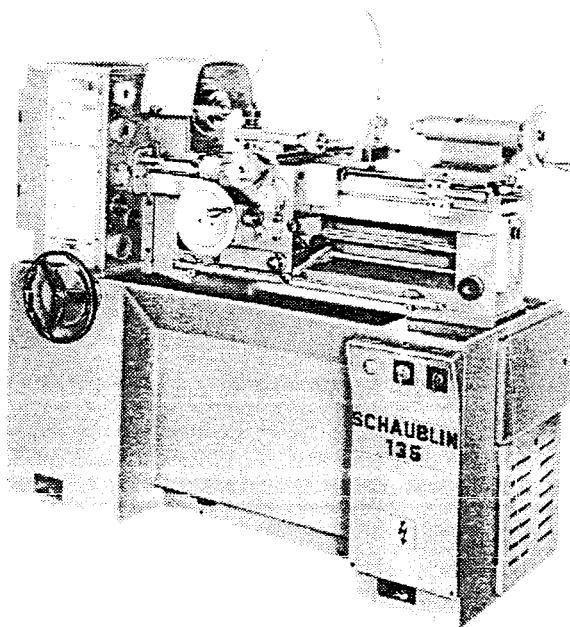


HIGH PRECISION LEADSCREW LATHE

SCHAUBLIN 135



SERVICE INSTRUCTIONS

To be handed over to the operator in charge of the machine .

Reproduction of the contents, drawings and illustrations, is forbidden.
Dimensions, figures and weights are not binding. We reserve the right
to introduce such constructional changes we may deem necessary in
order to improve our product.

Estat le 5.5.70

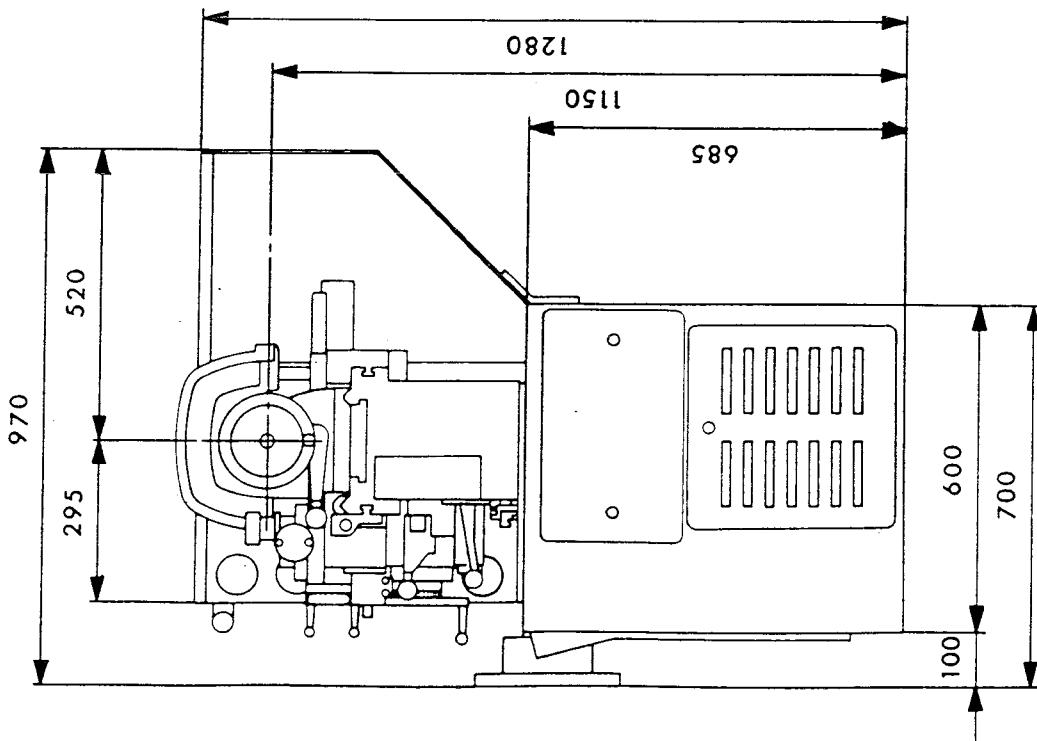
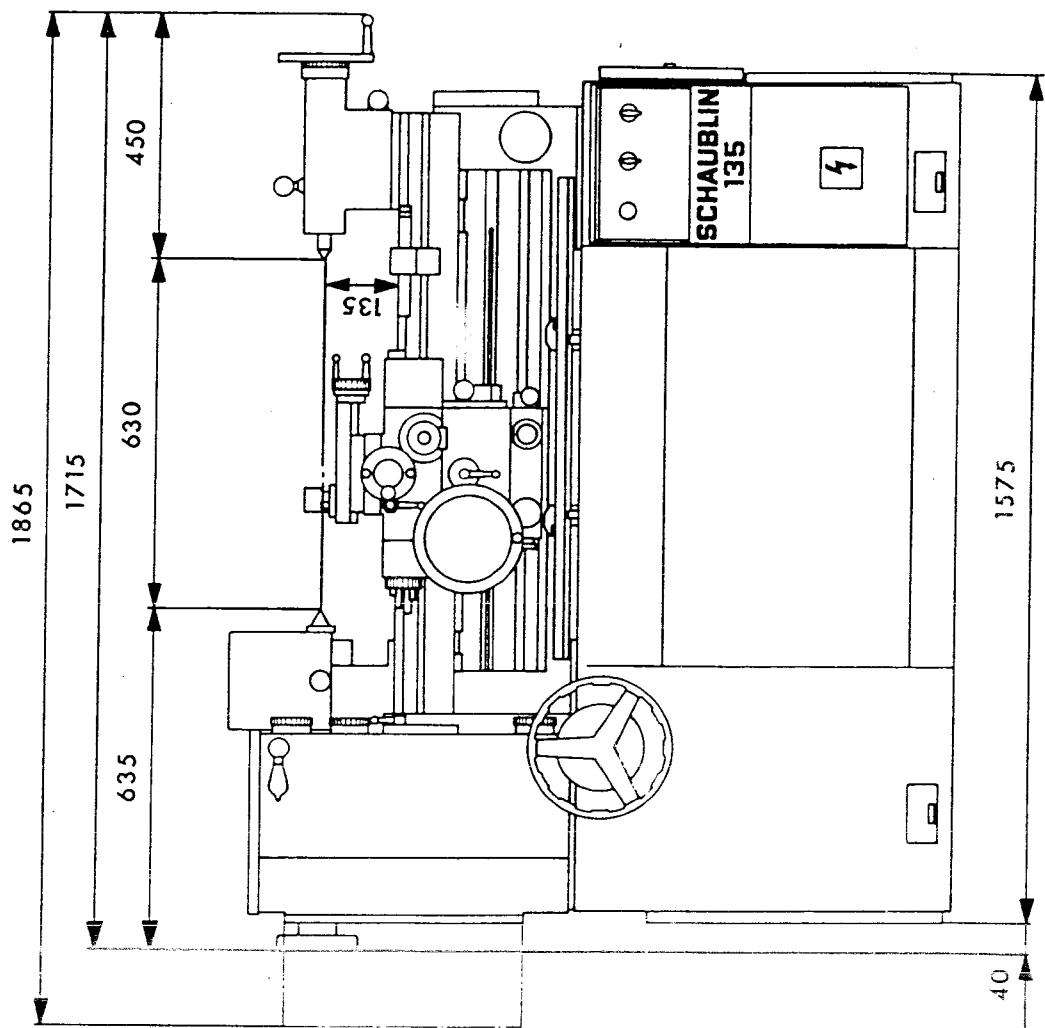
Annulé le 21.9.72

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Tension of the belts	38
Transmission belt arrangement	39
TRANSMISSION BELTS AND PULLEYS	40
DRIVING GEAR DIAGRAM	41

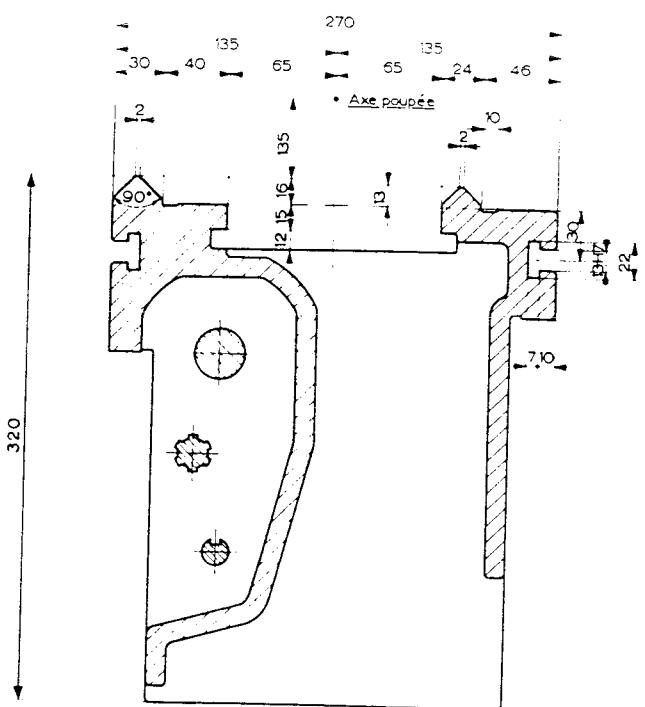
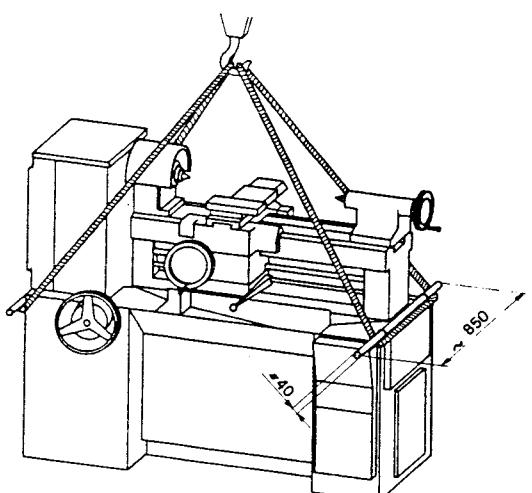
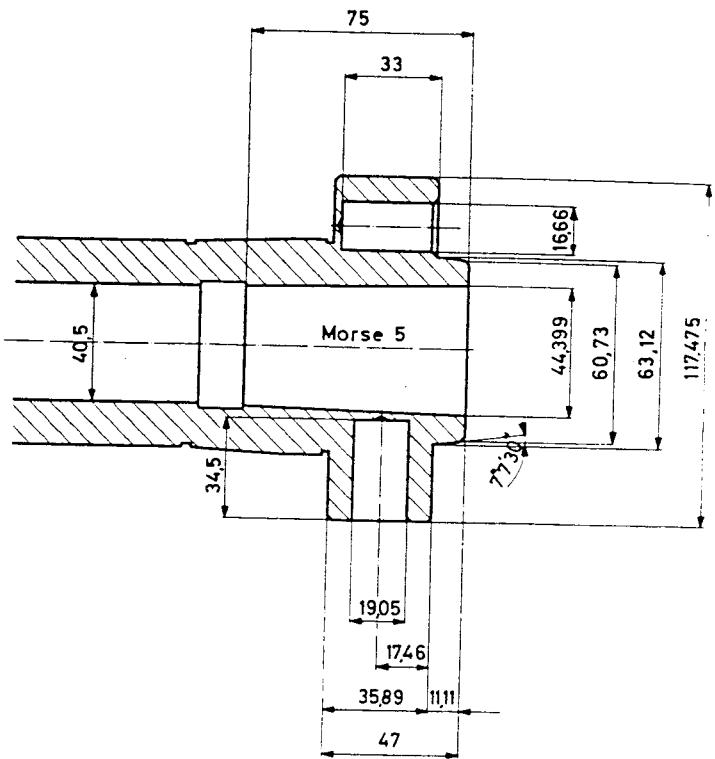
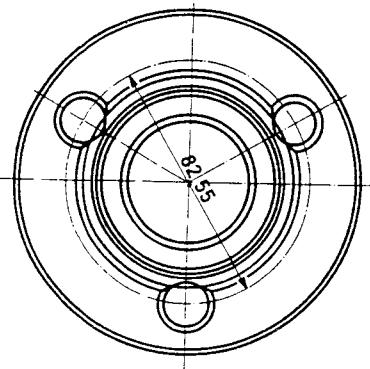
FABRIQUE DE MACHINES **SCHAUBLIN S.A.** BÉVILARD/SUISSE

SPECIFICATIONS

Height of centres	135 mm
Distance between centres	630 mm
Swing over bed	315 mm
Swing over carriage	150 mm
Swing in gap	355 mm
HEADSTOCK	
Spindle speeds, infinitely variable	55 to 3000 rpm.
with open belt drive	220 to 3000 rpm.
with reduction gears	55 to 750 rpm.
Spindle nose, outside diameter	117.45 mm
Spindle taper	Camlock D1-4"
Spindle bore diameter	Morse N° 5
Reduction socket for collet	40 mm
Bar capacity of collet	B32
	24 mm
SCREWCUTTING AND FEED CONTROL BOX	
48 Metric pitches	0.25 to 14 mm
48 English pitches	72 to 1 t.p.i.
48 Module pitches	0.125 to 7
24 fine longitudinal and transverse feeds	0.015 to 0.21 mm/rev.
24 longitudinal and transverse feeds	0.025 to 0.35 mm/rev.
Larger feeds by using the screwcutting gear wheels	
CARRIAGE	
Longitudinal travel	620 mm
Tool slide traverse	100 mm
Cross slide traverse	180 mm
Height of centres above slide	26 mm
Tool section	16 x 16 mm
TAILSTOCK	
Spindle internal taper	Morse N° 3
Spindle traverse	120 mm
Spindle lateral adjustment	± 10 mm
DRIVING MOTOR	
Speed	750 to 3000 rpm.
Power	2 / 4 hp.
WEIGHTS	
With standard equipment	net 1150 kg gross 1300 kg
MAIN DIMENSIONS	Length x width x height 1715 x 970 x 1280 mm



FABRIQUE DE MACHINES SCHAUBLIN S.A. BÉVILARD/SUISSE



FABRIQUE DE MACHINES SCHAUBLIN S.A. BÉVILARD/SUISSE

INSTALLATION

Unpacking and transport

Unscrew top and side pannels of the packing box and remove accessories contained in it.

Weight of machine approximately 1150 kg.

For transporting the machine by means of a hoist or crane :

- a) free lathe from the bottom of the box and pass the ropes as shown by the sketch on page 6.
- b) introduce two rods 40 mm dia., and approximately 850 mm long into the lifting rings screwed into the bed base.

If there is no lifting means available, keep the machine on the box bottom and transport it on rollers. Do not forget to remove the levelling screws on the base before moving the lathe onto the floor.

Concrete foundation

The SCHAUBLIN 135 lathe should preferably be installed on a concrete foundation the dimensions of which are given on the following page. The thickness of the concrete slab depends on the nature of the ground which must be stable. The fixation points with the levelling screws are numbered 1 to 4 in the foundation plan on page 8. The lathe must be supported on four resting plates 100 mm dia. and then fastened by means of Seetru bolts 135-80.050.

The electrical feeding cable arrives at the point A and must emerge by about 40 cm above the floor.

Free access to the lathe must be foreseen (see hatched portion of foundation plan).

Levelling

Proceed to levelling the lathe by taking the bed ways as reference plane :

1. Crosswise levelling on headstock side.
Slightly tighten bolts 1 and 2; adjust level by using levelling screws 1 and 2. Clamp bolts 1 and 2.
2. Lengthwise levelling to be tested over the full length of the bed.
Slightly tighten bolts 3 and 4; adjust level by means of levelling screws 3 and 4.
3. Crosswise levelling on tailstock side by the aid of the levelling screws 3 and 4. Verify the longitudinal levelling and clamp bolts 3 and 4.

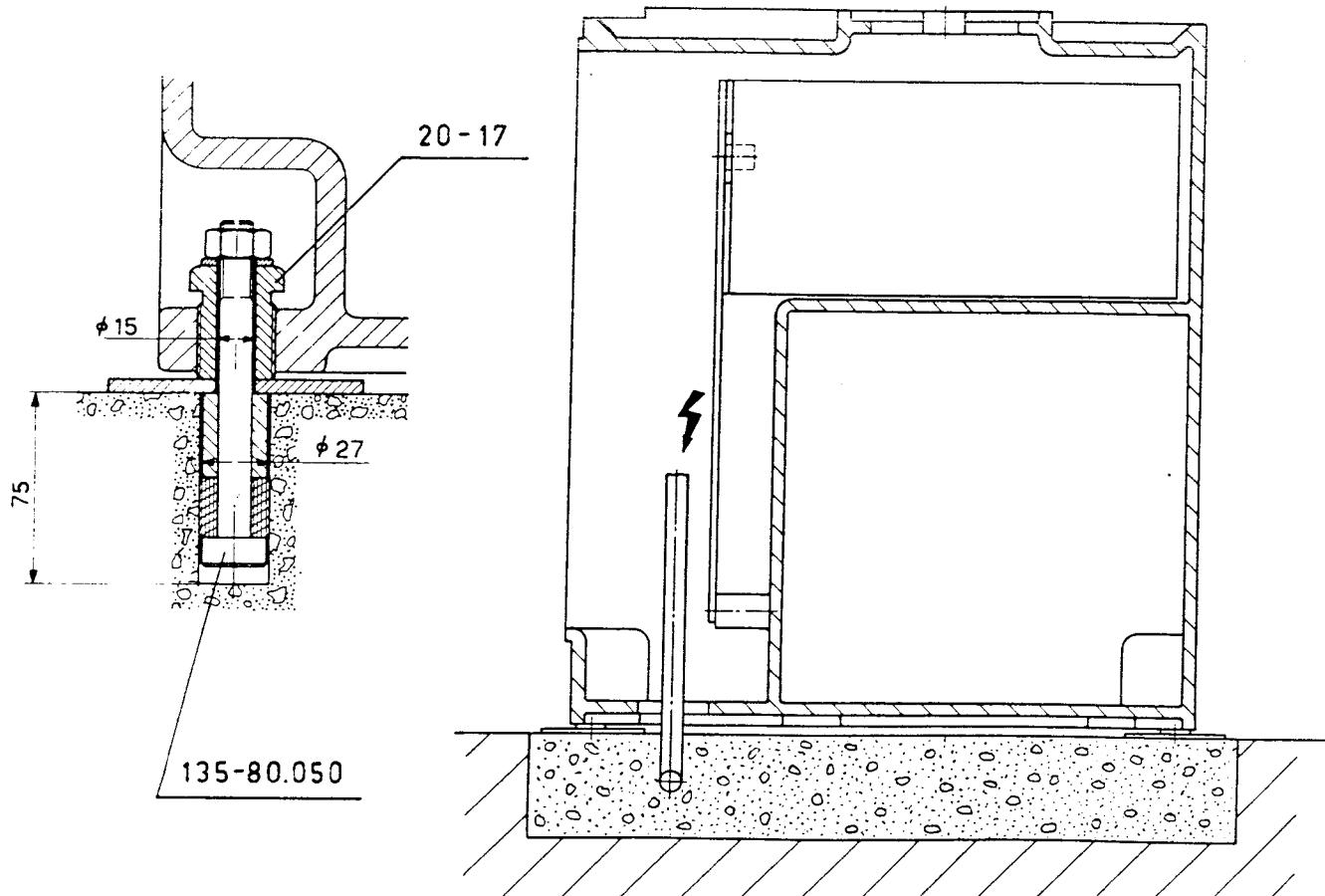
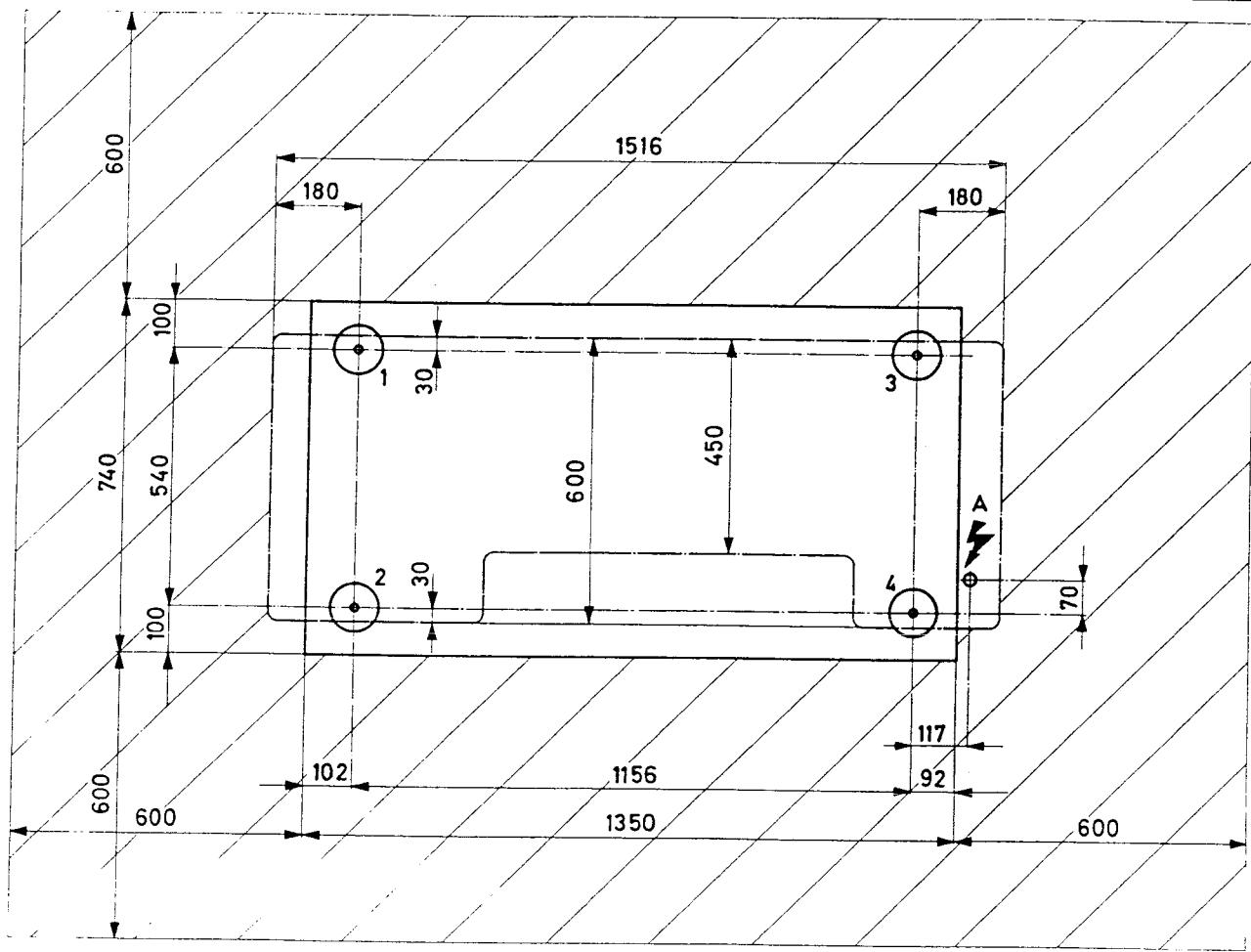
Accurate levelling of the machine is very important. Use a precision bulb level.

Cleaning

When removing the anti-rust grease and cleaning the lathe, use only clean and chemically neutral rags (preferably white).

First take-off the anti-rust grease with a dry rag. Wipe the surfaces with a clean rag drenched in kerosene and then squeezed in order to extract an excess liquid. The anti-rust grease has no lubricating properties what so ever and should be carefully removed in order to prevent possible seizing during operation.

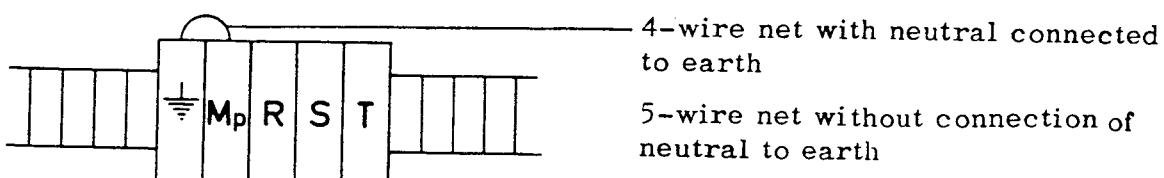
FABRIQUE DE MACHINES SCHAUBLIN S.A. BÉVILARD/SUISSE



FABRIQUE DE MACHINES **SCHAUBLIN S.A. BÉVILARD/SUISSE**

Putting into service

Connect the feeding wires to the terminals of the control cabinet according to diagram given below. Earthing is to be made for operator's safety.



Consult the wiring diagram supplied with this manual.

Make sure that lubrication has been performed in accordance with the directions given on the following pages.

Place the feed engaging lever 54 on position O. (see page 18).

Starting the lathe

Turn on main switch 51.

Let the lathe run freely for a few hours at low speed, checking the functioning of all moving parts.

Should the motor rotate in reverse direction, inverse two of the three wires R, S and T.

The main motor is protected by built in thermostats. Should the thermostats release through overheating, let the motor cool down for approx. 20 minutes.

Resume motor start as described above.

Start coolant pump, switch 52. Do not run the pump without coolant.

LUBRICATION AND UPKEEP

Before starting the lathe :

Lubricate all moving parts. Use a pure mineral oil of good quality : viscosity 4,5°E at 50°C approximately.

Fill through the hole 1 the reservoir 2 (see line drawing on page 13), that has been emptied before transport (use MOBIL Velocite N° 6 that is to be found in the machine box).

Check both levels 3 and 4.

We recommend to use the oil and grease qualities listed in the lubricating chart in page 14.

Important! Never mix oil of different brands which may chemically react and loose their lubricating properties or provoke deposits.

Pressure lubrication

All points to be lubricated by a hand pressure gun are marked ● on the illustrations in page 11. Four to five shots every week are sufficient.

Oil level control

Check every week the oil levels 4 and 3 on the apron and the reservoir. Replenish them if necessary.

Oil bath of the transverse screw rear bearing

Drain it once a year by unscrewing the oil sighter 5. Remove both screws 6. Screw in an oiler ● in one of the tapped holes, the other being used for air exhaust. Replenish ● with the lubricating gun.

Oil bath of the carriage apron with oil reserve for the "one-shot" pump

Give every day a few shots to the push-button 7 of the pump.

Once a week check the level 4 (maxi and mini) of the oil bath.

Remove plug on hole 8 and fill oil up to the upper level (bath capacity : 2,3 litres).

Drain by unscrewing screw 9.

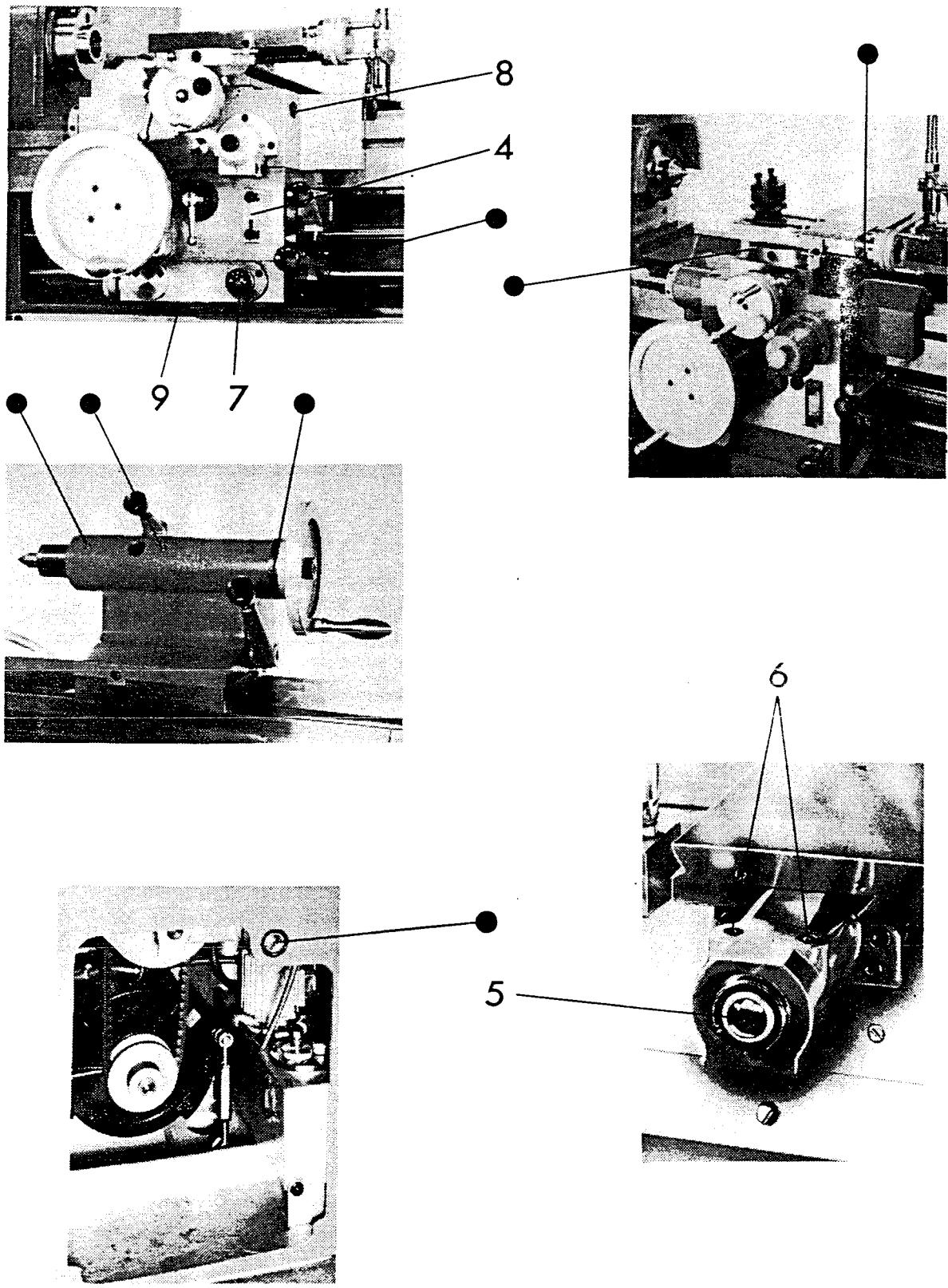
Leadscrew lubrication

Once a year renew the grease over the full length of the leadscrew.

Remove both protections shown on line drawings of page 37.

Lubrication of main motor

The "Oerlikon" maintenance directions herewith provide all particulars regarding the upkeep of the electrical motors.



FABRIQUE DE MACHINES **SCHAUBLIN S.A.** BÉVILARD/SUISSE

LUBRICATION CIRCUIT

The pump 10 immersed in the tank 2 ensures the lubrication of the headstock, the screwcutting and feed box and the speed variator.

The whole circuit must be drained and cleansed once a year.

Emptying

1. Tank
Unscrew plug 11.
2. Screwcutting and feed box oil bath.
Drain by unscrewing screw 20-20.097.

Dismantling

1. Remove the belt of the motor pulley, withdraw the variator pulleys in uppermost position (dial 57 on 760 rpm).
2. Remove the magnetic cartridge 1.
3. Uncouple the pipes line 13, 16 and 17 on the side of the reservoir and of the pump.
4. Remove the filter with strainer held by the three screws 15.
5. Remove the pump (2 screws CCM M6x20) by tilting it forward.
6. Remove the cover of the reservoir 18, which is fixed with 6 screws CCM M6x10.

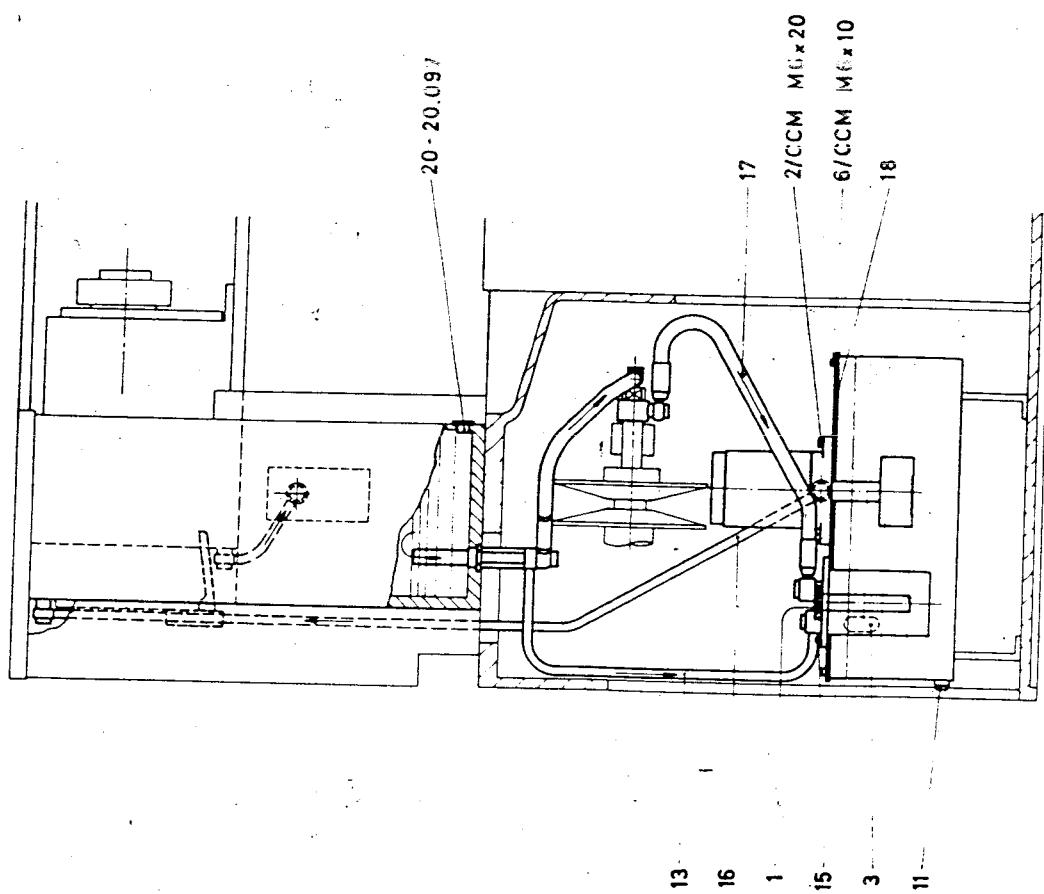
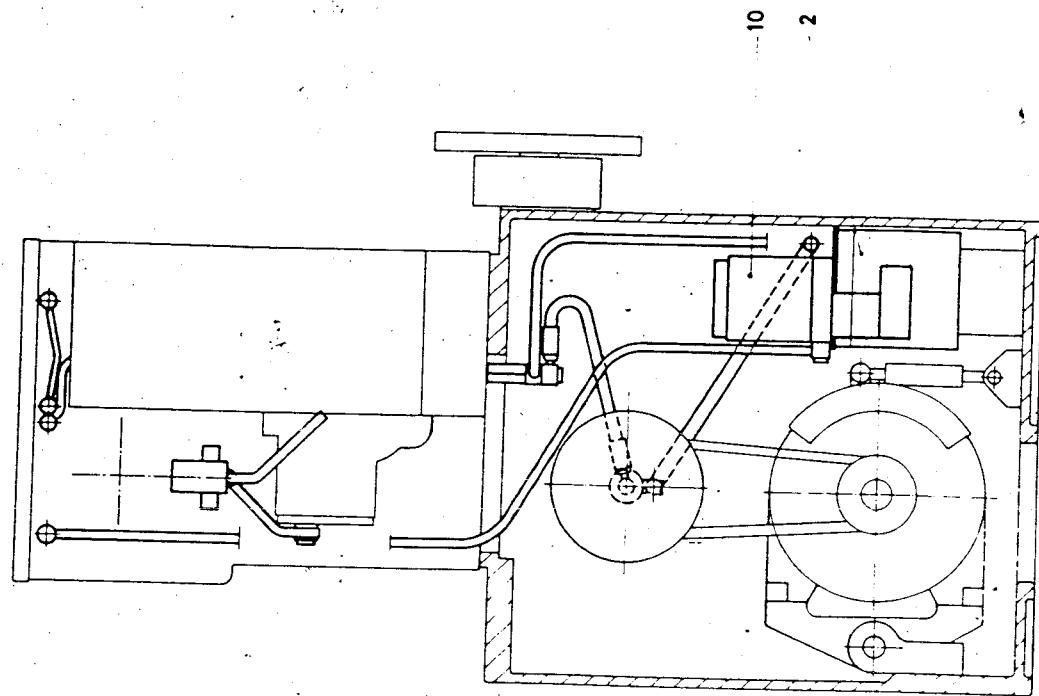
Cleaning

1. Tank :
Clean it, without removing it from the base.
2. Oil pump :
To be cleansed, with petrol; dry it with compressed air.
Renew the grease of the motor bearings once a year.
3. Magnetic cartridge and strainer filter :
Clean with petrol, dry with compressed air. Do not bush or hit the filter.

Oil replenishment

Use a good quality fine mineral oil for lubrication systems viscosity 1,4 to 1,6° E at 50°C. Capacity of the whole system 11,5 litres (2.4 G.B. gal).

1. Pour oil through filling hole 1 up to the upper mark of the sighter 3.
2. Start the lathe at reduced speed.
3. Let it run till the oil baths are supplied. Complete the reservoir content so that it lies on the upper line of the sighter 3.
Note! It is possible to verify that the oil circulates correctly by disconnecting the conduit 17 and asserting that the oil flow is plentiful.



FABRIQUE DE MACHINES SCHAUBLIN S.A. BÉVILARD/SUISSE

**TABLEAU DE GRAISSAGE
SCHMIERTABELLE
LUBRICATING CHART**

**SCHAUBLIN
135**

MODE DE LUBRIFICATION ART DER SCHMIERUNG TYPE OF LUBRICATION	ORGANE DE LA MACHINE MASCHINENTEILE MACHINE PARTS		LUBRIFIANT SCHMIERMITTEL LUBRICANT
<u>Garnissage</u> Tous les ans	Paliers des moteurs des 2 pompes	Lager der beiden Pumpenmotoren	Pumps Motors bearings
<u>Fettpackung</u> jährlich	Vis-mère	Leitspindel	Leadscrew
<u>Grease packed</u> yearly	Paliers du moteur principal	Lager des Haupt- motors	Main motor bearings
<u>Bain d'huile</u> Changer d'huile tous les ans	Poupée Boîte de filetage et d'avances	Spindelstock Gewindeschneid- und Vorschubkasten	Headstock Screwcutting and feed gear box
<u>Oelbad</u> Oelwechsel jährlich	Paliers du variateur de vitesse	Lager des Variators	Speed variator bearings
<u>Oil bath</u> Change oil yearly	Tablier et corps de chariot	Bettschlitten-Steuer- kasten und Bett- schlitten	Apron and carriage body
	Palier arrière de la vis du coulisseau transversal	Hinteres Lager der Quergewindespindel	Rear bearing of the cross slide screw
<u>Lubrification</u> Hebdomadaire	Levier de mise en marche	Einschalthebel (für Ingangsetzung des Motors)	Starting lever
<u>Schmierung</u> Wöchentlich	Barre des avances Axe de pivotement du variateur de vitesse	Vorschubstange Schwenkachse des Variators	Feed bar Speed variator pivoting shaft
<u>Lubrication</u> Weekly	Coulisseau porte-outil Contre-poupée Appareil à tourner conique	Werkzeugschlitten Reitstock Konischdreh- vorrichtung	Tool slide Tailstock Taper turning attachment
	Dispositif de serrage rapide	Schnellspann- vorrichtung	Quick clamping device.
<u>Lubrification centrale</u> Quotidien	Glissières du tablier	Führungen des Bett- schlitten Steuerkastens	Apron guide ways
<u>Zentralschmierung</u> täglich	Coulisse et vis transversale	Querschlitten und Quergewindespindel	Cross slide and screw
<u>Central lubrication</u> daily			

FABRIQUE DE MACHINES SCHAUBLIN S.A. BÉVILARD/SUISSE

TABLEAU DE CONVERSION

VERGLEICHSTABELLE

COMPARISON CHART

Huile - Oil - Öl - Oil N°	1	2	3	4	5	6	7	8	9	10	11
Mobil	Velocite N° 6	DTE-Oil Light	DTE Oil heavy medium	Vactra N° 2			Mobilux GRN 2	Mobiplex 47	Compound FF		
BP	Energel HP 3	Energel HP 10	Energel HP 20C	Energel HP 20 C			Energreas LS2		Energol GR 55 EP		
STAP	Stap 200	Hydraulic 150	Hydraulic 275	Stap 310			Cosmolube N°2	Cosmolube T27	Stap EP Gear Oil 140		
Oel CMS	Oel HTX	Oel CMU					Fett HL 2	Fett HTR	Oel DG		
ASEOL	16-105	16-110	16-120	16-22			6-077	6-147-4	11-233		
GULF	Magna A/B	Hypsin 70	Magna BO				Sphereol AP 2	Sphereol AP 2	Alpha LS 4		
SPINDEL OIL 5X	OC Turbine Oil 9	OC Turbine Oil 15	Vistac Oil 14 X				Grease BRB-2	Dura-Lith Grease EP 2	Gear Compound 140		
ESSO	Spinoresso 14	Nuto H 44	Nuto H 54	Febis K-53			Beacon 2	Beacon 2	Poi EP 5		
KR	KR 2008	DK 30 S	TU 518	K			LW 2	HTR	BMB 35		
GULFSPIN 35	Harmony 44	Gulfway 52	Gulfway 5,2				Gulfcrown Grease 2 Pen 290	Gulfcrown Grease 2 Pen 285	EP Lubricant 145		
MOTUL	Safco speed A	Safdrive A	Safco slud V/X				Supraco G 43 SL	Supraco G 53 XP	Supraco MPL 32		
NON FLUID OIL	Spindle-Oil 20		A-90	A-89 / Amber			G-60	G-60	D-18		
SHELL	Tellus Oil 15	Tellus Oil 27	Tellus Oil 33	Tellus Oil 33			Alvania Grease 2	Alvania Grease 2	Macoma Oil 275		
SUNVIS	Sunvis 907	Sunvis 916	Sunvis 931	Way lubricant 80			Sunaplex 992 EP	Sunaplex 992 EP	Sunep 1110		
Y	R-60 TOS	EP Compound HT N° 0	EP Compound HT N° 1	EP Compound HT N° 1			LB Grease N° 2	LB Grease N° 2	EP Compound HT N° 5		
SPECIAL CONTINU JA		Missola AH	Missola BH	Moglia B			Pebron RT 3 S	Pebron RT 3 S	Pebron HFN 35		
KLÜBER									Altemp Q NB 50	Isolfer LDS 18 Speciale A	

FABRIQUE DE MACHINES SCHAUBLIN S.A. BÉVILARD/SUISSE

COOLANT SUPPLY

Start coolant pump, switch 52.

Do not run coolant pump without coolant or during standstills of the machine.

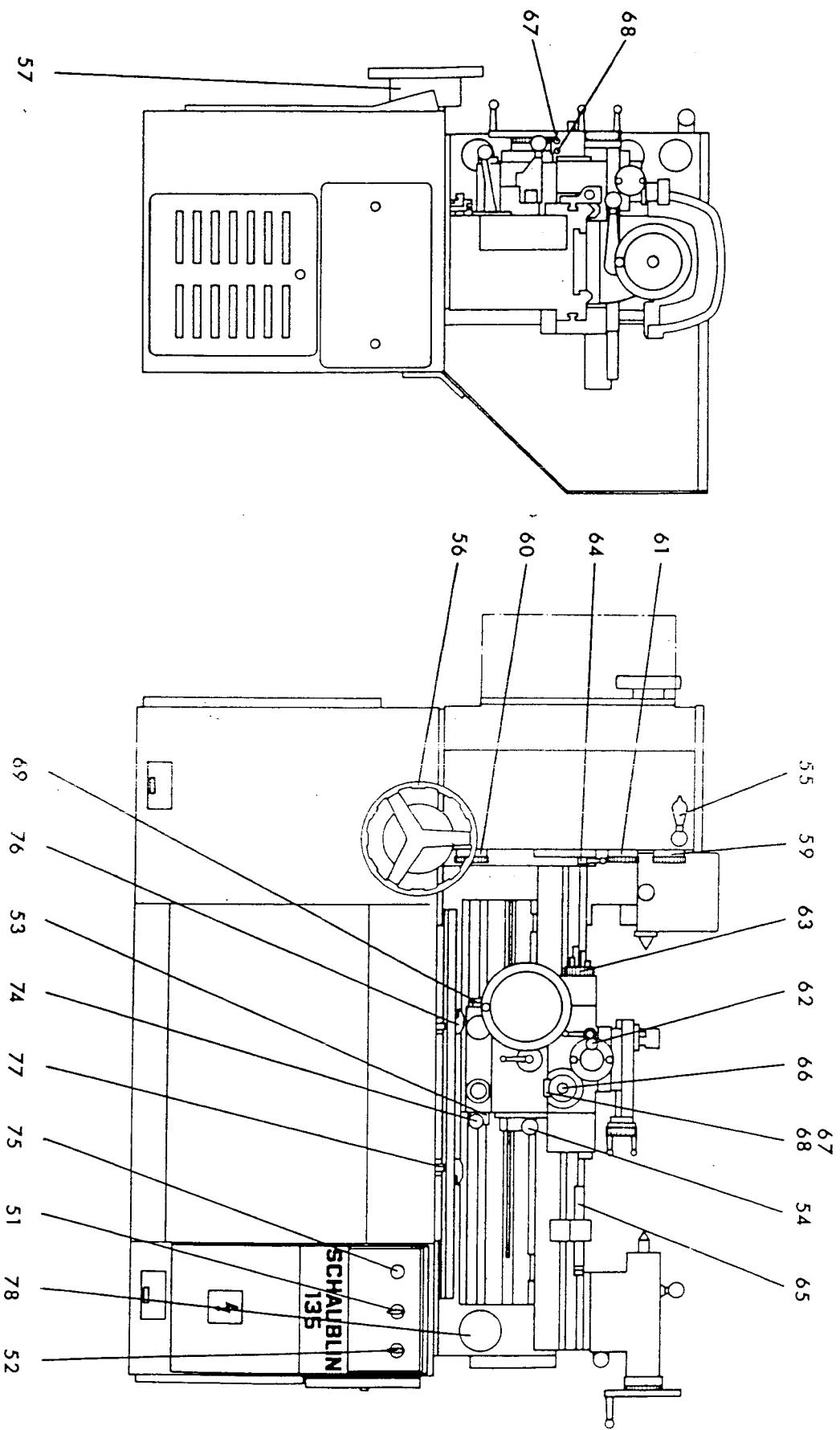
Keep coolant level at over two-thirds of the tank capacity. Pour fresh coolant through the chip tray in the base.

Recommandation! Experience as shown that a cutting oil of good quality is to be preferred to soluble oils which have the tendency to decompose after prolonged use and to provoke corrosion of the machine.

Maintenance

In order to prevent excessive wear it is important that the coolant system be cleaned 2 or 3 times a year, especially when soluble oils are used. For cleaning proceed as follows.

1. Fully dismantle pump, tank, pipes and filters.
The tank (capacity 27 liters - 60 G.B. gal.) can be removed from the machine base.
2. Clean all parts in petrol.
3. Once a year, refill grease into the motor bearings.



FABRIQUE DE MACHINES SCHAUBLIN S.A. BÉVILARD/SUISSE

OPERATING DIRECTORY

Spindle speed

The starting lever 53 controls the rotating sense of the spindle and the selection of the motor speeds.

II	II Reverse rotation - motor speed 3000 rpm.
I	I Reverse rotation - motor speed 750 rpm.
0	0 The spindle is stopped by the electromagnetic brake. It can be released by placing the lever 55 in position 
I	I Normal rotation - motor speed 750 rpm.
II	II Normal rotation - motor speed 3000 rpm.

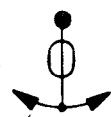
Two stops fixed on the lever guide help to select the positions.

The speed variator is controlled by the handwheel 56 which must be operated while the lathe is running.

The spindle speed is to be read on one of the four scales on dial 57, i.e. :

- a) White scale 55 to 185 rpm.
- b) Green scale 220 to 750 rpm.
- c) White scale 220 to 750 rpm.
- d) Red scale 880 to 3000 rpm.

Lever 55 for the headstock reduction unit permits passing from the a) and c) speed ranges to the b) and d) speed ranges. The red plate with the symbol "stop before engaging" recalls that the spindle must be stopped before the lever is operated.



The change over from speed ranges a) and b) to c) and d) is obtained through motor speed change, lever 53.

Button 75, permits instantaneous stoppage at the spindle. (can also be obtained with pedal 135-80.140 supplied on request).

For security, the travel of the starting lever 53 can be limited to the low speed or 0 to prevent reversing of spindle rotation. The handwheel 78 indicates the selected lock-up.

Working feeds

The feed rates are read in mm/rev. of spindle on the chart secured to the screwcutting and feed box. There are :

24 fine longitudinal and cross feeds from 0,015 to 0,21 mm/rev.

24 longitudinal and cross feeds from 0,025 to 0,35 mm/rev. (measured on Ø).

These 48 feed rates are not modified by the change of the screwcutting gear wheels.

Larger feeds can be obtained by using the screwcutting positions.

Feed changes can be made when the lathe is running by setting the selecting handwheels hereafter.

Handwheel 59 selecting : feed , fine feed

Caution! Do not turn handwheel 59 on position short pitches or large pitches when the machine is running.

Handwheel 60 for rapid changes of the feed rate within small limits (then used as feed variator). Refer to points 1, 2, 3, 4, 5, 6 on chart.

Handwheel 61 for rapid changes of the feed rate over large limits. Refer to letters A, B, C, D on chart.

The longitudinal and transversal displacements are read on the graduated drums of the carriage. The setting (zeroing) of the transverse drum is made possible by unscrewing the knurled button 62.

TURNING (Surfacing)

The feed selecting lever 54 has six positions. It is pushed close to the apron for surfacing feeds :

I feeds from right to left

O neutral position

II feeds from left to right

For transverse feeds the lever is set in remote position from the apron :

III feeds from front to rear

O neutral position

IV feeds from rear to front.

Limit stops - feed disengagement

Longitudinal travel

The six-position abutment 63 and the stops 64 and 65. Limit the longitudinal feed when it is operated manually, or disengage it when it is automatically operated.

The stop 65 can also be mounted on the left of the carriage if the stop 64 cannot be reached. It is possible to remove the six-position abutment 63 without dismantling anything and use preset abutments for batch production.

Transverse travel

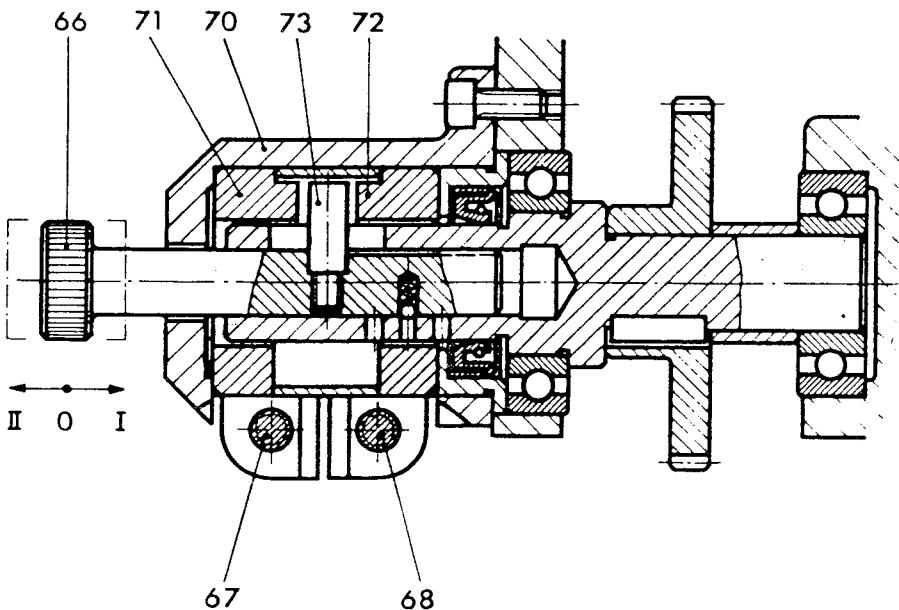
The box 70 contains two adjustable precision stops 71 and 72 which limit the travel of the cross slide when operated manually, or disengage the automatic feed.

The stops must be made to operate 1 to 7 mm (5/64 to 5/16 in.) before the cross slide stops by placing the knob 66 in position I or II (see sectional view along side).

Position O - The pusher pin 73 is between stops 71 and 72.

Position I - The pusher pin 73 butts against the stop 72.

Position II - The pusher pin 73 butts against the stop 71.



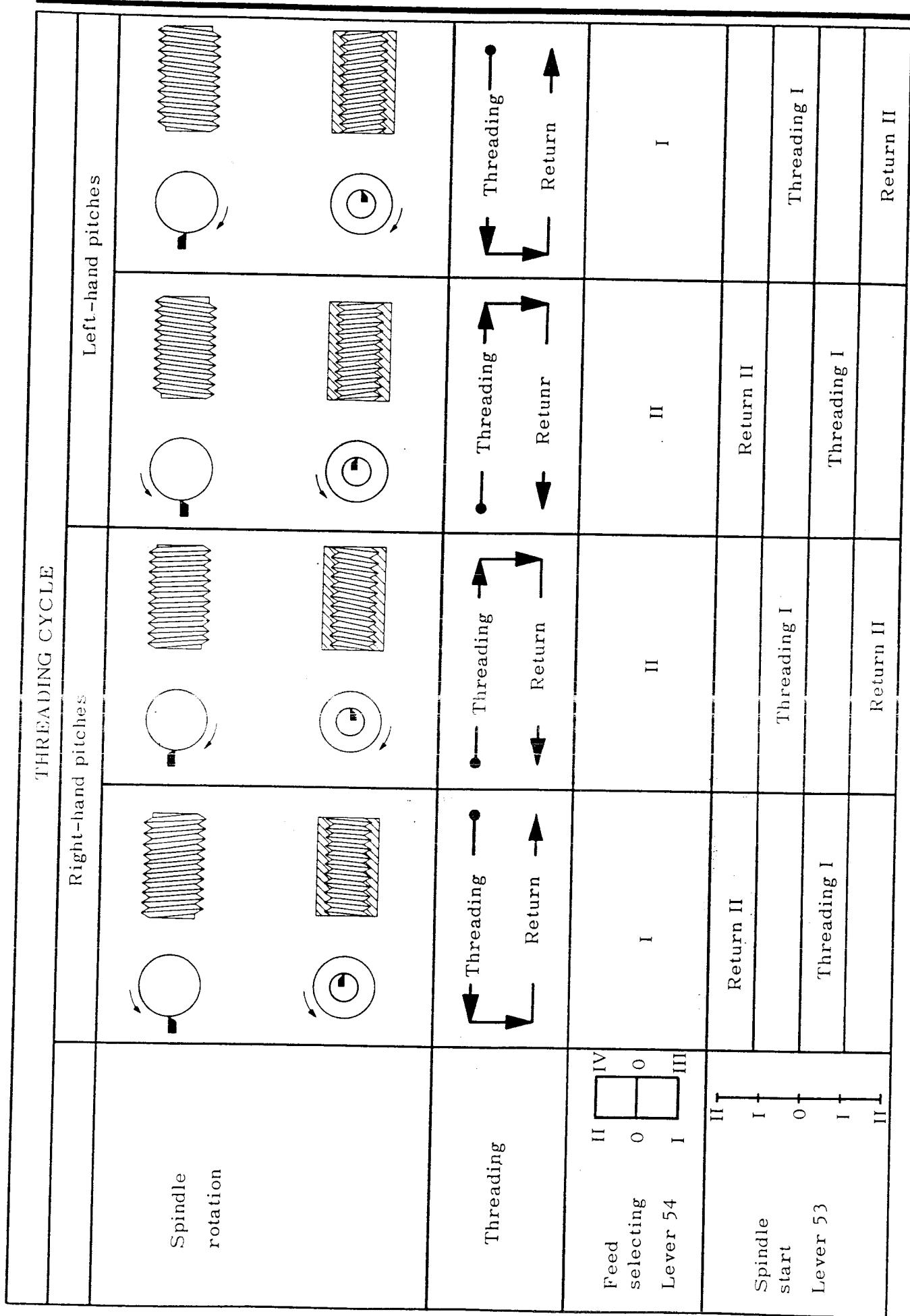
Adjusting the stops

1. Loosen screw 68.
2. Set tool to the workpiece dia. and adjust vernier to 0 .
3. Push knob 66 to position I.
4. Move cross-slide backward by rotating handwheel 4 times.
5. Advance cross-slide to 0 position of vernier (preset as described under 2).
6. Tighten screw 68 and control function of stop.

A second stop can be set by proceeding similarly, however, knob 66 to be put to position II and tightening lock screw 67.

The power (pressure) necessary to disengage the feeds can be adjusted with button 69 depending on the operations to be carried out (roughing, finishing or accurate threading throw-off).

THREADING CYCLE

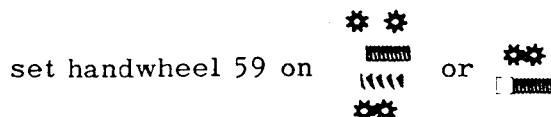


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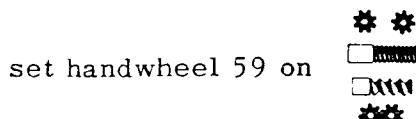
THREADING

1. Place starting lever on position 0.
2. Check the set of change gears.
3. Select short pitches or large pitches

For short pitches : place lever 55 on or



For large pitches : place lever 55 on



4. Set handwheels 60 and 61 as indicated on the screwcutting chart, according to the pitch to be cut.
5. Fasten knob 69 in order to prevent feed disengagement.
6. Set the component to be machined and adjust the travel of the thread between the 2 stops 76 and 77.
7. Determine the direction of the thread with regard to the direction of the spindle rotation according to the chart on page 20.
8. Set the engaging lever 54.

Threading cycle

1. Operate the lever 53 for threading.
2. At the completion of the thread free the tool by actuating the carriage screw handwheel. The spindle is stopped automatically on stop 76 or 77.
3. Set the lever 53 for return travel. The return travel is automatically stopped on stop 76 or 77.
4. Advance the tool.

Change gears

E = gear driven by the headstock.

F , G , H , I = gears mounted on the swing frames.

K = gear mounted on the front of the threading box.

Set of gears supplied with the machine :

45 - 48 - 50 - 50 - 54 - 55 - 56 - 62 - 64 - 72 - 79 - 80 - 87 - 89

The three screwcutting charts herewith and the plate affixed to the machine provide a full list of normal pitches.

The positions A, B, C, D and 1, 2, 3, 4, 5, 6 of the threading box if combined with the set of change gears supplied with the machine provide a great number of threading possibilities, viz. :

- | | | |
|--|------------|---------------------------|
| 1. Metric threads | Finely cut | |
| 2. Metric threads with special pitches | } | |
| 3. English threads | | With approaching accuracy |
| 4. Module threads | | |

In calculating the change gears used for the machining of the second quality threads, the error in gear ratio must not exceed 2 : 10.000 (see examples here below).

We shall, on request calculate ratios and specify the necessary change gears for definite pitches at shortest notice.

Metric threads (accurate machining)

Example : Determine the set of gears for a pitch of 2,7 mm.
Choose in the Metric chart a pitch * approaching 2,7 that is 2,8.

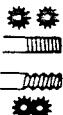
$$\text{Ratio of the gears to be used} = \frac{\text{Pitch to be obtained}}{\text{Pitch} *} = \frac{2,7}{2,8}$$

$$\frac{\text{Driving gears}}{\text{Driven gears}} = \frac{E \times G \times I}{F \times H \times K} = \frac{27}{28} = \frac{50 \times 48 \times 72}{56 \times 64 \times 50}$$

Set handwheels 59, 60, 61 and lever 55 as foreseen for pitch * 2,8, viz :

Lever 55 or

Handwheel 59 on



Handwheel 60 on 3

Handwheel 61 on D

Metric threads with special pitches (approaching accuracy)

Example : Determine the set of gears for a pitch of 3,7 mm
Choose in the Metric chart a pitch * approaching 3,7 that is 3,6.

$$\text{Theoretical ratio of the gears to be used} = \frac{\text{Pitch to be obtained}}{\text{Pitch} *} = \\ = \frac{3,7}{3,6} = 1,02777$$

Select the number of teeth of the gears the ratio of which gives a quotient close to 1,02777.

$$\text{Driving gears} = \frac{E \times G \times I}{F \times H \times K} = \frac{50 \times 62 \times 55}{64 \times 48 \times 54} = 1,02780$$

Theoretical ratio = 1.02777

Ratio of the gear set = 1.02780

Error = 0.00003

Set handwheels 59, 60, 61 and lever 55 as foreseen for pitch * 3.6.

English threads

Example : Determine the set of gears for a pitch of 46 t.p.i.

Choose in the Metric chart a pitch * approaching $\frac{25.4}{46}$, that is 0.5

Theoretical ratio of the gears to be used = $\frac{25.4}{\text{threads per inch} \times \text{pitch} *}$
= $\frac{25.4}{46 \times 0.5} = 1.10435$

Select the number of teeth of the gears the ratio of which gives a quotient close to 1.10435.

$$\frac{\text{Driving gears}}{\text{Driven gears}} = \frac{E \times G \times I}{F \times H \times K} = \frac{50 \times 62 \times 79}{56 \times 55 \times 72} = 1.10434$$

Theoretical ratio = 1.10435

Ratio of the gear set = 1.10434

Error = 0.00001

Set handwheels 59, 60, 61 and lever 55 as foreseen for pitch * 0.5.

Module pitches

Example : Determine the set of gears to be used for the module pitch 4.25.

Choose in the Metric chart a pitch * approaching $4.25 \times \pi$, that is 12.8.

Theoretical ratio of the gears to be mounted = $\frac{\text{Module} \times \pi}{\text{Pitch} *}$
= $\frac{4.25 \times 3.14159}{12.8} = 1.04310$

Select the number of teeth of the gears the ratio of which gives a quotient close to 1.04310.

$$\frac{\text{Driving gears}}{\text{Driven gears}} = \frac{E \times G \times I}{F \times H \times K} = \frac{50 \times 89 \times 45}{80 \times 48 \times 50} = 1.04297$$

Theoretical ratio = 1.04310

Ratio of the gear set = 1.04297

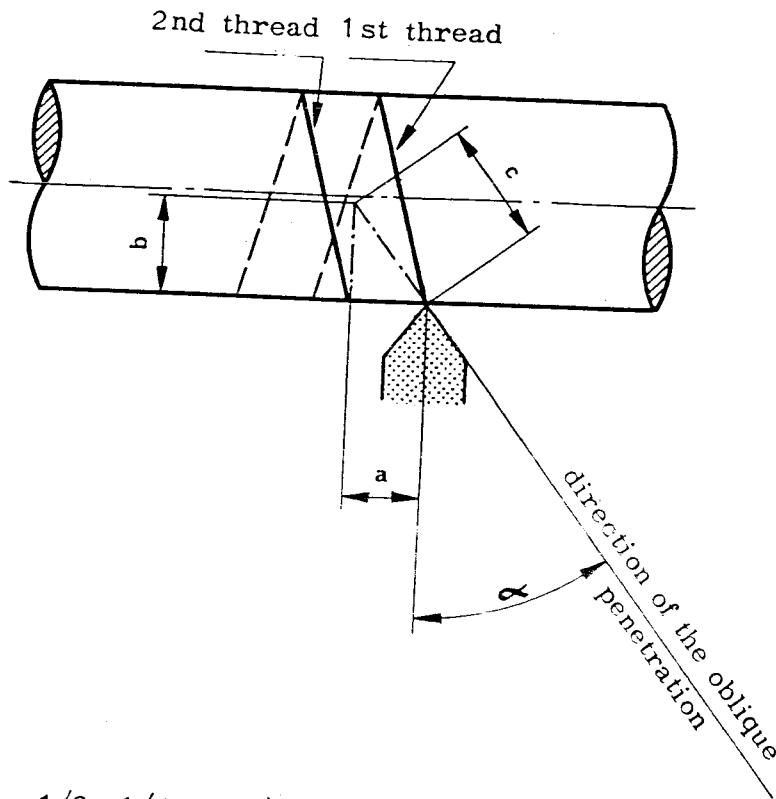
Error = 0.00013

Set handwheels 59, 60, 61 and lever 55 as foreseen for pitch * 12.8.

MULTIPLE THREADS

1. With one multiple tool.
2. By offsetting the slide when using the oblique penetration system (see drawing here below).

The actual displacement of the tool is determined in this system by the orientation of the tool slide. It is therefore very important that this orientation be accurately adjusted. For want of precise angular measuring devices (optical protractor, sine bar, etc.), it is recommended to proceed to a few threading trials and to correct the carriage orientation if necessary.



$$a = \frac{1}{2} \text{ pitch (or } \frac{1}{3}, \frac{1}{4}, \text{ etc.)}$$

$$b = \frac{a}{\tan \alpha} = \text{feed given by the cross slide}$$

$$c = \frac{a}{\sin \alpha} = \text{oblique feed given by the tool slide.}$$

RADIAL PITCHES.

The metric, english and module radial pitches can be obtained by means of the gears and positions given for the longitudinal pitches.

Put lever 54 on positions III or IV.

ADJUSTMENTS

Both spindle bearings are carefully adjusted when testing the lathe in our works. They are of "SPECIAL" quality and will not need readjustment before a long time. Readjustment requires maximum cleanliness and accuracy.

Adjustment of the front bearing radial and axial play

1. Determine the value of both plays by the aid of a micrometer reading to 0,001 mm.
2. Remove the eight screws M6 on cover plate 135-21.067.
3. Dismantle the cover plate 135-21.063 held by five screws CCM M6x15.
4. Loosen the two set screws P M5x8 on nut 135-21.044, remove the latter and the oil retainer 135-21.014 (distance piece).
5. Drive out the spindle carefully using a lead hammer; collect the outer race of roller bearing NN 3012 K/SP.
6. Loosen the two set screws P M5x8 on nut 135-21.071 and remove it.
7. Drive out the thrust bearing 234 414 SP and the roller bearing NN 3014 K/SP by hitting the spindle at the rear.
8. Reduce the thickness of the oil retainer (distance piece) 135-21.068 by an amount to be determined according to the value of the radial play measured as follows :

$$e = \text{radial play in mm} \times 14$$

Example : Assuming that a radial play of 0,008 mm has to be taken up.

$$e = 0,008 \times 14 = 0,112 \text{ mm.}$$

9. Reduce the thickness of the spacing ring of the thrust bearing 234 414 SP by the amount to be taken up + 0,001 to 0,002 mm for preload.
10. Carefully clean all parts when reassembling. Slightly oil the bearings.
11. The spindle as well as all bearing races carry a locating line (a, b and c in sectional view page 33).

Place the four lines b) in alignment, at 180° with regard to the spindle line a) during the operations 12, 13 and 15.

12. Push the inner race of the bearing NN 3014 K/SP over the spindle taper till the distance piece (oil retainer) is pressed laterally.
13. Assemble the thrust bearing, tighten the nut 135-21.071 and lock it with the set screws P M5x8.
14. Mount the spindle, assemble the cover plate 135-21.067.
15. Mount the rear bearing NN 3012 K/SP without play, according to the directions of the next chapter
16. Loosen the eight screws on cover plate 135-21.067 and check the play of the front bearing which must be practically naught.

ADJUSTMENT OF REAR BEARING RADIAL PLAY

1. Determine the radial play by means of a micrometer reading to 0,001 mm.
2. Unlock the nut 135-21.044 by loosening the set screws P M5x8 and screw it according to the amount of play to be taken up. The slight conicity of the inner race of the roller bearing NN 3012 K/SP prevents the nut from advancing regularly. Hit the nut concentrically by means of a tube adequate diameters so as to provoke a slight displacement of the bearing over the spindle taper tighten the nut again.

Repeating this procedure some times will permit to rotate the nut by the desired angle. Check carefully the advance of the nut since it will be difficult to withdraw the bearing inner race if it pushed too far.

Advance the nut 135-21.044 = Radial play to be taken up \times 14 mm.

Nut pitch = 1,25 mm.

Example : Assuming that a radial play of 0,01 mm is to be taken up.

The advance of the nut = $0,01 \times 14 = 0,14$ mm or

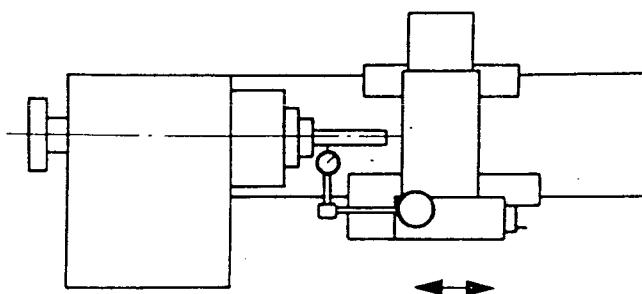
$$\text{a rotation of } \frac{0,14 \times 360^\circ}{1,25} = 40^\circ$$

corresponding to a lenght of $\frac{76 \times \pi \times 40}{360}$ = 26,5 mm measured on the outside diameter 76 mm of the nut.

3. Lock the nut by means of the set screws P M5x8.
4. Check then the radial play which must practically be naught. The roller bearing NN 3012 K/SP must be quite clean and slightly lubricated when checking the play after readjustment.

ADJUSTMENT OF THE SPINDLE PARALLELISM

It is possible to adjust the headstock in the horizontal plane in order to set the spindle centre line accurately parallel with regard to the carriage longitudinal travel.

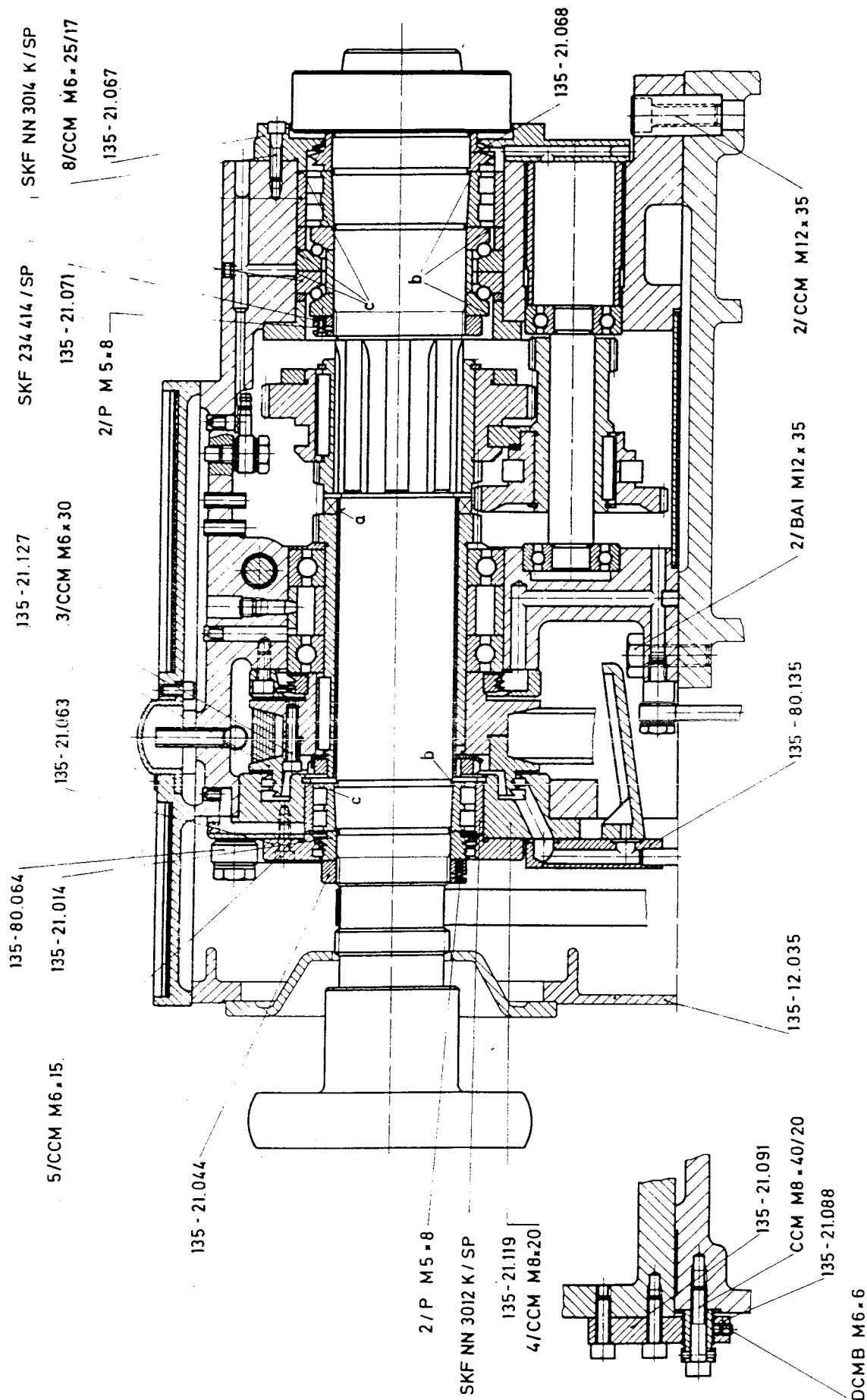


Dial indicator reading to 0,001 mm on tool slide.

Reference arbor mounted in the spindle.

Testing the parallelism is made by moving the carriage apron along the bed

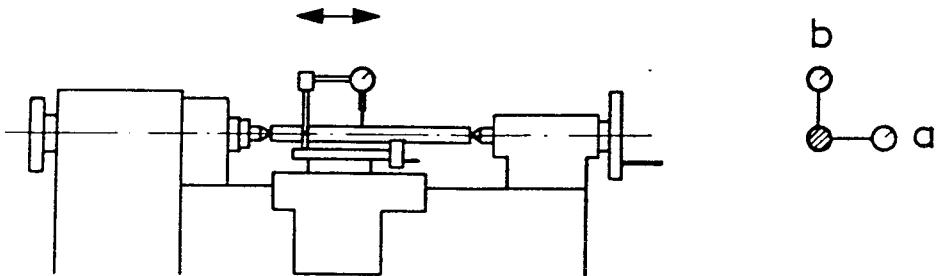
1. Unlock the two screws CCM M12 and the two screws BA1 M12 which secure the headstock to the bed.
2. Unlock the screw DCMB M6x6 and the screw CCM M8x40 on plate 135-21.091.
3. Adjust headstock by means of the adjusting screws 135-21.088 and the screws CCM M8x40 and check the parallelism with the dial indicator.
4. Clamp the adjusting screws.
5. Tighten the four screws fixing the headstock to the bed.



FABRIQUE DE MACHINES SCHAUBLIN S.A. BÉVILARD/SUISSE

Tailstock alignment

This will become necessary when the centre line of the headstock and tailstock is no more exactly parallel with the longitudinal travel of the carriage.



Dial indicator reading to 0,001 mm on swivelling slide.

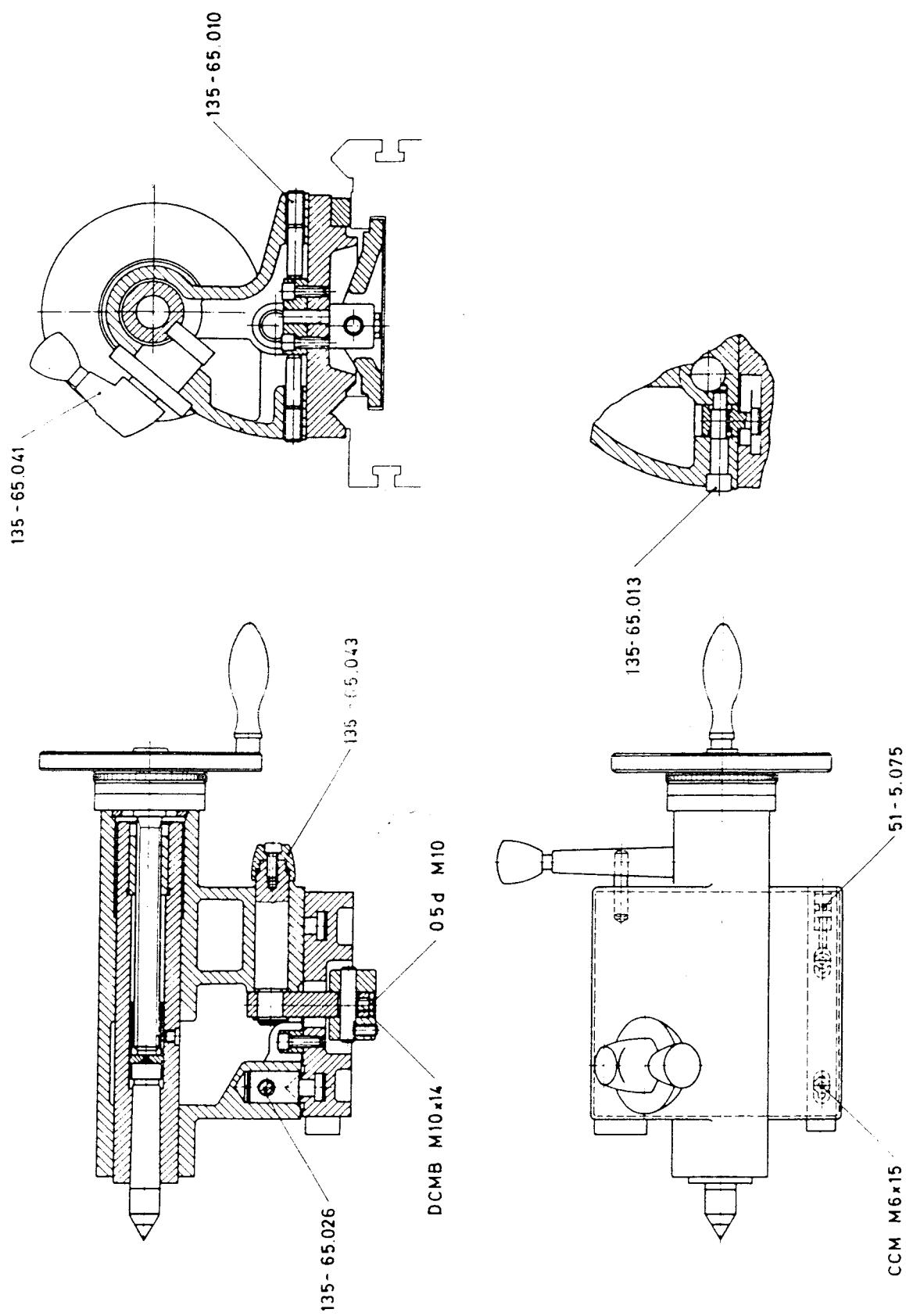
Reference mandrel held between centres.

Check is performed by moving the carriage apron along the bed.

1. Remove the tailstock from the bed ways.
2. Loosen the two eccentrics 135-65.013 and 135-65.026.
3. Move the tailstock on its base plate by means of the two screws 135-65.010 till the screws M6×15 of the gib are accessible.
4. Loosen these screws.
5. Bring back the tailstock to the centre and place it again on the bed ways.
6. Adjust the height of the spindle centre by rotating the screw 51-5075 (to be screwed for raising), check the setting by placing the dial indicator on b.
7. Tighten the screws M6×15 of the gib.
8. Adjust parallelism by operating the two screws 135-65.010. Check it by placing the dial indicator on a.
9. Clamp the two eccentrics 135-65.013 and 135-65.026.

Adjustment of locking device of the tailstock

1. Unlock the nut 0,5d M10
2. Tighten slightly the screw DCMB M10×14.
3. The internal cogging of the locking levers 135-65.041 and 43 permits to place these in a favorable position.



FABRIQUE DE MACHINES SCHAUBLIN S.A. BÉVILARD/SUISSE

REPLACEMENT OF THE LEADScrew PROTECTIONS = ELASTICONE COVERS 230 S

On tailstock side.

1. Free the leadscrew from plate 135-12.030 by loosening nut 135-12.026.
2. Remove plate 135-12.030 held by four screws CCM M8x35/20.
3. Withdraw Elasticone from rear of bed.

On headstock side.

1. Move carriage by hand towards tailstock. Unscrew the leadscrew.
Important! Do not overrun distance A = 780 mm in order to prevent the balls from escaping the nuts.
2. Hold firmly the farthest ends of the protection in order to fighter the coils and withdraw the protection.

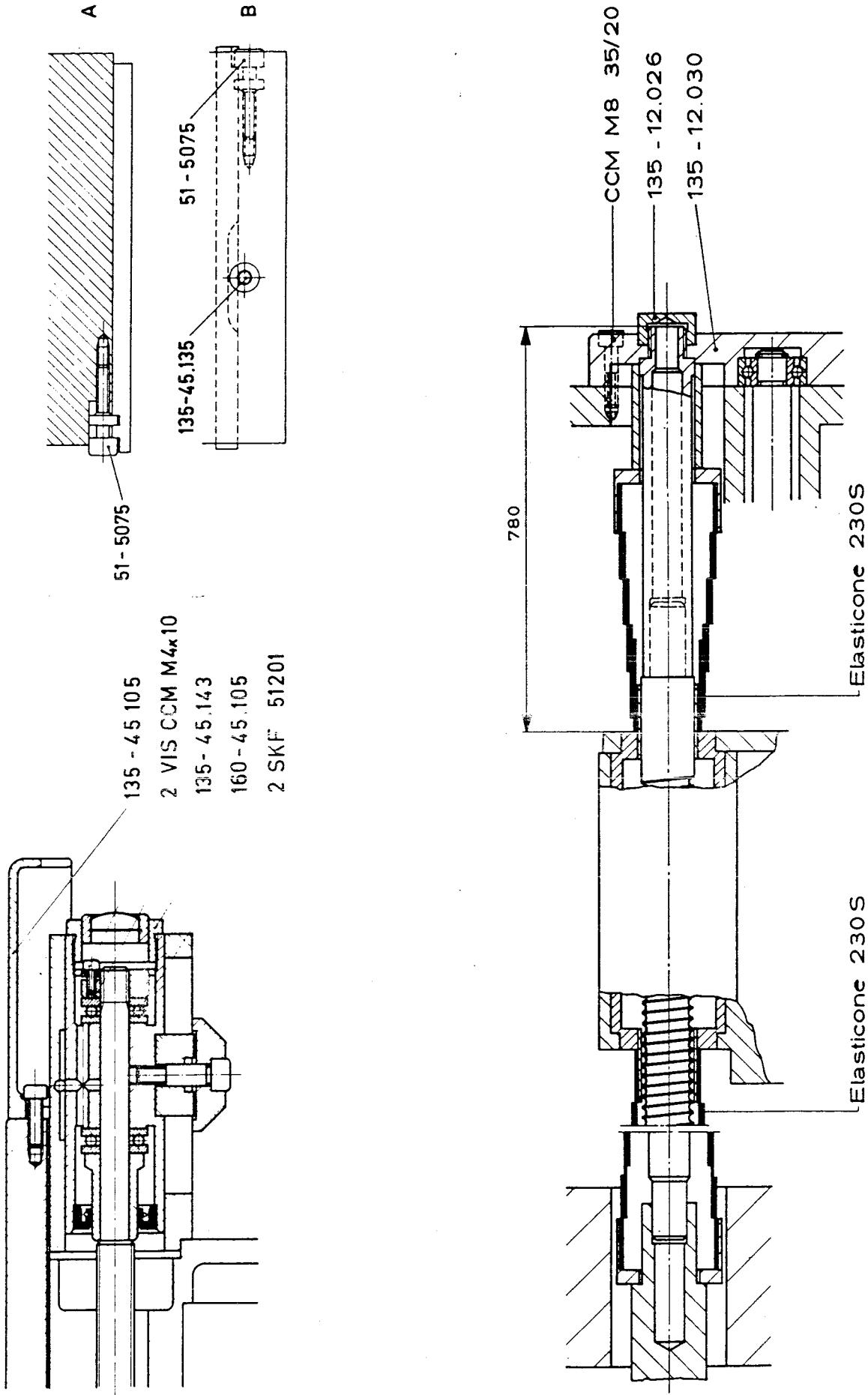
For reassembly, proceed as above but vice versa, commencing from headstock side. Lightly oil the coils.

ADJUSTMENT OF PLAY OF CROSS SLIDE SCREW

1. Remove protection cover 135-45.105.
2. Unscrew oil sightglass 160-45.105.
3. Unlock nut 135-45.143 which is clamped by 2 screws CCM M4x10.
4. Adjust it as to eliminate the play.
5. Reassemble oil sightglass 160-45.105 and replenish oil bath using the lubricating gun (see page 10).

ADJUSTMENT OF THE GIBS

- A. Tool slide gib.
Transversal slide gib.
Apron gib.
Adjust by means of screw 51-5075
- B. Carriage rear gib.
Unlock the gib by tightening screw 135-45.135.
Adjust by means of screw 51-5075.
Lock the gib by unscrewing the screw 135-45.135.



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REPLACEMENT OF THE VARIATOR DRIVING BELTS

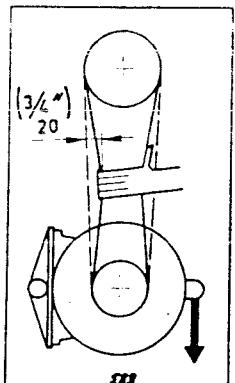
1. Loosen the screw CCM M8x 22 (page 39).
2. Withdraw the shaft 135-84.023 from the bearing so as to provide sufficient clearance to remove the belts.

To change the spindle belt, dismantle the headstock rear bearing as follows : (see sectional view page 33)

1. Remove the cover plate 135-12.035 held by three screws CCM M6.
2. Disconnect the pipe 135-80.135.
3. Unscrew the four screws CCM M8x 20 holding the plate 135-21.119 and take it off using two holes tapped M8.
4. Unscrew the three screws CCM M6x 30 holding the half pulley 135-21.127 and take it off using the two holes tapped M6.
5. Take out the belt from the rear of the spindle.

TENSION OF THE VARIATOR BELTS

1. Loosen the two nuts 0,5d M14.
2. Adjust the belt tension at standstill by operating the tensioner 135-80.051.



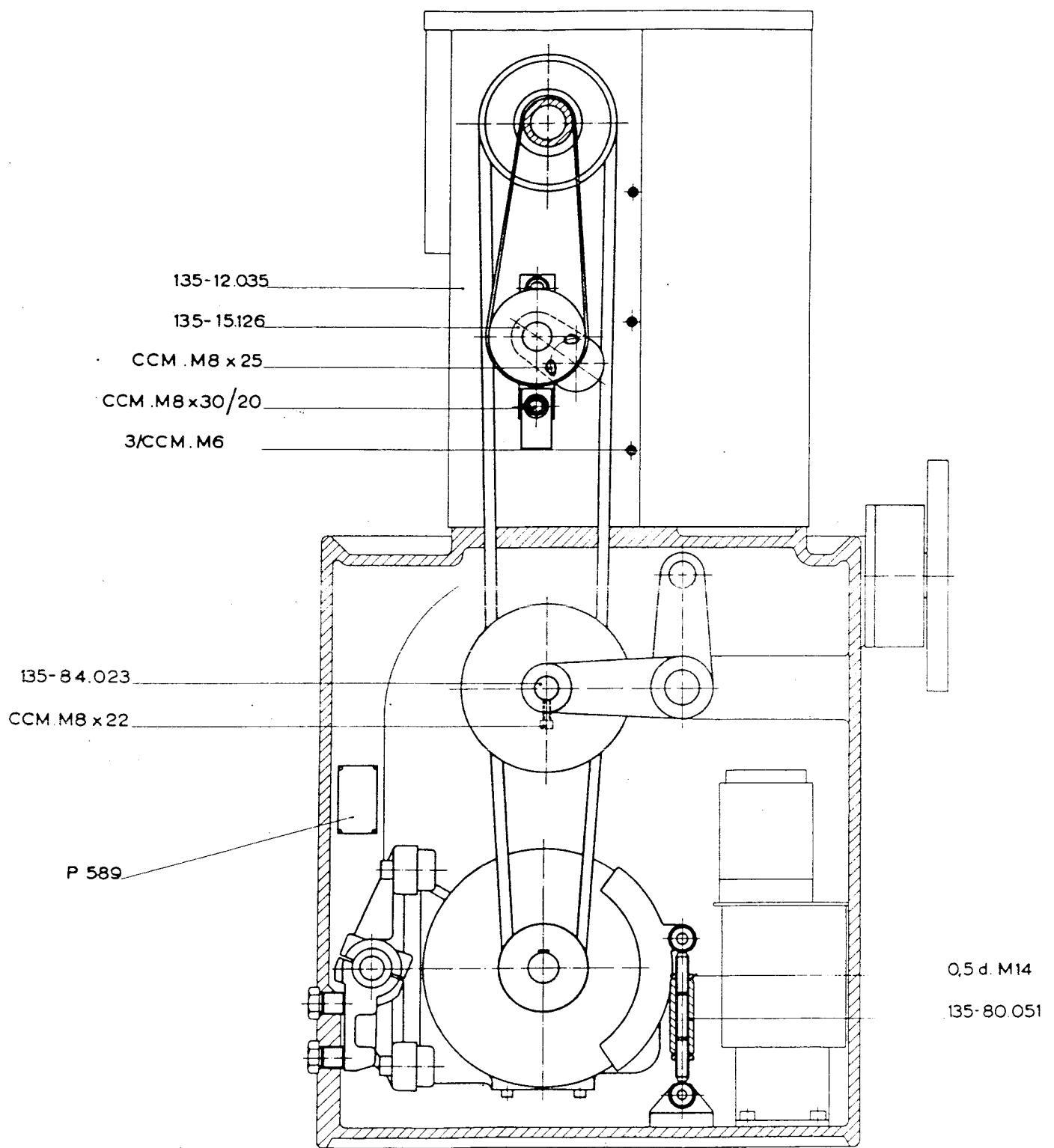
Important !

Both belts must be kept slack enough to permit imparting them a deflection of 20 mm ($\frac{3}{4}$ in.) by hand. See the plate affixed inside. Exaggerated tension may result in an overheating and seizing of the variator bearings.

3. Tighten the two nuts 0,5d M14.

TENSION OF THE FEED BOX DRIVING BELT

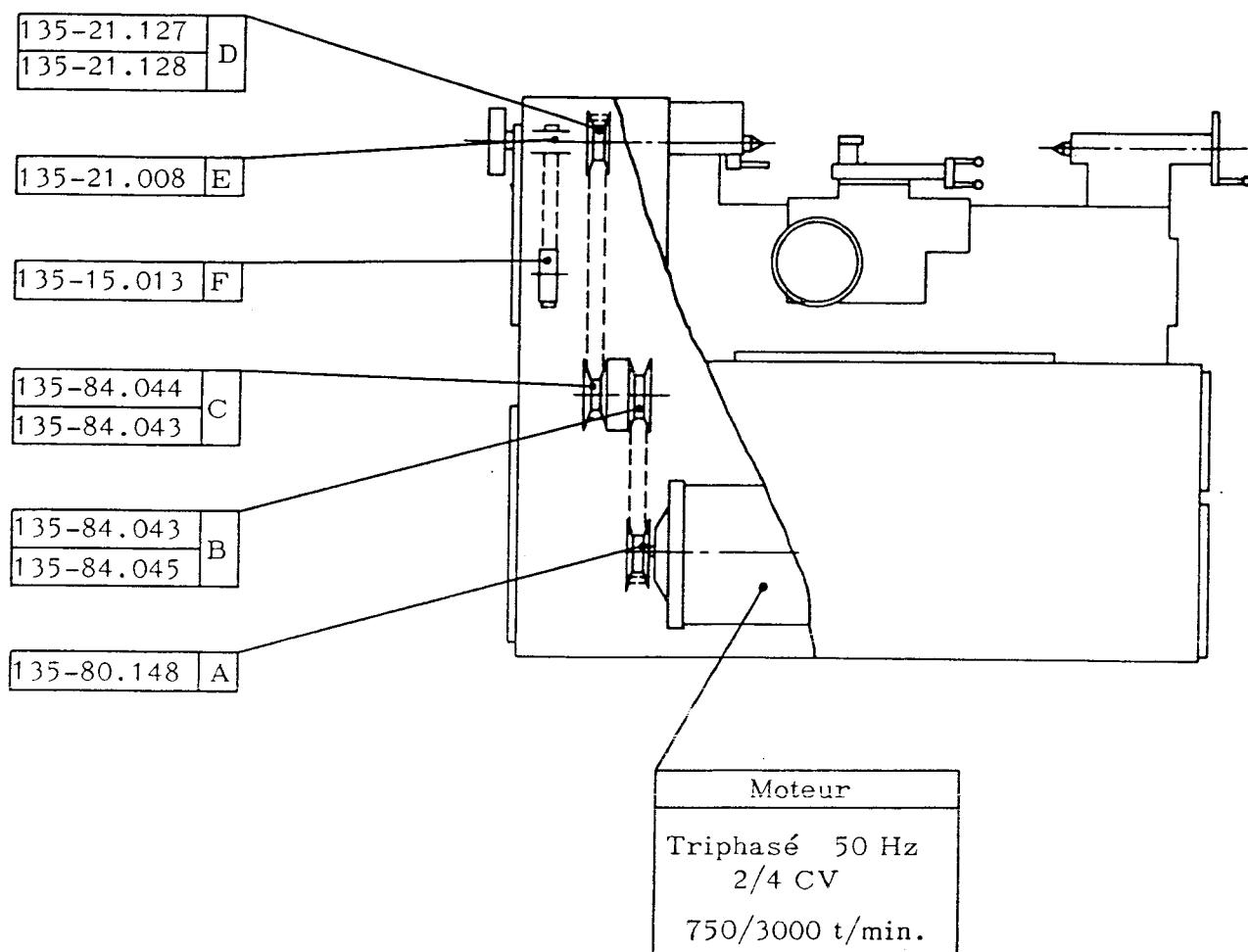
1. Loosen two screws CCM M8x 30/20 and two screws CCM M8x 25.
2. Adjust the tension of the belt by tilting the plate 135-15.126 about its pivoting point.
3. Tighten the four screws mentioned above.



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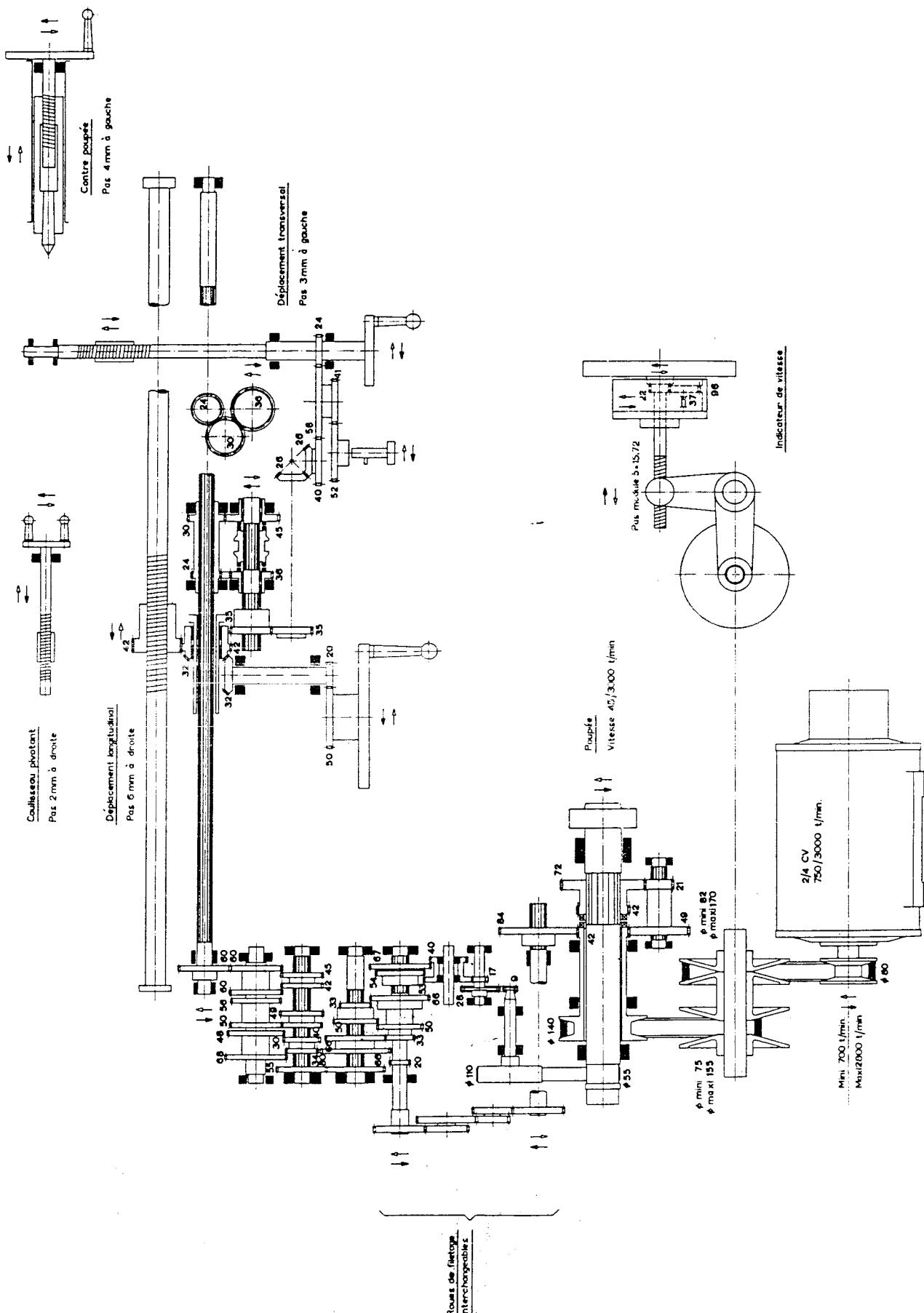
ORGANES DE TRANSMISSION

TOUR SCHAUBLIN 135



Poulies	Courroies					
	Ø prim.	Liaison	Largeur ou profil mm	Longueur mm	Marque	Désignation
A 100 B 103-180	A/B	32,5x13	int. 960	Continental	Variflex FZ 30° (Schaublin)	
C 80-157 D 140	C/D	32,5x13	int. 1650	Continental	Variflex FZ 30° (Schaublin)	
E 55 F 110	E/F	20	725	Siegling	Extremultus type L 1 B	

FABRIQUE DE MACHINES SCHAUBLIN S.A. BÉVILARD/SUISSE



FABRIQUE DE MACHINES SCHAUBLIN S.A. BÉVILARD/SUISSE

TOUR SCHAUBLIN 135
PIECES DE RECHANGE - ERSATZTEILE - REPAIRS PARTS

Banc - Wange - Bed

2 Elasticone Covers 230 S

Poupée - Spindelstock - Headstock

135-21.078	1	Clé de serrage	Gegenmutter	Locking nut
160-21.044	1	Ecrou	Stellmutter	Nut
160-21.090	3	Excentrique	Klemmexzenter	Eccentric
160-21.561	3	Tirant	Nutenschraube	Bolt

Chariot - Kreuzschlitten - Carriage

135-45.282	1	Crémaillère	Zahnstange	Rack
135-45.366	1	Cliquet	Klinke	Trigger

Vis de chariot - Kreuzschlittenschraube - Carriage screw

135-45.026	1	Ecrou	Stellmutter	Nut
135-45.033	1	Vis	Schraube	Screw

Vis transversale - Quergewindespindel - Cross slide screw

135-45.140	1	Vis	Schraube	Screw
135-45.147	1	Ecrou	Stellmutter	Nut

Contre-poupée à vis - Reitstock - Tailstock

135-65.006	1	Vis	Schraube	Screw
135-65.038	1	Ecrou	Stellmutter	Nut
135-65.026	1	Excentrique	Klemmexzenter	Eccentric
135-65.028	1	Tirant	Nutenschraube	Bolt
135-65.013	1	Excentrique	Klemmexzenter	Eccentric
20-50.026	1	Tirant	Nutenschraube	Bolt

Contre-poupée à croisillon - Reitstock mit Kreuzrad - Starwheel-operated tailstock

135-65.013	1	Excentrique	Klemmexzenter	Eccentric
20-50.026	1	Tirant	Nutenschraube	Bolt
135-65.026	1	Excentrique	Klemmexzenter	Eccentric
135-65.028	1	Tirant	Nutenschraube	Bolt

Lunette fixe à charnière - Aufklappbare Lünette - Hinged steady

135-90.004 3 Chien Spannklaue Clamping dog

Lunette à suivre - Mitlaufende Lünette - Travelling steady

135-90.004 2 Chien Spannklaue Clamping dog

Boîte de chariotage et filetage - Gewindeschneid- und Vorschubkasten -
Turning and threading control box

135-15.084	1	Tourillon court	Achsbolzen kurz	Short gudgeon
135-15.085	1	Tourillon long	Achsbolzen long	Long gudgeon
102VM-1.710	2	Ecrou	Stellmutter	Nut
102VM-1.711	2	Rondelle	Scheibe	Disc

COURROIES - RIEMEN - BELTSPoupée - Spindelstock - Headstock

1 Courroie Siegling Extremultus. type L 1 B
20 mm / 725 mm

Variateur - Variator - Variator

- 1 Courroie Continental, type Variflex FZ
LR maxi 0,5 mm
profil 32,5 x 13 mm angle 30° long. int. 1650 mm
- 2 Courroie Continental, type Variflex FZ
LR maxi 0,5 mm
profil 32,5 x 13 mm angle 30° long. int. 960 mm

JOINTS - DICHTUNGSRINGE - JOINTS

GROUPES GRUPPE GROUPS	Banc Wange Bed	Boîte de chariotage Vorschubkasten Feed box	Poupée Spindelstock Headstock	Tablier - Chariot Bettschlitten - Kreuzsupport Carriage - Apron	Accessoires de chariot Zubehör zu Kreuzsupport Carriage accessories	Variateur Variator Variator
Gaco MINI 1628/7	1					
Gaco MIM 1630		1				
Gaco MIM 2035/10				1		
Gaco MIM 2538/7				1		
Gaco MIM 2540		4				
Gaco MIM 2540/10				2		
Gaco MIM 3040/7				1		
Gaco OR 144					2	
Gaco SMIN 3048				1		
Stefa A 2545						1
Aeroquip VI 107				2		
V-Ring V 55				1		

JOINTS - DICHTUNGSRINGE - JOINTS

GROUPES GRUPPE GROUPS									
	Banc Wange Bed	Boîte de chariotage Vorschubkasten Feed box	Poupée Spindelstock Headstock	Tablier - Chariot Bettschlitten - Kreuzsupport Carriage - Apron	Accessoires de chariot Zubehör zu Kreuzsupport Carriage accessories	Variateur Variator Variator			
	O-Ring PRP 010		1						
	O-Ring PRP 011			1					
O-Ring PRP 012				1					
O-Ring PRP 013				1					
O-Ring PRP 014				1					
O-Ring PRP 111	1			1	1				
O-Ring PRP 112				1					
O-Ring PRP 113				1					
O-Ring PRP 255						1			
O-Ring HN 340 47x2,5			1						
O-Ring HN 340 94x2,5			2						
O-Ring HN 340 109x2			1						

ROULEMENTS - KUGELLAGER - BEARINGS

GROUPES GRUPPE GROUPS	Banc Wange Bed	Boîte de chariotage Vorschubkasten Feed box	Poupée Spindelstock Headstock	Coulisse transversale Querschlitten <small>Transversal slide</small>	Tablier - Chariot Bettschlitten - Kreuzsupport Carriage - Apron	Coulisse pivotante Schwenkbar Querschlitten Swivelling slide	Contre-poupée à vis Reitstock Tailstock	Contre-poupée à croisillon Reitstock mit Kreuzrad Starwheel-operated tailstock	Variateur Variator Variator	Lunette fixe à 3 chiens Lünette mit 3 Bronzebacken 3-jaw steady
6000 - 2 RS										3
6004					2					
6005 - 2 RS					3					
6006					4					
6015 - P4			2							
6203		10			2					
6203 - 2 RS					2					
6204		5								
6204 - 2 RS				1						
6205		1								
6206		2						2		
6208								-1		
6304 - P6		2							1	
6305										
Hoffmann 115 CD						1				
Hoffmann 115 CDE					1					
Hoffmann 320 CDE							1			
NN 3012 K/SP			1							
NN 3014 K/SP			1							
234 414/SP			1							

FABRIQUE DE MACHINES SCHAUBLIN S.A. BÉVILARD/SUISSE

ROULEMENTS - KUGELLAGER - BEARINGS

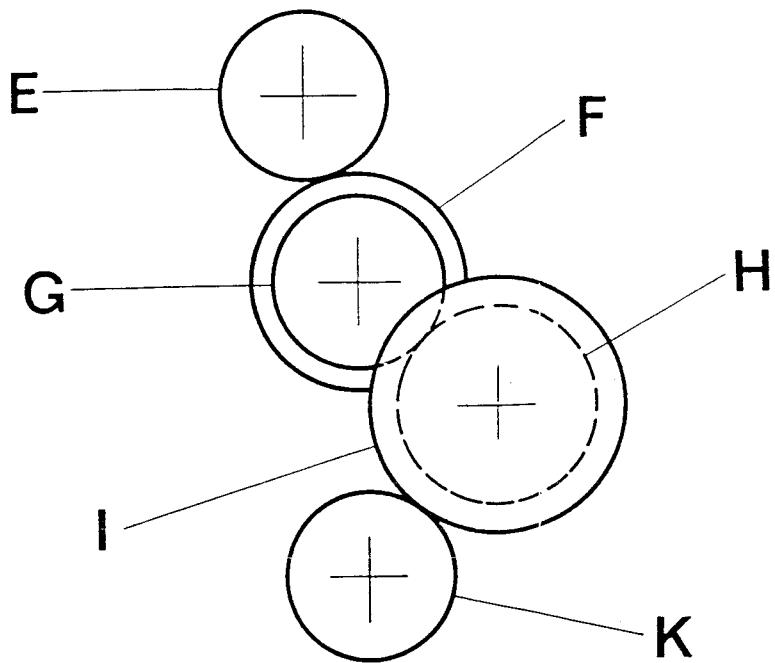
GROUPES GRUPPE GROUPS	Banc Wange Bed	Boîte de chariotage Vorschubkasten Feed box	Poupée Spindelstock Headstock	Coulisse transversale Querschlitten Transversal slide	Tablier - Chariot Bettschlitten - Kreuzzsupport Carriage - Apron	Coulisse pivotante Schwenkbar Querschlitten Swivelling slide	Contre-poupée à vis Reitstock Tailstock	Contre-poupée à croisillon Reitstock mit Kreuzrad Starwheel-operated tailstock	Variateur Variator	Lunette fixe à 3 chiens Lünette mit 3 Bronzebacken 3-jaw steady
Nadella AX 1528										
Nadella AX 1730					2					
Nadella AX 2035							1		1	
Nadella AX 3047					1					
Nadella RAX 445					2					
INA K 10/13								2		
INA K 12×15×9						2				
INA K 17/10						2				
INA K 17/13						2				
INA K 20/10						3				
INA K 20/13						3				
INA K 22×28×17		2								
INA K 28×33×26 zw						1				
INA NK 20/16		1								
INA NK 26/16		1								
INA WR 60								1		
INA BR 60			1					2		
INA BR 95			1							
AL 12	1	1								
AL 17	1	2								

FABRIQUE DE MACHINES SCHAUBLIN S.A. BÉVILARD/SUISSE

ROULEMENTS - KUGELLAGER - BEARINGS

GROUPES GRUPPE GROUPS	Banc Wange Bed	Boîte de chariotage Vorschubkasten Feed box	Poupée Spindelstock Headstock	Coulisse transversale Querschlitten Transverse slide	Tablier - Chariot Bettschlitten - Kreuzsupport Carriage - Apron	Coulisse pivotante Schwenkbar Querschlitten Swivelling slide	Contre-poupée à vis Reitstock Tailstock	Contre-poupée à croisillon Reitstock mit Kreuzrad Starwheel-operated tailstock	Variateur Variator Variator	Lunette fixe à 3 chiens Lünette mit 3 Bronzebacken 3-jaw steady
Feinprüf 5 N 3332				1						
51201				2						

SCHAUBLIN I35



Jeu de roues 45° 48° 50° 50° 54°
 Rädersatz 55° 56° 62° 64° 72°
 Set of change gears 79° 80° 87° 89°

* Pour le calcul des jeux de roues
 employer seulement les pas *
 Exemples voir pages 22 et 23.

* Für die Berechnung von Wechselrädern
 nur mit * bezeichnete Steigungen verwenden.
 Beispiele siehe Seite 22 und 23.

* For calculation of change gears only take
 pitches marked with *
 For examples refer to pages 22 and 23.

Pas courts
 Kleine Steigungen
 Short pitches

Pas Steigung Pitch mm	Roues	
	E	F
0,2	50	80
0,225	45	56
* 0,25	50	56
0,3	50	80
* 0,3125	50	56
* 0,35	50	56
* 0,375	50	56
* 0,4	50	56
* 0,4375	50	56
0,45	45	56
* 0,5	50	56
0,6	50	80
* 0,625	50	56
* 0,7	50	56
* 0,75	50	56
* 0,8	50	56
* 0,875	50	56
0,9	45	56
* 1	50	56
1,1	55	56
1,2	50	80
* 1,25	50	56
* 1,4	50	56
* 1,5	50	56
* 1,6	50	56
* 1,75	50	56
1,8	45	56
* 2	50	56
2,2	55	56
2,4	50	80
* 2,5	50	56
* 2,8	50	56
3	50	56
* 3,2	50	56
* 3,5	50	56
1,666	50	56

TABLEAU DE FILETAGE GEWIDESCHNEIDTABELLE SCREW-CUTTING CHART

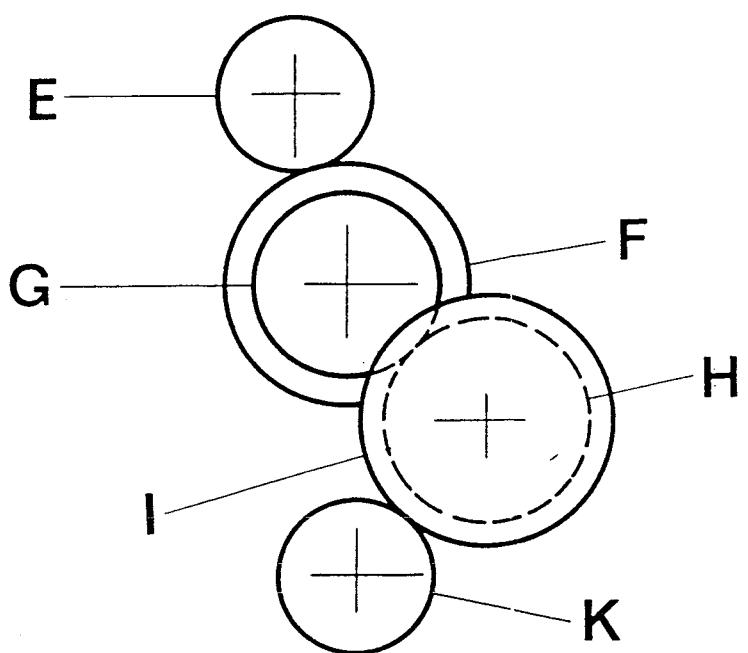
FILETS MÉTRIQUES

METRISCHE GEWINDE

METRIC THREADS

SCHAUBLIN I35

TABLEA
GEWID
SCREW



Jeu de roues	45	48	50	50	54
Rädersatz	55	56	62	64	72
Set of change gears	79	80	87	89	

Exemples de calcul voir pages 22 et 23.
Berechnungsbeispiele siehe Seiten 22 und 23.
Examples of calculation see pages 22 and 23.

Module Modul Module	Roues	
	E	F
0,25	50	45
0,25	50	55
0,3	50	55
0,325	50	64
0,35	54	62
0,375	50	45
0,4	50	45
0,45	50	55
0,5	50	45
0,5	50	55
0,55	50	45
0,6	50	55
0,7	54	62
0,75	50	45
0,8	50	45
0,9	50	55
1	50	45
1	50	55
1,125	50	55
1,25	50	45
1,5	50	45
0,125	50	45

AU DE FILETAGE DESCHNEIDTABELLE -CUTTING CHART

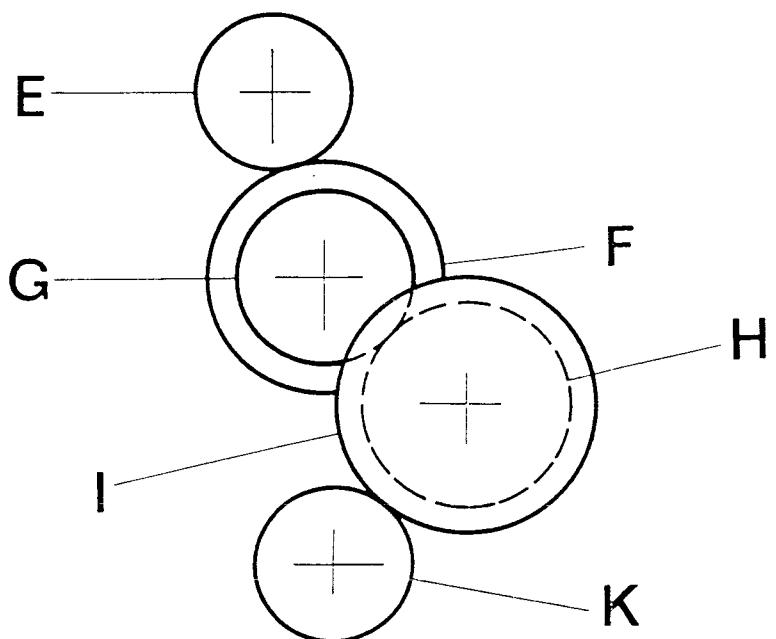
FILETS ANGLAIS

ENGLISCHE GEWINDE

ENGLISH THREADS

SCHAUBLIN 135

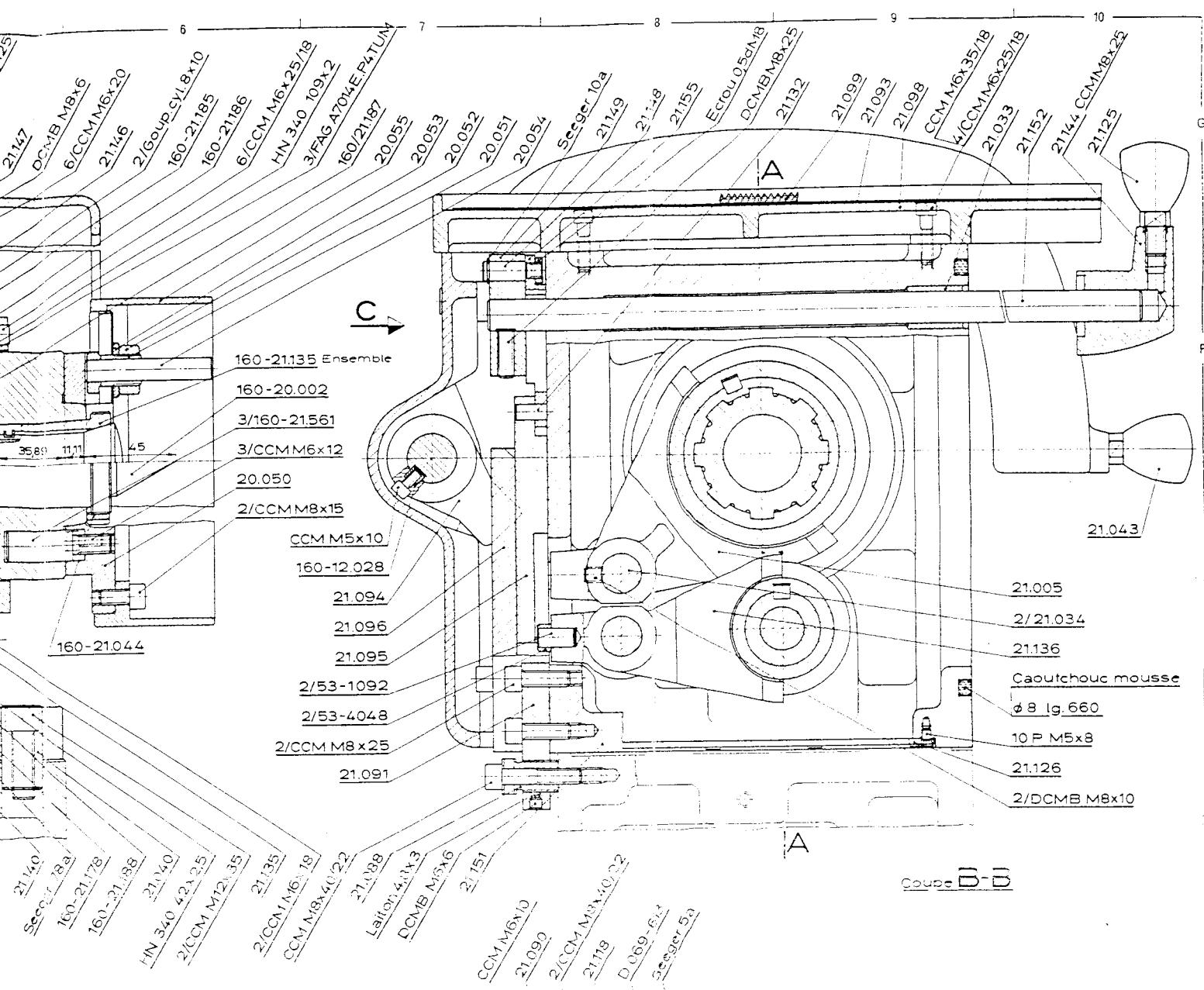
TABLEAU GEWINDI SCREW-C



Jeu de roues 45 48 50 53 54
 Rädersatz 55 56 62 64 72
 Set of change gears 79 80 87 89

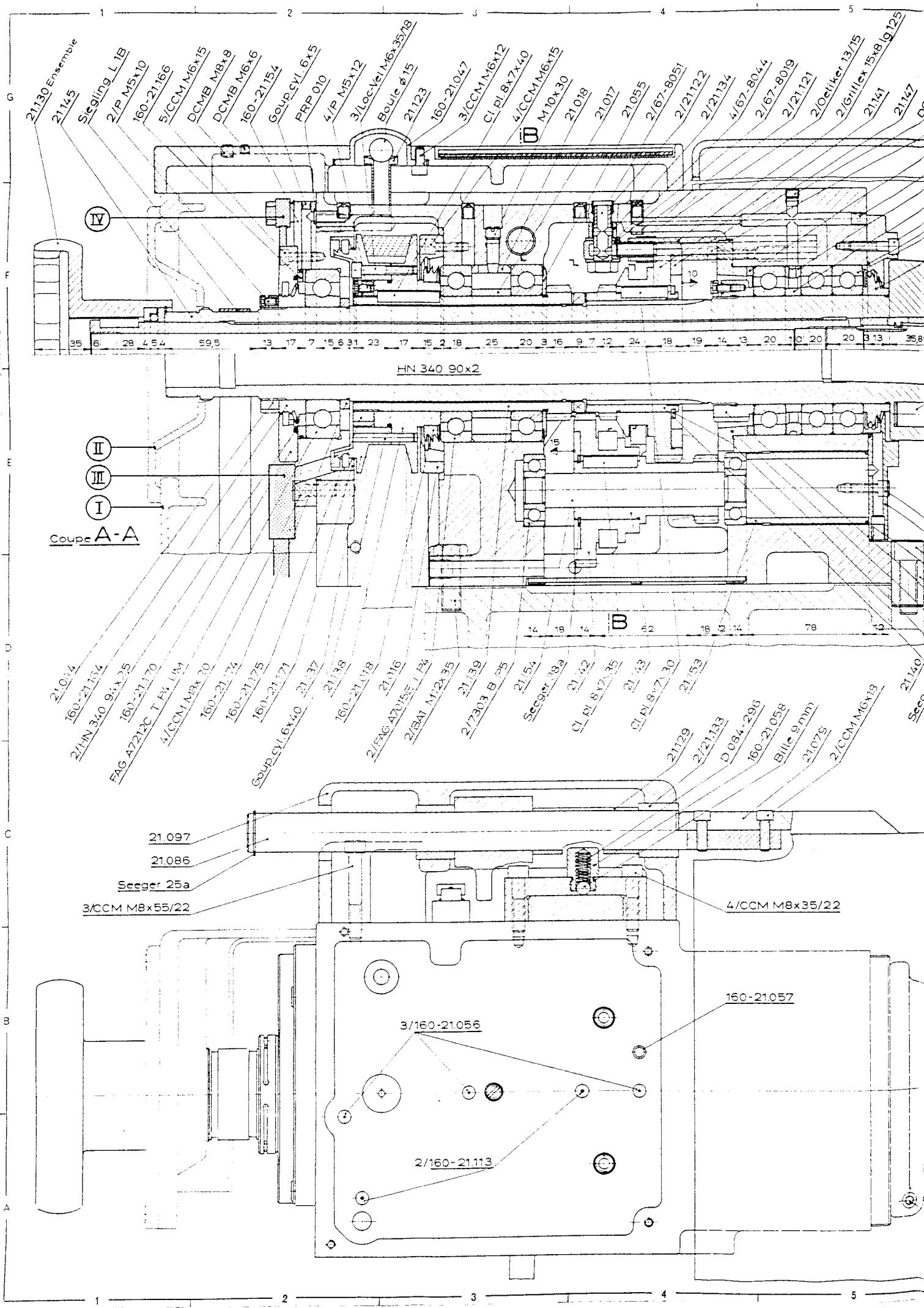
Exemples de calcul voir pages 22 et 23.
 Berechnungsbeispiele siehe Seiten 22 und 23.
 Examples of calculation see pages 22 and 23.

Filets au" Gänge auf 1" Threads per In	Roues		
	E	F	G
80	50	54	50
72	50	79	89
64	50	54	79
62	50	80	87
56	50	62	87
48	50	79	89
44	50	54	79
40	50	62	87
36	50	79	89
32	50	62	87
30	50	64	89
28	50	62	87
27	50	64	79
26	48	79	89
24	50	79	89
22	50	54	79
20	50	62	87
19	50	50	89
18	50	79	89
16	50	62	87
14	50	62	87
13	48	79	89
12	50	79	89
11 1/2	50	80	72
11	50	54	79
10	50	62	87
9	50	79	89
8	50	62	87
7	50	62	87
6	50	79	89
5 1/2	50	54	79
5	50	62	87
4	50	62	87
15	50	64	80
60	50	62	80



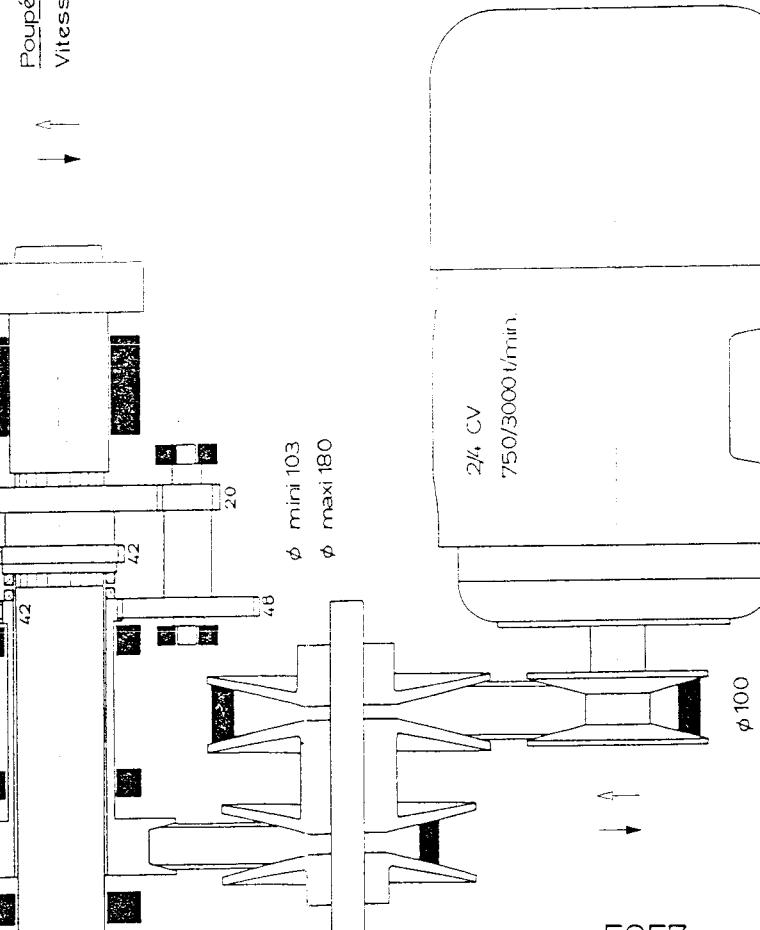
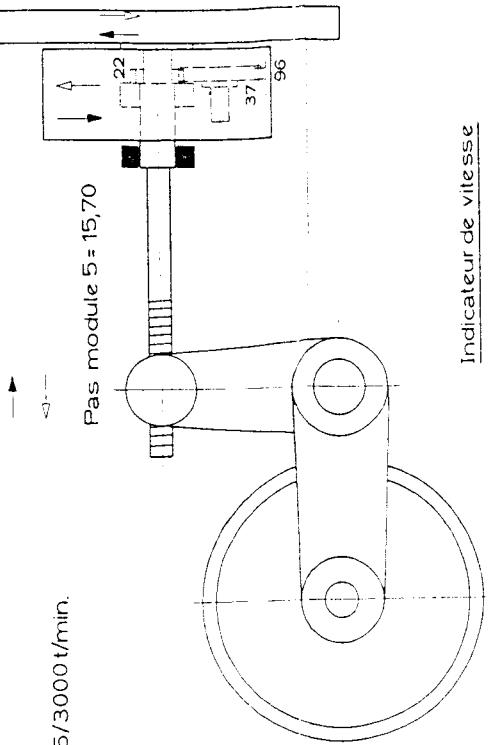
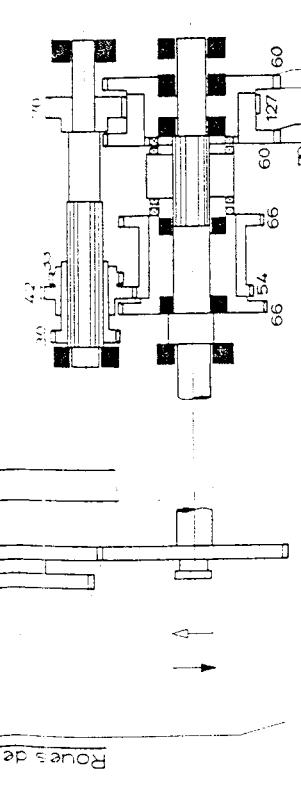
Détail nez Camlock

Emploi pour	Places semées
Outilage	
Modifications 18290	Remplace par
Rép. 16-21.264 du 3.10.62	Rép. 16-21.264 du 3.10.62
Échelle Dessin 1:10 Scale 1:10	Contrôle Control
Matière Matière Model Modèle	Vue View
SCHAUBLIN S.A. SEYLAUD (SUISSE)	135-21.000

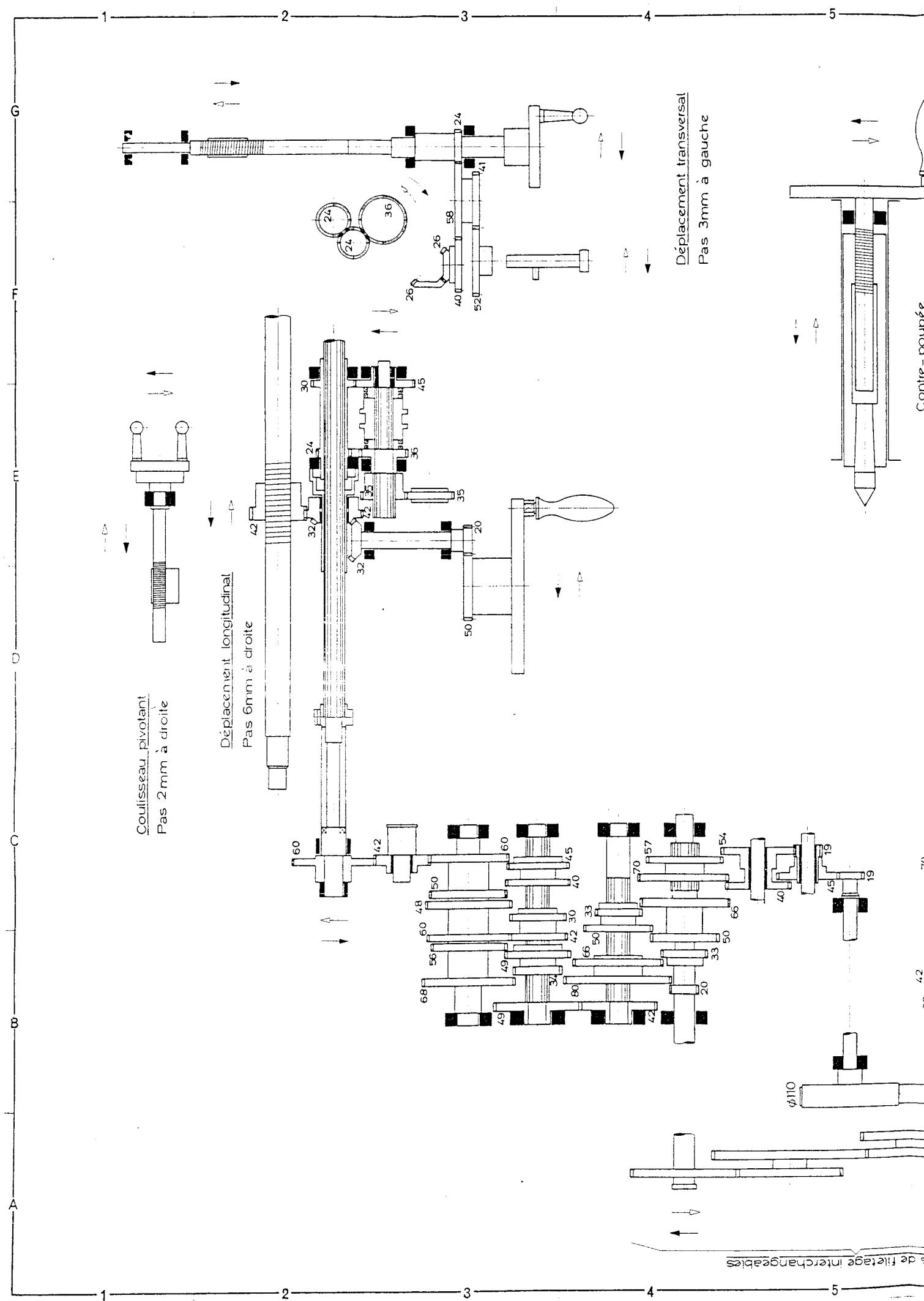


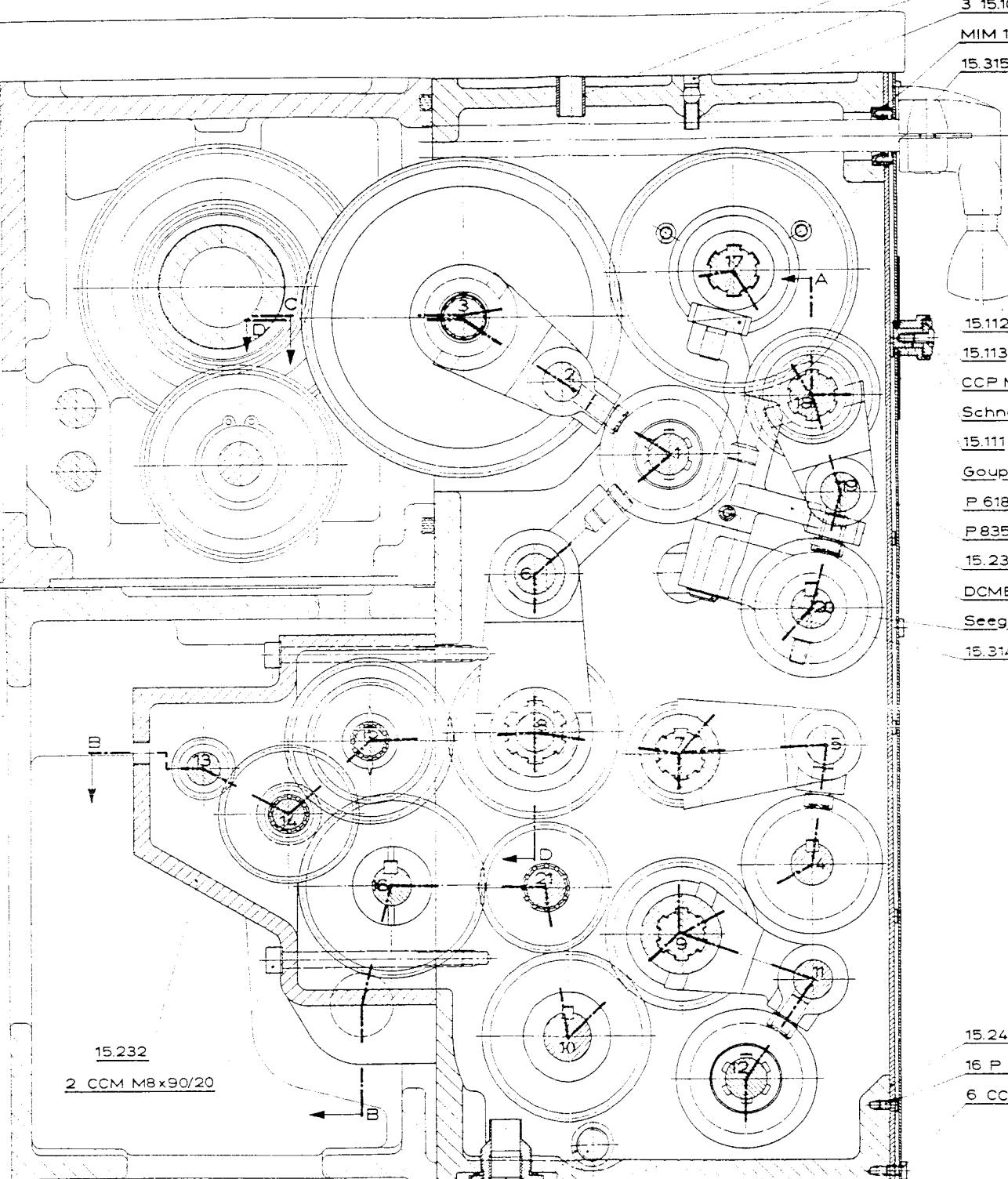


Contraire - Poulie
Pas 4mm à gauche



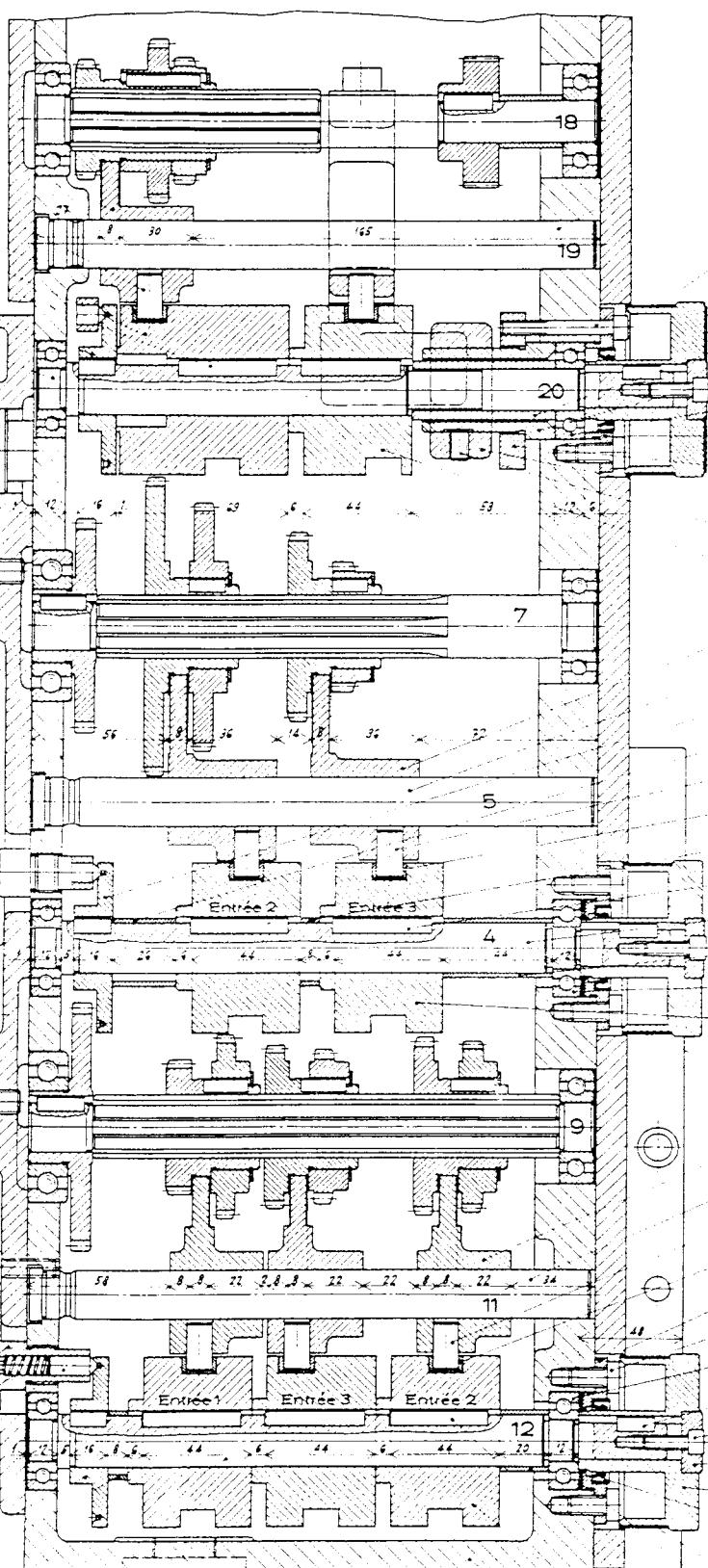
Empreinte pour Outilage	Pièces semblables
Modifications	Remplace par
Remplace 5957 du 18.12.64	
Echelle Dessin 14.12.71 3N	
Contrôle 1:2,5	
SCHAUBLIN S.A. BÉVILARD (SUISSE)	IN 135-4





PIÈCES SÉPARÉES	
Outilage	A
Modifications: 1984/5	Réparations: 1984/5 au 27/5/83
Boulle de charriote et filetage	Echelle: Dessin: 1/10 - 27 Juillet
Matière: Acier	Contrôle: Normes VU
SCHAUBLIN S.A. LE VILLAGE SAUSSET	135-15.000 F ₁
	voir E2 et 3

G

15.2452 53-10922 53-404815.3072 cl. pl. 5x5x4015.30915.3063 15.10615.130-15.205selon liste2 102 VM-17102 102 VM-17114 15.2134 PRP 11615.21615.214P 83615.21115.212Loclite Blocpress15.21715.2152 51-911515.2182 Heli-CoilM10x15(1,5 d)2 CCMM10x35/252 53-921615.233Caoutchoucmousse Ø 86 CCM M8x224 15.2484 D076-5674 15.24915.23115.29615.27715.295Coupe A-A15.2793 CCM M6x45/172 Parker 0x 3/16"P 7353 Parker 0x 3/16"P 73615.31315.3102 620315.31115.31215.238DCMB M8x1215.3082 15.24215.27915.27515.2782 53-10922 53-404815.2772 cl. pl. 5x5x4015.27415.2762 62032 15.3622 Parker 0x 3/16"P 5223 15.24415.2793 53-10923 53-40483 15.2668 CCM M6x152 62038 cl. pl. 5x5x154 CCM M6x184 15.2644 15.2654 MIM 2535/72 Parker 0x 3/16"P 7344 Schnorr K 620315.2973 cl. pl. 5x5x403 15.36215.230

DCMB M8x12

125-14.047

125-14.049

C pl. 6x6x50

125-15.045

6205

2 6005

125-15.030

125-15.029

125-15.026

C pl. 5x5x30

6204

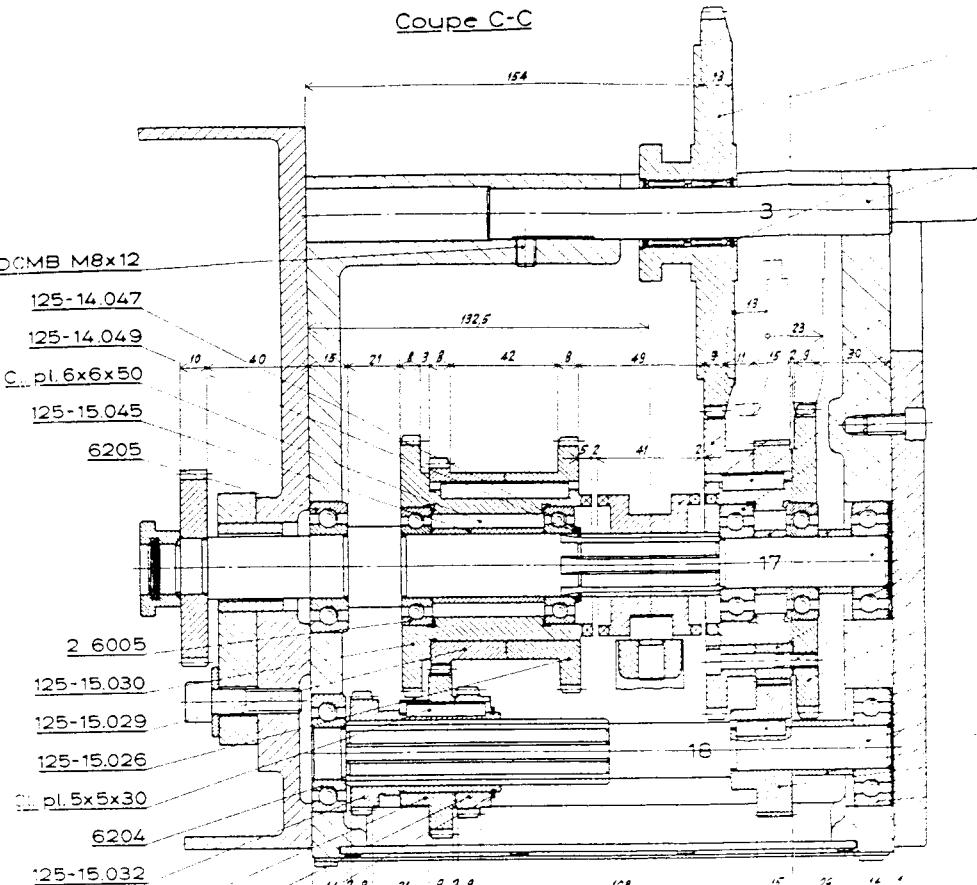
125-15.032

125-15.031

125-15.027

Seeger 32 a

Coupe C-C



15.273

2 INA K 20x26x17

2 INA BR 26

15.272

15.299

125-14.025

Cl. pl. 6x6x25

3 6204

15.302

Entr. 26/20x14

Schnorr K 6204

15.298

15.301

3 CCM M6x40/17

15.300

Cl. pl. 6x6x20

Schnorr K 6204

15.303

15.305

15.304

6203

15.271

15.243

2 6203

15.267

15.269

15.263

2 6005 C pl. 5x5x30

15.262

15.268

15.362

P 622

2 Parker 0x3/16"

P 562

3 Parker 0x3/16"

15.270

2 53-4048

2 53-1092

15.241

15.280

15.281

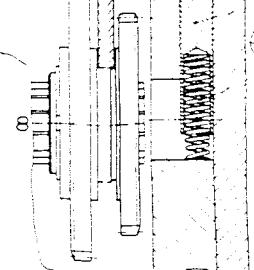
DCMB M6x6

15.330

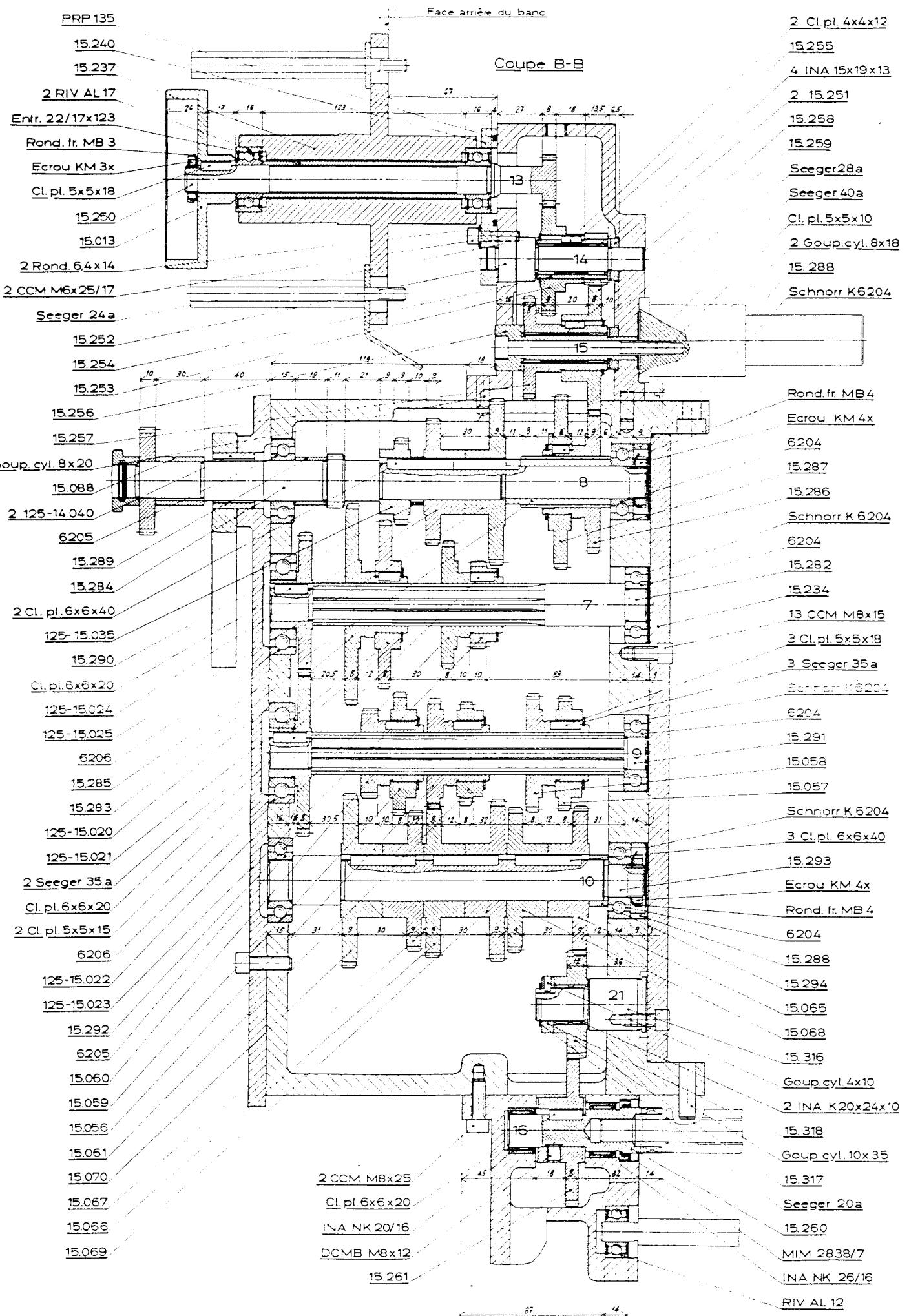
15.247

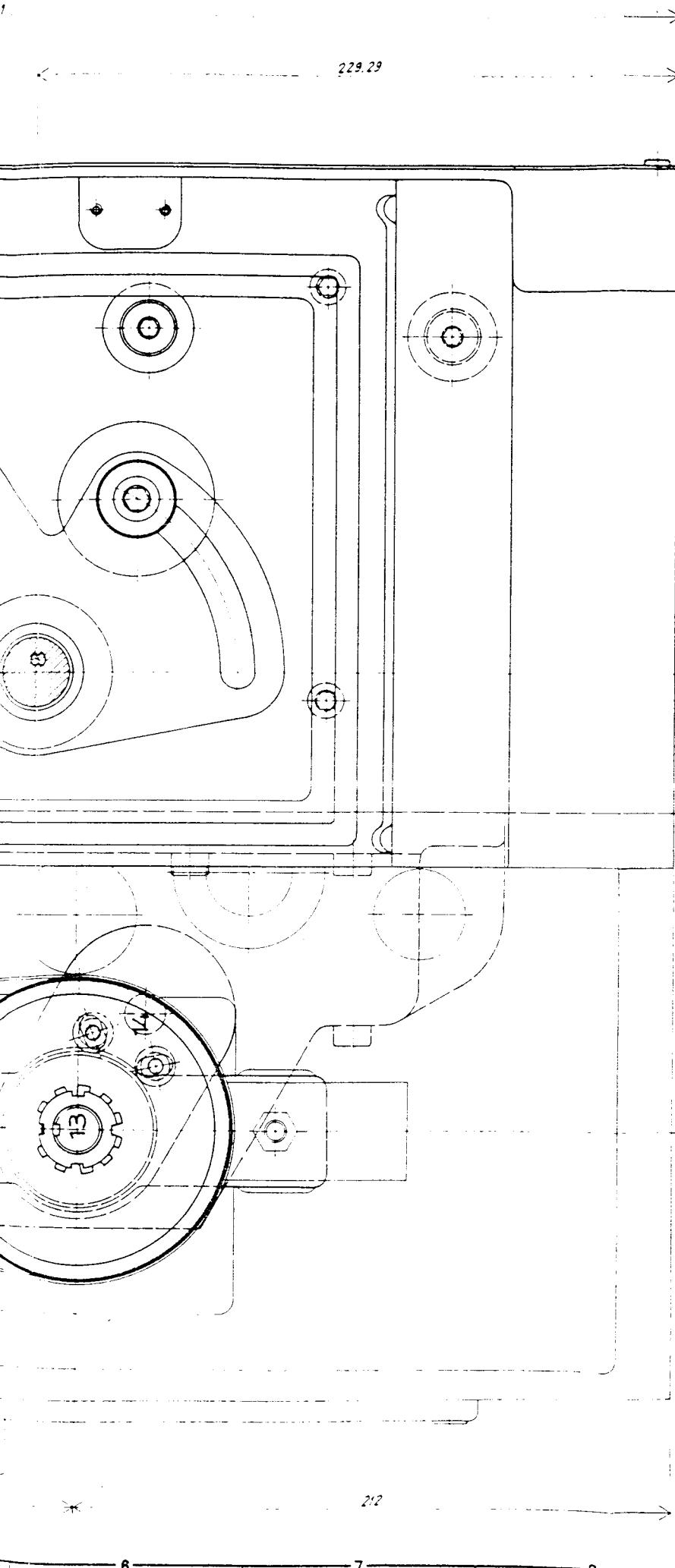
D 098-207

Coupe D-D



Emp. pour:	Places servies
Outilage:	
Modifications 18845	Réparations
	Réparations 125-15.000 du 27.5.63
Boîte de chariotage et filetage	Erreurs 16 B.2.1. Répar.
Matières	Contrôle
	Normes
SCHAUBLIN S.A. BERNARD - SUISSE	VU
135-15.000	





Ensemble 13-16.625

8 CM M4x10

G

F

E

D

C

B

M7+

SI
SA
SA
SA

Stock

Empl pour:	Pièces semblables:
Outilage	
Modifications: 18645	
Remplace par	
Remplace 135-16.625 du 22.5.63	
Boîte de chariotage et filetage	Echelle Dessiné Contrôlé Normes Vu
Matière Modèle	11
SCHAUBLIN S.A. BÉVILARD SUISSE	135-15.000 F3

6

212

7

8

9

10

A

1 2 3 4 5

461

G

F

H

D

K

L

B

A

151.52

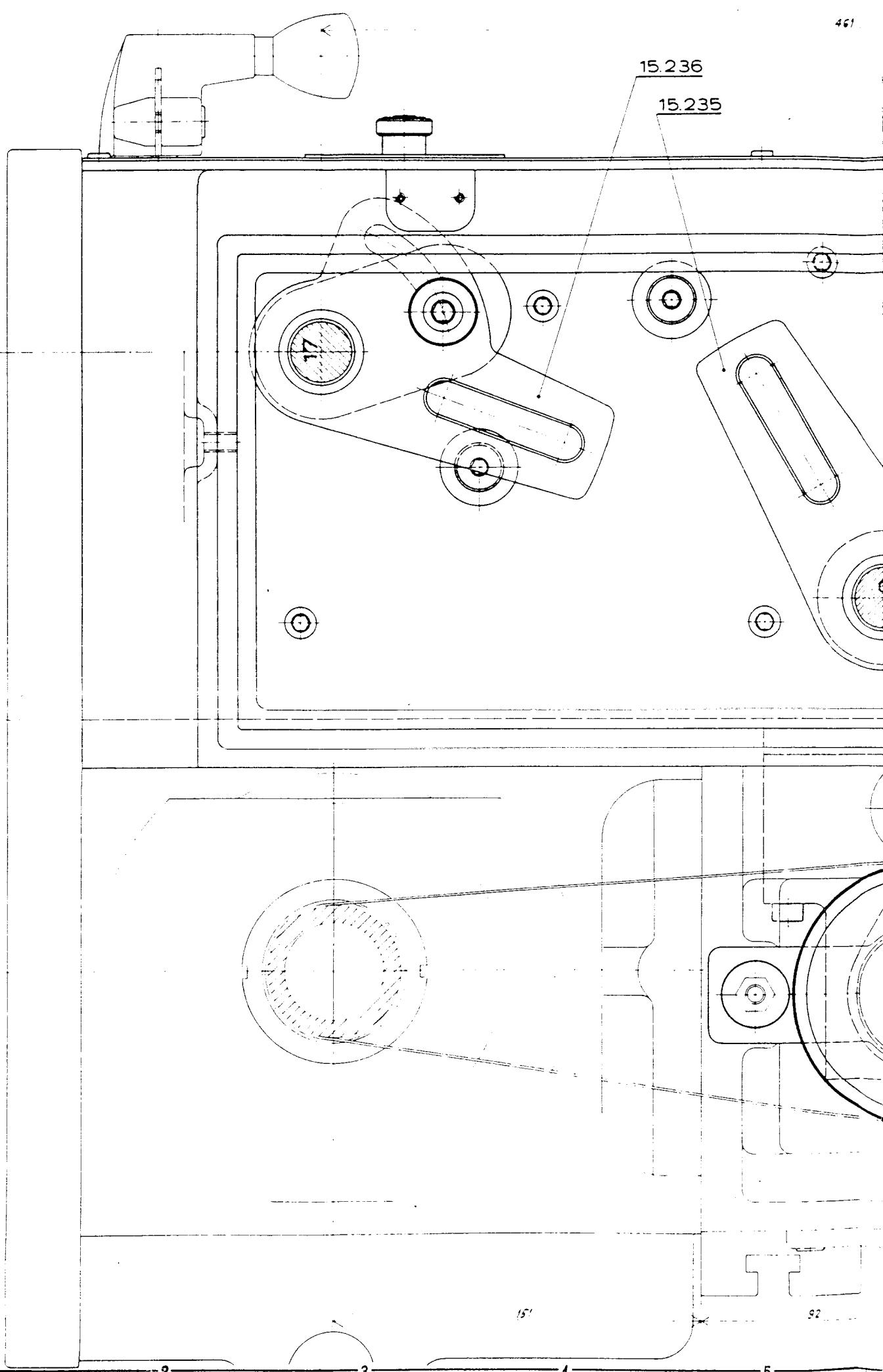
15.236

15.235

105

15'

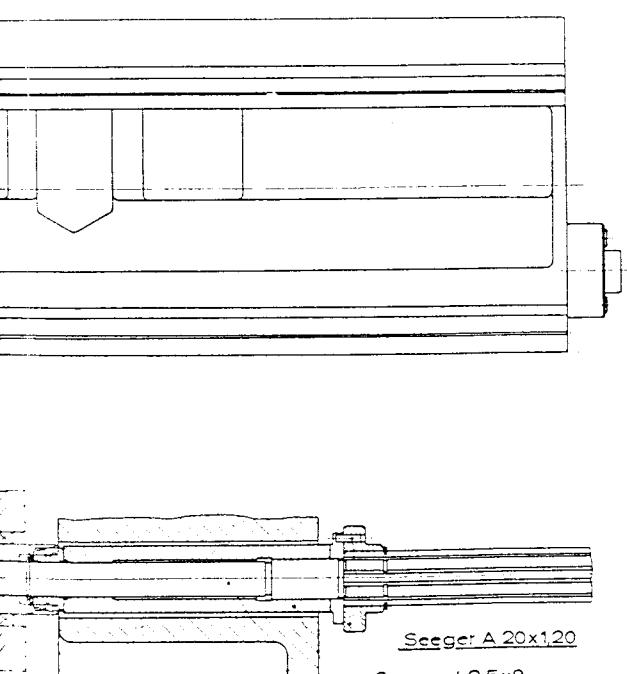
52



12.007
160-12.020
12.001
12.025
Boulement AL 17
2 Goup. cyl. C8x40
12.024
12.029
12.025
4 Vis CCM M8x35/20

621

12.001
2 Elastique 230 S
2 12.025
Boulement AL 17
2 Goup. cyl. C8x40
12.024
12.029
12.025
4 Vis CCM M8x35/20



12.048

Truarc 5103-56

Détail C (éch.11)

Seeger A 20x120

Goup.cyl. 2,5x8

12.047

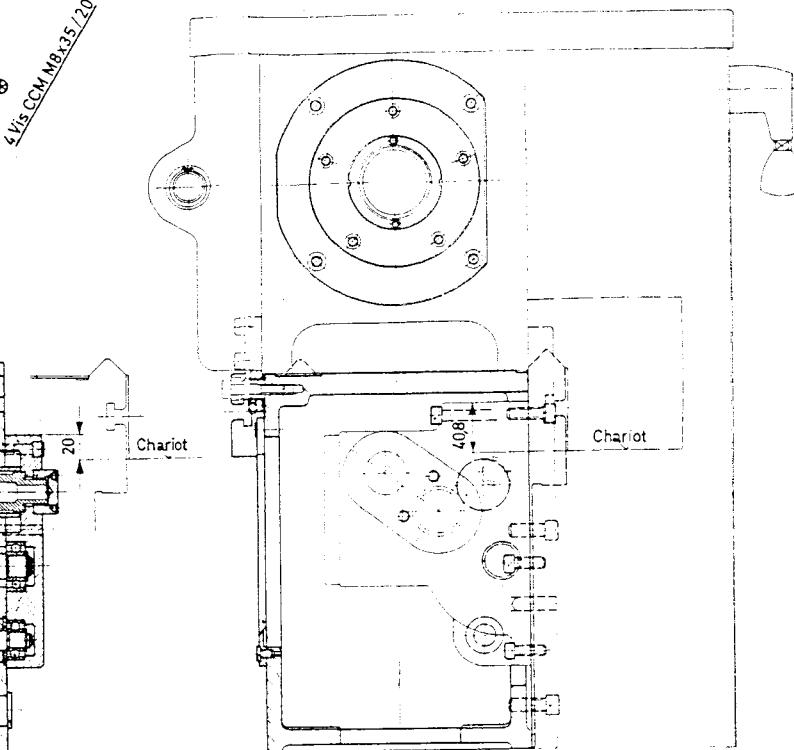
12.046

12.039

* Voir liste boîte

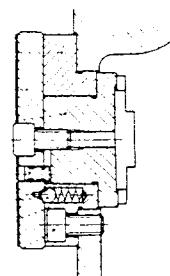
⊕ Voir liste tablier

○ Voir liste poupee

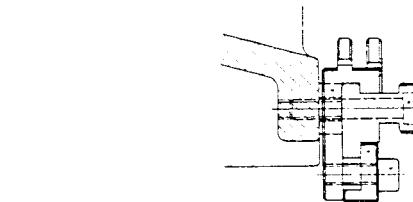


Vis CLP M5x12
12.008
* 2 Vis CCM M8x35/20
* 2 Vis CCM M8x25
* 2 Vis CCM M10x25

P 662
3 Parker 0 x 3/16''
12.033
12.034
12.032
Goup.cyl. 5x10
Bille ø 6 mm
D 059 - 480
3 Vis CCM M8 x 15



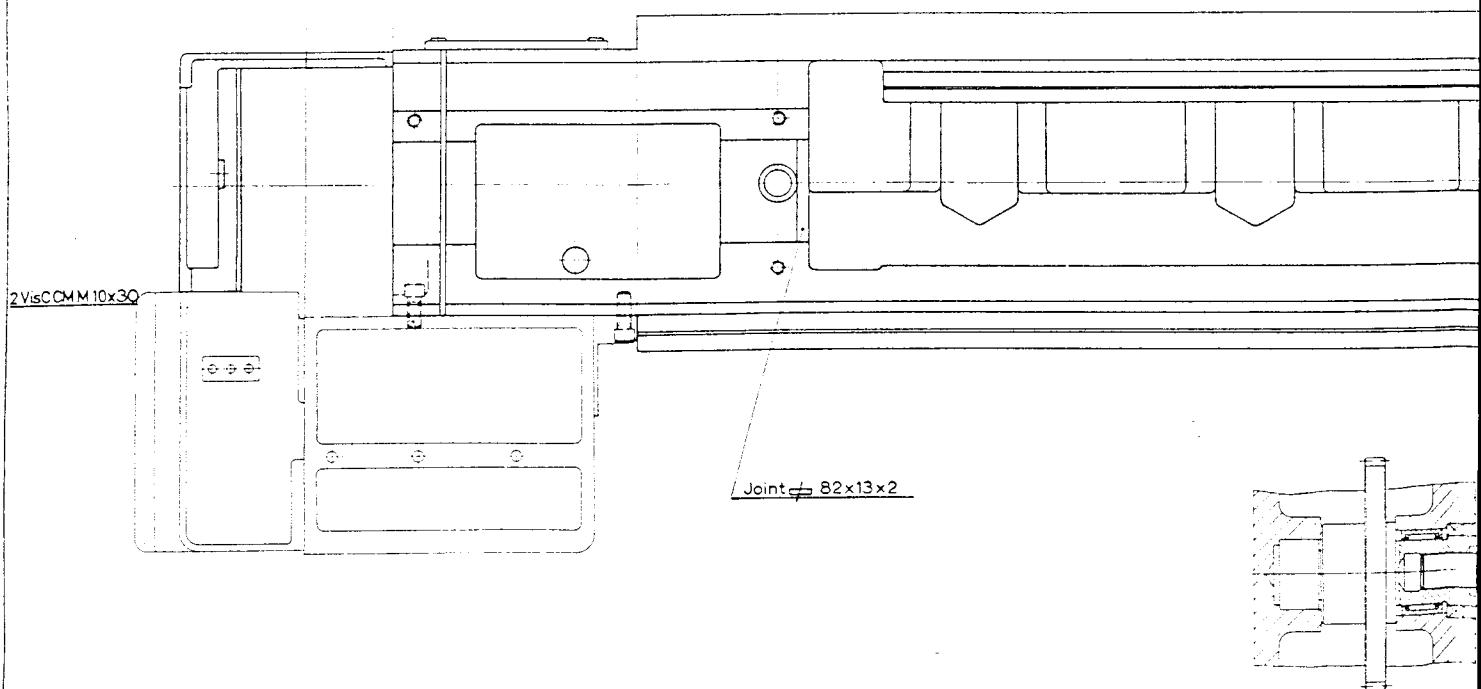
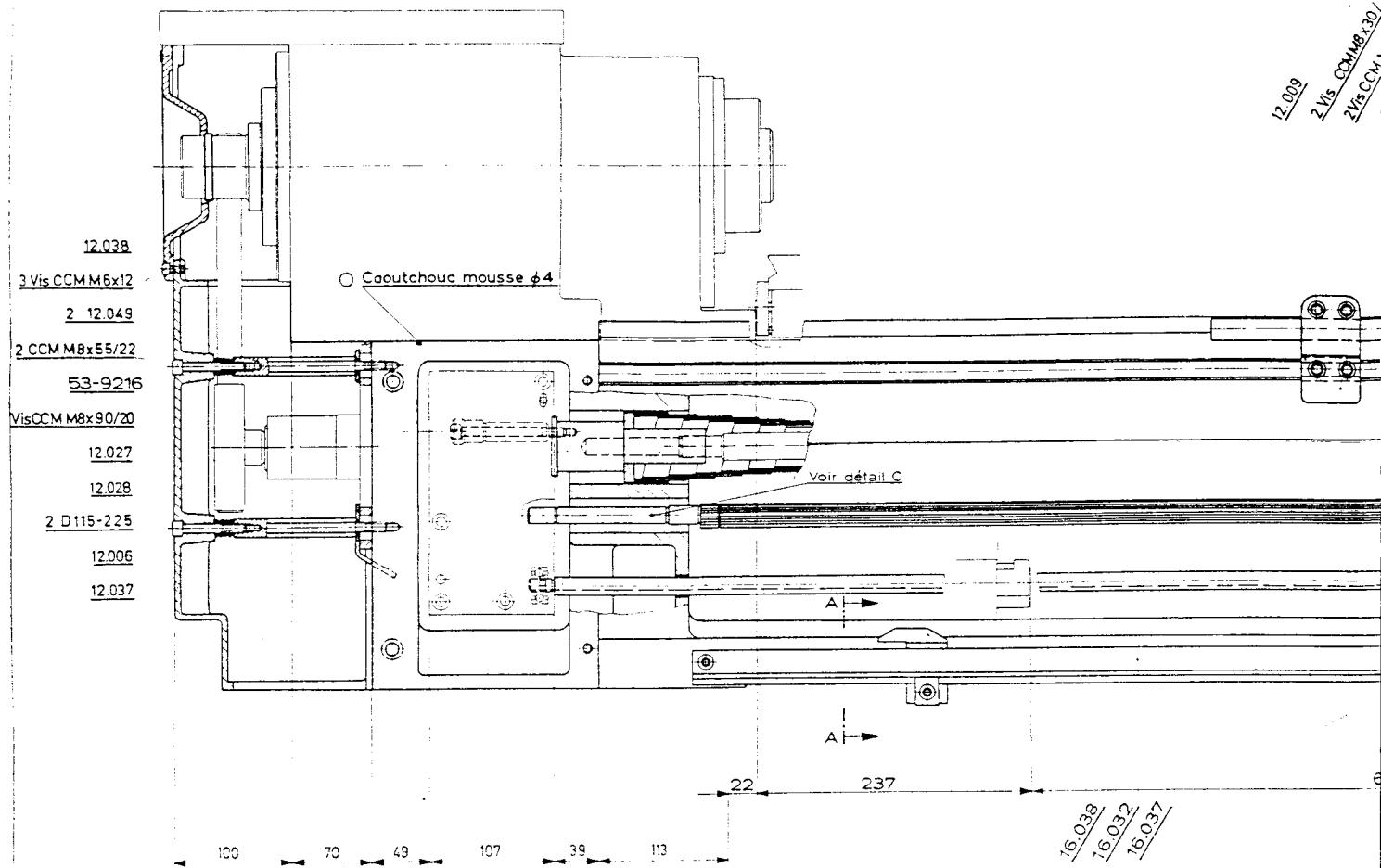
Coupé B-B

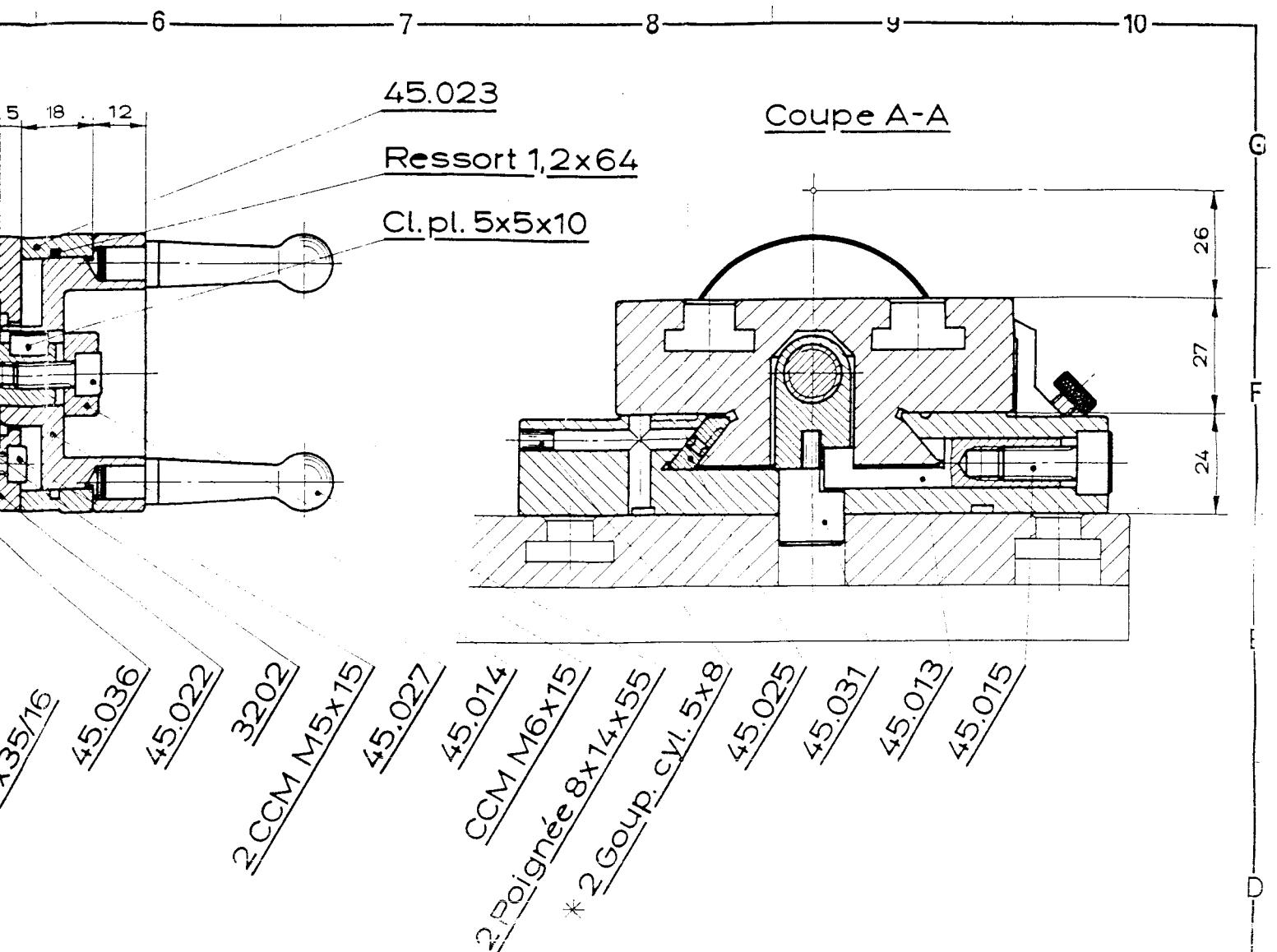


Coupé A-A

2 12.031
2 Vis CM M8x45/22
2 16.039
2 Vis CCM M8 x 22

Outilage		
Modifications	1614, 17551, 17554, 18001, 17553, 18519, 18648	Remplace par Remplace IS 120000/17843
BANC	Echelle Désign. 3.5.68 Charnière	1.2
Matière	Matériel	1.1
SCHAUBLIN S.A. REVILARD (SUISSES)		135-12.000

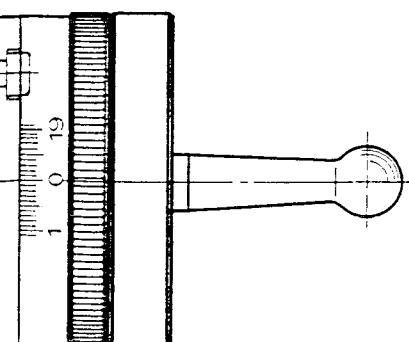




Course 100 mm

Pas de la vis 2 mm

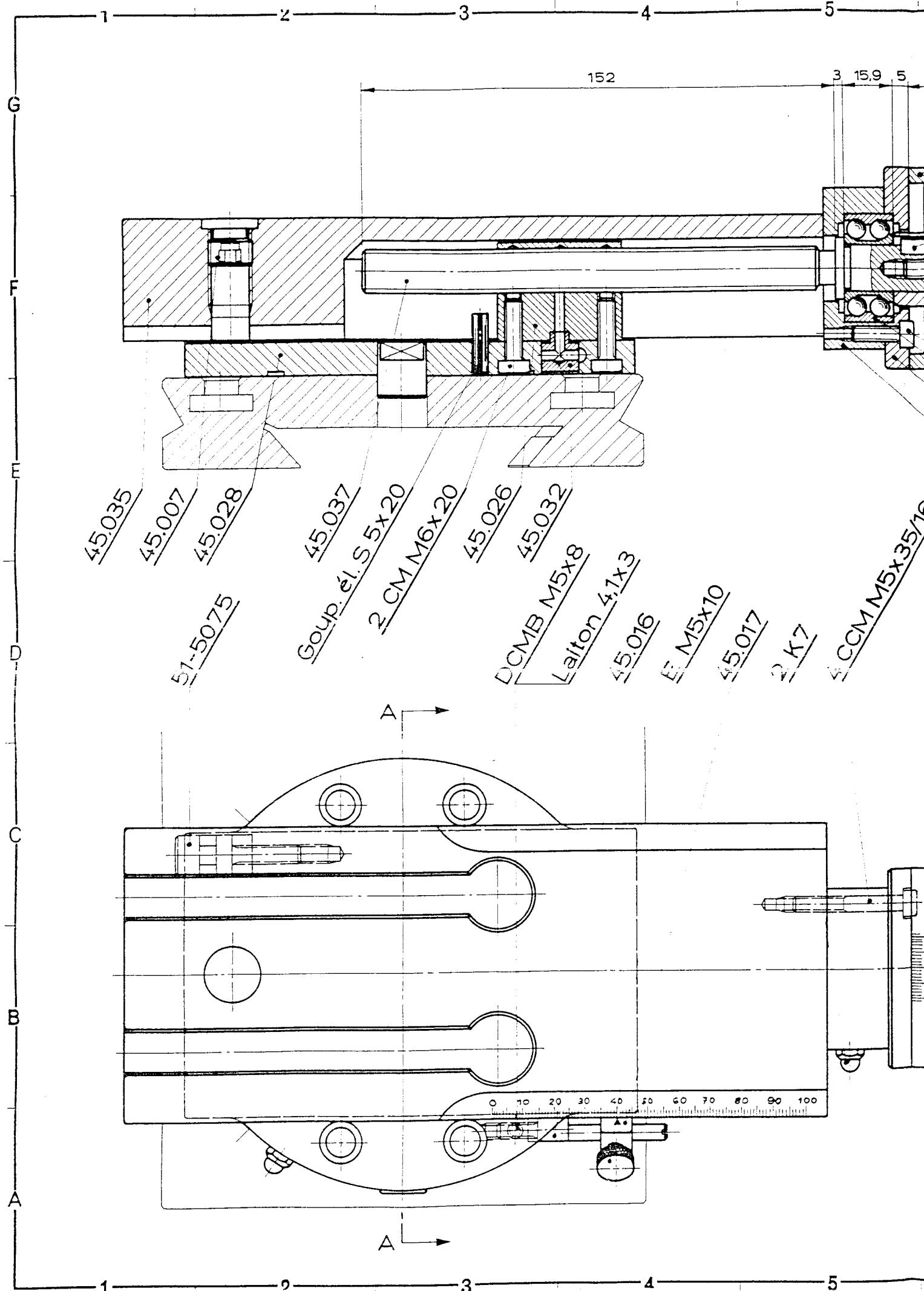
* Coller au Loctite Blocpress

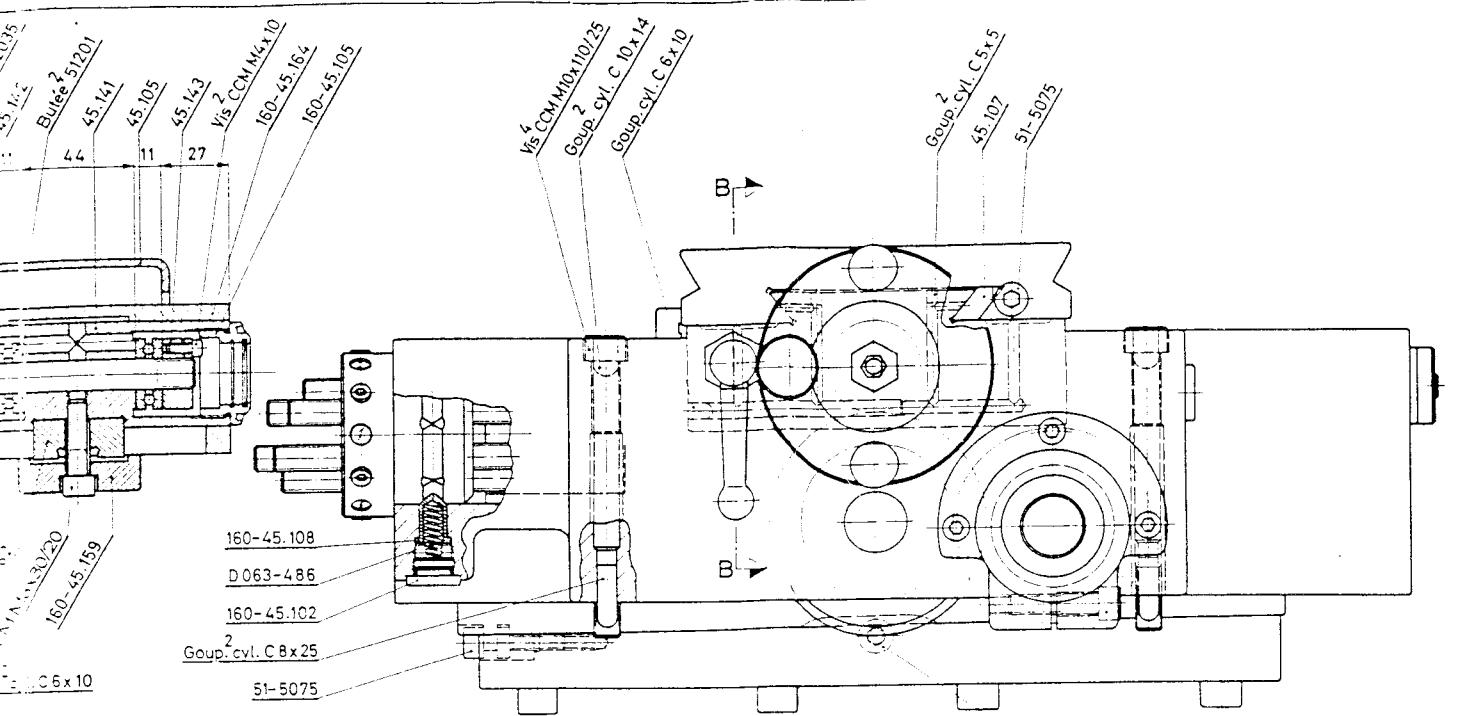


M71

BI	
BR	
BL	
BA	32753
Stock	

Empl. pour:	Pièces semblables:
Outillage	
Modifications: 19207	Remplacé par
	Remplace 135-45.000 du 20.5.66
Partie supérieure du chariot	Echelle Dessiné 16.11.71 Schmid 1:1 Contrôlé _____ Matière Modèle Positif _____ Vu _____
SCHAUBLIN S.A. BÉVILARD (SUISSE)	135-45.000

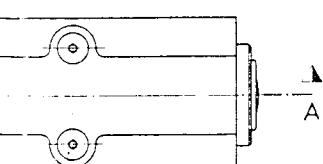
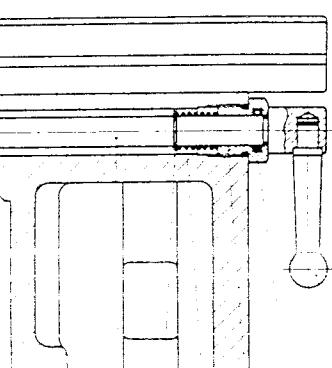




Coupe C-C

Vis DCMB M6x6
Laiton 4,8 x 3

Coupe B-B



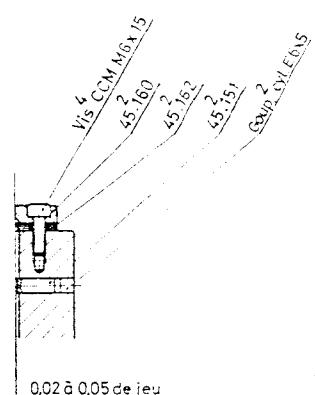
Vis 2 CCP M6x12

Vis 4 CCM M8x25

Goup. 2 cyl. C 6x10

Vis 2 DCMB M6x8

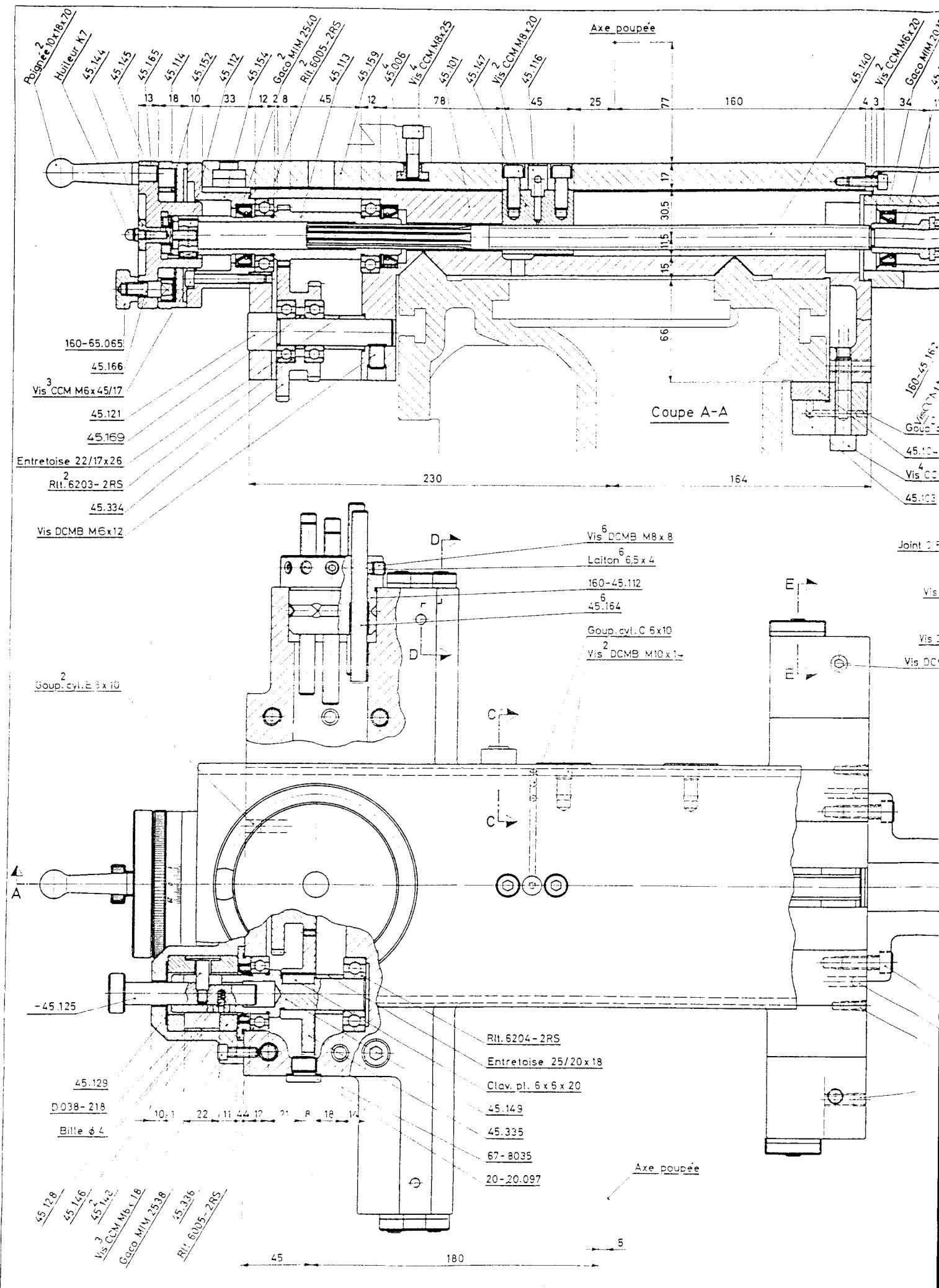
Vis 5 DCMB M8x8

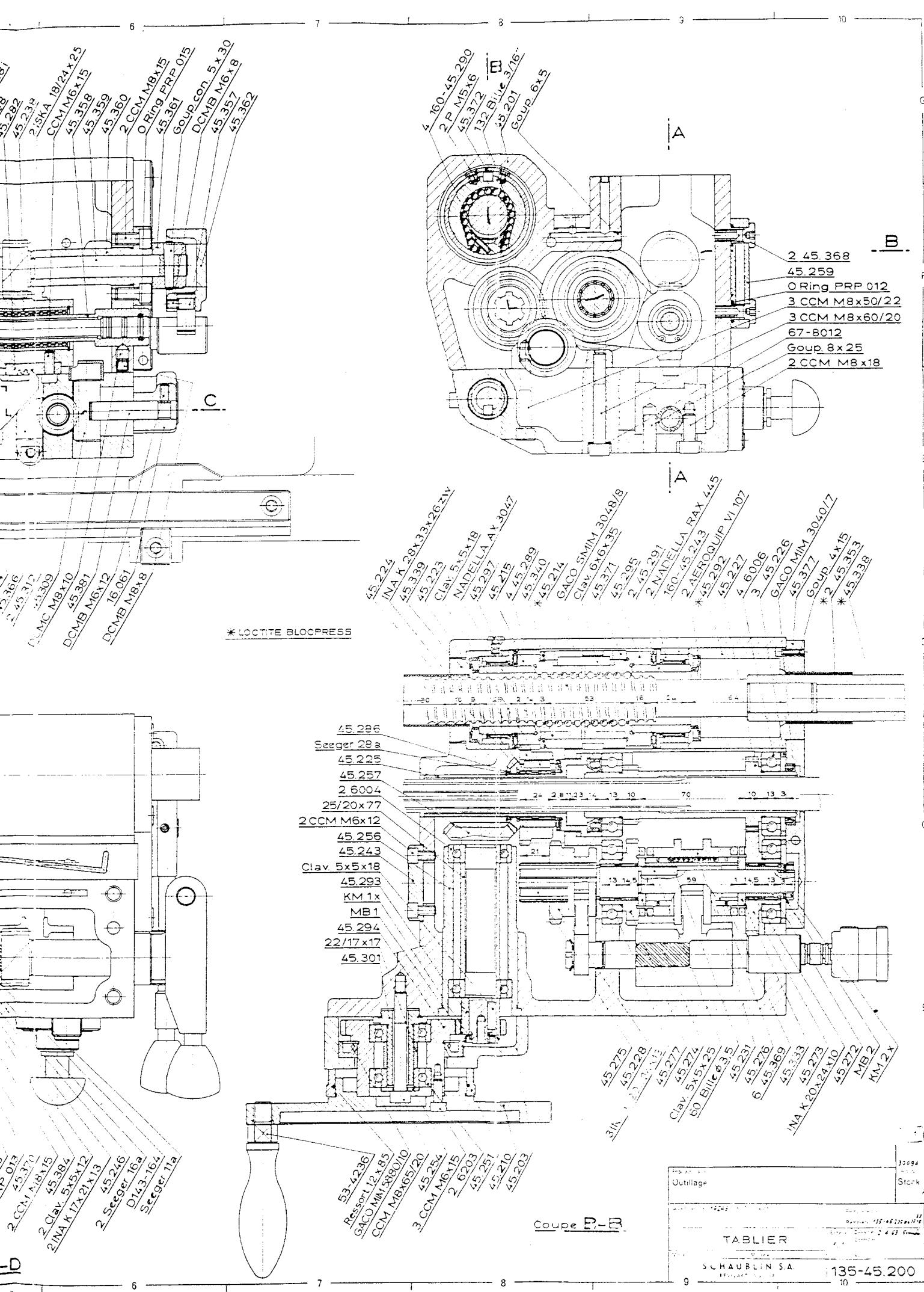


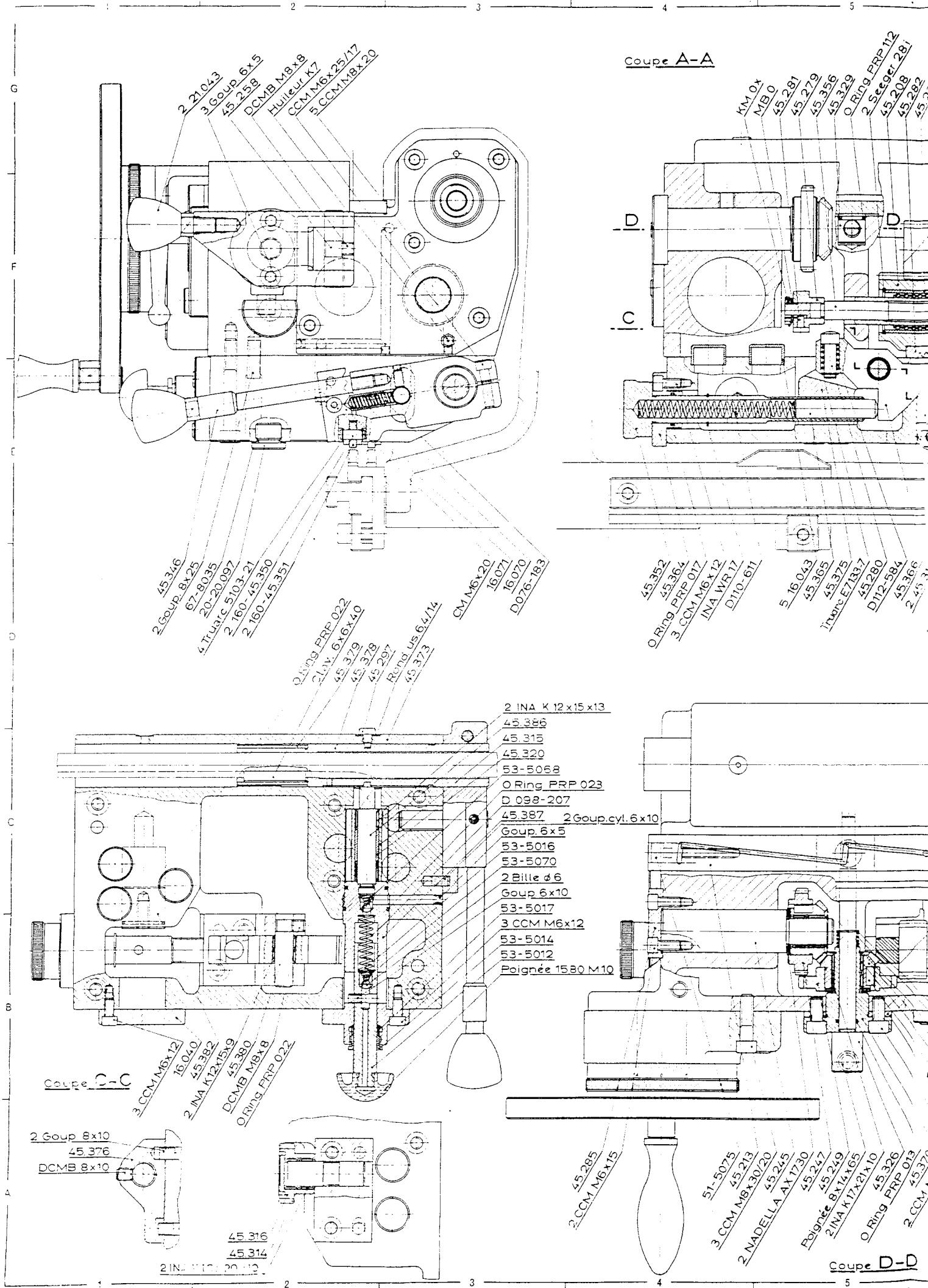
Coupe D-D

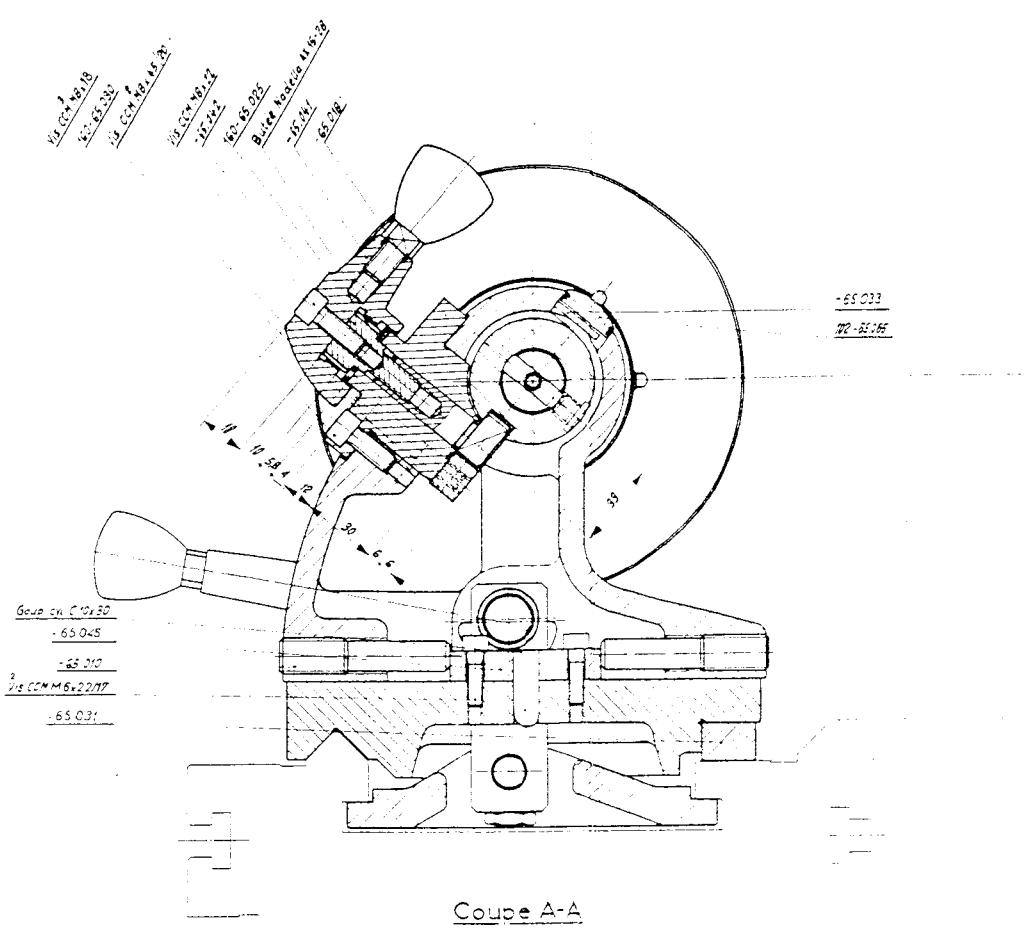
Coupe E-E

Outilage		Stock
Nominal n°	4361-0752, 0288-17289, 0258-1621	Remplace n° 371759
Échelle :	Dessin : 1:1	Contrôle : 1:1
Corps de chariot		
Matériau		
SCHAUBLIN SA		
		135-45.100

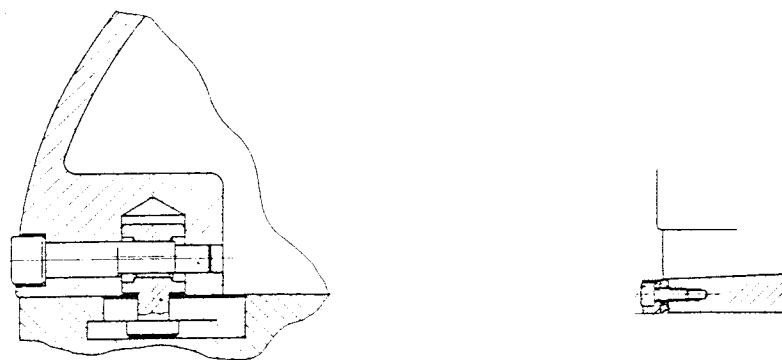








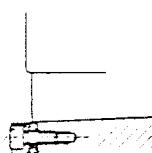
Coupe A-A



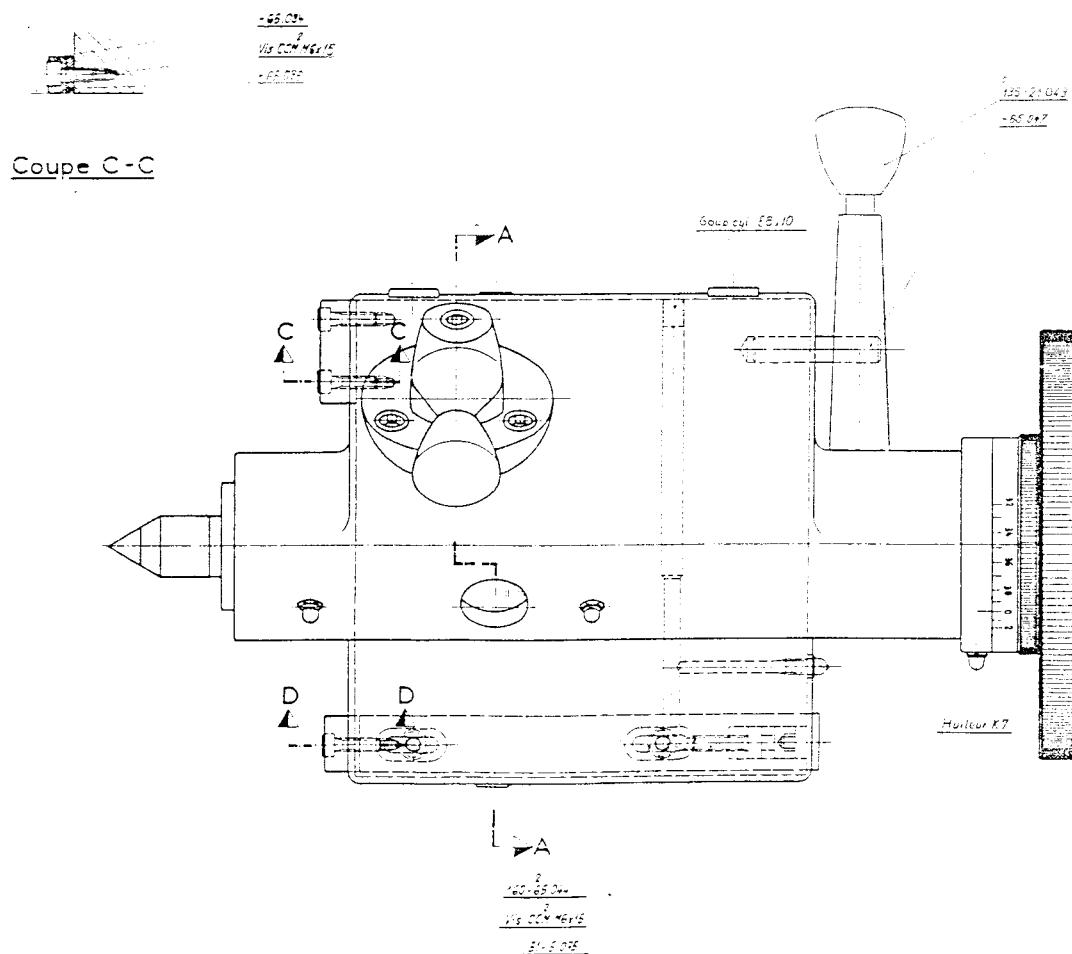
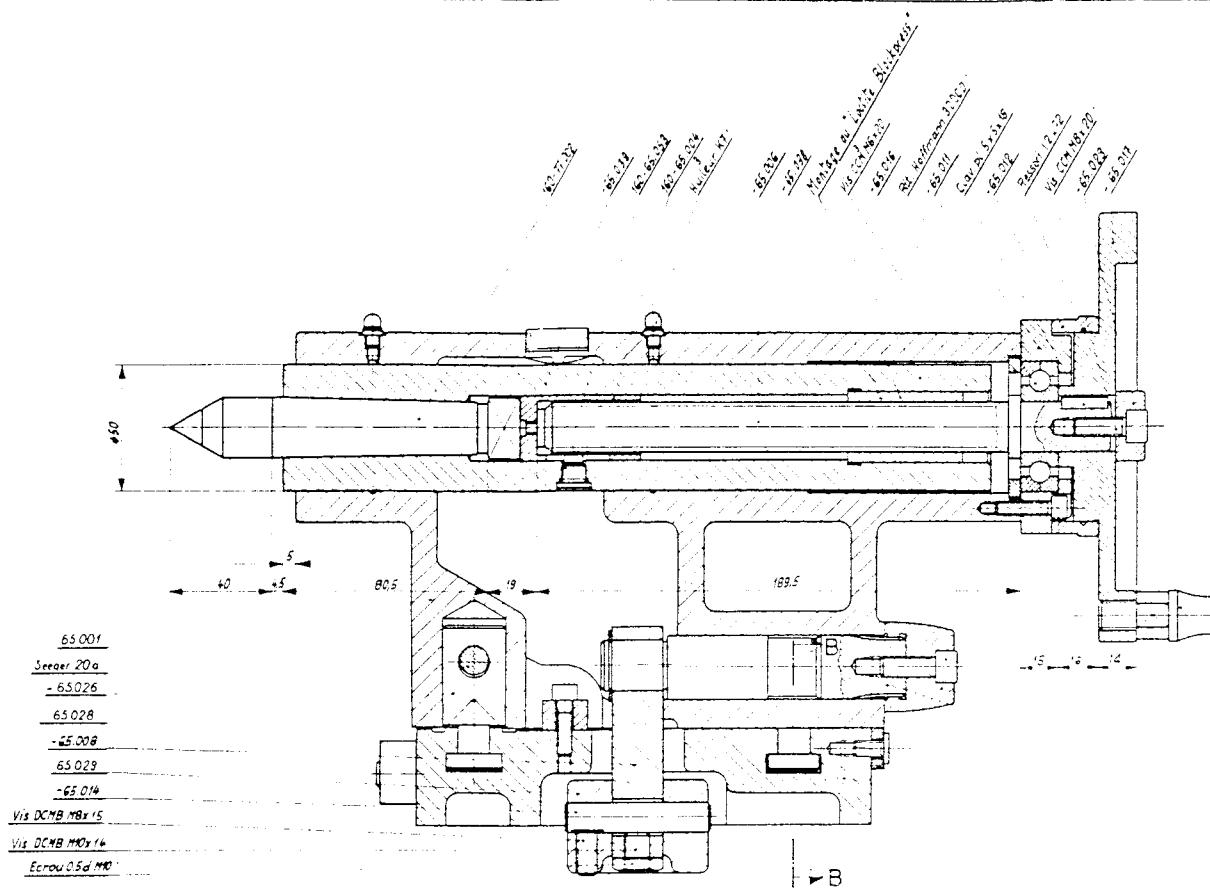
Coupe B-B

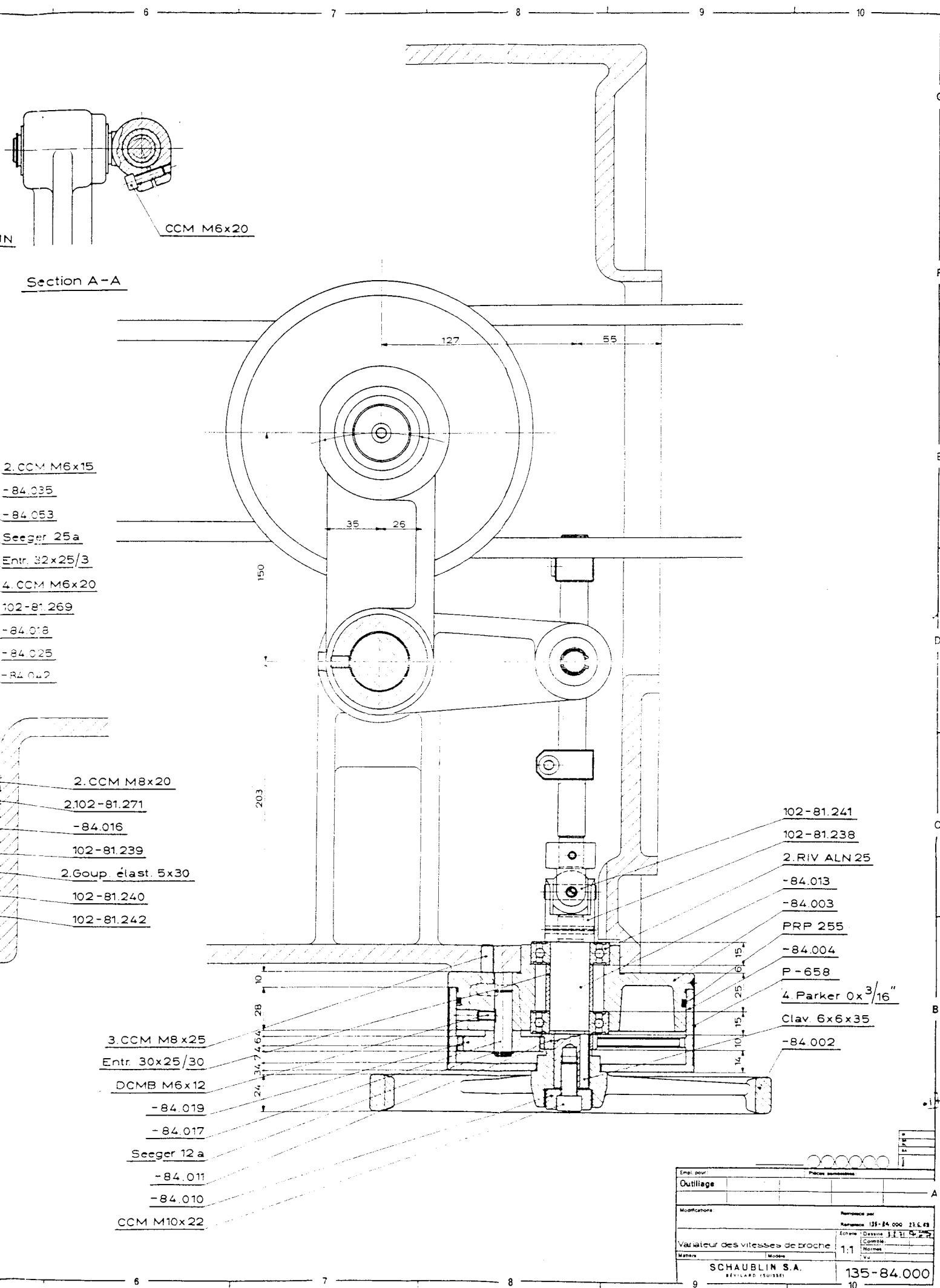
- 65.013
 - 65.026
 16.CC.M6.15
 - 65.035
 - 65.037

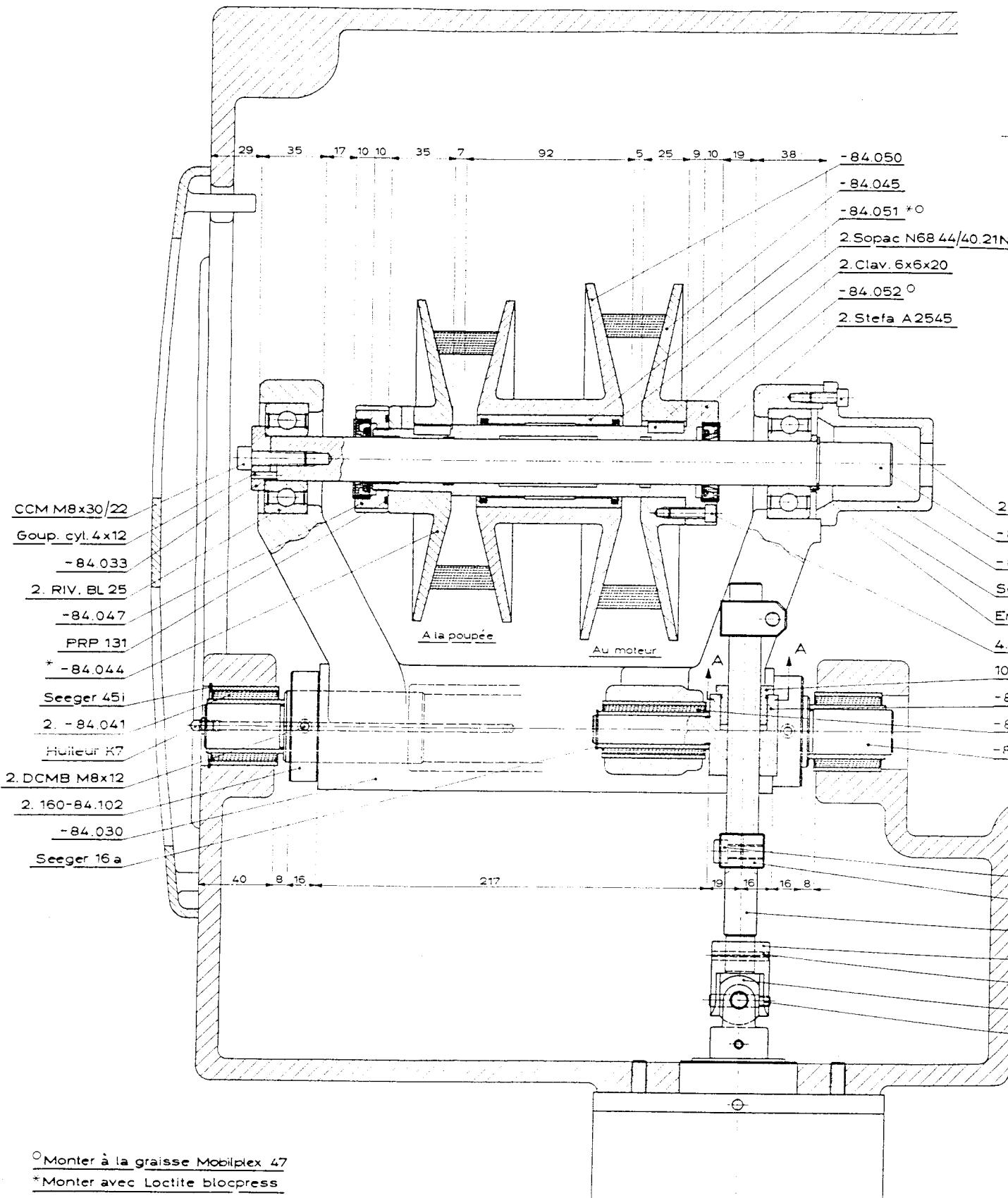
Coupe D-D



Outilage	Stock
Montage 16.CC.15419 15530 16363 17271 17223 Remplace par	Stock
17282	Montage 16.CC.15419 15530 16363 17271 17223 Remplace par
CONTRE - POUREE à vis	Montage 16.CC.15419 15530 16363 17271 17223 Remplace par
N° 16	Montage 16.CC.15419 15530 16363 17271 17223 Remplace par
SCHAUBLIN S.A. REV. 10/1971	135-65.000



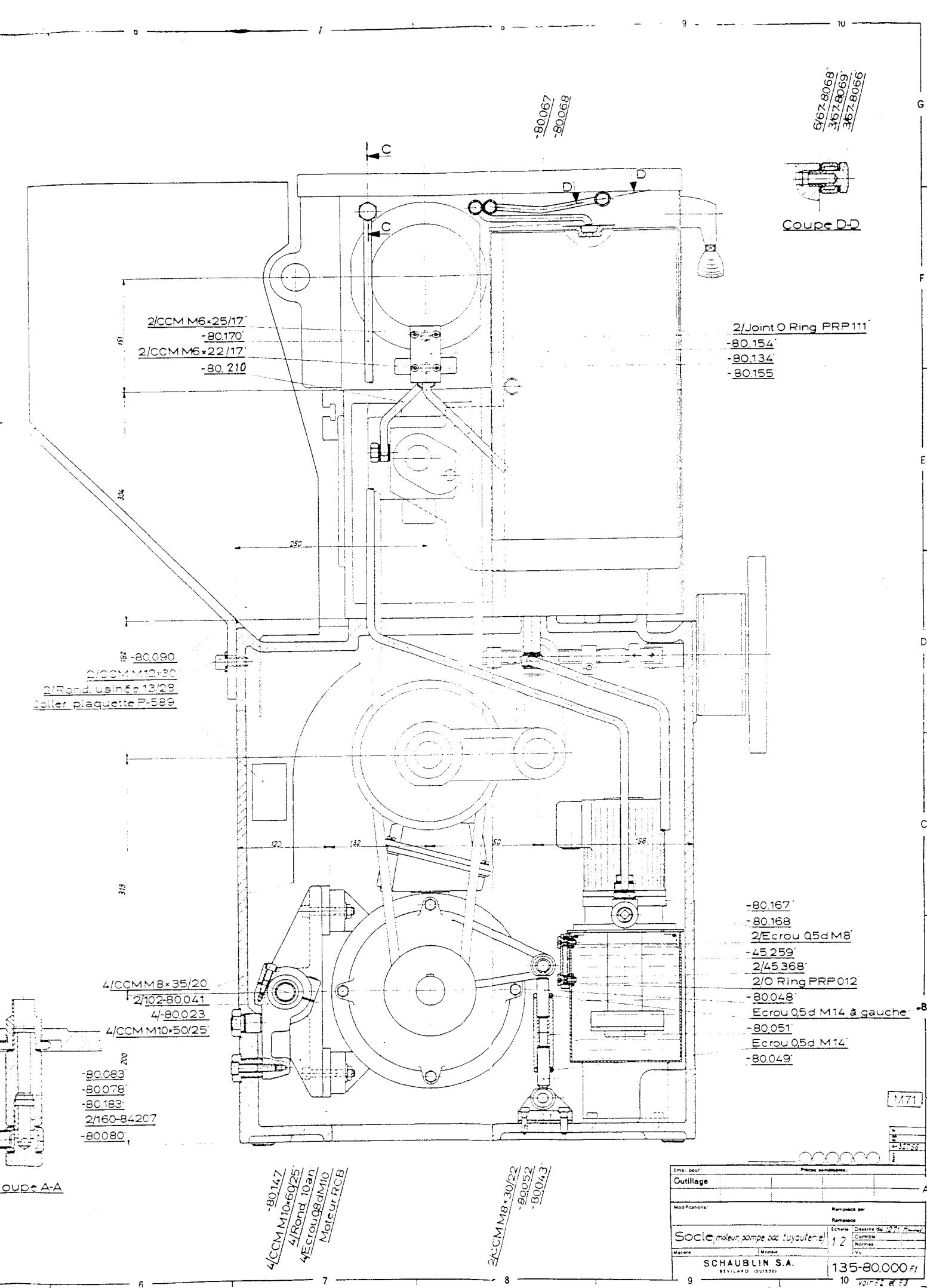




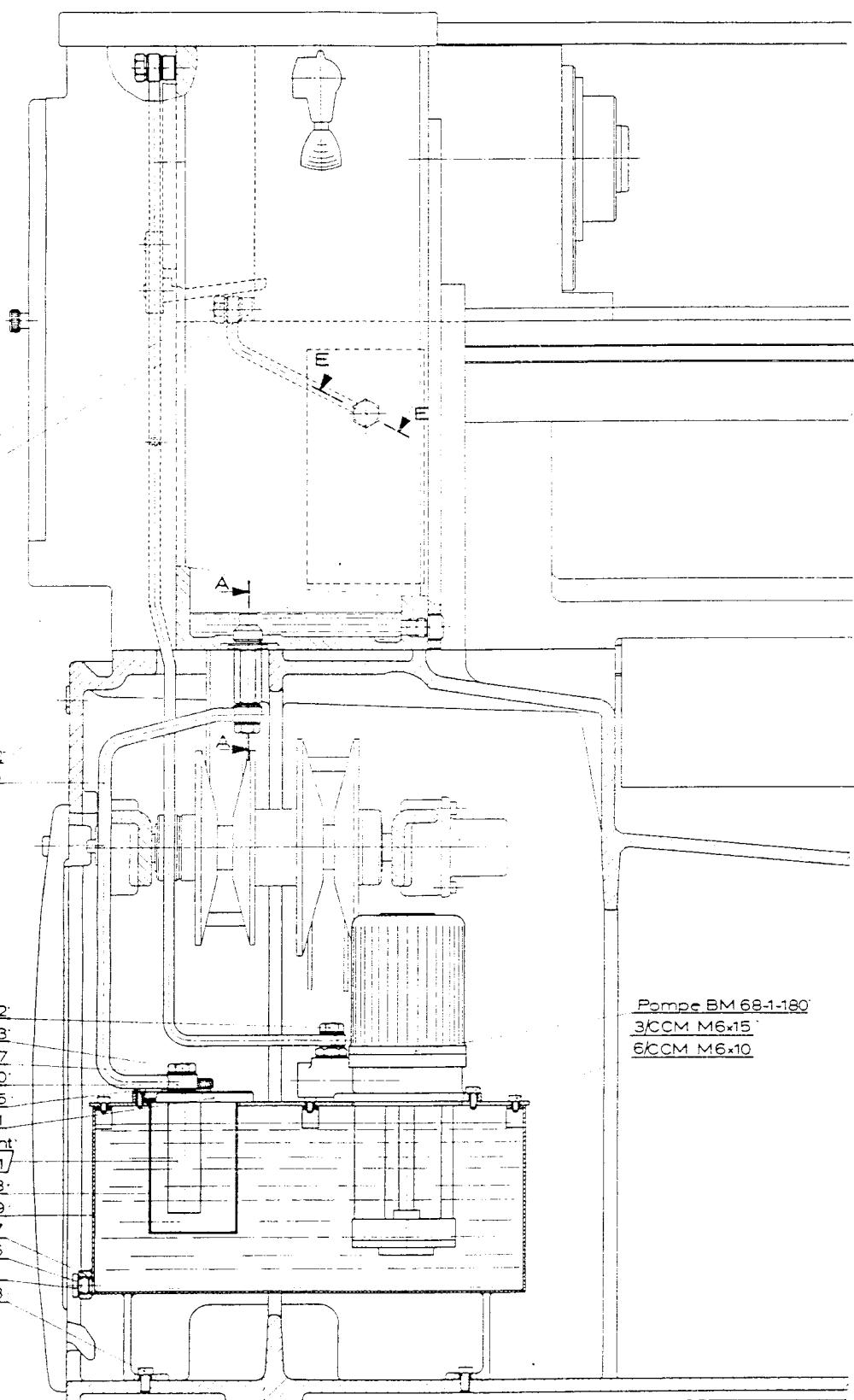
COURROIES: Variflex, profil 32,5 x 13

poupeé: longueur int. 1650mm.

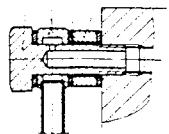
moteur: longueur int. 950mm.



G

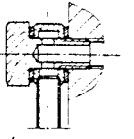


-80181
2/67-8019
5/67-8044
-80185



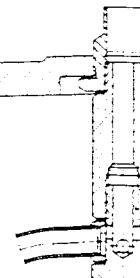
Coupe C-C

2/67-8019
-80182
5/67-8044

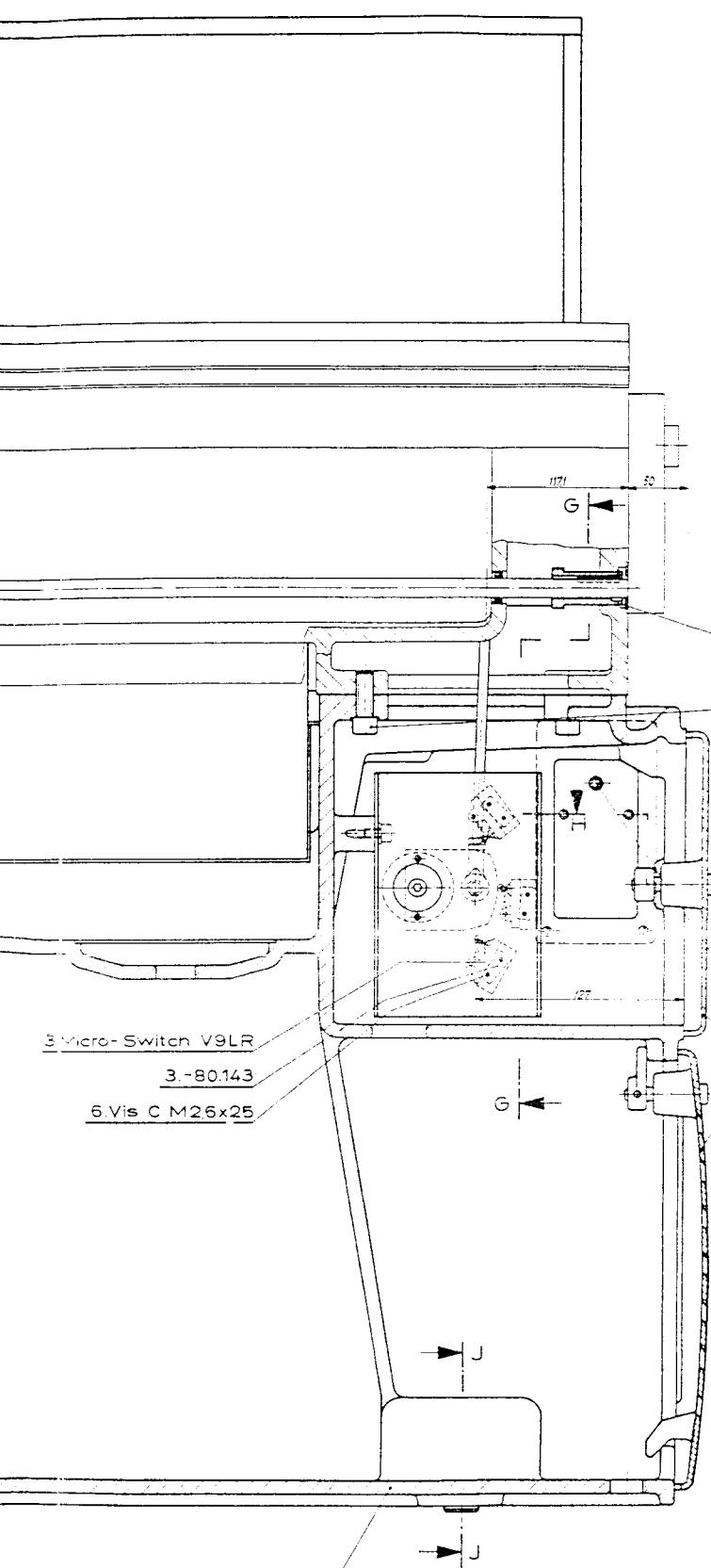


Coupe E-E

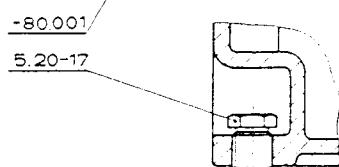
Pompe BM 68-1-180
3/CCM M6x15
6/CCM M6x10



Cours

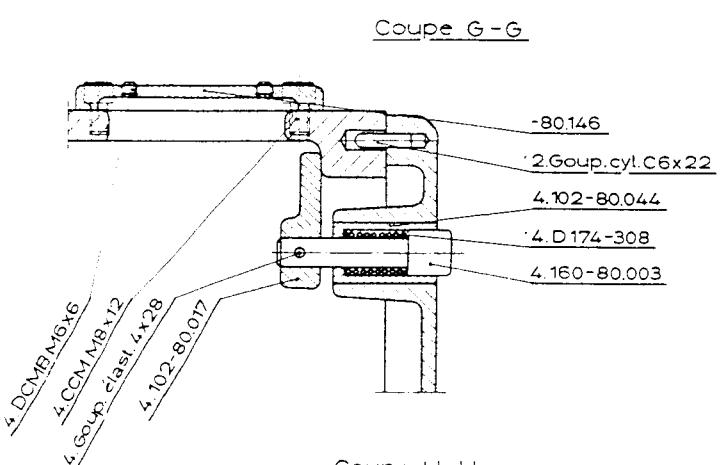
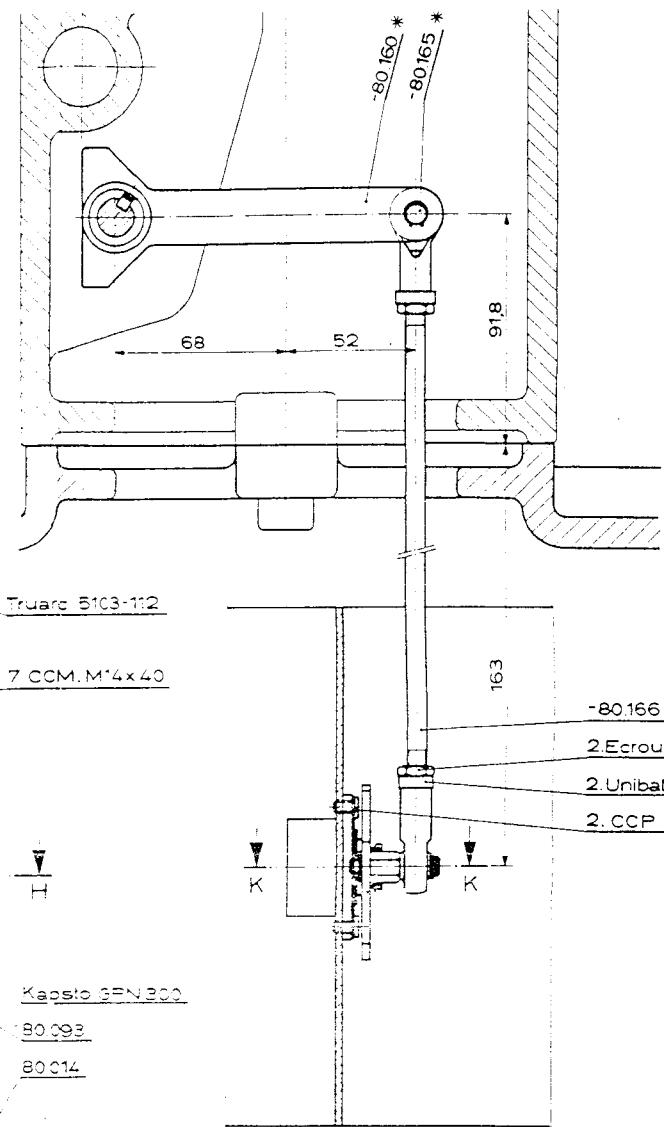


Seeger 8a *
80164 *
ond. forgée 6an *
crou 05d M6 *
80175 *
Rit. 6200-2RS *

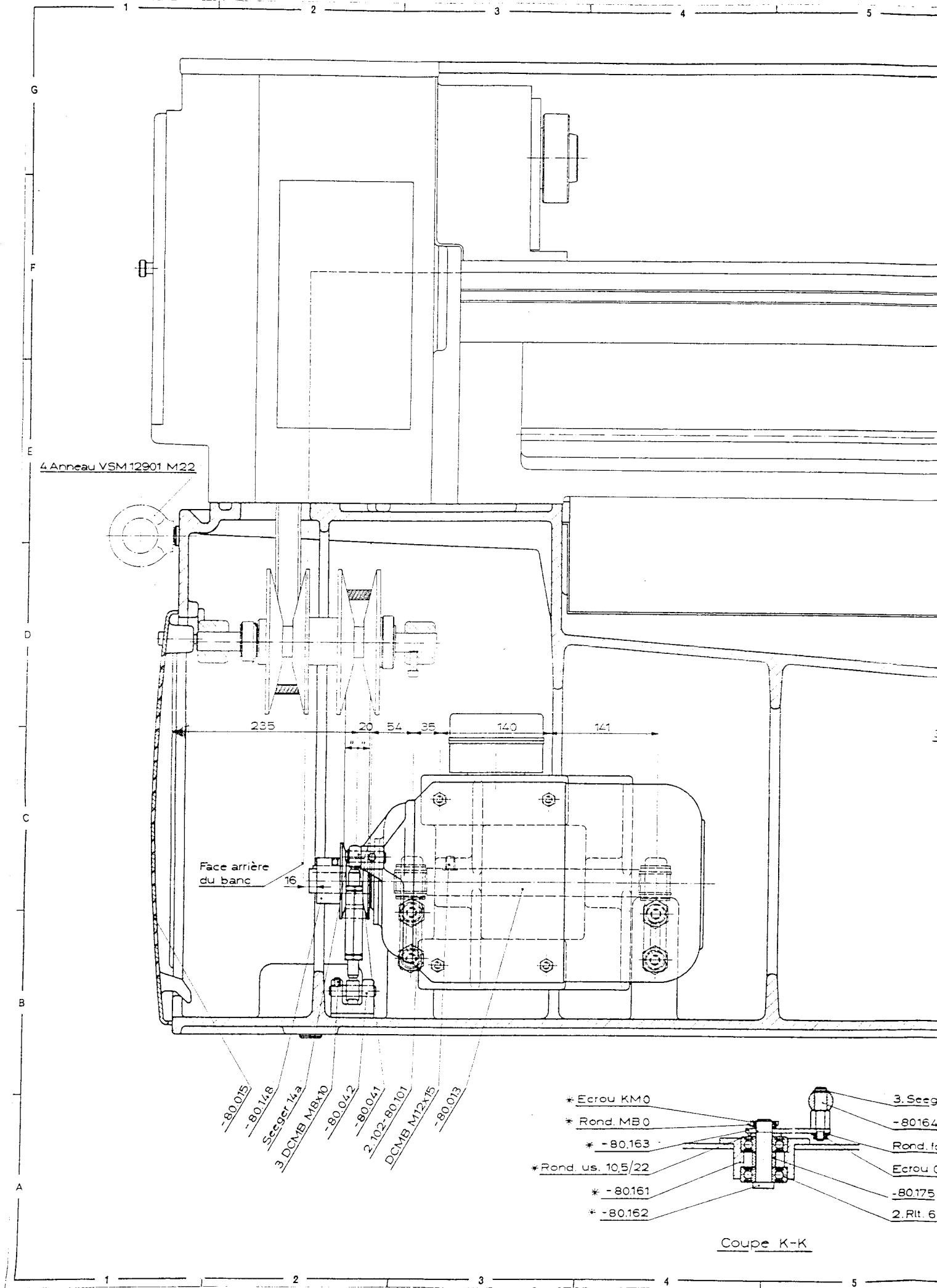


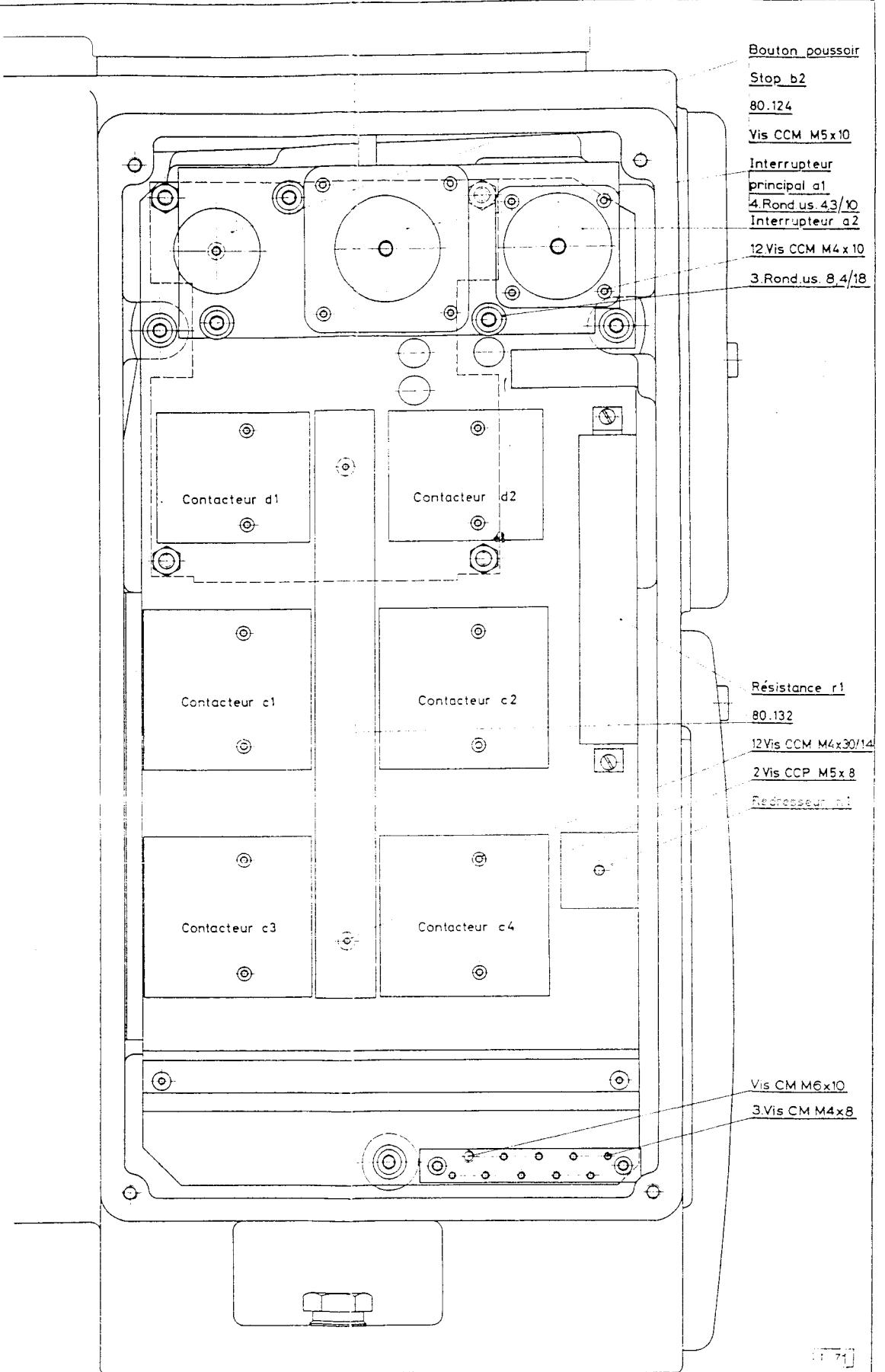
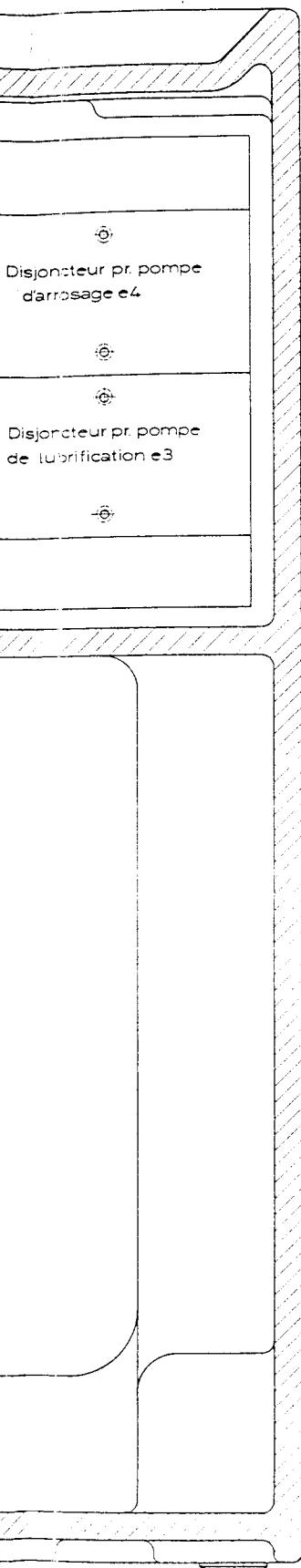
* Voir liste banc

Coupe J-J



Etab pour:		Pièces combinées	
Outilage			
Modifications: 13332-2/4/2		Remplace par:	
		Remplace par:	
Socle (Moteur et levier de mise en marche)		135-80.000 au 34.51	
Materie	(Materie)	Echelle: Dessins N. 4.125, 5.125	
		1:1	[Carré]
		1:2	[Normes]
		V.V.	
SCHAUBLIN S.A.		135-80.000	
SEVILLAN (SUISSE)		Fr.	

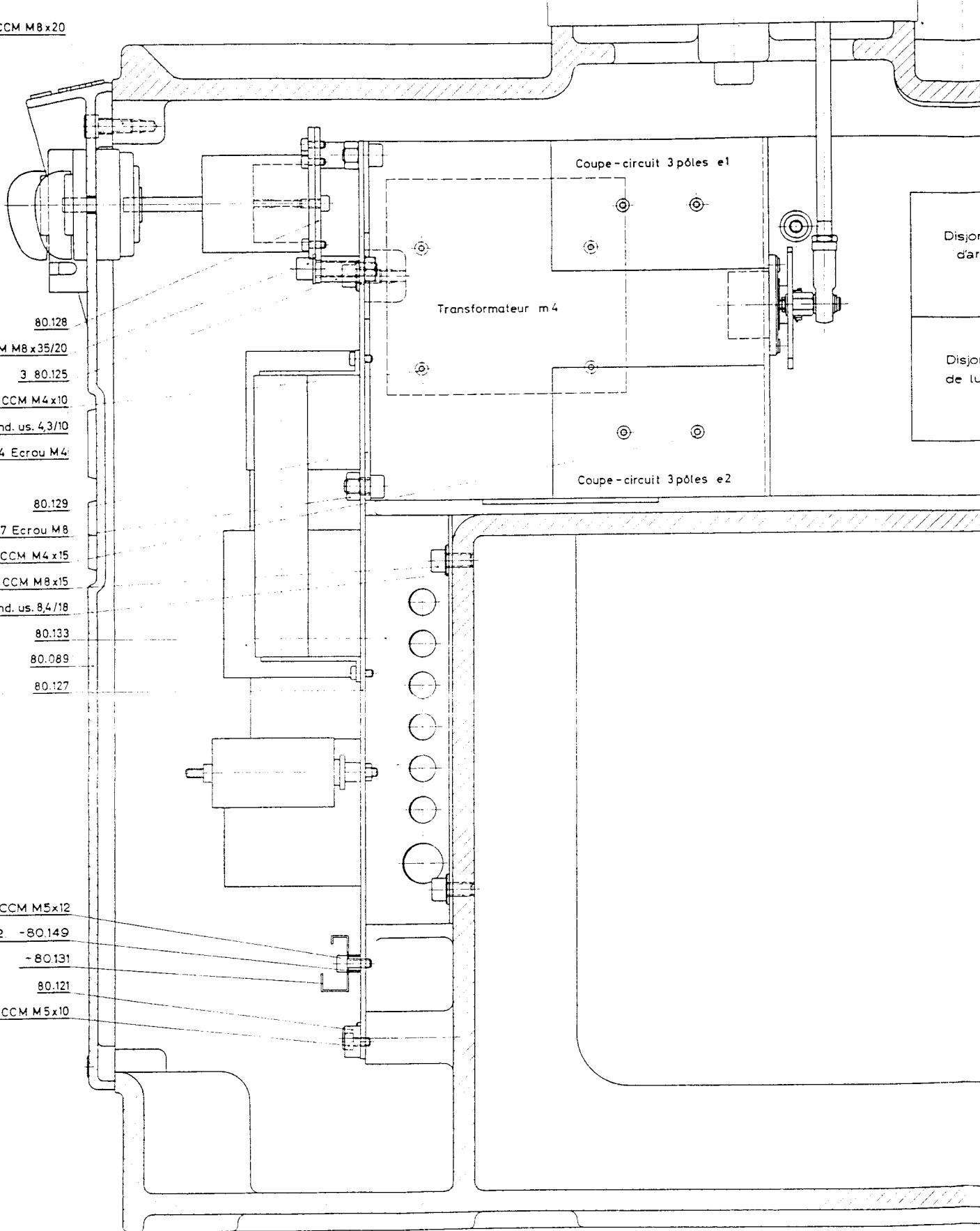


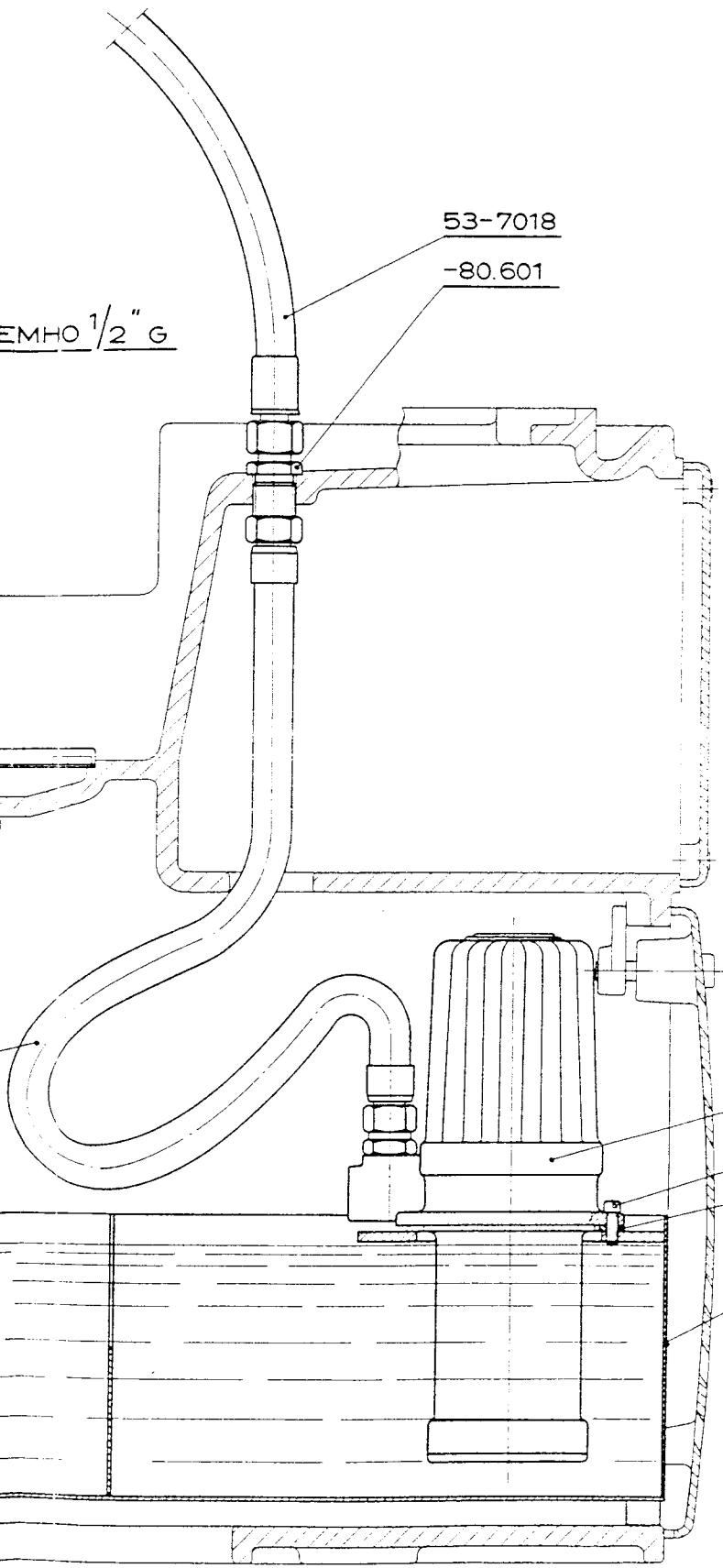


Mod. n° et Dénom.	BA N°
Outilage	Stock
Modifications 17287, 17302, 1731, 1625	Remplace par
Socle (matériel électrique)	Remplace
Matière	Echelle : Dessin : 1:1 - Controle : 1:1
SCHAUBLIN S.A. BEVILARD SUISSE	Vu
	135-80.000 F.3

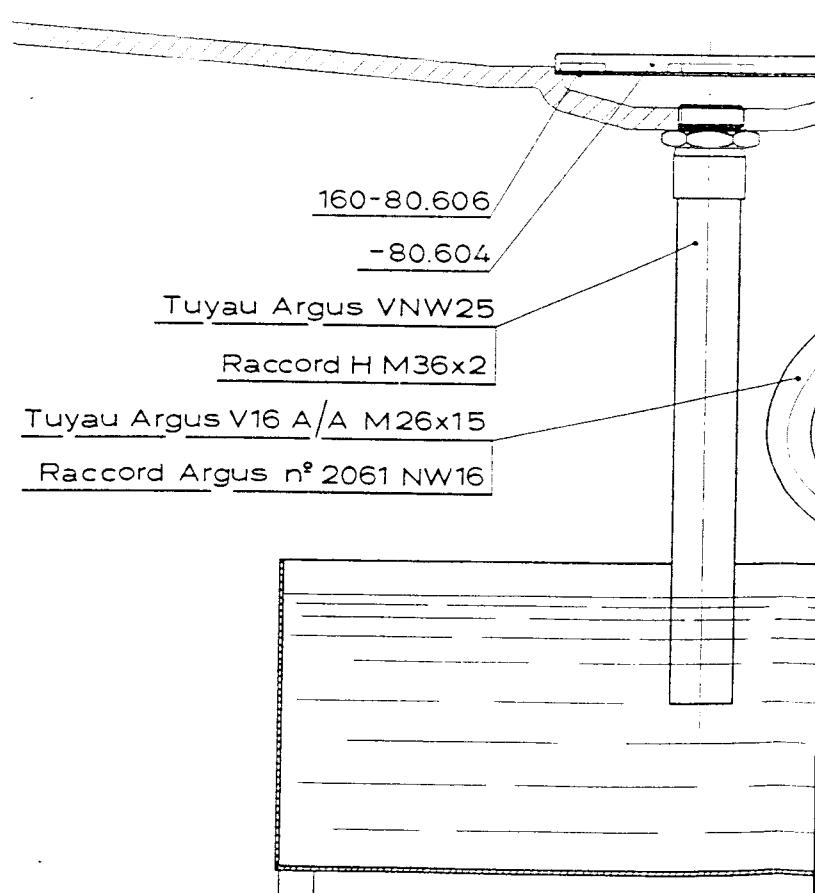
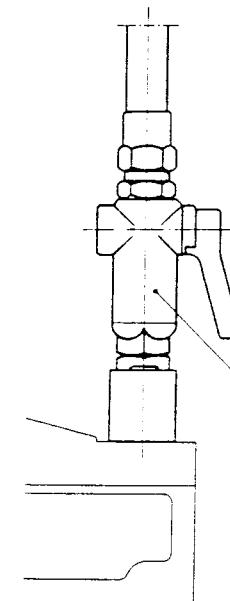
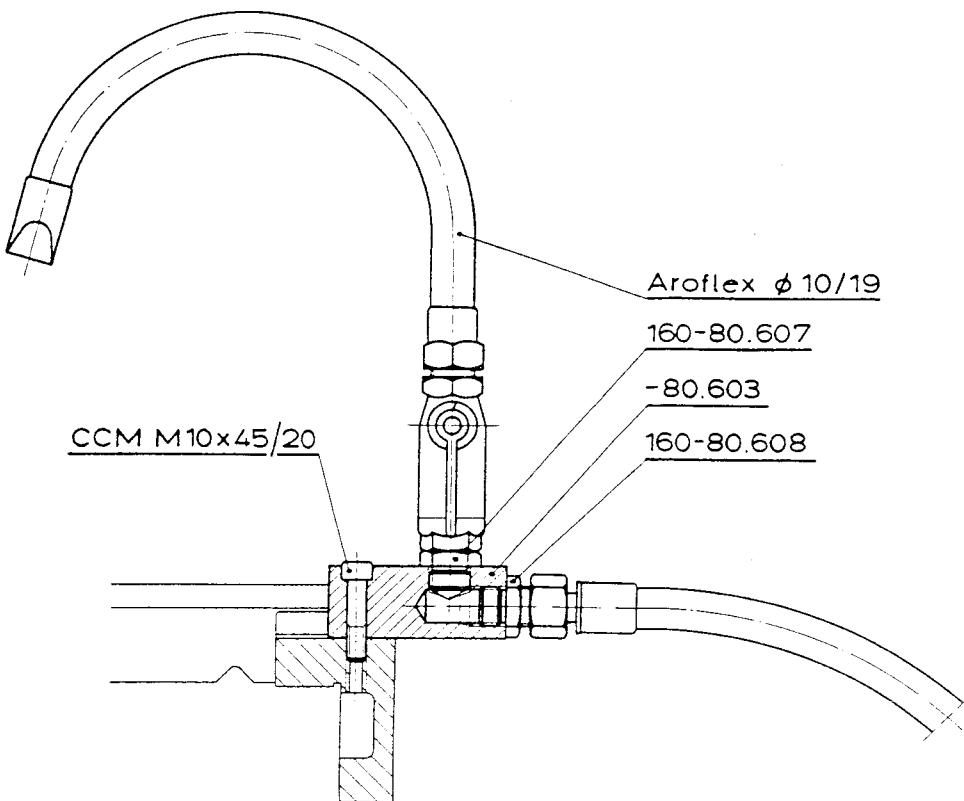
Voir F.1 et F.2

4 Vis CCM M8x20





Empl pour	Pieces semblables:
Outilage	
Modifications: 1156	REMPLACÉ PAR
	REPLACE 135-160-80.600
135.160 Arrosage.	Echelle Dessiné 30:69
Matière Modèle	Contrôle Positif Vu
SCHAUBLIN S.A. FR. LAUSANNE (SUISSE)	135-80.600



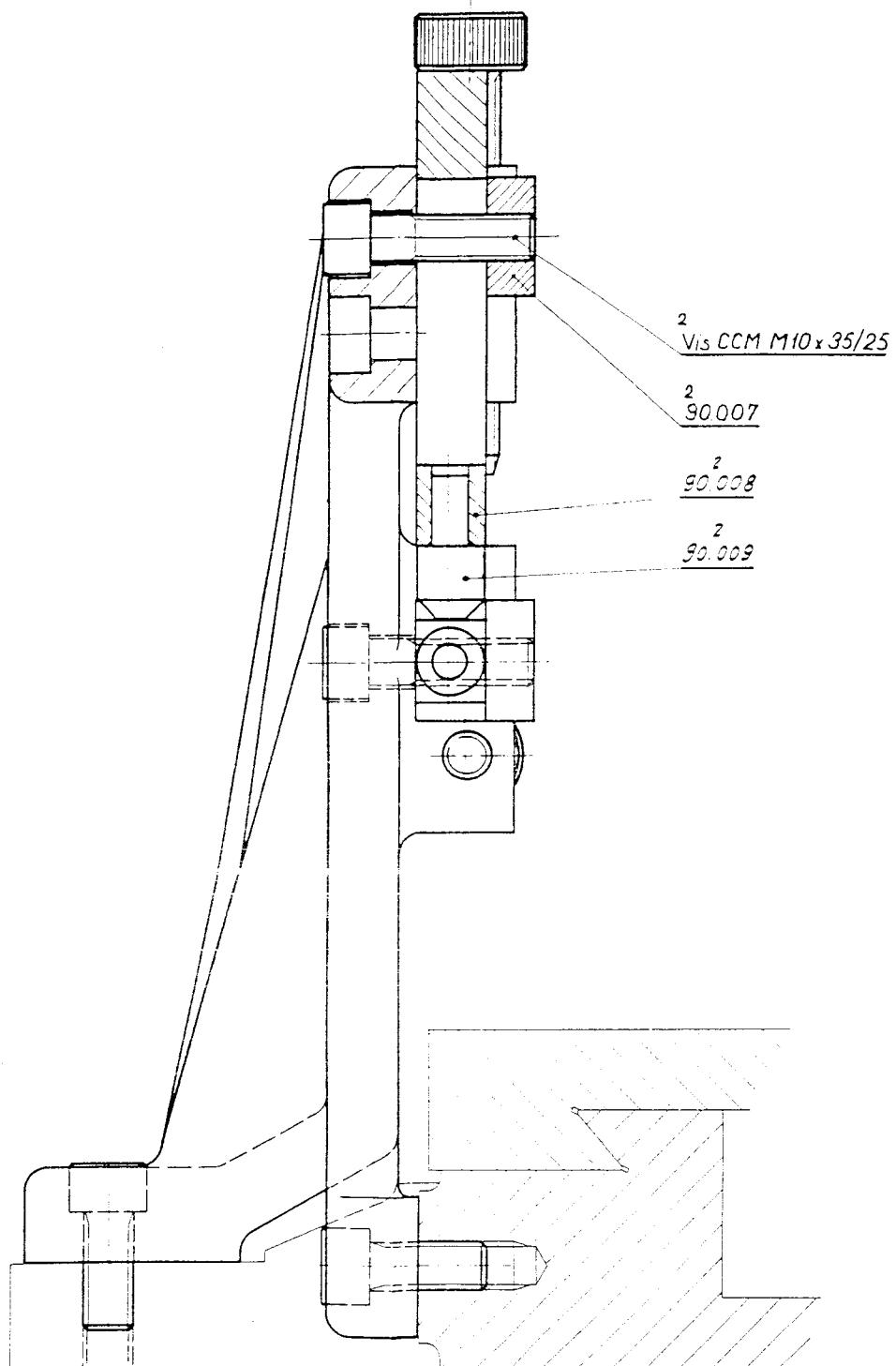
Capacité du bac 135 : 27l.

" " " 160 : 65l.

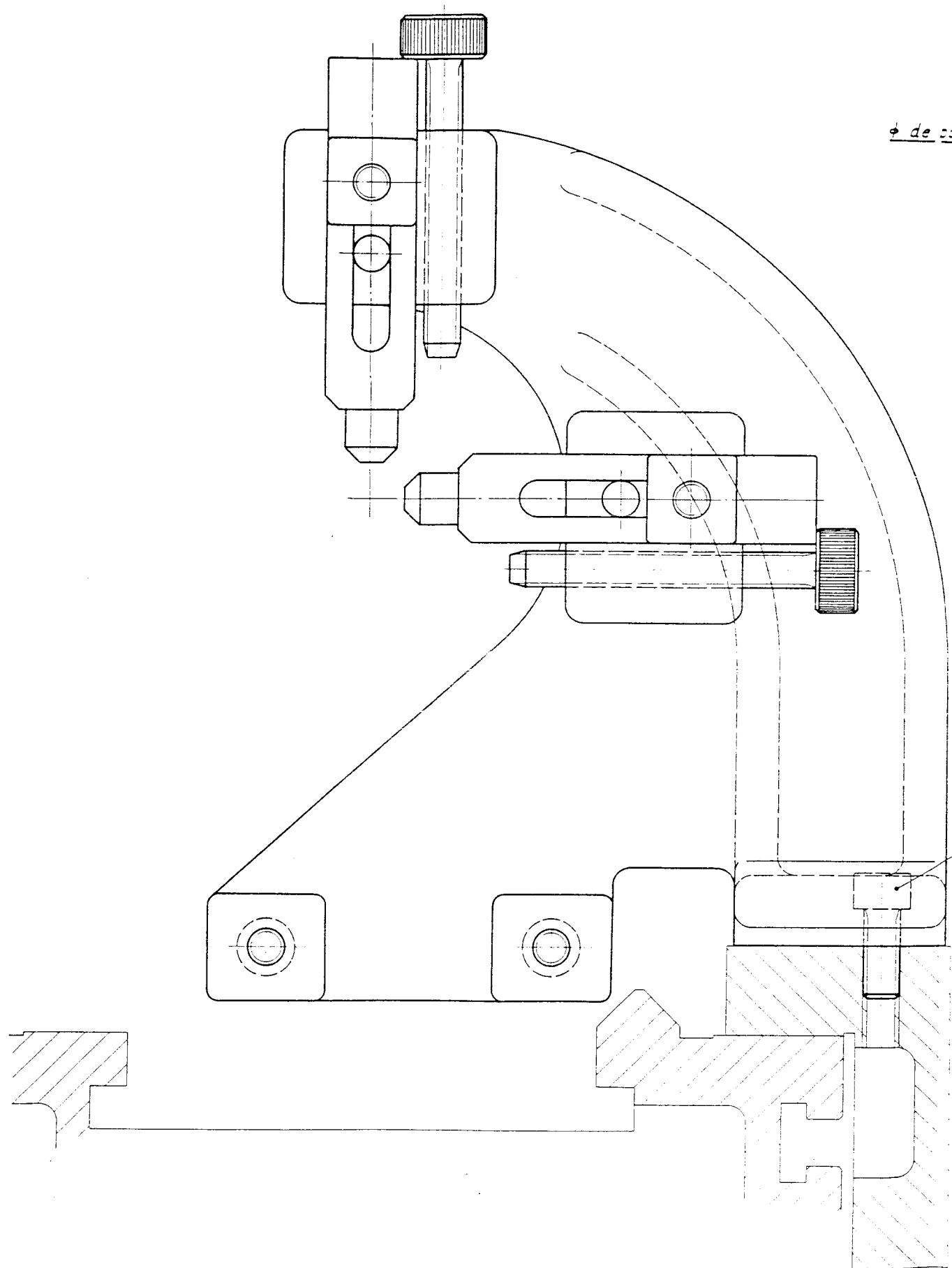
* Pièce pour exécution 160

e passage: mini 8

maxi 100



Empl. pour:	Pièces semblables:			
Outilage				
Modifications: 15965, 17754	Remplacé par			
Lunette à suivre	Remplace			
Matière	Modèle	Echelle	Dessiné	9.1263
		1:1	Contrôlé	/
			Positif	/
			Vu	/
SCHAUBLIN S.A. BÉVILARD (SUISSE)	135-90.150			



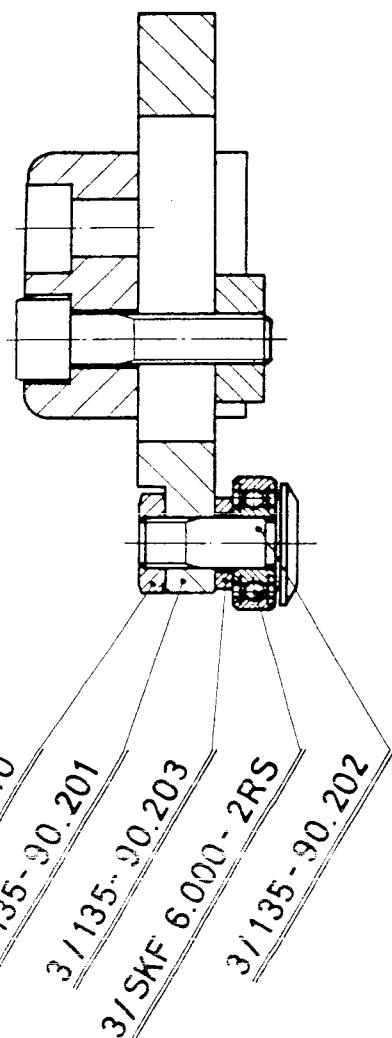
de

03

135 - 90.006160 - 90.007

DCMB M8x15

3/CCM M10x40/25
3/135 - 90.009
3/135 - 90.007

3/135 - 90.008

Ø de passage

mini 5

maxi 100

— Pièces pour lunette à 3 chiens

— Pièces pour chiens à galets
(art. 135 - 90.200)

BI
BR
BL
BA 28954
Stock



Enpl. pour: 135 - 90.000 et 90.200 | Pièces semblables:

Outilage				
Modifications: 15964, 17754		Remplacé par		
				Remplace 135 - 90.000 du 28.11.51
Lunette fixe à charnière		Echelle	Dessiné	R Schen
		1:1	Contrôlé	✓
Matière		Positif		
SCHAUBLIN S.A.		Vu		
BÉVILARD (SUISSE)		135 - 90.000		

135 - 90.005

3/135 - 90.003

160 - 90.004

160 - 90.003

160 - 90.006

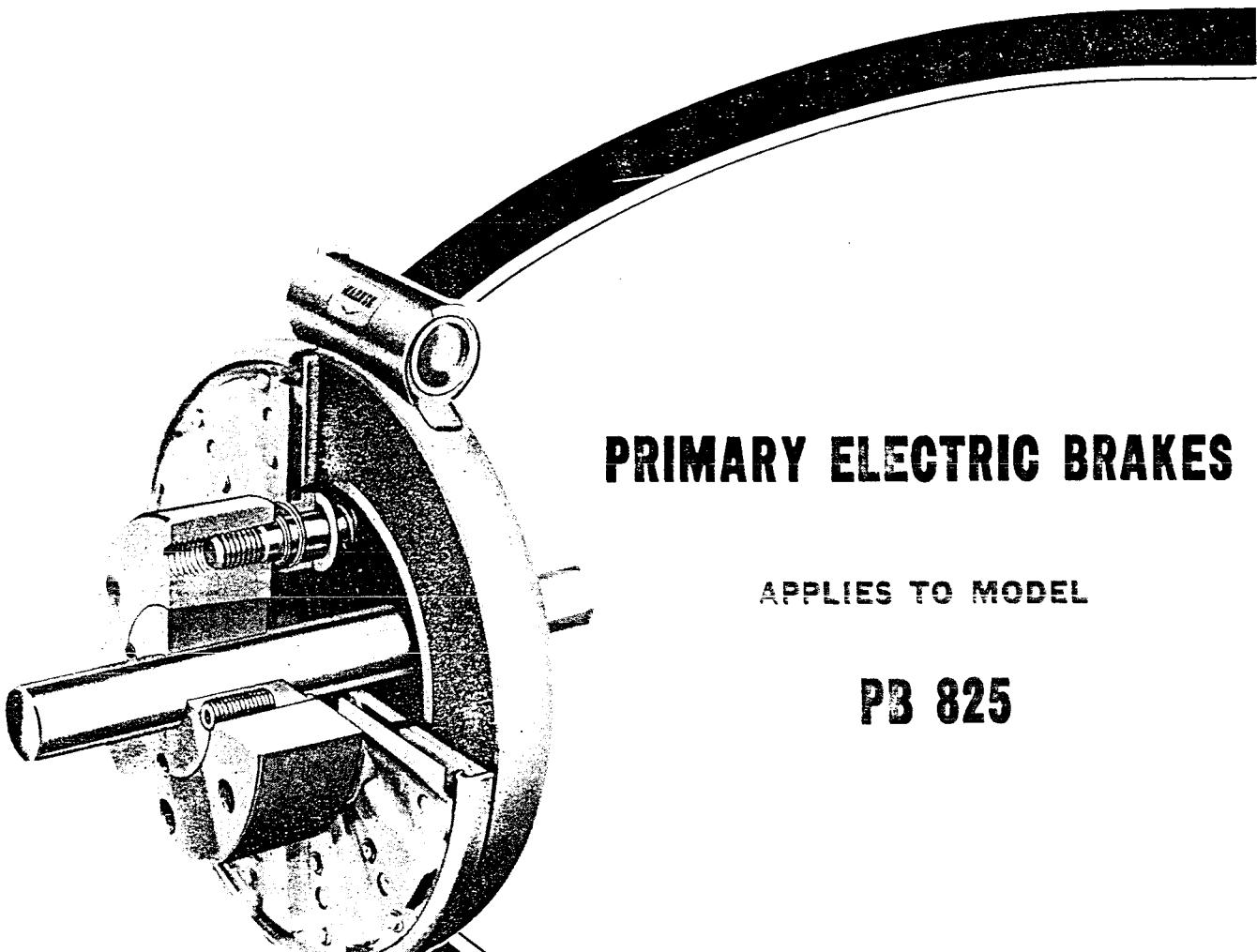
135 - 90.010

2/CCM M 10 x 45 / 25

2/13

135

SERVICE MANUAL



PRIMARY ELECTRIC BRAKES

APPLIES TO MODEL

PB 825



INSTALLATION INSTRUCTIONS
Cont'd.

PB BRAKE, SIZE 825
WITH PIN DRIVE ARMATURE

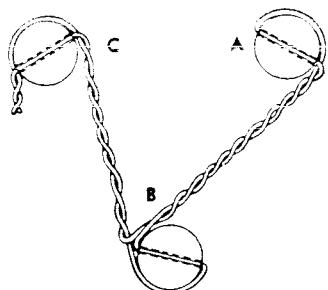


1. If the armature is fixed to the shaft first, then back off the magnet until there is 1/16 inch between the two faces and fix to the machine member.
2. If the magnet is fixed to the shaft or to a machine member first, then back off the armature until there is 1/16 inch between the two faces.
- D. The armature and armature hub are mounted on the shaft by a taperlock bushing. All parts be clean and free from burrs or chips before assembly. Place the bushing into the hub and the key. The key is a side to side fit and should not contact the top of the keyway. Lubricat locking setscrews, insert them into the bushing and slide the assembly onto the shaft. Tighte drawing up on each screw alternately with a torque wrench. During the tightening process, the ing should be tapped lightly from time to time to make certain that it seats-in properly.

The assembly should be checked by pressing the armature into contact with the friction face and releasing the armature. The armature should spring back approximately 3/64 inch. This ga be automatically maintained throughout the life of the unit.

- SAFETY WIRING INSTRUCTIONS

After the autogap assembly has been completed, the drive pins must be safety wired. The fol steps should be taken.



1. Check the pins to see if they are securely tightened.
 2. Use a soft annealed #19 (.041) to #21 (.032) W & M gauge wire. NOTE: Wiring must be tight throughout assembly.
 3. Insert the wire into pin A as shown until the ends of the wire even.
 4. Twist the wire together until pin B is reached. NOTE: A loosening action on pin B would be resisted by a tightening action on A and C.
 5. Insert one end of the wire into pin B and pull tight. NOTE: A loosening action on pin B would be resisted by a tightening action on pins A and C.
 6. Wrap the inserted wire around pin B and twist both wires together until pin C is reached. NOTE: A loosening action on pin C would be resisted by a tightening action on pin B.
 7. Insert one wire into pin C and wrap the other wire around the pin.
 8. Complete the wiring by twisting the ends together on pin C.
- four pin safety wiring is done in the same manner as above

COIL DATA

UNIT SIZE	O D mm	CURRENT (A)			RESISTANCE Ω			AT 20° C 90V
		6V	24V	90V	6V	24V		
500	128	3,42	1,05	0,41	1,76	22,8		218
825	218	4,30	1,22	0,37	1,39	19,7		242
1000	262	4,17	1,12	0,34	1,44	21,4		264
1225	322	4,16	1,11	0,34	1,44	21,5		262
1525	398	4,18	1,12	0,34	1,43	21,4		261



PB BRAKE, SIZE 825 WITH PIN DRIVE ARMATURE

MAINTENANCE

When a Warner Electric Brake is properly assembled and installed, no further servicing, lubrication or maintenance should be required throughout the life of the unit. As with any friction-type device, some initial care should be given to wear rate, as minor adjustments in actuation time can sometimes greatly extend the life of the unit.

Slight changes in torque, made with the control potentiometer may greatly and easily extend the life of your unit by increasing the actuation time. Keep the input voltage to the magnet as low as possible when maximum capacity is not required. Once the right speed has been established, precautions should be taken to prevent machine operators, or other personnel not familiar with wear characteristics, from changing the potentiometer setting arbitrarily for effecting minor operating changes. A good rule to remember is the quicker the stop, the shorter the life.

WEAR PATTERN: Wear grooves appear on the armature and magnet surfaces. This is a normal wear condition, and does not impair functioning of the unit. Never machine either the armature or magnet contact surfaces to remove grooves or score marks resulting from wear.

Remachining the face of a worn armature is not recommended. If a replacement armature is to be used with a used magnet, it is necessary to remachine the worn magnet face. In refacing a magnet: (1) machine only enough material to clean up the complete face of the magnet; (2) hold the face within .005" of parallel with the mounting plate; and (3) undercut the molded facing material .002" - .004" below the metal poles. Normally the magnet and armature, as a mating pair, will wear at the same rate. It is the usual recommendation that both components be replaced at the same time.

HEAT: Excessive heat and high operating temperatures are causes of rapid wear. Units, therefore, should be ventilated as efficiently as possible, especially if the application requires fast, repetitive cycle operation.

FOREIGN MATERIALS: If units are used on machinery where fine, abrasive dust, chips or grit are dispelled into the atmosphere, shielding of the brake may be necessary if maximum life

is to be obtained. Where units are used near gear boxes or transmissions requiring frequent lubrication, means should be provided to protect the friction surfaces from oil and grease to prevent serious loss of torque. Oil and grease accidentally reaching the friction surfaces may be removed by wiping with a rag damped with trichlorethylene. In performing this operation, do not drench the friction material. If the friction material has been saturated with oil or grease no amount of cleaning will be completely effective. Once such a unit has been placed back in service, heat will cause the oil to be boiled to the surface resulting in further torque loss.

TORQUE LOSS: If a brake slips or loses torque completely, the initial check should be the input voltage to the magnet as follows:

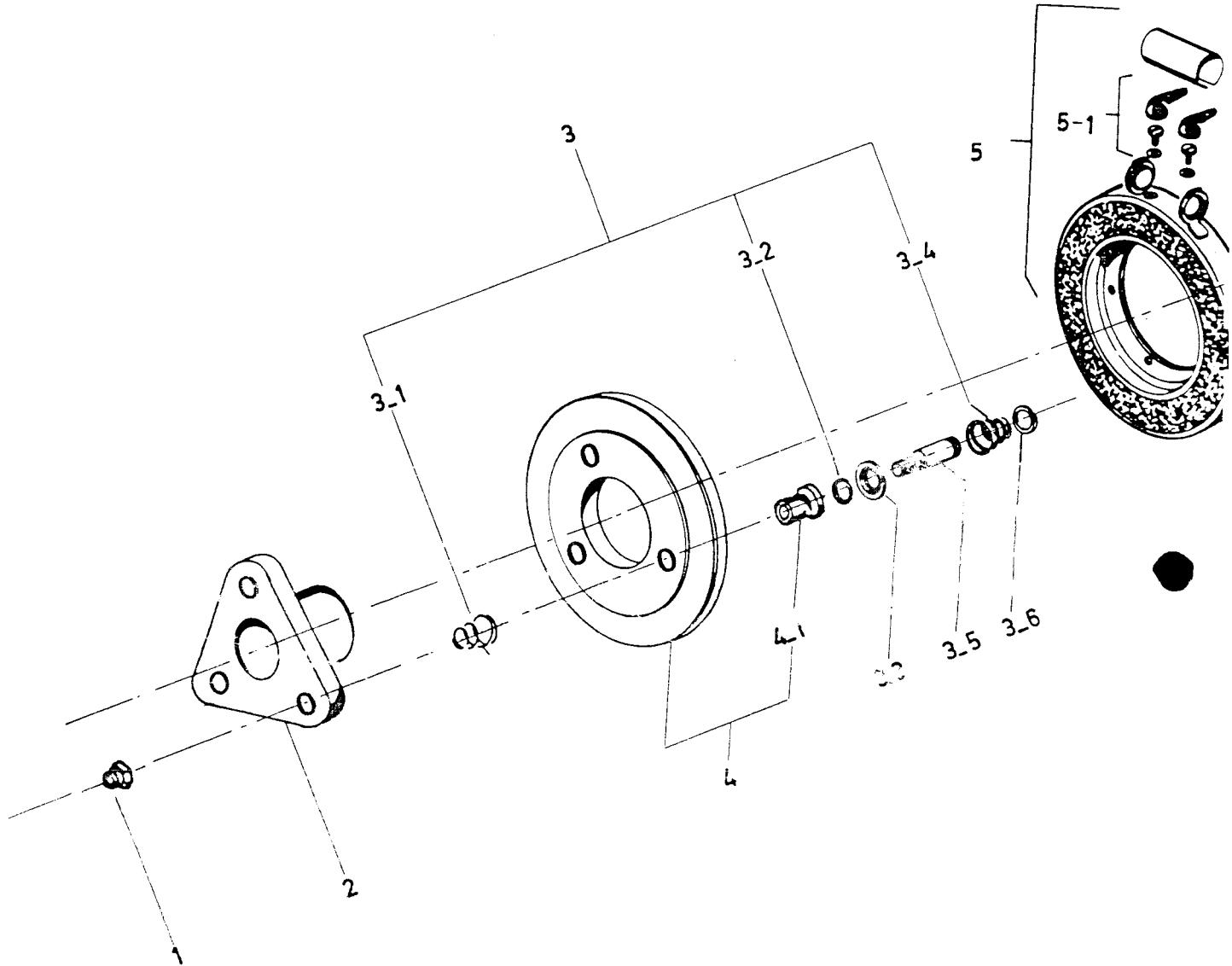
90 VOLT SERIES: Connect a DC voltmeter with a range of 0-100 or more directly across the magnet terminals. With the power on and the potentiometer turned up, a normal reading is 90 volts although 85 to 95 is satisfactory. The reading should drop as the potentiometer control is adjusted counter-clockwise.

For 6 volt magnets use a DC voltmeter of approximately 0-15 volt range. A normal reading is from 5.5 to 6.5 volts depending on the power supply.

The above checks normally are sufficient. Further checks may be made as follows: a low range ammeter, when connected in series with one magnet lead, will normally indicate approximately .35 amperes for the 90 volt units and 4.0 amperes for the 6 volt series. These readings are with the power on and the potentiometer control in the maximum position.

Ohmmeter checks should be made with the power off and the circuit open (to be certain, disconnect one lead to the magnet). Average resistance for the 90 volt series is 260 ohms, for the 6 volt series, 1.5 ohms. A very high or infinite resistance reading would indicate an open coil.

If the above checks indicate that the proper voltage and current is being supplied to the magnet, mechanical parts should be checked to assure that they are in good operating condition and properly installed.



Item No.	Description	Part No.	No. Req.
1	Nut	661-0005	3
2	Armature hub	MFO	1
3	Mounting accessory	5301-101-003-01	1
3-1	Follow-up spring	808-0008	3
3-2	Detent spring	SW 16	3
3-3	Detent spring retainer	748-0329	3
3-4	Release spring	808-0042	3
3-5	Drive pin	413-0002	3
3-6	Retainer	748-0014	3
4	Armature	5301-111-006	1
4-1	Sleeve	166-0004	3
5	Magnet	5311-631-025	1
5-1	Terminal accessory	5311-101-001	1

Instrucciones de montaje y conservación de los motores trifásicos tipos 37—41, 143—157 con cojinetes de rodillos lubrificados con grasa consistente

Erection and maintenance instructions for motors types 37 to 41 and 143 to 157 with grease-lubricated ball or roller bearings

Disposición: La forma de construcción, indicada sobre la placa de características, determina el tipo de disposición del motor (por ejemplo B3, V1; véase figura). Obsérvese que la entrada y salida del aire de refrigeración permanezca libre de obstáculos. Todas las vibraciones exteriores que actúen sobre el motor, deberán ser eliminadas.

Conexiones: Compruébese la tensión y conexión indicadas en la placa de características y efectúense las conexiones según el esquema que se encuentra en la tapa de la caja de bornes. Asegúrase de que las conexiones y la toma de tierra, quedan bien apretadas.

Sentido de rotación: Según el esquema que se encuentra en la tapa de la caja de bornes.

Conservación: Los cojinetes han sido provistos de grasa y están preparados para entrar en servicio. Para cambiar la grasa, desmontar las tapas soporte de los cojinetes aflojando los tornillos de las mismas y los de las tapas de los cojinetes. Limpiar la grasa vieja con petróleo (conteniendo 4—5 % de aceite mineral). La grasa deberá ser cambiada después de los siguientes períodos de tiempo:

Tipo 37—41 aprox. cada 10 000 horas de servicio o como mínimo cada 5 años

Tipo 143—149 aprox. cada 8 000 horas de servicio o como mínimo cada 4 años

Tipo 151—157 aprox. cada 6 000 horas de servicio o como mínimo cada 3 años

En los motores con velocidades superiores a 1800 r.p.m., deberá cambiarse la grasa después de la mitad del tiempo indicado anteriormente. Para motores con acoplamiento directo (sin transmisión por correa) podrán aumentarse los tiempos dados en un 50 %.

Si el motor está situado en un ambiente de clima tropical (humedad constante 100 %) o bien se trata de un tipo con protección P 44, montado sin protección al aire libre o en un local polvoriento, entonces deberá tomarse la mitad de los tiempos dados.

Calidad de la grasa: Con preferencia se empleará grasa Holz-Exalin Olyt A 20. Si este tipo de grasa no puede obtenerse, se elegirá entre las grasas siguientes: Aseel Litea 6-077, SKF 28, BP Energease LS 2, Crown-Grease No. 2, Shell Alvania Grease 2, Valvoline LB Grease, Grease 2 y 3 o ESSO Beacon M 200 y M 285. Cantidad aproximada de grasa por cojinete:

Típos 37 39 41 143 145 147 149 151 153 155 157

Gramos 1,5 1,7 2 5 15 25 32 50 75 100 150

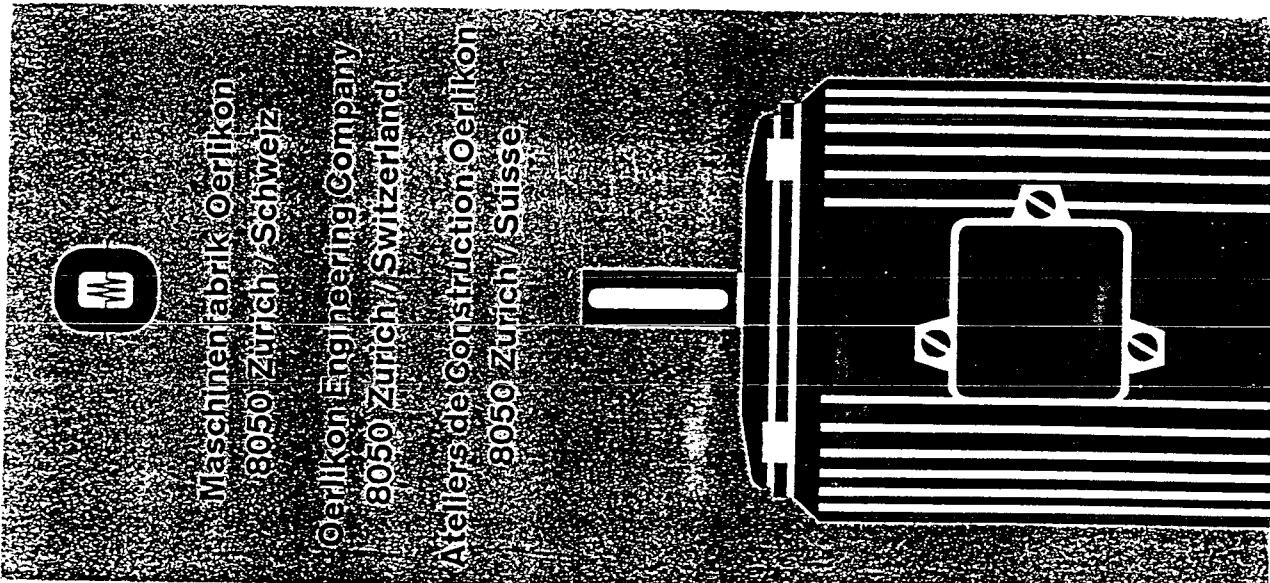
Montaje de piezas de accionamiento en la extremidad del eje:

Las piezas de accionamiento (poleas, acoplamientos, etc.) deben estar perfectamente equilibradas dinámicamente, de lo contrario se entorpecerá la buena marcha del motor.

Los órganos de accionamiento, deberán ser equilibrados sin tener en cuenta la chaveta, ya que el motor ha sido equilibrado con la chaveta que se suministra conjuntamente.

Los cojinetes de rodillos son sensibles a los choques y a las vibraciones, en consecuencia deberá tenerse presente:

- Efectuar correctamente el montaje de las piezas de accionamiento empleando para ello los dispositivos de montaje apropiados, haciendo uso del paso de rosca que se encuentra en la extremidad del eje.
 - Cuando no se posean dispositivos de montaje adecuados, se dispondrá el motor verticalmente apoyando la extremidad opuesta del eje sobre una base sólida. De esta forma pueden ser golpeados cuidadosamente los órganos de accionamiento.
- Importante: Los orificios de ventilación y los devanados deberán mantenerse siempre limpios. Una obstrucción de dichos orificios, ocasionaría un aumento excesivo de la temperatura.



Conexión: Check voltage and connection given on the rating plate and on the diagram inside the terminal cover. Tighten well terminal nuts and earthing screw.

Dirección de rotación: According to the diagram inside the terminal cover.

Mantenimiento: The bearings are already filled with ball-bearing grease and are ready for service. To change the grease, remove the end shield by loosening the cover and shield screws. Wash out the old grease with cleaning petroleum (containing 4...5 % oil). The grease should be renewed after the following intervals:

Types 37 ... 41 : c. every 10 000 running hours, but at least every 5 years
Types 143 ... 149 : c. every 8 000 running hours, but at least every 4 years
Types 151 ... 157 : c. every 6 000 running hours, but at least every 3 years

For speeds over 1800 rpm, these intervals should be halved.

For direct coupling about 50 % longer intervals are permissible.
If the conditions under which the motor operates are tropical (humidity continuously around 100 %), or if it is of the P 44 type and is mounted without protecting cover in the open or in a very dusty atmosphere, then these maintenance intervals must be halved.

Grasa calidad: Use ball bearing grease Holz-Exalin Olyt A 20. Should this not be available, Aseel Litea 6-077, SKF 28, BP Energease LS 2, Gulfcrown-Grease No. 2, Shell Alvania Grease 2, Valvoline LB Grease, Mobilax Grease 2 and 3, or ESSO Beacon M 200 or M 285 may also be used.

Quantity of grease per bearing:

Type of motor	37	39	41	143	145	147	149	151	153	155	157
Grams	1,5	1,7	2	5	15	25	32	50	75	100	150

Mounting pulleys or couplings:

Pulleys or couplings after machining must be dynamically balanced (without the wedge, as the motor has been balanced with the full wedge) and carefully mounted. Otherwise the smooth running of the bearings will suffer. Ball bearings are adversely affected by blows and vibration, and therefore

- The driving organs must be pressed on using a suitable jig and the thread in the shaft end,
- If such a jig is not available, the motor can be placed upright, resting on the opposite shaft end, and the driving organ moderately tapped on.

Important: Keep cooling air openings and ventilated external surfaces clean. Dirt and blockages in the air flow cause overheating.

Anweisung über Montage und Wartung der Wälzlager-Motoren Typ 37—41, 143—157 mit Fettschmierung

Aufstellung: Die auf dem Leistungsschild vermerkte Bauform bestimmt die Art der Aufstellung des Motors (z.B. B 3, V 1; siehe nebenstehende Abbildungen). Achten Sie auf unbehinderten Zutritt und Ausritter der Kühlluft. Von aussen auf den stillstehenden Motor einwirkende Vibrationen sind zu vermeiden.

Anschluss: Spannung und Schaltung auf Leistungsschild und Schema im Klemmenschutzdeckel beachten. Klemmenmuttern und Erdungsschraube fest anzuziehen.

Drehzinn: Nach Schema im Klemmenschutzdeckel.

Wartung: Die Lager sind mit Wälzlagerradfern versehen und betriebsbereit. Zum Ersetzen des Fettes beide Lagerschilder durch Lösen der Deckel- und Schildschrauben demontieren. Altfett durch Auswaschen mit Waschpetrol (enthält 4—5 % Öl) entfernen. Das Fett ist in folgenden Intervallen zu ersetzen:

Typ 37—41 ca. alle 10 000 Betriebss Stunden, mindestens jedoch alle 5 Jahre

Typ 143—149 ca. alle 8 000 Betriebss Stunden, mindestens jedoch alle 4 Jahre

Typ 151—157 ca. alle 6 000 Betriebss Stunden, mindestens jedoch alle 3 Jahre

Bei Drehzahlen über 1800 U/min sind diese Zeiten zu halbieren.
Bei direkter Kupplung sind ca. 50 % höhere Werte zulässig.

Herrscht in unmittelbarer Umgebung des Motors tropisches Klima (dauernd gegen 100 % Luftfeuchtigkeit) oder ist er in Schutzzart P 44 ausgeführt und deckt im Freien oder in stark staubhaltiger Umgebung aufgestellt, so ist die Wartungsfrist zu halbieren.

Fettqualität: Wälzlagerradfett Holz-Exalin Olyt A 20 einzufüllen, wo nicht vorhanden, ist Aseol Litea 6—077, SKF 28, BP Energiease LS 2, Gulfcrown-Grease Nr. 2, Shell Alvania Grease 2, Valvoline LB Grease, Mobilax 2 und 3 oder ESSO Beakon M 200 oder M 285 nachzufüllen.

Fettdosis pro Lager:

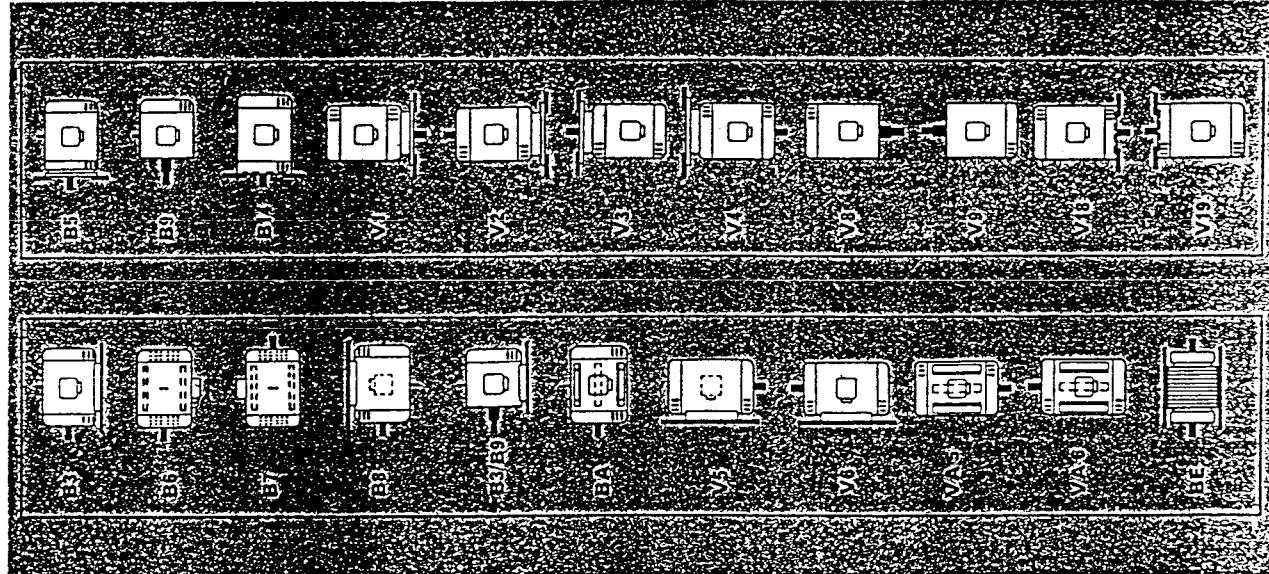
MotorTyp	37	39	41	143	145	147	149	151	153	155	157
Gramm	1,5	1,7	2	5	15	25	32	50	75	100	150

Aufsetzen von Antriebsorganen auf das Wellenende:

Die Antriebsorgane (Riemenscheiben, Kupplungen usw.) sollen genau bearbeitet, dynamisch ausgewechselt und gut fluchtend montiert werden, sonst leidet die Laufweise des Motors. Die Antriebsorgane sind ohne Keil dynamisch auszuwuchten, da der Motor mit dem mißlieferierten vollen Keil gewuchst ist. Wälzlager leiden durch Schläge und unter Vibrationen, daher muss

- das Aufsetzen der Antriebsorgane sachgemäß mit passender Aufziehhörrichtung unter Berücksichtigung des Gewindes im Wellenende erfolgen;
- wenn eine Aufziehhörrichtung fehlt, können die Antriebsorgane bei senkrechtem Gestell und auf der gegenseitigen Wellenstrahlfläche abgestützt Motor vorsichtig aufgeschlagen werden.

Wichtig: Lüftungsöffnungen und ventilierte Außenflächen sauberhalten. Verschlüsse und Verschmutzung bewirken unzulässige Erwärmung.



Notice de montage et d'entretien des moteurs, types 37 à 41 et 143 à 157, munis de paliers à roulements lubrifiés à la graisse

Installation: Le mode de construction indiqué par la plaque signalétique (exemple : B 3, V 1 ; voir esquisses ci-contre) détermine le genre d'installation du moteur. Il faut veiller à dégager les ouvertures d'admission et de rejet de l'air de refroidissement et éviter que des vibrations ne s'exercent sur le moteur au repos.

Raccordement : Respecter les indications de la plaque signalétique et du schéma fixé au couvercle de la boîte à bornes : tension et couplage.

Bloquer les écrous des bornes et la vis de mise à la terre.

Sens de rotation : Suivant le schéma fixé au couvercle de la boîte à bornes.

Entretien : Pourvus de graisse en usine, les paliers sont près à entrer en service. Pour renouveler la graisse, démonter les deux flaques en desserrant les vis des caps et flasques. Enlever la vieille graisse par lavage au pétrole (teneur en huile : 4 à 5 %). Périodicité de renouvellement de la graisse :

Types 37 à 41 : après quelque 10 000 heures de service,
mais au plus tard tous les 5 ans

Types 143 à 149 : après quelque 8000 heures de service,
mais au plus tard tous les 4 ans

Types 151 à 157 : après quelque 6000 heures de service,
mais au plus tard tous les 3 ans

Réduire ces intervalles de moitié pour les vitesses de rotation supérieures à 1800 l./min.

Les moteurs à accouplement direct admettent des valeurs plus élevées d'environ 50 %.

Pour les moteurs travaillant dans une ambiance de climat tropical (degré hygrométrique voisin de 100 % en permanence) ainsi que pour les moteurs avec mode de protection P 44 installés à l'extérieur sans toit de protection ou encore lorsque l'air ambiant a une forte teneur en poussières, il y a lieu de réduire de moitié l'intervalle normal entre revisions.

Qualité de graisse : utiliser la graisse pour roulements Holz-Exalin Olyt A 20 ; à défaut : Aseol Litea 6—077, SKF 28, BP Energiease LS 2, Gulfcrown-Grease N° 2, Shell Alvania Grease 2, Valvoline LB Grease, Mobilax Grease 2 et 3, Esso Beakon M 200 ou M 285.

Quantité approximative de graisse, par palier :

Types de moteurs	37	39	41	143	145	147	149	151	153	155	157
Grammes	1,5	1,7	2	5	15	25	32	50	75	100	150

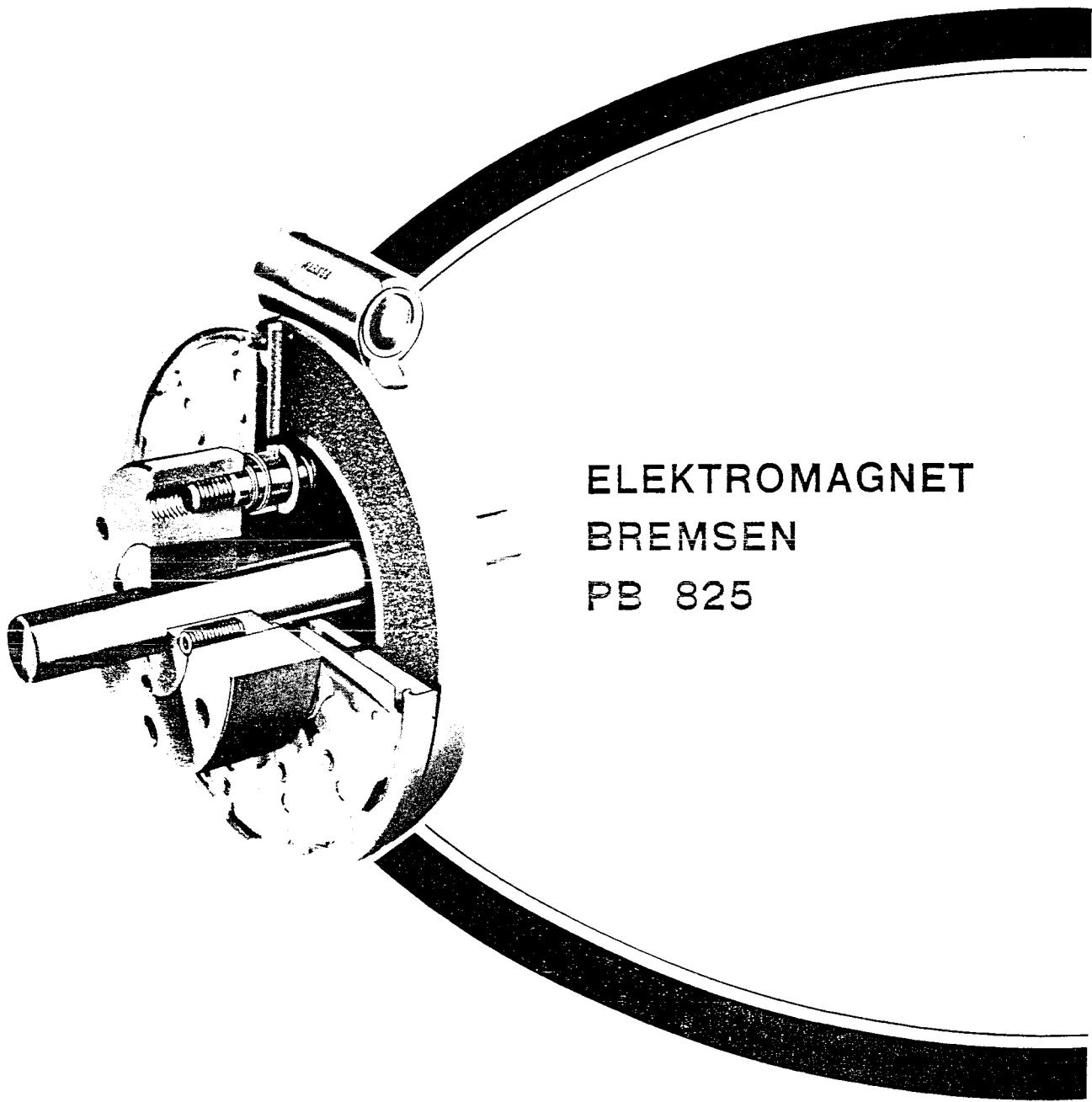
Montage des organes d' entraînement sur le bout d' arbre :

Tout défaut de précision d'ustilage, d'équilibrage dynamique ou d'alignement des organes d' entraînement (poulies, accouplements, etc.) nuiraient à la bonne marche du moteur. Il faut donc équilibrer ces pièces dynamiquement, mais sans la clavette livrée avec le moteur déjà équilibré avec celle dernière. Les paliers à roulements sont sensibles aux chocs et aux vibrations, il faut donc :

- monter l'organe d' entraînement sur l'arbre en utilisant un arrache-poulie adéquat et le tarage du bout d' arbre,
- à défaut, placer le moteur verticalement, reposant sur l'autre bout d' arbre, et le frapper avec précaution sur l'organe d' entraînement pour l'engager sur le bout d' arbre.

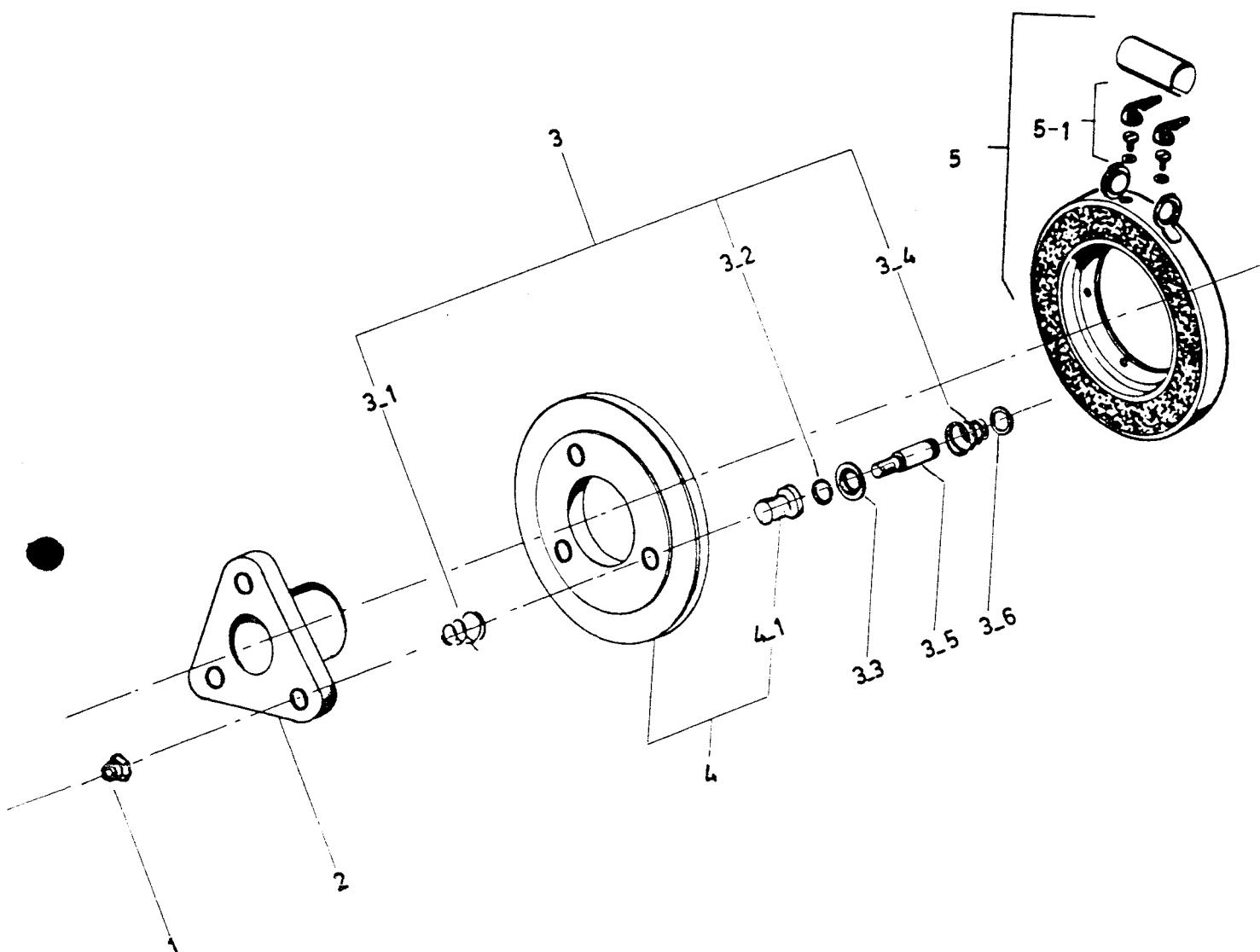
Important: Veiller à la propreté des ouvertures et surfaces extérieures de ventilation. L'obstruction des uns et l'encaissement des autres provoquaient un échauffement excessif.

BEDIENUNGSANLEITUNG



ELEKTROMAGNET
BREMSEN
PB 825





Pos.	Bezeichnung	Teil Nr.	Stck
1	Mutter	661-0005	3
2	Ankernabe	MFO	1
3	Montagezubehör	5301-101-003-01	1
3-1	Andrückfeder	808-0008	3
3-2	Federring	SW 16	3
3-3	Federteller	748-0329	3
3-4	Abdrückfeder	808-0042	3
3-5	Mitnehmerbolzen	413-0002	3
3-6	Sicherungsring	748-0014	3
4	Ankerplatte	5301-111-006	1
4-1	Büchse	166-0004	3
5	Magnet	5311-631-025	1
5-1	Klemmenzubehör	5311-101-001	1

Wartung



ERWAERMUNG: Die Aussentemperatur am Magnet darf 90°C nicht überschreiten. Bei höheren Temperaturen ist eine Belüftung erforderlich, da sonst der Verschleiss zu gross oder die Spule schadhaft wird.

FREMDKOERPER: Ein Schutzblech oder eine Abschirmung sind vorzusehen, wenn die Einheit in staubiger oder ölhaltiger Luft arbeitet. Vorsicht! Einheit nicht einkapseln, da sonst eine Abkühlung der Ankerplatte nicht möglich ist.

Grösse	Aussen Ø mm	Strom (A) bei			Widerstand (Ω) bei 20°C		
		6V	24V	90V	6V	24V	90V
500	128	4,4	1	0,36	1,36	23,8	247
650	165	4,8	1,31	0,35	1,24	18,3	257
825	218	4,7	1,18	0,40	1,27	20,3	225
1000	262	4,9	1,22	0,30	1,23	19,6	297
1225	322	4,5	1	0,34	1,33	22,3	262
1525	398	4,13	1,21	0,37	1,45	19,8	240

DREHMOMENTABFALL: Wenn die Einheit durchrutscht sind Spannung, Strom oder Widerstand zu messen.

Weiterhin ist zu prüfen, ob die Pole des Magneten guten Kontakt mit der

Ankerplatte haben und der Belag nicht verölt oder gefettet ist. Öl- oder Fettspuren sind mit Tetrachlor-Kohlenstoff zu entfernen. Magnete mit stark verölten Belägen müssen ersetzt werden.



Wartung



ERWAERMUNG: Die Aussentemperatur am Magnet darf 90°C nicht überschreiten. Bei höheren Temperaturen ist eine Belüftung erforderlich, da sonst der Verschleiss zu gross oder die Spule schadhaft wird.

FREMDKOERPER: Ein Schutzbblech oder eine Abschirmung sind vorzusehen, wenn die Einheit in staubiger oder ölhaltiger Luft arbeitet. Vorsicht! Einheit nicht einkapseln, da sonst eine Abkühlung der Ankerplatte nicht möglich ist.

Grösse	Aussen Ø mm	Strom (A) bei			Widerstand (Ω) bei 200C		
		6V	24V	90V	6V	24V	90V
500	128	4,4	1	0,36	1,36	23,8	247
650	165	4,8	1,31	0,35	1,24	18,3	257
825	218	4,7	1,18	0,40	1,27	20,3	225
1000	262	4,9	1,22	0,30	1,23	19,6	297
1225	322	4,5	1	0,34	1,33	22,3	262
1525	398	4,13	1,21	0,37	1,45	19,8	240

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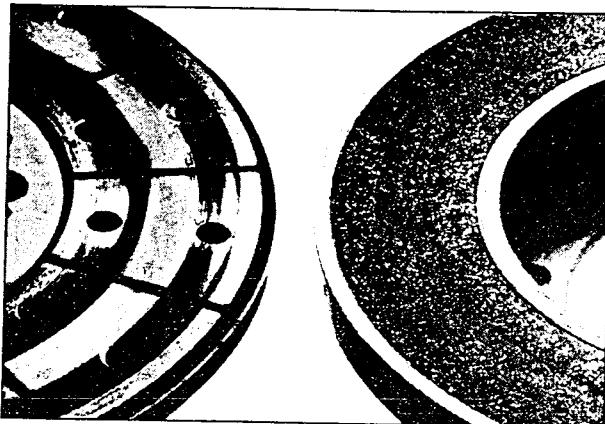
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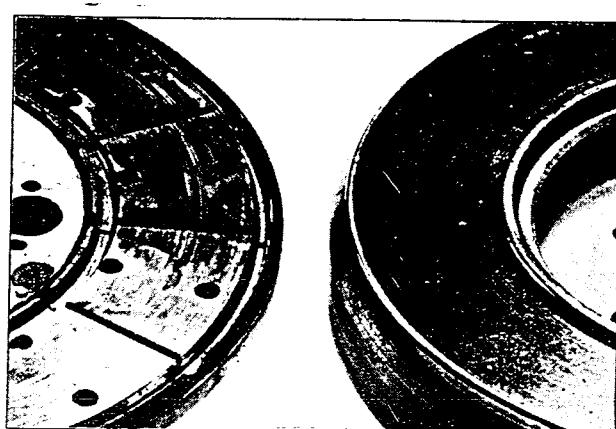
Wartung



Bedienungsanleitung für PB-Bremsen und PC-Kupplungen



Reibspuren an Ankerplatte und Reibbelag nach den ersten Schaltungen.



Typisches Verschleissbild abgenützter Reibflächen. Die Rillen und Riefen in Ankerplatte und Belagteil sind normal.

WARTUNG: Eine richtig montierte und eingebaute Warner-Einheit bedarf keiner Wartung. Die Ankerplatte stellt sich selbsttätig nach.

Achtung! Reibflächen nicht ölen oder schmieren.

VERSCHLEISS: Eine neue Einheit überträgt ca. 40% des Nennmomentes. Das maximale Drehmoment wird meist nach kurzer Einlaufzeit erreicht, wenn Reibspuren von Belag- und Eisenpolen auf der Ankerplatte sichtbar sind.

Die Einlaufzeit kann durch Einrutschen verkürzt werden, indem der Magnet mit etwa 25% der Nennspannung erregt wird, und man die Ankerplatte auf dem feststehenden Magneten rutschen lässt. Erreicht der Magnet eine Außentemperatur von etwa 90°C, so ist der Vorgang zu unterbrechen. Nachdem sich Magnet und Ankerplatte abgekühlt haben, ist das Einrutschen solange zu wiederholen bis Reibspuren vom Belag auf der Ankerplatte sichtbar sind.

Achtung! Rillen und Riefen dürfen weder an der Ankerplatte noch am Magnet nachgearbeitet werden! Bei Warner-Einheiten arbeiten sich die Pole in die Ankerplatte ein.

Abgenützte Ankerplatten sind stets zu ersetzen. Wird eine neue Ankerplatte mit einem noch nicht abgenützten Magnet eingebaut, so ist Ueberdrehen der Reibfläche mit den Eisenpolen zulässig. Nach dem Ueberdrehen ist der Belag ein wenig (0,05 - 0,1 mm) zu hinterdrehen.

B. Betrieb

Prüfung:	<p>Isolation:</p> <p>Der Isolationswiderstand in Megohm soll nicht kleiner sein als die Betriebsspannung in Kilovolt. Wird nach längerem Stillstand der Isolationswiderstand, infolge Durchfeuchtung, wesentlich kleiner, so ist die Wicklung möglichst mit warmer Luft von höchstens 80° oder durch längeren Lauf bei $\frac{1}{5}$ bis $\frac{1}{4}$ der Nennspannung auszutrocknen.</p> <p>Erwärmung:</p> <p>Jede übermässige Erwärmung ist zu vermeiden. Die normal zulässige Temperatur (bei 40° Umgebungstemperatur) beträgt: 115° für Wicklung und Eisen, 80° für das Lager. Temperaturmessungen sind mit dem Thermometer vorzunehmen.</p>
Wartung:	Die Motoren sollen in betriebsbedingten Zeitabschnitten gereinigt werden. Schmutz und Staub zwischen den Kühlrippen und am Gitterblech der Ventilatorhaube sind zu entfernen. Bei der Demontage der Motoren sind die Wälzlager gegen jegliche Verunreinigung durch dichte Abdeckung zu schützen.
Schmierung:	<p>Die periodische Nachschmierung der betriebsbereit gelieferten Motoren richtet sich nach der täglichen Betriebsdauer, der Belastung, der Lagergrösse, der Betriebsdrehzahl und der Lagertemperatur.</p> <p>Für die mit Schmiernippel ausgerüsteten Motoren erfolgt die Nachschmierung bei laufendem Motor.</p> <p>Bei einem Drehzahlbereich bis 1500 T/min betragen die Schmierintervalle ca. 10 000 Betriebsstunden, bei einem Drehzahlbereich von 1500 bis 3000 T/min ca. 5000 Betriebsstunden.</p> <p>Bei Revisionen und Fettwechsel ist die vollständige Reinigung der Lager und Fettkanäle mit Benzin oder Benzol unerlässlich.</p> <p>Verwendetes Kugellagerfett: Mobiltemp 1, Fabrikat Mobil-Oil</p> <p>Schweizer-Vertretung: Mobil-Oil, Dufourstrasse 29, Basel</p>
Ersatzteile:	Bei Ersatzteillieferungen sind Motortyp und Fabrikationsnummer anzugeben.

Vorschrift über Aufstellung und Betrieb von Drehstrommotoren

A. Aufstellung

Lieferzustand:	Der Motor wird im Betrieb dynamisch mit ganzem Keil ausbalanciert und betriebsfertig mit fettgefüllten Lagern geliefert.								
Allgemeine Bedingungen:	Eventuelle Transportschäden sind vor der Aufstellung festzustellen. Die sorgfältige Befestigung auf fester Unterlage ist zu beachten. Genügend Raumlüftung schützt vor Überwärmung des Motors.								
Antriebsorgane:	<p>Die Montage der Antriebsorgane erfolgt wenn möglich mittels Aufzugvorrichtungen zur Vermeidung von Schlägen und Stößen auf die Wälzlager.</p> <p>Riemenscheiben: in gleicher Flucht (nicht zu stark spannen)</p> <p>Kupplungen: sorgfältig ausgerichtet.</p>								
Ei. Anschluss:	<p>Die Netzzuleitungen sind nach Schaltbild mit dem Motor zu verbinden. Die Motoren können bei direktem Einschalten an 2 Spannungen im Verhältnis 1:1,73 angeschlossen werden.</p> <table style="width: 100%; text-align: center;"> <tr> <td>Niedere Spannung Δ</td> <td>Höhere Spannung Y</td> </tr> <tr> <td>$\text{Z} \text{ } \text{x} \text{ } \text{Y}$</td> <td>$\text{Z} \text{ } \text{x} \text{ } \text{Y}$</td> </tr> <tr> <td>$\text{U} \text{ } \text{v} \text{ } \text{w}$</td> <td>$\text{U} \text{ } \text{v} \text{ } \text{w}$</td> </tr> <tr> <td>Netzanschluss</td> <td>Netzanschluss</td> </tr> </table> <p>Der Klemmenkasten befindet sich bei Sicht auf das Wellenende normal rechts, ausnahmsweise links. Die Erdung erfolgt nach Landesvorschrift. Erdungsschraube gelbgrün.</p>	Niedere Spannung Δ	Höhere Spannung Y	$\text{Z} \text{ } \text{x} \text{ } \text{Y}$	$\text{Z} \text{ } \text{x} \text{ } \text{Y}$	$\text{U} \text{ } \text{v} \text{ } \text{w}$	$\text{U} \text{ } \text{v} \text{ } \text{w}$	Netzanschluss	Netzanschluss
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Netzanschluss	Netzanschluss								
Schutz:	Dem Motor ist ein Motorschutzschalter mit Wärmepaketauslöser vorzuschalten, der ihn gegen betriebsmässige Überlastung und gegen die schädlichen Auswirkungen des einphasigen Laufes schützt und ihn auch beim Ausbleiben einer Phase bei vollbelastetem Betrieb rechtzeitig abschaltet.								