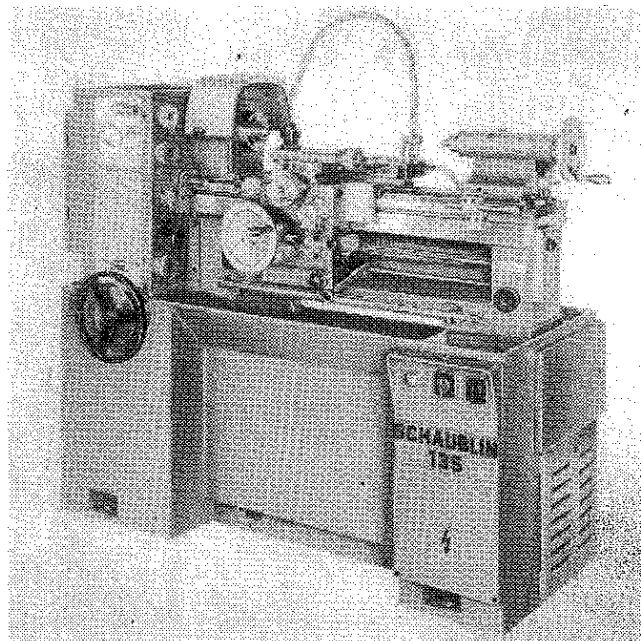


HIGH PRECISION LEADSCREW LATHE

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.

Machine N° : _____
BL N° : 205698
Voltage : 415

FABRIQUE DE MACHINES
SCHAUBLIN S.A.
2735 BEVILARD SUISSE

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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
 with open belt drive 220 to 3000 rpm.
 with reduction gears 55 to 750 rpm.
 Spindle nose, outside diameter 117.45 mm

Spindle taper

Reduction socket for collet

Bar capacity of collet

SCREWCUTTING AND FEED CONTROL BOX

48 Metric pitches
 48 English pitches
 48 Module pitches
 24 fine longitudinal and transverse feeds
 24 longitudinal and transverse feeds
 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 No 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

55 to 3000 rpm.

Camlock D1-4"
 Morse No 5

40 mm
 B32

24 mm

0.25 to 14 mm
 72 to 1 t.p.i.

0.125 to 7

0.015 to 0.21 mm/rev.
 0.025 to 0.35 mm/rev.

620 mm

100 mm

180 mm

26 mm

16 x 16 mm

Morse No 3

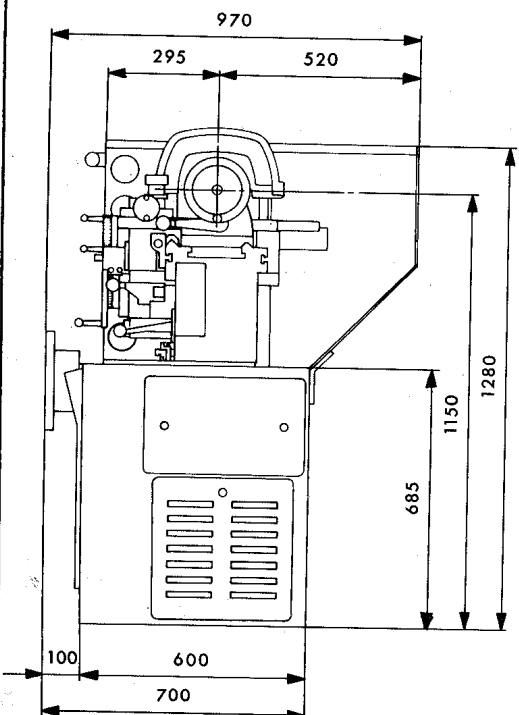
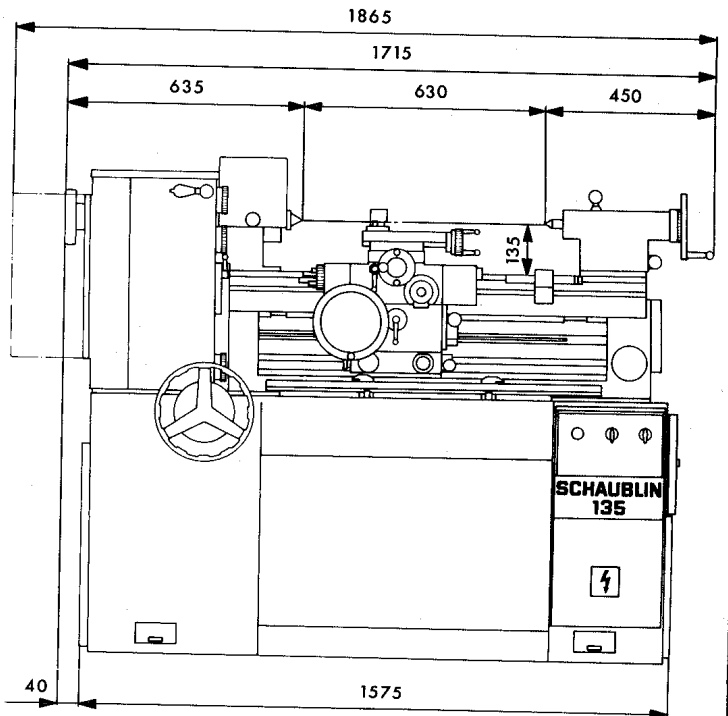
120 mm

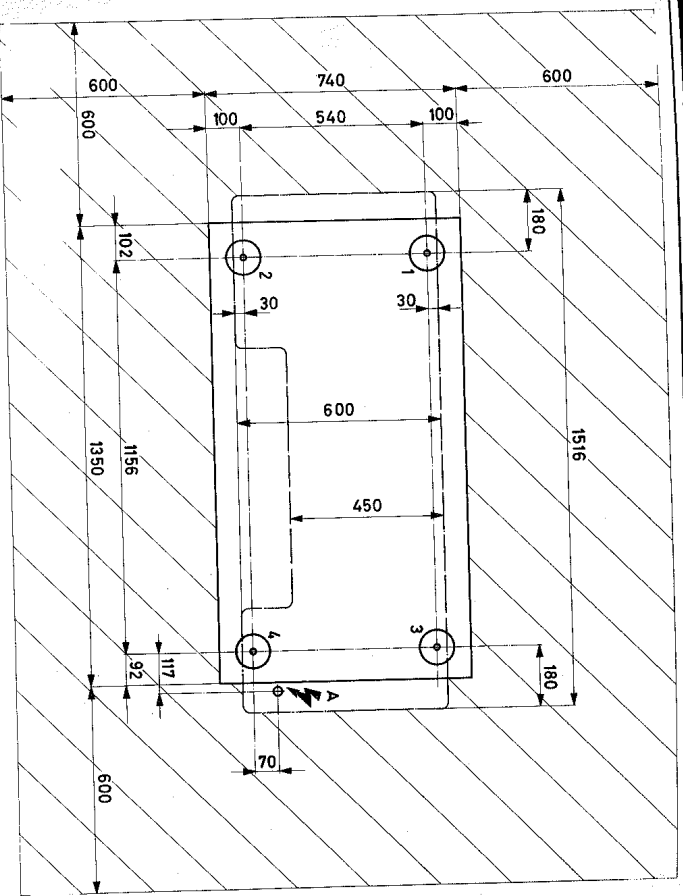
± 10 mm

750 to 3000 rpm.
 2 / 4 hp.

net 1150 kg
 gross 1300 kg

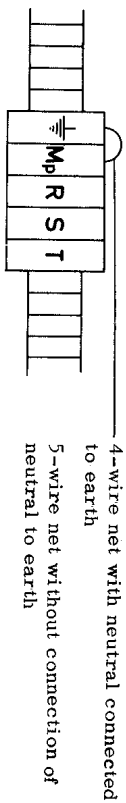
1715 x 970 x 1280 mm





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

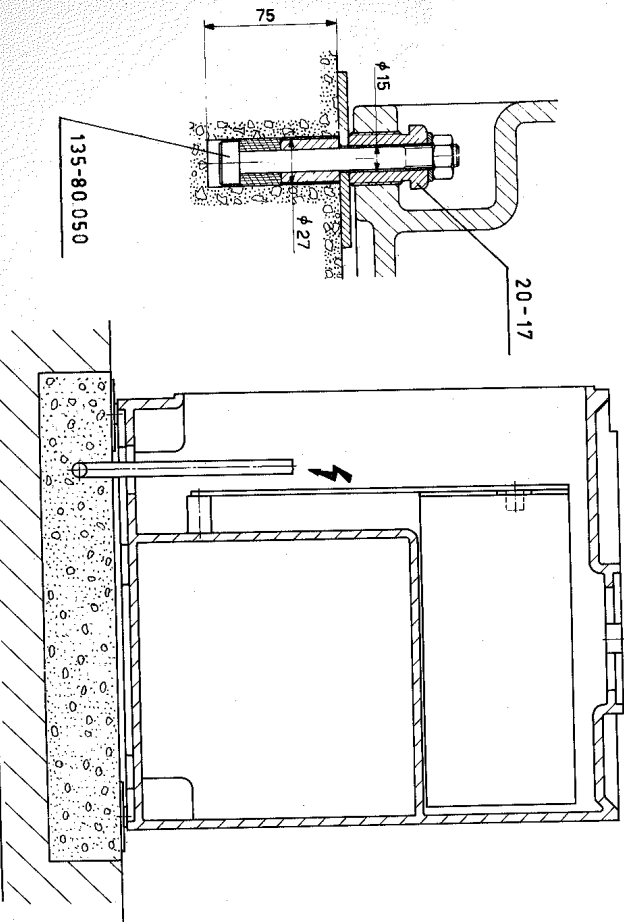
Turn on main switch 51.

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 lose 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.

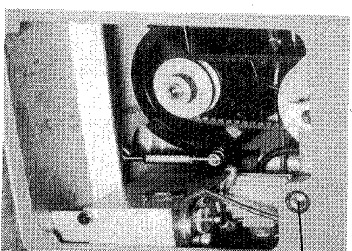
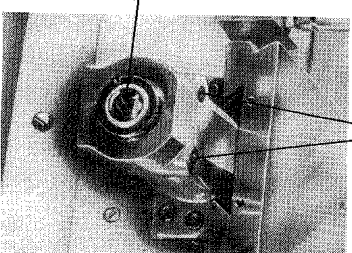
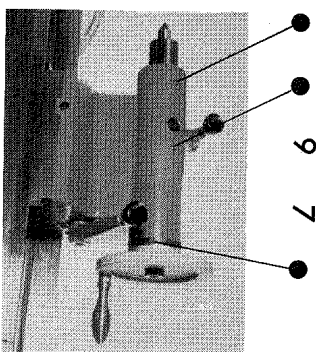
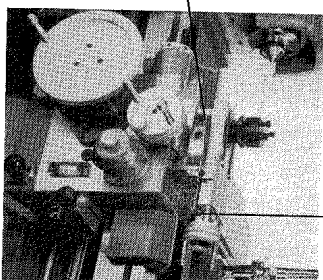
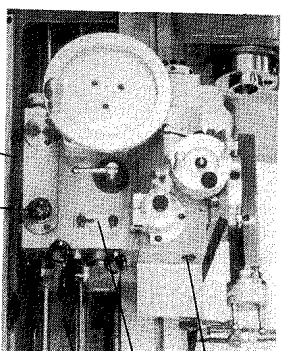
Leadscrew Lubrication

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.



5

6

9

7

4

8

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.

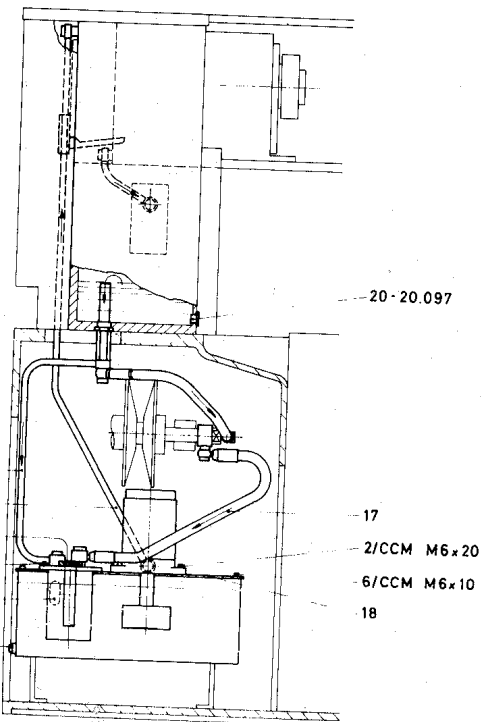
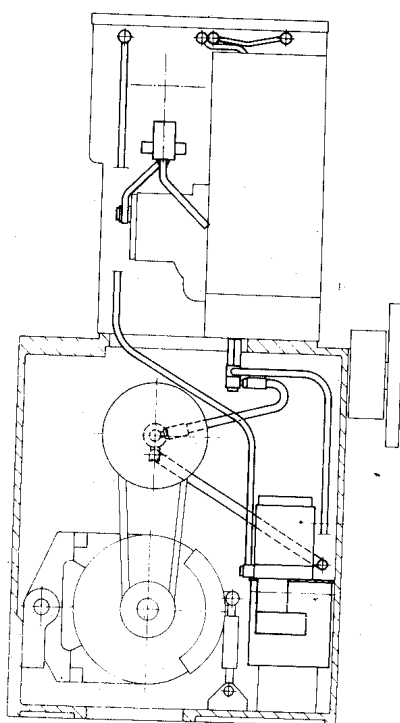
Cleaning

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.



**TABEAU DE GRAISSAGE
SCHMIERTABELLE
LUBRICATING CHART**

**SCHAUBLIN
135**

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

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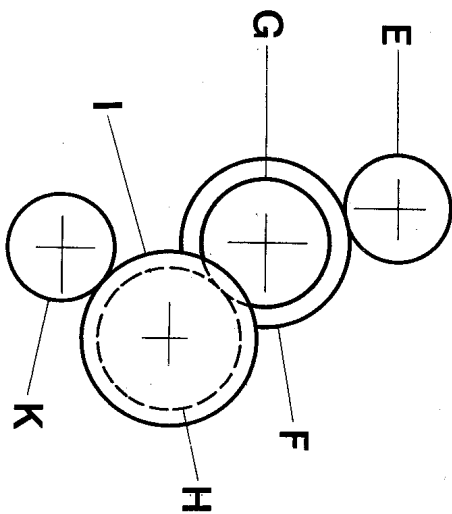
SCHAUBLIN 135

TABLEAU DE FILETAGE GWIWESCHNEIDTABELLE SREW-CUTTING CHART

FILETAGE-MODULE

MODULEGEWINDE

MODULE THREADS



Jeu de roues 45 48 50 50 54
 Räderatz 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

Pas courts Kleine Steigungen Short pitches	Räder										Pas longs Große Steigungen Long pitches			
	Hocher- Modul		Hocher- Modul		Hocher- Modul		Hocher- Modul		Hocher- Modul					
Module Modul	E	F	G	H	I	K	Position- Stellung Position	E	F	G	H	I	K	Position- Stellung Position
0.25	50	45	72	55	54	50	B1	54	79	--	50	--	55	C1
0.25	80	55	64	80	72	50	B4	50	45	54	80	72	50	C1
0.3	50	55	79	72	54	50	B6	54	79	--	50	--	55	C3
0.325	80	64	72	62	45	50	C2	50	45	72	55	54	50	C1
0.35	54	62	79	64	45	55	C2	50	55	64	80	72	50	C4
0.375	50	45	72	55	54	50	B4	50	55	79	64	45	50	C6
0.4	50	45	72	55	54	50	B5	54	79	--	50	--	55	D1
0.45	50	55	79	64	45	50	C3	50	45	72	55	54	50	C2
0.5	50	45	72	55	54	50	C1	50	45	54	80	72	50	D1
0.5	80	55	64	80	72	50	C4	50	45	72	55	54	50	C4
0.55	50	45	54	80	72	50	C5	50	62	89	50	64	72	D1
0.6	50	55	79	72	54	50	C6	54	79	--	50	--	55	D3
0.7	54	62	79	64	45	55	D1	50	55	54	80	72	45	D4
0.75	50	45	72	55	54	50	C4	50	45	72	55	54	50	D1
0.8	50	45	72	55	54	50	C5	50	55	64	80	72	50	D4
0.9	50	55	79	64	45	50	D3	50	55	79	64	45	50	D6
1	50	45	72	55	54	50	D1	50	45	72	55	54	50	D2
1	80	55	64	80	72	50	D4	50	45	72	64	54	50	D5
1.125	50	55	79	64	45	50	D6	50	45	72	55	54	50	D4
1.25	50	45	72	55	54	50	D2	50	55	79	54	62	45	D4
1.5	50	45	72	55	54	50	D4	54	55	72	64	80	45	D4
0.125	50	45	72	55	54	50	A1							

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 diameter's 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

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

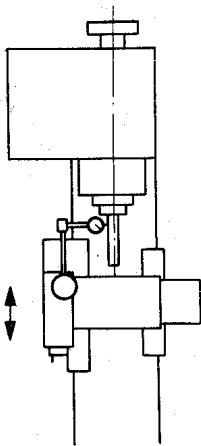
corresponding to a length of $\frac{76 \times \pi \times 40}{360} = 26,5$ mm measured on the

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.



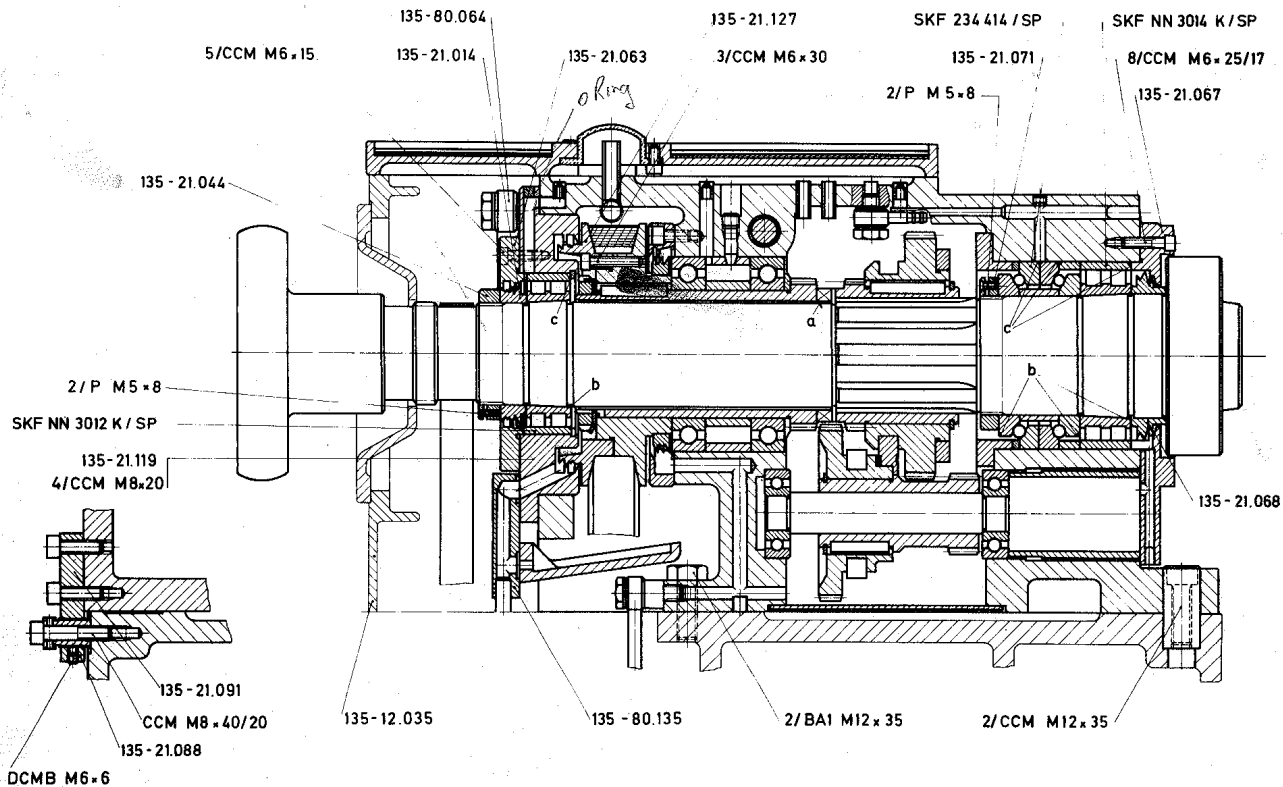
Dial indicator reading to 0,001 mm on tool slide.

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.

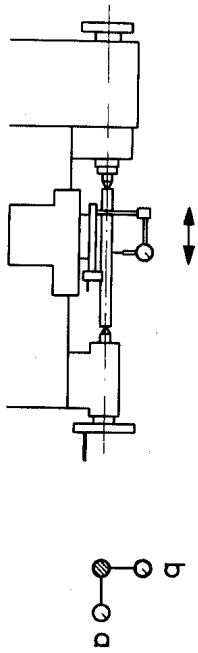
FABRIQUE DE MACHINES SCHAUUBLIN S.A. BÉVILARD/SUISSE



FABRIQUE DE MACHINES SCHAUUBLIN 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.



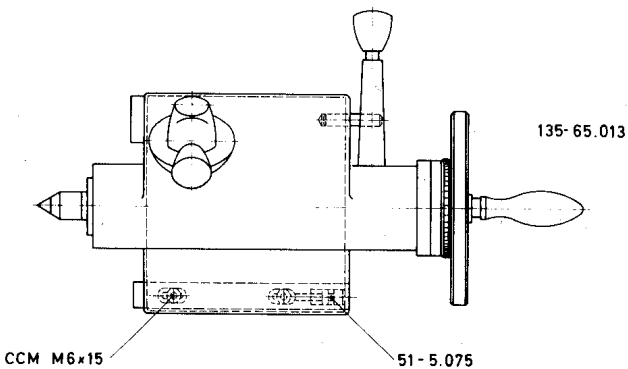
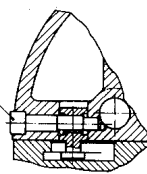
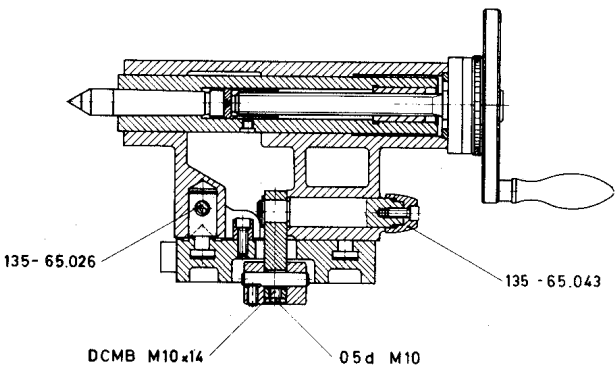
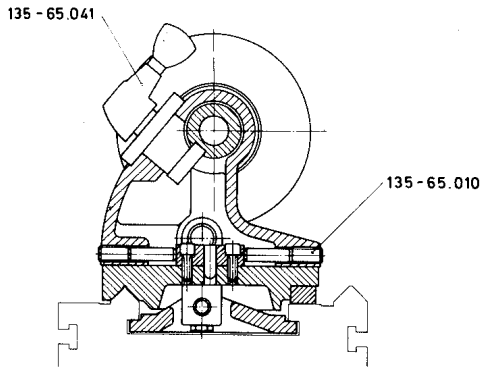
Dial indicator reading to 0,001 mm on swivelling slide.
Reference mandrel held between centres.

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 M6x15 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 M6x15 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 M10x14.
3. The internal cogging of the locking levers 135-65.041 and 43 permits to place these in a favorable position.



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 ^{fighten} fighter the coils and withdraw the protection.

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

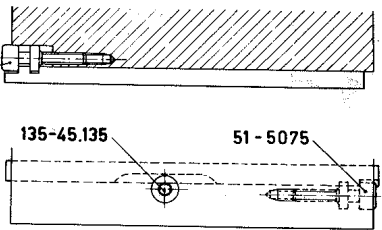
ADJUSTMENT OF PLAY OF CROSS SLIDE SCREW

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).

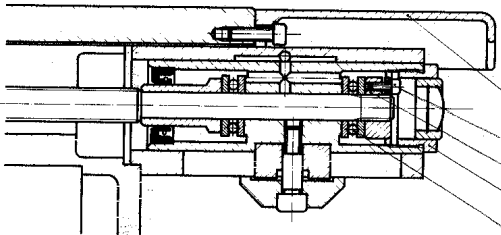
ADJUSTMENT OF THE GIBS

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

A
B

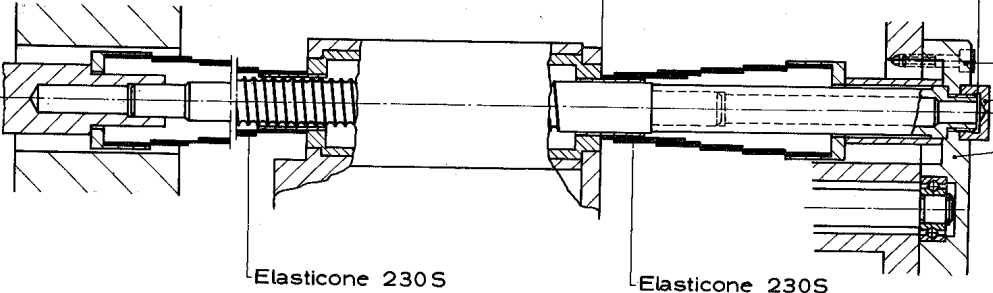


- 135 - 45.105
- 2 VIS CCM M4x10
- 135 - 45.143
- 160 - 45.105
- 2 SKF 51201



780

- CCM M8 35/20
- 135 - 12.026
- 135 - 12.030



Elasticone 230S

Elasticone 230S

REPLACEMENT OF THE VARIATOR DRIVING BELTS

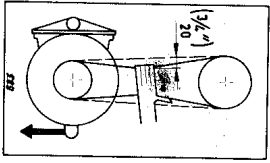
1. Loosen the screw CCM M8x22 (page 39).
2. Withdraw the shaft 135-84.023 from the bearing so as to provide sufficient clearance to remove the belts.

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 135-80.1335.
3. Unscrew the four screws CCM M8x20 holding the plate 135-21.119 and take it off using two holes tapped M8.
4. Unscrew the three screws CCM M6x30 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 !

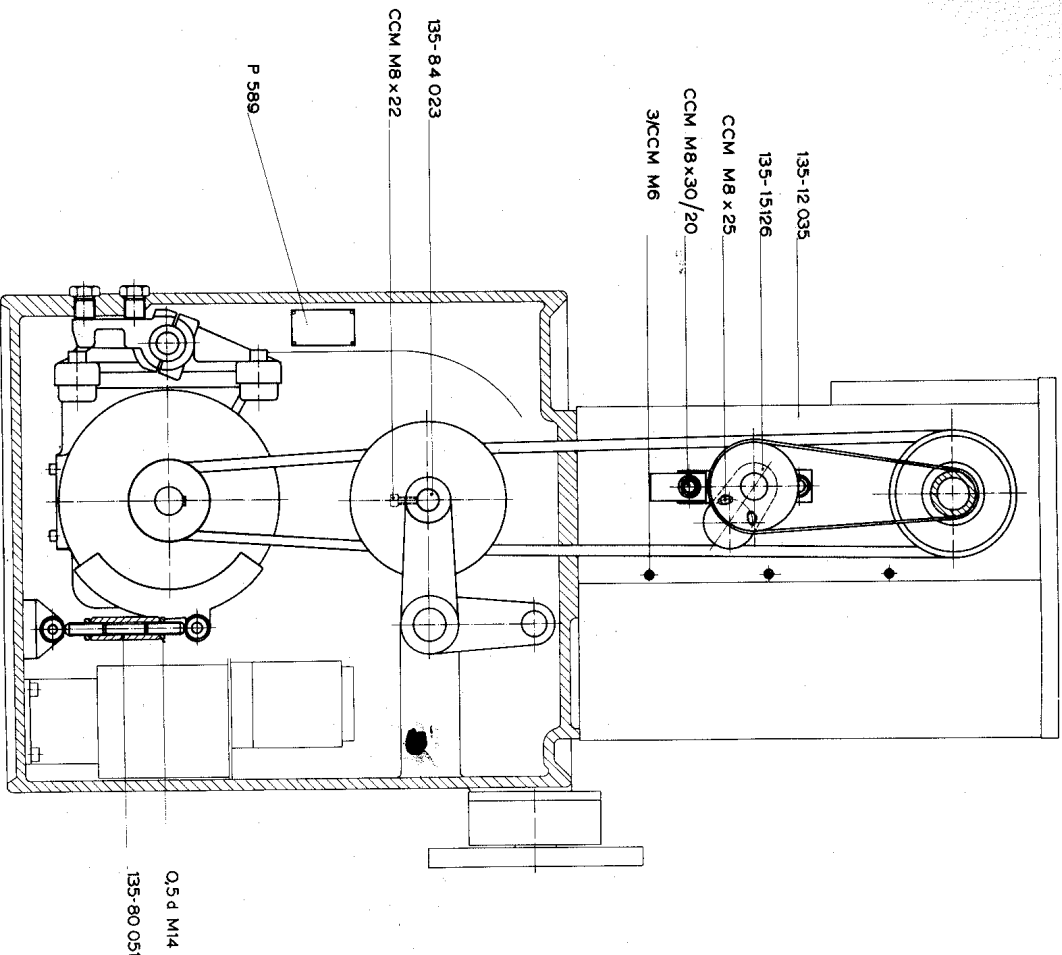
Both belts must be kept slack enough to permit emparting them a deflection of 20 mm ($\frac{3}{4}$ in.) by hand. See the plate affixed inside. Exaggerated tension may result in an overheating and seizing of the variator bearings.

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

TENSION OF THE FEED BOX DRIVING BELT

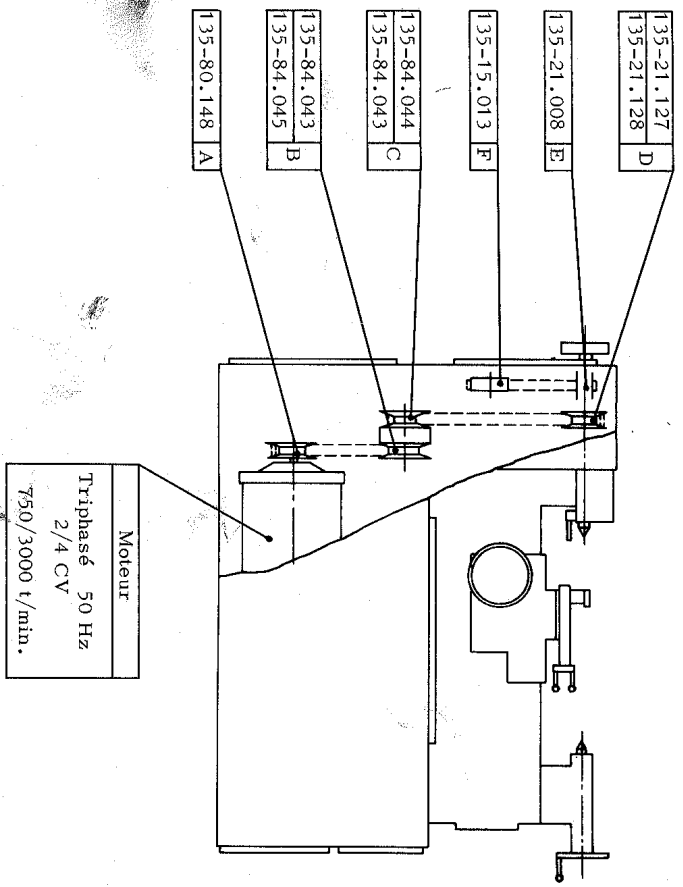
1. Loosen two screws CCM M8x30/20 and two screws CCM M8x25.
2. Adjust the tension of the belt by tilting the plate 135-15.126 about its pivoting point.
3. Tighten the four screws mentioned above.

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



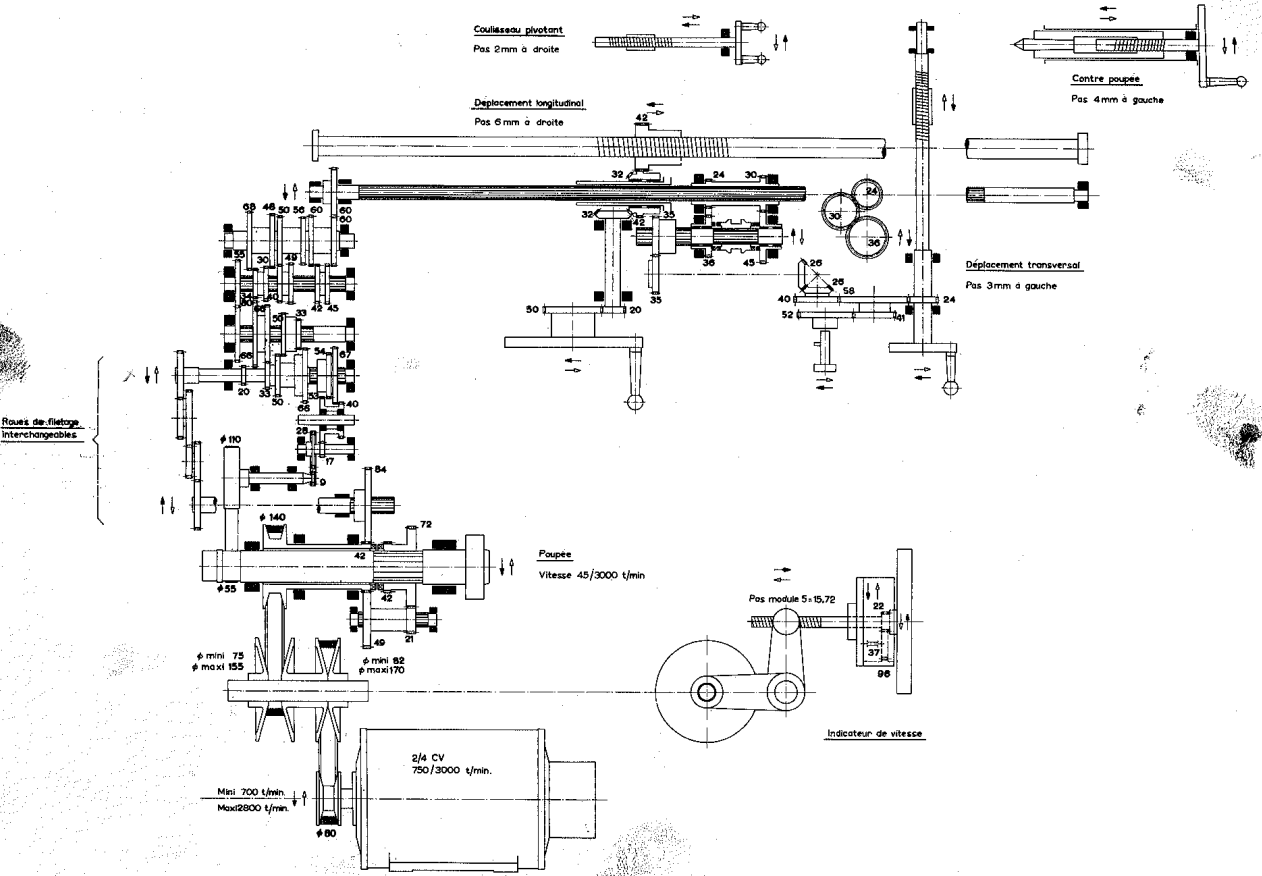
FABRIQUE DE MACHINES **SCHAUBLIN S.A. BÉVILARD/SUISSE**

ORGANES DE TRANSMISSION
TOUR SCHAUUBLIN 135



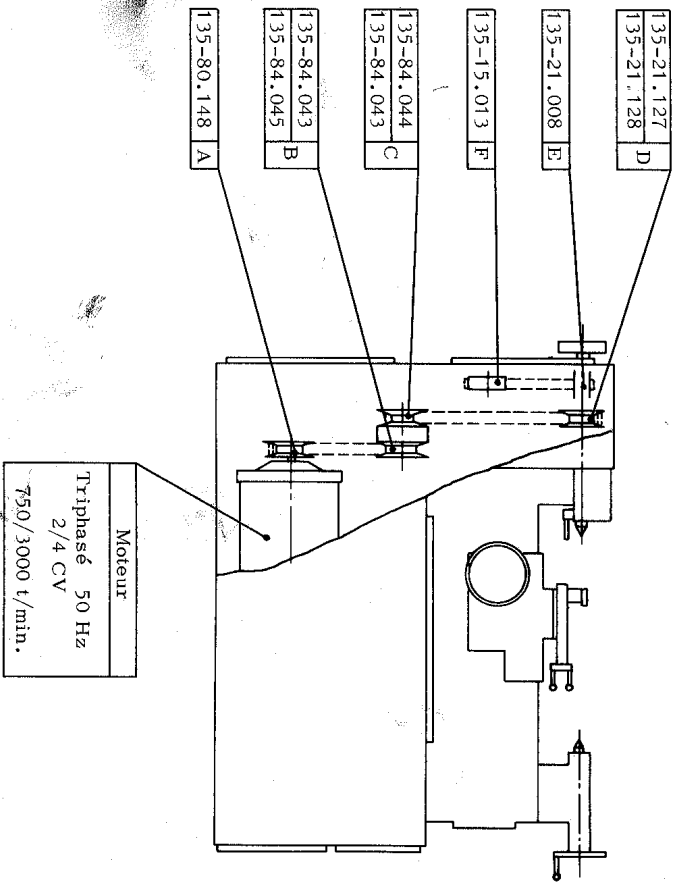
Poulies		Courroies			
Ø prim.	Liaison	Largueur ou profil mm	Longueur mm	Marque	Désignation
A 100	A/B	32,5x13	int. 960	Continental	Variflex FZ 30° (Schaublin)
B 103-180	A/B	32,5x13	int. 960	Continental	Variflex FZ 30° (Schaublin)
C 80-157	C/D	32,5x13	int. 1650	Continental	Variflex FZ 30° (Schaublin)
D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

FABRIQUE DE MACHINES SCHAUUBLIN S.A. BÉVILARD/SUISSE



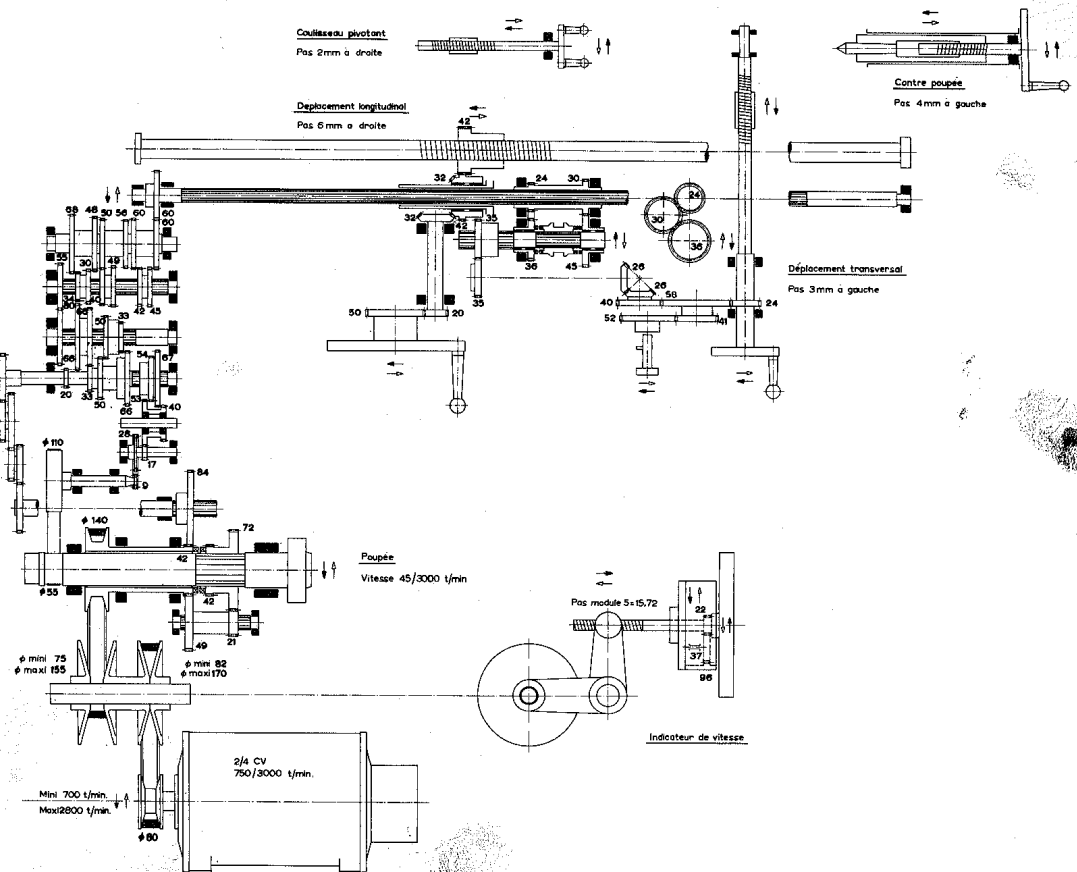
FABRIQUE DE MACHINES SCHAUUBLIN S.A. BÉVILARD/SUISSE

ORGANES DE TRANSMISSION
TOUR SCHAUUBLIN 135



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

FABRIQUE DE MACHINES SCHAUUBLIN S.A. BÉVILARD/SUISSE



FABRIQUE DE MACHINES SCHAUUBLIN S.A. BÉVILARD/SUISSE

TOUR SCHAUBLIN 135

~~PIÈCES DE RECHANGE~~ - ~~ERSATZTEILE~~ - REPAIRS PARTS

~~Banc~~ - ~~Wage~~ - Bed

2 Elasticone Covers 230 S

~~Poupée~~ - ~~Spindelstock~~ - Headstock

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

~~Chariot~~ - ~~Kreuzschitten~~ - Carriage

135-45.282	1	Grémallière	Zahnstange	Rack
135-45.366	1	Gilquet	Klinke	Trigger

~~Vis de chariot~~ - ~~Kreuzschittenschraube~~ - Carriage screw

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

~~Vis transversale~~ - ~~Querwindespindel~~ - Cross slide screw

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

~~Centre-poupée à vis~~ - ~~Reitstock~~ - Tailstock

135-65.006	1	Vis	Schraube	Screw
135-65.038	1	Ecroû	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 creusillon~~ - ~~Reitstock mit Kreuzrad~~ - Star wheel-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

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BY INDUSTRIAL BELTS

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LAWRIE ABBOTT
FAX 83498002

VARIE BELTS SUPPLIED 10/10/98

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X 30°
1650 X 14 X 32 INSIDE MEASURE
X 30°

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FOR COLLETS MODEL 3C SHAL
FOR COLCHESTER

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

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 47x 2,5			1			
O-Ring HN 340 94x 2,5			2			
O-Ring HN 340 109x 2			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 Querschlitzen Transversal slide	Tablier - Chariot Bettschlitten - Kreuzsupport Carriage - Apron	Coulisse pivotante Schwenkbar Querschlitzen 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					2					3
6004					3					
6005 - 2 RS					4					
6006					2					
6015 - P4			10		2					
6203					2					
6203 - 2 RS					2					
6204		5			1					
6204 - 2 RS					1					
6205		1								
6206		2						2		
6208								1		
6304 - P6			2							
6305								1		
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 Querschlitzen Transversal slide	Tablier - Chariot Bettschlitten - Kreuzsupport Carriage - Apron	Coulisse pivotante Schwenkbar Querschlitzen 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
Nadella AX 1528							1	1		
Nadella AX 1730					2					
Nadella AX 2035								1		
Nadella AX 3047					1					
Nadella RAX 445					2					
INA K 10/13								2		
INA K 12x15x9					2					
INA K 17/10					2					
INA K 17/13					2					
INA K 20/10					3					
INA K 20/13					3					
INA K 22x28x17		2								
INA K 28x33x26 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 SCHAUUBLIN S.A. BÉVILARD/SUISSE

ROULEMENTS - KUGELLAGER - BEARINGS

GROUPES GRUPPE GROUPS	Banc Wange Bed	Boîte de chariotage Vorschubkasten Feed box	Poupée Spindelstock Headstock	Coulisse transversale Querschlitzen Transversal slide	Tablier - Chariot Bettschlitten - Kreuzsupport Carriage - Apron	Coulisse pivotante Schwenkbar Querschlitzen 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					

FABRIQUE DE MACHINES SCHAUUBLIN S.A. BÉVILARD/SUISSE

SERVICE MANUAL



PRIMARY ELECTRIC BRAKES

APPLIES TO MODEL

PB 825



INSTALLATION INSTRUCTIONS

Cont'd.

PB BRAKE, SIZE 825
WITH PIN DRIVE ARMATURE



PB BRAKE, SIZE 825
WITH PIN DRIVE ARMATURE

MAINTENANCE

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.

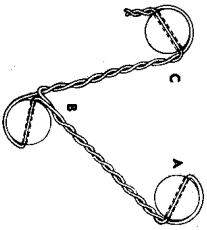
D. The armature and armature hub are mounted on the shaft by a taperlock bushing. All parts must be clean and free from burrs or chips before assembly. Place the bushing into the hub and insert the key. The key is a slide fit and should not contact the top of the keyway. Lubricate the locking screws, insert them into the bushing and slide the assembly onto the shaft. Tighten by drawing up on each screw alternately with a torque wrench. During the tightening process, the bushing 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 then releasing the armature. The armature should spring back approximately 3/64 inch. This gap will be automatically maintained throughout the life of the unit.

SAFETY WIRING INSTRUCTIONS

After the autogap assembly has been completed, the drive pins must be safely wired. The following 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 steel wire. NOTE: Wiring must be tight throughout assembly.
3. Insert the wire into pin A as shown until the ends of the wire are 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 pins 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 ends together on pin C. The four pin safety wiring is done in the same manner as above.
8. Complete the wiring by twisting the ends together on pin C.



COIL DATA

UNIT SIZE	O D mm	CURRENT (A)		RESISTANCE Ω		AT 20° C	
		6V	24V	6V	24V	90V	90V
500	128	3.42	1.05	1.76	22.8	218	218
825	218	4.30	1.22	1.39	19.7	242	242
1000	262	4.17	1.12	1.44	21.4	264	264
1225	322	4.16	1.11	1.44	21.5	262	262
1525	398	4.18	1.12	1.43	21.4	261	261

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 dampened with trichloroethylene. 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:

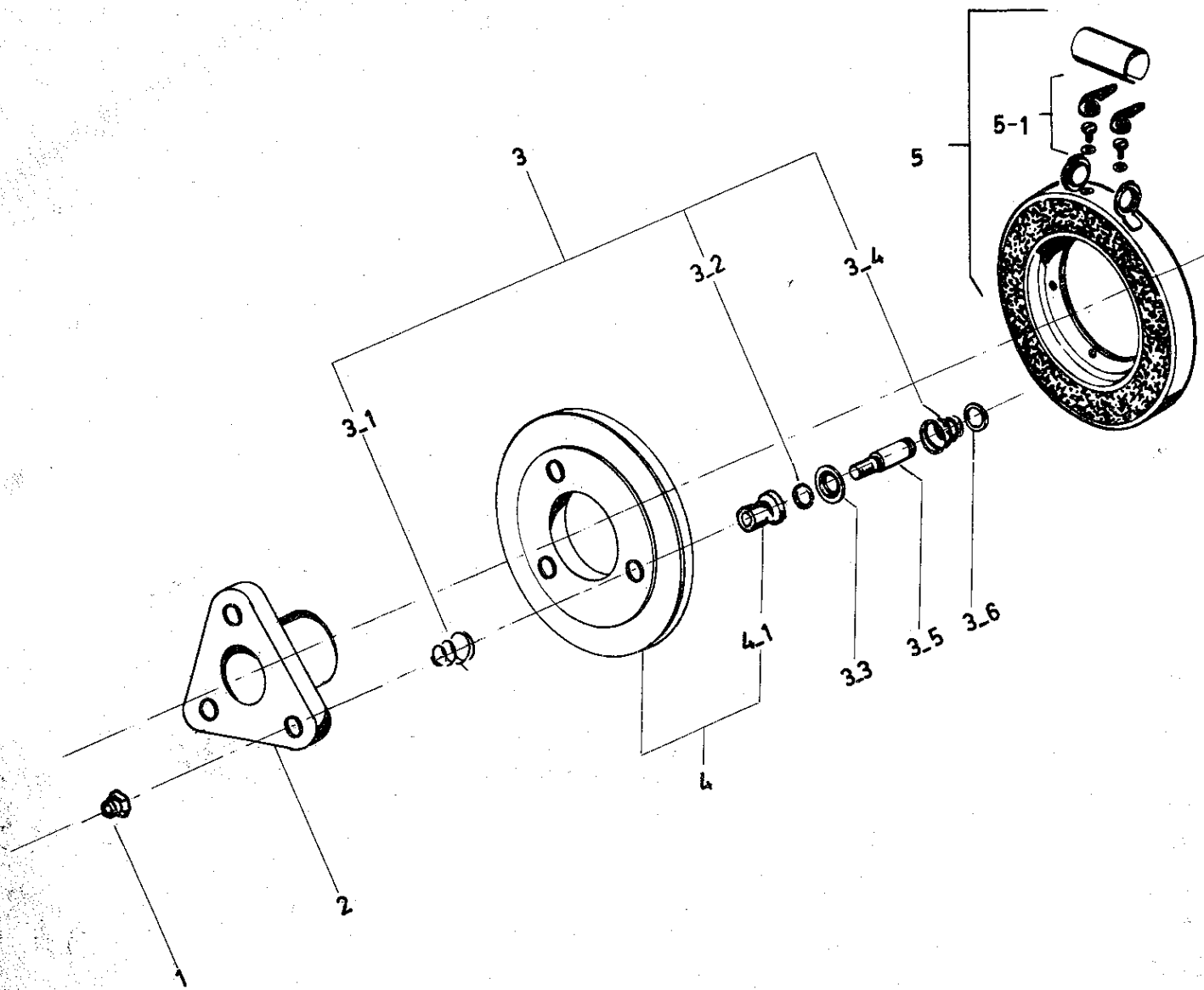
90 VOLT SERIES: Connect a DC voltmeter with a range of 0-100 or more directly across the magnet terminals. With the power on and the potentiometer turned up, a normal reading is 90 volts, although 85 to 95 is satisfactory. The reading should drop as the potentiometer control is adjusted counter-clockwise.

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