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• GENERAL DESCRIPTION

The new SURVEYOR-PARALLEOLOMETER is made up of one mechanical holding arm for any handpiece or micromotor already owned by the Laboratory, which is mounted on the structure of the DENTOLFARM surveyor, with the aim to allow, in addition to the traditional manual operation, to carry out accurate drilling operations, too.

With the new arm, you are allowed to execute the same manual operations usually carried out with the DENTOLFARM surveyor, viz:

- to determine the path of insertion for the attachments
- to position the attachments
- layout of the reference points
- to survey the prosthesis
- to locate the anchorage positions of clasps.

The novelty is represented by the adoption of a universal holder for clamping, under condition of perfect orthogonality, any straight dental handpiece for the most sophisticated operations:

- drilling at calibrated depth
- boring
- screw thread
- parallel milling
- milling of anatomic abutment
- "coulisse" execution.

• DESCRIPTION OF STANDARD ACCESSORIES

The principal parts of the instruments are as follows:

- ⇒ the upright holding column made of gauged and ground stainless steel allowing the highest precision and softness in sliding;
- ⇒ the element adjusting height of the arm on the column;
- ⇒ the guide rod for the axial controlled sliding motion;
- ⇒ the guide rod for drilling operation;
- ⇒ the graduated knob limiting and measuring the vertical stroke;
- ⇒ the reciprocating knob locking the front articulated joint;
- ⇒ the model-holder adaption set consisting of some components expressly studied to stiffen locking of the model on the standard model-holder plate;
- ⇒ the set screw wrench no. 3 and no. 6 used to assemble the parts.

• TECHNICAL FEATURES

Among the variety of applications of a Surveyor equipped with a Handpiece Holder identified as “milling operation”, we can split it up in two well defined groups according to the technique used:

1. when the model-holder is fixed on the base and the arm is operated,
2. when the arm is fixed and the model-holder is operated.

Basically, the structure of the machine will allow to opt for one of the two solutions. For the second option, high complex milling machines are required, equipped with model-holders assembled on micrometric feed saddle, contemplating a considerable investment not only in money but in time devoted to learning, too.

Your new precision ISO surveyor/parallelometer made up of the new arm assembled on the existing surveyor, will allow to carry out this operations contemplated in point 1, with no obstacle to “free-hand” operation as provided for in point 2.

The arm can freely slide on the vertical axis of the holding column (1), if leaned on the height adjusting element (2) or be locked in any position by tightening the proper ring nut (3).

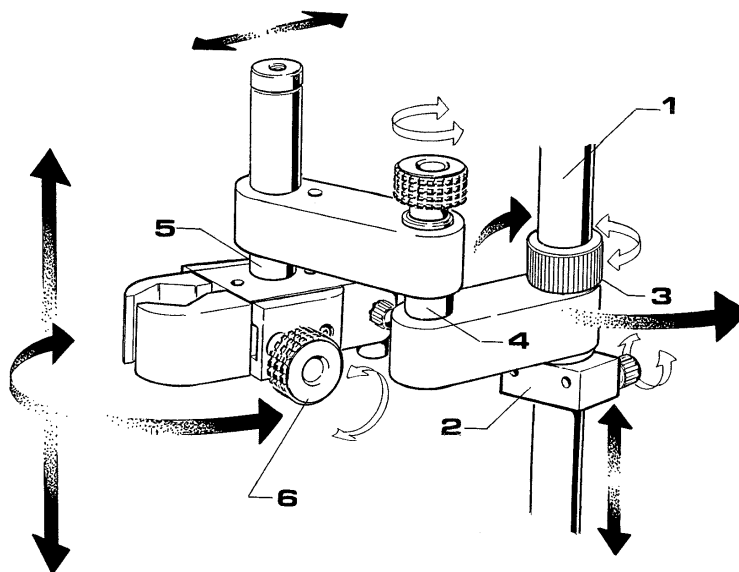
The (4 and 5) arm joints, which articulate on the vertical axis, move on ferrules and can be both frictioned and locked by means of the pertinent knobs.

Thanks to these three rotation points, any movement of the pantograph arm is thus possible, allowing a free and smooth traverse on the full working area.

The forearm (6) is the mobile rear component holding the spindle; the conceiving provides for the rotation fulcrum located at the centre offering the possibility to assemble on one end (17) the spindle for manual operations or, angulating it up to 180°, on the other end (18) the handpiece for drilling instruments.

The complete rear unit can freely slide on the vertical axis and it is fitted with spring recovery but in case of drillings, it is possible to limit the downstroke movement (depth measurement) and restrain the parallelism (the max. vertical stroke is 15 mm).

The supply of a tool, extremely easy to be mounted, guiding the movement of controlled axial sliding, has been contemplated, too.

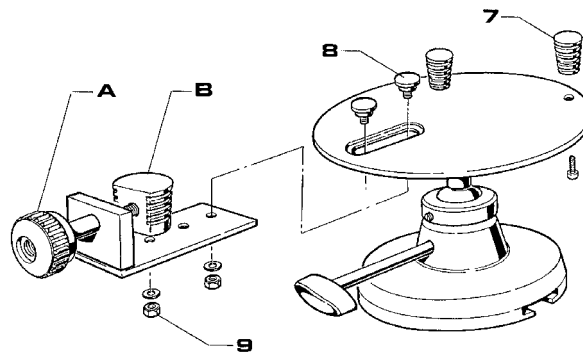


• INSTALLATION INSTRUCTIONS

To start working with your new DRILLING KIT, we ask you to follow carefully the following instructions paying your utmost attention to the delicate and sophisticated manufacturing components which have been built with the highest care to grant you maximum precision.

MODEL-HOLDER ADJUSTMENT STAGE:

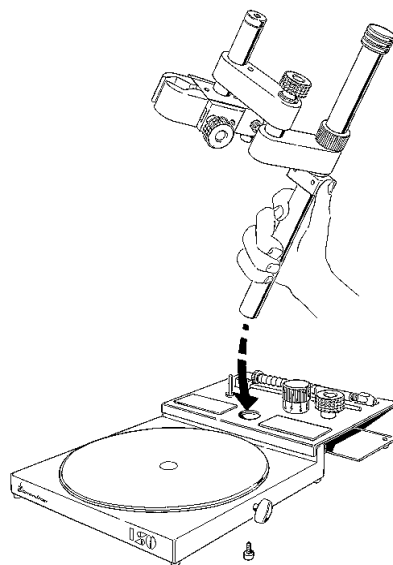
1. disassemble model-holder from the base,
2. utilize the exagonal wrench n° 3, unscrew the fixing screws of the two reaction pins (7) and assemble the new cone-shaped pins,



III. 2

SURVEYOR ADJUSTMENT STAGE:

1. unscrew the fixing screw and remove the bar column (this is indeed the only part of the old arm which can still be used),
2. remove the upper cap and take out the tools,
3. utilize the exagonal key wrench n° 6, remove the column from its seat and assemble the new column, tightening deeply,
4. put again the model-holder in its seat,
5. remove the cap from the new column and introduce the tools again.



III. 2 bis

• INSTRUCTIONS FOR USE

No doubt the drilling and milling technique used cannot be summed up in a few lines, therefore in the following chapter illustrating the instructions for use, the various movements and limits of each component are clearly illustrated and detailed along with the useful hints which will help you to solve the daily small inconveniences.

POSITIONING OF THE MODEL

The new model positioning system allows a longer stroke and a safer locking. Turning the knob (A ill. 2) rightwards, the pressure element (B ill. 2) will go in, whereas if turned leftwards it will go out.

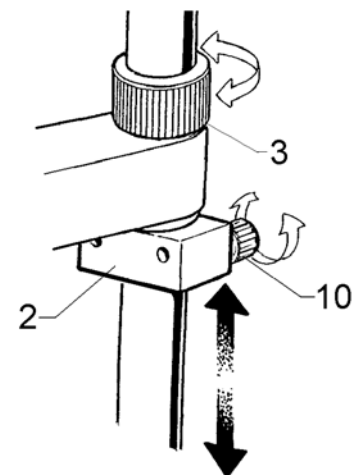
The model-holder plate is assembled on a ball and it can be tilted up to a maximum of 30° to restore the chewing conditions, but if you need it to be in a position perfectly parallel to the working plane, it will be sufficient to lean the lower face of the forearm on the plate, to facilitate fitting and lock in place.

The complete model-holder can freely slide on the working plane or be locked in place; if you choose the last solution, we recommend to lock it as near as possible to the central axis of the working plane in order to be granted that even under effort no vibrations will be originated.

WHEN POSITIONING THE ARM IN HEIGHT

To position the arm in height, you must set the adjusting element (2) and the fixing ring nut (3).

When both elements are loosened, let the unit slide on the column until the preset point is attained, then close the pressure knob (10). If the arm has to turn freely, this is the right working condition, whereas if it has to be locked in place, you will have to close the ring nut (3), too (turn rightwards to lock, leftwards to open).



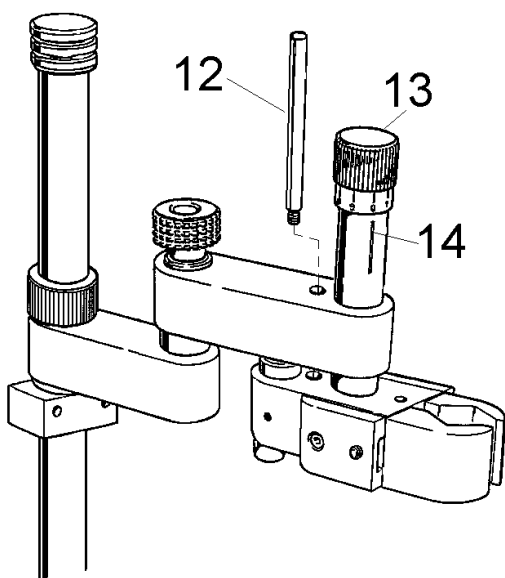
III. 3

WHEN POSITIONING THE ARM ON THE MODEL

As already mentioned in the introductory chapter, the arm is fitted with two additional intermediate joints facilitating the approach to the working point; they can be both fix or movable.

To lock the rear joint it is sufficient to tighten the knob (11 ill. 4) whereas for the front joint it always depends on the procedure to be carried out:

1. if you need to eliminate the possibility to slide vertically, assemble the tightening male knob (15 ill. 5) on the upper cap and screw tight,
2. if you wish to drill, thus maintaining the vertical movement but eliminating the others, assemble the parallel guide rod (12 ill. 4) in the upper movable part (in this case it is possible to insert the stroke limiting knob (13 ill. 4) on the upper cap functioning both as depth stop and as measuring gauge).



USE OF THE GRADUATED KNOB

By screwing tight the graduated knob (13) in the upper cap, the forearm is only allowed to rotate but not to run down (optimum condition to execute parallel drillings with radial delimitation at the same height).

Glancing sideways at the black protection cylinder, you can notice a vertical reference line (14): when the knob is tight screwed, make the zero of the scale mate with this line; by unscrewing you will determine the depth amplitude let to the movement of the instrument (every figure corresponds to a tenth of millimetre, therefore every complete turn is equivalent to a millimetre of actual vertical sliding).

III. 4

USE OF THE PARALLEL GUIDE ROD FOR DRILLING OPERATION

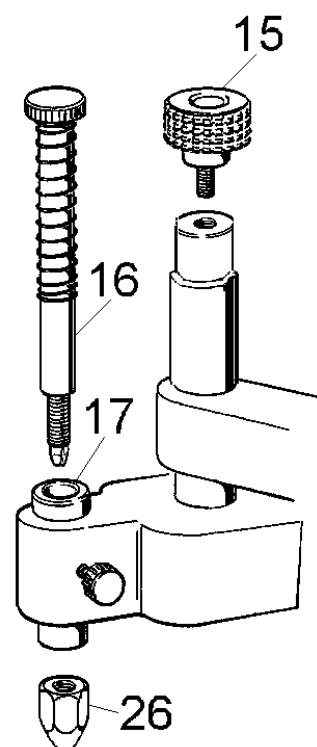
To assemble the parallel guide for drilling (12 ill. 4) it is necessary to align both the arm and the forearm and introduce the rod in the hole drilled behind the black protection cylinder until you find the insertion point and screw tight; in such a way the sliding will stiffen and side movements are inhibited.

ASSEMBLY OF THE SPINDLE FOR MANUAL OPERATION

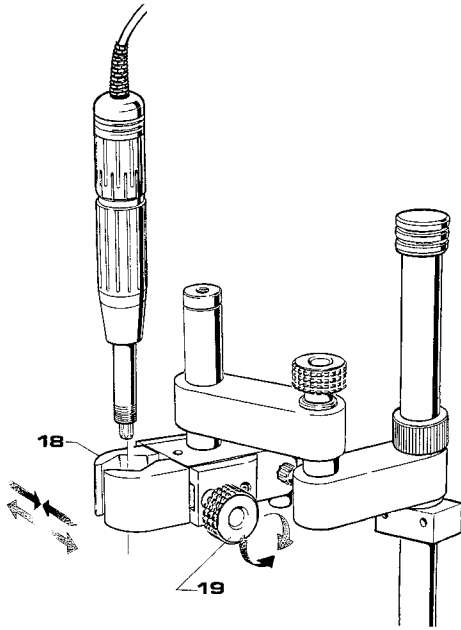
The spindle rod (16) disassembled from the old arm is located on the movable forearm (17), in the hole opposite to the pliers: both assembly and operation are the same followed for the previous model.

To use this arm it is recommended to assemble on the rear joint the male tightening knob (15) allowing rotation with no possibility of downstroke when it is loosened and it can lock any movement when positioning the attachments.

When it is not used, it is indispensable to remove it and store it in a safe place in order to avoid it to limit the movements or to touch unintentionally the model (may we remind you that a suitable "tool compartment" is available complete with magnetic bands to hold your burs, to be assembled on the rear part of the instrument).



III. 5



ASSEMBLY OF THE HANDPIECE FOR DRILLING OPERATION

The handpiece or micromotor holder (18) has a range from diameter 14 mm to 32 mm allowing to clamp practically any instrument utilized in the dental field; despite this, our preference is given to those handpieces with perfect cylindrical shape and made of rigid material (in case the handpiece is rubber-coated for better grip, we suggest to remove this part).

To mount the handpiece, it is sufficient to open the holder (turn knob - 19 - rightward) until it is clamped, then tighten firmly.

When clamping the handpiece, be careful to find the nearest point to the bur holding pliers (according to the tool locking system).

III. 6

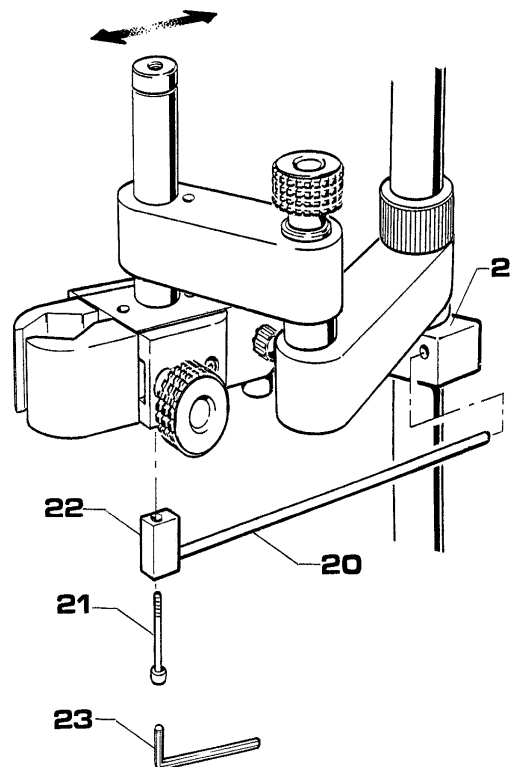
ASSEMBLY OF THE GUIDE ROD FOR THE AXIAL SLIDING MOTION

This tool will be mounted from one side to height measuring gauge on the holding column and the other side on the forearm lower face, in correspondence with the central axle.

For the installation proceed as follows:

- introduce the free end of the guide rod (20) in the block (2);
- let free any hinge points, fold the arm in correspondence of the height of the rear articulated joint (right- or leftward as you are accustomed to) and align both the arm and the block;
- bring the other end (22) near the centre of the forearm articulated joint and tighten the screw (21) utilising the key no. 3 (23) supplied;
- when all the elements are correctly aligned, tighten definitively the block knob (2) and test sliding; if it is perfectly free, position the model-holder parallel to the sliding axle.

When the tools is not used, it is necessary to disassemble it completely; to do this, simply loosen the screw and remove the guide rod; it is recommended to store it in a protected place in order to avoid any damage (scratch); for this purpose, the tool storage compartment embodies a rack for accessories.



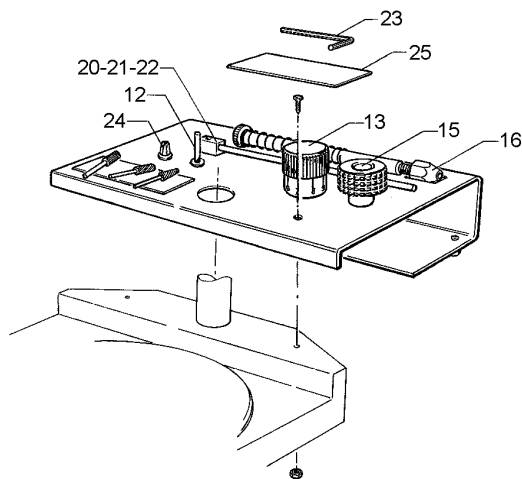
III. 7

ASSEMBLY OF THE TOOL AND INSTRUMENT COMPARTMENT

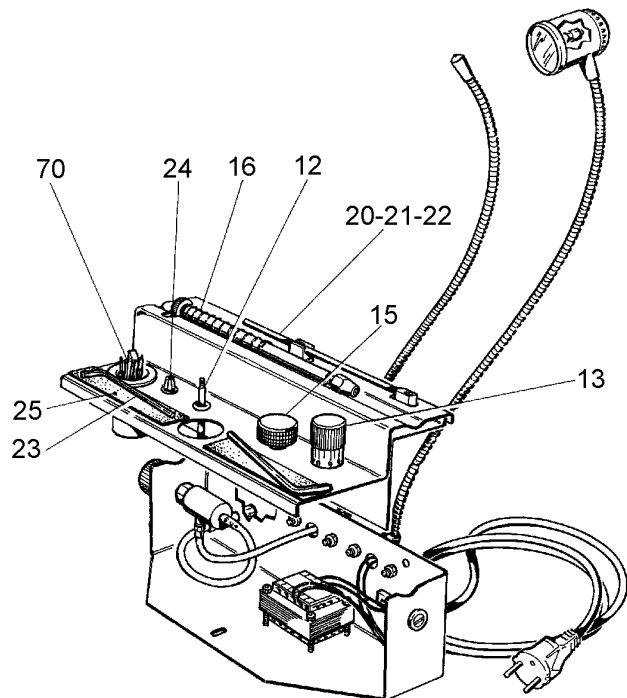
These accessories, which are not included in the drilling kit but are available upon specific request, can be easily assembled by introducing them from the upper part of the column (to do this first remove the cap, the rubber joint, the arm and the adjusting element). In order to fix the proper screws to the base, drill suitable holes (diameter 3.2/3.5) in case they haven't been already done and tighten the nuts supplied with; in addition to this, for the model with light and air blow, it will be necessary to fix in place the lower element with a self-threading screw right at the center and join the rear parts.

TOOL STORAGE COMPARTMENT

Starting from the rear part, the following tools are conveniently located: the spindle for manual operation (16), the guide rod for axial sliding (20 - 21- 22) fitted with its key (23), the tool holder for collet of reduced diameter (24), the parallel guide rod for drilling (12), the male tightening knob (15), the graduated knob (13) and, on the two sectors covered by magnetic bands (25), the burs in use.



III. 8 Tool Storage Compartment



III. 9 Storage Compartment with light and air blow

● MAINTENANCE INSTRUCTION

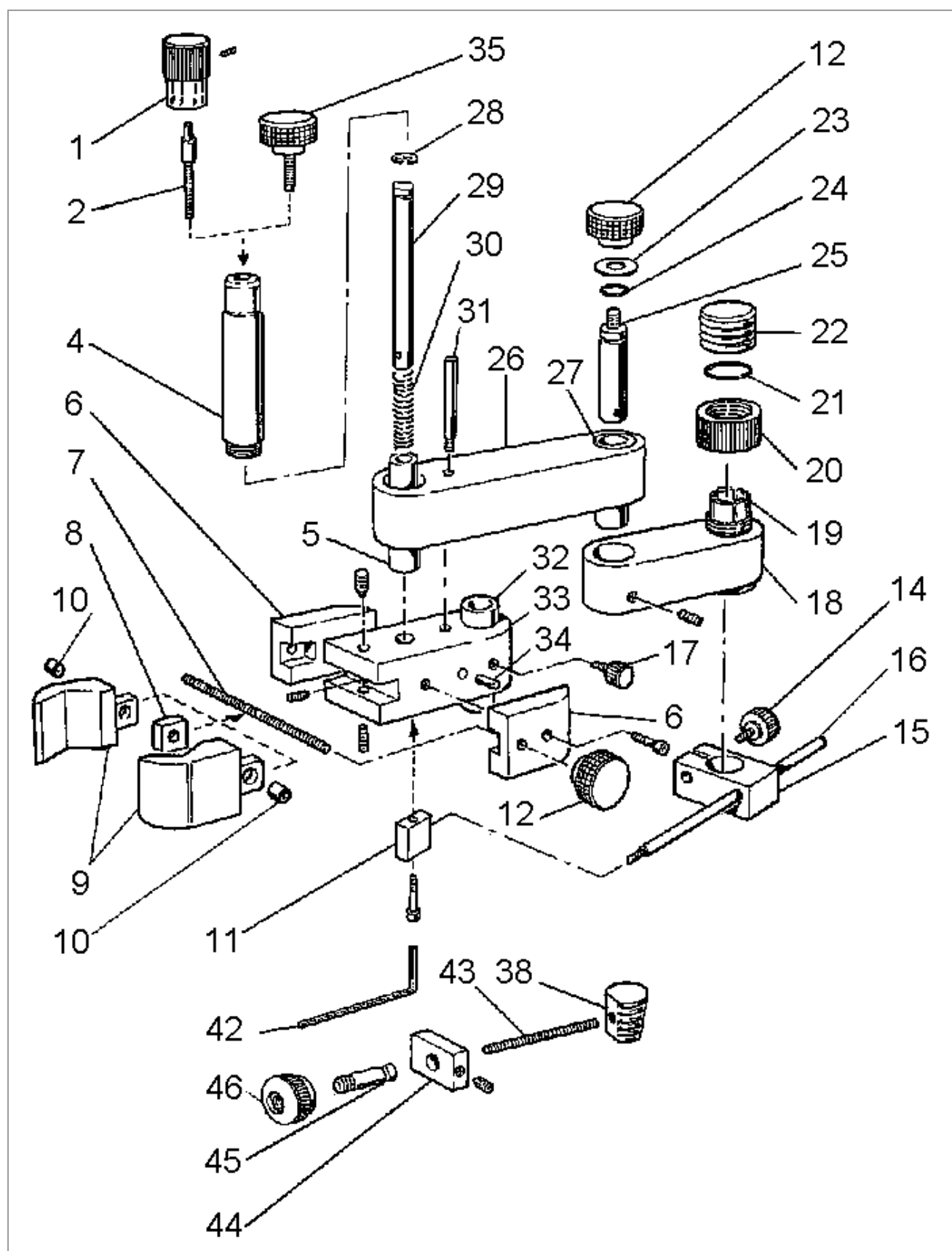
To assure optimum performance of the instrument, it is indispensable to clean accurately any sliding components and lubricate them with acid free oils for turbine engines or pure vaseline, never blow with compressed air to prevent small dust particles from entering the bushes and the bearing.

It is also necessary to remove opportunely the chips and the dust microparticles in order to avoid any damages or scratches compromising the correct motion which, on the other end, has to be facilitated by specific antifriction products when you are working with the fixed arm and the movable model-holder.

Any single component can be dismantled by referring to the enclosed plan of the instrument printed at the end of the present manual allowing to understand correctly how the different parts have been assembled. May we remind you to place the tools which are not being used in the storage compartment thus avoiding to loose or to damage them.

• SPARE-PART LIST AND EXPLODED DRAWING

N°	CODE	DESCRIPTION
1	NVT142	GRADUATED KNOB
2	RI015	DEPTH ADJUSTING SCREW
4	RI013	PROTECTION CASE
5	RI016	BUSHING ON FOREARM
6	RI010	SIDE CLOSURE
7	RI006	DOUBLE PITCH SCREW
8	RI007	CENTRAL GUIDE
9	RI004	JAW
10	RI005	GUIDE FERRULE
11	RI037	LINKING LOOSE PIECE
12	NVT147	Ø 30 M6 FEMALE KNOB
14	NVT153	Ø 25 M6 X 25 MALE KNOB
15	RI035	HEIGHT ADJUSTING ELEMENT
16	RI036	GUIDE ROD FOR AXIAL SLIDING MOVEMENT
17	NVT151	Ø 15 M4 X 10 MALE KNOB
18	RI001	REAR HORIZONTAL AXLE
19	RI019	BUSHING ON COLUMN
20	RI020	LOCKING RING NUT ON COLUMN
21	NPOR119	OR 119 RING
22	RP007	COLUMN KNURLED TOP
23	RI009	SHOULDER WASHER
24	NPOR112	OR 112
25	RI008	CENTRAL ROTATION AXLE
26	RI002	REAR HORIZONTAL AXLE
27	RI018	BUSHING ON CENTRAL ARTIC. JOINT
28	NVT039	SEEGER RS 8
29	RI011	REAR ROTATION AXLE
30	RI012	REACTION SPRING
31	RI028	DRILLING GUIDE
32	RI017	BUSHING FOR TOOL HOLDER
33	RI003	FOREARM
34	NVT050	CYLINDER PIN
35	NVT148	Ø 30 MALE M6 X 25 KNOB
38	RI021	MODEL LOCKING PIN
42	NVT201	HEXAGONAL KEY NO. 3
43	RI023	THRUST SCREW
44	RI024N	GUIDE SUPPORT
45	RI022	GUIDE FOR SCREW
46	RI042	FEMALE KNOB



• TECHNICAL SPECIFICATIONS

FEATURES	ISO	KIT
Overall Dimensions mm (W x D x H)	190 x 270 x 340	190 x 270 x 340 complete (190 x 210 x 340 without panel)
Gross Weight Kg	6,1	6,1 (3,1 KIT only)
Net Weight Kg	5,3	5,3 (2,2 KIT only)
Capacity of tool-holder	from Ø 15 to Ø 32 mm	from 15 to Ø 32 mm
Forearm max. vertical stroke	16 mm	16 mm
Standard collet holding tools	from Ø 3 to Ø 2,5 mm	from Ø 3 to Ø 2,5 mm
Reduced collet holding tools	from Ø 2,5 to Ø 2,1 mm	

• REFERENCE TECHNICAL REGULATIONS AND TEST PROCEDURES

Any instrument is mass-manufactured by DENTOLFARM in compliance with Technical and safety rules in force, as provided for by the 2006/42 EEC Community Directive on Machinery and it is provided with CE marking and CE Declaration of Conformity.

Careful inspection and full routine testing are carried out singularly on each machine.

This unit is not classified as AEE (electric and electronic device, whose correct operation depends on electric currents and electromagnetic fields); therefore, the Directive 2002/96 CE does not apply.

/!\ ATTENTION:

DENTOLFARM is responsible only for risks deriving from purely mechanical devices, contemplating manual use, intended as components of the original configuration of the product.

Should a micromotor or a turbin be assembled, it is absolutely necessary to comply carefully with instructions, cautions and warnings of the Company manufacturing these instruments, above all referred to the eventual installation of protection shields, the adoption of suitable devices for individual protection, the use under safety conditions and the maintenance. We decline all responsibility also for tampering or improper use.

DENTOLFARM Srl

Via Susa, 9/A - 10138 TORINO - ITALY

 TECHNICAL COMMERCIAL SERVICE - (+39) 011 4346588

 AFTER-SALE ASSISTANCE - 011 4346632

 FAX 011 4346366 – E-mail: info@dentalfarm.it

Website: www.dentalfarm.it