



**DP Pulveriser®**  
since 1962



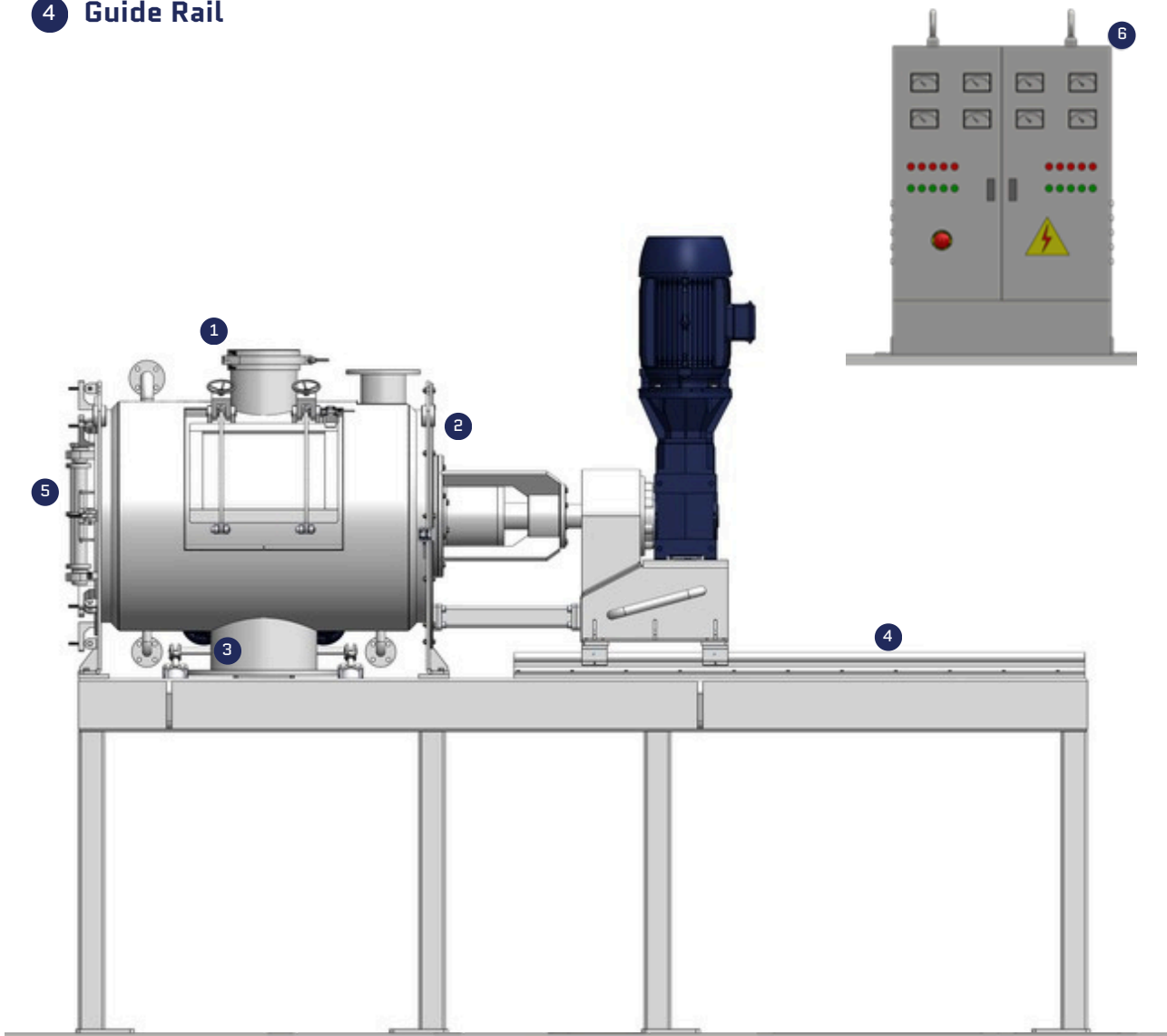
## **DP® Plough Shear Plow Mixer**

*Powder Mixers*

## Introduction

The DP® Plough Shear Mixer is a high-performance industrial mixing system designed to achieve fast, uniform blending of powders, granules, and dry bulk materials. Engineered for gentle yet efficient mixing, it delivers excellent batch consistency, easy cleaning, and reliable operation for food, chemical, pharmaceutical, mineral, and specialty material applications.

- 1 Material Inlet
- 2 DP® Pin Disc Mill
- 3 Material Discharge
- 4 Guide Rail
- 5 Front Door
- 6 Control Panel



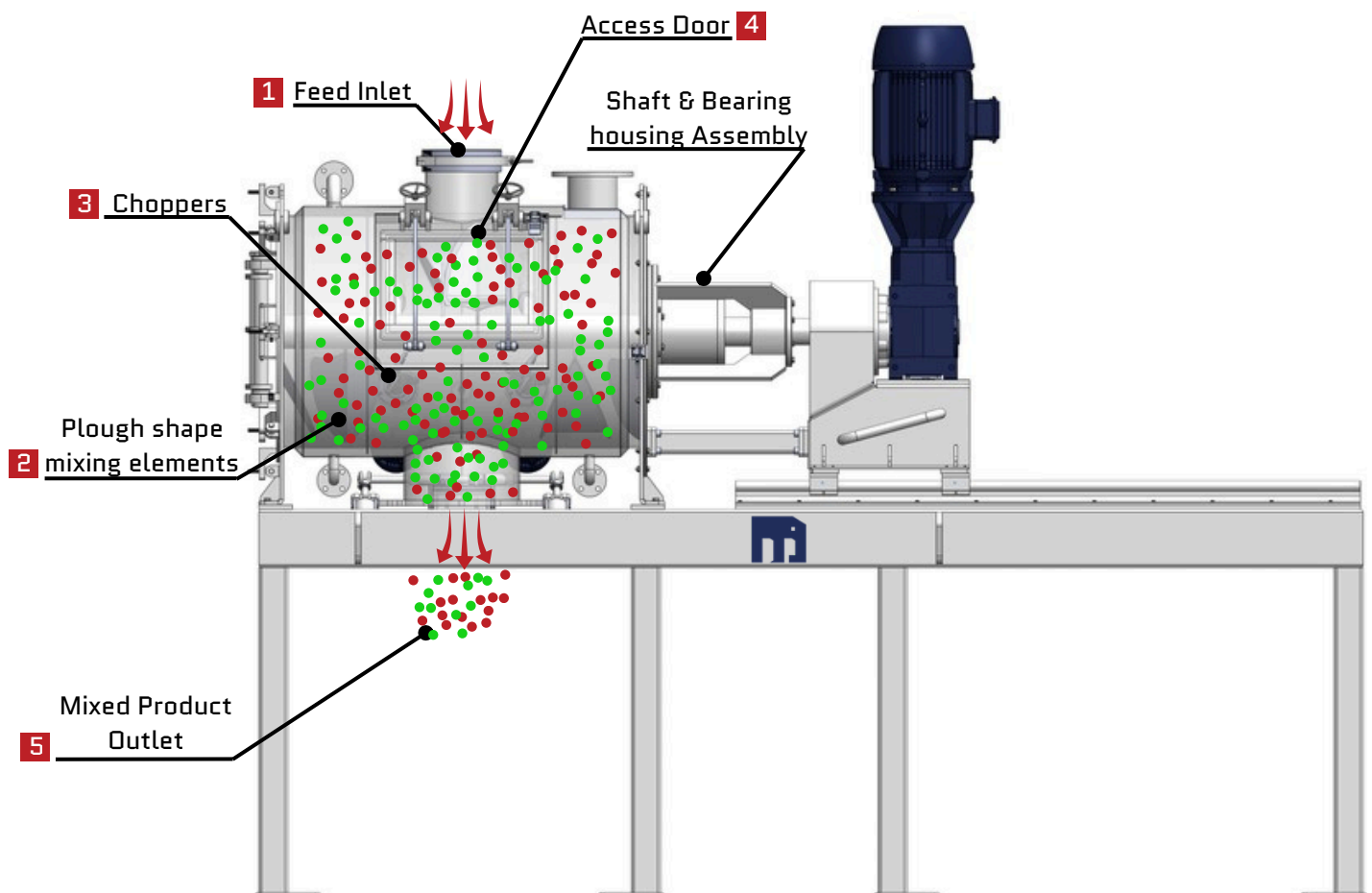
► Typical process flow diagram of a Plough Shear Mixer

## Working Principle

The **DP® Plough Shear Mixer** operates on the principle of intensive mechanical mixing through the combined action of rotating plough-shaped mixing elements and high-speed choppers. Material enters the mixer through the **feed inlet (1)** and is loaded into the mixing chamber, where the **plough-shaped mixing elements (2)** continuously lift, circulate, and distribute the material throughout the vessel.

Inside the mixing chamber, the rotating ploughs generate a three-dimensional turbulent movement, causing continuous lifting, rolling, and cascading of particles to achieve rapid and uniform blending. The **choppers (3)** provide additional high-speed impact and shear forces, breaking down agglomerates and dispersing fine particles to improve mixing uniformity. The **access door (4)** allows convenient inspection, cleaning, and maintenance of the mixing chamber and internal components.

The combined action of the ploughs and choppers ensures efficient mixing of powders, granules, and materials with different particle sizes and bulk densities. Once the desired mixing uniformity is achieved, the finished product is discharged through the **mixed product outlet (5)** for collection or downstream processing. The mixer is suitable for a wide range of industrial applications, offering short mixing times, uniform product distribution, and efficient processing of dry powders and granules.



► A cross-sectional view of the Plough Shear Mixer

## Features & Benefits

- ▶ Delivers rapid and uniform blending of powders, granules, and dry bulk materials, ensuring excellent mixing efficiency and batch-to-batch consistency.
- ▶ Specially designed plough elements generate intensive axial and radial material movement, promoting continuous circulation, effective particle distribution, and shorter mixing cycles.
- ▶ Independently driven choppers generate additional high-shear forces to break down agglomerates, disperse fine particles, and improve mixing uniformity.



▶ DP® Plough Shear Mixer in Operating Position

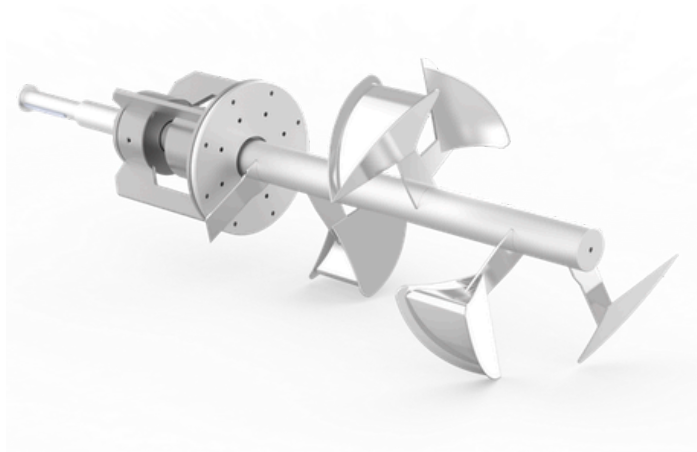


▶ DP® Plough Shear Mixer with Agitator Assembly Retracted

- ▶ Engineered vessel geometry and strategically positioned mixing elements minimize dead zones, enhance material circulation, and support efficient product discharge.
- ▶ Large access doors and an accessible internal arrangement facilitate inspection, cleaning, and maintenance, reducing product changeover time.
- ▶ Heavy-duty construction and a reliable drive system ensure stable mixing performance, reduced maintenance requirements, and extended equipment service life.

## Options and Accessories

- **Explosion Protection:** Can be engineered with pressure-resistant construction and suitable explosion protection systems, subject to material hazard assessment and applicable safety requirements.
- **Metal Separation:** Can be integrated with magnetic separators or metal detectors to maintain product purity and protect downstream equipment.
- **Liquid Addition System:** Optional spray nozzles, spray bars and dosing systems for uniform incorporation of oils, flavors, binders, colors and other liquid ingredients during mixing.
- **Heating & Cooling Jacket:** Optional jacketed trough for temperature-controlled mixing using hot water, steam or chilled water, depending on process requirements..
- **Instrumentation & Monitoring:** Can be equipped with level monitoring sensors, temperature probes, speed monitoring, load cells, safety interlocks, and PLC/HMI automation for reliable process control.
- **Sanitary Construction:** Mirror-polished product contact surfaces with CIP/SIP compatibility for food and pharmaceutical applications.



► *Plough Shear Elements and Shaft assembly*



► *Inside view of high speed Choppers*

## Machine size

| Model     | Total capacity | Working capacity | Power | Speed |
|-----------|----------------|------------------|-------|-------|
| PSM       | liter          | liter            | kW    | rpm   |
| PSM-5L    | 5              | 3                | 1.1   | 0-582 |
| PSM-10L   | 10             | 7                | 1.1   | 0-582 |
| PSM-45L   | 45             | 30               | 2.2   | 223   |
| PSM-70L   | 70             | 45               | 2.2   | 190   |
| PSM-100L  | 100            | 70               | 3     | 170   |
| PSM-200L  | 200            | 140              | 5.5   | 149   |
| PSM-300L  | 300            | 210              | 7.5   | 129   |
| PSM-500L  | 500            | 350              | 11    | 118   |
| PSM-750L  | 750            | 500              | 15    | 103   |
| PSM-1000L | 1000           | 700              | 22    | 101   |
| PSM-1500L | 1500           | 1000             | 30    | 85    |
| PSM-2000L | 2000           | 1400             | 45    | 72    |
| PSM-3000L | 3000           | 2100             | 55    | 67    |
| PSM-4000L | 4000           | 2800             | 75    | 62    |
| PSM-5000L | 5000           | 3500             | 75    | 54    |



▶ DP® Plough Shear Mixer with open mixing chamber ready for dispatch

## Who are WE?

We are DP Pulveriser Industries and have been designing and building size reduction equipment in India since 1962. We believe in using the materials of the highest grade to build our equipment because we understand your need for a machine that will perform - without breakdown - day in and day out. 60+ years, 7500 installations and 32 countries later we now hold the reputation of being one of India's finest manufacturers of size reduction equipment. Regardless of the industry you operate in, DP can optimize, innovate and automate your entire process with tailor made solutions and expertise that is backed by 60+ years of experience. We are a young bunch of passionate engineers excited to work on your next challenging project



## What do we DO?

**DP Pulveriser Industries' offerings are broadly classified under 3 segments:**



### Powder Processing Equipment

Built for durability and low maintenance even after years of service, Our core strength lies in Size Reduction and Air Classification. We offer a wide range of machines to meet all your particle size requirements.

### Testing and Other Services

We offer various services such as material trials of our equipment, grinding and air classification of your material on a contract basis and even particle testing and analysis at a fully equipped laboratory on the campus of our partner IIT Gandhinagar.



### Turnkey Systems & Plant Automation

Thanks to our decades of experience, we understand what processing technologies and equipment are best suited for your application and industry. This means we can be your one stop solution for setting up complete powder processing plants carefully tailored to your needs.



## Our Global Footprint

- Australia
- Bahrain
- Germany
- Mexico
- New Zealand
- South Africa
- Qatar
- Canada
- United Arab Emirates
- Bangladesh
- Ghana
- Hongkong
- Iran
- Nepal
- Singapore
- Nigeria
- Bhutan
- China
- Tanzania
- Oman
- Philippines
- Switzerland
- Uruguay
- Zambia
- Kenya
- Estonia
- Egypt
- Mauritius
- Madagascar
- Guatemala
- Indonesia
- Sri Lanka
- Bremen

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