

Desenhos em 31)

OT

	<u>Livro de instruções</u>
Máq.	MF 4
Língua	INGLÊS
obs.	



MÁQUINAS PINHEIRO, L^{DA}

**TROFA
PORTUGAL**

FILIAIS { **LISBOA: Rua Filinto Elísio, 15-C**
PORTIMÃO: Rua Infante D. Henrique, 194

A maior Fábrica e Organização Portuguesa de Máquinas para trabalhar Madeira



PREFACE

This manual contains a great number of elements with which we expect to give you a valuable help in the treatment and utilization of the machine acquired. The constant observation of these rules gives it a longer life and a greater output. Please give them your attention and for any problem our technical services are at your entire service.

Much success and increase of production are the best wishes of

MAQUINAS PINHEIRO

TROFA-PORTUGAL

Machine type

Series number

Manufacturing year

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1 - TECHNICAL DATA

Width as thicknesser	mm	500
Width between vertical spindles	mm	440
Minimum width between cutting sides		
with cutters of 130 mm ϕ	mm	15
with cutters of 180 mm ϕ	mm	inferior cut
Thicknessing height	mm	180
Standard milling height	mm	120
Milling height on request and by additional payment	mm	150
Depth of grooving with the thicknessing cutterblock	mm	20
Depth of grooving for vertical spindles of 130 mm ϕ	mm	25
Diameter of the cutting cutterblocks	mm	125
Speed of the horizontal cutterblocks	rpm	5.300
Number of blades of the horizontal cutterblocks		4
Cutting diameter of the vertical spindles with cutters	mm	180
Diameter of the cutting line of the vertical spindles with the cutterblock	mm	130
Speed of the vertical spindle with cutter- block	rpm	4.800
Speed of the vertical spindles with cutters (on request)	rpm	6.000
Advance speed, continuous variation	m/min.	from 3 to 20
Motor power for the planer cutterblock	H.P.	5.5
Motor power for the thicknessing cutter block	H.P.	7.5
Motor power for the vertical spindles (each one)	H.P.	4 or 5.5
Feeding motor power	H.P.	2
Net weight of machine	Kgs.	
Weight with seaworthy packing	kgs.	
Cubic contents	m3	
Space occupied by machine	mm	



2 - STANDARD AND EXTRA ACCESSORIES

2.1 - STANDARD ACCESSORIES

- 1- Set of blades by cutterblock, already mounted
- 2- Cutterheads in the respective spindles
- 1- Blades gauge of 400 mm
 - Spanner-wrench 14/15; 17/19; 20/22; 27/32
 - Hexagonal spanners M3, M4, M5, M6, M8, M10, M12
- 1- Pipe wrench for the vertical movement of the vertical spindles
- 1- Spanner for the transversal movement of the spindles
- 1- Small oil can
- 1- Lubricating pump
- 1- Operating instructions book

2.2- EXTRA ACCESSORIES

On request when ordering, the machine can be fitted with the following extra accessories:

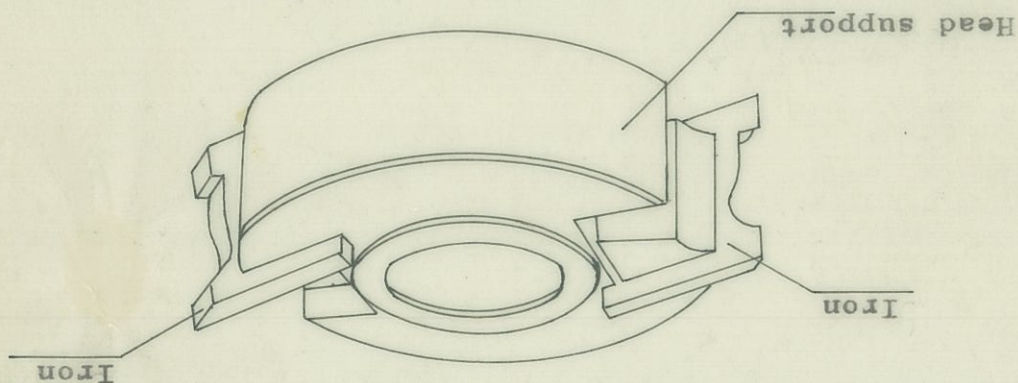
- 2.2.1 -Mechanical raising of table - obtained by independent electric motor and coupled reduction-gear.
- 2.2.2 -Presser and feeding rollers, fractionated, allow the simultaneous feeding of woods with different thicknesses (maximum difference 3 mm); it avoids oblique feedings.
- 2.2.3 -Machine prepared for coupling to an individual or collective system of shreds or dust suction - great advantage for a better working.
- 2.2.4 -Milling vertical spindles allowing a maximum cutting height of 150 mm.
- 2.2.5 -Milling vertical spindles with greater number of per minute rotations (6.000) in order to allow better works with cutters.
- 2.2.6 -Sets of universal cutterheads for moulding knives of 120x40, two adjusting knives of which are adjustable by millimetric screws (Pict.1).

The placement of the machine in the desired place is made with an adequate crane. For the suspension follow the plane of the picture 2 .
 It must be only used ropes (never chains) which must be fixed to the most steady parts of the machine.

3.1 - Transport (Pict.2)

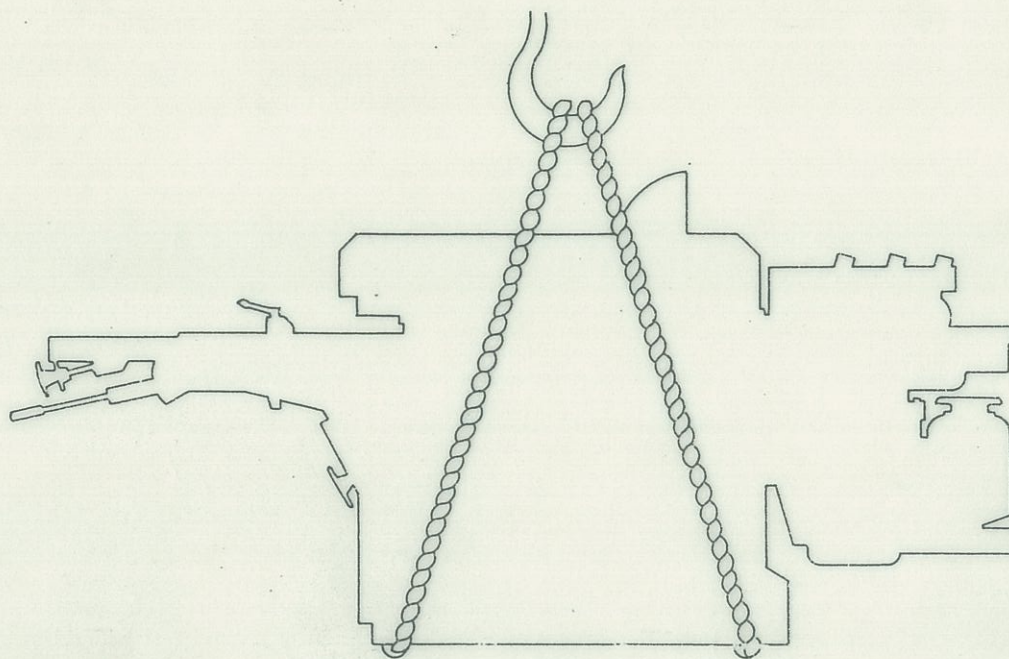
3 - MACHINE INSTALLATION

Pict. 1



IRONS CUTTERBLOCK

METHOD OF LIFTING



PICT. 2



So that the paint is not damaged, if possible, old clothes sack-clothes or bits of felt must be placed on the places where the ropes may be in contact with the paint.

If there is not a crane at our disposal, the machine can be transported over rollers.

3.2 - SETTING (Pict.3)

It is advised setting on an appropriate cavity as per indications by drawing 3-200.068 in order to allow a better access to the interior of the machine for cleaning, lubricating and making little adjustments when necessary.

3.3 - CLEANING

The worked surfaces of the machine are protected with lubricating grease to prevent oxidations. If it is verified that during the transport there was an accumulation of dust, those surfaces must be cleaned and when necessary, the lubricating grease replaced.

The machines with seaworthy packings are protected with anticorrosive varnish. That varnish must be cleaned with petroleum or any other diluent. When cleaning do in such a way that the diluent does not reach the paint as it can be danified.

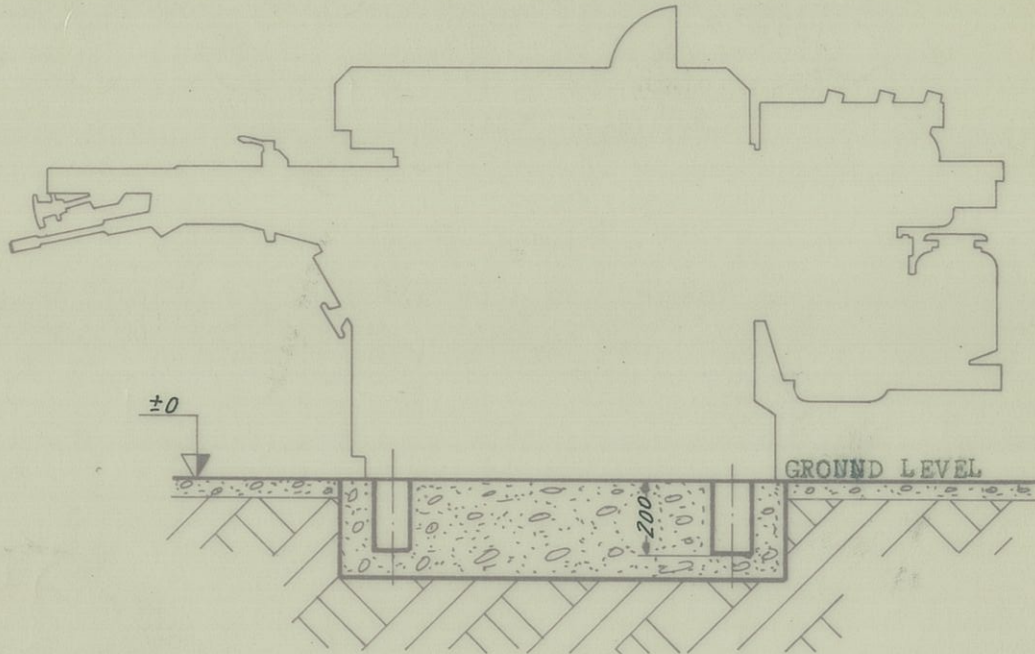
3.4 - ELECTRIC CONNECTION Pict.4




The machine has two types of electric connections, the client having the possibility of choosing any of them.

3.4.1- WITH THE DEVICES OF ELECTRIC CONTROL PLACED IN THE VERY BODY OF THE MACHINE

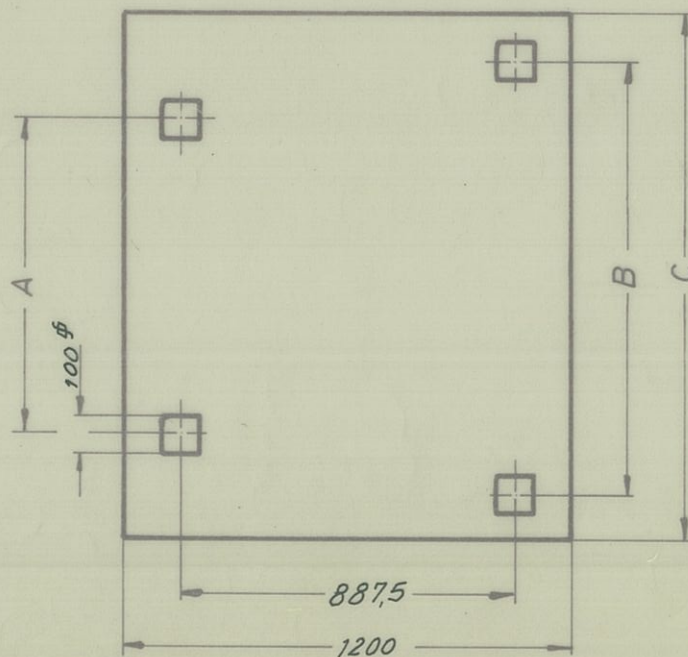
In this case it is only necessary to effecte the connection of the terminal box to the power supply system according the scheme of pict.4 included in this instructions book. We advise this connection to be made by a competent electrician and that fuses are mounted in the wiring for protection of the installation and of the motors against short-circuits as well as the connection of the machine to the earth for protection of the workers.

FOUNDATION PLAN (MACHINE WITHOUT OUTFEED DEVICE)



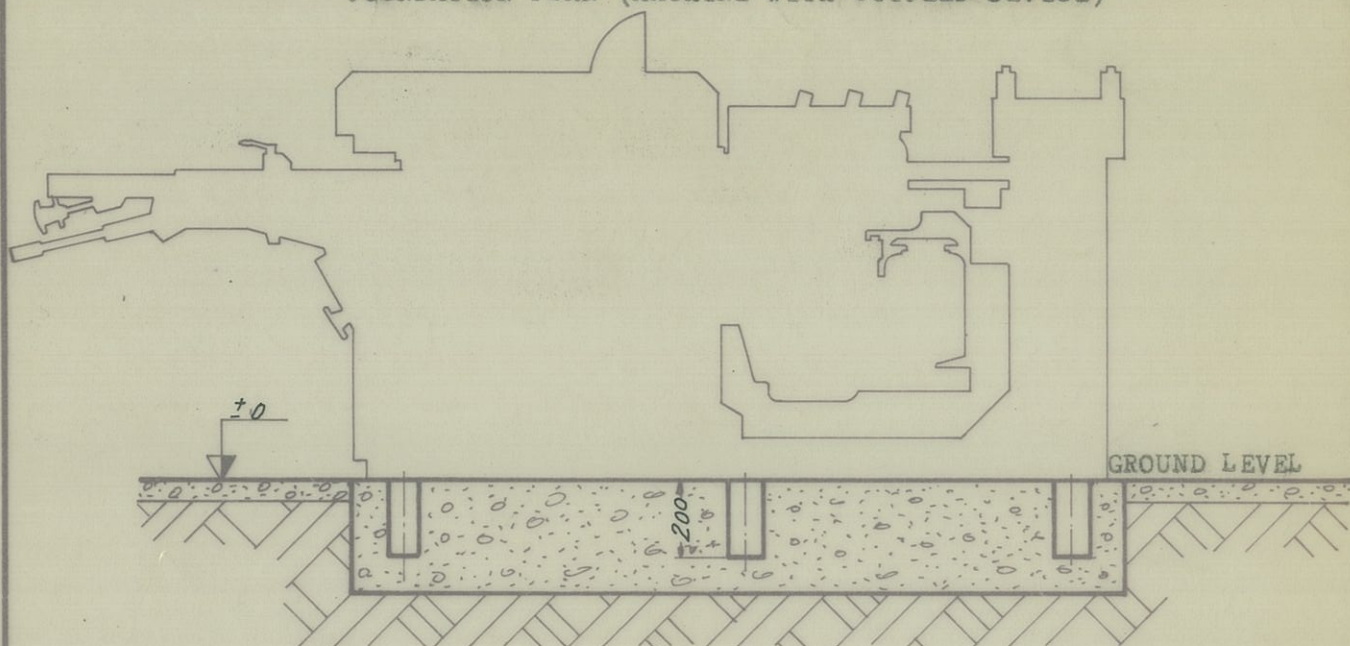
	Foundation	concrete + iron
	ballast and wall	concrete
	Ground	

WALL
1000
Min. distance
up to the wall






	MF4 510	MF4 630
A	720	840
B	1020	1140
C	1300	1400

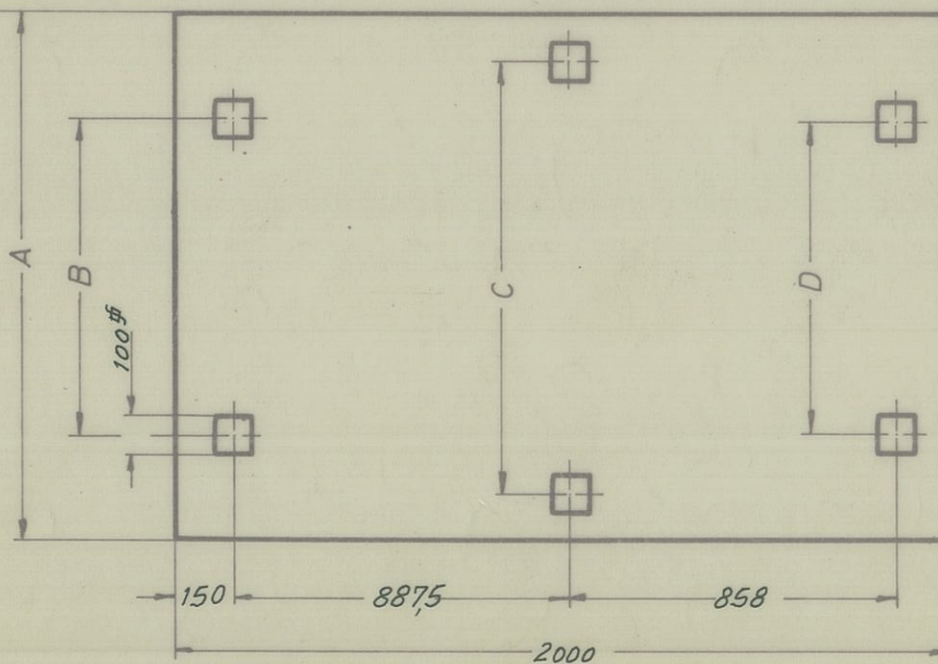
FOUNDATION PLAN (MACHINE WITH OUTFEED DEVICE)



WALL
Min. distance up
1000
to the wall

	FOUNDATION	Concrete Iron
	Ballaste and wall	Concrete
	Ground	

	MF4 510	MF4 630
A	1300	1400
B	720	840
C	1020	1140
D	700	820



3.4.2 - WITH THE DEVICES OF ELECTRIC CONTROL INSTALLED IN A SPECIAL CABINET, INDEPENDENT OF THE MACHINE

In this case it is necessary to make first the connections of the terminal box of the machine to the cabinet and then are made the connections of this to the power supply system as per scheme of Pict.4 and following the same indications of the last paragraph.

The regulation of the protection relays of the motors against overcharges is made at our factories for the nominal intensity of the motors and must not be modified under any pretext.

As information, we present afterwards, a map with the wiring to be used, according the motor power and voltage of utilization.

Wiring [mm2 of copper]

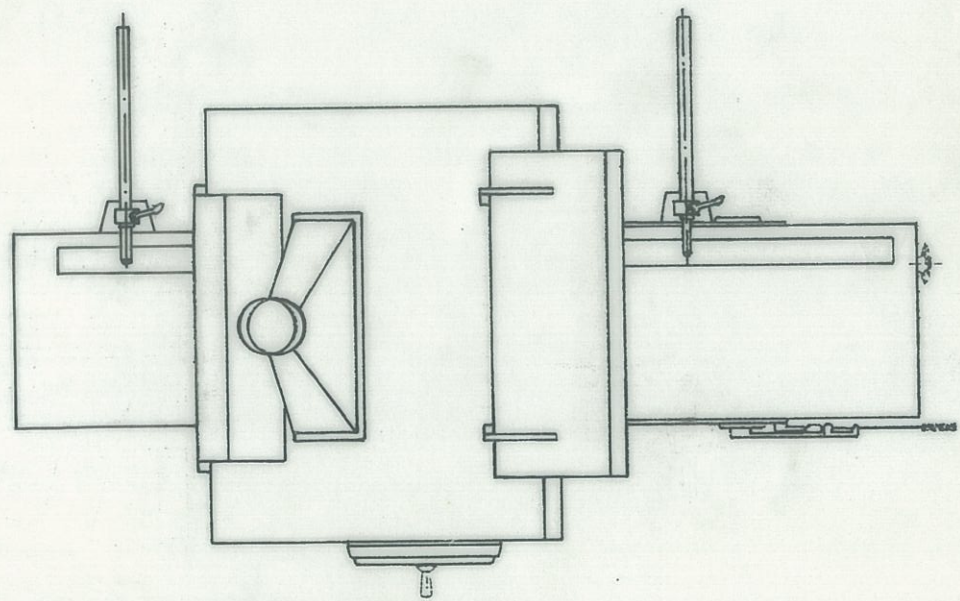
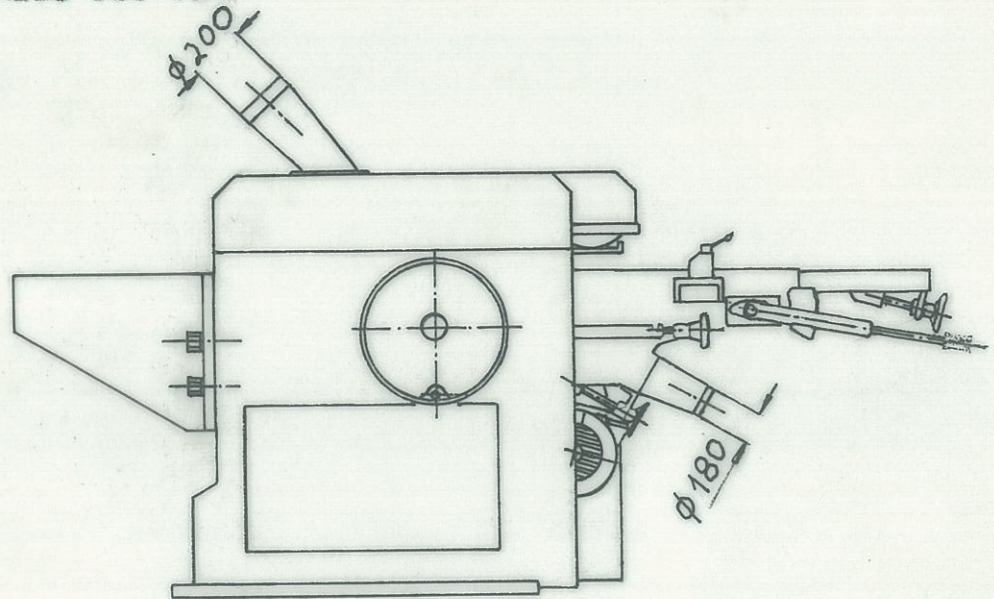
Power [KW / HP]	Tension [V]		
	220	380	500
1.5 / 2	2.5	2.5	2.5
3 / 4	2.5	2.5	2.5
5.5 / 7.5	6	2.5	2.5
7.5 / 10	10	4	2.5
11 / 15	16	6	4
15 / 20	16	10	6

3.5 - CHIP EXHAUST (only on request) Pict.5

A good and quick exhaust of the shreds makes easier the work and the cleaning of the machine and of the workshop. For connection to a system of chips exhaust eventually existing, the machine can be fitted on request with a funnel for shreds suction.

Between this funnel and the suction piping existing, must be placed a flexible pipe of such a length that it does not interfere with the opening of the covers or the driving of the machine.

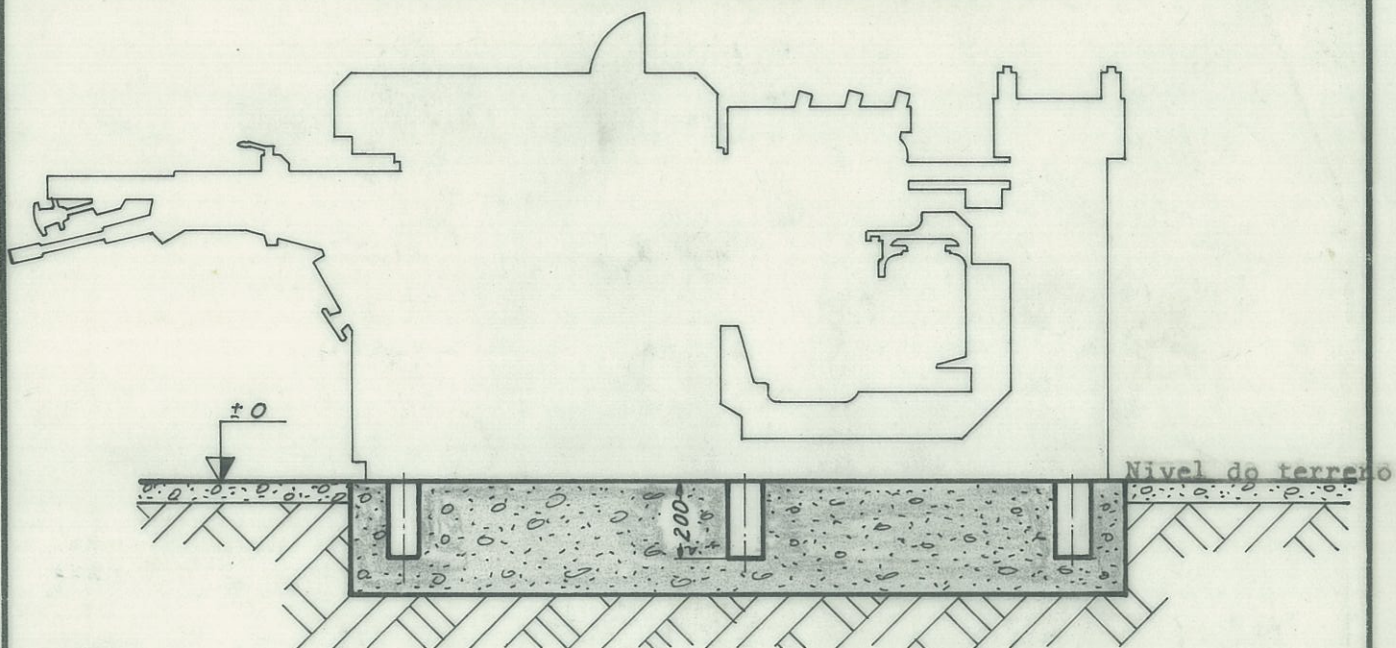
PUTTING INTO POSITION AND DIMENSIONS OF THE OUTLET FOR THE
SYSTEM OF SHREDS SUCTION



EXHAUST REQUIREMENTE

6000 M³/H
30 M/S







PLANO DE FUNDAÇÕES (máquina c/ extração)



PAREDE

Limite mínimo 1000

a parede

	Maciço		Betão + ferro
	Lastro e parede		Betão
	Terreno		Terra

	MF4 510	MF4 630
A	1300	1400
B	720	840
C	1020	1140
D	700	820

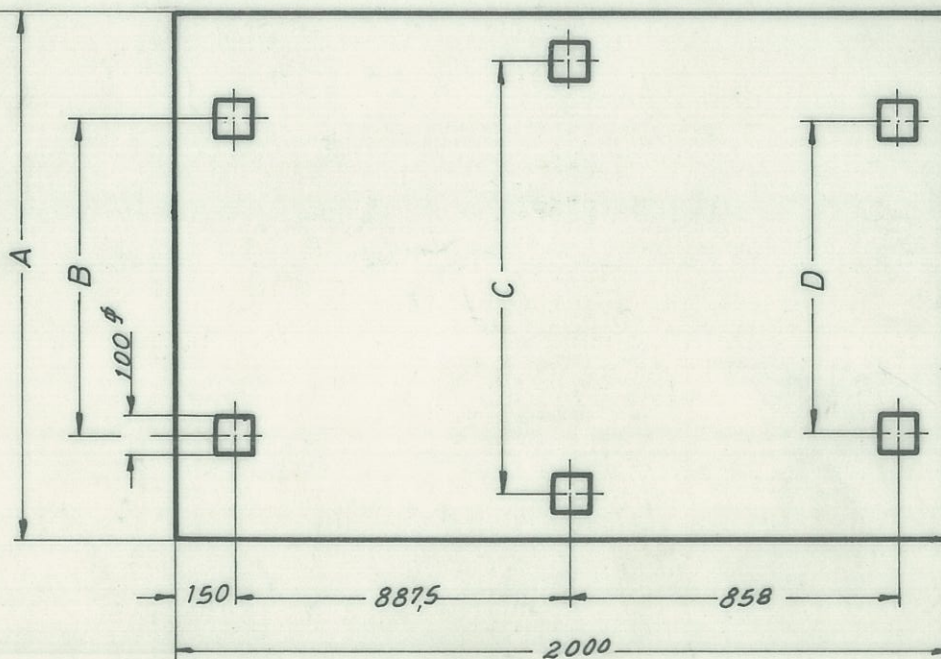


Fig 4

This intercalary must be made of a soft material to prevent transmission of noises.

4 - DRIVING (Pict.6)

4.1 - Starting and operation

Since the electric connection is carried out, the machine is ready to start working. For this it is enough to switch on the general switch and afterwards take the starters to the first position (Y), await 8 to 10 seconds and afterwards take them to the working position ().

In machines with automatic installation it is enough to press the starter push button. Nevertheless never put wood on, without the cutterblock has attained the maximum of rotation.

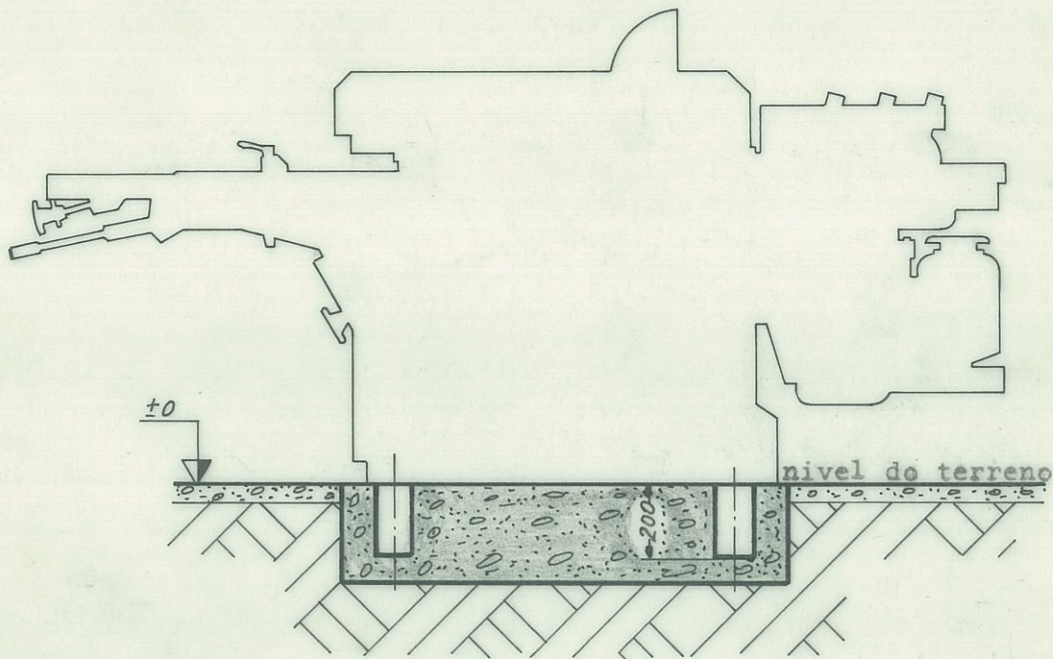
Before beginning the first work it is convenient to make the machine work without charge during a few minutes and lubricate all the points of manual lubrication with oil. All the bearings have been lubricated at our factories on account of which they have lubricator for the period indicated in the lubricating map.

The machine leaves our factory ready to enter in operation. The position of the pressing bars and of the superior feeding rollers is such that it is necessary a new adjustment. The smooth rollers of the table are ± 0.3 mm above it. This position is ensured by means of pressing screws and lock nuts. If it is necessary to place the rollers a little above (green and twisted woods) it is enough to turn on the manual flywheel 1 in the case of the rollers of the planer and in the manual flywheel (39) in the case of the thicknesser.

4.2 - WOOD FEEDING

The automatic feed of the wood is driven by the levers (36) and (37). The first is used to switch on or off the feed as well as to place each one of the 2 speeds. The second is used to choose the different advances of the wood within each speed.

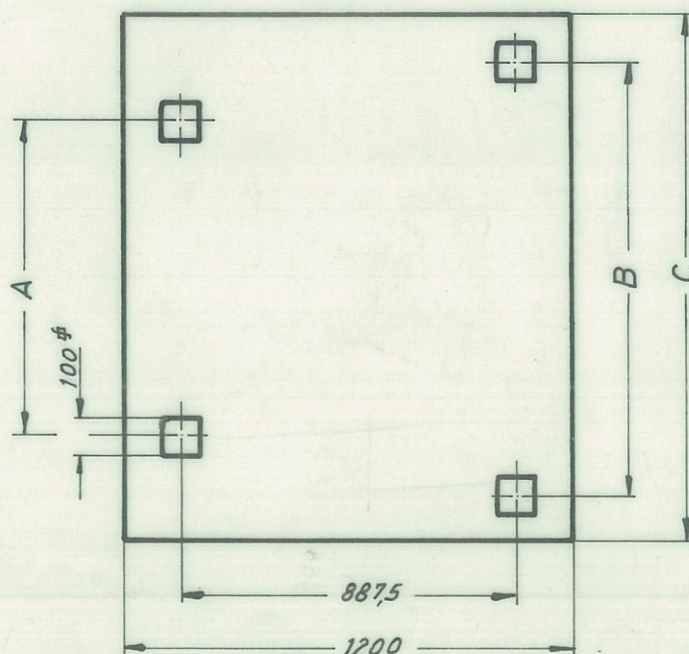
PLANO DE FUNDAÇÕES (Máquina s/ extração)



	MACIÇO	Betão + ferro
	LASTRO E PAREDE	Betão
	TERRENO	TERRA

Fig 3

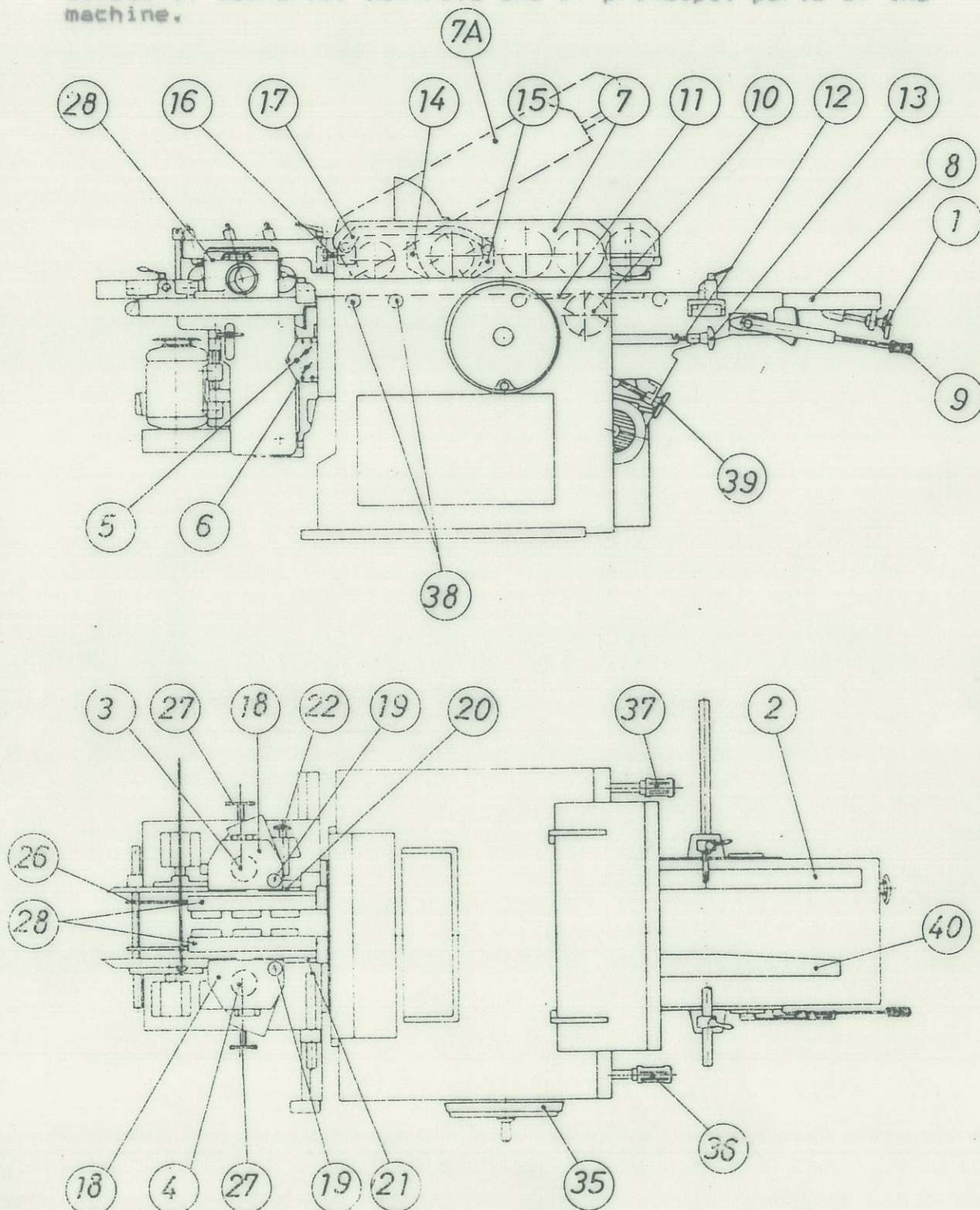
PAREDE
Limite mínimo
aparede 1000



	MF4 510	MF4 630
A	720	840
B	1020	1140
C	1300	1400

5

Scheme of mechanical controls and of principal parts of the machine.



pict.6



The choice of the most adequate speed must be made according the nature and quality of the wood to be worked and according the depth of cut we want to give.

VERY IMPORTANT - The manoeuvre of these levers must be only effected with the feeding motor switched on.

4.3 - WORK AS THICKNESSER OR TWO-SIDED MACHINE.

If we want to use the machine to thicken 1 or 2 sides, the ruler 2 placed on the right of the table must be put to the side. For that, we make pression on the manual flywheel 22 which serves also for small precision settings of the referred ruler. The supports of the spindles 3 and 4 can also be taken intirely out by means of the lateral regulation shafts 5 and 6. For use as one-sided thicknesser, the inlet table of the planer must be taken to the position Q by means of the lever 9 and the cutterblock of the planer must not be put on.

4.4 - WORK AS THREE-SIDED MACHINE

The machine leaves our factories prepared for that effect. It is only necessary to take the inlet table of the planer for the position Q by means of the lever 9 of quick regulation and not put on the cutterblock of the planer.

4.5 - WORK AS FOUR-SIDED MACHINE

The machine leaves our factories adjusted and prepared for that effect on account of which it is only necessary to regulate: the cutting thickness of the planer actuating in the regulation lever (9) of the inlet table of the planer; the thicknessing height actuating in the flywheel of table raising (35); and the position of the vertical spindles actuating in the shafts of the transversal movement (5).(6) and in those of raising of the spindles (19).

IMPORTANT NOTE: Both in the work as machine of three-sides and as four-sides, it is necessary to pay attention to the system of stopping the vertical spindles (27) which must be relieved before the respective motors are switched on as otherwise great averages can occur in the machine.

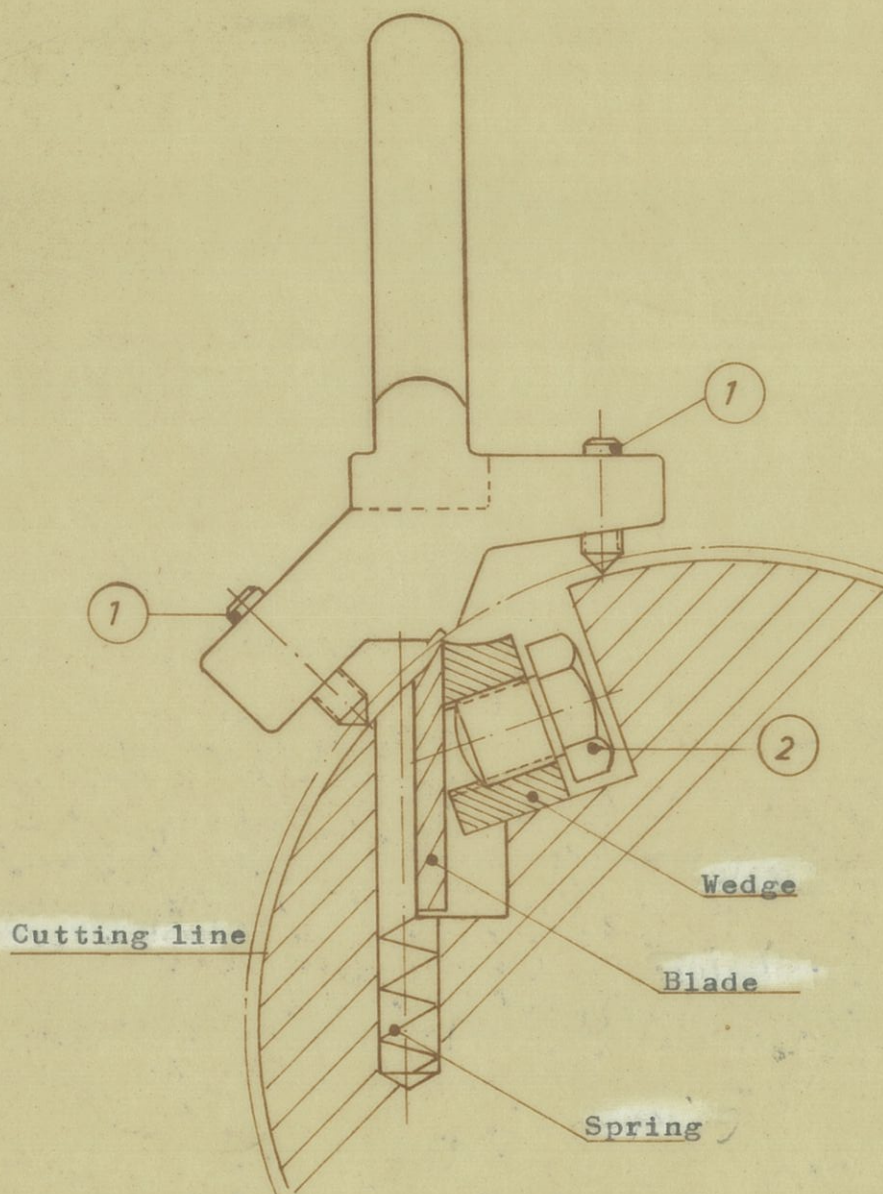
Have also in attention that when beginning with free running, the vertical spindles must be switched on one by one.

4.6 - BLADES GAUGING (Pict.7)

It is most important obtain always a rigorous gauging, not only to obtain more perfection of the planed surface as well as to insure a total utilization of all blades and consequently increase the cutting output. In this regard it must be noted that not well gauged blades have greater wearings in the salient points, which shortens greatly the life and increases the sharpening costs. In order to insure a perfect gauging of the blades of the cutterblocks and of the vertical spindles, it must be proceeded in the following manner:

- 1: - Place the first blade in the cutterblock
- 2: - Put the gauge in the position indicated in pict.7 and with it push the blade until the four bolts (1) are very well set on the cutterblock.
- 3: - Hold the gauge with one of the hands and with the other adjust the screws (2) making use of the narrowest part of the spanner 17. Begin always by the central screws and then continue alternatively to the extreme ones.
- 4: - Take out the gauge and make the last tightening of all screws with the strongest part of the spanner.
- 5: - Repeat these operations for the remaining blades never forgetting the last tightening of all screws.

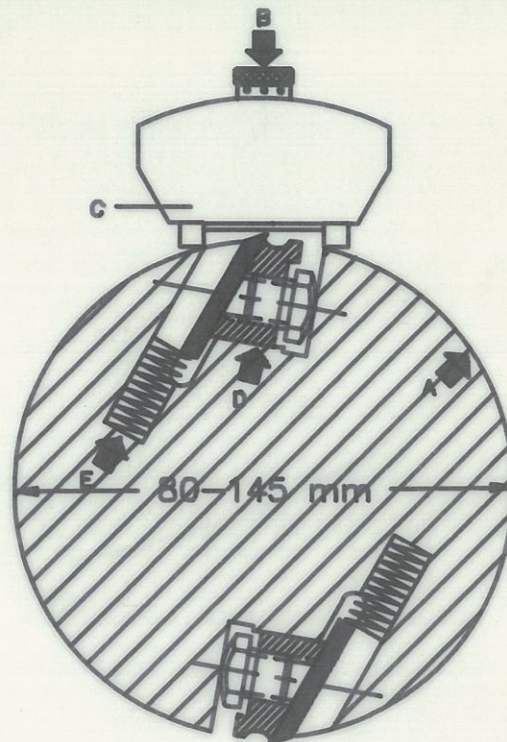
BLADES GRANGE



Pict. 7

9

**ADJUSTABLE MAGNETIC
QUICK SETTING**



OPERATING INSTRUCTIONS

Take care that clamping surface and wedges of cutter blocks are always clean. The knives should be sharpened honed and balanced always per SET. The normal projection of the knives over the body of the cutter block is 1,5 mm. This corresponds to a projection of the knife at the chip breaker lip of the wedge of 0,7 to 0,8 mm.

Adjust the projection of the knife as follows. Put the setting device on the body of the cutter block (not within the range of the cutters) and turn the brass stop with the set nut unto the diameter of the body. By turning the set nut unto the diameter of the knives of 1,5 mm. (1 point at the neck of the nut corresponds to 0,1 mm).

Then insert the knives, push it with a piece of wood into the slot of the cutter block and tighten it slightly.

Put setting device on the cutter block as illustrated and loosen the clamping wedge of the knife. the spring will then push the knife toward the stop. then retighten the clamping wedge from the center outwards and do not tighten one jack completely but tighten each one slightly and go around the head several times until proper tension is on knife jack the adjustment is completed.

Do not put the setting device on the cutter block in an oblique manner as this would result in inaccuracy.

DO NOT EVER USE A WRENCH LARGER CAUTION YOUR OPERATOR AGAINST USING SUCH A WRENCH AS TOO MUCH PRESSURE MAY BE APPLIED.

If there is not such a care, the blades could be loosened and provoke serious damages on the machine.

IMPORTANT NOTE: - Never increase the length of the spanner, as an excessive pressure can deform the rims of the thread and give origin to them breaking during the work.

On the other hand, the screws 2 must be periodically lubricated.

For another cutting line of the cutterblock, the gauge supplied must be adjusted, regulating conveniently the bolts (1).

5 - MAINTENANCE

The Pinheiro Machines have been studied and produced in order to require a minimum of cares of the user. Nevertheless in order to obtain a maximum output and durability it is necessary to pay attention to the following cares:

5.1 - CLEANING AND LUBRICATION

The woodworking machines are constantly exposed to dusts resultant of the very work. These dusts amounting themselves successively give origin to pernicious frictions. On account of this, a work of cleaning must be weekly effected, giving a special attention to the moving organs and to those which, by their function require special cares.

After this, a careful lubrication must be effected. In order to make easier the operations, we ask your attention to the lubricating map (Pict.8) which indicates the principal points to lubricate and the way of making it.

Besides the points indicated, there are others, such as the gearings and screws of table raising and of the movement of the vertical spindles, carriages, sliding joints and in a general way all the points with any movement, ^{which} must be periodically lubricated, not only to prevent wearings but also to guarantee a perfect working of all mechanisms.

INSTRUCTIONS FOR VARIATOR MAINTENANCE "SIMPLABEI"

LUBRICATION PERIOD: Once a week or after 40 hours of service (in case it works 8 hours a day).

If there is excessive warmth, dust or wetness lubricate more often.

REMARK: When lubricating lubricator 1 pay attention that grease gets effectively in so that grease pellicle may cover all teeth.

USE ONE OF THE FOLLOWING LUBRICANTS

MOBIL - MOBILUX GREASE 2

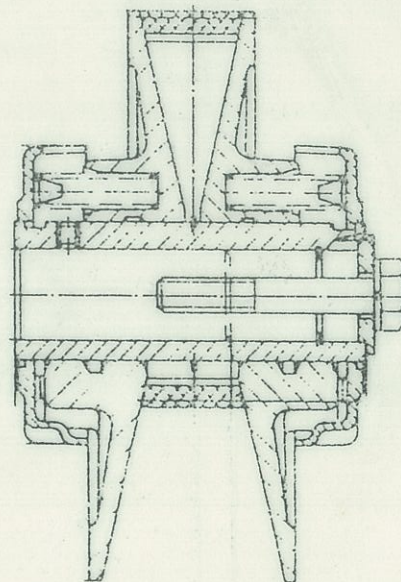
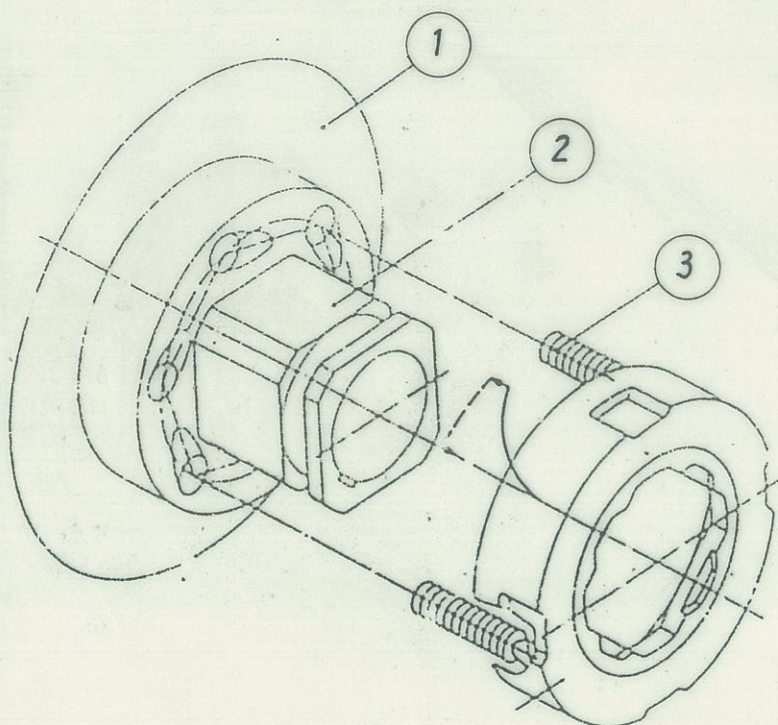
SACOR - BELONA 2

SHELL - ALVANIA EP GREASE 2

BP - ENERGREASE LS 2

SONAP - GL/2

ESSO - BEACON 2



IMPORTANT: Do not operate the variator lever when the motor is stopped.

In this field have always present that excessive or too many lubrications are more prejudicial than advantageous. The excess of lubricator, mainly the grease in the supports and bearings, provokes dangerous heatings which can provoke serious damages.

In the bearings of the cutting cutterblocks, must be used a consistent grease of good quality of degree 2.

When the machine leaves our factories all the points are lubricated.

The electric installation must also be cleaned periodically with compressed air and the contacts lubricated with vaseline. When effecting this service do not forget to switch off the general switch of the line or even take the fuses.

It is convenient to dismount and clean the motors every 2 years. At that time, change the bearings grease and verify the state of it.

As accessory a pressure pump is delivered to lubricate again the bearings. Before applying it clean well the lubricating points so that no dirtiness enters.

5.2 - ADJUSTING THE PLANER CUTTERBLOCK (Pict.6)

The superior armour-plate (7) must be raised in such a way that it is in the position (7a). The inlet table of the planer (8) must be lowered as much as possible by means of the lever of quick regulation (9). At that time we will have the interior cutterblock (10) well visible and accessible so that it is possible to use the gauge sent for the blades setting. The cutting line of the cutterblock must be tangent to the outlet table of the planer (11). In order to adjust the cutting thickness, the inlet table (8) must be regulated by means of the regulation lever (9). The lateral bars (12) of both sides of the table allow a vertical setting of the cutting cutterblock of 0,35mm down and 0,35 of the table.

5.3 - ADJUSTING THE THICKNESSER CUTTERBLOCK

When lifting the armour-plate (7) the thickening cutterblock is at hand. With it we can groove until 20 mm of depth, since the pressers (14) and (15) are dully removed from the cutterblock for that effect. Those pressers are movable in order to give a better tightening against the wood and be possible its adjustment.

5.4 - ADJUSTING THE MILLING VERTICAL SPINDLES (Pict.6)

Opening the covers of the armour-plate (18), we can actuate on the raising screws of the vertical spindles (19) in order to regulate them in height. In order to regulate the cutting depth we can actuate on the fences (20) and (21) as well.

When using the vertical spindles to mill, it must be taken in attention that the grooving cutter must be placed in the right cutterblock when the tonguing cutter is in the left cutterblock.

5.5 - ADJUSTING THE FEEDING ROLLERS (Pict.9)

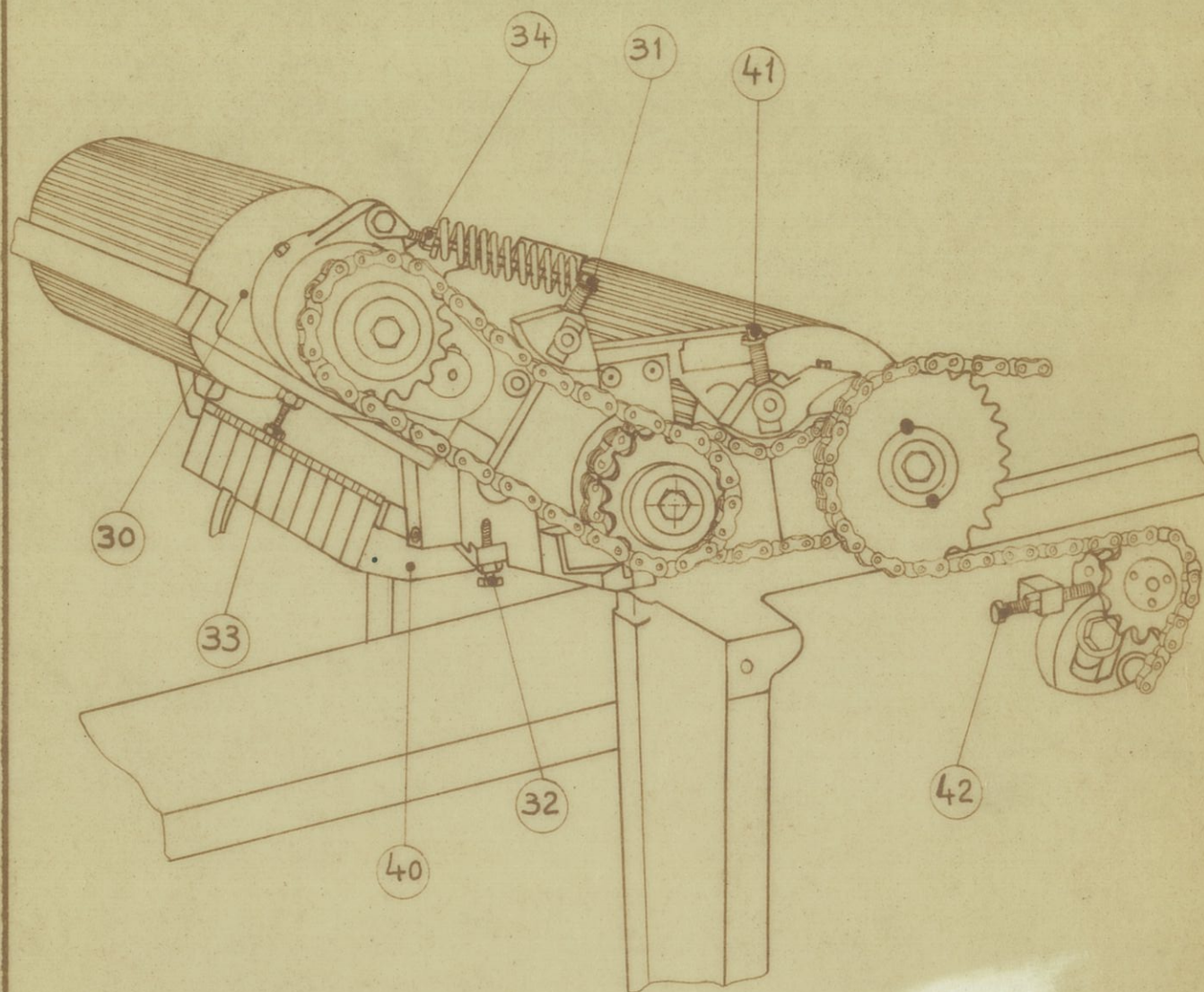
The machine has 3 grooved feeding rollers, the first of which (30) has as function, to feed authomatically the machine and consequently increase a great deal its output. If there is convenience in making the manual feeding, this same roll can be lifted and so put out of its previous function. For this take out the screws (31) from both sides of the machine and loosen the screws 32.

In order to adjust this roll in height and depth actuate on the screws (33) and if it is necessary tension the spring, make it through the screws (34).

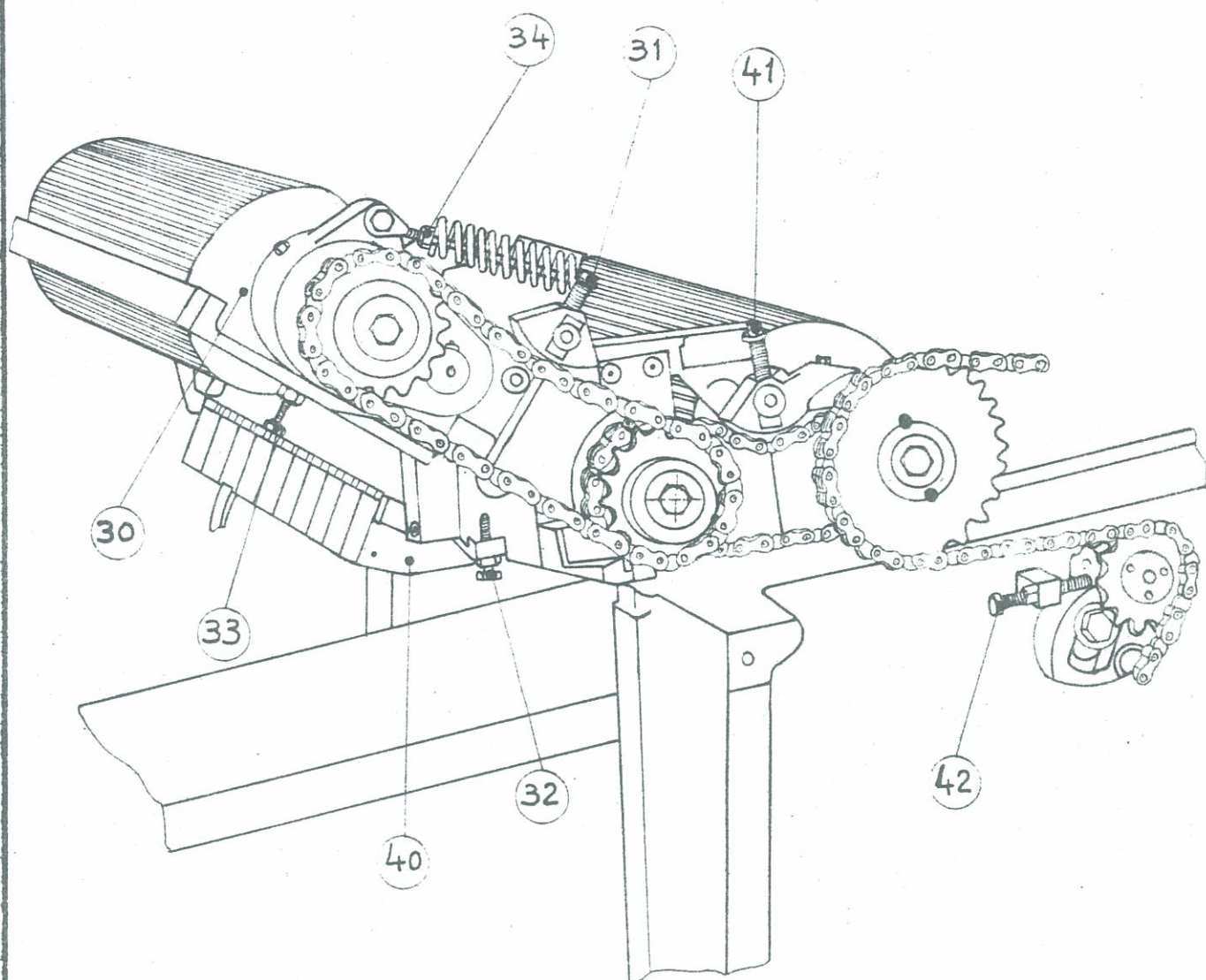
5.6 - ADJUSTMENT OF THE PRESSERS

The principal function of the pressers (40) it is to give a greater support to the wood and preventing it from vibrating near the cutting zones. If with time passing, the wood begins coming out twisted it is because the

11



Pict.9



Pict.9

pressers are not actuating conveniently. Usually it is enough to give more pression to the springs, so that all is well. It can also happen that some wood-shavings have entered into the supports preventing them from going down or then that the screws have loosened themselves. In the first case it is enough to raise them up and take out the shavings; in the second it is necessary a new regulation of the screws in such a way that the inlet presser actuates at 1 mm of the cutterblock cutting line and the outlet one at 0.4 mm.

5.7 - ADJUSTMENT OF FENCES (Pict.10)

The regulation of the fence-guide (2) and of the fence of the right vertical spindle outlet is made according the schemes of Pict.10.

5.8 - TABLE POSITIONING AND ELIMINATION OF CLEARANCES

If with the wear, a bad position of the table is verified, represented by non uniform thicknesses on the width of the thickened wood, we can eliminate this fault unscrewing the nut of the raising screw in one side and turning it over in the way indicated, until the leveling is correct.

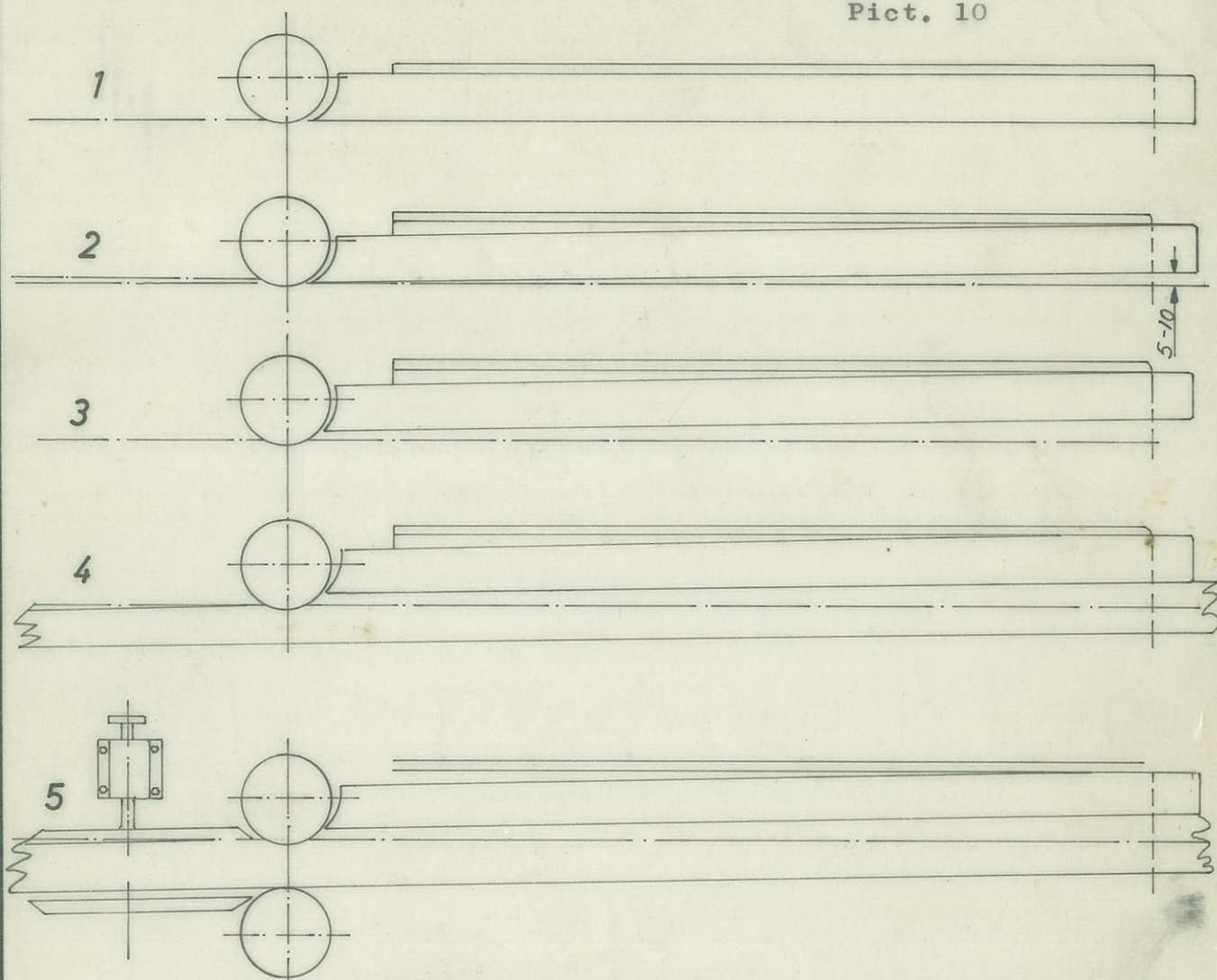
If on the other side, the table is only levelled in the direction of the wood inlet, actuate on the screws which tighten the wedges in such a way to remake a good adjustment of the table to the guides of the frame.

5.9 - TENSION OF BELTS AND CHAINS

Deserve also a special attention the driving belts used in the machine. As they dilate in the first times of service, they must be adjusted latter, according what is necessary. The same happens with the roll chains which drive the cylinders of authomatic advance of the wood. These chains must be cleaned often and lubricated with grease from time to time.

Regulation - adjustment of the fences

Pict. 10



In order to regulate the positions of the guide-ruler of the planer table with the fence of the right vertical spindle, actuate in this manner:

- 1 - Place the fence guide ruler besides the planer table and lined up by the fly circle of the right vertical spindle.
- 2 - Afterwards tilt its anterior part 5 to 10 mm according the smaller or greater length of the wood to be worked.
- 3 - Regulate the wanted cutting thickness.
- 4 - With the machine switched on, make a wood plank sufficiently long pass so that it sets on the guide-ruler and goes over the fence of the right vertical spindle.
- 5 - Afterwards adjust this fence against the planed wood.

For the adjustment of it actuate on the respective stretchers (41 and 42)

The V-belts must be only slightly stretched.

5.10 - REPLACEMENT OF BEARINGS

It is convenient do not forget that the bearings are replacement organs estimated by the manufacturer for a determined number of working hours. So, when necessary, it must be done the replacement of them, using the services of a specialized worker.

The reference of the bearings fitted on the machine is indicated in the drawings of the spare parts, so that new bearings can be obtained with the due antecedence.

6-SPARE PARTS

In order to avoid delays and errors in identifying the ordered parts, you are kindly request to give the following informattions when placing your order:

- Type and model of the machine they are intended to:
- Serial number of the multiface machine;
- Reference of the spare part according to the correspondent drawing;
- Number of parts required and delivery instructions.



Setting the bottom feed rolls and the bottom head

It is very importante that the bottom head cut line is level with the main table, or a litle higher (0.1 mm) maximum.

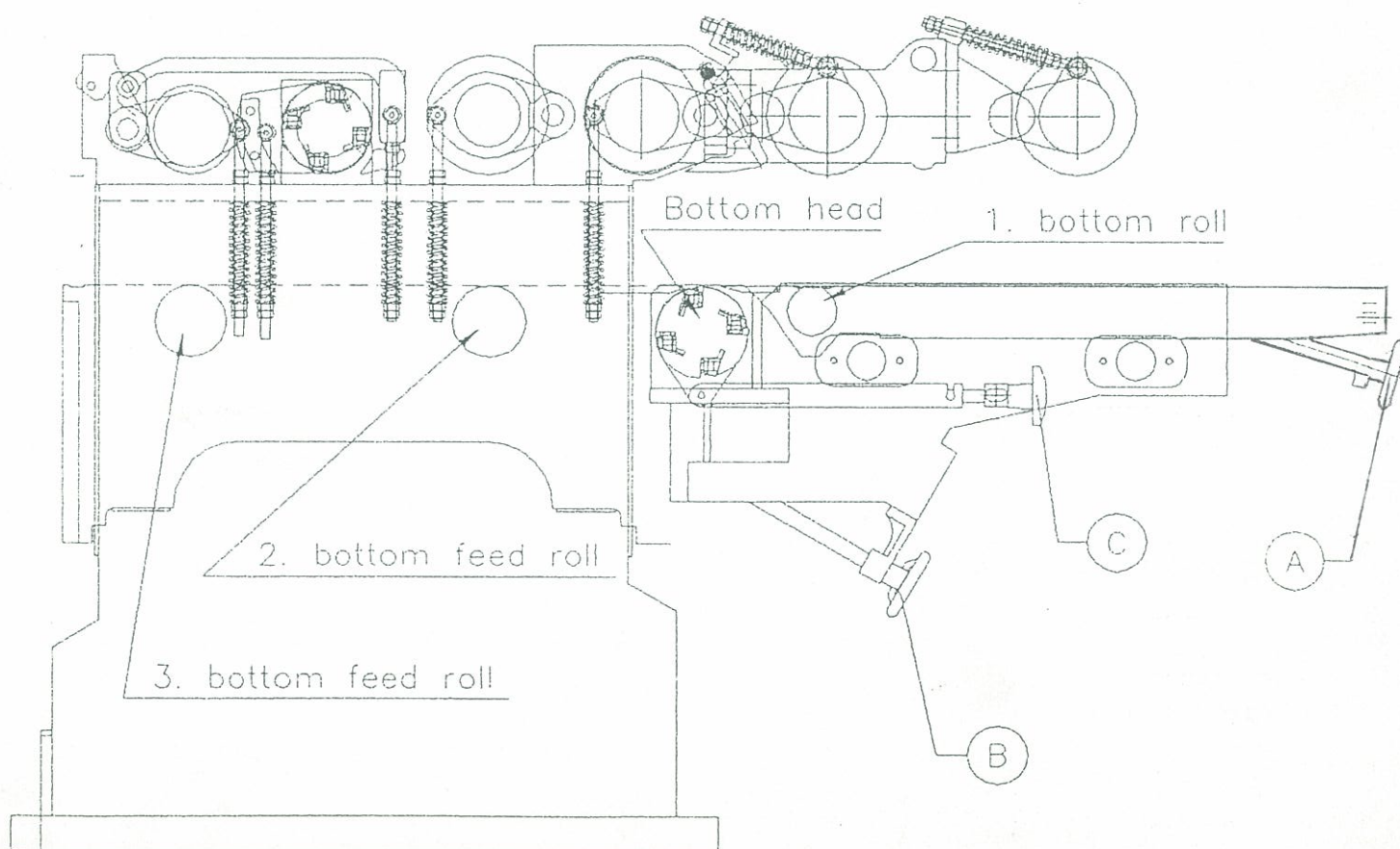
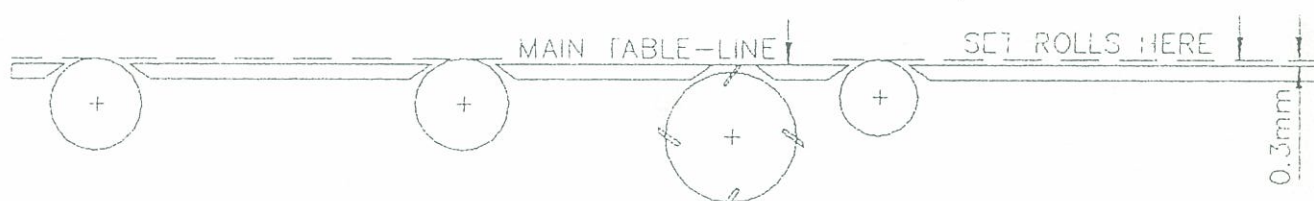
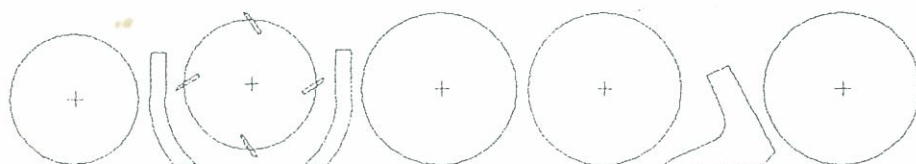
Bottom head cut line higher then the main table.



Bottom head cut line bellow the main table.



1. The handle A is to set the 1. bottom roll hight.
2. The handle B is to set the 2. and 3. bottom feed rolls hight.
3. The handle C (right and left sides) are to set the bottom head hight.





Setting the top feed rolls and the pressure systems

It is necessary one board with 25x250x2000 mm or dimensions similar to these.

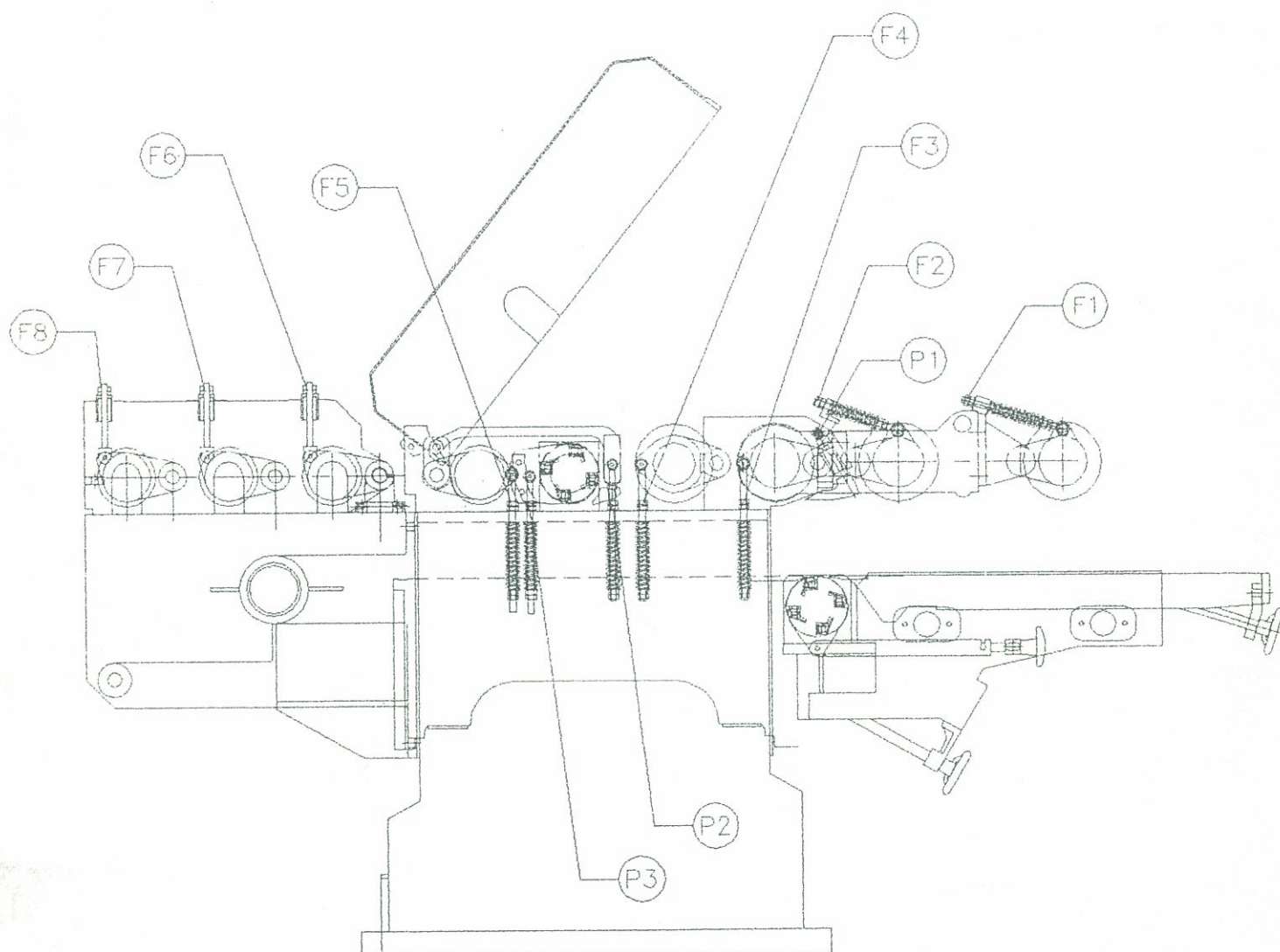
1. Plane top and bottom the board.
2. Without change the thickness set the infeed table to 0 mm cut
3. Feed the board again. This time top and bottom head don't remove material
4. when the board is under all the feed rolls, press the emergency stop
5. Now, because the board is level with the top head it is easy to see and to set the high of the feed rolls and the pressure systems.

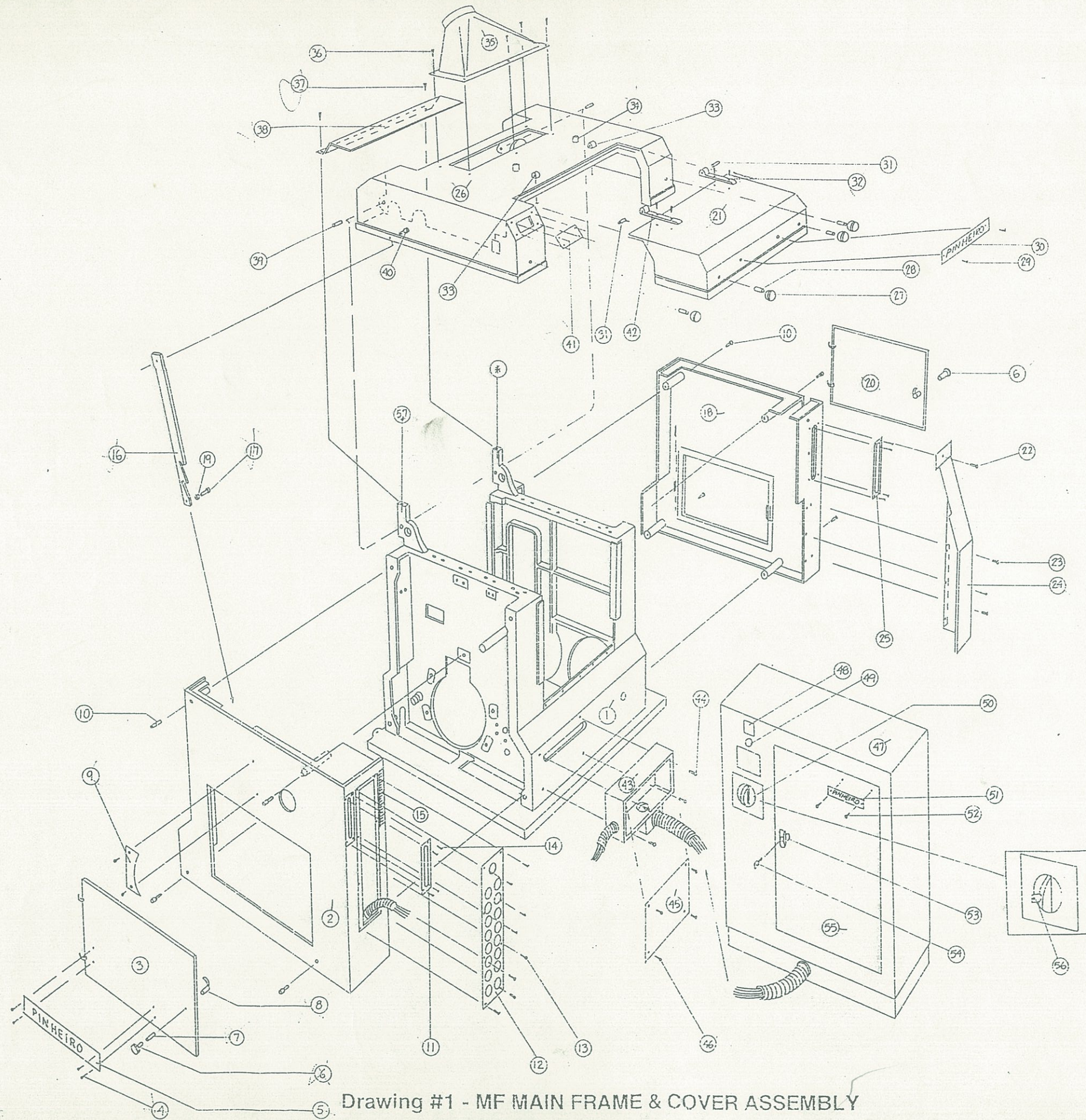
To do that set the gap between the nuts F and P to the following dimensions

Nuts F1,F2,F3,F4,F5,F6,F7,F8 aproximatly 1mm

Nuts P1,P2,P3 aproximatly 0.5 mm

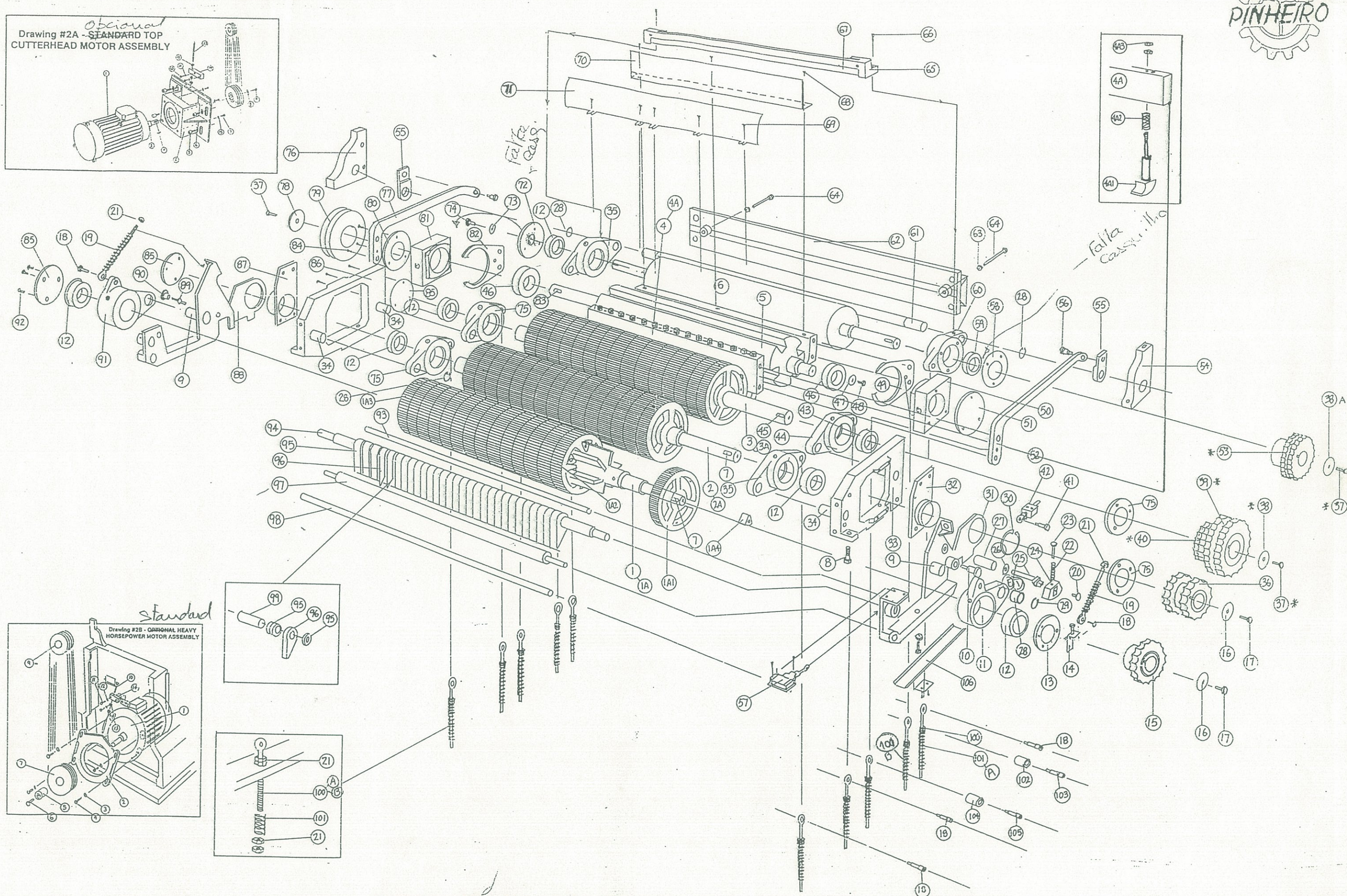
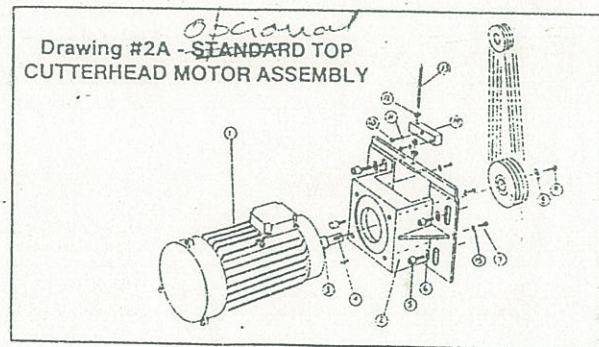
NOTE: This dimensions must be equal on both sides



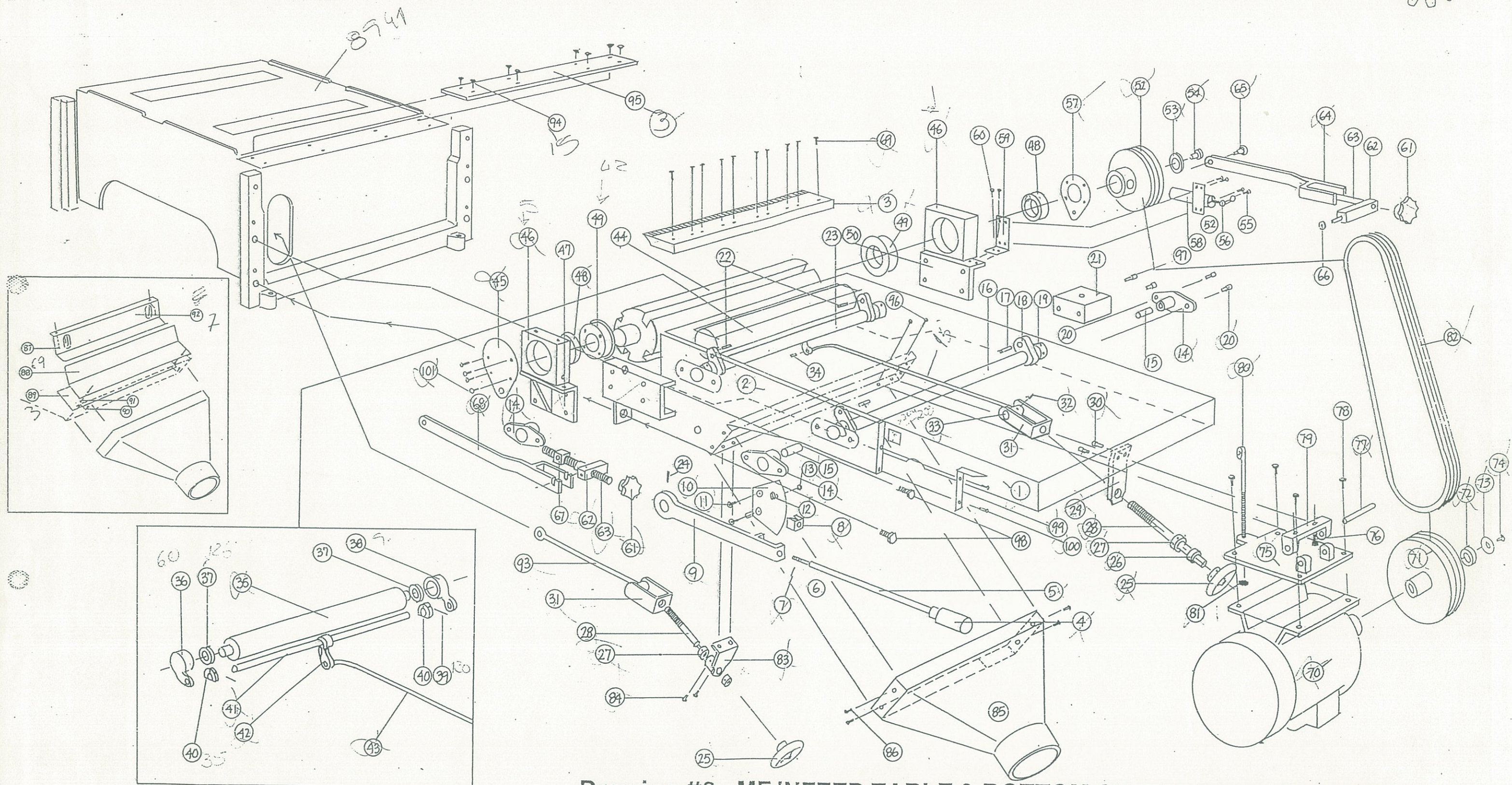


Drawing #1 - MF MAIN FRAME & COVER ASSEMBLY

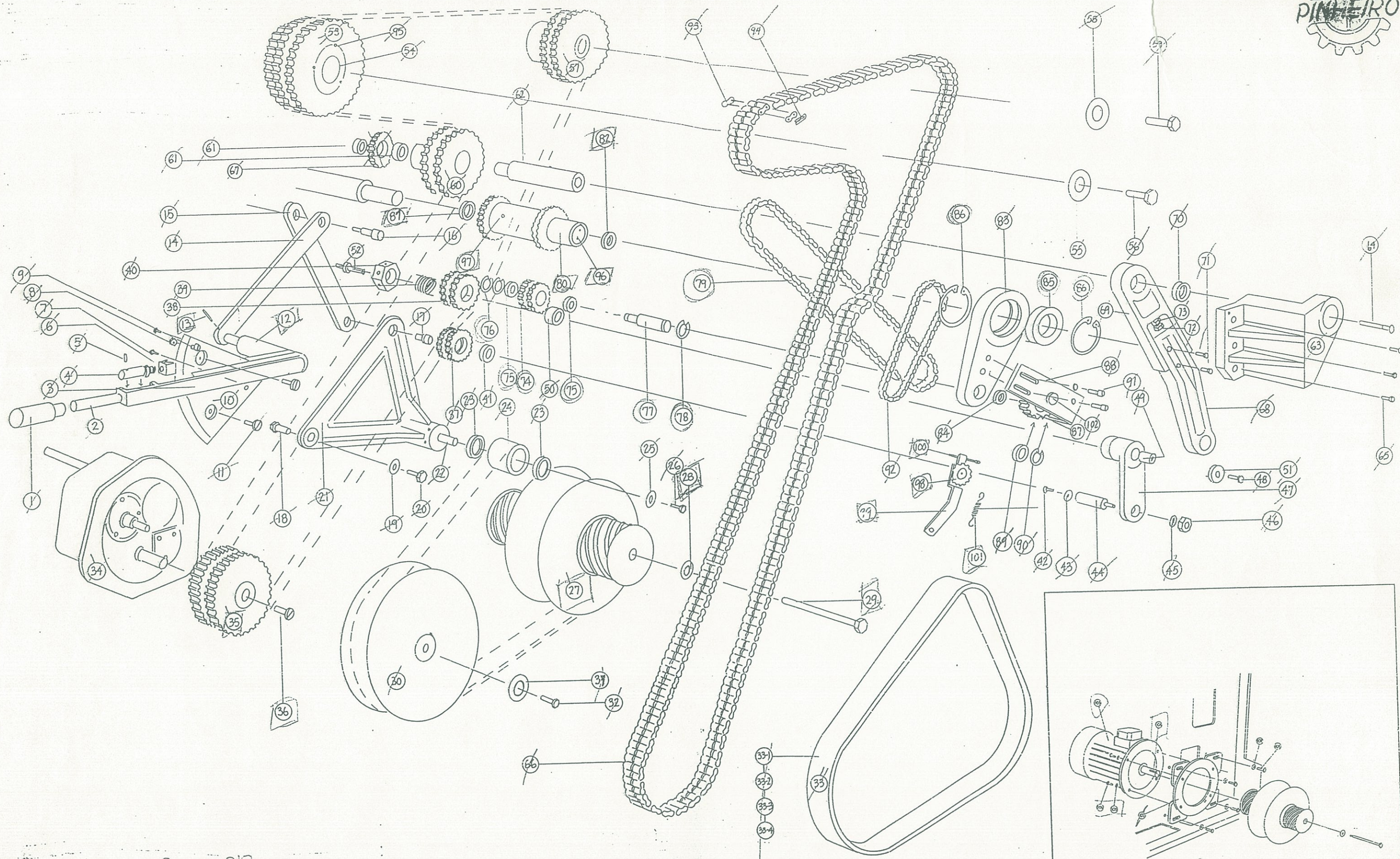




Drawing #2 - MF TOP FEED ROLL & CUTTER HEAD ASSEMBLY

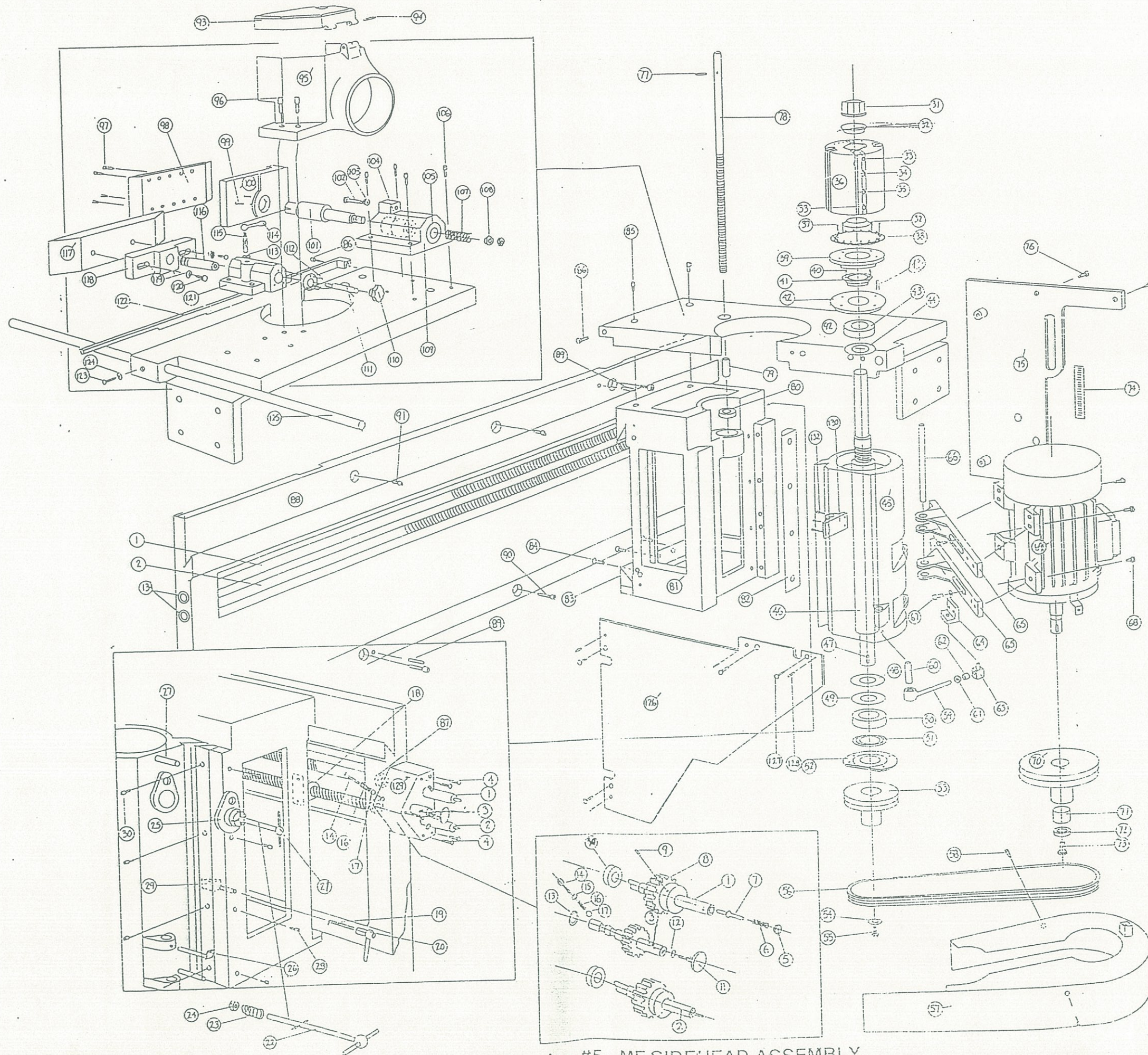


Drawing #3 - MF INFEED TABLE & BOTTOM CUTTER HEAD ASSEMBLY



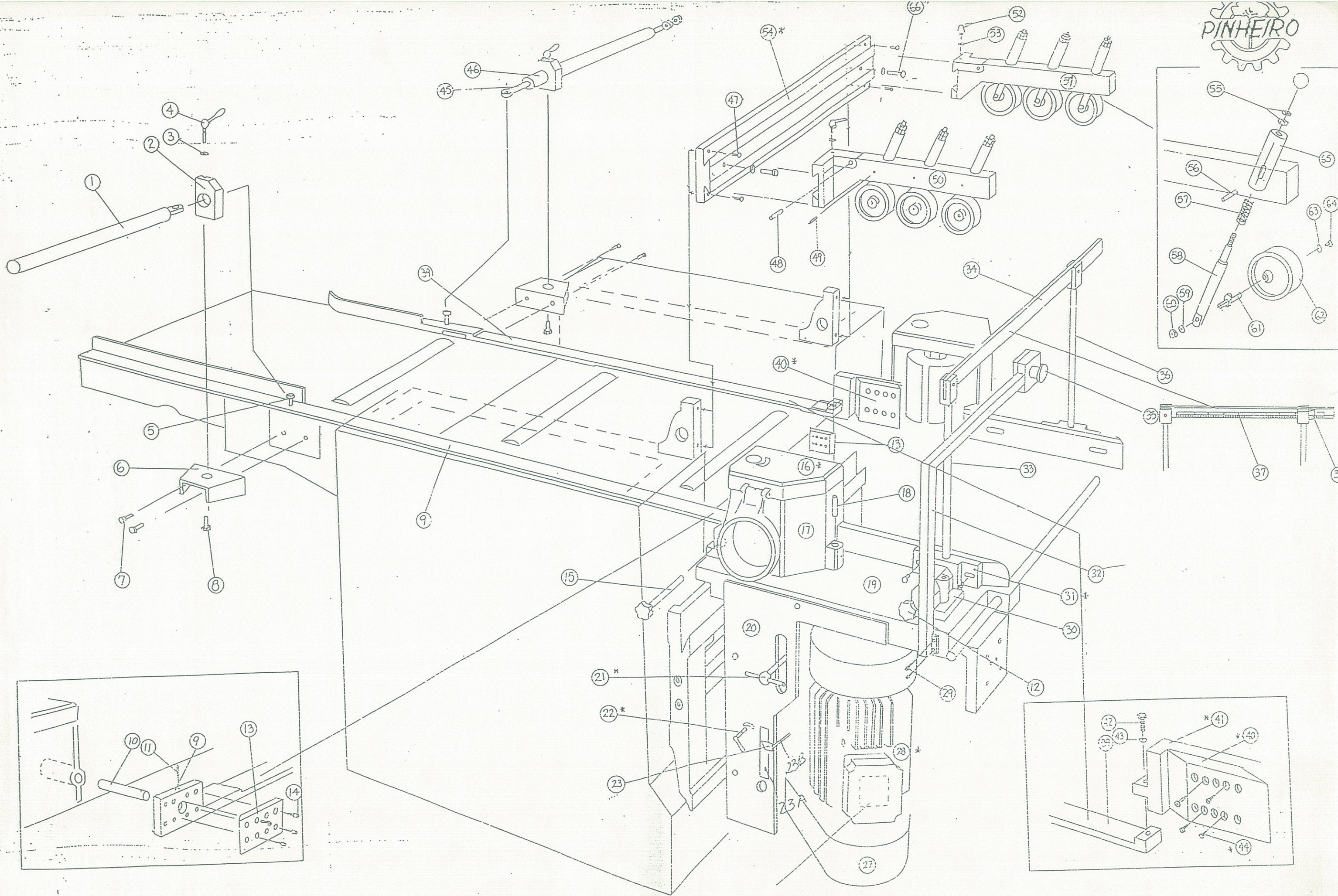
O → 8817

Drawing #4 - MF FEED ROLL DRIVE ASSEMBLY

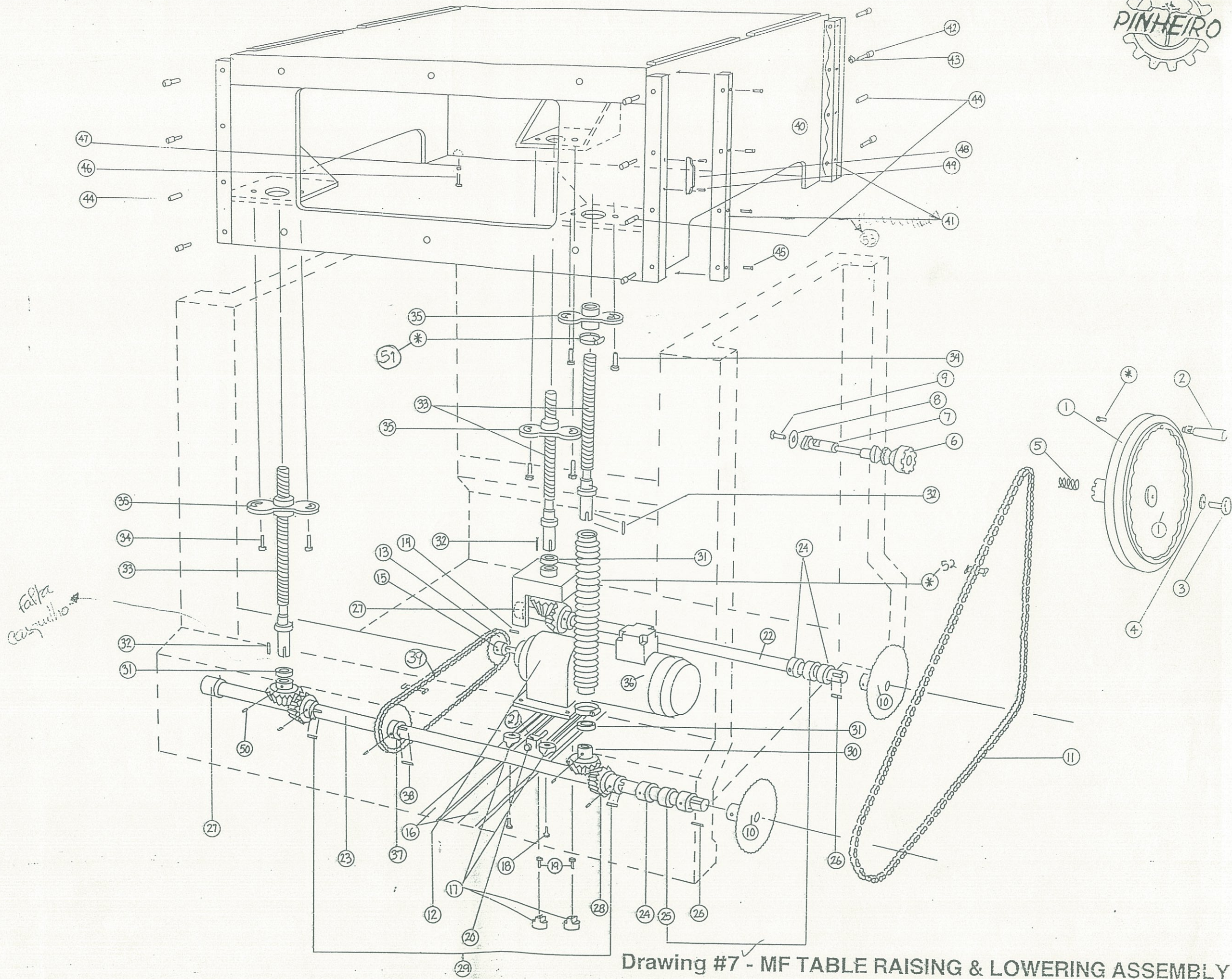


Drawing #5 - MF SIDEHEAD ASSEMBLY

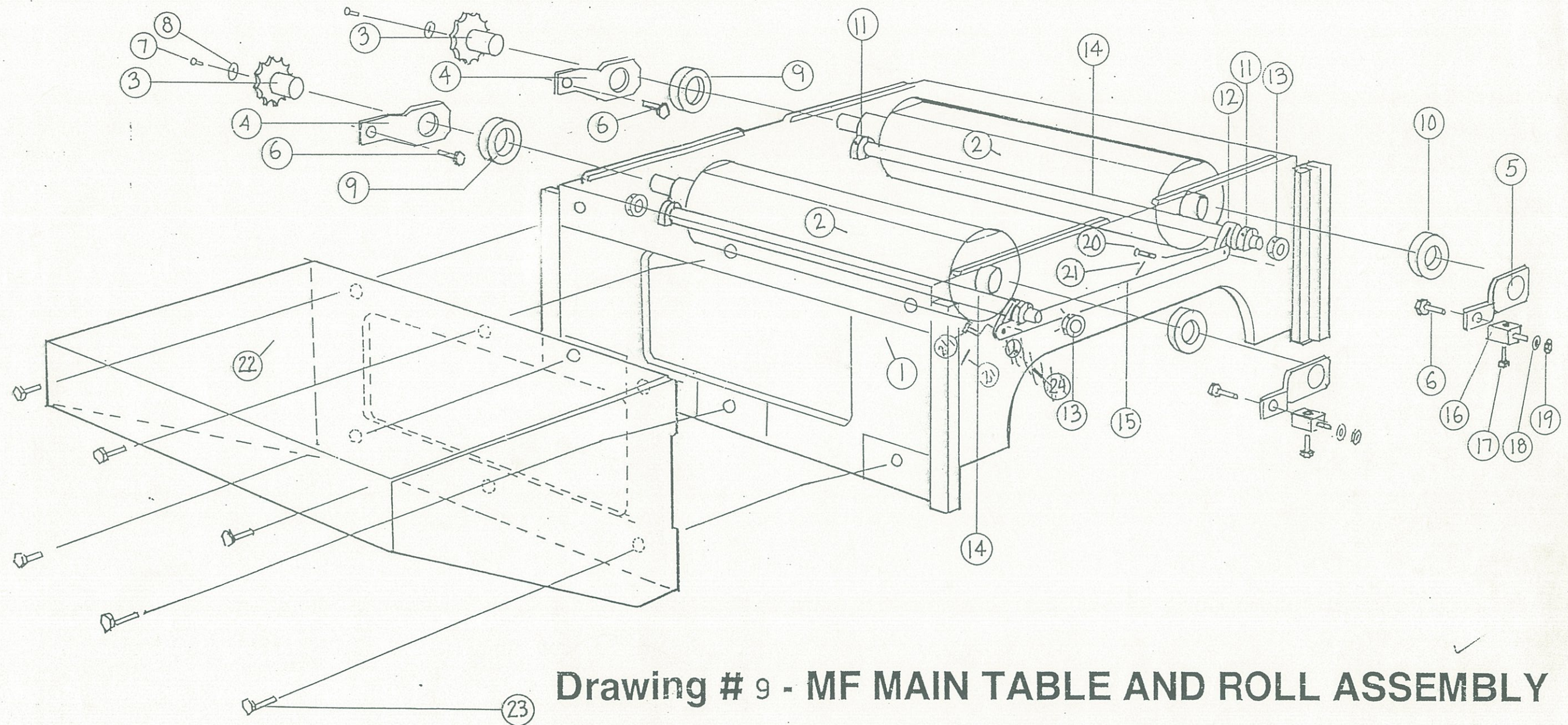
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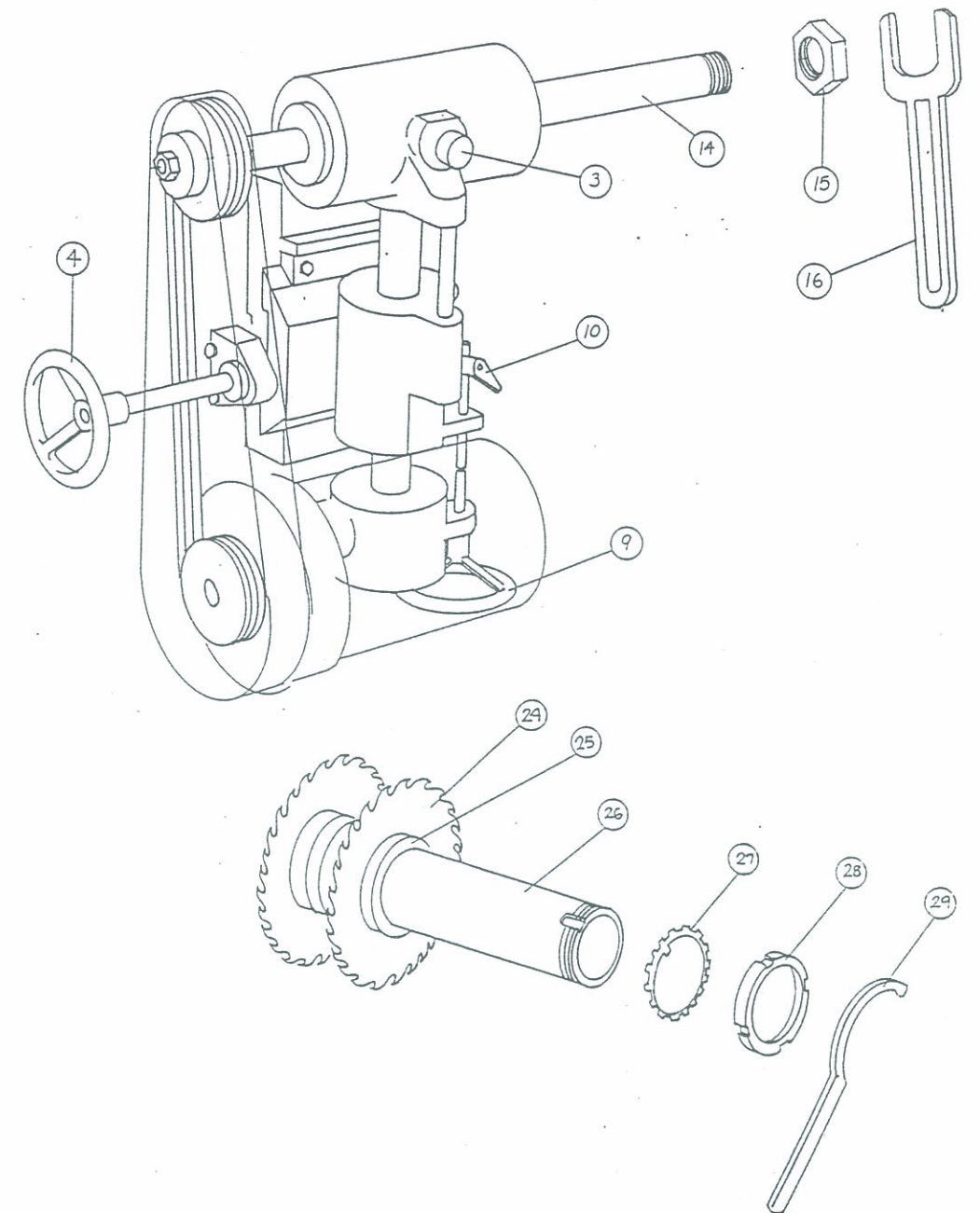
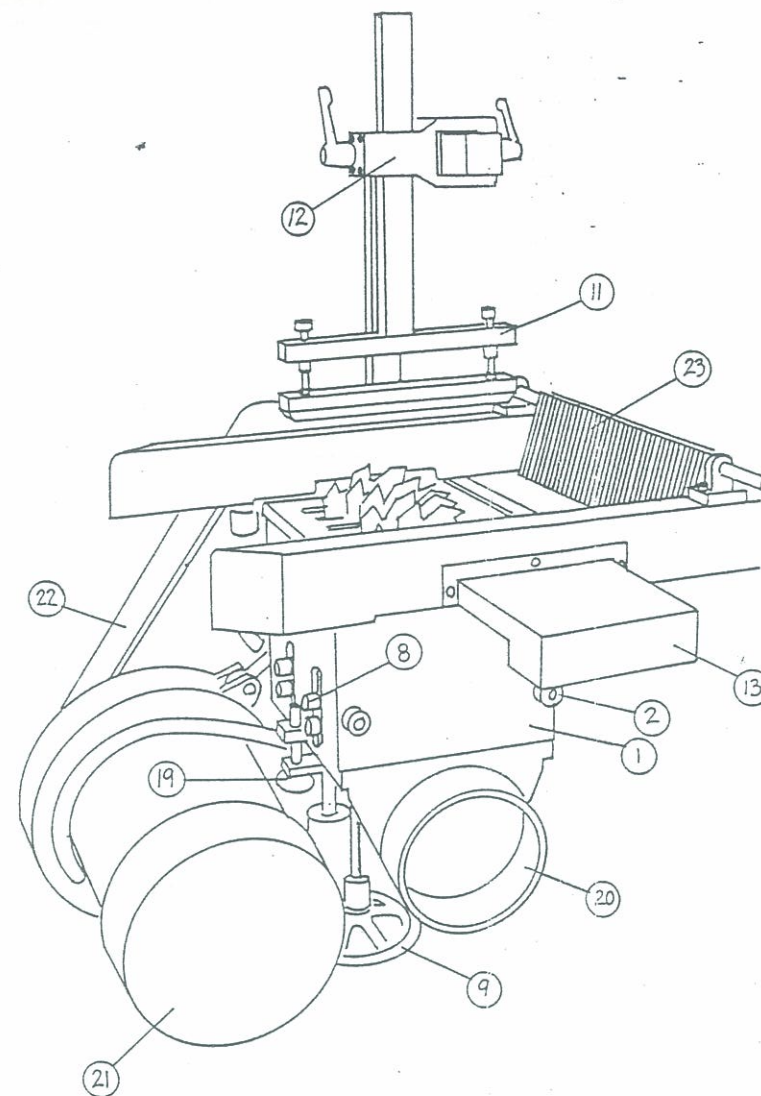
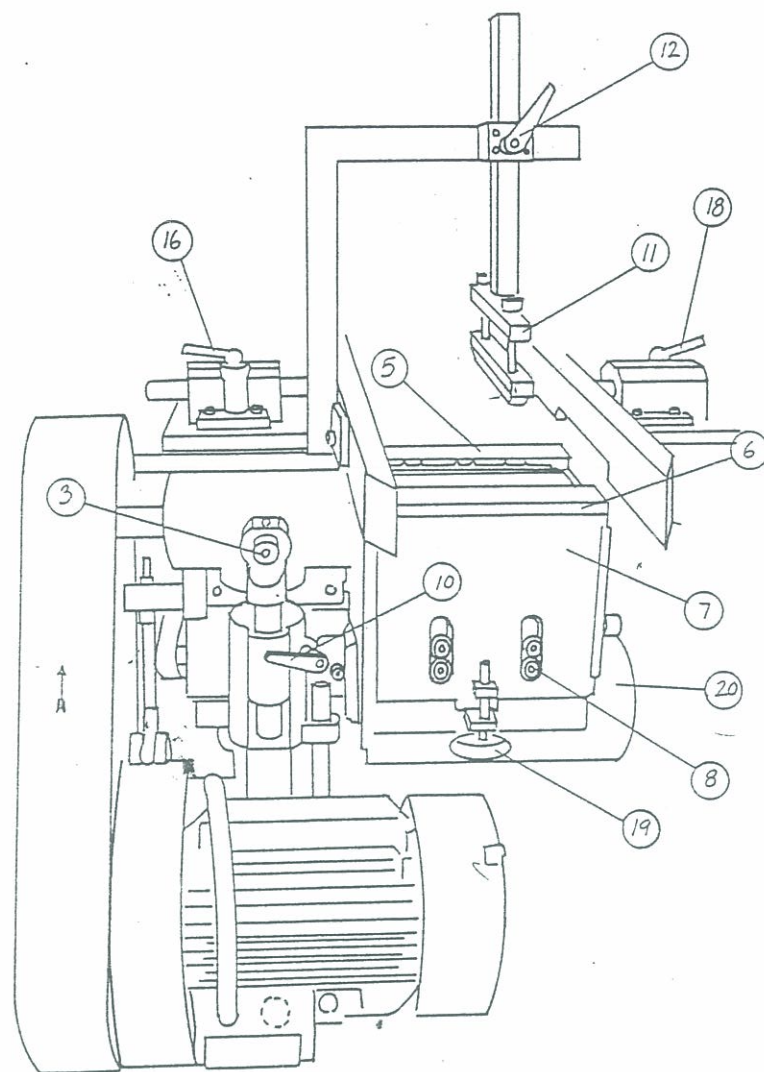
Drawing #6 - MF SIDEHEAD, FENCE & HOLD DOWN ASSEMBLY



Drawing #7 - MF TABLE RAISING & LOWERING ASSEMBLY

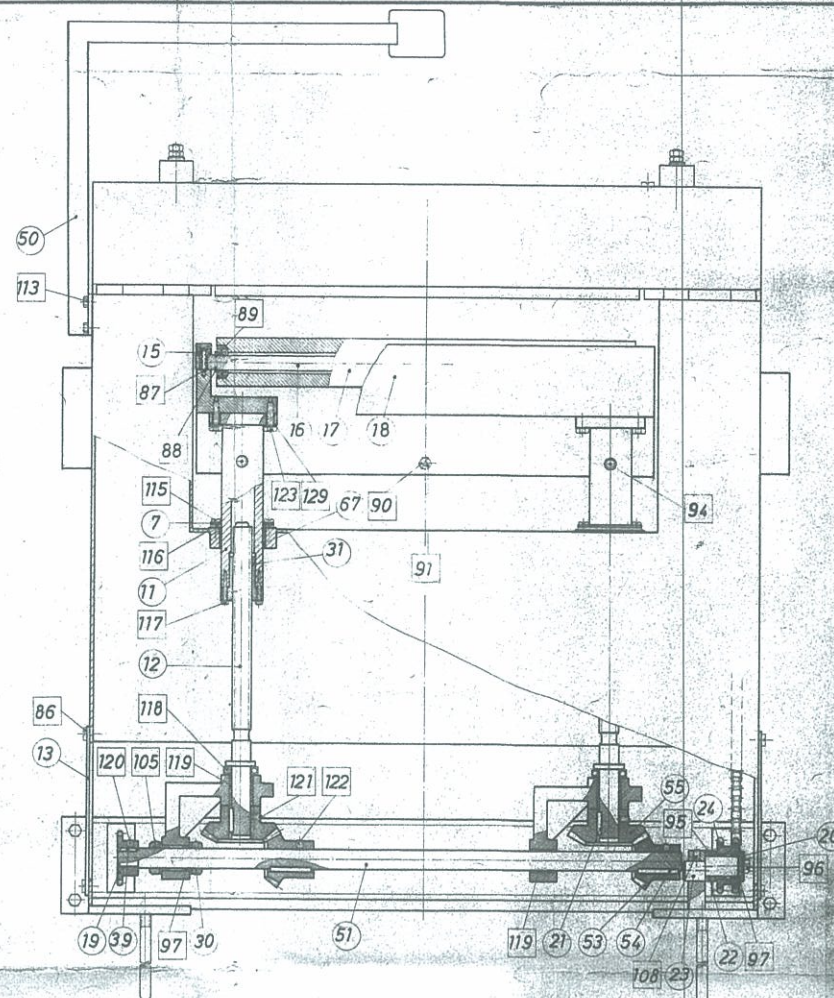


5TH SPINDLE ASSEMBLY COMPONENTS



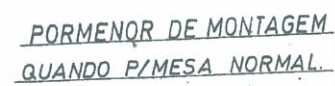
- 1) DUST HOOD COVER
- 2) DUST HOOD COVER LOCKING SCREWS
- 3) SPINDLE LOCK
- 4) HORIZONTAL ADJUSTING HANDLE
- 5) INFED PLATE
- 6) OUTFEED PLATE
- 7) OUTFEED PLATE SUPPORT
- 8) OUTFEED PLATE SUPPORT LOCKING BOLTS
- 9) VERTICAL ADJUSTING HANDLE
- 10) VERTICAL ADJUSTING LOCKING DEVICE
- 11) HOLDDOWN ASSEMBLY
- 12) HOLDDOWN ASSEMBLY LOCKING DEVICE
- 13) SPINDLE GUARD PLATE
- 14) SPINDLE
- 15) SPINDLE NUT

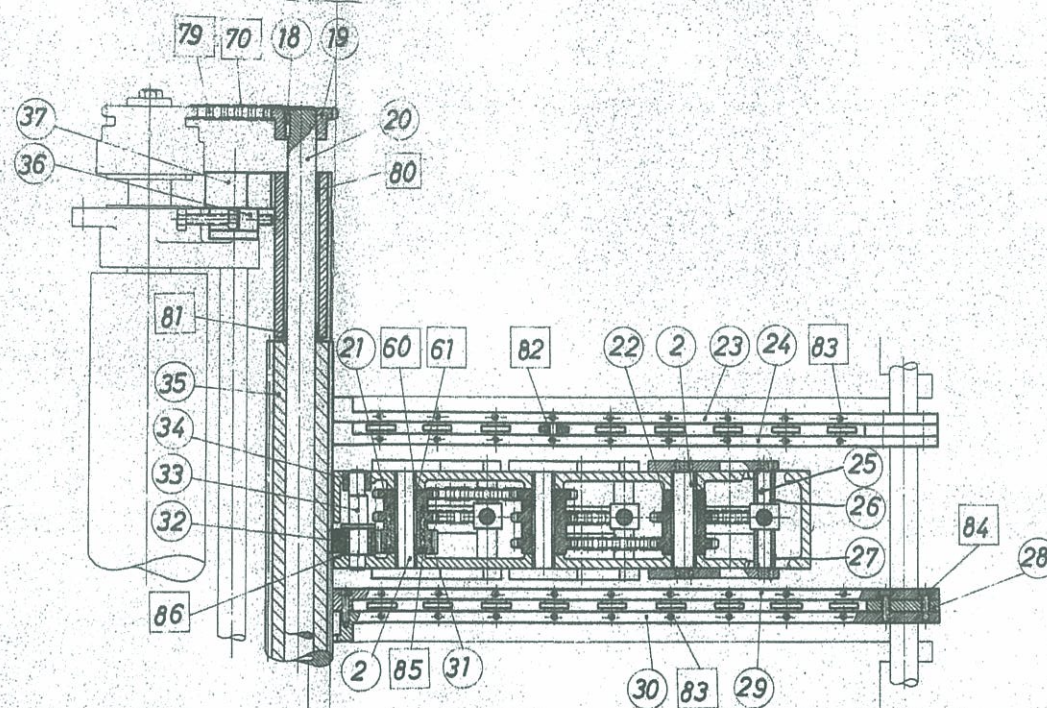
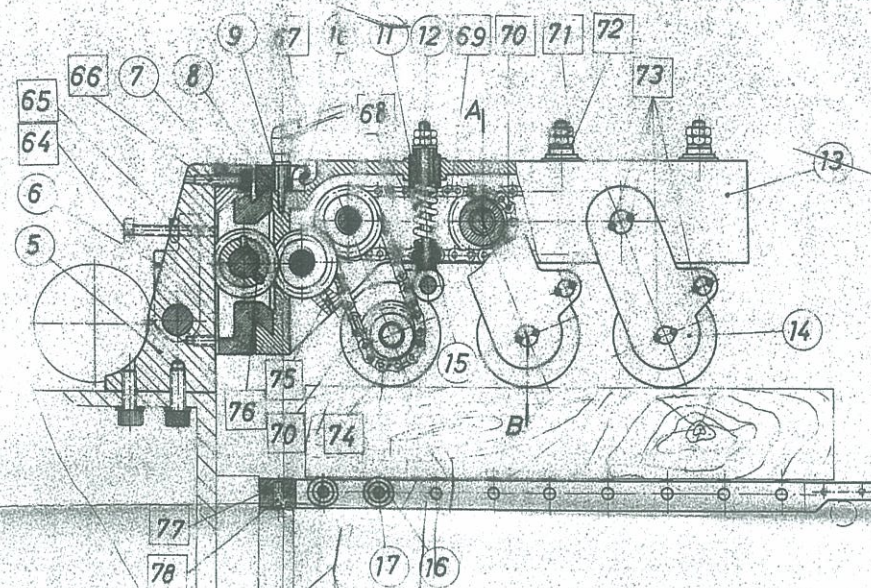
- 16) SPINDLE WRENCH
- 17) RIGHT OUTFEED FENCE ADJUSTING DEVICE
- 18) LEFT OUTFEED FENCE ADJUSTING DEVICE
- 19) OUTFEED PLATE SUPPORT ADJUSTING HANDLE
- 20) DUST HOOD OUTLET
- 21) SPINDLE MOTOR
- 22) BELT GUARD
- 23) ANTI KICKBACK FINGER ASSEMBLY
- 24) SAW BLADE
- 25) SPACER
- 26) SAW SLEEVE
- 27) WASHER
- 28) SLEEVE NUT
- 29) SPANNER WRENCH



1	Barril cob. revestido	6.350055	—	69	
2	Superfície esquadro	6.30793	—	68	
2	Casquinha de frisco	6.30774	Rronco	67	
1	Anilha lisa	6.30775	St-42K	66	
2	Piela	6.29100	St-33	65	HTAF
1	Anilha lisa	6.29053	St-42K	64	NMP-916
2	Carrete de Corrente	6.30776	St-62	63	
1	Barril cob. revestido	6.350055	—	62	
1	Superfície plana	6.773	St-33	61	HTAF
1	Anilha lisa	6.4193	St-33	60	NMP-602
1	Fixa esquadro	6.28031	St-42K	59	25°
2	Carrete chum. e corrente	6.29022	St-62	58	
1	Estrutura	6.30772	—	57	
1	Estrutura	6.30773	—	56	St quando o Diâx Individual sd quando o Diâx Individual
2	Carrete cônico	6.569	GG-12	55	GD1
2	Carrete	6.51054	St-33	54	ABx7x63
2	Carrete cônico	6.109	GG-12	53	NMP-909 GD1
1	Fixo	6.29034	CGAx	51	
1	Fixo	6.29035	CGAx	50	
1	Fixo	6.29027	—	49	
1	Fixo	6.29020	—	48	
1	Fixo	6.29021	—	48	
1	Fixo esquadro	6.29023	St-60	47	
1	Anilha lisa	6.50733	St-42K	46	22°
1	Carrete de esquadro	6.29022	St-60	45	NMP-601
1	Carrete	6.29024	St-60	44	
1	Carrete	6.29039	St-33	43	

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[illegible]



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					95		
					94		
					93		
					92		
					91		
					90		
					89		
					88		
					87		
2	2	Casquilho autolubrificante			86	$20^{\circ} \times 22^{\circ} \times 30^{\circ} \times 11,5$	
4	4	Paraf. cab. cil. c/ sext. int.	DIN-912		85	$M8 \times 40$	
4	4	Paraf. cab. cil. c/ sext. int.	DIN-912		84	$M6 \times 25$	
36	36	Porca rosca	DIN-913		83	$M4 \times 8$	
18	18	Casquilho autolubrif.			82	$10^{\circ} \times 12^{\circ} \times 10$	
2	2	Casquilho autolubr. c/ pestana			81	$30^{\circ} \times 34^{\circ} \times 42^{\circ} \times 26$	
2	2	Casquilho autolubrificante			80	$30^{\circ} \times 34^{\circ} \times 40$	
1	1	Corrente c/	DIN-8187		79	$1 \times 15,875 \times 9,65 \times 10,16$	
1	1	Porca c/ sext. int.	DIN-913		78	$M8 \times 16$	
4	4	Paraf. cab. cil. c/ sext. int.	DIN-912		77	$M6 \times 30$	
4	4	Paraf. rosca	DIN-913		76	$M8 \times 12$	
4	4	Paraf. rosca	DIN-913		75	$M6 \times 20$	
2	2	Corrente c/	DIN-8187		74	$1 \times 15,875 \times 9,65 \times 10,16$	
3	3	Corre. rosca	DIN-913		73	$M5 \times 8$	
36	36	Plancha de chapa	DIN-125		72	12°	
2	3	Pin.					

6	Porca sextavada	DIN-934	71	M10
6	Elo de engate	DIN-8187	70	1 x 15,875 x 9,65 x 10,18
6	Corrente C	DIN-8187	69	1 x 15,875 x 9,65 x 10,18
1/2	Mala helicoidal compr.cil.	4G-220006	68	21,5 x 22 x 7,5 x 22,5
1	Kopp macho		67	M10 x 45
4	Porca cab cil c/sext.m	DIN-912	66	M10 x 50
2	Porca sextavada	DIN-934	65	M10
2	Porca cap sextavada	DIN-558	64	M10 x 90
4	Porca cab cil c/sext.m	DIN-912	63	M5 x 35
6	Casquilho autolubrificante		62	22 x 25 x 20
6	Casquilho autolubrificante		61	22 x 25 x 20
6	Casquilho autolubrifi.		60	22 x 25 x 15
			59	
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			39	
			38	
			37	
1	Suporte de eixos paralelos	4-650655	GG-12	37
1	Bielã	4-650649	GG-12	36
1	Carreto	4-650653	FR-3	35
-	Carreto	4-650650	FR-3	34
1	Casquilho de separação	4-650622	SI-42K	34
1	Eixo excêntrico	4-650621	SI-60	33
1	Carreto	4-650623	CNV-4	32
1	Carreto	4-650627	CNV-4	31
1	Barra-guia	4-650644	SI-33	30
1	Barra-guia	4-650647	—	29
2	Entealçar	4-650641	SI-33	28
3	Casquilho de separação	4-650634	SI-42K	27
3	Casquilho de separação	4-650633	SI-42K	26
3	Eixo liso	4-650631	SI-42K	25
1	Barra guia	4-650646	—	24
1	Barra guia	4-650648	SI-33	23
1	Carreto duplo de corrente	4-650632	SI-60	22
1	Carreto duplo de corrente	4-650629	SI-60	21
-	Eixo	4-650654	CCAV	20
-	Eixo	4-650626	CCAV	19
1	Carrete de corrente	4-28987	SI-60	18
1	Chaveiro	4-51146	SI-50X118	17
18/18	Eixo liso	4-650639	CCAV	17
18/18	Roda	4-650640	SI-60	16
3	Porca	4-650638	SI-42K	15
6	Bielã	4-650645	—	14
1	Suporte corrediça	4-650657	FUNICOR	13
3	Tirante	4-650625	SI-42K	12
3	Porca	4-650637	SI-42K	11
1	Eixo liso	4-650635	SI-42K	10
1	Anilha lisa	4-4187	SI-33	9
1	Gaiha	4-650624	GG-12	8
1	Corrediça	4-650658	GG-12	7
-	Corrediça	4-650659	GG-12	6
1	Bielã	4-650636	GG-12	6
1	Suporte de eixos paralelos	4-650656	GG-12	5
3	Carrete de corrente	4-650642	SI-60	4
6	Roda	4-650630	SI-42K	3
6	Eixo espigado	4-650651	SI-42K	2
1	Carrete triplo de corrente	4-650652	SI-60	1

HCAF-50
NMP-100

ALTERAÇÕES

Qt.	Minutos	Pos.	Projeto	Data	Nome
1	HTAF-AE-O		Desenho Verifica	17/4/85	[Assinatura]
Exatidão 1/5					
Tolerâncias não indicadas					

HTAF-AE-O

(Extração p/máquina cartes)

CONJUNTOS MECÂNICOS

PINHEIRO

2-650620