dysfunction Malfunction of the Sensor 1 (PWR030-1)	Check the motor voltage; Check motor connections; Check wiring inside the control panel; Check power lines. Replace the PWR030 Contact your dealer if the problem persists.
The control panel displays alarm A13 - A15 Current phase loss sensor 1 on line 1-2 or 3. (PWR030-1)	Current phase lost Wiring Power dysfunction Malfunction of the Sensor 1 (PWR030-1)	Check the motor current; Check motor connections; Check wiring inside the control panel; Check power lines. Contact your dealer if the problem persists.
The control panel displays alarm A16 - A18 Voltage phase loss motor 2 (PWR030-1)	Voltage phase lost Wiring Power dysfunction Malfunction of the Sensor 2 (PWR030-2)	Check the motor voltage; Check motor connections; Check wiring inside the control panel; Check power lines. Contact your dealer if the problem persists.
The control panel displays alarm A19 - A21 Current phase loss motor 2 (PWR030-1)	Current phase lost Wiring Power dysfunction Malfunction of the Sensor 2 (PWR030-2)	Check the motor current; Check motor connections; Check wiring inside the control panel; Check power lines Contact your dealer if the problem persists.

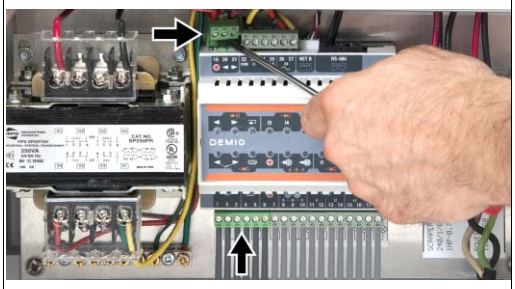
Fault	Possible cause	Solution
The control panel displays alarm E1 Connection loss with the FIO	Faulty connection on the control panel. Power dysfunction Malfunction of the control panel module (FIO152) or FIO252.	Check the wiring. Shut power off for 30 seconds to reset the control panel; Contact your dealer if the problem persists.
The control panel displays alarm E2 Connection loss with the sensor (PWR030-1)	Faulty connection on the control panel. Power dysfunction Malfunction of the control panel module (FIO152) or FIO252. Malfunction of the PWR030 sensor.	Check the wiring; Shut power off for 30 seconds to reset the control panel; Check the power lines. Contact your dealer if the problem persists.

Note!
For any other faults, please contact your authorized dealer.

10.4 Troubleshooting bypass switch

Danger!
Risk of electric shock!
Shutdown is required! Shut the main power supply and lock with a locking device. Post a sign on the panel stating: ”Do not turn on, electric work in progress” in order to prevent an inadvertent power of the main electric supply.

When the programmable module of the control panel is dysfunctional, operate manually the control panel.

• Shut down and lock the main electric power supply; • Remove the troubleshooting bypass switch from the control panel door.	
• Disconnect the pinpointed connectors.	
• Connect the connectors on the troubleshooting bypass switch. • Rearm the control panel. • Flip the switch to operate the scraper(s).	

10.5 Misrolled cable procedure

The misrolled cable switch triggers when a cable has shredded wires, is broken or when the cable is loose.

Determine the cause and follow the corresponding steps.

10.5.1 Misrolled cable procedure resulting from shredded wires or broken cable

Note!
The shredded wires of a cable can trigger the switch without causing a double winding.

Warning!
Inadvertent start!
Shutdown is required! Shut the main power supply and lock with a locking device. Post a sign on the panel stating: ”Do not turn on, electric work in progress” in order to prevent an inadvertent energizing of the main electric supply.

- Shutdown and lock the power supply.
- Inspect the cable.
- Find all damaged cable section(s).
- Unlock and activate the power supply.

Caution!
Wear protective boots, eye gear and gloves.

- Wind or unwind the cable to access the damaged section.

Warning!
Inadvertent start!
Shutdown is required! Shut the main power supply and lock with a locking device. Post a sign on the panel stating: ”Do not turn on, electric work in progress” in order to prevent an inadvertent energizing of the main electric supply.

- Shutdown and lock the power supply.
- Remove the damaged sections.
- Replace the cable. Refer to section 6.28: Handling and installation - Cable installation. Follow the steps corresponding to the cable section that requires installation.
- Close and lock the drive unit hood.

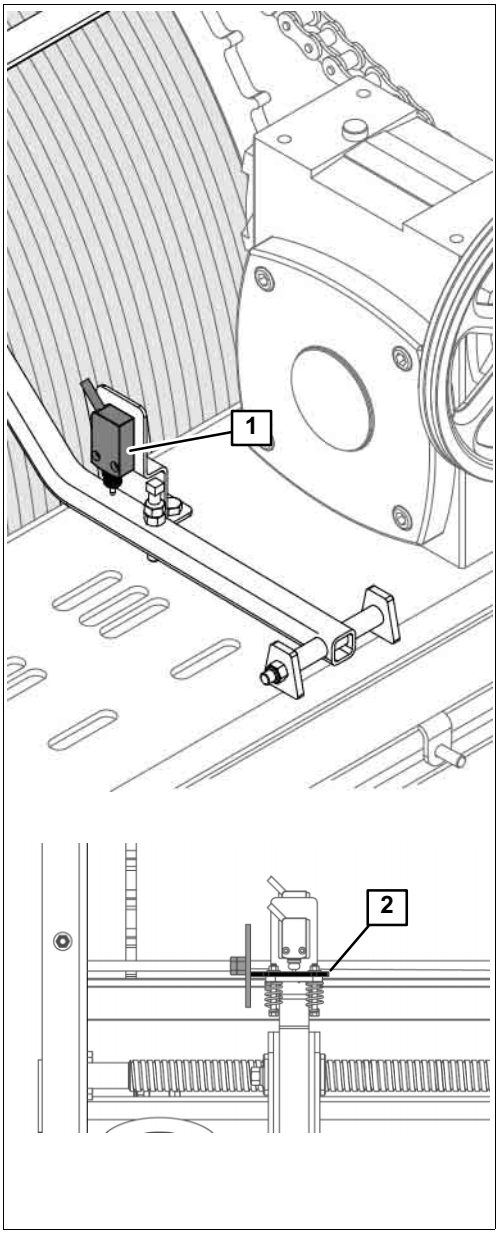
10.5.2 Misrolled cable procedure resulting from a loose cable

Caution!
Wear protective boots, eye gear and gloves.

Note!
Have an assistant to help perform the following steps.

Step 1 - Unwind the cable

- Press the emergency stop button on the control panel door.
- Unlock and open the hood.
- Loosen the bolts holding the switch (1).
- Lift the switch and lightly tighten the bolts.
- Reset the control panel by pulling the stop button and rearming the control panel.
- Open the drive unit front access door.
- Push the sliding plate(2).
- Using the instant start function, engage the control panel. Have an assistant pull the cable until the double winding is free.
- Press the emergency stop button.
- Push the sliding plate (2) in the opposite direction.
- Reset the control panel by pulling the stop button and rearming the control panel.
- Using the instant start function, engage the control panel. Have an assistant align the cable while the drive unit winds the cable properly. Make sure the cable is aligned in the cable guide locate under the drive unit.



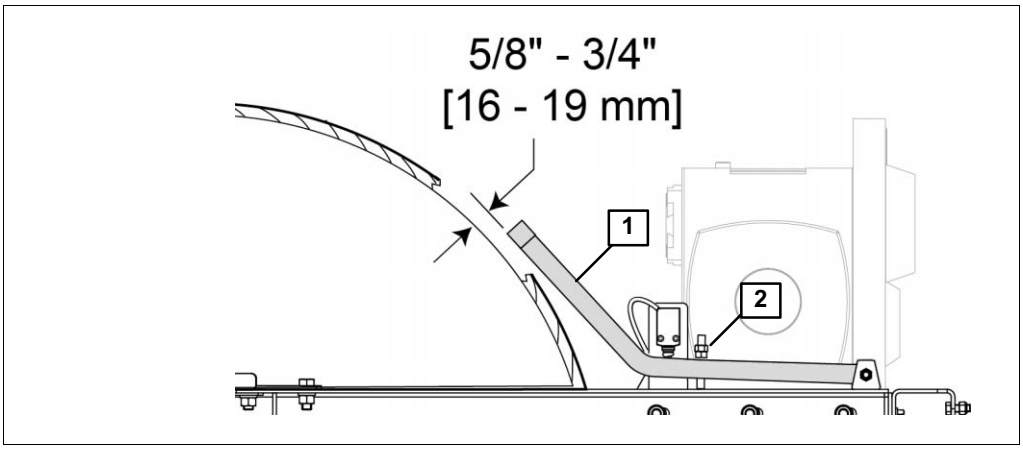
Step 2 - Adjust the cable tension

- Refer to sections 11.4 or 11.5: Maintenance - Check and adjust the tension of the nylon or steel cable.

Step 3 - Reposition the switch

Caution!
Wear protective boots, eye gear and gloves.

- Press the emergency stop button on the control panel door.
- Unlock and open the drive unit hood.
- Check the detection arm (1) adjustment and make sure the measurement corresponds to the type of cable or rope:
  - ⅝” [16mm] from the drum when using a 3/8” [10mm] cable.
  - ¾” [19mm] from the drum when using a 1/2” [13mm] cable.
  - ⅝” [16mm] from the drum when using a nylon rope.
- If necessary, adjust the detection arm using the bolt (2). Lock the bolt.
- Once the detection arm is adjusted, check the switch adjustment. The switch must trigger when the detection arm is lifted. If required, adjust accordingly.

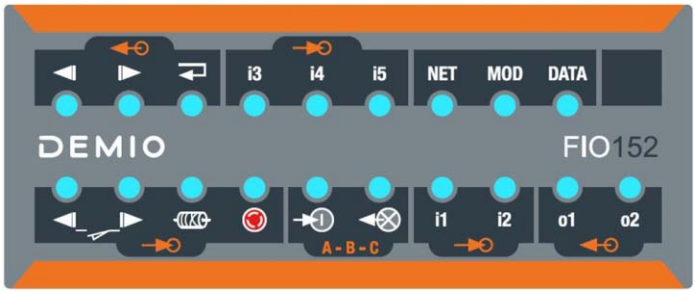


- Rearm the control panel.
- Using the instant start function, engage the control panel.

Caution!
Risk of injury!
Be aware of the rotating elements when accessing the misrolled cable limit switch.

- Lift the misrolled cable detection arm, the drive unit must stop operating.
- Close and lock the drive unit hood.

10.6 FIO152 indicator lights



	Direction: State of the micro-switch inputs; in reverse/forward.
	Double winding input: Status of the drive unit double winding switch input. In normal mode (correct winding), the indicator light is ON. If the indicator is OFF, verify the winding of the cable and switch on the cable drive unit.
	External emergency stop: Status of the external emergency stop input. The indicator light must be ON in normal operation. If the indicator is OFF, the external emergency button is activated or disconnected. In absence of an external emergency button, a jumper should be wired (see electric diagrams).
	External start: Status of the external start signal. The indicator light is ON when receiving an external start signal.
	Feedback: Status of the feedback output. The output is activated when cleaning is in progress.
	Inputs: Status of the inputs.
	Outputs: Status of the outputs.
	Command: Status of the control output (Reverse/Forward).

	By-pass: Indicates that the system is backing up after detecting an obstacle.

	Inputs: Status of the input signals

	User interface connection: Status of the user interface (UCC). There are four possible states: - Solid green indicates that the communication is functional. - Solid red indicates a network problem caused by; wiring, power or addressing problem. - Flashing red indicates that the connection with user interface is dysfunctional. Normally caused by intermittent problems such as electrical noise, grounding or wiring problems. - Flashing green indicates that the network is functional, but communication with the interface has not yet been established.

	Module state: The indicator light is ON when the FIO152 is powered.

	HP sensor connection: Status of the network connection with the PWR030 HP Sensors. Flashes when the communication is functional.

11 Maintenance

11.1 Special qualification required for maintenance work

Maintenance work must be performed by trained personnel in accordance with the safety instructions.

Electric work must be performed by a qualified electrician.

Read the section: Safety - Personnel qualifications.

11.2 Safety instructions for maintenance

Warning!
Risk of fall!
Be aware of the surroundings when working near areas such as a storage pit, a cross gutter, a transfer pump hopper, etc.

Warning!
Risk of injury!
Keep all safety guards in place. When necessary to remove the guard, reinstall the guard after completing the maintenance steps.

Caution!
Risk of injuries!
Wear protective boots, eye gear and gloves for all steps included in this section.

Caution!
Risk of stumble!
Be aware of the cable in the free stall alleys.

Caution!
Slippery floor!
Manure makes the floor slippery, be aware.
Use the walkways when possible.

11.3 Scheduled maintenance responsibilities

11.3.1 GEA Farm Technologies Canada Inc. / Division GEA Houle Maintenance Schedule

Task	First 50hours of operation	First 100 hours of operation	Every week	Every month	Every 3 months	Every 6 months	Action by
Check and adjust the tension of the nylon rope	**Refer to the corresponding maintenance section for schedule**						Trained personnel
Check and adjust the tension of the steel/galvanized cable							
Visual inspection	x	x			x		
Check the bolts and anchor bolts torque	x	x				x	
Adjust the belt tension		x			x		
Change oil of the speed reducer(s)		x				x	
Lubricate the threaded rod			x				
Grease the bearings			x				
Grease the corner wheels			x				
Check and adjust the scraper blades				x			
Purge the air and check the oil level of the speed reducer(s)					x		
Grease the scraper hinges					x		
Inspect and adjust #40 and #80 chain tension		x		x			
Lubricate the #40 and #80 chain					x		
General cleaning						x	
Lubricate the ½" threaded rod						x	
Visual inspection of the sealed bearings						x	
Control panel cleaning						x	

Attention!
When operating this GEA Houle product using other manufacturer's components and/or products such as a PTO, a tractor, a motor, a pump, etc., ALWAYS perform maintenance of the component and/or product as recommended by its manufacturer.

11.4 Check and adjust the tension of the nylon rope

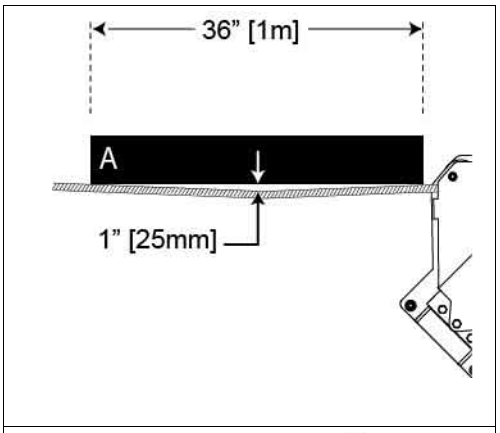
Every hour during the first day of operation
Every day during the first week of operation
Every week during the first month of operation
Every month during the first six months of operation

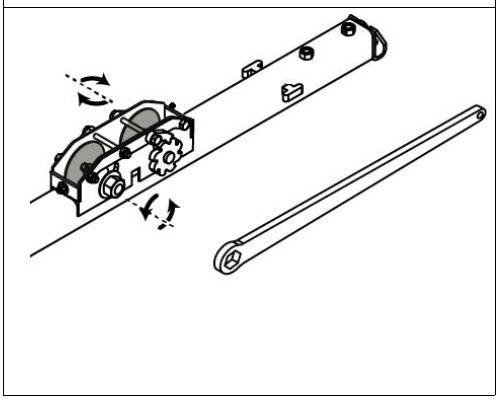
Warning!
Inadvertent start!
Shutdown is required! Shut the main power supply and lock with a locking device. Post a sign on the panel stating: ”Do not turn on, electric work in progress” in order to prevent an inadvertent energizing of the main electric supply.

Warning!
Risk of injury!
Be careful when using the wrench, the cable is under tension.

Attention!
Improper cable tension affects the load detection system. It causes the system to malfunction.

- Shutdown and lock the power supply.
- Check the cable tension on the corner wheels located next to the drive unit. Position a 36” (1m) straight edge (A) on the floor next to the cable.
- Pull by hand the cable to measure the tension in the center of the straight edge (A). The cable must roughly deflect 1” (25mm).
- If the deflection is greater than 1” (25 mm), roll one catch on each scraper tensioner using the wrench. Proceed scraper by scraper. Make sure the cable tensioner is correctly locked.
- Repeat steps until the deflection is obtained on each corner wheel located next to the drive unit.
- Install the scrapers tensioner cover.





- After adjusting the cable(s) tension, it might require adjusting the stroke of the scrapers. Manually operate the scraper in reverse and forward motion to make sure the scrapers stop in proper position. Refer to section 6.29: Handling and installation - Stroke washers fine tuning.
- Perform the ”MAXIMUM LOAD FLUCTUATION” steps in section 8.7.1: Programming.
- Adjust the misrolled cable limit switch at ⅛” (3mm) above the nylon rope. Follow the steps in section: Handling and installation - Testing the electric connections - Misrolled cable limit switch.

11.5 Check and adjust the tension of the steel/galvanized cable

Every day during the first week of operation
Every week


Warning!
Inadvertent start!
Shutdown is required! Shut the main power supply and lock with a locking device. Post a sign on the panel stating: ”Do not turn on, electric work in progress” in order to prevent an inadvertent energizing of the main electric supply.

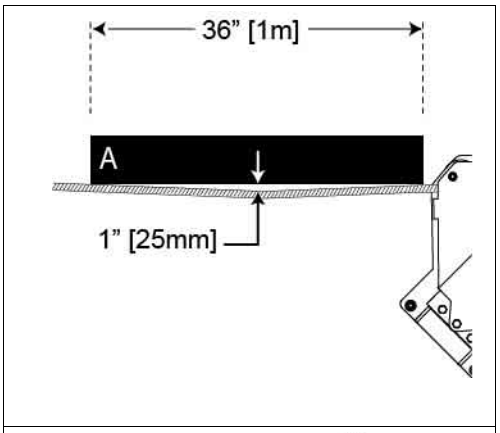
Warning!
Risk of injury!
Be careful when using the wrench, the cable is under tension.

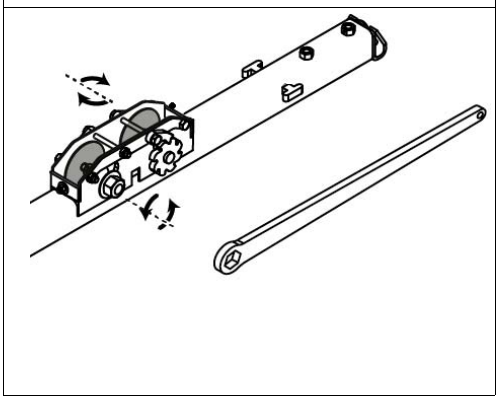
Attention!
Improper cable tension affects the load detection system. It causes the system to malfunction.

Caution!
Wear protective boots, eye gear and gloves.

Important!
Change the cable if it shows signs of significant wear.

- Shutdown and lock the power supply.
- Check the cable tension on the corner wheels located next to the drive unit. Position a 36” (1m) straight edge (A) on the floor next to the cable.
- Pull by hand the cable to measure the tension in the center of the straight edge (A). The cable must roughly deflect 1” (25mm).
- If the deflection is greater than 1” (25 mm), roll one catch on each scraper tensioner using the wrench. Proceed scraper by scraper. Make sure the cable tensioner is correctly locked.
- Repeat steps until the deflection is obtained on each corner wheel located next to the drive unit.
- Install the scrapers tensioner cover.





- After adjusting the cable(s) tension, it might require to adjust the stroke of the scrapers. Manually operate the scrapers in reverse and forward motion to make sure they stop at proper position. Refer to section 6.29: Handling and installation - Stroke washers fine tuning, if required
- Perform the ”MAXIMUM LOAD FLUCTUATION” steps in section 7 : Programming.

11.6 Visual inspection

The first 50 hours of operation
The first 100 hours of operation
Every 3 months


Warning!
Inadvertent start!
Shutdown is required! Shut the main power supply and lock with a locking device. Post a sign on the panel stating: ”Do not turn on, electric work in progress” in order to prevent an inadvertent energizing of the main electric supply.

Step 1 - Inspect the system to find any defective part or signs of abnormal wear

Caution!
Risk of injury!
Wear protective boots, eye gear and gloves.

- Check the cables, corner wheels, pulleys, belts, scrapers, motor and speed reducer.
- Change the cable if it shows signs of significant wear.

Step 2 - Check for manure accumulation

Danger!
Risk of electric shock!
Never pressure wash electric equipment and components.

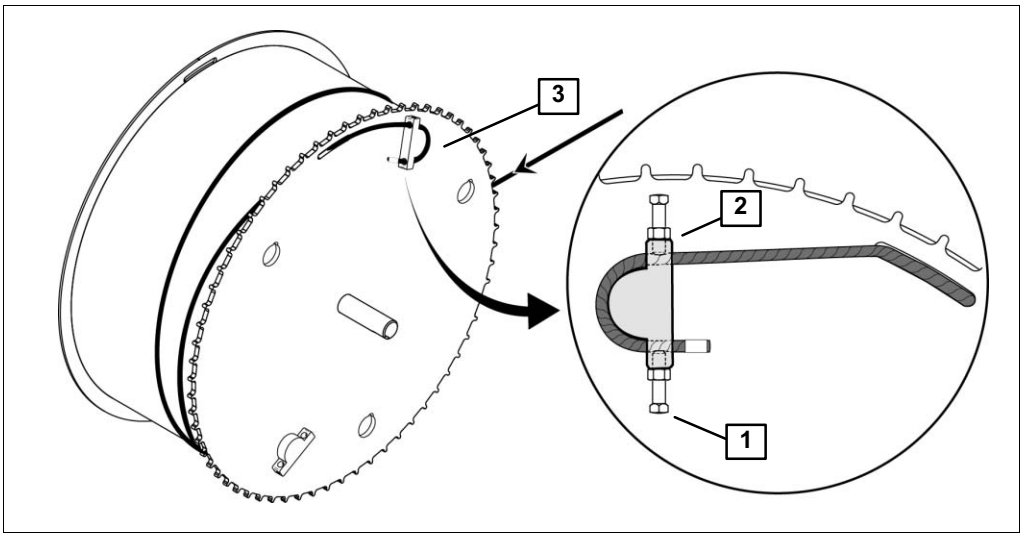
- Remove accumulated manure on the drum, the misrolled detection arm, the drive unit, the corner wheels, the scraper, etc.

11.7 Check the bolts and anchor bolts torque

The first 50 hours of operation
The first 100 hours of operation
Every 6 months

Warning!
Inadvertent start!
Shutdown is required! Shut the main power supply and lock with a locking device. Post a sign on the panel stating: ”Do not turn on, electric work in progress” in order to prevent an inadvertent energizing of the main electric supply.

- Shutdown and lock the power supply.
- Check that all bolts and anchor bolts are secured,
- Re-torque when required,
- Change bolt, if necessary.
- In particular, re-tighten the bolts (1) and nuts (2) that secure the cable in both cable attachments (3) located on each side of the drive unit drum, as illustrated.



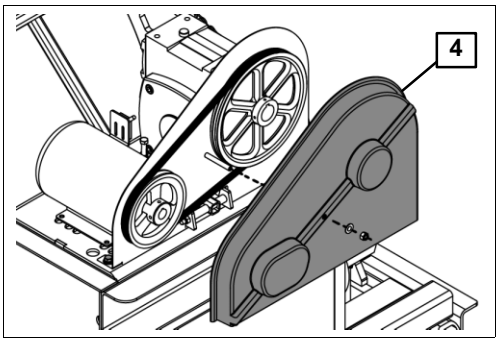
11.8 Adjust the belt tension

The first 100 hours of operation
Every 3 months

Warning!
Inadvertent start!
Risk of finger entanglement.
Shutdown is required! Shut the main power supply and lock with a locking device. Post a sign on the panel stating: ”Do not turn on, electric work in progress” in order to prevent an inadvertent energizing of the main electric supply.

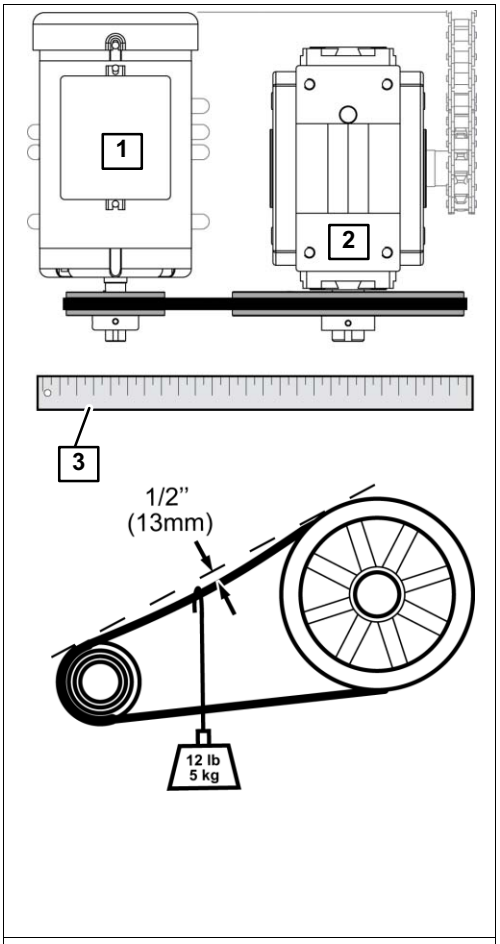
Caution!
Pinch point hazard!
Wear protective gloves when handling belts and pulleys.

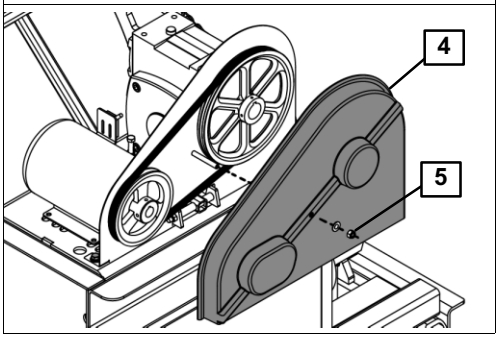
- Shutdown and lock the power supply.
- Open the drive unit hood.
- Remove the pulley guard (4).
- Loosen the four motor bolts.



Attention!
Risk of damage!
Improper alignment of the pulley can cause damages to the equipment, align both pulleys perfectly.

- Hand pull the motor (1) while making sure the motor stays parallel to the speed reducer (2).
- Hold position by securing the motor bolts, do not tighten yet.
- Apply a 12 lb [5 kg] of pressure halfway between the pulleys. Measure the deflection. The deflection must be 1/2” (13mm).
- If required, reposition the motor until proper belt tension is obtained.
- Place a straight edge (3) on the side of both pulleys to check the alignment.
- To align the pulleys, reposition the motor or move the pulley on the shaft.
- When aligned, tighten the set screw of the pulley.
- Verify the belt tension and the alignment again.
- Tighten the motor bolts on the motor table.
- Reinstall the guard (4) using the hardware (5).
- Close and lock the drive unit hood.





11.9 Change oil of the speed reducer(s)

First 100 hours of operation
Every 6 months

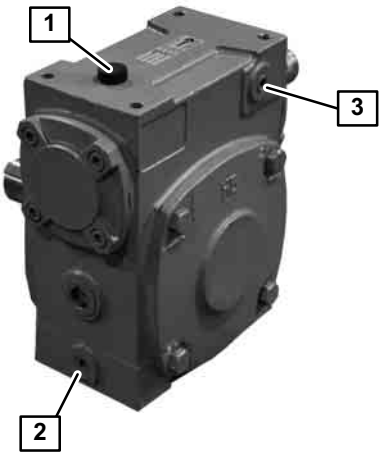
Warning!
Inadvertent start!
Shutdown is required! Shut the main power supply and lock with a locking device. Post a sign on the panel stating: ”Do not turn on, electric work in progress” in order to prevent an inadvertent energizing of the main electric supply.

Caution!
Risk of skin irritation!
Wear protective gloves and eye wear.

Attention!
Clean oil spills immediately and follow the local rules and regulations on oil disposal.

Note!
Have within reach containers to collect all substances potentially harmful such as oils, coolants, cleaning and disinfecting agents, etc.

- Make sure the power supply is shutdown and locked.
- Remove the filling plug (1) on top of the speed reducer.
- Place a container under the speed reducer to recover the used oil.
- Remove the drain plug (2).
- When completely drained, reinstall the drain plug.
- Remove the set screw (3).
- Using Petro Canada Ultima G220 synthetic oil, fill the speed reducer through the filling plug (1) until the oil level reaches the set screw opening (3).
- If applicable, repeat these steps to change the oil of the second speed reducer.
- Close and lock the drive unit hood.



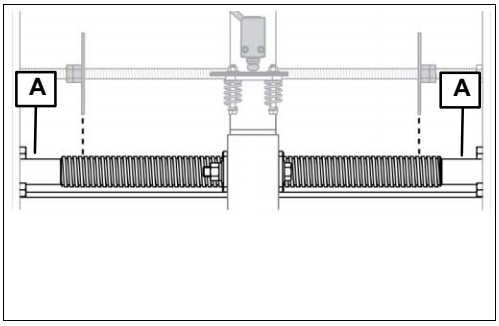
11.10 Lubricate the threaded rod

Every week

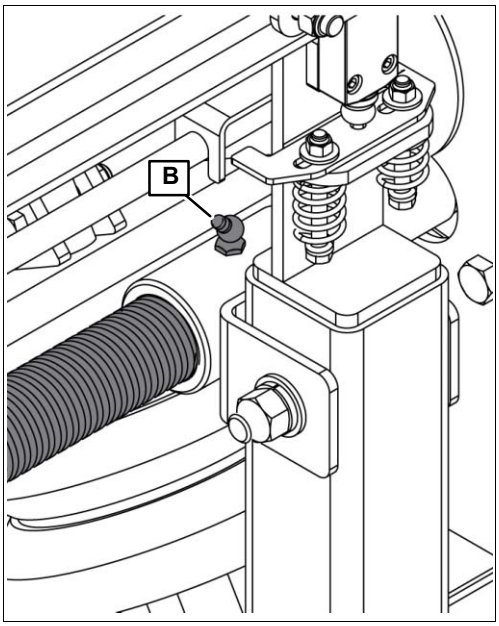
Warning!
Inadvertent start!
Shutdown is required! Shut the main power supply and lock with a locking device. Post a sign on the panel stating: ”Do not turn on, electric work in progress” in order to prevent an inadvertent energizing of the main electric supply.

Caution!
Risk of skin irritation!
Wear protective gloves and eye wear.

- Shutdown and lock the power supply.
- Unlock and open the access door.
- Using a brush, apply grade 2 PRECISION XL5 MOLY EP2 grease to the threaded sections (A), between the end of stroke washers and the drive unit frame.

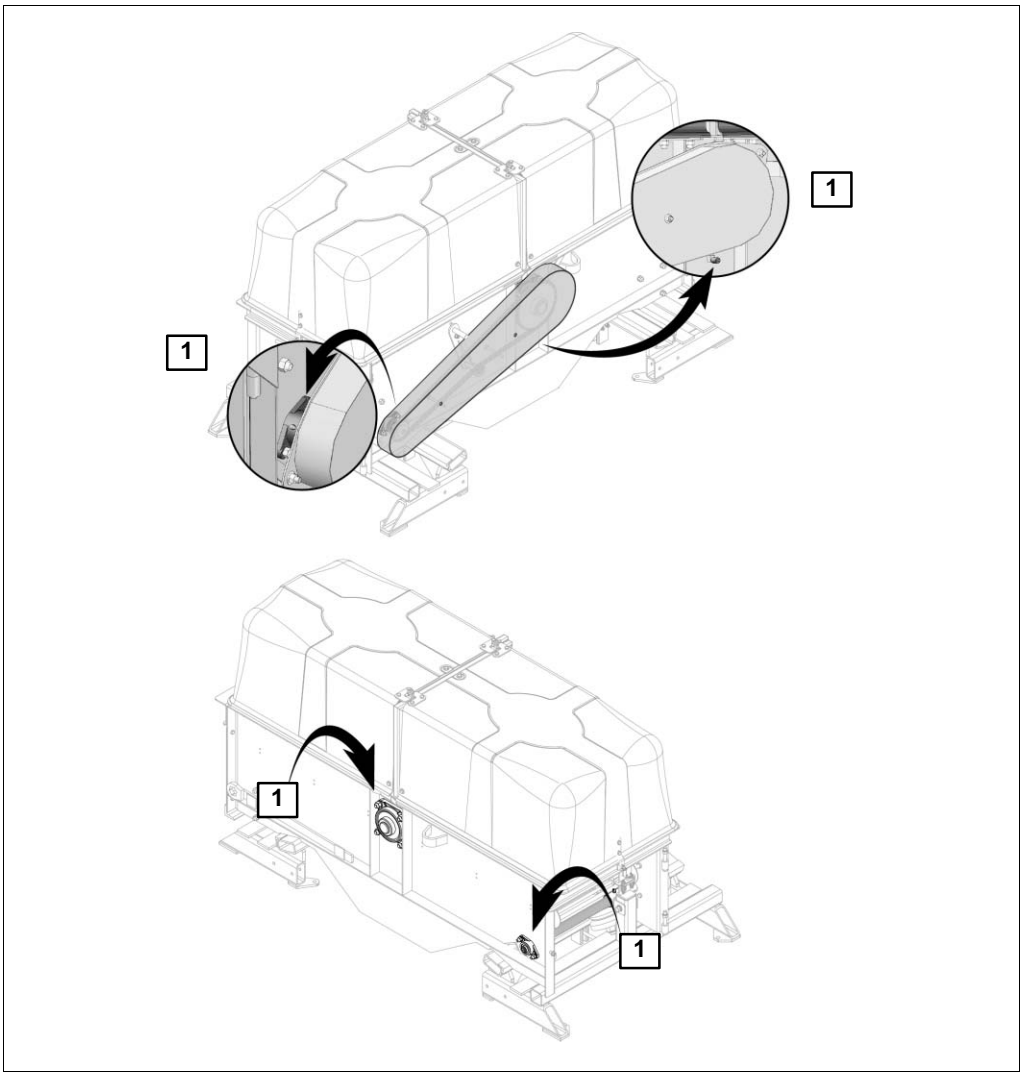


- Use a grease gun, apply grade 2 PRECISION XL5 MOLY EP2 grease to the threaded rod through the grease fitting (B).
- Close and lock the access door.



11.11 Grease the bearings

Every week



Caution!
Risk of skin irritation!
Wear protective gloves and eye wear.

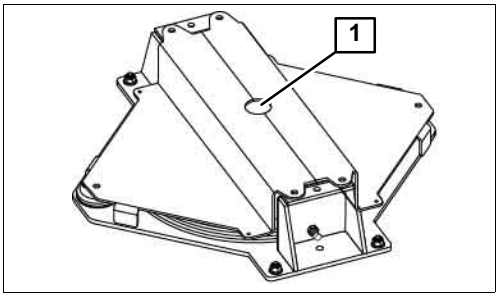
- Use a grease gun, apply grade 2 PRECISION XL5 MOLY EP2 grease to the bearings (1).

11.12 Grease the corner wheels

Every week

Caution!
Risk of skin irritation!
Wear protective gloves and eye wear.

- Using a grease gun, apply grade 2 PRECISION XL5 MOLY EP2 grease to each corner wheel (1).



11.13 Check and adjust the scraper blades

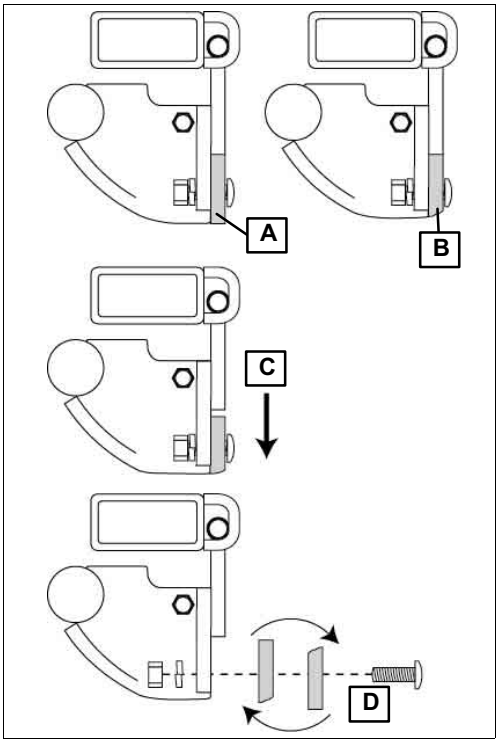
Every month

Warning!
Inadvertent start!
Shutdown is required! Shut the main power supply and lock with a locking device. Post a sign on the panel stating: ”Do not turn on, electric work in progress” in order to prevent an inadvertent energizing of the main electric supply.

Caution!
Risk of finger pinching, cuts and skin irritation!
Wear protective gloves.

11.13.1 Steel blade

- Check the scraper blades;
  (A) New blade;
  (B) Worn blade.
- Adjust downwards the blades to compensate the wear (C);
- Flip or rotate the blades to wear each edge (D);
- Blades must be replaced when they can no longer be adjusted.

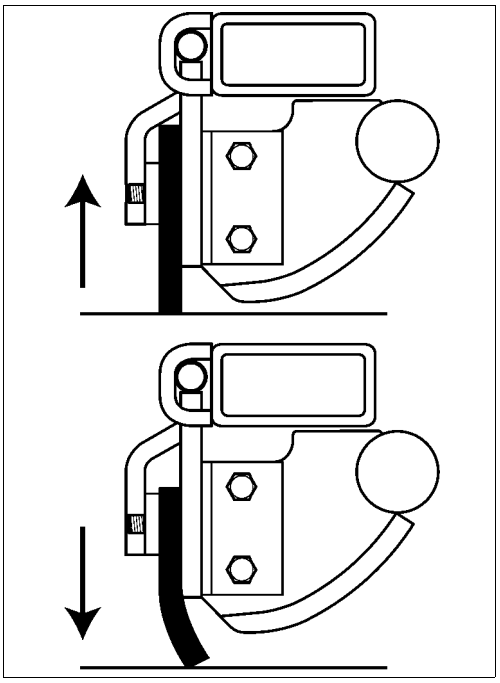


Fully adjusted upward:

- When positioned as illustrated, the urethane blade stiffness is maximized. Therefore, it cleans the alley similarly to a steel blade.

Fully adjusted downward:

- When positioned as illustrated, the urethane blade cleans the alley more gently, such as a squeegee.



11.14 Purge the air and check the oil level of the speed reducer(s)

Every 3 months

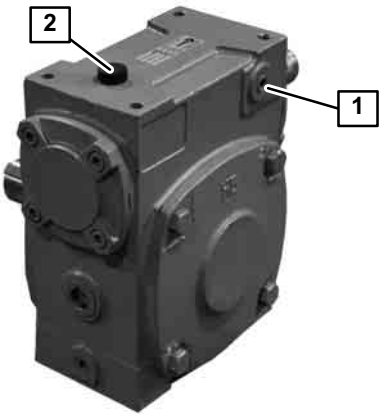
Warning!
Inadvertent start!
Shutdown is required! Shut the main power supply and lock with a locking device. Post a sign on the panel stating: ”Do not turn on, electric work in progress” in order to prevent an inadvertent energizing of the main electric supply.

Caution!
Risk of skin irritation!
Wear protective gloves and eye wear.

Attention!
Clean oil spills immediately and follow the local rules and regulations on oil disposal.

Note!
Have within reach containers to collect all substances potentially harmful such as oils, coolants, cleaning and disinfecting agents, etc.

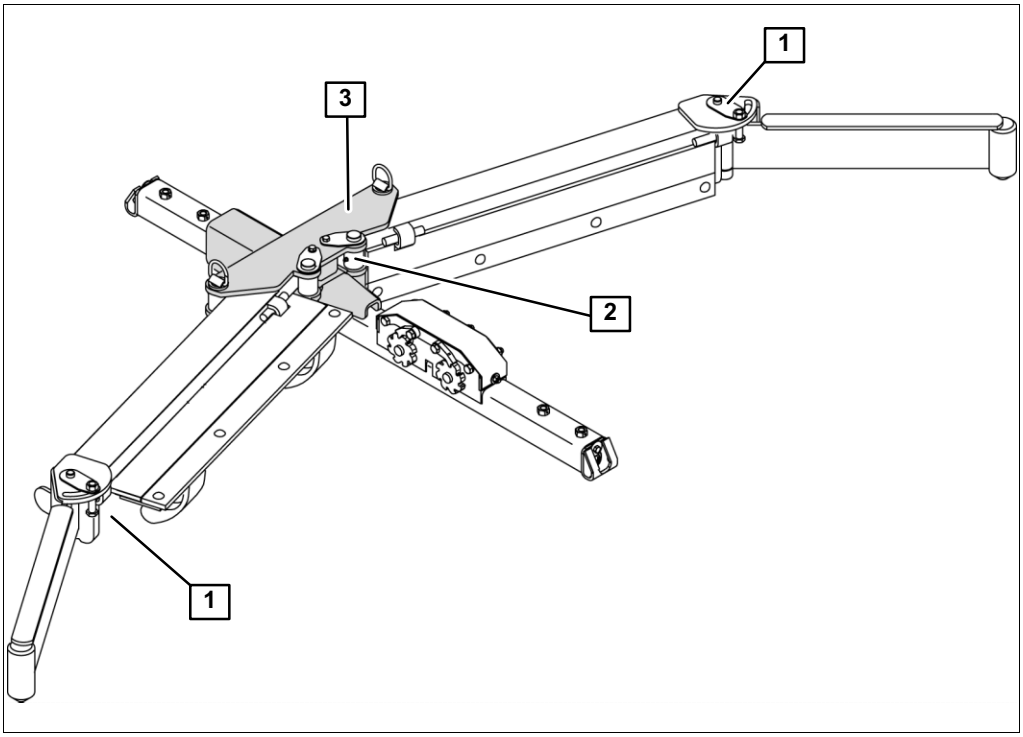
- Make sure the power supply is shutdown and locked.
- Remove the set screw (1).
- The oil level must reach the set screw opening (1).
- Remove the filling plug (2) on the top of the speed reducer.
- Using Petro Canada Ultima G220 synthetic oil, fill the speed reducer until the oil level reaches the set screw opening (1).
- Repeat these steps to check the oil level of the second speed reducer, if applicable.
- Close and lock the drive unit hood.



11.15 Grease the scraper hinges

Every 3 months

Warning!
Inadvertent start!
Shutdown is required! Shut the main power supply and lock with a locking device. Post a sign on the panel stating: ”Do not turn on, electric work in progress” in order to prevent an inadvertent energizing of the main electric supply.



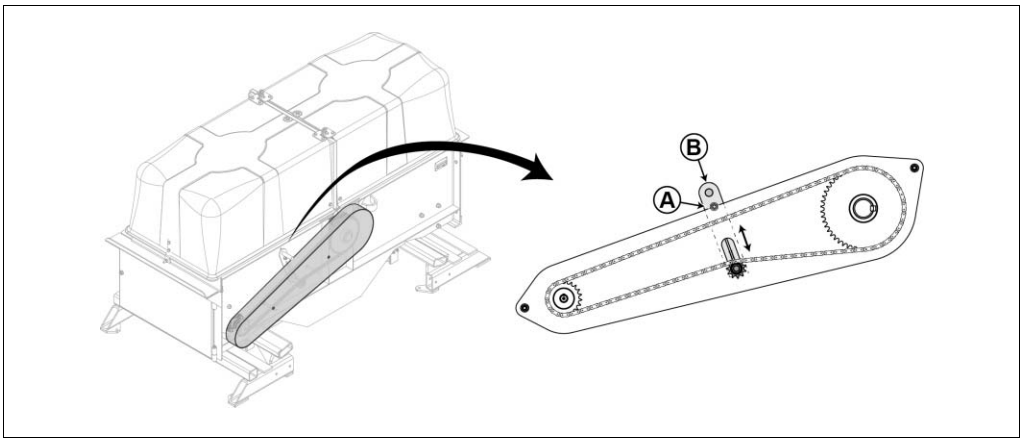
Caution!
Risk of finger pinching, cuts and skin irritation!
Wear protective gloves.

- Using a brush, apply grade 2 PRECISION XL5 MOLY EP2 grease to the scraper hinges (1).
- Using a grease gun, apply grade 2 PRECISION XL5 MOLY EP2 grease to the scraper hinges (2). The scraper arms can be removed from the central part (3).

11.16 Inspect and adjust #40 and #80 chain tension

The first 100 hours of operation
Every month

#40 chain



- Do not remove the safety guard.
- Loosen the #40 chain tensioner bolt (A).
- Pull the tensioner (B) by hand to increase tension on the chain.
- Tighten the bolt (A).

#80 chain

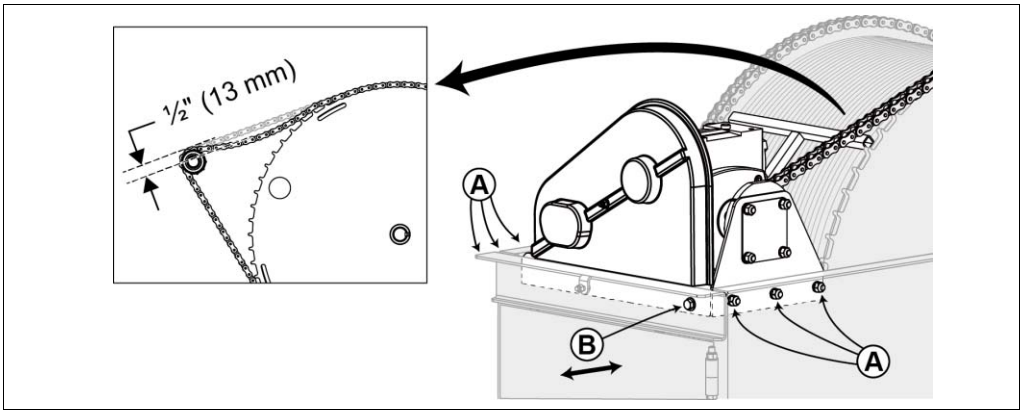
Caution!
Risk of finger pinching, cuts and skin irritation!
Wear protective gloves.

Attention!
Make sure the chain tension is equal on both chain sections (over and under the drum). Perform the following steps.

- Operate the drive unit in forward motion for a few seconds.
- Stop the control panel.

Warning!
Inadvertent start!
Shutdown is required! Shut the main power supply and lock with a locking device. Post a sign on the panel stating: ”Do not turn on, electric work in progress” in order to prevent an inadvertent energizing of the main electric supply.

- Shutdown and lock the power supply.
- Unlock and open the drive unit hood.



- Lightly loosen bolts and nuts (A) on each side of the drive unit.
- Screw the adjustment bolt (B) to increase the #80 chain tension.
- Hold the position by tightening one bolt and nut (A) on each side of the drive unit.
- Apply hand pressure in the middle of the chain. The chain must lightly deflect approximately ½", as illustrated.

Attention!
Too much deflection or insufficient tension will cause premature wear of the sprockets and the chain.

- Repeat steps until proper deflection is achieved.
- Once deflection is obtained, make sure the chain aligns on the drive unit drum.
- Tighten all bolts and nuts (A).
- Close the drive unit hood.
- Operate the drive unit in the opposite direction for a few seconds.
- Stop the control panel.

Warning!
Inadvertent start!
Shutdown is required! Shut the main power supply and lock with a locking device. Post a sign on the panel stating: "Do not turn on, electric work in progress" in order to prevent an inadvertent energizing of the main electric supply.

- Shutdown and lock the power supply.
- Adjust the chain deflection of the second #80 chain.
- Once deflection is obtained, make sure the chain aligns on the drive unit drum.
- Tighten all bolts and nuts (A).
- Close and lock the drive unit hood.

11.17 Lubricate the #40 and #80 chain

Every 3 months

Warning!
Inadvertent start!
Shutdown is required! Shut the main power supply and lock with a locking device. Post a sign on the panel stating: ”Do not turn on, electric work in progress” in order to prevent an inadvertent energizing of the main electric supply.

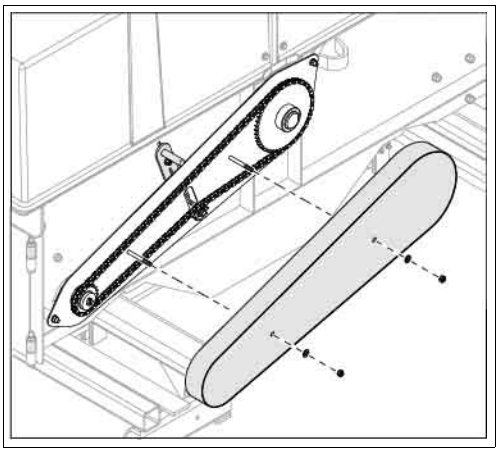
Caution!
Risk of skin irritation!
Wear protective gloves.

Attention!
Clean oil spills immediately and follow the local rules and regulations on oil disposal.

Note!
Lubrication can occur every three months only when using a high performance chain lubricant such as a Chain Gang brand.

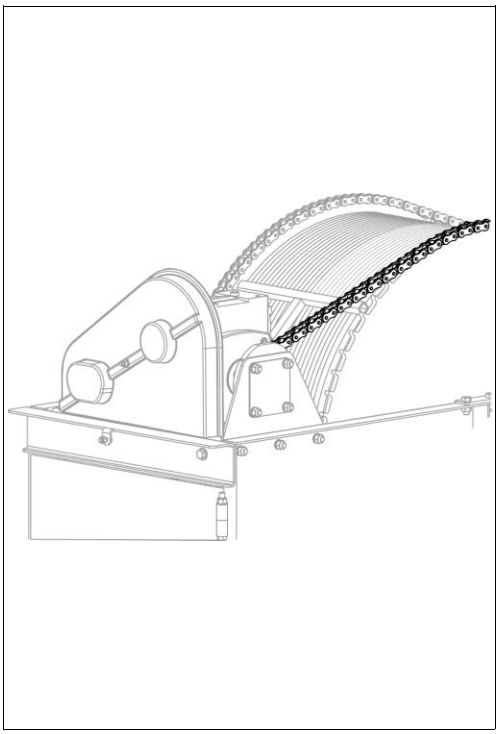
Chain #40

- Shutdown and lock the power supply.
- Remove the safety guard, as illustrated.
- Apply ”Chain Gang” grease to the chain.
- Reinstall the safety guard.



Chain #80

- Shutdown and lock the power supply.
- Unlock and open the hood.
- Apply ”Chain Gang” grease to the section of the chain that is accessible.
- Close and lock the hood.
- Unlock and activate the power supply.
- Using the instant start function, engage the control panel.
- Operate the drive unit for 5 minutes to expose the non-lubricated portion of the chain.
- Repeat steps until the #80 chain is completely lubricated.
- Close and lock the drive unit hood.



11.18 General cleaning

Every 6 months

Danger!
Risk of electric shock!
Never pressure wash electric equipment and components.

Warning!
Inadvertent start!
Shutdown is required! Shut the main power supply and lock with a locking device. Post a sign on the panel stating: ”Do not turn on, electric work in progress” in order to prevent an inadvertent energizing of the main electric supply.

Caution!
Wear protective boots, eye gear and gloves.

Attention!
Use tap water to clean this product. Do not exceed 2000 psi [105 bar] when using a pressure washer and keep the nozzle at a distance of 1ft [30cm] from the surface to be cleaned.

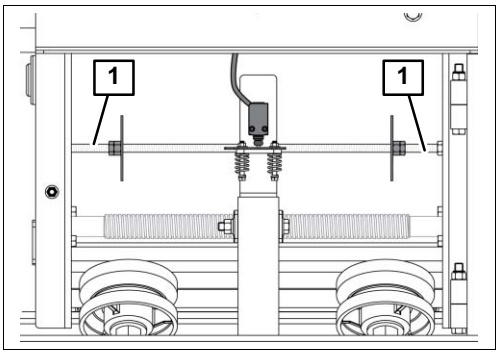
- Shutdown and lock the power supply.
- Clean manure buildup on the scrapers, the corner wheels, the alleys, etc.
- Remove manure build up in and out of the drive unit. DO NOT PRESSURE WASH THE ELECTRIC MOTOR and electric components.
- Reinstall all safety guards.

11.19 Lubricate the ½" threaded rod

Every 6 months

Caution!
Risk of skin irritation!
Wear protective gloves.

- Shutdown the control panel.
- Unlock and open the access door.
- Using a brush, apply grade 2 PRECISION XL5 MOLY EP2 grease to the ½" [13 mm] threaded rod beyond the stroke washers (1), as illustrated.
- Close and lock the access door.



11.20 Visual inspection of the sealed bearings

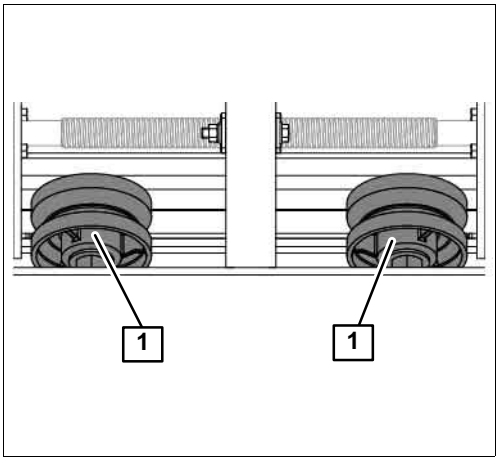
Every 6 months

Warning!
Inadvertent start!
Shutdown is required! Shut the main power supply and lock with a locking device. Post a sign on the panel stating: "Do not turn on, electric work in progress" in order to prevent an inadvertent energizing of the main electric supply.

Caution!
Risk of skin irritation!
Wear protective gloves.

Attention!
Do not grease sealed bearings.

- Shutdown and lock the power supply.
- Unlock and open the access door.
- Inspect the sealed bearings (1) to find if there are signs of grease leaks.
- If a bearing leaks, the complete steel wheel must be replaced. Contact your dealer.
- Close and lock the drive unit access door.



11.21 Control panel cleaning

Every 6 months

Danger!
Risk of electric shock!
Never pressure wash electric equipment and components.

- Clean the control panel box with a dry cloth to remove all dust particles.

12 Decommissioning

12.1 Special qualification required for decommissioning work

Decommissioning work must be performed by trained personnel in accordance with the safety instructions.

Electric work must be performed by a qualified electrician.

Read the section: Safety - Personnel qualifications.

12.2 Safety instructions for decommissioning

Warning!
Inadvertent start!

Shutdown is required! Shut the main power supply and lock with a locking device. Post a sign on the panel stating: ”Do not turn on, electric work in progress” in order to prevent an inadvertent energizing of the main electric supply.

Warning!
Risk of fall!
Be aware of the surroundings when working near areas such as a storage pit, a cross gutter, a transfer pump hopper, etc.

Warning!
Risk of injury!
When releasing tension on a cable, a significant load is applied on the wrench. Clean the tensioner and make sure the wrench is properly inserted on the bolt head before applying force on the wrench. Before releasing pressure on the wrench, make sure the tensioner is locked in position.

Warning!
Risk of injury!
Remove livestock from the decommissioning area.

Caution!
Risk of stumble!
Be aware of the cable in the free stall alleys.

Caution!
Slippery floor!
Manure makes the floor slippery, be aware.
Use the walkways when possible.

Caution!
Risk of skin irritation, cuts, finger pinching!
Wear protective gloves when handling the scrapers, steel cable, lubricants, corner wheels, the electric motor, pulley and belt.

Attention!
Clean oil spills immediately and follow the local rules and regulations on oil disposal.

- Shut and lock the main power supply.
- Disconnect all electric wires.
- Decommission all parts. To handle the drive unit, refer to section 6.7: Handling and installation - Drive unit handling.

12.3 Decommissioning/disposal

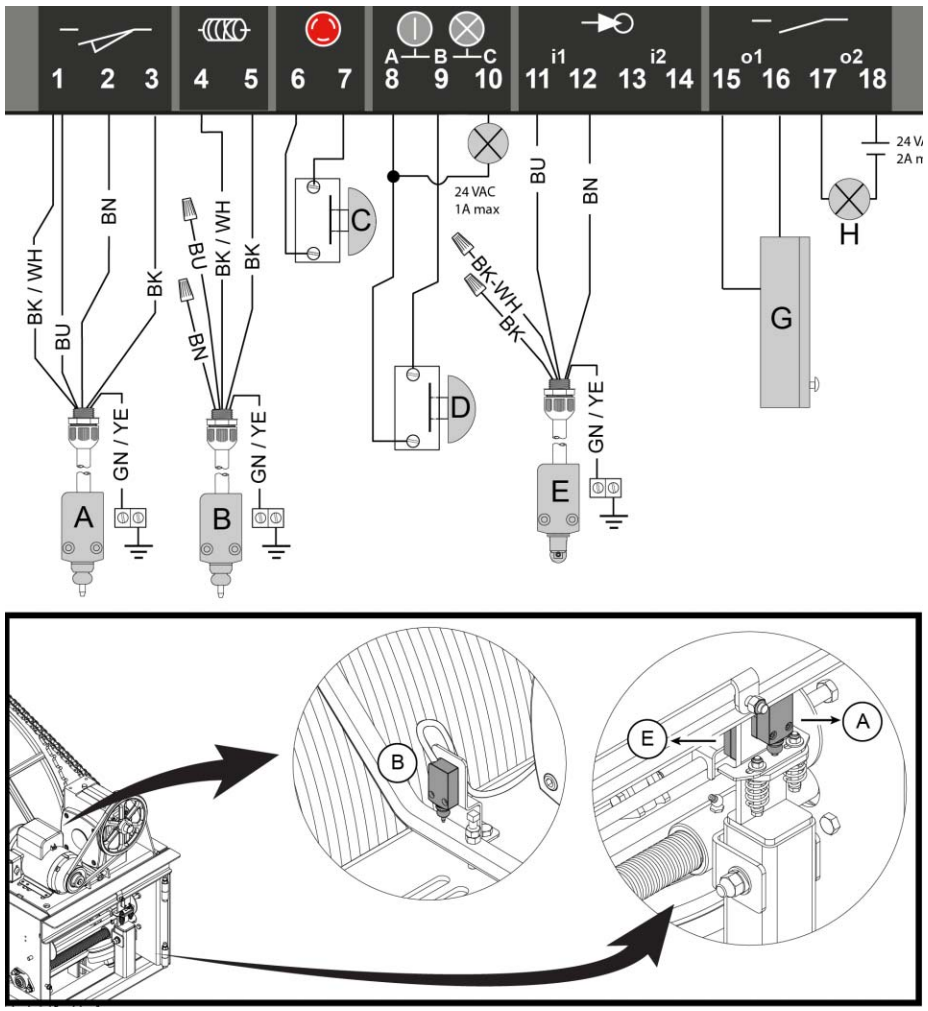
Handle all components and lubricants properly and dispose of them in accordance with your valid local rules and regulations on waste disposal. Recycle if possible.

13 Appendix

13.1 IVR PRO wiring diagram

Find the wiring diagram in the control panel instruction manual and inside the control panel box

Attention!
GEA provides specifications and wiring diagrams related to Baldor motor(s). For any other motor brand, contact the manufacturer.

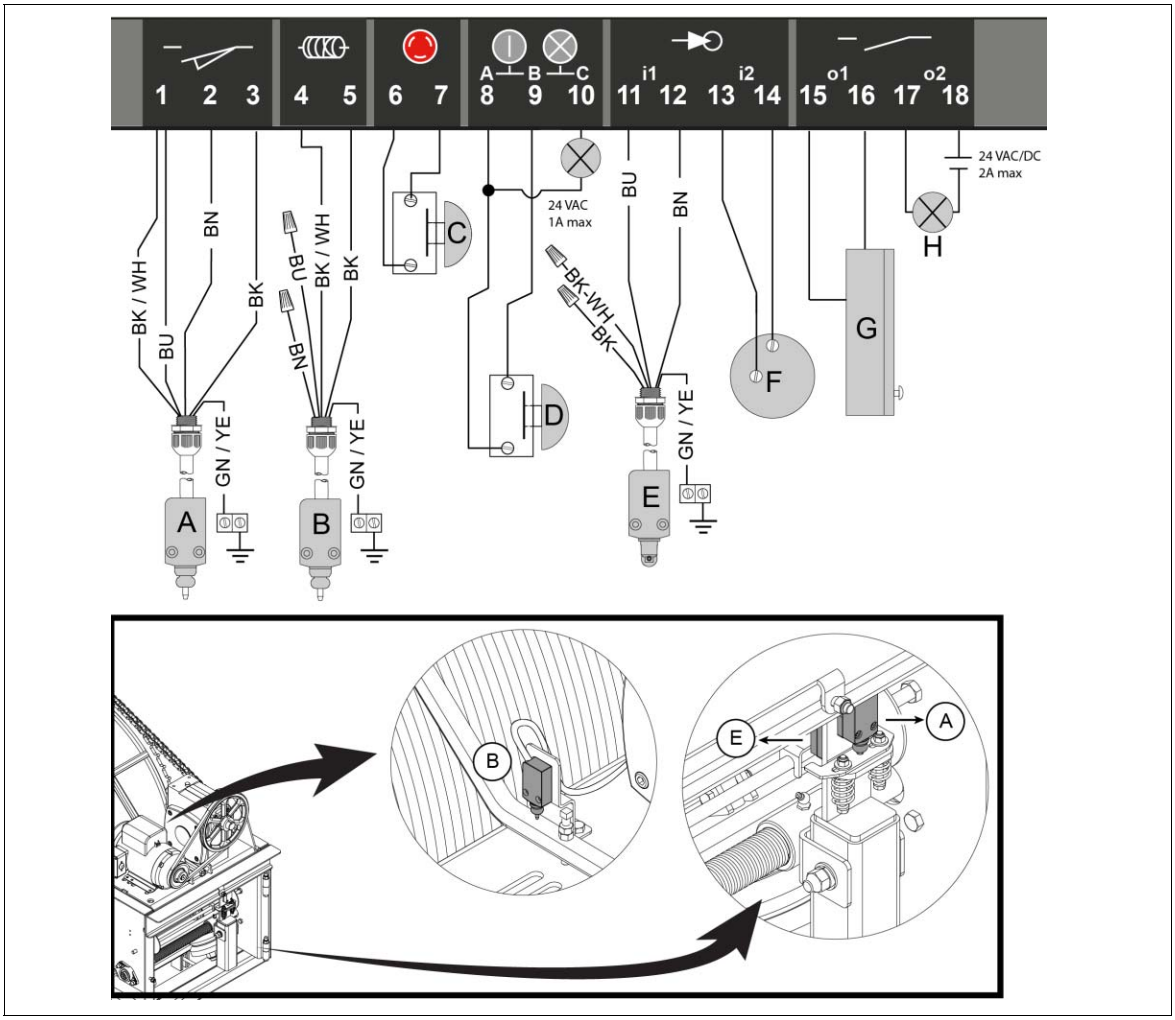


Legend:			
A	Stroke limit switch	H	Dry contact for alarm indicator light
B	Misrolled cable switch	BK/WH	Black / White
C	Remote emergency stop button	BU	Blue
D	Remote start button with indicator light	BN	Brown
E	External start signal limit switch	BK	Black
G	Dry contact for start signal	GN/YE	Green / Yellow

13.2 IVR PRO Max@ccess wiring diagram

Find the wiring diagram in the control panel instruction manual and inside the control panel box

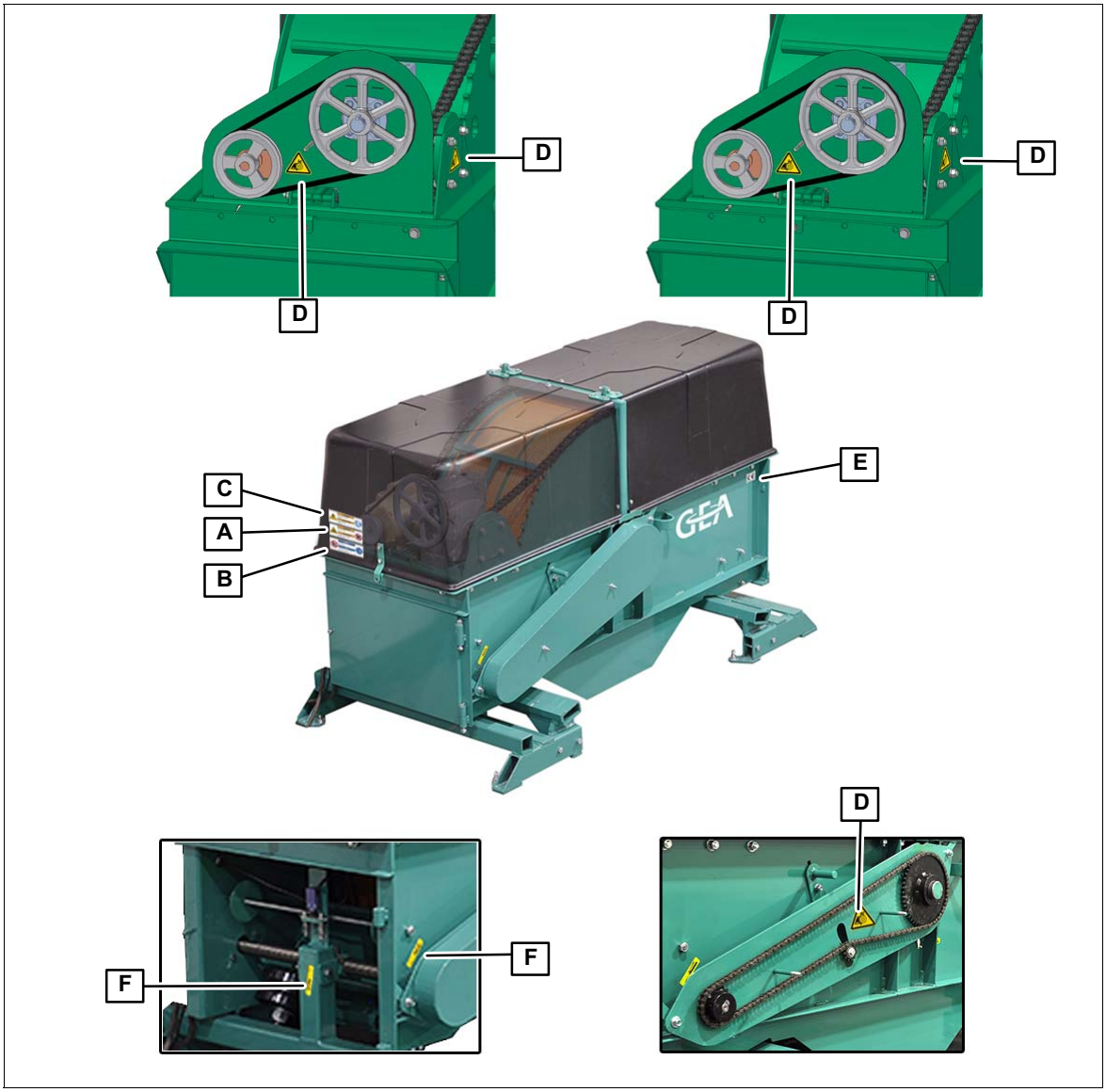
Attention!
GEA provides specifications and wiring diagrams related to Baldor motor(s). For any other motor brand, contact the manufacturer.

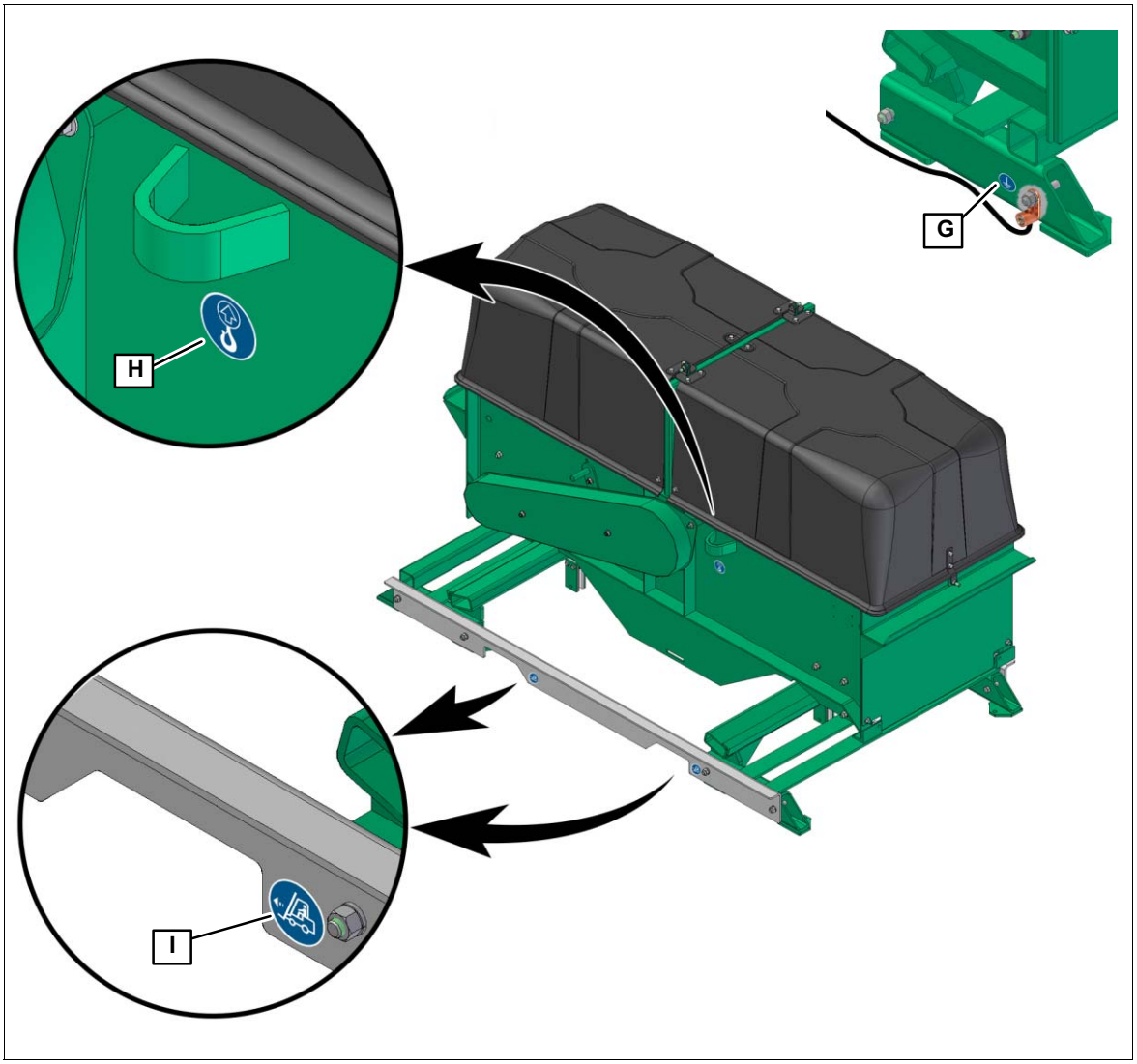


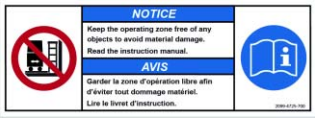
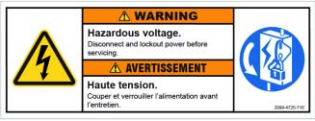
Legend:			
A	Stroke limit switch	G	Dry contact for start signal
B	Misrolled cable switch	H	Dry contact for alarm indicator light
C	Remote emergency stop button	BK/WH	Black / White
D	Remote start button with indicator light	BU	Blue
E	Manure apron, gradual discharge and external start signal limit switch	BN	Brown
F	Thermostat	GN/YE	Green / Yellow

13.3 Safety labels and lubrication labels position

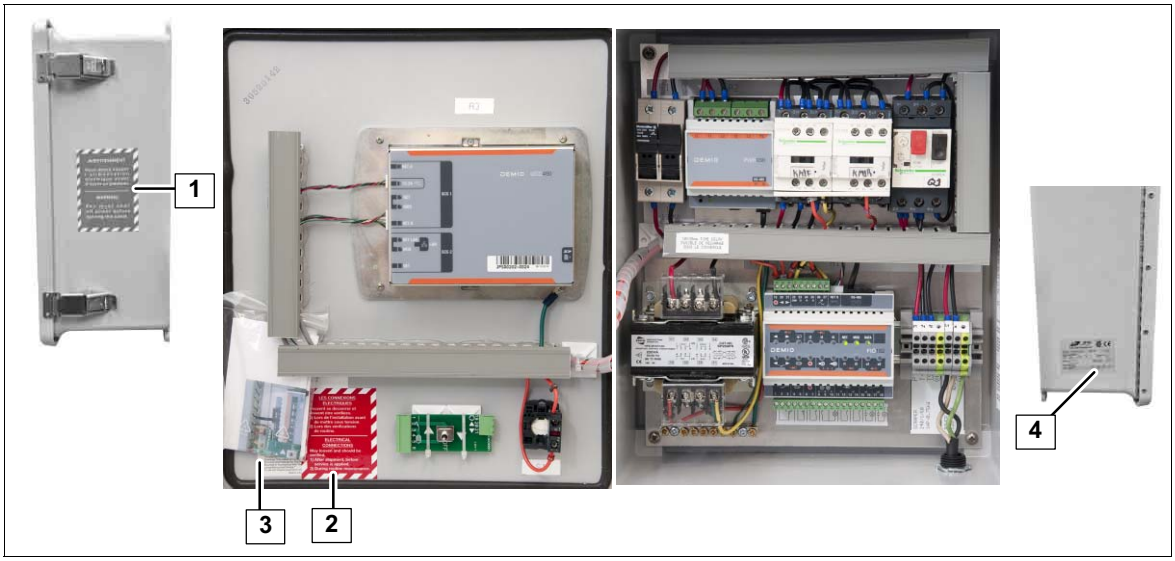
13.3.1 Drive unit





A	 2099-4725-690	**B**	 2099-4725-700	**C**	 2099-4725-710
D	 2099-4725-110	**E**	 2099-4725-120	**F**	 2009-4701-240
G	 2099-4700-040	**H**	 2099-4700-060	**I**	 2099-4700-050

13.3.2 Control panel



Legend:			
1	Warning! Shut off power before opening this panel.	3	Control panel box certification label
2	Electric connections may loosen and should be verified after shipment, before service is applied and during routine maintenance.	4	Control panel specifications

13.4 Abbreviations

Terms	Explanation	Terms	Explanation
@	at	Ø	Diameter
CE / EC	European Union	CW	clockwise
CCW	counterclockwise	fax	facsimile
I.D.	inside diameter	Inc.	Incorporated
NC	national coarse thread	O.D.	outside diameter
PTO	power take-off	PVC	polyvinyl chloride
QC / qc	Quebec	SAE	Society of Automotive Engineers
Us / USA	United States of America	www	world wide web

Units	Explanation	Units	Explanation
A	Amperage (electrical current)	kW	kilowatt
AS	Alloy steel	km/h	kilometres per hour
bar	bar pressure	LPM	liters per minute
cm	centimeters	LCS	Low carbon steel
°	degree angle	lb	pounds
°C	degree centigrade/ Celsius (temperature)	m	meter
°F	degree Fahrenheit (temperature)	MCAS	Medium carbon alloy steel
' / ft	Feet	MCS	Medium carbon steel
ft-lb	foot-pound	min	minute
g	grams	mph	miles per hour
gal.	gallon	mm	millimeters
GPM	gallons per minute	N/m	Newton meter
Hp	horsepower	psi	pounds per square inch (pressure)
hrs	hours	RPM	revolutions per minute
HT	Heat threaded	s	second
Hz	Hertz	V	volt (voltage)
” / in	inch (= 25.4 mm)	VDC	volts of direct current
kg	kilograms	VAC	volts of alternative current
kPa	kilo Pascal	Ω	Ohm (resistance)

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