

# Kest Mixer, KM ATEX

For outstanding mixing performance in critical pharma and biotechnology applications.

DS-000011 EN REV C

## Kest Mixer, KM ATEX

The Kest Mixer is a bottom mounted magnetic coupled mixer. With its aseptic design, excellent mixing performance and ability to mix to the last drop it has become a popular choice for critical pharma and biotech applications where full product recovery is important.

The Kest Mixer KM ATEX range covers mixing volumes up to 22 000 liters.

The Kest Mixer is designed for CIP/SIP applications in an ATEX environment.

Kest Mixer KM ATEX has a Zone 1 classification available for both Gas & Dust environments.

Short down times is secured by features like our patented Kest-Lock Connection. Our revolution counter gives you secure control of your mixing process.

The Kest Mixer KM ATEX range can be customized to perfectly fit your needs. We can manufacture the parts that have media contact in the specific materials that your process requires, please contact your reseller for a quote.

## Kest Mixer range for various mixing applications

Kest has developed several product lines for various mixing applications and clean room needs. The KMS product line was developed for LAF applications and the Rapid Motion

(RM) line for medium shear force generation. See separate data sheets on the other product lines in the Kest Mixer family or contact your reseller for more information.

# We bring flow to your mixing process

Our mixers and components have one purpose: to make your mixing process flow. 24/7. To ensure predictable and compliant results. To minimize maintenance. To minimize waste. To maximize the value created by your mixing process.



## ✓ Perfect mixing result

After years of experience developing mixers this mixer will deliver a perfect mixing result over and over again.

## ✓ Full integrity of the tank

The magnetic coupling between the mixing head and drive unit ensures total integrity of the tank. All tank plates are FEM analyzed according to PED & ASME.

## ✓ ZERO particle shedding

The robust bearing combination of Zirconium and Sic and the fine-tuned geometry, ensures no particle generation.

\*

\* The external test, according to USP<788> PARTICULATE MATTER IN INJECTIONS, could not detect any particles from the bearing.

## ✓ Mixing low level volumes

Due to the low building height of the mixer head along with a lot of wing area close to the bottom it can handle continues mixing of low levels.

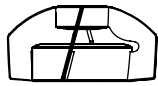
## ✓ Mixing to the last drop

The wings fixed position close to the tank bottom and the possibility to run the mixer during emptying of the tank, ensures full product recovery.

## ✓ Minimize downtime

The low weight of the drive unit and our patented Kest-Lock connection ensures quick disconnection from the tank plate during maintenance.

# Kest Mixer KM ATEX, general information



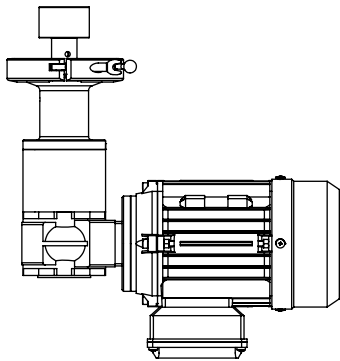
Mixing Head



Male Post



Tank Plate



Drive Unit

The Kest Mixer is a magnetically coupled mixer containing 4 modules, Mixing head, Male Post, Tank plate and Drive Unit.

To secure the integrity of the tank, the tank plate is welded into the tank, the mixing head and drive unit couples through magnetic forces. When installing the tank plate, make sure to use the welding tool and to follow the welding guideline.

Select the appropriate model. For complex mixing applications contact your reseller for consultation.

Decide upon optional drive unit features like Revolution counter and you will find the order information, Ref. No., for each part in this data sheet.

The Kest range of ATEX mixers comply with the following ATEX classifications, see explanation below.

## Zone 0 inside the tank?

You can use the Kest ATEX mixer if you have Zone 0 inside the tank, on the condition that you secure with 2 independent systems that the mixing head is always covered with liquid when in operation. In practice, this means that you ensure that the mixer head is not exposed to Zone 0 when in operation or can be put into operation by mistake when the above condition is not met. This is the most common way to deal with Zone 0 for mixers of this type, even those brands that are rated for Zone 0. This is also why the Kest Mixer is only rated for Zone 1.

Inside the tank:


**II Ex 2G h II T5 (Gb)**  
**II Ex 2D h IIIB T100 °C (Db)**

Outside the tank:


**II Ex 2G h IIB T4 (Gb)**  
**II Ex 2D h IIIC T135 °C (Db)**

**Equipment Group**  
Group I is for mining  
Group II is for above surface industries

**Equipment Category G (GAS)**  
Category 1: Zone 0  
Category 2: Zone 1  
Category 3: Zone 2

**D (Dust)**  
Category 1: Zone 20  
Category 2: Zone 21  
Category 3: Zone 22

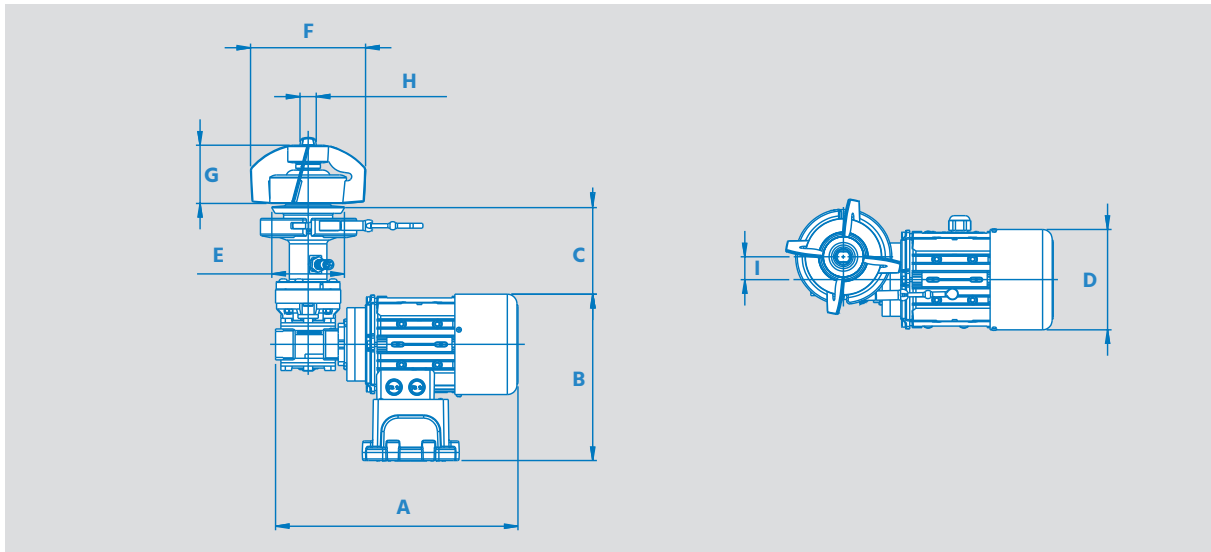
**Type of protection**  
h = marking of non-electrical equipment

**Subgroup**  
Group II = Approved for all A, B, C  
Group IIB = Ethylene  
Group IIIC = All dust

**Temperature class**  
T3 = 200°C  
T4 = 135°C  
T5 = 100°C

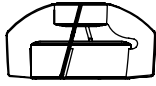
**Equipment protection level**  
Gb = Approved for Zone 1 & 2  
Db = Approved for Zone 21 & 22

# Kest-Mixer ATEX, dimensions



MODEL	A mm [in]	B mm [in]	C mm [in]	D mm [in]	E mm [in]	F mm [in]	G mm [in]	H mm [in]	I mm [in]
KM-0/3 ATEX	300 [11.811]	172 [6.772]	96 [3.779]	123 [4.843]	55 [2.165]	82 [3.228]	33 [1.299]	12 [0.472]	28 [1.102]
KM-3/7 ATEX	300 [11.811]	172 [6.772]	96 [3.779]	123 [4.843]	55 [2.165]	96 [3.780]	46 [1.811]	12 [0.472]	28 [1.102]
KM-7/20 ATEX	300 [11.811]	172 [6.772]	96 [3.779]	123 [4.843]	84 [3.307]	120 [4.724]	56 [2.205]	16 [0.630]	28 [1.102]
KM-20/70 ATEX	300 [11.811]	172 [6.772]	100 [3.937]	123 [4.843]	89 [3.504]	142 [5.591]	71 [2.795]	20 [0.787]	28 [1.102]
KM-70/120 ATEX	340 [13.386]	185 [7.283]	120 [4.724]	138 [5.433]	99 [3.898]	160 [6.299]	71 [2.795]	20 [0.787]	40 [1.575]
KM-120/230 ATEX	388 [15.278]	213 [8.386]	128 [5.039]	156 [6.142]	119 [4.685]	184 [7.244]	73 [2.874]	20 [0.787]	50 [1.966]
KM-230/600 ATEX	388 [15.278]	213 [8.386]	130 [5.118]	156 [6.142]	159 [6.260]	192 [7.559]	119 [4.685]	30 [1.181]	50 [1.966]
KM-600/1300 ATEX	420 [16.535]	224 [8.819]	135 [5.315]	171 [6.732]	150 [5.906]	220 [8.661]	150 [5.906]	30 [1.181]	60 [2.362]
KM-1300/2200 ATEX	548 [21.575]	255 [10.039]	120 [4.724]	196 [7.717]	239 [9.409]	273 [10.748]	124 [4.882]	30 [1.181]	85 [3.346]

# Kest Mixer KM, specifications



Mixing Head



Male Post



Tank Plate

## MECHANICAL SPECIFICATIONS

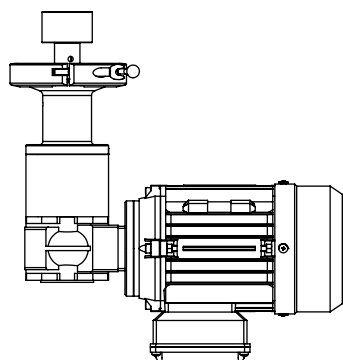
	Mixer head	Male post	Tank plate
Material grade	EN 1.4435/ASTM 316L, Silicone carbide (SiC)	Zirconium Oxide (ZrO2)	EN 1.4435/ASTM 316L
Material requirement	EN 10 272/10028-7, A479/A240 or SA479 SA240		
Documentation	Heat Certificate 3.1 acc. to EN 10 204		
Surface finish	Ra=[0.38 µm] [15 µin] Polished - on surfaces in product contact		
Design Temperature	[0°C to +150°C] [+32°F to +302°F]		
Operating temperature	[0°C to +135°C] [+32°F to +275°F]		
Design Pressure	[-1 bar(g) to + 10 bar(g)] [-14.5 psi to 145 psi]		
pH range	1-14		
Marking	Head and Bearing is marked with ID No. Tank plate is marked with material grade and heat number		
Packing	Each item is sealed in vacuum plastic bag, labelled with article code and packed in a box		
Male bearing sealing	EPDM or Silicone, approved acc. FDA regulation CFR 177.2600, USP Class VI		
Quality Assurance	Each product is controlled and tested acc. to Kest Technology quality assurance system		

## Kest Mixer KM, weights

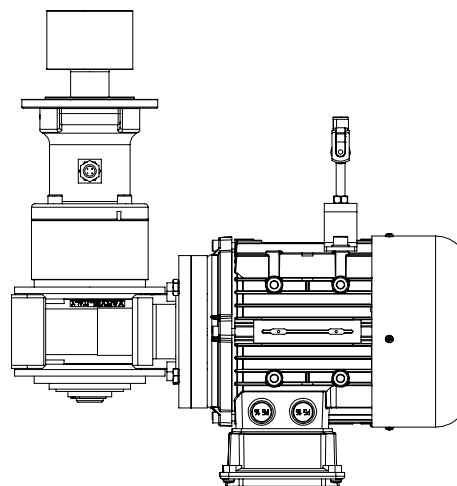
MODEL	MIXING HEAD kg / [lb]	MALE POST kg / [lb]	TANK PLATE kg / [lb]	DRIVE UNIT* kg / [lb]	TOTAL* kg / [lb]
KM-0/3	0.3 / [0.7]	0.02 / [0.04]	0.2 / [0.5]	7.0 / [15.4]	7.5 / [16.5]
KM-3/7	0.5 / [1.1]	0.02 / [0.04]	0.3 / [0.7]	7.1 / [15.7]	8.0 / [17.6]
KM-7/20	1.0 / [2.2]	0.04 / [0.09]	0.5 / [1.1]	7.4 / [16.3]	9.0 / [19.8]
KM-20/70	1.5 / [3.3]	0.09 / [0.2]	0.8 / [1.8]	7.5 / [16.5]	10.0 / [22.1]
KM-70/120	2.0 / [4.4]	0.09 / [0.2]	1.1 / [2.4]	10.6 / [23.4]	14.0 / [30.9]
KM-120/230	2.1 / [4.6]	0.09 / [0.2]	1.8 / [4.0]	15.4 / [34.0]	19.5 / [43.0]
KM-230/600	4.0 / [8.8]	0.40 / [0.9]	2.5 / [5.5]	19.6 / [43.2]	26.5 / [58.4]
KM-600/1300	5.0 / [11.0]	0.40 / [0.9]	2.7 / [6.0]	24.5 / [54.0]	32.5 / [71.7]
KM-1300/2200	6.6 / [14.6]	0.40 / [0.9]	8.4 / [18.5]	45.0 / [99.2]	60.5 / [133.4]

\*Weights based on standard unit with extension, stainless steel cover is not included, small variations might occur depending on options selected

# Kest-Mixer ATEX, Drive unit specifications



Drive Unit



\*Drive Unit with motor support

MODEL	MOTOR POWER 50/60Hz [kW]	FREQUENCY [Hz]	CURRENT 230/400V [A]	GEAR BOX RATIO [i]	SPEED RANGE [RPM]
KM-0/3 ATEX	0.25/0.30	50/60	1.3/0.75	1:7	50-490
KM-3/7 ATEX	0.25/0.30	50/60	1.3/0.75	1:7	50-490
KM-7/20 ATEX	0.25/0.30	50/60	1.3/0.75	1:7	50-490
KM-20/70 ATEX	0.25/0.30	50/60	1.3/0.75	1:7	50-490
KM-70/120 ATEX	0.55/0.68	50/60	2.4/1.4	1:7	50-490
KM-120/230 ATEX	0.75/0.90	50/60	3.3/1.9	1:7	50-490
KM-230/600 ATEX	1.10/1.30	50/60	4.7/2.7	1:7	50-490
KM-600/1300 ATEX*	1.50/1.80	50/60	6.2/3.6	1:7	50-490
KM-1300/2200 ATEX*	3.00/3.50	50/60	11.8/6.8	1:10	35-340

\*The two largest drive units are supplied with a motor support, that can be fastened with an M8 bolt. The motor support reduces the stress on the tank plate, tank dish and drive unit flange. The motor support is also providing the possibility to adjust the outer driving head to perfectly align with the tank plate.

## DRIVE UNIT SPECIFICATIONS

Motor	One thermo element as standard
Design Temperature	[0°C to +40°C] [+32°F to +104°F]
Protection class	IP 55
Paint	Motor Epoxy paint RAL 7015, Flange and Gearbox Jotun RAL 9010
Gearbox oil	UH1 6, NSF H-1 rated FDA compliant
Marking	Each item is marked with article code
Packing	Each item is sealed in plastic bag, labelled with article code and packed in a box
Quality Assurance	Each product is controlled and tested acc. to Kest Technology quality assurance system

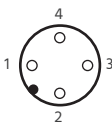
# Kest Mixer KM ATEX, Revolution Counter (optional)

The Kest Mixer ATEX Revolution Counter is a sensor system that enables secure verification of the actual rotation of the shaft.

The unit consists of a Namur sensor, that is located on the Drive Unit flange.

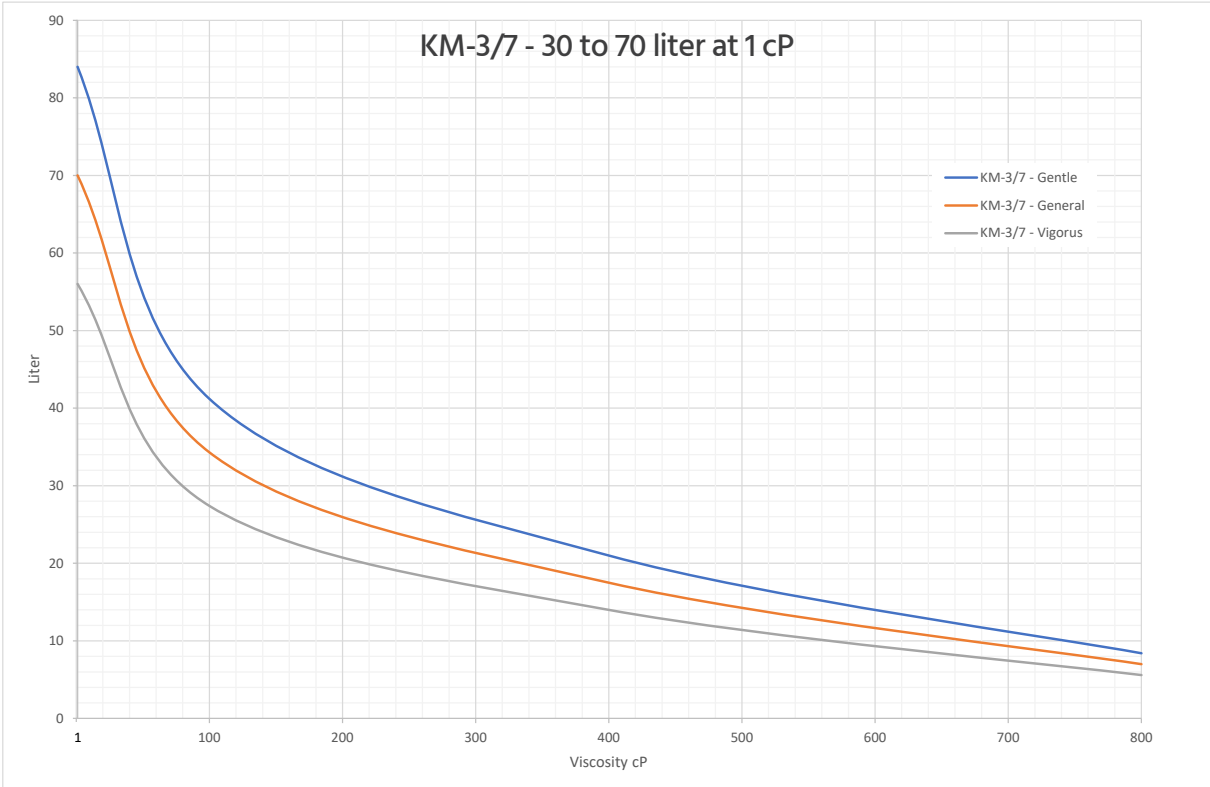
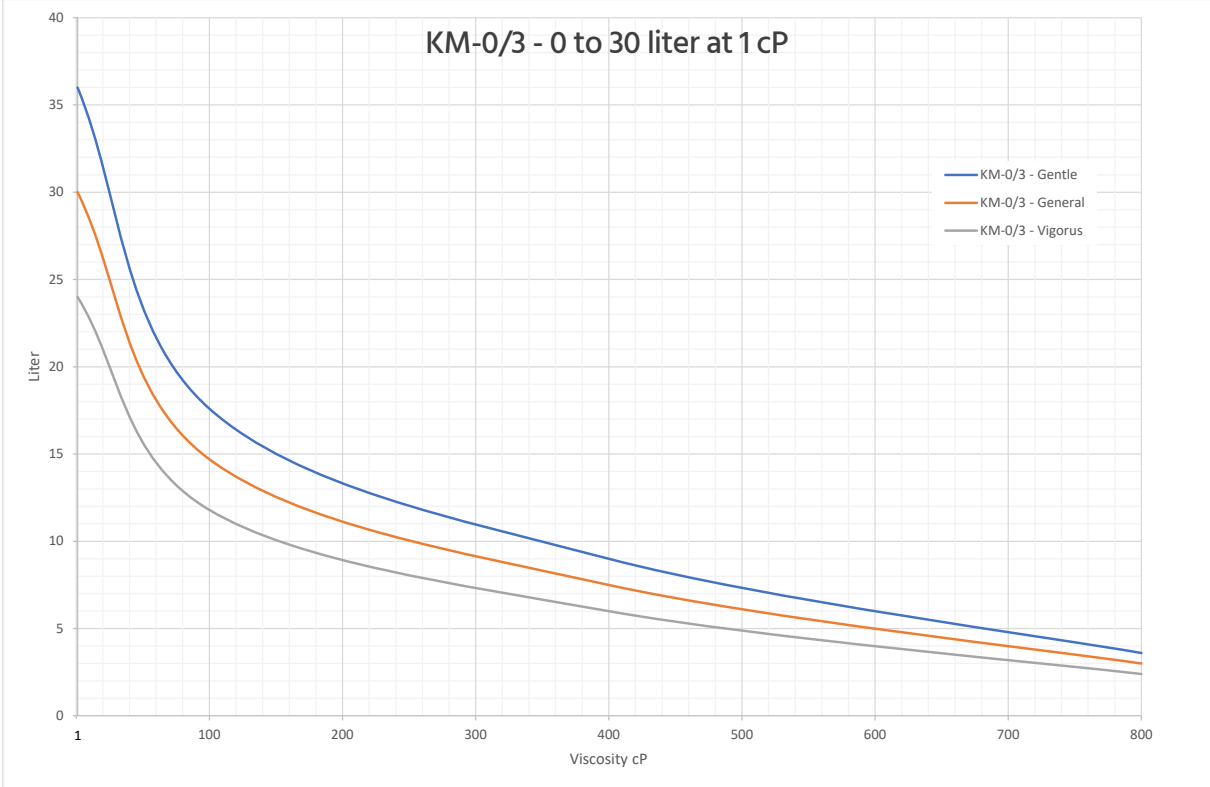
The output signal from the sensor is 1 pulse/rotation.

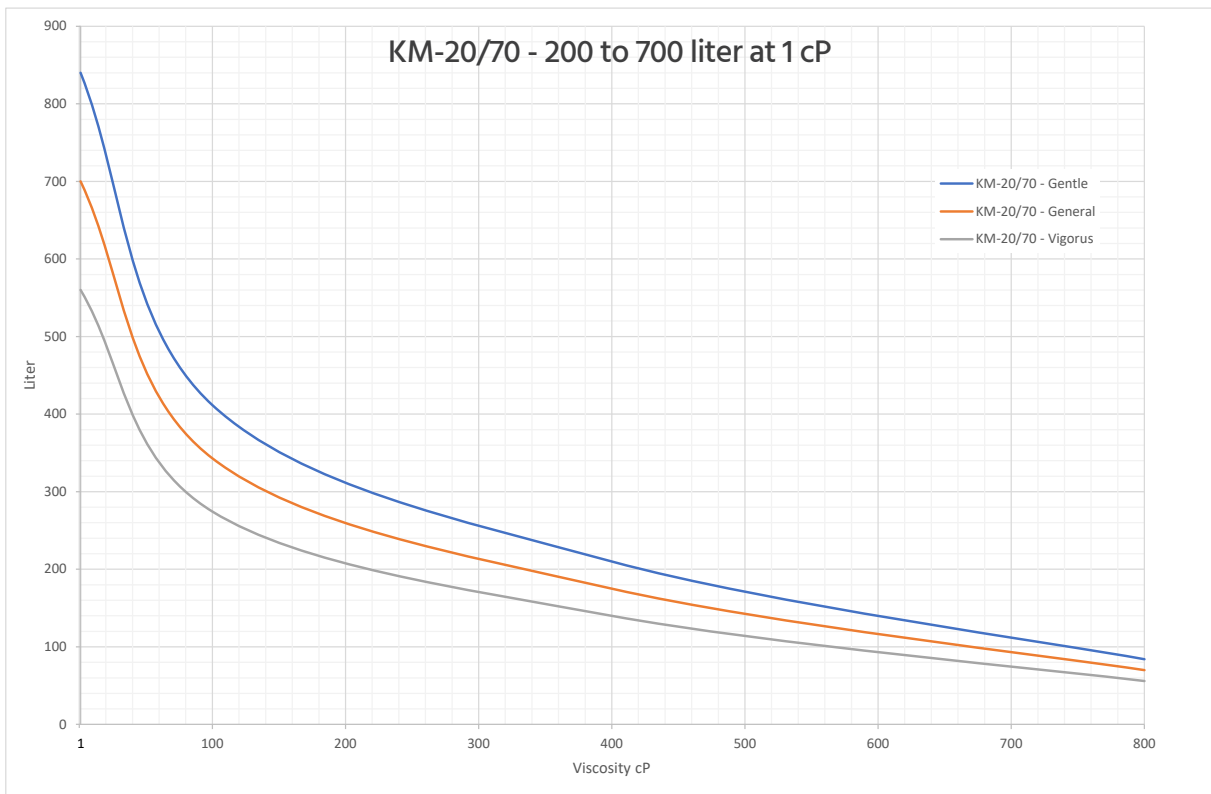
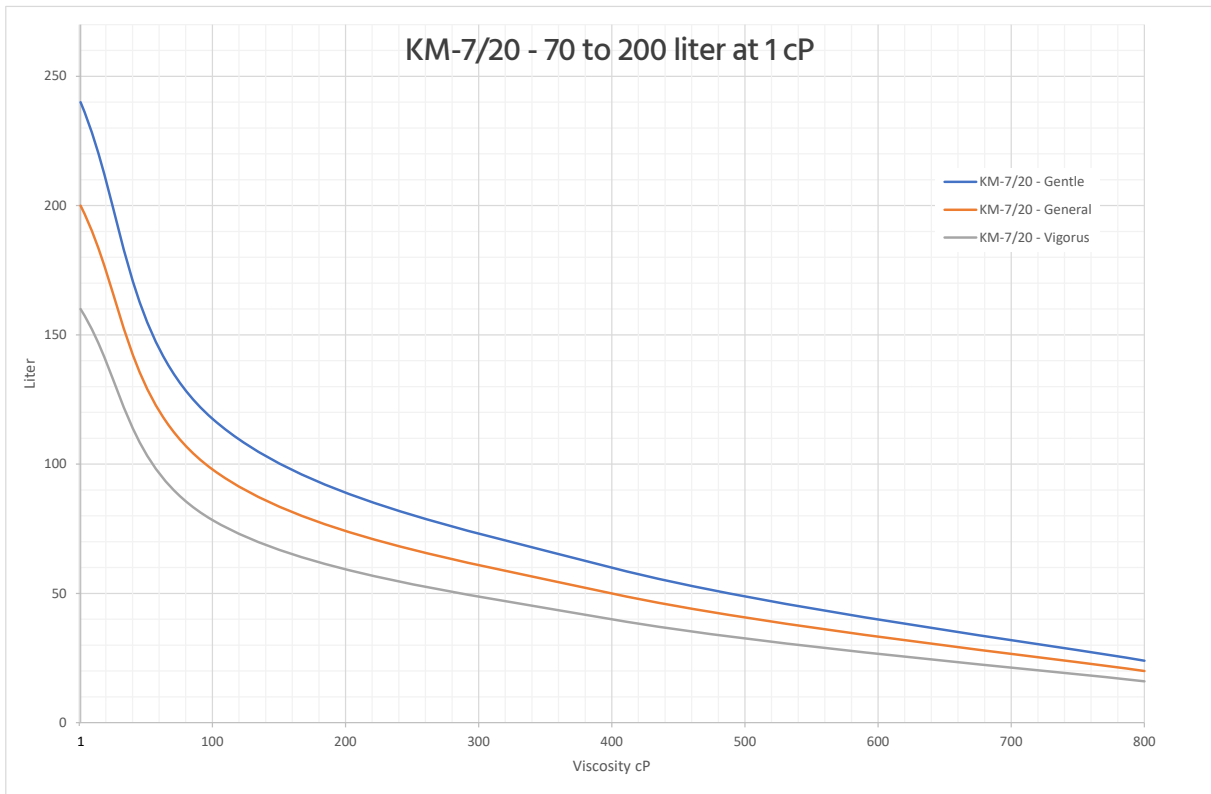
For visual indication - A LED on the sensor housing is indicating with yellow light when the sensor gets a pulse.

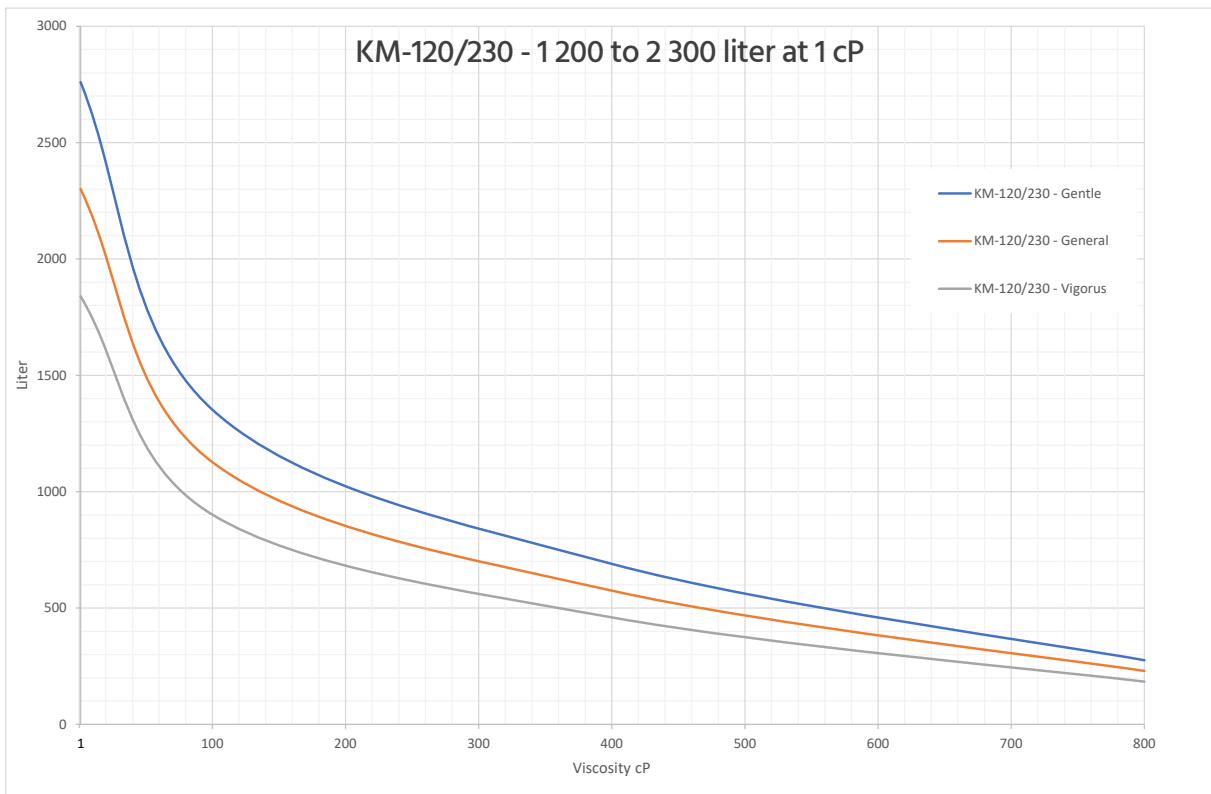
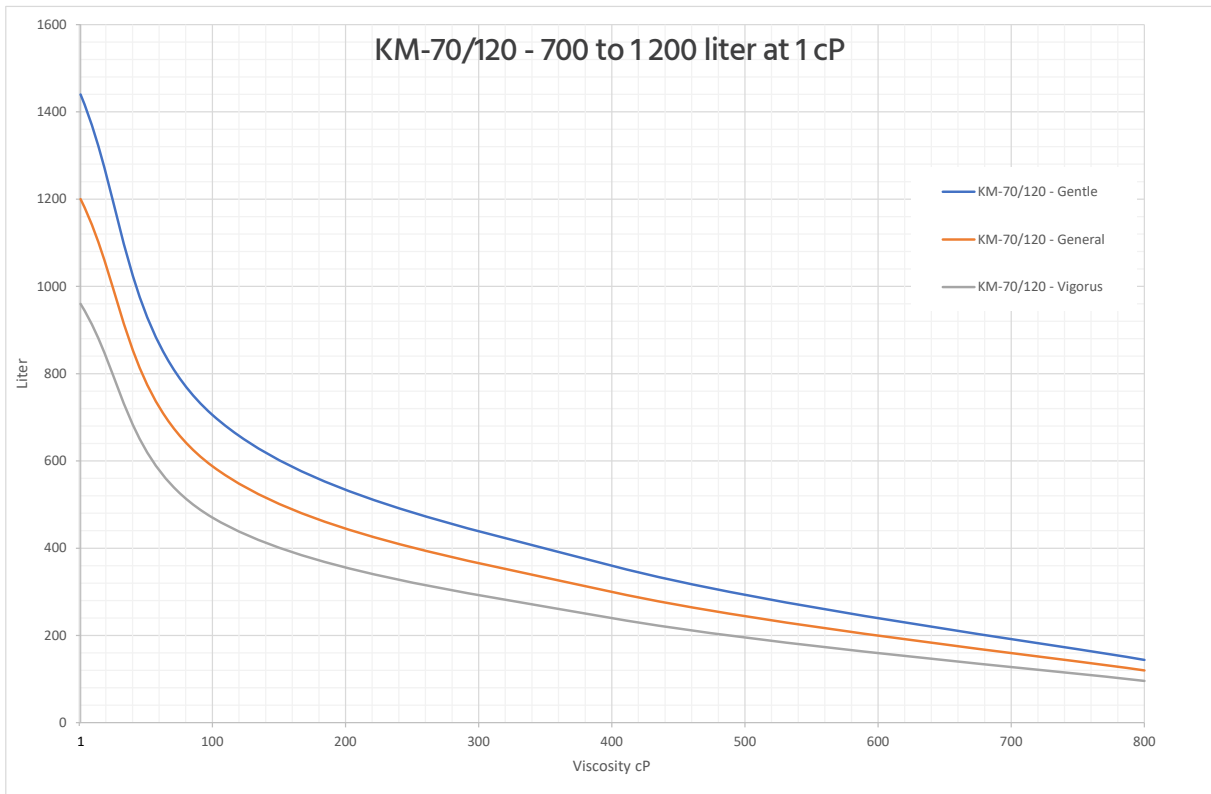
MECHANICAL SPECIFICATIONS			
	Sensor Housing	Sensing face	Cable
Material grade	1.4305 / AISI303	PBT	5 meter, open ends
Design Temperature	[-25°C to +100°C] [-13°F to +212°F]		[0°C to +40°C] [+32°F to +104°F]
Marking	Each item is marked with article code		
Packing	Each item is sealed in vacuum plastic bag and packed in a box		
Quality Assurance	Each product is controlled and tested acc. to Kest Technology quality assurance system		
Electrical Specifications			
Type	NAMUR, NC		
Voltage	5-25 V DC		
Rated Current	200 mA		
Protection class	IP 67 (contacts)		
Connection type sensor unit	Output: 4-pole male connection M12x1		
Socket wiring identification		<b>1: Power supply 5-25 V DC (Brown)</b> <b>2: Pulse signal 5-25 V DC (Blue)</b> <b>3: -</b> <b>4: -</b>	
Pulses	1 pulse / rotation		

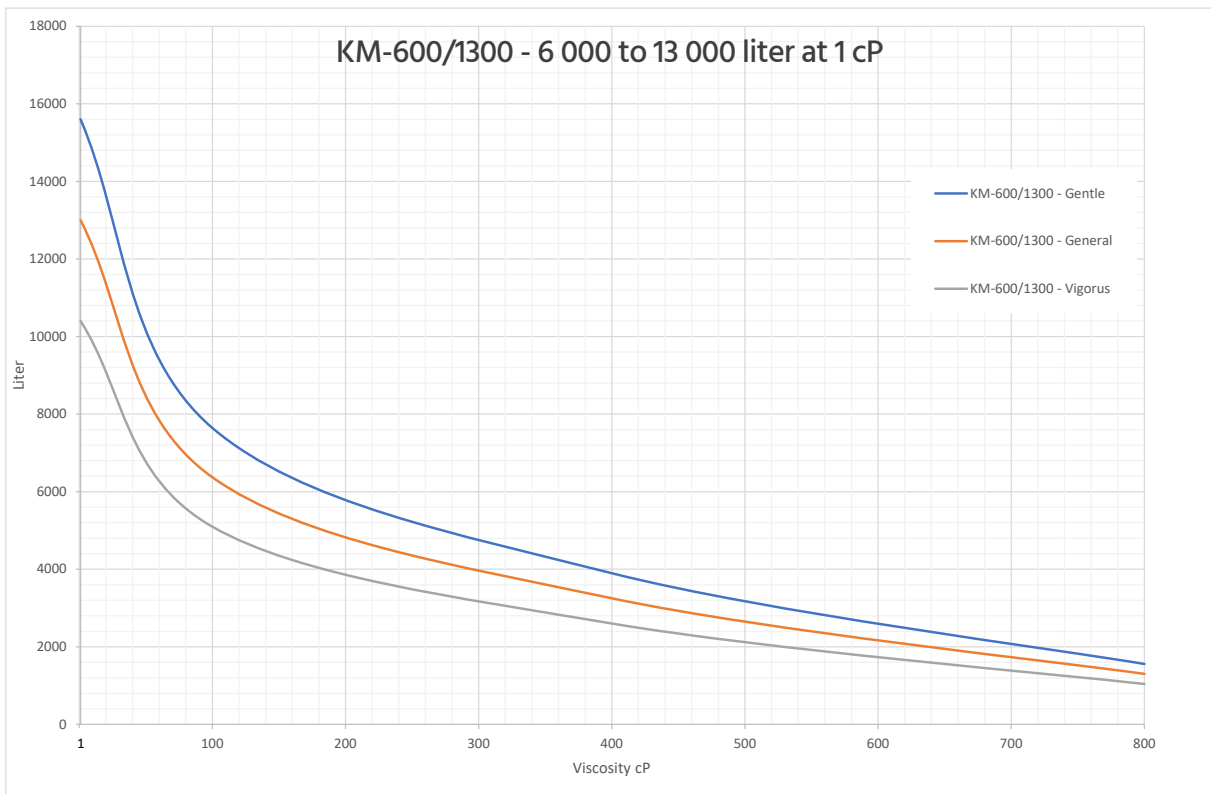
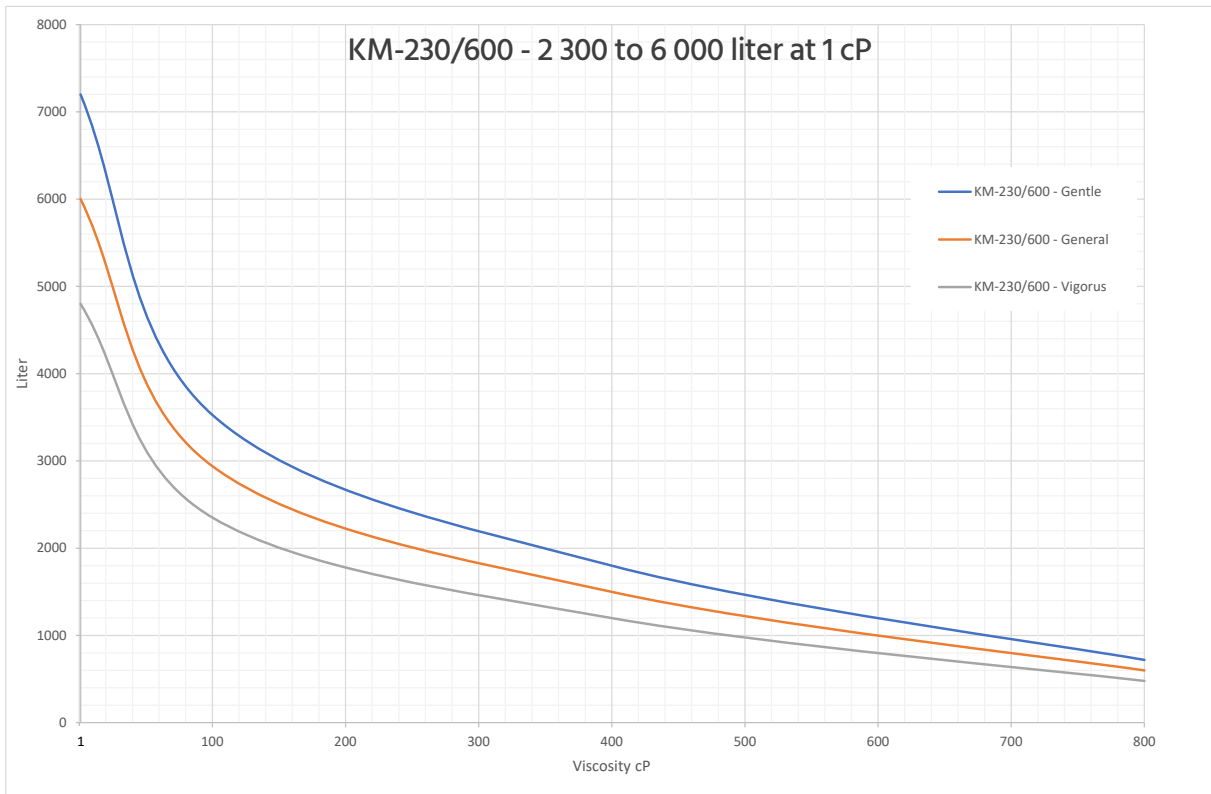
# Selection guide

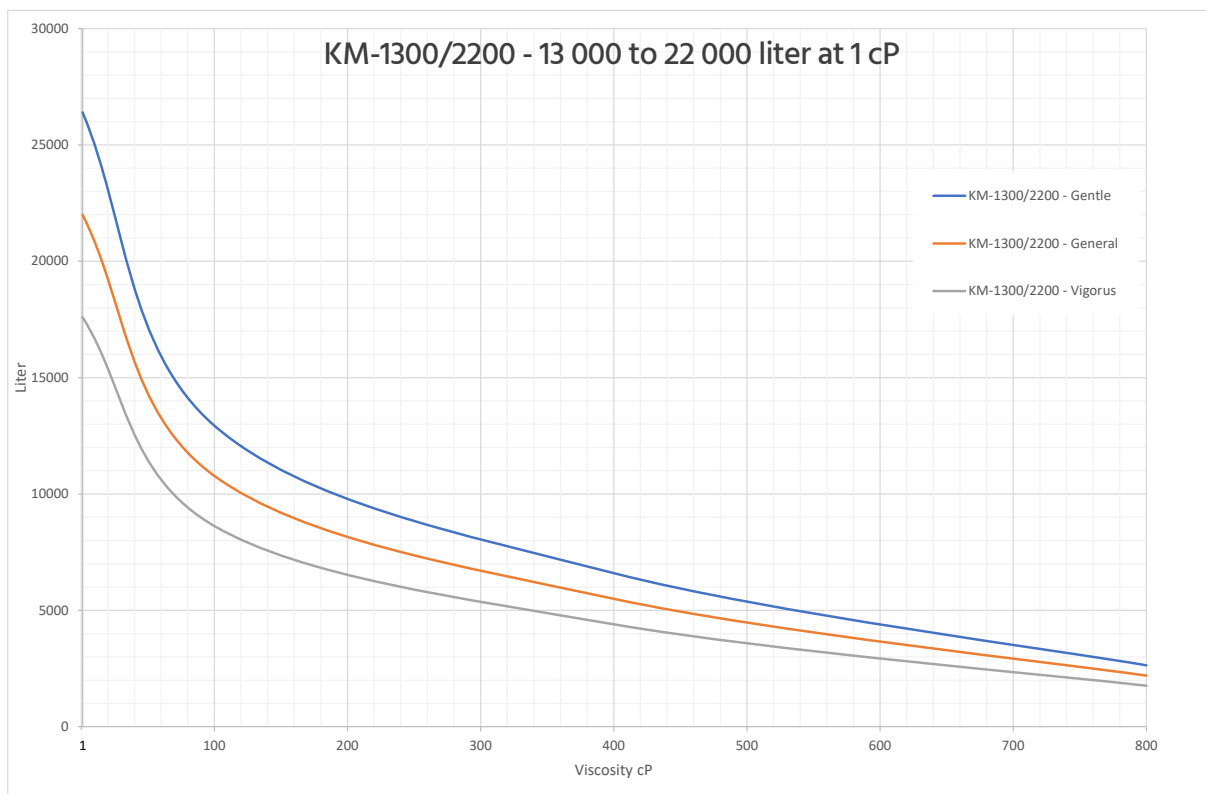
The mixer is selected after volume and desired mixing type based on the viscosity of the media. The different mixer sizes are targeting a specific volume range based on viscosity of 1 cP. Depending on the viscosity you might need to go for a larger size even if you are in the target volume. The characteristics of the General, Gentle and Vigorous mixing is subjective and built on experience. See example in the end of the selection guide on how to select correct mixer size.











## Example:

You want to select a mixer that shall generate **General mixing**

The max mixing volume is 500 liters

The viscosity of the media is 100 cP.

Start with the mixer graph that has the correct range at 1 cP, KM20/70 has the range of 200 to 700 liter at 1 cP. Look at the graph at 100cP (on the horizontal axis) and follow it up to the orange line (General mixing) and read the value of the vertical axis to find out what the maximum mixing volume is at viscosity 100 cP.

In this case it is 340 Liter, go to the next size KM70/120 and check the maximum mixing volume in the same way. KM70/120 has the maximum mixing volume of 590 liter at 100 cp, this is enough for the application.

**For this application you need the KM-70/120 mixer.**

For higher viscosities you might need to go up several sizes to find a mixer that with the sufficient capacity.

Gentle mixing and Vigorous mixing are variations of the General mixing, for support contact your local distributor or Kest.

## Test center

Mixing can be simple and complex, this selection guide sizes the mixer to the correct capacity. Mixing performance can be affected by many different factors, if you need support with your mixing application, we have long experience and a fully equipped test centre. Do not hesitate to contact us with your mixing application or read more at [www.kest.se](http://www.kest.se)

## Kest Mixer KM ATEX, Ref. No. list

MODEL	MIXING HEAD	MALE POST	TANK PLATE
KM-0/3 ATEX	100433	100562	100383
KM-3/7 ATEX	100559	100562	100625
KM-7/20 ATEX	101273	101530	100647
KM-20/70 ATEX	100451	100415	100396
KM-70/120 ATEX	100650	100415	100546
KM-120/230 ATEX	100713	100415	100712
KM-230/600 ATEX	100442	101817	100537
KM-600/1300 ATEX	100544	101817	100794
KM-1300/2200 ATEX	102448	101817	101292

## Kest-Mixer KM ATEX, drive unit - Ref.No list

MODEL	GAS	GAS WITH REVOLUTION COUNTER	GAS & DUST	GAS & DUST WITH REVOLUTION COUNTER
KM-0/3 ATEX	102569	102570	102405	102406
KM-3/7 ATEX	102561	102571	102407	102408
KM-7/20 ATEX	102562	102572	102410	102409
KM-20/70 ATEX	102550	102573	102403	102404
KM-70/120 ATEX	102564	102574	102411	102413
KM-120/230 ATEX	102565	102575	102415	102414
KM-230/600 ATEX	102566	102576	102417	102416
KM-600/1300 ATEX	102551	102577	102418	102419
KM-1300/2200 ATEX	102578	102579	102420	102421

## Kest Mixer KM ATEX, options - Ref. No. list

MODEL	MIXING HEAD ATTRACTOR*	MALE POST TIGHTENING TOOL*	MULTI TOOL*	WELDING TOOL
KM-0/3 ATEX	101620	100704	101006	100446
KM-3/7 ATEX	101620	100704	101006	100923
KM-7/20 ATEX	101436	102422	101342	100802
KM-20/70 ATEX	100571	102423	100655	100802
KM-70/120 ATEX	-	102423	100655	100780
KM-120/230 ATEX	-	102423	100655	100717
KM-230/600 ATEX	-	102424	101010	100800
KM-600/1300 ATEX	-	102424		100717
KM-1300/2200 ATEX	-	102424		101300

\*See separate data sheet



kest