

PMS VACUUM MIXER[®]

Counter-rotating Homogenizing Vacuum Mixer



VM 250N PLANT





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PMS VACUUM MIXER® is applicable for a wide variety of viscosity product, i.e. emulsions and semisolid. It integrates mixing, vacuuming, heating, cooling and homogenizing functions into single machine, resulting in a considerably reduction in cycle time. Our range stretches from laboratory model of 10 liters up to production model of 6,000 liters working capacity.

Theory of Operation

The basis of mixing system of PMS VACUUM MIXER® is a combination of counter-rotating paddle agitator and internal homogenizer. Gate-type agitator with cross baffles rotates in anti-clockwise direction while counter paddle revolves in clockwise direction, generating a disturbance in the normally circular flow pattern and dampen vortex formation. The blades of paddles are pitched to promote top-to-bottom flow. In addition, adjustable scrapers are utilized to prevent the build-up of a stagnant film between the agitator and the vessel, and assure efficient heat transfer to product during heating and cooling steps. The speed of the agitator and the counter paddle can be varied separately.

Homo disperser, locates at the bottom of the vessel, accomplishes emulsification by physical action and centrifugal forces created by high-speed rotation of the rotor. These actions would break up oil phase/ aqueous phase liquid stream into tiny and discrete droplets. Then, they will be intensively and continuously mixed by counter-rotating agitator mechanism, and become final products. For versatility of use, interchangeable high viscosity and low viscosity homo disperser heads are provided with the system. Homo disperser speed is adjustable by inverter control.

Conical mixing vessel is jacketed for heating/cooling and completely enclosed. All contact parts are stainless steel SUS 316. The vessel is designed to operate under vacuum; mixing and emulsification can then be performed without entrainment of air.

A temperature measuring probe, extending directly into the product, allows exact setting of the temperature with a view to process management. For process reproducibility, mixing time, product temperature, agitator speed, counter paddle speed and homogenizer speed can be controlled to the desired condition.

Raw material feeding to PMS VACUUM MIXER® can be manual through the fully open lid, or completely automatic through vacuum system. Finished product is discharged by manual discharge valve or through special design transfer pump on mobile trolley into product container.



VM 250N

	VM 10 N	VM 250N
Total Volume (L)	12	250
Working Volume (L)	10	250
Width (mm)	600	600
Length (mm)	1620	1620
Height (mm)	1780	1780
Main Agitator Driving (KW)	0.55	0.55
Counter Rotating Driving (KW)	0.37	0.37
Homogenizer Driving (KW)	1.1	1.1
Tiltable Vessel	Yes	Yes



Application

- ☀ Pharmaceuticals: Ointment, Cream, Gel, Lotion, Paste
- ☀ Cosmetics: Cream, Gel, Lotion, Mascara, Wax, Lipstick, Sunscreen, Face masks
- ☀ Body Care Products: Toothpaste, Shampoo, Conditioner, Liquid soap
- ☀ Food: Mayonnaise, Ketchup, Sauce, Mustard, Dressing, Jam, Margarine
- ☀ Chemical: Adhesives, Grease, Shoe polishing, Car polishing, Lubricants, Household cleaner, Viscoplastic substance, Lacquer, Putty, Paint

Benefit

- ✓ cGMP Compliance
- ✓ Versatility for wide range of products
- ✓ Consistent and Repeatable process
- ✓ Short Production Time as a result of the
- ✓ integrated hot-cold vacuum emulsifying process
- ✓ Scale-up from R&D to production
- ✓ Easy to operate, clean and maintenances



VM 75N PLANT



VM 25 N	VM 50 N	VM 75 N	VM 150 N	VM 250 N	VM 500 N	VM 1000 N	VM 1500 N	VM 2000 N*	VM 3000 N*	VM 6000 N*
34	72	100	204	340	647	1365	1855	2600	3900	7400
25	50	75	150	250	500	1000	1500	2000	3000	6000
685	800	800	1000	1000	1200	1500	1600	2100	2400	2700
1340	1700	1700	1850	2000	2650	3500	3300	2100	2400	2700
1823	2100	2100	2600	2600	3125	3700	4000	4300	4800	6100
0.75	1.5	1.5	2.2	4.0	5.5	7.5	11.0	11.0	15.0	18.5
0.55	0.75	0.75	1.5	2.2	4.0	5.5	7.5	7.5	11.0	15.0
1.5	2.2	2.2	4.0	5.5	7.5	30.0	40.0	22.0	30.0	45.0
Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No

Note : * Enclosed Lid with Lug Support (no Hydraulic-Lift)

Standard

- ⚙️ Mixing bowl with heating/cooling jacket and all contact parts made of SUS 316
- ⚙️ Variable-speed main agitator, counter-rotating mixer and homogenizer.
- ⚙️ Homogenizer located at the lowest point in the vessel for internal homogenization
- ⚙️ Changeable Low viscosity homogenizing head and High viscosity homogenizing head
- ⚙️ Integrated vacuum pump and vacuum equipments with manual control
- ⚙️ Tiltable vessel to discharge product or clean for model VM 10 N - VM 500 N
- ⚙️ Semi-automatic control system and Safety equipments
- ⚙️ Manually operated valves

Option

- ⚙️ Explosion-proof motors and Explosion-proof control
- ⚙️ Oil phase and water phase mixing tank with special design platform to suit plant layout
- ⚙️ Hot water circulation system for heating purpose
- ⚙️ Special loading equipments or dosing unit
- ⚙️ Discharge height and Feature to suite specific discharge requirements, i.e. Product transfer pump with mobile trolley
- ⚙️ Programmable Logic Controller (PLC)
- ⚙️ Automatic Control System
- ⚙️ Pneumatically operated valves
- ⚙️ Washing in place (WIP)/Cleaning in place (CIP) system
- ⚙️ Validation Document : Installation Qualification (IQ) / OperationalQualification (OQ)



Vacuum Mixer Model SVM 500N for Low Head Room

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