

Maintenance guide |

Keep your mixer in perfect condition

Maintenance aspect built into every Metenova mixer

Why does preventive maintenance matter more than ever?

As biopharmaceutical processes make new advances the requirements on the equipment in the production plants are constantly increasing. Demand for higher yield, lower downtime, and less risk for contaminating batches all point at selecting equipment of the highest standards. However once installed, this equipment needs proper care to perform at its best, time after time.



Performance and reliability

Metenova Zero-g mixers include slide bearings. Regular replacement ensures that the bearings are always in optimal condition, maintaining the performance and reliability of the equipment they support. Elastomers, such as o-rings, are exposed during pharma production to a demanding environment, with high temperatures and various types of substances. Regular maintenance with the replacement of o-rings is important to maintain the high aseptic standard. Carelessness with this maintenance can lead to leakage, cross-contamination, and risk to the function of the equipment.

"Maintenance is crucial to ensuring that a production line can remain in the required hygienic state over time. During the lifetime of a process, hygienic functionality is ensured through continuous monitoring of critical components, as well as the performance of planned maintenance at appropriate intervals. Hygienic maintenance means replacing consumable parts even if they still function as intended and replacing these parts. This way, it can be guaranteed that the hygienic functionality is not compromised. "

Friis, A. (2022) *Practical Hygienic Design.* Force Technology, EHEDG accredited.

Extended equipment lifespan



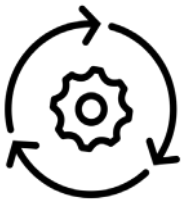
The slide bearings play a crucial role in supporting the rotating components the Zero-g mixer. By replacing them regularly, you can prevent excessive wear and damage to the mating surfaces. This, in turn, extends the overall lifespan of your equipment.

Cost-effectiveness



While regular replacements may seem like an additional expense, they offer cost savings in the bigger picture. By replacing slide bearings proactively, you avoid the potential for more extensive damage that could occur if worn-out bearings are left in place. Therefore, you can anticipate and plan for associated costs.

Improved efficiency



Neglecting of maintenance of slide bearings can lead to increased friction, heat generation, and energy loss. By replacing them regularly, you ensure that the mixer operates with optimal efficiency.

Minimized downtime



Unplanned equipment downtime can be disruptive and costly. By proactively maintaining machinery, you can prevent unexpected breakdowns, schedule maintenance during planned downtime, and minimize interruptions to production or operations.

Overview of a Metenova magnetic mixer

With decades of experience of designing equipment at the highest aseptic level, Metenova has addressed this issue by designing mixers easy to maintain. Our mixers are designed in a way that minimizes the risk of failure and also allows for easy maintenance using our installation and maintenance tools.

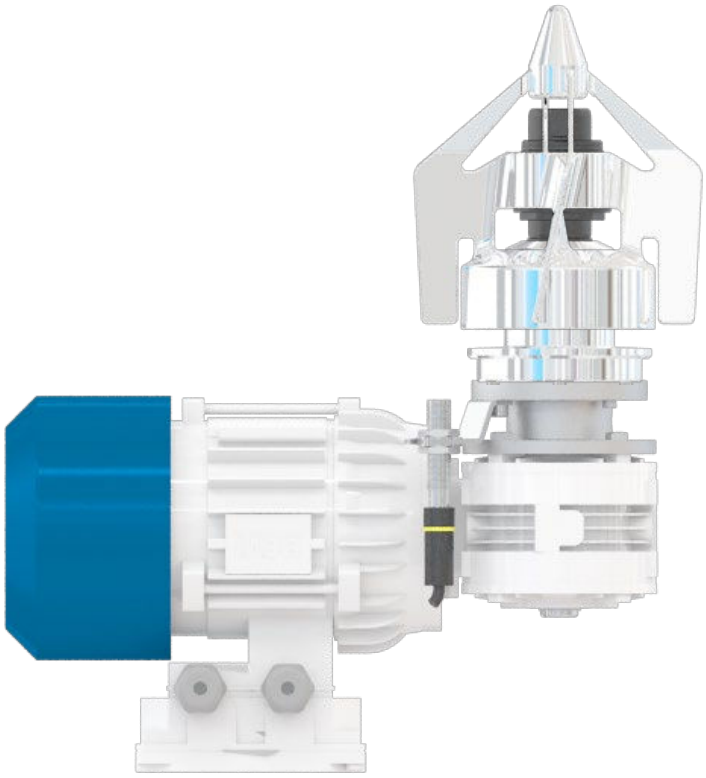
Always use Metenova's original spare parts when servicing your mixer.

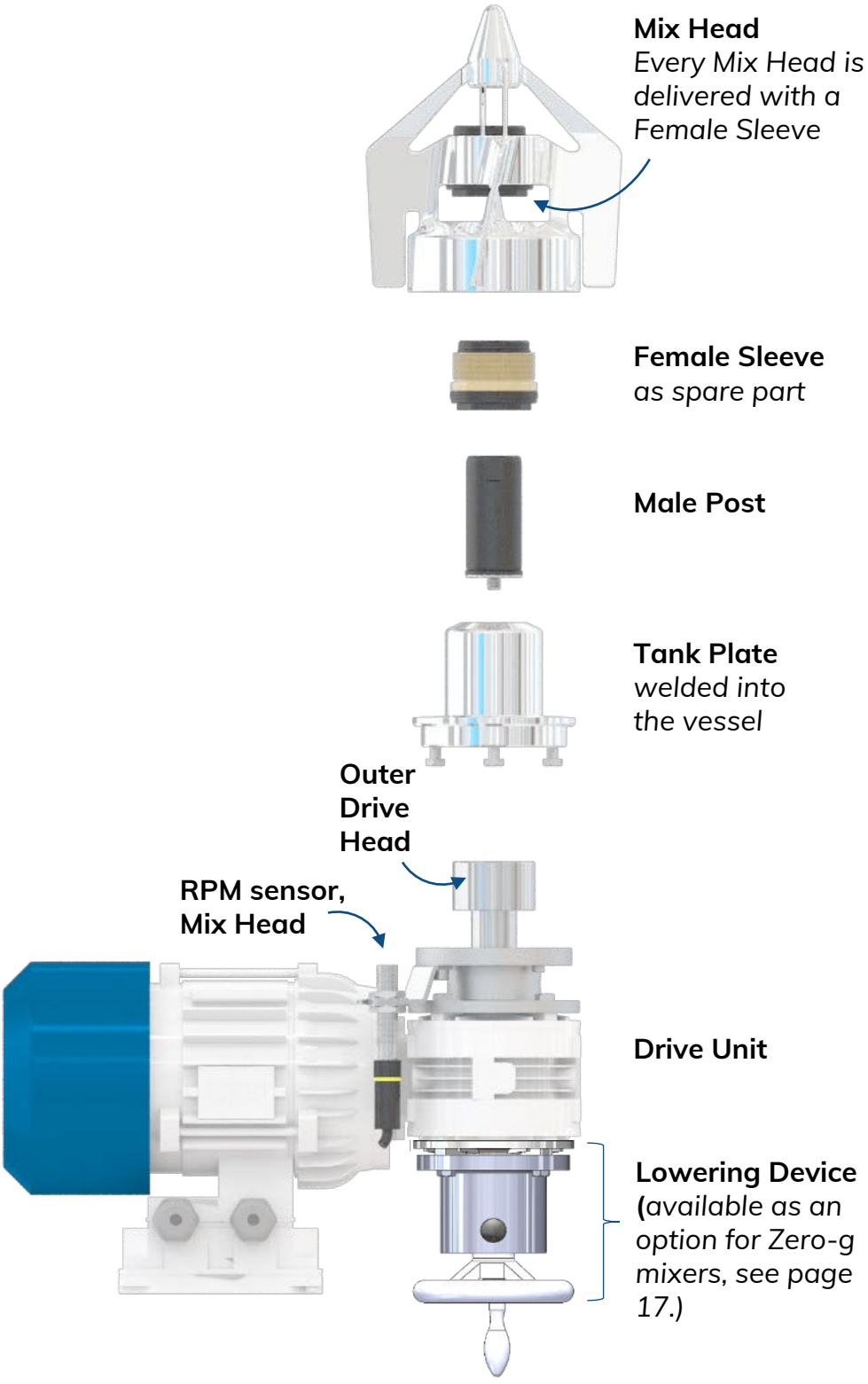
Our spare parts are valid for the following Metenova products: Zero-g, High Shear, High Power, and TU (Technology Upgrade).

The image below shows the main components of Metenova's Zero Gravity technology fitted to a Zero-g mixer.

High Power and High Shear mixers have similar architecture, except that the drive units are straight since there is no reducing gearbox. High Shear mixers also have a stator fitted to the tank plate. The impeller of a High Shear mixer is not called a Mix Head but a Rotor.

Technology Upgrade (TU) mixers make use of existing drive units. An outer drive head is the only component outside the vessel supplied by Metenova for TU mixers.




Mix Head
Every Mix Head is delivered with a Female Sleeve
Female Sleeve
as spare part
Male Post
Tank Plate
welded into the vessel
Outer Drive Head
RPM sensor, Mix Head
Drive Unit
Lowering Device
(available as an option for Zero-g mixers, see page 17.)

Overview of mixers and bearing sizes

Three standardized bearing sizes cover vessels from 1 liter (0.25 gallons) up to 20,000 liters (5,000 gallons). Likewise, tools and spare parts are standardized on these three sizes.

The Female Sleeve is a subcomponent of the Mix Head. It has two o-rings of different sizes – one upper o-ring and one lower o-ring.

The Male Post has one o-ring.

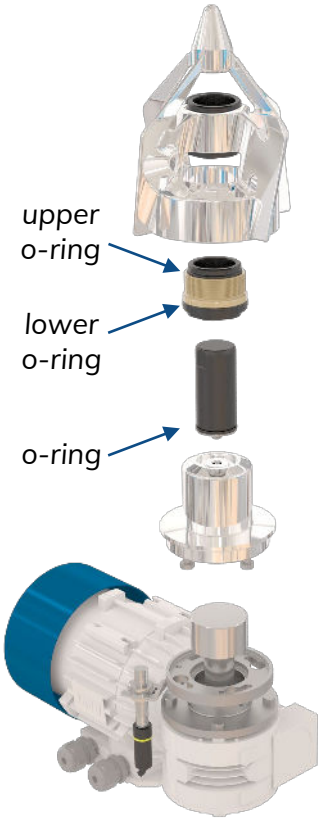
A High Shear mixer has a stator with two o-rings of different sizes – one upper o-ring and one lower o-ring.

Size of bearing system

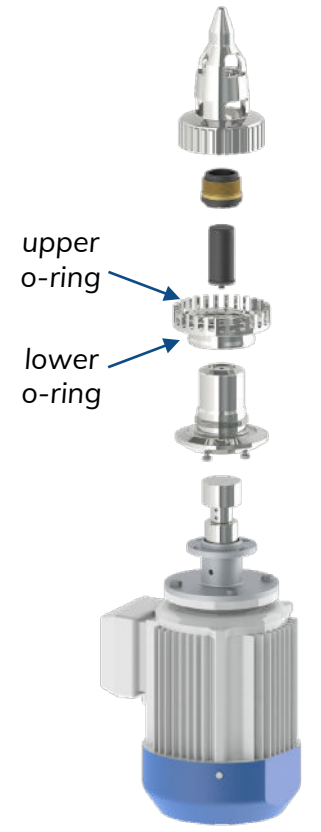
Metenova mixer family

	18 mm	32 mm	40 mm
ZG Zero-g	ZG1 *(ZG_05509_)* ZG2 *(ZG_51509_)*	ZG3 *(ZG_12509_)* ZG5 *(ZG_52509_)* ZG6 *(ZG_13509_)* ZG7 *(ZG_23509_)*	ZG8 *(ZG_53509_)* ZG9 *(ZG_14509_)* ZG10 *(ZG_24509_)*
HP High Power	HP2 *(HP_51509_)*	HP5 *(HP_52509_)*	HP8 *(HP_53509_)*
HS High Shear	HS2 *(HS_51511_)*	HS5 *(HS_52511_)*	HS8 *(HS_53511_)*
TU GMP Technology Upgrade	GMP50 *(_03321)*	GMP100 *(_00418)* GMP500 *(_00419)* GMP1000 *(_00420)* GMP2000 *(_00421)*	GMP5000 *(_01782)* GMP10000 *(_01305)* GMP20000 *(_01325)*
TU SM Technology Upgrade	SM 60 *(_00940)*	SM 85 *(_03502 or _01789)* SM 120 *(_03399 or _01791)*	SM 120H *(_01305)* SM 210 *(_01793)*

Zero-g Mixer

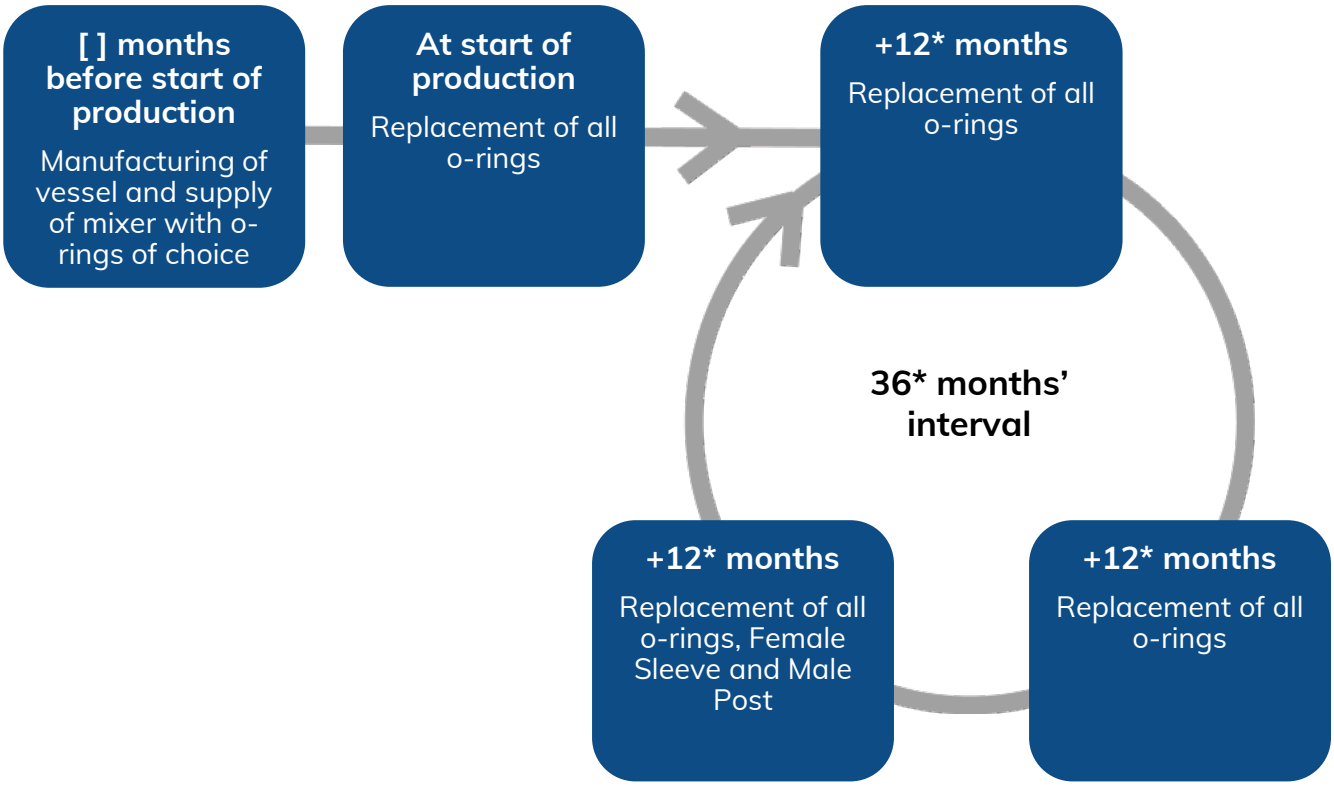


High Shear Mixer



The model number (e.g. ZG8) is visible on a mixer's Drive Unit, while the item number (in the format of ZG_53509_, e.g. ZG53509-00422) is visible on the Mix Head or HS Rotor.
The model number and the item number are also stated on the documentation that came with the mixer.

Service interval guidelines



** More frequent service intervals may be required depending on use conditions.*

See also page 19.

At every service

1. Ensure correct spare parts, such as o-rings and bearings. We recommend Metenova original spare parts as they are tested and come with the correct validation documentation
2. Ensure correct mounting and tightening tools
3. Remove components from the vessel
4. Inspect the complete mixer so that there are no damage, and replace recommended components
5. Mount components into the vessel using Metenova tools
6. Test run & run in of components



1a. Ensure correct o-ring spare parts

O-ring kits for Female Sleeve (2 pieces)

	18 mm	32 mm	40 mm
Female Sleeve o-ring kit, EPDM	ZG00013-01067	ZG00013-00798	ZG00013-00799
Female Sleeve o-ring kit, Silicone	ZG00013-04185	ZG00013-04186	ZG00013-04187
Female Sleeve o-ring kit, Viton	ZG00013-03228	ZG00013-03229	ZG00013-03230
Female Sleeve o-ring kit Kalrez	ZG00013-03222	ZG00013-03223	ZG00013-03224

O-ring Kits for Male Post (1 piece)

	18 mm	32 mm	40 mm
Male Post o-ring kit, EPDM	ZG00013-01066	ZG00013-00767	ZG00013-00797
Male Post o-ring kit, Silicone	ZG00013-04182	ZG00013-04183	ZG00013-04184
Male Post o-ring kit, Viton	ZG00013-03225	ZG00013-03226	ZG00013-03227
Male Post o-ring kit Kalrez	ZG00013-03219	ZG00013-03220	ZG00013-03221

O-ring Kits for TU Male Post (2 pieces)

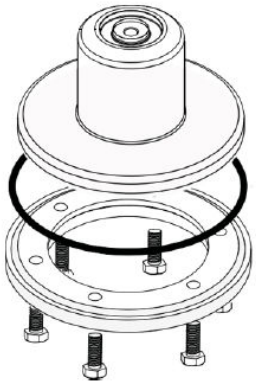
	GMP50	GMP100 GMP500 GMP1000 GMP2000	GMP5000 GMP10000 GMP20000
TU Male Post o-ring kit, EPDM	TU00013-02385	TU00013-01978	TU00013-02460
TU Male Post o-ring kit, Silicone	TU00013-04188	TU00013-04191	TU00013-04192
TU Male Post o-ring kit, Viton	TU00013-03679	TU00013-03680	TU00013-03681
TU Male Post o-ring kit Kalrez	TU00013-03669	TU00013-03670	TU00013-03671

	SM60	SM85 SM120	SM120H SM210
TU Male Post o-ring kit, EPDM	TU00013-02385	TU00013-02386	TU00013-02388
TU Male Post o-ring kit, Silicone	TU00013-04188	TU00013-04189	TU00013-04190
TU Male Post o-ring kit, Viton	TU00013-03679	TU00013-03682	TU00013-03683
TU Male Post o-ring kit Kalrez	TU00013-03669	TU00013-03672	TU00013-03673

O-ring Kits for HS Stator (2 pieces)

	HS2	HS5	HS8
HS Stator o-ring kit, EPDM	HS00013-04755	HS00013-04756	HS00013-05716
HS Stator o-ring kit, Silicone	HS00013-05710	HS00013-05713	HS00013-05718
HS Stator o-ring kit, Viton	HS00013-05711	HS00013-05714	HS00013-05719
HS Stator o-ring kit Kalrez	HS00013-05712	HS00013-05715	HS00013-05720

O-ring Kits for Flanged Tank Plate (1 piece)



Most Metenova mixers can be ordered with flanged tank plates, with an o-ring between the Tank Plate component and the flange welded into the vessel.

	ZG1 ZG2 HP2 HS2	ZG3 ZG5 HP5 HS5	ZG6
Flanged Tank Plate o-ring kit, EPDM	ZG00013-04759	ZG00013-04760	ZG00013-05730
Flanged Tank Plate o-ring kit, Silicone	ZG00013-05424	ZG00013-05727	ZG00013-05732
Flanged Tank Plate o-ring kit, Viton	ZG00013-05725	ZG00013-05728	ZG00013-05733
Flanged Tank Plate o-ring kit Kalrez	ZG00013-05726	ZG00013-05729	ZG00013-05734

	ZG7 ZF100	ZG8 HP8 HS8	ZG9 ZF160
Flanged Tank Plate o-ring kit, EPDM	ZG00013-05735	ZG00013-05740	ZG00013-05745
Flanged Tank Plate o-ring kit, Silicone	ZG00013-05737	ZG00013-05742	ZG00013-05747
Flanged Tank Plate o-ring kit, Viton	ZG00013-05738	ZG00013-05743	ZG00013-05748
Flanged Tank Plate o-ring kit Kalrez	ZG00013-05739	ZG00013-05744	ZG00013-05749

1b. Ensure correct bearing spare parts

Female Sleeve

The Female Sleeve is included in the Mix Head when a complete mixer is ordered, it does not need to be ordered on its own.

	As part of complete mixer	As spare part
	18 mm	
Female Sleeve with EPDM o-rings	(ZG00508-00824)	ZG00508-00824-E
Female Sleeve with Silicone o-rings	(ZG00508-00824) ZG00013-04173	ZG00508-00824-S
Female Sleeve with Viton o-rings	(ZG00508-00824) ZG00013-03130	ZG00508-00824-V
Female Sleeve with Kalrez o-rings	(ZG00508-00824) ZG00013-03136	ZG00508-00824-K
	32 mm	
Female Sleeve with EPDM o-rings	(ZG00508-00101)	ZG00508-00101-E
Female Sleeve with Silicone o-rings	(ZG00508-00101) ZG00013-04174	ZG00508-00101-S
Female Sleeve with Viton o-rings	(ZG00508-00101) ZG00013-03131	ZG00508-00101-V
Female Sleeve with Kalrez o-rings	(ZG00508-00101) ZG00013-03137	ZG00508-00101-K
	40 mm	
Female Sleeve with EPDM o-rings	(ZG00508-00333)	ZG00508-00333-E
Female Sleeve with Silicone o-rings	(ZG00508-00333) ZG00013-04175	ZG00508-00333-S
Female Sleeve with Viton o-rings	(ZG00508-00333) ZG00013-03132	ZG00508-00333-V
Female Sleeve with Kalrez o-rings	(ZG00508-00333) ZG00013-03138	ZG00508-00333-K

The Female Sleeve is a part of the Mix Head and it is delivered with EPDM o-rings as standard, or with silicone, viton or kalrez o-rings if an additional item number is included. When ordering a Female Sleeve as spare part, the o-ring material is specified by adding the following ending to the item number ordered:

-E: EPDM -S: Silicone -V: Viton -K: Kalrez

Example:

A ZG8 complete mixer was ordered with the following Mix Head:

ZG53509-00422 ZG8 Mix Head, EPDM o-rings
ZG00013-03138 Kalrez o-rings in lieu of EPDM

When the Female Sleeve is scheduled for replacement, the following spare part should be ordered:

ZG00508-00333-K 40mm Female Sleeve, Kalrez o-rings

Male Post

	As part of complete mixer	As spare part
	18 mm	
Male Post with EPDM o-rings	ZG00507-00827	ZG00507-00827-E
Male Post with Silicone o-rings	ZG00507-00827 ZG00013-04170	ZG00507-00827-S
Male Post with Viton o-rings	ZG00507-00827 ZG00013-03127	ZG00507-00827-V
Male Post with Kalrez o-rings	ZG00507-00827 ZG00013-03133	ZG00507-00827-K
	32 mm	
Male Post with EPDM o-rings	ZG00507-00199	ZG00507-00199-E
Male Post with Silicone o-rings	ZG00507-00199 ZG00013-04171	ZG00507-00199-S
Male Post with Viton o-rings	ZG00507-00199 ZG00013-03128	ZG00507-00199-V
Male Post with Kalrez o-rings	ZG00507-00199 ZG00013-03134	ZG00507-00199-K
	40 mm	
Male Post with EPDM o-rings	ZG00507-00329	ZG00507-00329-E
Male Post with Silicone o-rings	ZG00507-00329 ZG00013-04172	ZG00507-00329-S
Male Post with Viton o-rings	ZG00507-00329 ZG00013-03129	ZG00507-00329-V
Male Post with Kalrez o-rings	ZG00507-00329 ZG00013-03135	ZG00507-00329-K

The Male Post is delivered with EPDM o-rings as standard, or with silicone, viton or kalrez o-rings if an additional item number is included. When ordering a Male Post as spare part, the o-ring material is specified by adding the following ending to the item number ordered:

-E: EPDM -S: Silicone -V: Viton -K: Kalrez

Example:

A ZG8 complete mixer was ordered with the following Male Post:

ZG00507-00329 40mm Male Post, EPDM o-ring
ZG00013-03135 Kalrez o-rings in lieu of EPDM

When the Male Post is scheduled for replacement, the following spare part should be ordered:

ZG00507-00329-K 40mm Male Post, Kalrez o-ring

TU Male Post for GMP

	As part of complete mixer	As spare part
	GMP50 – 18 mm	
TU Male Post with EPDM o-rings	TU00507-03305	TU00507-03305-E
TU Male Post with Silicone o-rings	TU00507-03305 TU00013-04176	TU00507-03305-S
TU Male Post with Viton o-rings	TU00507-03305 TU00013-03659	TU00507-03305-V
TU Male Post with Kalrez o-rings	TU00507-03305 TU00013-03664	TU00507-03305-K
	GMP100, GMP500, GMP1000 – 32 mm	
TU Male Post with EPDM o-rings	TU00507-00262	TU00507-00262-E
TU Male Post with Silicone o-rings	TU00507-00262 TU00013-04177	TU00507-00262-S
TU Male Post with Viton o-rings	TU00507-00262 TU00013-03660	TU00507-00262-V
TU Male Post with Kalrez o-rings	TU00507-00262 TU00013-03665	TU00507-00262-K
	GMP2000 – 32 mm	
TU Male Post with EPDM o-rings	TU00507-00678	TU00507-00678-E
TU Male Post with Silicone o-rings	TU00507-00678 TU00013-04177	TU00507-00678-S
TU Male Post with Viton o-rings	TU00507-00678 TU00013-03660	TU00507-00678-V
TU Male Post with Kalrez o-rings	TU00507-00678 TU00013-03665	TU00507-00678-K
	GMP5000, GMP10000 – 40 mm	
TU Male Post with EPDM o-rings	TU00507-00712	TU00507-00712-E
TU Male Post with Silicone o-rings	TU00507-00712 TU00013-04178	TU00507-00712-S
TU Male Post with Viton o-rings	TU00507-00712 TU00013-03661	TU00507-00712-V
TU Male Post with Kalrez o-rings	TU00507-00712 TU00013-03666	TU00507-00712-K
	GMP20000 – 40 mm	
TU Male Post with EPDM o-rings	TU00507-02280	TU00507-02280-E
TU Male Post with Silicone o-rings	TU00507-02280 TU00013-04178	TU00507-02280-S
TU Male Post with Viton o-rings	TU00507-02280 TU00013-03661	TU00507-02280-V
TU Male Post with Kalrez o-rings	TU00507-02280 TU00013-03666	TU00507-02280-K

TU Male Post for SM

	As part of complete mixer	As spare part
	SM60 – 18 mm	
TU Male Post with EPDM o-rings	TU00507-01120	TU00507-01120-E
TU Male Post with Silicone o-rings	TU00507-01120 TU00013-04176	TU00507-01120-S
TU Male Post with Viton o-rings	TU00507-01120 TU00013-03659	TU00507-01120-V
TU Male Post with Kalrez o-rings	TU00507-01120 TU00013-03664	TU00507-01120-K
	SM85 – 32 mm	
TU Male Post with EPDM o-rings	TU00507-00382	TU00507-00382-E
TU Male Post with Silicone o-rings	TU00507-00382 TU00013-04179	TU00507-00382-S
TU Male Post with Viton o-rings	TU00507-00382 TU00013-03662	TU00507-00382-V
TU Male Post with Kalrez o-rings	TU00507-00382 TU00013-03667	TU00507-00382-K
	SM120 – 32 mm	
TU Male Post with EPDM o-rings	TU00507-00384	TU00507-00384-E
TU Male Post with Silicone o-rings	TU00507-00384 TU00013-04179	TU00507-00384-S
TU Male Post with Viton o-rings	TU00507-00384 TU00013-03662	TU00507-00384-V
TU Male Post with Kalrez o-rings	TU00507-00384 TU00013-03667	TU00507-00384-K
	SM120H – 40 mm	
TU Male Post with EPDM o-rings	TU00507-01302	TU00507-01302-E
TU Male Post with Silicone o-rings	TU00507-01302 TU00013-04180	TU00507-01302-S
TU Male Post with Viton o-rings	TU00507-01302 TU00013-03663	TU00507-01302-V
TU Male Post with Kalrez o-rings	TU00507-01302 TU00013-03668	TU00507-01302-K
	SM210 – 40 mm	
TU Male Post with EPDM o-rings	TU00507-01556	TU00507-01556-E
TU Male Post with Silicone o-rings	TU00507-01556 TU00013-04180	TU00507-01556-S
TU Male Post with Viton o-rings	TU00507-01556 TU00013-03663	TU00507-01556-V
TU Male Post with Kalrez o-rings	TU00507-01556 TU00013-03668	TU00507-01556-K

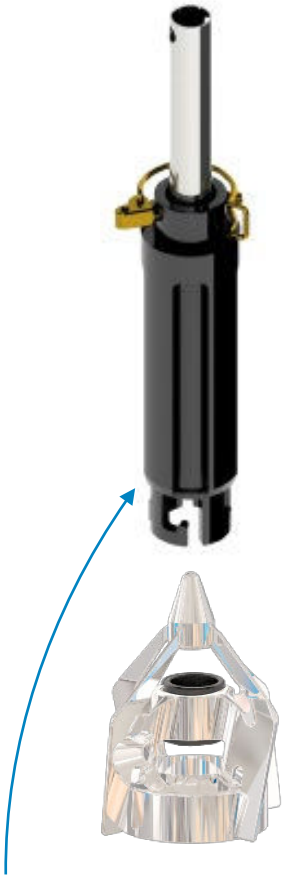
2. Ensure correct tools

Tools for reaching into the vessel

A magnetic mixer is installed in the bottom of the vessel while the manway is at the top. Purposeful equipment is needed to properly reach down into the vessel. Metenova offers a range of tools for reaching into the vessel, namely:

- Lifting Tool – for installing and removing Mix Heads and HS Rotors
- Tightening Tool – for installing and removing Male Posts
- HS Stator Tightening Tool – for installing and removing HS Stators
- Extension Rods and sockets – for obtaining the desired length of the tool

Lifting Tool for Mix Head



Tightening Tool for Male Post



Tightening Tool for HS Stator



Extension Rods and sockets



Most Lifting Tools for Mix Head have a guiding device that helps align the Mix Head despite the action of magnetic forces.

Always install the HS Stator by using the HS Stator Tightening Tool, to ensure proper compression of the o-rings.

Most of the tools for reaching into the vessel have a modular design providing different lengths to match users' needs.

Tools for replacing components

Once the components have been taken out from the vessel, the following tools are used for maintenance:

- Mounting Tool for Female Sleeve
- TU Tightening Tool Kit (for TU mixers only)
- Lubricant (for lubrication of o-rings, not supplied by Metenova)

The Mounting Tool for Female Sleeve is used to exchange the Female Sleeve of the Mix Head, or to replace the o-rings of the Female Sleeve. The platform is designed to fit onto a workbench.

The TU Tightening Tool Kit is both used to remove the TU Male Post from the vessel and for properly service a TU Male Post. The kit comes with two tools - one that grips the stainless-steel adapter plate and one that grips the ceramic part of the TU Male Post.

Mounting tool for Female Sleeve



Tightening tool kit for TU Male Post



Please contact your Metenova sales representative to choose the right tools for you.

Please visit www.metenova.com for instruction videos on how to operate Metenova's tools.



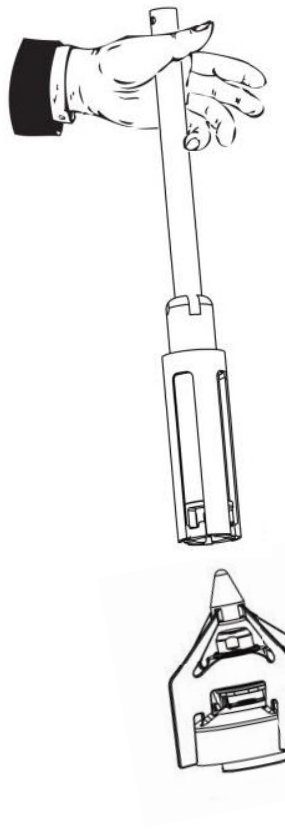
3. Remove components from the vessel

The procedure below should be followed when removing the mixer components from the vessel. Make sure to use the right Metenova tools and carefully follow the procedures stated in the manual for each step. The most common cause for component failure is handling errors, contact your Metenova sales representative for training in handling of tools and components.

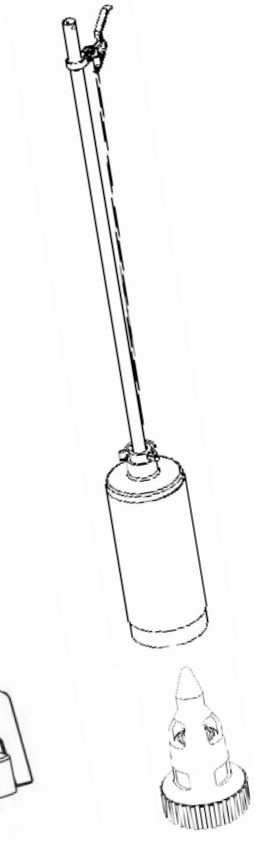
	ZG	HP	HS	TU
Remove Drive Unit	✓	✓	✓	✓*
Remove Mix Head	✓	✓		✓
Remove HS Rotor			✓	
Remove Male Post	✓	✓	✓	
Remove TU Male Post				✓
Remove HS Stator			✓	

* TU Drive Units are sometimes supplied by Metenova, sometimes they are carried over from the previous mixer.

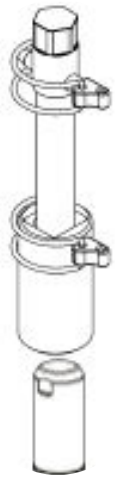
Removal of Mix Head



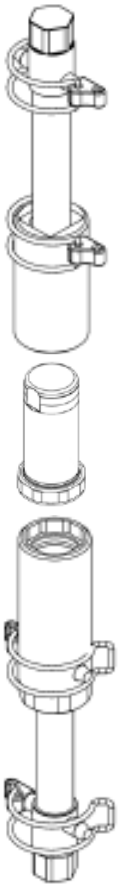
Removal of HS Rotor



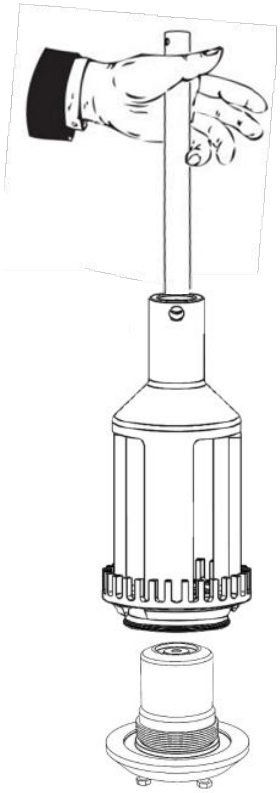
Removal of Male Post



Removal of TU Male Post



Removal of HS Stator



Removal of Drive Unit

The Drive Unit is a heavy item and its weight is unbalanced. It should always be removed before the components inside the vessel are removed, since strong magnetic forces act between the Mix Head and the Outer Drive Head. Consider the weight of the Drive Unit before removing it, as stated in the table below. Non-standard Drive Units may have different weights.

Indicative weight of Metenova Standard AC Drive Units

	ZG1, ZG2	ZG3	ZG5	ZG6	ZG7	ZG8	ZG9	ZG10
E0	6 kg 12 lb	7 kg 14 lb	9 kg 20 lb	11 kg 23 lb	16 kg 35 lb	28 kg 62 lb	29 kg 64 lb	42 kg 92 lb
E100	6 kg 14 lb	7 kg 15 lb	11 kg 23 lb	12 kg 26.4 lb	18 kg 40 lb	31 kg 68 lb	32 kg 70 lb	46 kg 101 lb

	HP2	HP5	HP8	HS2	HS5	HS8
E0	8 kg 17 lb	20 kg 44 lb	46 kg 101 lb	8 kg 17 lb	20 kg 44 lb	79 kg 174 lb

For heavy Drive Units or confined spaces we recommend a lowering device. By ordering a Drive Unit equipped with Lowering Device the need to disassemble the Drive Unit is eliminated. Lowering Devices are available for ZG mixers only.

Lowering Devices are also available as retrofit to your existing Drive Units. Contact your Metenova Sales Representative for more information.



Lowering Device (available as option for ZG mixers).

Lowering Devices Option to Order Together with Standard Drive Unit

	ZG1, ZG2	ZG3	ZG5	ZG6
E0	ZG51502-04147	ZG12502-03638	ZG52502-02000	ZG13502-02002
E100	ZG51502-04148	ZG12502-03639	ZG52502-02001	ZG13502-02003
	ZG7	**ZG8**	**ZG9**	**ZG10**
E0	ZG23502-02006	ZG53502-02008	ZG14502-02010	ZG24502-02012
E100	ZG23502-02007	ZG53502-02009	ZG14502-02011	ZG24502-02013

4. Inspect and replace components

Once a component is removed from the vessel it should be inspected for wear and damage. O-rings should always be exchanged before mounting the component back again. Bearings should be replaced according to the service interval (see page 5). Components in stainless steel should be replaced if damaged or scratched.

The tools recommended for replacing o-rings are shown on page 15 and instructional videos of the procedures can be found at www.metenova.com. Carefully follow the procedures stated in the manual for each step.

5. Mount components onto the vessel

The reverse procedure as in section 3 (and as below) should be followed when mounting the mixer components. Make sure to use the right Metenova tools and carefully follow the procedures stated in the manual for each step. The most common cause for component failure is handling errors.

	ZG	HP	HS	TU
Install HS Stator			✓	
Install TU Male Post				✓
Install Male Post	✓	✓	✓	
Install HS Rotor			✓	
Install Mix Head	✓	✓		✓
Install Drive Unit	✓	✓	✓	✓

6. Test run & run in of components

When all components have been mounted properly, make sure to check that all the steps in the manual have been followed, as well as site specific procedures and protocols.

A test run should be carried out after having reassembled the mixer. Test runs should always be carried out with the mixer submerged, otherwise the bearings may generate particles or even fail.

When the mixer has been submerged, engage the Variable Frequency Device at a low value, e.g. 10 Hz. Let the mixer operate for some time and listen for noise or vibrations. Increase the frequency in steps of 5 or 10 Hz and listen for noise and vibrations. Repeat until the mixer's speed range has been tested. Instantaneous ramp up may lead to a breakdown.

If new ceramic components, i.e. Female Sleeve and/or Male Post, have been installed, run in the mixer for a recommended 20 hours before commissioning it.

Interval conditions

The mixer is often supplied one or several years before the start of production. During this time, it undergoes numerous sterilization cycles. Replacement of o-rings is therefore recommended before the start of production. Recommended service intervals are based on normal operation 8 h/day.

More frequent replacement intervals of o-rings are recommended at extraodrinary operating conditions, such as:

- sterilization temperatures above 140°C (284F) or
- operation in corroding environment.

More frequent replacement intervals of bearings are recommended at extraordinary operating conditions, such as:

- frequent dry-running of bearings
- mixing of abrasive products or
- 24/7 operation

We recommend replacing the mixer's o-rings as frequently as other elastomers in the vessel.

Preventive maintenance by Metenova

Metenova has a wide partner network with qualified technicians who are used to work with equipment in clean rooms. Contact your local Metenova representative, or Metenova directly, if you need help on a maintenance assignment or a service package to ensure recurring and regular maintenance.



Contact Metenova or your Metenova representative for more information and for ordering components

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Revision B
The information in this publication is subject to change without prior notice.

Mete Nova