

PTS - Ploughshare Mixer

Introduction:



PerMix PTS series Ploughshare Mixer is one of our two types of Turbulent Mixer, which are originally designed by our Israeli engineers. The other one is PTP series Paddle Mixer.

PTS ploughshare mixer is so versatile that it can handle nearly all types of materials including dry powders, granular materials, short fibered substances, moist solids with liquids, pasty materials and highly viscous masses.

The PerMix PTS series Ploughshare Mixer can be used for numerous processing, including compounding, fine mixing, dispersing, suspending, emulsifying, deaerating, tempering, accelerating chemical or physical reactions, granulating, breaking down agglomerates, etc. It is particularly suited for such difficult processes as mixing trace elements in proportions of 1 in 100,000 to 1 in 1,000,000 parts.

Basic Construction:



PerMix PTS series Ploughshare Mixer consists of a centrally mounted horizontal shaft that rotates within a cylindrical container, plough shaped mixing elements that are attached to the centrally mounted shaft, special openings at the top for feeding materials, flush fitting access doors in the front of the mixer, a flush fitting discharge valve at the bottom of the mixer which is pneumatically or manually operated, and a complete drive unit.

Operation Process:

The mixing drum of a Ploughshare Mixer is filled from 30% to 70% capacity, allowing space for individual particles to be dispersed within the main area of the mixer. The plough-shaped mixing elements create intense axial and radial movement causing the product to move throughout the mixing area. The shape and angle, together with the adjustment and rotation of the mixing elements and the mixing drum, cause the product to be lifted off the surface of the drum wall. The product is automatically discharged while the machine is still running so that any segregation is prevented.

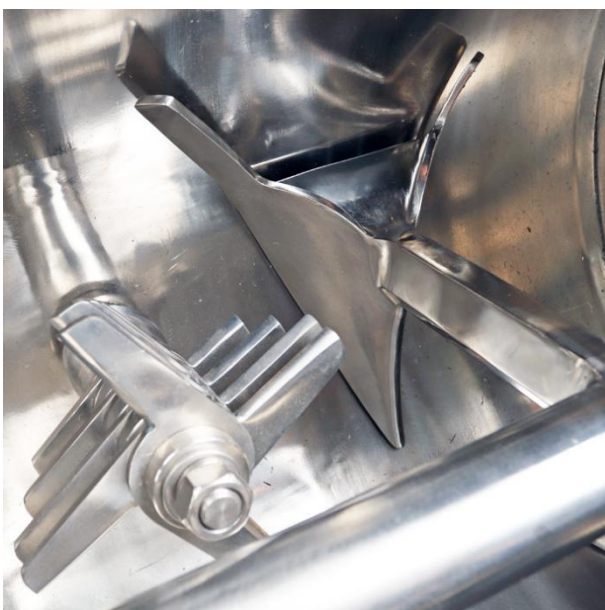
Lab & Pilot Models:



PerMix is able to offer lab & pilot size ploughshare mixers for Research & Development purpose. The small size machine is very helpful for customers when the ingredients for R&D are expensive, and to meet the budget limit at the first stage.

With the good performance of the lab & pilot mixer, it is easy to scale up for a medium size or even bigger one.

Special Design with Choppers:



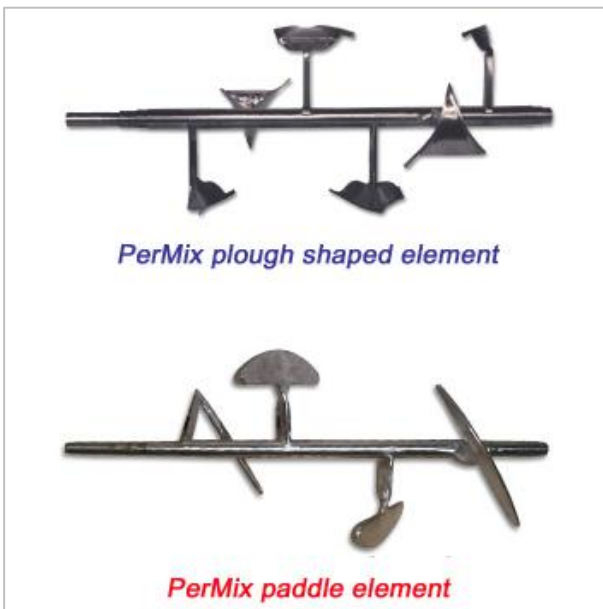
The installation of PerMix High Speed Side Choppers in the basic PTS mixer enables the breaking down of agglomerates / lumps, and also accelerates the mixing process. Together with the mixing element, the PerMix Side Chopper removes lumps in the initial product, chops pasty adhesives and

hinders the formation of agglomeration during the moisturizing of powdered substances. The PerMix Side Chopper is operated independently by its own motor.

Vacuum Mixer Dryer:

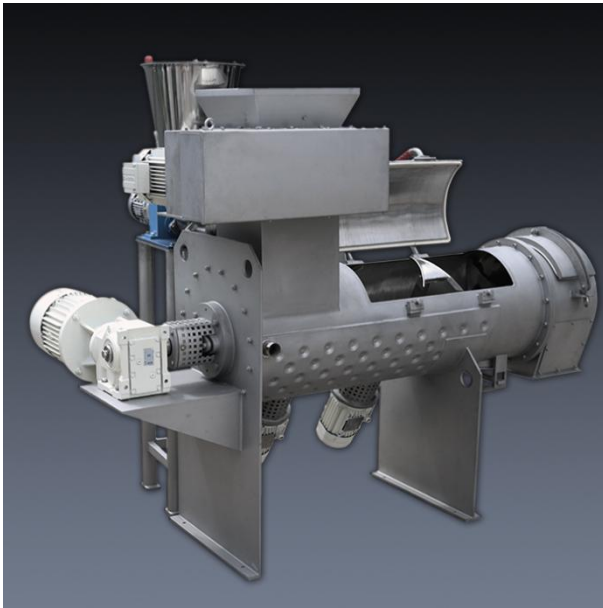
With some special modifications - for example heating jacket for the mixing tank, mechanical shaft seal, special segmented discharge valve, dust filter housing, temperature control system - the PerMix PTS series Ploughshare Mixer can be used as a multi-stage process vessel eliminating the need for additional specialist equipment. It can be used as a vacuum mixer dryer, mixer-granulator, de-aerator, reactor and cooler.

Optional Features:



- Various types of mixing element

PerMix provides mainly two types of mixing elements – plough (for PTS Mixer) and paddle (for PTP Mixer). Both have their advantages: the plough shaped element can easily penetrate through the dense and thick powder or paste materials, while the paddle element can cover an even wider range of viscosity.



- Continuous operation

PerMix supplies mixers for continuous work when a large capacity per hour is needed for the same material. Continuous plough mixers differ from batch plough mixers in that the mass flow of the product is from the inlet of the container to the discharge at the opposite end.

- Heating/Cooling jacket

Jacketed trough for heating/cooling operation by steam, thermal oil, or water. ASME/PED certificate can be optional for high pressure operation.



- Drive system

Drive system by geared motor, cycloidal reducer, worm reducer, belt or chain transmission, etc.



- Feeding & Discharging

A variety of feeding & discharging methods can be selected by the customers. Discharging port can be by manual or pneumatic operation.

- Access door

Access doors can be designed for easy cleaning, inspection & maintenance.

- Spray nozzle

Liquid can be added into the powder by spray nozzles on a pipe which is installed on the top of the mixing trough. The necessary pump and tank can also be provided by PerMix.



- Extended height bases

Discharge clearance of PerMix mixers are available according to customer's requirement, with extended machine bases, tubular frames, platform, etc.

- Construction material

We are able to offer mixers with contact part to be built by Carbon steel, SS304, SS316/316L, Titanium, Duplex stainless steel, Hastelloy, etc. For abrasive materials we offer hardened steel as the contact part, or the mixing elements to be coated with materials such as Tungsten Carbide or equivalent. Also we produce mixers all by stainless steel in order to meet the high hygienic requirement.

Applications:

PerMix PTS series Ploughshare Mixer has a wide range of applications:

- Dry powder mixing: Food flavoring/additives, Sponge/cake mixes, Cosmetics, Pharmaceuticals, Cement, Powdered rubber
- Paste mixing: Biscuit creams, dough, PVC pastes, Car body fillers/putties, Sugar/marzipan paste, Toiletry pastes, Tile adhesives and grouts
- Mixing of wet slurry: Filter cake re-slurrying, dough, Fiber glass resin dough putty
- Wet granulation
- Liquid coating of powders and granules
- Fat and oil incorporation
- Vacuum drying
- Hot air drying

Specifications:

Model	Total capacity (liter)	Working capacity (liter)	Power (*) (kW)	Speed (rpm)	L1 (mm)	L (mm)	W (mm)	H1 (**)(mm)	H (***)(mm)
PTS-5L	5	3	1.1	0-582	180	800	500	-	-
PTS-10L	10	7	1.1	0-582	200	900	500	-	-
PTS-45	45	30	2.2	223	480	900	550	450	950
PTS-70	70	45	2.2	190	580	1,050	600	450	970
PTS-100	100	70	3	170	660	1,100	610	450	1,020
PTS-200	200	140	5.5	149	890	1,400	730	500	1,180
PTS-300	300	210	7.5	129	970	1,550	850	500	1,300
PTS-500	500	350	11	118	1,250	2,000	950	500	1,400
PTS-750	750	500	15	103	1,500	2,250	1,100	600	1,600
PTS-1000	1,000	700	22	101	1,900	2,600	1,150	600	1,800
PTS-1500	1,500	1,000	30	85	2,110	3,200	1,200	600	2,000
PTS-2000	2,000	1,400	45	72	2,110	3,500	1,350	600	2,200
PTS-3000	3,000	2,100	55	67	3,000	4,100	1,500	800	2,400
PTS-4000	4,000	2,800	75	62	3,000	4,200	1,550	800	2,600
PTS-5000	5,000	3,500	75	54	3,000	4,300	1,620	800	2,800

1. PTS-L: laboratory size
2. (*) (**) (***): Changes are available according to the customer's request.
3. All specifications and illustrations are as accurate as is reasonably possible, but they are not binding.
4. PerMix reserves the right to modify the design without notice.

Gallery:



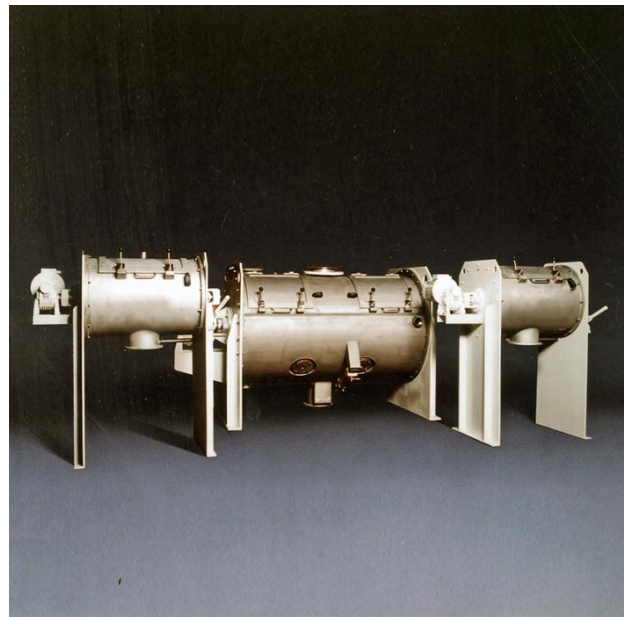
PTS-2000 Mixer with Pneumatic Discharge



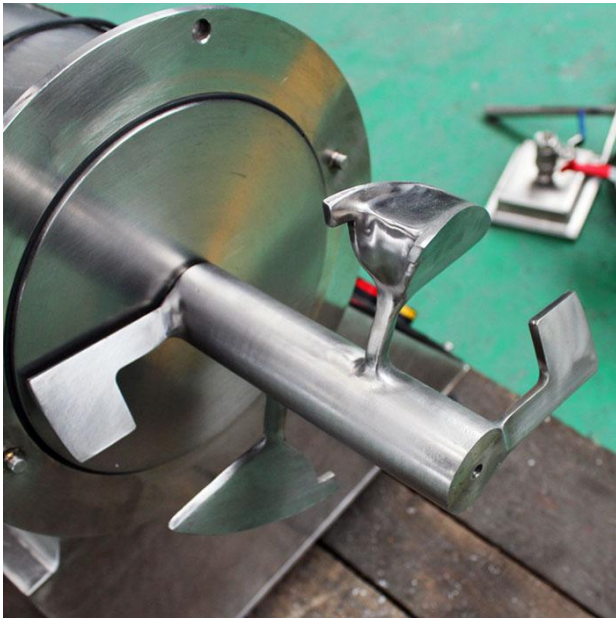
PTP-1500 Mixer with Access Doors Open



PTS-100 Full SS Plow Mixer



PTS Plow Mixers of Various Sizes



Plough of PTS-5 Lab-size Mixer



High Speed Chopper of PTS Mixer



Internal View of PTS Mixer



Access Door of PTS Plow Mixer