

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 form-locking 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 continuously, 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 breakdowns 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

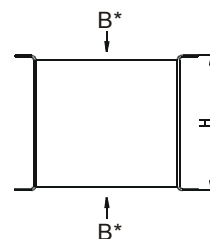
Base

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 preparation 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 polyelectrolyte must not fall directly onto the water surface of the preparation 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:

- 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)
- Base for adaption to suspensomat A
(Part No. 31296)
- Suspensomat A **(Part No. see MB 3 10 01)**
- Heatable nozzle **(Part No. 19683)**

Technical data

Motor	DC	3 phase
Mains connection V-Hz	220...240/50...60	230/400-50 * ¹
Power consumption * ²	370	370
Motor power W	250	250
Motor field voltage V	200	---
Armature voltage V	0...180	---
Shape faktor	1.4	---
Speed adjustment range	1:50	1:20
Control signals * ²	mA	0...20
	mA	4...20
Load	350	---
Admissible ambient temperature °C	0...45	0...45
Integral hopper volume dm ³	15	15
Weight kg	TEH 0004...0420	24
	TEH 0850...2650	26

*¹ Frequency converters require 220...240 V/50...60 Hz

*² referring to thyristor controller or frequency converter

Selection table and Part Numbers

Feeder with hollow worm

Capacity dm ³ /h	Type of dry feeder	Worm		Admissible grain size mm * ¹	DC motor drive	3-phase motor drive
		d mm	Speed min ⁻¹			
4	TEH 0004	20	150	1	30231305	30231316
14	TEH 0014	20	150	2	30231306	30231317
38	TEH 0038	38	150	2	30231307	30231318
60	TEH 0060	38	150	3	30231308	30231319
150	TEH 0150	38	150	3	30231309	30231320
320	TEH 0320	51	150	3	30231310	30231321
420	TEH 0420	51	150	3	30231311	30231322
850	TEH 0850	75	150	3	30231312	30231323

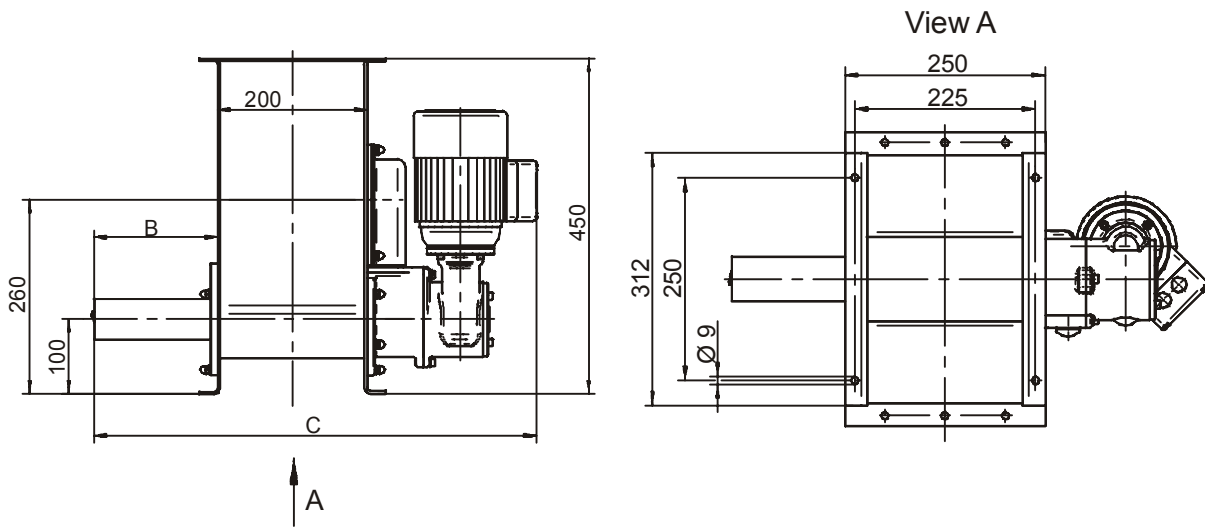
1380* ²	TEH 1380	75	150	3	30231313	30231324
1900* ²	TEH 1900	90	150	4	30231314	30231325
2650* ²	TEH 2650	90	150	4	30231315	30231326

*¹ The admissible grain size depends strongly on the grain geometry and flowability of the bulk material.

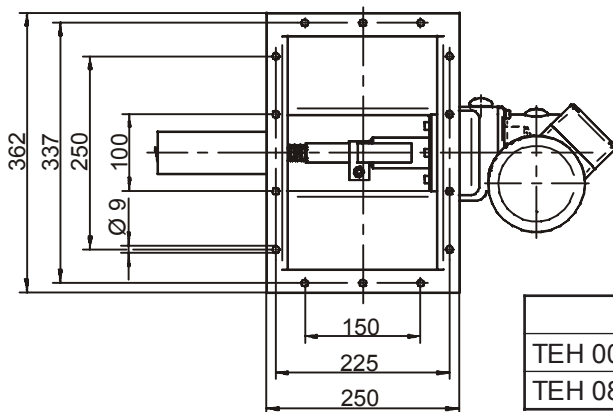
In cases of doubt a practical test will help.

*² Available upon request.

Dimensions



View B



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

Installation diagram

1. Hopper
2. Dry feeder
- 2.1 Output adjustment
- 2.2 Nozzle heating
3. Funnel
- 3.1 Level control
4. Dissolving water station
5. Preparation tank
- 5.1 Max. electrode
- 5.2 Min. electrode
- 5.3 Dry running protection electrode
6. Electric agitator
7. Metering pump
8. Relief valve
9. Shutoff valve

