General

Dry feeders are used to provide accurate metering of bulk material required in chemical and process engineering. Such substances can be metered if the particles of the material are as fine as dust or in the form of pellets, flakes or short fibres. All dry feeders described here are volumetric types and are equipped with hollow worms (lead screws). Metering is not related to the type of material, therefore care must be taken in operation to ensure that the possibly varying bulk density is within the permitted limits for the process, or if special measures are necessary.

Design

The dry feeder is a self-supporting welded structure made from stainless steel plates. The gear and motor are located outside at the hopper.

The maximally suitable speed for all worms is 150 rpm. The metering output mainly depends on:

Worm diameter
Worm pitch
Worm speed
Design of worm
Flowability of the material to be metered.

To avoid bridge formation in the bulk material and to ensure even filling of the metering worm, a rotary blade is fitted above the worm. The speed is approx. 23 rpm.

A dustproof separation of the shaft bushes between the bulk material and the gearing is ensured by formlocking elastomer sealing rings.

The hoppers have a rectangular flange at the top with holes to enable storage hoppers or shutoff valves to be mounted.

For assembly purposes, the base of the feeder has holes for fixing adaptor bases which are available to adjust the height as required.

Power supply and control

Standard 3-phase as well as DC motors are available for the power unit.

The DC motor can be controlled continuously by a thyristor controller in the range from 1:50.

The 3-phase motor either operates continously, with a time relay switch to set intervals or is adjusted continuously via a frequency controller in the range of 1:20.

Additional equipment

1. Control of metering output

The quantity is adjusted by changing the screw speed. A thyristor controller and various frequency converters according to MB 4 20 02 are available.

2. Suspensomat

Many bulk materials are difficult to introduce into liquids in which the dry material has to be dissolved or suspended. The reasons for this are mostly the water-repellent properties of the particles or their lower density in comparison to the liquid: the dry material would simply float on the surface. Suspensomats are a valuable and reliable aid in wetting the bulk material leaving the feeder intensively with water from all sides in order to facilitate the introduction into the preparation tank. The film of water rotating at speed in the conically shaped collector of the suspensomat effectively prevents blockage due to sticking. For details see data sheet MB 3 10 01.

3. Nozzle heating

Hygroscopic bulk materials may cause breakdown if they become lumpy and sticky due to the entry of moisture. Also accurate metering becomes impossible because a homogeneous bulk material flow which is required for precise metering is no longer guaranteed.

Heated nozzles prevent the entry of more or less humid ambient air into the dry feeder.

Mains connection:	220/240V AC
Control temperature:	60 °C

Feeder Type	Worm d mm	Power W	Nozzle Part No.
TEH	20	30	31298
	38	40	19682
	51	50	19683
	75	60	19684
	90	60	31302

4. Base for height adjustment

The size of the suspensomats depends on the output of the dry feeders. Bases are used for height adaption.

Suspensomat	Base Part No.
A	31297
B	31296

Base

for Suspensomat
type A: H = 195
type B: H = 315

*see dry feeder dimensions

5. Hoppers for direct mounting upon request

Order example

In a sewage treatment plant 200 kg/h flocculants are to be released. The bulk density is approx. 0.9 kg/ dm3. The process requires a pure batch preparation operation.

Solution:

A volumetric metering output of 222 dm3/h follows from the bulk density. A dry feeder with hollow worm is chosen (because this type of worm is particularly suitable for the small-format, flocculent bulk material), dry feeder type TEH 0320.

As the dry feeder is used for pure peparation operation only, controllable speed is not required. Therefore the dry feeder is to be equipped with a simple three-phase motor.

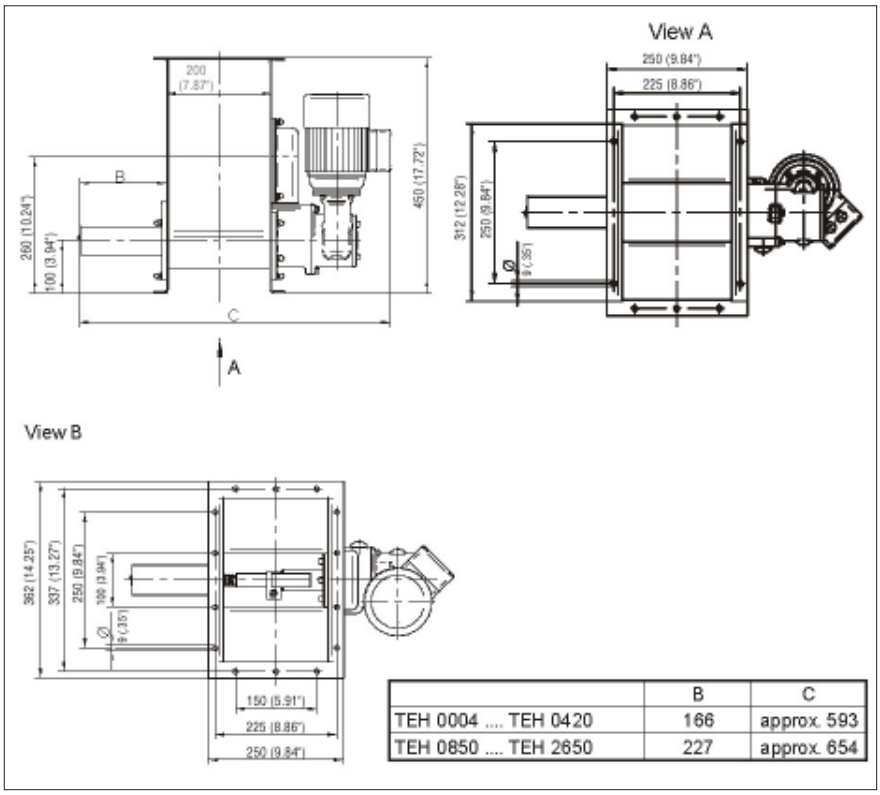
To avoid lump formation the polyectrolyte must not fall directly onto the water surface of the peparation tank but has to be wetted in a suspensomat before. For the chosen dry feeder size suspensomat type A must be used (see data sheet 3 10 01).

To adapt the dry feeder to the suspensomat a rack of matching height can be installed on site (see installation scheme), or suspensomat and dry feeder are mounted on the same platform. In this case an appropriate base according to the above selection table must be installed below the dry feeder.

A heatable nozzle is fitted to prevent humidity from entering from the preparation tank or the suspensomat into the discharge pipe (see accessories).

The order texts read as follows:

1. Dry feeder type TEH 0320
   Simple hollow worm d 51 mm
   Worm speed 150 min-1
   Dry feed in stainless steel construction (Part No. 30231321)
2. Base for adaption to suspensomat A (Part No. 31296)
3. Suspensomat A (Part No. see MB 3 10 01)
4. Heatable nozzle (Part No. 19683)



	B	C
TEH 0004 .... TEH 0420	166	approx. 593
TEH 0850 .... TEH 2650	227	approx. 654