

5 AXIS DRILL GRINDING CENTER Ø 1 TO 8 mm*

*or 2 to 14.5 with option A60.02.000



DETAILED DOCUMENTATION

AVYAC MACHINES, ZAC L'ORME LES SOURCES 42340 VEAUCHE - FRANCE

Tel. 04 77 53 99 12 - Fax 04 77 53 60 34

Mail : contact@avyac-machines.com - <http://www.avyac-machines.com>

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1. AVYAC MACHINES COMPANY

Avyac Machines factory in Veauche, France



AVYAC REPRESENTATIVES WORLDWIDE

Germany



Obere Hauptstr. 46
78604 Rietheim-Weilheim
Tel +49 7424/501190
www.haller-wst.de

United-States



Drill Masters Eldorado Tool
336 Boston Post Road
Milford, CT 06460
+1 203 878-1711 or +1 800-658-8855
www.dmetool.com

China



Shanghai Marquart Technology Ltd.
上海市乌鲁木齐北路199号世纪时空大厦L-8602室, 邮编: 200040
Room L-8602, No. 199, North Urumqi Road, World Union Building, JingAn District, ShangHai, PRC
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Tel +86 21 622 500 12
www.marquart.cn

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2. PRESENTATION NC18 GRINDING CENTER

2.1. INTRODUCTION

COMPACT DRILLS GRINDING CENTER NC18 5 AXIS

2 available versions:

Standard: with B&R PPC2100 numerical control (Ref.: 860.00.01_)

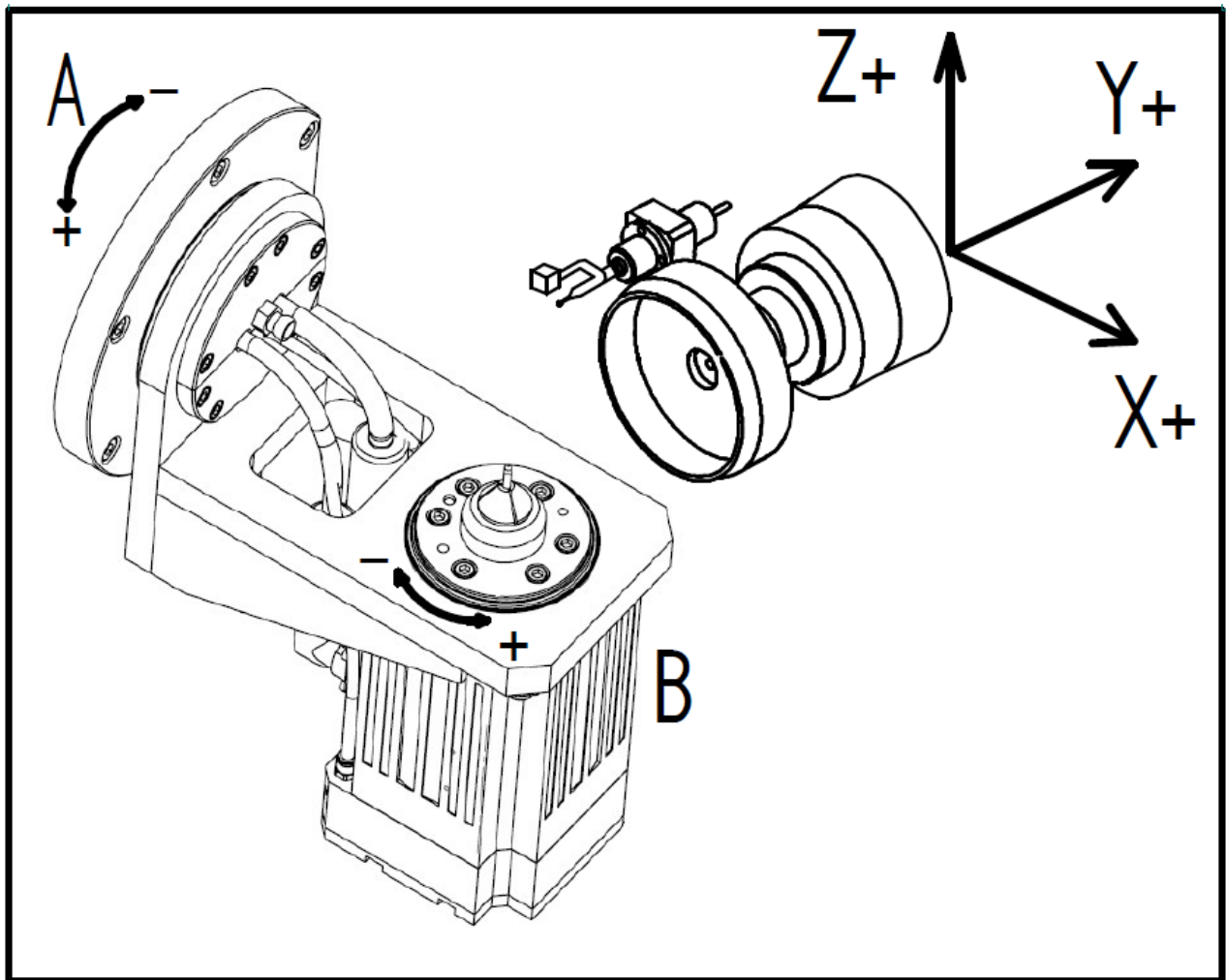
Or

In option: with SIEMENS 840D SL numerical control (Ref.: 860.00.00_)

Tools Diameter: **Standard Ø1 to 8 mm with W12 collets**
 Optional Ø2 to 14.5 mm with W20 collets (option A60.02.000)

Maximum length of tools: 320 mm

2.2. AXIS KINEMATIC



X AXIS: Stroke 150 mm –longitudinal slide

Y AXIS: Stroke 125 mm –transversal slide

X and Y slides are equipped with crossed roller design. They are driven by precision ball screws (diameter 16 mm and step 5 mm) and controlled by synchronous motors.

A AXIS: Stroke 180° - specific rotary axis (supports the dividing tool holder)
Inclination of the dividing tool holder allowing the evolution of clearance angles.
Controlled by synchronous motor with brake.

B AXIS: Stroke 360° - Dividing tool holder
Conical Spindle, directly set on direct drive hollow shaft motor for a perfect concentricity (0.005 mm). Automatic pneumatic locking of the drill into W12 collets (or W20 – option A60.02.000). Loading of the drills by mean of attraction without specific equipment.

Z AXIS: Stroke 110 mm – Vertical slide.

Z axis is equipped with crossed roller and is driven by precision ball screw (diameter 16 mm and step 5 mm) and controlled by synchronous motor with brake.

The entire axes are controlled with synchronous motors with absolute coder (From B&R or SIEMENS for linear axis, hollow shaft motors from STOBBER for rotary axis).

2.3. NUMERICAL CONTROL

B&R version, POWER PANEL PPC2100, with colour touch screen 10'4 (640 x 480 pixels).
Bus POWERLINK.



Sample of screen – B&R version

SIEMENS 840D SL version with operator front panel touch screen 12" TFT (1280x800 pixels). Ethernet Bus and connection SIEMENS "DRIVE-CLIQ"



Sample of screen – SIEMENS Version

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2.4. ELECTROSPINDLE

Compact, precise, pressurized and water tight motor grinding wheel spindle, with a speed of 3000 to 9000 rpm. Allows the use of borazon or diamond grinding wheel diameter 100 mm. The wheel is assembled directly on the end of the motor shaft.

Three head motor. 2.2 kW, 230/400 Volts

2.5. TOOL DETECTION

Probing precision: 5 microns

Sensor MARPOSS equipped with 2 stylus (1 cubic 6 mm, 1 with ball diameter 1 mm)

Used for:

- Detection of drill length
- Drill detection (to find the flute)
- Drill indexing (to find the lip position)

A compressed-air tube starts at the end of the cycle, during the loosening and of the unloading of the drill, to facilitate its ejection

2.6. DRILL LOADING AND BRAKE DEVICE

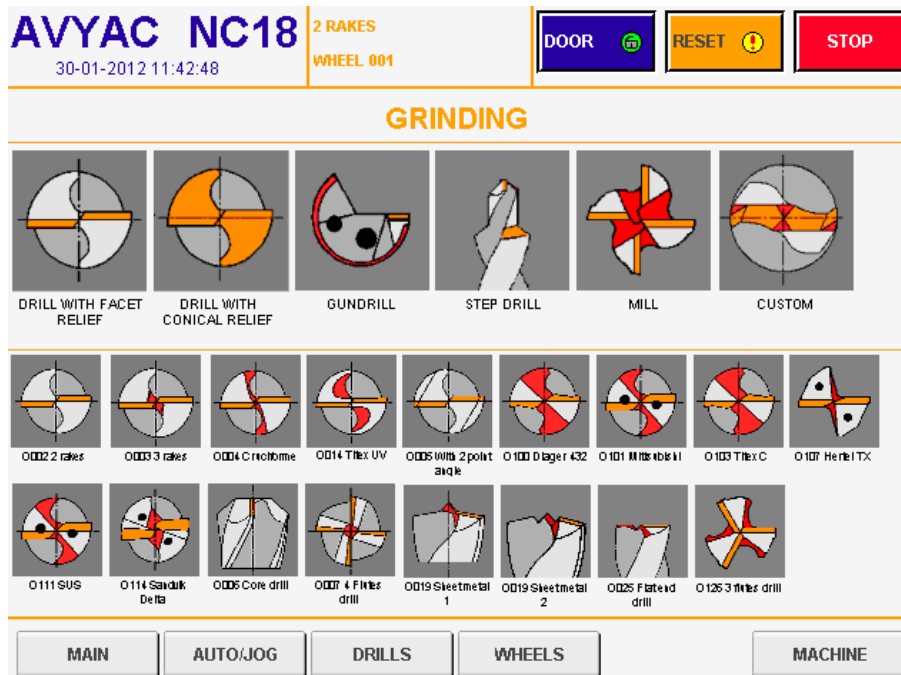
That it is manually or automatically with the option plate, the loading is done by gravity. The drill is guided in a tube (3 tubes diameters 9, 14 and 18 delivered with the machine), then slowed down by an intermediate plate (3 forms available) which is retracted automatically, to arrive finally on a plate of indexing (deadened by spring) which automatically positions the length of exit of the drill.

2.7. GRINDING SOFTWARE

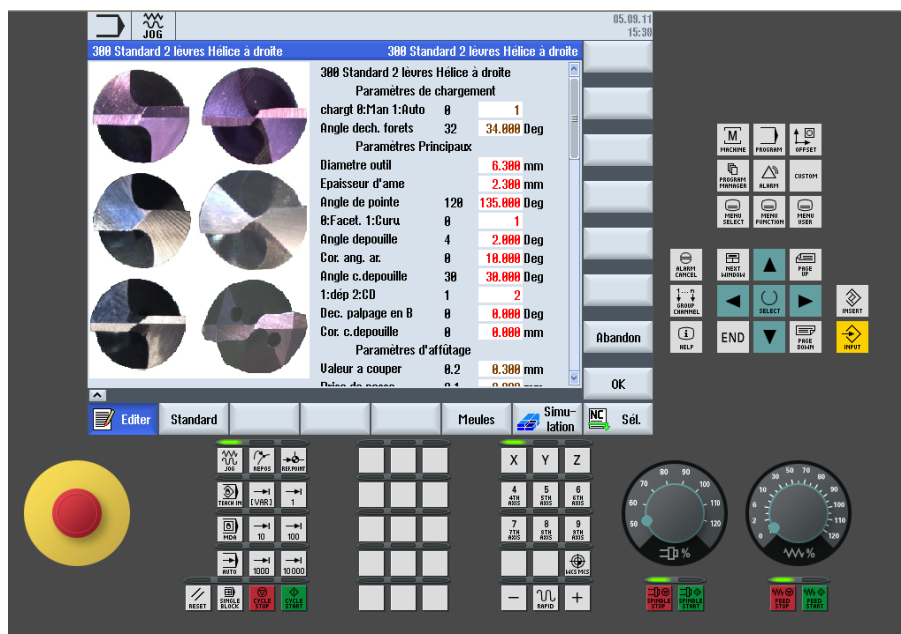
Graphic interface specific for drill grinding. Very easy to use.

Each parameter goes with a small obvious drawing allowing introducing value without thinking about sign, unit and so on ...

You can see the different grinding available on paragraph 3.



Sample of screen – B&R version



Sample of screen – SIEMENS Version (optional)

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2.8. ELECTRICAL CABINET

In conformity with CE and ELECTROMAGNETIC COMPATIBILITY
Three head electrical equipment 400 volts - 50 Hz.
Lighting 24 V DC - 50 Hz by fluorescent tube, watertight IP65.
Ventilated

2.9. COOLANT DEVICE

Tank of decantation for the coolant liquid (capacity 80l) located in the frame.
Pump with flow of mini 60 L /min is driven thanks to digitally controlled system.

2.10. COMPRESSED AIR

Allows:

- To tighten the drill,
- To stop the drill,
- To eject the drill.

Pressure of network required: 5 bars.

Including a digital air pressure sensor, controlled by NC.

2.11. SAFETY

Electronically and mechanical safety-device.

2.12. COLOR

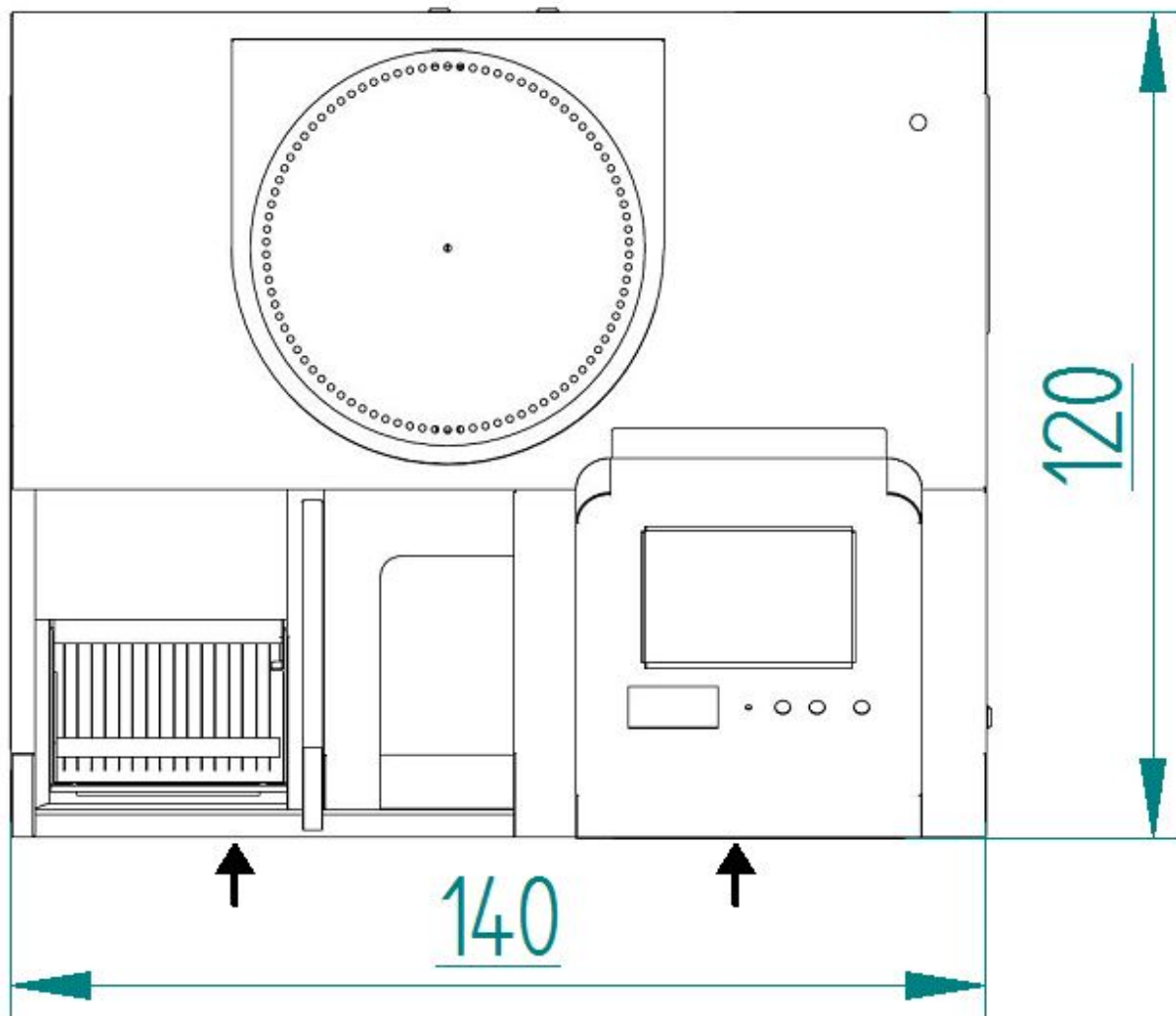
Red RAL 3020, dark Grey RAL 7012 and light Grey RAL 7035

2.13. DIMENSIONS

Weight: 1000 kg (2200 lb)

Dimensions of NC18 alone (large, long, height): 1,4m x 1,2m x 1,5m (4.6ft x 3.9ft x 5ft)

Some space is necessary to access to the right and back doors.



2.14. MAINTENANCE

Very easy access for maintenance (board that can be dismantled)

3. THE GRINDING “PACK”

Diameters: From 1 to 8 mm (standard) or from 2 to 14.5 with option A60.02.000

The machine is provided with the universal drills program.

All extra grinding request is an option. Depending on the programs required, the accessories must be chosen to cover the clamping systems, the wheels holders and the type of wheel required.

3.1. Universal drills program (860.80.001)

Programs: 300-302-100

3.2. End mills grinding pack (860.80.003)

Programs: 202-203-204-205

3.3. Step drills grinding pack (860.80.004)

Programs: 032-033-034-035

3.4. Gun drills grinding pack (860.80.005)

Programs: 146-151-300

3.5. Specific grinding program (860.80.002)

Programs on demand: metal sheet, woodworking, concrete, ceramic, three lips, flat drills, engraving tools, punch pin, countersink, others.

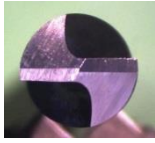
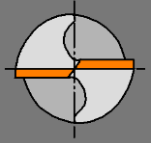
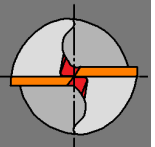
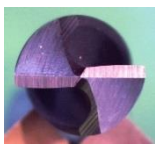
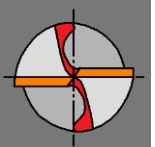
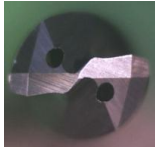
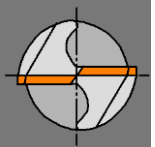
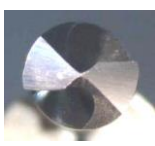
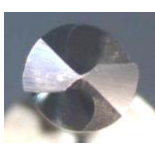
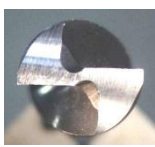
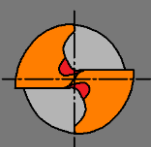
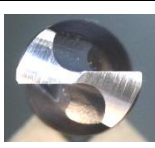
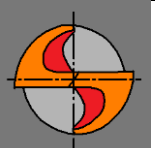
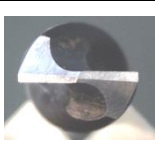
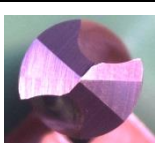
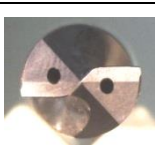
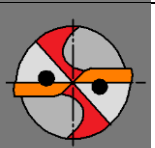
3.6. Customer drill grinding program (860.80.010)

We require drawing and samples for feasibility tests.

This reference is including the creation and optimization of a special program.

After study, we will indicate if the grinding require a specific wheel holder or grinding wheel.

Other grinding: Please consult us

Photo	Drawing	Designation	Grinding AVYAC N°	Program+ Material required
		2 rakes	002	PGM 300 + 1 short wheel holder + 1 wheel 12V9
		3 rakes	003	PGM 300 + 1 short wheel holder + 1 wheel 12V9
		Cruciform	004	PGM 300 + 1 short wheel holder + 1 wheel 12V9
		With 2 point angles (for instance First to 120° and second one to 90°)	005	PGM 300 + 1 short wheel holder + 1 wheel 12V9
		Conic relief form A	010	PGM 302 + 1 short wheel holder + 1 wheel 1A1
		Conic relief form C	011	PGM 302 + 1 short wheel holder + 1 wheel 1A1
		Conic relief form B	012	PGM 302 + 1 long wheel holder + 1 wheel 12V9 + 1 wheel 1A1
		Special Type 013	013	PGM 302 + 1 long wheel holder + 1 wheel 12V9 + 1 wheel 1A1
		Special Type 014	014	PGM 300 + 1 short wheel holder + 1 wheel 12V9
		Special Type 100	100	PGM 100 + 1 short wheel holder + 1 wheel 12V9
		Special Type 101	101	PGM 300 + 1 short wheel holder + 1 wheel 12V9

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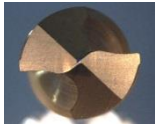
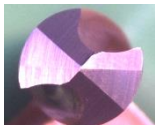
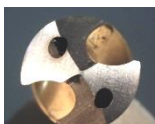
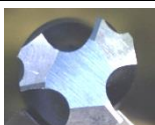
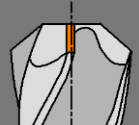
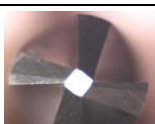
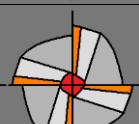
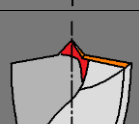
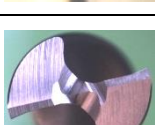
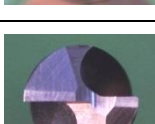
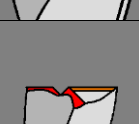
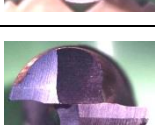
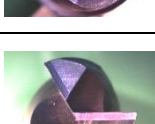
Photo	Drawing	Designation	Grinding AVYAC N°	Program+ Material required
		Special Type 102	102	PGM 302 + 1 short wheel holder + 1 wheel 1A1
		Special Type 103	103	PGM 100 + 1 short wheel holder + 1 wheel 1A1
		Special Type 110	110	PGM 302 + 1 short wheel holder + 1 wheel 1A1
		Core drills (3, 4 flutes)	006	
		4 flutes drill (Point angle 90°)	007	
		Standard grinding for sheet metal	019	
		Specific grinding for sheet metal	021	
		Flat end drill	025	
		2 flutes end Mills	202	
		3 flutes end Mills	203	
		4 flutes end Mills	204	

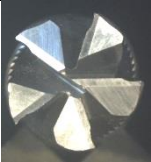
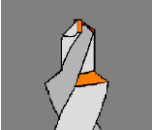
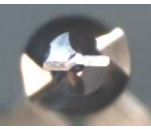
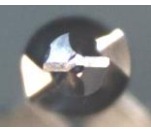
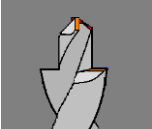
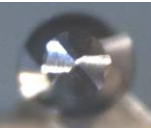
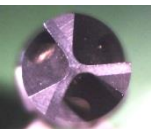
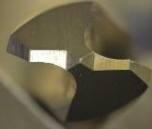
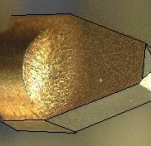
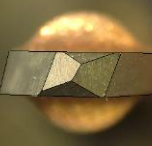
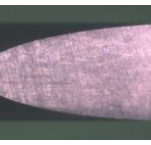
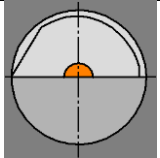
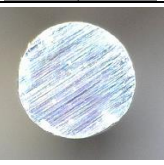
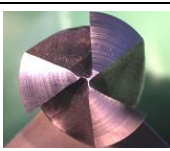
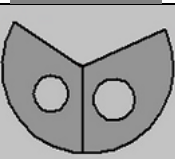
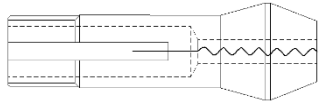
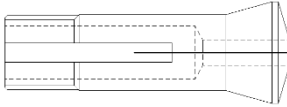
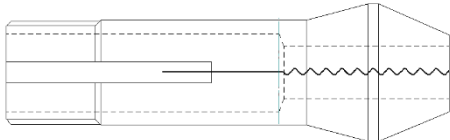
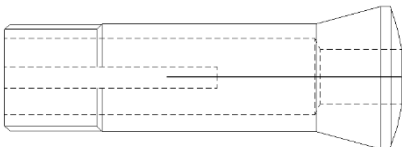
Photo	Drawing	Designation	Grinding AVYAC N°	Program+ Material required
		5 flutes end Mills	205	
		Step drill form A	032	
		Step drill form B	033	
		Step drill form B'	034	
		Step drill form C	035	
		3 flutes drill	126	PGM 300 + 1 short wheel holder + 1 wheel 12V9
		Wood Working Drill Brad point	060	PGM 60 + 1 short wheel holder + 1 wheel 12V9
		Woodworking drill E form	065	PGM 65 + 1 long wheel holder + 1 form wheel + 1 wheel 1A1
		Glass and ceramic drill		
		Type 61	061	
		Type 62	062	PGM 062 + 1 short wheel holder + 1 wheel 12V9

Photo	Drawing	Designation	Grinding AVYAC N°	Program+ Material required
		Engraving Tools	063	PGM 063 + 1 short wheel holder + 1 wheel 12V9
		Pin Punch		
		Countersink drill	250	PGM 250 + 1 short wheel holder + 1 wheel 12V9
		GUNDRILL 5 Facets standard	140	PGM 146 + 1 short wheel holder + 1 wheel 12V9
		GUNDRILL 2 flutes standard	145	PGM 300 + 1 short wheel holder + 1 wheel 12V9
		GUNDRILL 2 flutes	148	PGM 300 + 1 short wheel holder + 1 wheel 12V9
		GUNDRILL 7 facets	150	PGM 146 + 1 short wheel holder + 1 wheel 12V9
		Step GUNDRILL	151	PGM 151 + 1 short wheel holder + 1 wheel 12V9
		V for Gundrills	155	PGM 155 + 1 short wheel holder + 1 wheel 12V9

Non exhaustive list
Other grinding: Please consult us

4. ACCESSORIES

4.1. Collets

Collets	Reference	Drawing
Set of 15 collets W12 Ø 1 to 8 - 0.5 by 0.5 (supplied with standard machine) 4 jaws with Z form	T836000/A2	
Set of 8 collets W12 Ø 1 to 8 - 1 by 1 3 jaws standard	T852000/A1	
Set of 26 collets W20 Ø 2 to 14.5 - 0.5 by 0.5 (supplied with option A60.02.000) 4 jaws with Z form	T834000/A2	
Set of 13 collets W20 Ø 2 to 14 - 1 by 1 3 jaws standard Lot de 13 pinces W20 standard Ø 2 à 14 de 1 en 1 - 3 mors standard	T850000/A1	

The collets are also available to the unit. Specific diameters on request.

4.2. Oil

Emulsion or plain oil for coolant, oil for air pressure system.

5 l cutting oil Emulsion T429.007	5 l cutting oil Emulsion T429.008	5l MOBIL DTE Oil light T429.013
		
for HSS only	For HSS and Carbide	Air Pressure System

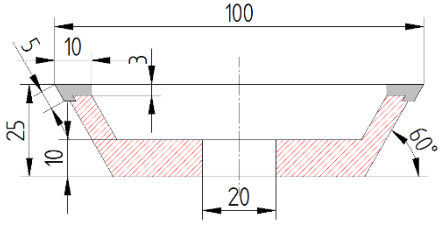
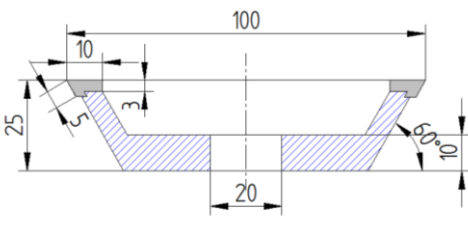
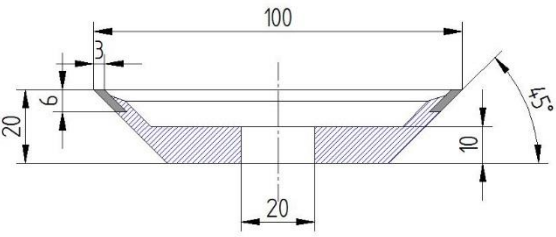
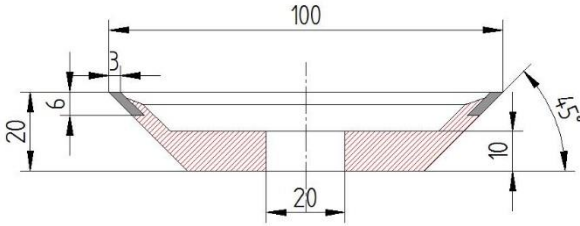
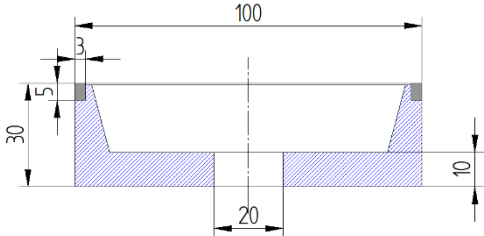
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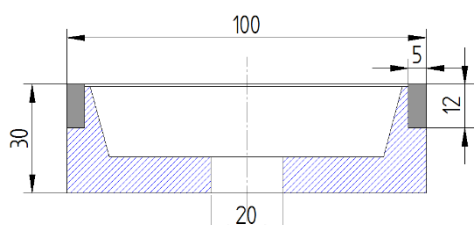
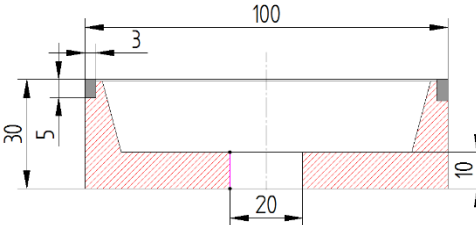
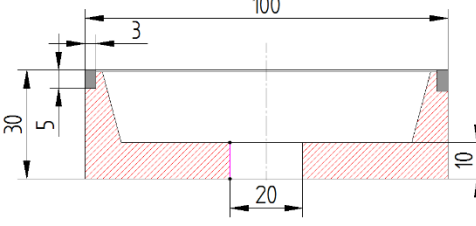
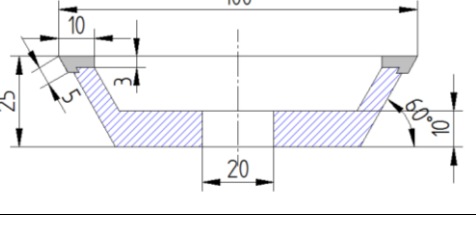
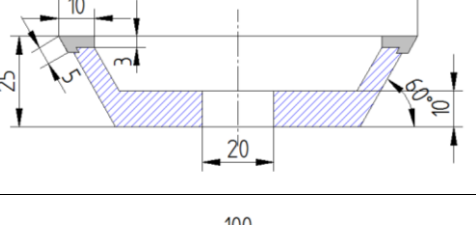
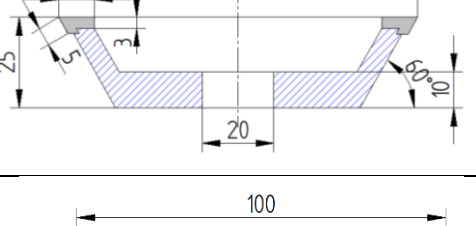
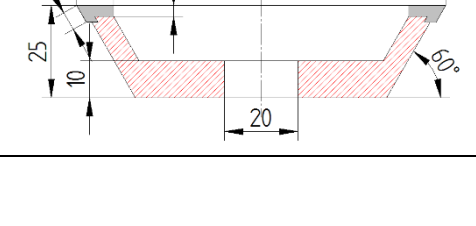
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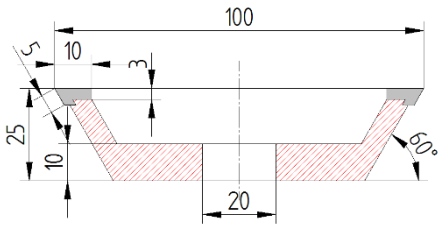
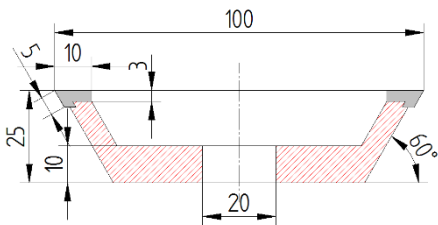
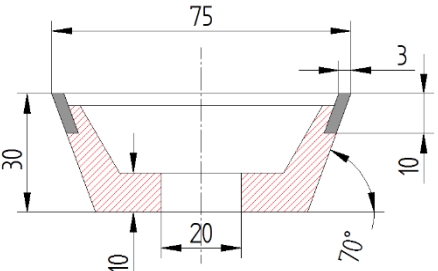
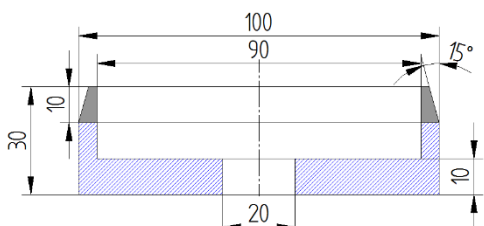
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4.3. Wheels

Avyac works with local suppliers to provide his customers the best quality and best delivery time for grinding wheels. Most of the programs are developed to work with only one standard wheel for all grinding operations.

Ref AVYAC	Form	Characteristic	Grinding cycle
	AVYAC STANDARD WHEELS		
T822.034		CBN 12V9 D100 grain 76 C100 Binding resin	HSS Universal
T822.042		DIAMOND 12V9 D100 grain 76 C100 Binding resin	Carbide Universal
	OTHER WHEELS		
T822.000		DIAMOND 12V9 D100 Grain 126 C100 binding resin	Carbide form 003-004-006-140*-145-150*-151*
T822.001		CBN 12V9 D100 Grain 126 C100 Binding resin	HSS form 003 – 004 006
T822.002		DIAMOND 6A9 Ø100 grain 126 C100 Binding resin	Carbide form 003-004-140*-145- 147-150*-151*

Ref AVYAC	Form	Characteristic	Grinding cycle
T822.041		DIAMOND 6A9 D100 grain 151 C100 Binding resin	Carbide form 003-004-140*-145- 147-150*-151*
T822.003		CBN 6A9 Ø100 grain 126 C100 Binding resin	HSS form 003 – 004 006
T822.023		CBN 6A9 D100 grain 151 C100 Binding resin	HSS form 003 – 004 006
T822.047		DIAMANT 12V2 D100 grain 64 C100 Binding resin	Carbide form 003-004-010-011-140*-145- 147-150*-151*
T822.028		DIAMANT 12V2 D100 grain 126 C100 Binding resin	Carbide form 003-004-010-011-140*-145- 147-150*-151*
T822.050		DIAMANT 12V2 D100 grain 151 C100 Binding resin	Carbide form 003-004-010-011-140*-145- 147-150*-151*
T822.046		CBN 12V2 D100 grain 64 C100 Binding resin	HSS form 003 – 004 006 – 010 - 011

Ref AVYAC	Form	Characteristic	Grinding cycle
T822.043		CBN 12V2 D100 grain 126 C100 Binding resin	HSS form 003 – 004 006 – 010 - 011
T822.049		CBN 12V2 D100 grain 151 C100 Binding resin	HSS form 003 – 004 006 – 010 - 011
T822.045		CBN 12V9 D75 grain 126 C75 Binding resin	HSS form 040
T822.036		DIAMOND D100 grain 76 C100 Binding resin	Carbide form 140-150

* without chamfer at 15°

No exhaustive list.

5. OPTIONS

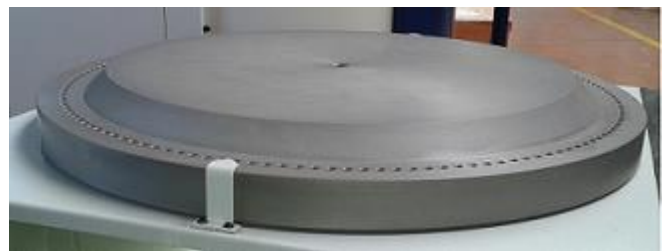
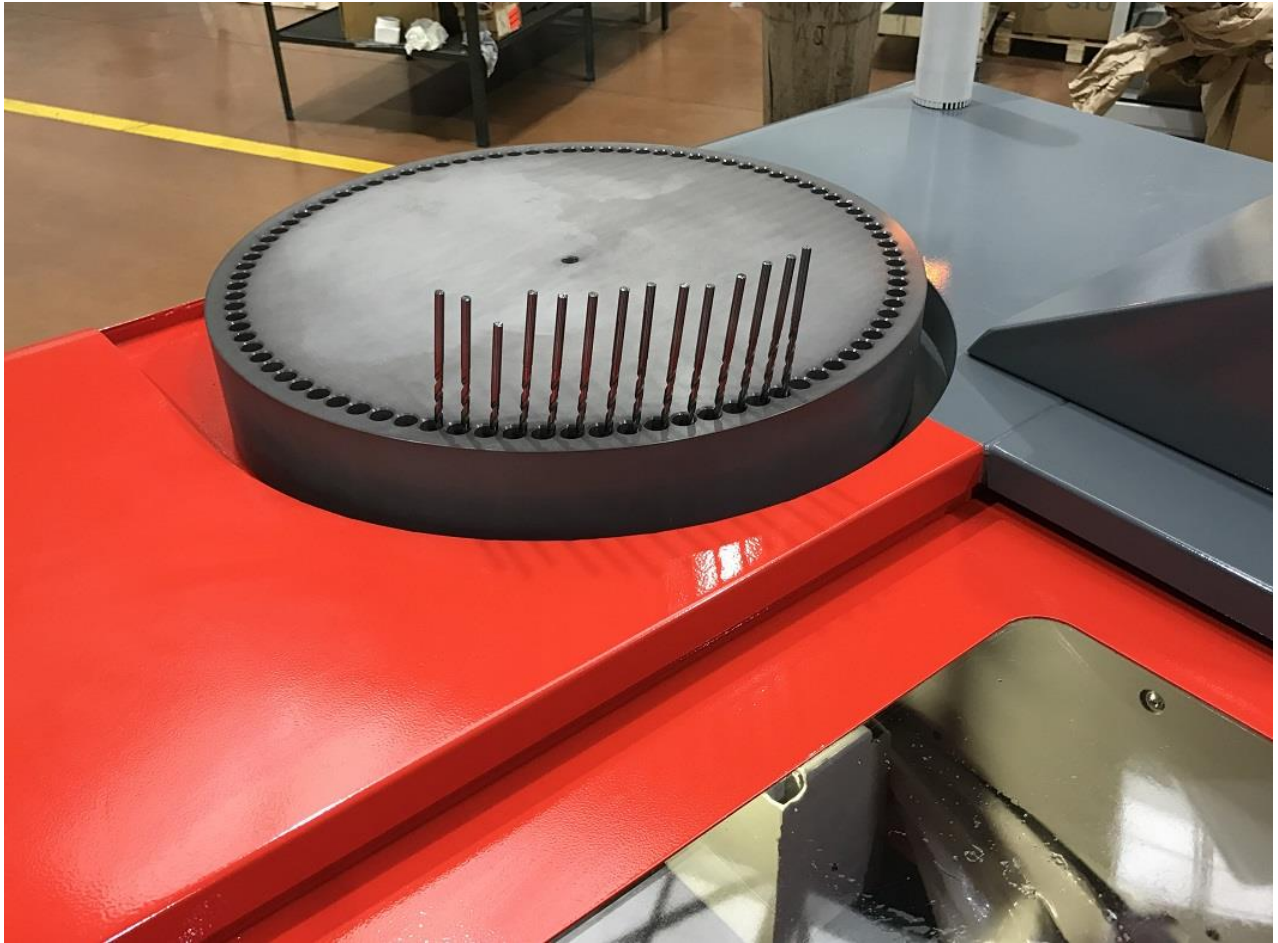
5.1. SIEMENS 840D SL set (ref. AVYAC 860.00.00X *)

(* X = 1 for France, 2 for Europe, 3 for other countries)

Instead of B&R set, installation of Siemens 840D SL Numeric control and motors.



5.2. Loader with round table (ref. AVYAC 860.47.000)



The round table (diameter 600 mm) allows loading of 90 drills from diameter 1 to 8 mm (or 2 to 14.5 with option A60.02.000)

The round table can be personalized at will according to the need of the customers. (drills diameters, length, driver...)

The height of the plate is variable according to the length of the drills to charge.

The diameter of the holes can vary from 2 to 15 mm according to the diameters of drills.

The plate is ordered by CN and is pulled by a step motor of 6 Nm.

An inductive sensor (BALLUF) ensures the detection of the holes and then the perfect positioning of the plate.

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5.3. Transformers (ref. AVYAC A60.13.001 / A60.13.002)

The machine must be connected with an electrical network TN type (neutral connected to earth). Else, (IT or TT), it is necessary to set up an isolation transformer up stream the main disconnecting switch. The guaranty will not be applicable if those orders are not followed

Transformer of insulation: 10 KVA 400V/400V, 50/60 HZ: **A60.13.001**

For connection to electrical network with 3 Phases 230V, 50HZ like in USA.

Transformer for USA: 10 KVA, 400V / 230V, 50/60 HZ: **A60.13.002**

A place is envisaged in the electrical equipment box for the transformer. This option thus does not generate additional obstruction.

5.4. Option: internal collector for drills (ref. AVYAC A60.03.010)

By default, the machine is delivered with a simple drill collector (unloading inside of the machine).

In option, an internal collector is available. By opening the door in the middle, you can have an access to the drill for an easy and safe unloading. You don't have to stop the machine to collect the drill with this option.

A separate basket lets the operator collect the drills easily.



5.5. Other clamping systems

5.5.1 W20 collets capacity 2 to 14.5 mm (ref. AVYAC A60.02.000)

Instead of capacity 1 to 8 mm, you can choose capacity 2 to 14.5 mm. The main difference consists in larger clamping system with bigger collets (26 collets W20 instead of 15 collets W12).

Maximum length for drills is still 320 mm.

The frame and dimensions of the machine are the same. Every other option is still available.



5.5.2 Jaws chuck system capacity 3 to 14 mm (réf. AVYAC 8600.5018)

Instead of clamping with collets, you can choose the new 6 jaws chuck clamping system. Its clamping range is from 3 to 14mm. The average accuracy at 20mm is 0.02mm.

Maximum length for drills is still 320 mm.

The scope of the 6 jaws are 30mm to maximize the accuracy.



5.6. Coolant Filtration from SIEBEC (ref. AVYAC A55.23.100)

A coolant filtration can be installed directly in the machine, with an easy access and maintenance. This 5 μ or 20 μ filtration with cartridge is recommended to increase the quality of grinding and general machine maintenance, available for oil or emulsion coolant. The filtration device is controlled with the machine NC.



Siebec filtration device with cartridge



Filtermist oil mist extractor

5.7. Oil mist extractor FILTERMIST S200 (ref. AVYAC A60.24.000)

Oil mist is removed from the air by centrifugal impaction. Clean oil is returned to machine. The system is installed directly on the top of the machine, besides the loader plate.

A perforated drum with specially designed vanes rotates at high speed. Oil mist is drawn into the unit and impacts on its vanes at high velocity. Special drum pads assist the coalescing process and filter out stray solid particles.

Centrifugal force pushes oil to the unit's outer case where it drains back to the machine for re-use or collection and clean air is returned to the workshop through the top of the unit.

The extraction tube of diameter Ø100mm, aspirates the oil mist directly in the working area. It allows the opening of the main door quickly after the end of drill grinding. The filter automatically starts when the cycle begins. It stops one minute after the end of the cycle.

This option is highly recommended for machine working with oil coolant.

5.8. Fire Extinguisher System for machine with oil coolant only

5.8.1 Fire Extinguisher System Traceflam (ref. AVYAC A60.14.000)

An automatic fire extinguisher system is essential for all machine grinding with oil coolant.

The Traceflam device is using a special polymers tube to detect the fire. This pressurized tube is maintained near potential risk households. When a fire breaks out and reaches the tube, the pipe wall thin to burst at the hottest point.

This device consists in an automatic detection, a manual command, a visual and acoustic signal.

The CO2 bottle is set directly in the machine (2Kg bottle).

A yearly maintenance is recommended to control the pressure and check the bottle.



5.8.2 Fire Extinguisher System Kraft & Bauer (ref. AVYAC A60.14.000/K&B)

An automatic fire extinguisher system is essential for all machine grinding with oil coolant.

System FB703 from Kraft & Bauer uses a UV flame detector (optical sensor), with pressurized air to keep clean. The detection is autonomous thanks to a 12 V battery as emergency power supply.

This device consists in an automatic detection, a manual command, a visual and acoustic signal. The CO2 bottle is set directly in the machine (6Kg bottle).

Yearly maintenance made by Kraft & Bauer.



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5.9. Connection to centralized filtration device (ref. AVYAC A55.23.300)

5.9.1 Lift pump to external centralized oil filtration

Installed instead of the standard coolant pump, this pump lift the coolant with dirt from the machine working area to the customer external filtration.

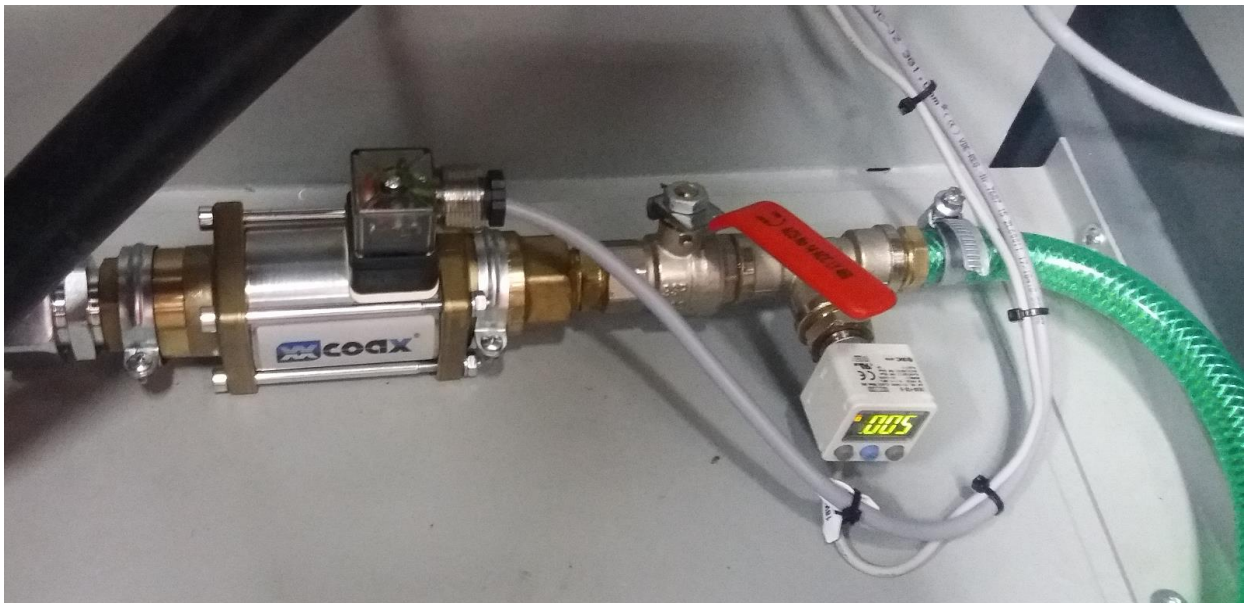
The pump and connectors sizing have to be decided with the customer.

A level sensor is necessary to control and manage the different oil level in the machine tank, to avoid overflows or vacuum pumping.

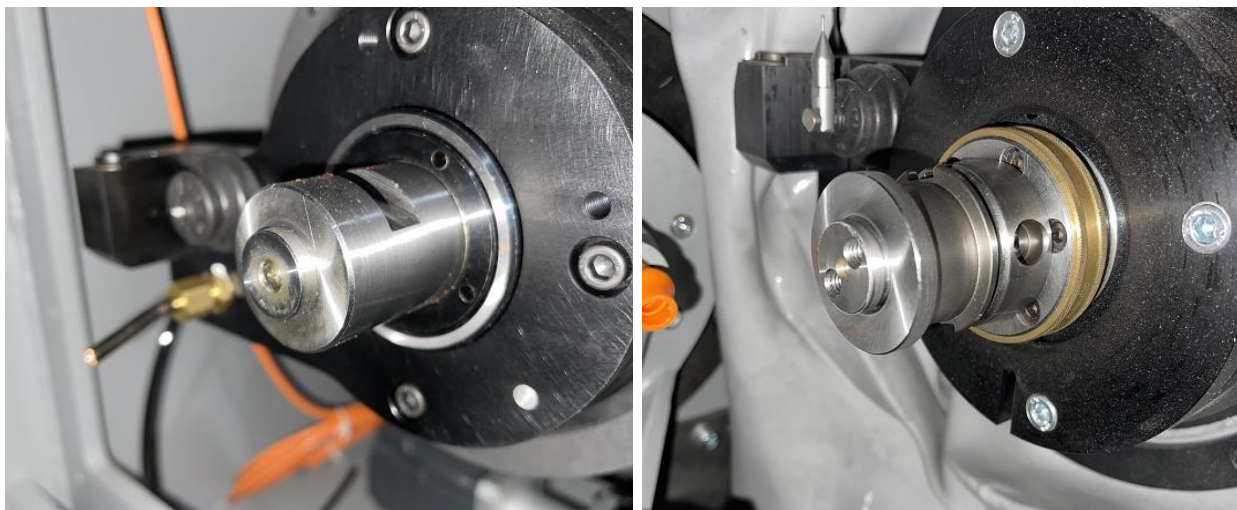


5.9.2 Solenoid valve for coolant

The solenoid valve from COAX takes place in the clean coolant circuit between the filtration and the machine working area. A pressure sensor is set directly after the valve to check the presence of liquid during grinding operations.



5.10. Option HSK40 spindle (ref. AVYAC A60.13.010)



In standard machine, the grinding wheel is set directly on the electro-spindle nose.
The HSK40 spindle option gives the possibility to prepare the grinding wheel outside of the machine, for dressing, balancing and measuring.
It also allows to use two grinding wheels with a longer nose.



5.11. Option internet remote access (ref. AVYAC A60.05.000)

Avyac choose the M2Me device from ETIC TELECOM to allow remote maintenance on automated machines. Easy to install and to use, Avyac or the trained personal can accede to the machine by using 3G RAS Router or directly the existing Internet access of the factory.



5.12. Guaranty extension

Guaranty extension for 2 years (1+1): **860.60.011** for France

Guaranty extension for 2 years (1+1): **860.60.012** for Europe

Guaranty extension for 2 years (1+1): **860.60.013** for other countries

6. SERVICES

6.1. Packaging

References:

Packaging France: **870.56.001**: Protection of the fragile parts, wooden floor and open box.

Packaging Europe: **870.56.002**: Protection of the fragile parts, wooden floor and open box.

Packaging International: **870.56.003**: Protection of the fragile parts, wooden floor and closed box with fumigation certificate, vacuum-packed protection for maritime transport.

6.2. Shipping

The shipping is included with standard supply. For France and Europe, it includes complete shipping until customer plant (without unloading). For other countries, standard incoterm for maritime transport is CIF (Cost, Insurance and Freight).

References:

Shipping France: **870.57.001**

Shipping Europe: **870.57.002**

Shipping International: **870.57.003**

6.3. Warranty

Standard warranty: parts & labour during 1 year (or 5000 hours) excluding travel cost

6.4. Training

References:

Fitting and training in customer plant 2 days NC18 France: **860.70.001**

Fitting and training in customer plant 2 days NC18 Europe: **860.70.002**

Fitting and training in customer plant 3 days NC18 Export: **860.70.003**

7. STANDARD SUPPLY

AVYAC NC18 with numerical control B&R PPC2100 (Colour touch screen 10.4') and B&R motorisation (absolute coders): **860.00.012 (Europe) or 860.00.013 (Other countries)**

AVYAC NC18 with numerical control SIEMENS 840 DSL (Colour touch screen 12') and Siemens motorisation (absolute coders): **860.00.002 (Europe) or 860.00.003 (Other countries)**

Including:

Welded mechanic frame color Gray RAL 7035 (86001000)

Sheet thickness 3 mm Carterisation (86003000) including:

- 1 electronically and mechanically safety device (MECALECTRO) for main door
- 2 access doors for maintenance
- 1 board for electrical access
- 1 tank for emulsion (capacity app. 80 liters)

Cross table XYZ on which are mounted:

- 1 Electro-spindle with wheel holder (for wheel Ø100 boring Ø20) power 2.2 KW
- MARPOSS sensor device for drill detection, equipped with 2 stylus
- 1 stop for drill length indexing

Drill holder dividing device for collets W12 (86005000) - Axis B (or W20 with option A60.02.000) mounted on rake orientation device (axis A)

Electrical set 400V, 50 Hz, numerical control and motors with absolute coders (according to customer inquiry), with integrated light 24V DC (86013000)

Set for coolant, lubrication and air including (86014000):

- Coolant device with pump (60l/min)
- Pneumatic set from SMC

Tool set for working (86020000) including:

- 1 set of 15 high precision collets from diameter 1 to 8 mm (T836000/A2)
- 1 CBN wheel (T822.034)
- 1 diamond wheel (T822.042)
- 1 set of keys (flat + BTR)

Complete documentation paper or CD or USB stick (English) including:

- 1 drawing for electric, pneumatic coolant
- 1 user book
- 1 documentation for B&R or SIEMENS control

Guaranty: parts & labour during 1 year (or 5000 hours) excluding travel cost