Flexible Feeder Solution
Bin Picking - Flexible Feeder

Basic Description
FANUC Robotics’ new Flexible Feeder is the next generation in part feeding technology. Built on our industry-leading bin picking algorithm, our Flexfeeder overcomes the high cost of tradition parts feeding. Combining the power of FANUC’s intelligent robot control with our integral vision we are able to offer a highly reliable low cost flexible feeding solution.

Technical Description
FANUC Robotics’ intelligent robots and field-proven software give us the unique ability to deliver these leading-edge feeders. Our Flexible Feeders are able to find and pick randomly placed parts in a bin. The feeders come in a variety of sizes and are able to handle a wide range of parts. Bins are typically sized to hold enough parts for several hours of operation.

FANUC Robotics’ Bin Picking - Flexible Feeder, the right solution for -
Feeding parts in automated workcells:
- Loading machine tools as part of unattended operations.
- Feeding parts at the beginning of a line.
- Picking parts from boxes/bins as part of an assembly operation.

Benefits
- Predefined solutions reduce delivery time and risk.
- Scaleable solutions to meet your specific needs.
- Tooling setup for a family of parts.
- Add new parts using our user-friendly iRVision product.
- Automatic part changeovers.
- Easily add part inspection and error proofing with the supplied 2D camera.
- Re-grip station to optionally reorient parts for proper loading.

Features
- Vision guided picking of randomly placed parts.
- High feed rates with automated recoveries.
- Standard bin avoidance software.
- Several hours of unattended operation.
- Error proofing capability.

Mechanical:
- Three standard solutions: LRMate, M-20 and R-2000 robots.
- Standard field-proven end of arm tools for typical part shapes.
- Standard bins for most part sizes.
- Integral camera and lighting stands reduce integration costs.
- Part orientation/inspection station to increase system flexibility as needed.

Software:
Our feeders are built around FANUC’s time-tested software. All feeders come with HandlingTool and the following robot software options.
- iRVision Bin Picking
- iRVision 3DL
- iRVision 2DV
- iRVision Error Proofing
- iRVision Online Help
- Collision Guard
- Collision Skip
- Constant Path
- Cycle Time Priority
- DCS Pos./Speed check

Robot Models
We support three robot models for our Flexible Feeders. They are:
- LRMate
- M-20
- R-2000
Which model is right for each application is determined by several factors.
- Part size and weight
- Storage volume for incoming parts
- Workcell layout
With these options, there is a Flexible Feeder that is right for your application.
For customized solutions, additional robot models are available.
Feeder Configurations

<table>
<thead>
<tr>
<th>Reach</th>
<th>Robot Model</th>
<th>Max Part Weight (kg)</th>
<th>Pick Envelope (Bin Size)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>LR Mate® 200i C Series</td>
<td>1</td>
<td>Length (m)</td>
</tr>
<tr>
<td>Medium</td>
<td>M-20i A Series</td>
<td>10</td>
<td>0.3</td>
</tr>
<tr>
<td>Large</td>
<td>R-2000i/B™ Series</td>
<td>30</td>
<td>1</td>
</tr>
</tbody>
</table>

Additional part sizes can be evaluated at customers’ request.

<table>
<thead>
<tr>
<th>Gripping Method</th>
<th>Orientation</th>
<th>Typical Tool</th>
<th>Optional Tool</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outside Diameter</td>
<td>On Axis (from end)</td>
<td>3-Jaw gripper</td>
<td>2 or 4-Jaw gripper, Collet</td>
</tr>
<tr>
<td>Outside Diameter</td>
<td>Off Axis (90º to axis)</td>
<td>2-Jaw gripper</td>
<td>Magnet, Vacuum</td>
</tr>
<tr>
<td>Inside Diameter</td>
<td>On Axis</td>
<td>3-Jaw gripper</td>
<td>2 or 4-Jaw gripper, Mandrel</td>
</tr>
<tr>
<td>Opposing Surfaces</td>
<td>n/a</td>
<td>2-Jaw gripper</td>
<td>3-Jaw gripper</td>
</tr>
<tr>
<td>Flat or slightly curved Surface</td>
<td>n/a</td>
<td>Vacuum Cup(s)</td>
<td>Magnet</td>
</tr>
</tbody>
</table>

Bin Configuration

Customer supplied bin (for simpler parts) | ASG Shallow sloped bin (for difficult parts)

Optional Engineering Services

Examples: Workcell layout, Risk assessment, Full application programming, Installation support and Startup or complete system

Please contact ASG Applications Engineering to configure your Flexible Feeder

Included in Packaged Solution

- FANUC LRMate, M-20 or R-2000 Robot. (Customer selected)
- iRVision system with robot mounted 3DL sensor
- Two fix mounted 2D cameras with lighting and support boom
- Robot mounted end of arm tool.
- Cabling dress for robot arm. (3DL and EOAT)
- Plug-in cables for 2D cameras and lights.
- Application program (selection and picking part from bin for a well defined geometry part)
- Standard software packages for bin picking solution
- Assembly of all components
- Functionally tested and ready for system integration
- ROBOGUIDE® Basic Cell; configured with 3D model. (provided after order placement for workcell development)

Options Priced Separately

- Workcell Layouts
- ASG Shallow sloped bin (increases pickability)
- Full Application program (includes re-grips and placement to final position)
- Error proofing checks
- Risk Assessment
- Additional Work Cell peripherals
- Custom Application Software
- Integration and Startup Support
- ROBOGUIDE®-HandlingPRO™

Error Proofing Pass / Fail
Pick Prioritization and Selection

Intelligent Robot Solutions

FANUC Robotics America, Inc.
3900 W. Hamlin Road
Rochester Hills, MI 48309-3253
(248) 377-7000

For sales or technical information, call:
1-800-Q-ROBOT

marketing@fanucrobotics.com
tfanucrobotics.com

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