

**Recoules
Quackenbush[®]**

Advanced Drilling

Precision Drilling - Every Time

The most complete product range

Specialty



CD Drill



Nut Plate Drill



Back Spotfacer



Compact Power Feed

Self Collecting



Template Foot



Concentric Collet

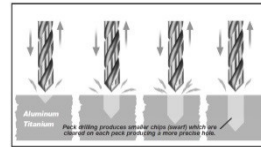


Twist Lock

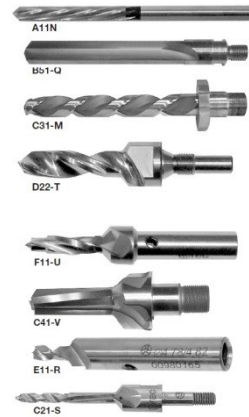


C Foot

Peck Feed



Cutters



Positive Feed

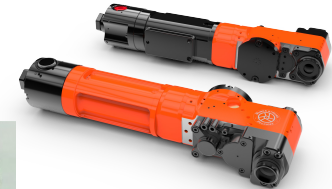
Right Angle



Inline



New Technology



A1

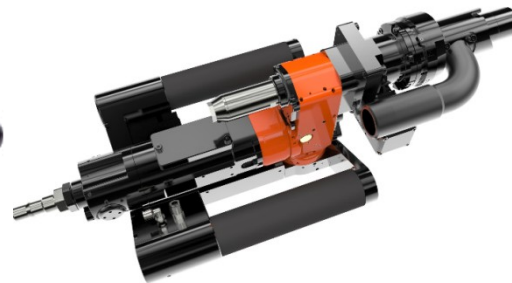
Fragmented Chips



Chip Fragmentation – Mitis™



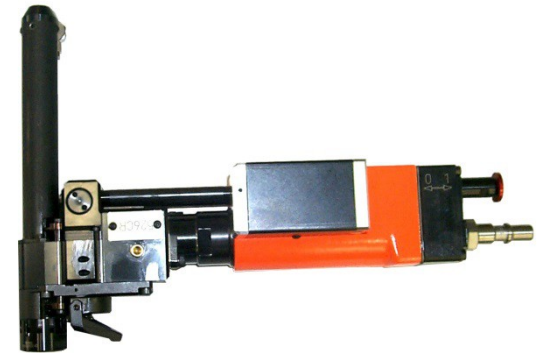
Our four inevitable drilling machines, presentation of the Best Sellers...



20932 (RA) / 20952 (IL)

- Performance and modularity at your service

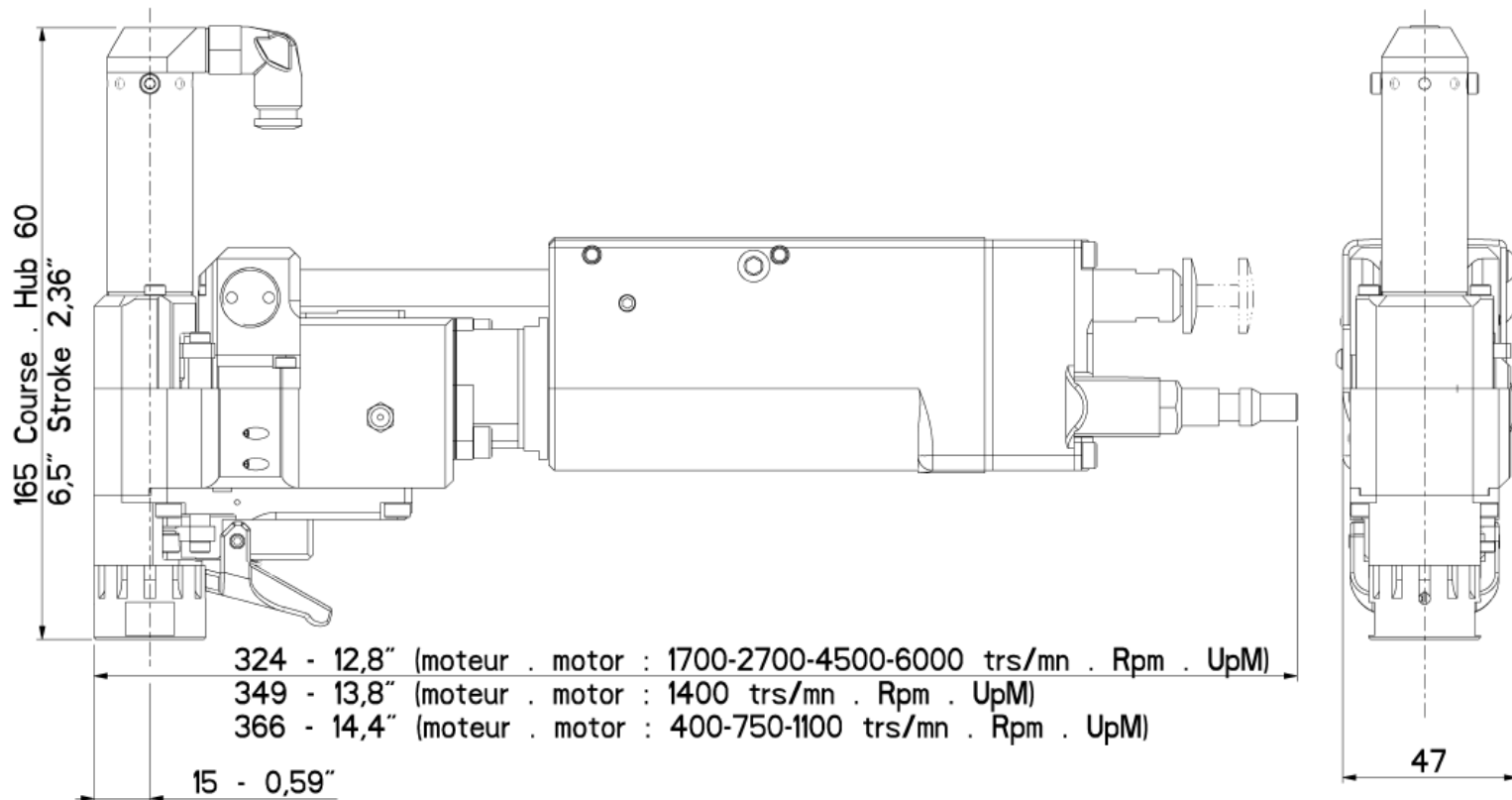
- Motor power: 1,2hp - 883W
- Spindle speed: 400 – 750 – 1100 – 1400 – 1700 – 2700 – 4500 – 6000rpm
- Feed in/rev (*mm/rev*):
.0006 (0,015) - .0012 (0,03) - .002 (0,05) - .0028 (0,07) - .004 (0,10)
- Std stroke: 2.36”
- Cutter attachment: 1/4”-28f, 5/16”-24f and 3/8”-24f



4,63 lbs
2,2 Kg

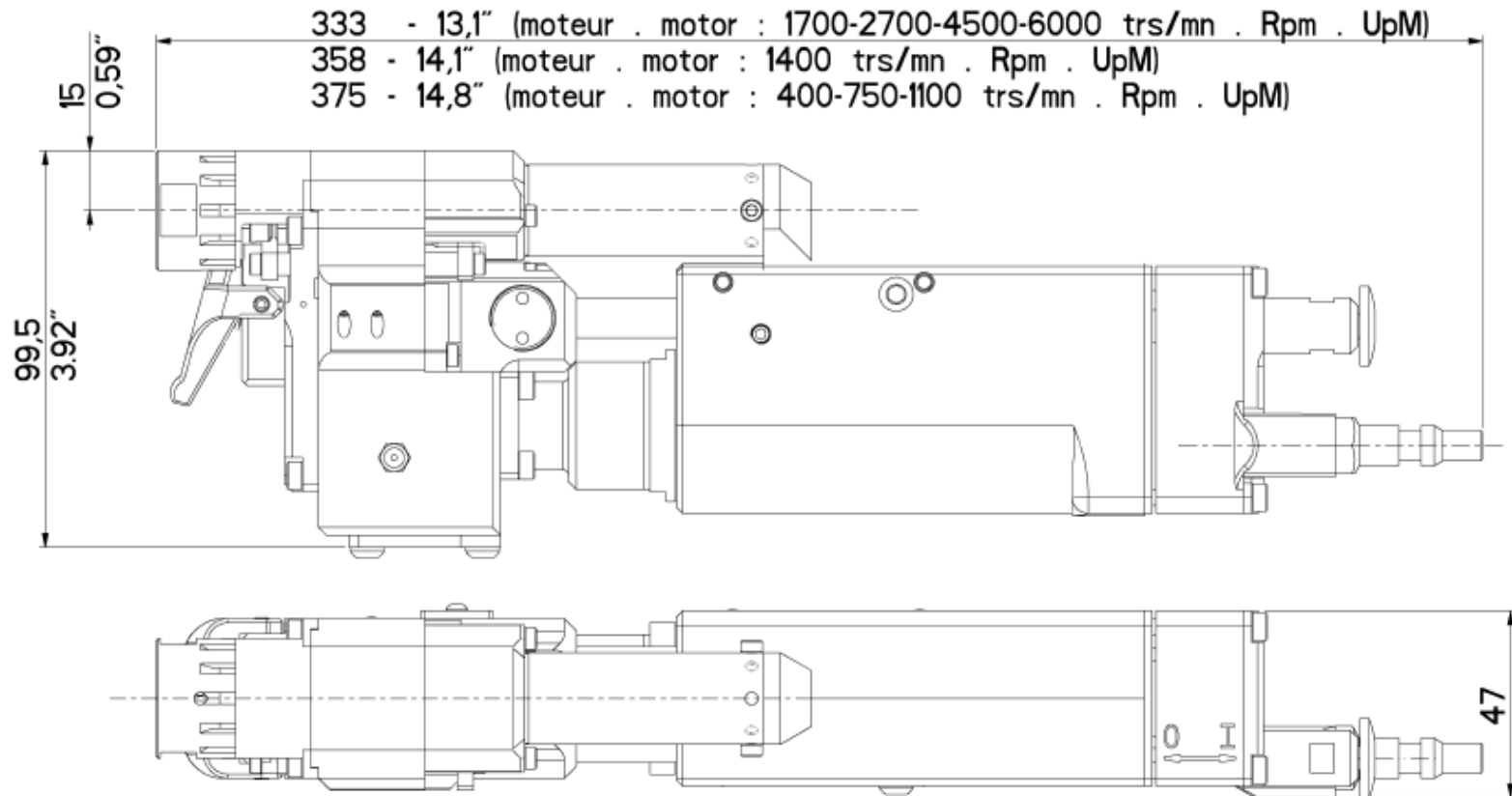
20932 (RA) / 20952 (IL)

- Reduced overall for constraining applications - 20932



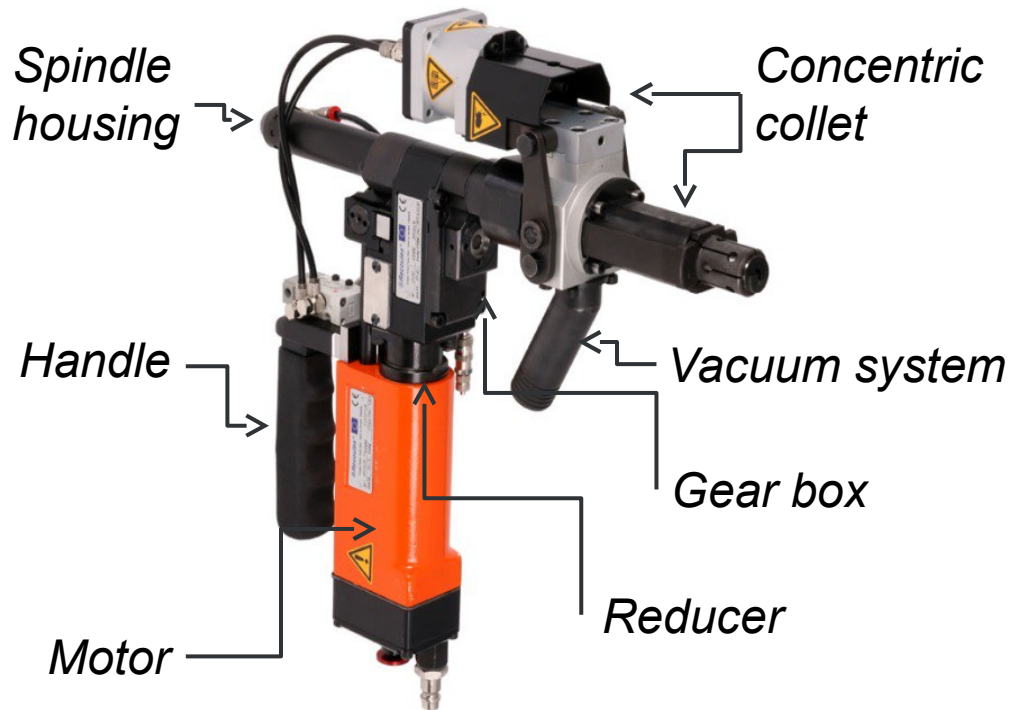
20932 (RA) / 20952 (IL)

- Reduced overall for constraining applications - 20952



20932 (RA) / 20952 (IL)

- Key components & options for each customer requirement



Plenty of options...



...and more

20942 (RA) / 20962 (IL)

- Drill and countersink application for wide range of materials
 - Motor power: 1,2hp - 883W
 - Spindle speed: 400 – 750 – 1100 – 1400 – 1700 – 2700 – 4500 – 6000rpm
 - Feed in/rev (*mm/rev*):
.0006 (0,015) - .0012 (0,03) - .002 (0,05) - .0028 (0,07) - .004 (0,10)
 - Std stroke: 2.36”
 - Cutter attachment: 1/4”-28f, 5/16”-24f and 3/8”-24f

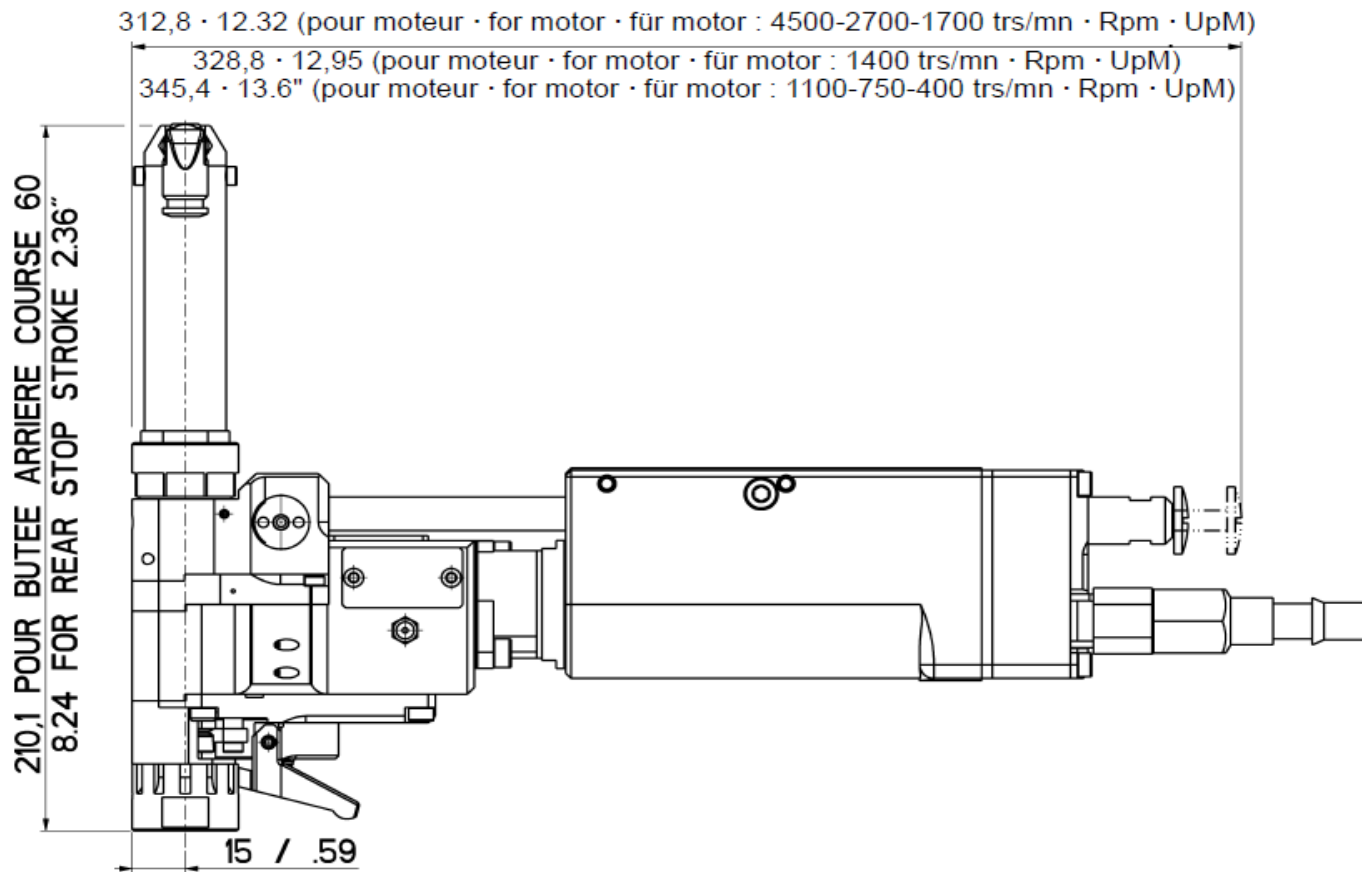


4,63 lbs
2,2 Kg



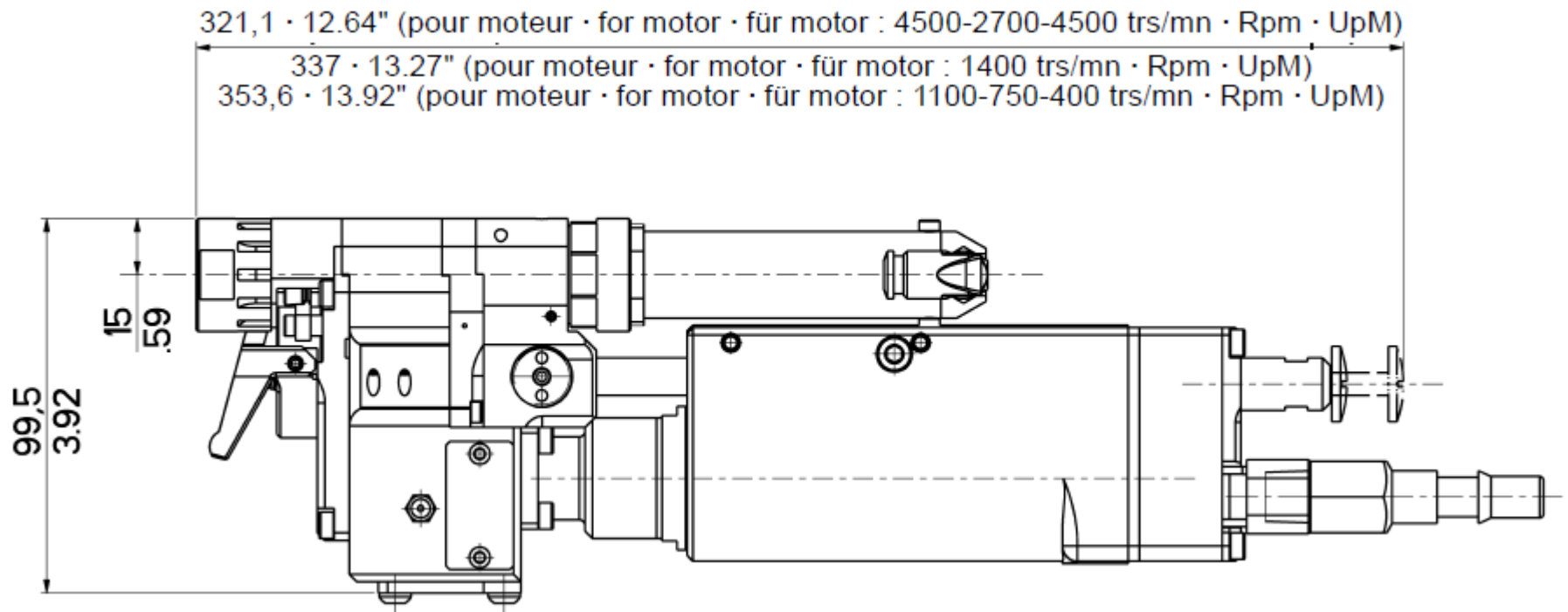
20942 (RA) / 20962 (IL)

- Reduced overall for constraining applications - 20942



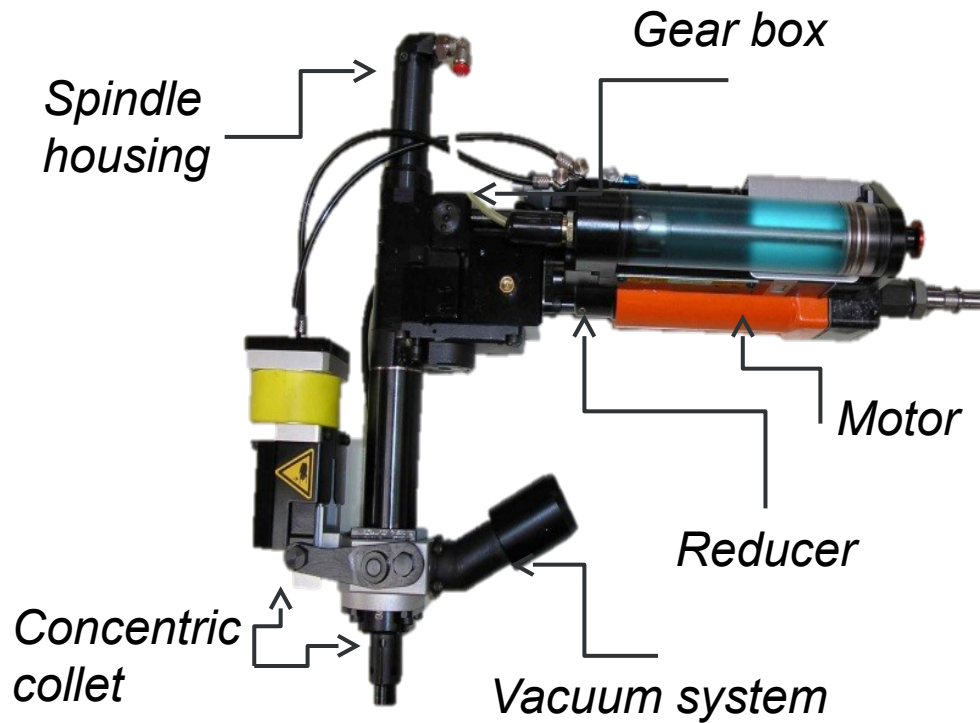
20942 (RA) / 20962 (IL)

- Reduced overall for constraining applications - 20962



20942 (RA) / 20962 (IL)

- Durable components & judicious options

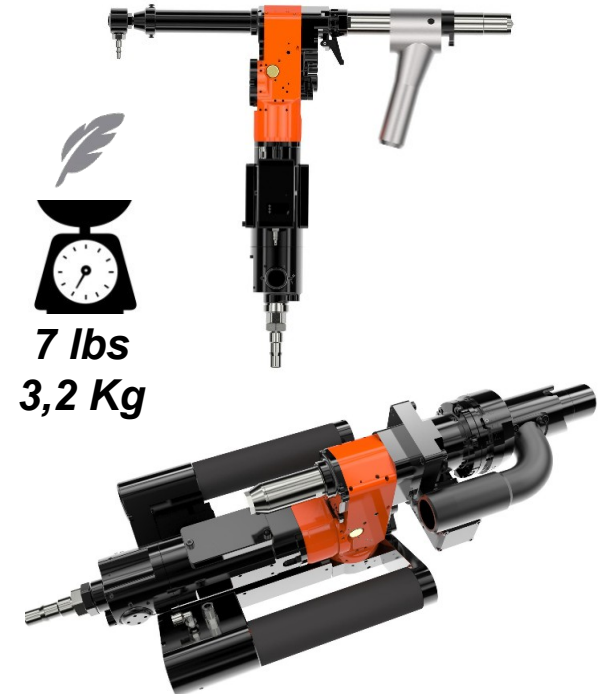


Some optional parts...



A1

- New modular design fully automatic tool
 - Improved durability 300 000 cycles
 - Greater hole capacity
 - Improved mechanical design to minimize spindle jam
 - Configurable error proofing reduces defects
 - Easy (10 minute) feed gear change or Mitis change
 - Integral Easy Access Mitis



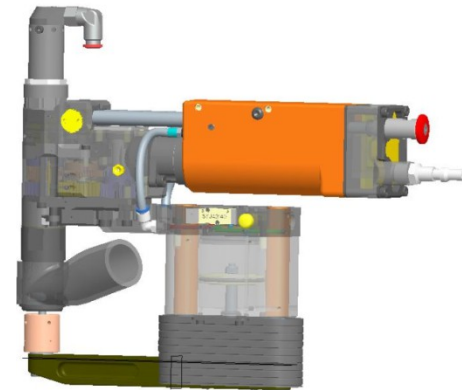
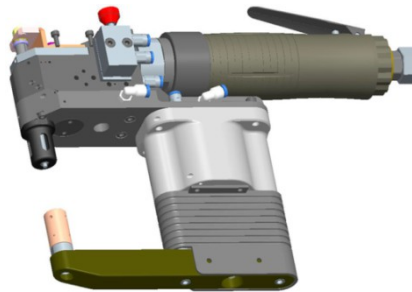
The Best Sellers

- Capacity .1285" Drill/ .250" Countersink*
- .6"/15mm Feed Stroke, 7/16"/11mm Clamp Stroke
- Power 0.7hp/0.5kW
- Weight 5lbs/2.3Kg*
- RPM 600/6000
- Minimum Countersink Depth Accuracy of

2QNPD
Nutplate Drill



We are already working
on your future
applications...



20802 Mini C-Clamp

- **The Most Compact ADE on the Market!**

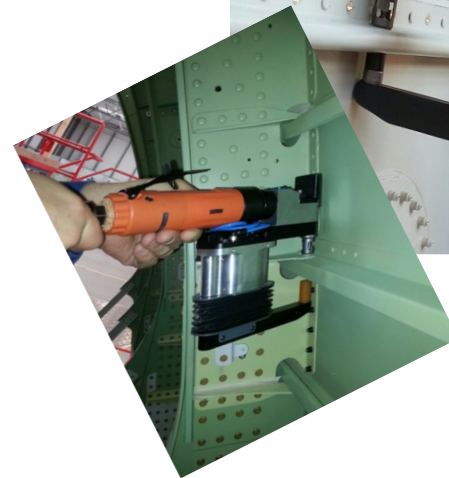
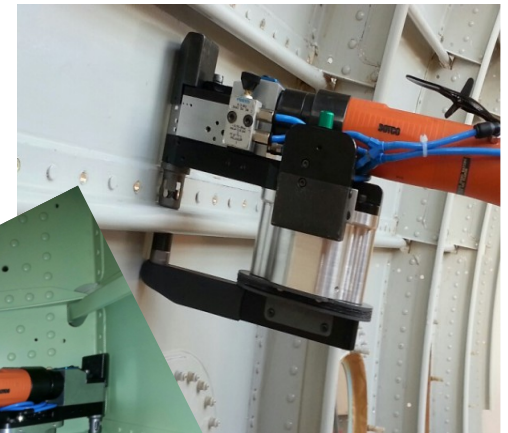
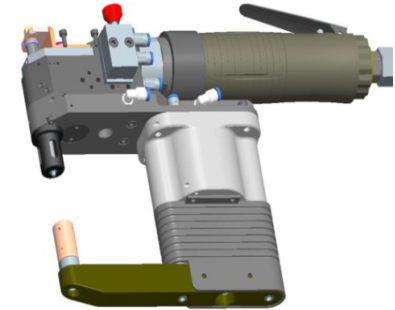
- Dedicated to holes up to 10 mm
- 0,9 HP Pneumatic motor
- Speed 500 to 3200rpm (6000 and 9000 ongoing)
- Feed 0,07 to 0,14 mm/tr (.003 to .006 in/rev)
- Less than 3 kg!! (6.6 lbs)

- **Designed to Increase Quality**

- Due to its incredible small size and efficiency, this ADE can replace most of the manual drilling to increase quality

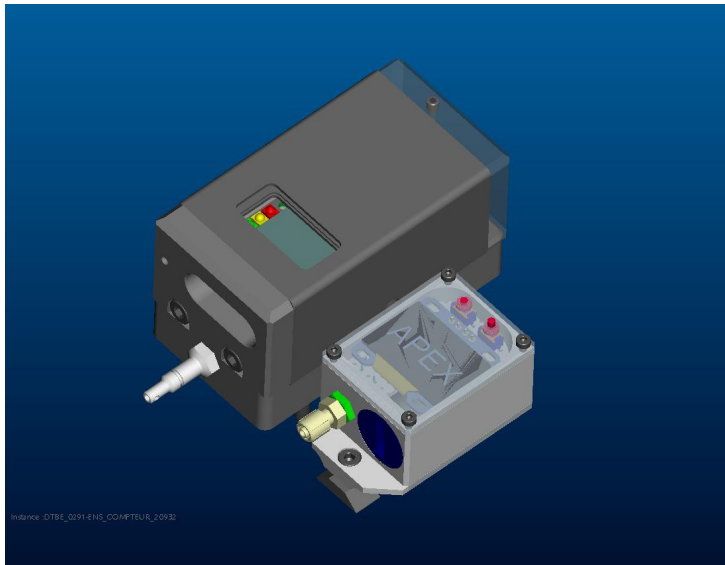
Already available !

- Cycle time optimization



New E-COUNTER

- The Smallest Colored Screen Counter on the Market!
 - Cycle Time monitoring
 - Process control

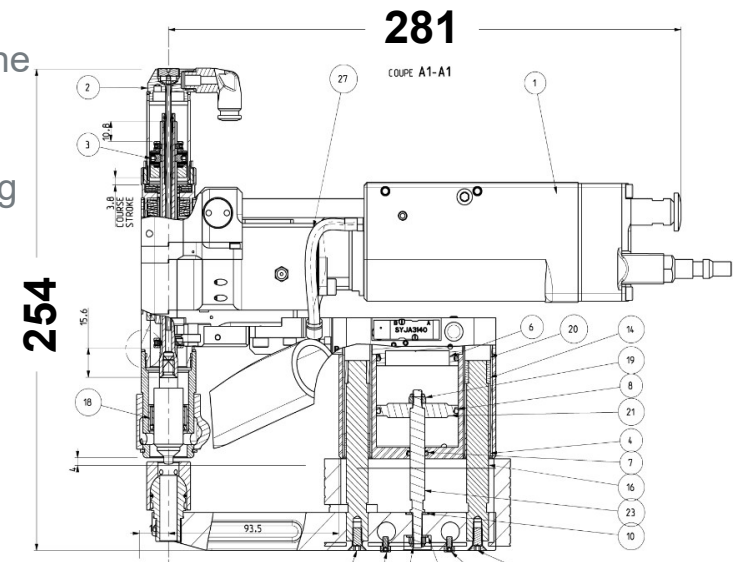


Already available !

The future 20942 C-Clamp

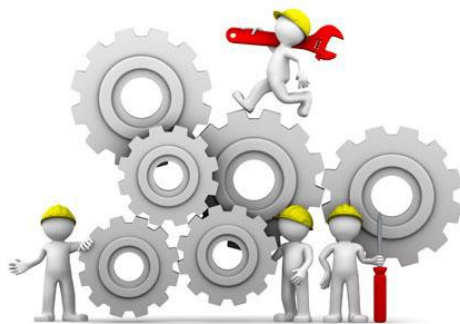
- The 20942 qualities, associated to C-Clamp benefits

- C-Clamp integrated to one of the Best Sellers, the 20942 machine
- The most appropriate machine for countersinking applications with difficult access !



Available soon !

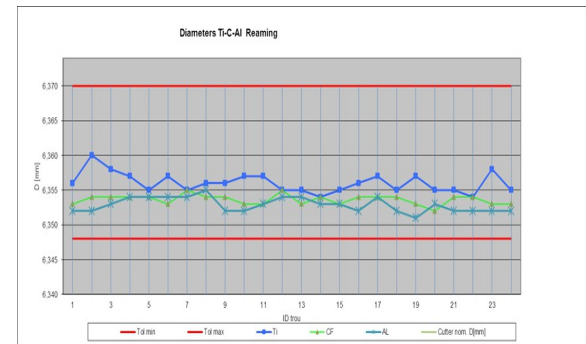
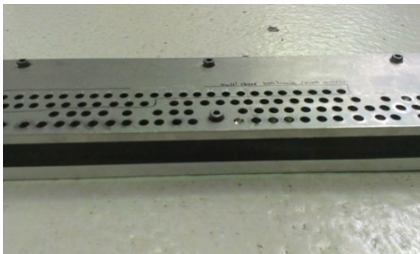
ATG customer service &
maintenance :
Technicians & engineers
always available for you...



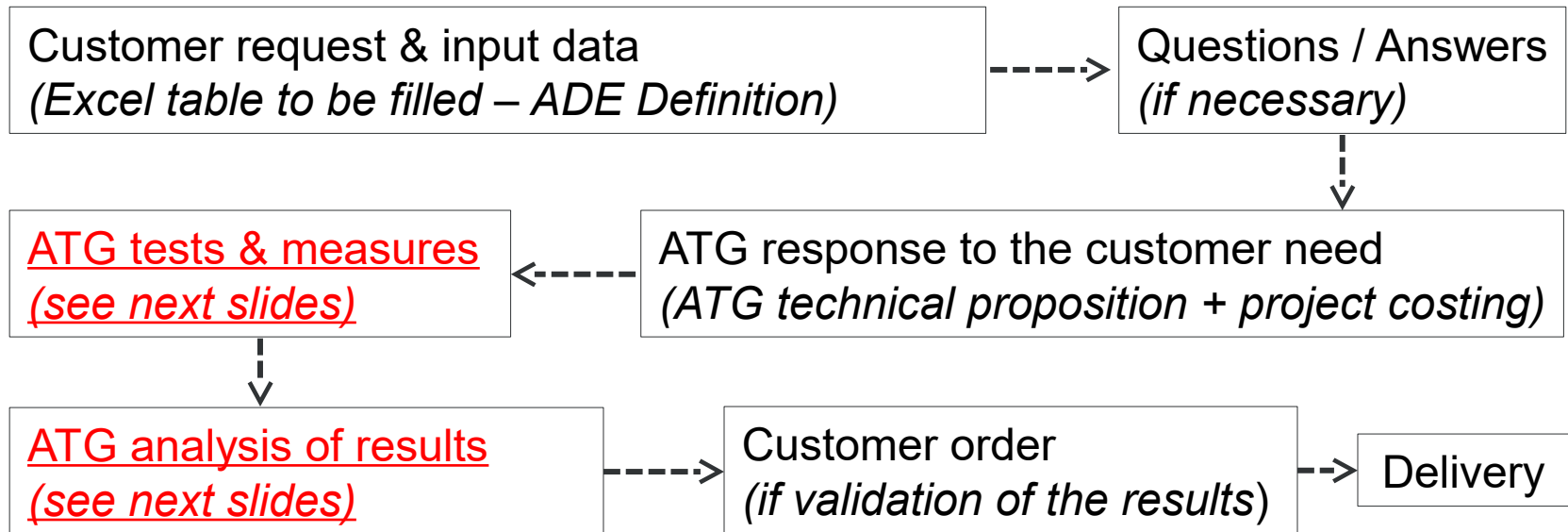
- Ongoing communication with our customer during all the project, and even after !
- For every problem, a solution: we commit to quickly respond to your questions and comments
- 360° overview



Quality of products & services thanks to well-managed working methods...



- Satisfying our customers is the main priority



- Customer proximity · Engineers & technicians at your service · Reactivity

- As a turn key solution provider (providing drilling machine + cutters), our team has developed a UNIQUE know-how in analyzing and optimizing drilling processes

- This capability has been possible by creating an analysis methods which has proven to bring clear advantages in developing turn key solutions. This method is based on:
 - Live measurement of the drilling torque
 - Live measurement of the drilling thrust
 - Live measurement of the machine speed
 - Analysis of the chip
 - Accurate measurement of the hole quality
 - Drilling machine power capabilities analysis

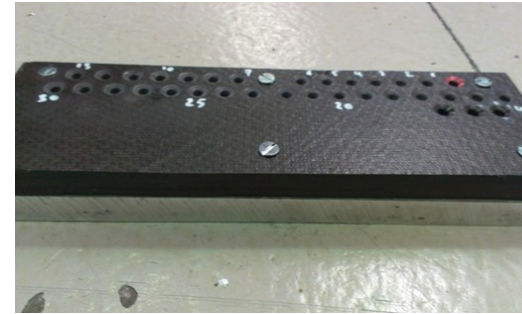
- The complete set of means available in our lab will be put at the customer disposable.
- A test plan will be agreed prior the test session to prepare the means



Drilling Column

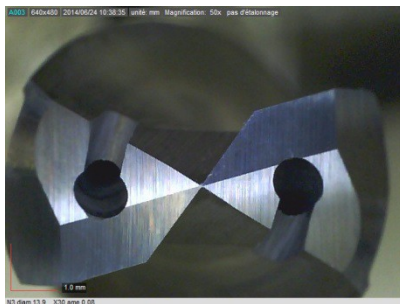
- The ADE is installed in a position representative of the position it has in “real life”, with or without lubrication, vacuum or cooling
- The lub, vacuum or cooling are representative of the customer’s ones

- To monitor the holes quality and the results obtained, the holes will be measured



Control

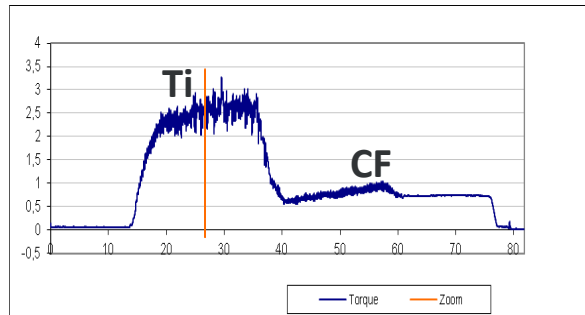
- Hole Quality Control (Mitutoyo / Bowers)
- Tolerance precision diameters (Cpk)
- Ra, burrs and countersink variation
- Cutting tool wear development with microscope



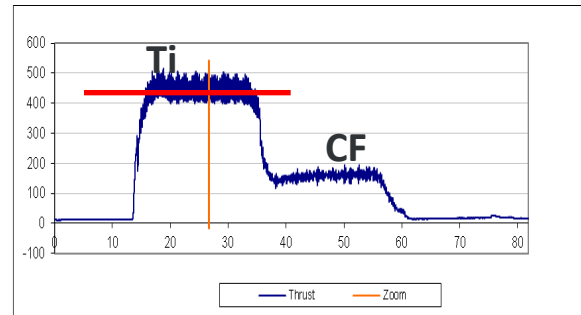
ATG Tests, Measures & Analyses

- Once the analysis done, a report will be edited and transmitted to the customer with all the data recorded

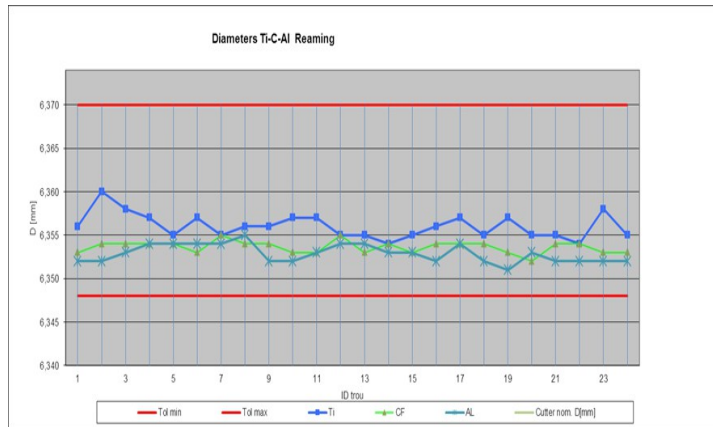
Torque (Nm)



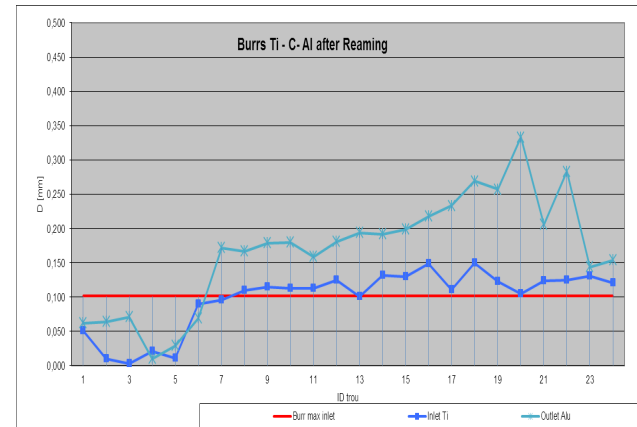
Thrust (N)



Diameters (mm)



Burrs (mm)



Reaming

Cpk Ti	1,87 6
Cpk C	2,63 7
Cpk AI	1,57 0

- Strengthen with these data, the process will be understood by our customers that will have the freedom to:
 - Let the process « as is »
 - Eventually make some modifications to improve the process (cutter life, cycle time, hole quality...)

- Of course, the Team of APEX will be able to support and help if needed to propose changes or new solutions

Conclusions

Thank you for your attention,
any questions ?

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