

Subject: Vibration Feeder Overview	Product: G7 Drive	Doc#: AO.AFD.63
Title: Vibration Feeder		

## Vibration Feeder

### Application Overview

Vibration Feeders are designed to move large volumes of bulk materials at either fixed or variable feed rates. The long stroke and the low frequency of these feeders make them ideal for handling a variety of materials such as coal, coke, rock, sand and chemicals in sizes from large lumps to fines. The feeder typically uses the vibratory action developed by a motor driven eccentric shaft and two-mass coil springs.

### Application Challenges:

- Eliminate unwanted resonant frequencies
- Develop high torque at very low speeds
- Quickly stop the drive without using a braking resistor
- Allow drive to continue operation without need for attended restart in the event of a power outage

### Yaskawa Products:

Product	Feature	Benefit
<b>G7 Drive</b>	Jump Frequency	The drive is able to skip over any resonant frequencies that may occur in surrounding equipment by using the Jump Frequency Function.
	<ul style="list-style-type: none"> <li>• DC Injection Braking</li> <li>• High Slip Braking</li> </ul>	Although the stop time is generally long due to large inertia, it is still possible to quickly stop the drive without a braking resistor by using the DC Braking or the High Slip Braking function.
	Overtorque or Undertorque Detection	Both the Overtorque and the Undertorque Detection functions can sense if there is an overloaded feeder or lack of material.
	<ul style="list-style-type: none"> <li>• Dwell</li> <li>• Stall Prevention</li> <li>• Feed Forward</li> </ul>	For accelerating high inertia loads, the user can increase the Dwell Function setting and tune Stall Prevention. The Feed Forward function can also be used to assist in acceleration.
	<ul style="list-style-type: none"> <li>• Frequency Loss</li> <li>• Momentary Power loss Ride-through</li> <li>• Fault Restart</li> </ul>	The Frequency Loss, Momentary Power loss Ride-through and Fault Restart functions allow the drive to continue operation without the need for attended restart.
	MOP UP/DOWN Function	On large machinery where two or more operator control panels are required, the UP-DOWN drive function can be used to control speed from each panel. If a speed potentiometer is used, only one control station can control speed.
	<ul style="list-style-type: none"> <li>• Frequency Detection</li> <li>• Speed Agree</li> </ul>	Both Frequency Detection and Speed Agree signals can interlock with primary and auxiliary machinery as well as safety equipment while the feeder is operating.

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### Application Details:

In some Vibration Feeder applications, material such as coal, coke or rock, must move from one point of a process to another point at the rate of 2,000-25,000 cubic feet (56.63 to 707.92 cubic meters) per hour. To accomplish this, Yaskawa AC drives are able to counteract the high inertia loads by adjusting the Dwell and Stall Prevention to improve the response to acceleration commands.

A load of this type constitutes a great amount of inertia. This means it is difficult to restart the drive after a momentary power outage. To help keep the supply of material constant, Yaskawa AC drives have features that keep the drive running even if the supply of power to the drive is momentarily interrupted (< 5 ms). Unattended restart of the drive can be accomplished automatically without the need for operator interaction.

Yaskawa AC drives have a full set of features designed to protect the vibration feeder. Overtorque and Undertorque are used to detect an overloaded feeder or lack of material and help prevent machine downtime. In some cases, High Slip Braking (HSB) can be used to bring the feeder to a stop without the need for braking resistors.

Yaskawa AC drives have a Motor Operated Potentiometer (MOP) feature that enables control of the vibration feeder from multiple operator stations. Other drive techniques use an analog signal that allows control from only one control station.

