



## Instruction Manual

### Rotary Jet Mixer Iso-Mix 10

**Covering** ▪ **Standard Machines**

IM-TE911600-EN3  
ESE02183  
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Original manual



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## Introduction

This manual has been prepared as a guide for the persons who will be operating and maintaining your Rotary Jet Mixer Iso-Mix 10. The key to long life for your mixer will always be a system of carefully planned maintenance procedures; you will appreciate that a mixer which has a rough job to do will need more frequent attention than one working in ideal conditions.

**Note:** Get the best and most economical performance from your Rotary Jet Mixer Iso-Mix 10. Insufficient preventive maintenance means poor performance, unscheduled stops, shorter lifetime and extra costs. Good preventive maintenance on the contrary means good performance, no unscheduled stops and superior total economy.

You will find the information contained in this manual simple to follow, but should you require further assistance, our Technical Department will be pleased to help you. Please quote the type and serial number with all your enquiries; this will help us to help you. The type and serial number are placed on the gear house of the mixer.

## Marking

Alfa Laval tank cleaning machines are all marked to allow recognition of machine type, machine name, Serial number and manufacturing address. The marking are placed on the body of the tank cleaning machine.

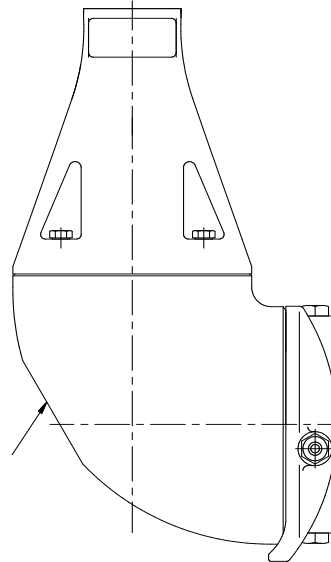
Rotary Jet Mixer  
IsoMix IM10  
Patent: EP 1 324 818  
s/n.: yyyy-xxxxx  
Alfa Laval, DK-Ishoej, Baldershoej 19  
CE

### Serial number explanation

Machines supplied with or without normal documentation:

yyyy-xxxxx: serial number  
yyyy: year  
xxxxx: 5 digit sequential number

Marking  
area



**Note:** The illustrations and specifications contained in this manual were effective at the date of printing. However, as continuous improvements are part of our policy, we reserve the right to alter or modify any unit specification on any product without prior notice or any obligation.

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## **Intended Use**

It is to be verified by the end-user:

- that the mixer is in conformity with respect to tank, vessel or container size in which it will be used.
- that the construction materials (both metallic and non-metallic) are compatibility with product, flushing media, cleaning media, temperatures and pressure under the intended use.

## **Patents and trademarks**

This Instruction Manual is published by Alfa Laval Kolding A/S without any warranty. Improvements and changes to this Instruction Manual may at any time be made by Alfa Laval Kolding A/S without prior notice. Such changes will, however, be incorporated in new editions of this Instruction Manual.

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Rotary Jet Mixer Iso-Mix 10 product has patents in the EPO member states and in other countries. The Alfa Laval logotype is a trademark or a registered trademark of Alfa Laval Corporate AB. Other products or company names mentioned herein may be the trademarks of their respective owners. Any rights not expressly granted herein are reserved.

## General Description

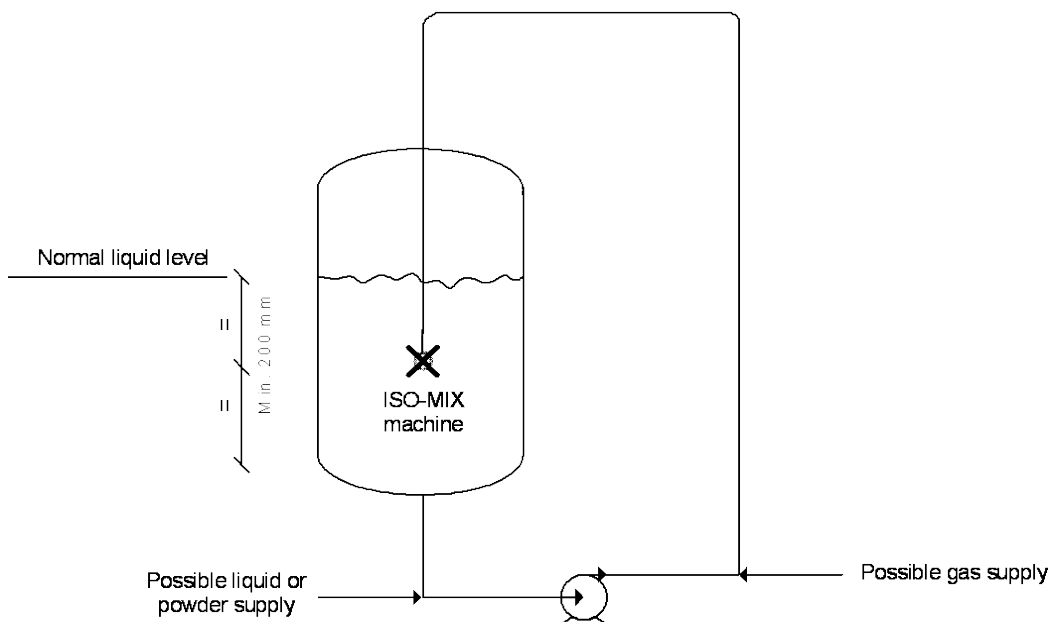
The Rotary Jet Mixer Iso-Mix 10 is a media driven and media lubricated tank/reactor mixer. All materials are selected for contact with food, and the machine is self-cleaning i.e. all internal and external surfaces are cleaned.

## Functionality

The Rotary Jet Mixer Iso-Mix 10 is placed inside the tank/reactor under the liquid surface of the liquid volume to be mixed.

The mixer is combined with an external recirculation loop. The fluid of the tank/reactor is recirculated through this loop and reintroduced in the tank/reactor through the Rotary Jet Mixer Iso-Mix 10. The more fluid being recirculated, the more effective mixing is obtained.

The mixer should be placed in the centre of the fluid to be mixed. Minimum 200 mm under the liquid surface.



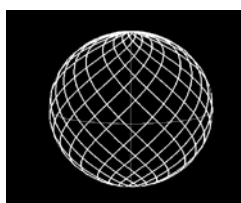
The flow of fluid to be mixed passes from the tank into the mixer through a turbine, which is set into rotation. The turbine rotation is through a gearbox transformed into a combined horizontal rotation of the mixer body and a vertical rotation of the nozzles.

## General Description (continued)

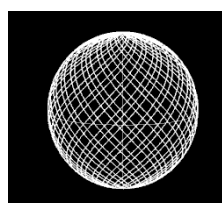
### Functioning (continued)

The combined motion of the mixer body and the nozzles ensures a fully indexed tank mixing. After  $5\frac{5}{8}$  revolutions of the hub cover with nozzles ( $5\frac{3}{8}$  revolutions of the mixer body), one coarse cleaning pattern is laid out on the tank surface and the first cycle has been made. During the following cycles, this pattern is repeated 7 times, each of which is displaced, and the pattern gradually becomes denser. Finally, after 8 cycles - a total of 45 revolutions of the hub cover with nozzles (43 revolutions of the mixer body), a complete mixing pattern has been laid out, and the first pattern is repeated. This feature eliminates "dead zones" in the tank, and makes the Rotary Jet Mixer Iso-Mix 10 a very efficient automatic tank cleaning machine, when the tank is empty.

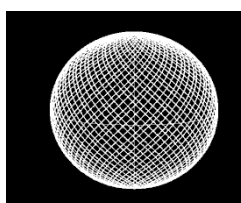
This is illustrated below for spherical tank with the machine placed in the centre:



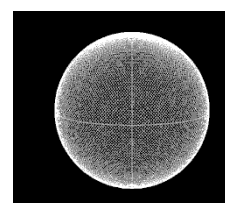
1<sup>st</sup> cycle



2<sup>nd</sup> cycle



3<sup>rd</sup> cycle

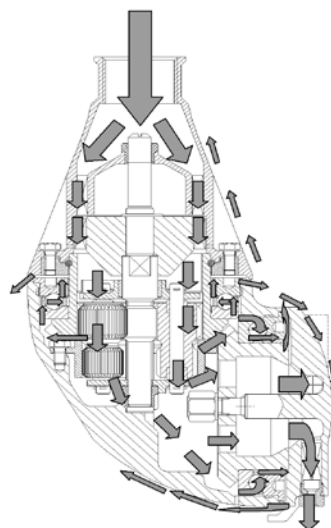


4<sup>th</sup> cycle

It is possible to add fluid, gas or solids in the recirculation loop. These ingredients will very effectively be mixed into the entire tank/reactor volume.

When the tank/reactor is empty the Rotary Jet Mixer Iso-Mix 10 can be used as a tank cleaning machine.

Apart from the main flow flushing the gear and the hub, and thereafter forming the jets through the nozzles, fluid is flushed through all internal areas, through bevel gear, ball bearings and gaps between moving parts and is finally also used for cleaning of the outside surfaces of the machine. The areas behind the screws on the cone are cleaned through small spray holes behind the screws. In the bottom of the body, the machine is equipped with a hole to ensure self-draining. This self-draining is only ensured, if the machine is installed in upright position.



## General Description (continued)

### Standard Configurations for Rotary Jet Mixer Iso-Mix 10

Connection	Nozzles [mm]	Article No.
1" BSP, Female	4 x $\varnothing$ 3.9	TE30B030
	4 x $\varnothing$ 4.6	TE30B040
	4 x $\varnothing$ 5.5	TE30B050
1" NPT, Female	4 x $\varnothing$ 3.9	TE30N030
	4 x $\varnothing$ 4.6	TE30N040
	4 x $\varnothing$ 5.5	TE30N050



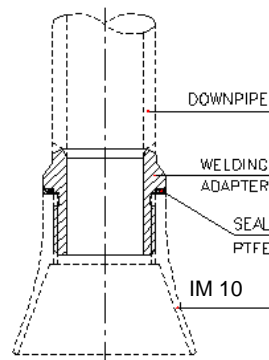
## General Description (continued)

### Accessories

Welding adapter with sealing assembly between down pipe, welding adapter and machine.

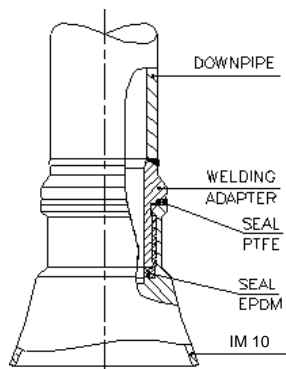
Pipe Dimension in mm	Connection thread	Article No.
1" ISO thread pipe: $\varnothing 33.7 \times 3.25$	1" BSP	TE52D030
1" ANSI Sch.40S: $\varnothing 33.4 \times 3.38$	1" NPT	TE52D031
1½" ISO Dairy pipe: $\varnothing 38 \times 1.2$	1" BSP	TE52D032

For devices with tapered thread connections to the down pipe, it is recommended that you secure the connection in a manner appropriate for the application. Subject to the intended use environment and any in-house user requirements or policies, an adhesive such as Loctite No. 243 or equivalent could be used. Other methods could be acceptable and subject to customer preference.



### Sanitary connection

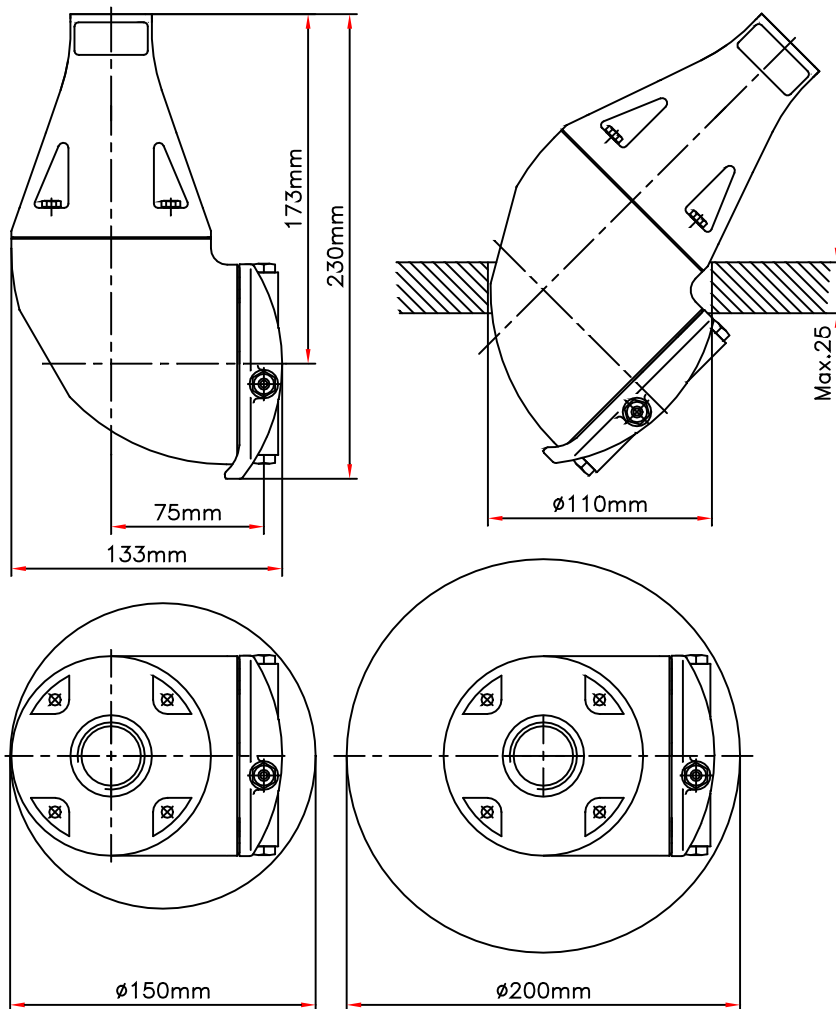
Use cone with gasket.



## Technical Data

Weight of machine	:	5,1 kgs (11,2 lb)
Working pressure	:	3-8 bar (40-115 psi)
Recommended inlet pressure	:	5-7 bar (70-100 psi)
Working temperature max.	:	110°C (230°F)
Max. temperature	:	140°C (284°F)
Materials	:	Stainless steel, PFA, PEEK, PVDF, A4/EPDM

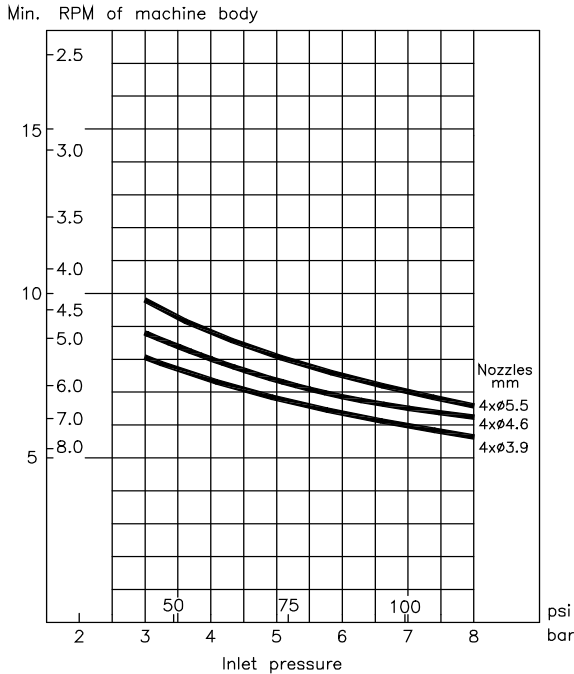
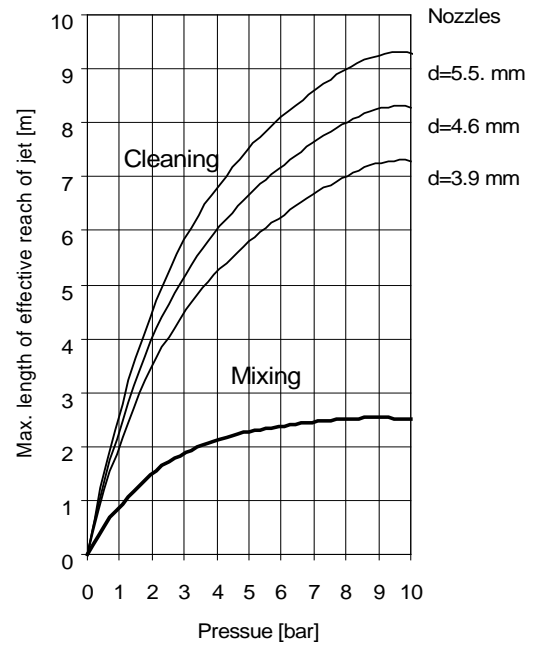
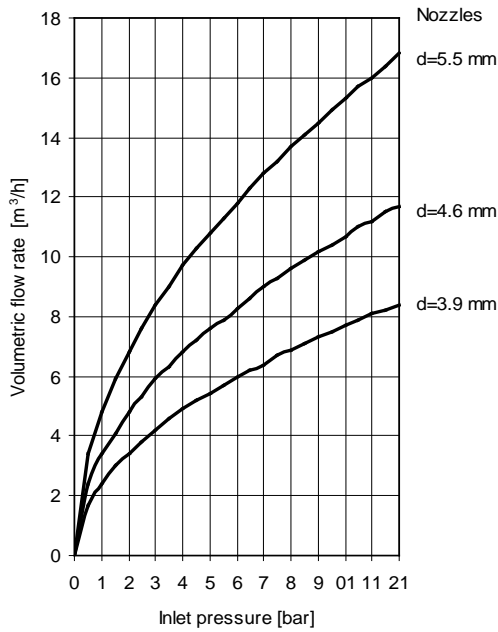
## Principal dimensions in mm



Minimum required passage:  $\varnothing 110\text{ mm}$  (4.33 inch) at flange thickness 25 mm (0.98 inch)  
 Otherwise  $\varnothing 150\text{ mm}$  (5.90 inch)

## Technical Data (continued)

### Performance Data



Time for complete pattern

**Note:** The distance (reach) of the jet from the rotary nozzles at which the jets still have a reasonable mixing effect depends i.a. of pressure, the diameter of the nozzles, the viscosity of the fluid, the desired mixing time and various other parameters.

The effective reach of the jets as indicated above is in a fluid with a viscosity of 1 cP.

The pressure is measured at the mixer. This means that due consideration shall be taken to pressure drops in the recirculation line from the pump to the mixer as well as to static pressure differences, when the jet mixing system is being dimensioned.

## Installation and Normal Operation

### General Installation Instructions

The Rotary Jet Mixer Iso-Mix 10 should be installed in vertical position (upright or upside down). It is recommended to install a filter in the supply line in order to avoid large particles to clog inside the machine. Before connecting the mixer into the system, all supply lines and valves should be flushed to remove foreign matter.

It is recommended to secure the bolted connection between machine and down pipe against loosening to vibrations. Use locking wire, nabs or equivalent for the actual application.

In general a filter with 3 mm holes is recommended in the supply line. In case of fine solid particles below 500 µm in the cleaning fluid, choose filter size accordingly.

It is recommended that the fluid valve fitted is of a type that prevents hydraulic shocks, which may cause severe damage to the entire installation.

The machine should be screwed tightly onto its supporting supply line using a 36 mm flat jawed spanner (tool no. 81B040) and the flats machined on the inlet cone.

For devices with tapered thread connections to the down pipe, it is recommended that you secure the connection in a manner appropriate for the application. Subject to the intended use environment and any in-house user requirements or policies, an adhesive such as Loctite No. 243 or equivalent could be used. Other methods could be acceptable and subject to customer preference.

**Note:** The Rotary Jet Mixer Iso-Mix 10 shall be installed in accordance with national regulations for safety and other relevant regulations and standards.

In EU-countries the complete system must fulfill the EU-Machine Directive and depending of application, the EU-Pressure Equipment Directive, the EU-ATEX Directive and other relevant Directives and shall be CE-marked before it is set into operation.

The Rotary Jet Mixer Iso-Mix 10 as delivered has been tested at the factory before shipping.

Check that the mixer is in operating condition by inserting 3/16" Hex Screwdriver (tool no. 134A) in screw in top of turbine shaft and easily turn turbine shaft anti-clockwise. If any resistance is recognised, the mixer should be disassembled in order to localise the cause.

## Installation and Normal Operation (continued)

### Normal Operation

#### Media to be mixed

Use mixer only in fluids compatible with stainless steel AISI 316L, SAF 2205, PFA, PEEK, PVDF, A4/EPDM and ceramics ( $Al_2O_3$ ). Furthermore, the fluids to be mixed should not contain abrasive materials and fibrous material and the viscosity should not be above 450 cP. Normal detergents, moderate solutions of acids and alkalis will be acceptable. Aggressive chemicals, excessive concentrations of chemicals at elevated temperatures, as well as certain hydrochlorides should be avoided. If you are in doubt, contact Alfa Laval Tank Equipment.

#### After use cleaning

After use flush the mixer with fresh water. Fluids should never be allowed to dry or set-up in the Rotary Jet Mixer Iso-Mix 10 due to possible "salting out" or "scaling" of the ingredient.

#### Pressure

Avoid hydraulic shocks. Increase pressure gradually. Do not exceed 8 bar inlet pressure. Recommended inlet pressure: 5-7 bar. High pressure in combination with high flow rate will create consumption of wear parts.

If the pump in the recirculation loop is a positive pump giving pressure fluctuation, it is recommended to install a hydrofor in the pipeline.

### General Safety Precautions

**Warning:**

Precautions shall be made to prevent starting of the cleaning operation, while personnel are inside the tank or otherwise can be hit by jets from the nozzles.

**Warning:**

If the machine is used in potential explosive atmospheres, tapes or joint sealing compounds which are electrical insulators must not be used on threads or joints, unless an electrical connection is otherwise established to ensure an effective earthing. In addition, connecting pipe work, must be electrically conductive and earthed to the tank structure. The resistance between the nozzles and the tank structure should not exceed 20,000 Ohm. This is essential to avoid the build-up of static electricity on the machine.

For further information see DS/CLC/TR 50404:2003 Safety of Machinery, guidance and recommendations for the avoidance of hazards due to static electricity.

Electrical equipment such as magnetic valves and electric actuators must not be installed in Ex-zones without type approval and marking, corresponding to the EX-class in question.

## Recommended Service Intervals

Inspection every 1000 working hours. After 4000 working hours: inspection every 500 hours.

A service consists of:

0. At a pressure of 0.3 bar open a hatch in the tank to verify rotation and liquid fans are emerging from all slots. ATTENTION: Use only pure water at normal temperature for safety reason

If needed proceed to 1).

1. Un-install the machine.
2. Visual inspection for foreign objects. Remove any objects and clean before rotation verification.
3. Rotation verification by hand for free rotation.
4. Reinstall machine.
5. Fill in the Service Log.

## Maintenance and Repair

### Preventive Maintenance

In order to keep your Rotary Jet Mixer Iso-Mix 10 servicing you as an efficient tool in your mixing operations, it is essential to maintain its high performance by following a simple preventive maintenance programme, which will always keep your mixer in good condition.

Good maintenance is careful and regular attention!

The following recommended preventive maintenance is based on a Rotary Jet Mixer Iso-Mix 10 working in average conditions. However, you will appreciate that a mixer, which has a rough and dirty job to do, will need more frequent attention than one working in ideal conditions. We trust that you will adjust your maintenance programme to suit.

Always use only proper tools. Use standard tool kit for Rotary Jet Mixer Iso-Mix 10. Never force, hammer or pry components together or apart. Always perform all assembly/disassembly steps in the order described in this manual.

Never assemble components without previous cleaning. This is especially important at all mating surfaces. Work in a clear well lighted work area.

### Every 2500 working hours

1. Disassemble machine as described on the following pages.
2. Clean material build-up and deposits from internal parts with chemical cleaner and/or desired fine abrasive cloth.
3. Check slide bearing (pos. 14, page 20) for wear. If end face of slide bearing is worn more than 1 mm into slide bearing, it should be replaced.
4. Check bearings for turbine shaft (pos. 3, page 18) in cone and body. If holes are worn oval to a max diameter of more than 10.4 mm, bearings should be replaced. Thickness of collar is to be min. 3.5 mm for bearing in body.
5. Check carrier bearing (pos. 15.3, page 18). If worn oval to a max diameter of more than 15.8 mm, it should be replaced.

**Note:** Timely replacement of ball bearings and collar bushes will prevent costly damage to the gearbox.

## Maintenance and Repair (continued)

### Preventive Maintenance (continued)

6. Check planet wheels (pos. 15.4 and 15.5, page 18) while still mounted in planet gear carrier (pos. 15.6, page 18). They must rotate easily on shafts. If restriction or much clearance on shafts is felt, planet wheels should be dismounted for inspection of bearing bushes and shafts for planet wheel (pos. 15.2, page 18). Max diameter of holes: 6.2 mm.

Check tooth wear.

If replacement is necessary, planet wheels must be replaced as a pair.

7. Check unrestricted rotation of ball bearings. Inspect for build-up of foreign material on PEEK-bushings (pos. 9.1 and 18.1, page 20), in ball retainers (pos. 10, page 20) and ball races.
8. Assemble machines as described in the following pages.
9. Check that the machine is in operating condition by inserting 3/16" Hex screwdriver (tool no. 134A) in screw in top of turbine shaft, and easily turn turbine shaft anti-clockwise. If any resistance is recognised, the machine should be disassembled in order to localise the cause.

Apart from the parts specifically mentioned above, all the remaining wear parts should regularly be inspected for wear. Wear parts are specified in the Reference List of Parts, page 29.



## Maintenance and Repair (continued)

### Turbine and Carrier Assembly

#### Disassembly

1. Remove M5 screws (pos. 8). Loosen and unscrew with a socket wrench (tool no. 462A).
2. Lift off cone (pos. 1).
3. Withdraw turbine shaft (pos. 2) with impeller. If necessary, turn turbine shaft left and right.
4. Remove circlip (pos. 4) and pull off impeller (pos. 5).
5. Withdraw carrier assembly (pos. 15) while turning/rocking carrier left and right.
6. Remove cotter pins (pos. 15.7), pull out shafts (pos. 15.2) and remove planet wheels (pos. 15.4 and 15.5). If necessary, push out carrier bearing (pos. 15.3)
7. If necessary, push out bearing for turbine shaft (pos. 3) from cone (pos. 1).

#### Reassembly

Before reassembly, make sure that all parts are clean without deposits or build-up of foreign matter.

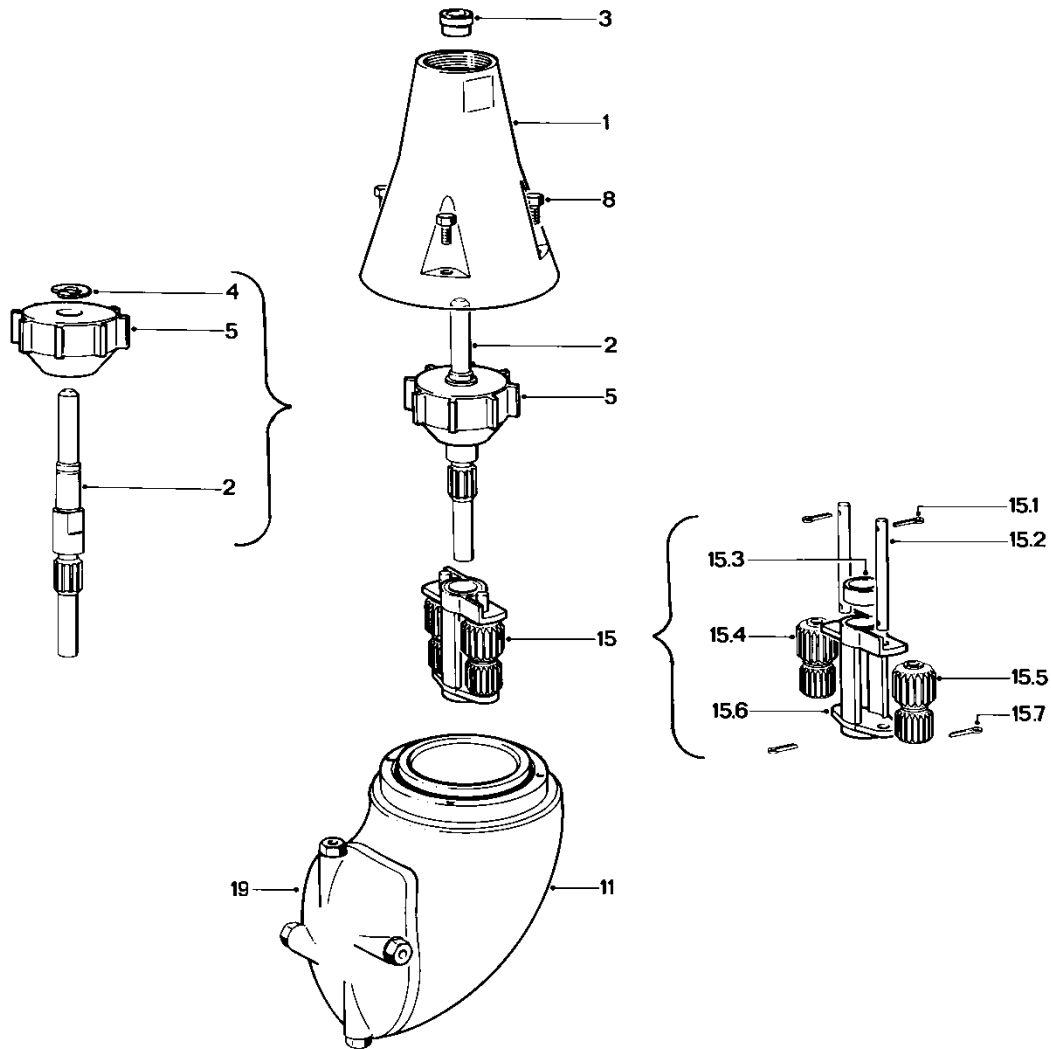
1. Insert bearing (pos. 3) in top of cone (pos. 1) and push home with thumb.
2. Insert carrier bearing (pos. 15.3) and push with thumb. Insert planet wheels (pos. 15.4 and 15.5) and shafts (pos. 15.2) and secure with cotter pins (pos. 15.7). Check free rotation of planet wheels.

**Note:** The two planet wheels are different: on planet wheel 1, teeth of upper and lower gearing are aligned, while they are displaced  $\frac{1}{2}$  tooth on planet wheel 2.

3. Insert carrier assembly (pos. 15), into body: Insert through stem (pos. 16, page 20). Hold body in one hand and use the other to turn hub cover (pos. 19) left and right with small rocking movements until carrier falls through internal gear (pos. 13, page 20). Check that carrier is fully home on bearing for turbine shaft (pos. 3). In body: Rotate carrier assembly by hand a few rotations to check correct position and function.
4. Mount impeller (pos. 5) on turbine shaft (pos. 2) and secure with circlip (pos. 4).
5. Insert turbine shaft with impeller through carrier assembly. Rotate impeller to ensure correct insertion into bearing for turbine shaft (pos. 3) in body. Check unrestricted rotation.
6. Mount cone (pos. 1) over turbine shaft and retaining ring. Mount and tighten screws (pos. 8) with socket wrench (tool no. 462A).

## Maintenance and Repair (continued)

### Turbine and Carrier Assembly



## Maintenance and Repair (continued)

### Remaining Assemblies

#### Disassembly

1. Remove retainer spring (pos. 6). Use small screwdriver to lift retainer spring out of groove in stem (pos. 16). Lift off retaining ring (pos. 7).
2. Hold body against table and unscrew stem nut w. ball race (pos. 9) with caliper (tool no. 369). Withdraw stem (pos. 16) together with ball retainer w. balls (pos. 10).
3. Remove M5 screws (pos. 12) with a socket wrench (tool no. 462A) and draw out internal gear (pos. 13).
4. Insert a 13 mm spanner (tool no. 81B041) into body, hold cap nut (pos. 23) and by hand screw off hub cover (pos. 19), and remove washer (pos. 22).
5. Hold body against table and unscrew hub nut with ball race (pos. 18) with caliper (tool no. 369).

**Note:** Left-hand thread

Withdraw hub (pos. 17) together with ball retainer with balls (pos. 10).

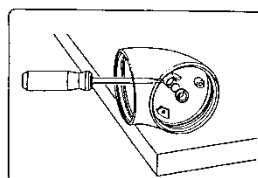
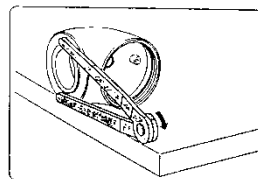
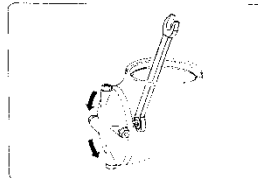
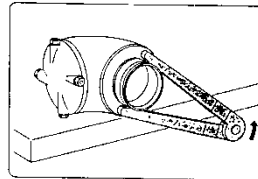
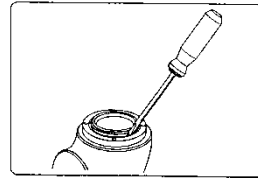
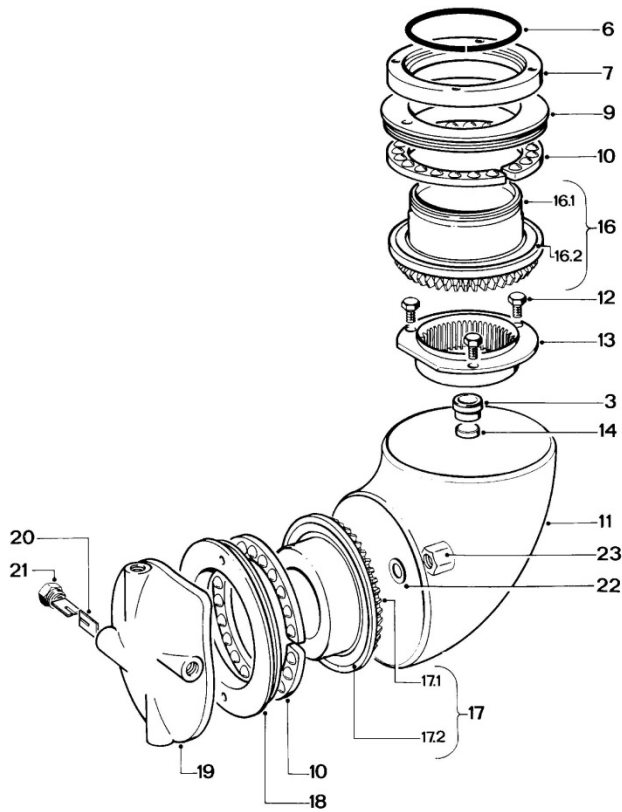
6. With screwdriver lift slide bearing (pos. 14) and bearing for turbine shaft (pos. 3) out of body.
7. Unscrew nozzles (pos. 21) with 11 mm spanner (tool no. 81B041). Be careful not to damage nozzle vanes (pos. 20) as this will severely reduce nozzle performance. Nozzle vanes should not be removed unless they need to be replaced.

If PEEK-bushings (pos. 9.1 and 18.1) are worn, they can easily be replaced, see page 24.

If ball races (pos. 16.2 and 17.2) on stem and hub as well as stem/hub nut with ball race (pos. 9 and 18) are heavily worn, they should be replaced as well as ball retainer with balls (pos. 10), see page 23.

## Maintenance and Repair (continued)

### Remaining Assemblies



## Maintenance and Repair (continued)

### Remaining Assemblies

#### Reassembly

Before reassembly make sure that all parts are clean without deposits or build-up of foreign matter.

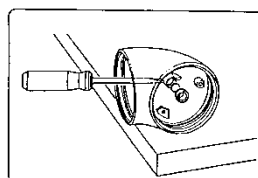
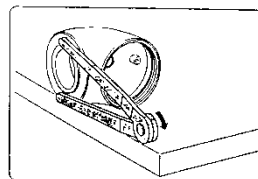
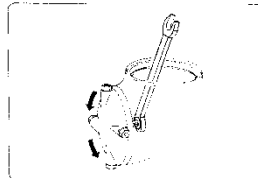
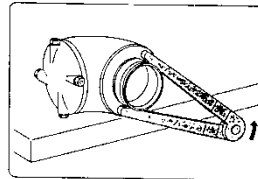
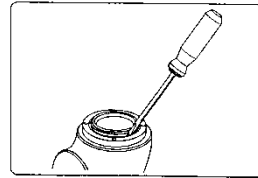
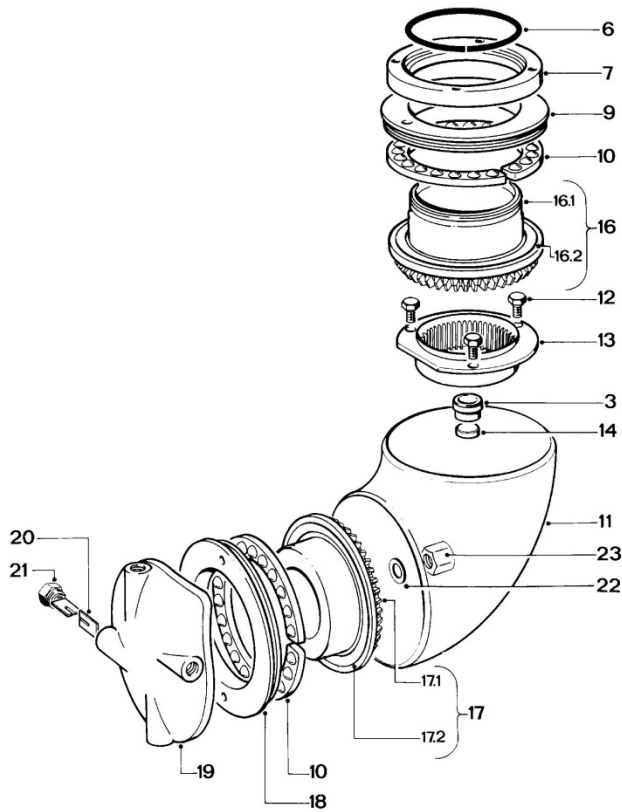
1. If necessary insert new nozzle vanes (pos. 20, see drawing page 20). Be careful not to damage nozzle vanes. Mount nozzles (pos. 21) and tighten with spanner.
2. Place slide bearing (pos. 14) in body and push in bearing for turbine shaft (pos. 3) with thumb. Make sure that bearing is fully home.
3. Inset hub (pos. 17) together with ball retainer with balls (pos. 10). Mount hub nut with ball race (pos. 18) with caliper (tool no. 369) and tighten.

**Note:** Left-hand thread

4. Place washer (pos. 22) on threaded pin on hub cover and mount cap nut (pos. 23). Insert spanner (tool no. 81B041) into body, hold cap nut (pos. 23) and by hand screw on hub cover (pos. 19) and tighten. Check free rotation of hub.
5. Insert internal gear (pos. 13), mount screws (pos. 12) and tighten with socket wrench (tool no. 462A).
6. Insert stem (pos. 16) together with ball retainer with balls (pos. 10). Mount stem nut with ball race (pos. 9) with caliper (tool no. 369) and tighten. Turn hub cover and check unrestricted rotation.
7. Place retaining ring (pos. 7) over stem (pos. 16) and push on retainer spring (pos. 6) and "click" into groove in stem. Check free rotation.

## Maintenance and Repair (continued)

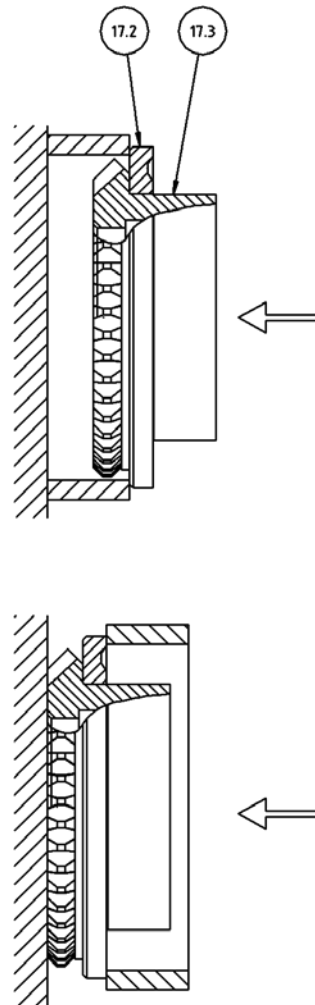
### Remaining Assemblies



## Maintenance and Repair (continued)

### Replacement of Ball Races

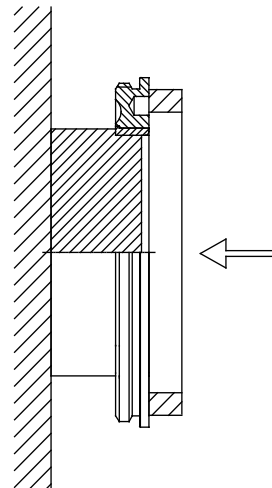
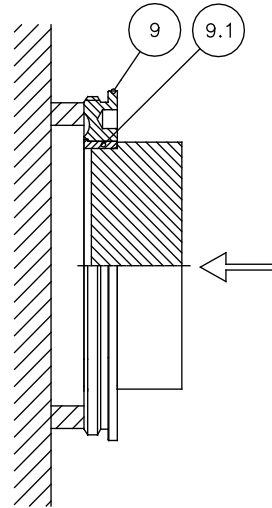
1. Place stem or hub complete (pos. 16 or 17, see page 28) in a support ring and press off ball race. Press parallel. Use press or vice. Be careful not to damage teeth and opposite end face of stem.
2. With mandrel press ball race fully home. Press parallel. Use press or vice. Be careful not to damage surface of ball race.



## Maintenance and Repair (continued)

### Replacement of PEEK-bushing

1. Place stem nut (pos. 9 or 18, see page 28) in a support ring and press the PEEK-bushing off. Press parallel. Use press or vice. Be careful not to damage the inner face of stem nut and the surface of the ball race.
2. With support ring press PEEK-bushing fully home. Press parallel. Use press or vice. Be careful not to damage surface of ball race.





## Service Kits and Tools

### Service Kit for Rotary Jet Mixer Iso-Mix 10

#### Article No. TE30B292

Part No.	Description	No.
TE20G640	Bearing for turbine shaft	1 pcs.
TE20G571	Stem nut with ball race	1 pcs.
TE30B302	Ball retainer with balls	2 pcs.
TE20G641	Slide bearing	1 pcs.
TE51C102	Cotter pin	2 pcs
TE20G642	Bearing for planet gear carr.	1 pcs.
TE20G643	Planet wheel I	1 pcs.
TE20G644	Planet wheel II	1 pcs.
TE20G574	Ball race	2 pcs.
TE20G573	Hub nut with ball race	1 pcs.
TE20G584	Washer	1 pcs.
TE20G548	Bearing for turbine shaft, top	1 pcs.

### Standard Tool Kit for Rotary Jet Mixer Iso-Mix 10, article no. TE81B085

Tool No.	Description
369	5 mm caliper
462A	8 mm socket wrench with pin
81B040	Spanner, 36 mm
81B041	Spanner, 12/13 mm

## Trouble Shooting Guide

### Symptom: Slow rotation or failure of machine to rotate

Possible Causes	Fault finding
<b>No or insufficient liquid flow</b>	<ul style="list-style-type: none"><li>a) Check if supply valve is fully open.</li><li>b) Check if inlet pressure to mixer is correct.</li><li>c) Check supply line/filter for restrictions/ clogging.</li><li>d) Remove nozzles and check for clogging. If blocked, carefully clean nozzle without damaging nozzle vanes and nozzle tip.</li><li>e) Remove cone, guide and impeller and check for clogging in impeller area.</li><li>f) If large particles repeatedly get jammed in the mixer, install filter or reduce mesh size of installed filter in supply line.</li></ul>
<b>Foreign material or material build-up</b>	Insert Hex screwdriver in screw in top of turbine shaft and easily turn turbine shaft clockwise. If any resistance is recognised, disassemble machine in order to localise the cause.
a) Impeller jammed	Remove guide and impeller (see page 17) and remove foreign material.
b) Turbine shaft sluggish in main bush	Remove gland (see page 17) and clean main bush.
c) Planet gear jammed/sluggish	Remove foreign material from planet wheels and internal gears. Check rotation of planet wheels. If restriction is recognised, disassemble carrier assembly (see page 17) and remove material build up, especially on shafts and bushes in planet wheels.

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## Trouble Shooting Guide (continued)

### Symptom: Slow rotation or failure of machine to rotate

Possible Causes	Fault finding
d) Stem or hub jammed/sluggish	Remove carrier assembly (see page 17). Turn hub cover and check unrestricted rotation. Remove stem and hub (see page 19-21). Remove foreign material/material build-up on stem, hub, PEEK-bushing and inside nut with ball race. Clean ball races and ball retainer with balls. Assemble stem/hub, ball retainer with balls and stem/hub nut with ball race. Also clean main bush.
e) Bevel gears jammed	Remove flange/nipple and hub (see page 19). Clean teeth on stem and hub.

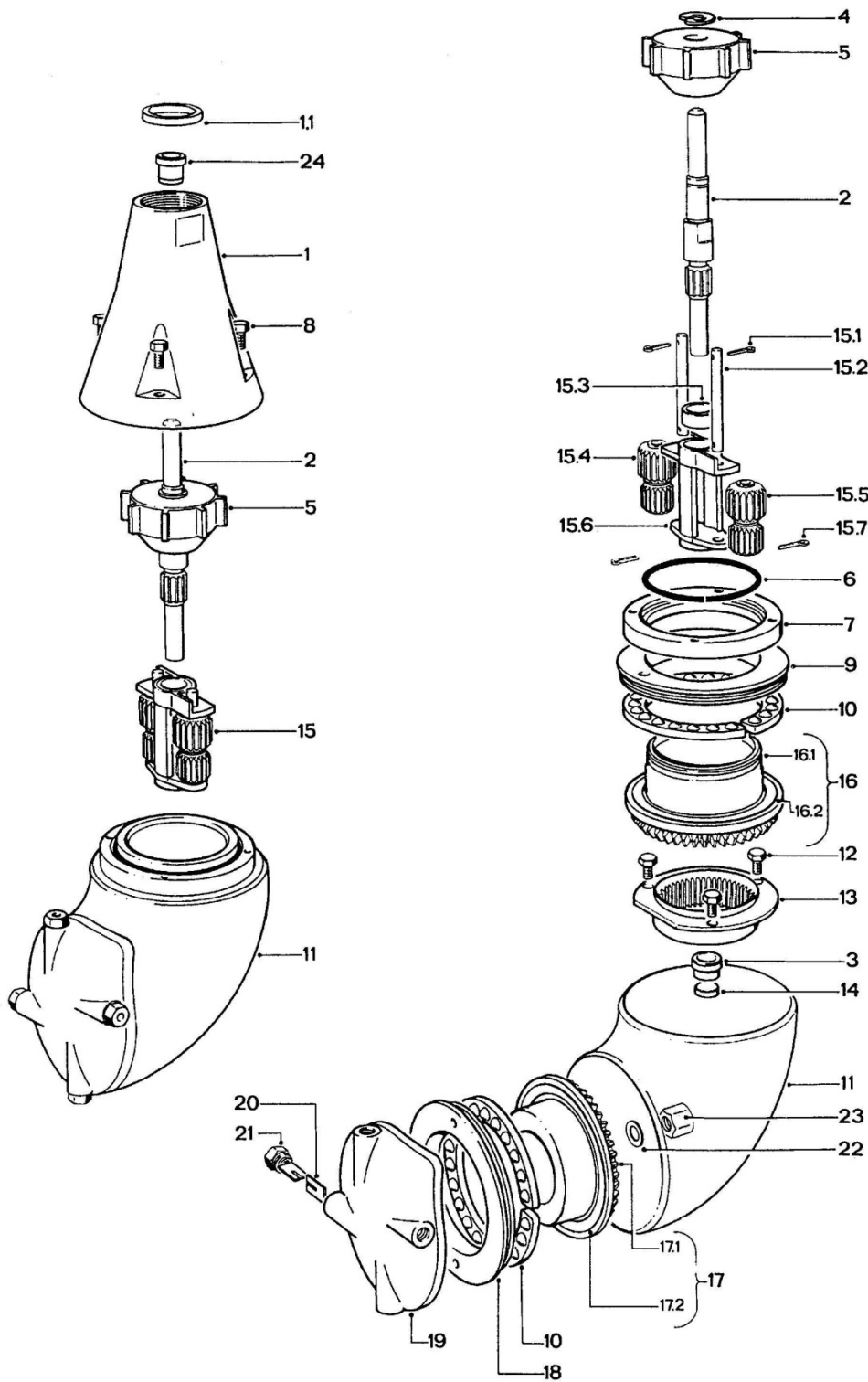
### Wear

a) Slide bearings	See page 15.
b) Bearing for turbine shaft	See page 15.
c) Planet wheels	See page 16.
d) Shafts for planet wheels	Check clearance of planet wheels on shafts. Transverse movement should not exceed 0.3 mm.
e) Turbine shaft	Check clearance in carrier bearing and bearing for turbine shaft. Transverse movement should not exceed 0.3 mm. Also inspect teeth for wear.

### Mechanical defects

a) Planet wheels. Teeth broken	Replace planet wheels.
b) Planet wheel can not rotate on shafts/shafts bent.	Replace shafts for planet wheels.
c) Damaged teeth on bevel gear	Inspect teeth on stem and hub for deformation. Mount hub and stem in body (See page 21). Hold body in upside down position and rotate Hub to check that bevel gears can work together. If damaged: Replace stem and/or hub.

### Exploded View Drawing



## Reference List of Parts

Pos.	Ref. No.	No/Unit	Description	Material	Remarks
1	<input type="checkbox"/> TE20G508	1	Cone 1" BSP	Stainless steel	Spare part
2	TE30B511	1	Turbine shaft	Stainless steel	Spare part
3	TE20G549	1	Bearing for turbine shaft (body)	Polymer	Wear part
4	TE51C201	1	Circlip RS 10, DIN 6799	Stainless steel	Spare part
5	<input type="checkbox"/> TE20G553	1	Impeller (ø3.5/3.9 mm nozzle)	Polymer	Spare part
	<input type="checkbox"/> TE20G554	1	Impeller (ø4.5/4.6 mm nozzle)	Polymer	Spare part
	<input type="checkbox"/> TE20G555	1	Impeller (ø5,5 mm nozzle)	Polymer	Spare part
6	TE20G565	1	Retainer spring	Stainless steel	Spare part
7	TE20G563	1	Retaining ring	Stainless steel	Spare part
8	TE51A172	4	Screw	Stainless steel	Spare part
9	TE20G571	1	Stem nut with ball race	Stainless steel	Wear part
10	TE30B302	2	Ball retainer with balls	PFA/Stainless steel	Wear part
11	TE20G512	1	Body	Stainless steel	-
12	TE51A170	3	Screw	Stainless steel	Spare part
13	TE20G525	1	Internal gear	Stainless steel	Spare part
14	TE20G558	1	Slide bearing	Polymer	Wear part
15	TE30B307	1	Planet complete		Spare part
15.1	TE20G530	1	Planet gear carrier	Stainless steel	Spare part
15.2	TE20G642	1	Bearing for Planet Gear carrier	Polymer	Wear part
15.3	TE30B514	2	Shaft for Planet wheel	Stainless steel	Spare part
15.4	TE51C102	2	Cotter pin	Stainless steel	Spare part
15.4	TE20G643	1	Planet wheel I	Polymer	Wear part
15.5	TE20G644	1	Planet wheel II	Polymer	Wear part
16	TE20G319	1	Stem complete	Stainless steel	Spare part
16.1	TE20G624	1	Stem	Stainless steel	Spare part
16.2	TE20G574	1	Ball race	Stainless steel	Wear part
17	TE20G320	1	Hub complete	Stainless steel	Spare part
17.1	TE20G625	1	Hub	Stainless steel	Spare part
17.2	TE20G574	1	Ball race (= pos. 16.2)	Stainless steel	Wear part
18	TE20G573	1	Hub nut with ball race	Stainless steel	Wear part
19	TE20G620	1	Hub cover with pin	Stainless steel	Spare part
20	TE20G594	8	Nozzle vane	Stainless steel	Spare part
21	<input type="checkbox"/> TE20G608	4	Nozzle ø3,9 mm	Stainless steel	Spare part
	<input type="checkbox"/> TE20G609	4	Nozzle ø4,6 mm	Stainless steel	Spare part
	<input type="checkbox"/> TE20G605	4	Nozzle ø5,5 mm	Stainless steel	Spare part
22	TE20G584	1	Washer, USIT	Stainless steel/Elastomer	Spare part
23	TE51A521	1	Cap nut	Stainless steel	Spare part
24	TE20G548	1	Bearing for turbine shaft (cone)	Polymer	Wear part

Possible configurations marked .

## How to Order Spare Parts

On the Cross Sectional Drawing as well as on all instruction drawings, the individual parts have a pos. number which is the same on all drawings. From the pos. number, the part is easily identified in the Reference list of Parts, page 29.

Individual parts should always be ordered from the Reference list of parts. Reference number and description should be clearly stated.

Please also quote the type of mixer and serial number. This will help us to help you. The type and serial number are stamped on the body of the Rotary Jet Mixer Iso-Mix 10.

## Claim Procedure

In case of failure that needs assistance from Alfa Laval Tank Equipment, it is essential for our evaluation that the problem as well as the working conditions of the machine is described as detailed as possible.

## How to contact Alfa Laval Tank Equipment

For further information please feel free to contact:

### **Alfa Laval Tank Equipment**

#### **Alfa Laval Kolding A/S**

31, Albuen - DK 6000 Kolding - Denmark

Registration number: 30938011

Tel switchboard: +45 79 32 22 00 - Fax switchboard: +45 79 32 25 80

[www.toftejorg.com](http://www.toftejorg.com) , [www.alfalaval.dk](http://www.alfalaval.dk) - [info.dk@alfalaval.com](mailto:info.dk@alfalaval.com)

Contact details for all countries are continually updated on our websites.

## Declaration of Compliance with 10/2011 – Food contact materials

### Declaration of compliance for food contact materials



Article Nr: TE30Bxxx  
TE30Nxxx

Product IM-10

We, Alfa Laval Tank Equipment A/S, hereby certify that the plastic articles intended to come into contact with product included in the article stated above comply with the Regulation (EC) No. 1935/2004 and the Regulation (EC) No. 10/2011 both in their relevant versions on materials and articles intended to come in contact with food.

Finished articles subject to an overall migration limit of 10 mg/dm<sup>2</sup> or 60 mg/kg.  
The following substances subject to limitations are used in the above stated article:  
SML:

PEEK 450G (PEEK GLD FG 140)  
Diphenylsulphor: 3 mg/kg food  
1,4 Dihydroxybenzol: 0.6 mg/kg food  
4,4' Defluorobenzopheneone: 0.05 mg/kg food  
(TFE: 0.05 mg/kg/kg food)

PFA and PTFE  
TFE: 0.05 mg/kg food  
PPVE: 0.05 mg/kg food

PVDF  
VDF: 5 mg/kg food  
Antioxydant: 5 mg/kg food

Migration from the plastic articles has been investigated by calculations as laid down in paragraph (32) in Regulation (EC) No. 10/2011, to control that the migration limits and other requirements are fulfilled. The articles can be used, within its application area, with all type of foods at batch size above 1,500 kg\*.

We also certify that the plastic articles intended to come into contact with product included in the article stated above are also entirely in accordance with the present US regulation FDA CFR 21§ 177.

Ishoj, 01-01-2014

A handwritten signature in blue ink, appearing to read 'Henrik Falster-Hansen'.

Henrik Falster-Hansen,  
R&D Manager  
Alfa Laval Tank Equipment A/S

\*Based on worst case scenario = all of the free monomer in the plastic migrates to one batch.

Alfa Laval Tank Equipment A/S  
Baldershoj 19, DK-2635 Ishoej  
Tel switchboard: +45 43 55 86 00 - Fax switchboard: +45 43 55 86 01

**How to contact Alfa Laval**

Contact details for all countries are continually updated on our website.

Please visit [www.alfalaval.com](http://www.alfalaval.com) to access the information directly.

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