INSTRUCTIONS FOR OPERATION & MAINTENANCE

MODEL DB1C (COMPACT)

VOLUMETRIC SCREW FEEDER

General Description

The DB1C Feeder is a simple, rugged and accurate Volumetric Feeder used for the dependable metering of dry solids into process. It consists of a 5 ft._ hopper as standard, a trough with an agitator/conditioner screw (except Model DB1C-6), a metering screw and a variable speed drive, all mounted on a common base plate.

The steep, sloped hopper, with it's large rectangular outlet, allows for material flow to the agitator/conditioner screw. The function of this screw is to keep the material in motion and also "condition" the material to a constant density while insuring complete filling of the metering screw flights. Hence, accuracy is maintained while rates are varied by screw speed changes.

Installation

The DB1C Feeder is shipped complete and ready for operation. There is no need for bolting the unit into place, therefore, the four (4) levelers positioned under the base plate are equipped with rubber pads. Room should be provided at the discharge end to allow for screw removal. Normally, 20" clearance is sufficient.

Electrical Requirements

Standard units are provided with DC drives which have their own SCR controllers capable of converting alternating current to direct current. They are single phase units, 115 volt up to 3/4 HP and 230 volt for 1 HP or greater. The controller may be mounted at the Feeder location or remotely. See separate manual for controller instructions.

Note: Units with shunt wound motors have the field energized at all times with the switch in the off position. If feeder is not to be used for an extended period of time, it is recommended that an AC line switch be installed prior to the control to power down the control.

Operation

After the Feeder is in place and wired, it is ready for operation. Units equipped with DC drives can have their speed adjusted at anytime, i.e., with the unit stopped or in motion. The dial provides for setting screw speeds to 1 part in 1000. Speed is increased by turning the potentiometer in clockwise rotation. As noted above, AC drives must be in motion to change speed.

The hopper should be filled with the feed material and the potentiometer should be set to #500 (#5 for AC drives). The unit should be allowed to run for 5 minutes before a 1 minute sample is collected and weighed. It is suggested that 5 or more samples be taken to assure the Feeder is operating properly. Once the feed rate is known at setting #500, the required rate may then be obtained by proper speed change. The drive and, therefore, the feed rates are linear, hence, at setting #500 the Feeder will be operating at approximately half capacity. As an example, if at a #500 setting a 20#/minute rate is achieved and a 10#/minute rate is desired, change the setting to 250# and a 10#/minute rate will be delivered. Take samples at 3 or 4 settings and plot a graph, setting versus rate. From this graph, any feed rate may be selected.

Warning: *Keep hands clear of all moving parts. Serious injury can occur.*

Optional Hopper Vibrator

The hopper may be equipped with a pneumatically or electrically operated vibrator if the feed product requires an assist to promote flow. The hopper is also equipped with a baffle when a vibrator is used. The amount of vibration should be minimal, just enough to promote flow. The vibrations of the pneumatic vibrator may be adjusted by changing the P.S.I. setting (pressure regulator, filter, gauge, etc., by customer), but should not exceed a maximum pressure of 80 P.S.I. For electric vibrators, the vibrations may be adjusted by changing the alignment of the centerlines of the eccentric weights.

The closer you align the centerlines of the two (2) OUTER weights with the centerlines of the two (2) INNER weights, you are INCREASING the force. The further you misalign the referenced centerlines, the more your DECREASE the force. If the centerlines of all four (4) weights are completely aligned, you will develop the maximum force available. Under all conditions, the OUTER weights should be a mirror image of each other and the INNER weights should be a mirror image of each other.

Any other arrangement could cause damage to the hopper, welds and the feeder in general.

Maintenance

The DB1 Series Feeders are reasonably maintenance free. Listed below are maintenance schedules:

1. Front and rear ball bearings are sealed lifetime lubed units. These bearings are oversized and are run at a very low speed, i.e., 165 RPM or less. Although they are fitted with grease fittings, it is suggested they not be lubricated unless in very severe conditions.

2. Rear seal packing is as standard greased cotton waste. If any leakage is observed, the cotton waste should be replaced along with the rear seal gasket.

3. The standard speed reducer is grease lubricated and should not be regreased for up to (5) years service. On special units, with oil lubricated units, they are shipped with oil in them. Follow the attached instructions.

4. The DC motors have lifetime lubed bearings, which gives years of service. If bearings fail, a competent motor repair shop must replace them. Brushes should be checked for wear every (6) months of continuous service.

5. When handling highly abrasive materials, the screw should be checked periodically for wear.

6. After several days of operation, check belt tension. The belt should be depressed easily 1/8Åh for proper tension. If belt tension required tightening, loosen (4) bolts holding reducer/motor and increase tension. (Slotted holes in base will allow for this).

Disassembly

<u>Warning:</u> Motor must be electrically Locked-out before any work is performed.

The DB1C Feeder is easily disassembled for cleaning, changing of screws, or maintenance purposes. To remove the discharge tube:

1. Loosen the set collar on the bearing (Part #1, Dwg. S-1873)

2. Remove the four (4) bolts and pull the tube forward until it disengages the screw.

To remove the screw (Part #4), the tube must be removed as indicated above then:

1. Loosen the set collar on the bearing (Part #7)

2. Loosen set screw on pulley so it will fall from the screw shaft when the screw is pulled forward.

The hopper may be removed by undoing the bolts and lifting vertically off the trough assembly.

Re-assemble by reversing the above procedures.

When inquiring about any feeder, always refer to the Serial Number stamped on the Metalfab nameplate.

Metalfab Service

Metalfab, Inc.
Prices Switch Road
P.O. Box 9
Vernon, NJ 07462
Phone (973) 764-2000 * Fax (973) 764-0272
Email: metalfab@metalfabinc.com

DB1C (COMPACT) FEEDER PARTS LIST

(SEE SCHEMATIC S-2982)

1. FRONT END BEARING*
2. FEED TUBE*
3. FEED SCREW WITH AGITATOR/CONDITIONER*
4. REAR SEAL
5. PULLEY BELT*
6. TROUGH
7. REAR END BEARING*
8. LEVELERS
9. SPEED REDUCER
10. D.C. MOTOR
11. S.C.R. CONTROLLER

*IT IS SUGGESTED THAT THESE PARTS BE PURCHASED AS SPARES AND KEPT ON HAND. SEE RECOMMENDED SPARE PARTS SHEET.