

Operating Instructions

RETOCAST I

LABORATORY EQUIPMENT IN STAINLAESS STEEL



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Dear Customer!

The compact benchtop centrifugal induction casting machine RETOCAST I is suitable for casting precious and non-precious metal alloys under vacuum as well as model casting. The high performance induction heating melting generator ensures high precision melting of alloys and fast working. The sophisticated centrifugal arm with three different speeds ensures rapid adjustment to different mould sizes.

Any other use or usage beyond this scope is considered unintended use. The manufacturer shall not be responsible for any damages that may result thereby.

Prior to installation of the device operating instructions and especially the safety instructions must be read and followed by all personnel who use this device.

After having unpacked the device, please check carefully whether transportation damages of any kind have occurred. If that is the case, the carrier or manufacturer must be notified within 3 days. The company will not be responsible for any damages found after that.

These operating instructions must be read and followed by all personnel who use this device. To ensure quick access we recommend to keep it at a safe place near the device. In case of loss it can be ordered from the manufacturer.

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1 Technical Description

1.1 Basic Equipment

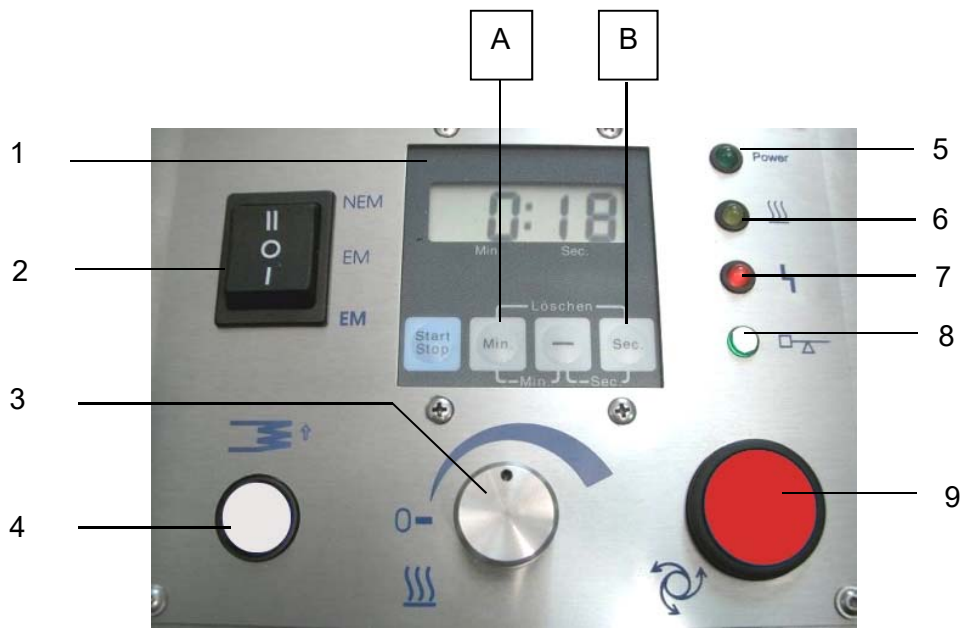
- RETOCAST I casting machine
- 1 ceramic crucible (non-precious metal)
- 1 graphite crucible (noble metal)
- 1 hose package
- 1 manual opener

1.2 Special Accessories

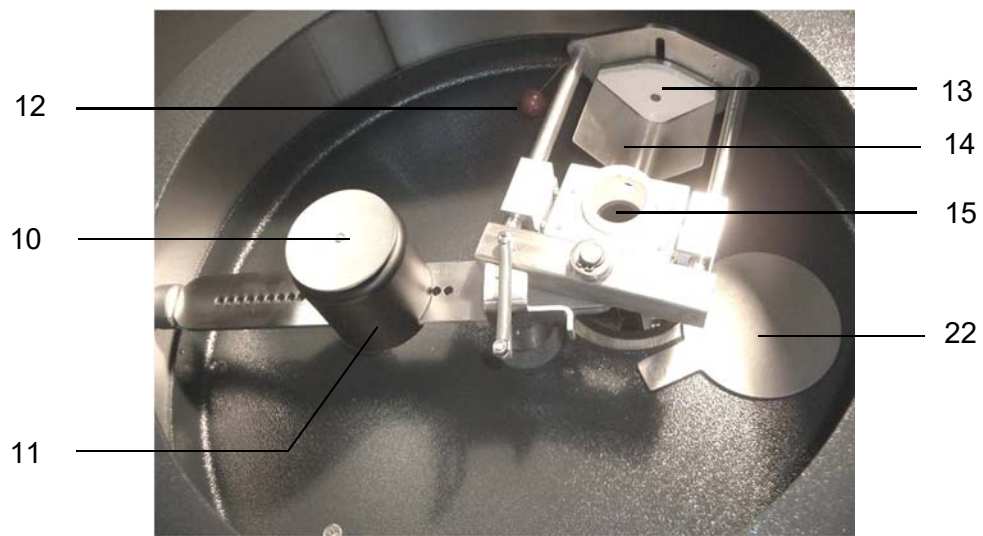
- Order-No.: 23807000 Water cooling unit
- Order-No.: 23806000 Crucible holder
- Order-No.: 28001000 Ceramic crucible for non-precious metals (5 pcs./pack.)
- Order-No.: 28002000 Graphite insert for noble metal (5 pcs./pack.)

1.3 Device Description

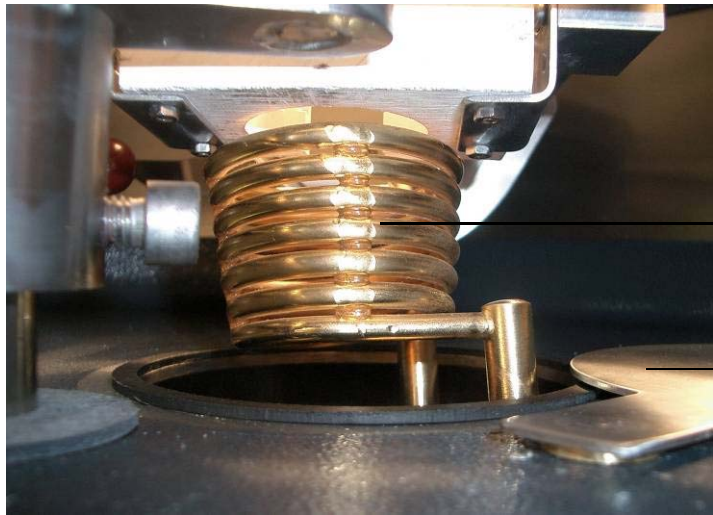
- 1 Timer
- 2 Switch (torque)
- 3 Power control
- 4 Incutions button
- 5 LED „Power“ (Device is ready to use)
- 6 LED Generator „On“
- 7 LED „malfunction“
- 8 LED (centrifugal arm in correct position)
- 9 „Start“-switch
- 10 Locating pin incl. plate
- 11 Counterweight
- 12 Adjusting lever
- 13 Mould's back insulation
- 14 Mould support
- 15 Crucible holder
- 16 Induction coil
- 17 Lid
- 18 Emergency stop switch
- 19 Power switch
- 20 Device socket for water cooling unit (option)
- 21 Automatic fuse 20 A
- 22 Induction coil flap
- 23 Automatic fuse 0,8 A for lid opener
- 24 Sight glass
- 25 Compressed air connection
- 26 Water inlet
- 27 Water reflux
- 28 Power connection
- 29 Green control lamp



Control unit/panel



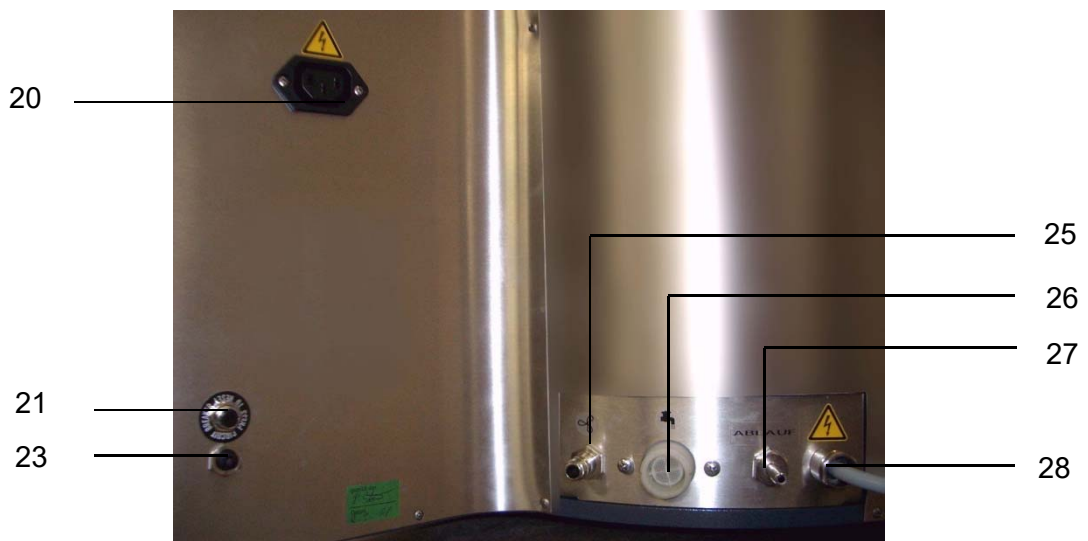
Interior of the unit



Interior with induction coil



Device view



Rear side of the device

1.4 Technical Data

Line voltage	230 V/50-60 Hz
Current consumption	3.200 W
Height/width/depth	530(930)/740/510 mm
Weight	60 kg
Speed	500 rpm
Mould size	1-9 and model casting
Amount of metal for casting: max. quantity Minimum quantity	Noble metal 110 g; non-precious metal 55 g Non-precious metal 15 g
Material	Noble metal/non-precious metal/model casting
Sound level	≤ 70 dB(A)
Housing	Stainless steel
Made in Germany (Subject to modifications)	

2 Safety Notes

2.1 General Safety Notes

- All equipment undergoes final inspection and testing before leaving our factory. However, if equipment is damaged during shipping or through any other circumstances, it must not be used in service. Please check the device regularly for damages. Damaged parts should be replaced immediately.
- All power/air/water/gas sources should be rated for the demands of the device as listed in the technical data sheets. Maximum ratings must not be exceeded. All VDE (Verein Deutscher Elektro-Ingenieure) standards should be followed. Equipment should be grounded according to standards.
- Adherence to valid regulations regarding necessary checks (e.g. according to Accident Prevention & Insurance or electrical equipment) is exclusively taken over by the buyer/user of this product.
- This device has been designated to be used only for its intended purpose. All other applications must be prohibited for safety reasons as otherwise the manufacturer's warranty expires.
- The device should be set-up in a clean, well-ventilated room, if necessary under a hood.
- Supporting surfaces should be straight, flat and adequately stable.
- Don't place anything on top of the machine.
- To avoid injury, appropriate protection should be worn (e.g. gloves, safety glasses, safety shoes, hearing protection etc.)
- If the machine is defective or working improperly it must be taken out of service. In case of further use of the machine the owner will be held responsible for any consequential damage.
- To prevent accidents from water, fire or explosion, all power/air/water/gas sources should be turned off after working hours and during breaks, and secured against unauthorized access.
- When carrying out maintenance works or repairs or when opening the device always turn off the main power switch and unplug the whole unit.
- Repairs should be carried out only by the manufacturer or by qualified and certified personnel appointed according to chapter 7 – warranty.
- In case of leaking water out of housing or tank shut down device and call service.

2.2 Specific Safety Notes

Attention:

The machine must not be used by people with electronic implants e.g. pacemakers.

In case of danger press the red emergency button (18) immediately. The casting procedure can be interrupted prematurely by activating the emergency stop switch. The lid (17) opens automatically after 30 sec.

After each casting the time to cool down the machine must be at least 10minutes. During cooling time, please open the lid and remove all muffle or heat exposing objects from the machine.

- The RETOCAST I is a benchtop unit. When installing make sure the machine is horizontal and has a stable base. Please make sure that the machine won't fall off the support in case of wrong counterweight adjustment, leading to an unbalance in machine.
- Carefully close the metal lid to prevent contusion.
- Don't store any explosives, highly inflammable or burnable material in the working area.
- Always wear welding goggles and protective gloves during metal fusion. Parts positioned close to the crucible and liquid metal in the crucible are hot and are subject to appropriate safety measure to avoid causing burns. Installiertes Schutzglas verwenden.
- Use appropriate pliers to insert or to take out the mould and the crucible. Danger of burns.
- Only use the device for melting metals and alloys in appropriate crucibles (only use original products from manufacturer).
- Never operate the machine without metal, with too much or too little alloy (minimum quantity 15 g non-precious metal; depending on the alloy) to prevent damage to the generator. Don't use old metal (danger of crucible cracks). We don't assume liability for consequential damage.
- Only use metals approved for casting from their manufacturers, don't use any alloys containing ingredients like Beryllium etc.; ensure sufficient ventilation, danger of intoxication.
- Use and processing of endangering material / hazardous to human health, carefully observe the safety instructions and safety data sheets.
- Prior to casting the crucible is subject to an optical control to exclude damage or wear of material.
- The generator may only be turned on if the melting material is already in the machine.
- When the heating is on, don't touch the inductor chamber with your hands or other tools.

- Never open lid before the centrifugal arm has totally stopped. Risk of injury when reaching into the running machine.

3 Installation

The equipment delivered is ready for immediate use. The sealed plug can be connected directly to the mains supply 230 V/16 A. For installation please refer to chapter 2.

3.1 Installation

Note:

Prior to connection to the power supply check whether the specifications on the rating plate correspond to the supply network: **Fuse protection:** slow blow fuse 16 A or circuit breaker K16 A or C16 A, minimum tension 210 V/max. 240 V. Don't connect any other loads to the 16 A fuse.

In order to minimize mould cooling during insertion, the RETOCAST I has to be set up very near to the preheating furnace. Please ensure dust-free surroundings (don't install the machine e.g. near to the sandblaster).

3.2 Compressed air connection

Note:

Take care to prevent compressed air contamination and water in compressed air!

Please arrange for at least 4 bar compressed air. Take care that the hoses are no longer than 2 m max. Usually a hose with a light width of 9 mm is used as well as a quick coupling system, type NG7.

3.3 Water connection

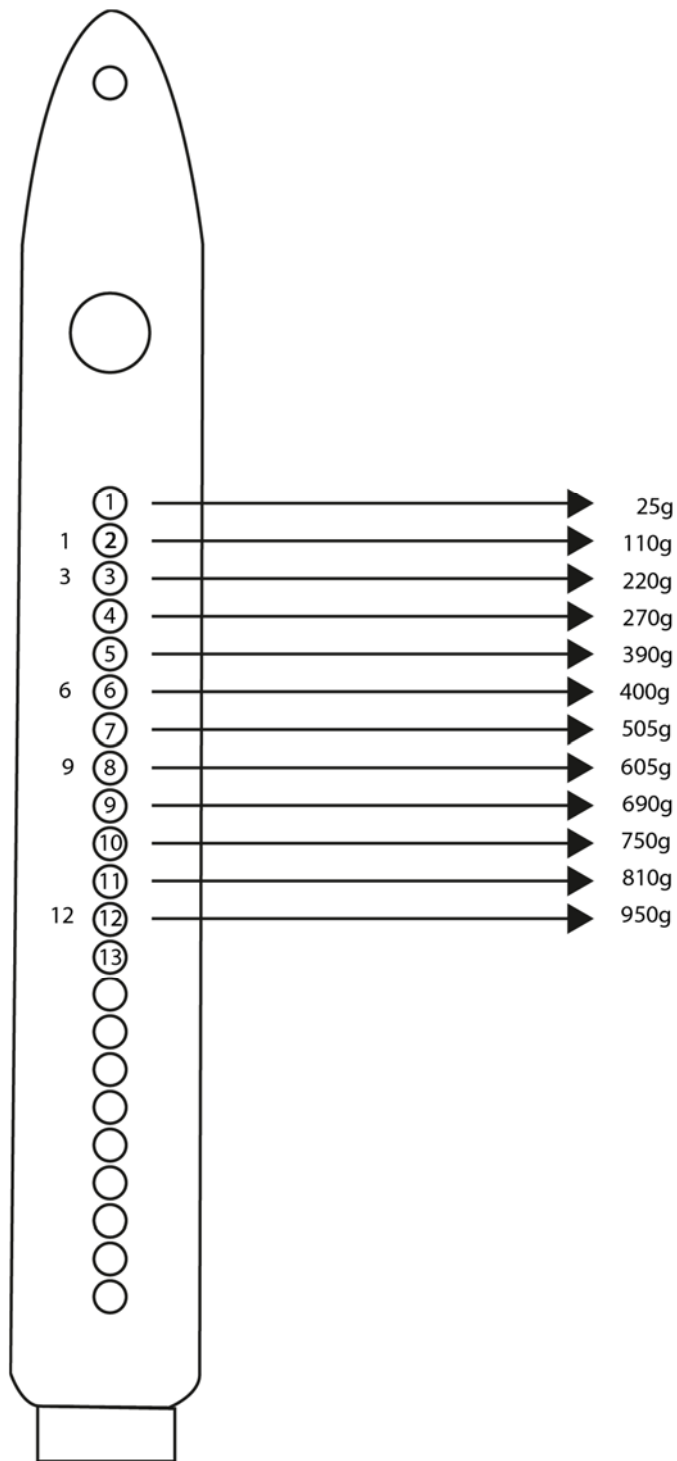
Note:

Water temperature may not exceed 35 °C. When working with the water cooling unit, put the end of the outlet hose in the storage tank. It's important that the hose's end is always under water.

1. Connect water to the tap by the supplied hose. Water supply pressure at least 3 bar.
2. Put water drain hose into the sink or the waste drainage. (Use clamp to secure hose).
Alternatively the REITEL water cooling unit can be ordered and installed.

3.4 Setting the counterweight on the centrifuge arm

The values in grams are approximate values that can be used as a reference for aligning muffles that do not conform to the "classic" ring system. Setting for approximate muffle weight: **Please note that the muffles must be weighed with the metal to be poured!**



4 Operation

Note:

Prior to switching on the unit make sure that the emergency switch has been released.

When the emergency stop switch is activated, casting procedure will not start!

The timer button „Start/Stop“ shouldn't be activated after starting the casting procedure, to prevent premature interruption of the heating process.

Casting procedure starts as soon as the lid (17) is closed and the green control lamp (29) is off.

1. Turn the potentiometer (3) to „0“. Turn the regulator completely to the left until it snaps in.
2. Switch on the unit with the power switch (19). The switch shines and the device is ready to use.
3. Open the lid. If the lid has locked, press the emergency stop switch (18). After approx. 30 sec. the lid opens automatically.
4. Manually rotate the centrifugal arm until it has reached a position above the induction coil flap (22). The correct position is reached as soon as a resistance is noticeable and the LED (8) shines. The moving end of the centrifugal arm is bent.
5. Adjust the centrifugal arm with the counterweight (11) in accordance with the mould size. Lift locking pin with plate (10) and allow it to lock again after adjustment. For standard mould sizes markings are provided.
6. Adjust mould support in accordance with mould size. Use the lever (12) to adjust mould height (12). Pay attention to an aligning position of the mould's funnel and the crucible opening.
7. Activate the induction button (4). The induction coil moves upwards into position.
8. When casting noble metal, put the graphite insert in the crucible support (15).
9. Alloy is filled in the crucible by using an alloy tray (minimum quantity non-precious metal 15 g and maximum quantity noble metal 10 g/non-precious metal 55 g).

10. Set startup delay time with switch (2) for torque:
 - „0“ = very gentle (for plaster-bonded investment);
 - „I“ = gentle (for noble metal);
 - „II“ = quick (for non-precious metal).
11. Set timer (1) to required centrifugation time:
 - Key A: minutes
 - Key B: seconds
 - Key A+B: reset

4.1 Casting with premelting

1. For casting with pre-melting put the cover (17) on, without closing it. The contact is closed and the heating process in the induction coil chamber is free.
2. Fully turn on potentiometer (3). The metal starts to melt. Watch melting process through sight glass (24).
3. Open the lid (17), as soon as the alloy pellets have a red-hot color. (The alloy must not be entirely melted.) Put the muffle on the muffle support (14) and close the lid (17). The green control lamp (29) goes off. When inserting the mould, pay attention to an aligning position of the mould's funnel and the crucible opening.
4. As soon as the alloy is sufficiently melted, press the „Start“ switch (9) to start casting. The induction coil goes down and casting procedure starts.
5. The casting process stops automatically after the centrifugation time has run out. After approx. 30 seconds, the lid (17) opens automatically.

4.2 Casting without premelting

1. For casting without premelting put the mould on the mould support (14) and close the lid (17). The green control lamp (29) goes off. When inserting the mould pay attention to an aligning position of the mould's funnel and the crucible opening.
2. Fully turn on the potentiometer (3). The alloy starts to melt. Watch melting process through sight glass (24).
3. As soon as the alloy is sufficiently melted, press the „Start“ switch (9) to start casting. The induction coil goes down and casting procedure starts.
4. Upon expiry of centrifugation time centrifugation process is finished. After approx. 30 seconds, the lid (17) opens automatically.

5 Troubleshooting

Device doesn't start.	a. Check fuse of the building. b. Check the device's fuse.
Centrifugation doesn't start, green control lamp (29) shines.	Carefully close lid (17).
Lid (17) doesn't open.	Press emergency stop switch (18) or open lid with the manual opener (Note: never open the lid during centrifugation process).
Machine vibration and runout.	Wrong counterweight adjustment leads to unbalance and strong vibrations → Press emergency stop switch (18). After 30 seconds the lid opens. Readjust counterweight.
Induction coil (16) doesn't lift up.	a. Set potentiometer (3) to "0". b. Check centrifugal arm position (LED).
Centrifugation time has not been set.	Press emergency switch (18), after 30 sec. the lid opens, set centrifugation time, repeat casting procedure.
LED „malfunction“ (7) shines.	Contact service.

6 Maintenance

- Regularly check the device. Pay attention to visible damages to housing, power cord or compressed air hoses.
- Regularly clean or Hoover the centrifugal arm. Dirt particles may disturb the coil cover.
- The following components are subject to permanent control:
 - perfect mould's back insulation (13) (clean and non-defective);
 - the crucible support (15) should be without cracks;
 - the centrifugal arm should be easily movable;
 - the induction coil flap (22) is in alignment with the induction coil.
- Regularly clean the housing with a damp cloth or with REITEL stainless steel care spray.

Note:

Clean and protect your device regularly with the REITEL stainless steel care spray (order-no.: 90405000) to remove lime, plaster and dust as well as other contaminants from the surface of equipment and to prevent corrosion. The spray creates a water repellent protective film which helps keep the equipment clean.

7 Warranty

We, REITEL Feinwerktechnik GmbH, offer a 1 year's warranty beginning from the proven date of purchase. This warranty covers all defects traceable to materials, design or workmanship. The following warranty regulations are applicable:

Within the warranty period Reitel Feinwerktechnik GmbH or an authorized distributor agrees at its sole option, to perform repair or replace this product at no charge covering all defects traceable to materials, design or workmanship. Warranty only applies to appropriate use and regular maintenance of this product according to the operating instructions. Claims under warranty are restricted to complementary performance. Additional claims, especially claims for indemnifications, are not covered by this warranty.

1.

Warranty claims have to be addressed to the distributor the product was purchased from or directly to our service department.

Contact:

REITEL Feinwerktechnik GmbH

Senfdamm 20

49152 Bad Essen

Germany

Phone: +49(0)5472-9432-32 (Service Department)

Phone: +49(0)5472-9432-0 (Reception)

Fax-No: +49(0)5472-9432-40

2.

In case of warranty claim application the sales receipt or your purchase invoice showing the date of purchase of the product and the serial number must be furnished. Securely pack and ship the device, freight charges prepaid, at your own risk to us, along with a report describing the defect. We reserve the right to decline warranty if this information has been removed or modified after purchase of the product or if they are not included in case of warranty claims.

3.

Warranty repairs have to be performed by REITEL Feinwerktechnik GmbH or by authorised distributors. Repairs performed by non-authorised companies will void the claim for refund since damages to the product resulting hereof are not covered by warranty.

4.

If the unit sent in for repair or replacement is still under the original warranty then warranty is to the end of the original 1 year warranty.

5.

If the unit is destined to be operated in another country than originally intended and manufactured for, modifications to the product might be necessary to comply to special technical and /or safety standards of that specific country. Such modifications are no defects traceable to materials, design or workmanship. and are therefore expressly excluded from warranty claims.

Modification costs or damages arising from operation of the product under deviating conditions are not covered by warranty.

6.

Exclusions from warranty:

- Service and maintenance work as well as repair and replacement of consumables according to our consumables' list
- Transportation cost of the machine or installation and dismounting expenses incurred
- Damages due to use of the product other than for its intended purpose
- Damages due to faulty installation or insufficient maintenance of the product (e.g. decalcification)
- Damages due to natural disaster e.g. lightning, water, fire, act of nature beyond control, war, inadequate line voltage, insufficient ventilation, no decalcification, insufficient care and cleaning or non-adherence to operation and maintenance instructions according to the accompanying operation guide.
- Damage due to use of the product other than in accordance with the instructions provided by REITEL Feinwerktechnik GmbH;
- The warranty does not cover the cost of removal and replacement of parts and accessories, unless supplied as original equipment by REITEL Feinwerktechnik GmbH
- All kind of damages occurred not directly at the device as well as consequential damages (e.g. damages to furniture due to a lack of water, downtime of the machine, material, lost working hours, wages and other consequential damages).

This warranty shall be rendered null and void if:

- the product has been subject to any modification, repair or replacement other than as authorised by REITEL Feinwerktechnik GmbH
- the product is continued to be operated despite a functional defect

7.

The warranty is device specific and may be claimed, within the warranty period, by any person who has legally acquired the device.

8.

Consumables are excluded from warranty. Spare parts are subject to a warranty coverage of 6 months against all defects traceable to materials, design or workmanship according to these warranty regulations.

9.

Legal default claims on the part of the purchaser remain unaffected by this warranty.

10.

We reserve the right to charge a fee if repair of the device is rejected and the device is destined to be sent back unrepaired.

11.

Please note:

Upon repair or replacement of this unit, personal data and settings might get lost or damaged. We don't accept liability for all kind of data loss. The customer is advised to backup essential programs and data before sending for service.

12.

This warranty shall be interpreted in accordance with German law to the exclusion of UN sales law. Place of jurisdiction is our business location.

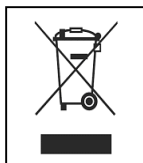
13.

If any provisions of this warranty are judged to be illegal or unenforceable, the continuation in full force and effect of the remaining provisions will not be prejudiced. The provisions of this warranty judged to be illegal or unenforceable shall be construed so as to give effect to the intent manifested by the provision held invalid, illegal or unenforceable and to give effect to section 13 hereof.

14.

Should you need to borrow a device while your device is being repaired, please contact Messrs. REITEL or your distributor. These loans are a service for which availability cannot necessarily be guaranteed. After the warranty period, a fee may be charged for loan equipment as well as for shipping and packaging.

8 Disposal Regulations



According to valid laws our devices are disposed of properly according to B2B-regulations for proper disposal. Pls. contact your local dealer for information on local disposal guideline

9 Spare Parts List

Best.-Nr. Ref.:	Retocast I 76 Ersatzteilliste / Spare parts list 03/2019	Stck/Qty	ME Unit
E6216400	Dichtungssatz für Sichtscheibe / Sealing set for inspection glass	1	St./pc.
E6219910	Drucktaster m.Kontaktelement rot / Push button with red contact element	1	St./pc.
E6031200	Feder für Verriegelungsbolzen / Spring for locking bolt	1	St./pc.
E7807400	Feder, Zug- / Tension spring	1	St./pc.
E7402700	Hauptschalter mit Überstromschutz / Main switch with overload protection	1	St./pc.
E6047300	Keilriemen 950 / Cog belt 950	1	St./pc.
E6272400	Magnetspule für Deckelöffnen / Solenoid for lid opening	1	St./pc.
28003000	Muffelrückenisolierung / Rear muffle isolation	1	St./pc.
E6042100	Schalter I-O-II / Switch I-O-II	1	St./pc.
E6216520	Schauglas, Sicherheits / Safety inspection glass	1	St./pc.
E7616100	Riegelblock Verschluss an Wanne, Gegenstück zu E72890 Bolt lock chamber side (counter piece to E72890)	1	St./pc.
E6097400	Türöffner Stößel mit Kugelknopf zur manuellen Auslösung Door opener lifter with ball knob for manual opening	1	St./pc.
E7208000	Türaufwerfer Bgr., kpl. verschraubt	1	St./pc.
E7289000	Verriegelungseinheit im Deckel, komplett vormontiert Lid lock unit, completely pre-installed	1	St./pc.

10 EU DIRECTIVE

im Sinne der EG-Richtlinie 2006/42/EG über Maschinen (Anhang II A)
according to Machinery Directive 2006/42/EC (Appendix II A)
au sens de la Directive Machines 2006/42/CE (Annexes II A)

Name und Anschrift des Herstellers/Name and address of manufacturer/Nom et adresse du fabricant:

Reitel Feinwerktechnik GmbH
Senfdamm 20
49152 Bad Essen

Diese Erklärung bezieht sich nur auf die Maschine in dem Zustand, in dem sie in Verkehr gebracht wurde; vom Endnutzer nachträglich angebrachte Teile und/oder nachträglich vorgenommene Eingriffe bleiben unberücksichtigt. Die Erklärung verliert ihre Gültigkeit, wenn das Produkt ohne Zustimmung umgebaut oder verändert wird./This declaration relates exclusively to the machinery in the state in which it was placed on the market and excludes components which are added and/or operations carried out subsequently by the final user. This declaration will become invalid if any unauthorised modification is made to the product./Cette déclaration concerne exclusivement les machines dans l'état dans lequel elles ont été mises sur le marché et exclut des composants ajoutés et/ou les opérations effectuées par la suite par l'utilisateur final. La présente déclaration perd sa validité si des modifications non-autorisées ont été apportées à la machine.

Hiermit erklären wir, dass die nachstehend beschriebene Maschine/We hereby declare that the machine described below/Nous déclarons que la machine ci-dessous

Produktbezeichnung/Product name/Nom du produit: Induktionsguss-Schleuder/
Induction heated casting centrifuge/
Fronde à induction par centrifugation

Typenbezeichnung/Type/Type: RETOCAST I

allen einschlägigen Bestimmungen der Maschinenrichtlinie 2006/42/EG sowie der Richtlinie 2014/30/EU (EMV-Richtlinie) über elektromagnetische Verträglichkeit entspricht. Die Schutzziele der Richtlinie 2014/35/EU über elektrische Betriebsmittel sowie 2011/65/EU (RoHS 2) werden eingehalten./is in conformity with all applicable requirements of the Machinery Directive 2006/42/EC and the Electromagnetic Compatibility Directive 2014/30/EC. The safety objectives of the Directive on Electrical Equipment 2014/35/EC as well as the Directive 2011/65/EC (RoHS 2) are adhered to./est conforme aux dispositions applicables de la Directive Machines 2006/42/CE et de la Directive Compatibilité Electromagnétique 2014/30/CE. Les objectifs de sécurité de la Directive sur les Matériels Electriques 2014/35/CE ainsi que de directive 2011/65/CE (RoHS 2) sont respectés.

Angewandte harmonisierte Normen/Harmonised standards applied/Normes harmonisées appliquées:

EN ISO 12100:2011	EN 61010-1:2020
DIN EN 60204-1:2019	EN 61000-6-1:2019
DIN EN 45635-1	EN 61000-6-3:2011
DIN EN 60519-3:2006	

Bevollmächtigter für die Zusammenstellung der relevanten technischen Unterlagen/Representative authorised to compile the relevant technical documentation/Personne autorisée à constituer la documentation technique pertinente:

Daniel Reitel
Reitel Feinwerktechnik GmbH
Senfdamm 20
49152 Bad Essen

30.03.2021

Ort, Datum
Place, Date
Lieu, Date

Daniel Reitel, Geschäftsführender Gesellschafter/Managing Director/
Directeur Général

Unterschrift/Signature/
Signature



We manufacture in compliance with Quality Management ISO 13485:2016 incorporating established standards.



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