

Parting off and grooving

When you work with ARNO tools, you benefit from reliable processes when it comes to complex grooving operations, and long tool life and higher productivity in your production.

OUTSTANDING

OUTSTANDING FOR MORE PRODUCTIVITY IN YOUR PRODUCTION.

Do you have challenging machining tasks? We have outstanding solutions. For three generations, we have been developing tool systems which have outstanding quality, long tool life and process reliability. As an ARNO customer you benefit from a combination of experience and pioneering spirit. Besides these values we are also influenced by the typical Swabian talent for inventiveness. We are proud to assist our customers to secure that extra competitive advantage with clever new developments and advancements and we will continue along this path in the future.

PARTING OFF AND GROOVING WITH ARNO.

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IRRESISTIBLE ARGUMENTS.

World premiere: 3D grooving module

The first 3D printed grooving module manufactured in series. It has two cooling holes, one of them triangular, to ensure optimum cooling and chip removal even in complex grooving operations.

Patented cooling system

ACS – ARNO Cooling System: the original from ARNO Werkzeuge – the coolant hole is going through the insert seat and brings the coolant underneath the swarf.

Tool life longer by 300%

Even with narrow, deep parting off and grooving operations the ACS – ARNO Cooling System achieves excellent increases in tool life, on average 300%.



Perfectly centred

The ARNO AMS Mini-System always achieves immediate perfect positioning at tip height.

Stable processes

Short and correct: maximum stability for parting off and grooving with ARNO flange mounted holders for many machine manufacturers and types.

70–90% potential savings

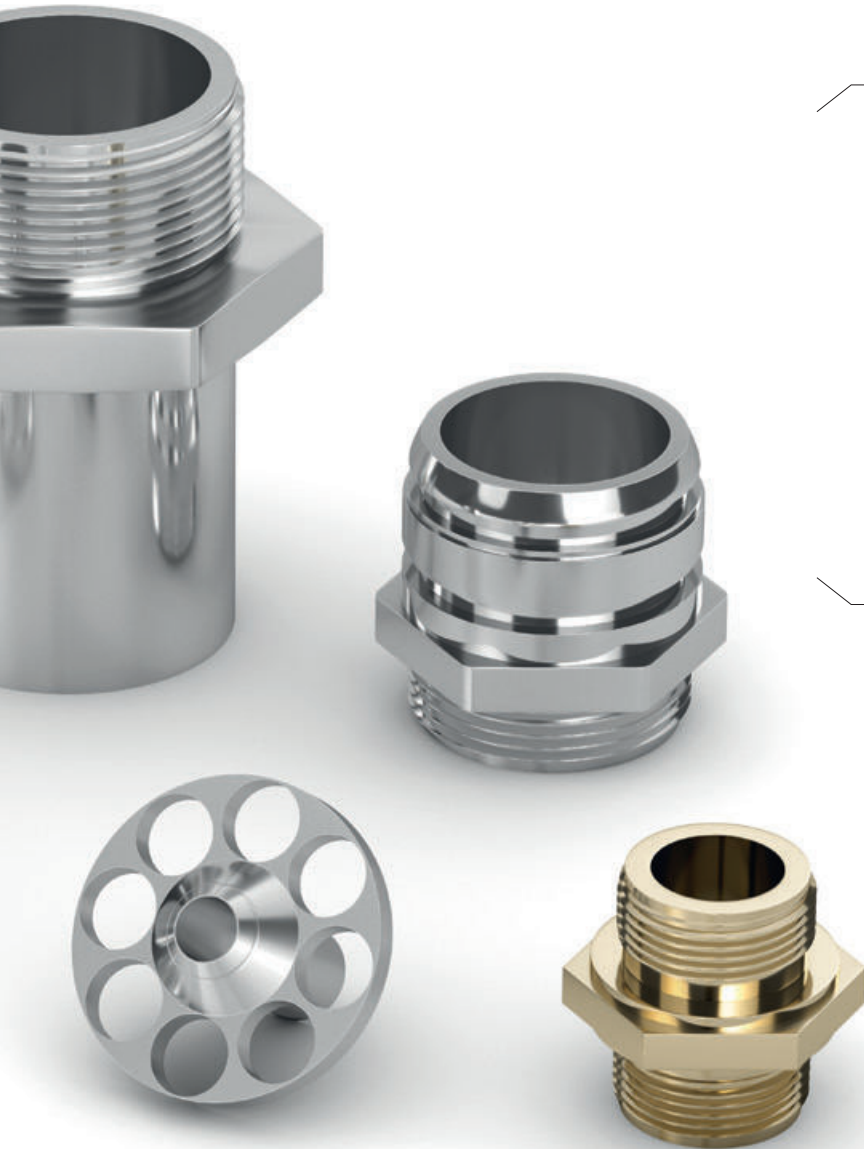
Tests at customers show that the high-performance SA and SE grooving systems from ARNO save enormous costs.

Wide range of applications

No matter what your parting off and grooving requirements are, you will find a solution in our extensive portfolio.

All-inclusive package

We help make your work easier all the way down the line by providing personal consultation, fast delivery and extensive documentation.



WE ARE GENUINE GROOVING SPECIALISTS!

Interview with: Dieter Wollensack, Sales Manager South at ARNO Werkzeuge.

Why should a customer opt for ARNO when it comes to parting off and grooving solutions?

Because we can cover an enormous range of applications. Many customers do not know that we are genuine grooving specialists. Our tools up to a diameter of 65 mm perform at least as good as our competitors' tools and often even much better than our competitors. This is not just what we claim, it has been proven in daily practice by our customers. A 300 per cent longer tool life is almost always achievable – provided of course that rigidity remains the same or even better. So it's no wonder that customers who switch over to our system are extremely satisfied.

A 300 per cent longer tool life – how is that possible?

Well, many factors play a role here. It starts with consulting the customer on site. We always review the system as a whole. Only when everything in the machine is perfectly matched down to the tool can we guarantee reliable processes – and that's what it all comes down to. Of course, we know that grooving processes are complex and few are willing to change them. That's why we take a very close look and then advise the customer to only change something when it's really worth it. Luckily this is quite often the case thanks to the quality and precision of our systems in combination with our ACS cooling system.

In the meantime many products have internal cooling. Why is the ARNO system better?

Very simple: the coolant hole is going directly through the insert seat. Firstly, it improves chip removal and secondly it almost completely avoids outbreaks and the formation of build-up edges. No other system manages this as well since no other system gets the coolant as precisely in the cutting zone as our system. And that will remain so since we developed and patented this form of cooling – we're simply the only manufacturer to offer this cooling system. In the meantime, we've launched the ACS2 – it has an additional coolant hole which cools the tool flank from underneath. This improves tool life even more.





“A 300 per cent longer tool life is almost always achievable.”

What are the trends in the parting off and grooving sector?

The future will focus more and more on saving material by applying narrow grooving and parting off. And efficient cooling is the key to stable processes. With ACS2 we are in a great position here. But of course we're not going to leave it at that. In collaboration with Rosswag Engineering, we have now launched the world's first 3D-printed modules produced in series. They're very narrow but still have two coolant holes. The one underneath the tool flank is even triangular so that the coolant reaches the outermost part of the cutting edge. That's just impossible using conventional manufacturing processes. And we're already working on prototypes with additional holes on the sides so that there will be a total of four coolant holes.

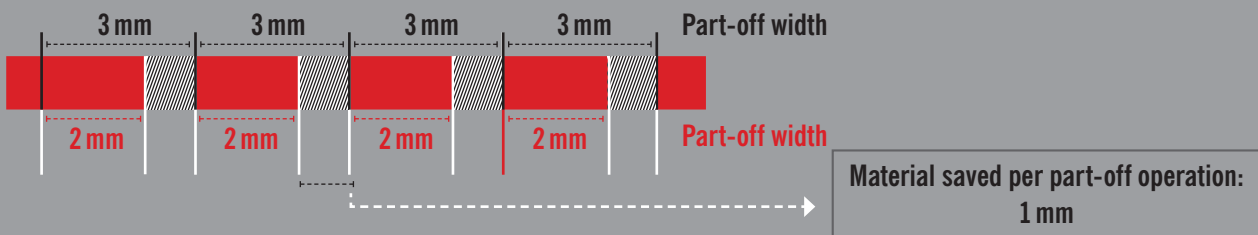
4 coolant holes and even one with a triangular shape – that sounds great but what does this really mean?

They reduce thermal stresses and as a result there is less wear. At the same time, it's even easier to remove the chip out of the groove. This is particularly important for deep grooving or for working with materials that are difficult to machine. It shows, that we have a lot of things to offer regarding innovations and they all aim to increase the productivity of our customers.

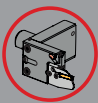
1 MILLIMETRE LESS – SAVINGS OF 429,000 EURO.

The challenge: reduce groove widths, guarantee process reliability.

Every industrial company knows this problem: production costs rise faster than they can raise the prices of the products sold. This uneven development must be countered by introducing efficient processes and reducing costs. For example, a lot of material can be saved in grooving operations by reducing groove width – provided process reliability and tool life remain the same. To achieve this, the tool system, especially the overhang length, must be as short and therefore as rigid as possible. The cooling system must also function smoothly to remove chips despite the narrow groove and to reduce thermal stresses.



The ARNO solution: a combination of rigidity and efficient cooling.



ARNO flange mounted holders:

- Tailored to the machine type in use
- Extra short and absolutely rigid
- Compared to conventional holders, there is one interface less

+



ARNO SA grooving modules:

- As narrow as a grooving blade
- As rigid as a monoblock holder

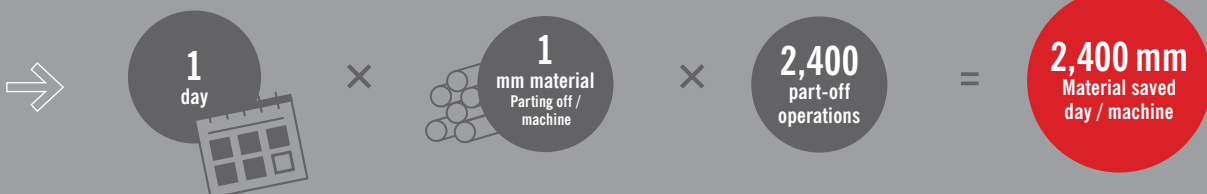
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The ACS2 – ARNO Cooling System:

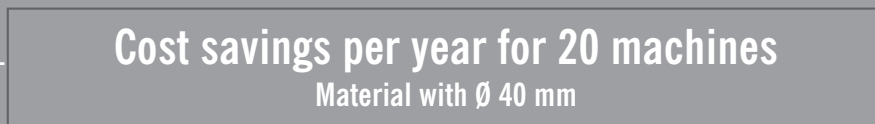
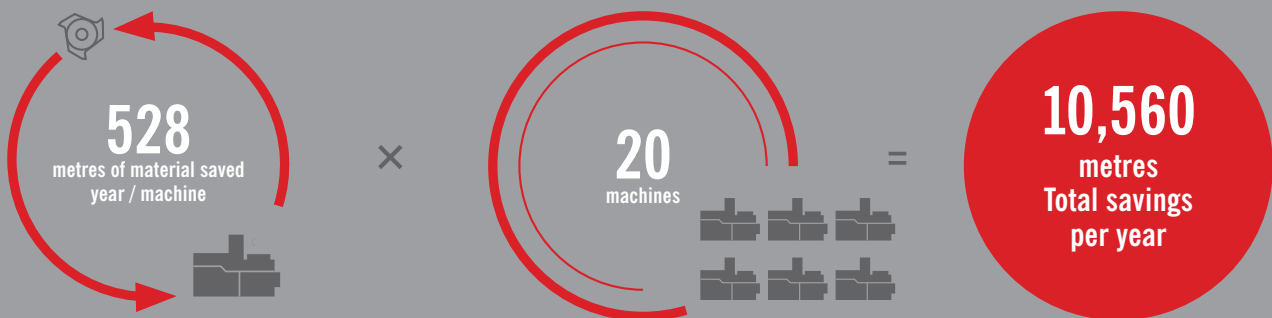
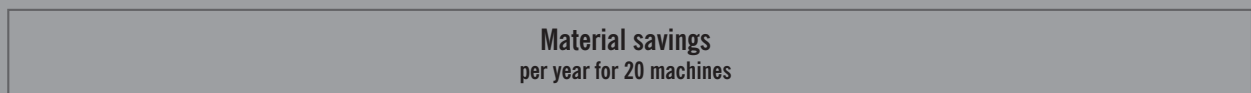
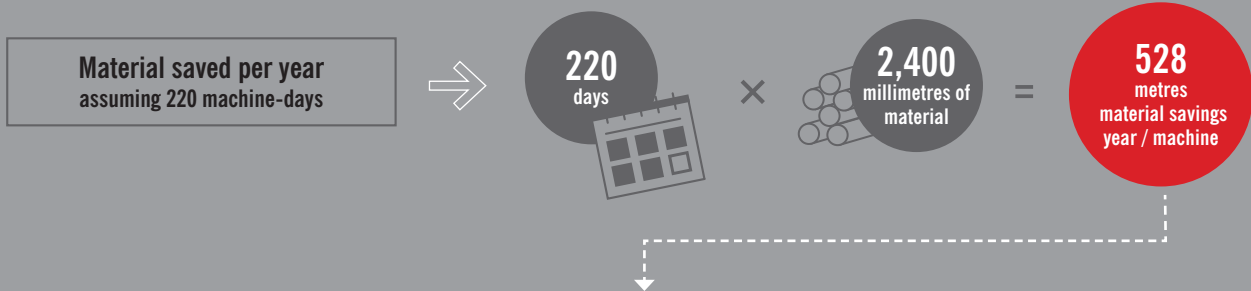
- Less wear and good chip removal
- Coolant hole fed directly through the insert seat for chip removal
- Additional cooling of the tool flank from underneath

Material saved per day
Assuming 2,400 part-off operations
per day / machine



The result: enormous savings with identical tool life.

A combination of ARNO flange mounted holder, grooving module and ACS2 can reduce the groove width from 3 mm to 2 mm without reducing tool life. Grooving work continues smoothly. Another benefit is the fact that ACS gets the coolant underneath the swarf and guarantees optimum cutting conditions – wrong positioning of the coolant is not possible.



INNOVATIVE HIGHLIGHTS FOR MORE PRODUCTIVITY.

When it comes to grooving applications, ARNO is one of the best. And we're right up among the leaders there – that's because no other tool manufacturer can offer you these highlights:

3 TIMES LONGER TOOL LIFE

ACS – ARNO Cooling System

The cooling system patented by ARNO: Only ACS gets the coolant underneath the swarf and guarantees optimum cutting conditions. For optimised insert cooling and reliable chip removal. ACS2 also has a second coolant hole which cools the tool flank from underneath. That's because two is better than one, even in metal-cutting. See page 12 for more details.

WORLD PREMIERE

3D-printed grooving modules

Additive manufacturing processes open up new possibilities for the metal-cutting industry. Of course, ARNO is one of the leaders here. In collaboration with Rosswag Engineering we have launched the first series-produced additive manufactured grooving module on the market – extra narrow and with a triangular coolant hole to optimise tool flank cooling. See page 14 for more details.

STABLE DIVERSITY

Flange mounted holders

Flange mounted holders combined with ARNO grooving modules unite the benefits of grooving blades and monoblock holders in a single system. We have the largest portfolio of flange mounted holders for a wide range of machine manufacturers and types. See the convincing arguments of the advantages of this system for yourself on page 16.

“The question is what does the customer need?”

As head of development at ARNO, it's my job to look very closely at what is used on the market and, if necessary, make good products even better. This is because there is an increasing demand for speed, quality and flexibility. It explains why we continue to further develop what is already a very good SA grooving system – it's outstandingly reliable, fast and durable and when combined with the ACS Cooling System it's easy to use in the application. This provides our customers a very clear competitive advantage – and for us it confirms that it's worthwhile for us to question every detail.

**Werner Meditz, Head of Technology at ARNO Werkzeuge
about the ACS – ARNO Cooling System.**

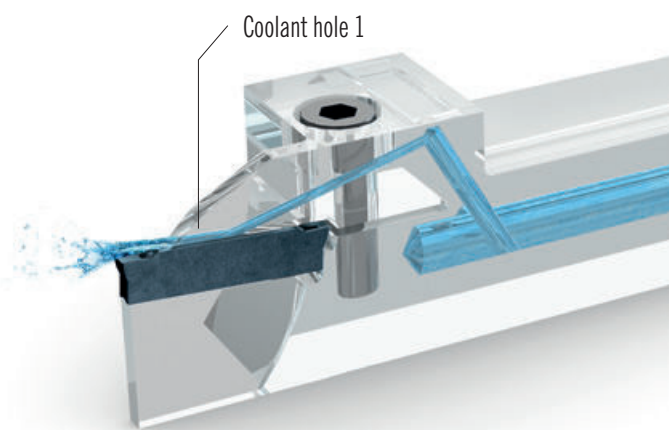


THE UNRIVALLED ORIGINAL.

The ACS – ARNO Cooling System: the patented cooling system for efficient parting off, grooving and groove turning with the SA and SE grooving systems.

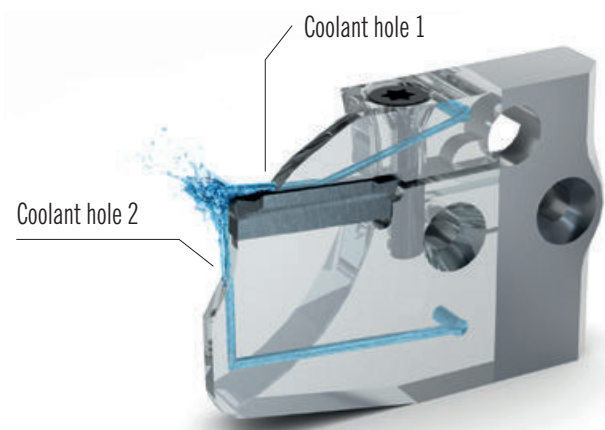
There's no cooler and more precise way: In the ACS Cooling System developed and patented by ARNO, coolant is fed directly along the insert seat to optimise insert cooling. Coolant enters the cutting zone, gets underneath the chip and ensures efficient chip removal.

In addition, the ACS2 cools the tool flank from underneath. This results in an average increase in tool life of 300 per cent, higher speed and greater process reliability. Summarizing, the patented ACS Cooling System makes our outstanding SA and SE grooving systems into outstanding productivity boosters.



ACS1 – coolant under the swarf

The coolant hole (1) is fed directly along the insert seat and exits at the cutting zone. It goes under the swarf and removes it efficiently – so reducing wear effectively and increasing tool life.



ACS2 – two is better than one

In addition to the coolant hole at the insert seat (1) there is a second coolant hole underneath the insert tool flank (2). This again increases tool life significantly.



ARNO DIGITAL // See the ACS – ARNO Cooling System in action under grooving.arno.de



COOL BENEFITS

of the ACS – ARNO Cooling System

Precise feed of coolant hole –
no adjustment needed, no error possible

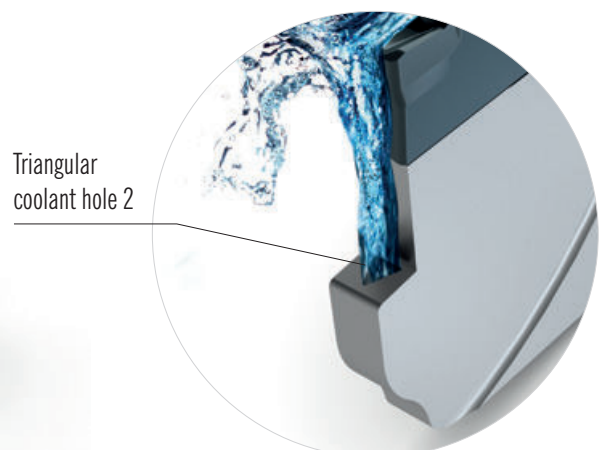
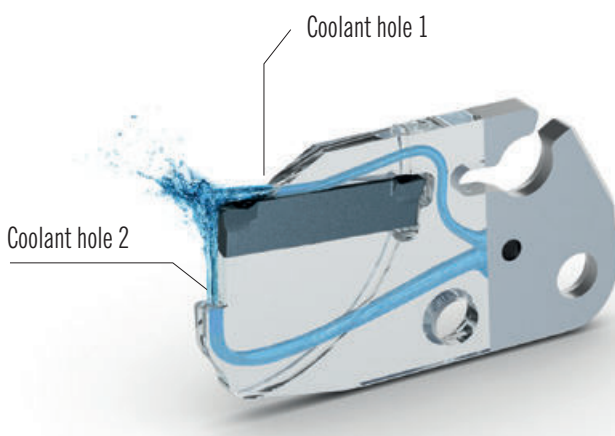
Average of 300% longer tool life –
thanks to significant reduction in wear

Optimised chip breakage and precise
chip removal by chip flushing

INNOVATION: A COOLANT HOLE WITH EDGES AND CORNERS.

The first series-produced additive manufactured tool in the world: the ACS module with triangular coolant hole ensures maximum cooling through to the edge.

A grooving module with triangular coolant hole – it sounds futuristic but it has already been successfully produced in series – using 3D printing: for the first time, ARNO Werkzeuge and Rosswag Engineering have transformed the possibilities of additive manufacturing into a standard tool in the grooving sector. This process even allows narrow tools to have two coolant holes with nozzle-shaped geometries and optimised flow characteristics. The bottom hole also ends in a triangular shape to feed coolant through to the edge of the tool flank. This results in longer tool life and shorter chips and it breaks down chips to reduce tool flank wear. We have already conducted tests with additional side coolant holes. With this tool you are now ready to face future challenges.

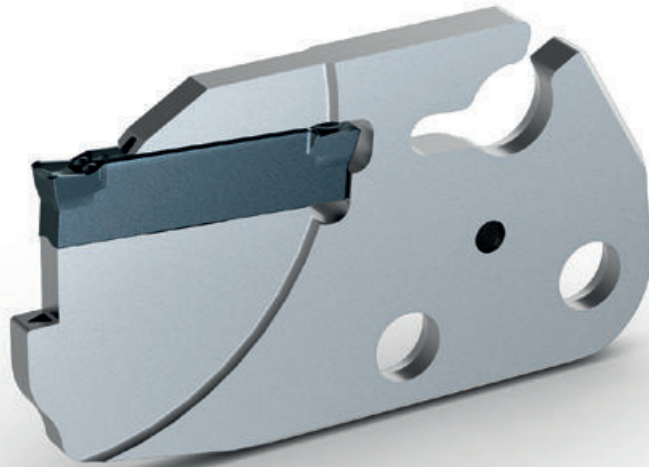


Additive manufacturing – ideal for narrow shapes and maximum cooling options with ACS

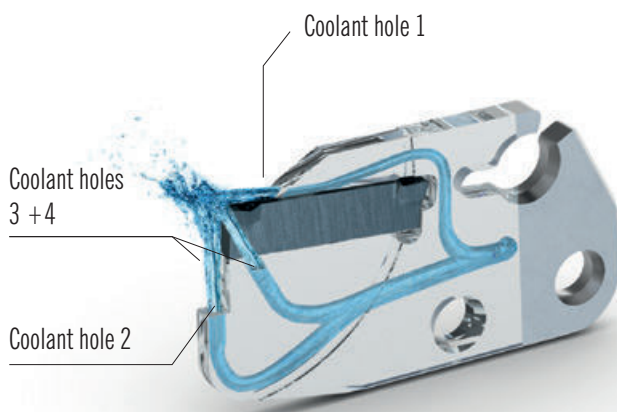
The 3D printing process allows us to produce coolant holes with flow-optimised where there is actually no space to do so.

Cool all the way down the line – triangular coolant hole

The coolant hole cooling the underside of the tool flank ends in a triangular shape. This feeds coolant across the full width of the insert through to the edge and minimises wear.



ARNO DIGITAL // See this world innovation live in action under grooving.arno.de



Cool flanks – ACS4 with side coolant holes already under test

Besides cooling the cutting edges and tool flanks, the insert sides can also be cooled. Prototypes with four coolant holes are already undergoing trials at the ARNO Test Centre.



INNOVATIVE ADVANTAGES

of ACS in the 3D printed tool

Triangular coolant hole – optimum cooling through to the tool flank edge

Ideal for narrow grooves – the tool is efficiently cooled, even in narrow grooves

All the advantages of ACS are boosted – precise coolant feed, reduced wear, reliable processes, increased productivity

THE CONNECTION TO MAXIMUM RIGIDITY.

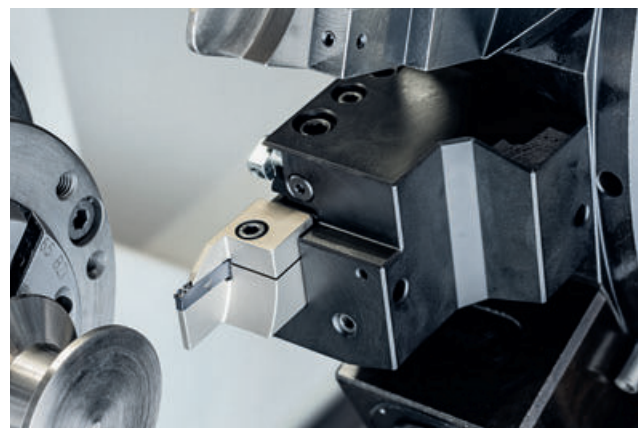
One interface less for more process reliability: with flange mounted holders for monoblock holders, grooving modules and grooving blades.

Reliability is the top priority in grooving and parting off operations. On this point our flange mounted holders are specially optimised for each machine to eliminate an interface and therefore get rid of one more error source. They are perfectly designed to guarantee maximum rigidity. Whether your requirement is for a monoblock holder, grooving module or grooving blade – we offer you the matching flange mounted holder for every application and for many machine types. And because satisfied customers want to equip more and more machines with them, we are constantly designing new types.



Perfect combination – flange mounted holders and grooving modules

ARNO tip: Select the combination of flange mounted holders and grooving modules. The modules combine the advantages of monoblock holders and grooving blades. And flange mounted holders ensure maximum rigidity.



Flexible – KMH tool holders

Available for almost every machine type, with or without internal cooling – also suitable for ACS tools. Instead of monoblock holders, grooving modules and blades can also be used with the correct adapters.



BIGLIA
INDEX
TRAUB
DAEWOO
DOOSAN
MAZAK
MIYANO
MORI SEIKI
MURATA
NAKAMURA
GOELTENBODT

Your machine type is not listed? We'll find the right solution for you fast.

HARDINGE
BMT
AND MANY MORE



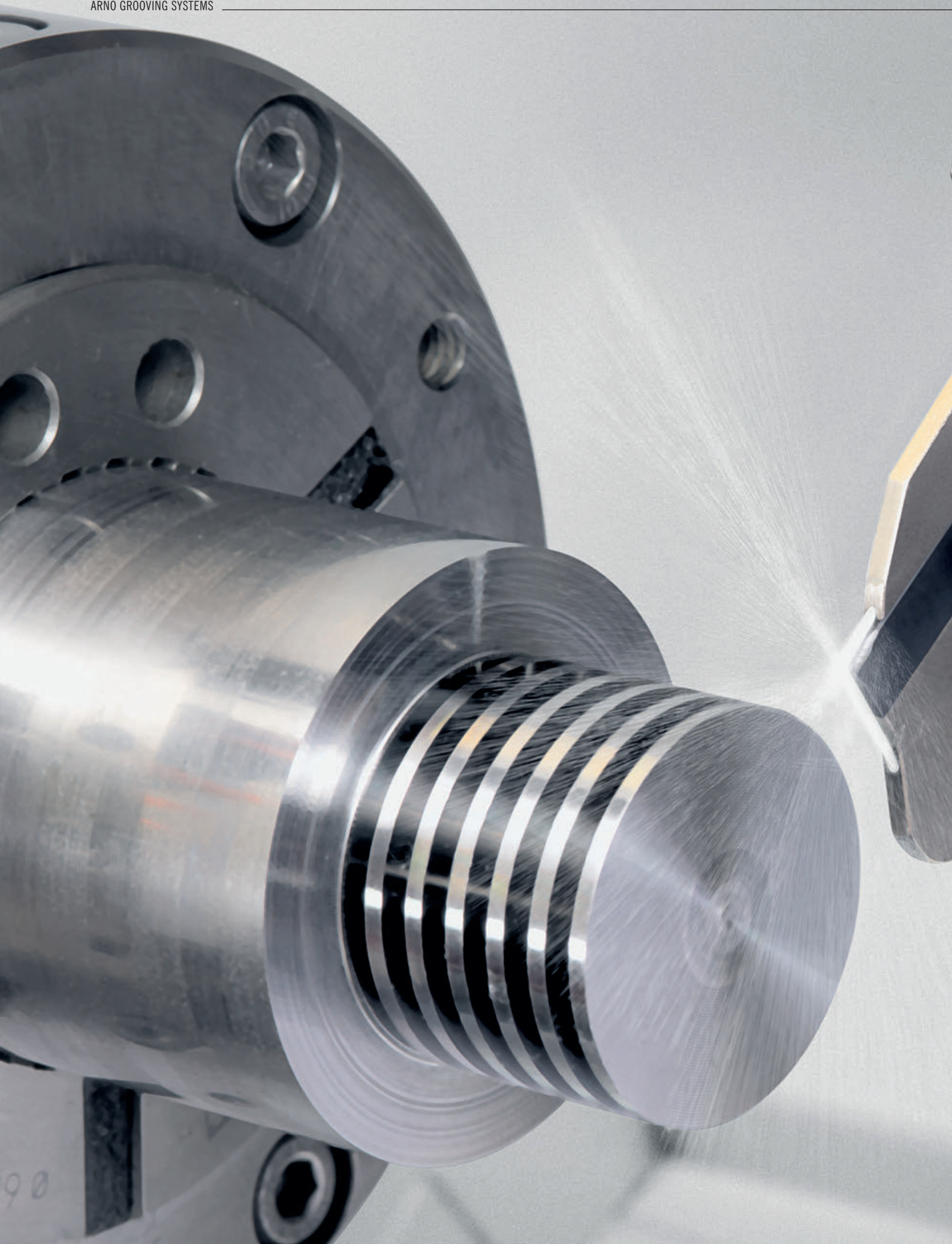
RIGID ADVANTAGES


of ARNO flange mounted holders

Reliable processes – maximum rigidity
thanks to perfectly matched holders

With internal cooling – reduced wear
of the insert, optionally with ACS

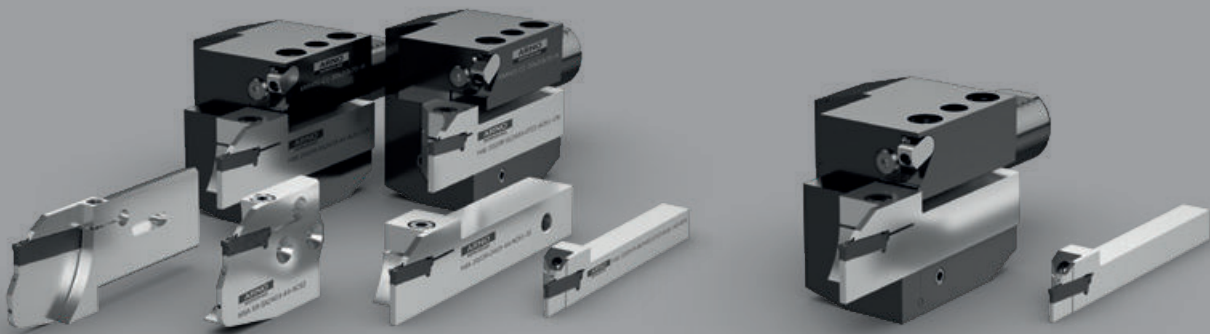
Versatile – for normal or upside down assembly,
for a grooving range of 20 to 140 mm
and widths of 1.5 to 6 mm





READY TO **FACE**
EVERYTHING – THE ARNO
GROOVING SYSTEMS.

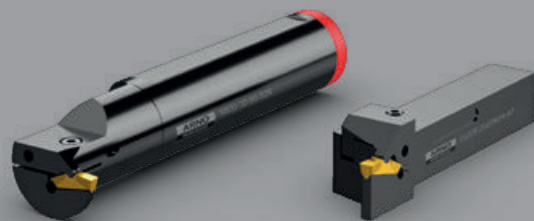
OUR PROFESSIONAL GROOVING AND PARTING OFF TOOLS AT A GLANCE.



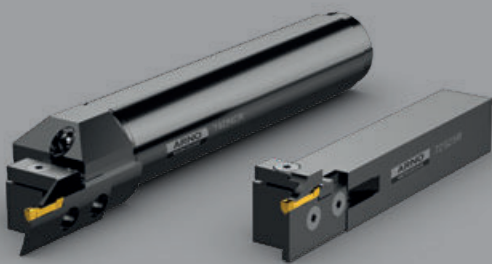
SA grooving system and SE groove turning system | Parting off, grooving and copy turning
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SIM | Internal machining
Page 28



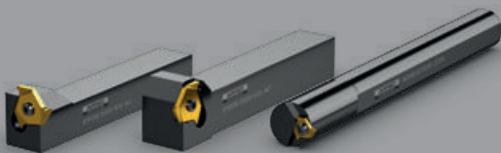
SHORT-CUT | Grooving and turning system
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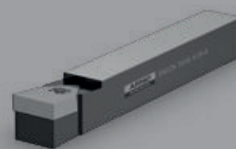
NC universal grooving system | Radial, axial and "Kontra" grooving
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AMS - ARNO Mini-System | Internal machining
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CLIP-GROOVE | Circlip grooving system
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PROFIL-CUT | Form grooving system
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CUT OUT THE COMPETITION WITH CERTAINTY.

**Extremely efficient and flexible for parting off and grooving diameters up to 140 mm:
the ARNO SA grooving systems.**

When it comes to efficiency, our SA system is almost unbeatable for parting off and grooving. The rigid insert clamping guarantees maximum process reliability. It's even better in combination with our patented ACS – ARNO Cooling System: it helps you to achieve an average of 300 per cent longer tool life in your grooving operations and can increase speed – even with narrow part-off operations or materials which are difficult to machine.

**The versatile addition to parting off, grooving and copy turning:
the ARNO SE groove turning system.**

The SE groove turning system is your flexible solution for grooving operations and Swiss type turning. It offers absolute rigidity to withstand high shear loads. Workpieces with a big radius can also be machined. The SE system is also convincing as it is so simple to handle and it offers long tool life – especially when combined with ACS1 which gets the coolant underneath the swarf.



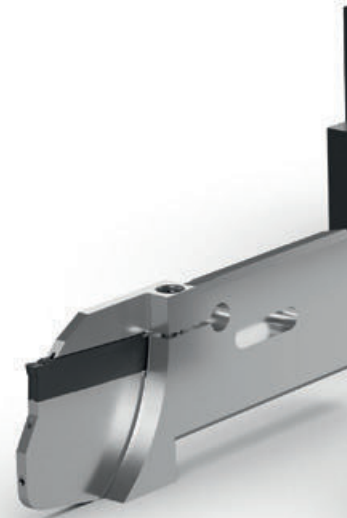
PROFITABLE ADVANTAGES

of ARNO SA and SE grooving systems

Tool life longer by an average of 300% –
with ACS – ARNO Cooling System

Average of three times more productivity

Reliable processes at maximum productivity



Flange mounted holders for SA

- Maximum rigidity by perfect matching to machine (types)
- Flexible – for monoblock holders, grooving blades or modules, with normal or upside down assembly
- For grooving ranges of 20 to 140 mm and groove widths of 1.5 to 6 mm

SA and SE monoblock holders

- Rigid for reliable processes
- Easy to use – only one replacement part on the monoblock holder
- Precise cutter positioning by active insert clamping with fixed stops
- Impossible to pull the insert out (SE)
- Available for SA shanks: 8 x 8 to 32 x 32, SE: 12 x 12 to 25 x 25 mm
- Available for SA groove widths: 1.5 to 10 mm, SE: 2 to 6 mm
- Special for Swiss type turning: simple and fast tool change with the AFC – ARNO Fast Change holders. Go to www.arno.de/langdrehen for more details

SA grooving blades

- Ideal for narrow and deep parting off and grooving
- Precise and rigid insert positioning thanks to active insert clamping
- Available in sizes of 26 to 32 mm and groove widths of 1.5 to 4 mm

SA modules

- Rigid and narrow – perfect combination of grooving blade and monoblock holder
- Perfect in combination with ARNO flange mounted holders
- Available for cutting depths of 10 to 70 mm and groove widths of 1.5 to 4 mm



ACS – ARNO Cooling System

- Tool life longer by an average of 300%
- Simple – precise coolant hole feed without the need for manual adjustment
- ACS1 for SA and SE: Coolant under the swarf for maximum cooling effect
- ACS2 for SA: additional tool flank cooling to optimise chip breakage

Inserts

- Efficient with two cutting edges
- Precise and cost-efficient due to directly pressed special geometries or ground to high precision
- Equipped with many geometries and grades for every application

ONE SYSTEM FOR **A**LL CASES.

Shows genuine all-round talent: the NC groove turning system for external and internal turning.

Radial or axial grooving, internal or external machining, inward or outward copy turning – if you're looking for a versatile tool system, you've come to the right place with the NC groove turning system. Two modular basic holders for internal and external machining are adaptable to every application by a number of different support blades and clamps. The range of applications are further extended by a monoblock holder and a boring bar. Together with inserts with two cutting-edges in various geometries and grades, this system equips you for almost every machining application.



VARIETY OF ADVANTAGES

of the ARNO NC groove turning system

Modular system – holder, support blade, clamp and insert provide the right solution in every case

High quality – all inserts are precision ground or sintered

Flexible, proven system – perfect when versatility and rigidity are required



4 holder types

- Modular basic holder plus SAN monoblock holder and SIN boring bar for small bores
- External machining: Modular holders 8 x 8 to 32 x 32, groove widths from 0.55 to 10 mm, combinable with polygon shank/UTS/KM/VDI holding tools
SAN monoblock holders 16 x 16 to 25 x 25, groove widths from 3 to 6 mm, cutting depths up to 27 mm
- Internal machining:
Modular boring bars and SIN boring bars from \varnothing 12 to 50 mm, D_{\min} starting at \varnothing 16, groove widths from 0.55 to 10 mm



Inserts

- Efficient with double cutting edges
- High quality – all inserts are precision ground or sintered
- The right insert for every material – different chip geometries and wide range of grades with specially selected coatings
- Rigid and precise – long prism seating to locate inserts for optimised control of cutting forces in Swiss type turning and copying operations
- Positive insert geometry allows program compensation of 0.01 mm – ideal for finishing operations

Special inserts

- For finishing to hundredths of millimetres – 5 precision ground geometries for all materials
- Precision sintered geometry for medium machining and optimised chip breaking
- Inserts can also be used to machine exotic materials

CENTRING MADE EASY.

Modular and precise: the ARNO Mini-System AMS for internal machining starts at a diameter of 0.7 mm and reaches drilling depths of up to 50 mm.

Rigid centring, guaranteed tip height and absolute dimensional accuracy – it's so easy with AMS for flexible operations in holes with small diameters.

This is how it works: The insert is clamped rigidly in central position by a ground chamfer on the shank and a tapered pin. A fixed stop guarantees repeatable positioning at tip height. Besides tool holders, there are also inserts with inner cooling to achieve optimised wear protection and precise coolant supply.

This results in reliable processes, maximum precision even at tight tolerances and an increase of one to four times in tool life.



Tool holders

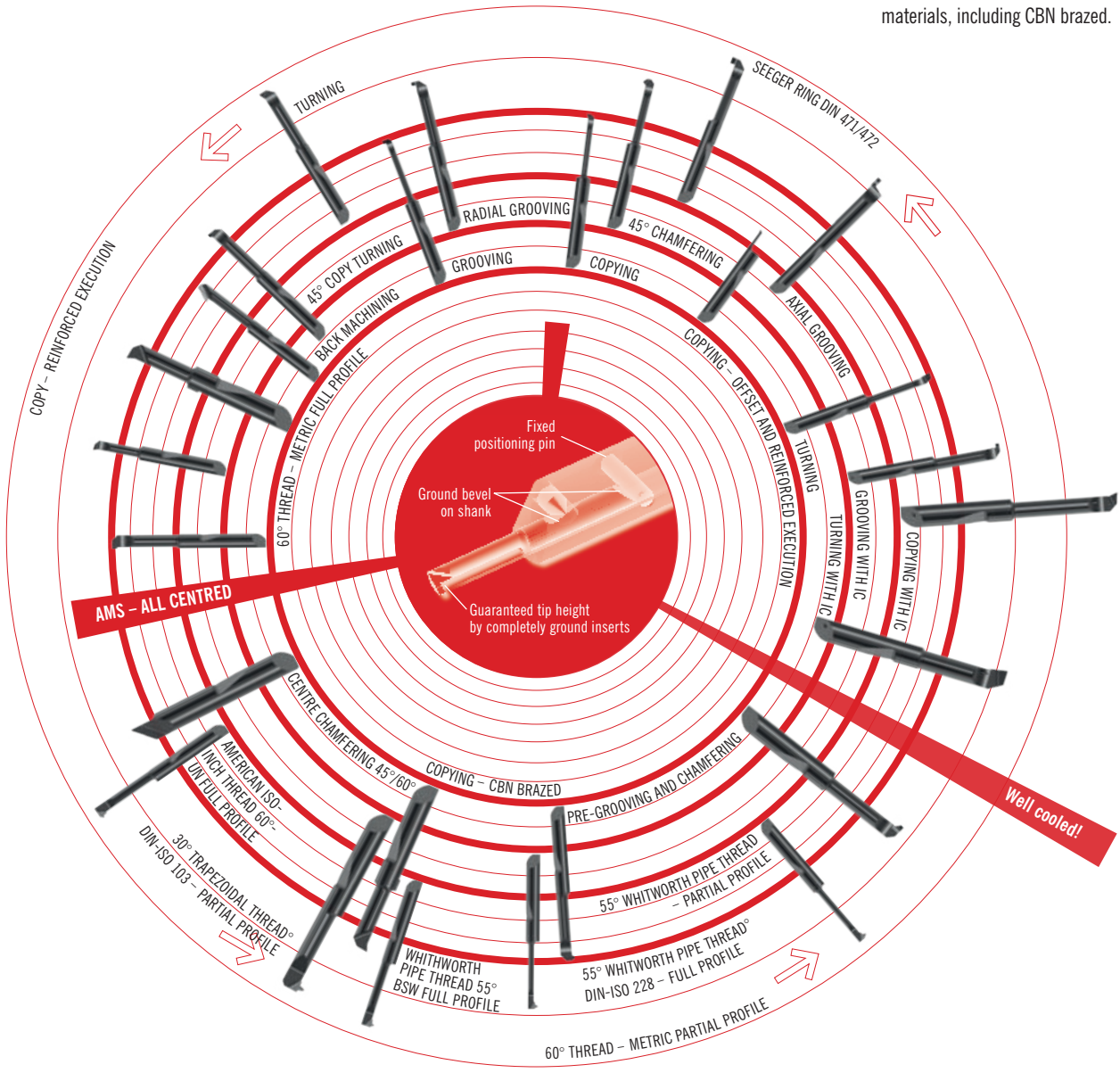
Every application is covered by 10 tool holders: standard or offset, hydraulic or polygon shank, for multi spindle or Swiss type machines. Available with coolant supply for longer tool life.

NEW: AMS boring bars with indexable inserts

All the benefits of the AMS system with even greater efficiency: with AMS boring bars and the right indexable inserts.

Inserts

Suitable for every application: from axial grooving to threading, for hardened materials, including CBN brazed.



NEW: Inserts with coolant hole

Precise coolant supply for maximum wear protection:
 Either with coolant supply from the top (IKO) - perfect for through hole boring or from the bottom (IKU) - perfect for blind hole boring.



PRECISE BENEFITS
 of the ARNO Mini-System

- Rigid centring and easy tool changes thanks to the clever system of a ground chamfer on the shank and tapered pin.
- Up to 400% longer tool life thanks to significant reduction in wear
- Precision and quality all inclusive – all inserts are fully ground with shank included

UNRIVALLED RIGIDITY AND PRECISION.

**Perfect for internal machining starting at 6.7 mm bore diameter:
the modular ARNO SIM System.**

Perfect repeatability and rigidity due to oval shaped shank and patented ARNO interface:
The 3-point right angled location ensures optimised transfer of cutting forces.
At the same time, you benefit from absolute repeatability of insert positioning.
Inserts are easy and fast to change as there is only one screw.

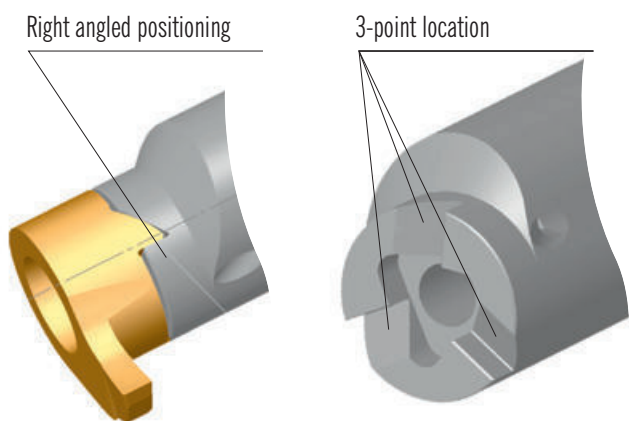


ASSURED ADVANTAGES of the ARNO SIM System

Oval shaped shank and patented 3-point location ensures rigidity and optimised force transfer

Absolute repeatability of insert positioning

Simple and fast – replace inserts with only one screw

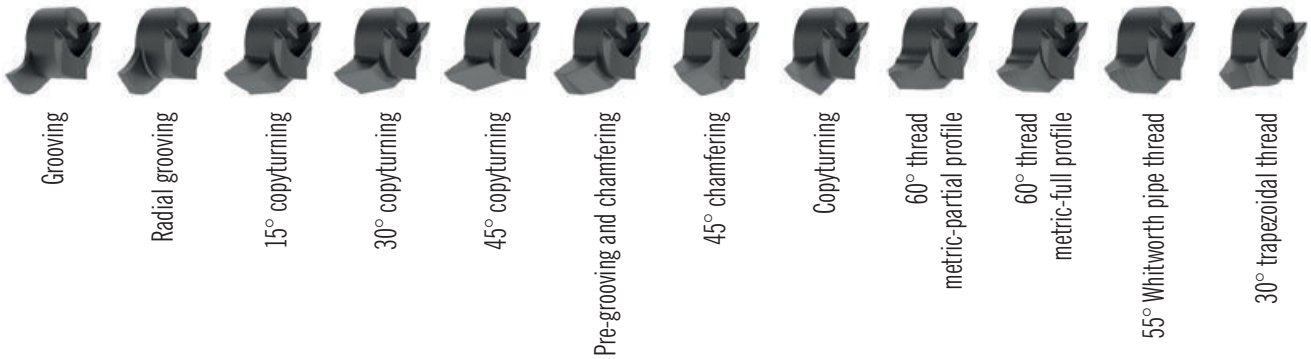


Precision strength – 3-point location with 90° positioning

Optimised force transfer guaranteed by right angled positioning – as well as the repeatability of the positioning of the insert.

Boring bars

- Standard and square holders in 5 sizes starting at 6.7 mm bore diameter
- Rigid 3-point location, oval shaped shank and 2 location flats on the shank
- Long tool life thanks to through tool cooling
- Available in steel and carbide execution – the carbide shank with its brazed steel head is vibration damped
- Overhangs up to 80 mm



Inserts

- Cutting depths up to 6 mm, groove widths from 0.5 to 4 mm
- PVD coating optimised to each application
- Simple fast handling – only one screw to replace inserts

Versatile

- Grooving
- Radial grooving
- Circlip DIN 471/472
- Copying
- Pre-grooving
- Chamfering
- Copyturning
- Threading

ROBUST SPECIALISTS FOR ROUGH TURNING.

Assured rigidity: the SHORT-CUT system for external and internal grooving starting at 29.5 mm minimum diameter.

Monoblock holders and boring bars with short overhang lengths and periphery ground or precision sintered inserts make SHORT-CUT a powerful combination for radial machining operations. SHORT-CUT tools with their special chip geometries and cutting edge executions are ideal for rough machining tasks. The patented clamping system holds the double-sided inserts rigidly in place even under heavy stresses.



STRONG ADVANTAGES

of the ARNO SHORT-CUT groove turning system

Reliable processes thanks to the rigid system

Patented insert clamping system to ensure rigidity for radial groove turning

Specially developed geometries for medium machining operations and for aluminium

SIS boring bar

- Efficient chip removal and wear protection thanks to coolant supply through the clamping claw
- 2 insert sizes, groove widths from 3 to 4 mm and cutting depths up to maximum 14 mm



Monoblock holders

- Rigid for reliable processes
- Easy to use – only one spare part on the monoblock holder
- Shanks from 10 x 10 to 32 x 25 mm
- 7 insert sizes, groove widths from 2 to 10 mm and cutting depths up to 27 mm

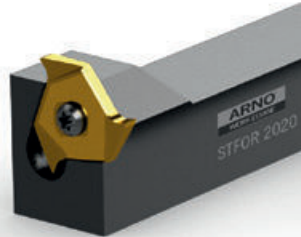
Inserts

- Versatile with 4 geometries and 9 grades
- High quality – precision sintered or ground
- Efficient with double cutting edges

3-EDGED INSERTS FOR MANY DIFFERENT APPLICATIONS.

Perfect for short grooves: CLIP-GROOVE for radial or axial machining.

Tried and tested for external and internal grooving, efficient due to 3-edged inserts, fast tool changes and rigid thanks to screw clamping of the indexable insert to ensure optimised clamping and insert location: CLIP-GROOVE is a tool system you can always rely on. The highlight features of CLIP-GROOVE focus specially on circlip grooves. Its range of geometries and grades permits the efficient machining of high strength materials. Due to the compact design this system can be used for Swiss type turning.



FLEXIBLE ADVANTAGES

of the ARNO CLIP-GROOVE grooving system

Efficient thanks to its 3-edged indexable inserts

Different profil grooves with only one tool

Reliable processes thanks to tried and tested reliable system

Monoblock holders

- Rigid seating of the indexable insert by screw clamping
- Inserts can be changed and clamped quickly
- Shanks 10 x 10 mm - 25 x 25 mm, cutting depths up to 10 mm, grooving up to \varnothing 20 mm

Boring bars

- Rigid seating of the indexable insert by screw clamping
- Form grooves with CLIP-GROOVE axial
- Shanks \varnothing 12 to 32 mm, D_{\min} 10 to 37 mm



Inserts

- Efficient with three cutting edges
- Versatile with 4 geometries and 10 grades
- Groove widths 0.55 to 5 mm (special profiles up to 7 mm), Cutting depths 0.2 to 10 mm

PERFECT POTENTIAL SAVINGS.

Perfect for mass production: PROFIL-CUT – the profil grooving system for custom profiling of inserts.

Profile inserts offer enormous potential savings. We grind profile inserts to your requirements fast and precisely in-house for various profile grooves. Alternatively we offer you semi-finished products for you to grind your own profiles. In addition PROFIL-CUT is easy to fit for fast tool changes. This ensures high process reliability, reduce tool costs and shorten machining times all at the same time.



SPECIAL ADVANTAGES

of the ARNO PROFIL-CUT form grooving system

High potential savings by reducing tool costs and machining times

Absolute process reliability by rigid insert seating

Simple fast tool changes

Monoblock holders

- Rigid, simple, efficient – only one replacement part, easy to handle
- Rigid seating of the indexable insert by screw clamping
- Inserts can be changed and clamped quickly
- Shanks from 12 x 12 to 25 x 25 mm, cutting depths from 5 to 14 mm and groove depths from 12 to 25 mm



Inserts

- Variety of blanks for different insert sizes
- Special profiles for groove widths of 25 mm, special forms to drawing on request
- Available in 3 grades

EQUIPPED FOR EVERY CHALLENGE.



Grooving systems	SA	SE	NC
Application	Grooving system for parting off and grooving	Grooving system for parting off and grooving, Swiss type turning and copy turning	Groove turning system for radial, axial and Kontra machining
Machining application	External machining	External machining	External and internal machining
Holder types	Monoblock holders, grooving blades, modules	Monoblock holders	Monoblock holders, boring bars, grooving tool holders
Designs	R/L/neutral	R/L	R/L
Cooling	without/ACS1/ACS2	without/ACS1	without/with internal cooling
ARNO flange mounted holders	Yes, monoblock holders / modules / blades	Yes, monoblock holders	Yes, monoblock holders
Groove width	1.5 to 10 mm	2 to 6 mm	0.55 to 10 mm
Depth of cut (max)	up to 70 mm	up to 21 mm	up to 42 mm
Diameter (min)	–	–	16 to 81 mm
Diameter (max)	up to 140 mm	up to 42 mm	–
Inserts for	P/M/K/N/S	P/M/K/N/S	P/M/K/N/S/H
Square shank	8x8 to 32x32 mm	12x12 to 25x25 mm	8x8 to 32x32 mm
Boring bars ø	–	–	ø12 to ø50 mm
Others	–	–	UTS/KM, VDI, polygon shank



AMS	SIM	SHORT-CUT	CLIP-GROOVE	PROFIL-CUT
ARNO Mini-System	Grooving system for internal grooving with small diameter	Groove turning system for rough machining	Grooving system with inserts with three cutting edges	Form grooving system
Internal machining	Internal machining	External and internal machining	External and internal machining	External machining
Tool holders	Boring bars	Monoblock holders, boring bars	Monoblock holders, boring bars	Monoblock holders
R/L	R/L	R/L	R/L	-
without/with internal cooling	with internal cooling	without/with internal cooling	without/with internal cooling	without internal cooling
No	No	Yes, monoblock holders	Yes, monoblock holders	Yes, monoblock holders
0.8 to 3.28 mm	0.5 to 4 mm	2 to 10 mm	0.55 to 10 mm	up to 25 mm
up to 3.5 mm	1 to 6 mm	up to 27 mm	up to 10 mm	up to 30 mm
0.7 to 11 mm	6.7 to 17.2 mm	29.5 to 47.5 mm	16 to 37 mm	-
-	-	-	-	-
P/M/K/N/S/H	P/M/K/N/S	P/M/K/N/S/H	P/M/K/N/S	P/M/K/N/S
12x12 mm	12x20 mm	10x10 to 32x25 mm	10x10 to 25x25 mm	12x12 to 25x25 mm
ø12 to ø32 mm	ø12 to ø16 mm	ø20 to ø40 mm	ø12 to ø32 mm	-
Polygon shank	-	-	-	-

GREAT SUCCESS: **ARNO** WERKZEUGE IN ACTION.

Franz Kattner, owner of Franz Kattner GmbH & Co. KG (left) has been supported by ARNO external sales engineer Ulrich Wenzel for over 15 years. The mutual trust that has grown up has produced many new high-performance and reliable process solutions.



“The ACS Cooling System brought many benefits right from the start.”

Franz Kattner, owner of Franz Kattner GmbH & Co.KG in Esslingen

COOL TOOL LIFE INCREASE IN METAL-CUTTING.

Longer tool life and problem-free process reliability increase productivity. Franz Kattner GmbH & Co. KG benefits from using the SA grooving system with the ACS2 – ARNO Cooling System.

Franz Kattner GmbH & Co. KG in Esslingen is well known for zero defect production on its CNC milling and turning machines. After the company was founded in 1993 with 4 employees and a small machine pool, it has successfully stayed on track despite economic downturns. Today, it ranks among the specialists in metalworking and metal machining in the automotive, aviation and shipping industries. Its success is also due to a willingness by the company's founder Franz Kattner to take entrepreneurial risks. "I've invested in new machines almost every year although there were no confirmed orders on the table," he stresses.

In the meantime, Kattner is constantly working on the company's speciality – new solutions to complex parts made of materials which are difficult to machine on a site measuring 2,000 m². Through many years of business relations, Kattner has built up a wide range of knowledge in this sector. One aircraft seat manufacturer in Schwäbisch Hall collaborated with Kattner on developing a product from test trials through to the complete assembly. It must be remembered that the aviation industry is extremely demanding due to the multitude of regulations. The finished safety parts must meet high requirements. All the work steps and the tools used including their coatings have to be precisely documented and certified. One of Kattner's special services is the supply of complete modules and components. This offering alone is a constant challenge for the company to take on a certain amount of risk since it is also responsible for purchasing the raw materials.

ARNO: the best all-round package – for the past 15 years

In Franz Kattner's opinion, success lies in a mix of having qualified skilled employees, an excellent machine pool and tools which work reliably in the processes. Over 15 years ago, ARNO Werkzeuge turned out to be the supplier with the best all-round package. The main factors were competent consulting, product quality and performance, reliable deliveries and local proximity. "Waiting 4 to 5 hours for replacement tools is no option because of urgent delivery deadlines!" says Franz Kattner. The ARNO external sales engineer Ulrich Wenzel has looked after Kattner right from the start. Over the years, this has become a well coordinated team based on trust where both sides can rely on each other to develop new processes.



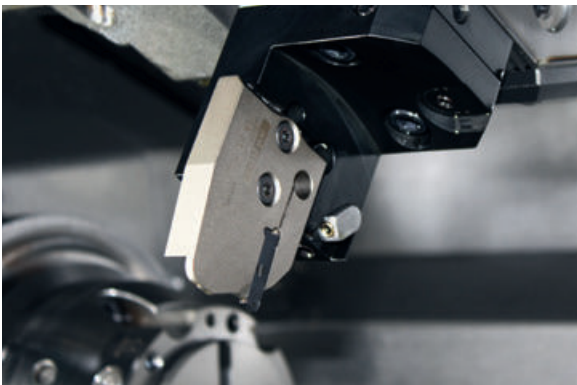
Demanding materials and complex workpieces require a lot of experience from both the manufacturing company and the tool manufacturer.

Part-off and grooving solutions including optimised cooling for high-temp materials

The collaboration started with the machining of high-temp materials. These materials may be tough and durable but they cause relatively high concentrated cutting forces when machined. Especially these difficult to machine materials are becoming more and more popular in the aircraft industry due to their advantages in using them.

Here the great advantage is the experience and continuous further development carried out by ARNO Werkzeuge in the field of demanding materials.

In the meantime, Kattner fully relies on the SA grooving system from ARNO to perform parting off and grooving work on demanding materials. Ulrich Wenzel explains: "This system has a high performance and is also incredibly versatile with groove widths starting at 1.5 mm and cutting depths up to 70.0 mm. This is precisely the right solution for Kattner." The latest technology is used on the Index C100 automatic lathe to achieve better tool life without compromising process reliability. The patented cooling technology of the ACS2 – ARNO Cooling System brought immense advantages straight away for the SA grooving system product range. The high sensitive material 1.4548 or 1.4404 is grooved in high volumes. In the past, the complex stainless steel parts were machined at a feed of 0.06 mm/rev. at a cutting speed of 100 m/min. Tool life of previous tools: 95 parts. ACS2 gets the coolant through the insert seat right to the cutting zone and the second coolant hole from the bottom. This increases tool life by over 200 per cent. Feed improved to 0.12 mm/rev. and cutting speeds to 150 m/min. In addition, the flange mounted holders from ARNO Werkzeuge can be used both in the main and counter spindles to optimal effect.



2 coolant holes: The patented "ACS" technology for the SA grooving system from ARNO Werkzeuge achieves impressive increases in tool life.

Franz Kattner is delighted: "The tight tolerances required for the finished parts are extremely difficult to maintain. Later, the products will operate at temperatures between -40° and +70° and everything has to be exactly right!"

Maximum precision and expertise for every case

He is now well equipped to take on future contracts from the aviation industry. A new machining centre specially produced for Kattner is capable of machining high-pressure tubes up to 3 m long. Short tooling time and a high capacity of tools in the magazine permit complex 5-axis machining processes. Again, ARNO Werkzeuge provides its support with tailor-made special tool solutions in addition to the wide standard product range.

The main factors which are important to Franz Kattner are constantly optimising and raising the efficiency of internal processes in order to stay ahead of the competition. This is why the entire process from the incoming order through to delivery is subjected to regular company and product audits. For the future, he also regards personnel as the most critical point. Since it is almost impossible to automate the entire production process and retooling is a daily necessity, operators need to have specialist skills. But this is where the two companies are also joining forces. Kattner's skilled workers are trained directly at ARNO Werkzeuge and learn about tool developments, tips and tricks right from the source. This builds a solid foundation for successful cooperation in future.



ARNO SUCCESS FACTORS

for Franz Kattner GmbH & Co. KG

Competent consulting and customer proximity

Reliable fast processes even with tight tolerances

Longer tool life

OUTSTANDING WHEN IT COMES TO SERVICE.

We do our utmost for you to achieve success: from comprehensive consulting by our machining experts and fast implementation of special solutions through to overnight delivery. As a family-owned company, we focus on successful long-term business relations with our customers. That's why we prefer to develop well-designed products than start short-term sales promotions. And if you use these products in your production, we make sure that there is a benefit for you: efficient, reliable and simple production processes.



PERSONAL

At ARNO you are assigned a personal contact who stands at your side to optimise production processes. An honest and fair consultation offers you genuine added value – either by regular visits to your offices or by telephone.



FAST

When time is an issue, you can rely on ARNO. When you place your order by 18.00 (on Friday by 16.00), you receive your tool the next working day. Of course, we can only guarantee this speed if we have the product in stock – but in all cases, we have a very short implementation for special solutions.



COMPETENT

You benefit from decades of experience, concentrated technical know-how and our Swabian talent for inventiveness. We have the right solution even for complex machining operations. And if we don't, we'll find one. Since our R&D, Production and Sales departments are all under one roof, we can react fast and start extensive tests.

We are close to you all over the world

Our tools are in use all over the world – that's why we are close to you all over the world.
You can reach us easily through our subsidiaries and distributors.



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OUTSTANDING VERSATILE AND INNOVATIVE.

Turning or Swiss type turning, grooving, drilling or milling: whatever your requirements are, it's worth your while to take a look at ARNO. We have a solution for almost every metal-working application. We have the right mix of experience, pioneering spirit and quality to ensure that you get the best out of your production with the right tool systems, tool management solutions and clever innovations.

For more details on our innovative systems, go to www.arno.de