

AnyFeeder

User's Guide

AnyFeeder SXM100/140

AnyFeeder SX240/340

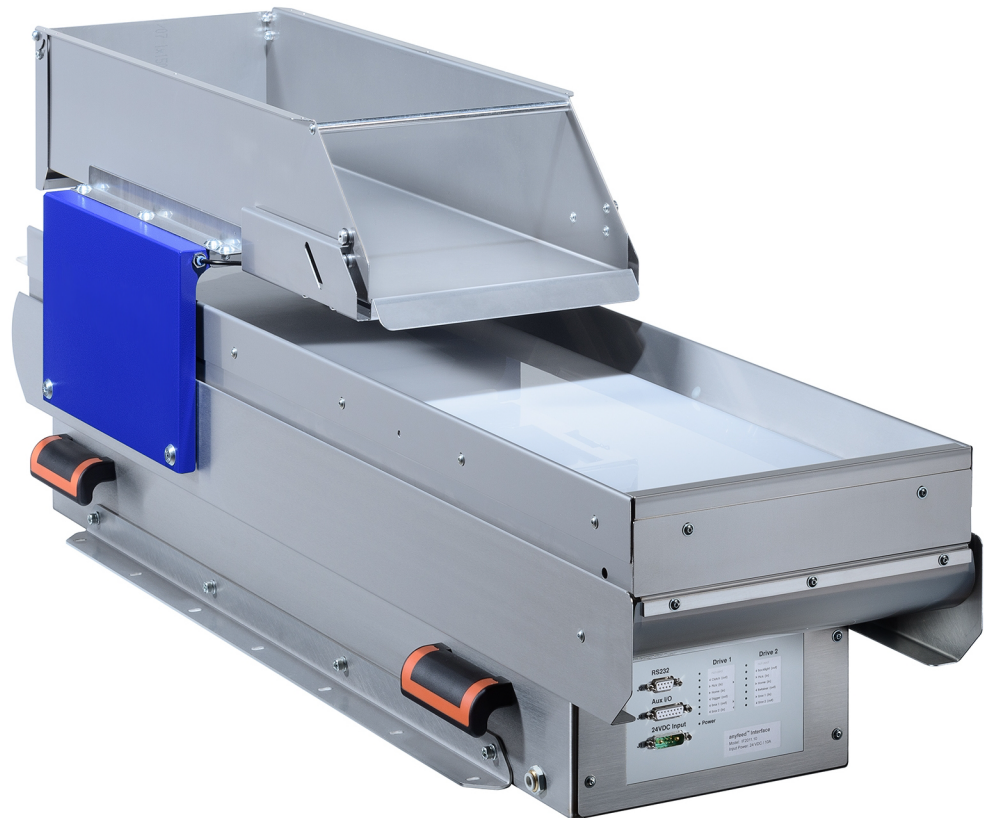


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1 Overview

1.1 Introduction

This manual describes the key points for getting your AnyFeeder operational. Before getting started, make sure you have all the components necessary to set up your AnyFeeder. In addition to the AnyFeeder (shown in Figure 1-1 below), it is assumed that you have the appropriately configured, controlled robot with vision guidance. (See Section 1.3 and Section 2.1 for details.)

1.2 Product Description

Your AnyFeeder provides flexible parts feeding without the limitations of a hard-tooled feed system (such as a bowl-feeder or tray-feeding system).

The AnyFeeder is designed for feeding a wide variety of parts with rapid change-over times.

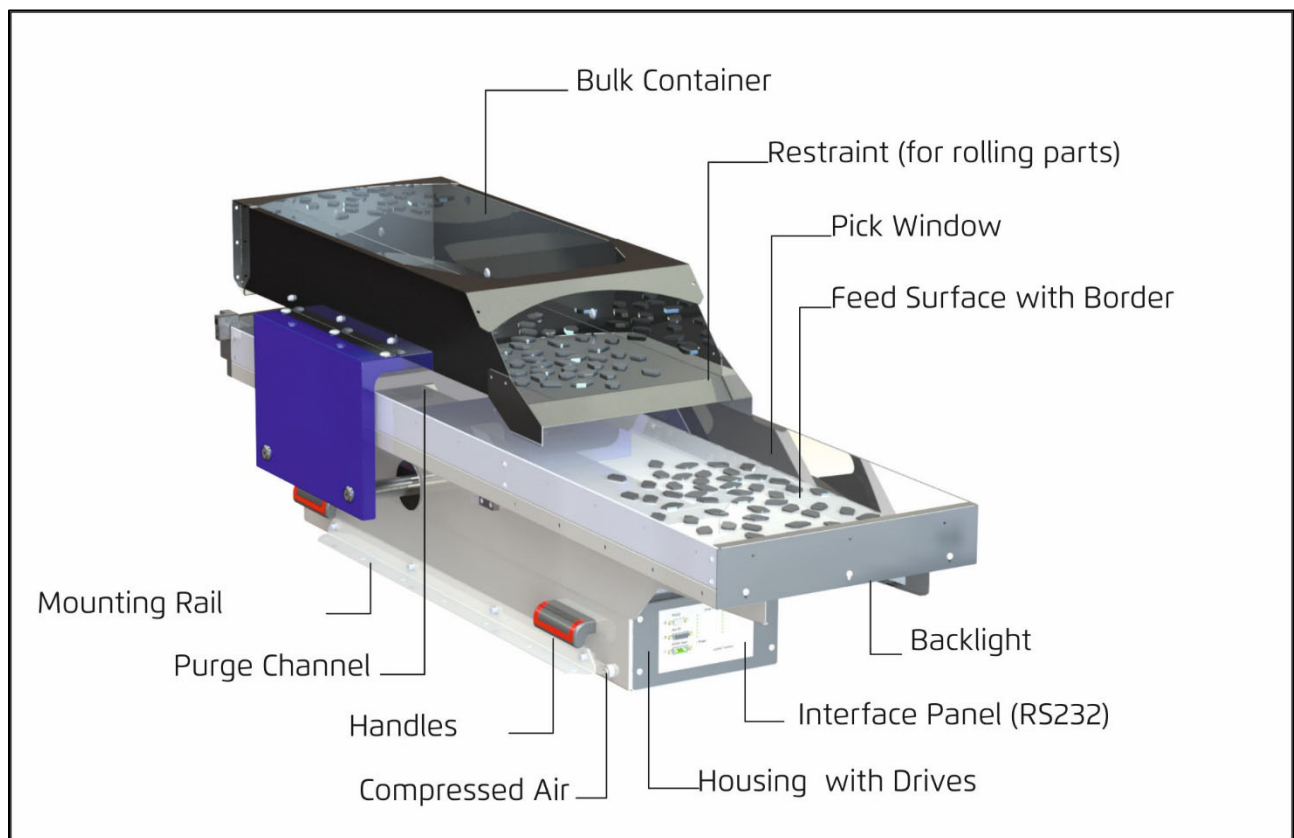


Figure 1-1: AnyFeeder parts, model SX340 shown

There are different AnyFeeder models available:

- AnyFeeder SXM100
- AnyFeeder SXM140
- AnyFeeder SX240
- AnyFeeder SX340

NOTE: In most aspects, the feeders are similar enough that they will be covered together. In areas where there are significant differences, information is given for the most models or presented in single chapters such as “Maintenance”.

Your AnyFeeder package includes:

- AnyFeeder
- 24-VDC Power Cable, 5 m
- RS232-Cable, 4.5 m

1.3 Warnings, Cautions, and Notes in Manual

There are five levels of special alert notation used in this manual. In descending order of importance, they are:



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



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



WARNING: This indicates a potentially hazardous electrical situation which, if not avoided, could result in injury or major damage to the equipment.



WARNING: This indicates a potentially hazardous situation which, if not avoided, could result in injury or major damage to the equipment.



CAUTION: This indicates a situation which, if not avoided, could result in damage to the equipment.

Note: Notes provide supplementary information, emphasize a point or procedure, or give a tip for easier operation.

1.4 Safety Precautions



Warning: An AnyFeeder can cause personal injury or damage to itself and other equipment if the following safety precautions are not observed:

1.5 Declaration by the manufacturer on integration and conformity

The documents for the AnyFeeder will be handed over separately upon request.

1.6 Intended Use of AnyFeeder SX and SXM

The feeders of the AnyFeeder SX/SXM series are intended for the use in combination with an industrial robot and vision system, with the purpose to store and singulate bulk parts for easy pickup by a robot. The working principal is illustrated in the diagram below.

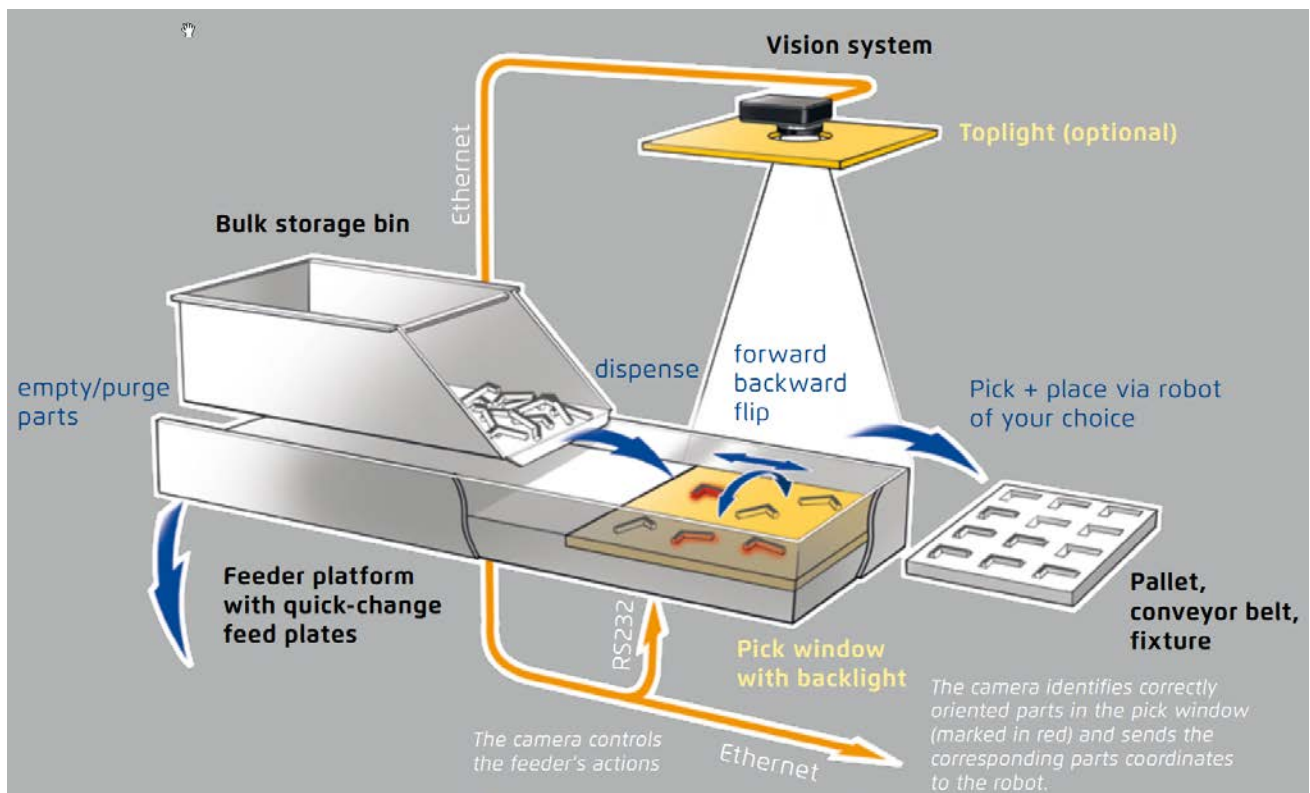


Figure 1-2: Working principle AnyFeeder/robot/vision

The feeders of the AnyFeeder SX/SXM series are exclusively intended for use in the following industrial areas and applications, for the purpose to store and singulate parts for later pickup by a robot:

- Small part assembly, material handling, and quality control
- Part packaging applications
- Part counting applications

- Loading of process machines

The feeders of the AnyFeeder SX/SXM series must be operated at any time under the following **ambient conditions**: 5 to 40° C, humidity 5% to 90% (no condensation).

All operating personnel must be instructed and trained to safely operate the complete system, comprised at minimum of feeder/robot/gripper/vision.

All operating personnel must have read and fully understood all relevant safety aspects of this user manual/guide.

The feeders of the AnyFeeder SX/SXM series are **NOT** to be used:

- for handling food products
- in explosive environments
- for wet, oily and visibly contaminated parts
- for applications in radioactive environments such as handling radioactive parts
- in outdoors applications

The feeders of the AnyFeeder SX/SXM series are considered incomplete machines in accordance with the European Machinery Directiv 2006/42/EU.

Other applications not mentioned in this documentation require approval by the manufacturer in writing.

2 Installation

2.1 Unpacking and Inspecting the Equipment

Before Unpacking

The AnyFeeder SX series is shipped in a carton that is banded onto a wooden pallet.

Carefully inspect the carton for evidence of damage during transit. Pay special attention to any tilt and shock indication labels on the exteriors of the carton. If any damage is indicated, request that the carrier's agent be present at the time the carton is unpacked.

Upon Unpacking

Before signing the carrier's delivery sheet, please compare the actual items received (not just the packing slip) with your equipment purchase order and verify that all items are present and that the shipment is correct and free of visible damage.

- If the items received do not match the packing slip or are damaged, do not sign the receipt. Contact your sales representative as soon as possible.
- If the items received do not match your order, please contact your sales representative immediately.

Inspect each item for external damage as it is removed from its carton. If any damage is evident, contact your sales representative.

Retain all cartons and packaging materials. These items may be necessary to settle claims or, at a later date, to relocate equipment.

2.2 Repacking for Relocation

If the AnyFeeder or other equipment needs to be relocated, reverse the steps in the installation procedures that follow. Reuse all original packing containers and materials and follow all safety notes used for installation. Improper packaging for shipment will void your warranty. Specify this to the carrier if the AnyFeeder is to be shipped.

Unpacking

To unpack the AnyFeeder:

1. Use a forklift or hand truck to move the shipping carton with pallet to the installation area.
2. Cut the banding with a utility knife or scissors.
3. Raise the shipping carton cover straight up until it clears the contents, and then remove it.
4. Detach the AnyFeeder from the shipping pallet by using a 4 mm Allen wrench and 10 mm wrench or socket to remove the four (4) screws from the mounting rails of the AnyFeeder, as shown in the following figure.

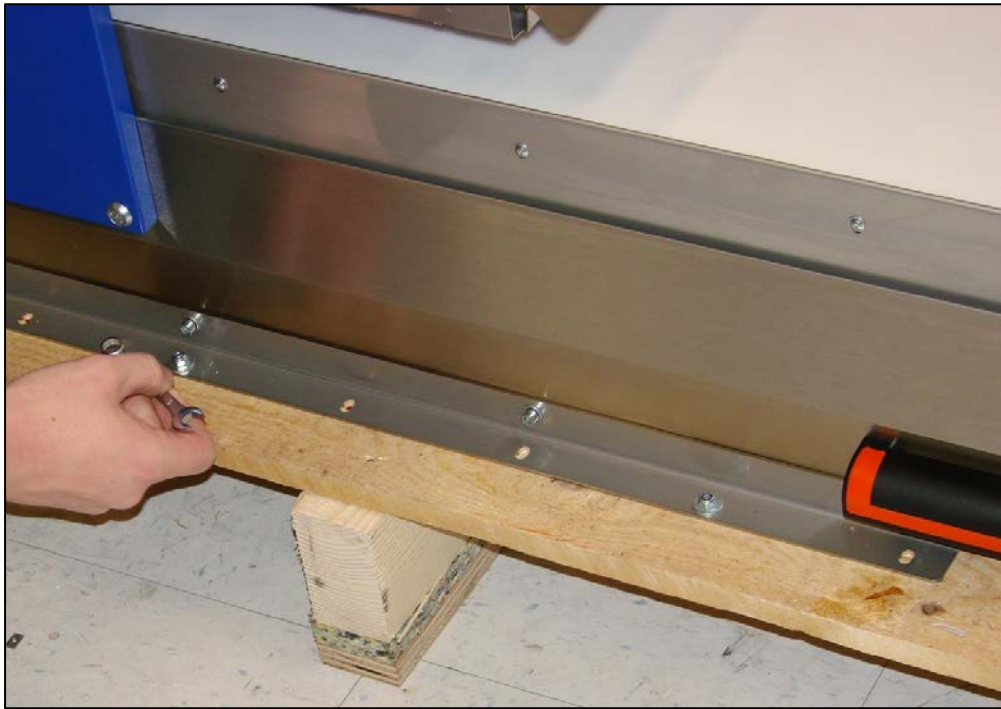


Figure-2-1: Shipping Screws on Mounting Rail

2.3 Mechanical Installation

Preparing a Mounting Location



WARNING: The AnyFeeder must be bolted or clamped down to the base plate at all times while it is in operation. Due to its working principle the AnyFeeder may “walk off” the base plate during operation if it is not properly secured to the base plate.



WARNING: Do not connect the AnyFeeder to electrical power or compressed air before it is securely bolted or clamped down to the base plate.

Before the AnyFeeder can be used, it must be securely mounted in a prepared location within the robot's work cell.

Prepare the mounting hole pattern as shown in the relating figure. Locate the mounting hole pattern on the base plate so that the minimum base plate contact of each AnyFeeder's base housing rests on the base plate, as shown in the following figures.

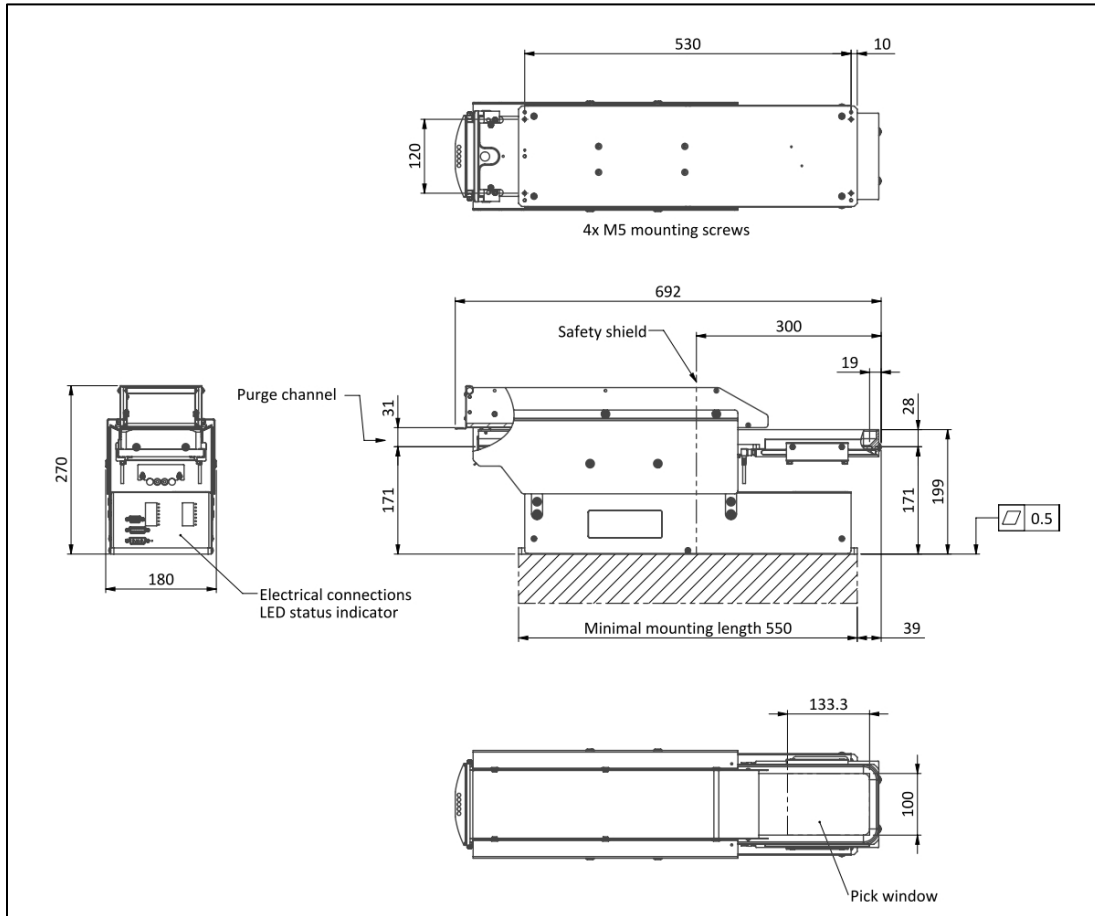


Figure 2-2: AnyFeeder SXM100

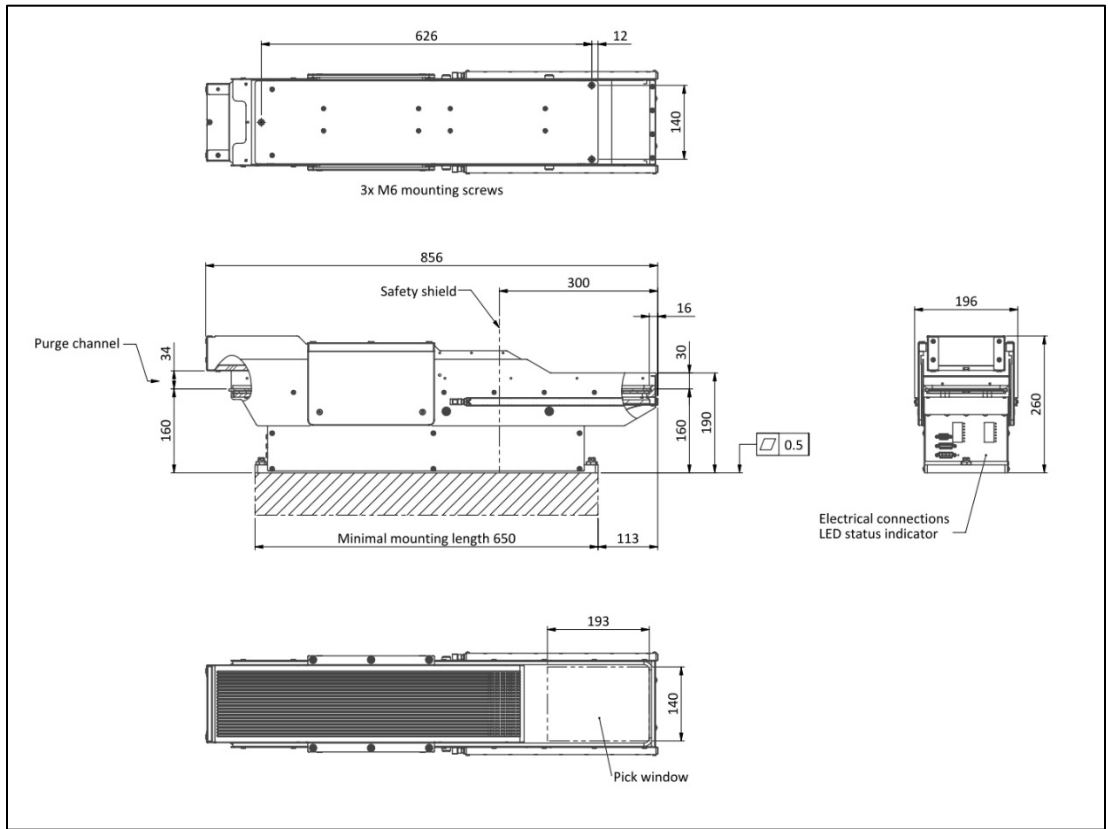


Figure 2-3: AnyFeeder SXM140

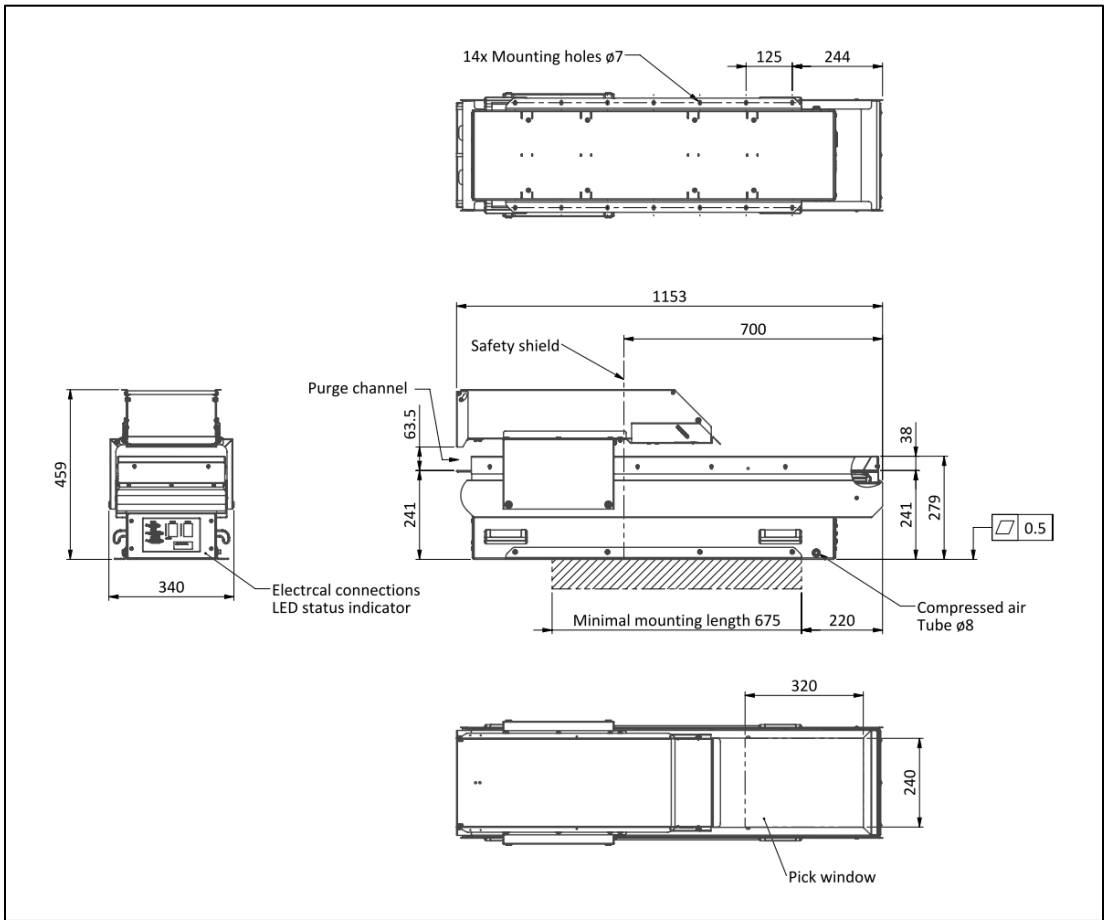


Figure 2-5: AnyFeeder SX240

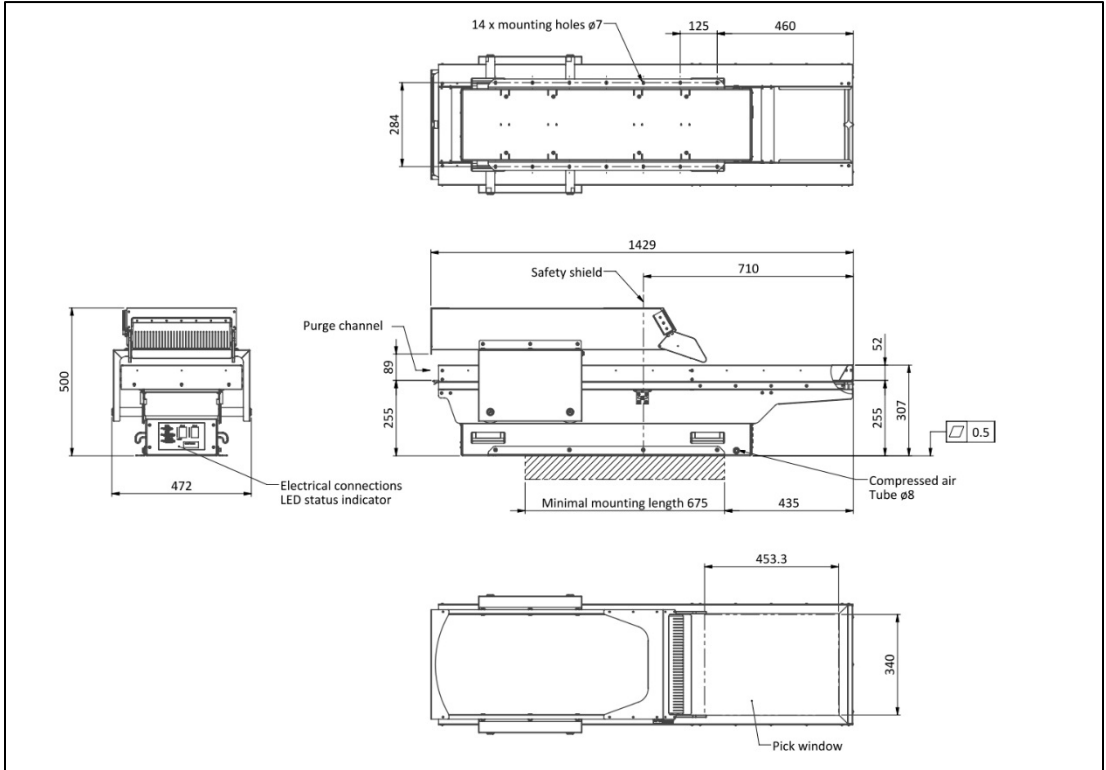


Figure 2-6: AnyFeeder SX340

Moving the AnyFeeder to the Mounting Location



WARNING: Two people must lift and move the AnyFeeder of the SX series to the prepared location. Only lift the AnyFeeder by holding it at the base housing at the handles. The AnyFeeder models SX240 and SX340 provide these handles.

1. Find a co-worker to help you move the AnyFeeder.
2. Lift the AnyFeeder by the handles shown in the following figures.



Figure 2-6: Handles

3. Move the AnyFeeder to the prepared mounting location.
4. Bolt the AnyFeeder to the mounting location by inserting at least four (4) M6 x 16 mm Allen screws with washers and lock washers through the holes in the feeder's mounting rails (use at least two screws in each mounting rail).

2.4 Installing the Pneumatic Line

This section describes the installation procedure of the pneumatic line for the AnyFeeder SX240 and SX340.

The AnyFeeder models SXM100 and SXM140 do not require a pneumatic connection.

1. Locate the pneumatic connector below the side handle on the AnyFeeder.



Figure 2-7: Pneumatic Connector Location

2. Prepare an 8 mm OD air line.
3. Attach the air line to the pneumatic connector (see following figure). Do not overtighten the connection.



Figure 2-8: Air Line Attached to Pneumatic Connector

2.5 Electrical Interface Panel

Interface Panel

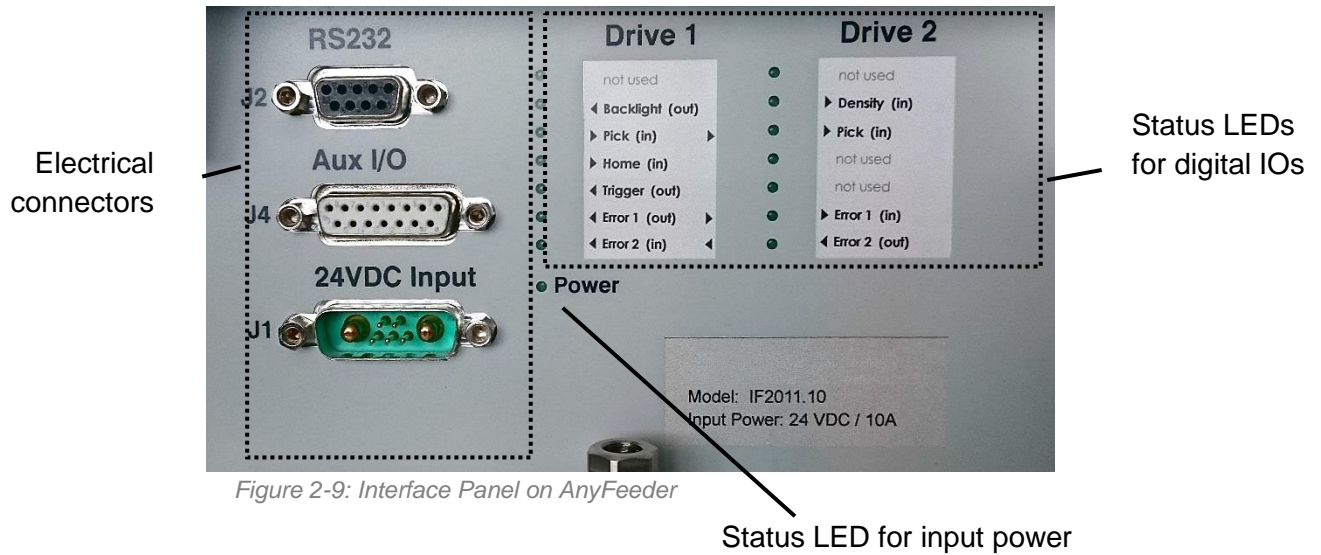


Figure 2-9: Interface Panel on AnyFeeder

Electrical Connectors on Interface Panel

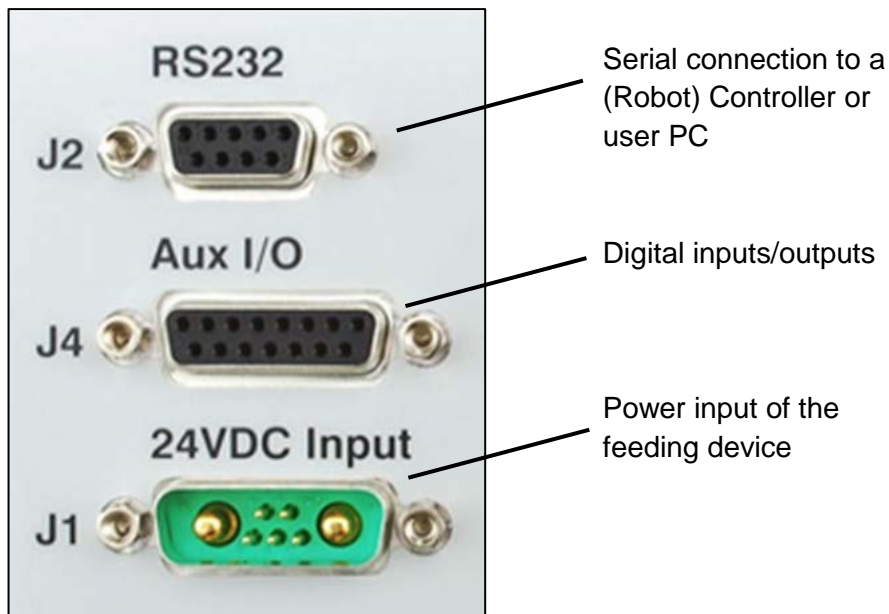


Figure 2-10: Electrical Connectors on Interface Panel

Table 2-1: Electrical connector pinout

Description	Function	Type	Pin- #	Pinout	Cable
J1	Power input for control logic and servo motors	D-Sub-M 2 + 5 male	A1	24 VDC	No. 1 (red)
			A2	GROUND	No. 2 (blue)
J2	RS232	D-Sub 9, female	2	RX	D-Sub 9, female
			3	TX	
			5	GROUND	
J4	Aux I/O	D-Sub 15, female	1	Trigger out	User-supplied
			4	GROUND	
			5	GROUND	
			6	24 V out	
			7	24 V out	
			8	Pick in	
			9	Flash in	
			14	Error Drive 1	
15	Error Drive 2				

2.6 Installing Cables and Power

This section describes the electrical installation procedure for the AnyFeeder.

The AnyFeeder requires the following cable connections:

- The servo motor power cable (supplied)
- The RS232 serial communications cable (supplied)

NOTE: The AnyFeeder is equipped with a fuse to protect the internal components. The 24 VDC input line is protected with a 20 Amp fuse. This fuse can be replaced in the field. If you suspect a problem with the fuse, contact your sales representative.

RS232 Cable Installation

An RS232 cable is supplied with the AnyFeeder (see following figure).

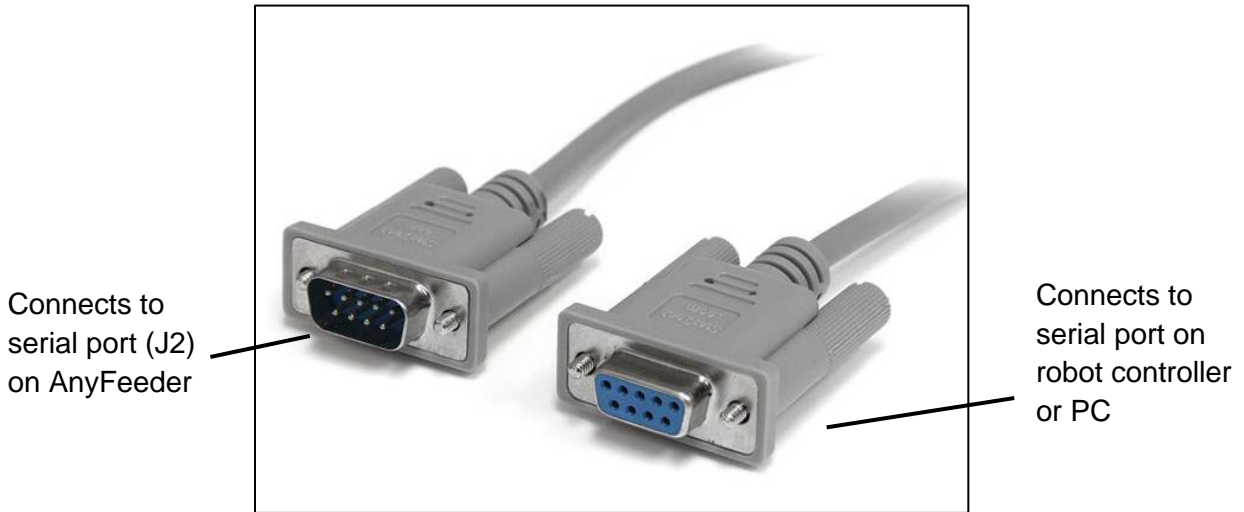


Figure 2-11: Serial Connections Cable

Connect the male end of the cable to the RS232 (J2) port on the AnyFeeder (see following figure).



Figure 2-12: J2 RS232 Connections Cable

Connect the female end of the cable to the serial port on the robot controller or PC. Make sure that the cable on the AnyFeeder port is secured with the two screw locks.

Connecting the Servo Power Cable

1. Locate the servo motor power cable with connector that was supplied with the AnyFeeder (see following figure).



Figure 2-13: Servo Power Cable

2. Connect the wire end of the cable to the user-supplied 24 VDC / 10 A regulated power supply:

Blue marked wire to 0V/GND of the power supply

Red marked wire to +24V of the power supply

Black wire = cable shield to PE (protective earth)

3. Attach the connector end of the cable to the Motor Power 24 VDC Input (J1) connector on the front of the AnyFeeder (see following figure).



Figure 2-14: J1 – 24VDC In Connector

3 Using the AnyFeeder with Serial Communication

3.1 Introduction

This chapter describes the requirements for using the AnyFeeder with a robot/vision system and serial communications.

3.2 Program Flow

The steps below briefly describe a simple program flow for using the AnyFeeder in the work cell:

1. Initialize the AnyFeeder.
2. Send “dispense” command to the AnyFeeder to bring parts from the bulk container onto the feed-surface (pick-area).
3. Acquire a vision image and locate “usable” parts.
 - a. If usable parts are found proceed with step 4.
 - b. If no usable parts are found go to step 6.
4. Command robot to pick one or more usable parts and place it to the desired destination.
5. Acquire a new vision image as soon as the robot is outside the cameras field of view.
 - a. Go to step 3.
6. If no part is found or the last usable part has been picked up from the feeder, send a feeding-command to reallocate the parts.
 - a. Which command is executed depends on the situation of parts on the feeder.
7. After a defined settling time, so that the parts have stabilized, acquire a new vision image and locate usable parts.
 - a. If usable parts are found, go back to step 4.
 - b. If no usable parts are found, and feed area is not empty, repeat step 6.
 - c. If no usable parts are found, and feed area is empty, go to step 2.

3.3 Serial Communications

This section describes how to set up serial communications with the AnyFeeder.

Setting the Serial Port Communication Parameters

In order to communicate properly with the AnyFeeder, configure the serial port of the control device as follows:

Table 3-1: Serial Port Settings

Item	Setting
Baud rate	9600
Data bits	8
Stop bit	1
Parity	none
Flow control	none
In addition to the above: - Disable local echo - Termination character is CR =ASCII code 13 (decimal). IMPORTANT: Do not append LF (line feed)! - For better display append "line feed" to received strings.	

Note: The AnyFeeder will not receive or send any serial data if the baud rate is not set correctly.

3.4 Serial Command Codes

The following sections describe:

- The serial commands that can be sent to the AnyFeeder
- How the AnyFeeder responds to received commands
- Sample serial communications dialogs

Sending Commands to the AnyFeeder

Table 3-3 provides a list of all available AnyFeeder serial commands. With each command there is a maximum of two associated parameters which influence that command. Note that some commands do not need any parameters.

During startup, the AnyFeeder firmware assigns default values to all parameters. For example, if you send the AnyFeeder a "feed forward" command without first changing any of its parameters, the AnyFeeder control system will apply the default parameters (see Table 3-4 for details).

Table 3-2: Description of Symbols used in Tables

Symbol	Description
>	Represents the prompt of a text terminal window
<cr>	Carriage return, ASCII code 13 (decimal)
[speed]	Integer in the range 0... 10
[turns]	Integer in the range 1 ... 10, except for purge (range is 1 ... 127)
_	Explicit space (not an underscore)
Note that all text in the Syntax column is case sensitive.	

See Table 3-7 for a list of standard responses.

Table 3-3: AnyFeeder Serial Commands part 1

Command	Description	Syntax	Explanation	Response
Feed Forward [ffwd]	Feed parts forward	> x=1<cr>	Executes a feed forward	Standard response
Feed Backward [fbwd]	Feed parts backward	> x=2<cr>	Executes a feed backward	Standard response
Feed + Flip Forward [flipfwd]	Flip parts forward	> x=3<cr>	Executes a flip forward	Standard response
Feed + Flip Backward [flipbwd]	Flip parts backward	> x=4 <cr>	Executes a flip backward	Standard response
Flip [flip]	Flip parts without moving forward or backward	> x=5 <cr>	Executes a flip	Standard response
Dispense [dispense]	Move parts from the bulk container onto the feed surface	> x=6<cr>	Executes a dispense	Standard response
Purge [purge]	Feed parts out backwards, purge gate must be opened manually	> x=7<cr>	Executes a purge	Standard response
Initialize [init]	Move the AnyFeeder into its home position and clear all possible errors; Required after power-up before any motion command can be executed	> x=16<cr>	Initializes the AnyFeeder	Standard response

Table 3-3: AnyFeeder Serial Commands part 2

Command	Description	Syntax	Explanation	Response
Stop [stop]	Stops the current motion and moves the AnyFeeder to home position	> x=15<cr>	Aborts currently running feeder-motion, if such is executing	Standard response
Startup feed firmware	Start AnyFeeder firmware (also stops active motions)	> S_RUN<cr>	Restarts AnyFeeder firmware	m10<cr> m20<cr> (to indicate the AnyFeeder is ready)
Reset error	Reset error status and moves AnyFeeder to home position	> x=30<cr>	Resets error status	Standard response
Restart firmware	Restart AnyFeeder firmware; resets all parameters to default values	> x=31<cr>	Restarts AnyFeeder firmware and resets defaults	Standard response

Table 3-4: Setting Parameters – Number of Repetitions part 1

Command	Description	Syntax	Explanation	Response
Setting the Number of Repetitions				
Set Feed forward repetitions	Set number of repetitions for feed forward	> ab[1]=[turns]<cr>	Sets repetitions	No response
Set Feed backward repetitions	Set number of repetitions for feed backward	> ab[2]=[turns]<cr>	Sets repetitions	No response
Set Feed + Flip forward repetitions	Set number of repetitions for feed flip forward	> ab[3]=[turns]<cr>	Sets repetitions	No response
Set Feed + Flip backward repetitions	Set number of repetitions for feed flip backward	> ab[4]=[turns]<cr>	Sets repetitions	No response
Set Flip repetitions	Set number of repetitions for flip	> ab[5]=[turns]<cr>	Sets repetitions	No response

Table 3-4: Setting Parameters– Number of Repetitions part 2

Command	Description	Syntax	Explanation	Response
Set Dispense repetitions	Set number of repetitions for dispense	> ab[6]=[turns]<cr>	Sets repetitions	No response
Set Purge repetitions	Set number of repetitions for purge	> ab[7]=[turns]<cr>	Sets repetitions	No response

Table 3-5: Setting Parameters– Speed

Command	Description	Syntax	Explanation	Response
Setting the Speed of Operation				
Set Feed forward speed	Set speed of feed forward operation	> ab[17]= [speed]_x=17<cr>	Sets speed	Standard response
Set Feed backward speed	Set speed of feed backward operation	> ab[18]= [speed]_x=18<cr>	Sets speed	Standard response
Set Feed + Flip forward speed	Set speed of feed flip forward operation	>ab[19]= [speed]_x=19<cr>	Sets speed	Standard response
Set Feed + Flip backward speed	Set speed of feed flip backward operation	>ab[20]= [speed]_x=20<cr>	Sets speed	Standard response
Set Flip speed	Set speed of feed flip backward operation	> ab[21]= [speed]_x=21<cr>	Sets speed	Standard response
Set Dispense speed	Set speed of dispense operation	> ab[22]= [speed]_x=22<cr>	Sets speed	Standard response
Set Purge speed	Set speed of purge operation	> ab[23]= [speed]_x=23<cr>	Sets speed	Standard response

Table 3-6: Setting Parameters– Other Settings

Command	Description	Syntax	Explanation	Response
Other Settings				
Vision trigger interval	Sets the vision trigger interval in multiples of 50ms	> ab[25]= [value]_ x=25<cr>	Range for value is 10 to 100 (500...5000ms) Default is 2000ms (value=40)	Standard response
Vision trigger delay	Sets the vision trigger delay in multiples of 20ms. The trigger delay starts after an AnyFeeder action has completed.	> ab[26]= [value]_ x=26<cr>	Range for value is 1 to 100 Default is 200ms (value=10)	Standard response
Set digital output	Sets the state of the AnyFeeder's internal digital outputs. It is not recommended to set these during normal operation. Only used for debugging purposes	> ab[27]= [mode]_ x=27<cr>	Mode: 0: Engage the dispense clutch (SX-series) 1: Engage the flip clutch (SX-series only) 2: Turn backlight OFF 3: Turn backlight ON 4: Close retainer gate 5: Open retainer gate	Standard response

AnyFeeder Responses

After receiving a command, the AnyFeeder will respond with specific characters to indicate the status of each motor in the mechanism.

Motor 1:

The “flip” drive, located to the front of the AnyFeeder, under the feed surface.

Motor 2:

The “dispense” drive, located to the rear of the AnyFeeder, under the bulk container.

Responses

mix

Where:

m = "m" stands for "motor" and is not variable

i = the drive number (1 or 2) that is reporting

x = the status of the drive (number from 0 to 9)

The following pages describe the actual responses from the AnyFeeder. Please note that before any answer, the echo of the sent command is always returned. This is not mentioned each time in the following descriptions.

Standard Responses

During normal operation, the responses you should expect to see from the AnyFeeder are as follows.

Table 3-7: Standard Responses

Response	Meaning
m11<cr>	Motor 1 understood command and is busy
m21<cr>	Motor 2 understood command and is busy
m10<cr>	Motor 1 completed action successfully and is OK
m20<cr>	Motor 2 completed action successfully and is OK
<p>NOTE 1: Motors 1 and 2 may report back in different orders for example, sometimes motor 1 will report back first and sometimes motor 2 will report back first.</p> <p>NOTE 2: Because the two motors perform different motions during the same operation, there will be variable delays between the responses.</p>	

Table 3-8: AnyFeeder Responses part 1

Response	Meaning	Details
m10	Motor 1 completed action successfully	
m11	Motor 1 received command and is busy	
m12	Invalid command	Command number or command syntax incorrect.
m13	Motor 1 servo error	Possibly overloaded. Check for obstructions or hardware problems. Error must be reset before operation can continue.
m16	Motor 1 not initialized	AnyFeeder must be initialized before motion commands can be executed.
m17	Motor 1 reports error state on motor 2.	Motor 1 has received error state from motor 2. Error must be reset before operation can continue.
m20	Motor 2 completed action successfully	
m21	Motor 2 received command and is busy	
m22	Invalid command	Command number or command syntax incorrect.

Table 3-8: AnyFeeder Responses part 2

Response	Meaning	Details
m23	Motor 2 servo error	Possibly overloaded. Check for obstructions or hardware problems. Error must be reset before operation can continue.
m26	Motor 2 not initialized	AnyFeeder must be initialized before motion commands can be executed.
m27	Motor 2 reports error state on motor 1	Motor 2 has received error state from motor 1. Error must be reset before operation can continue.
m28	Timeout – no sync-signal received	The sync-signal was not received from Motor 1. Therefore, Motor 2 cannot start its action. Error must be reset before operation can continue

Serial Dialog Examples

This section provides some examples of serial communication streams for basic AnyFeeder operations.

Initializing the AnyFeeder

The following table shows responses to the Init command (x=16<cr>).

Table 3-10: Initializing the AnyFeeder

Terminal Window	Explanation
m11<cr>	Motor/Drive 1 understood command and is now busy, indicated by the second '1'
m21<cr>	Motor/Drive 2 understood command and is now busy, indicated by the '1'
m10<cr>	Motor/Drive 1 completed action successfully, indicated by '0'
m20<cr>	Motor/Drive 2 completed action successfully, indicated by '0'

Feeding Parts Forward

The following table shows responses to the Feed Forward command (x=1<cr>).

Table 3-11: Feeding Parts Forward

Terminal Window	Explanation
m11<cr>	Motor/Drive 1 understood command and is now busy, indicated by the second '1'
m21<cr>	Motor/Drive 2 understood command and is now busy, indicated by the '1'
m10<cr>	Motor/Drive 1 completed action successfully, indicated by '0' In feed commands the 'dispense drive' does not execute a motion, but still confirms that it accepted the command and is 'alive'. A consistent drive reporting scheme is easier to handle by the receiving control device.
m20<cr>	Motor/Drive 2 completed action successfully, indicated by '0'

Changing the Feed Forward Repetitions

The following table shows responses to the command "Set number of turns for Feed Forward motion to 8" (ab[1]=8<cr>).

Table 3-12: Set the number of turns for Feed Forward

Terminal Window	Explanations
	When setting number of repetitions (=turns) the AnyFeeder does not respond with its standard answers. As stated in the section "AnyFeeder Responses" only the echo is returned.

Changing the Flip speed/intensity

The following table shows responses to the command "Set Flip speed/Intensity to 6" (ab[21]=6 x=21<cr>).

Table 3-13: Set Flip speed/Intensity

Terminal Window	Explanation
m11<cr>	Drive 1 command understood
m21<cr>	Drive 2 command understood
m10<cr>	Drive 1 finished
m20<cr>	Drive 2 finished

AnyFeeder not Initialized

The following table shows responses to the Feed Forward command (x=1<cr>) before the AnyFeeder has been initialized.

Table 3-14: AnyFeeder not Initialized

Terminal Window	Explanation
m16<cr>	Drive 1 reports that it is not initialized
m26<cr>	Drive 2 reports that it is not initialized

Servo Problem on Flip Drive

The following table shows responses to the Flip command (x=5<cr>) when the flip drive has a servo problem.

Table 3-15: Flip Drive has a Servo Problem

Terminal Window	Explanation
m11<cr>	Drive 1 command understood
m21<cr>	Drive 2 command understood
m20<cr>	Drive 2 reports end of motion
m13<cr>	Drive 1 reports a servo error

Servo Problem on Disp Drive

The following table shows responses to the Dispense command (x=6<cr>) when the disp drive has a servo problem.

Table 3-16: Disp Drive has a Servo Problem

Terminal Window	Explanation
m11<cr>	Drive 1 command understood
m21<cr>	Drive 2 command understood
m23<cr>	Drive 2 reports a servo error
m17<cr>	Drive 1 stops and reports an error state on Drive 2

Unknown Command

The following table shows responses to an unknown command, for example (x=9<cr>).

Table 3-17: Unknown Command

Terminal Window	Explanation
m12<cr>	Drive 1 reports that an unknown command was received
m22<cr>	Drive 2 reports that an unknown command was received

4 Maintenance – AnyFeeder SXM100 and SXM140

4.1 Introduction

NOTE: This chapter refers to the AnyFeeder models SXM100 and SXM140.



WARNING: Only qualified service personnel may install or service the AnyFeeder.

This chapter describes:

- The periodic maintenance required for the AnyFeeder
- The replacement procedure for the feed surface

4.2 Periodic Maintenance

The following tables shows the periodic (routine) maintenance tasks required for the AnyFeeder.

Table 4-1: Periodic Maintenance

Item	Description	Interval
Feed surface	Clean upper side of feed surface and frame with a non-abrasive, no-residue cleaner, such as rubbing alcohol or window cleaner. Failure to do this may degrade vision performance.	Weekly
Feed surface and support	Remove feed surface and clean bottom side with a non-abrasive, no-residue cleaner, such as rubbing alcohol or window cleaner. Clean support surface and glass window with alcohol. Failure to do this may degrade vision performance.	Monthly
Backlight	Remove side panel and clean upper side of backlight. Failure to do this may degrade vision performance.	Quarterly
Servo valve	Check the two plastic silencers that are screwed into the servo valve to see if they are blocked with oil. If needed, replace the silencers. Failure to do this may degrade AnyFeeder performance.	Annually

NOTE: Maintenance intervals may require adjustment based on environment and/or application conditions. If you are feeding dirty parts or if bulk parts contain debris, you may need to shorten the maintenance interval in order to maintain optimum performance of the equipment.

4.3 Removing and Installing the Feed Surface

The feed surface is subject to wear during normal system use and will need to be replaced periodically. To replace the feed surface:



WARNING: Follow proper lockout procedures before performing this service procedure. Failure to do so could result in injury.

1. Purge all parts from the AnyFeeder.
2. Turn off the power and air supply to the AnyFeeder.
3. Remove the feed surface by sliding it out of the rear end of the AnyFeeder.
4. After the existing feed surface has been removed, clean all residue from the exposed feed deck.



CAUTION: Use only a non-abrasive, no-residue cleaner, such as rubbing alcohol or window cleaner applied to a clean shop towel. Do not spray cleaner directly onto the feed deck.

- a. Spray the cleaning product onto a clean shop towel.
 - b. Wipe the feed deck with the shop towel to remove any dirt or debris.
5. Unpack the new feed surface.
 6. Slide the new feed surface into the feed deck.
 7. Turn on the power and air supply to the AnyFeeder.

5 Maintenance – AnyFeeder SX240 und SX340

5.1 Introduction

NOTE: This chapter refers to the AnyFeeder-models SX240 und SX340.



WARNING: Only qualified service personnel may install or service the AnyFeeder.

This chapter describes:

- The periodic maintenance required for the AnyFeeder
- The replacement procedure for the feed surface
- The settings for the retainer speed

5.2 Periodic Maintenance

The following table shows the periodic (routine) maintenance tasks required for the AnyFeeder.

Table 5-1: Periodic Maintenance

Item	Description	Interval
Feed surface	Clean upper side of feed surface and frame with a non-abrasive, no-residue cleaner, such as rubbing alcohol or window cleaner. Failure to do this may degrade vision performance.	Weekly
Feed surface and support	Remove feed surface and clean bottom side with a non-abrasive, no-residue cleaner, such as rubbing alcohol or window cleaner. Clean support surface and glass window with alcohol. Failure to do this may degrade vision performance.	Monthly
Backlight	Remove side panel and clean upper side of backlight. Failure to do this may degrade vision performance.	Quarterly
Servo valve	Check the two plastic silencers that are screwed into the servo valve to see if they are blocked with oil. If needed, replace the silencers. Failure to do this may degrade AnyFeeder performance.	Annually

NOTE: Maintenance intervals may require adjustment based on environment and/or application conditions. If you are feeding dirty parts or if bulk parts contain debris, you may need to shorten the maintenance interval in order to maintain optimum performance of the equipment.

5.3 Removing and Installing the Feed Surface

The feed surface is subject to wear during normal system use and will need to be replaced periodically. To replace the feed surface:



WARNING: Follow proper lockout procedures before performing this service procedure. Failure to do so could result in injury.

1. Purge all parts from the AnyFeeder.
2. Turn off the power and air supply to the AnyFeeder.
3. Loosen the screws on the side rails.
4. Remove the feed surface by sliding it out of the rear end of the AnyFeeder.
5. After the existing feed surface has been removed, clean all residue from the exposed feed deck (see following figure).

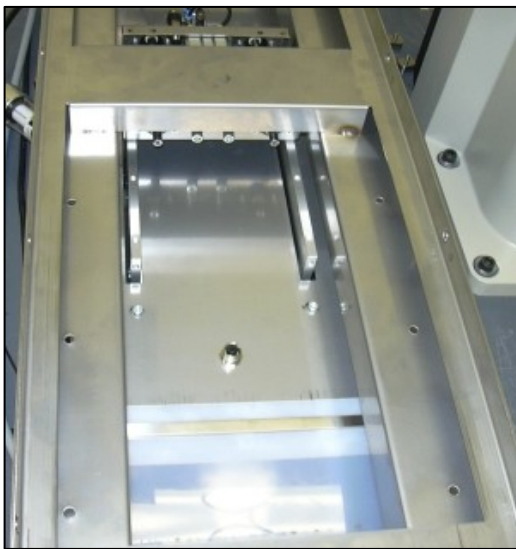


Figure 5-1: Feed Deck and Drive Block



CAUTION: Use only a non-abrasive, no-residue cleaner, such as rubbing alcohol or window cleaner applied to a clean shop towel. Do not spray cleaner directly onto the feed deck.

- a. Spray the cleaning product onto a clean shop towel.
- b. Wipe the feed deck with the shop towel to remove any dirt or debris.
6. Unpack the new feed surface.
7. Slide the new feed surface into the feed deck.
8. Re-tighten the screws on the side rails.

9. Turn on the power and air supply to the AnyFeeder.

5.4 Retainer Speed Settings on AnyFeeder SX240

The retainer speed can be manually set (see following figure).

The necessary steps are described in this section.

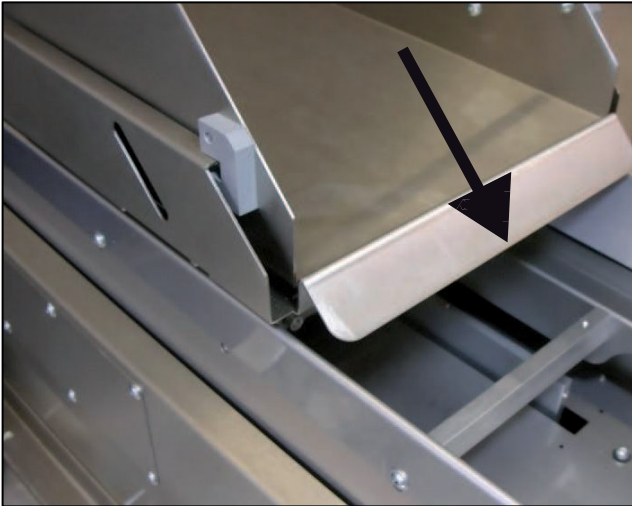


Figure 5-2: Retainer

1. Pull out the feed surface from the back of the feeder (see Section 5.3). Loosen the three screws on both sides of the bulk container and move it aside
2. The interior of the feeder is now accessible (see following figure). You can now increase the speed of the retainer (clockwise) or decrease (counterclockwise) by turning the rotary knob regulator shown in Figure 5-3.

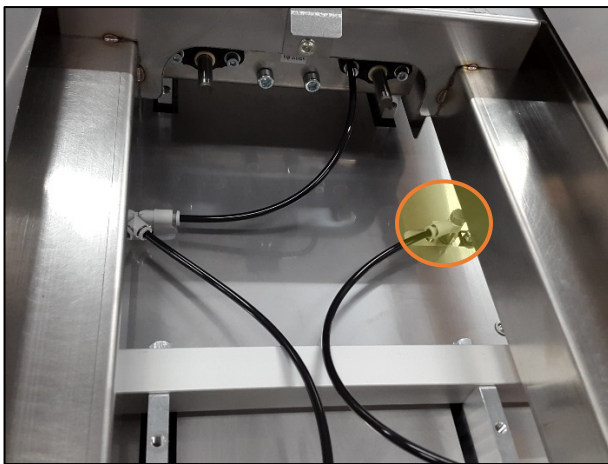


Figure 5-3: Rotary Knob Regulator

3. To check if you achieved the required speed, remove the back plate of the feeder (see Figure 5-4) by loosening the four screws shown in this figure. To actuate the retainer, push the blue valve (see Figure 5-5) with a pen or similar object. For this test the pneumatic line must be connected to the AnyFeeder. Reinstall the back plate.



Figure 5-4: AnyFeeder Back Plate

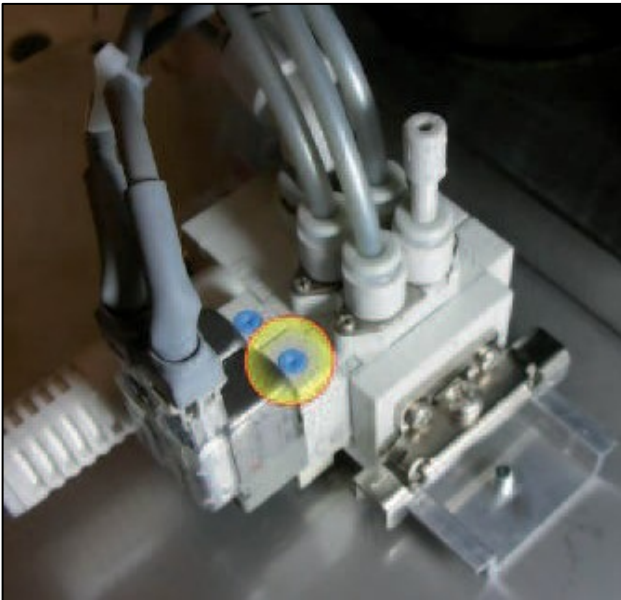


Figure 5-5: Valve Block

5.5 Restraint Setting on AnyFeeder SX340

The restraint speed can be manually set (see following figure).

The necessary steps are described in this section.



Figure 5-6: Restraint

1. You can increase (clockwise) or decrease (counterclockwise) the speed of the restraint by turning the screw shown in Figure 5-7.



Figure 5-7: Rotary Knob Regulator

2. To check if you achieved the required speed, remove the back plate of the feeder (see

Figure 5-8) by loosening the four screws shown in this figure. To actuate the restraint, push the blue valve with a pen or similar object (see Figure 5-9). For this test the pneumatic line must be connected to the AnyFeeder. Reinstall the back plate.

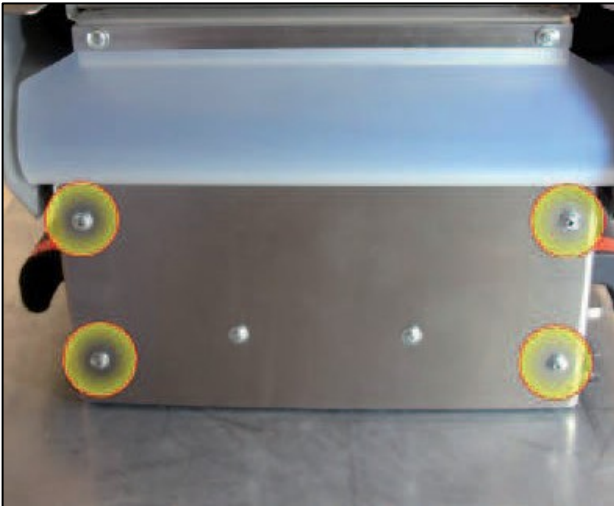


Figure 5-8: AnyFeeder Back Plate



Figure 5-9: Valve Block

6 FOV–Support Plate for AnyFeeder SX240

6.1 Introduction

An optional FOV support plate is available for the AnyFeeder SX240. The delivery includes the plate and 9 screws.

The FOV support plate supports the feed surface and avoids any slacking of the surface due to a heavy payload.

The following section describes the necessary procedure for installing this support plate.



WARNING: Follow proper lockout procedures before performing this procedure. Failure to do so could result in injury.

6.2 Installing the FOV Support Plate

Installing the FOV support plate refers only to the AnyFeeder SX240.

1. Dismount the face plate in front of the AnyFeeder.



Figure 6-1: Face Plate in front of the AnyFeeder

2. Dismount the bulk container including the blue bridge element.

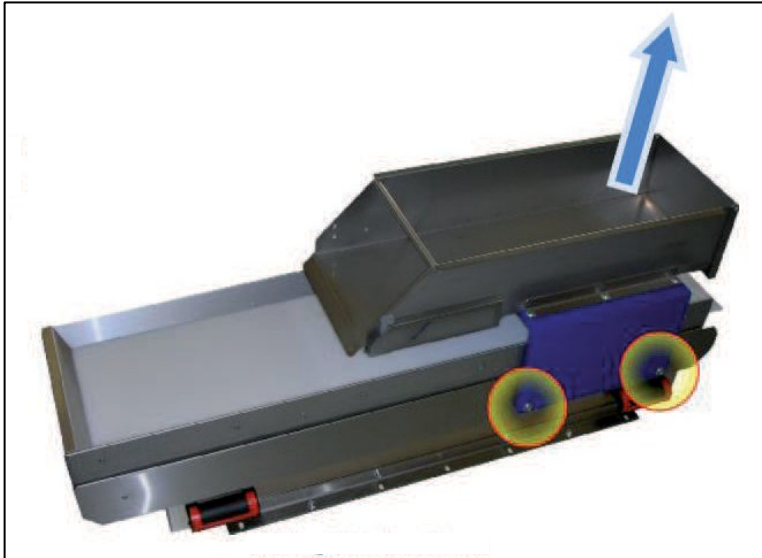


Figure 6-2: Dismounting Bulk Container

3. Disconnect the pneumatic line beneath the bulk container (see following figure).

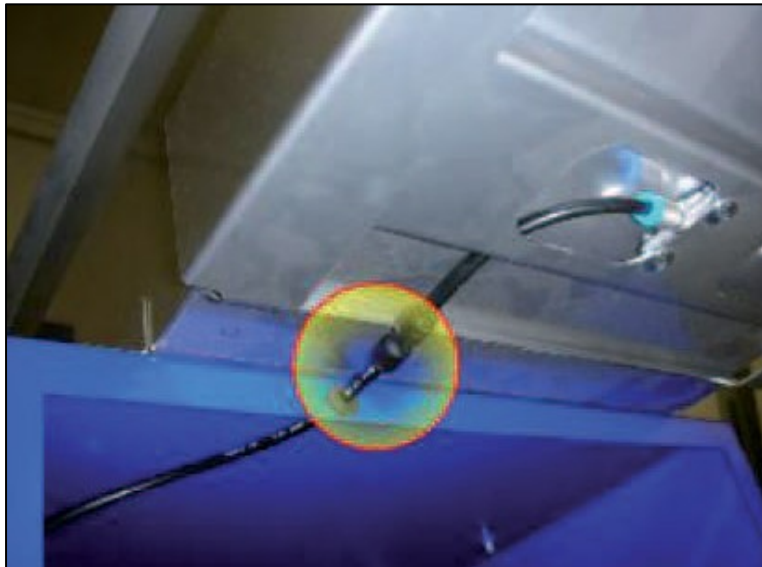


Figure 6-3: Pneumatic Line

4. Dismantle the side panels and then the V-rails above them, which are pressing down on the feed surface. Also slide out the feed surface.

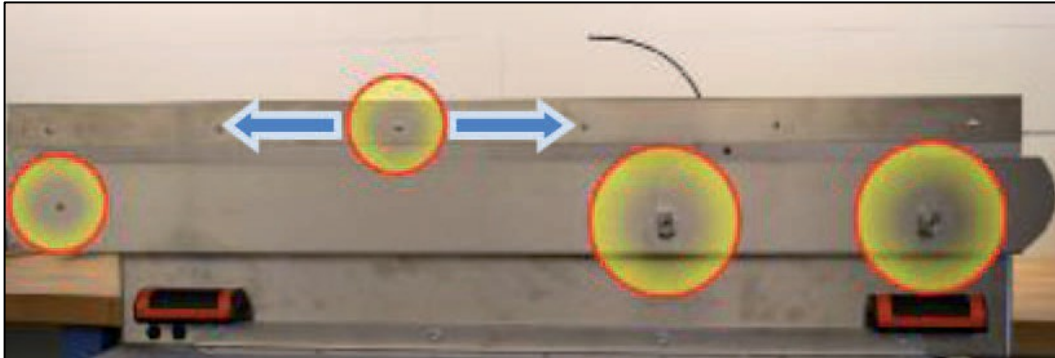


Figure 6-4: Dismantling Side Panels and V-rails

5. Loosen the four screws of the backlight and pull it out of the front of the feeder. Disconnect the cable between the backlight and feeder.



Figure 6-5: Dismantling Backlight

6. You can now install the FOV support plate in the AnyFeeder. Remove the protective foil from the plate before installation.



Figure 6-6: FOV Support Plate and Screws

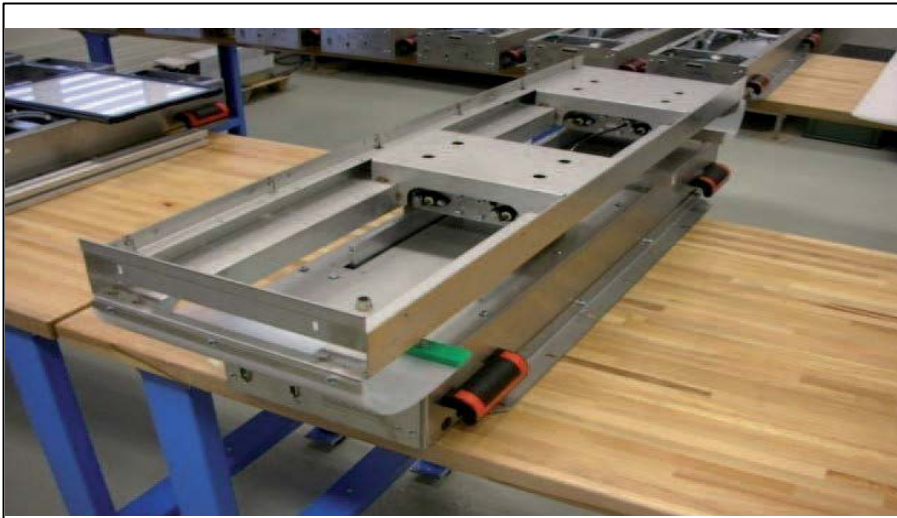


Figure 6-7: AnyFeeder before installing FOV Support Plate

7. Install the FOV support plate with the provided screws. Do not overtighten the screws or the plate may warp or crack.

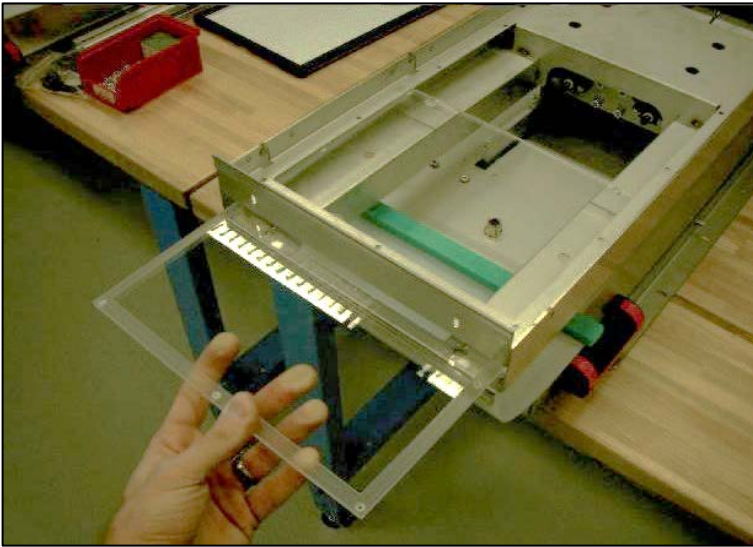


Figure 6-8: Sliding in FOV Support Plate



Figure 6-9: Tightening FOV Support Plate

8. Reinstall the backlight.



Figure 6-10: Installing Backlight

9. To correctly mount the V-rails, slide the feed surface in first. Place the V-rails on top and screw them on while applying a bit of pressure from above. When doing this, always check if you can still slide out the feed surface using medium force. Remount the side panels.



Figure 6-11: Mounting V-rails and Side Panels

10. You can now reinstall the bulk container and the bridge including the pneumatic line.

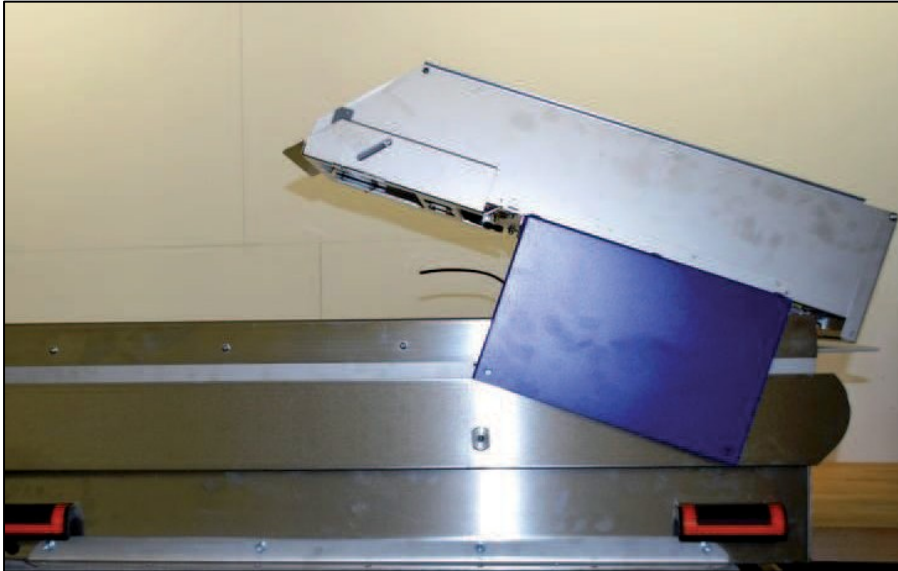


Figure 6-12: Mounting Bulk Container and connecting Pneumatic Line

7 Backlight

7.1 Introduction

An optional red or infrared backlight is available for the AnyFeeder models. Contact your sales representative for more information on backlights.

This section describes the procedure for installing the backlight option on the AnyFeeder SX240.



WARNING: Turn off and disconnect power before proceeding and protect against unintentional reconnection.

7.2 Preparing the Installation

1. Slide out the feed surface from the back of the AnyFeeder as shown in section 4.3.
2. Use a 2.5mm Allen wrench to remove the two screws from the feed platform front cover.

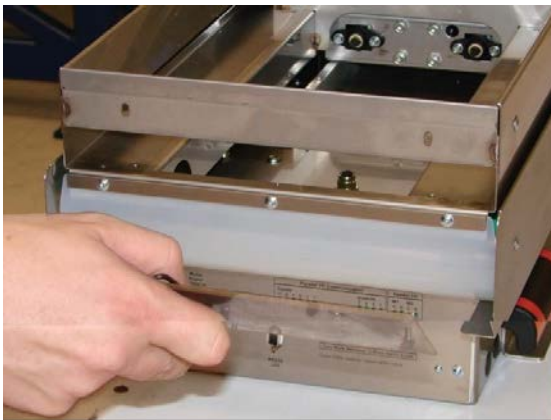


Figure 7-1: Removing Feed Platform Front Cover

7.3 Installing the LED Controller

If your feeder was not supplied with an integrated LED controller, you must install one in order to operate the backlight.

1. Remove the two screws shown in the following figure. The cable connected to the LED controller is located on the bottom of the cover plate. Disconnect the cable from the cover plate.

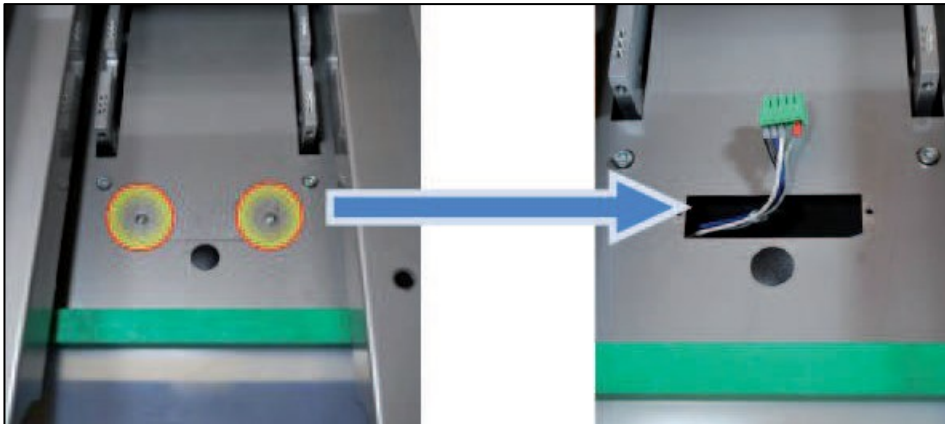


Figure 7-2: Cover Plate on Feed Deck (left), Cable to the LED Controller (right)

2. Connect this cable to the connector of the LED controller.

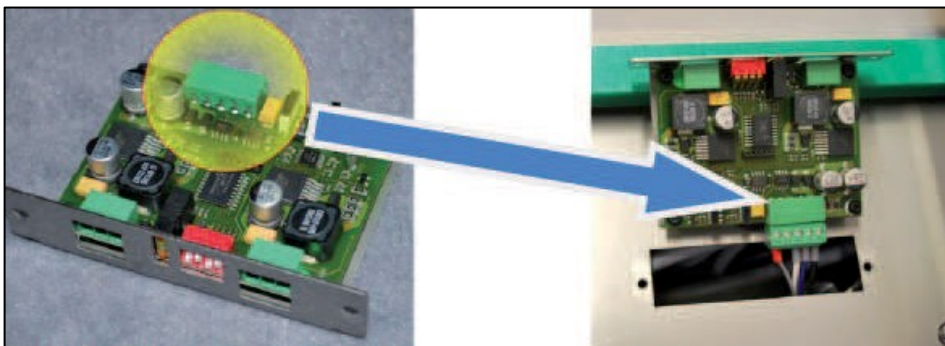


Figure 7-3: LED Controller mounted on a bracket (left), LED Controller and Connector (right)

3. Insert the LED Controller into the notch. Make sure the two switches do not accidentally get switched (see Figure 7-4.). Reinstall the two screws.

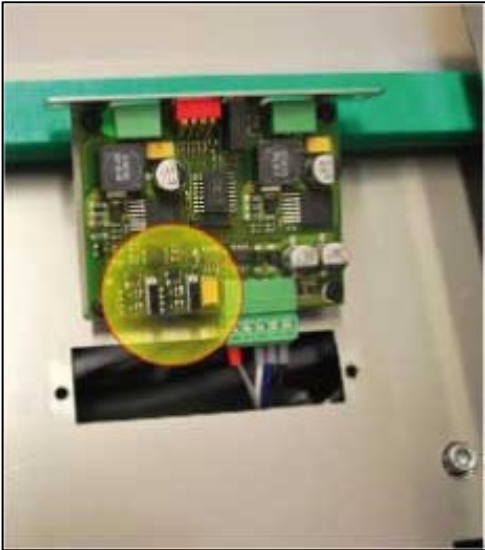


Figure 7-4: Switches on LED Controller



Figure 7-5: LED Controller (installed)

7.4 Installing the Backlight

1. Insert the backlight about halfway (cable side first). Connect the backlight plug with the connectors of the LED controller and attach the cable tie base as shown in the following figure. If necessary, decrease the feed surface.



Figure 7-6: Inserting Backlight

2. Push the backlight all the way to the back and mount it with the four screws in the corners of the backlight. Tighten the screws with a 2.5mm Allen wrench.

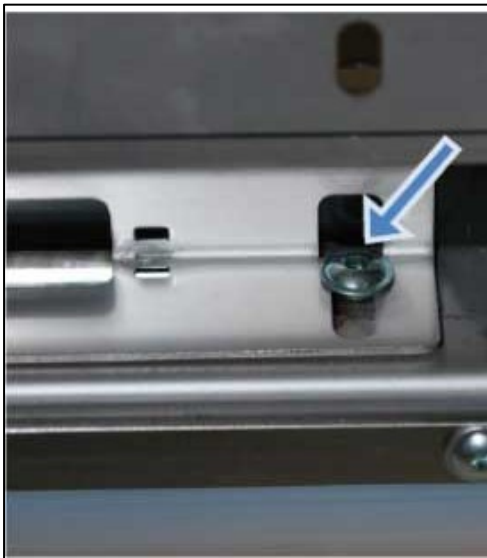


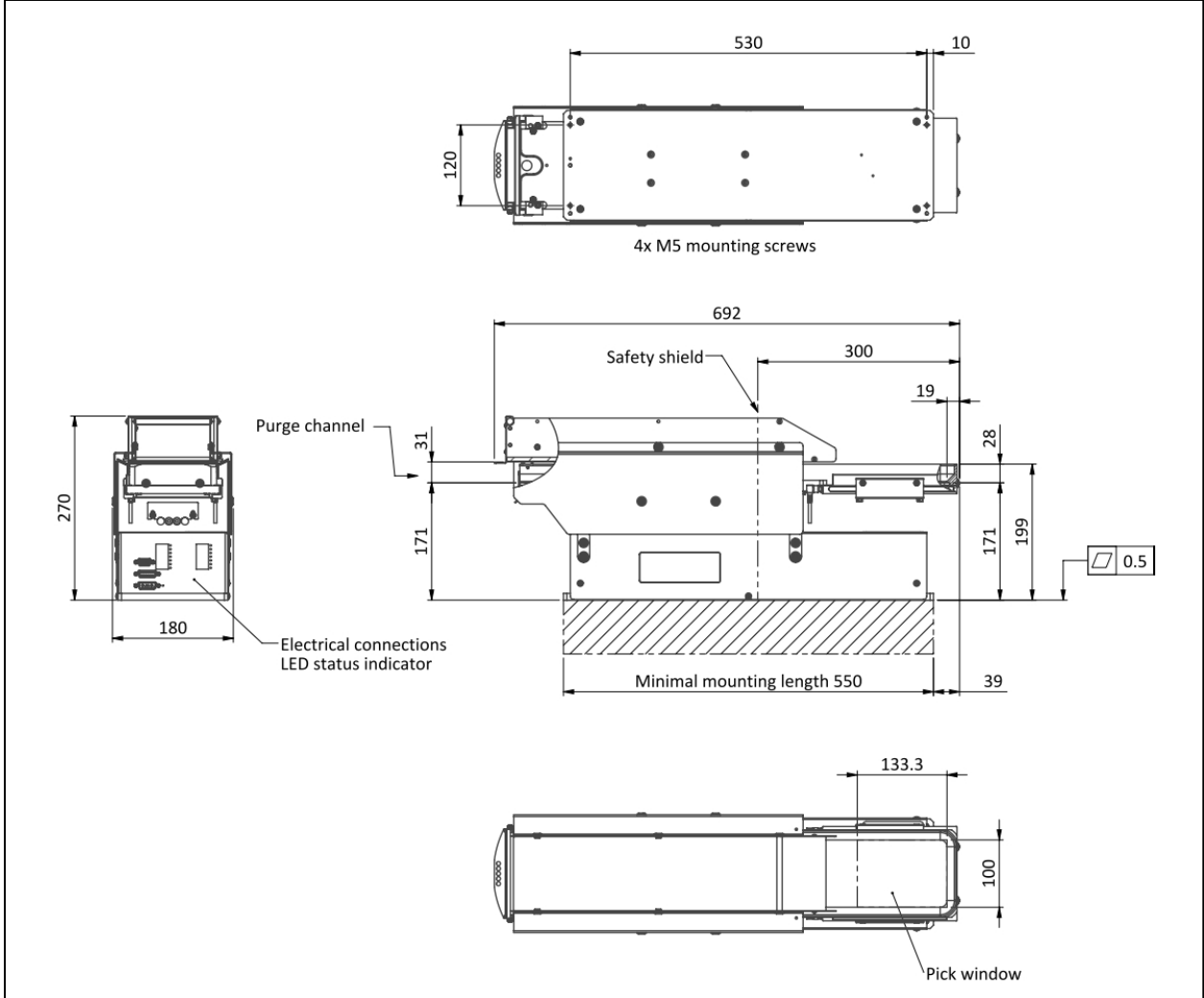
Figure 7-7: Installing Backlight Screws

3. Reinsert the feed surface from the back of the AnyFeeder and reinstall the feed platform front cover using two screws.

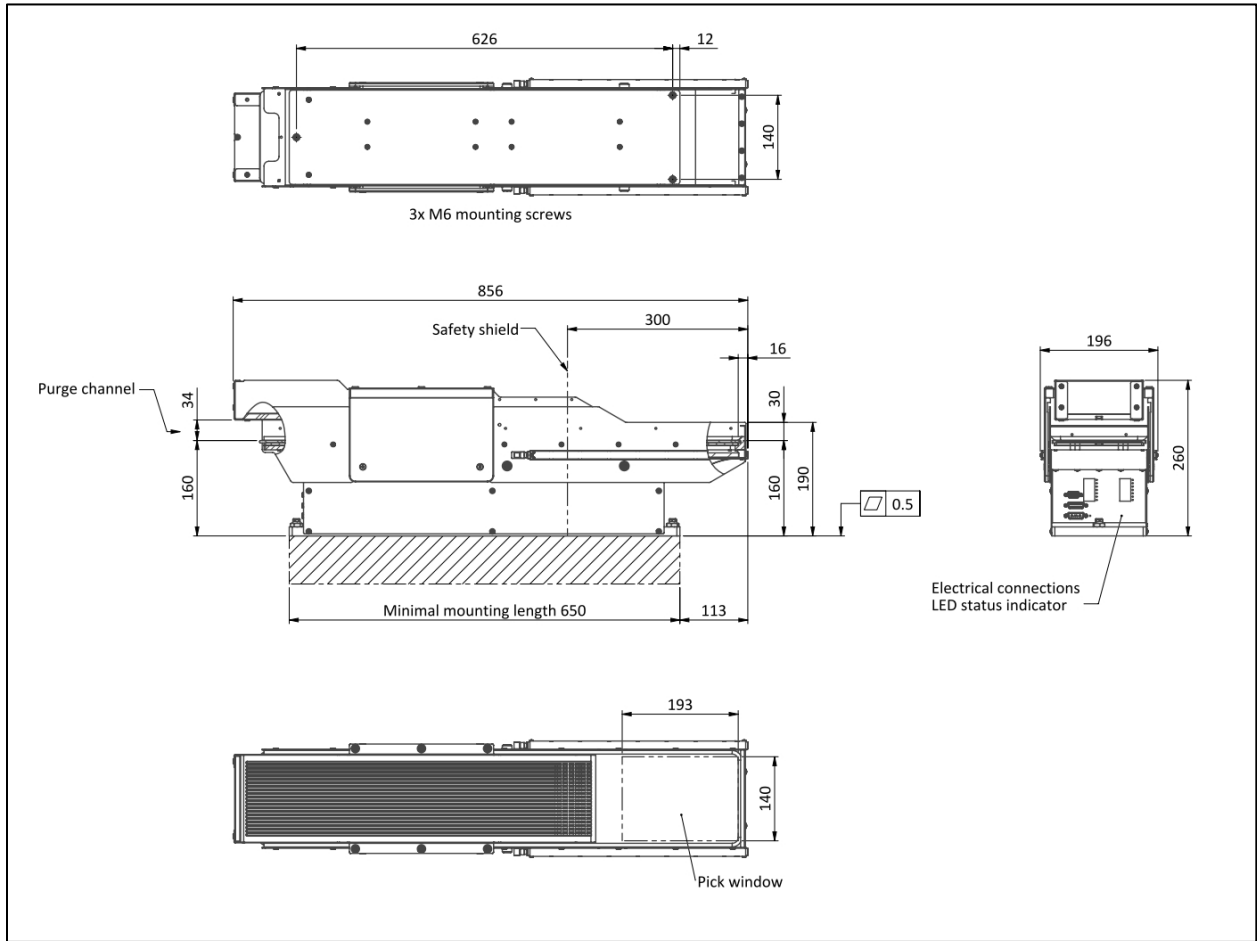
8 Technical Specifications

8.1 Dimensions

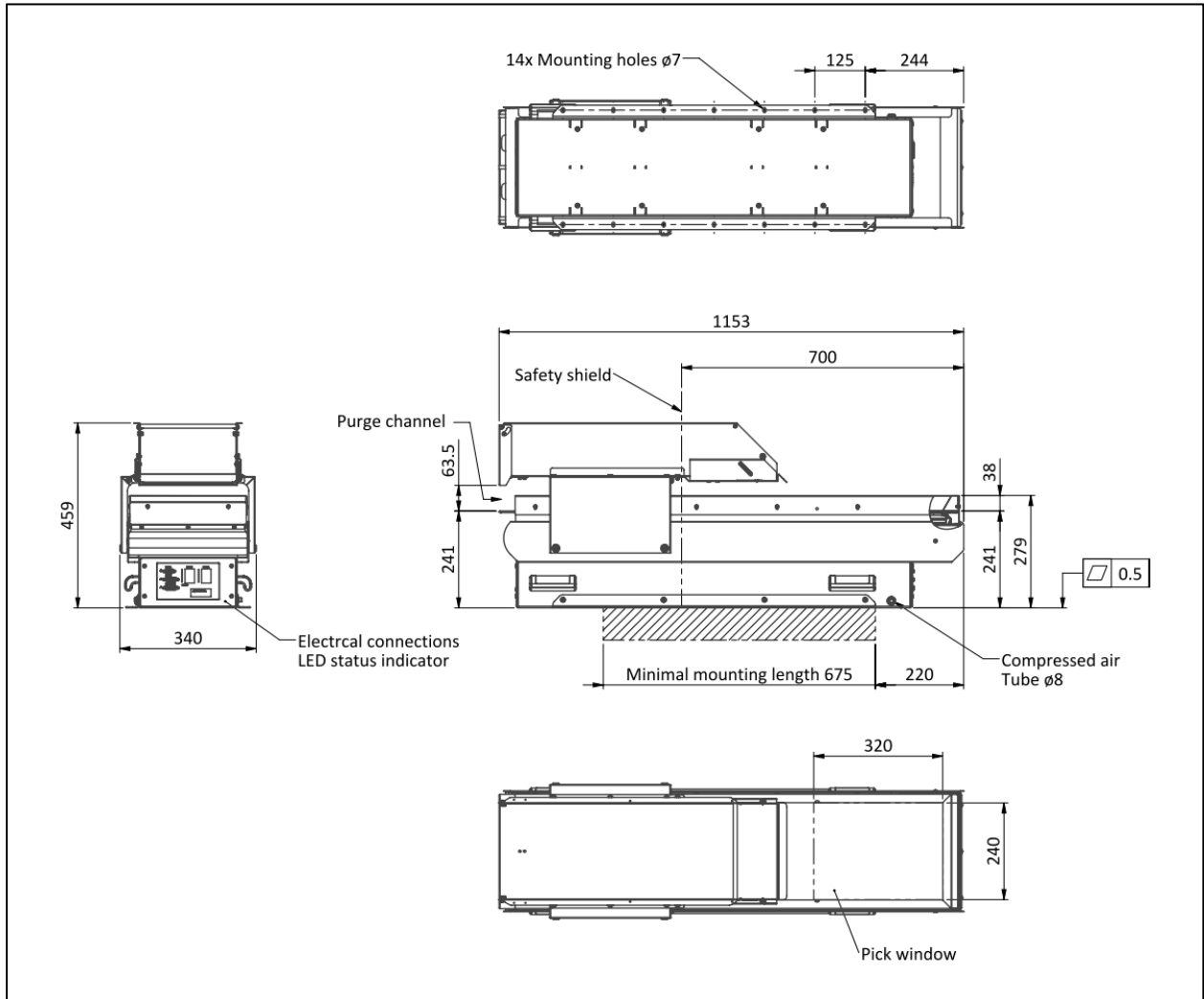
AnyFeeder SXM100



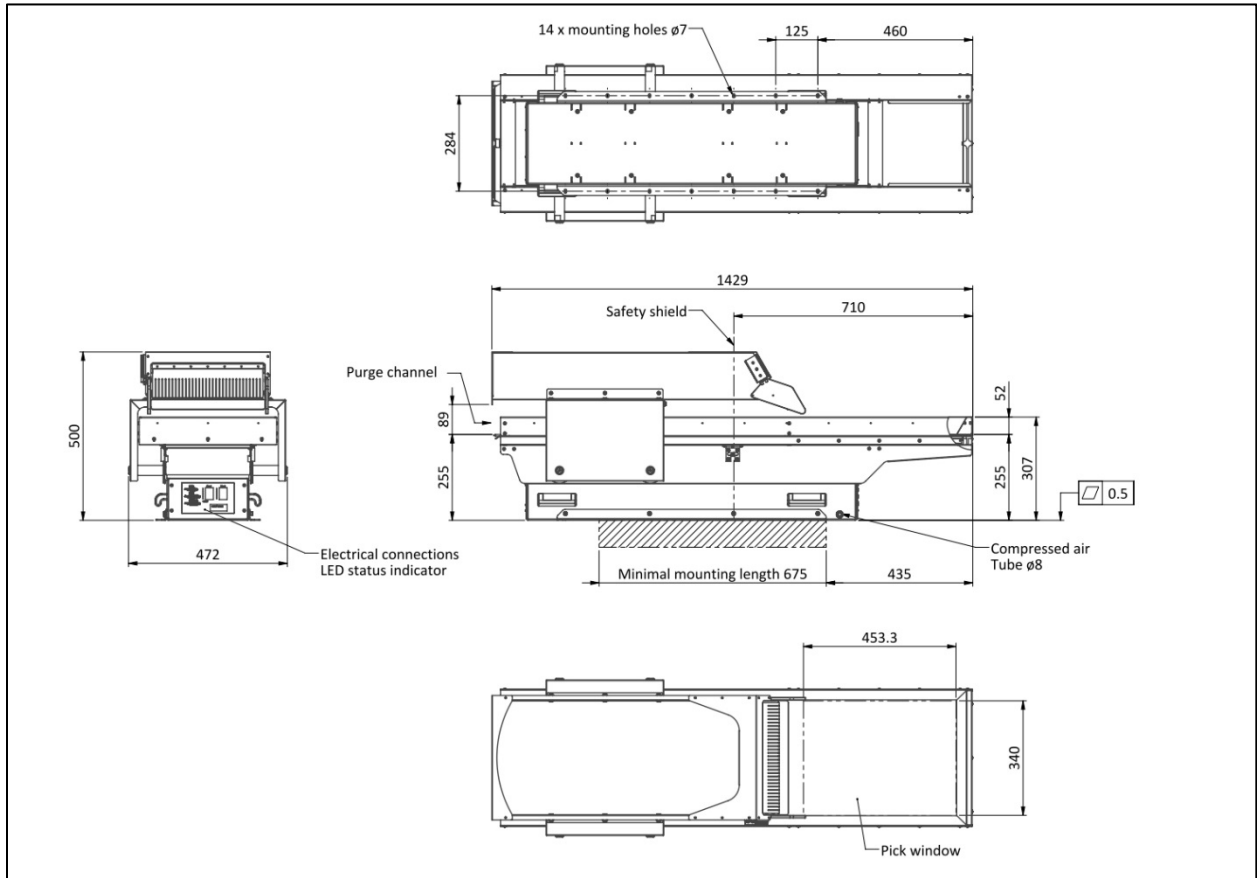
AnyFeeder SXM140



AnyFeeder SX240



AnyFeeder SX340



8.2 Specifications

	SXM100	SXM140	SX240	SX340
Capacity Bulk Container	3 dm ³	4 dm ³	10 dm ³	15 dm ³
Field of Vision	100x134 mm	140x193mm	240x320 mm	340x430 mm
Backlight Area	134 cm ²	270 cm ²	768 cm ²	1462 cm ²
Max. weight on surface (FOV)	500g	500g	1500g	1500g
Plate level (parts)	171mm	160mm	241mm	255mm
Border height	28mm	28mm	38mm	52mm
Light height of Purge Channel	34mm	34mm	63.5mm	89mm
Power Requirements	24 V/ 10 A			
Typical consumption	100 W (depending on operating mode)			
Compressed Air	-	-	≤ 6 bar unlubricated / filtered	≤ 6 bar unlubricated / filtered
Eccentricity Feed Surface (Maximum stop from initial position)	±2mm	±3.5mm	±12mm	±12mm
Eccentricity Bulk Container	±2mm	±2mm	±5mm	±5mm
Interface	RS232 (DSUB9 Female)			
Drive	2 brushless servo drives			
Temperature	5-45°C			
Humidity	95% non-condensing			
Weight	18kg	22kg	50kg	55kg

Manufactured by flexfactory ag
Giessenstrasse 15, CH-8953 Dietikon,
+41 44 774 55 66,
info@flexfactory.com

Manual written by flexfactory ag

For support please contact your local Omron
Support Center: www.ia.omron.com