



Designed for
EXTREME
CONDITIONS

sign

Battery
System





IN WHICH **EXTREME** CONDITIONS HAVE WE TESTED OUR DEVICES?

- ▶ Handpieces are **autoclaved all night long** after subjecting them to sterilization for 40 minutes and drying for 30 minutes.
- ▶ After the autoclave process, we performed cutting, drilling and reaming operations **with a handpiece outer surface 50°C**.
- ▶ Just after these tests, we washed the handpieces for **3 times successively at 70°C** in the automated machine.
- ▶ We used the handpieces **for hammering**, out of purpose.



ACF Sign Handpieces
have passed from
all **extreme** conditions
tests



Acf Product Insurance
First year free technical service

*First time in the world, user errors
are covered
by the guarantee*



We repair your products in
48 hours

*We care the patients.
We care you.
Do not lose your time.*



SINGLE SENSITIVE TRIGGER

The sensitive trigger system is a technology obtained by dividing the sensor distance of 4 mm into 1500 steps. The system accelerates from 0 rpm, increasing by 10 revolutions every 2.6 micrometers. The sensitive trigger ensures that **the doctor has control throughout the operation, even the minimum oscillation created by the blade is noticed, and the entire movement of the blade can be seen accurately.** This feature allows the physician to operate in areas close to soft tissue and small bones as easily as in large bones during the procedure.



IPX 6 WATER PROTECTION

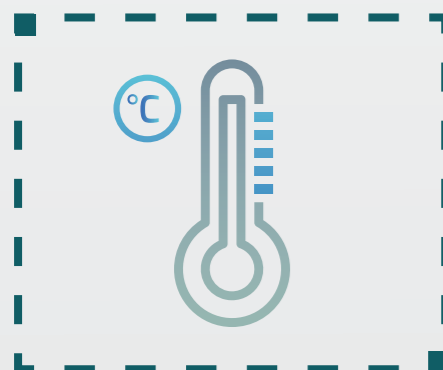
When the devices are subjected to intensive cleaning after the operation, the sealing feature protects the devices from damage. IPX 6 water protection feature in our Sign system is provided by using quality sealing elements. Thanks to this feature, **the power tool handpieces can be safely washed in the automatic machine.** Another benefit of this feature is that the personnel cleaning the devices can protect themselves with less contact opportunity from the risk of contagious diseases.



HIGH-TECH INTERNAL MOTOR AND DRIVER

Less energy, Less heating up

Internal motor and driver technology used in the handpiece directly affects the energy and heating consumed by the product. In our products, world-proven brushless motors and drivers who design is 100% owned by our company are used. Smart soft start and soft stop features in our drivers are factors that directly affects performance, efficiency and device life. In this way, our **Sign systems provide less consuming energy and less heating up thanks to less current requirement.**



READY TO USE IN EMERGENCY

We have electronic drivers that manage the power tool system in our handpieces that are subject to sterilization. High technology components are selected for the production of our electronic drivers. All components have high operating temperatures. With this technology, **after sterilization, the operation team can use the devices without waiting for the device to cool.**



MEET ACF'S Sign Power Tool System

API

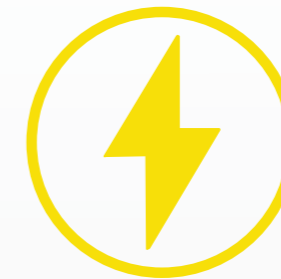
Acf Product Insurance

API (ACF PRODUCT INSURANCE)

When purchasing a surgical power tool system which has long life cycle, technical service availability and costs are frequently considered issue. As soon as you invest in ACF Surgical Power Tool Systems, **you are sure that there will be no additional cost in the first year.**

Our API system is a system implemented for the first time in the world.

It also covers errors that occur outside the scope of warranty. It is a support system created by our company that gives a sigh of relief to the investor in the first year.



QUICK CHARGING

Our chargers are designed to be **charged in a maximum of 20 minutes** after 1 operation.



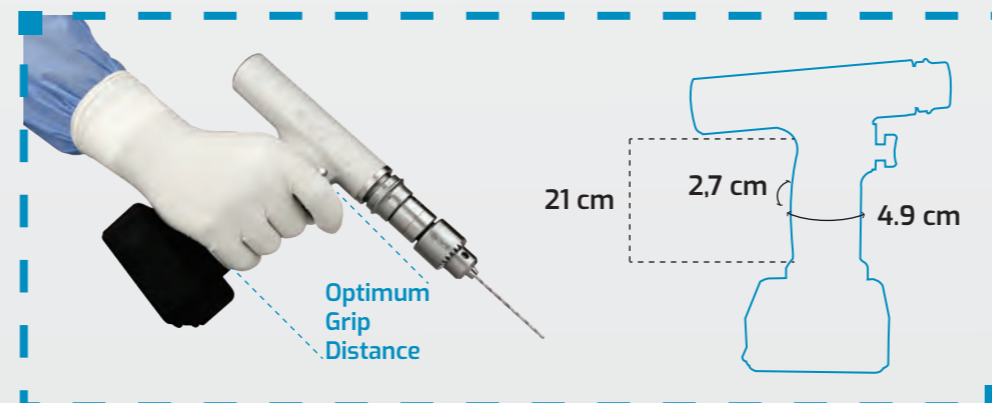
TECHNICAL SERVICE IN 48 HOURS

All system equipment that received by our company are repaired and shipped to you **within 48 hours** at the latest after your approval.



ONE HAND CONTROLLING

The surgeon needs to change the direction of the device in cases such as screwing, drilling, jamming of the reamer in the bone, and the screw direction is different from the targeted area. Thanks to the left-right safety key designed on the trigger, **the required operation is easily performed with one hand.**



BALANCED AND ERGONOMIC

A device is considered ergonomic if it can be operated reliably with one hand. How the battery, motor and gearbox will be positioned is very important. Gearbox and battery balance each other, making it possible to hold the device with one hand. For devices with a grip, the ideal diameter at the grip is 50 mm. The handle should extend across the full width of the palm, as a handle that is too short will cause unnecessary compression in the middle of the palm. Our handpieces are designed based on these features.

Handpieces can stand upright; and this enables attachments to be inserted more easily, to reduce contact with other hand tools and to be grasped quickly.

Handpieces



Ref	Description
A01 310	Handpiece / Modular / Battery / Type / 01
Drilling Speed	Drilling Torque
0-750 rpm	6,5 Nm
Reaming Speed	Reaming Torque
0-250 rpm	17,8 Nm
Operation Voltage	Sterile Conditions
14.4 V	134°C (+ 4°C / - 0°C)

* 4,2 mm cannulated



Ref	Description
A01 400	Saw / Battery / Type / 01
Oscillation Speed	Oscillation Arc
15.000 cpm	4°
Operation Voltage	Sterile Conditions
14.4 V	134°C (+ 4°C / - 0°C)

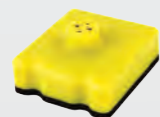
Attachments (Compatible with battery and cable systems)

	Ref	Description
	A01 700	Adapter for Drill (Keyed)
	A01 702	Adapter for Drill / A.O. Synthes / Small
	A01 720	Adapter for Reamer / Zimmer
	A01 721	Adapter for Reamer / A.O. Synthes / Big
	A01 722	Adapter for Reamer / Harris / Aesculap
	A01 723	Adapter for Reamer / Hudson - Stryker
	A04 101	Key for Chuck / Type / 01
	A01 741	Adapter for Wire Driver (0.5 - 1.5 mm)
	A01 740	Adapter for Wire Driver (1.6 - 2.5 mm)
	A01 750	Adapter for Pin Driver (2.6 - 3.2 mm)
	A01 751	Adapter for Pin Driver (3.3 - 4.0 mm)

Accessoires



Ref	Description
A02 460	Charger / Type / 01
Charging Same Time :	Shows Battery Rating :
2 Batteries	Yes



Ref	Description
A02 520	Power Box / Type / 01
Battery Capacity :	Battery Voltage :
2500 mAh	14.4 V
Type :	
Lithium - Ion	

Sterilization Containers and Guide

	Ref	Description
	A05 140	Sterilization Container / Battery / Saw / Modular / 400x302x107
	A05 160	Sterilization Container / Battery / Saw / 302x302x107
	A05 161	Sterilization Container / Battery / Modular / 302x302x107
	A01 310 04	Power Box Installation Guide

Required torque for reaming

Min. 15 Nm
Max. 20 Nm

Handpiece Operational Weight with battery and attachments

Approx.
1200 - 2100 gr



Required speed for drilling

Min. 500 rpm
Max. 1500 rpm

Article

What should be the speed (rpm) of the drill handpiece in trauma operation?



Sterilization Conditions

Sterilizability in steam autoclave.

Battery and Charger

Battery - Lithium Ion
Charger should show battery charge rate
Battery charging time max. 1 hour



Required speed for wire and pin driving

Min. 500 rpm
Max. 1500 rpm
Size range for Wire and Pin Driving
0,5 mm - 4,0 mm

Article

Comparison of Power Tool Modes Used for Kirschner Wire Driving: Forward & Reverse (F&R) Mode - Oscillation Mode



Cannulation and Left-Right Safety Key

Must be cannulated
Cannula Diameter must meet the max Wire and Pin sizes.

The handpiece should be controllable with one hand and therefore the left right key should be close to the trigger.



Required speed for sawing

Min. 11.000 cpm
Max. 15.000 cpm

Oscillation Arc between
3° - 5°

Article

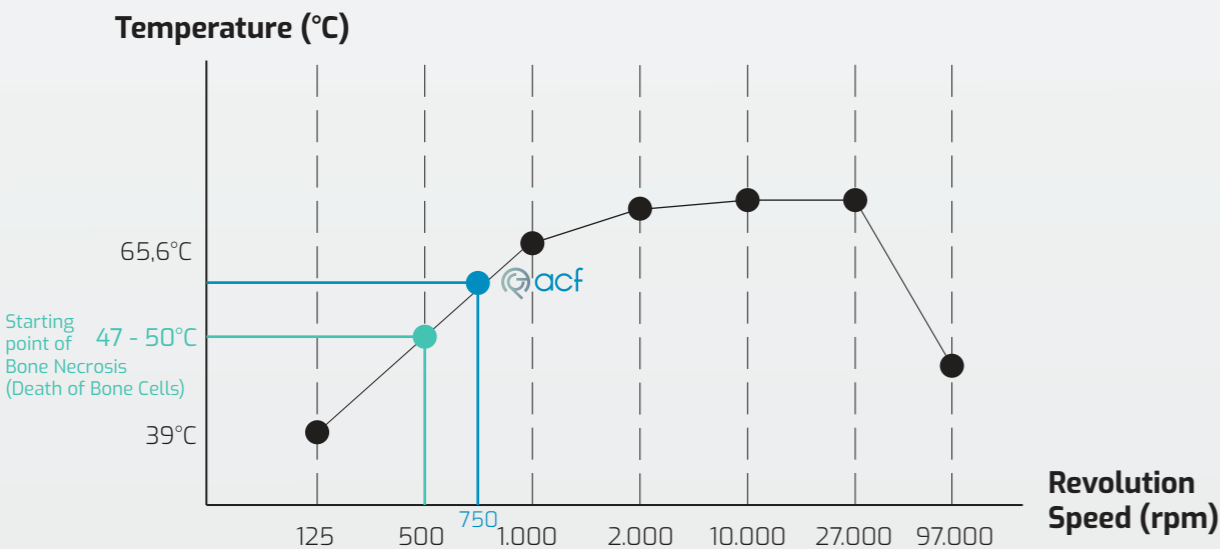
The Importance of Heat in Bone Cutting and Drilling Procedures in Orthopedic Operations



**We focused on fast patient recovery and success surgery.
Not for fast surgery.**

Thompson (1958) examined low drilling speeds, temperature increase according to the speed and tissue damage in the drilling operations. He tried different drilling speeds on the dog jaw bone and examined bone reactions. While the temperature at 125 rpm was 39 °C, it exceeded 65.5 °C at 1000 and 2000 rpm speeds. Therefore, in accordance with Pallan (1960), he proposed **a drilling speed of 500 rpm to minimize the thermal damage and histological response of the bone.** Abouzgja and James (1997) found that the maximum temperature rise is rapidly decreasing in free running speeds from 27,000 rpm to 97,000 rpm. Apart from Matthews and Hirsch's studies (1972), there seems to be a general agreement that the temperature rise increases with the drilling speed until about 10,000 rpm. (Parsa, 2006)

Considering the global usage conditions of the drill bits, **ACF determined a sufficient speed that minimizes the heating in the bone and the torque value** that will support the doctor in this drilling process.



Please scan the QR code for more detail and references.

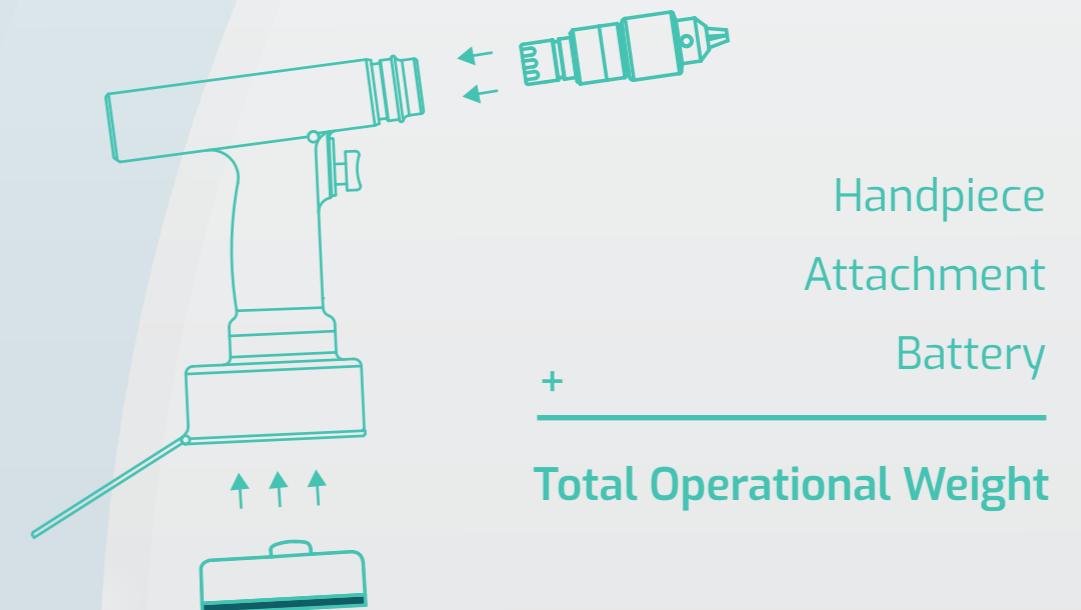
<https://www.acf.com.tr/what-should-be-the-speed-rpm-of-the-drill-handpiece-in-trauma-operation/>



HOW YOU SHOULD EVALUATE THE WEIGHT OF HANDPIECE?

Surgical power tool systems have different production methods. **Manufacturers can add weight-creating elements inside the handpiece to accessories.** For example, the internal motor and driver can be placed in the battery or the gearbox can be included in the attachments. This can cause the weight of the handpiece to be perceived as light.

For this reason, when evaluating the weight of a surgical power tool handpiece, **all accessories used in the operation should be considered.**





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