



جامعة الإمام عبد الرحمن بن فيصل
IMAM ABDULRAHMAN BIN FAISAL UNIVERSITY
كلية طب الأسنان | College of Dentistry

Teaching Laboratories Guide

College of Dentistry



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INTRODUCTION



INTRODUCTION

The Laboratory is a replication of the field setting, providing the learner with the opportunity to integrate theory to practice, think critically. Laboratories are equipped with equipment used to teach students scope of skills and procedures. Preclinical dental courses are taught in the specialized teaching laboratories to prepare the students for the clinical courses. Dental students are introduced to all aspects of dentistry by performing procedures on simulation mannequins before starting their clinics.


The laboratories at the college of dentistry are divided into three main categories as follows:

- **Teaching Labs**
 - Phantom Lab
 - Prosthodontic Lab
 - Pathology Lab
 - Oral Surgery Simulation Lab
 - Radiology Lab
- **Support Labs**
- **Digital Labs**


The Multipurpose Lab and the CAD/CAM Lab feature the latest technologies available to produce consistent and quality dental prosthetics partial and full dentures, dental crowns, and dental bridges; for the patients being treated by students, and faculty members.

TEACHING LABS


○ PHANTOM LAB

Location and Number of stations		Courses 
Alnawras Campus	Rakah Campus	
<p>1 Lab 63 Phantom heads</p>	<p>1 Lab 92 Phantom heads</p>	<p>The phantom laboratory provides training for undergraduate and postgraduate students in preclinical courses.</p> <p>The lab is utilized during the following courses:</p> <ol style="list-style-type: none"> 1. Prosthodontics 2. Restorative dentistry 3. Endodontics 4. Pediatric Dentistry 5. Periodontics

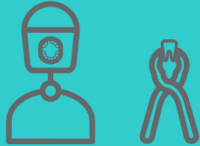
○ PROSTHODONTIC LAB

Location and Number of stations		Courses 
Alnawras Campus	Rakah Campus	
<p>1 Lab 51 Phantom heads</p>	<p>1 Lab 66 benches</p>	<p>The preclinical lab is the primary instructional area for general and prosthetic dentistry. The lab is designed to support the teaching and learning of the following courses:</p> <ol style="list-style-type: none"> 1. Prosthodontics 2. Orthodontics

○ **ORAL HISTOPATHOLOGY LABORATORY**

Location and Number of stations		Courses 
Alnawras Campus	Rakah Campus	
<p>1 Lab 60 Microscopes</p>	<p>1 Lab 50 Microscopes</p>	<p>The purpose of this laboratory is to facilitate diagnosing oral and maxillofacial tissue biopsy specimens. Diagnose services including histopathologic investigation and radiographic interpretation. The microscope lab is designed to support teaching and learning in the following courses:</p> <ol style="list-style-type: none"> 1. General pathology 2. Oral biology 3. Oral pathology

○ **ORAL SURGERY SIMULATION LAB**

Location and Number of stations		Courses 
Alnawras Campus	Rakah Campus	
<p>60 Units</p>	<p>1 Lab 45 Units</p>	<p>The oral surgery and pain control lab supports students' practicing administration of local anaesthesia on models in addition to simulation phantom heads for extraction. This lab is used by the following courses:</p> <ol style="list-style-type: none"> 1. Pain control and anesthesia 2. Oral and maxillofacial surgery

○ **ORAL RADIOLOGY LABORATORY**

Location and Number of stations		Courses
Alnawras Campus	Rakah Campus	
	6 Rooms	<p>The oral radiology lab supports students' practicing taking radiographs on models in addition to simulation phantom heads for x-ray. This lab is used by the following courses:</p> <ol style="list-style-type: none"> 1. Oral radiology 2. Preclinical Endodontics



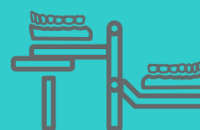
○ **DENTAL MORPHOLOGY LABORATORY**

Location and Number of stations		Purpose
Alnawras Campus	Rakah Campus	
60 benches	50 benches	<p>The dental morphology laboratory provides training for students in preclinical courses to understand the morphology of the individual teeth and to differentiate and identify the teeth in the oral cavity. The lab is used by the following courses:</p> <ol style="list-style-type: none"> 1. Dental Morphology Course 2. Prosthodontics




SUPPORT LABS

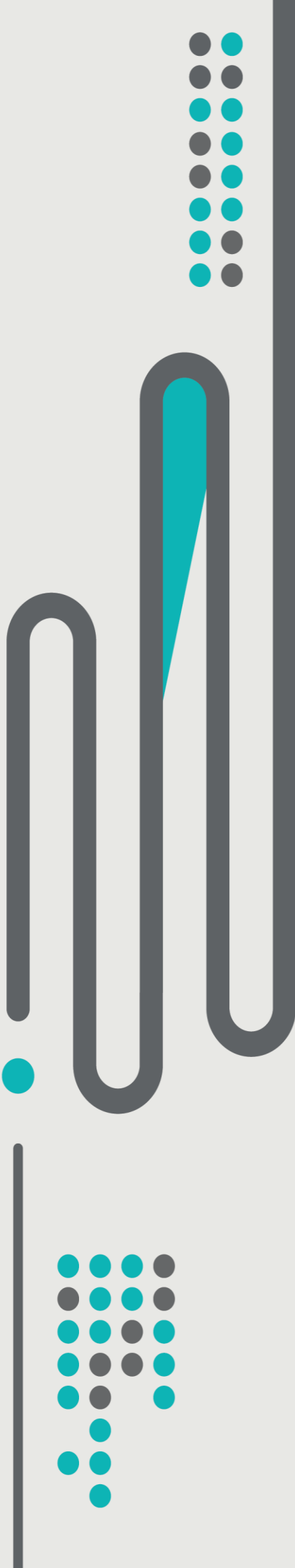
Location and Number of stations		Courses
Alnawras Campus	Rakah Campus	
<p>4 Labs</p>	<p>1</p> <p>Production Labs</p> <p>36 benches</p>	<p>The purpose of the production laboratory is to provide laboratory support to students and interns to fabricate dental prostheses and closely supervise the students in their fixed and removable case procedures. The students can pour the impressions, trim the dental casts, and fabricate prosthodontic cases.</p> <p>The ceramic Laboratories are used to fabricate all-ceramic tooth- and implants- supported prostheses and apply ceramic for porcelain fused to metal restorations.</p>
<p>1 Ceramic Lab</p> <p>6 benches</p>	<p>2</p> <p>Ceramic Support Labs</p> <p>28 benches</p>	



DIGITAL LABS

Location and Number of stations		Courses
Alnawras Campus	Rakah Campus	
	<p>1 CAD/CAM Lab 4 benches</p> <p>1 3D printing Lab 8 benches</p>	 <p>The laboratory where CAD-CAM (computer-aided design and computer-aided manufacturing) technologies are used to plan, design, and fabricate indirect dental restorations which include crowns, veneers, inlays, and onlays, fixed partial dentures, and dental implant restoration. The laboratory serves the demands of patients of specialty clinics, postgraduate students, 5th and 6th years students, interns, and researchers.</p> <p>The laboratory is equipped with 3D printers and 3D computer-guided software. The printers are capable of producing models, maxillary and mandible jaws replicas for surgery purposes, denture bases, custom trays, removable partial denture frameworks, provisional restorations, castable parts and copings, orthodontic splints, surgical guides, orthognathic surgical splints, and specimens for research. The lab serves the demands of patients of specialty clinics, postgraduate students, 5th and 6th years students, interns, and researchers.</p>

The laboratories are located at the college of dentistry two main campuses, Rakah and Alnawras. All labs are accessible to all students and faculty during the school operating hours from 8:00 am to 5:00 pm (Sunday-Thursday). Students must follow the session time specified by the Vice Deanship of Academic Affairs (VDAA).



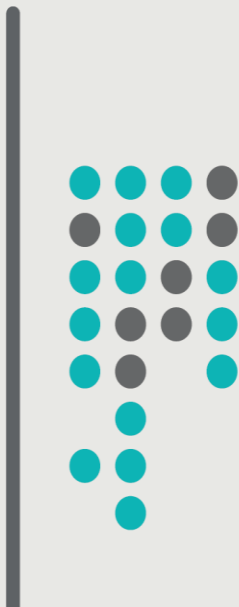
LAB RULES AND REGULATIONS

LAB RULES AND REGULATIONS

- Students must wear college dress code and College/University ID card when in the teaching laboratories all the time.
- The presence of unauthorized Personnel (individuals other than faculty, staff, or student) is prohibited.
- Students should deal with their colleagues, dental axillary staff, and supervisors with respect and professional manner.
- Training for proper operation, use, and settings of lab equipment and instruments will be conducted to the students during the lab orientation at the beginning of each course. Improper use may affect the equipment and make it unsafe for the other students.
- Using the lab equipment without permission or in other than its intended purpose considered a clear violation and disciplinary action will be taken.
- Appropriate infection control precautions must be taken in the lab. Personal Protective Equipment (PPE) must always be worn while working in the lab.
- Students are not allowed to remove or take any equipment or material without the lab's supervisor's permission.
- All preclinical sessions will begin and end as scheduled by the Vice Deanship of Academic Affairs (VDAA) unless specified. Students must present in the lab on time and are not allowed to leave preclinical sessions without the supervisor's permission.
- Students must behave in a professional and academic manner. Failure to do so will result in dismissal from the lab.
- Cellphones and electronic devices must be turned off or put on silence mode during preclinical sessions to avoid disturbances during the ongoing sessions.
- Eating or drinking is not allowed in the laboratories.



STUDENT RESPONSIBILITIES



STUDENT RESPONSIBILITIES

All students must comply with the pre-clinical and clinical lab policies. The laboratory dispensary provides the students with all materials, instruments, devices (e.g., articulator, surveyor) requested by different pre-clinical courses.

Students should inspect the items provided by the laboratory dispensary and assigned station at the beginning of each lab to verify their functionality. If damage is noted, the student should report this to the attending faculty to be reported to the lab supervisor. If a student finds any instrument or device at their station that does not belong to them, they should inform the attending faculty or the lab supervisor.

A student or students' group may assign to a station for the entire of the preclinical course. It's the student's responsibility to keep and maintain the station clean and in good condition. Students must respect lab property and equipment and ensure proper, respectful care of the equipment throughout the time of their training in the lab.

Reliability, attendance, punctuality, honesty, respect, and cooperation are the student's responsibility and must be always displayed towards classmates, instructors, and dental axillary staff.



LAB SAFTEY GUIDLINES

SAFETY GUIDELINES

EYE PROTECTION

- All students, faculty, and staff must wear appropriate protective eyewear during lab work activities to prevent eye injury such as chemical splash.
- In case of eye injury:
 - Go immediately to the nearest eyewash station.
 - Flush your eye continuously for 15 minutes while keeping your eye open with your fingers.
 - Roll your eyes in all directions.
 - Report the injury to lab supervisor.
 - Seek immediate medical attention.

HANDLING OF SHARPS

- Sharp items (e.g., needles, scalpel blades, wires) should be considered as potentially infective and handled with care to prevent injuries.
- All used sharps shall be discarded in sharp container available in the area.
- The following shall be considered sharps in settings:
 - Needles
 - Scalpel blades
 - Suture needles
 - Dental burs
 - Endodontic files
 - Reamers.
 - Broaches
 - Broken glass
- Students should wear Personal Protective Equipment when handling sharp objects.
- All sharps shall not be uncovered or unwrapped the sharp object until it is time to use it.
- Sharps shall be kept always pointed away from the user and other people.

- Sharps shall never hand to someone else; it shall be placed on a safe surface for another person to pick up.
- Used disposable syringes and needles, scalpel blades, and other sharp items should be placed in appropriate leak-proof puncture-resistant containers.

THERMAL AND CHEMICAL BURN

Lab-related injuries such as chemical burns (injury by causative chemical agent) and thermal burn (by flame, hot water, or object) may happen during the dental lab session.

- In case of thermal or chemical burn injuries:
 - Remove clothes (lab coat or gown) from the burned area.
 - Irrigate the injured part under running water.
 - Follow the first aid guideline for the burn.
 - Report the injury to lab supervisor.
 - Refer to management of safety data sheets (SDS) policy No. DH.ADM-GEN 01-008 for specific chemical injury.
 - Seek medical attention for evaluation and consultation.

Physical injury

Work-related physical injury are unique injuries that require individualized treatment and management depending upon the causative physical agent.

- In case of physical injury:
 - Ensure protection of rescuers and health care workers from exposure.
 - Remove the injured person from the area of exposure.
 - Evaluate for any cut or laceration.
 - Referrer to first aid policy if needed.
 - Report the injury to lab supervisor.
 - Seek medical attention for evaluation and consultation.

Radiation safety

- Deliberate exposure of an individual to dental radiographic procedures for training or demonstration purposes shall not be permitted unless there is a documented diagnostic need for the exposure.
- Exposure shall be made only after faculty authorization. The retaking of radiographs shall be authorized and supervised by faculty member.
- Students who have obtained radiographic pre-clinical competence will be allowed to take radiographs in the clinics under faculty supervision.
- All radiological imaging equipment shall be tested regularly to ensure permissible levels of radiation.
- Lead shields shall be adequately available in all radiological rooms/ clinics and they shall be annually tested.

FIRE SAFETY

TO PREVENT FIRE

- All doors must remain free of obstructions ·
- Work area must be free of clutter or away from any “fire hazard” ·
- Electrical equipment/devices not in use must be unplugged ·
- Properly label all dental materials or chemical containers to identify contents · Combustible liquids or flammable items must be properly stored and must not exceed the allowable storage capacity ·
- Propane/Gas/Nitrous Oxide (outlet) must be periodically checked, and any leakage reported.



LAB INFECTION CONTROL GUIDELINES

LAB INFECTION CONTROL GUIDELINES

Students are responsible to comply and enforce all policies and protocols related to infection prevention & control that affect the operations of laboratories including:

- PPE are enforced to assure safe and healthful working conditions for faculty, staff, and students and to protect them from exposure to workplace hazards and risk of injury.
- No eating, drinking, or smoking in the lab.
- All impressions must be rinsed clean with running water until all debris is removed and then disinfected.
- All impressions must be transported to and from the lab in a designated container or single sealed plastic bags.
- Appliances and prosthodontics devices should be disinfected and stored dry in sealed plastic bags.
- Disposable items should be single used and not sterilized nor disinfected.
- Work area should be wiped and disinfected.
- Cleaned disinfected instruments should be used for each patient's laboratory work.
- Fresh pumice is required for each use.
- Devices used to polish, trim, or adjust contaminated intraoral devices must be disinfected or sterilized properly packaged, or wrapped. If packaging is compromised, the instruments must be re-cleaned, packaged in a new wrap, and sterilized again.
- Waste generated in the dental laboratory (e.g., disposable trays or impression materials) can be discarded with general waste. The housekeeping department holds the responsibility of segregating and collecting waste in containers specially made for this purpose within the labs.
- Sharp items (e.g., burs, disposable blades and orthodontic wires) should be disposed in puncture-resistant containers.
- Upon completion, clean work area from all debris.

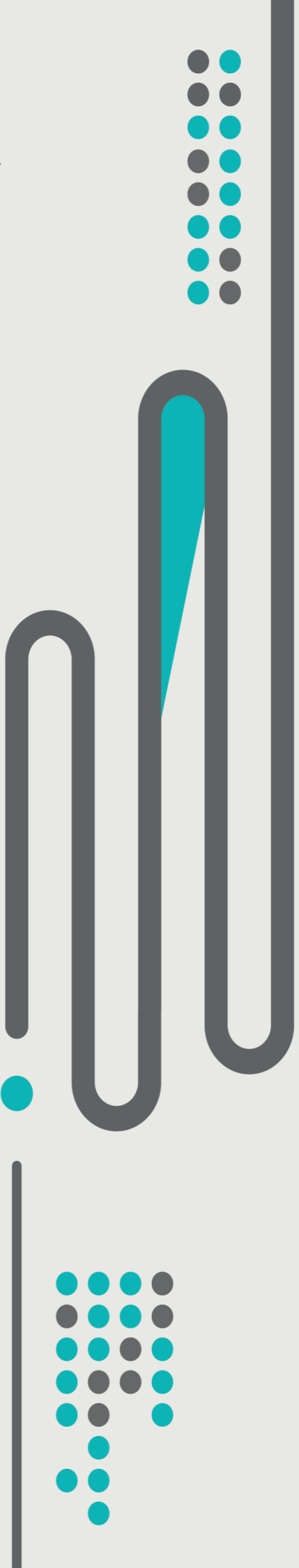
EXTRACTED TEETH

- Extracted teeth must be heat sterilized before being used in an educational setting to allow safe handling therefore extracted teeth that contains amalgam restorations are not suitable for pre-clinical teaching/research.
- Extracted teeth containing amalgam should not be placed in a medical waste container intended for incineration for final disposal or general trash it should be Extracted teeth containing amalgam restorations should be discarded in amalgam container.
- Extracted teeth with amalgam should NEVER be autoclaved or incinerated as medical waste because the high temperatures of the autoclave/incinerator can cause the release of mercury vapor.
- All extracted teeth and soft tissues surgically removed shall be considered as general waste and must be disposed of in general waste containers with black waste bag.

NEEDLE STICK INJURY

In case of needle stick or sharp object injury:

- Stop all procedures.
- Wash gently with water.
- Clean with alcohol wipe.
- Cover with appropriate bandage.
- Report the injury to the lab supervisor.
- Seek medical attention for evaluation and consultation.



**LAB MACHINES, DEVICES,
AND INSTRUMENTS**

LAB MACHINES

BOIL OUT DEWAXING MACHINE



This unit with integrated spray gallows scalds up to 12 flask halves simultaneously and fully automatically. The multifunction touch-screen terminal offers diverse functions and reproducible procedures by simple programming.

WET CAST TRIMMER



A machine that uses a disk for modeling hard or soft plaster.

POURING VIBRETOR



Designed to promote easy pouring of plaster while preventing bubbles while pouring.

DENTAL LABORATORY STEAM CLEANER



This device is suitable for cleaning small items, dental objects and instruments as well as for detailed use on larger objects. Grease, sticky wax, pickling agents, various contaminants, and adhesives are completely removed without affecting the object itself.

SAND PLASTER



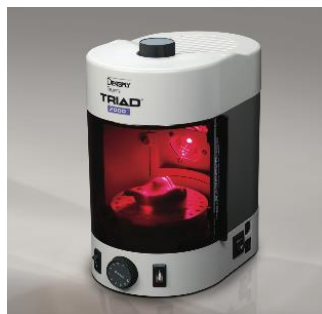
Fine sandblasting unit used to clean and micro rough surfaces like zirconia and metals for better bonding.

HYDRAULIC DENTAL PRESS



A pressing lock which allows to accommodate up to three flasks simultaneously.

TRIAD MACHINE



The light curing unit is designed for easy fabrication of the acrylic devices that are routinely used in removable dental procedures. The adjustable table features enable the processing of several types of visible light cure materials to fabricate custom trays, denture relines and repairs, with or without the use of a model (cast)

HEAT ZONE WAXER



The heat zone heats wax modeling tools without flame using an electromagnetic induction process and is sensor activated when a tool is inserted into the “zone”. It heats the tool safely and extremely fast, replacing the traditional Bunsen Burner. Heats wax tools fast without flame or gas and emits no carbon deposits on instruments or on wax ups.

VACUUM FORMER MACHINE



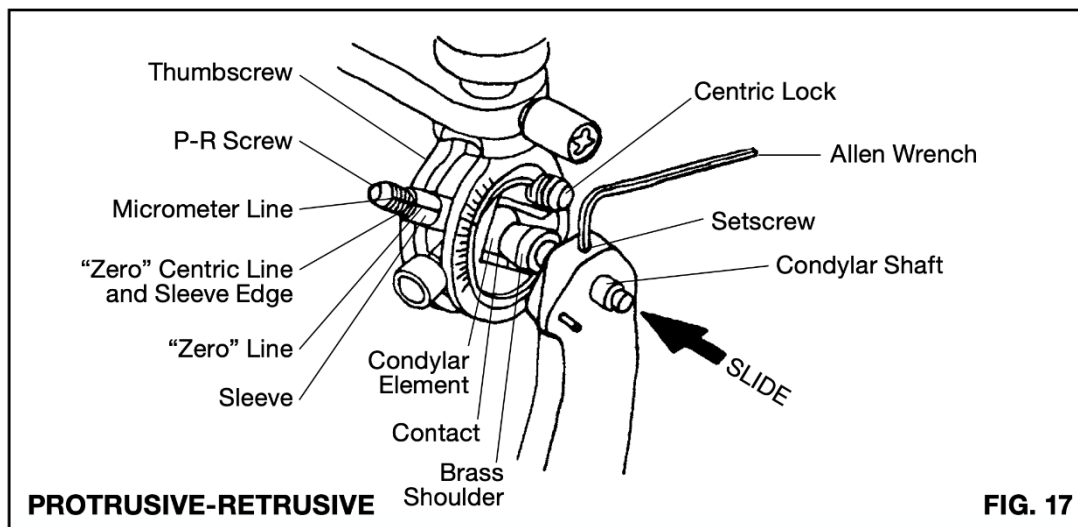
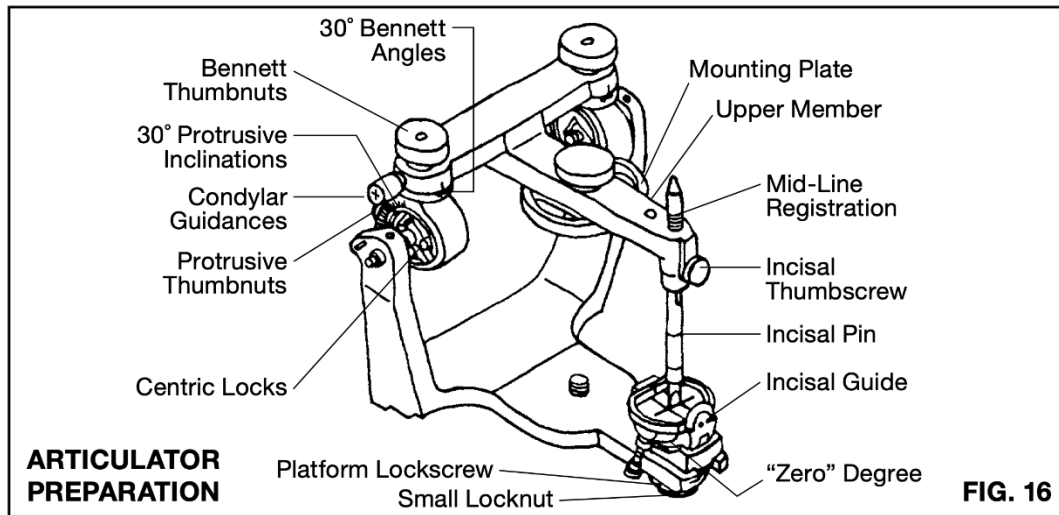
Vacuum former for constructing bleaching trays, custom impression trays, mouth guards and splints. Features quick-lock frame that automatically levels. Gasket-free system maintains excellent vacuum seal for most accurate adaptations with no parts to replace. Individual heat and vacuum controls.

ACRYLIC POLISHER



This machine is equipped with two separate motors, each of them offering fully variable speed. it offers economic and precise grinding, polishing, cleaning, and brushing of metal and plastic materials. The filter bags of the integrated suction are washable and can be reused.

HAND ARTICULATOR



Hanau Articulator is mechanical hinged device used to which casts are fixed, reproducing some or all the movements of the mandible in relation to the maxilla.

DENTAL SURVEYOR



The dental surveyor is a paralleling instrument used in construction of a prosthesis to locate and delineate the contours and relative positions of abutment teeth and associated structures.

ENDO MOTOR



Endo x smart is an endodontic rotary device used in root canal treatment.

ADULT DENTAL JAWS MODEL



Represent typical adult dentition occlude in centric occlusion with natural physiologic points.

PEDIATRIC DENTAL JAWS MODEL



Represent typical pediatric dentition occlude in centric occlusion with natural physiologic points.

ENDO MODUPRO



Perfect training models for preclinical endodontics that allow mounting extracted and plastic teeth. It uses magnetics to hold the jaw section in place.

LAB INSTRUMENTS

RESTO/ENDO CASSETTE

Resto/Endo cassette is a 27-piece cassette that includes instruments for restorative and endodontic need.

Resto instruments

- Intra-oral mirror
- Composite condenser
- Amalgam condenser
- Amalgam carrier
- Amalgam well
- Football burnisher (amalgam)
- Anatomical Burnisher (amalgam)
- Gingival marginal trimmer MT-26 or 27
- Gingival marginal trimmer MT-28
- Enamel hachette.
- Hollenback carver
- Plastic filling instrument (small)
- Plastic filling instrument (big)
- Dressing Pliers
- Matrix band holder
- Discoid-cleoid

Endo instruments

- Endodontic prob
- Explorer
- Root canal plugger (anterior)
- Root canal plugger (posterior)
- Root canal spreader
- Scissor
- X-ray film holder twicer
- Cement spatula
- Spoon excavator (S)
- Spoon excavator (L)
- Dressing plier auto look (twicer)

PERIO CASSETTE

Non-surgical periodontal cassette contains 20-piece cassette that include instruments for scaling and root planning treatment.

- Mouth Mirror with Handle (double-sided)
- Explorer Wilken / Tufts
- Dressing Plier
- Williams Probe
- Nabers Probe
- Towner-Jacquette Scaler 33-415
- Jacquette Scaler 30-33
- Jacquette Scaler 34-35
- Morse Scaler
- Gracey's Curette 1R-2R
- Gracey's Curette 3R-4R
- Gracey's Curette 5R-6R
- Gracey's Curette 7R-8R
- Gracey's Curette 9R-10R
- Gracey's Curette 11R-12R
- Gracey's Curette 13R-14R
- Younger Good Curette
- Columbia Curette 13-14
- Columbia Curette 13-14
- Aspirating Syringe

RUBER DAM KIT

The kit contains a set of clamps, clamp holder, rubber dam frame and rubber dam puncher.



ENDO SPLIT KIT

A storage unit for endodontic instruments such as files, reamers, spreaders used during root canal treatments. Autoclavable up to 135 °C, it keeps endodontic instruments in sterile conditions and ready to use.



ORTHO PLIERS

A set of pliers that are used to cut and shape orthodontic wires, consist of cutter, Adam's plier, three beak plier and bird beak plier.





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