

## Instrument

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To go back use the key combination [Alt] + [Left Arrow].

### 102030 Multiwave PRO Microwave Oven 50Hz

Multiwave PRO is a versatile and modular microwave reaction system for sample preparation and synthesis. The instrument supports various rotor types for fast and complete closed vessel digestion and extraction of organic and inorganic samples under high pressure and temperature as well as for high-throughput method development, parallel optimization and multigram synthesis of valuable compounds in pharmaceutical, biomedical and other organic-chemical synthesis laboratories. Two standard magnetrons of 1000 W deliver up to 1800 W microwave power (limited by the software) in an unpulsed mode over the full power range. The sophisticated software prevents thermal overshoots and the design of the microwave applicator provides utmost field density with a high homogeneity, which allows efficient heating. The applied microwave energy is continuously controlled by optional wireless sensors for internal temperature and vessel pressure and an IR sensor to monitor the temperature of all vessels permanently. Three different temperature sensors are permanently controlling the magnetrons, the exhaust unit and the dissipated exhaust air. Together with the constant cooling during operation, the instrument provides maximum safety.

#### Comes with:

Mains cable with plug CEE Type 7 (Central European), 3 m exhaust hose, basic tools and instruction manual

#### Included basic tools:

1# 74904 Hose Clip Dmin=70 Dmax=92

Power supply: 230 V, 50 Hz, 3680 VA



Fig. 1 Multiwave PRO

### 102031 Multiwave PRO Microwave Oven 60Hz

Same as 102030 Multiwave PRO Microwave Oven 50Hz, but for 230 V, 60 Hz and mains cable with twist lock plug model NEMA N6-20(P) (North American type).

### **108040 Multiwave PRO SOLV Microwave Oven 50Hz**

102030 Multiwave PRO Microwave Oven 50Hz already equipped with 104631 Safety Module SOLV PRO and 5699 Magnetic Stirrer Device.

Ready for use with organic solvents in microwave synthesis and microwave-assisted extractions.

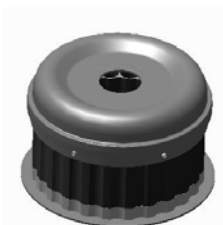
### **108041 Multiwave PRO SOLV Microwave Oven 60Hz**

102031 Multiwave PRO Microwave Oven 60Hz already equipped with 104631 Safety Module SOLV PRO and 5699 Magnetic Stirrer Device.

Ready for use with organic solvents in microwave synthesis and microwave-assisted extractions.

## Rotors

### 129750 Rotor 24HVT50



High-throughput rotor with Rotor Lid 24HVT and 24 SmartVent technology vessels made of PTFE-TFM (50ml).

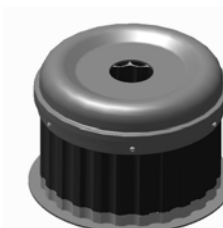
#### Applications:

Digestion and acid leaching of all kind of samples including food and biological samples, waste water and sludge, soil and sediments, EPA-procedures (3015A, 3051A, 3052), routine food samples, environmental samples, agricultural samples.

#### Comes with:

1# 129749 Rotor 24HVT50 (without vessels),  
24# 104452 Pressure Vessel HVT50,  
1#103438 Handling Tool for HVT

### 161101 Rotor 24HVT80



High-throughput rotor with Rotor Lid 24HVT and 24 SmartVent technology vessels made of PTFE-TFM.

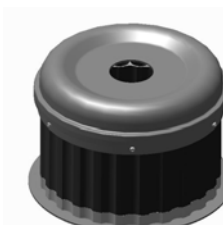
#### Applications:

Digestion and acid leaching of all kind of samples including food and biological samples, waste water and sludge, soil and sediments, EPA-procedures (3015A, 3051A, 3052), routine food samples, environmental samples, agricultural samples.

#### Comes with:

1# 161099 Rotor 24HVT80 (without vessels),  
24# 161100 Pressure Vessel HVT80,  
1#103438 Handling Tool for HVT

### 176270 Rotor 41HVT56



High-throughput rotor with 41 SmartVent technology vessels made of PTFE-TFM.

#### Applications:

Digestion and acid leaching of all kinds of samples including biological, environmental, agricultural, cosmetic and pharmaceutical samples.

#### Comes with:

1# 176271 Rotor 41HVT56 (without vessels),  
41# 176282 Pressure Vessel HVT56,  
1#103438 Handling Tool for HVT

#### Not included but required:

1# 102168 IR Temperature Sensor MW PRO

### 5701 Rotor 16MF100



Medium-throughput rotor with 16# 5710 Pressure Vessel MF100 made of PEEK and PTFE-TFM (100 mL) for routine and quality control applications. The rotor can be closed easily by the help of a multifunctional bayonet lid. The lid serves as rack for up to 16 vessels and protection shield during reaction. Large figures on the lid and on the tray make sample positioning and tracing easy. Built-in air cooling guides made of reinforced high performance plastic provide fast cooling after reaction as well as protection in case of spontaneous reactions.

All parts are made of highly resistant materials and can be cleaned easily.

**Note:**

An upgrade to a high pressure rotor can be done by exchanging 2432 Vessel Jacket M100 PEEK with 2738 Vessel Jacket Ceramics.

**Application:**

Sample preparation: Various kind of samples including food and biological samples, waste water and sludge, soil and sediments, EPA-procedures (3015A, 3051A, 3052), beverages, metals and alloys, protein hydrolysis.

Synthesis: Standard scale-up reactions at medium pressure and temperature, solid-phase chemistry, parallel synthesis at large scale, synthesis of nanomaterials, reactions under inert atmosphere

**Comes with:**

1# 5712 Rotor 16 (without vessels) and 16# 5710 Pressure Vessel MF100

**Not included:**

5698 Pressure/Temperature Sensor Accessory, 13686 Rack 16 and 8564 Seal Forming Device for 8 Caps

### 5702 Rotor 16HF100



Medium-throughput rotor with 16# 5711 Pressure Vessel HF100 made of ceramics and PTFE-TFM (100 mL) for versatile applications. The rotor can be closed easily by the help of a multifunctional bayonet lid. The lid serves as rack for up to 16 vessels and protection shield during reaction. Large figures on the lid and on the tray make sample positioning and tracing easy. Built in air cooling guides made of reinforced high performance plastic provide fast cooling after reaction as well as protection in case of spontaneous reactions.

All parts are made of highly resistant materials and can be cleaned easily.

**Application:**

Sample preparation: Various kind of samples including soil and sediments (contaminated), geological materials, metals and ores, glass and quartz, mixed organic/inorganic materials, protein hydrolysis.

Synthesis: Standard scale-up reactions at elevated pressure and temperature, parallel synthesis at large scale, multigram library generation

**Comes with:**

1# 5712 Rotor 16 (without vessels) and 16# 5711 Pressure Vessel HF100

**Not included:**

5698 Pressure/Temperature Sensor Accessory, 13686 Rack 16 and 8564 Seal Forming Device for 8 Caps

### 104273 Rotor 8NXF100



Rotor with 8# 104275 Pressure Vessel NXF100 made of ceramics and PTFE-TFM (100 mL) for difficult samples and various applications, even for inhomogeneous samples.

The rotor upper plate made of aluminum contains a unique, patented hydraulic pressure sensor for simultaneous measurement of all 8 vessels with wireless data transmission to the oven. The rotor can be closed easily by the fastening screws and a multifunctional bayonet lid combined with a safety closure by a bolt. The lid serves as rack for up to 8 liners as well as protection shield. The protective casings made of reinforced high performance plastic work as cooling air guides to provide fast cooling after reaction and as protection in case of

spontaneous reactions.

All parts are made of highly resistant materials and can be cleaned easily. Upgrade to Rotor 8NXQ80 can be done easily by replacing PTFE-TFM liners and the ceramic vessel jackets with quartz vessels and the suitable lip type seals.

#### **Applications:**

Sample preparation: All kind of samples including ceramics, refractories, ores and ashes.

Synthesis: Scale-up reactions at elevated temperature and pressure, synthesis of nanomaterials, reactions with gaseous reagents.

#### **Comes with:**

1# 104271 Rotor 8N (without Vessels), 8# 104275 Pressure Vessel NXF100 and 10684 Seal Forming Tool X

### 104274 Rotor 8NXQ80



Rotor with 8# 104276 Pressure Vessel NXQ80 made of quartz (80 mL) for high temperature reactions of the most demanding samples. The rotor upper plate made of aluminum contains a unique, patented hydraulic pressure sensor for simultaneous measurement of all 8 vessels with wireless data transmission to the oven. The rotor can be closed easily by the fastening screws and a multifunctional bayonet lid combined with a safety closure by a bolt. The lid serves as protection shield in case of spontaneous reactions. The protective casings made of reinforced high performance plastic work as cooling guides to provide fast cooling after reaction and as protection in case of spontaneous reactions.

All parts are made of highly resistant materials and can be cleaned easily.

#### **Applications:**

Sample preparation: All kind of samples including plastics, oil, grease and coal. No samples, which require HF-usage.

Synthesis: Near-critical water chemistry, scale-up reactions at extreme temperature and pressure, synthesis of nanomaterials, reactions with gaseous reagents

#### **Comes with:**

1# 104271 Rotor 8N (without Vessels), 8# 104276 Pressure Vessel NXQ80 and 10684 Seal Forming Tool X

### 24176 Rotor 16SOLV MF100



Rotor for various microwave-heated applications using organic solvents, e.g. for the replacement of slow classical methods like Soxhlet extraction, dissolution of polymers and derivatization reactions.

The optional, but mandatory 104631 Safety Module SOLV PRO helps to prevent the danger of solvent vapor explosions. The optional, but required 5698 Pressure/Temperature Sensor Accessory allows accurate temperature profile processes according to national and international standards (e.g. EPA 3546).

The rotor can be loaded with up to 16# 24174 Pressure Vessel SOLV MF100.

The vessels consist of a PTFE-TFM liner within a reinforced PEEK vessel jacket. Each vessel is hermetically closed with a cone-type seal cap, containing a metal safety disk.

Both jackets and liner are fully compatible with acid digestion. An upgrade to a dual-use for extraction and reaction can be achieved by simply interchanging the screw caps. An additional set of liners for acid digestion is recommended.

#### **Application:**

Extraction of soil, sewage sludge and sediments, extraction of polymers, packaging material and food, dissolution of polymers, derivatization reactions.

#### **Comes with:**

1# 5712 Rotor 16 (without vessels) and 16# 24174 Pressure Vessel SOLV MF100

#### **Not included:**

5698 Pressure/Temperature Sensor Accessory, 104631 Safety Module SOLV PRO

### 24177 Rotor 16SOLV HF100



Rotor for various microwave-heated applications using organic solvents, e.g. for the replacement of slow classical methods like Soxhlet extraction, dissolution of polymers and derivatization reactions. The optional, but mandatory 104631 Safety Module SOLV PRO helps to prevent the danger of solvent vapor explosions. The optional, but required Pressure/Temperature Sensor Accessory (5698 Pressure/Temperature Sensor Accessory) allows accurate temperature profile processes according to national and international standards (e.g. EPA 3546), while the IR Temperature Sensor controls vessel-to-vessel deviations.

The rotor can be loaded with up to 16 Pressure Vessel SOLV HF100 (24175 Pressure Vessel SOLV HF100). The vessels consist of a PTFE-TFM liner within a ceramic vessel jacket. Each vessel is hermetically closed with a cone-type seal cap containing a metal safety disk.

Both jackets and liner are fully compatible with acid digestion. An upgrade to a dual-use configuration can be achieved by simply interchanging the screw caps.

#### **Application:**

Extraction of all kind of samples, dissolution of polymers, derivatization reactions for e.g. GC or LC, determination of polymerization degree of plastics and rubber

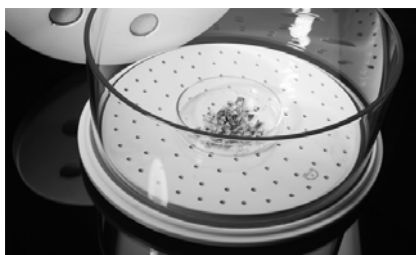
#### **Comes with:**

1# 5712 Rotor 16 (without vessels) and 16# 24175 Pressure Vessel SOLV HF100

#### **Not included:**

5698 Pressure/Temperature Sensor Accessory, 104631 Safety Module SOLV PRO

### 6450 Rotor 1DRY



Rotor for fast and efficient drying by the help of microwave heating. Samples like sewage sludge and soil as well as biological materials can be treated. Sintered glass filters in the lid avoid contamination of the samples by airborne dust. The exhaust unit removes humidity and odour and cools the samples after drying. The slightly self-heating glass tube of the chamber avoids condensation of humidity on the rotor walls.

sensitive material will not get charred.

#### Applications:

Soil and sediments  
Sewage sludge  
Biological materials, plants, food  
Standard reference materials prior to analysis

### 40422 Rotor 64MG5



Fully equipped Rotor (body and lid) with 1# 41214 Set of Vials MG5 (200PCS), 64# 41188 Screw Cap Vial MG5 and 1# 41186 Set of Seals for Vials MG5 (200PCS). The reaction vessels are standard Wheaton® glass vials (15x46 mm), made of borosilicate glass, Type I. The vials are arranged in 16 groups of 4 for utmost temperature homogeneity. Both items, vials as well as seals are disposable to avoid laborious cleaning procedures.

#### Applications:

Sample preparation: Digestion of microsamples from biological material, protein hydrolysis.

Synthesis: Method development, parallel optimization, library generation, derivatizations, preparation of nanoparticles.

#### Comes with:

1# 41218 Rotor 64 (Without Vials),  
1# 41214 Set of Vials MG5 (200PCS),  
64# 41188 Screw Cap Vial MG5,  
1# 41186 Set of Seals for Vials MG5 (200PCS),  
1# 43298 Venting Tool MG5

### 79114 Rotor 4X24 MG5



Fully equipped rotor (body and lid) with four SiC Wellplate 24, its corresponding holders, a package of 200 disposable Wheaton<sup>®</sup> glass vials, 96 PEEK screw caps and 200 disposable PTFE seals.

**Applications:**

- Method development
- Parallel optimization
- Library generation
- Derivatizations
- Protein hydrolysis
- Preparation of nanoparticles

**Comes with:**

- 1# 41216 Rotor 4X48 (Without Wellplate)
- 4# 79110 SiC Wellplate 24
- 4# 79112 Holder for Wellplate 24
- 1# 41214 Set of Vials MG5 (200PCS)
- 96# 41188 Screw Cap Vial MG5
- 1# 41186 Set of Seals for Vials MG5 (200PCS)
- 1# 43298 Venting Tool MG5

**Not Included:**

- 41219 Vial handling tool



## Packages

### 143998 Multiwave PRO 50Hz Package 24HVT50

Complete package including:  
102030 Multiwave PRO Microwave Oven 50Hz and 129750 Rotor 24HVT50.

### 143999 Multiwave PRO 60Hz Package 24HVT50

Complete package including:  
102031 Multiwave PRO Microwave Oven 60Hz and 129750 Rotor 24HVT50.

### 177946 Multiwave PRO 50Hz Package 41HVT56

Complete package including:  
102030 Multiwave PRO Microwave Oven 50Hz and 176270 Rotor 41HVT56.

### 177947 Multiwave PRO 60Hz Package 41HVT56

Complete package including:  
102031 Multiwave PRO Microwave Oven 60Hz and 176270 Rotor 41HVT56.

### 105678 MW PRO PHARMA QUALIFICATION PACKAGE

The MW PRO Pharma Qualification Package includes DQ, IQ, OQ and PQ, Risk Analysis, 21 CFR Part 11 checklist, Deviation List, Traceability Matrix and user SOP. The documentation fulfills the requirements of GMP, 21 CFR Part 11, GAMP 5, USP<1058> and covers all steps of a complete instrument qualification.

### 162349 MW PRO PHARMA REQUALIFICATION

The MW PRO Pharma Requalification Documentation contains all relevant documents for the instrument requalification in pharmaceutical companies. This document can be used for requalification of Multiwave PRO, only. For the first instrument qualification the 105678 MW PRO PHARMA QUALIFICATION PACKAGE has to be applied.

## Rotors, Spare Parts, Vessels & Consumables

### Rotor 48

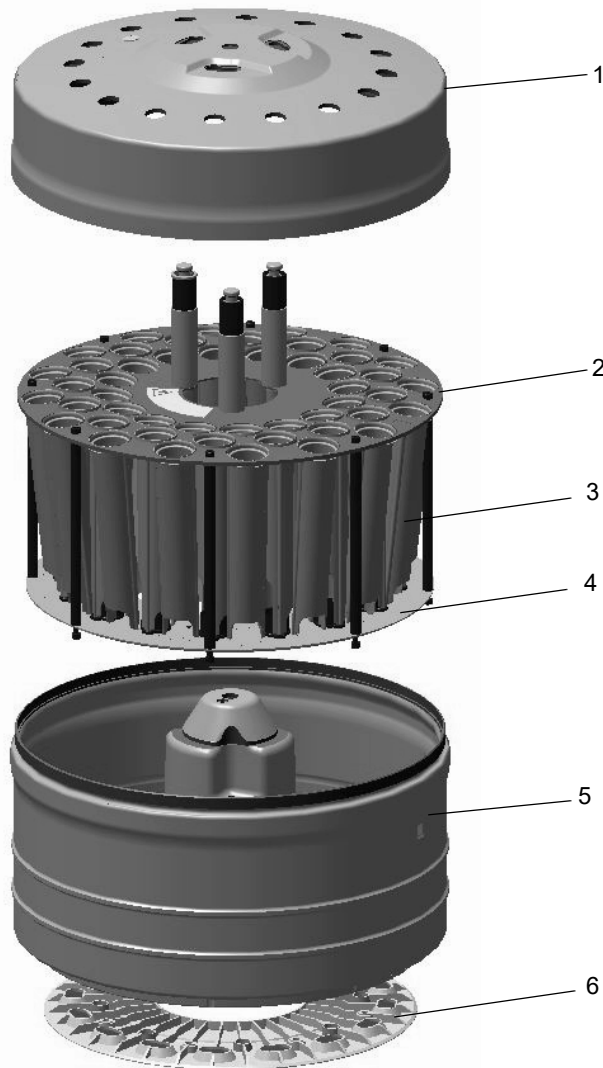


Fig. 2 Rotor 48MF50 (without vessels)

No.	Mat.No. / Item
1	21104 Rotor 48 Lid
2	21198 Rotor 48 Tray
3	21197 Rotor Inner Base Ring 48
4	20773 Vessel Holder F50
5	21105 Rotor 48 Body
6	104310 Rotor Base Ring 48 with Magnets

**22796 Rotor 48 (without Vessels)**

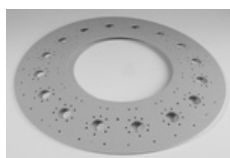
Complete 48 position rotor without reaction vessels and sensors.

**Comes with:**

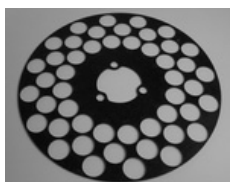
23664 Unlock Disk for Seal M50

**21104 Rotor 48 Lid**

Bayonet lid for closing Rotor 48. The lid can also be used as rack for 16 liners.

**21197 Rotor Inner Base Ring 48**

Ring made of PP for positioning the 20773 Vessel Holder F50 and fixing the Rotor Base Ring.

**21198 Rotor 48 Tray**

Central tray made of PP-GMT, mounted in the upper part of the Rotor 48 Body. For fixing the 20773 Vessel Holder F50.

**21105 Rotor 48 Body**

Bowl-shaped body of the 20773 Vessel Holder F50.

**20773 Vessel Holder F50**

The multifunctional holder combines three functions: positioning of the vessels, cooling air guide and protection shield in case of vessel damages. For use in 22796 Rotor 48 (without Vessels).

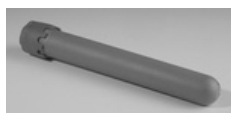
**20802 Seal for Vessel Holder 48**

Seal made of silicone to avoid influences of the cooling air on the IR measurement at the bottom of 22800 Rotor 48MF50 and 90088 Rotor 48MF50 TFM.

**104310 Rotor Base Ring 48 with Magnets**

Central ring for reinforcing and positioning Rotor 48 in the oven. The black ring is equipped with white reflective marks and with magnets for the position recognition system of Multiwave 3000 or Multiwave PRO.

**Not included:** 6212 Cheese Head Screw M5x8 Titan to fix the ring

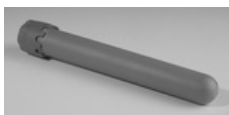
**22533 Pressure Vessel MF50**

Complete reaction vessel for various applications under medium pressure and temperature, see Fig. 3. The 21143 Liner F50 PFA is made of PFA and has an O-ring on the top. It is supported by the 20620 Vessel Jacket M50 PEEK.

The vessels is closed by the 20619 Screw Cap M50 made of PEEK, and the cone-shaped 22531 Seal for Pressure Vessel MF50 made of PTFE-TFM. A vent pipe for convenient gas release and a safety disk are integrated.

Specifications:	Vessel volume:	50 mL
	Max. filling volume:	25 mL
	Operating parameters:	200°C at 20 bar (290 psi)

### 100154 Pressure Vessel MF50 TFM



Complete reaction vessel for various applications under medium pressure and temperature, see Fig. 3. The 90018 Liner F50 TFM is made of TFM and has an O-ring on the top. It is supported by the 20620 Vessel Jacket M50 PEEK.

The vessel is closed by the 20619 Screw Cap M50 made of PEEK, and the cone-shaped 22531 Seal for Pressure Vessel MF50 made of PTFE-TFM. A vent pipe for convenient gas release and a safety disk are integrated.

Specifications:	Vessel volume:	50 mL
	Max. filling volume:	25 mL
	Operating parameters:	200°C at 20 bar (290 psi)

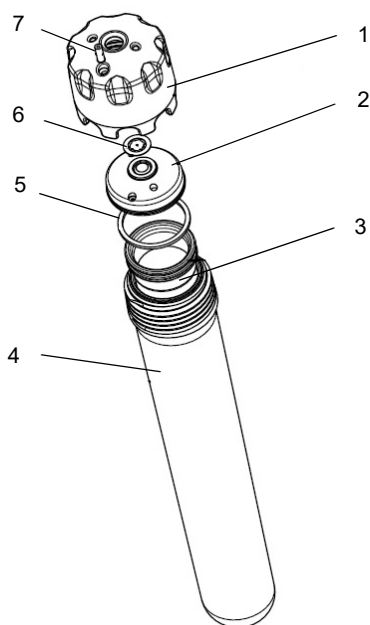


Fig. 3 Pressure vessel MF50

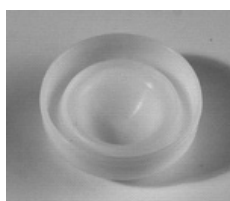
No.	Mat.No. / Item
1	20619 Screw Cap M50
2	22531 Seal for Pressure Vessel MF50
3	90018 Liner F50 TFM 21143 Liner F50 PFA
4	20620 Vessel Jacket M50 PEEK
5	10302 O-Ring 22x2
6	21274 Safety Disk M50
7	22794 Vent Pipe M50

**20619 Screw Cap M50**

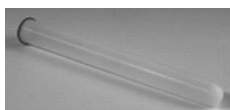
Cap of 22533 Pressure Vessel MF50 made of fiber-reinforced PEEK. The cap holds the optional seal, the safety disk and the vent pipe.

**Not included:**

22531 Seal for Pressure Vessel MF50, 21274 Safety Disk M50 and 22794 Vent Pipe M50

**22531 Seal for Pressure Vessel MF50**

Cone-type seal made of PTFE-TFM with venting system ensures perfect closure during reaction. Controlled pressure release via the 22794 Vent Pipe M50 facilitates handling. Minimized dead space volume reduces danger of contaminations or losses and makes rinsing easy. Used in 22533 Pressure Vessel MF50 and 100154 Pressure Vessel MF50 TFM.

**21143 Liner F50 PFA**

Reaction vessel made of PFA with a volume of 50 mL. Used as liner in 22533 Pressure Vessel MF50.

**Not included:**

10302 O-Ring 22x2

**90018 Liner F50 TFM**

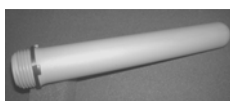
Reaction vessel made of TFM with a volume of 50 mL. Used as liner in 100154 Pressure Vessel MF50 TFM

**Not included:**

10302 O-Ring 22x2

**20620 Vessel Jacket M50 PEEK**

Supporting vessel jacket for 22533 Pressure Vessel MF50 and 100154 Pressure Vessel MF50 TFM made of fiber-reinforced PEEK. The jacket protects the 21143 Liner F50 PFA and 90018 Liner F50 TFM against deformation at elevated pressure and temperature.

**47751 Sensor Vessel Jacket M50 PEEK**

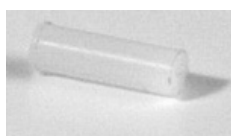
Supporting vessel jacket made of fiber-reinforced PEEK, equipped with a spacer ring for 21290 Pressure/Temperature Sensor M50. The jacket protects the 21143 Liner F50 PFA against deformation under medium pressure and temperature. For use with 21290 Pressure/Temperature Sensor M50 or 25493 Pressure Sensor M50 only.

**10302 O-Ring 22x2**

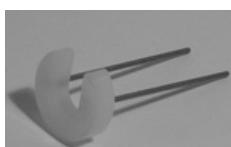
Chemically and thermally resistant O-ring for 21143 Liner F50 PFA and 90018 Liner F50 TFM. It prevents the release of reaction gases via the thread of the screw cap during vessel venting.

**21274 Safety Disk M50**

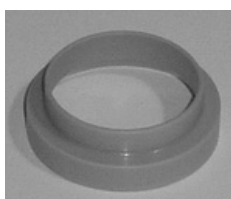
Safety disk, made of corrosion-resistant alloy, with a burst pressure of 35 bar. Protects 22533 Pressure Vessel MF50 and 100154 Pressure Vessel MF50 TFM in case of overpressure during spontaneous reactions.

**22794 Vent Pipe M50**

The vent pipe M50 is made of PTFE (L=8 mm). After reaction, the residual pressure is released by the vent pipe and not via the thread of the screw cap.

**23511 Seal Ejector M50**

The seal ejector is used to remove the seal of the 21290 Pressure/Temperature Sensor M50 in case of repair or replacement. It is used in combination with the 23664 Unlock Disk for Seal M50 and 25493 Pressure Sensor M50.

**23664 Unlock Disk for Seal M50**

The unlock disk is used to remove the seal of the 22533 Pressure Vessel MF50, 100154 Pressure Vessel MF50 TFM and of the 21290 Pressure/Temperature Sensor M50 in case of repair or replacement. In case of replacement on the p/T- or p-sensor it is used in combination with 23511 Seal Ejector M50 and 25493 Pressure Sensor M50.

**23459 Seal Forming Tool p/T M50**

This tool is delivered with each 21290 Pressure/Temperature Sensor M50 and 25493 Pressure Sensor M50.

Combines two different functions:

Expanding the lip type seal of the 21290 Pressure/Temperature Sensor M50 prior to closing the vessel.

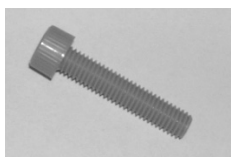
Ejecting the seal of 22533 Pressure Vessel MF50 and 100154 Pressure Vessel MF50 TFM in case of repair or replacement of the seal.

**23454 Tie Rod 48**



Rod to be mounted on the 21105 Rotor 48 Body. With conical end for easy assembling. Eight rods are required for one rotor.

**23455 Cheese Head Screw M5x25 PEEK**



Allen screw made of PEEK to fix the 23454 Tie Rod 48.

**108033 Consumables Set 16# MF50**

Sealing Parts for Rotor 48MF50 including 16# 21274 Safety Disk M50, 16# 22531 Seal for Pressure Vessel MF50 and 16# 10302 O-Ring 22x2

**26334 Consumables Set MF50**



Sealing parts for Rotor 48MF50.

Qty.	Mat.No. / Item
48	21274 Safety Disk M50
48	22531 Seal for Pressure Vessel MF50
50	10302 O-Ring 22x2
48	22794 Vent Pipe M50

**24454 Set of O-Rings 100Pcs**



Set of 100# 10302 O-Ring 22x2 for the liners of 90018 Liner F50 TFM and 21143 Liner F50 PFA.



## Rotor 24HVT50

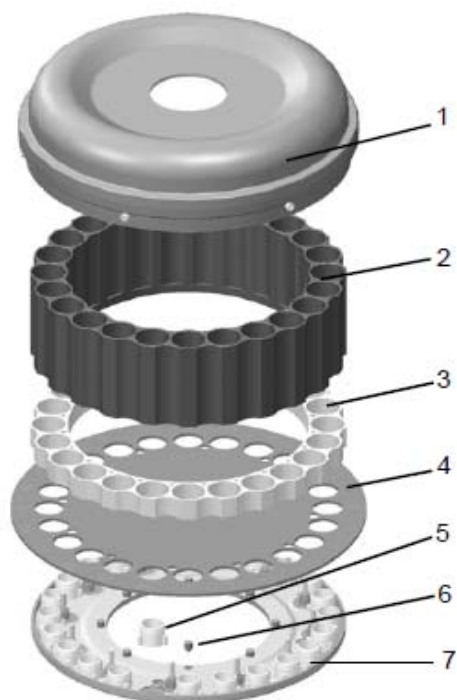
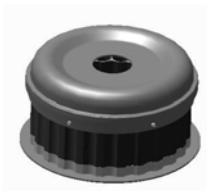


Fig. 4 Rotor 24HVT50 (without vessels)

No.	Mat.No.	Item
1	170416	Rotor Lid 24HVT
2	129666	Rotor Body 24HVT50
3	129742	Rotor Base 24HVT
4	129744	Rotor Separation Plate 24HVT
5	129743	Rotor Seal 24HVT
6	161284	Spacing Bolt 24HVT
7	129745	Rotor Centering Ring 24HVT

## 129749 Rotor 24HVT50 (without vessels)



High-throughput rotor for routine and quality control applications.

**Comes with:**  
1# 170416 Rotor Lid 24HVT

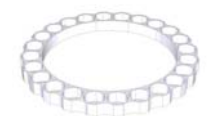
**Not included:**  
24# 104452 Pressure Vessel HVT50

## 129666 Rotor Body 24HVT50



The rotor body consists from an PTFE coated aluminum. It allows safe operation of the pressure vessels at high pressure.

## 129742 Rotor Base 24HVT



The rotor base is made from PTFE and works as the mechanical connection between separation plate and 129666 Rotor Body 24HVT50 or 161086 Rotor Body 24HVT80. It leads the microwave radiation directly to the pressure vessels.

### 129744 Rotor Separation Plate



The black separation plate works as the handle for the 129749 Rotor 24HVT50 (without vessels) or 161099 Rotor 24HVT80 (without vessels) and shows the position of every single vessel.

## 170416 Rotor Lid 24HVT



Rotor Lid 24HVT for easy cleaning and to prevent corrosion.

**Comes with:**  
2# 169329 Rotor Lid Foam 24HVT (5 pcs)

## 169329 Rotor Lid Foam 24HVT (5 pcs)



Replacement rotor lid foam.

## 129743 Rotor Seal 24HVT



The seal is made from silicone and is necessary to ensure proper air flow along the 104452 Pressure Vessel HVT50 or 161100 Pressure Vessel HVT80 and to prevent faults in temperature measurement.

## 129745 Rotor Centering Ring 24HVT



Centering ring for reinforcing and positioning 129749 Rotor 24HVT50 (without vessels) or 161099 Rotor 24HVT80 (without vessels) in the microwave oven. The ring is equipped with 3 magnets for the position recognition system.

## 104452 Pressure Vessel HVT50



Complete high-performance reaction vessel with SmartVent technology for routine and quality control applications made of PTFE-TFM.

The 104616 Vessel Body HVT50 is sealed with the 104454 Seal for Pressure Vessel HVT and closed by the 104453 Screw Cap HVT (Assembled).

Specifications:

Vessel volume:	50 mL
Max. filling volume:	25 mL
SmartVent parameters:	250°C at 20 bar (290 psi)

## 104616 Vessel Body HVT50



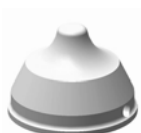
Reaction vessel body made of PTFE-TFM with a volume of 50 mL.

## 104453 Screw Cap HVT (Assembled)



Screw cap made of PTFE-TFM ensures perfect closure during pressurized reactions. The integrated venting system allows for safe and convenient relief of gaseous products during the run.

## 104454 Seal for Pressure Vessel HVT



Seal made of PTFE-TFM ensures perfect closure during pressurized reactions. Minimized dead space volume and reduced danger of contaminations or losses. Fits to 104452 Pressure Vessel HVT50 and 161100 Pressure Vessel HVT80.

**152050 Pressure Vessel Set 12# HVT50**

Set of 12# 104452 Pressure Vessel HVT50 with SmartVent technology for routine and quality control applications made of PTFE-TFM.

**188682 Spare Part Vessel Set for 24HVT50**

Includes 24# 104616 Vessel Body HVT50 and 24# 104454 Seal for Pressure Vessel HVT.

**Not included:**104453 Screw Cap HVT (Assembled).

## Rotor 24HVT80

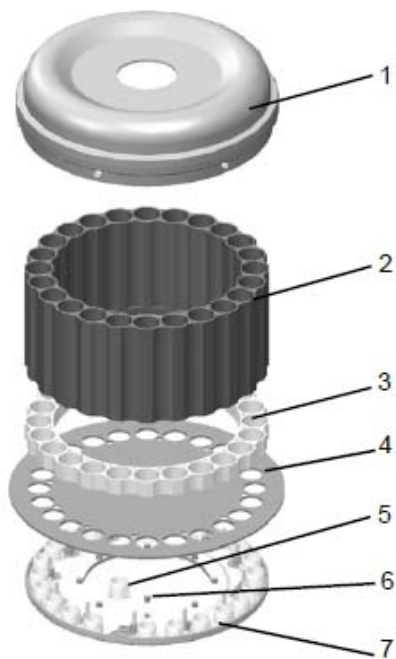
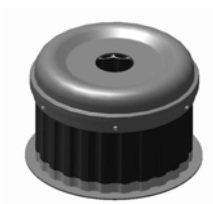


Fig. 5 Rotor 24HVT80

No.	Mat.No.	Item
1	170416	Rotor Lid 24HVT
2	161086	Rotor Body 24HVT80
3	129742	Rotor Base 24HVT
4	129744	Rotor Separation Plate 24HVT
5	129743	Rotor Seal 24HVT
6	161284	Spacing Bolt 24HVT
7	129745	Rotor Centering Ring 24HVT

**161099 Rotor 24HVT80 (without vessels)**



High-throughput rotor for routine and quality control applications.

**Comes with:**  
170416 Rotor Lid 24HVT

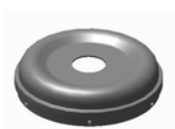
**Not included:**  
24# 161100 Pressure Vessel HVT80

**161086 Rotor Body 24HVT80**



The rotor body consists from an PTFE coated aluminum. It allows safe operation of the pressure vessels at high pressure.

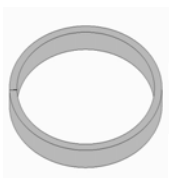
**170416 Rotor Lid 24HVT**



Rotor Lid 24HVT for easy cleaning and to prevent corrosion.

**Comes with:**  
2# 169329 Rotor Lid Foam 24HVT (5 pcs)

**169329 Rotor Lid Foam 24HVT (5 pcs)**



Replacement rotor lid foam.

**161100 Pressure Vessel HVT80**



Complete high-performance reaction vessel with SmartVent technology for routine and quality control applications made of PTFE-TFM.

The 161077 Vessel Body HVT80 is sealed with the 104454 Seal for Pressure Vessel HVT and closed by the 104453 Screw Cap HVT (Assembled).

Specifications:

Vessel volume:	80 mL
Max. filling volume:	55 mL
SmartVent parameters:	250°C at 20 bar (290 psi)

**161077 Vessel Body HVT80**



Reaction vessel body made of PTFE-TFM with a volume of 80 mL.

**163920 Pressure Vessel Set 12# HVT80**

Set of 12# 161100 Pressure Vessel HVT80 with SmartVent technology for routine and quality control applications made of PTFE-TFM.

**188683 Spare Part Vessel Set for 24HVT80**

Includes 24# 161077 Vessel Body HVT80 and 24# 104454 Seal for Pressure Vessel HVT.

**Not included:** 104453 Screw Cap HVT (Assembled).

### Rotor 41HVT56

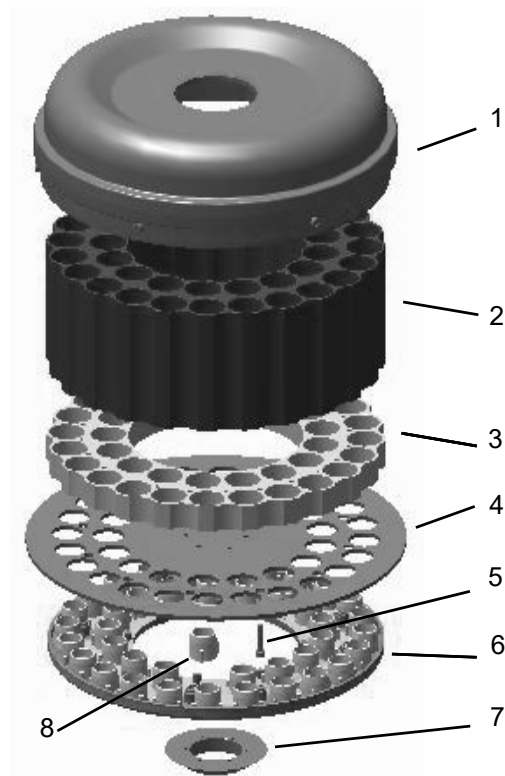


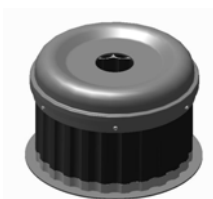
Fig. 6 Rotor 41HVT56

No.	Mat.No.	Item
1	170416	Rotor Lid 24HVT
2	176269	Rotor Body 41HVT56
3	176273	Rotor Base 41HVT
4	176275	Rotor Separation Plate 41HVT
5	161284	Spacing Bolt 24HVT
6	176277	Rotor Centering Ring 41HVT
7	176281	Rotor Centering top Ring 41HVT
8	129743	Rotor Seal 24HVT

Rotors, Spare Parts, Vessels & Consumables



### 176271 Rotor 41HVT56 (without vessels)



High-throughput rotor for the digestion and acid leaching of all kinds of samples including biological, environmental, agricultural, cosmetic and pharmaceutical samples.

**Comes with:**

170416 Rotor Lid 24HVT, 1# Turntable 41HVT assembled, 1# 177257 Speed Indication Board

**Not included:**

41# 176282 Pressure Vessel HVT56  
1#102168 IR Temperature Sensor MW PRO

### 176274 Rotor Body 41HVT56



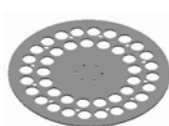
The rotor body consists from an PTFE coated aluminum. It allows safe operation of the pressure vessels at high pressure.

### 176273 Rotor Base 41HVT



The rotor base is made from PTFE and works as the mechanical connection between separation plate and 176274 Rotor Body 41HVT56. It leads the microwave radiation directly to the pressure vessels.

### 176275 Rotor Separation Plate 41HVT



The black separation plate works as the handle for the 176270 Rotor 41HVT56 and shows the position of every single vessel.

### 176277 Rotor Centering Ring 41HVT



Centering ring for reinforcing and positioning the 176270 Rotor 41HVT56 in the microwave oven. The ring is equipped with 3 magnets for the position recognition system.

### 176394 Turntable 41HVT assembled

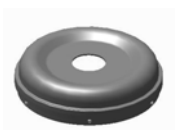


Plate-shaped support made of PEEK, which holds the 176270 Rotor 41HVT56 inside the cavity.

### 176281 Rotor Centering top Ring 41HVT



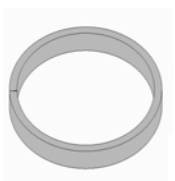
Plate-shaped support made of PE-HD, centering the 176270 Rotor 41HVT56 in the cavity.

**170416 Rotor Lid 24HVT**


Rotor Lid 24HVT for easy cleaning and to prevent corrosion.

**Comes with:**

2# 169329 Rotor Lid Foam 24HVT (5 pcs)

**169329 Rotor Lid Foam 24HVT (5 pcs)**


Replacement rotor lid foam.

**176282 Pressure Vessel HVT56**


Complete pressure vessel HVT56 providing SmartVent technology. The vessel made of PTFE-TFM (56 mL) is optimized for the digestion and acid leaching of all kinds of samples including biological, environmental, agricultural, cosmetic and pharmaceutical samples.

The 176269 Vessel Body HVT56 is sealed with the 104454 Seal for Pressure Vessel HVT and closed by the 104453 Screw Cap HVT (Assembled).

Only for Rotor 41HVT56. Cannot be used with Rotor 24HVT50 or Rotor 24HVT80.

Specifications:	Vessel volume:	56 mL
	Max. filling volume:	30 mL
	SmartVent parameters:	250°C at 20 bar (290 psi)

**176269 Vessel Body HVT56**


Reaction vessel body made of PTFE-TFM with a volume of 56 mL.

Only for Rotor 41HVT56. Cannot be used with Rotor 24HVT50 or Rotor 24HVT80.

**188684 Spare Part Vessel Set for 41HVT56**

Includes 41# 176269 Vessel Body HVT56 and 41# 104454 Seal for Pressure Vessel HVT.

**Not included:** 104453 Screw Cap HVT (Assembled).

**Rotor 16MF100 /Rotor 16HF100**

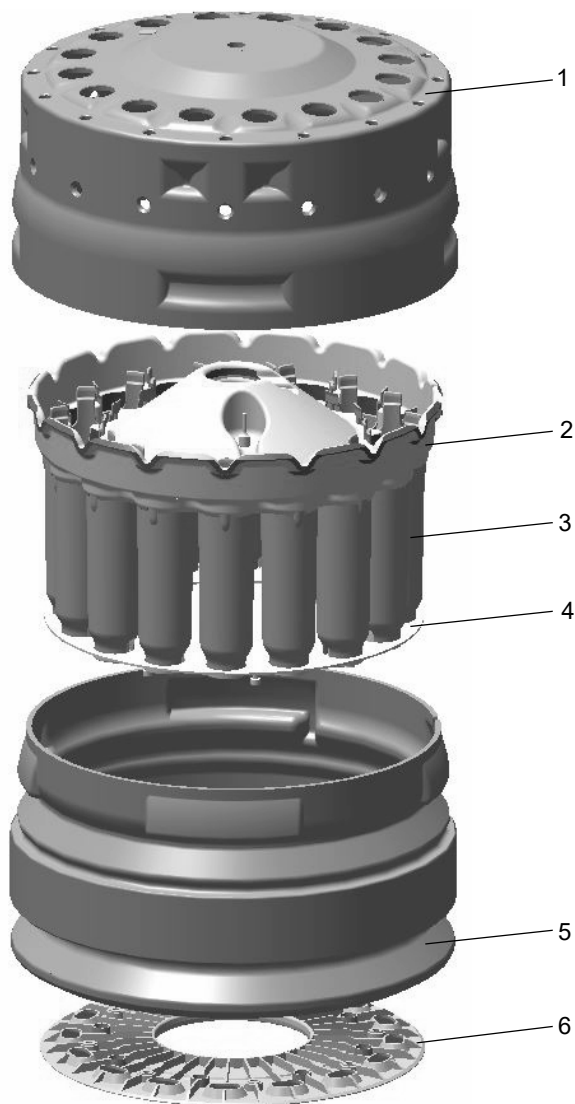


Fig. 7 Rotor 16 (without vessels)

No.	Mat.No. / Item
1	4646 Rotor 16 Lid
2	4647 Rotor 16 Tray
3	4955 Vessel Holder 7702 Seal for Vessel Holder
4	21215 Vessel Holder Positioning Ring
5	4645 Rotor 16 Body
6	104307 Rotor Base Ring HF, MF with Magnets

Rotors, Spare Parts, Vessels & Consumables

### 5712 Rotor 16 (without vessels)



16 position rotor for the 5701 Rotor 16MF100, 5702 Rotor 16HF100, 104290 Rotor 8EVAP MW PRO, 24176 Rotor 16SOLV MF100 and 24177 Rotor 16SOLV HF100.

**Comes with:**

7901 Vent Opener, 5927 Seal Forming Tool M&H

### 4645 Rotor 16 Body



Bowl-shaped body of the 5701 Rotor 16MF100, 5702 Rotor 16HF100, 104290 Rotor 8EVAP MW PRO, 24176 Rotor 16SOLV MF100 and 24177 Rotor 16SOLV HF100.

### 4646 Rotor 16 Lid



Bayonet lid for closing 5701 Rotor 16MF100, 5702 Rotor 16HF100, 24176 Rotor 16SOLV MF100 and 24177 Rotor 16SOLV HF100. The lid can also be used as rack for liners and screw caps with seals.

### 4647 Rotor 16 Tray



Central tray for positioning the vessels and the 5698 Pressure/ Temperature Sensor Accessory in the rotor.

### 104307 Rotor Base Ring HF, MF with Magnets

Central ring for reinforcing and positioning Rotor 16 in the oven. The black ring is equipped with white reflective marks and with magnets for the position recognition system of Multiwave 3000 or Multiwave PRO.

**Not included:** 6212 Cheese Head Screw M5x8 Titan to fix the ring

**4955 Vessel Holder**

The multifunctional holder combines three functions: positioning of the vessels, cooling air guide and protection shield in case of vessel damages. For 5701 Rotor 16MF100, 5702 Rotor 16HF100, 104290 Rotor 8EVAP MW PRO, 24176 Rotor 16SOLV MF100 and 24177 Rotor 16SOLV HF100.

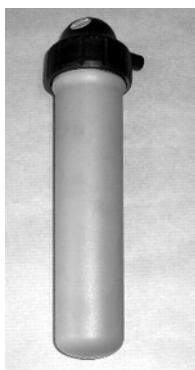
**Not included:**  
7702 Seal for Vessel Holder

**7702 Seal for Vessel Holder**

Seal made of silicone to avoid influences of the cooling air on the IR measurement at the bottom of 5701 Rotor 16MF100, 5702 Rotor 16HF100, 104290 Rotor 8EVAP MW PRO, 24176 Rotor 16SOLV MF100 and 24177 Rotor 16SOLV HF100.

**21215 Vessel Holder Positioning Ring**

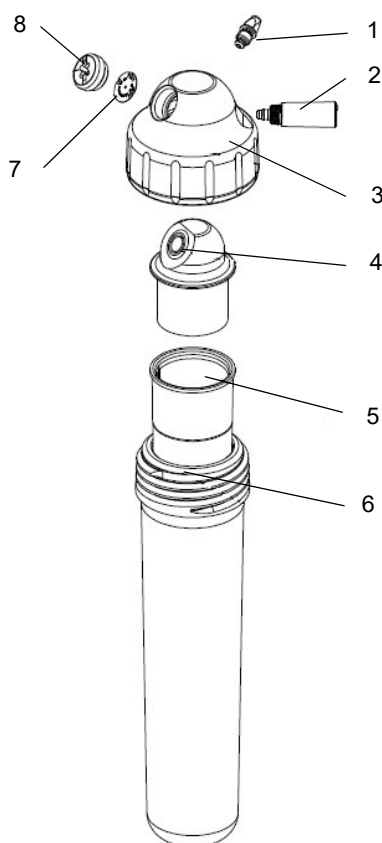
Ring made of PC to keep the vessel holders and vessels into position for appropriate IR measurement. Positioning ring is used for Rotor 16MF100, 5702 Rotor 16HF100, 24176 Rotor 16SOLV MF100, 24177 Rotor 16SOLV HF100 and 104290 Rotor 8EVAP MW PRO.

**5710 Pressure Vessel MF100**


Complete reaction vessel for routine and quality control applications under medium pressure, see Fig. 7. The 2433 Liner F100 TFM is made of PTFE-TFM and supported by the 2432 Vessel Jacket M100 PEEK.

The vessel is closed by the 4913 Screw Cap made of PEK, which contains the lip-type 2724 Seal for Pressure Vessel M+H+XF made of PTFE-TFM. A venting screw for convenient gas release and a safety disk are integrated.

Specifications:      Vessel volume:            100 mL  
                                  Max. filling volume:        50 mL  
                                  Operating parameter:       200°C at 20 bar (290 psi)



No.	Mat.No. / Item
1	2722 Syringe Connector
2	5692 Venting Screw
3	4913 Screw Cap
4	2724 Seal for Pressure Vessel M+H+XF
5	2433 Liner F100 TFM
6	2432 Vessel Jacket M100 PEEK or 2738 Vessel Jacket Ceramics
7	2720 Safety Disk M&H
8	2723 Safety Disk Holder M&H

Fig. 8 Pressure vessel MF100 or HF100.

**5711 Pressure Vessel HF100**


Complete reaction vessel for various applications under high pressure and temperature, see Fig. 7. The 2433 Liner F100 TFM is made of PTFE-TFM and supported by the 2738 Vessel Jacket Ceramics.

The vessel is closed by the 4913 Screw Cap made of PEK, which contains the lip-type 2724 Seal for Pressure Vessel M+H+XF made of PTFE-TFM. A venting screw for convenient gas release and a safety disk are integrated.

Specifications:	Vessel volume:	100 mL
	Max. filling volume:	50 mL
	Operating parameter:	240°C at 40 bar (580 psi)

**2722 Syringe Connector**


Made of PTFE-TFM for safe vapor and gas release after reaction. Compatible with lip-type seals 2724 Seal for Pressure Vessel M+H+XF, 2725 Seal for Pressure/Temperature Sensor Accessory, 11059 Seal XQ, 104646 Seal NXQ Wide, 104286 Seal NXF and 104287 Seal NXQ.

**5692 Venting Screw**


Screw for safe and convenient closing and venting of reaction vessels. Consists of a PEEK body with PTFE-TFM sealing bolt. Compatible with lip-type seals 2724 Seal for Pressure Vessel M+H+XF, 2725 Seal for Pressure/Temperature Sensor Accessory, 11059 Seal XQ.

**4913 Screw Cap**


Cap of 5710 Pressure Vessel MF100 and 5711 Pressure Vessel HF100, made of high performance thermoplastic (PEK). The cap holds the optional seal, safety disk, safety disk holder, venting screw and syringe connector.

**2724 Seal for Pressure Vessel M+H+XF**


Lip-type seal made of PTFE-TFM ensures perfect closure during pressurized reactions. The integrated venting system allows for safe and convenient relief of gaseous products after the run. Minimized dead space volume reduces danger of contaminations or losses. Fits to 5710 Pressure Vessel MF100, 5711 Pressure Vessel HF100.

**2433 Liner F100 TFM**

Reaction vessel made of PTFE-TFM with a volume of 100 mL.

Used as liner in 5710 Pressure Vessel MF100, 5711 Pressure Vessel HF100, 104275 Pressure Vessel NXF100, 24174 Pressure Vessel SOLV MF100 and 24175 Pressure Vessel SOLV HF100..

**2432 Vessel Jacket M100 PEEK**

Supporting vessel jacket for 5710 Pressure Vessel MF100 and 24174 Pressure Vessel SOLV MF100, made of fiber-reinforced PEEK. The jacket protects the 2433 Liner F100 TFM against deformation at elevated pressure and temperature.

**2738 Vessel Jacket Ceramics**

Supporting vessel jacket for 5711 Pressure Vessel HF100 and 24175 Pressure Vessel SOLV HF100.

Made of microwave transparent and chemically resistant ceramics. The jacket protects the 2433 Liner F100 TFM against deformation at high pressure and temperature. Also for easy upgrade from MF to HF vessel type. Fits also the 104275 Pressure Vessel NXF100.

**2720 Safety Disk M&H**

Safety disk, made of corrosion-resistant alloy. Protects 5710 Pressure Vessel MF100 and 5711 Pressure Vessel HF100 in case of overpressure during spontaneous reactions.

Also assembled into 14747 Pressure Sensor Accessory and 5698 Pressure/ Temperature Sensor Accessory.

**2723 Safety Disk Holder M&H**

Screw made of PEEK to hold 2720 Safety Disk M&H in position.



**26330 Consumables Set 16M&H**


Sealing parts for Rotor 16MF100 and Rotor 16HF100.

Qty.	Mat.No. / Item
16	5692 Venting Screw
16	2720 Safety Disk M&H
16	2724 Seal for Pressure Vessel M+H+XF

**20031 Screw Cap M&H (Assembled)**


Complete screw cap for both Pressure Vessels of 5710 Pressure Vessel MF100 and 5711 Pressure Vessel HF100.

**Comes with:**

2724 Seal for Pressure Vessel M+H+XF, 2720 Safety Disk M&H, 2723 Safety Disk Holder M&H, 5692 Venting Screw, 2722 Syringe Connector and 4913 Screw Cap

**16389 Set of Venting Screws (16 pcs)**

Set of 16# 5692 Venting Screws for replacement.

**26335 Consumables Set Liner F100-TFM**


Set of 8# 2433 Liner F100 TFM for all 100 mL reaction vessels of the Multiwave PRO system.

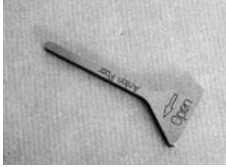
**5927 Seal Forming Tool M&H**


Prior to closing the vessels the lip type seals have to be expanded. This seal forming tool comes with each Multiwave PRO. Even when the 8564 Seal Forming Device for 8 Caps is used, the seal forming tool is needed to expand the seal of the pressure- and pressure/temperature sensors.

**6136 Liner Extractor Bolt 16**

Bolt to lift liners out of supporting jackets by pushing the jackets onto the bolt. Mounted with a thread in the tray of 5701 Rotor 16MF100, 5702 Rotor 16HF100, 104290 Rotor 8EVAP MW PRO, 24176 Rotor 16SOLV MF100 and 24177 Rotor 16SOLV HF100.

7901 Vent Opener



Key for opening the venting screw after reaction.

Rotor 8NXF100 / Rotor 8NXQ80

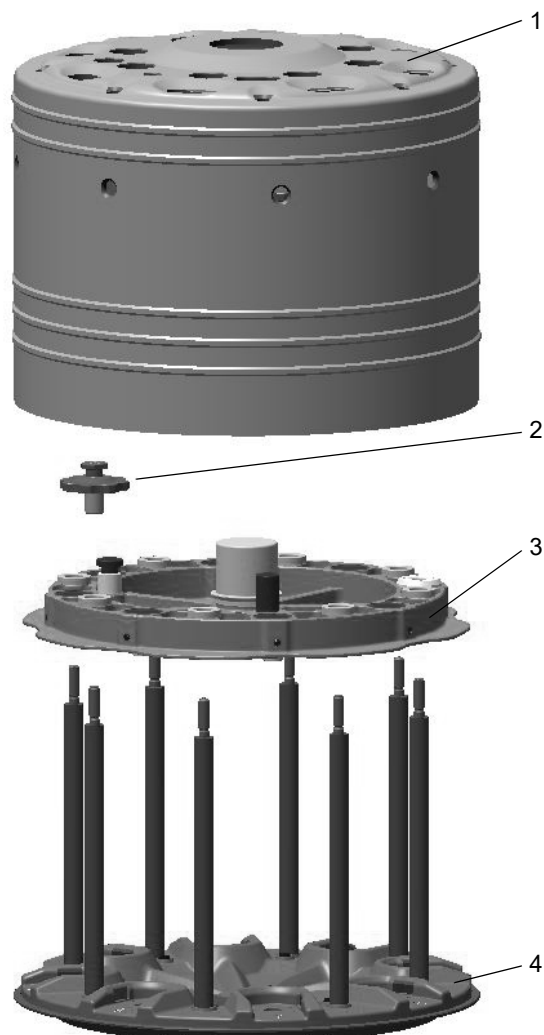


Fig. 9 Rotor 8N (without vessels)

No.	Mat.No. / Item
1	104771 Rotor 8N Lid
2	9971 Thumbwheel 10363 Fastening Screw 6212 Cheese Head Screw M5x8 Titan
3	104277 Rotor Upper Plate 8N (Assembled)
4	104313 Bottom Load Ring 8N (Assembled)

## 104271 Rotor 8N (without Vessels)



Complete 8 position rotor with aluminum upper plate.

**Comes with:**

10684 Seal Forming Tool X, 7901 Vent Opener

**Not included:**

104275 Pressure Vessel NXF100, 104276 Pressure Vessel NXQ80

## 104771 Rotor 8N Lid



Bayonet lid for closing 104273 Rotor 8NXF100 and 104274 Rotor 8NXQ80 The lid can be used as rack for liners and seal holders as well.

## 104277 Rotor Upper Plate 8N (Assembled)



Rotor sensor plate made of aluminum with integrated pressure sensor. The unique pressure measuring system consists of a hydraulic system, which transfers the pressure from all 8 vessel positions to a pressure sensor, which is located inside a shielded electronics module in the middle of the rotor upper plate.

The pressure data are transferred via infrared signals to the oven controller, while the vessel with the highest reaction pressure controls the microwave power. Energy is supplied wireless via high frequency inductions, therefore the sensor does not require any electrical plugs or batteries. No sensitive cables or plugs are necessary.

**Comes with:**

8# 9971 Thumbwheel, 8# 10363 Fastening Screw and 8# 6212 Cheese Head Screw M5x8 Titan

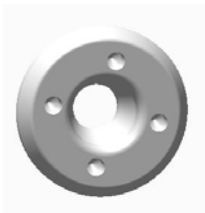
## 10337 Bottom Guard



Mounted on the bottom load ring, made of glass-fiber reinforced PPS.

Combines three functions: positioning of the vessels, guidance of the cooling air and protection of the bottom load ring in case of vessel damage.

### 104316 Centering for T-Probe N



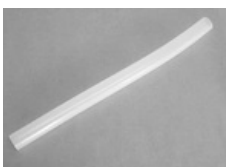
Small husk in the Rotor Upper Plate 8N for centering the T-Probe in order to avoid breakage.

### 14618 Tension Bar Short



Metallic spacing bar with threaded ends located between rotor upper plate and rotor bottom plate to counter-act the forces caused by the vessel pressure. Included in the 104313 Bottom Load Ring 8N (Assembled).

### 10365 Protection Hose 8



Silicone hose on the tension bars of 104271 Rotor 8N (without Vessels). Used as a protection against chemical influences and as elastic element to lift the rotor upper plate.

### 104313 Bottom Load Ring 8N (Assembled)



Complete assembly.

#### Comes with:

1# 10337 Bottom Guard, 8# 14606 Base Ring, 8# 14607 Distance Bush, 8# 14618 Tension Bar Short, 6# 104331 Insulation Husk, 8# 6212 Cheese Head Screw M5x8 Titan

### 9971 Thumbwheel



Made of high performance plastics. Holds optional 10363 Fastening Screw via the 6212 Cheese Head Screw M5x8 Titan to fix the 104277 Rotor Upper Plate 8N (Assembled) to the loaded rotor.

### 10363 Fastening Screw



Used in combination with the 9971 Thumbwheel to fix the rotor upper plate 8N.

#### Not included:

6212 Cheese Head Screw M5x8 Titan

**10684 Seal Forming Tool X**

The lip-type seals have to be expanded prior to closing the vessels. This seal forming tool comes with each Rotor 8N.

**11175 Liner Extractor Bolt 8**

Bolt to lift liners out of the supporting jackets by pushing the jackets onto the bolt.

**14606 Base Ring**

Made of reinforced PEEK; used as a spacer between the bottom load ring and the 10337 Bottom Guard.

**14607 Distance Bush**

Made of PEEK; used as a spacer between the bottom load ring and the 10337 Bottom Guard.

**104331 Insulation Husk**

Insulation Husk for Rotor 8N made out of PEEK.

**14855 Slipper**

Mounted on the bottom of the 104313 Bottom Load Ring 8N (Assembled) to prevent scratching of the coating of the bottom plate.

**13844 Centering Pin**



Plastic pin for correct positioning of the reference vessel in 104273 Rotor 8NXF100 and 104274 Rotor 8NXQ80. Comes together with the 13921 T-Probe or 18468 T-Probe S.

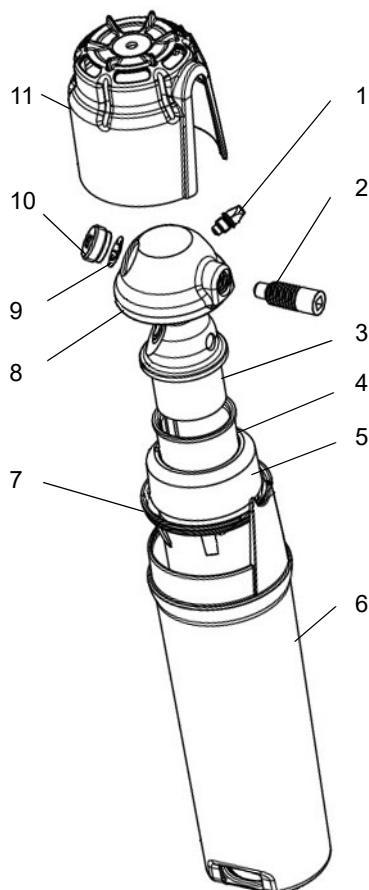
**104275 Pressure Vessel NXF100**



Complete pressure vessel for various applications under elevated pressure and temperature and reactions in pre-pressurized vessels. The 2433 Liner F100 TFM is made of PTFE-TFM and supported by the 84015 Vessel Jacket X100 Ceramics.

The vessel is closed by the 102865 Seal Holder NX made of PEK, assembled with the lip-type 104286 Seal NXF made of PTFE-TFM. A venting screw for convenient gas release and a safety disk are integrated. The complete pressure vessel comes with a 11058 Protective Casing and 102877 Protective Cap N, both made of PEEK. The pressure vessel NXF 100 can not be used with Rotor 8S of Multiwave 3000.

Specifications:	Vessel volume:	100 mL
	Max. filling volume:	50 mL
	Operating parameter:	260°C at 60 bar (870 psi)



No.	Mat.No.
1	2722 Syringe Connector
2	104284 Venting Screw N
3	104286 Seal NXF
4	2433 Liner F100 TFM
5	84015 Vessel Jacket X100 Ceramics
6	11058 Protective Casing
7	10141 Center Ring
8	102865 Seal Holder NX
9	10359 Safety Disk X
10	10358 Safety Disk Holder X
11	102877 Protective Cap N

Fig. 10 Pressure Vessel NXF100 (104275)

### 173020 Cap NXF (Assembled)



Complete cap for Pressure Vessel NXF100 for Rotor 8N.

**Comes with:**

1# 102865 Seal Holder NX, 1# 104286 Seal NXF, 1# 10359 Safety Disk X, 1# 10358 Safety Disk Holder X, 1# 2722 Syringe Connector, 1# 104284 Venting Screw N

### 104284 Venting Screw N



Screw for safe and convenient closing and venting of reaction vessels. Consists of a PEEK body with PTFE-TFM sealing bolt. Compatible with 104286 Seal NXF, 104287 Seal NXQ, 104288 Seal NXF100 for T-Probe and 104289 Seal NXQ80 for T-Probe.

### 104285 Set of Venting Screws N (8pcs)

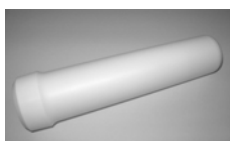
Set of 8# 104284 Venting Screw N for replacement.

### 104286 Seal NXF



Lip-type seal made of PTFE-TFM ensures perfect closure during pressurized reactions. The integrated venting system allows for safe and convenient relief of gaseous products after the run. Minimized dead space volume reduces danger of contaminations or losses. Fits to 104275 Pressure Vessel NXF100.

### 84015 Vessel Jacket X100 Ceramics



Supporting vessel jacket for 104275 Pressure Vessel NXF100, made of microwave transparent and chemically resistant ceramics. The jacket protects the 2433 Liner F100 TFM against deformation at elevated pressure and temperature.

**Note:**

Vessel Jacket X100 Ceramics comes without a thread and is therefore not compatible with the pressure vessels of Rotor 16.



### 11058 Protective Casing



The protective casing for Rotor 8S and Rotor 8N, works as cooling guide to provide fast cooling after reaction and protection in case of spontaneous reactions. A guide in the bottom ensures optimal positioning in the rotor. Perforations in the Protective Cap provide an optimal air circulation. Made of highly resistant materials (PEEK, PEK) and can be cleaned easily. Size and shape are compatible for both 104275 Pressure Vessel NXF100 and 104276 Pressure Vessel NXQ80.

The Protective Casing (11058) cannot be used for oxygen combustions.



**Comes with:** Centre Ring (10141)

### 102877 Protective Cap N



The protective cap N is made of PEEK and works as cooling air guide and mechanical protection. Fits to 104275 Pressure Vessel NXF100 and 104276 Pressure Vessel NXQ80. The protective cap can not be used with Rotor 8S of Multiwave 3000.

### 102865 Seal Holder NX



Cap of 104275 Pressure Vessel NXF100 and 104276 Pressure Vessel NXQ80, made of high performance thermoplastic (PEK). The cap holds the optional seal, safety disk, venting screw and syringe connector. The seal holder can not be used with Rotor 8S of Multiwave 3000.

**Not included:** 104286 Seal NXF or 104287 Seal NXQ, 10359 Safety Disk X, 10358 Safety Disk Holder X, 104284 Venting Screw N and 2722 Syringe Connector

### 10359 Safety Disk X



Safety disk, made of corrosion-resistant alloy. Protects 104275 Pressure Vessel NXF100 and 104276 Pressure Vessel NXQ80 in case of overpressure during spontaneous reactions. Also assembled with 104292 Immersion Tube with Seal NXQ, 104291 Immersion Tube with Seal NXF, 104323 Immersion Tube S with Seal NXQ, 104324 Immersion Tube S with Seal NXF, 104634 Immersion Tube S PTFE coated + Seal NXQ and 104635 Immersion Tube S PTFE coated + Seal NXF.

**10358 Safety Disk Holder X**


Screw made of PEEK to hold 10359 Safety Disk X in position.

**104297 Consumables Set NXF100**


Sealing parts for 104273 Rotor 8NXF100. The consumable set cannot be used with Rotor 8S of Multiwave 3000.

Qty.	Mat.No. / Item
8	104284 Venting Screw N
8	10359 Safety Disk X
8	104286 Seal NXF
8	2722 Syringe Connector
8	10358 Safety Disk Holder X
8	102865 Seal Holder NX

### 104276 Pressure Vessel NXQ80

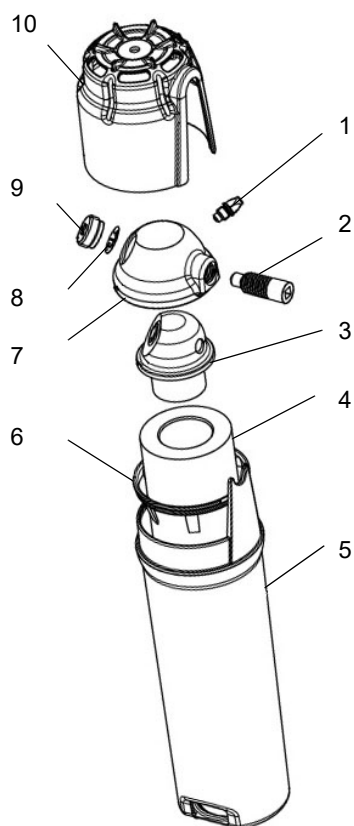


Complete pressure vessel for various applications under elevated pressure and temperature and reactions in pre-pressurized vessels.

The vessel consists of 6423 Quartz Vessel Q80 and is closed by the 102865 Seal Holder NX made of PEK, assembled with the lip-type 104287 Seal NXQ made of PTFE-TFM. A venting screw for convenient gas release and a safety disk are integrated. The complete pressure vessel comes with a 11058 Protective Casing and 102877 Protective Cap N, both made of PEEK.

Note: Do not use 6423 Quartz Vessel Q80 with hydrofluoric acid. The pressure vessel NXQ80 cannot be used with Rotor 8S of Multiwave 3000.

Specifications:	Vessel volume:	80 mL
	Max. filling volume:	40 mL
	Operating parameter:	300°C at 80 bar (1160 psi)



No.	Mat.No.
1	2722 Syringe Connector
2	104284 Venting Screw N
3	104287 Seal NXQ
4	6423 Quartz Vessel Q80
5	11058 Protective Casing
6	10141 Centre Ring
7	102865 Seal Holder NX
8	10359 Safety Disk X
9	10358 Safety Disk Holder X
10	102877 Protective Cap N

Fig. 11 104276 Pressure Vessel NXQ80

**104287 Seal NXQ**

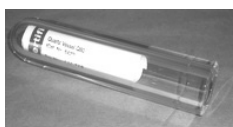

Lip-type seal made of PTFE-TFM ensures perfect closure during pressurized reactions. The integrated venting system allows for safe and convenient relief of gaseous products after the run. Minimized dead space volume and reduced danger of contaminations or losses. Fits to 104276 Pressure Vessel NXQ80.

**104646 Seal NXQ Wide**


Self-sealing lip-type seal with flange made of PTFE-TFM. Perfect closure during digestion, the venting system allows for safe and easy relief of residual pressure after digestion. Fits to 104276 Pressure Vessel NXQ80.

**129518 Seal NXQ modified**


Lip-type seal made of PTFE-TFM with glass crossbeam. Fits to 104276 Pressure Vessel NXQ80.

**6423 Quartz Vessel Q80**


Reaction vessel made of quartz glass with a volume of 80 mL. Used in 104276 Pressure Vessel NXQ80. For special applications where high temperature, pressure and extremely smooth surface is needed.

**104298 Consumables Set NXQ80**


Sealing parts for Rotor 8NXQ80. The consumable set cannot be used with Rotor 8S of Multiwave 3000.

Qty.	Mat.No. / Item
8	104284 Venting Screw N
8	10359 Safety Disk X
8	104287 Seal NXQ
8	2722 Syringe Connector
8	10358 Safety Disk Holder X
8	102865 Seal Holder NX

**Rotor 16SOLV MF100 / HF100**

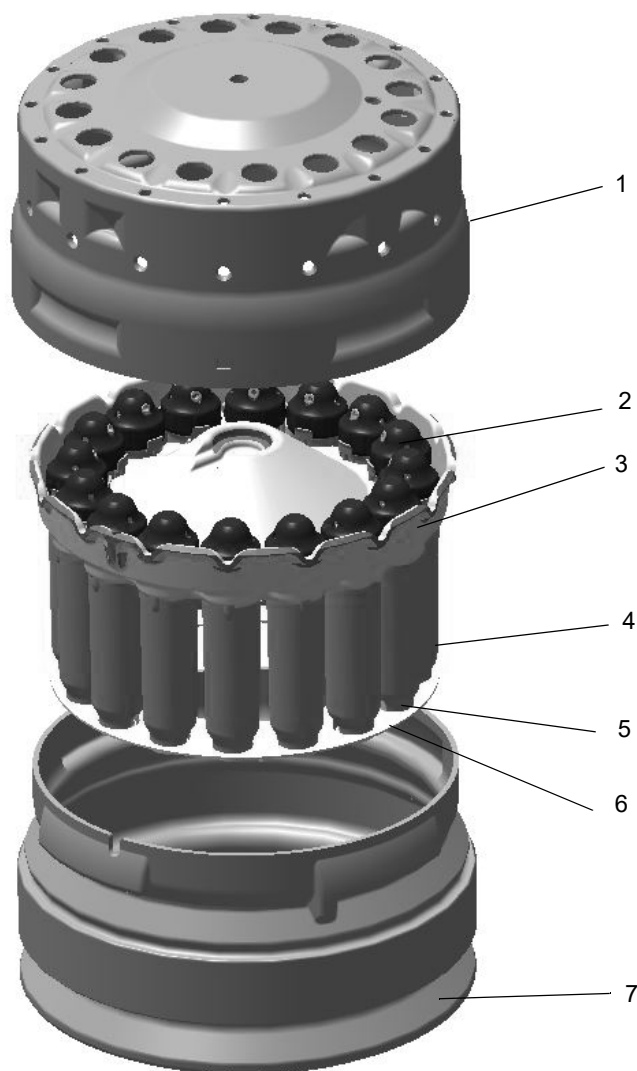


Fig. 12 Rotor 16SOLV with vessel MF100 or HF100

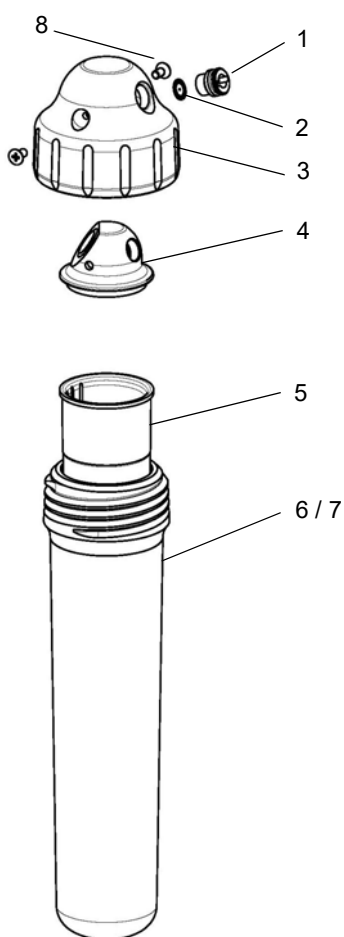
No.	Mat.No. / Item
1	4646 Rotor 16 Lid
2	24174 Pressure Vessel SOLV MF100 or 24175 Pressure Vessel SOLV HF100
3	4647 Rotor 16 Tray
4	4955 Vessel Holder
5	7702 Seal for Vessel Holder
6	21215 Vessel Holder Positioning Ring
7	4645 Rotor 16 Body and 104307 Rotor Base Ring HF, MF with Magnets

**24174 Pressure Vessel SOLV MF100**


Complete reaction vessel for solvent extraction applications, see Fig. 12. The 100 mL 2433 Liner F100 TFM is made of PTFE-TFM and supported by the 2432 Vessel Jacket M100 PEEK.

The vessel is closed by the 13801 Screw Cap SOLV made of PEK, which contains the cone-type 97161 Seal SOLV C made of PTFE-TFM. A safety disk is integrated.

Specifications:	Vessel volume:	100 mL
	Max. filling volume:	50 mL
	Operating parameter:	200°C at 18 bar (261 psi)



No.	Mat.No. / Item
1	24162 Safety Disk Holder SOLV
2	13804 Safety Disk SOLV
3	13801 Screw Cap SOLV
4	97161 Seal SOLV C
5	2433 Liner F100 TFM
6 / 7	2432 Vessel Jacket M100 PEEK or 2738 Vessel Jacket Ceramics
8	13871 Screw PEEK M3x6

Fig. 13 Pressure Vessel SOLV MF100 or HF100

### 24175 Pressure Vessel SOLV HF100



Complete reaction vessel for solvent extraction applications, see Fig. 12. The 100 mL 2433 Liner F100 TFM is made of PTFE-TFM and supported by the 2738 Vessel Jacket Ceramics.

The vessel is closed by the 13801 Screw Cap SOLV made of PEK, which contains the cone-type 97161 Seal SOLV C made of PTFE-TFM. A safety disk is integrated.

Specifications:	Vessel volume:	100 mL
	Max. filling volume:	50 mL
	Operating parameter:	200°C at 18 bar (261 psi)

### 24162 Safety Disk Holder SOLV



Screw made of PEEK to hold 13804 Safety Disk SOLV in position.

### 13804 Safety Disk SOLV



Safety disk, made of corrosion-resistant alloy, with a burst pressure of 22 bar. Protects 24174 Pressure Vessel SOLV MF100 and 24175 Pressure Vessel SOLV HF100 in case of overpressure.

### 13801 Screw Cap SOLV



Cap of 24174 Pressure Vessel SOLV MF100 and 24175 Pressure Vessel SOLV HF100, made of high performance thermoplastic (PEK). The cap holds the optional seal and safety disk.

**Not included:**

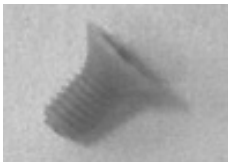
97161 Seal SOLV C, 13804 Safety Disk SOLV, 24162 Safety Disk Holder SOLV and 13871 Screw PEEK M3x6

### 97161 Seal SOLV C



Cone-type seal made of PTFE-TFM for solvent extraction applications in 24174 Pressure Vessel SOLV MF100 and 24175 Pressure Vessel SOLV HF100.

**13871 Screw PEEK M3x6**



Phillips screw to fix the 97161 Seal SOLV C in the respective 13801 Screw Cap SOLV. Two screws are used with each screw cap.

**26333 Consumables Set SOLV M&H**



Sealing parts for rotors Rotor 16SOLV MF100 and Rotor 16SOLV HF100.

Qty.	Mat.No. / Item
16	13804 Safety Disk SOLV
16	97161 Seal SOLV C
32	13871 Screw PEEK M3x6

**44086 Screw Cap SOLV (Assembled)**



Complete screw cap for both pressure vessels of Rotor 16SOLV, 24174 Pressure Vessel SOLV MF100 and 24175 Pressure Vessel SOLV HF100.

**Comes with:**  
97161 Seal SOLV C, 13804 Safety Disk SOLV, 24162 Safety Disk Holder SOLV and 2# 13871 Screw PEEK M3x6 and 13801 Screw Cap SOLV



## Rotor 1DRY

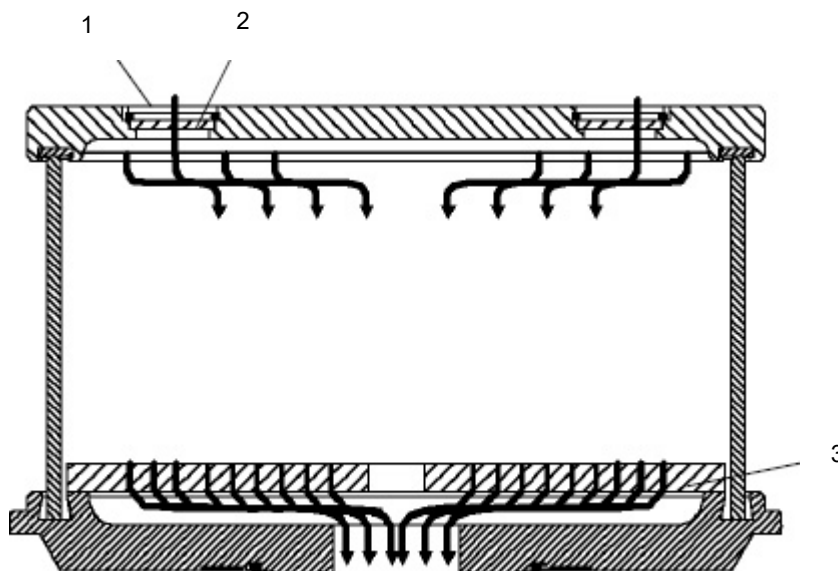
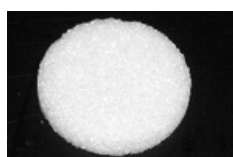


Fig. 14 Rotor 1DRY for Multiwave PRO (6450)

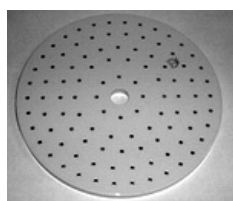
No.	Mat.No. / Item
1	77579 Filter Disk Borosilicate Glass D=30mm Porosity 0
2	77693 O-Ring 28.24x2.62 Silicone
3	77580 Desiccator Plate

### 77579 Filter Disk Borosilicate Glass D=30mm Porosity 0



Glass frit made of borosilicate glass with a diameter of 30 mm, for filtration of air passing through the drying chamber. Six filter disks are located in the top plate.

### 77580 Desiccator Plate



Porcelain desiccator plate, glazed on one side, with 4 mm perforation.

### 77693 O-Ring 28.24x2.62 Silicone



Silicone O-ring for fastening the filter disks in the drying rotor top plate.

### Rotor 8EVAP

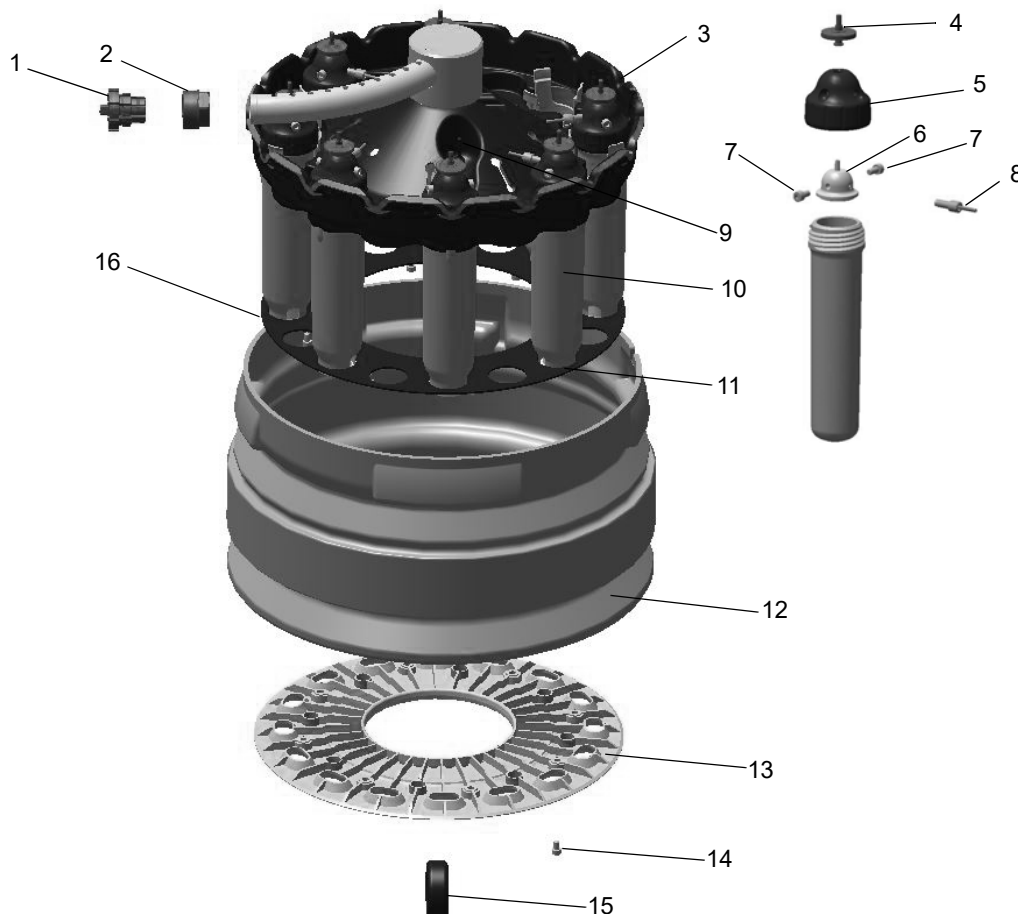


Fig. 15 Rotor 8 EVAP

No.	Mat.No. / Item	No.	Mat.No. / Item
1	10816 Hose Connector 8/8	9	6136 Liner Extractor Bolt 16
2	10814 Hose Connector Nut	10	4955 Vessel Holder
3	104280 Rotor Tray EVAP PRO	11	7702 Seal for Vessel Holder
4	11103 Syringe Filter	12	4645 Rotor 16 Body
5	10808 Screw Cap EVAP	13	104307 Rotor Base Ring HF, MF with Magnets
6	10810 Seal EVAP	14	6212 Cheese Head Screw M5x8 Titan
7	16542 Cheese Head Screw M5x10 PEEK	15	10813 Ring Weight
8	11087 Connection Hose	16	21215 Vessel Holder Positioning Ring

## 104280 Rotor Tray EVAP PRO



Central tray for positioning the vessels in the rotor.

## 10816 Hose Connector 8/8



Mechanical element made of PTFE, to hold 8 connection hoses.

## 10814 Hose Connector Nut



Connects the 8 connection hoses, which are held by the 10816 Hose Connector 8/8, to the 11091 Lead Through EVAP.

## 10810 Seal EVAP



Made of PTFE-TFM, perfect closure during evaporation, with ports for the 11103 Syringe Filter and 11087 Connection Hose.

## 10808 Screw Cap EVAP



Cap for evaporation vessels, made of high performance thermoplastic (PEK). The cap holds the optional 10810 Seal EVAP, 11087 Connection Hose and 11103 Syringe Filter.

### **Not included:**

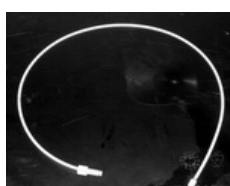
10810 Seal EVAP, 11087 Connection Hose, 11103 Syringe Filter and 2# 16542 Cheese Head Screw M5x10 PEEK

## 11103 Syringe Filter



0.2 µm PTFE filter connected to 10808 Screw Cap EVAP, for evaporation under clean room conditions.

## 11087 Connection Hose



PTFE-hose with threaded joints. Connects the screw cap of Rotor 8EVAP MW PRO to the 11091 Lead Through EVAP in the cavity wall to pass over acid fumes and reaction gases to an external scrubber.

## 6212 Cheese Head Screw M5x8 Titan



Screw made of titan used in the following parts:  
5712 Rotor 16 (without vessels), 104290 Rotor 8EVAP MW PRO, 104271 Rotor 8N (without Vessels), 104277 Rotor Upper Plate 8N (Assembled) and 104313 Bottom Load Ring 8N (Assembled).

## 10813 Ring Weight



Ring underneath the 104280 Rotor Tray EVAP PRO keeps the connection hoses of the 8 reaction vessels in place.

## 10820 Hose Connector 8/1



The hose connector 8/1 is connected outside of Multiwave PRO to the 11091 Lead Through EVAP and combines the 8 connection hoses from the evaporation vessels into one single hose to the scrubber.

**44735 Seal EVAP Quartz**



This seal made of PTFE-TFM is required when using Rotor 8EVAP MW PRO with Q80 quartz vessels.

**104309 Rotor Base Ring 8EVAP with Magnets**

Central ring for reinforcing and positioning Rotor 8EVAP MW PRO in the oven. The black ring is equipped with white reflective marks and with magnets for the position recognition system of Multiwave 3000 or Multiwave PRO.

**Not included:** 6212 Cheese Head Screw M5x8 Titan to fix the ring

**62064 O-Ring 5x1.5 Viton**



Fluoroelastomer O-ring for sealing the 10820 Hose Connector 8/1.

**Rotor 64MG5**

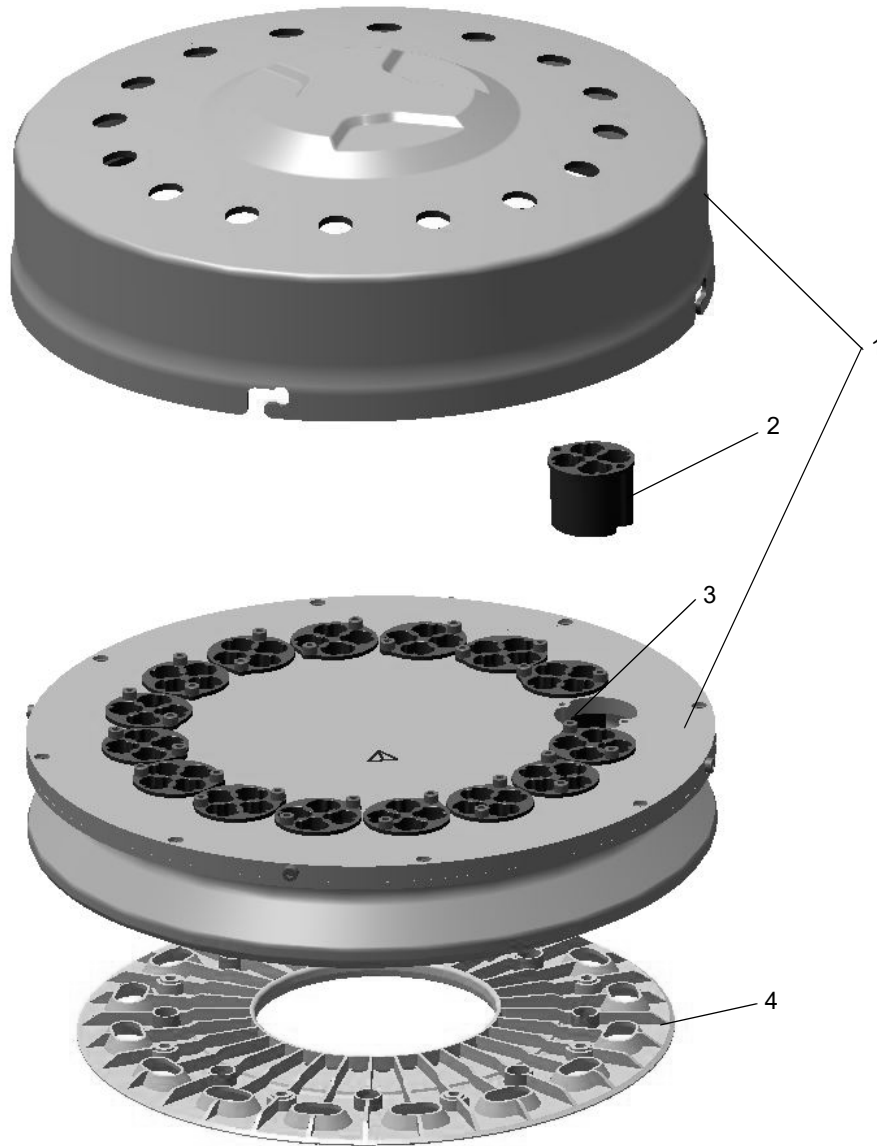


Fig. 16 Rotor 64MG5

No.	Mat.No. / Item
1	41218 Rotor 64 (Without Vials)
2	41185 Vial Holder 64MG5
3	16542 Cheese Head Screw M5x10 PEEK
4	104312 Rotor Base Ring 64 with Magnets

Rotors, Spare Parts, Vessels & Consumables

**41218 Rotor 64 (Without Vials)**

Rotor body with corresponding rotor lid, no accessories included.

**41185 Vial Holder 64MG5**

PTFE insert for 41214 Set of Vials MG5 (200PCS) to be used in 40422 Rotor 64MG5.

**104312 Rotor Base Ring 64 with Magnets**

Central ring for reinforcing and positioning Rotor 64 in the oven. The ring is equipped with white reflective marks and with magnets for the position recognition system of or Multiwave PRO. Needed to operate Rotor 64MG5 used in Multiwave 3000 with Multiwave PRO.

**41214 Set of Vials MG5 (200PCS)**

Package of 200# screwable Wheaton® glass vials (15x46 mm) for use in 40422 Rotor 64MG5 and 79114 Rotor 4X24 MG5.

**41188 Screw Cap Vial MG5**

PEEK screw cap for use with 41214 Set of Vials MG5 (200PCS). Equipped with a corresponding borehole for appropriate venting and sample withdrawal by autosampler equipment.

**41186 Set of Seals for Vials MG5 (200PCS)**

Package of 200# disposable PTFE seals to be used with 41214 Set of Vials MG5 (200PCS).

**41219 Vial handling tool**

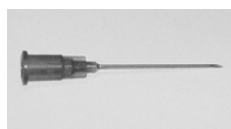
Combined venting- and lifting tool for simultaneous handling of 4 vials MG5 in Rotor 64MG5 and Rotor 4x24MG5.

**41151 Gripper**



Part of the 41219 Vial handling tool, made of PEEK.

**41227 Injection Needle**



Injection needle with luer adaptor (diameter 0.7 mm, l = 30 mm) for use with the 43298 Venting Tool MG5 and 41219 Vial handling tool.

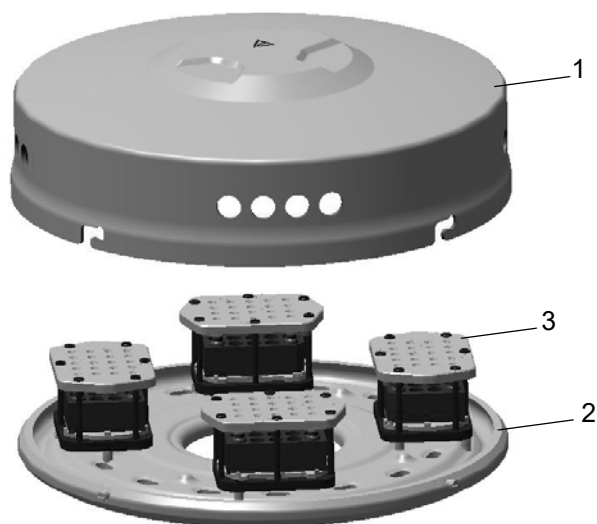
**43298 Venting Tool MG5**



Combined PTFE tool for proper adjustment of the appropriate seal onto the Vial MG5 prior to reaction and to vent the vials afterwards. This tool comes with each 40422 Rotor 64MG5.



**Rotor 4x48 / 4x24 / 4x20**



No.	Mat.No. / Item
1 / 2	41216 Rotor 4X48 (Without Wellplate)
3	91160 Wellplate 20MGC

## 41216 Rotor 4X48 (Without Wellplate)



Rotor plate with corresponding protection lid, no other accessory included. Spare Part for 40421 Rotor 4X48 MC Wellplate, 92283 Rotor 4X20 MGC and Rotor 79114 Rotor 4X24 MG5.

## 41013 Rotor Lid 4x48MC Wellplate

Protection lid, with no other accessory included. Spare Part for 40421 Rotor 4X48 MC Wellplate, 92283 Rotor 4X20 MGC and 79114 Rotor 4X24 MG5.

## 41012 Rotor Lid 4x48MC Wellplate

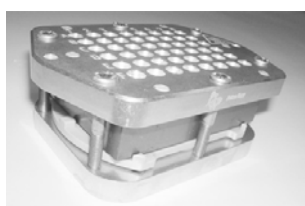
Protection lid, with no other accessory included. Spare Part for 40421 Rotor 4X48 MC Wellplate, 92283 Rotor 4X20 MGC and 79114 Rotor 4X24 MG5.

## 41027 Holder for Wellplate Assembly



All-aluminum carrier (128 x 85.5 mm), capable of holding one complete 41217 Wellplate 48MC Assembled.

## 41217 Wellplate 48MC Assembled

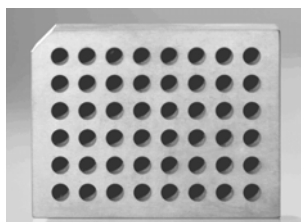


Complete wellplate unit, comprising the aluminum sealing assembly, the silicon carbide 41021 Wellplate 48MC and the PFA 41020 Sealing Foil 48MC. Allen key not included.

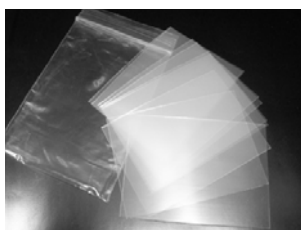
## 41021 Wellplate 48MC



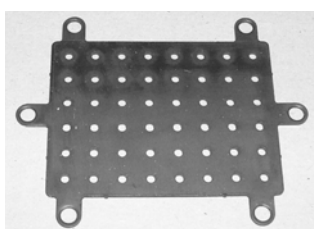
Microtiter wellplate made of silicon carbide (SiC) with round bottom 400  $\mu$ L wells in a 6x8 matrix.

**81925 Wellplate 48MC 200  $\mu$ L**

Microtiter wellplate made of silicon carbide (SiC) with conical 200  $\mu$ L wells in a 6x8 matrix.

**41020 Sealing Foil 48MC**

Package of 10 PFA foils (0.3 mm), used as disposable septum in the 41217 Wellplate 48MC Assembled.

**41019 Inlay 48MC**

Perforated fluoropolymer mat (Viton<sup>®</sup>) supporting proper sealing of the SiC wellplate, fixed on the aluminum top plate of the sealing assembly. Bolts for fixing 41024 Knop 48MC not included.

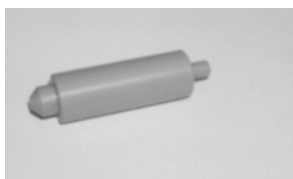
**41018 Bolt 4x48MC**

PEEK screw mounted on the outside edge of the rotor plate, used as the bayonet lock for the rotor lid.

**41017 Bolt Short 4x48MC**

PEEK bolt mounted near the inner rim of the rotor plate for appropriate positioning of the 41217 Wellplate 48MC Assembled.

## 41015 Bolt Long 4x48MC



PEEK bolt mounted near the outer rim of the rotor plate for appropriate positioning of the aluminum sealing 41217 Wellplate 48MC Assembled.

## 41025 Peek Centering 48MC



PEEK spacer used in the wellplate assembly for correct positioning of the SiC 41021 Wellplate 48MC on the aluminum base plate.  
Three PEEK screws for fixing included.

## 41024 Knop 48MC



PEEK screw for fixing the 41019 Inlay 48MC on the aluminum top plate of the sealing assembly.

## 104311 Rotor Base Ring 4 with Magnets

Central ring for reinforcing and positioning Rotor 4 in the oven.

The ring is equipped with white reflective marks and with magnets for the position recognition system of Multiwave 3000 or Multiwave PRO.

## 92282 Wellplate 20MGC Assembled



Complete wellplate unit, comprising an aluminum sealing assembly and a 91160 Wellplate 20MGC for standard HPLC/GC autosampler glass vials (12x32mm).

**79110 SiC Wellplate 24**

SiC plate for vials 41214 Set of Vials MG5 (200PCS) with standard ANSI footprint (128x85.5 mm), comprising appropriate wells in a 6x4 matrix.

**79112 Holder for Wellplate 24**

Holder to place 79110 SiC Wellplate 24 appropriately on the rotor turntable. Four PEEK screws for proper adjustment on the rotor turntable are included.

**91160 Wellplate 20MGC**

SiC plate with compact footprint (85x62.5mm) comprising appropriate wells in a 5x4 matrix for carrying standard HPLC/GC autosampler glass vials (12x32mm).

**92685 Set of HPLC/GC Vials ND8 (100 Pcs)**

Package of 100 standard screw cap HPLC/GC autosampler glass vials (ND8, 12x32mm, 1.5mL).

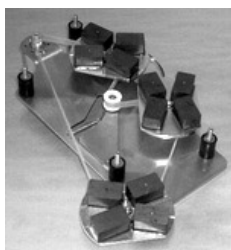
Used as reaction vials in 92283 Rotor 4X20 MGC.

**92734 Set of Screw Caps For HPLC/GC Vials (100 Pcs)**

Package of 100 standard PP screw caps with PTFE coated silicone seals.  
Used with 92685 Set of HPLC/GC Vials ND8 (100 Pcs) in 92283 Rotor 4X20 MGC

## Options

### 5699 Magnetic Stirrer Device



Optional stirring device for Multiwave PRO. It contains all required parts, 16# 1252 Stir Bar PTFE Ø 6x20 and 78010 Stir Bar Retriever L=250 CYL.

When ordered with a Multiwave PRO system, the Magnetic Stirrer Device is installed in the bottom compartment of the oven. Later upgrades can be done in the field by authorized service technicians.

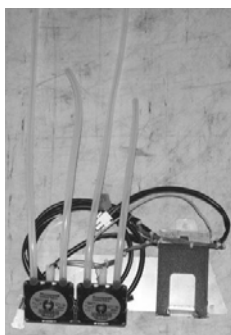
#### Important Note:

Do not use magnetic stirring for quartz vessels to avoid scratching the glass surface when stirring solid samples.

#### Comes with:

16# 16 1252 Stir Bar PTFE Ø 6x20, 1# 78010 Stir Bar Retriever L=250 CYL

### 104631 Safety Module SOLV PRO



Optional hardware accessory for the Multiwave PRO oven, mandatory for safe operation with organic solvents in microwave synthesis and solvent extraction.

It contains mechanical and electronic parts to monitor the exhaust airflow in order to keep concentrations of solvent vapors inside the instrument cavity within the safety limits.

This safety design fulfills the regulations of industrial standard EN 954-1 Cat. 4. When ordered with a new Multiwave PRO system, the Safety Module SOLV is installed in the bottom compartment of the oven. Later upgrades can be done in the field by authorized service technicians.

#### Comes with:

Labeling "Microwave Reaction System SOLV" to label the instrument accordingly if upgraded in the field

### 104300 Calibration Unit (T/IR)



Optional tool for automatic and software-supported calibration of all temperature sensors used in Multiwave PRO: 5698 Pressure/Temperature Sensor Accessory, 21290 Pressure/Temperature Sensor M50, 13921 T-Probe, 18468 T-Probe S and 102168 IR Temperature Sensor MW PRO.

It consists of a folding metal support which holds the 26153 Calibration Insert, additionally a centering jacket and a spacer (for use with Rotor 8N) are provided.

Calibration improves the accuracy of temperature measurement in order to comply with GLP and to extend the life-time of the reaction vessels. Calibration or check of sensor accuracy can be performed within 15 minutes, guided by online instructions. Calibration data are automatically stored in the sensor library of Multiwave PRO.

#### Comes with:

104299 Alignment Calibration Unit

Specifications:	Temperature range:	40 - 220 °C (p/T Sensor Accessory, T-Probe)
		100 - 220 °C (IR Sensor Accessory)

### 104299 Alignment Calibration Unit



Additional metal angle to upgrade the Calibration Unit (T/IR) (26167) of Multiwave 3000 for Multiwave PRO to calibrate the IR sensor.

### 26153 Calibration Insert

Replacement part for the 104300 Calibration Unit (T/IR). Can also be used as a stand-alone unit for temperature calibration of 13921 T-Probe or 18468 T-Probe S.

Comes with centering jacket and spacer

### 11091 Lead Through EVAP



Required for operation with 104290 Rotor 8EVAP MW PRO.

Has to be mounted onto the left cavity wall of Multiwave PRO.

It is used for the connection of the 8 hoses of 104290 Rotor 8EVAP MW PRO for gas outlet to the vacuum pump and acid scrubber.

The included 10820 Hose Connector 8/1 leads the 8 hoses together at the outside of the oven to one single hose, which is connected to the vacuum pump.

When ordered with a new Multiwave PRO system, the Lead Through EVAP comes already installed. Later upgrades can be done in the field by authorized service technicians.

### Sensors

#### 21290 Pressure/Temperature Sensor M50



Sensor screw cap for simultaneous pressure and temperature measurement in 22533 Pressure Vessel MF50.

The temperature sensor is a gas-bulb thermometer, which measures the temperature directly in the solution.

It is hermetically shielded by a sapphire thermowell with highest chemical and mechanical resistance. It allows precise and fast measurement up to 300 °C.

Calibration of the sensor can be done automatically with the optional 104300

Calibration Unit (T/IR). The pressure sensor is a load cell, which measures the reaction pressure via the force applied by the movable seal.

A shielded electronic module contains the sensor transducers, electronic and a microprocessor. Both pressure and temperature data are transferred via infrared signal to the controller of the oven. Energy supply is provided wireless by induction, thus the sensor accessory does not require any electrical plugs or batteries. Each sensor has an individual identification number, which is automatically checked. Thus different sensors can be used for one oven without further interaction.

Specifications:	Temperature range:	0 - 300 °C
	Pressure range:	0 - 86 bar (1247 psi)

Comes with:

47751 Sensor Vessel Jacket M50 PEEK, 21143 Liner F50 PFA, 23459 Seal Forming Tool p/T M50, 23511 Seal Ejector M50



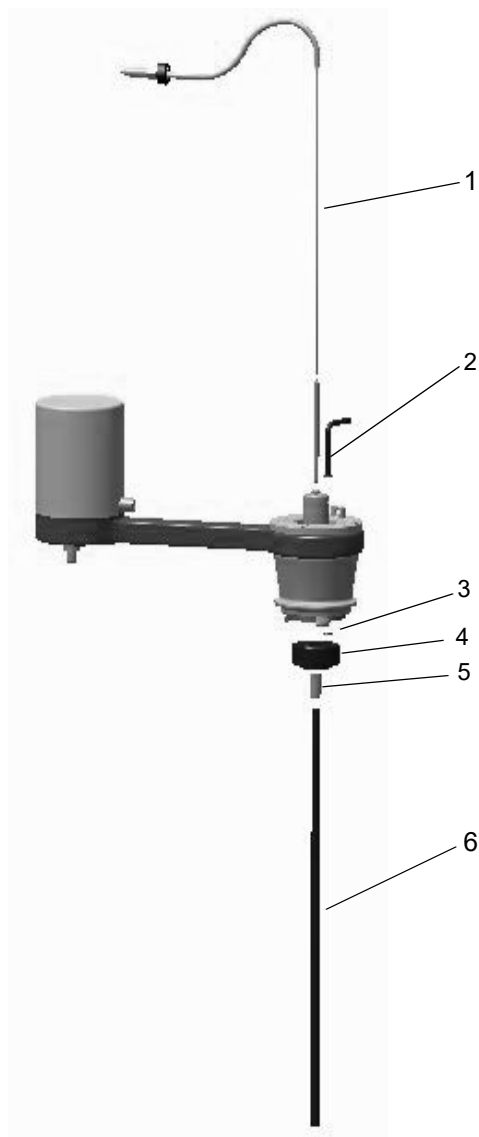


Fig. 17 Pressure/Temperature Sensor M50

No.	Mat.No. / Item
1	24179 Thermometer Capillary pT M50
2	21285 Vent Pipe Sensor M50
3	10622 O-Ring 3x1.2FPM 70 Viton
4	21280 Seal for pT Sensor M50
5	14614 Seal Husk
6	21289 Immersion Tube Sapphire p/T M50

**24179 Thermometer Capillary pT M50**

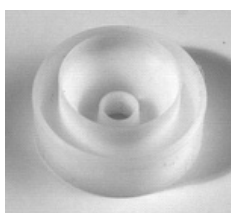
Temperature sensor balloon and capillary with metal junction husk for the 21290 Pressure/Temperature Sensor M50.

**21285 Vent Pipe Sensor M50**

The vent pipe for the 21290 Pressure/Temperature Sensor M50 is made of PTFE (L=46 mm). After reaction, the residual pressure is released by the vent pipe and not via the thread of the screw cap.

**10622 O-Ring 3x1.2FPM 70 Viton**

Chemically and thermally resistant O-ring on the vent pipe of the 21290 Pressure/Temperature Sensor M50.

**21280 Seal for pT Sensor M50**

Lip-type seal for 21290 Pressure/Temperature Sensor M50 made of PTFE-TFM. Similar function and same properties as the seal for pressure vessel MF50, but special form with a center inlet for 21289 Immersion Tube Sapphire p/T M50. Must be used with 14614 Seal Husk.

**Comes with:**

1# 14614 Seal Husk, 1# 21285 Vent Pipe Sensor M50, 1# 10622 O-Ring 3x1.2FPM 70 Viton

**14614 Seal Husk**

Used with 5698 Pressure/Temperature Sensor Accessory, 21290 Pressure/Temperature Sensor M50, 104292 Immersion Tube with Seal NXQ and 104324 Immersion Tube S with Seal NXF plus 104291 Immersion Tube with Seal NXF.

The seal husk provides the sealing between the immersion tube and the seal. Do not re-use once it has been disassembled

**9582 Pipette**

Supporting piece for mounting the 14614 Seal Husk.

**21289 Immersion Tube Sapphire p/T M50**

Thermowell made of sapphire for the 21290 Pressure/Temperature Sensor M50.

**Comes with:**

1# 14614 Seal Husk

**25493 Pressure Sensor M50**



Sensor screw cap for pressure measurement in 22533 Pressure Vessel MF50. The pressure sensor is a load cell, which measures the reaction pressure via the force applied by the movable seal.

A shielded electronic module contains the sensor transducers, electronic and a microprocessor. The pressure is transferred via infrared signal to the controller of the oven. Energy supply is provided wireless by induction, thus the sensor accessory does not require any electrical plugs or batteries. Each sensor has an individual identification number, which is automatically checked. Thus different sensors can be used for one oven without further interaction.

Specifications: Pressure range 0 - 86 bar (1247 psi)

**Comes with:**

47751 Sensor Vessel Jacket M50 PEEK, 21143 Liner F50 PFA, 23459 Seal Forming Tool p/T M50, 23511 Seal Ejector M50

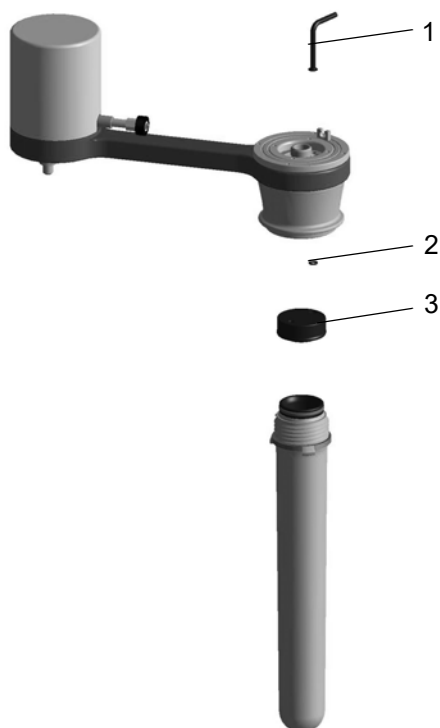


Fig. 18 Pressure Sensor M50

No.	Mat.No. / Item
1	21285 Vent Pipe Sensor M50
2	10622 O-Ring 3x1.2FPM 70 Viton
3	25492 Seal for p Sensor M50

**5698 Pressure/Temperature Sensor Accessory**

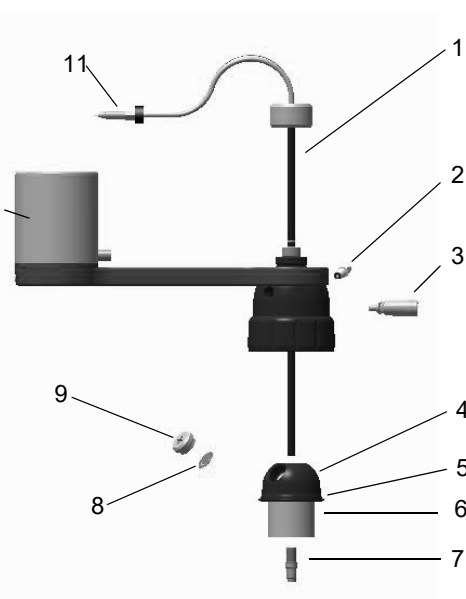

Sensor screw cap for simultaneous pressure and temperature measurement in 5710 Pressure Vessel MF100 or 5711 Pressure Vessel HF100.

The temperature sensor is a gas-bulb thermometer, which measures the temperature directly in the solution.

It is hermetically shielded by a sapphire thermowell with highest chemical and mechanical resistance. It allows precise and fast measurement up to 300 °C. Calibration of the sensor can be done automatically with the optional 104300 Calibration Unit (T/IR). The pressure sensor is a load cell, which measures the reaction pressure via the force applied by the movable seal.

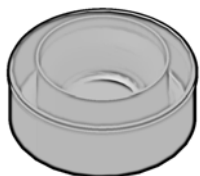
A shielded electronic module contains the sensor transducers, electronic and a microprocessor. Both pressure and temperature data are transferred via infrared signal to the controller of the oven. Energy supply is provided wireless by induction, thus the sensor accessory does not require any electrical plugs or batteries. Each sensor has an individual identification number, which is automatically checked. Thus different sensors can be used for one oven without further interaction.

Specifications:	Temperature range:	0 - 300 °C
	Pressure range:	0 - 86 bar (1247 psi)

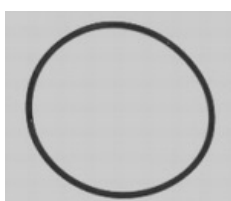


*Fig. 19 Pressure/Temperature Sensor Accessory*

No.	Mat.No. / Item	No.	Mat.No. / Item
1	5744 Immersion Tube Sapphire M&H	7	14614 Seal Husk
2	2722 Syringe Connector	8	2720 Safety Disk M&H
3	5692 Venting Screw	9	2723 Safety Disk Holder M&H
4	4910 Seal Holder p/T Sensor Accessory	10	2786 Cap for Sensor Module
5	23824 O-Ring 38x1.5 GREEN	11	5745 Thermometer Capillary M&H
6	2725 Seal for Pressure/ Temperature Sensor Accessory		

**25492 Seal for p Sensor M50**

Lip-type seal for 25493 Pressure Sensor M50 made of PTFE-TFM. Similar function and same properties as the seal for pressure vessel MF50.

**23824 O-Ring 38x1.5 GREEN**

O-ring on the seal holder of the 5698 Pressure/Temperature Sensor Accessory and 14747 Pressure Sensor Accessory.

**2786 Cap for Sensor Module**

Protective cover made of PSU for the electronic module of the 14747 Pressure Sensor Accessory and 5698 Pressure/Temperature Sensor Accessory.

**4910 Seal Holder p/T Sensor Accessory**

Special formed cap with center inlet for the 5698 Pressure/Temperature Sensor Accessory and 14747 Pressure Sensor Accessory, made of high performance thermoplastic (PEK). The cap holds the seal, safety disk, venting screw and syringe connector.

**2725 Seal for Pressure/Temperature Sensor Accessory**

Seal for 5698 Pressure/Temperature Sensor Accessory. Same function and properties as the 2724 Seal for Pressure Vessel M+H+XF but special form with a center inlet for 5744 Immersion Tube Sapphire M&H.

**Comes with:**

1# 14614 Seal Husk, 1# 18553 Seal Husk S

**2720 Safety Disk M&H**

Safety disk, made of corrosion-resistant alloy. Protects 5710 Pressure Vessel MF100 and 5711 Pressure Vessel HF100 in case of overpressure during spontaneous reactions. Also assembled into 14747 Pressure Sensor Accessory and 5698 Pressure/Temperature Sensor Accessory.

**2723 Safety Disk Holder M&H**

Screw made of PEEK to hold 2720 Safety Disk M&H in position.

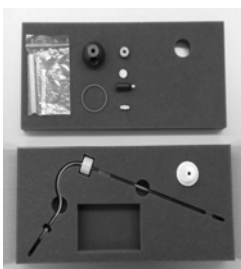
**5744 Immersion Tube Sapphire M&H**

Thermowell made of sapphire for the 5698 Pressure/Temperature Sensor Accessory with metal joint.

**Comes with:**  
1# 14614 Seal Husk

**5745 Thermometer Capillary M&H**

Temperature sensor balloon and capillary with metal junction husk for the 5698 Pressure/Temperature Sensor Accessory.

**175183 Maintenance Kit p/T-Sensor Accessory**

Maintenance kit for preventive replacement of immersion tube on 5698 Pressure/Temperature Sensor Accessory.

Includes all necessary items to replace the immersion tube, capillary and sealing parts.

**2724 Seal for Pressure Vessel M+H+XF**

Lip-type seal made of PTFE-TFM ensures perfect closure during pressurized reactions. The integrated venting system allows for safe and convenient relief of gaseous products after the run. Minimized dead space volume reduces danger of contaminations or losses. Fits to 5710 Pressure Vessel MF100, 5711 Pressure Vessel HF100.

### 14747 Pressure Sensor Accessory



Sensor screw cap for pressure measurement in 5710 Pressure Vessel MF100 or 5711 Pressure Vessel HF100.

The pressure sensor is a load cell, which measures the reaction pressure via the force applied by the movable seal.

A shielded electronic module contains the sensor transducers, electronic and a microprocessor. Pressure data is transferred via infrared signal to the controller of the oven. Energy supply is provided wireless by induction, thus the sensor accessory does not require any electrical plugs or batteries. Each sensor has an individual identification number, which is automatically checked. Thus different sensors can be used for one oven without further interaction. If required, the pressure sensor accessory can be upgraded to the 5698 Pressure/Temperature Sensor Accessory.

For upgrading the following parts are needed:

Mat. No. / Item	#	
5745 Thermometer Capillary M&H	1 pc.	
5744 Immersion Tube Sapphire M&H	1 pc.	
2725 Seal for Pressure/Temperature Sensor Accessory	1 pc.	
14614 Seal Husk	1 pc.	
Specifications:	Pressure range	0 - 86 bar (1247 psi)

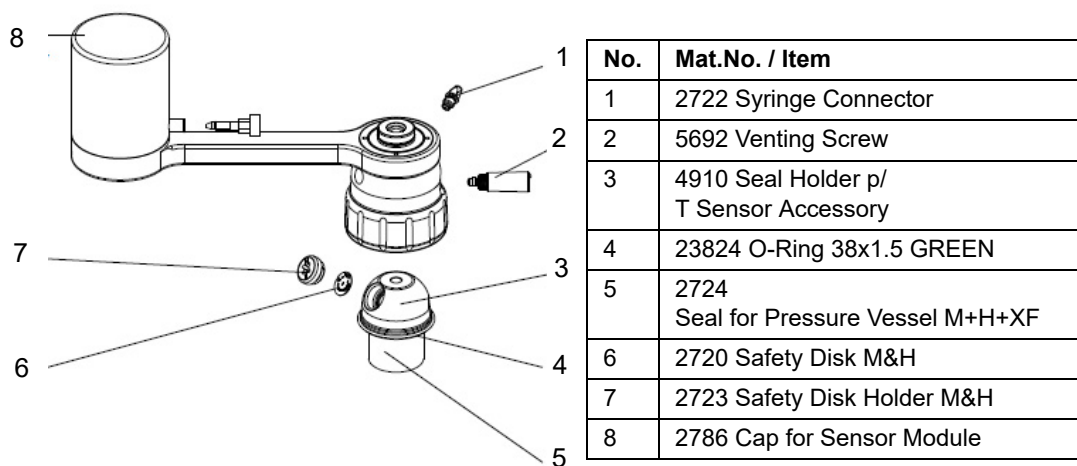


Fig. 20 Pressure Sensor Accessory

**13921 T-Probe**


Immersing temperature probe for precise measurement of the solution temperature in 104274 Rotor 8NXQ80 and 104273 Rotor 8NXF100. The sensor head includes a gas-bulb thermometer for monitoring the reaction temperature up to 300 °C. Requires either 104292 Immersion Tube with Seal NXQ or 104291 Immersion Tube with Seal NXF.

Easy installation, no additional electrical connections, cables or hoses required. A torus-shaped electronic module contains the sensor transducer and signal conversion electronics. The temperature data are transferred via infrared signals to the ovens. Wireless energy supply by induction, therefore the sensor accessory does not require any electrical plugs or batteries. Each sensor has an individual identification number, which is automatically checked and matched with calibration information stored in the oven. Different sensors can be used for one oven without further user interaction.

Specifications:                      Temperature range:                      0- 300 °C

**Not included:**

104292 Immersion Tube with Seal NXQ

104291 Immersion Tube with Seal NXF

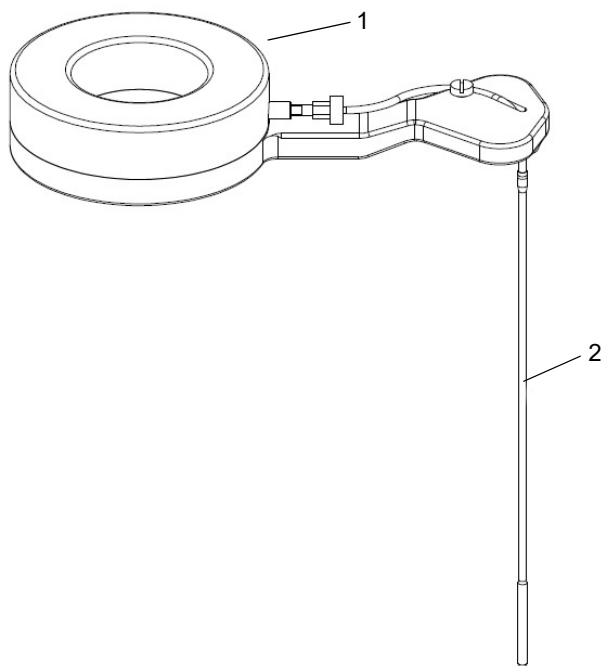


Fig. 21 T-Probe (13921)

No.	Mat.No. / Item
1	10379 Cap for T-Probe electronics module
2	13922 Thermometer Capillary for T-Probe



**13922 Thermometer Capillary for T-Probe**


Temperature sensor capillary tube with glass bulb for the 13921 T-Probe, coated and shielded, with metal junction husk.

**10379 Cap for T-Probe electronics module**


Protective cover made of PSU for the torus-shaped electronics module of the 13921 T-Probe and 18468 T-Probe S.

**104291 Immersion Tube with Seal NXF**


Special seal holder for the T-Probe, used with 104275 Pressure Vessel NXF100. **Comes with:** 13927 Immersion Tube Sapphire X, 104288 Seal NXF100 for T-Probe, 104650 Seal Holder NX for T-Probe, safety disk and outlet components.

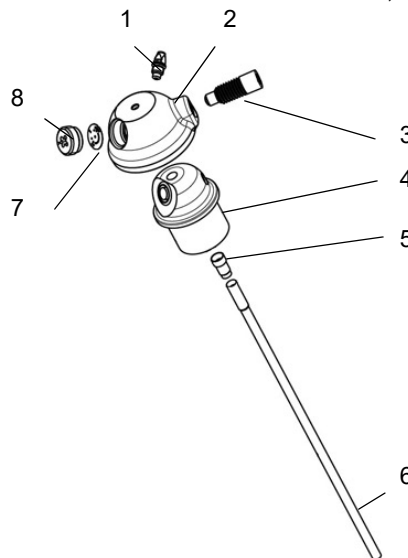


Fig. 22 Immersion Tube with Seal NXF

No.	Mat.No. / Item
1	2722 Syringe Connector
2	104650 Seal Holder NX for T-Probe
3	104284 Venting Screw N
4	104288 Seal NXF100 for T-Probe
5	14614 Seal Husk
6	13927 Immersion Tube Sapphire X
7	10359 Safety Disk X
8	10358 Safety Disk Holder X

**104650 Seal Holder NX for T-Probe**

Special formed cap with center inlet for 104323 Immersion Tube S with Seal NXQ, 104634 Immersion Tube S PTFE coated + Seal NXQ, 104635 Immersion Tube S PTFE coated + Seal NXF, 104324 Immersion Tube S with Seal NXF, 104292 Immersion Tube with Seal NXQ and Immersion Tube with Seal NXF (13925), made of high performance plastic (PEK). The cap holds the optional seal, safety disk, venting screw and syringe connector.

**Not included:**

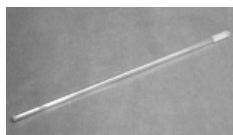
104288 Seal NXF100 for T-Probe or 104289 Seal NXQ80 for T-Probe, 10359 Safety Disk X, 10358 Safety Disk Holder X, 104284 Venting Screw N and 2722 Syringe Connector

**104288 Seal NXF100 for T-Probe**

Lip-type seal made of PTFE-TFM, venting system. Same function as 104286 Seal NXF, but special form with center inlet for 13927 Immersion Tube Sapphire X.

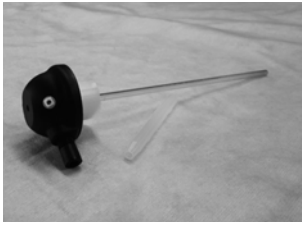
**Comes with:**

1# 14614 Seal Husk, 1# 18553 Seal Husk S

**13927 Immersion Tube Sapphire X**

Thermowell made of sapphire for 104292 Immersion Tube with Seal NXQ and 104291 Immersion Tube with Seal NXF, with PTFE-coated sealing zone.

### 104292 Immersion Tube with Seal NXQ



Special seal holder for the T-Probe, used with 104276 Pressure Vessel NXQ80.

**Comes with:**

13927 Immersion Tube Sapphire X, 104289 Seal NXQ80 for T-Probe, 104650 Seal Holder NX for T-Probe, safety disk and outlet components

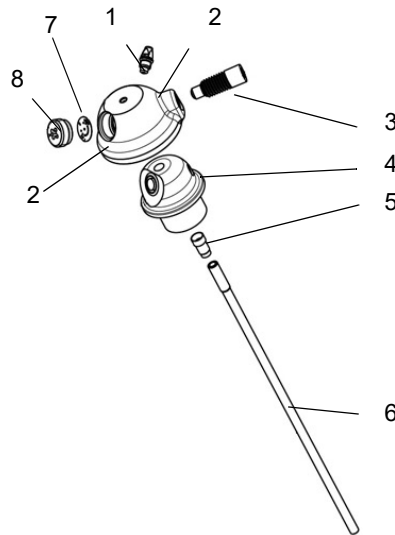


Fig. 23 Immersion Tube with Seal NXQ

No.	Mat.No. / Item
1	2722 Syringe Connector
2	104650 Seal Holder NX for T-Probe
3	104284 Venting Screw N
4	104289 Seal NXQ80 for T-Probe
5	14614 Seal Husk
6	13927 Immersion Tube Sapphire X
7	10359 Safety Disk X
8	10358 Safety Disk Holder X

### 104289 Seal NXQ80 for T-Probe



Lip-type seal made of PTFE-TFM, with venting system. Same function as 104287 Seal NXQ, but special form with center inlet for 13927 Immersion Tube Sapphire X.

**Comes with:**

1# 14614 Seal Husk, 1# 18553 Seal Husk S

### 18468 T-Probe S



Immersing temperature probe for precise measurement of the temperature in Rotor 8NXF100 and 8NXQ80. The sensor head includes a gas-bulb thermometer for monitoring the reaction temperature up to 300 °C. The sensor is hermetically shielded by a quartz thermowell. Its microwave-transparent design does not interfere with the microwave field. The installation is very easy and does not require any electrical connections, cables or hoses.

A torus-shaped electronic module contains the sensor transducer and signal conversion electronics. The temperature data are transferred via infrared signals to the ovens controller. Energy supply is wireless by HF induction, thus the sensor accessory does not require any electrical plugs or batteries. Each sensor has an individual identification number, which is automatically checked

and matched with calibration information stored in the oven. Thus different sensors can be used for one oven without further user interaction.

Due to the length of the probe only use it with 104323 Immersion Tube S with Seal NXQ, 104324 Immersion Tube S with Seal NXF, 104634 Immersion Tube S PTFE coated + Seal NXQ or 104635 Immersion Tube S PTFE coated + Seal NXF.

Specifications:                      Temperature range:      0-300 °C

**Not included:**

Immersion Tube with special seal has to be ordered separately.

This thermowell assembly is available in four different versions:

104323 Immersion Tube S with Seal NXQ,

104324 Immersion Tube S with Seal NXF,

104634 Immersion Tube S PTFE coated + Seal NXQ and

104635 Immersion Tube S PTFE coated + Seal NXF

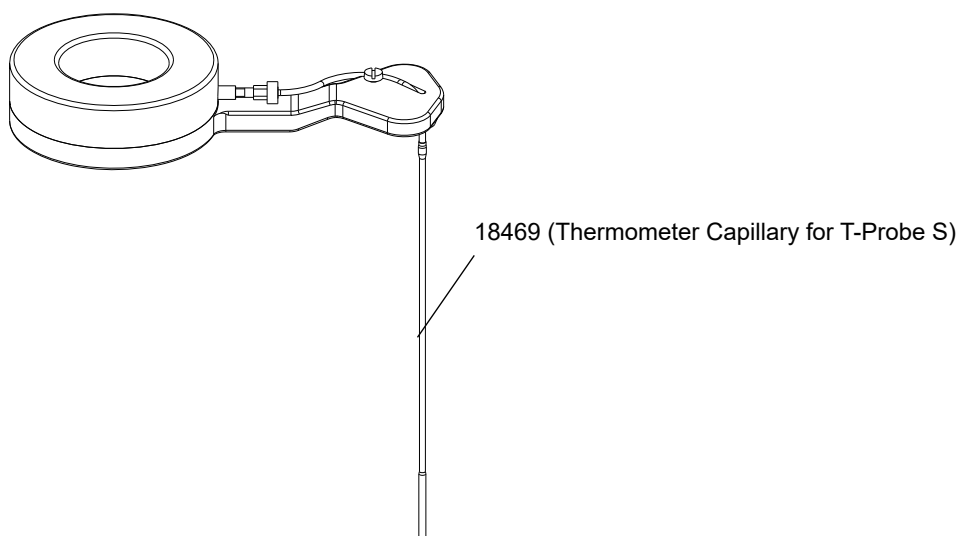


Fig. 24 T-Probe S

### 18469 Thermometer Capillary for T-Probe S



Temperature sensor capillary tube with glass bulb for 18468 T-Probe S, coated and shielded, with metal junction husk.

### 104323 Immersion Tube S with Seal NXQ

Assembly of a special seal holder for 18468 T-Probe S used with 104276 Pressure Vessel NXQ80 in synthesis applications.

**Comes with:**

104289 Seal NXQ80 for T-Probe, 104650 Seal Holder NX for T-Probe, safety disk and outlet components

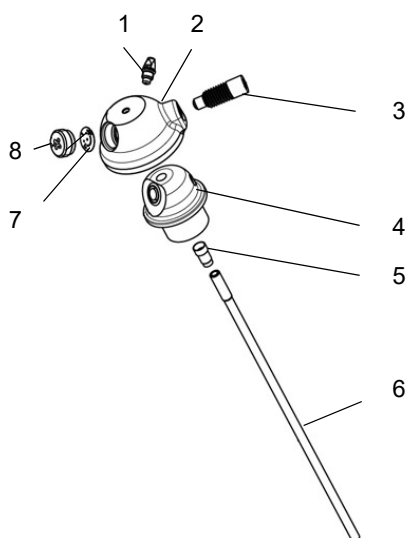


Fig. 25 Setup of all variations of Immersion Tube S

No.	Mat.No. / Item
1	2722 Syringe Connector
2	104650 Seal Holder NX for T-Probe
3	104284 Venting Screw N
4	104289 Seal NXQ80 for T-Probe or 104288 Seal NXF100 for T-Probe
5	18553 Seal Husk S
6	18367 Immersion Tube S Quartz for T-Probe S
7	10359 Safety Disk X
8	10358 Safety Disk Holder X

**104324 Immersion Tube S with Seal NXF**

Assembly of a special seal holder for 18468 T-Probe S used with 104275 Pressure Vessel NXF100 in synthesis applications see Fig. 23.

**Comes with:** 104288 Seal NXF100 for T-Probe, 104650 Seal Holder NX for T-Probe, safety disk and outlet components.

**104634 Immersion Tube S PTFE coated + Seal NXQ**



Assembly of a special coated seal holder for the T-Probe, used with 104276 Pressure Vessel NXQ80 see Fig. 23.

**Comes with:**  
104289 Seal NXQ80 for T-Probe, 104650 Seal Holder NX for T-Probe, safety disk and outlet components

**104635 Immersion Tube S PTFE coated + Seal NXF**



Assembly of a special coated seal holder for the T-Probe, used with NXF100 vessels see Fig. 23.

**Comes with:**  
104288 Seal NXF100 for T-Probe, 104650 Seal Holder NX for T-Probe, safety disk and outlet components

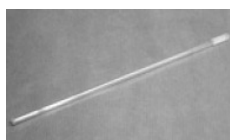
**18553 Seal Husk S**



Used with 104323 Immersion Tube S with Seal NXQ, 104324 Immersion Tube S with Seal NXF, 104634 Immersion Tube S PTFE coated + Seal NXQ and 104635 Immersion Tube S PTFE coated + Seal NXF, to provide leak tight connection between the seal and the corresponding immersion tube.

The seal husk provides the sealing between the immersion tube and the seal. Do not re-use once it has been disassembled

**18367 Immersion Tube S Quartz for T-Probe S**



Quartz thermowell for 104291 Immersion Tube with Seal NXF or 104292 Immersion Tube with Seal NXQ as well as for Immersion Tube S with 18537 Immersion Tube S with Seal XQ or 18539 Immersion Tube S with Seal XF, with PTFE-coated sealing zone.

**83635 Immersion Tube S Sapphire, PTFE coated, for T-Probe S**



PTFE-coated sapphire thermowell for 104634 Immersion Tube S PTFE coated + Seal NXQ and 104635 Immersion Tube S PTFE coated + Seal NXF.

## Accessories

**129671 Rack 12HVT**

Rack for storing up to 12 pressure vessels HVT.

**13686 Rack 16**

Rack 16 is your ideal companion when setting up microwave-based sample preparation reactions to be conducted in your Multiwave PRO. Rack 16 has a total of 16 (2 x 8) holes compatible to all types of pressure vessels and liners. It's dimensions (W 460 x D 200 x H 170 mm) give a good grip and the functional two-tier design with additional holes of smaller diameter in the rack base securely keeps all vessels and liners in place and thus, helps to carry them safely around in the laboratory. Beyond

that Rack 16 enables convenient assembling / disassembling and loading / unloading of all types of Multiwave PRO reaction vessels. To avoid tilting of the rack, it is recommended to load Rack 16 symmetrically for handling of rather heavy XQ80 quartz glass vessels. In case only up to 8 reaction vessels need to be handled, Rack 16 can also be cut in halves.

Rack 16 is made of polyethylene foam which is a non-abrasive, durable, yet lightweight material of excellent strength and resistance to chemicals, and therefore ideally suited for use in chemical laboratory environments.

**Not included:**

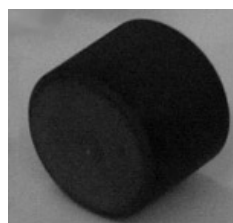
Vessels

**23609 Rack 24**

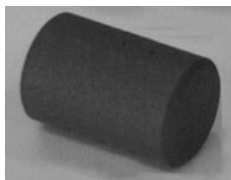
Rack for keeping MF50 vessels in place or transporting them safely.

**Not included:**

Vessels

**19432 Heating Element Ø10x8**

Cylindrical heating element (d=10 mm, h=8 mm, m=1.94 g), made of sintered silicon carbide (SiC) for use in MF50 vessels.

**22775 Heating Element Ø10x18**

Cylindrical heating element (d=10 mm, h=18 mm, m=3.95 g), made of sintered silicon carbide (SSiC) for use in NXQ80 and MF/HF/NXF100 vessels.

**Important Note:**

Use heating elements in quartz vessels carefully. Do not scratch the vessel surface.

**89089 Stir Bar PTFE D=6 L=10**

Package of 10# cylindrical PTFE-coated stir bars.

**23620 Stir Bar PTFE Ø4.5X15**

PTFE-coated stir bar for M50 liner.

**1252 Stir Bar PTFE Ø 6x20**

Standard stir bar for 2433 Liner F100 TFM.

**7424 Stir Bar PTFE D=6 L=25**

PTFE-coated stir bar for all fluoroplastic liners.

**89088 Stir Bar PTFE D=3 L=10**

PTFE-coated stir bar for 41214 Set of Vials MG5 (200PCS).

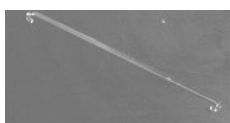
**78010 Stir Bar Retriever L=250 CYL**

For safe and convenient removal of the magnetic stir bars from the vessels. Completely covered with PTFE.



**16425 Weighing Scoop**

Tool made of quartz glass for weighing solid and liquid samples into the liner. It has a small rim bent up to avoid spreading of sample onto the balance table. The weighing scoop can be left inside the reaction vessel when running reactions in Multiwave PRO. After reaction it can be removed easily with its small handle using the 16428 Lifting Hook Quartz. Do not use with hydrofluoric acid.

**16428 Lifting Hook Quartz**

Rod made of quartz glass with a hook on both ends. Used to handle the 16425 Weighing Scoop, the 16847 Microwave UV Lamp and the 16427 Sample Holder Quartz.

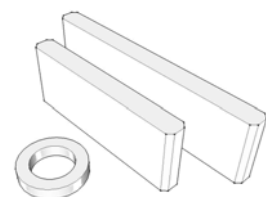
**79296 Venting Screw Tap Set**

The venting screw tap set consists of a screw tap and a die. The screw tap is used for cleaning the thread of the venting screw of the screw cap and the seal holder. The die is used on the thread of the venting screw.

**Note:** Not compatible with Seal Holder N and Venting Screw N.

**82889 Liner Stand**

The liner stand is a lightweight polymer tool to aid weighing of samples. Applicable with 2433 Liner F100 TFM, 90018 Liner F50 TFM and 16427 Sample Holder Quartz.

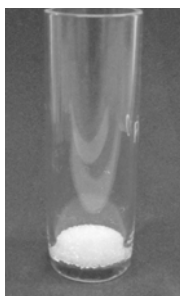
**102871 Foam Package**

Replacement foams for the area between exhaust unit and pipe connection, the inside of the pipe connection and the exhaust hose of Multiwave PRO.

**94396 Rotor Stand**

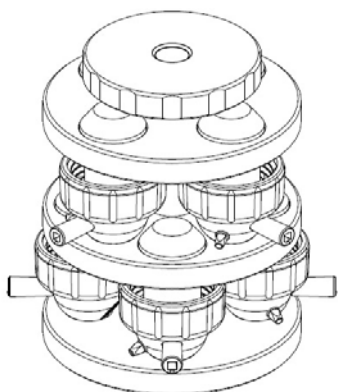
Light-weight polymer turntable with an anti-slip support to facilitate loading and unloading of reaction vessels. Applicable with any reaction, extraction and synthesis rotor of Multiwave PRO.

**97446 Glass Filter Insert**



Special borosilicate glass tube with a glass frit for solvent extraction of solid materials. The glass filter insert is loaded with sample material, closed with glass wool (not included) and placed into the liner. It allows for convenient sample introduction without the risk of contaminating the sealing area of the liner with sample particles.

**8564 Seal Forming Device for 8 Caps**



Safe and clean storage for XF/XQ seals and Screw Cap M&H.

Provides proper, timesaving closing, and longer service life. Not for use with NXF/NXQ/"NXQ Wide" seals.

For 5701 Rotor 16MF100

For 5702 Rotor 16HF100

**Not included:**

Caps

**108454 Seal Forming Device NX**



Safe and clean storage for NXF/NXQ/"NXQ Wide" seals. Provides proper, timesaving closing, and longer service life.

**103438 Handling Tool for HVT**



Tool for closing and opening the 104452 Pressure Vessel HVT50 and 161100 Pressure Vessel HVT80.

**41219 Vial handling tool**



Combined venting- and lifting tool for simultaneous handling of 4 vials MG5 in Rotor 64MG5 and Rotor 4x24MG5.

### 107422 Rotor Handling Device



For loading the rotor in front of Multiwave PRO and shifting it into the instrument without carrying the fully loaded rotor.

## Accessories for Microwave Oxygen Combustion

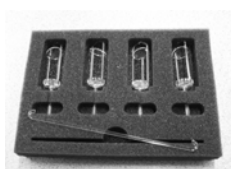
### 104689 Oxygen Combustion Set II

The oxygen combustion set contains all accessories which are necessary to adapt 4 pieces of 104276 Pressure Vessel NXQ80 for the microwave-assisted oxygen combustion (MIC).

**Comes with:**

4# 10335 Seal Holder X, 4# 11059 Seal XQ, 4# 10359 Safety Disk X, 4# 10358 Safety Disk Holder X, 4# 16427 Sample Holder Quartz, 4# 2722 Syringe Connector, 1# 99133 Vent Opener Gas, 1# 16428 Lifting Hook Quartz, 4# 99132 Gas Loading Check Valve, 1# 16447 Accessory Rack (4 Positions) and 1# 17263 Punching Tool Ø18 mm, 4#188253 Protective Casing MIC

### 16427 Sample Holder Quartz



Made of quartz for holding sample and filter paper during microwave-assisted oxygen combustion.

### 16447 Accessory Rack (4 Positions)



Rack for holding up to 4 16847 Microwave UV Lamp or 4 16427 Sample Holder Quartz and one 16428 Lifting Hook Quartz.

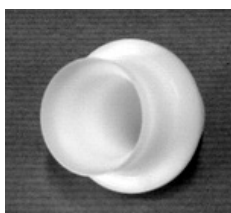
### 17263 Punching Tool Ø18



Special tool for punching circular filter papers with a diameter of 18 mm.

**Comes with:**  
Protective pad

### 11059 Seal XQ



Lip-type seal made of PTFE-TFM ensures perfect closure during pressurized reactions. The integrated venting system allows for safe and convenient relief of gaseous products after the run. Minimized dead space volume and reduced danger of contaminations or losses. Spare part for use with the 104689 Oxygen Combustion Set II.

### 10335 Seal Holder X



Cap of 104276 Pressure Vessel NXQ80 when used for gasloading applications, like microwave-induced oxygen combustion. The cap holds the seal, safety disk, venting screw and syringe connector. Spare part for use with the 104690 Gas loading Set II.

**Not included:**

11059 Seal XQ, 10359 Safety Disk X, 10358 Safety Disk Holder X, 99132 Gas Loading Check Valve and 2722 Syringe Connector

### 159590 Pellet Pressing Tool



Device for converting powdered samples into pellets (diameter 10 mm), which are used for microwave-induced oxygen combustion (MIC). The pellet pressing tool is made of high-purity titanium. Additional press (e.g. toggle press) or vise is required.

### 188253 Protective Casing MIC



The protective casing MIC has to be used when performing oxygen combustion in Rotor 8NXQ80 (104274).

**Comes with:** Centre Ring (10141)

### 102877 Protective Cap N



The protective cap N is made of PEEK and works as cooling air guide and mechanical protection. Fits to 104275 Pressure Vessel NXF100 and 104276 Pressure Vessel NXQ80. The protective cap can not be used with Rotor 8S of Multiwave 3000.

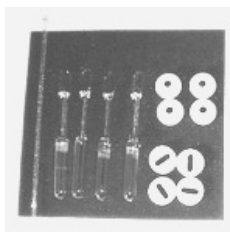
### 188254 Quartz Tube MIC



The quartz tube MIC protects the 2433 LINER F100 TFM when performing MIC in the Rotor 8NXF100 (104273).

## Accessories for Microwave UV Digestion

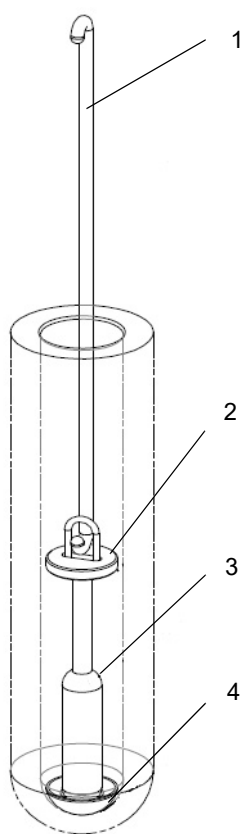
### 16846 Set of 4 MW-UV Lamps and Accessories



The Set of 4 MW-UV Lamps and Accessories contains all accessories which are necessary to adapt 4 pieces of 104276 Pressure Vessel NXQ80 for the microwave-assisted UV digestion.

**Comes with:**

4# 16847 Microwave UV Lamp, 4# 16446 Lamp Base Ring, 4# 16445 Lamp Spacer, 1# 16428 Lifting Hook Quartz, 1# 16447 Accessory Rack (4 Positions)



No.	Mat.No. / Item
1	16428 Lifting Hook Quartz
2	16445 Lamp Spacer
3	16847 Microwave UV Lamp
4	16446 Lamp Base Ring

Fig. 26 Accessories for Microwave UV Digestion

**16847 Microwave UV Lamp**

Electrode-less cadmium discharge lamp filled with argon.

**16445 Lamp Spacer**

Teflon disk to keep the UV lamp centered inside the vessel and to prevent damage to the 104276 Pressure Vessel NXQ80 by the strap of the 16847 Microwave UV Lamp.

**16446 Lamp Base Ring**

Protective teflon ring to prevent damage to the 104276 Pressure Vessel NXQ80 by the bulb of the 16847 Microwave UV Lamp.

**104290 Rotor 8EVAP MW PRO**

Rotor for simultaneous evaporation of up to 8 solutions. Rotor 8EVAP MW PRO comes with 8 2432 Vessel Jacket M100 PEEK. The vessels are closed by a screw cap fitted with a seal made of PTFE-TFM, a syringe filter for air inlet under clean room conditions and a connection for gas outlet. Flexible connection hoses 11087 Connection Hose made of PTFE connect the vessels to the 8-port 11091 Lead Through EVAP in the cavity wall.

The hoses are connected at the outlet to an external acid scrubber and a vacuum pump. The rotor contains built-in air cooling guides made of reinforced high-performance plastic for fast cooling after evaporation.

All parts are made of highly resistant materials and can be cleaned easily.

**Application:**

Evaporation of acids or water, removal of acids, interfering with analytical measuring methods, removal of silicates with HF

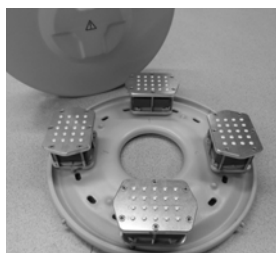
Specifications:	Vessel volume:	100 mL
	Max. filling volume	50 mL
	Pore size of syringe:	0.2 µm

**Comes with:**

8# 2432 Vessel Jacket M100 PEEK

**Not included:**

PTFE-TFM liners (may be taken from the reaction vessels), 11091 Lead Through EVAP, 4756 Scrubber-Set of Washing Bottles (without pump), 4768 Vacuum Pump 230V/50Hz or 4769 Vacuum Pump 115V/60Hz

**92283 Rotor 4X20 MGC**

Fully equipped rotor (turntable and lid) with four assembled 92282 Wellplate 20MGC Assembled, a package of 100 disposable 1.5 mL HPLC/GC autosampler glass vials (12x32mm) with PP screw cap and PTFE-coated silicone seals.

Specifications:	Vial volume:	2 mL
	Operation volume:	0.1-1.5 mL
	Operating pressure:	max. 20 bar (290 psi)
	Max. IR temperature:	180 °C
	Operating temperature:	max. 200 °C

Applications:	Method development
	Combinatorial chemistry
	Reaction screening
	Derivatizations
	Microscale extractions

**Comes with:**

1# 41216 Rotor 4X48 (Without Wellplate), 4# 92282 Wellplate 20MGC Assembled, 1# 92685 Set of HPLC/GC Vials ND8 (100 Pcs), 1# 92734 Set of Screw Caps For HPLC/GC Vials (100 Pcs), 1# Allen key

**104293 Multiwave PRO 50Hz Package 10HF100**

Complete package including:

102030 Multiwave PRO Microwave Oven 50Hz, 5712 Rotor 16 (without vessels), and 10# 5711 Pressure Vessel HF100.

**104294 Multiwave PRO 60 Hz Package 10HF100**

Complete package including:

102031 Multiwave PRO Microwave Oven 60Hz, 5712 Rotor 16 (without vessels), and 10# 5711 Pressure Vessel HF100.

**223915 Multiwave PRO 50Hz Package 16HF100 p-Sensor**

Complete package including:

102030 Multiwave PRO Microwave Oven 50 Hz, 5712 Rotor 16 (without vessels), 16# 5711 Pressure Vessel HF100, 14747 Pressure sensor accessory..

**223916 Multiwave PRO 60 Hz Package 16HF100 p-Sensor**

Complete package including:

102031 Multiwave PRO Microwave Oven 60 Hz, 5712 Rotor 16 (without vessels), 16# 5711 Pressure Vessel HF100, 14747 Pressure sensor accessory.



### 163346 Multiwave PRO 50Hz Package 24HVT80

Complete package including:  
102030 Multiwave PRO Microwave Oven 50Hz and 161101 Rotor 24HVT80.

### 163347 Multiwave PRO 60Hz Package 24HVT80

Complete package including:  
102031 Multiwave PRO Microwave Oven 60Hz and 161101 Rotor 24HVT80.

### 159700 Multiwave PRO Extraction Package 50Hz

Complete package including:  
102030 Multiwave PRO Microwave Oven 50Hz already equipped with 104631 Safety Module SOLV PRO and 5699 Magnetic Stirrer Device, 24176 Rotor 16SOLV MF100, 5698 Pressure/Temperature Sensor Accessory, 16# 22775 Heating Element Ø10x18 and 16# 97446 Glass Filter Insert

### 159699 Multiwave PRO Extraction Package 60Hz

Complete package including:  
102031 Multiwave PRO Microwave Oven 60Hz already equipped with 104631 Safety Module SOLV PRO and 5699 Magnetic Stirrer Device, 24176 Rotor 16SOLV MF100, 5698 Pressure/Temperature Sensor Accessory, 16# 22775 Heating Element Ø10x18 and 16# 97446 Glass Filter Insert

### 108035 MW PRO 50Hz PACKAGE 8NXF100

Complete package including:  
102030 Multiwave PRO Microwave Oven 50Hz and 104273 Rotor 8NXF100.

### 108036 MW PRO 60Hz PACKAGE 8NXF100

Complete package including:  
102031 Multiwave PRO Microwave Oven 60Hz and 104273 Rotor 8NXF100.

### 16449 Sound Insulation Hood



Cardboard container covered with a special sound absorbing knob-shaped PU foam. Installed at the backside of the instrument for remarkable noise reduction.

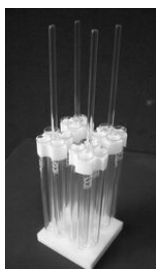
### 102361 Presentation Case Pressure Vessels ASC



Representative collection of pressure vessels of the Multiwave family and the Monowave models for demonstration purposes, containing:

1# 6423 Quartz Vessel Q80, 1# 104452 Pressure Vessel HVT50, 1# Vial MG5, 1# Reaction Vial G4, 1# Reaction Vial G10, 1# Reaction Vial G30, 1# Glass Vial Rack 06 (55 mL), 1# Glass Vial Rack 18 (18 mL), 1# TFM Vial Rack 18 (18 mL)

## 23880 Insert Vessel Set 4x4 Hydrolysis



Set of 4# 23879 Insert Vessel Holder 4x Hydrolysis together with PTFE rack for storage of four units.

**Comes with:**  
16 glass tubes

## 94308 Set of Vials G2 (100 pcs)

Package of 100 standard wide neck crimp top HPLC/GC autosampler glass vials (ND8, 12x32 mm, 1.5 mL). For use with 94271 Insert Vial Holder 3x.

## Accessories for Gas and Liquid Handling

### 104690 Gas loading Set II

The Gas Loading Set II enables loading of reaction vessel with gas.

**Comes with:** 1# 17224 4-Way Valve Station, 1# 102811 Loading connector with hose 2m and 1# 17385 Connecting Piece Hydrolysis

### 17224 4-Way Valve Station



Basic equipment for all kinds of gas and liquid handling applications with connection hoses and connectors for the gas supply.

**Comes with:**

1# , 1# 17202 4-Way Valve made of PEEK, 102811 Loading connector with hose, 17216 NPT Adaptor 1/8", 21922 Adaptor O2 UNF 1/4"-28/G1/4", 17215 Screw Plug and 17082 Hose 0.5 m incl. Connectors

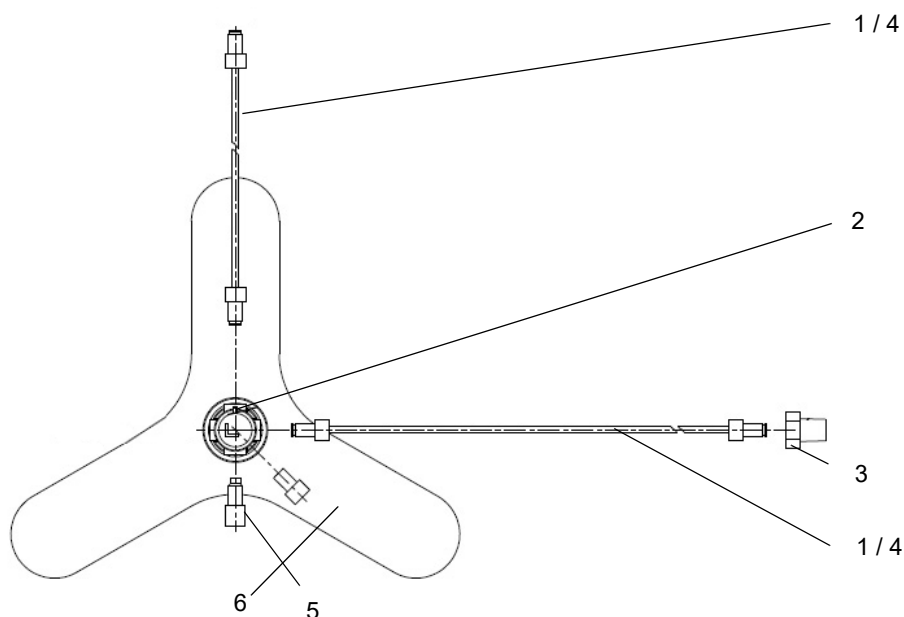


Fig. 27 4-Way Valve Station

No.	Mat.No. / Item
1	17082 Hose 0.5 m incl. Connectors
2	17202 4-Way Valve
3	17216 NPT Adaptor 1/8"
4	17085 Tube
5	17215 Screw Plug
6	17201 Retort Stand Base

## 17202 4-Way Valve



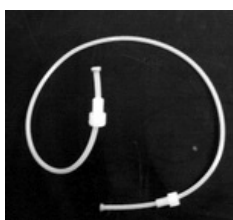
Made of PEEK to quickly switch between the single connections.

## 17385 Connecting Piece Hydrolysis



Made of PEEK to connect the 17224 4-Way Valve Station to the 2722 Syringe Connector. For purging of reaction vessels with inert gas and gas loading at moderate pressure.

## 17082 Hose 0.5 m incl. Connectors



Connection hose to the pressure vessel, made of PTFE, including 1/4"-28 connectors.

## 102811 Loading connector with hose

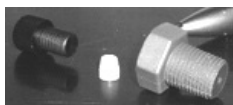
Connection hose to the gas supply, made of PTFE, including 1/4"-28 connectors.

## 17215 Screw Plug



For closing the 4<sup>th</sup> port of the 4-Way Valve Station. The port can be used for further upgrades.

## 17216 NPT Adaptor 1/8"



Connection to the gas supply, made of PEEK.

## 21922 Adaptor O2 UNF 1/4"-28/G1/4"

Connection to the gas supply, made of brass, nickel-plated.

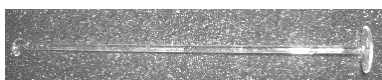
### 79116 Seal XQ Modified



SLip-type seal made of PTFE-TFM, modified with a circular groove comprising a glass crossbeam. Fits to Pressure Vessel XQ80 (10608).

**Not included:** 10335 Seal Holder X, 10359 Safety Disk X, 10358 Safety Disk Holder X, 5692 Venting Screw and 2722 Syringe Connector

### 79118 Glass Holder



Specially designed glass rod with hook and rimmed base platform, capable for SiC heating elements (19432 Heating Element Ø10x8 or 22775 Heating Element Ø10x18).

**Not included:**

SiC 19432 Heating Element Ø10x8 or 22775 Heating Element Ø10x18

**Note:**

Has to be ordered together with 79116 Seal XQ Modified. Both items are single pieces, have to be ordered for each vessel that should be operated with this accessory.

### 99132 Gas Loading Check Valve

The gas loading check valve ensures fast, safe and convenient loading of pressure Vessels of Rotor 8N with gas. It consists of a PEEK valve body and valve seat, 1# 99129 Sealing Bolt TFM, 1# 99158 Sealing Bolt Titanium and 1# 99128 Gasket PTFE.

The gas loading check valve is delivered assembled and is used instead of a standard venting screw. Requires 11059 Seal XQ and 10335 Seal Holder X. Not compatible with Seal NXF and Seal NXQ.

Use Protective Casing MIC (188253) instead of the standard protective casing (11058) in order to avoid damages to the gas loading check valve.

### 99133 Vent Opener Gas

Key for opening the 99132 Gas Loading Check Valve after the reaction.

### 99128 Gasket PTFE

Gasket made of PTFE, is part of the 99132 Gas Loading Check Valve.

### 99129 Sealing Bolt TFM

Sealing bolt made of PTFE-TFM, is part of the 99132 Gas Loading Check Valve.

### 99158 Sealing Bolt Titanium

Sealing bolt made of titanium, is part of the 99132 Gas Loading Check Valve.

### 26331 Consumables Set XF100



Package of sealing parts for 2433 Liner F100 TFM when used for gas loading in Rotor 8N. Required, since the 99132 Gas Loading Check Valve is compatible with 10335 Seal Holder X only and does not fit to the 102865 Seal Holder NX of Rotor 8N.

**Comes with:** 8# 5692 Venting Screw, 8# 10359 Safety Disk X, 8# 2724 Seal for Pressure Vessel M+H+XF, 8# 2722 Syringe Connector, 10358 Safety Disk Holder X, 10335 Seal Holder X

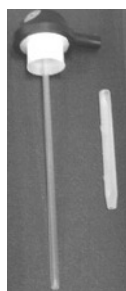
### 26332 Consumables Set XQ80



Package of sealing parts for 6423 Quartz Vessel Q80 when used for oxygen combustion or gas loading in Rotor 8N. Required, since the 99132 Gas Loading Check Valve is compatible with 10335 Seal Holder X only and does not fit to the standard 102865 Seal Holder NX of Rotor 8N.

**Comes with:** 8# 5692 Venting Screw, 8# 11059 Seal XQ, 8# 2724 Seal for Pressure Vessel M+H+XF, 8# 2722 Syringe Connector, 10358 Safety Disk Holder X, 10335 Seal Holder X

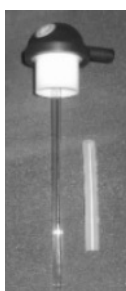
### 18537 Immersion Tube S with Seal XQ



Assembly of a special seal holder for 18468 T-Probe S for 6423 Quartz Vessel Q80 when used for gas loading in Rotor 8N.

Required since the 99132 Gas Loading Check Valve is compatible with 10335 Seal Holder X for 13921 T-Probe only, and does not fit to the standard 104650 Seal Holder NX for T-Probe of Rotor 8N.

### 18539 Immersion Tube S with Seal XF

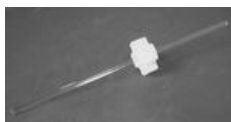


Assembly of a special seal holder for 18468 T-Probe S for 2433 Liner F100 TFM when used for gas loading in Rotor 8N.

Required, since the 99132 Gas Loading Check Valve is compatible with 10335 Seal Holder X for 13921 T-Probe only, and does not fit to the 104650 Seal Holder NX for T-Probe of Rotor 8N.

## Accessories for Hydrolysis

### 23879 Insert Vessel Holder 4x Hydrolysis



Glass rod with PTFE holder for 4 disposable glass tubes (d = 10 mm, h = 100 mm), applicable in MF/HF/NXF100 vessels (equipped with 4 tubes).

**Comes with:**  
4 glass tubes

### 94271 Insert Vial Holder 3x



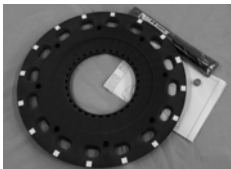
Glass rod with PTFE holder for 3 disposable glass vials (ND8, 12x32 mm), applicable in MF/HF/NXF100 vessels (vials not included).

### 94285 Set of Insert Vial Holder 3x (4 Pcs)

Set of 4# 94271 Insert Vial Holder 3x and 1# 23878 rack (vials not included).

## Update Kits

### 104279 Update Kit Rotor 16MF, HF, SOLV



Retrofit kit for making previous versions of Rotor 16 compatible with Multiwave PRO.

**Comes with:** 104307 Rotor Base Ring HF, MF with Magnets, Rotor Lid Magnet, a drill and an instruction sheet

### 104281 Update Kit Rotor 48



Retrofit kit for making previous versions of Rotor 48 compatible with Multiwave PRO.

**Comes with:** 104310 Rotor Base Ring 48 with Magnets, Rotor Lid Magnet, a drill and an instruction sheet

### 104278 Update Kit Rotor 8S



Polymer segment with magnets, which is mounted to the Bottom Load Ring of Rotor 8S, to make Rotor 8S compatible with Multiwave PRO.

### 104311 Rotor Base Ring 4 with Magnets

Central ring for reinforcing and positioning Rotor 4 in the oven.

The ring is equipped with white reflective marks and with magnets for the position recognition system of Multiwave 3000 or Multiwave PRO.

### 104312 Rotor Base Ring 64 with Magnets

Central ring for reinforcing and positioning Rotor 64 in the oven. The ring is equipped with white reflective marks and with magnets for the position recognition system of or Multiwave PRO. Needed to operate Rotor 64MG5 used in Multiwave 3000 with Multiwave PRO.



## Scrubber

### 4756 Scrubber-Set of Washing Bottles (without pump)



Set of four bottles, containing all flanges, gas diffusers, connectors and hoses in a corrosion resistant casing. Flexible PFA hose for connection to Multiwave PRO or other 12 mm hose connector included.

### 4768 Vacuum Pump 230V/50Hz



Chemically resistant, high throughput pump for use with 4756 Scrubber-Set of Washing Bottles (without pump).

Specifications:	Power supply:	230 V, 50 Hz, 130 W
	Suction power:	20 L/min.
	Vacuum:	< 100 mbar
	Overpressure max.:	1 bar ( psi)

### 4769 Vacuum Pump 115V/60Hz

Same as 4768 Vacuum Pump 230V/50Hz but for main supply 115 V/60Hz high throughput pump for use with 4756 Scrubber-Set of Washing Bottles (without pump).

### 4739 Gas Washing Bottle 2000 mL PP



Extra-strong vacuum resistant PP bottle with a volume of 2000 mL. Cap with opening for a PTFE-flange but without the flange itself.

## Mechanical Spare Parts

### 102130 Exhaust Module MW PRO

Strong, efficient and low-noise fan unit to protect vessels against over temperature during microwave-heated reactions, for efficient cooling after the heating phase and for exhausting noxious gases in case of vessel leakage or venting. The unit comes with connection cable for easy replacement by the user. Fits to both oven types, 50 Hz as well as 60 Hz.

### 74886 Seal Silicone Black



Chemically and thermally resistant silicone seal to connect the internal exhaust tube to the central exhaust holes of the chamber of the oven cavity.

### 74904 Hose Clip Dmin=70 Dmax=92



The 184269 Air Exhaust Hose D=80 PVC Antistatic has to be fixed on the exhaust module by the help of this adjustable clip.

### 184269 Air Exhaust Hose D=80 PVC Antistatic



Flexible exhaust hose made of PVC.  
Guides the cooling air from the exhaust module to a laboratory exhaust system like a fume hood.  
To be ordered by the meter.

**Note:** The distance between oven and exhaust system should not exceed 10 m.

### 184889 Air Exhaust Hose D=80 PVC - coated antistatic



Flexible exhaust hose made of antistatic PVC with pre-mounted grounding cable for MW PRO SOLV.  
Guides the cooling air from the exhaust module to a laboratory exhaust system like a fume hood. Length: 3m

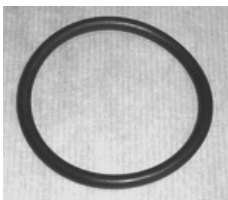
**Note:** The distance between oven and exhaust system should not exceed 10 m.

**53799 Rubber Spacer D=25 H=20 M6 L=17 t=6,5 65sh**



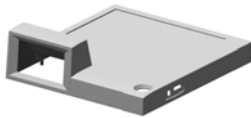
Rubber buffer on the ground plate of Multiwave PRO, to fix the internal exhaust tube.

**4294 O-Ring 62x5 NBR 70**



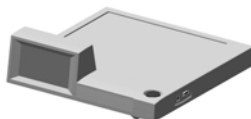
Chemically and thermally resistant O-ring between the internal exhaust tube of the oven and the cover of the exhaust tube.

**102111 Top Cover MW PRO**



Top cover of Multiwave PRO, made of ABS with conductive varnish for EMC protection at the inner side.

**102163 Top Cover MW PRO assembled**



Top cover of Multiwave PRO, includes 156651 DISPLAY UNIT II (ASSEMBLED).

Not included but required: 156521 PCB CPU Board II MW PRO

**102113 Door Cover Inside MW PRO**



Black polymer cover on the inner side of the safety door of the oven, with snap-on fastening.

**102159 Door Cover Outside MW PRO**



Front side cover of the safety door.

**102157 Door MW PRO**



Consists of a complete door for MW PRO.

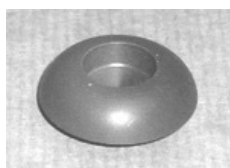
Not included: 102113 Door Cover Inside MW PRO and 102159 Door Cover Outside MW PRO

**4230 Slot Cover**



White PTFE cover plate to protect the microwave antenna slots.

**4238 Drive Bearing**



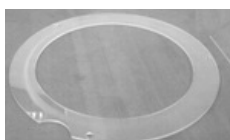
Central bearing of the turntable.

**4239 Drive Star**



Holds the turntable and is plugged into the 4238 Drive Bearing.

**4240 Drive Base**



Ring shaped support for the drive star.

**4237 Turntable**



Plate-shaped support made of PEEK, which holds the rotor inside the cavity.

**4259 Tension Spring**



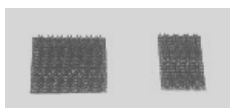
Small spring for the door safety-hooks.

**4260 Tension Spring**



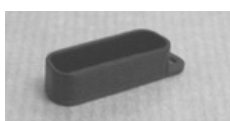
Small spring for the door mechanism.

**4274 Compression Lock**



Stickers for mounting the outer or inner door cover. Needs to be ordered per meter.

**78042 Protective Cap (D-Sub 15 Receptacle)**



Cap for the CAL port on the instrument to prevent corrosion on the contacts.

**7417 Buffer**



Small spacer for the clamp to fix the 102130 Exhaust Module MW PRO.

**7913 Fixing Bolt**



Bolt for fixing the PTFE 4230 Slot Cover.

**16542 Cheese Head Screw M5x10 PEEK**

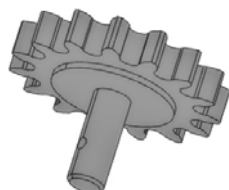
Screw made of PEEK used in the following parts:  
104290 Rotor 8EVAP MW PRO, 104277 Rotor Upper Plate 8N (Assembled), 13921 T-Probe,  
5698 Pressure/Temperature Sensor Accessory, 14747 Pressure Sensor Accessory.

**102812 IR Cap**

Protective cap for the 102168 IR Temperature Sensor MW PRO made of IR transparent plastics.

**4192 Toothed Belt L=950 B=10**

Toothed belt to drive the 5699 Magnetic Stirrer Device.

**71924 Gear Wheel PEEK**

## Printed Circuit Boards.

### **98975 PCB Power Board MW PRO**

Printed circuit board for magnetron power control, sensor inputs as well as safety and control circuits.

### **98973 PCB Sensor Supply MW PRO**

Supply and receiver board for the pressure/temperature signals coming from Multiwave PRO sensors.

### **101952 Power Supply 12V 6A**

Switched power supply board for 12V.

### **105957 Display Driving Board MW PRO with cable**

Display Driving board for Multiwave PRO delivered before January 2015.

### **98967 PCB CPU Board MW PRO**

CPU Board for Multiwave PRO delivered before January 2015.

### **156521 PCB CPU Board II MW PRO**

CPU Board for Multiwave PRO delivered after January 2015..

### **156651 DISPLAY UNIT II (ASSEMBLED)**

Replacement display unit for Multiwave PRO delivered after January 2015.

For Multiwave PRO below the serial numbers mentioned above, it is necessary to order the 156521 PCB CPU Board II MW PRO in addition.

### **165679 Retrofit kit Display MW PRO**

Replacement retrofit kit Display for Multiwave PRO delivered before January 2015.

The retrofit kit Display includes 156521 PCB CPU Board II MW PRO (without Toradex board) and 156651 DISPLAY UNIT II (ASSEMBLED).

## Electrical Components.

**12667 HV Transformer 230V incl. heat sink right**

High voltage transformer including an air baffle plate for the right side, assembled.

**12668 HV Transformer 230V incl. heat sink left**

High voltage transformer including an air baffle plate for the left side, assembled.

**75224 Power Cable CEE Plug 16A black 2.5 mt**

Mains connection for the 50Hz version of Multiwave PRO (Central European type). Mains plug CEE (7) VII, standard in Germany, Austria, Norway, Sweden, Finland, the Netherlands, Belgium, France; it is also used in Portugal and Spain. Supply court H05V V-F, conductor diameter 1.5 mm<sup>2</sup>, length 2.5 m Mains connector C19 according to EN60320 (16A, 250V).

**89984 Power Cable 3X12AWG 2.5M USA**

USA mains connection for the 60Hz version of Multiwave PRO (North American type). Mains plug NEMA N6-20 (20A, 250V), standard in USA and Canada. Supply court recognized AWG 12, length 2.5 m Mains connector C19 according to EN60320 (16A, 250V).

**75186 Line Filter 250V 20A**

Filter for the mains supply of Multiwave PRO.

**70430 Mains Switch with Thermofuse**

Black mains switch on the front panel, also acts as overload protection.

**73271 HV Capacitor 1 $\mu$ 15**

High voltage capacitor in the HV-circuit of the magnetron for the 50Hz version of Multiwave PRO.

**7401 HV Capacitor 0 $\mu$ 8**

High voltage capacitor in the HV-circuit of the magnetron for the 60Hz version of Multiwave PRO.

**73270 HV-Diode GLC 3-29**

High voltage diode for the magnetron circuit.

**76491 Magnetron 1000W**

Microwave generator with a power of 1000W. Multiwave PRO has two magnetrons installed.

**Comes with:** Glued in temperature sensor.



- 4764 Heating Transformer 230V 50/60Hz 2 x 3.3V 12A**  
Filament transformer for magnetrons.
- 75192 Geared Motor M27x20/S**  
DC motor for rotor drive type M27x20, including gearbox and 102105 Geared Motor kit Multiwave 3000 and Multiwave PRO.
- 102105 Geared Motor kit**  
Geared Motor kit for Multiwave 3000 and Multiwave PRO including 75192 Geared Motor M27x20/S for rotor drive.
- 4329 Geared Motor M42x15 12VDC**  
Motor for the optional 5699 Magnetic Stirrer Device.
- 4737 Motor Capacitor 2  $\mu$  400 VAC**  
Capacitor for the magnetron fan.
- 4330 Exhaust Fan D120 255CBM/H230V**  
Radial fan for cooling the HV transformers and the magnetrons.  
Not included:  
grey plastic air guide housing
- 173858 Blower II MW PRO (coated)**  
Replacement fan for 102130 Exhaust Module MW PRO coated.  
Not included:  
plastic housing and wiring
- 7213 Microswitch 20A**  
Microswitch for the door mechanism: mains voltage and power supply for the high voltage transformers.
- 7211 Microswitch 0.1A**  
Microswitch for the door mechanism: SELV voltage and power signals for „Door Open“- and „Explosion“- alarm.
- 13691 Differential Pressure Switch**  
Mechanical pressure switch for control of the exhaust air flowrate for 104631 Safety Module SOLV PRO.
- 13692 Safety Control Module**  
Emergency stop module in the 104631 Safety Module SOLV PRO, to control the exhaust airflow via differential pressure switches. Complies to international safety standards.

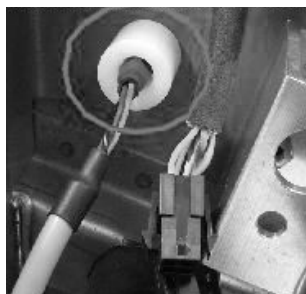
## 102168 IR Temperature Sensor MW PRO

IR-sensor unit for measuring the temperature of all vessels for reaction control and thermal protection.

**Not included:**

Adapter cable EK54 [176700] for the 2nd 102168 IR Temperature Sensor MW PRO.

102168 IR Temperature Sensor MW PRO is not compatible with the old IR Temperature Sensor.



IR sensor old



IR sensor new

## 177257 Speed Indication Board

Emergency stop print of the exhaust Blower II MW PRO (coated).

The 177257 Speed Indication Board includes the cable EK55, EK56, EK57 and a compression plate lock-up to fix the print on the powerboard panel sheet.

## 129998 Lifting Magnet MW PRO

Lifting magnet for Multiwave PRO.

## 98971 Hall Sensor MW PRO

Hall Sensor for Rotor detection in Multiwave PRO.