



... it's your future!

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A MEMBER OF **ZIMMER**
G R O U P 

 **BENZ**[®]
Werkzeugsysteme



BENZ – it's your future!

BENZ, a member of the Zimmer Group, has been the leading supplier for over 20 years in aggregate tooling, acting as the connecting component between motor spindle and machining tool for the wood and metal industry.



The Product Center Wood at BENZ offers solutions for all your applications from a single custom solution to a complete production process. No matter if it is hardwood, MDF, plastic or aluminum, what counts are quality, productivity, flexibility and commitment. With a balanced offering between standard product lines and customer specific solutions we create the right solution for you, ensuring unlimited manufacturing capabilities.



What are the advantages of using an aggregate head and how does BENZ support you with your application

In our efforts to support customers in their decision if they need an aggregate head and which one is the right choice for their application, the team members of BENZ have assembled some helpful information for you.

▲ Advantages of using an aggregate head versus a „standard,, motor spindle

To put it in simple terms: An aggregate is a „rectangular“ gear box (with numerous variations). How often have you programmed your machining center to machine work pieces just to notice that it would be much more productive to use a tool in a horizontal position? A good example is the vertical milling of slots! When working vertically with a router bit one can only work with minimal feed for an average cut. Whereas when working horizontally a much better result can be reached with the higher feed rates. This lowers the cycle time of your machine significantly and makes you more profitable. Every CNC machining center can be programmed for horizontal machining!

▲ Does an aggregate fit on any type machining center?

Yes, with a few exceptions! It is important to consider the power and machine connection (HSK 63F, SK/ISO30, BT35, etc.) of the motor spindle. This data can usually be found in the technical documentation for your machine.

▲ Can an aggregate be seated into a tool changer and programmed for automatic tool change?

This depends on the type of tool changer and the type of aggregate. In most cases this is not only possible, but also the most efficient way of using an aggregate. Please note the weight limitations on your tool changer and if necessary contact your machine manufacturer.

▲ Can an aggregate be used on more than one type of machining center?

Yes, due to the modular design of BENZ the use on different model of machines is made possible! Condition is: the connection of the motor spindle is the same! Each machine manufacturer has a specific type of machine connection for tools, which BENZ can put on the aggregate through the use of a so called torque-arm, which is modular. If a machine does not have a c-axis the aggregate can be turned 0° to 360° horizontally by use of this torque arm.

▲ What is the difference between the two standard designs?

BENZ differentiates between two standard lines: X-Line und Compact Line.

The X-line with its new gear concept and the compact design equals higher performance characteristics and with that stands for higher efficiency. With the lower heat development and extension of the life cycle it was developed to withstand the toughest applications in hardwood as well as all other applications that demand the highest standards and to increase productivity.

Along with our X-line series BENZ also sells aggregates that can find room in the tightest applications and for hard to access workpieces due to very restrictive machine/application dimensions. For these applications we developed our BENZ Compact Line. These light-weight and compact aggregates afford full functionality in the smallest possible space in proven quality. These aggregates are used primarily on smaller machines which have a limited traverse path and are therefore mostly used for drilling, light routing and sawing. They are not for use in continuous applications.

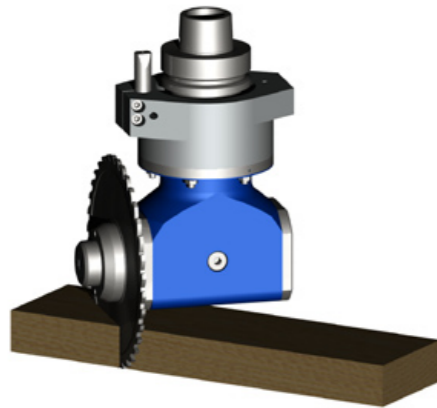
Hence our aggregates are all-purpose, up to a certain degree, which has to be pointed out. Due to high input and output speeds of up to 15.000 rpm significant internal temperatures can be reached.

The construction of the angle heads allows a max. internal operating temperature of 85°C.



Basic Use and Application of aggregates

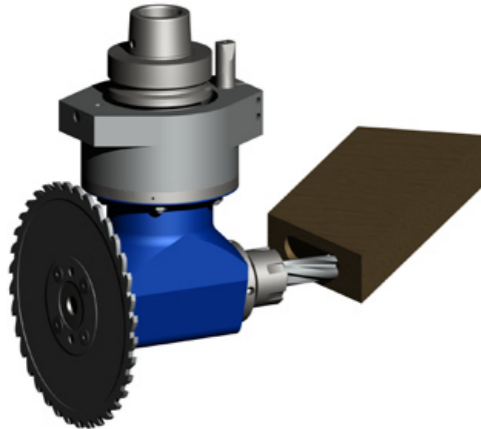
MONO



This aggregate head is equipped standard with a 90° angle.

Applications: horizontal boring and drilling, routing and sawing (reduced gear ratio), e. g. anchor hole drilling, lock recess, formatting of countertops, vertical slot machining (back side).

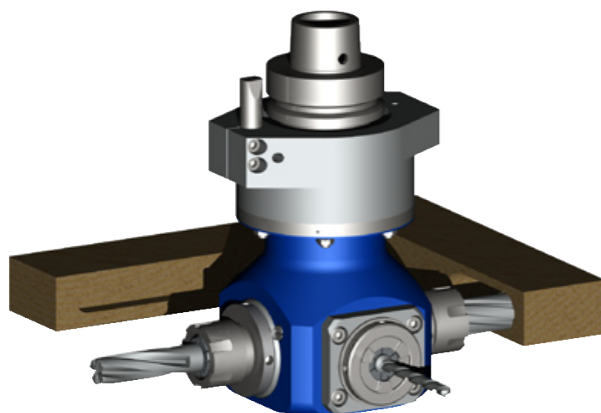
DUO



This aggregate head is standard equipped with 2 tool outlets, each at a 90° angle.

Application: horizontal boring, routing and sawing, e.g. pocketing, grooving, slashing and sizing.

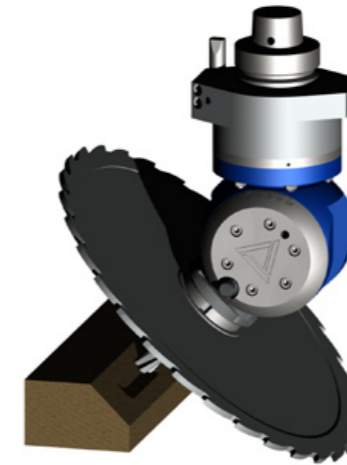
QUATTRO



This aggregate head is standard equipped with 4 tool outlets.

Application: horizontal boring, (except X-Line, which can also be used for routing).

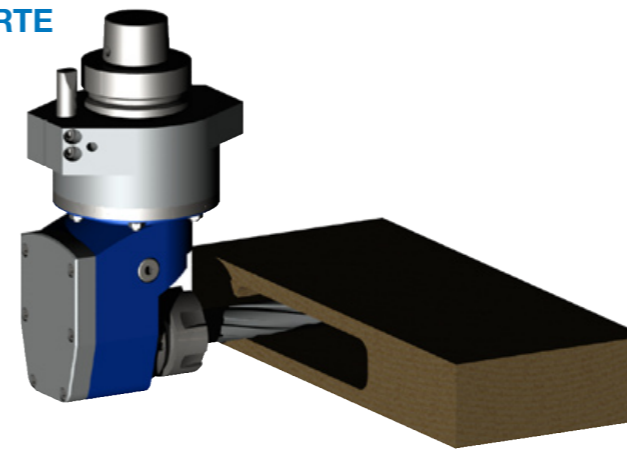
FLEX



This aggregate head is without doubt the most versatile. The angle of the tool outlet can be adjusted manually from -100° to +100°.

Application: For routing, drilling and sawing. E. g. v-grooving.

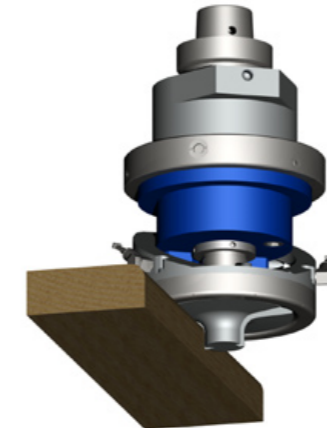
FORTE



This aggregate head with a recessed output connection is ideal for horizontal machining of larger workpieces, where limited machine stroke is a problem.

Application: Lock recess, corner notching etc.

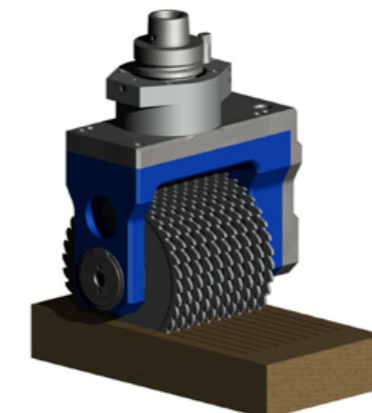
FLOATING



The floating head was developed to machine a consistent depth of cut or outside profile on workpieces with an uneven surface.

Application: shaping applications – corners (parallel profiling) and door surfacing.

MOULDER



This aggregate head can be equipped with straight knives, profile cutters and sawblade packages. The maximum tool length is 120mm.

Application: Heavy moulding, sawing and milling applications e.g. profiling of surfaces and acoustic panelling.



The standard product lines

▲ X-line

The X-line, with its new gear concept and the compact design equates to higher performance data and therefore higher efficiency. With slower heat development and extended lifetime this series was developed to withstand the toughest applications not only in hardwood but all other applications as well, and to ensure higher productivity.

Advantages that speak for themselves:

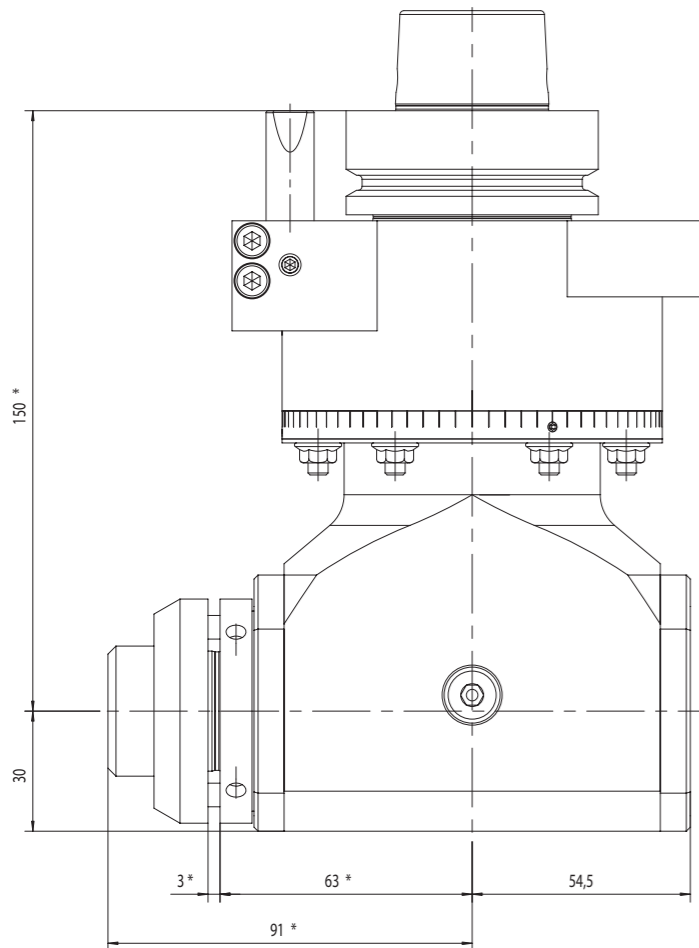
- ▲ Excellent operating characteristics– minimal wear, long life time, under 80 db
- ▲ Extreme rigidity – higher precision during machining
- ▲ New lubricant type – lower temperature, longer cycle times
- ▲ Optimized ratio in the spindle characteristics – high chipping capacity
- ▲ Light weight – fast tool change
- ▲ Optional with modular tool interface (BMS)
- ▲ Available for all machine types

▲ Compact Line

In addition to our X-line series, BENZ also offers aggregates that can be used in applications where space is at a premium and the workpiece is hard to access during the work process. This is the ideal scenario for our BENZ Compact Line.

Single sided right angle head Type MONO with reduced rpm

Application: Horizontal spindle outlet for vertical sawing, e.g. for sizing sheets of material, grooving.



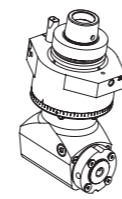
Technical data:

Maximum rpm input: 10.000 1/min
 Maximum rpm output: 7.300 1/min
 Maximum torque input: 18 Nm
 Maximum torque output: 25 Nm
 Gear ratio: 1:0,73
 Maximum temperature: 85°C/ 185 F
 Weight: approx. 4,5 kg
 Aggregate can be rotated 360°
 Maximum acceleration 120 1/s²

This aggregate is available in three different lengths.

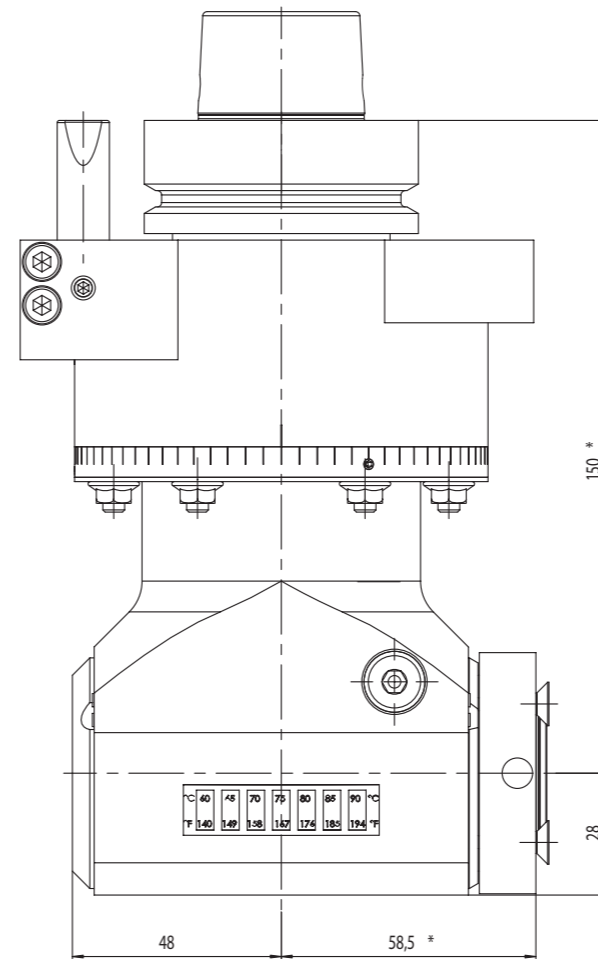
*Dimensions can vary depending on your machine connection and your tool connection.

Please select your tool insert on page 32. The aggregate is available for all CNC machines.



Single sided right angle head Type MONO

Application: Horizontal drilling and routing, e.g. for drilling anchor holes or routing lock recesses.



Technical data:

Maximum rpm input: 12.500 1/min
 Maximum rpm output: 15.000 1/min
 Maximum torque input: 30 Nm
 Maximum torque output: 25 Nm
 Gear ratio: 1:1,2
 Maximum temperature: 85°C/ 185 F
 Weight: approx. 4 kg
 Aggregate can be rotated 360°
 Maximum acceleration 120 1/s²

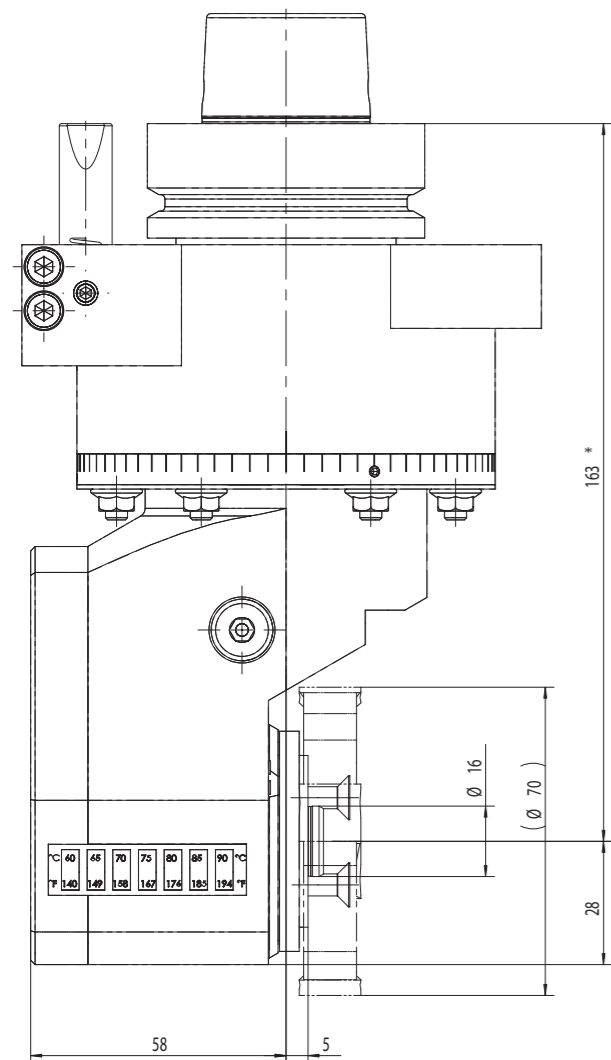
This aggregate is available in three different lengths.

*Dimensions can vary depending on your machine connection and your tool connection.

Please select your tool insert on page 32. The aggregate is available for all CNC machines.

Corner notching unit Type FORTE

Application: This aggregate, with its special spindle, was developed specifically for corner notching on inside corners.

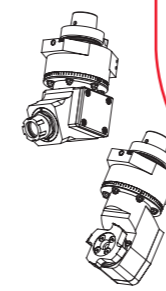


Technical data:

- Maximum rpm input: 12.500 1/min
- Maximum rpm output: 15.000 1/min
- Maximum torque n < 200 1/ min: 25 Nm
- Maximum torque n= 12.500 1/min: 10 Nm
- Gear ratio: 1:1,2
- Maximum temperature: 85 ° C
- Weight: approx. 4 kg
- Aggregate can be rotated 360°
- Maximum acceleration 120 1/s²

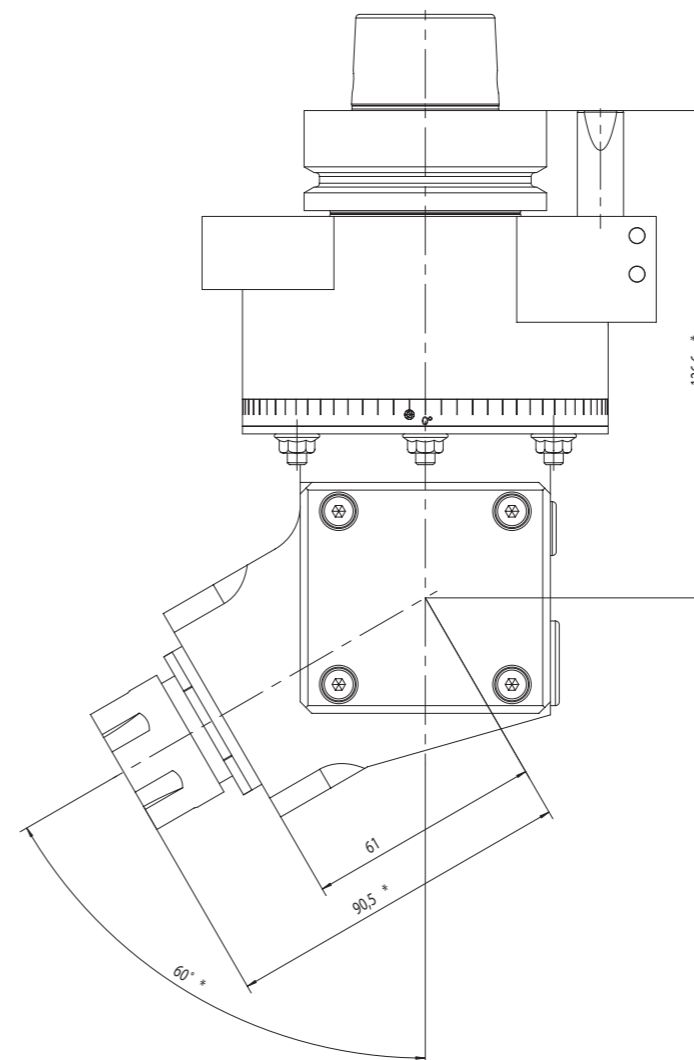
*Dimensions can vary depending on your machine connection and your tool connection.

This aggregate is available for all CNC machines.



Single sided angle head Type FIX with fixed angle

Application: Boring, drilling, routing and sawing at a user-defined fixed angle in the A-axis, e.g for edge beveling.



Technical data:

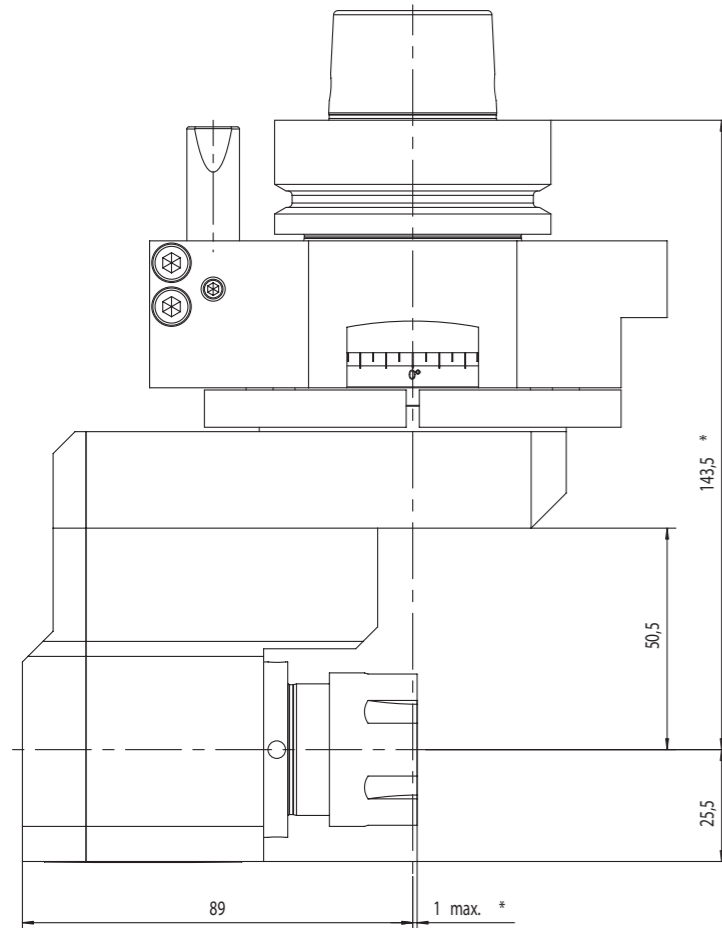
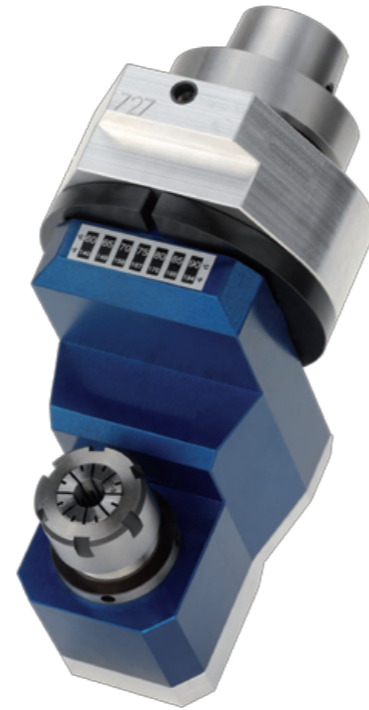
- Maximum rpm input: 15.000 1/min
- Maximum rpm output: 15.000 1/min
- Maximum torque : 25 Nm
- Gear ratio: 1:1
- Maximum temperature: 85°C/ 185 F
- Weight: approx. 4 kg
- Aggregate can be rotated 360°
- Maximum acceleration 120 1/s²

*Dimensions can vary depending on your machine connection and your tool connection.

Please select your tool insert on page 32. The aggregate is available for all CNC machines.

Lock recess trimming head Type FORTE

Application: This aggregate, with its recessed spindle output is ideal for horizontal machining with long tools, where limited room in the x or y stroke would otherwise present a problem.

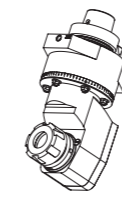


Technical data:

Maximum rpm input: 9.670 1/min
 Maximum rpm output: 12.000 1/min
 Maximum torque input: 20 Nm
 Maximum torque output: 16 Nm
 Gear ratio: 1:1,24
 Maximum temperature: 85°C/ 185 F
 Weight: approx. 4 kg
 Aggregate can be rotated 360°
 Maximum acceleration 120 1/s²

*Dimensions can vary depending on your machine connection and your tool connection.

Please select your tool insert on page 32. The aggregate is available for all CNC machines.

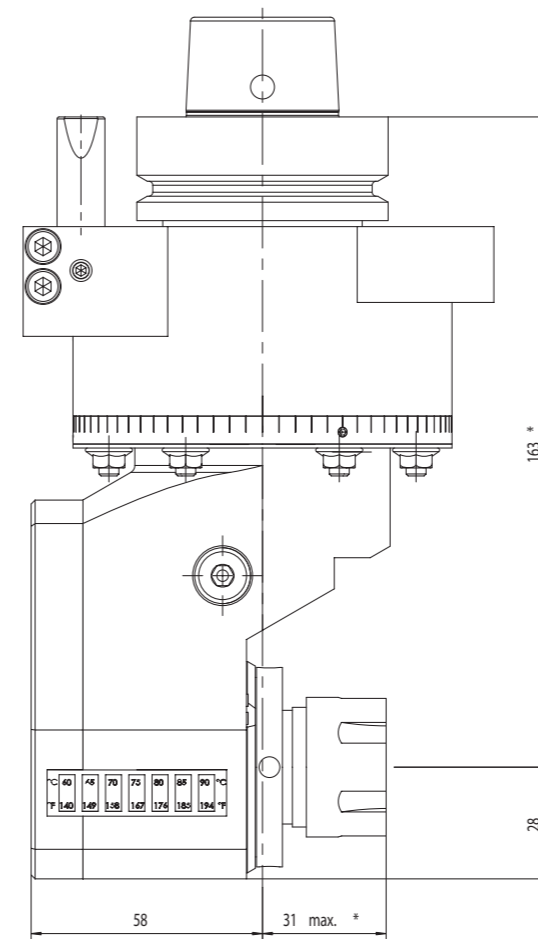


Lock recess trimming head Type FORTE

Application: This aggregate, with its recessed spindle output is ideal for horizontal machining with long tools, where limited room in the x or y stroke would otherwise present a problem, e.g. mortise lock machining on doors.



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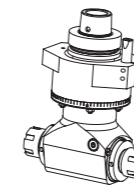


Technical data:

Maximum rpm input: 12.500 1/min
 Maximum rpm output: 15.000 1/min
 Maximum torque input: 30 Nm
 Maximum torque output: 25 Nm
 Gear ratio: 1:1,2
 Maximum temperature: 85°C/ 185 F
 Weight: approx. 4 kg
 Aggregate can be rotated 360°
 Maximum acceleration 120 1/s²

*Dimensions can vary depending on your machine connection and your tool connection.

Please select your tool insert on page 32. The aggregate is available for all CNC machines.



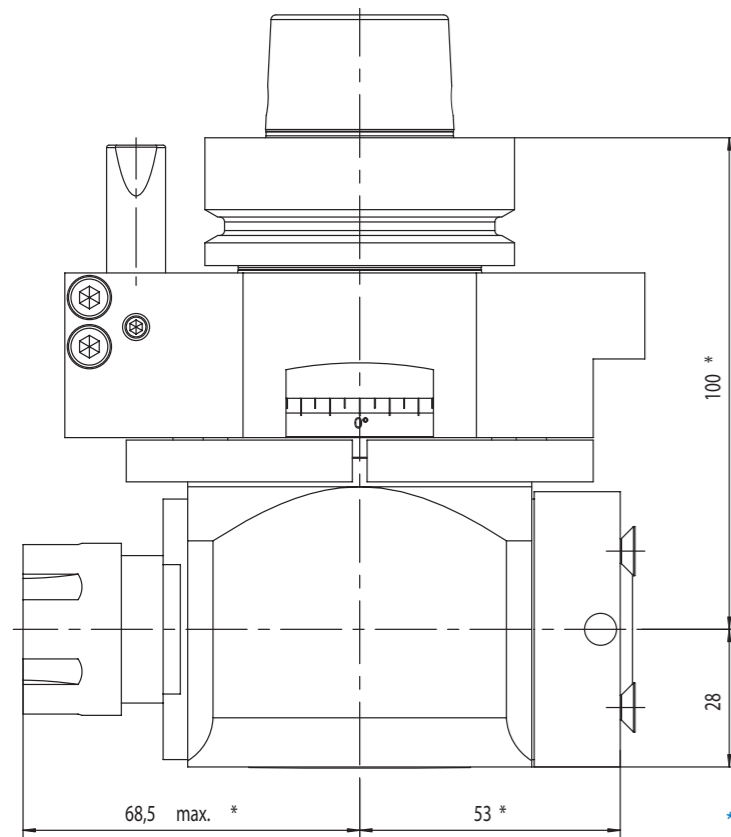
Double sided angle head Type DUO

Application: Horizontal spindle outputs for vertical sawing as well as horizontal boring and routing, (light duty sawing and drilling).



Technical data:

Maximum rpm input: 8.750 1/min
 Maximum rpm output: 12.000 1/min
 Maximum torque input: 20 Nm
 Maximum torque output: 15 Nm
 Gear ratio: 1:1,37
 Maximum temperature: 85°C/ 185 F
 Weight: approx. 4 kg
 Aggregate can be rotated 360°
 Maximum acceleration 120 1/s²



*Dimensions can vary depending on your machine connection and your tool connection.

Please select your tool insert on page 32. The aggregate is available for all CNC machines.

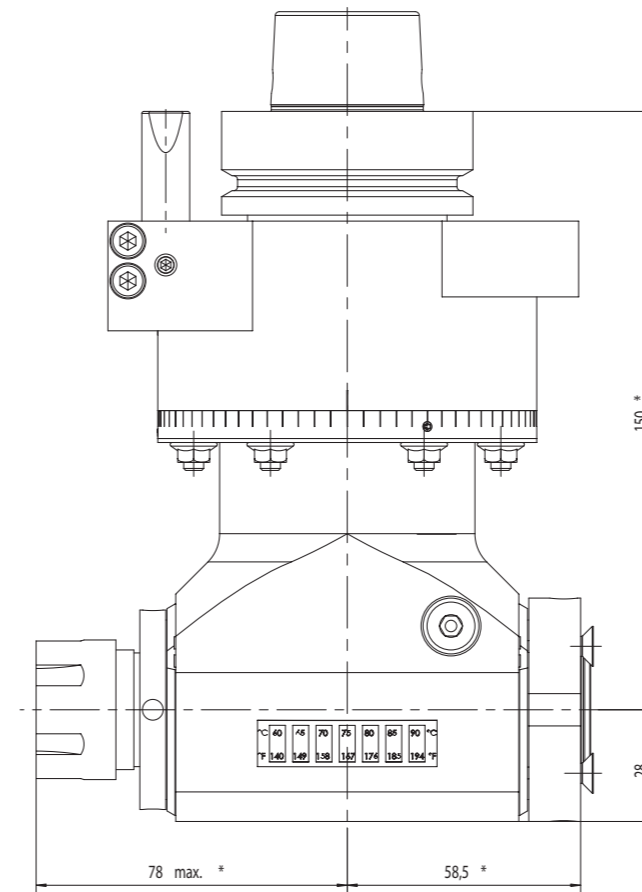
Double sided angle head Type DUO

Application: Horizontal spindle outputs for vertical sawing and routing, e.g. for slotting and pocketing.



Technical data:

Maximum rpm input: 12.500 1/min
 Maximum rpm output: 15.000 1/min
 Maximum torque input: 30 Nm
 Maximum torque output: 25 Nm
 Gear ratio: 1:1,2
 Maximum temperature: 85°C/ 185 F
 Weight: approx. 4 kg
 Aggregate can be rotated 360°
 Maximum acceleration 120 1/s²



*Dimensions can vary depending on your machine connection and your tool connection.

This aggregate is available in three different lengths.

Please select your tool insert on page 32. The aggregate is available for all CNC machines.

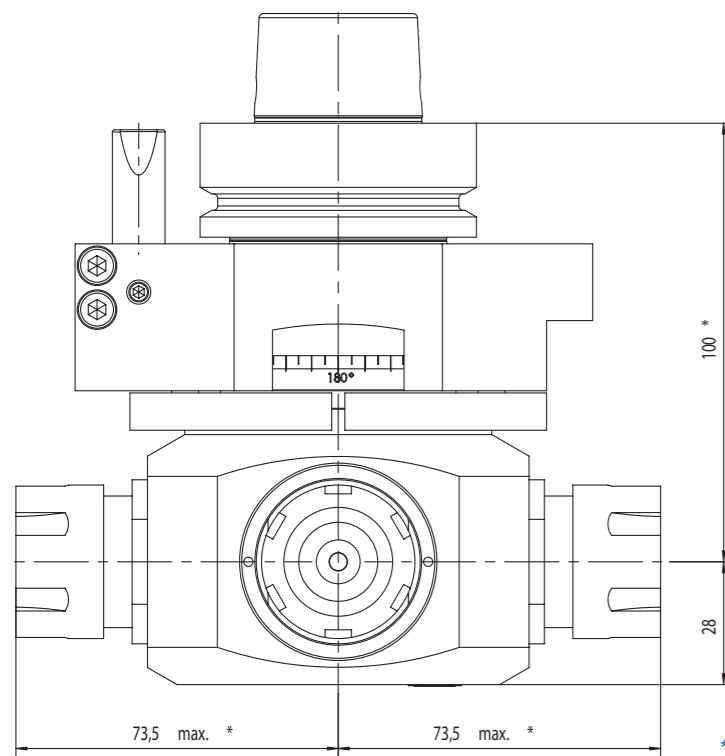
Four sided angle head Type QUATTRO

Application: Horizontal boring.



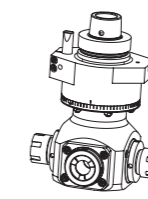
Technical data:

Maximum rpm input: 8.750 1/min
 Maximum rpm output: 12.000 1/min
 Maximum torque input: 20 Nm
 Maximum torque output: 15 Nm
 Gear ratio: 1:1,37
 Maximum temperature: 85°C/ 185 F
 Weight: approx. 4,5 kg
 Aggregate can be rotated 360°
 Maximum acceleration 120 1/s²



*Dimensions can vary depending on your machine connection and your tool connection.

Please select your tool insert on page 32. The aggregate is available for all CNC machines.



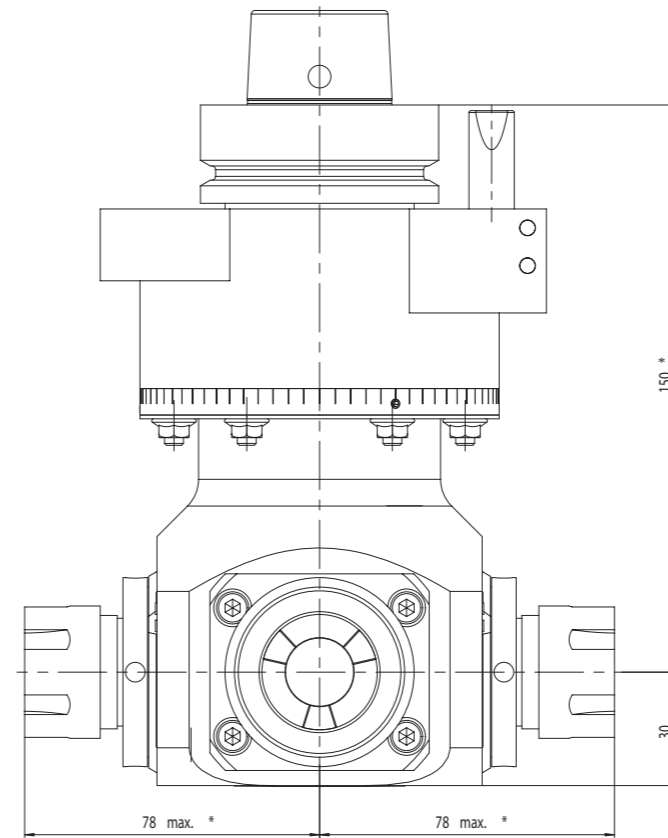
Four sided angle head Type QUATTRO

Application: two drill spindles for heavy and two boring spindles for light applications, e.g. machining of entry doors on all four edges.



Technical data:

Maximum rpm input: 12.500 1/min
 Maximum rpm output: 15.000 1/min
 Maximum torque input: 30 Nm
 Maximum torque output: 25 Nm
 Gear ratio: 1:1,2
 Maximum temperature: 85°C/ 185 F
 Weight: approx. 6 kg
 Aggregate can be rotated 360°
 Maximum acceleration 120 1/s²

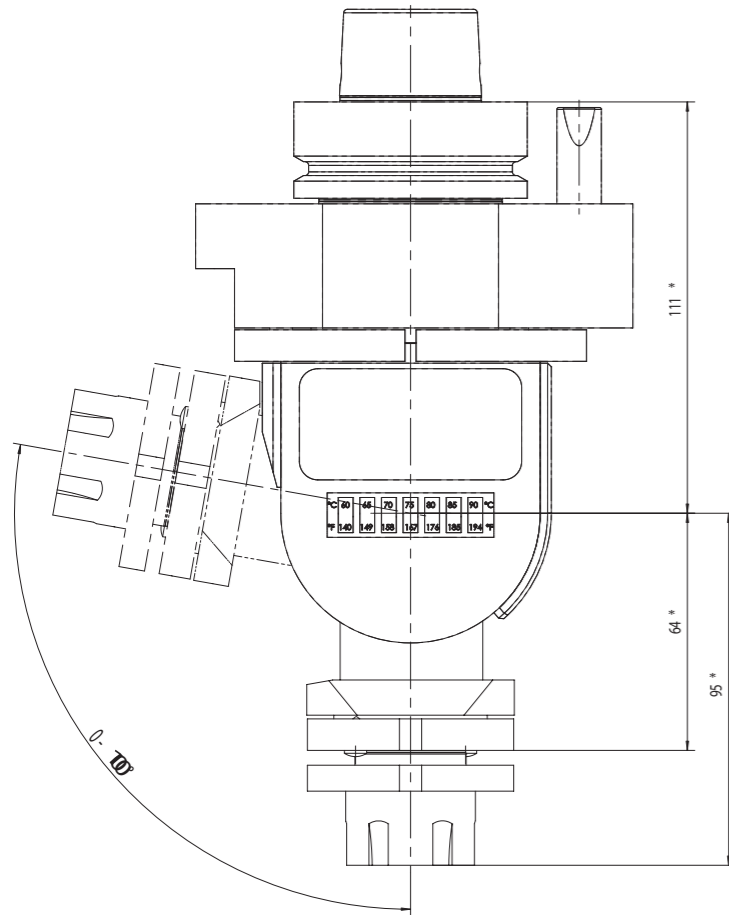


*Dimensions can vary depending on your machine connection and your tool connection.

Please select your tool insert on page 32. The aggregate is available for all CNC machines.

Adjustable right angle head Type FLEX

Application: Drilling/Boring, routing and sawing at any angle. The A-axis is manually adjustable from 0° to +100°, e.g. for any and all angled machining.

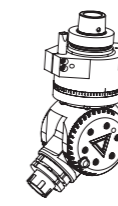


Technical data:

Maximum rpm input: 12.000 1/min
 Maximum rpm output: 12.000 1/min
 Maximum torque: 15 Nm
 Gear ratio: 1:1
 Maximum temperature: 85°C/ 185 F
 Weight: approx. 4 kg
 Aggregate can be rotated 360°
 Maximum acceleration 120 1/s²

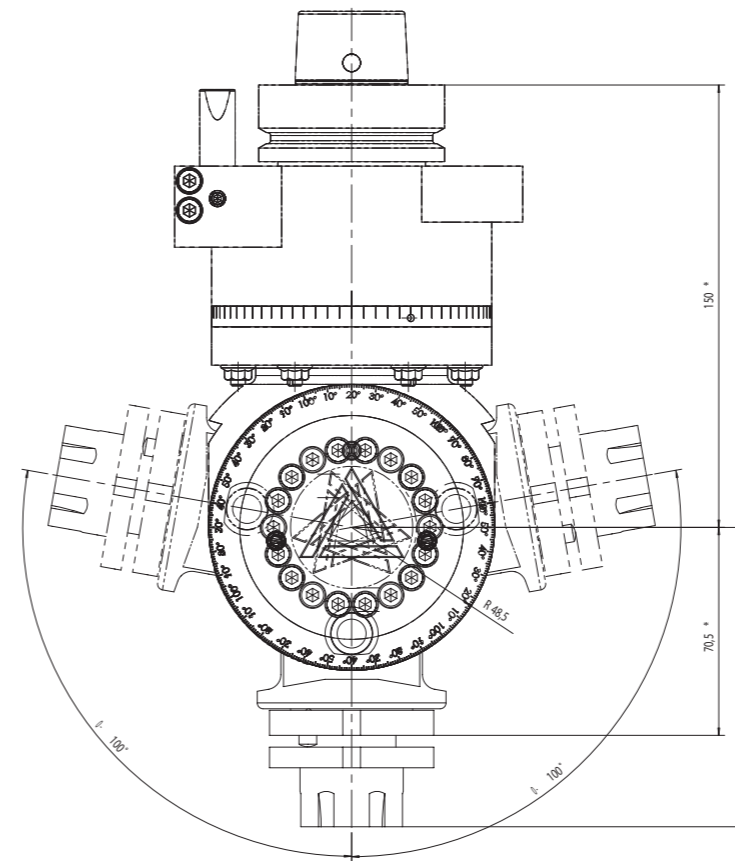
*Dimensions can vary depending on your machine connection and your tool connection.

Please select your tool insert on page 32. The aggregate is available for all CNC machines.



Adjustable right angle head Type FLEX

Application: Drilling/Boring, routing and sawing at any angle. The A-axis is manually adjustable from -100° to +100°, e.g. for any and all angled machining.



Technical data:

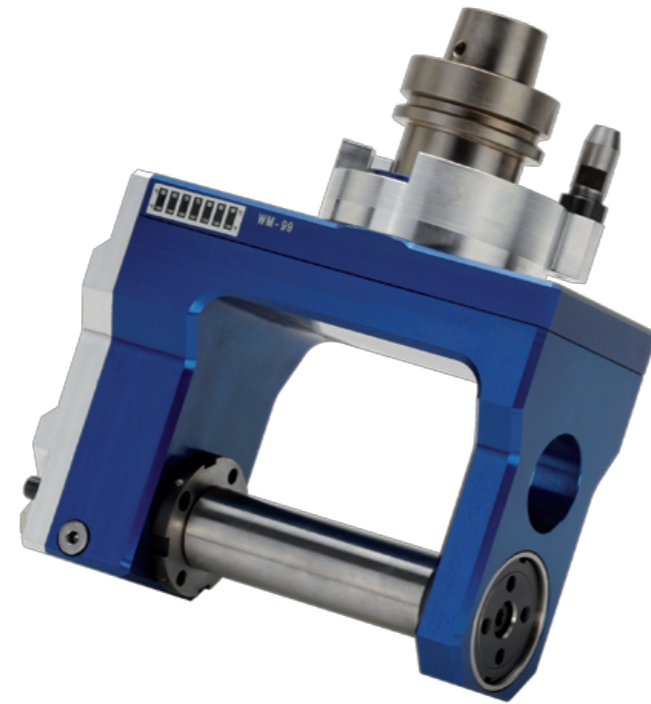
Maximum rpm input: 15.000 1/min
 Maximum rpm output: 15.000 1/min
 Maximum torque: 25 Nm
 Gear ratio: 1:1
 Maximum temperature: 85°C/ 185 F
 Weight: approx. 5 kg
 Aggregate can be rotated 360°
 Maximum acceleration 120 1/s²

*Dimensions can vary depending on your machine connection and your tool connection.

Please select your tool insert on page 32. The aggregate is available for all CNC machines.

Moulder head Type MOULDER

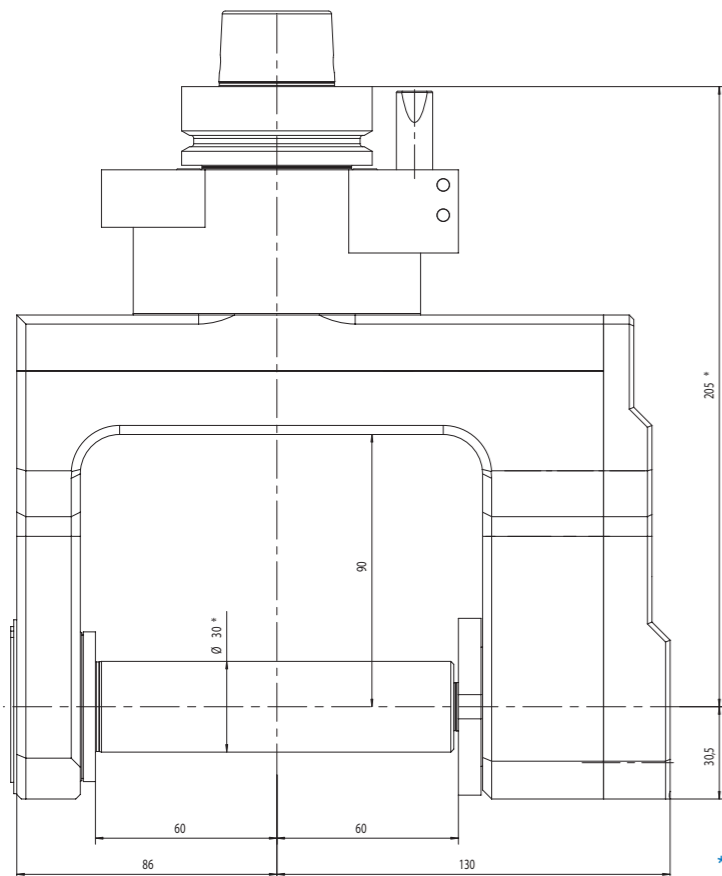
Application: For heavy duty moulding or profiling applications. The aggregate can be equipped with saw blade packages or profile cutters e.g. for profiling of surfaces.



Technical data

Maximum rpm input: 14.000 1/min
 Maximum rpm output: 10.000 1/min
 Maximum torque input: 18 Nm
 Maximum torque output: 25 Nm
 Gear ratio: 1:0,718
 Maximum temperature: 85°C/ 185 F
 Weight: approx. 10,5 kg
 Aggregate can be rotated 4 x 90°
 Maximum acceleration 120 1/s²
 Tool outlet options: Ø 30 mm or Ø 35 mm
 (arbor diameter)

*Dimensions can vary depending on your machine connection and your tool connection.



This aggregate is available for all CNC machines.

Floating trimming unit Type FLOATING

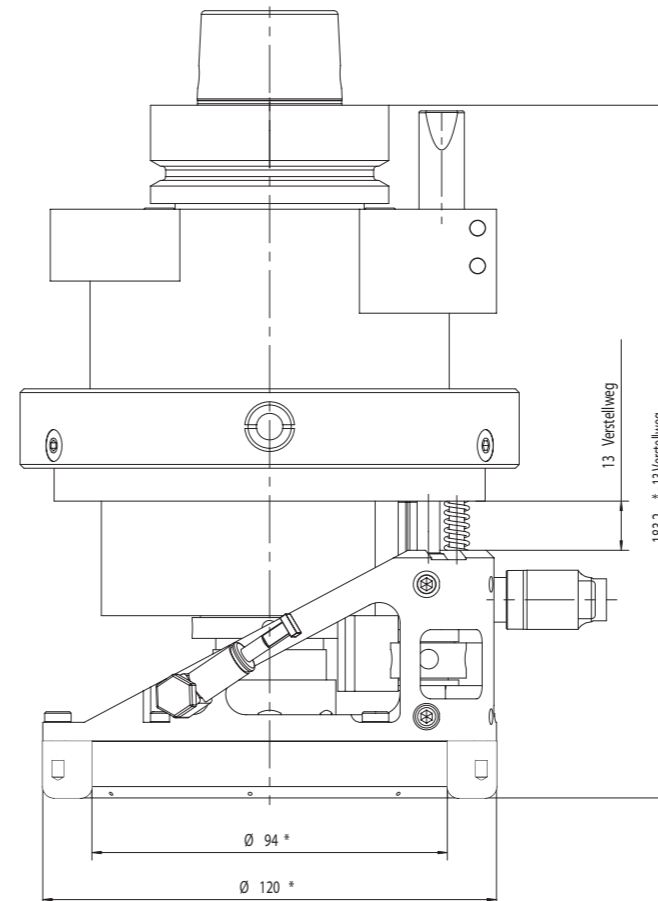
Application: vertical floating for exact cutting depths (e.g. engraving) , for cutting an exact depth or profiling edges on a workpiece with an inconsistent surface.



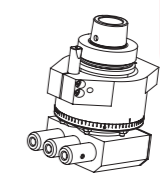
Technical data

Maximum rpm (version 1): 18.000 1/min
 Maximum rpm (version 2): 24.000 1/min
 Maximum torque: 20 Nm
 Gear ratio: 1:1
 Maximum temperature: 85°C/ 185 F
 Weight: approx. 5 kg
 Aggregate can be rotated 4 x 90°
 Maximum acceleration 120 1/s²

*Dimensions can vary depending on your machine connection and your tool connection.



Please select your tool insert on page 32. The aggregate is available for all CNC machines.



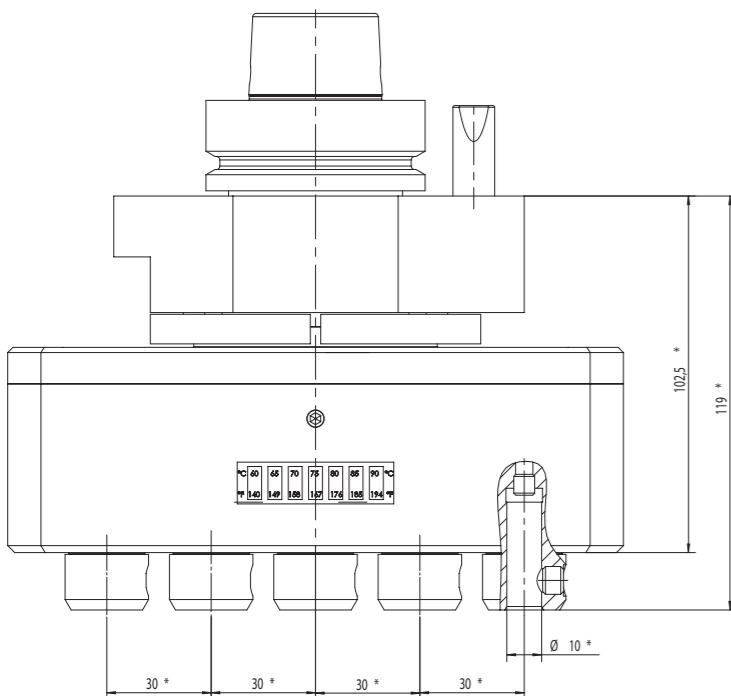
Multi Spindle head vertical

Application: for line boring applications, e.g. shelving.



Technical data

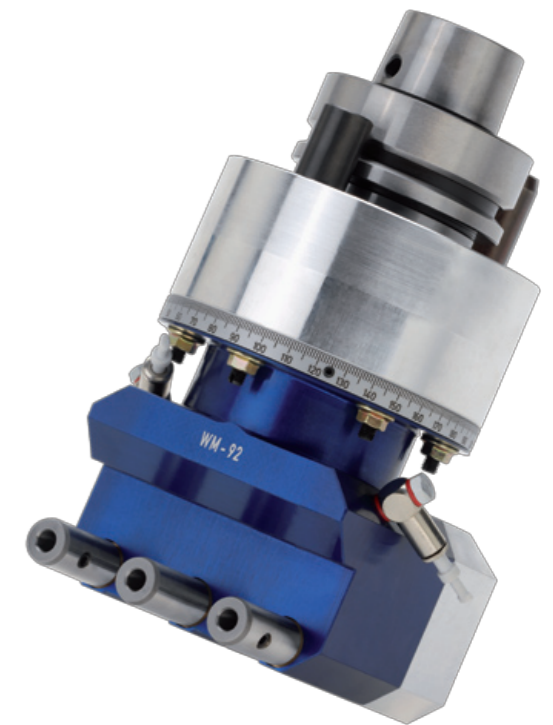
Maximum rpm input: 12.000 1/min
 Maximum rpm output: 12.000 1/min
 Maximum torque: 30 Nm
 Gear ratio: 1:1
 Maximum temperature: 85°C/ 185 F
 Weight: approx. 4-8 kg depending on quantity of spindles
 Aggregate can be rotated 360°
 Maximum acceleration 120 1/s²
 Available with 3 to 7 spindles
 Center to center distance: 25 mm/ 30 mm/ 32 mm



*Dimensions can vary depending on your machine connection and your tool connection.

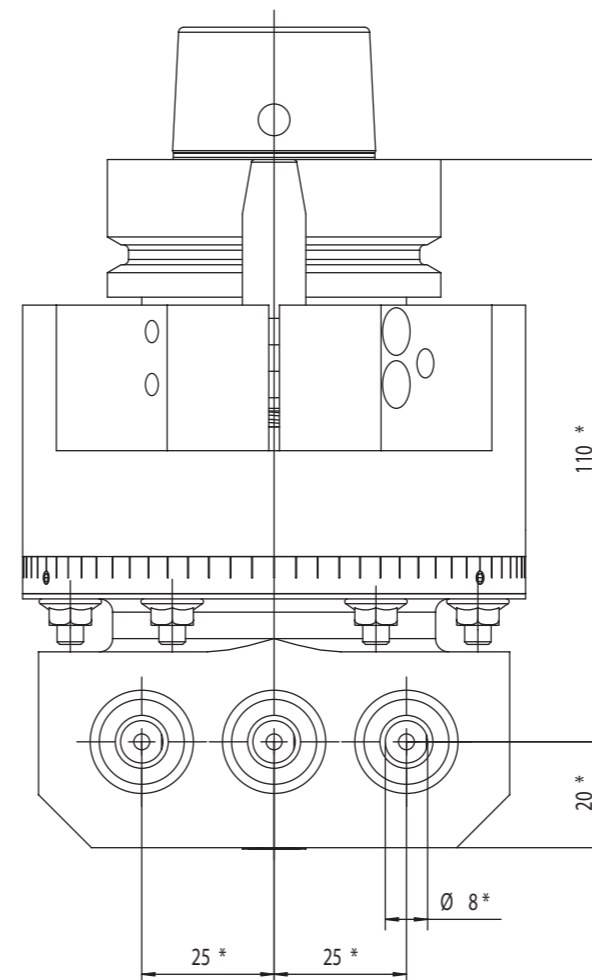
Multi Spindle head horizontal

Application: for line boring applications, e.g. shelving.

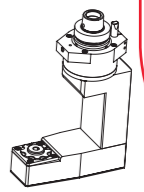


Technical data

Maximum rpm input: 7.300 1/min
 Maximum rpm output: 10.000 1/min
 Maximum torque: 30 Nm
 Gear ratio: 1:1,37
 Maximum temperature: 85°C/ 185 F
 Weight: approx. 4-8 kg depending on quantity of spindles
 Aggregate can be rotated 360°
 Maximum acceleration 120 1/s²
 Available with 3 to 5 spindles
 Center to center distance: 25 mm/ 30 mm/ 32 mm

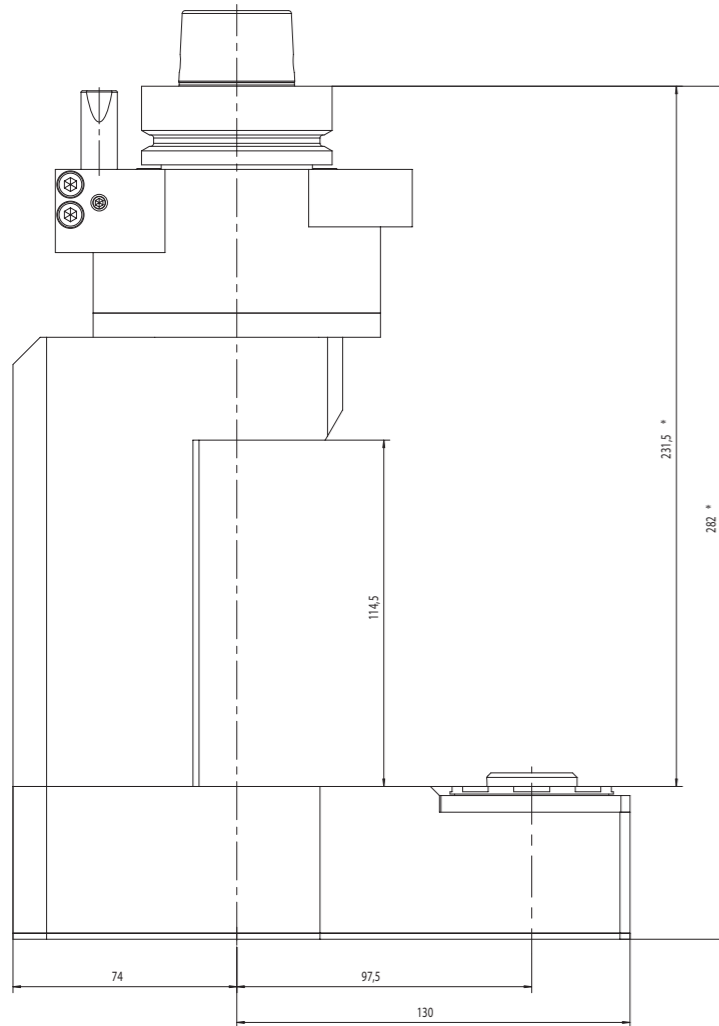


*Dimensions can vary depending on your machine connection and your tool connection.



Undersurface aggregate

Application: for working from underneath the work-piece, e.g. for closet doors.



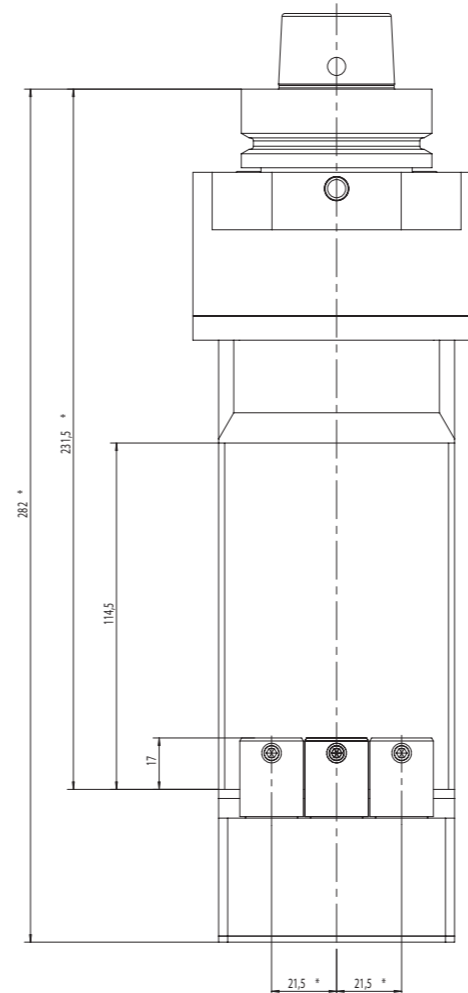
Technical data

Maximum rpm input: 12.000 1/min
 Maximum rpm output: 12.000 1/min
 Maximum torque: 15 Nm
 Gear ratio: 1:1
 Maximum temperature: 85°C/ 185 F
 Weight: approx. 8,5 kg
 Aggregate can be rotated 4 x 90°
 Maximum acceleration 120 1/s²
 This aggregate is available in different lengths for different applications

*Dimensions can vary depending on your machine connection and your tool connection.

Multi Spindle Undersurface aggregate

Application: for working from underneath the work-piece, e.g. for closet doors.



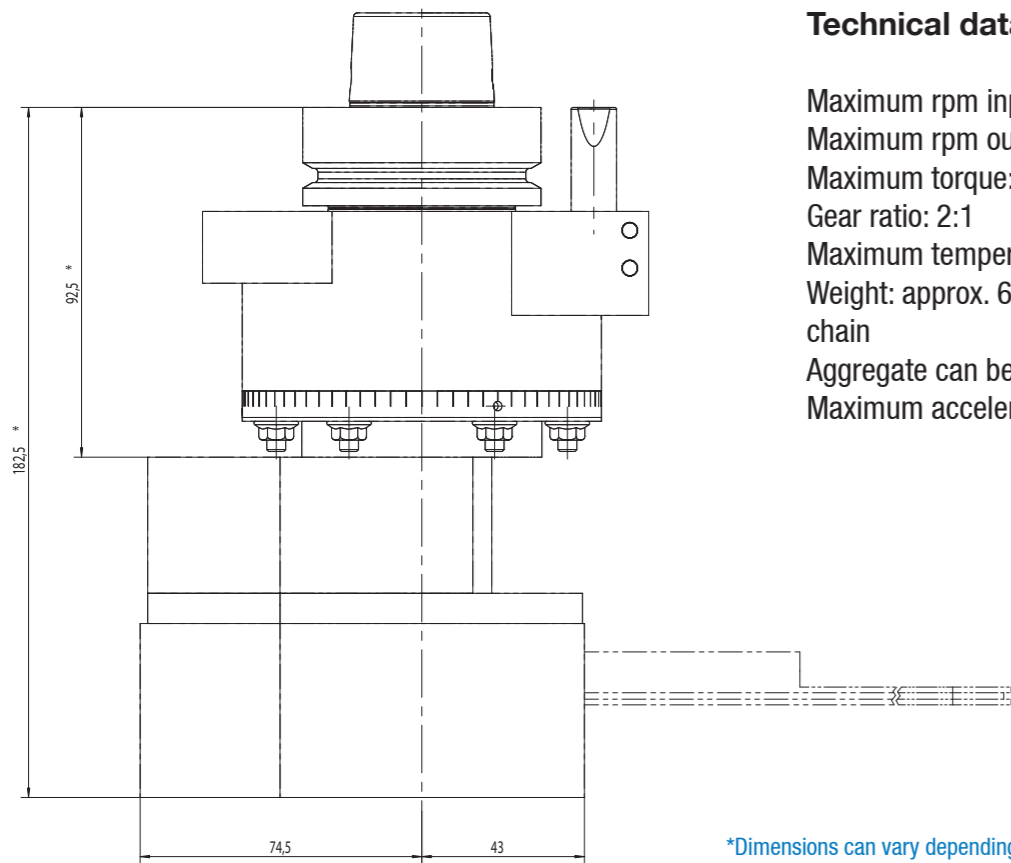
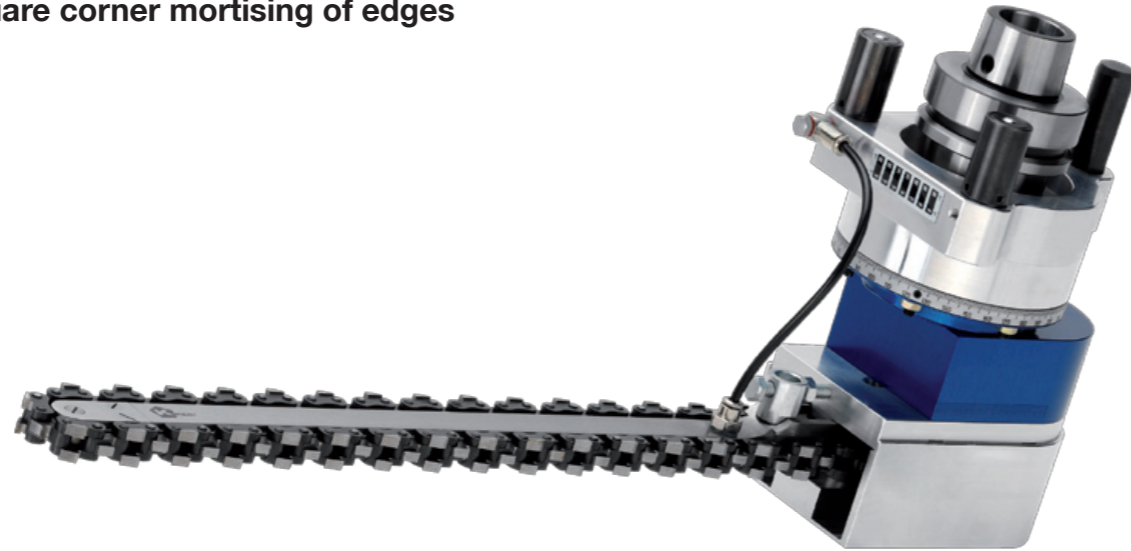
Technical data

Maximum rpm input: 4.800 1/min
 Maximum rpm output: 12.000 1/min
 Maximum torque: 30 Nm
 Gear ratio: 1:2,5
 Maximum temperature: 85°C/ 185 F
 Weight: approx. 8,5 kg
 Aggregate can be rotated 4 x 90°
 Maximum acceleration 120 1/s²
 This aggregate is available in different lengths for different applications

*Dimensions can vary depending on your machine connection and your tool connection.

Chain saw aggregate (mortising)

Application: for square corner mortising of edges

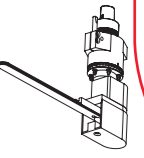


Technical data

Maximum rpm input: 6.000 1/min
 Maximum rpm output: 3.000 1/min
 Maximum torque: 10 Nm
 Gear ratio: 2:1
 Maximum temperature: 85°C/ 185 F
 Weight: approx. 6 kg depending on guide bar and chain
 Aggregate can be rotated 360°
 Maximum acceleration 120 1/s²

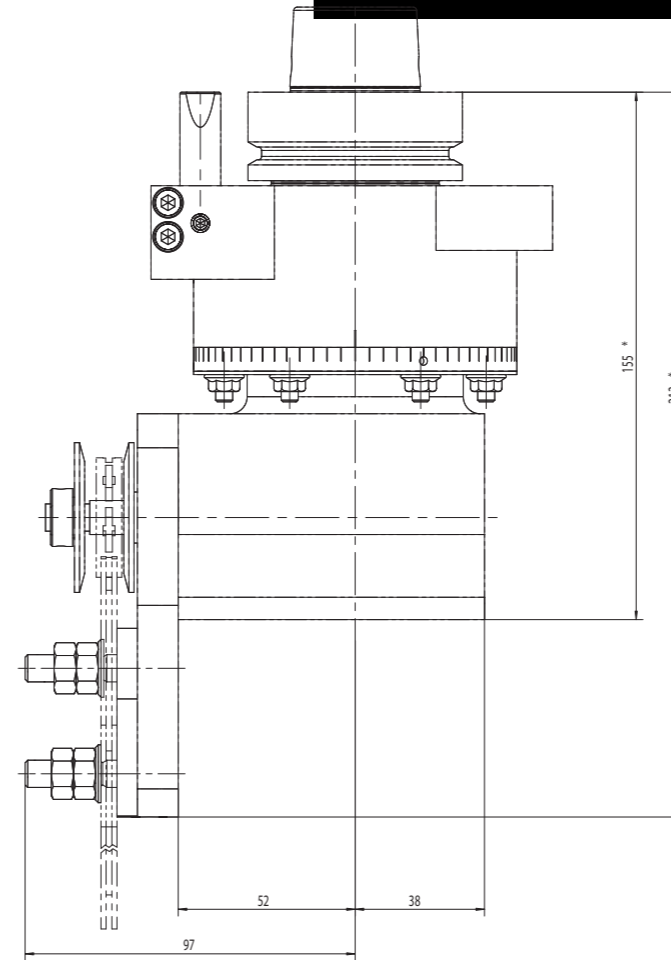
*Dimensions can vary depending on your machine connection and your tool connection.

Please select your tool insert on page 32. The aggregate is available for all CNC machines.



Chain saw aggregate (cutting)

Application: Cutting through thick material.



Technical data

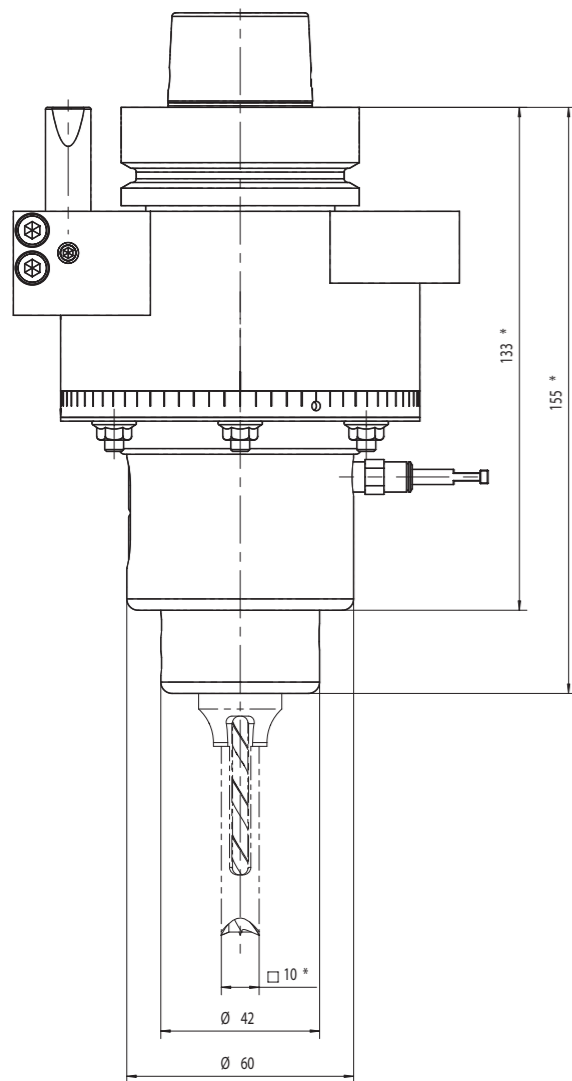
Maximum rpm input: 6.570 1/min
 Maximum rpm output: 9.000 1/min
 Maximum torque input: 22 Nm
 Maximum torque output: 16 Nm
 Gear ratio: 1:1,37
 Maximum temperature: 85°C/ 185 F
 Weight: approx. 8 kg depending on guide bar and chain
 Aggregate can be rotated 360°
 Maximum acceleration 120 1/s²

*Dimensions can vary depending on your machine connection and your tool connection.

Please select your tool insert on page 32. The aggregate is available for all CNC machines.

Chisel mortising aggregate vertical

Application: for boring square holes



Technical data

Maximum rpm input: 1.000 1/min
 Maximum rpm output: 1.000 1/min
 Maximum torque: 22 Nm
 Gear ratio: 1:1
 Maximum temperature: 85°C/ 185 F
 Weight: approx. 5 kg
 Aggregate can be rotated 360°
 Maximum acceleration 120 1/s²

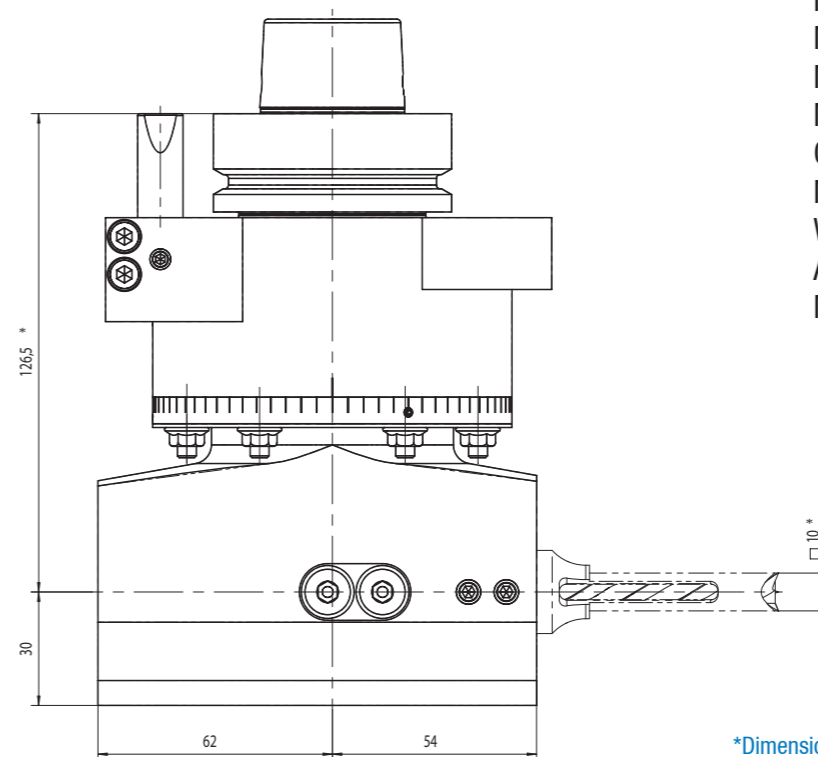
*Dimensions can vary depending on your machine connection and your tool connection.

This aggregate is available for all CNC machines.



Chisel mortising aggregate horizontal

Application: for boring square holes

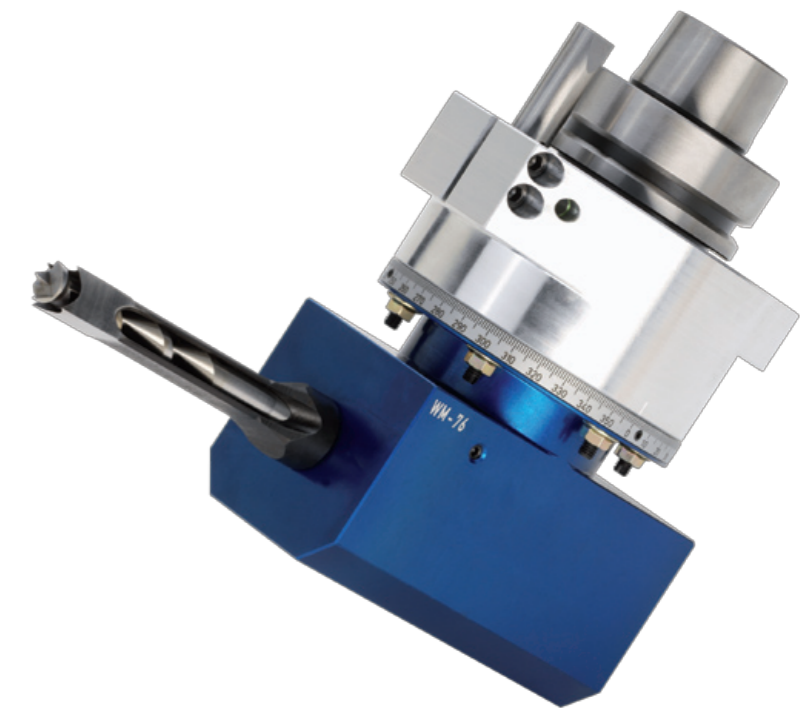


Technical data

Maximum rpm input: 1.370 1/min
 Maximum rpm output: 1.000 1/min
 Maximum torque input: 16 Nm
 Maximum torque output: 22 Nm
 Gear ratio: 1:0,73
 Maximum temperature: 85°C/ 185 F
 Weight: approx. 5 kg
 Aggregate can be rotated 360°
 Maximum acceleration 120 1/s²

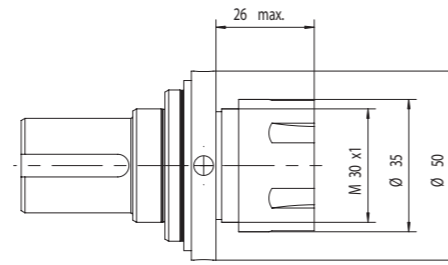
*Dimensions can vary depending on your machine connection and your tool connection.

This aggregate is available for all CNC machines.



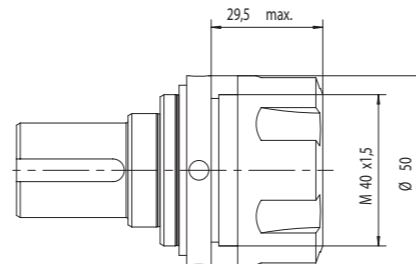
ER25 mini nut and collet system REGO-FIX®

Clamping capacity 1-16mm (also available 1-20mm – special collet)
Available for: MONO, DUO, QUATTRO, FORTE, FLEX, FIX, FLOATING



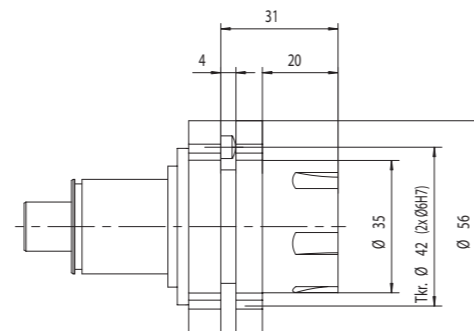
ER32 nut and collet system REGO-FIX®

Clamping capacity 2-20mm
Available for: MONO, DUO, FORTE, FIX



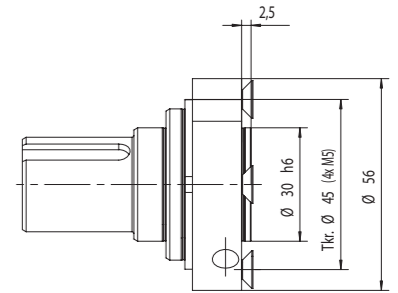
“Kombi” ER25 mini nut and collet system REGO-FIX® with saw blade

Available for: FLEX



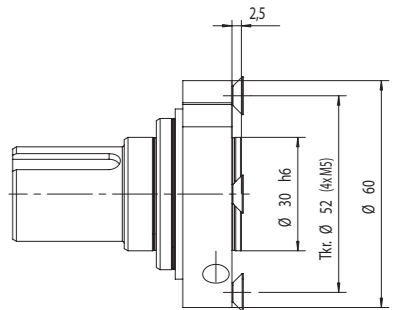
Saw blade connection with Weldon 10mm

Attachment: 4x M5 Ø 52mm
Available for: MONO, DUO, FLEX, FIX



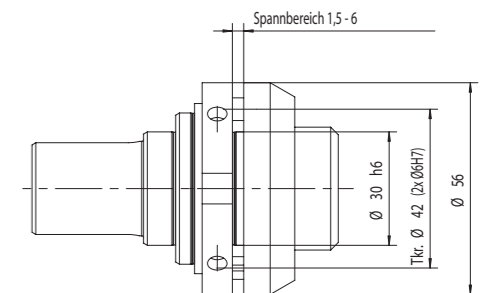
10 mm Weldon saw blade insert

Attachment: 4x M5 Ø 52mm
Available for: MONO, DUO, FLEX, FIX



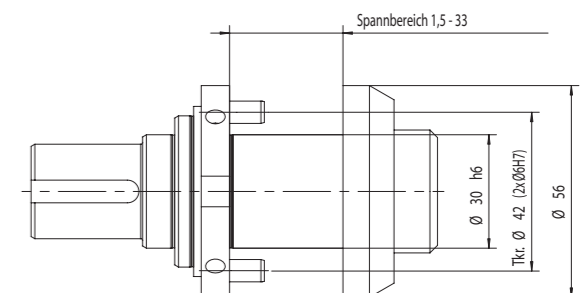
Saw blade connection with flange

Clamping capacity: 1,5-6mm
Available for: MONO, DUO, FIX



Saw blade/ cutter arbor connection

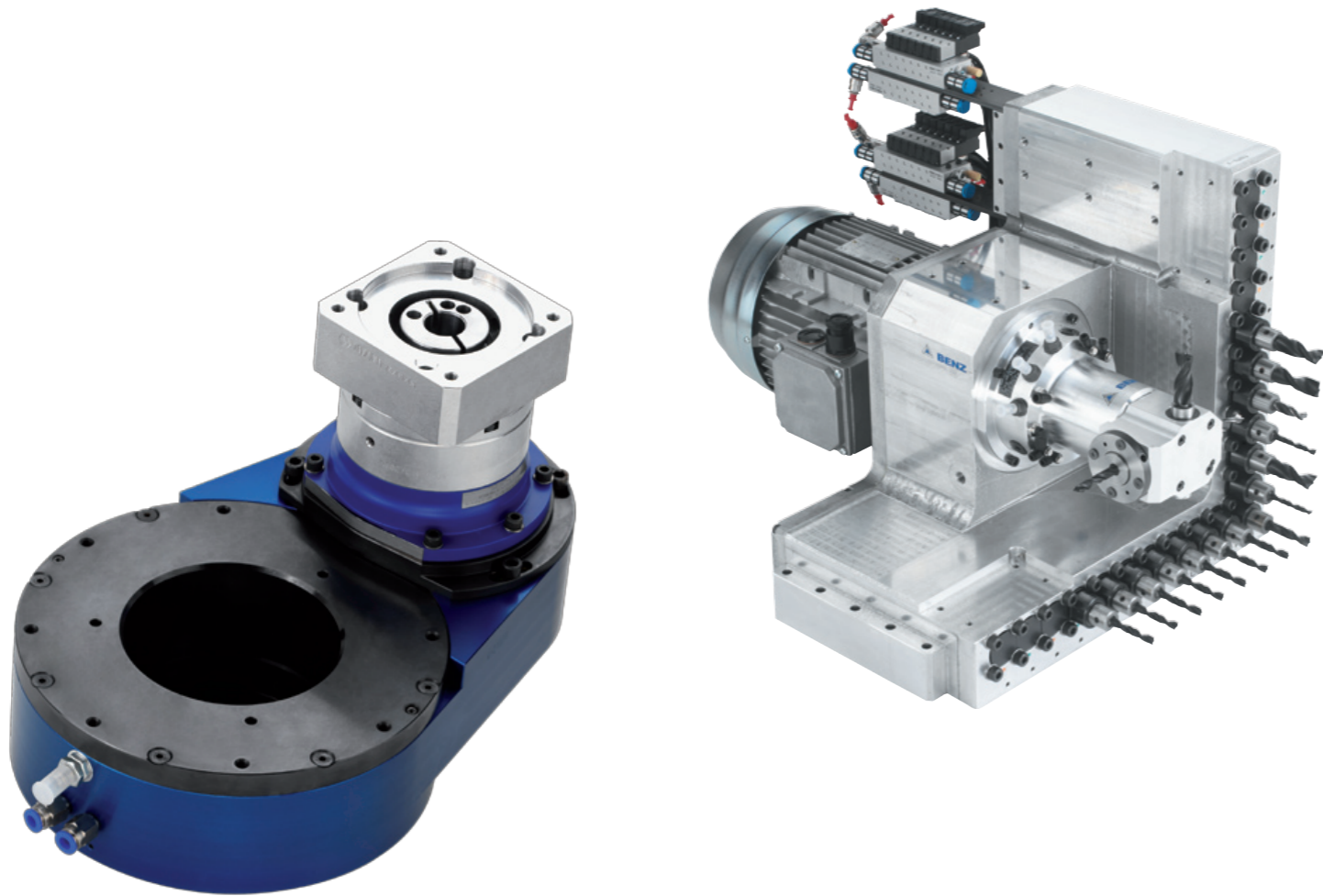
Clamping capacity: 1,5-33mm; arbor Ø 30mm
Available for: MONO, DUO



 **Customer specific single solutions**

In addition to the standard lines BENZ offers additional products which are developed for very special applications. In cooperation with our engineers your individual application example is considered and a fitting solution is developed. No matter if it is a completely new development or a modification of an already realized solution. New product development or modification of already realized customer solutions – our aggregates convince through reduced set-up time, fast cycle times and high performance. From C-axis to 5-axis heads, multi-spindle drill units or programmable adjustable aggregates:

you give us the requirement and we develop the solution.



 **Information about:**

- ▲ Further Products
- ▲ Technical Data
- ▲ Pricing
- ▲ Delivery times of customer specific single solutions will be provided upon request.



INQUIRY FORM



COMPANY: _____ **DATE:** _____

CONTACT: _____

ADDRESS: _____ **PHONE:** _____
 _____ **EMAIL:** _____
 _____ **FAX:** _____

NUMBER OF UNITS: _____

MACHINE MANUFACTURER/TYPE: _____

MOTOR SPINDLE CONNECTION (HSK63F,E; SK30; ISO30; BT30; etc.): _____

NUMBER OF SPINDLE OUTLETS AND SPINDLE TYPE (1,2,4:COLLET ER 25, ER 32; SAW BLADE WELDON 10 mm, etc.): _____

AGGREGATE SERIES (COMPACT, X-LINE): _____

SHORT DESCRIPTION OF YOUR APPLICATION: _____

PROCESSING MATERIAL: _____

DUTY CYCLE: _____

MAXIMUM SPEED OF TOOL: _____

MAXIMUM TOOL DIMENSION: _____

MAXIMUM ACCELERATION: 120 1/s²