

FILAMOS

Construction and Mining Technology

M, MH

M 50 - M 250

M 250 H - M 750 H





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FIELD OF APPLICATION

Compulsory mixers are designed to mix wet, moist and dry mixtures in the construction industry, in the metallurgic and foundry industries, for the industrial mixing of materials, etc. Their main advantage is the perfect mixing of individual mixture components within a short period of time (mixing speed is 4-5 times faster than that of the standard drum mixer), which provides the high quality of the final mixture.

Other advantages:

- rugged construction enabling work in demanding conditions
- minimal maintenance operation
- use of enhanced safety features (no-voltage trigger, terminal switch)
- special construction of the cover prevents mixture spillage
- possibility of tailor made modifications



WORKING PRINCIPLE

Compulsory mixers work on the principle of mixing arms rotating at high speed around the inner axis of the static mixing tank. The mixing is done by several arms which simultaneously ensure that the mixture is wiped off the sides and the bottom of the mixing tank. The mixing arms are side and height-adjustable and can be equipped with rubber spatulas. The basic model consists of one three-arm fork whose rotation provides the resistance of the mixed mixture (mixer blades I / mixer blades II).

The thorough mixing of heavy refractory mixtures requires specially designed Raking blades or Mixer blades I.

FILLING

The mixture is filled through the screen in the cover of the mixer. The screen is fitted with a separating comb for packaged materials. The construction of the cover prevents material spillage over the sides of the tank. If need be, the mixer can be provided with covering sheet metal preventing the leak of thinner or dusty mixtures (see Description).

DISCHARGE

The prepared material is emptied by turning the movable discharge segment on the tank bottom by hand or by hydraulic opening system (for surcharge).

MACHINE DESCRIPTION - "M" SERIES

MIXING UNIT (alternatives based on estimated mixture)



Mixing blades I

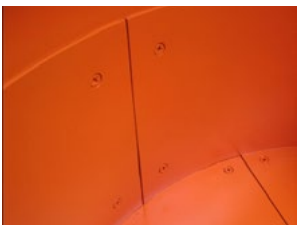


Mixing blades II



Raking blades

MIXING TANK can be equipped with exchangeable linings from standard or abrasion-proof material **HARDOX** (up to its utility mixing height).



Standard lining



HARDOX lining

POSITION SWITCH

disconnects an operating machine from the mains supply in the event that the cover opens during operation.

UPPER COVER WITH SEPARATING COMB can be modified according to customers demand



HEM of the mixing tank prevents mixture spillage



DISCHARGE SEGMENT with guiding groove (manual in standard / hydraulic for surcharge)



HEIGHT ADJUSTABLE FRAME

GRAB HANDLE

ELECTRIC CONTROLBOX with control buttons. RPM of the stirrer are standardly constant. For surcharge, mixer can be fitted with frequency inverter for fluent RPM regulation (COM-F version)

WHEELS are standard for M 50 - M 250. If required by customer, the frame can be modified.

"M" PRODUCTION LINE (models + videos)



The mixing tank is firmly connected to the stand that can be equipped with wheels (models M 50 – M 250). The M 50 – M 180 mixer models are fitted with height adjustable frame allowing for the variable height of discharging.

The drive of the mixing arms is ensured by a low-maintenance, worm or helical bevel gearbox (see OUTPUT).

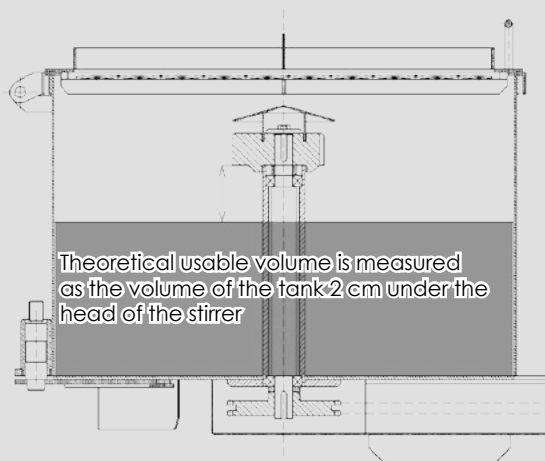
Mixer controls are on the mixer frame and consist of a control box with an emergency switch. Electric supply is led to a 16A or 32A coupler plug next to the control box.

Machine is being launched by pressing START button. Turning off the machine is by STOP button. In case of danger, machine is disconnected by pressing TOTAL STOP button (red button with locking).

The mixer is also fitted with a position switch that disconnects an operating machine from the mains supply in the event that the cover opens during operation. Simultaneously, the position switch prevents the machine from starting with an opened cover. The no-voltage release protects the machine from re-starting in case of power failure and its subsequent restoration.

Note: Pictures of machines are standard modification of "M" Series. Individual changes can be made in case of customers specific requirements.

M SERIES - VOLUME



Theoretical usable volume:

Each type of material has a different behaviour by mixing (e.g. stickiness, liquidity, wave of material arising in front of the mixing paddles, etc.).

Refractory concrete (heavy and sticky refractory materials)

- approximately 60% of theoretical usable volume

Powdery dry materials (e.g. sand with cement)

- approximately 70% of theoretical usable volume

Transport-concrete (suitable for transportation by truck-mixer)

- approximately 70% of theoretical usable volume

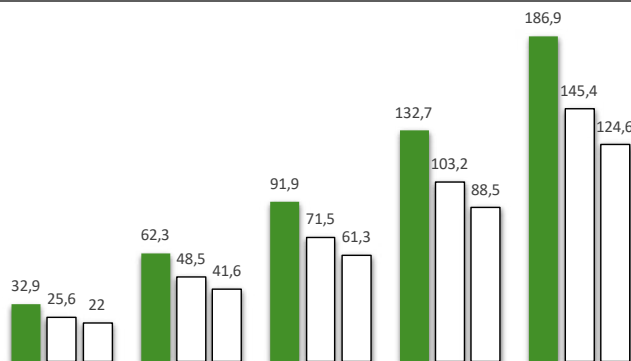
Liquid materials (e.g. mortar, plaster, self-leveling mixtures)

- approximately 90% of theoretical usable volume

THE DENSITY is an important value describing the weight of one liter of finally prepared mixture

The right alternative of the mixer is a combination of necessary **VOLUME (M 50 - M 250)** and **adequate POWER (1,5 - 5,5 kW)** with respect to characteristics of mixed material

Tables below demonstrate practical example for mixing Transport-concrete (density e.g. 2.200 kg/m³, that is 2,2 kg/l). For proper mixing of 80 l mixture (Table 1), ca. 176 kg (Table 2) - **M125 with 3 kW engine** might be a good alternative

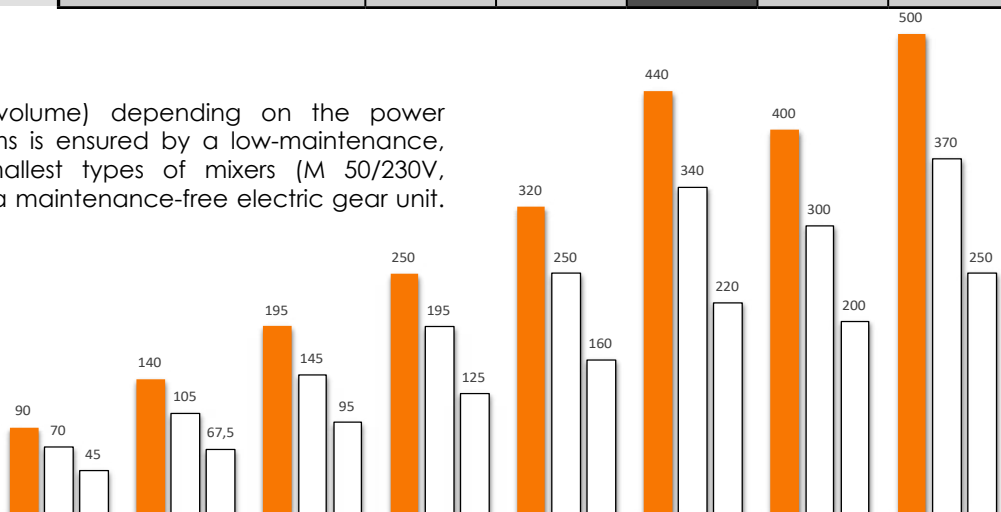


| MIXER VOLUME | M 50 | M 80 | M 125 | M 180 | M 250 |
|-------------------------------|-----------|-----------|-----------|------------|------------|
| Tank volume (l) | 74 | 111 | 162 | 233 | 330 |
| Theoretical usable volume (l) | 37 | 69 | 102 | 148 | 208 |
| Max. grain size (mm) | 4 | 6 | 8 | 8 | 8 |
| Transport-concrete (l) | 33 | 62 | 92 | 133 | 187 |
| Powdery dry materials (l) | 25 | 48,5 | 71,5 | 103,2 | 145,4 |
| Refractory concrete (l) | 22 | 41,6 | 61,3 | 88,5 | 124 |

| DIMENSIONS AND WEIGHT | | | | | |
|--|----------|-------------|-------------|-------------|-----------|
| Tank diameter (mm) | 580 | 580 | 700 | 840 | 1000 |
| Tank height (mm) | 280 | 420 | 420 | 420 | 420 |
| Total height (mm) | 950-1230 | 1090 - 1370 | 1090 - 1370 | 1090 - 1370 | 1270 |
| Weight (kg) variable in relation to exchangeable lining and output | 96 | 131 -137 | 147 - 187 | 172 - 213 | 270 - 390 |

M SERIES - OUTPUT

The ability to mix material is (except volume) depending on the power of the engine. The drive of the mixing arms is ensured by a low-maintenance, worm or helical bevel gearbox. The smallest types of mixers (M 50/230V, M 50/400V, and M 80/230V) are fitted with a maintenance-free electric gear unit.



| ENGINE OUTPUT | 1,5 kW | 2,2 kW | 3 kW | 4 kW | 4 kW | 4 kW | 5,5 kW | 5,5 kW |
|--|-----------------|------------------|------------------|------------------|---------------|---------------|---------------|---------------|
| Type of gearbox | worm | worm | worm | worm | helical-bevel | helical-bevel | helical-bevel | helical-bevel |
| Transport-concrete (kg) | 80 - 100 | 130 - 150 | 180 - 200 | 240 - 260 | 320 | 440 | 400 | 500 |
| Powdery dry materials (kg) | 60 - 75 | 100 - 110 | 140 - 150 | 190 - 200 | 250 | 340 | 300 | 370 |
| Refractory concrete (kg) | 40 - 50 | 65 - 75 | 90 - 100 | 120 - 130 | 160 | 220 | 200 | 250 |
| Stirrer rotation (rpm) | 48 | 51 | 48 | 48 | 49 | 36 | 49 | 36 |
| Torque (Nm) | 227 | 315 | 454 | 597 | 780 | 1061 | 1072 | 1459 |
| Voltage (V) | 230/400 | 230/400 | 400 | 400 | 400 | 400 | 400 | 400 |
| Current supply | 16 A | 16 A | 16 A | 16 A | 16 A | 16 A | 32 A | 32 A |
| Models offered with certain type of drives | M 50 | M 50 | | | | | | |
| | M 80 | M 80 | M 80 | | | | | |
| | | M 125 | M 125 | M 125 | M 125 | | | |
| | | | M 180 | M 180 | M 180 | M 180 | | |
| | | | | M 250 | M 250 | M 250 | M 250 | M 250 |

Note: Orientation values only. Maximal mixing weight can vary significantly by different materials.

MACHINE DESCRIPTION - "MH" SERIES

MIXING UNIT (optional with respect to mixed material and size of the tank)



Mixing blades H-I



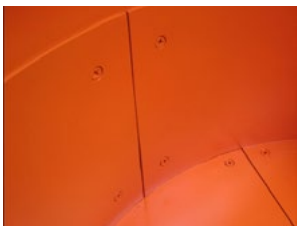
Mixing blades M550H, M750H

DISCHARGE SEGMENT

with guiding groove (manual in standard / hydraulic for surcharge)



TANK is standardly fitted with the replaceable lining layer from standard steel plates of abrasive-proof plates **HARDOX**



UPPER COVER WITH SEPARATING COMB

can be modified according to customers demand and can be also operated hydraulically



POSITION SWITCH disconnects an operating machine from the mains supply in the event that the cover opens during operation.

CONTROLBOX with control buttons machine is usually with standard numbers of stirrer rotation (rpm), frequency inverter enabling variable speed of stirrer is possibly being fitted on demand.

"MH" Series is standardly equipped with a softstarter that facilitates the continual start-up.

STURDY FRAME at "MH" version is stationary and modified so that it can be lifted with a fork-lift carriage. The height of the frame can be modified on demand. Mixers are standardly equipped with eyes for lifting-up with the crane.

"MH" PRODUCTION LINE (models + videos)



The drive of the mixing arms is ensured by a low-maintenance helical bevel gearbox (see OUTPUT).

Mixer controls are on the mixer frame (on long wires alternatively - on demand) and consist of a control box with an emergency switch. Electric supply is led to a 32A or 63A coupler plug next to the control box.

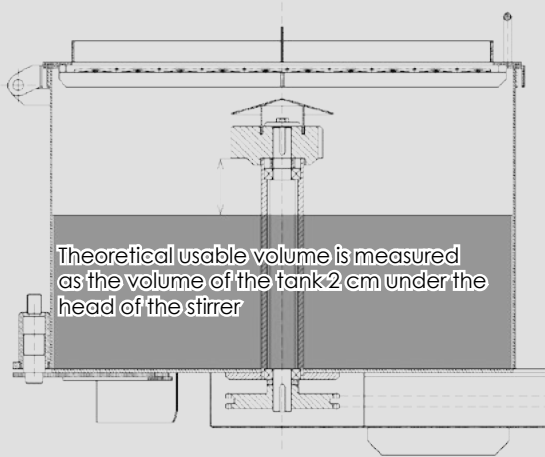
Machine is being launched by pressing START button. Turning off the machine is by STOP button. In case of danger, machine is disconnected by pressing TOTAL STOP button (red button with locking).

Models with a motor output of 5.5 kW and higher can be equipped with a soft starter that facilitates the continual start-up of the mixer.

The mixer is also fitted with a position switch that disconnects an operating machine from the mains supply in the event that the cover opens during operation. Simultaneously, the position switch prevents the machine from starting with an opened cover. The no-voltage release protects the machine from re-starting in case of power failure and its subsequent restoration.

Note: Pictures of machines are standard modification of "MH" Series. Individual changes can be made in case of customers specific requirements.

MH SERIES - VOLUME



Theoretical usable volume:

Each type of material has a different behaviour by mixing (e.g. stickiness, liquidity, wave of material arising in front of the mixing paddles, etc.).

Refractory concrete (heavy and sticky refractory materials)

- approximately 60% of theoretical usable volume

Powdery dry materials (e.g. sand with cement)

- approximately 70% of theoretical usable volume

Transport-concrete (suitable for transportation by truck-mixer)

- approximately 70% of theoretical usable volume

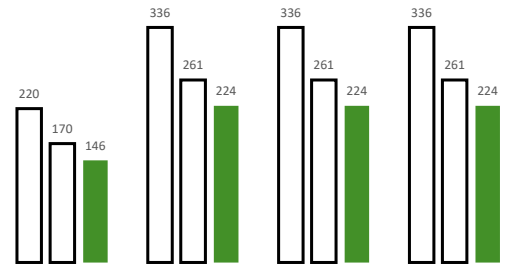
Liquid materials (e.g. mortar, plaster, self-leveling mixtures)

- approximately 90% of theoretical usable volume

THE DENSITY is an important value describing the weight of one liter of finally prepared mixture

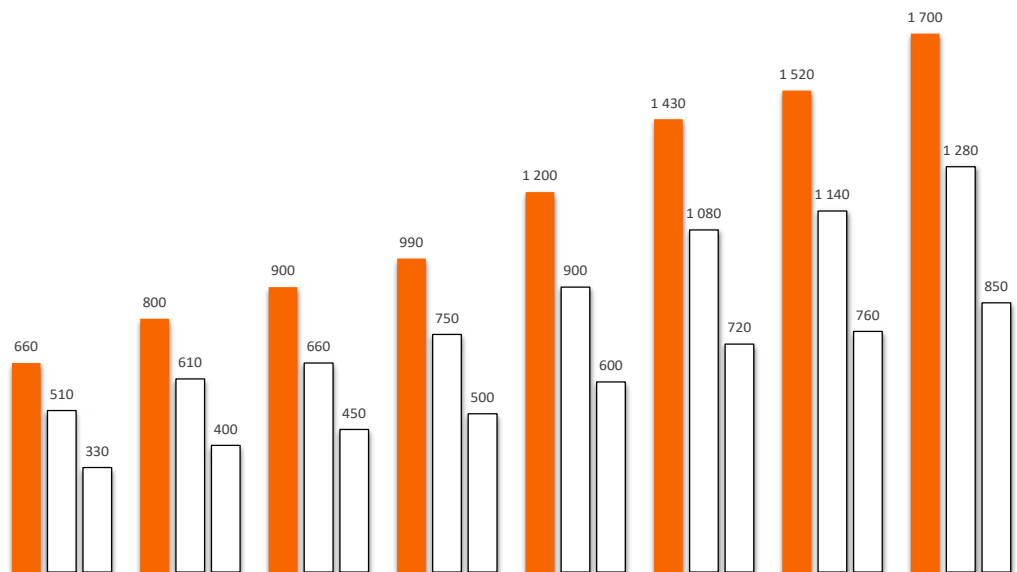
The right alternative of the mixer is a combination of necessary **VOLUME (M 250 H - M 750 H)** and **adequate POWER (7,5 - 22 kW)** with respect to characteristics of mixed material

Tables below demonstrate practical example for mixing Refractory concrete (density e.g. 1.900 kg/m³, that is 1,9 kg/l). For proper mixing of 250 l mixture (Table 1), ca. 476 kg (Table 2) - **M 550 H with 11 kW engine** might be a good alternative



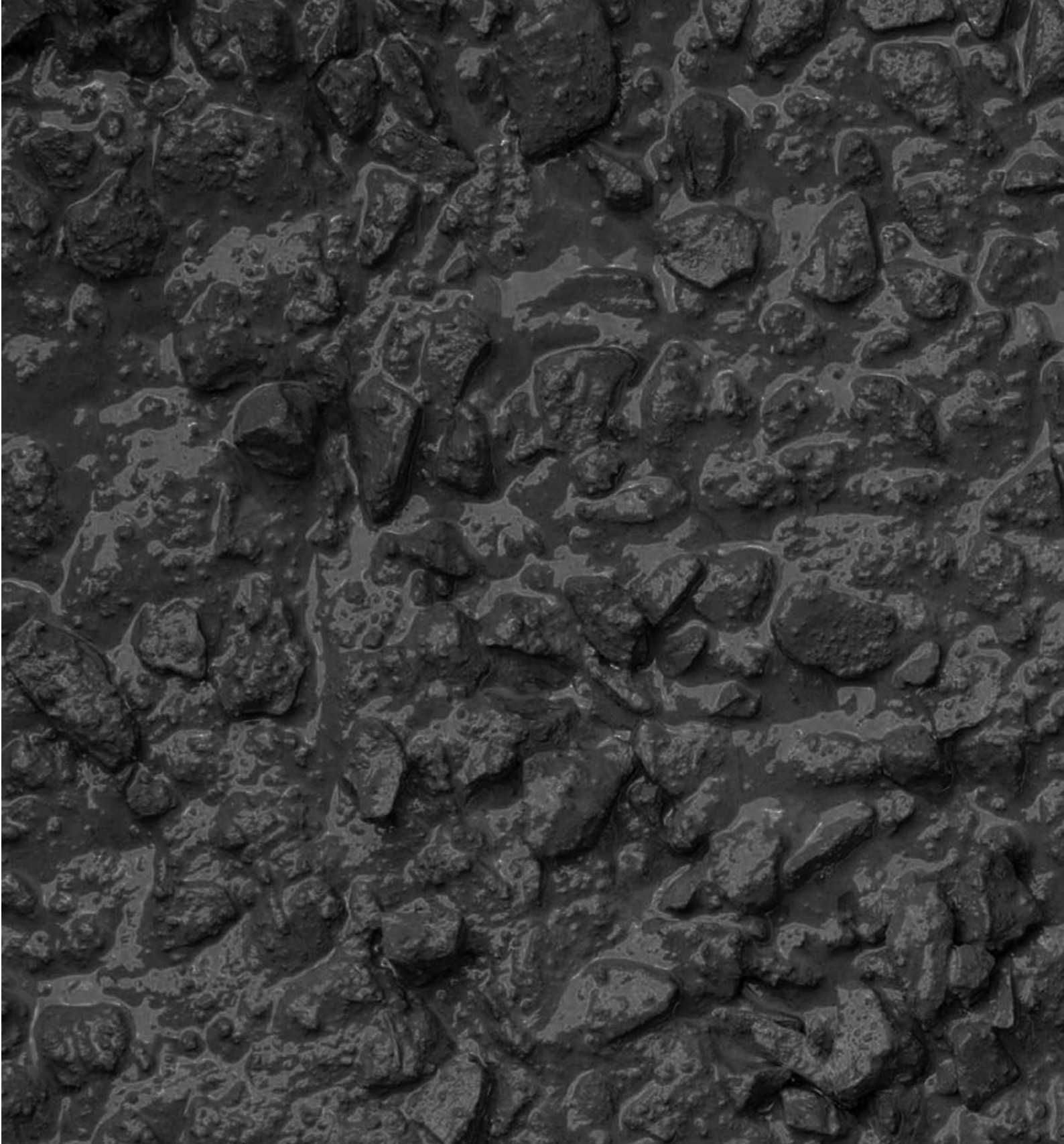
| MIXER VOLUME | M250H | M400H | M550H | M750H |
|--|------------|------------|------------|------------|
| Tank volume (l) | 487 | 646 | 978 | 1053 |
| Theoretical usable volume (l) | 246 | 373 | 503 | 678 |
| Max. grain size (mm) | 32 | 32 | 32 | 32 |
| Transport-concrete (l) | 220 | 336 | 453 | 610 |
| Powdery dry materials (l) | 172 | 261 | 352 | 475 |
| Refractory concrete (l) | 146 | 224 | 302 | 407 |
| DIMENSIONS AND WEIGHT | | | | |
| Tank diameter (mm) | 1100 | 1300 | 1600 | 1600 |
| Tank height (mm) | 520 | 1520 | 520 | 540 |
| Total height (mm) | 1300 | 1300 | 1300 | 1340 |
| Weight (kg) variable in relation to exchangeable lining and output | 605 | 700 | 1175-1354 | 1295-1340 |

MH SERIES - OUTPUT



| ENGINE OUTPUT | 7,5 kW | 7,5 kW | 9,2 kW | 11 kW | 15 kW | 18,5 kW | 22 kW | 22 kW |
|--|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Type of gearbox | helical-bevel | helical-bevel | helical-bevel | helical-bevel | helical-bevel | helical-bevel | helical-bevel | helical-bevel |
| Transport - concrete (kg) | 660 | 800 | 900 | 990 | 1200 | 1430 | 1520 | 1700 |
| Powdery dry materials (kg) | 510 | 610 | 660 | 750 | 900 | 1080 | 1140 | 1280 |
| Refractory concrete (kg) | 330 | 400 | 450 | 500 | 600 | 720 | 760 | 850 |
| Stirrer rotation (rpm) | 36 | 30 | 30 | 27 | 29 | 29 | 33 | 29 |
| Torque (Nm) | 1990 | 2388 | 2929 | 3912 | 4940 | 6093 | 6448 | 7246 |
| Voltage (V) | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 |
| Current supply | 32 A | 32 A | 32 A | 32 A | 63 A | 63 A | 63 A | 63 A |
| Models offered with certain type of drives | M250H | M250H | M250H | | | | | |
| | M400H | M400H | M400H | M400H | | | | |
| | | | M550H | M550H | M550H | M550H | | |
| | | | | M750H | M750H | M750H | M750H | M750H |

Note: Orientation values only. Maximal mixing weight can vary significantly by different materials.



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