



REMECH Standard Operating Procedure (SOP)

Version V3.03 (as of: December 1, 2022)

For contractors (suppliers), the REMECH Standard Operating Procedure are available for our partners to download via the Downloads area at <https://www.remech.de/>.

Version	Date	Section	Change
3.00	May 1, 2022	All	Revision of REMECH SOP, version 2.0
3.01	May 9, 2022	8 +11	Update of color scheme, installation instructions
3.02	August 15, 2022	10	Update bolting connections
3.03	November 14, 2022	10	Update general manufacturers specifications



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1 Target group

It is valid for all employees of REMECH Systemtechnik GmbH, and for all contractors of REMECH Systemtechnik GmbH.

2 Purpose

This Standard Operating Procedure regulates the organizational procedures and production specifications at REMECH Systemtechnik GmbH.

3 Basic principles

The Standard Operating Procedure defines the courses of action and scope for ensuring uniform procedures are followed in the manufacture and delivery of products.

The rules described here cover detailed planning, as well as purchasing, manufacture and shipping.

4 Terms and definitions

REMECH	REMECH Systemtechnik GmbH
SOP	REMECH Standard Operating Procedure
QAC	Quality Assurance Contract
NDA	Non-disclosure agreement
CLI	Client (REMECH)
CON	Contractor (external suppliers and REMECH departments involved in the process flow)

5 Referenced documents

/R1/	Confidentiality Agreement (is contractually agreed with the Contractor by the Client)
/R2/	Quality assurance agreement (is contractually agreed with the Contractor by the Client)
/R3/	Test Report (is made available to the Contractors by the Client)
/R4/	Rules for Business Partners

6 General information

The drawings / parts lists and the order-specific color concept always take precedence. Unless otherwise provided therein, the specifications below in items 7 ff. apply.

The binding production document is the drawing (hard copy or PDF format). Converted data (DXF, STEP, Allcatpart, 3D PDF) is prone to conversion errors.

Every order to the Contractor takes the REMECH SOP as its basic reference.



6.1 Up-to-date status

The Client reserves the right to update this SOP at irregular intervals and without special notification. The Contractor shall ensure that the most recent version of this standard operating procedure is available to it for each order and that it has taken due note thereof.

The most recent version of the SOP is available for our partners on our homepage <http://www.remech.de> under Downloads.

Changes to the previous version of this SOP are highlighted in yellow.

The Client shall inform the Contractor in the event of any changes made to the SOP after an order has been placed.

6.2 Audits and supplier inspections

6.2.1 Audits

REMECH reserves the right to conduct audits based on EN ISO 9001:2015 and, where applicable, VDA 6.4, EN ISO 14001:2015 and ISO 45001:2018. These audits will be coordinated with you in good time, and you will receive an audit program.

6.2.2 Progress checks

The Contractor grants the Client the right to check the progress of the project at any time (also at short notice), even at the Contractor's premises. If necessary, the Contractor shall prepare photographic documentation for online checking of the status of production or assembly.

6.2.3 Quality assurance and non-disclosure agreement

The Client concludes a /R1/ Non-disclosure agreement (GHV) and /R2/ Quality assurance agreement (QSV) with the Contractor.

6.2.4 Infosec / Data security

Transferred data are to be treated according to the signed non-disclosure agreements.

If, in the course of processing the order, problems arise in the area of data security (e.g. hacker attack) on the part of the Contractor, the Client shall be informed immediately about the type and scope and the Client's data that is affected.

The /R4/ [Rules for Business Partners](#) apply in all cases.

6.2.5 Labeling of separately supplied material

If material is provided by the Client for the completion of an order, the Contractor shall store this material separately from its other materials in a blocked warehouse. The material provided shall be marked as Contractor's property (REMECH property). The regulations according to ISO EN 9001:2015 section 8.5.3. apply.

7 Production of parts and modules

7.1 Communication

All consultations regarding order processing shall be made via the contact persons / purchasers named in the order. These persons ensure further internal communication. The purchaser must always be informed when there is direct communication between suppliers and other departments in the company.



7.2 General information

It must be ensured that no residues from previous operations (e.g. cooling lubricants) are located in cavities.

Ventilation/drainage holes for residues and for annealing are generally provided for in the design drawing. If for production reasons these are needed at other points or in the Contractor's view there is an insufficient number of them, REMECH should be consulted.

All welding spatter must generally be removed after welding.

The coating must be executed evenly and free of crater-forming substances and substances that impair the paint's wetting properties (no silicone).

7.3 Labeling

All individual production parts and modules for which a label is prescribed in the drawing, must be labeled by the Contractor. The label must be at the position marked "XXX" in the drawing.

If no labeling is noted on the respective individual part drawing, the labeling is omitted.

7.4 Individual production parts

7.4.1 Scope of labeling

Each individual part is labeled with drawing and part number, as noted on the drawing. (See item [7.5. Labeling by the manufacturer](#))

Labeling

The labeling shall be attached directly to the production part. If the labeling cannot or should not be attached directly to the production part because of the condition of the part (part is too small, individual labeling is unnecessary for mass-production parts), such parts shall be delivered in suitable containers (plastic bags, cardboard boxes, euro pallets). The labeling of the containers is then done with a sticker or tag. These must be attached in a non-detachable manner to ensure that they are still attached when they arrive at the location where the parts will be used.

If no label can be attached to the individual part, REMECH should be consulted.

7.4.2 Permitted labeling methods

Plastics: engraving; laser inscription
 Steel/aluminum: steel-stamp number; press stamp; acid stamp; electric engraver; engraving; laser inscription

	Model range	Signing stamp	Acid stamp	Electric recorder	Trailer	Plastic bag: with Labels	Laser-based labeling
Material							
Polyurethane					X	X	
PA6					X	X	X
Unhardened steel	X	X	X	X			X
Hardened steel			X	X	X		X
Aluminum	X	X	X	X			X

Note: On processed parts and fits, the labeling must be with either acid stamp or laser. On painted surfaces, the labeling must be engraved or applied as a steel-stamp number. Stamps, hardness test points and similar must not cause any notch effect or other damage. Designations or labels are only permitted in the places indicated in the drawing.

The use of adhesive labels is not permitted on the parts!

7.5 Labeling by the manufacturer

7.5.1 Specification of the position of the labeling on the individual part

The design engineer shall specify the position of the labeling on the part/module in accordance with the following criteria.

- Labeling also legible in the final assembled state (mandatory for wearing parts), if the installation situation permits
- Labeling primarily on unfinished surfaces
- Labeling shall be applied at an early production stage, in accordance with the individual part drawings

If there is a noticeable deviation from the drawing, it may be necessary to consult REMECH.

Information on the drawing:

XXX	Labeling with drawing number
	Labeling with drawing number

7.5.2 Title block REMECH drawing

Example: 20_7115_1110_001_18_Z00 (in each case with underscore only)

Index INDEX	Änderungen REVISIONS				Datum DATE	Name NAME
Methode 1 ISO 128	Maße, Form u. Lage ohne Toleranzangabe DIMENSIONS, FORM WITHOUT TOLERANCES ISO 2768-mK	Oberfl. Rauheit SURFACE ROUGHNESS	Oberfläche: SURFACE:	Gewicht: ca. 5,1 kg WEIGHT:		
		DIN EN ISO 1302	Maßstab: SCALE: 1:2	Werkst. -Nr. 1.0038		
gezeich. DRAWN	Datum DATE 26.03.20	Name NAME Matthes	 Systemtechnik GmbH Änderungen müssen über CAD erstellt werden MODIFICATIONS ONLY BY CAD	Benennung/TITLE Platte plate		Format/SIZE A4
bearb. COORD.	20.03.20	Knopf		Blatt/SHEET 1		
geprüft CHECKED	26.03.20	Halupka		von/OF 1		
Halbzeug: part-no. fixture:				Zeichnungs-Nummer/DRAWING NUMBER 20_7115_1110_001_18_Z00		

7.5.3 Title block Daimler drawing

Example: F5800010545370103_0_705_1 or Vxx
 (Version is specified in the circle after the item number or Vxx)

TEIL/ PART	705	F580001054537	01 03	WIE GEZEICHNET / AS DRAWN
TEIL/ PART	705	F580001054538	01 03	WIE GESPIEGELT/ AS MIRRORED
xxx - Beschriftung mit Zeichnungsnummer xxx - Marking with drawing number				
$\sqrt{Rz100}$	$\sqrt{Rz6,3}$	$\sqrt{Rz25}$	$\sqrt{Rz1}$	$\sqrt{Rz1}$
-DIN 6784		Umfeld, Maße: DIN ISO 2768-m not toleranced dimension: DIN ISO 2768-m		Maßstab: scale: 1:1
Schweiß-Konstr. A, DIN 8570 welding design: A, DIN 8570		Werkstoff material: 1.0038		
F5800010545370103		0	705	1
BRXXX				

7.5.4 Title block VW drawing

Example: 11-38-D-986539-32-1z
 11-38-D-986540-32-1z

KANTEN GEBROCHEN MESSKANTEN ENTGRÄTET		FLÄCHEN ZU STIFTLÖCHER ±0,05	
TEIL	32	11-38D 986539	WIE GEZEICHNET
TEIL	32	11-38D 986540	SPIEGELBILD
Nach VW 13705 Acc. to VW 13705	$\sqrt{Rz100}$	$\sqrt{Rz40}$	$\sqrt{Rz25}$
$\sqrt{Rz100}$	$\sqrt{Rz40}$	$\sqrt{Rz25}$	$\sqrt{Rz10}$
$\sqrt{Rz100}$	$\sqrt{Rz40}$	$\sqrt{Rz25}$	$\sqrt{Rz6.3}$
Zul. Abweichung fuer Nennmaße ohne Toleranzangabe nach DIN ISO 2768-m (spanende Fertigung). Permissible deviation for nominal sizes without tolerance specification acc. to DIN ISO 2768-m (machining operation).			
tief	≥ 0.5	> 6	> 30
	≤ 6	≤ 30	≤ 120
	± 0.1	± 0.2	± 0.3
	± 0.5	± 0.8	± 1.2
Bemerkung/ Note			
Positionnr. / Item no. 32-1z		Betriebsmittelnummer/ Operating equipment no. 11-38D_986539 11-38D_986540	
öhl	Haerten Hardening -60±2-HRC	Einsatzhaerttiefe Case depth 0,8 mm	Verguerten Quenching and tempering -600°/min
ZSB-91. ASSY sheet	Maßstab Scale 1:1	Werkstoff Material Murtfeldt	



7.5.5 Title block BMW drawing

Example: ZSB no. ... 0134

Module no. is partly not recognizable on the individual part drawings, so the associated Module number should be declared as well. Part numbers are shown in the drawings.

		STICHMASSTOLERANZ OHNE BEMESSUNG CENTER TO CENTER TOLERANCES W/O DIMENSION		nitriert NT 750 +20 HV NHT 0,2 + 0,1																																																																																																																									
		bis/to M5/Ø5,5 ±0,1	M5/Ø5,6-Ø7 ±0,2	M8-M10/Ø7,1-Ø11 ±0,3	Ø6/1008 M12/Ø11,1 ±0,5																																																																																																																								
		Paßbohrung ±0,02 FITTING DRILL HOLE ±0,02		Passung H7 FIT H7																																																																																																																									
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8 Color scheme

Unless otherwise specified in the order/drawings, the following shall apply:

the color scheme specifications apply to individual parts, modules and complete machines

- Pre-treatment:
 - Steel:
 - Mechanical: Manual pre-treatment using appropriate procedures, metallurgically clean
 - All remaining residues have to adhere
 - Aluminum / non-ferrous metals:
 - Mechanical: Metallurgically clean, free of residues
 - Generally without coloring
 - If, in exceptional cases, coloring is provided on the drawing, primer is required!
 - Additional surface treatment (e.g. anodizing) according to drawing specification
 - Plastic:
 - Mechanical: Clean, free of residues
- Synthetic resin-based paints should always be used for primer and top coats. Red lead is not permitted as a primer. The universal, synthetic-resin-based anti-rust coating with a suitably prepared substrate, for all machine parts as a primer coat, is to be given the shade according to the color design.
- Final coat with uniform and homogeneous surface in RAL according to the color scheme
- Powder coatings are not permitted without approval by REMECH. In special cases, they are to be coordinated on a project-specific basis
- The mounting and screw-on surfaces shall be primed according to the color design silk gloss, (thinned form 1:10 mixing ratio with ethyl alcohol, "free of paint runs"). If this cannot be guaranteed, then provide with corrosion protection only.
- The surface must be silk gloss (60%) and free of paint runs
- The nominal layer thickness is at least 80µm (+/-20µm)
- The respective bearing, running and guiding surfaces must be taped, and color residues must be removed
- Threaded bores and precision bores, as well as reflected surfaces for bolt heads, must always be free of paint (rework may have to be carried out by the Contractor)
- Adhesive tape shall be removed after the painting work and before delivery.
- The instructions of the paint manufacturer must be followed when working with coating systems
- the following assembly operations must be carried out only when the surface coating has hardened

Components (such as C-rails, cover plates, etc.) may only be realized without surface treatment if this is so required in the drawing.

9 Changes to the production documents

Production documents are drawings, parts lists and any other data provided.

9.1 Modifications to drawings or amendments by the Contractor

Required modifications during the production process can have the following causes:

- A faulty or unclear drawing
- Missing parts/separately supplied material

For modifications that were made by the Contractor together with the Client (purchasing/SQM), the following information must be noted on the drawing in writing or indelibly on the document and made available to the Client (purchasing/SQM).

(Feedback messages go through SQM/WE to the relevant REMECH specialist departments).

- Description of modification
- Name of the person with whom the modification was agreed at the Client
- Name of the Contractor and/or its authorized representative
- Date and signature

If defective parts, replacement solutions or similar are installed, they must be marked in such a way that it is easily recognizable upon receipt of the goods on our part (e.g. colored stickers, tags, attached drawing, or the like). The labeling is to be coordinated with us in the course of the change release (see above). This also applies to the places where missing parts do not allow complete assembly.

9.2 Permission to deviate

The Contractor must deliver in compliance with the drawings and specifications. In justified cases, a permission to deviate may be granted only by the Client.

The application for permission to deviate must include the following items:

- Part name, part number, modification status
- Type and scope of the deviation (with sketch)
- The exact specifications/analyses for deviations in material
- Test/trial results if any
- Number of pieces and/or delivery date which will be affected by the deviation

Permissions to deviate must always be in writing in order to be effective and shall be limited to a specific number of parts or a specific delivery period.

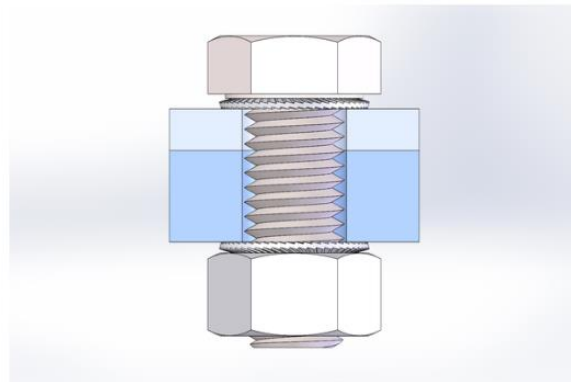
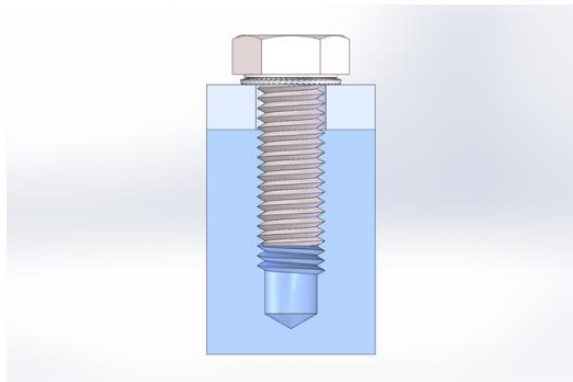
10 Assembly of modules

10.1 Bolted connections

Following regulations do apply to bolting connections:

- If nothing to the contrary is stated in the drawing (e.g. secured with Nord-Lock washers, glued in parts, ...), all bolting connections will basically be secured with SCHNORR® safety washers
- For screws of property class 8.8 till property class 10.9 safety washers of type VS have to be used.
- Pay your attention to general manufacturers specifications below:

CORRECT USAGE OF SAFETY WASHERS



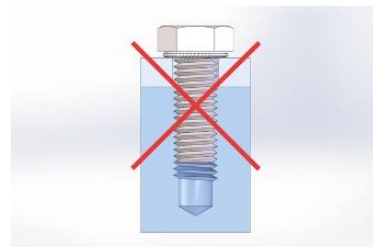
The Original SCHNORR® Safety Washer is only able to obtain its full effectiveness as a bolt locking device if it is used correctly.

To obtain the maximum locking effect of the Original SCHNORR® Safety Washers when fastening at bulkheads the screw head as well as the bolt nut must be fastened in conjunction with a safety washer.

INCORRECT USAGE OF SAFETY WASHERS



To obtain the maximum locking effect of the Original SCHNORR® Safety Washers we recommend **not** to use them in combination with a flat washer.



To obtain the maximum locking effect of the Original SCHNORR® Safety Washers we recommend **not** to use them up-side down.



To obtain the maximum locking effect of the Original SCHNORR® Safety Washers we recommend **not** to use them stacked.

- all bolts, nuts and washers must be zinc coated
- all bolts shall be checked for secure fit to a standard torque and marked with a securing point, using **red** paint, or alternatively a water-proof **red** felt-tip pen, that extends at least over the connection between bolt head and washer (see Annex photos correct/incorrect)
- glued-in bolts are labeled by marking a securing point with **blue** paint or a water-proof **blue** felt-tip pen
- If nothing to the contrary is stated in the parts list, all 8.8 screws must be galvanized.
(Exception: high-tensile bolts, for example: 12.9 black/burnished)

10.2 General information

Additional instructions for labeling screws, mounting guide carriages, deburring contour pieces and removing weld spatter as well as mounting instructions for REMECH-specific applications (e.g. floating or mounting instructions for dampers, shims) can be found as photo examples as an attachment in item 14.

10.3 Planning the packaging

The packaging shall be planned in such a way that no damage can occur during transport and storage. In addition to taking into account aspects such as the most cost-effective handling (filling capacity, low-cost emptying, transport and stacking capability), the planning must also consider environmental aspects.

10.4 Hazardous substances

Prior to the first delivery of hazardous substances, the Client must be sent the appropriate safety data sheets without having to request these.

All parts must be free of silicone and materials that impair the paint's wetting properties or form craters.

10.5 Documents from separately supplied material

Supplied components and groups (e.g. screwdrivers, motors, limit switches, etc.) can include:

- Documents from the original supplier
 - Data sheets
 - Declaration of Conformity
 - Product description
 - Operating instructions
 - Installation instructions
 - Other items
- Rating plates as well as
- Mounting aids (e.g. for guide carriages)

or similar.

Example: Mounting aid for guide carriage



Mounting aid for
guide carriage

These components of the separately supplied material are to be enclosed completely with the mounting assembly in an extra container. The container must be labeled accordingly to prevent confusion (e.g. sticker).



10.6 Packaging and transportation

The packaging is used to protect products during shipping and storage. Transport locking devices must be attached to movable parts. These must be visibly labeled.

Mirrored parts (right/left) must be packed in such a way that they are clearly visible. Stacking of part on top of each other should be avoided if possible.

To avoid damaging the products, preservative agents and, if necessary, additional packaging options are to be used. These are to be agreed with the Client.

This applies to mechanical, chemical and physical loads.

Company-internal and legal regulations, as well as customer-specific guidelines, require adherence to the following principles for packaging and shipping activities:

- the size and the cost of the packaging must be restricted to what is necessary to protect the product
- filling material must be reduced to a minimum
- reusable or recyclable packaging materials must be used
- oil paper and wax paper may be used only with the Client's consent
- only preservative agents that comply with IPPC and EC directives are to be used

The Contractor is responsible for using the selected packaging.

If necessary, information on how to handle the packaging must be attached visibly to the outside (e.g. protection from moisture, lifting points for transport by crane or forklift, various customer-specific and legal labeling).

11 Delivery

Care must be taken to ensure that the quality of the product is not impaired by handling.

To avoid any damage to the product, all selected means of transportation, such as pallets, containers or ground conveyors, must be suitable for the purpose and in proper condition.

It must be possible to handle the means of transportation using standard transportation equipment (forklift or similar). If special transportation equipment is required (such as a special-purpose crane), this must be agreed in advance.

All production parts and modules shall be delivered with delivery documents (delivery note, production drawings, logs, etc.) showing the respective order number of the Client.

The delivery note must contain the following information:

- Orderer (Remech)
- Order number/order item
- Product designation
- Quantity (mirrored-right-left)
- Weight of the goods items
- Country of origin/ commodity code

Deliveries must be made during times specified for the receipt of goods by the Client:

Monday to Friday (except holidays)	7:00 am – 3:45 pm
Break times:	8:45 am – 9:00 am
	11:50 am – 12:20 pm

Deliveries outside these hours must be arranged; otherwise delivery may be refused or not take place.



12 Information on delivery quality

The products/parts/modules to be delivered must be subjected to an outgoing goods inspection (if necessary, with functional test). The test results must be recorded and documented.

The deliveries must be organized in such a way that the Ordering Party only has to check for transport damage. The Contractor must ensure that the quantity and type of material/part are correct. If additional incoming goods tests are required, the Client is entitled to bill the Contractor for the expenses incurred.

If required, the Client can request that a test report be submitted together with the order. The relevant test report [/R2/](#) will be made available to the Contractor by the Client, if required.

All modules are to be delivered in inspected state.

If inspection characteristics are specified on the drawing, a test report is to be supplied as well. Ordered test certificates must be supplied with the ordered parts/modules. The tests of the outgoing goods inspections at the Contractor must be archived there. If necessary, the Client can request these for examination.

The results of the test dimension checks are to be recorded in writing in the test report during inspection of the part and include as a minimum:

- Designation of the inspected part or system
- Designation of the current test specifications, such as production drawings or test standards
- Name of the tester
- Place/date of test
- Designation of the test equipment
- Designation of the respective test dimension
- Reference values for high and low deviations (tolerances)
- Measured actual values (min and max value)

The standard test reports of the manufacturer can be used for this (for example, production inspections, 3D measuring machines, etc.).


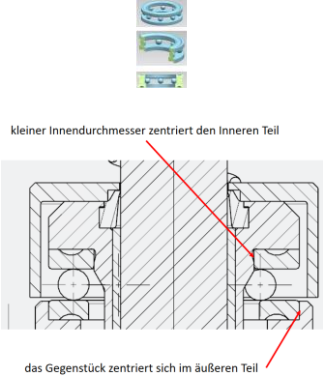
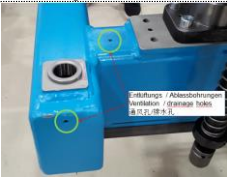


13 Occupational health and safety and environmental protection

The Contractor is obligated to comply with the relevant national legislation and regulations concerning occupational health and safety and environmental protection.

A procedure shall be used that ensures compliance with all applicable legal safety and environmental regulations. These include the requirements of the Closed Substance Cycle and Waste Management Act (Kreislaufwirtschaftsgesetz). Verification is to be supplied in the form of appropriate certificates or declarations of compliance.

14 Annex: REMECH-specific mounting instructions / examples

Examples of marking of bolts:			
correct	incorrect	Notes	
		Tightened screws tightened with the specified torque must be marked Screw connections at shim points are to be marked only after final adjustment or after measuring.	
Notes on assembly of guide carriages:			
			When installing the guide carriages, make sure that the side with the contact surface is in contact with the pin (opposite side to the inscription).
			Cover caps are to be installed in all cases
Notes on mounting set-screw feet:			
			Basically, use only burnished locknuts, not galvanized or similar.
Notes on mounting covers:			
			If necessary, use sufficiently large shims (washers, sheets, etc.) For soft parts, avoid twisting the cover under the screw
Notes on assembly shims:			
			Shim packages must be mounted so that they are easily accessible No disassembly of the entire assembly to remove or add shims is permitted Shims must not fall out of the shim position when opening the screw connection

Notes on assembly / grease nipple:	
	<p>When mounting the grease nipples, ensure accessibility with the filling tool</p> <p>If necessary, lubrication points must be pulled out (hose or similar)</p> <p>Original lubrication must be ensured, including filling of the lines.</p>
Notes on mounting floats (insert bearing shells):	
 <p>kleiner Innendurchmesser zentriert den Inneren Teil</p> <p>das Gegenstück zentriert sich im äußeren Teil</p>	<p>When fitting the deep-groove ball bearings, the bearing shells must be turned</p> <p>The bearing shells now serve as a running surface and realize the flotation</p> <p>It should be noted that the ball cage is on top to minimize contamination</p> <p>The smaller inner diameter centers the inner part, the counterpart centers in the outer part</p>
Example of frame ventilation holes, removal of residues:	
	<p>Completely remove cooling lubricants (risk of corrosion during transportation)</p> <p>If necessary, provide operational ventilation/drainage holes for this and also for annealing (at an identical position in each identical part)</p>
Notes / Deburring:	
	<p>Example: Edges here not broken</p> <p>Edges and corners break (Information on drawing → Note edges are broken)</p>
Notes / Welding:	
	<p>Example: Weld spatter not removed!</p> <p>As a general rule, all weld spatter must be removed</p>