



Vibratory Stick Feeder 2

Instruction Manual

Original Instructions
INS-VIBFDR2-1.0E

VIBRATORY STICK FEEDER 2

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Vibratory Stick Feeder 2 Instruction Manual

INS-VIBFDR2-1.0E

FUJI CORPORATION

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1. Overview

1.1 Vibratory Stick Feeder

The vibratory stick feeder 2 (hereafter referred to as vibratory feeder) is loaded on the machine feeder pallets and uses vibration to transfer stick supplied parts to the machine.

Each stick feeder occupies five feeder slots and can control up to five part types per feeder.

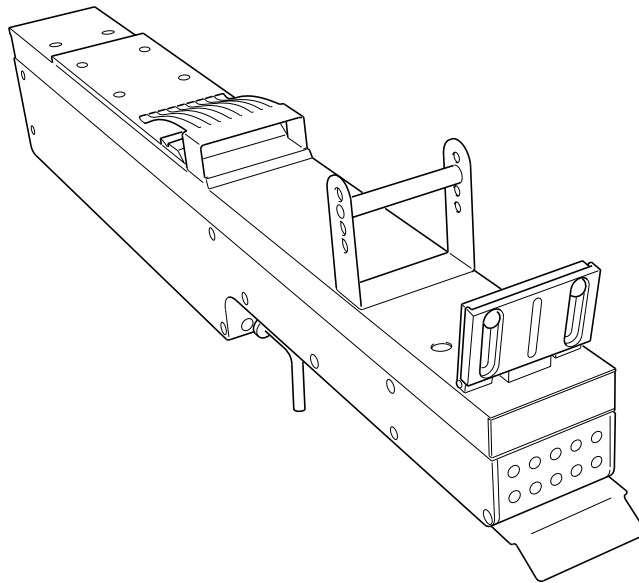
All sizes of stick supplied parts can be supported by changing the top plate provided with the accessories.

Feeder ID barcodes are provided for use with part administration systems such as Fujitrax.

The alternate feeder function (in the same vibratory feeder) is supported.

The following software is required when using vibratory stick feeders.

- NXT machine application V5.10 or later



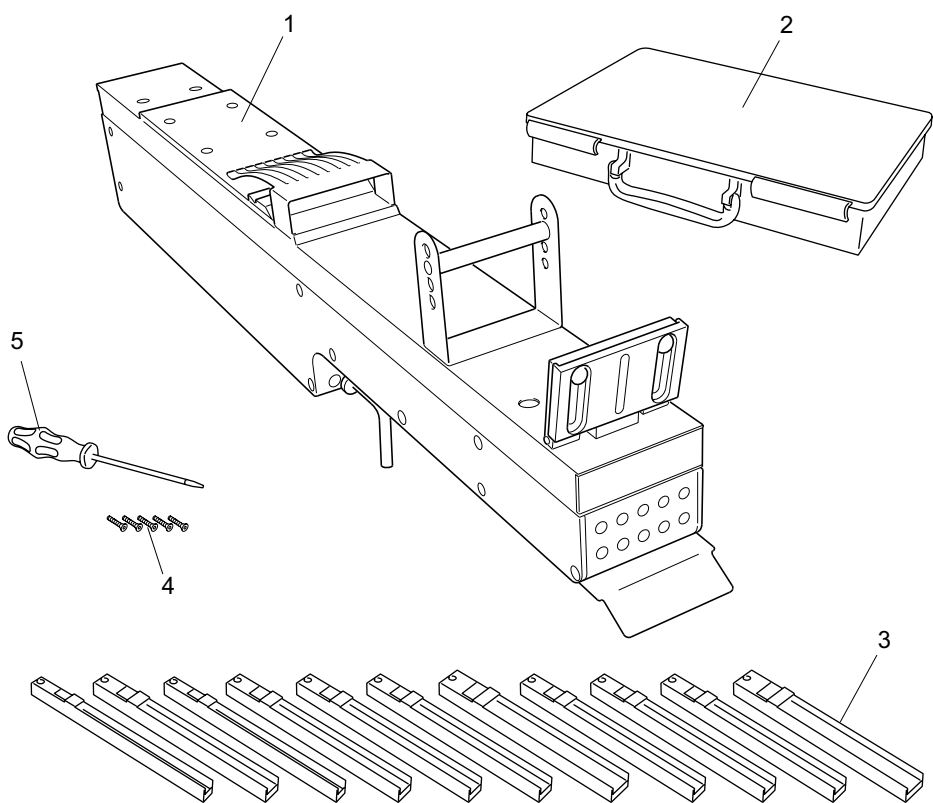
VIBFDR101

MEMO:

2. Component Names & Functions

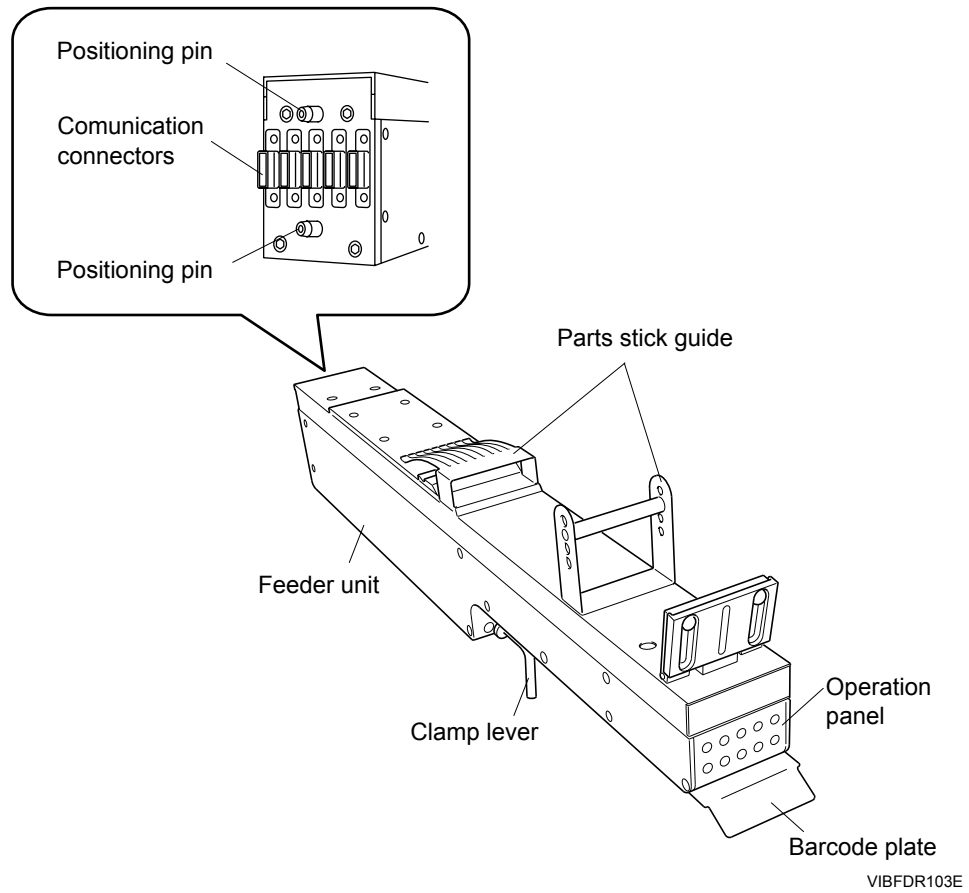
2.1 Kit Contents

No.	Name	Remarks
1	Vibratory stick feeder 2	-
2	Case	-
3	Top plate	See 2.3 "Top Plate Specifications".
4	Screws (used for top plate attachment)	Long: 5, short: 5
5	Dedicated screw driver	-

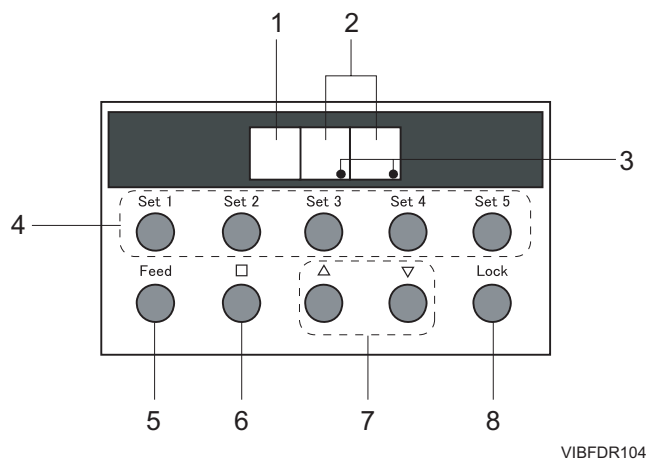




















VIBFDR102

2.2 Vibratory Stick Feeder 2

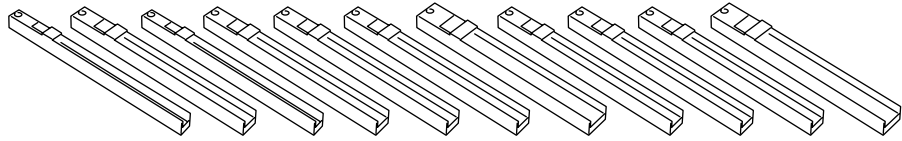


2.2.1 Operation panel



No.	Name	Explanation																
1	Mode display	<p>Displays a symbol to indicate the mode or parameter type.</p> <table border="1" data-bbox="798 405 1327 1159"> <thead> <tr> <th colspan="2" data-bbox="798 405 1327 448">Mode display</th> </tr> </thead> <tbody> <tr> <td data-bbox="798 448 928 556"></td> <td data-bbox="928 448 1327 556">Frequency: 1 to 99</td> </tr> <tr> <td data-bbox="798 556 928 664"></td> <td data-bbox="928 556 1327 664">Level (vibration amplitude): 1 to 99</td> </tr> <tr> <td data-bbox="798 664 928 771"></td> <td data-bbox="928 664 1327 771">Time (vibration time): 1 to 99</td> </tr> <tr> <td data-bbox="798 771 928 879"></td> <td data-bbox="928 771 1327 879">Program mode: 1 to 99</td> </tr> <tr> <th colspan="2" data-bbox="798 879 1327 922">Service mode *</th> </tr> <tr> <td data-bbox="798 922 928 1052"></td> <td data-bbox="928 922 1327 1052">Frequency: 1 to 99</td> </tr> <tr> <td data-bbox="798 1052 928 1159"></td> <td data-bbox="928 1052 1327 1159">Level: 1 to 99</td> </tr> </tbody> </table> <p data-bbox="798 1159 1251 1224">*: "Service mode" is for service personnel. Users should not use this mode.</p> <p data-bbox="1236 1215 1336 1237">VIBFDR105E</p>	Mode display			Frequency: 1 to 99		Level (vibration amplitude): 1 to 99		Time (vibration time): 1 to 99		Program mode: 1 to 99	Service mode *			Frequency: 1 to 99		Level: 1 to 99
Mode display																		
	Frequency: 1 to 99																	
	Level (vibration amplitude): 1 to 99																	
	Time (vibration time): 1 to 99																	
	Program mode: 1 to 99																	
Service mode *																		
	Frequency: 1 to 99																	
	Level: 1 to 99																	
2	Number display	Displays parameter values and program numbers. (00 to 99)																
3	Indicator dots	These blink when the feeder is vibrating.																
4	Set 1 to Set 5 buttons	Push the corresponding button to reset that slot position.																
5	Feed button	Push to have the feeder vibrate for a set period to index parts.																
6	Mode (square) button	Push to change the mode.																
7	Up and down arrow buttons	Push to set parameter values or program numbers. (If pushed and held down, the value will quickly change in the selected direction.)																
8	Lock button	Push at the same time with a Set # button to fix that selected slot in a power off condition.																

2.3 Top Plate Specifications



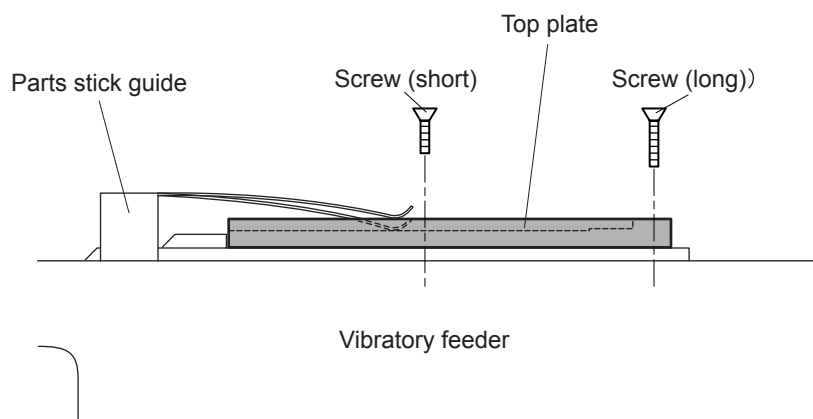
VIBFDR106

Type	Comp. type	Q'ty in kit	Occupies no. of slots	Max. comp. width	Max. stick width	Height inside top plate for part pickup
1	SO8	5	1	6.20	8.3	8.3
2	SO8W	3	1.5	10.65	15.6	7.3
3	SO14/ SO16	5	1	6.20	8.3	8.3
4	SO16W	3	1.5	10.65	15.6	7.3
5	SO20W	3	1.5	10.65	15.6	7.3
6	SO24W	3	1.5	10.65	15.6	7.3
7	SO28W	2	2	12.10	20.3	6.8
8	PLCC20	3	1.5	10.50	12.1	5.3
9	PLCC28	3	1.5	12.60	15.2	5.3
10	PLCC32	3	1.5	12.60	15.6	6.3
11	PLCC44	2	2	17.65	20.3	5.3
12	PLCC52	2	3	20.20	23.2	5.3
13	PLCC68	1	3	25.30	28.3	4.8
14	PLCC84	1	3	30.35	32.8	5.0

3. Setup

3.1 Attaching a Top Plate

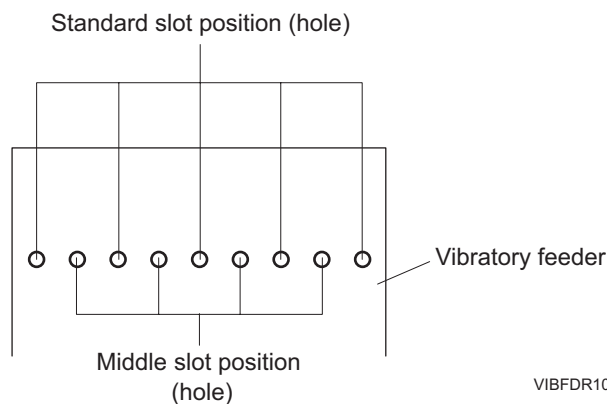
1. Select a suitable top plate for the part stick being loaded. (See 2.3 "Top Plate Specifications".)
2. Decide which slot position of the stick feeder the top plate is to be attached. (See the "Slot Positions" item below.)
3. Hold up the spring on the part stick guide and insert the top plate underneath. Locate the attachment holes and secure the end side using a long screw and the middle side using a short screw.



VIBFDR107E

Slot Positions

Stick feeders have both a standard slot position (5 locations) and a middle slot position (4 locations). The standard slot position matches the slot on the feeder pallets and is allocated the same slot number as that of the feeder pallet. The middle slot position is offset 6 mm to the right of the standard slot position and is allocated the same slot number as that of the standard slot.

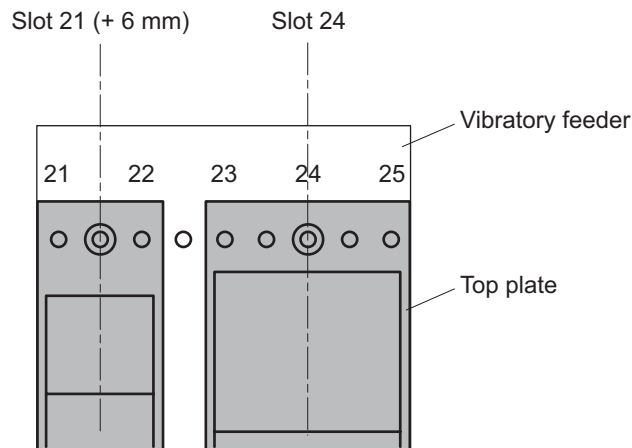


VIBFDR108E

Example:

When the stick feeder is loaded on the feeder pallet (slot nos. 21 to 25) and two top plates are attached as shown below, slot no. 21 is allocated to the parts on the left, and slot no. 24 is allocated to the parts on the right. However, the parts on the left occupy a middle slot position, and therefore it is necessary to apply a pickup offset for the X-axis (6 mm).

Offset values should be entered at the machine. If offset values are entered in the part data in Fuji Flexa, there is a possibility that an error may occur. (For details on entering pickup offset values at the machine, refer to the "NXT System Reference" or "NXT II System Reference" manual.

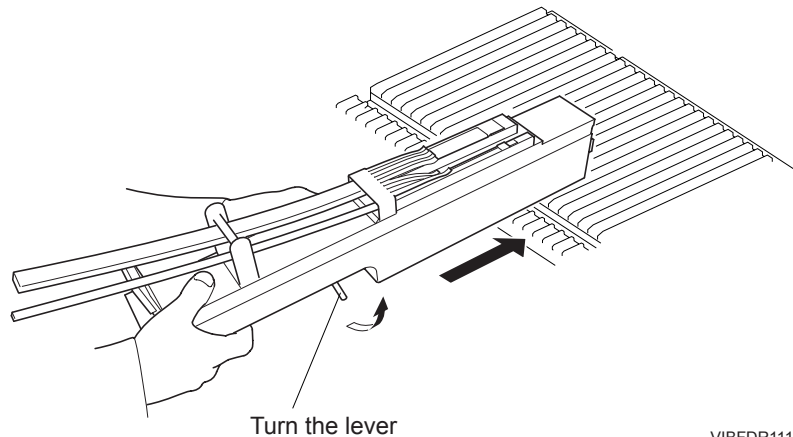


VIBFDR109E

3.2 Setting/Removing Vibratory Feeder

3.2.1 Setting

1. Align the guide on the underside of the vibratory feeder and the feeder pallet slot, and load the front end of the vibratory feeder on the feeder pallet.
2. Turn the clamp lever and slide the vibratory feeder horizontally onto the feeder pallet.



VIBFDR111E

3. Push the vibratory feeder in to ensure that the communication connector on the front end of the vibratory feeder has connected properly with the connector on the feeder pallet.

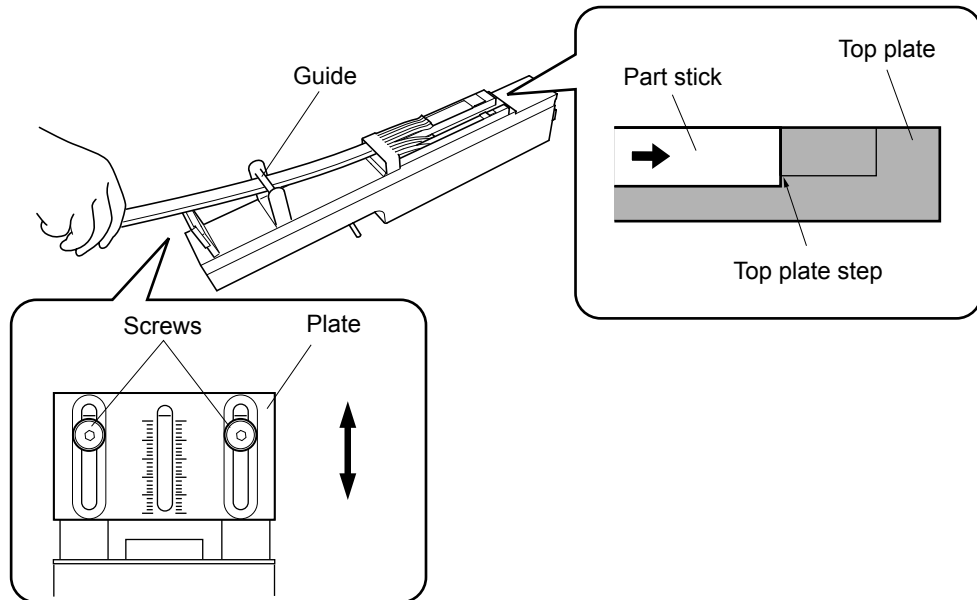
3.2.2 Removing

1. Turn the clamp lever and then pull the vibratory feeder out a little.
2. Support the front end of the vibratory feeder and then pull it out.

Note: Hold the vibratory feeder securely to ensure that it does not drop during removal.

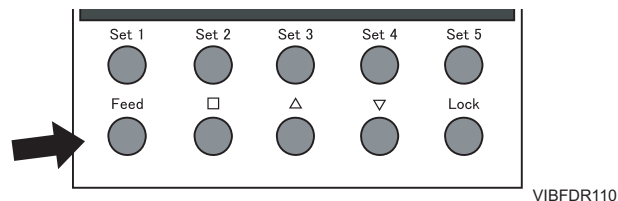
3.3 Replenishing Stick Parts

1. Pass the new part stick through top of the guide and push in until the end of the stick contacts the top plate step.



VIBFDR112E

2. Press the Feed button once. The vibratory feeder will then vibrate for a fixed length of time and one part will be fed to the top plate pick-up position.
If the part does not reach the pick-up position, push the button again.



VIBFDR110

3.4 Functions

3.4.1 Registering the vibration pattern

It is possible to register up to 99 vibration patterns as program numbers and afterwards use the desired pattern by selecting the corresponding program number.

Procedure

1. Supply power to the vibratory feeder. (When started, it is in program mode ["P" is displayed].)
2. Push the up and down arrow buttons to display the program number under which you want to register the vibration pattern.
3. Push the mode (square) button to display the parameter you want to adjust. (Refer to 2.2.1 "Operation panel".)
 - Frequency -> Level (vibration amplitude) -> Time (vibration time)
4. Push the up and down arrows to adjust the parameter.
5. Push mode to set the parameter.
6. Push the mode (square) button again to display another parameter.
7. In the same manner as before, use the up and down arrow buttons to adjust the value for the displayed parameter.
8. When finished adjusting the last parameter, push and hold the mode (square) button for a short time to set the last parameter and register the vibration pattern.
9. To use a vibration pattern, select the corresponding program number in program mode (P is displayed).
 - a. Push the mode (square) button to display "P".
 - b. Push the up and down arrow buttons to display the program number for the vibration pattern that you want to use.

3.4.2 Maintaining power off for unused slots

Use this function when the verification function is being used.

When the verification function is being used, guidance for dealing with unused slots on the vibratory feeder is displayed on the operation panel of the machine. By using this function to turn off the power for unused slots on the unit, the guidance on the machine is no longer displayed.

Procedure

1. Supply power to the vibratory feeder.
2. Push the Lock button and Set # button for the slot not being used at the same time. The power to that slot position is turned off and the guidance on the machine for that position is no longer displayed.

Note: It is possible to turn off the power for up to four slots.

3. To restore power to slots that have been turned off, pull the vibratory feeder out of the slot and then set it again.

MEMO:

4. Job Settings

When using a vibratory feeder, substitute with a standard 8 mm emboss feeder and make part data (package data) and machine configuration (feeder setup) settings. (Refer to the Fuji Flexa manual for details of the Fuji Flexa operation method.)

4.1 Part Data (Package Data) Settings

Enter standard 8 mm emboss feeder values in package data.

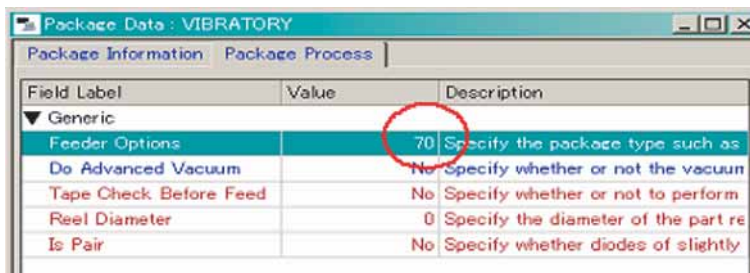
Package Name	VIBRATORY (input example)
Package Type	Emboss
Tape Width	8
Feed Pitch	4
Feeder Options	70

1. Create part data entitled "VIBRATORY".
2. Create package data entitled "VIBRATORY".
3. Set the [Package Type], [Tape Width], and [Feed Pitch] items at the [Package Information] tabbed page.



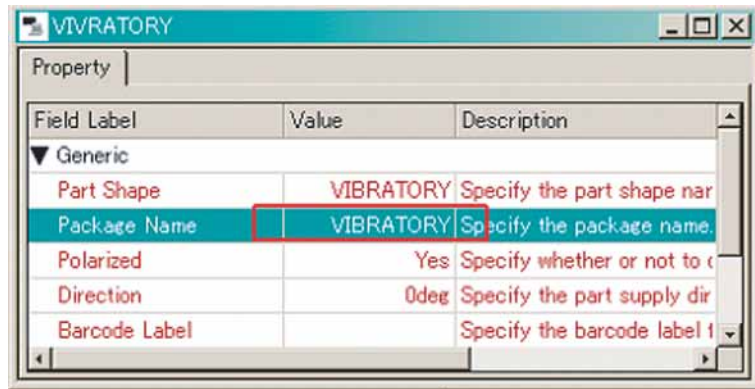
VIBFDR011

4. Set "70" in the [Feeder Options] item at the [Package Process] tabbed page.



VIBFDR012

5. Enter the package data name “VIBRATORY” (described on previous page) in the “VIBRATORY” part data [Package Name] item to complete the creation of the “VIBRATORY” part data.



VIBFDR013

4.2 Settings for Part Data (Shape Data)

For each top plate on the vibratory feeder, a pickup offset must be entered in the [Offset Z] setting in the [Process] tab of part data (shape data). This offset is based on the top plate which is being used and the height of parts for which pick-up is being performed.

4.2.1 Determining the offset Z value for pickup

If the bottom surface of the top plate (the surface contacting the top of the vibratory feeder) is 16.5 mm below the parts pickup height (Z0), the offset Z value for pickup can be calculated using the formula shown below.

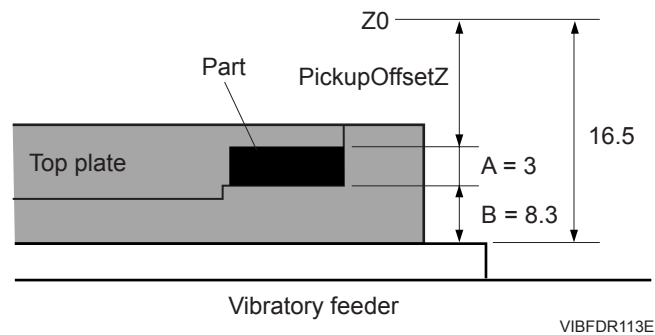
$$\text{(Pickup) Offset Z} = -16.5 + A + B$$

A: Part height

B: Top plate height for part pickup

(Refer to the graph in 2.3 "Top Plate Specifications".)

In the example shown below, a type 1 top plate is being used and parts with a height of 3 mm are being picked, so the offset Z for pickup is: $-16.5 + 3 + 8.3 = -5.2$.



4.2.2 Entering part data

Enter the determined value in the [Offset Z] setting for pickup in the [Process] tab of part data (shape data). (For details on creating part data, refer to the Fuji Flexa User Manual.)

4.3 Machine Configuration Settings

4.3.1 Feeder setup

Set the vibratory feeder parts allocation at the machine configuration.

1. Open the [Machine Configuration] screen.
2. Set the [Part Number], [Shape], [Package], and [Status] items and so forth at the [Feeder Setup] tabbed page.
3. Set “Fixed” or “Reserved” for the [Status] item. Select “Fixed” for slot positions with parts, and “Reserved” for slot positions without parts.

Example: The following setting example is for a feeder occupying slots 5 to 9, with parts in slots 6, 7 and 8, and no parts in slots 5 and 9.

Position	Part Number	Shape	Package	Status	Skip	Feeder Name	Feed
1				Variable	No		
2				Variable	No		
3				Variable	No		
4	RECT2608040_N			Variable	No		
5				Reserved	No		
6	VIBRATORY	VIBRATORY	VIBRATORY	Fixed	No		
7	VIBRATORY	VIBRATORY	VIBRATORY	Fixed	No		
8	VIBRATORY	VIBRATORY	VIBRATORY	Fixed	No		
9				Reserved	No		
10	RECT2608040_N			Variable	No		
11				Variable	No		
12				Variable	No		
13				Variable	No		
14				Variable	No		
15				Variable	No		

Set "Reserved", "Fixed", "Fixed", "Fixed", "Reserved" for the [Status] item.

Note: The optimizer does not support vibratory feeders and therefore the [Status] item should not be set to "Variable".

4. Select a vibration size value from "0" to "9" for the [Feed Count] when using a stick feeder.

Position	Part Number	Shape	Package	Status	Skip	Feeder Name	Feed Count	Ori
1				Variable	No		0	Oi
2				Variable	No		0	Oi
3				Variable	No		0	Oi
4	RECT2608040_N			Variable	No		0	Oi
5				Reserved	No		0	Oi
6	VIBRATORY	VIBRATORY	VIBRATORY	Fixed	No		5	Oi
7	VIBRATORY	VIBRATORY	VIBRATORY	Fixed	No		0	Oi
8	VIBRATORY	VIBRATORY	VIBRATORY	Fixed	No		0	Oi
9				Reserved	No		0	Oi
10	RECT2608040_N			Variable	No		0	Oi
11				Variable	No		0	Oi
12				Variable	No		0	Oi
13				Variable	No		0	Oi
14				Variable	No		0	Oi
15				Variable	No		0	Oi

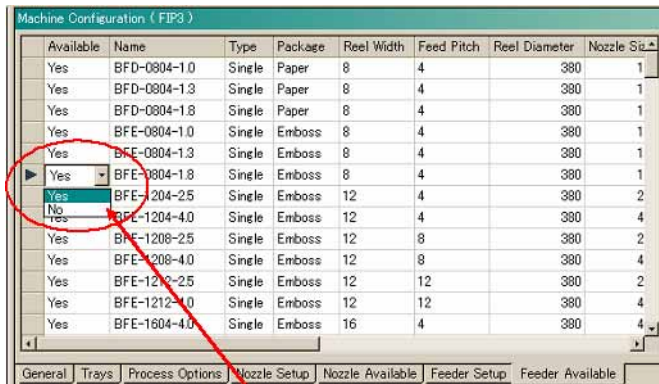
Vibration size

VIBFDR015E

4.3.2 Feeder available setting

Set whether the feeder is available for use.

1. Open the [Machine Configuration] screen.
2. Ensure that the [Available] item for one of the substituted feeders (Emboss, Reel Width: 8, Feed Pitch: 4 feeder) is set to "Yes" at the [Feeder Available] tabbed page.



Set to "Yes".

VIBFDR016E

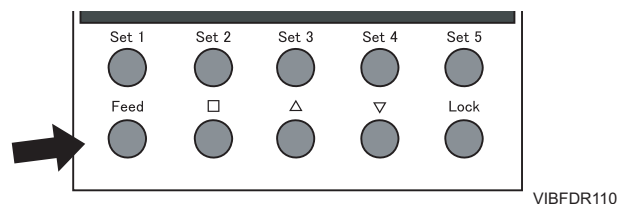
MEMO:

5. Performing Production

5.1 Changeover

Perform the following procedures when the job is changed to a job that uses a vibratory feeder.

1. Attach an appropriate top plate for the part(s) to the vibratory feeder. (Refer to 3.1 "Attaching a Top Plate".)
2. Set the stick parts in the vibratory feeder. (Refer to 3.3 "Replenishing Stick Parts".)
3. Set the vibratory feeder loaded with parts on the feeder pallet. (Refer to 3.2 "Setting/ Removing Vibratory Feeder".)
4. Specify the various parameters. (Refer to 2.2.1 "Operation panel".)
5. After setting the parameters, push Feed and check the vibration condition.



6. Return to the previous steps to correct any settings as necessary. If the settings are good, then push Feed to advance one part to the front of the top plate.
7. If not using Fujitrax to verify, then push the set button on the machine for that appropriate feeder slot.
8. If Fujitrax is being used to verify, perform the following steps to verify the parts.
 - a. Remove the vibratory feeder.
 - b. Verify the other feeders that are on the feeder pallet.
 - c. Set the vibratory feeder back on the feeder pallet.
 - d. Turn off the power for the slots that are not used. (Refer to 3.4.2 "Maintaining power off for unused slots".)
9. Start production.

5.2 Recovering from a Recovery Limit Error

Perform the following steps to recover when a recovery limit error occurs for pickup at a vibratory feeder during production.

1. Remove the cause of the recovery limit error at the vibratory feeder.
2. If parts have run out, remove the feeder from the feeder pallet and set new stick parts.
3. Set the feeder back in the machine and if Fujitrax is not being used, push the vibratory Set # buttons (Set 1 to Set 5) and then push the set button for the appropriate slots on the machine.
4. If Fujitrax is being used to verify, perform the following steps to verify the parts.
 - a. Remove the vibratory stick feeder.
 - b. Verify the other feeders that are on the feeder pallet.
 - c. Set the vibratory feeder back on the feeder pallet.
 - d. Turn off the power for the slots that are not used. (Refer to 3.4.2 "Maintaining power off for unused slots".)

5.3 Using the Alternate Feeder Function

5.3.1 When Fujitrax is not being used

It is possible to set the alternate "stick" in the vibratory feeder.

It is not possible to exchange stick parts during production while the vibratory feeder is on the feeder pallet.

When supplying parts, replenish parts by adding them from the end of the stick. If supplying multiple parts at the same time, then it is necessary to remove the vibratory feeder from the feeder pallet to exchange the sticks.

5.3.2 When Fujitrax is being used

It is possible to set dynamic alternate "sticks" on the vibratory feeder.

It is not possible to exchange stick parts during production while the vibratory feeder is on the feeder pallet.

To resupply parts, remove the vibratory feeder from the feeder pallet when all parts for the original and alternate positions have run out. Exchange with new sticks and verify.

Use the [Keep Alt Feeder] option out of the two dynamic alternate feeder modes (Look for Removable and Keep Alt Feeder).

5.4 Splicing

Splicing for vibratory feeders is supplying parts from the end of the stick. Specify that the feeder does not have a splicing sensor in the feeder data for Fujitrax (refer to the Fujitrax User Manual).

6. Preventive Maintenance

Preventive maintenance tasks include inspections and cleaning. These tasks should be performed without fail to ensure trouble-free, optimum machine performance.

6.1 Inspection

6.1.1 Top plate

Check the top plate to ensure that there is no damage such as cracks, chipping or deformation. Do not use damaged top plates.

6.1.2 Vibratory feeder

1. Check to ensure that the tape stick guide spring has not collapsed or become deformed. Ensure that the tape stick is securely held by the guide.
2. Check to ensure that the communication connector at the front end of the vibratory feeder is not damaged.

6.2 Cleaning

6.2.1 Top plate

1. Remove the vibratory feeder from the machine.
2. Use an air gun to remove any dust or foreign particles from the top plate.

6.2.2 Communication connector

1. Remove the vibratory feeder from the machine.
2. Use an air gun to clean the communication connector at the front end of the vibratory feeder.

MEMO:

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Management No.	Date	Notes
INS-VIBFDR2-1.0E	April 10, 2010	-

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