INSTRUCTION DE SERVICE

A remettre à la personne chargée de la conduite de la machine.

SERVICE INSTRUCTIONS

To be handed to the operator in of the machine.

BETRIEBSANWEISUNG

Diese Anweisung ist für die Maschine bedienende Person bestimmt.

Machine SCHAUBLIN	type	:	102
Machine / Maschine	N°	:	.....
BL	N°	:	225.132
Tension /Spannung	Volts	:	.....

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

0 43 Printed in Switzerland

W 25 HEADSTOCK

WITH ANTIFRICTION BEARINGS AND REDUCTION GEAR 5:1

FOR 102 LATHE

TYPE 102-32 Open type with closing by hand-operated drawbar
TYPE 102-33 Closed type with closing by hand-operated drawbar
TYPE 102-32L Open type with quick closing by hand-operated lever
TYPE 102-33L Closed type with quick closing by hand-operated lever

Lubrication by oil gun or oil mist.
Ranges of speeds: Normal, Special I and Special II

CHARACTERISTICS

Type	102-32/32L	102-33/33L
Thread on spindle nose	M 47,6 x 3 mm	
Cylindrical location on spindle nose	∅ 48 x 10 mm	
Spindle bore	∅ 25 mm	
Maximum through-bore in standard collet	∅ 19 mm	
Internal taper of spindle	15°	
Width of pulley steps	32 mm	
Diameter of pulley steps	75/100/125 mm	
Weight	24,55/28,20 kg	29,25/32,90 kg

MAINTENANCE

A. Cleaning on receipt

Prior to despatch all external and internal parts are given a coat of special anti-rust grease.

This grease has no lubricating property; its presence may cause serious seizure, even several weeks after starting up. Clean the entire headstock with a chemically neutral white rag (free of chlorine or acie) soaked in paraffin.

Avoid using alcohol, car petrol (which often contains alcohol), or any other organic product that would dissolve the cellulose paint.

B. Lubrication of bearings

Use a good mineral oil with a viscoscity of approximately 2,5°E at 50°C. (See lubrication chart ING 57-1).

The front and rear bearings are lubricated under pressure by means of a gun supplied with the machine. The lubricant and the method of lubrication have an influence on the friction and the temperature of the bearings. Any large accumulation of lubricant can produce overheating.

Oil frequently, but sparingly (at the most once a day).

Never use grease! Any abundance of grease can brake the rolling elements to such an extent that they will only skid on the tracks.

Note: Headstocks equipped with the oil-mist lubrication unit require no additional lubrication.

C. Lever-operated quick-closing mechanism

The pivot of the lever (102-34.020) carries a nipple K7 for injection of oil by gun.

Once a week inject one or two shots of oil through this nipple. Lubricate also the dogs (120VM-316). The bearing (RIV 16011) is lubricated either by oil mist or by injecting oil through the nipple K7 by means of the gun. In the latter case lubricate once a day during normal operation.

D. Oil bath of reduction gear

Use the same oil as for the bearings, that is a mineral oil with a viscosity of aproximately 2,5°E at 50°C.

Remove the plug (102-26.031) pour oil out to half of the level gauge.

Once a year, drain oil, rinse the box with petrol and pour fresh oil.

ADJUSTMENT OF SPINDLE BEARINGS

The play in the two spindle bearings is adjusted very carefully at the time of assembly of each headstock. No subsequent adjustment is necessary until after a relative long period of running.

Only an experienced person should be allowed to make the following adjustments, which require the greatest care:

Taking up radial play in front bearing

1. Determine the exact amount of radial play with a comparator reading to within 1/1000 mm. To obtain perfect running conditions, the radial play must be:

   0,002 to 0,003 mm for the NORMAL range of speeds up to 3000 rpm.
   0,003 to 0,004 mm for the SPECIAL I range of speeds up to 4500 rpm.
   0,004 to 0,005 mm for the SPECIAL II range of speeds up to 6000 rpm.

2. Remove the spindle (102-32.002) by following the instructions given below:

   a) Remove the quick-closing mechanism, which is fixed to the headstock frame by two screws (CCM M8x30) and held axially by the split ring (102-30.622).
   b) Unscrew the three screws of the cover (102-23.005).
   c) Remove the key (4x4x18).
   d) Remove the cover (102-23.006), which is held by four screws (CCM M6x15).
   e) Unscrew the screw (2015-6).
   f) Unlock the screw of the nut (102-23.008) and unscrew the nut.
   g) Carefully drive out the spindle with a lead or fibre hammer, striking the rear end.

3. Unlock the screw of the nut (102-23.009) and screw the nut down according to the amount of play to be taken up.

   The slight taper on the inner race of the bearing (NN 3009-K-SP) resists any normal advance of the nut (102-23.009). Strike the nut concentrically by means of a tube placed on the spindle in order to displace the inner race of the bearing slightly on the taper of the spindle (102-32.002). Then retighten the nut.

   By repeating this operation a certain number of times it is possible to turn the nut through the desired angle. Carefully check the advance of the nut (102-23.009), as it is difficult to move the inner race of the bearing back once it has been pushed too far forward on the taper.

   Advance of nut (102-23.009) = play to be taken up in mm x 14
   Pitch of nut (102-23.009) = 1 mm

   EXAMPLE: Let us assume that 0,001 mm radial play is to be taken up.

   Advance of nut : 0,01 x 14 = 0,14 mm
   equilivent to a rotation of : $0{,}14 \times 360^{\circ} = 50^{\circ}\ 24'$

   corresponding to a length of: $\frac{60 \times \pi \times 50{,}4}{360} = 26{,}4$ mm

   measured on the 60 mm outside diameter of the nut.

4. Tighten the nut (102-23.009) against the inner race of the bearing and lock it with the screw (D M6 x 6).
5. Refit the spindle (102-32.002) and check the radial play.
6. Refit the quick-closing mechanism.

   Note: The play must be checked with the bearings (7208) in position and with the bearing (NN 3009-K-SP) perfectly clean and lightly oiled.

Taking up end play in rear bearing

1. Determine the amount of end play with the aid of a comparator reading to within 1/1000 mm.

   To obtain perfect running conditions, the end play in the rear bearing must be:

   0,002 to 0,003 mm for the NORMAL range of speeds,
   0,003 to 0,004 mm for the SPECIAL I and SPECIAL II ranges of speeds.
2. Remove the quick-closing mechanism, which is fixed to the headstock frame by two screws (CCM M8x30).
3. Remove the key (4x4x18).
4. Remove the cover (102-23.006), which is held by four screws (CCM M6x15).
5. Remachine that face of the cover (102-23.006) marked * according to the amount of play to be taken up. This work must be done very carefully.

   Note: The face of the cover marked * must be perfectly parallel with the supporting face on the bearing.
6. Refit the cover (102-23.006) and check the end play in the spindle.

   This check must be made with the bearings (7208) perfectly clean and lightly oiled.

SPINDLE LOCKING DEVICE

The plunger (102-21.008) can be inserted into any of the holes in the side of the pulley (102-23.003) by means of the knurled knob (102-22.022 in the case of the closed headstock or 102-21.022 in the case of the open headstock), thus allowing the spindle to be locked in any position.

USE OF THE HOLE DIVISIONS

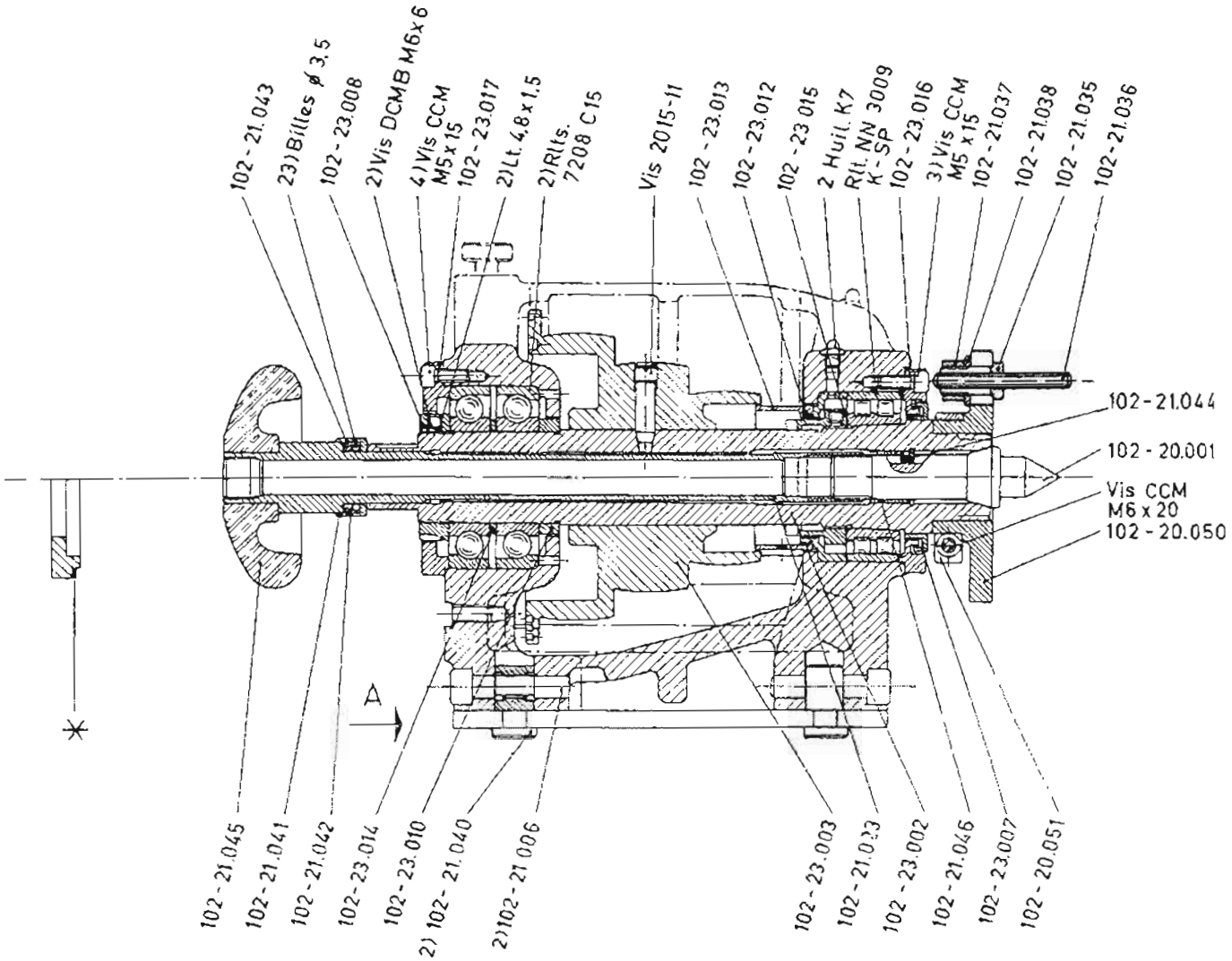
The pulley (102-26.003) is fixed to the sleeve (102-26.019) by the screw (2015-6); the screw (102-26.014) is not fastened. When using the divisions 12, 48, 60 and 100 on the pulley shoulder, and in order to eliminate the play in the reduction gear toothing, lock the pulley by means of the screw (102-26.014).

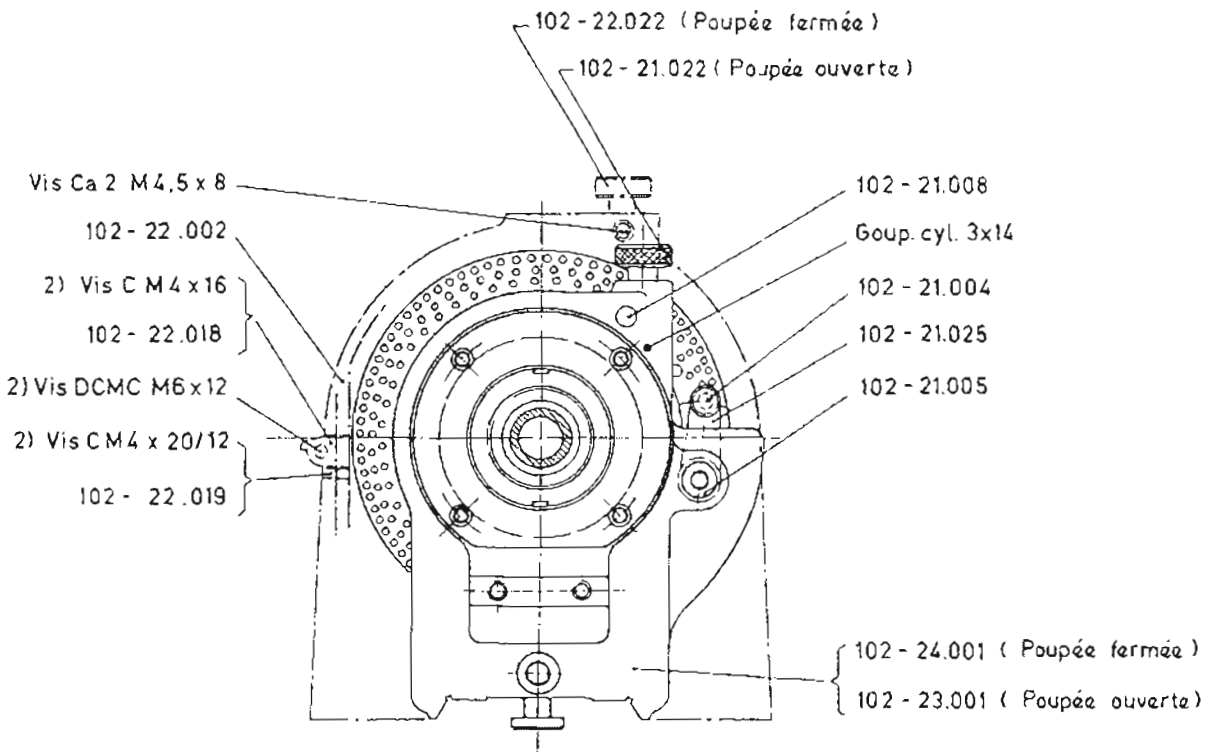
Unfasten the screw (102-26.014) before reverting to normal running conditions with or without reduction gear.

REDUCTION GEAR

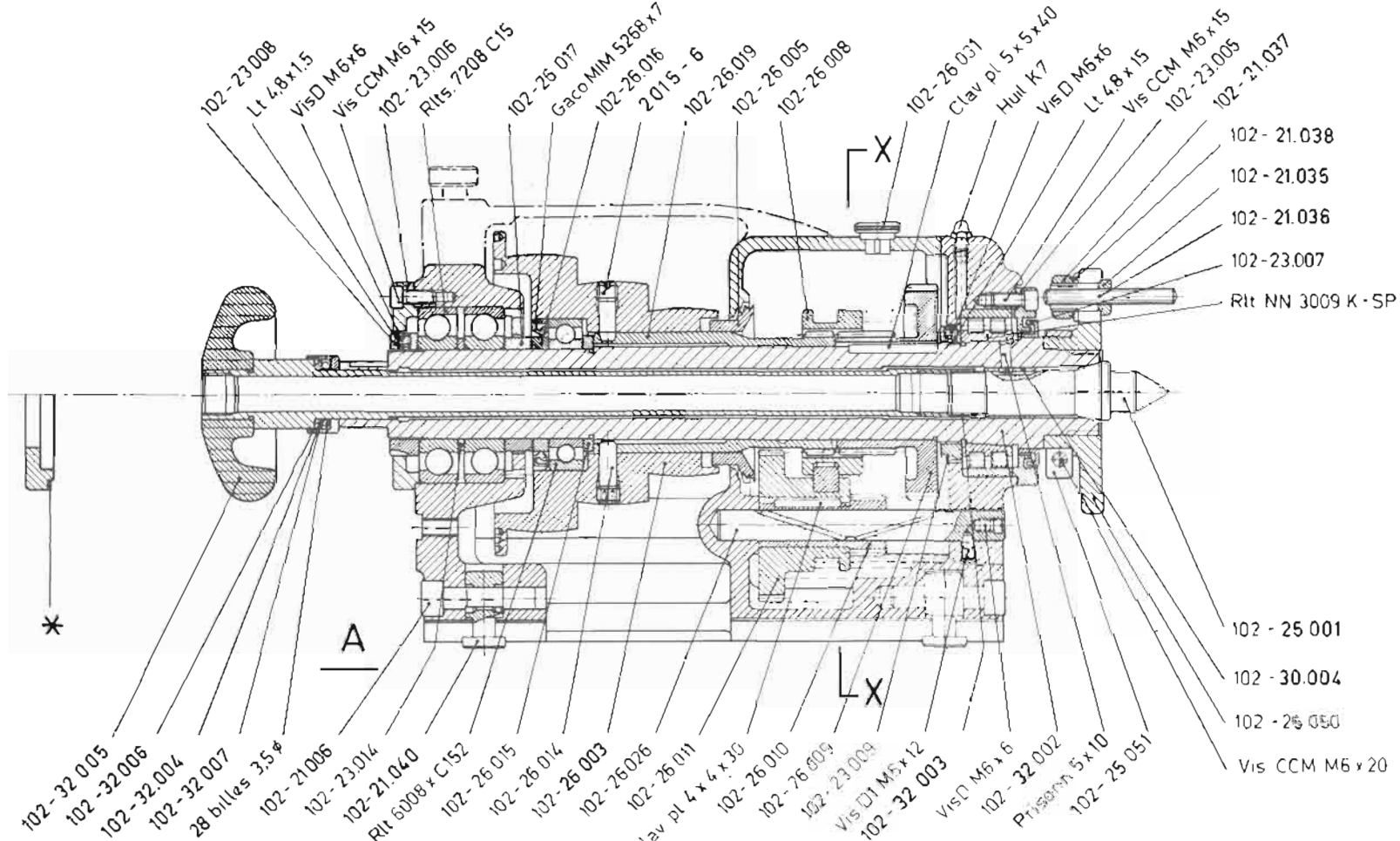
The change-over from direct drive to reduction gear drive is controlled by a lever. Never engage or disengage the reduction gear while the spindle is running. The reduction ratio is 4,95 : 1.

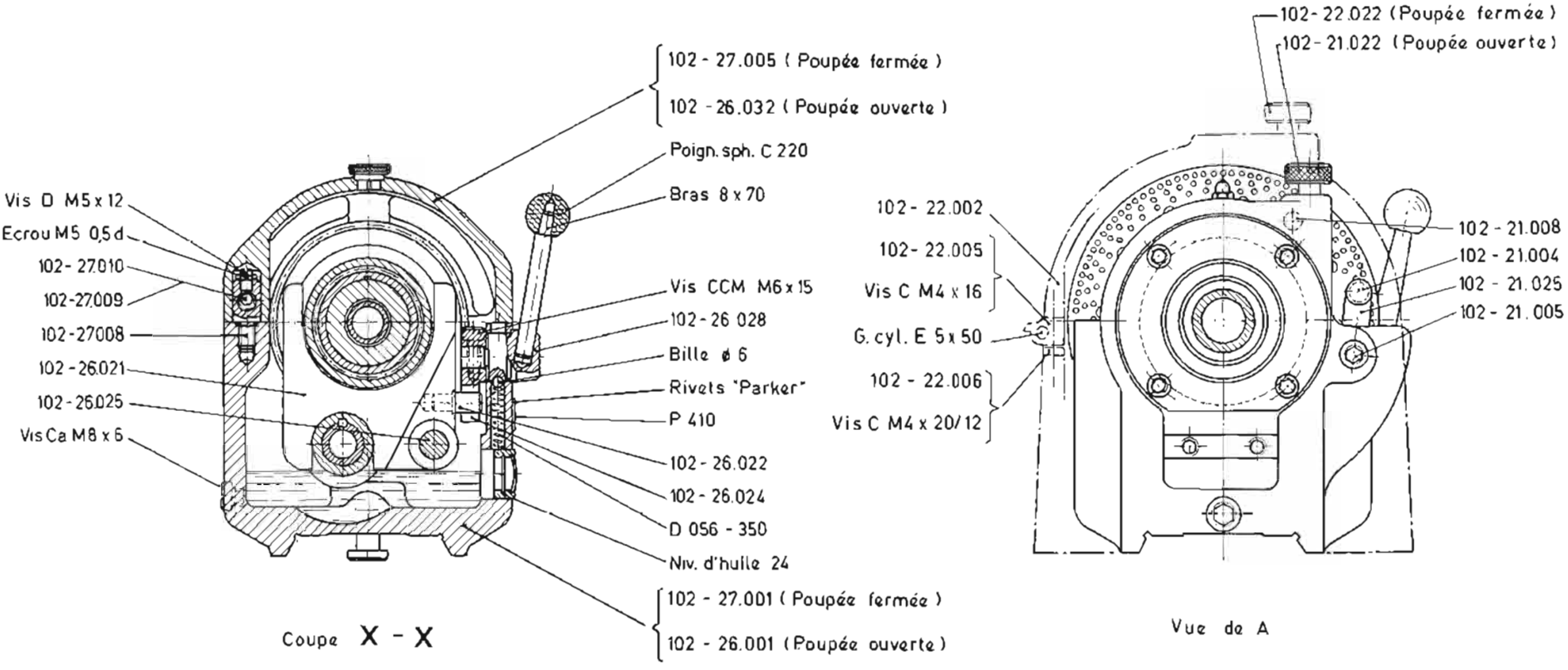
In order to facilitate the lubrication of the sleeve (102-26.019) and ball bearing (6008-615), periodically engage gears even if the reduction gear is not used for the work being carried out.


102 - 21.043
23) Billes ø 3.5
102 - 23.008
2) Vis DCMB M6x6
4) Vis CCM M5x15
102 - 23.017
2) Lt. 4.8x1.5
2) Rlts. 7208 C15
Vis 2015-11
102 - 23.013
102 - 23.012
102 - 23 015
2 Huil. K7
Rlt. NN 3009 K-SP
102 - 23.016
3) Vis CCM M5 x15
102 - 21.037
102 - 21.038
102 - 21.035
102 - 21.036
102 - 21.044
102 - 20.001
Vis CCM M6 x 20
102 - 20.050
A
102 - 21.045
102 - 21.041
102 - 21.042
102 - 23.014
102 - 23.010
2) 102 - 21.040
2) 102 - 21 006
102 - 23.003
102 - 21.033
102 - 23.002
102 - 21.046
102 - 23.007
102 - 20.051


102 - 22.022 (Poupée fermée)
102 - 21.022 (Poupée ouverte)
Vis Ca 2 M4,5 x 8
102 - 22 .002
2) Vis C M4 x16
102 - 22.018
2) Vis DCMC M6 x12
2) Vis C M4 x 20/12
102 - 22 .019
102 - 21.008
Goup. cyl. 3x14
102 - 21.004
102 - 21.025
102 - 21.005
102 - 24.001 (Poupée fermée)
102 - 23.001 (Poupée ouverte)

Vue de A


102 - 23 008
Lt 4,8 x 1,5
Vis D M6x6
Vis CCM M6 x 15
102 - 23.006
Rlts. 7208 C15
102 - 25 017
Gaco MIM 5268 x 7
102-26.016
2015 - 6
102-26.019
102 - 26 005
102 - 26 008
102 - 26 031
Clav pl 5 x 5 x 40
Huil K7
Vis D M6x6
Lt 4,8 x 15
Vis CCM M6 x 15
102 - 23.005
102 - 21.037
102 - 21.038
102 - 21.035
102 - 21.036
102-23.007
Rlt NN 3009 K - SP
X
X
A
*
102 - 25 001
102 - 30.004
102 - 25 050
Vis CCM M6 x 20
102 - 32 005
102 - 32 006
102 - 32.004
102 - 32 007
28 billes 3,5 ϕ
102 - 21 006
102 - 23.014
102 - 21.040
Rlt 6008 x C152
102 - 26 015
102 - 26 014
102 - 26 003
102 - 26 026
102 - 26 011
Clav pl 4 x 4 x 30
102 - 26 010
102 - 26 009
102 - 23 009
Vis D1 M5 x 12
102 - 32 003
Vis D M6 x 6
102 - 32 002
Pression 5 x 10
102 - 25 051


102 - 27.005 (Poupée fermée)
102 - 26.032 (Poupée ouverte)
Poign. sph. C 220
Bras 8 x 70
Vis D M5 x 12
Ecrou M5 0,5 d
102 - 27.010
102 - 27.009
102 - 27.008
102 - 26.021
102 - 26.025
Vis Ca M8 x 6
Vis CCM M6 x 15
102 - 26 028
Bille ø 6
Rivets "Parker"
P 410
102 - 26.022
102 - 26.024
D 056 - 350
Niv. d'huile 24
102 - 27.001 (Poupée fermée)
102 - 26.001 (Poupée ouverte)
Coupe X - X
102 - 22.022 (Poupée fermée)
102 - 21.022 (Poupée ouverte)
102 - 22.002
102 - 22.005
Vis C M4 x 16
G. cyl. E 5 x 50
102 - 22.006
Vis C M4 x 20/12
102 - 21.008
102 - 21.004
102 - 21.025
102 - 21.005
Vue de A

LEVER-OPERATED QUICK-CLOSING MECHANISM

for W25 headstocks

MAINTENANCE

A. Cleaning on receipt

The anti-rust grease used to protect the quick-closing mechanism in transit has no lubricating property and must be completely removed.
(See also instructions for headstocks 102-30-31 or 102-32-33).

B. Lubrication

The pivot of the lever (102-34.020) carries a nipple K7 for injection of oil by means of a gun.

Once a week inject a few shots of oil through this nipple and lightly lubricate the dogs (120VM-316). The ball bearing (RIV 16011) is lubricated either by oil mist or by injecting oil through a nipple K7. In the latter case lubricate once a day during normal operation.

OPERATION

To close the collet, pull the lever (102-36.004) towards the headstock.
To open it, push lever (102-36.004) to the left.

FITTING THE QUICK-CLOSING MECHANISM

A headstock with drawbar-operated closing can easily be converted into one with lever-operated quick closing by any skilled person.

1. Remove the handwheel-operated drawbar (102-32.005). This cannot be used for quick closing.
2. Place the key (4x4x18) in the seating provided in the headstock spindle.
3. Fit the quick-closing mechanism by inserting the drawbar into the spindle. See that the key (4x4x18) enters the slot in the sleeve (102-30.624).
4. Place the support (102-21.623) against the frame of the headstock and lightly tighten the two screws (CCM M8x30).
5. Lock the sleeve (102-21.624) by tightening the ring (102-21.628) with the screw (CCM M5x15).
6. Adjust the perpendicularity of the cage (102-21.664) in accordance with the instructions given under the heading "ADJUSTMENTS", item A.
7. On completion of this adjustment lock the two screws (CCM M8x30).
8. Lubricate the entire mechanism (see "MAINTENANCE").

ADJUSTMENTS

A. Adjusting the ball-bearing cage

Whenever refitting the quick-closing mechanism, it is necessary to adjust the perpendicularty of the cage (102-21.664). To do this, run the machine at a low speed and adjust the two eccentric screws of the lever (102-36.004) until the cage remains motinoless in the vertical plane.

NOTE! Any buckle in the cage, however slight, can cause very rapid wear in the ball bearing (RIV 16011).

B. Adjusting the closing force

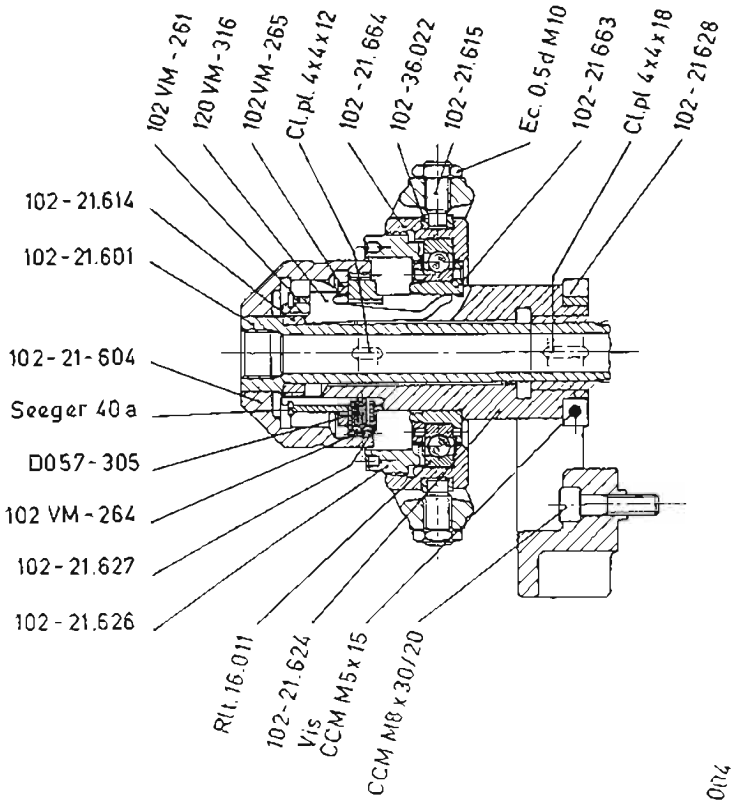
1. Pull the lever (102-36.004) towards the headstock.
2. Fit the collet in the spindle with the component to be machined.
3. Close the collet by screwing-in the adjusting sleeve (120VM-314).
4. Push the lever to the left and adjust the final closint force by means of the sleeve (120VM-314).

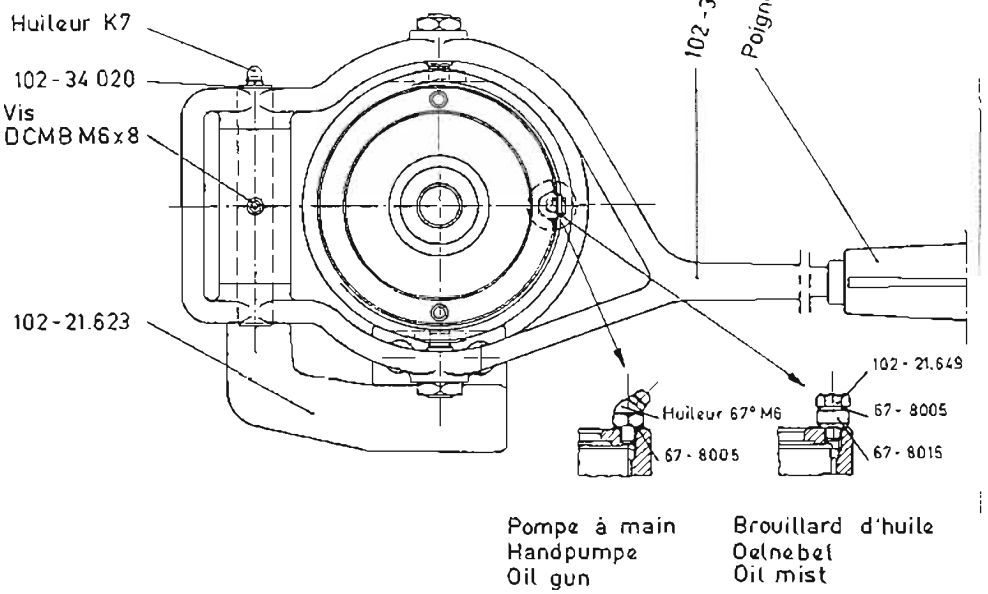
   The adjusting sleeve is automatically locked in all its positions by two spring-loaded pistons (102VM-264).

REPLACING THE CLOSING DOGS

Whenever it is necessary to replace the closing dogs (120VM-316), proceed as follows:

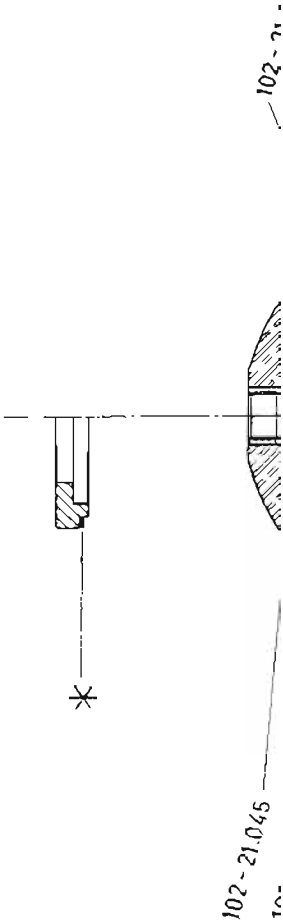
1. Remove the drawbar completely, together with the adjusting sleeve (120VM-314).
2. Release the Seeger circlip (45a) and withdraw the bush (102VM-261) about 10 mm in order to be able to free the two dogs from the slots in the bush.
3. Fit the new closing dogs.
4. Refit bush and secure with Seeger circlip (45a).
5. Refit drawbar.





Pompe à main
Handpumpe
Oil gun

Brouillard d'huile
Oelnebel
Oil mist



Vis Ca 2 M4,5

102-22.0

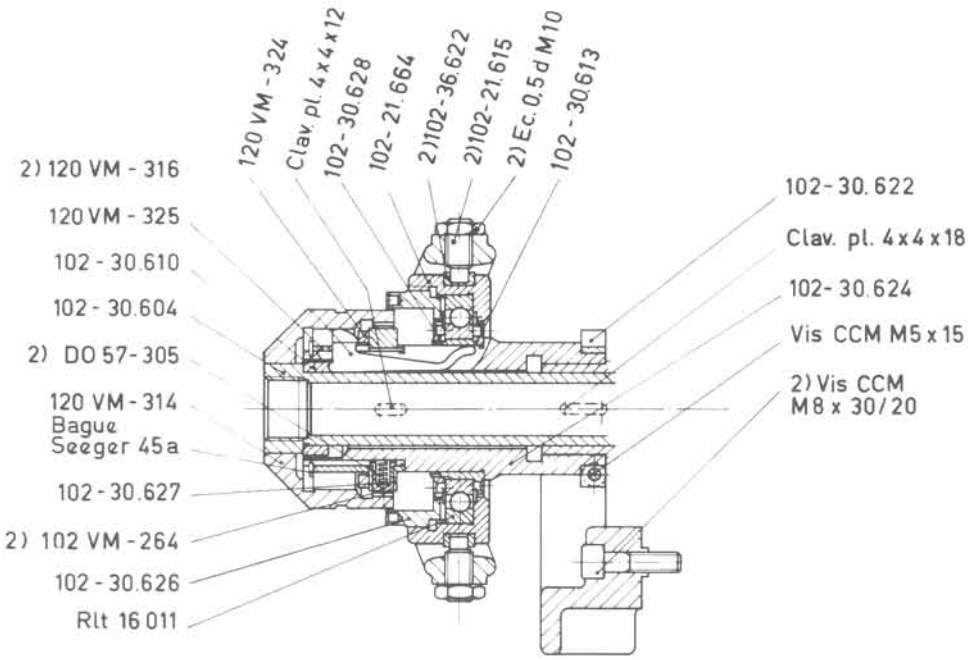
2) Vis C M4 x

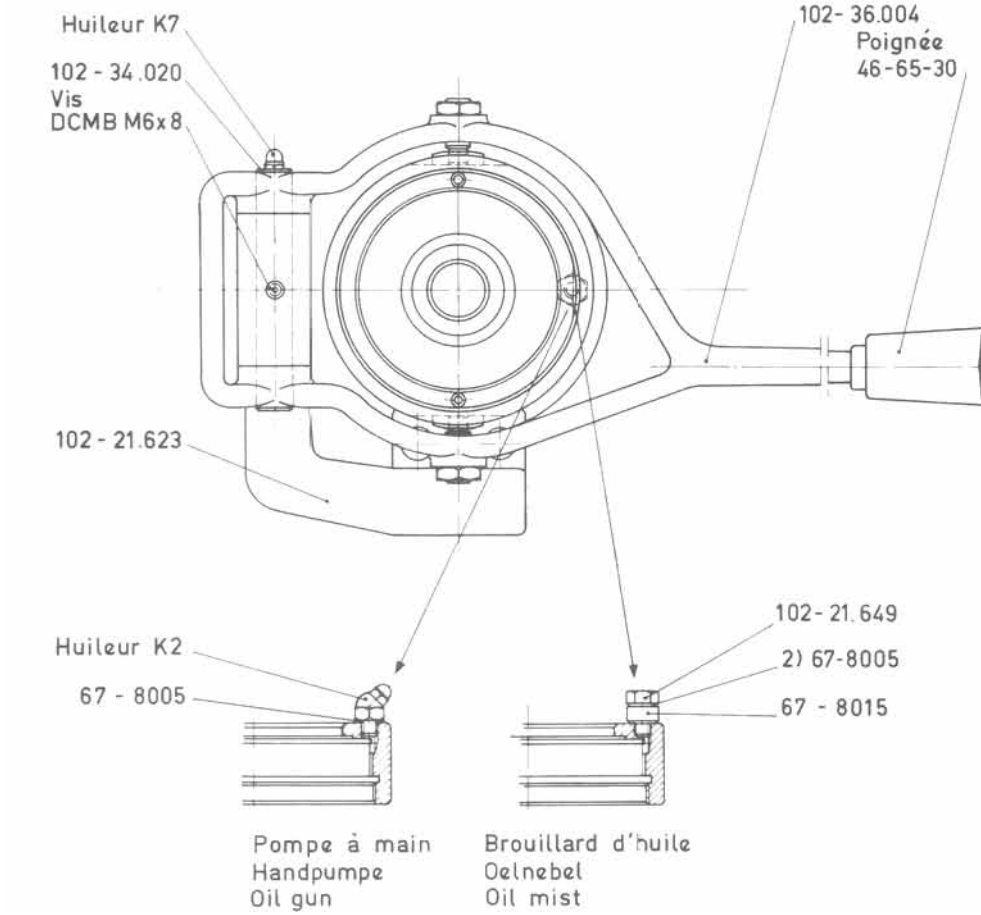
102-22.0

2) Vis DCMC M6 x

2) Vis C M4 x 20.

102-22.0


120 VM - 324
Clav. pl. 4 x 4 x 12
102 - 30.628
102 - 21.664
2) 102 - 36.622
2) 102 - 21.615
2) Ec. 0.5 d M10
102 - 30.613
2) 120 VM - 316
120 VM - 325
102 - 30.610
102 - 30.604
2) DO 57 - 305
120 VM - 314
Bague
Seeger 45a
102 - 30.627
2) 102 VM - 264
102 - 30.626
Rlt 16 011
102 - 30.622
Clav. pl. 4 x 4 x 18
102 - 30.624
Vis CCM M5 x 15
2) Vis CCM
M8 x 30/20


Huileur K7
102 - 34.020
Vis
DCMB M6x8
102 - 36.004
Poignée
46-65-30
102 - 21.623
Huileur K2
67 - 8005
102 - 21.649
2) 67-8005
67 - 8015
Pompe à main
Handpumpe
Oil gun
Brouillard d'huile
Oelnebel
Oil mist

SCREW-OPERATED CARRIAGE 102-45.000

Specification

Longitudinal stroke	90 mm	($3\frac{1}{2}$")
Transverse stroke	100 mm	(4")
Height of centre above carriage	20 mm	(13/16")
Swing over carriage :		
- without rear toolholder	120 mm	($4\frac{3}{4}$")
- with rear toolholder	60 mm	(2 3/8")
Adjustable graduated drums, reading	1/1000"	(1/100 mm)
Dimensions of tools	10x12 mm	(13/32x15/32")
Net weight	10.700 kg	(23.59 lbs)

Lubrication of slideways, nuts and feed screws

The carriage has two nipples through which oil can be injected by means of the oil gun supplied with the lathe. An advantage of this system of lubrication is that the oil is positively circulated under pressure and, at the same time, cleans the slideways and nuts. 4-5 shots of oil gun twice a week are sufficient.

Use a good mineral oil with a viscosity of 4° E at 50° C.

Lubrication of feed screw bearing

This patented bearing contains a ball bearing provided with adequate consistent grease to last for about 5 years. To renew the filling, proceed as follows, using a good ball bearing grease :

1. Knock out the conical pin (102-45.513).
2. Pull back the handle (102-45.512) and the graduated drum (102-45.506).
3. Loosen lock screw of the nut (102-45.502) and undo the latter.
4. After thorough cleaning with petrol, the fresh grease can be pressed between the balls of bearing (102-45.507) and into the hollow space marked (*).

Adjustments

The adjustment of the following members, all hough very simple to perform, should only entrusted to a competent person.

Adjustment of feed screw bearing

The play of the ball bearing can be taken up without any dismantling.

1. Loosen lock-screw of the nut (102-45.502).
2. Tighten the nut (102-45.502) on the sleeve (102-45.503) in accordance with the amount of play to be taken up.
3. Firmly tighten lock-screw of the nut (102-45.502) again.

The index, engraved on the nut (102-45.502), can be replaced in a correct position, by turning the sleeve (102-45.503) locked by a screw.

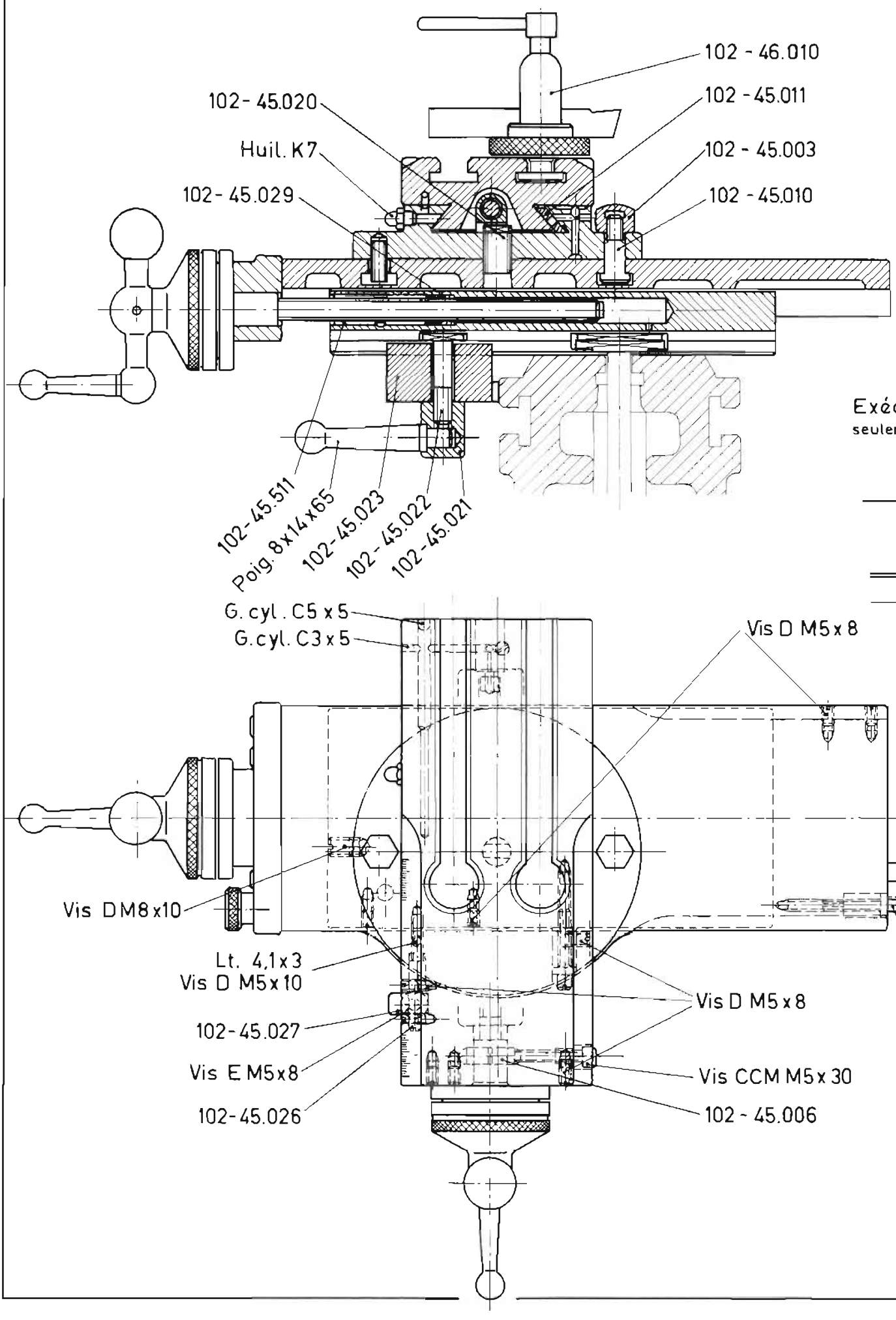
Taking up play in the slideways

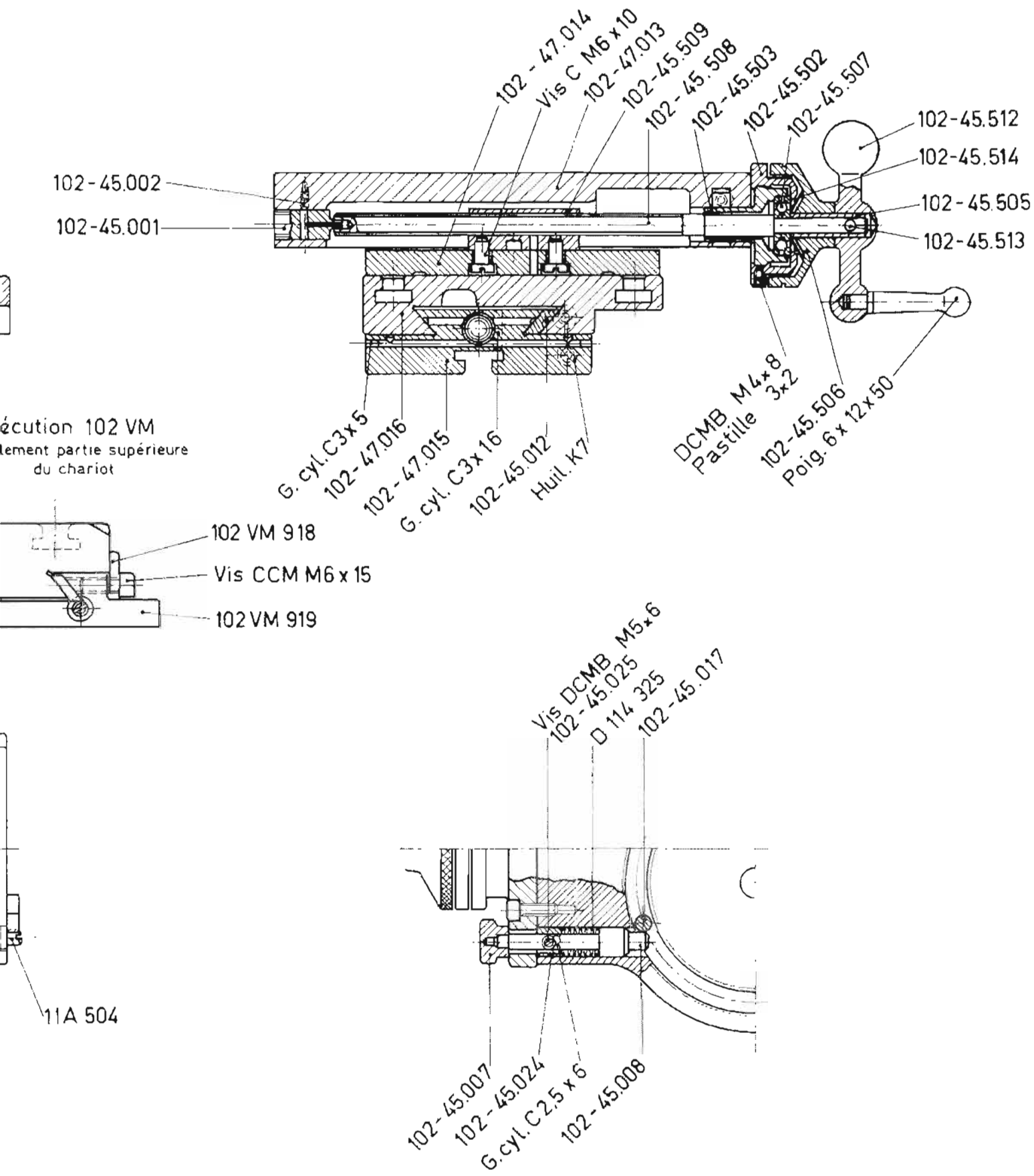
The ways of the cross and longitudinal slides are provided with taper strips to take up the play caused by wear and tear. Adjustment is effected by means of the screw (11A-504).

Adjustment of resetting device

The tiltable longitudinal slide is quickly returned to zero position by means of a patented, retractable stop, the position of which is adjusted as follows :

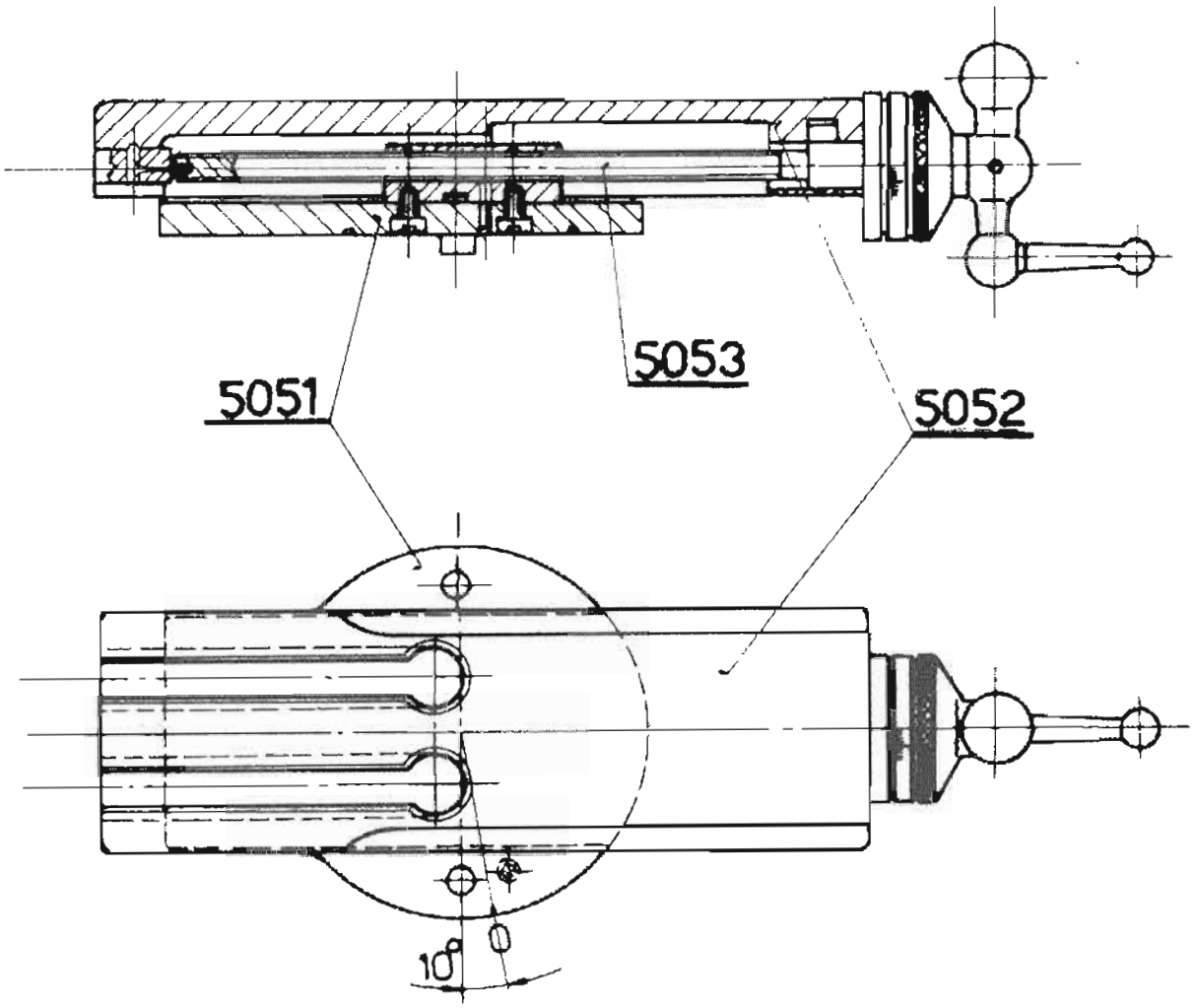
1. Slightly loosen the screw (DCMB M5x6).
2. Slacken the 2 nuts (102-45.003).
3. Bring the longitudinal slide into contact with the piston (102-45.008).
4. Turn the knurled screw (102-45.007) until the longitudinal slide is perfectly parallel with the bed.
5. When the best result is occured, firmly retighten the screw (DCMB M5x6) and the nuts (102-45.003).


102 - 46.010
102 - 45.011
102 - 45.003
102 - 45.010
102- 45.020
Huil. K7
102- 45.029
102-45.511
Poig. 8x14x65
102-45.023
102-45.022
102-45.021
Exécution 1
seulement part
du char
G. cyl . C5 x 5
G.cyl. C3 x 5
Vis D M5 x 8
Vis D M8 x10
Lt. 4,1x3
Vis D M5x10
Vis D M5 x 8
102-45.027
Vis E M5x8
102-45.026
Vis CCM M5 x 30
102 - 45.006
11A 5



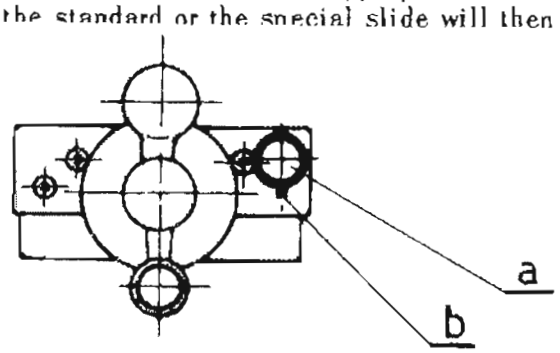
écution 102 VM
lement partie supérieure
du chariot

SPECIAL TOP SLIDE WITH STROKE 150 MM (6 IN.) FOR SCREW-OPERATED CARRIAGE 102-45



The «zero» of the circular graduation on bottom slide 5051 has been intentionnaly displaced from 10°.

When adjusting this swivel slide on the base of the standard screw-operated carriage 102-45. it is necessary to proceed with the alignment of the upper slide 5052 with help of an arbor and a dial indicator, and to engrave, on the base, opposite the «zero» of the slide, a reference mark appropriated to this new slide. Any confusion in setting either the standard or the special slide will then be avoided.



Every time, when changing the slide, the resetting device (knurled knob «a») must be adapted. For this purpose and after having aligned the new slide, unscrew lock-screw «b» and move knurled knob «a» with its eccentric to re-establish the correct contact with the stop.

Printed in Switzerland 23.4.59 MD/MCh

TAILSTOCK 102-65.000

The spindle 102-65.030 has a N° 2 Morse taper and contains an extractor 102-65.063 secured radially by the screw 102-65.063. The extractor enables us to remove either the N° 2 Morse tapers or the reduction bushes easily.

N° 2 Morse taper (Fig. 1)

To use tools with a N° 2 Morse taper, remove the hexagon socket-head screw 102-65.062 from the extractor 102-65.063. This exposes the slot in the extractor and enables tools with or without a tenon to be used.

To remove the tool, withdraw the spindle 102-65.030 until some resistance is felt (the extractor is then resting against the tool). When the resistance is overcome, the tool is released from the spindle.

Reduction bush (Fig. 2)

To use tools requiring a reduction bush (for example Schaublin 2° taper), refit the hexagon socket-head screw 102-65.062 in the extractor.

Only the reduction bush has to be driven permanently into the spindle. The tool itself is fitted with a slight push.

In this case the tool is extracted with the aid of the hexagon socket-head screw 102-65.062 without releasing the reduction bush.

By extending the stroke of the spindle, the extractor itself will push against the reduction bush and release it.

Fig. 1

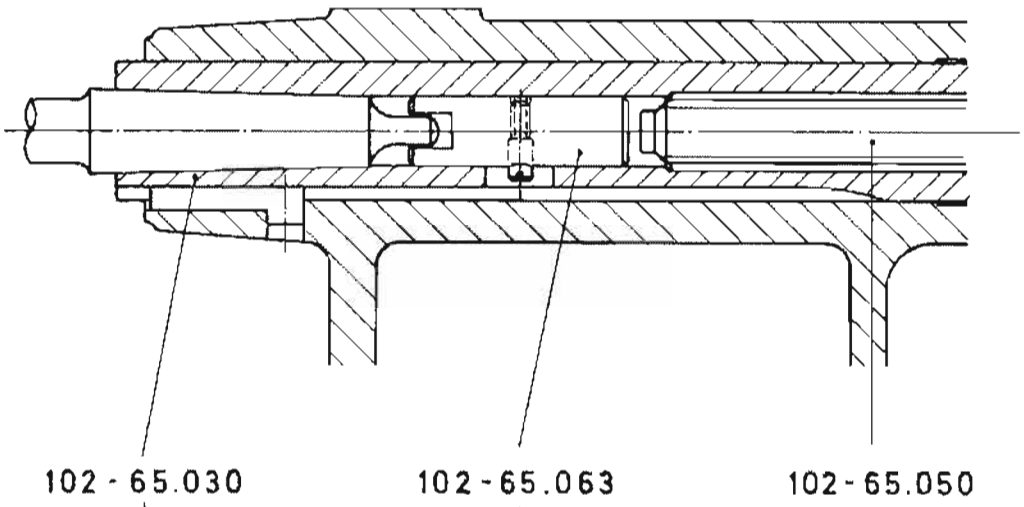
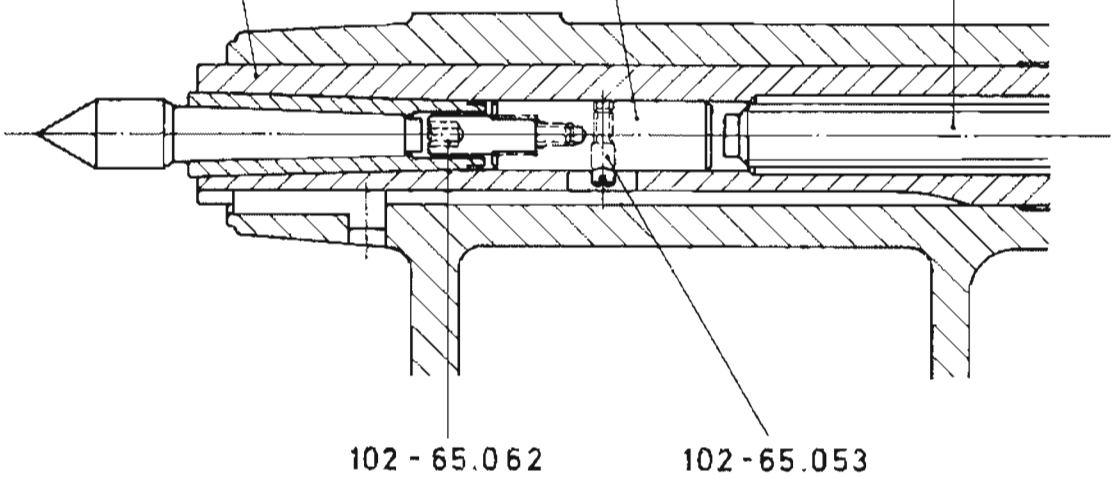
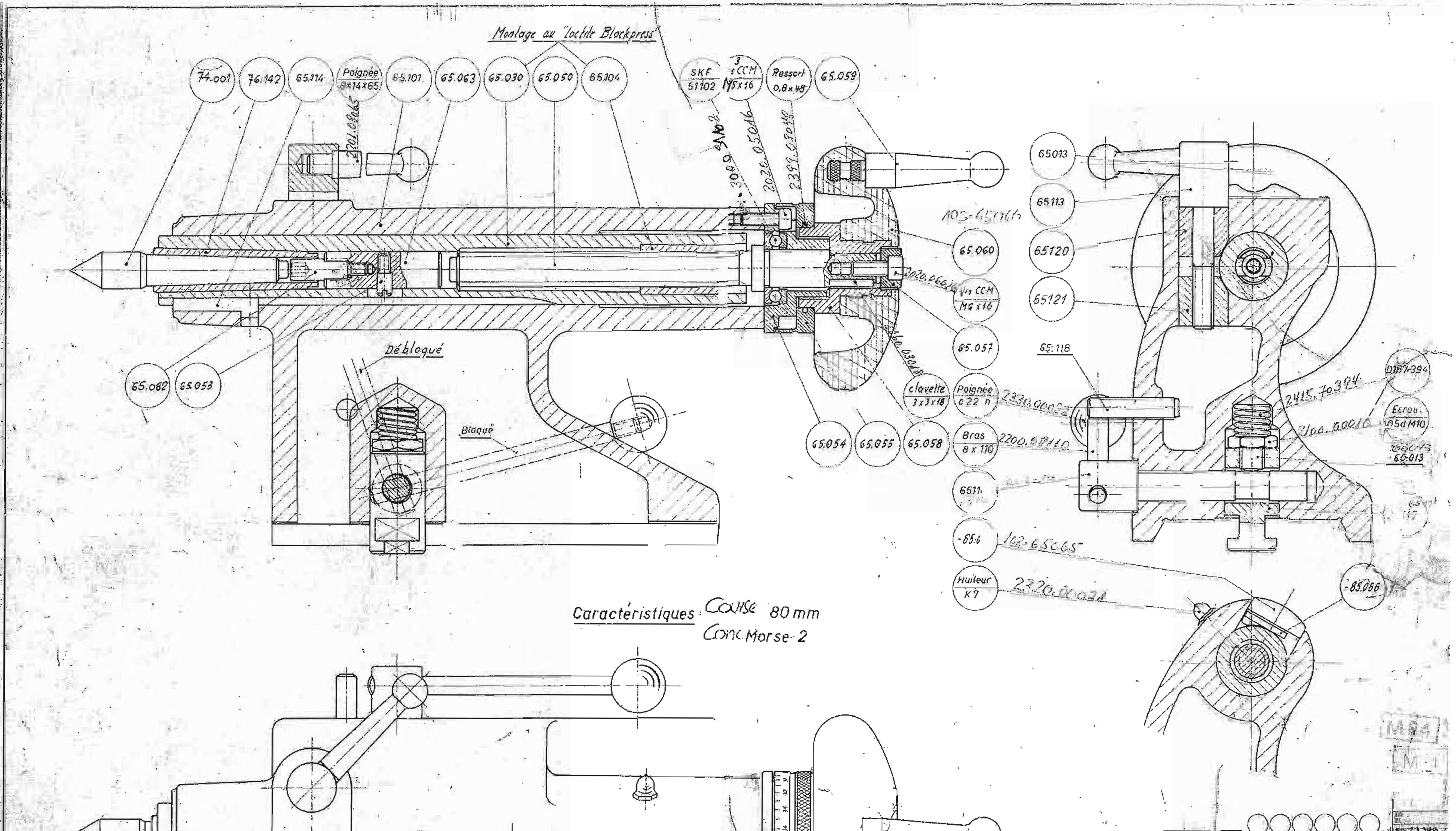


Fig. 2





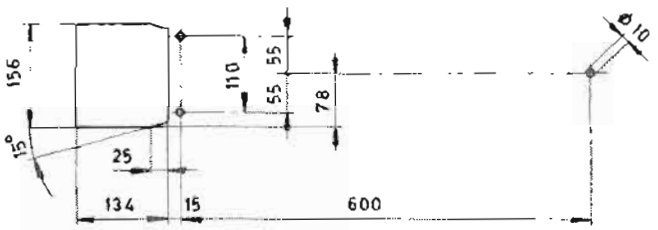
Empl. pour:	Pièces semblables:
Outillage	
Modifications: 9251, 9565, 10319, 10716, 11129, 14101, 14144, 17479, 18548	Remplacé par
Voir: 102-66.000-67.000-70.000-70.500-VM-65.000 / 120-65.000-66.000-68.000-69.000-VM66.000	Remplace 102-65.000/65.140
Contre-poupée à vis	Echelle 1:1 — 18.2.58 — Contrôlé — Positif — Vu
Matière	Mode
SCHAUBLIN S.A. BEVILARD (SUISSE)	102-65-000

FIXING BED 102 ONTO BENCH

Drill 3 fixation holes and saw one opening for the belt as shown on the sketches.

Bed for overhead drive
102-10.000

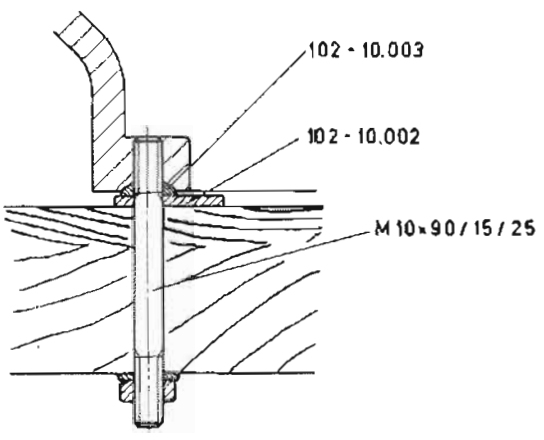
Bed for underneath drive
102-12.000
and 102-13.000



To eliminate a distortion of the bed which may be caused by an uneven bench, the bed is set on 3 special washers 102-10.003.

Two steel plates 102-10.002 are supplied with the bed. These are mounted on the bench to prevent the washers from penetrating into the wood.

After fitting make sure that a clearance between the foot of the bed and steel plate is maintained.



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

SCHMIER-ANWEISUNG FÜR WERKZEUGMACHER-NACHDREH- UND REVOLVERDREHBÄNKE "SCHAUBLIN" 65 - 70 - 102 - 120

TABLEAU DE LUBRIFICATION POUR TOURS : OUTILLEURS - DE REPRISE - REVOLVER "SCHAUBLIN" 65 - 70 - 102 - 120

LUBRICATING CHART FOR : TOOLMAKER'S / SECOND-OPERATION / TURRET LATHES "SCHAUBLIN" 65 - 70 - 102 - 120

Maschinenteile *Organes de la machine* Machine parts	Art der Schmierung *Mode de lubrification* Type of lubrication		Schmier- od. Kontrollfrequenz / *Fréquence /* Frequency		Aral	ARROL	BP	CASTROL	Esso	GARGOYLE	GULF	Mobil	MOTUL	SHELL	VACMOLINE
Spindelstöcke mit Gleitlagern *Poupées à paliers lisses* Headstocks with plain bearings	Oel *Huile* Oil	Kanne *Burette* Can	täglich *quotidien* daily	Misola A	Aral Oel HTU	16-60V	BP Energol HP 10	Hyspin 100	Teresso 43	Spezialol K	Harmony 44	Mobil DTE Oil Light	SAF Drive A	Vitrea Oil 33	Magnet 6
Spindelstöcke mit Kugel- & Rollenlagern *Poupées à roulements* Headstocks with anti-friction bearings	Oel *Huile* Oil	Handpresse *Pompe à main* Gun	täglich *quotidien* daily	•	•	•	•	•	•	•	•	•	•	•	•
Spezialspindelstöcke mit K.- & Rollenlagern *Poupées spéciales grandes vitesses à roulem.* Special high speed headstocks with anti-friction bearings	Oel *Huile* Oil	Oelnebel *Brouillard* Mist	täglich *quotidien* daily	•	•	•	•	•	•	•	•	•	•	•	•
Reduziergetriebe der Spindelstöcke *Réducteur à engrenages des poupées* Headstock reduction gears	Oel *Huile* Oil	Bad *Bain* Bath	jährlich *annuel* yearly	•	•	•	•	•	•	•	•	•	•	•	•
Schnellspannvorrichtung der Spannzangen (Hunde & Lagerführung) / *Dispositif serrage rapide taxe levier, chiens et coulisseaux du levier)* / Quick-closing attachment (lever axle, jaws and pivot-screws of lever)	Oel *Huile* Oil	Handpr./Kanne *Pompe à main Burette* Gun/Can	wöchentlich *hebdomadaire* weekly	•	•	•	•	•	•	•	•	•	•	•	•
Gewindespindeln & Kreuzschlittenführungen *Vis de réglage & guidages des coulisseaux des chariots* / Micrometer screws and carriage slide guide ways	Oel *Huile* Oil	Handpresse *Pompe à main* Gun	wöchentlich *hebdomadaire* weekly	•	•	•	•	•	•	•	•	•	•	•	•
Achslager des Riemenverstellpedals *Palier de l'axe de la pédale du dérailleur* Shaft bearings of belt shifter pedal	Oel *Huile* Oil	Kanne *Burette* Can	monatlich *mensuel* monthly	•	•	•	•	•	•	•	•	•	•	•	•
Achslager der Motorschwenkplatte *Paliers du support pivotant du moteur* Bearings of motor swivel plate	Oel *Huile* Oil	Handpresse *Pompe à main* Gun	monatlich *mensuel* monthly	•	•	•	•	•	•	•	•	•	•	•	•
Vorgelege *Renvoi de poulie* Base countershaft	Oel *Huile* Oil	Handpresse *Pompe à main* Gun	wöchentlich *hebdomadaire* weekly	•	•	•	•	•	•	•	•	•	•	•	•
Allgemeine Schmierung *Lubrification générale* General lubrication of machine	Oel *Huile* Oil	Handpresse *Pompe à main* Gun	wöchentlich *hebdomadaire* weekly	•	•	•	•	•	•	•	•	•	•	•	•
Kupplung & Bremse (Zub.) des Motors *Embrayage et frein du moteur (Acc.)* Motor clutch and brake (Acc.)	Oel *Huile* Oil	Handpresse *Pompe à main* Gun	wöchentlich *hebdomadaire* weekly	•	•	•	•	•	•	•	•	•	•	•	•
Reduziergetriebe (Zub.) im Sockel *Réducteur de vitesse dans le socle (Acc.)* Speed reduction unit in base (Acc.)	Oel *Huile* Oil	Bad, Handpresse *Bain, Pompe à m.* Bath, Gun	jährl./wöchentl. *annuel/hebdomad.* yearly/weekly	•	•	•	•	•	•	•	•	•	•	•	•
Umschaltgetriebe (Zub.) im Sockel *Inverseur de marche dans le socle (Acc.)* Reversing unit in base (Acc.)	Oel *Huile* Oil	Bad *Bain* Bath	jährlich *annuel* yearly	•	•	•	•	•	•	•	•	•	•	•	•
Stufenlos regelbares Getriebe (Zub.) *Variateur de vitesse dans le socle (Acc.)* Stepless variable-speed unit in base (Acc.)	Oel *Huile* Oil	Handpresse *Pompe à main* Gun	wöchentlich *hebdomadaire* weekly	•	•	•	•	•	•	•	•	•	•	•	•
Vorgelegelager des stuf.reg.Getriebe (Zub.) *Variateur de vitesse, palier du renvoi (Acc.)* Countershaft bearing of stepless variable-speed unit (Acc.)	Oel *Huile* Oil	Bad *Bain* Bath	jährlich *annuel* yearly	•	•	•	•	•	•	•	•	•	•	•	•
Schleifapparate (Zub.) mit Gleitlagern *Appareils à rectifier à paliers lisses (Acc.)* Grinding attachments with plain bearings (Acc.)	Oel *Huile* Oil	Kanne *Burette* Can	täglich *quotidien* daily	•	•	•	•	•	•	•	•	•	•	•	•
Schleifapparate (Zub.) mit Kugellagern *Appareils à rectifier à roulements (Acc.)* Grinding attachments with ball bearings (Acc.)	Oel *Huile* Oil	Handpresse *Pompe à main* Gun	täglich *quotidien* daily	•	•	•	•	•	•	•	•	•	•	•	•
Fräsapparat (Zub.) *Appareil à fraiser (Acc.)* Milling attachment (Acc.)	Oel *Huile* Oil	Handpresse *Pompe à main* Gun	wöchentlich *hebdomadaire* weekly	•	•	•	•	•	•	•	•	•	•	•	•
Kugellager der Schlitten-Gewindespindel *Palier à billes des vis de réglage des chariots* Ball bearing of slide micrometer screws	Fett *Graisse* Grease	Packung *Garnissage* Packed	alle 5 Jahre *tous les 5 ans* all 5 years	Pebron RT 33	ARAL Fett HL 2	Litex 6-026	BP Energrease LS 2	Spheerol AP 2	Andok B	Dagmol 1	Gulfcrown Grease No 2	Mobilux Grease No 2	Motul Autol	Alvania Grease No 2	L.P. Grease
Elektromotor *Moteur électrique* Electric motor	Fett *Graisse* Grease	Packung *Garnissage* Packed	jährlich *annuel* yearly	-	•	•	•	•	•	•	•	•	•	•	•
Einzelantrieb (Zub.) *Commande individuelle (Acc.)* Individual drive (Acc.)	Fett *Graisse* Grease	Packung *Garnissage* Packed	jährlich *annuel* yearly	-	•	•	•	•	•	•	•	•	•	•	•
Unabhängiges Vorgelege *Renvoi indépendant* Independent countershaft (Acc.)	Fett *Graisse* Grease	Staufler " "	wöchentlich *hebdomadaire* weekly	•	•	•	•	•	•	•	•	•	•	•	•

ING 57.1