Vibratory Scrap Feeder MHS

(Material Handling System)

Complete with 48” wide at the through bottom, tapered to 72” wide at through top by 185” long by 42” deep. Constructed of mild steel with discharge apron for longer life with less maintenance.

The continuous feed vibratory scrap feeder is a piece of auxiliary equipment to supplement the operation of side well melters; to provide for continuous addition of scrap charge material. This provides for totally unassisted feeding of scrap material, and usually operates in conjunction with other auxiliary equipment including the GPX vortex submerging device and the automatic salt flux addition system.
The Vibratory Scrap Feeder is designed to be an integral part of the Gillespie + Powers, Inc. total plant material handling and melting operations. From shredding to metal out the door, Gillespie + Powers, Inc. offers all aspects for the efficient aluminum melting process.

- Shredding
- GPX Reverse Flow Decoating
- Material Handling and Delivery
- Vortex Submerging
- GPX Side Well Furnaces
- Sow Mold Machines

Consistent Feeding

Variations in head load and material damping cause fluctuations in the capacity and feed rate of scrap feeders that are not sub-resonant tuned. Scrap feeders have negligible change in trough stroke when subjected to varying head load and material damping. Our precision sub-resonant tuned Scrap Feeders maintain trough consistency and speed stability thus delivering higher capacities at controlled feed rates, and repeatability.
Optimum utilization of materials for reduced waste.

The Gillespie + Powers’ automatic salt/flux feed system includes continuous proportioning and addition of salt fluxes to continuously add material in proportion to raw material charge. This intimate and properly proportioned mixing of salt fluxes with charged material provides for optimum utilization of these materials, reducing waste and increasing melt recovery.

TECHNICAL SUMMARY

The Gillespie + Powers’ automatic salt/flux feed system includes continuous proportioning and addition of salt fluxes to continuously add material in proportion to raw material charge. This intimate and properly proportioned mixing of salt fluxes with charged material provides for optimum utilization of these materials, reducing waste and increasing melt recovery.
Vibratory Scrap Feeder

The Vibratory Scrap Feeder is designed to provide a feed rate of up to 25,000 pounds per hour of a variety of shredded scrap aluminum into the melting furnace. The feeder will include a support stand on wheels as well as lugs to move with a fork truck. The material carrying deck assembly will have a replaceable stainless steel nose assembly that extends into the furnace well. Each feeder will be equipped with a control box that will contain the components of the automatic variable feed control system. (Custom controls systems are available at additional cost.)

DESIGN FEATURES:

- The trough will be formed and fabricated from 3/8” thick AISI C1020 mild steel to provide a bottom width of 60” with 36” high side x 17’-6” long (including stainless steel section). Maximum charge weight 12,000 pounds.
- Replaceable 2’-6” long bolt-on stainless steel discharge section bolted to the primary trough will be provided.
- The drive is a variable force drive mechanism utilizing the principle of sub-resonant magnification of small exciting force acting upon a two-mass natural frequency coil spring system. The first mass, consisting of the motor and exciter frame, is separated by precision engineered steel coil springs from the second mass, which is the material carrying deck assembly. The small force needed to excite the system is efficiently produced by counterweighted wheels mounted on a totally enclosed vibration design motor with double extended shafts. Centrifugal force produces the desired motion which is amplified by the coil springs and transmitted directly to the deck assembly, resulting in highly efficient straight-line feed of material.
- 8” I-Beam frame with heavy-duty casters to support vibrating hopper. Frame is designed to includes a support structure necessary to achieve a product discharge height of 60”.
- The drive unit consists of heavy-duty coil reactor springs and a VFD ready 15 HP 720 RPM T.E.N.V. Vibratory motor, wound for 230/460 volt, 3 phase, 60 cycle power supply, mounted below the trough. The motor is controlled with our integral control for adjustable rate control.
- Four heavy duty compression type steel coil isolation spring assemblies, complete with base plates, will be furnished to minimize transmission of vibration to the supporting structure.
- An independent NEMA 12 control cabinet will contain Honeywell UDC-330 controller, Variable Frequency Drives (VFD), and adjustable ratio relay. A shielded thermocouple is furnished for remote mounting in the furnace for interconnection with the UDC-330 controller.
- The unit will be completely assembled and mechanically tested prior to shipping.
- All exterior surfaces will be mechanically cleaned, power washed, and coated with an industrial production enamel.

UTILITIES REQUIRED:

- 230/460V 60amp Power for 15 HP Drive Unit MCC and Remote Switch by Others.

OPTIONAL AUXILIARY EQUIPMENT:

- Automatic Salt Feed Mechanism
- GPX Vortex Submerging Device
- GPX Side Well Furnace
- GPX Delacquering System

DESIGN DATA:

- Feed Material: Scrap Aluminum
- Discharge Capacity: 25,000 PPH
- Bulk Density: 15-90 PCF
- Particle Size: Shredded and Risers
- Moisture Content: Dry
- Product Temperature: Ambient
- Fed From: Front End Loader
- Discharge To: Furnace
- Incline: 0°
- Shipping Weight: 15,400 pounds
The Automatic Salt Feed Mechanism is designed to be used in conjunction with the Gillespie + Powers’ Vibratory Scrap Feeder, and provide a variable feed rate of salt fluxes based on the material feed rate of the GPX vibratory scrap feeder.

**DESIGN FEATURES:**

The automatic salt feed mechanism includes:
- Salt Auger Screw Feeder with 6” SS screw with Tivar Liner – 2HP variable speed drive.
- Hopper bolted on top of salt auger screw feeder. Total Nominal Capacity 73 cubic feet.
- Belt wall conveyor 12” OAW with 10” diameter drive and take-up pulley. 2HP variable speed drive. 18” top angle take-u, 100 FPM nominal.
- Automatic metering assembly

Supporting steel stands, hopper side viewing window and variable feed rate control panel, are also included. Sufficient guarding will be provided to shield components installed on base.

A completely wired operation control panel is included and mounted on the assembly. This panel includes the on/off switches, motor start, VFD’s, assorted running lights for the equipment, and Motor Over load protection with alarm. The operating motors include the following:
- a.) Conveyor - 2 HP, 480 Volt
- b.) Auger - 2 HP, 480 Volt
- c.) Discharge Vibrator - Fractional HP, 110 Volt (optional)
- d.) Control Motor - Fractional HP, 110 Volt (optional)

Also included in the panel will be the Auto-Manual potentiometer station for controlling the range of operation on the discharge conveyor and the auto/manual feed rate controller. The feed rate controller will be set up to receive a 4-20mA signal that may be fed to it from either the temperature of the metal or a signal from a weigh belt conveyor. This allows the continuous automatic adjustment of salt feed in response to changing charge rates. In addition, this controller can be operated on a manual feed basis.

The unit will be completely assembled and mechanically tested prior to shipping.

All exterior surfaces will be mechanically cleaned, power washed, and coated with an industrial production enamel.

**UTILITIES REQUIRED:**

(2) 230/460V Sump Power for 2 HP Drive Unit(s)
MCC and Remote Switch by Others.

**Note:**
The automatic salt feed mechanism, is not a standalone item. It must be used with the GPX vibratory scrap feeder.

**Controls Packages offered:**
- Analog Control (Standard)
- Digital Control (Optional)
- Custom Package Control (Optional)