



MILLTRONICS
C N C M A C H I N E S

Operation Manual & Parts List For TL14 Models A-C

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CAPACITY

	mm.
Centre height	180
Distance between centres	750-1000
Swing over bed	360
Swing over carriage	335
Swing over cross-slide	198
Bed width	250

HEADSTOCK

Main spindle bore	42
Main spindle nose	CAMLOCK-n°5 DIN 55027-n°5
Main spindle taper	4
Number of speeds	1
Variable spindle speed r.p.m.	100-4000

FEEDS

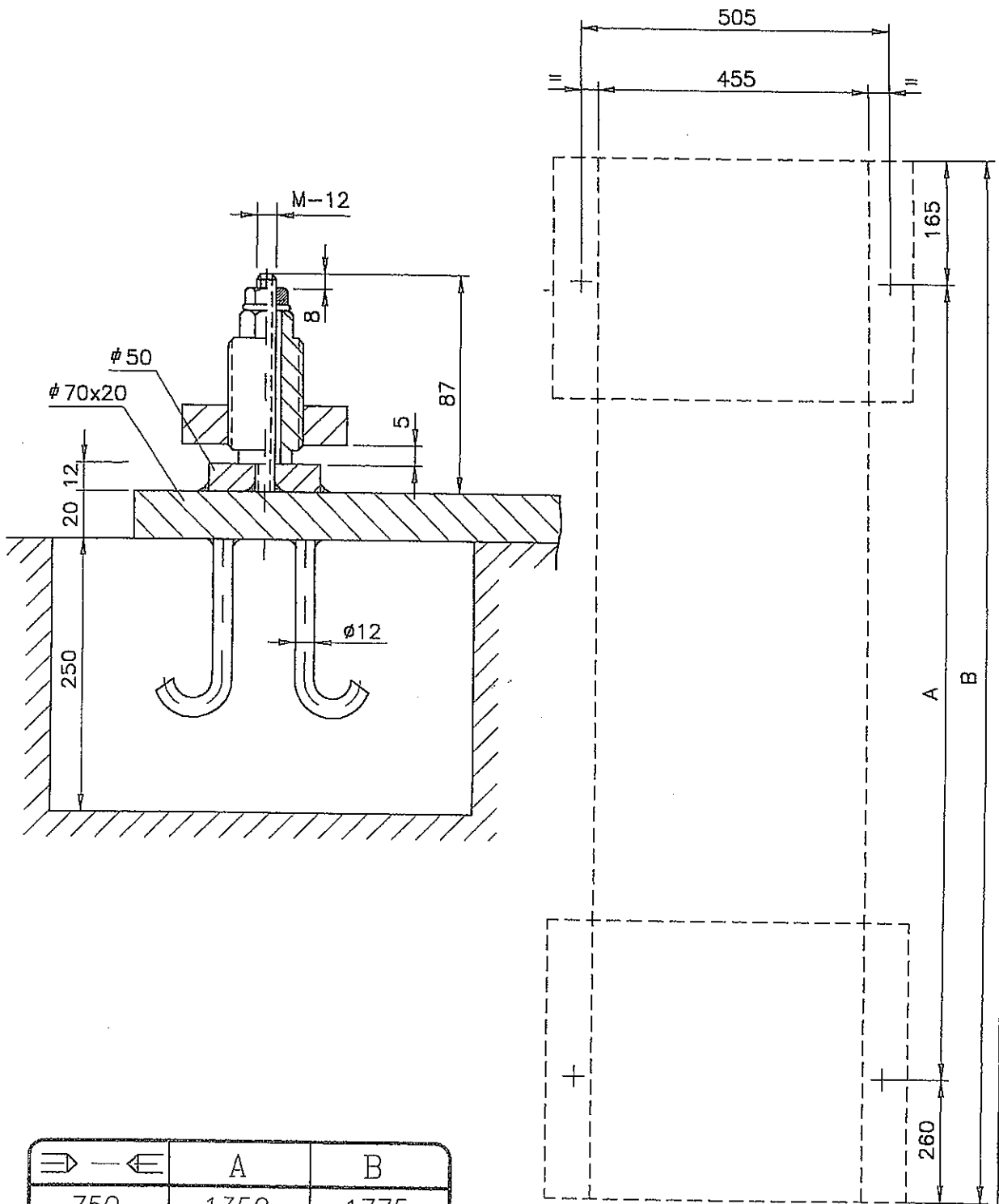
Working feed Z,X (mm/min)	0-7000
Rapid traverse Z,X (m/min)	10

TAILSTOCK

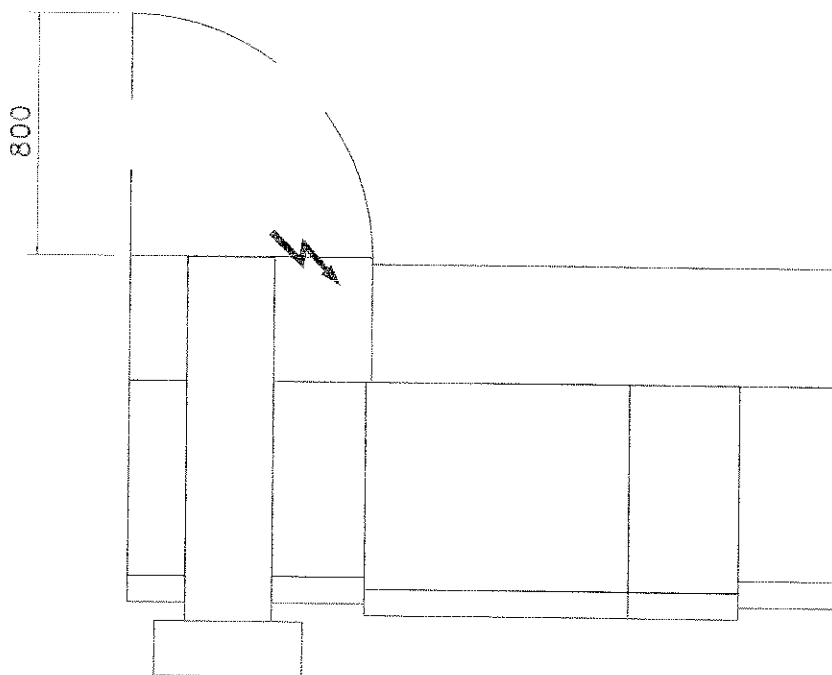
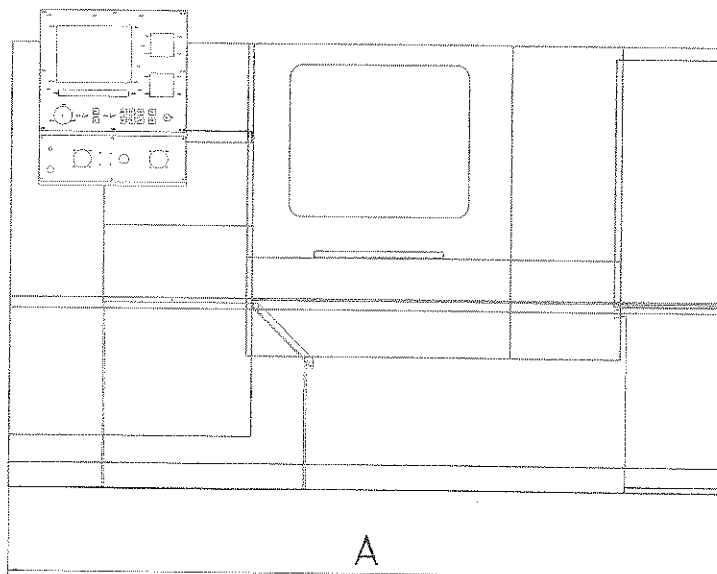
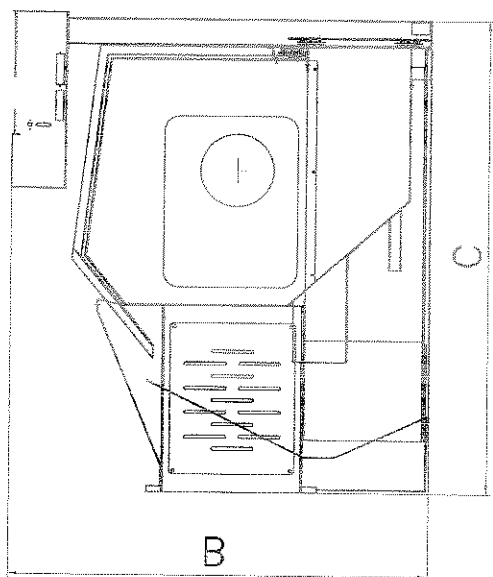
Tailstock quill diameter	48
Tailstock quill travel	140
Tailstock taper	3

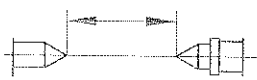
MOTORS

Main motor power in HP	5,5
Power of Z axis motor, C.A. in Nm	4
Power of X axis motor, C.A. in Nm	4
Coolant pump power in HP	0,32



	A	B
750	1350	1775
1000	1645	2070



	YO		A	B	C
KGS. NETO	1516	1000	2375	1390	1590

- INSTALLATION INSTRUCTIONS

The quality of the work produced by the machine depends mainly on the experience and skill of the operator, therefore it is essential to provide the best possible working conditions for the operator and the machine.

Lighting is an important element in order to obtain the best results. Natural light is best, however artificial lighting will suffice as long as it forms few shadows and is sufficiently intense. A good location for your new lathe would be a warm dry place, well away from walk through areas, with sufficient space around all sides of the machine and allowing enough space for the operator and for access for maintenance.

Vibration is a detriment for any lathe, it can adversely affect the operation of your lathe and also the results of the work being carried out. A cement floor is recommended, however, any solid foundation is admissible provided the machine is solidly supported. In other circumstances we recommend placing the machine on antivibratory supports.

- LIFTING

The machine must be lifted using slings as indicated in the drawing, taking the necessary precautions. The carriage and tailstock must be moved to the end of the bed in order to obtain balance under the hook.

- UNPACKING THE MACHINE

Place the lathe near to its final permanent location before proceeding to unpack. If the packaging shows signs of possible transport damage, take the necessary precautions not to damage the machine when unpacking. If any damage is found, the carrier and/or shipper must immediately notified of this fact to establish any claim which might arise.

Inspect the machine completely and carefully, making sure that all the materials, such as shipping documents, manuals and accessories supplied with the machine, have been received.

WARNING

DO NOT MOVE THE CARRIAGE OR THE TAILSTOCK UNTIL THE LATHE HAS BEEN CLEANED AND LUBRICATED AS EXPLAINED IN THE FOLLOWING PARAGRAPHS.

- FINAL CLEANING

Your new lathe must be completely cleaned after being unpacked, to make sure that all the moving parts and sliding surfaces cannot be damaged when operating the machine. Each unit leaves the factory with all its polished parts and sliding surfaces suitably greased, to avoid oxidation in the period of time that elapses until it is started up. Remove all the wrapping and clean all the surfaces with a degreaser to soften and remove the protective greases and coatings.

Clean all the surfaces with a clean piece of cotton and lubricate the lathe as explained in the following paragraph, before connecting to the power supply and beginning work with the machine.

WARNING

DO NOT USE COMPRESSED AIR TO CLEAN THE LATHE, OR DRY AFTER THE CLEANING, THE JET OF AIR MAY DRAW PARTICLES TO SENSITIVE AREAS, DAMAGING THEM.

- LUBRICATION

Lubrication is carried out automatically from a centralized lubrication unit which is located on the right hand side of the apron. The tank holds one litre of lubrication oil.

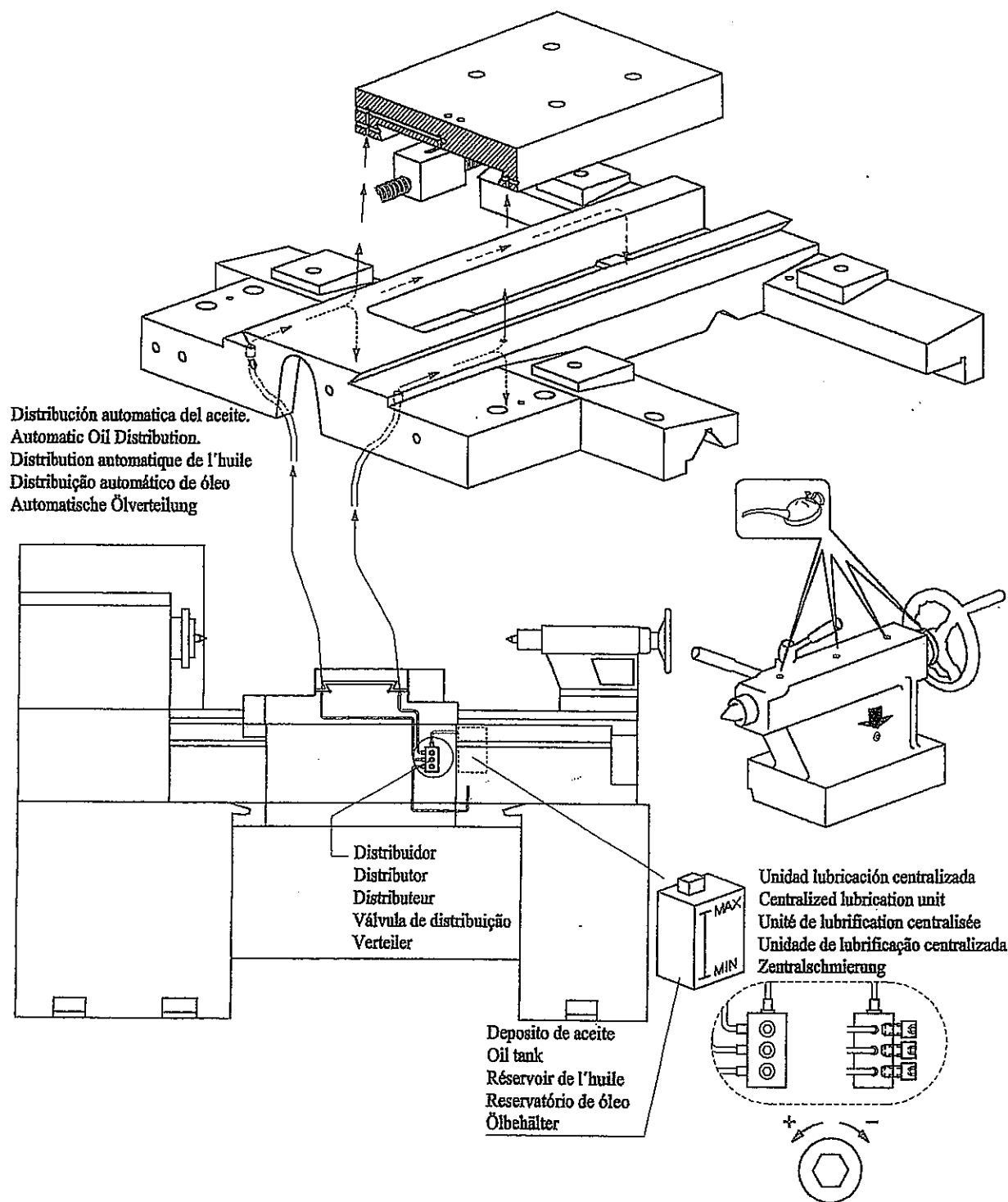
When the oil level goes down a message will appear on the monitor screen, (OIL LEVEL LOW), and if the machine is in automatic mode the programme will be interrupted. Lubrication takes place automatically every 45 minutes and last 10 seconds - this can be adjusted. At the same time using key Σ you can manually lubricate whenever you think necessary. To stop manual lubrication release the key.

On the apron there is an oil distribution valve which distributes oil to the cross-slide carriage, the longitudinal carriage and the bed guides.

In addition all the points indicated on the enclosed drawing must be lubricated.

Use any of the oil types recommended in the table, where a list of the main companies, makes and grades are given for machine oils which meet our specifications.

This table can be used for making comparisons with the characteristics of any other make you may prefer.



						
 8 h.	Premium SAE 30	Esso extra Motor Oil 3	Mobiloil A	Motor oil SAE 30	K100 Motor Oil 30	Renolin 30
 1 l.	Guías 68	Febis K68	Vactra N°2 LC	Zeus guía68	Tonna Oil T68 (XHVI)	RENEP 2

INSTRUCTIONS FOR LEVELLING AND PERIODICAL VERIFICATION

It is essential that the lathe is perfectly levelled, as indicated below, so that the machine can work properly and to obtain the desired quality in the work.

The lathe can be positioned in three ways:

a) FREE POSITIONING.

This must be done by laying down a strong base, on each support of the 4, 6 or 8 levelling points (depending on the model of lathe), between the foundation and the machine leg.

b) ANTIVIBRATORY POSITIONING.

-Place the antivibratory pads 4, 6 or 8 (depending on the model of lathe), between the foundation and the leg of the lathe at every levelling point.

c) FIXED POSITIONING.

-On a light foundation, make the correct number of square holes depending on the model of lathe 200 mm. square by approximately 250 mm. deep.

-Fit the required number of previously prepared flat irons (70x20), in line with the centres of the levelling points. (See page 8).

-Pour concrete into each of the square holes and leave to set.

-Lift the machine from the floor and fit part (A) into each levelling point with the rod centred in the inner hole of the tightening device (B) and anchor well.

-Place the machine on the previously fitted flat irons and weld.

-Proceed to level

IMPORTANT: In the antivibratory and fixed positioning ways, the rods must NEVER rub against the inner hole of the tightening device (B).

LEVELLING

Once the bases are in place, proceed to level, following our instructions:

-Fit precision levels (0.05 mm/mt) on the cross slide, as indicated in the figure.

-Position the carriage on the centre of the bed and by means of the 4 end tightening devices (C) obtain a reading of 0.05 mm/mt on the levels.

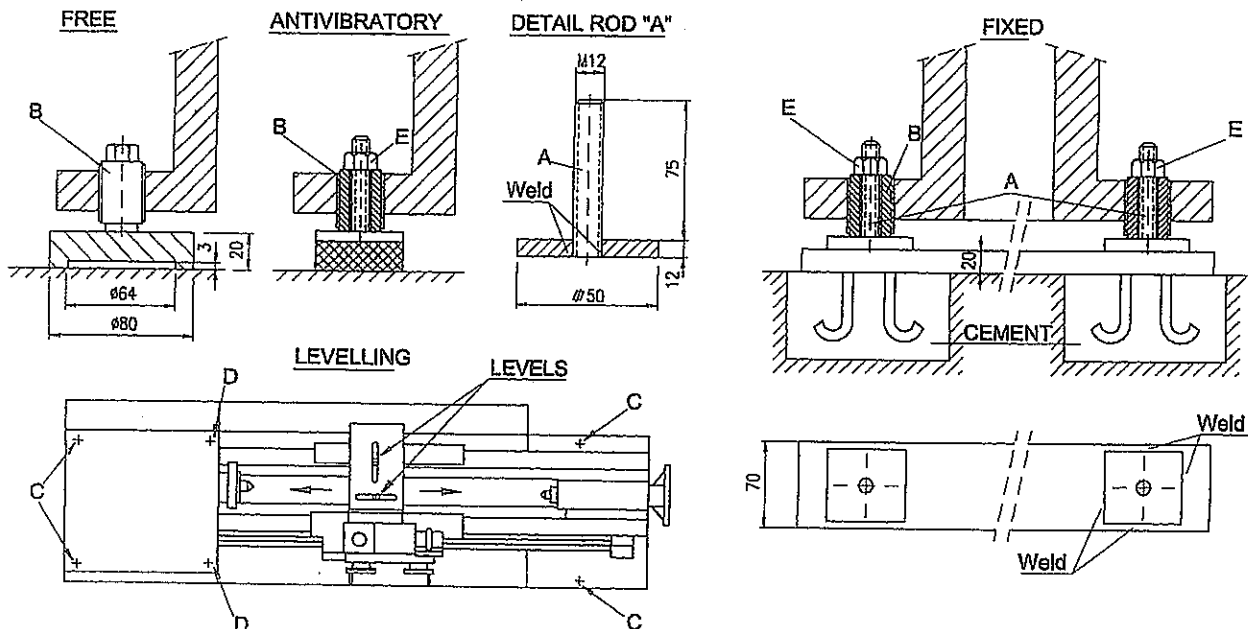
-Adjust the tightening devices (D) until they place pressure but do not vary the levelling.

-Lock with nuts (E) and check the levelling again.

-Check that all the tightening devices are supported.

-Before starting work with the machine, check the tolerances with the verification sheet enclosed with this manual.

IT IS ADVISABLE TO MAKE A COMPLETE VERIFICATION FROM TIME TO TIME.



INITIAL START UP

Electrical connection must only be carried out by qualified people.

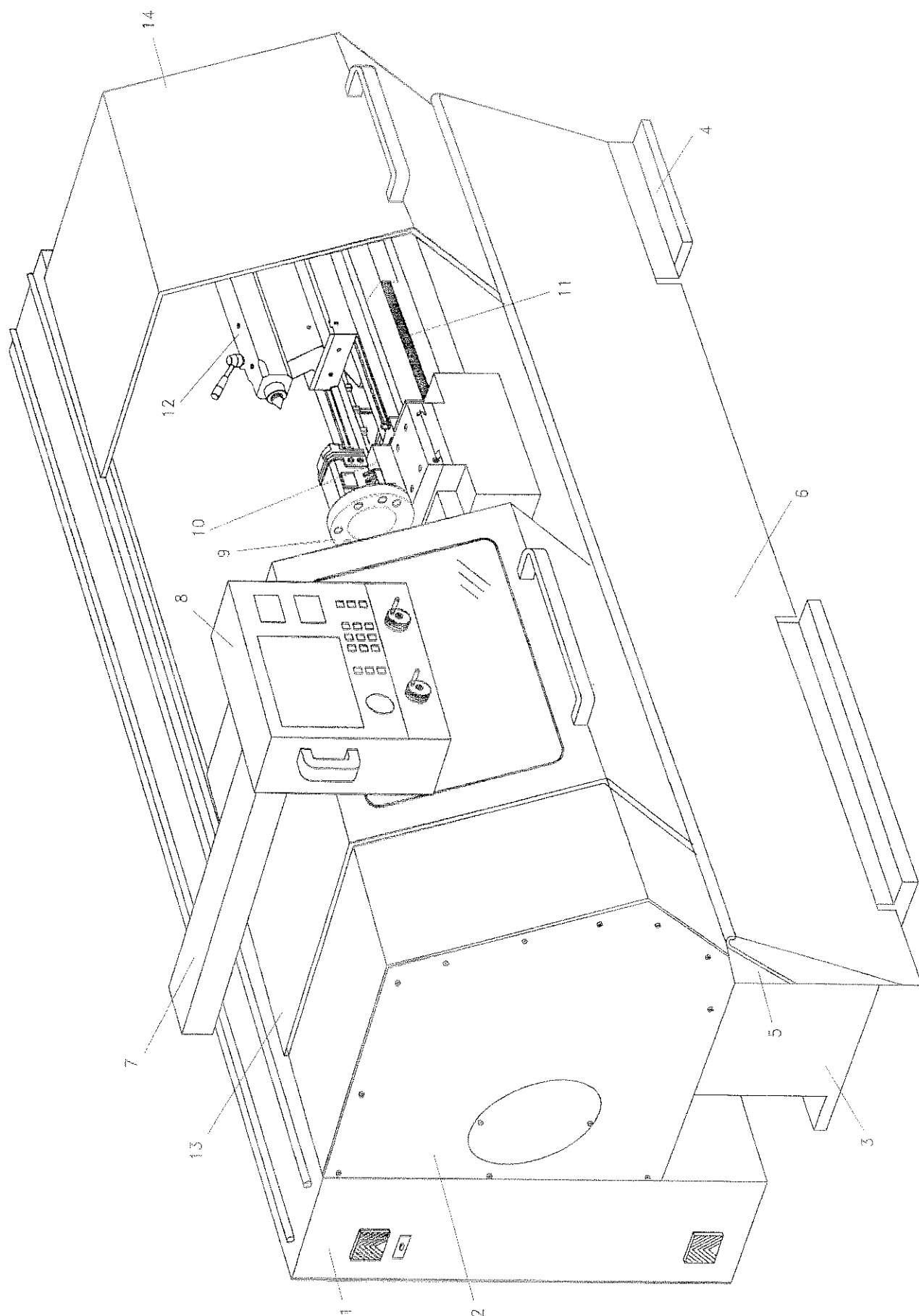
Connect the motor and the controls to a suitable electricity supply in accordance with all the local codes. Before connecting the motor, make sure that all the voltages and other current requirements of the motor adapt to the electrical power supply. When the connection has been made, check that the motor phase (rotation) is correct, checking that the rotation of the main shaft or face plate is forwards when the start lever is down.

OPERATION

VISIBLE PARTS

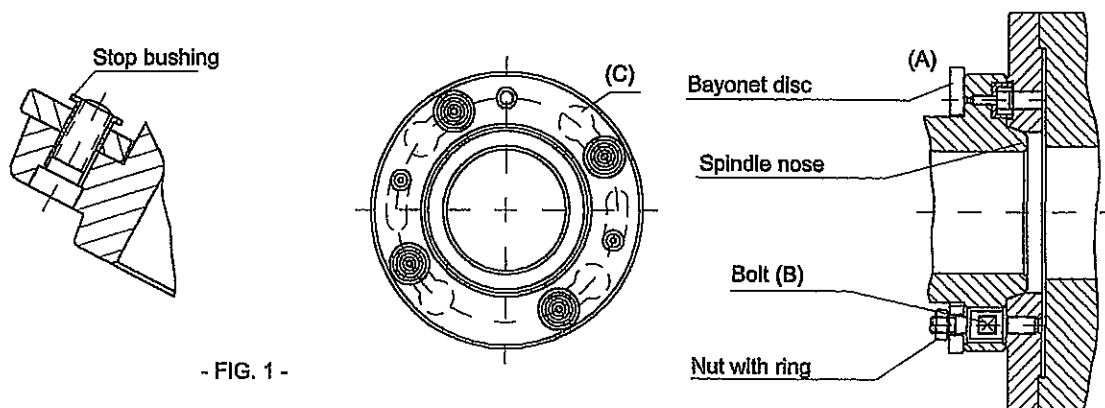
[illegible]

The drawing only tries to show the most common parts of a lathe, not being able to coincide exactly with the design that you have.



* DIN 55027 *

- Insert all the bolts (B) into the chuck back of the face plate.
- Fit the nuts and washers in the bolts (B).
- Turn the bayonet disc (A) in a clockwise direction until the stop.
Once turned, the hole (C) of the bayonet disc must line up with the hole of the shaft nose.
- Turn the bayonet disc (A) again in an anticlockwise direction until the stop, and tighten the nuts correctly.



- FIG. 1 -

* CAM-LOCK *

Insert all the bolts in the plate chuck back, until the circular reference line (F) is in line with the wall of the chuck back (fig. 2) and the semicircular grooves are in line with the holes of the lock or eccentric spindles.

Fit the lock screws (E) into each bolt (D) and tighten.

Make sure that the two contact sides (plate and shaft) are well cleaned of impurities.

-NOW YOUR FACE PLATE CAN BE MOUNTED-

Before coupling the face plate to the shaft nose, check that the reference line of the eccentric lines up with the reference line of each housing in the nose of the shaft (unlocked position).

In these housings there are also two marks (V), one at 90° and another at 180°, from the reference line (I).

The area between 0° and 90° is for attachment and the area from 90° to 180° is the safety area.

Place the face plate in position and tighten the eccentrics by turning in a clockwise direction with the wrench supplied for this purpose.

If the reference line on the eccentric is not in the 90° to 180° area, the face plate must be withdrawn and the face plate bolt must be adjusted again.

HOW TO ADJUST THE CAM-LOCK BOLT

- Slacken and withdraw the locking screw (E).
- Give the bolt (D) one complete turn inwards or outwards as necessary.
- Fit the locking screw (E) on again into its housing and re-tighten.

DO NOT FIT ANY FACE PLATE FROM ANOTHER MACHINE BEFORE VERIFYING BEFOREHAND THE CORRECT ADJUSTMENT OF EACH OF THE BOLTS WITH THEIR ECCENTRICS.

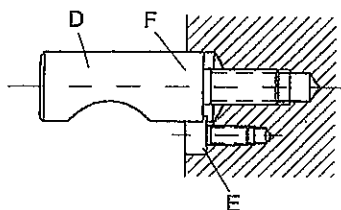


FIG. 2

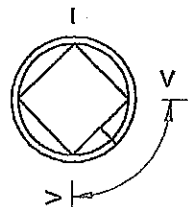


FIG. 3

MAINTENANCE

TRANSMISSION BELT ADJUSTMENT

The belts leave the factory with the tension adjusted.

After a few hours operation, the belts must be tightened again, as they stretch because they are new.

We leave the correct tension of the belt or belts to the operator's own criterion, due to his experience.

As a guide, we advise starting the lathe up, at maximum speed, the tension being correct if, on starting up, the belts do not slide or make a noise.

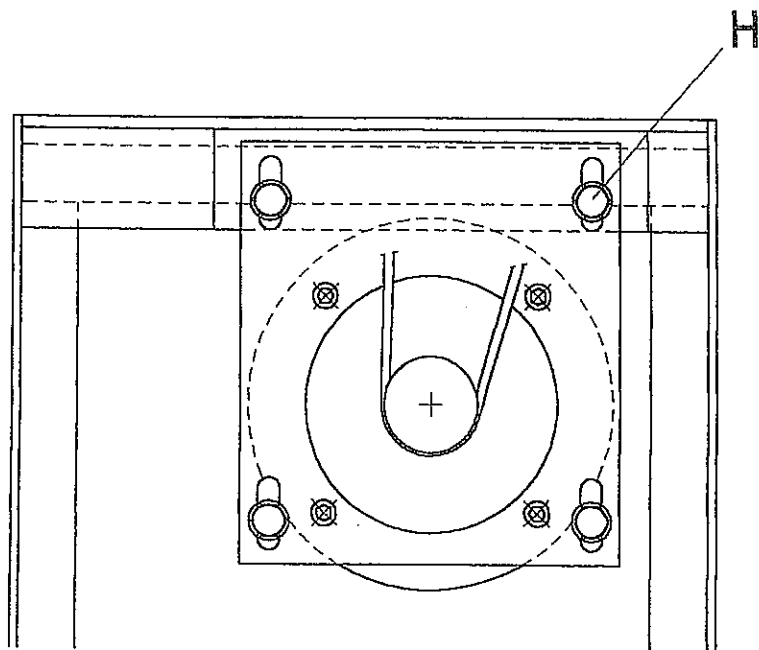
The tension is adjusted by tightening screw (H) until the correct tension is reached.

HEADSTOCK SET-OVER ADJUSTMENT

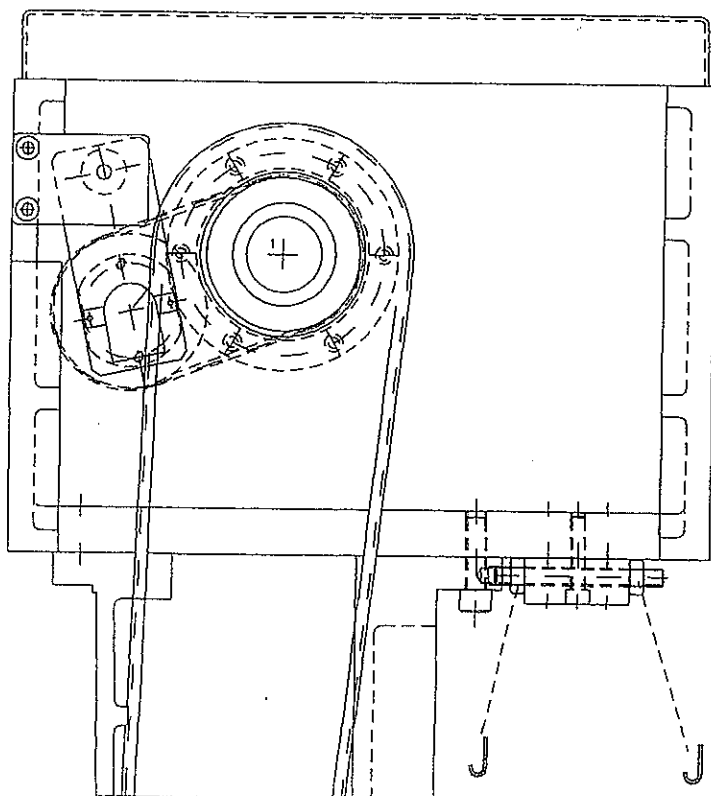
The set-over of the headstock or lack of parallelism of the headstock with the bed, is corrected by adjusting nut (J) in one direction or another, as necessary.

To do this, the four attachment screws of the headstock or bed must be slackened beforehand.

IMPORTANT. Before adjusting the set-over of the headstock, due to the taper turning, **MAKE SURE THAT THE LEVELLING IS CORRECT**, as indicated on page 12.



AJUSTE TENSION CORREA MOTOR
 MOTOR BELT ADJUSTMENT
 REGLAGE DE LA TENSION DE LA COURROIE DU MOTEUR
 EINSTELLUNG DES ZAHNRIEMENS, HAUPTANTRIEB



CORRECCION DESCENTRAMIENTO CABEZAL
 HEADSTOCK OFF-CENTRE ADJUSTMENT
 CORRECTION DESALIGNEMENT POUPÉE
 SPINDELSTOCK-JUSTIERUNG

TAILSTOCK SIDE MOVEMENT

- Unlock the tailstock by moving the handle (K) backwards.
- Slacken the grub screws (F).
- Slacken grub screw (G2) and tighten grub screw (G1), if you wish to move the tailstock towards the operator's side.
- Slacken grub screw (G1) and tighten grub screw (G2), if you wish to move the tailstock towards the other side.
- Tighten grub screws (F) again to leave the tailstock secured with the necessary side movement.
- Lock the tailstock by moving the handle forwards (L).

The alignment marks (H) on the right-hand side can be used as reference to move the tailstock back to its original position again.

TAILSTOCK LOCKING LEVER ADJUSTMENT

- The angular locking position of the lock lever can be adjusted with the tailstock lock released, turning nut (J) to the right (more locking pressure) or the left (less locking pressure).

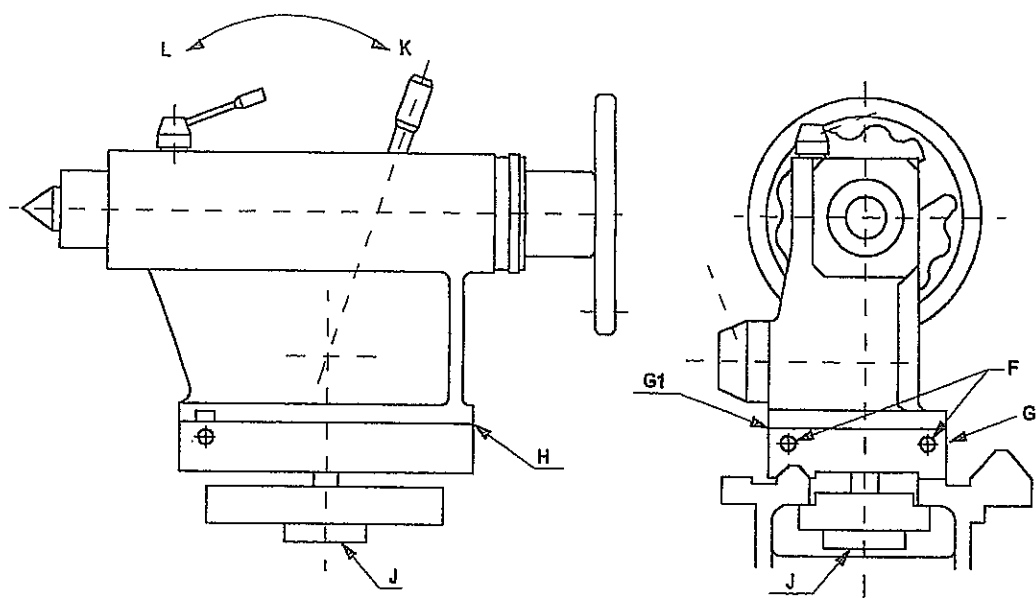
CROSS SLIDE GUIDE ADJUSTMENT

The play in the cross slide guides is corrected by means of the tapered gib, situated on the right hand side of the cross slide.

To correct, adjust screw (G) situated on the rear part of the carriage loosening it.

Then, tighten screw (H) situated on the front part of the carriage until the correct adjustment is obtained.

Once the correct adjustment has been obtained, tighten screw (G) again to fix the gib in its proper position.



(G1,G2)

TORNILLO DESPLAZAMIENTO LATERAL

TAPER ADJUSTMENT SCREW

VIS DE DEPLACEMENT LATERAL

SCHRAUBE ZUM VERSTELLEN DES RETTSTOCKES

PARAFUSO DE DESCENTRAMENTO LATERAL

(H)

MARCAS DE ALINEACION

ALIGNMENT MARKS

REPERE D'ALIGNEMENT DE LA CONTRE-POINTE

MARKIERUNG ZUM AUSRICHTEN

MARCAS DE ALINHAMENTO

(J)

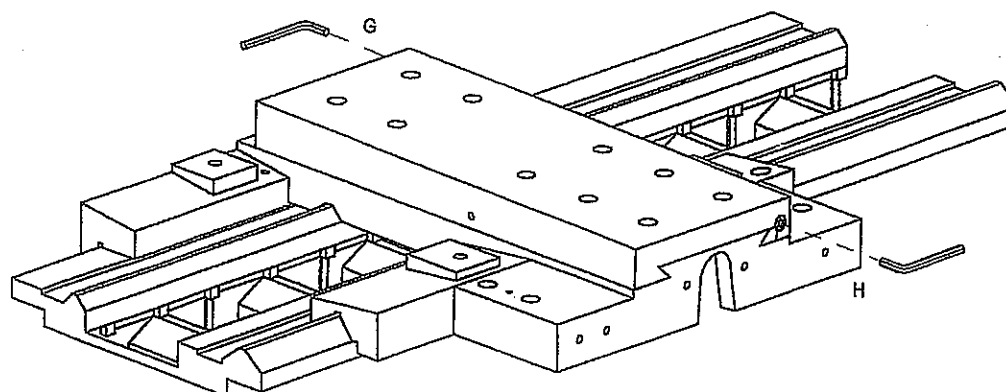
FRENO DEL CONTRAPUNTO

TAILSTOCK CLAMPING LEVER

BLOCAGE DE LA CONTRE-POINTE

VERSTELLUNG DER KLEMMSCHRAUBEN

TRAVÃO DO CONTRAPONTO



REGLAS CONICAS DE AJUSTE

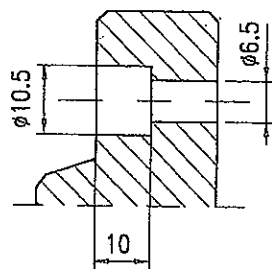
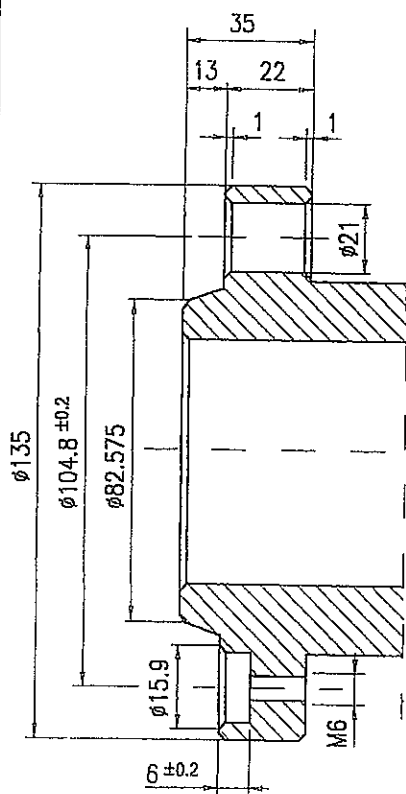
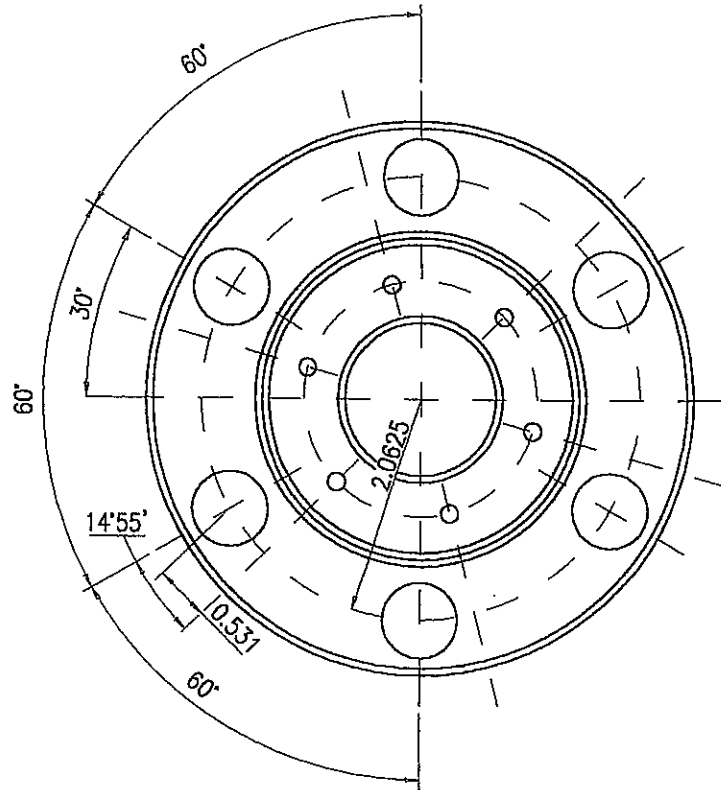
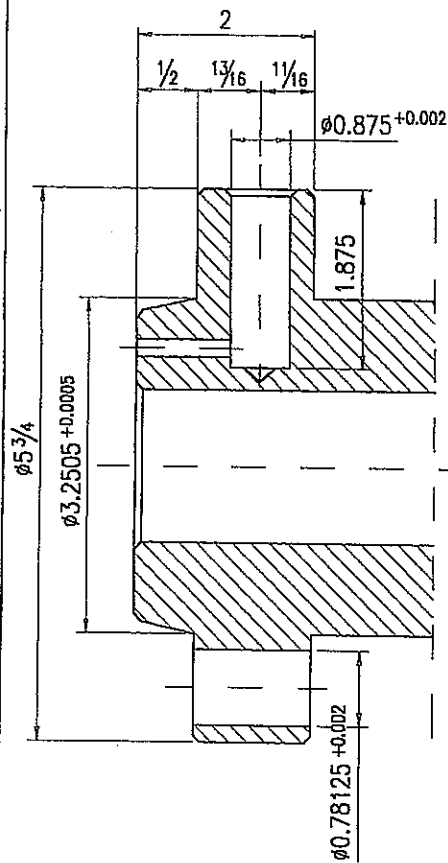
ADJUSTMENT TAPER RULERS

REGLES CONIQUES DE REAJUSTEMENT

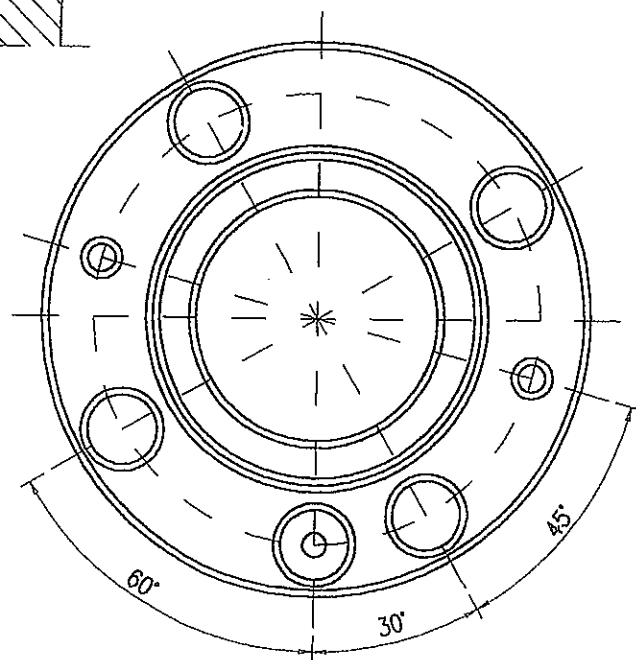
KEILLEISTE FÜR PLANSCHLITTEN

RÉGUAS CÔNICAS PARA AJUSTE

DIN-55029, CAM-LOCK n°5



DIN-55027 n°5



SPARE PARTS

* INDICATE MACHINE MODEL

* INDICATE MACHINE SERIAL NUMBER

This is engraved on the end of the bed in the guide free area. (see drawing).

* MAKING REFERENCE TO THE ASSEMBLY DESIRED

Indicate:

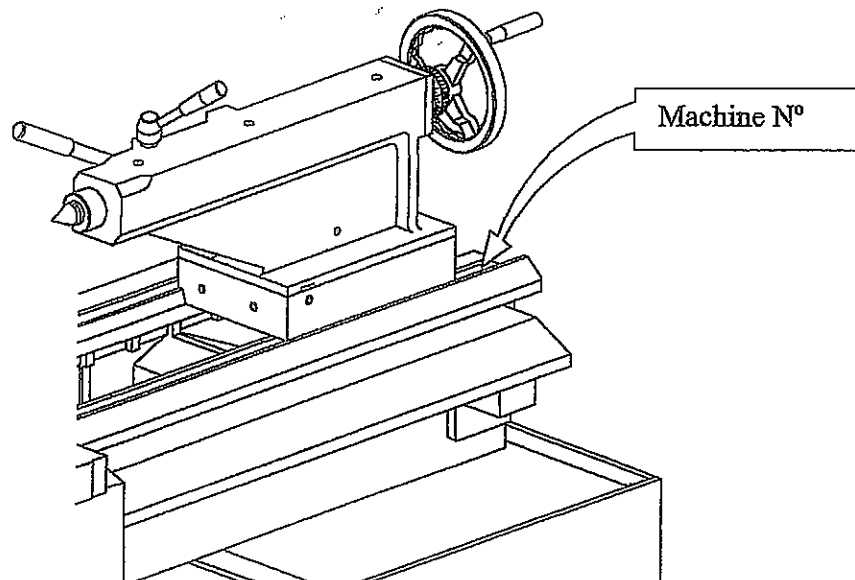
- Page no. of manual.
- Part number and description.

Once the part has been located on the illustrative drawing (right hand page), on the previous page or left-hand page you will see the part no. and its denomination.

- Indicate Qty. to be supplied.

* When requesting spare parts which might vary in length, indicate the distance between centres of the machine.

* When requesting lead screw or lead screw nut spare, indicate if it is MM or T.P.I.



<u>ASSEMBLY</u>	<u>PAG.</u>
- HEADSTOCK Main spindle	27
- HEADSTOCK Pulleys & belts	33
- Z AXIS BALL SCREW	35
- X AXIS BALL SCREW	39
- Z & X HANDWHEELS	41
- AUTOMATIC TOOL POST	43
- QUICK CHANGE TOOL POST	45
- MANUAL TOOL POST	47
- TAILSTOCK	51
- BED - LEGS - BRAKE	53
- STEADIES	55
- CHUCK PROTECTION GUARD	57

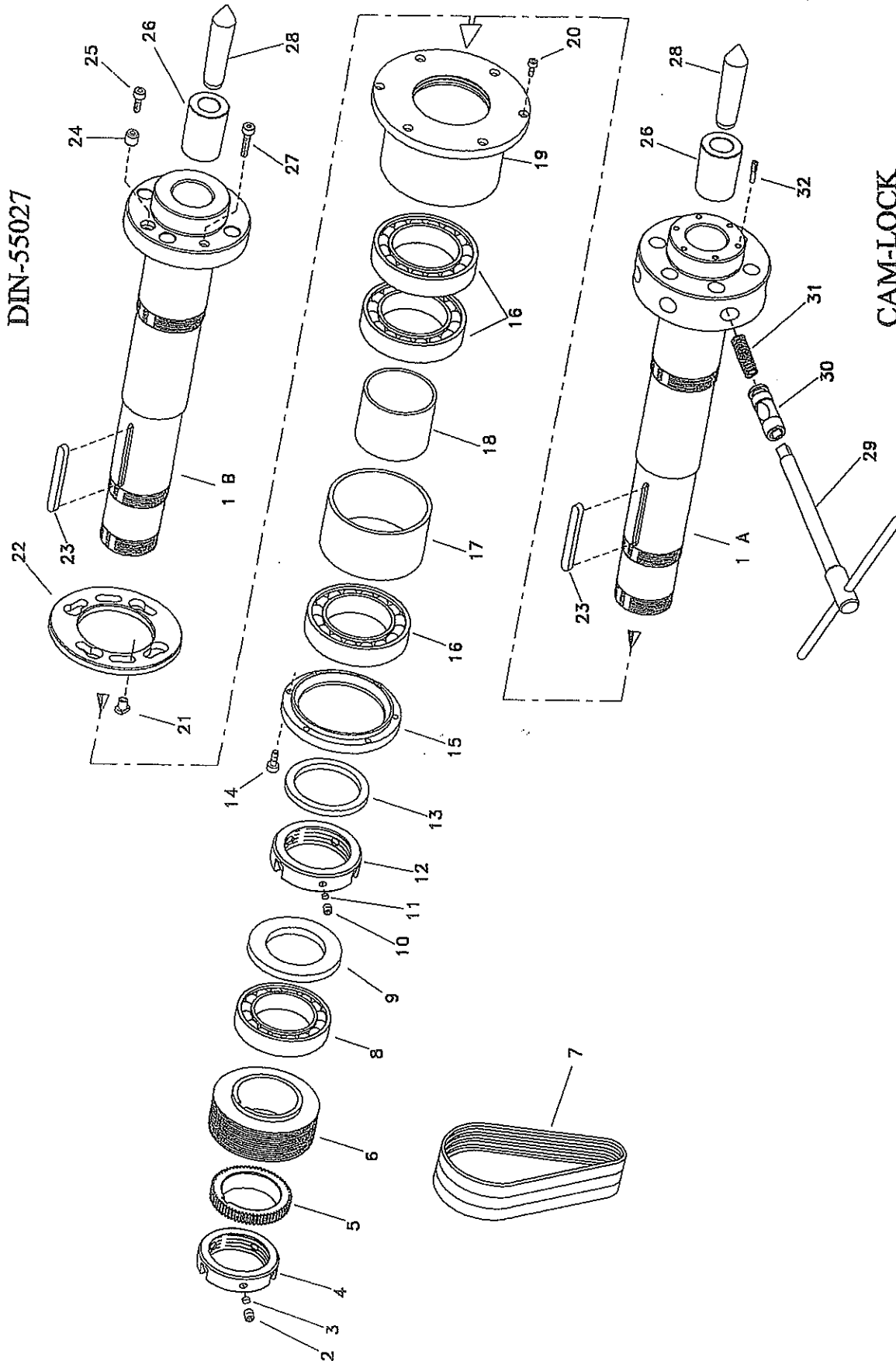
MT00439 E

HEADSTOCK

SEP-00

[illegible]

DIN-55027

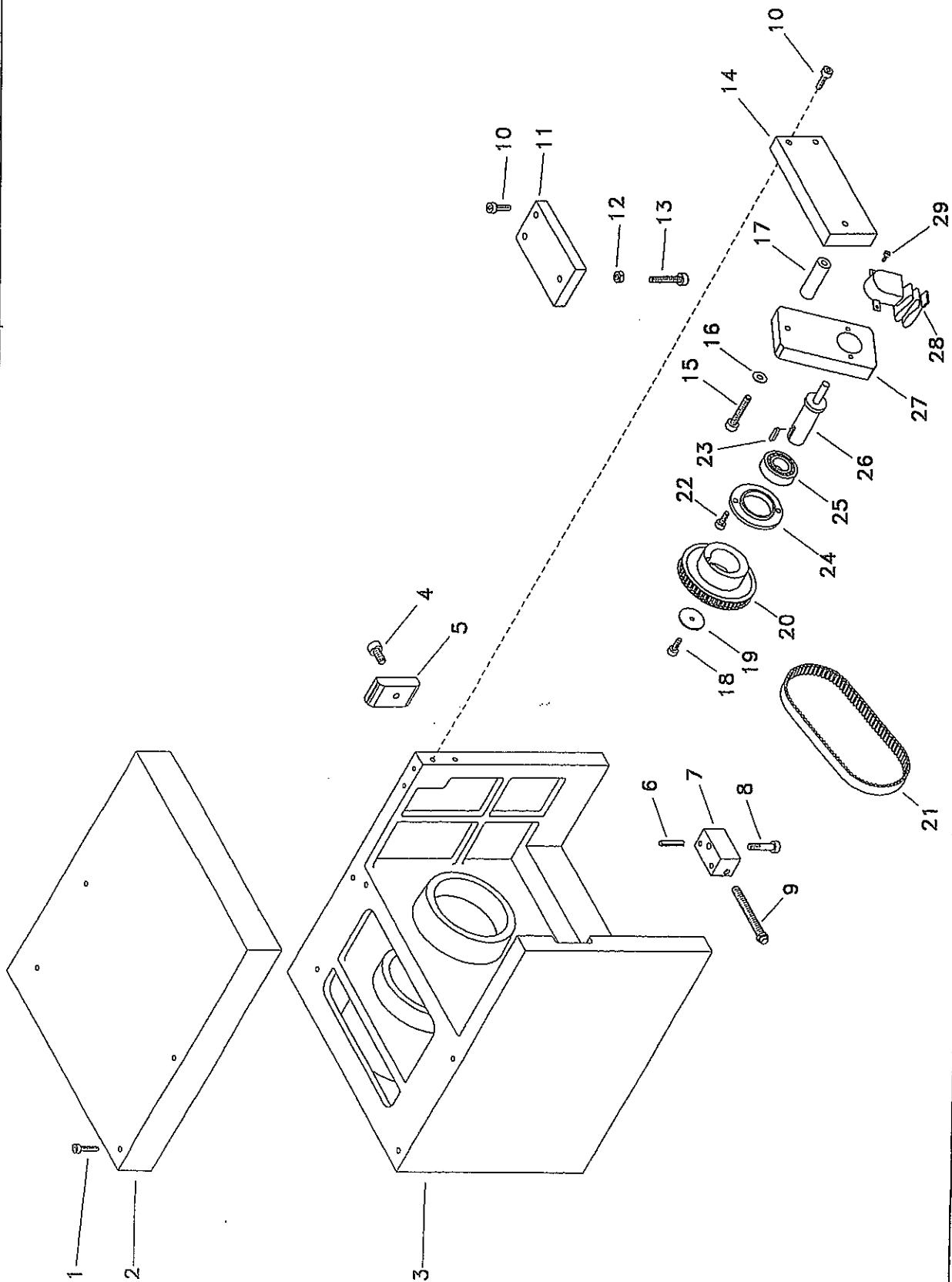


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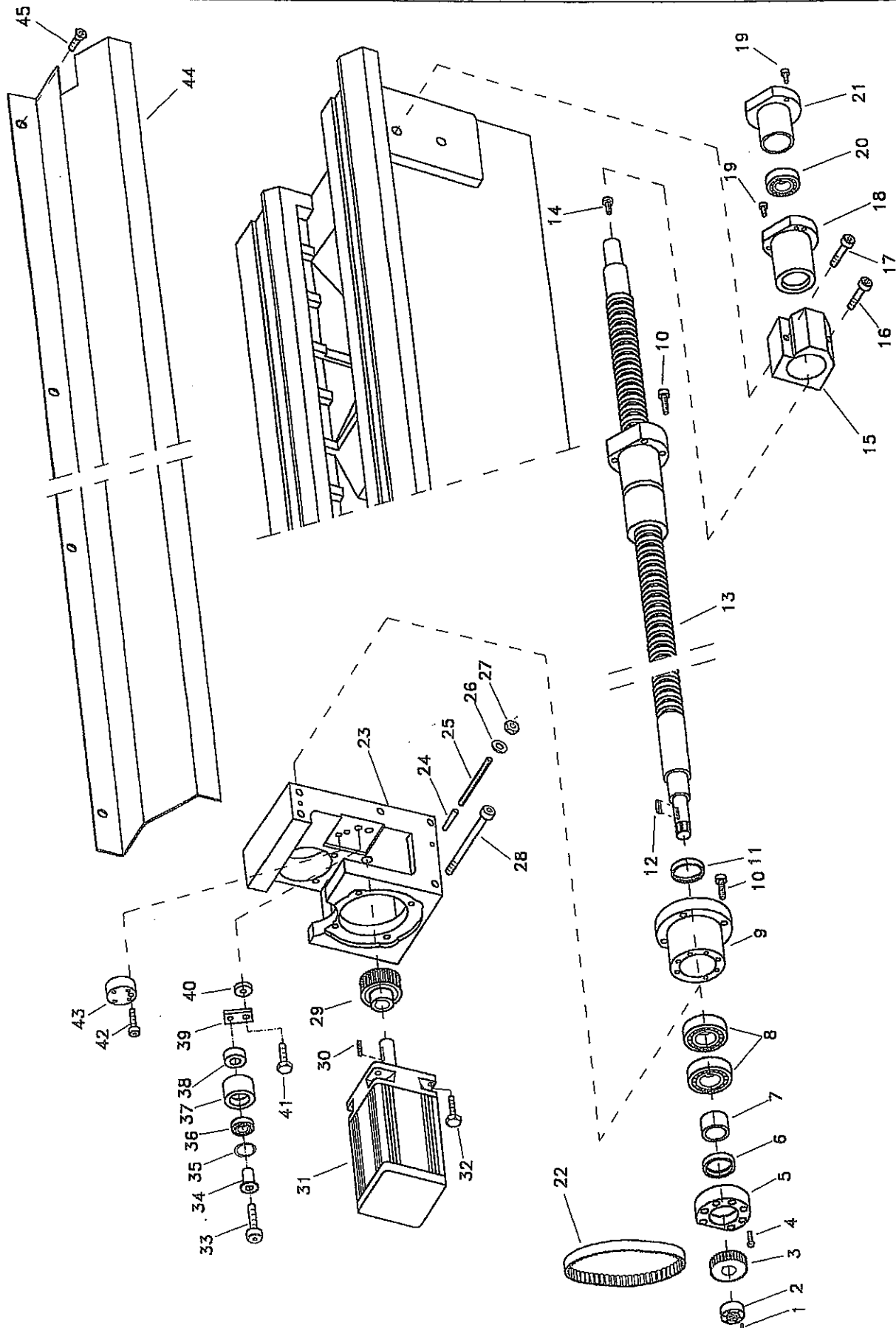
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HEADSTOCK

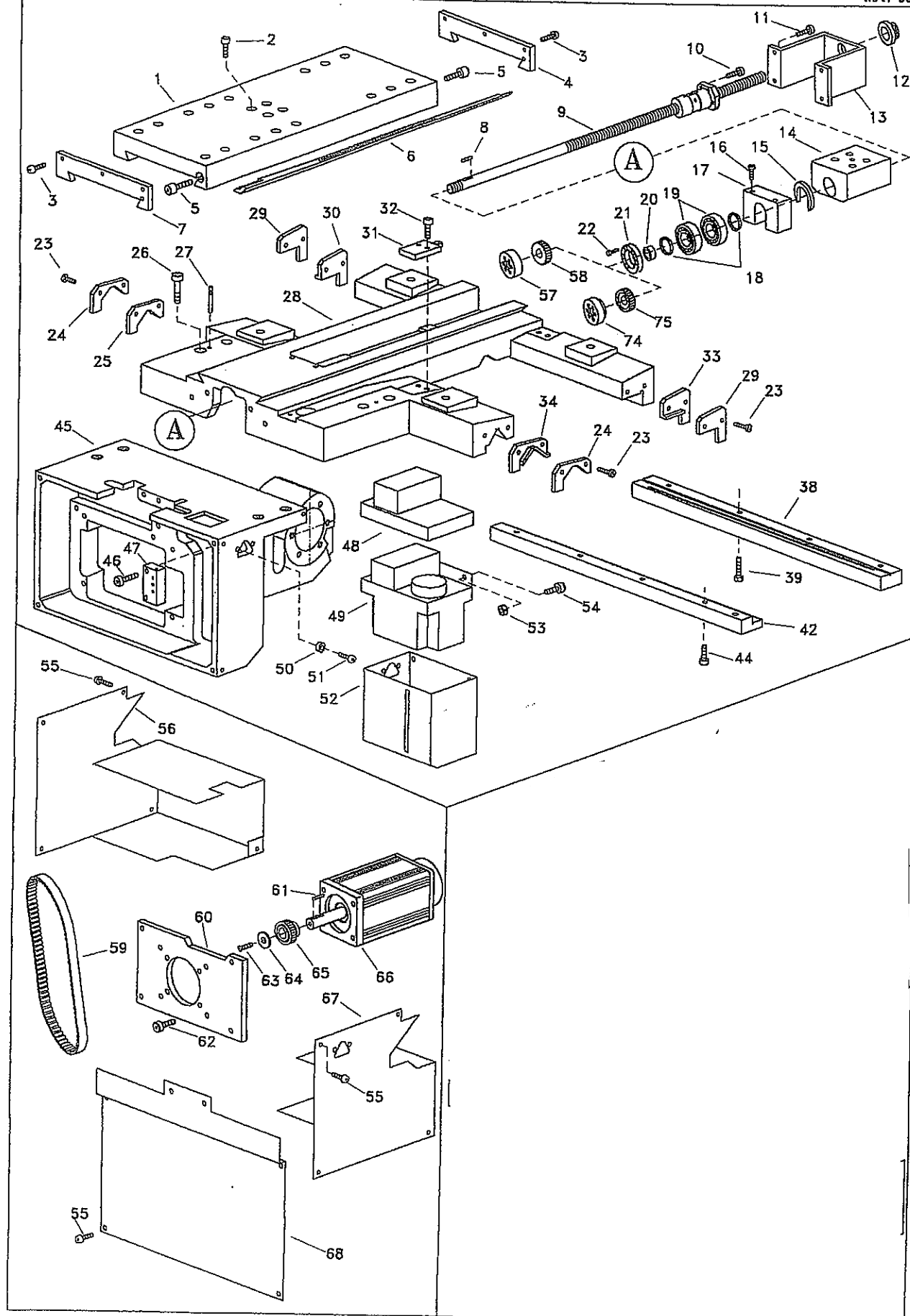
[illegible]



MT00408 I			
Z AXIS			
			SEP-00
Item	Part N°	Description	Amo.
1	DIN 914	Grub screw M6x10	3
2	12.02.11008	Fastening nut MLB-278	1
3	12.02.11542	Pulley 34-5M 25 MLB-279	1
4	DIN 7984	Allen screw M6x20	4
5	12.02.10036	Headstock side cover	1
6	DIN 3760	Retainer 32x45x7	1
7	12.02.11005	Bearing end spacer	1
8	DIN 628	Bearing 7205 CTDUHP4V Bq-67	2
9	12.02.10003	Front cover	1
10	DIN 912	Allen screw M8x20	9
11	DIN 3760	Retainer 40x52x7	1
12	DIN 6885	Key 6x6x30	1
13	12.02.10510	Ball screw Lathe 750	1
13	12.02.10511	Ball screw Lathe 1000 MPL-878	1
14	DIN 931	Hexagonal screw M8x20	1
15	12.02.11515	Leadscrew support Tailstock side	1
16	DIN 912	Allen screw M8x80	1
17	DIN 912	Allen screw M8x65	1
18	12.02.10038	Tailstock side cover	1
19	DIN 912	Allen screw M6x15	6
20	DIN 625	Bearing 6205 - 2RS BG-24	1
21	12.02.10039	Tailstock side cover	1
22	BT-85	Belt 350-5M 25 Or BT-90	1
23	12.02.11532	Leadscrew support Headstock side	1
24	DIN 7979	Cylindrical pin ø10x35	2
25	DIN 913	Stud M6x155	2
26	DIN 125	Flat washer ø6	2
27	DIN 934	Nut M6	2
28	DIN 912	Allen screw M10x80	5
29	12.02.11541	Pulley 34-5M 25	1
30	DIN 6885	Key 6x6x30	1
31	MO-125	YASKAWA .9KW motor	1
32	DIN 933	Hexagonal screw M10x35	4
33	DIN 7984	Allen screw M8x50	1
34	10.02.11044	Bushing	1
35	DIN 472	Cir clip J35	1
36	DIN 625	Bearing 6202 - 2RS	1
37	12.02.11584	Belt tightener roller	1
38	12.02.11044	Bushing tightener	1
39	08.03.00583	Plate	1
40	12.02.11046	Supplement bushing	1
41	DIN 933	Hexagonal screw M10x25	1
42	DIN 912	Allen screw M6x25	1
43	12.02.11121	End tightener	1
44		Leadscrew protection guard	1
45	ISO 7380	Round headed Allen screw M6x15	4/6
46		Fanuc Motor	1
47		Half round key	1
48	12.02.11547	Pulley 34-5M 25	1



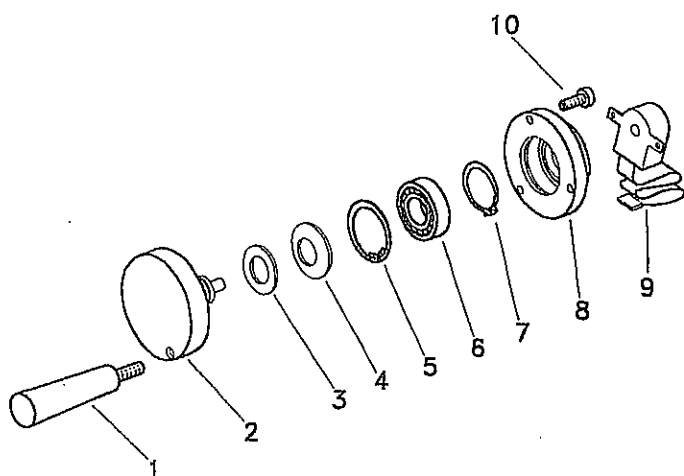
Item	Part N°	Description		Item	Part N°	Description	Quant
1	12.05.00504	Cross slide	1	54	ISO 7380	Allen screw M5x15	2
2	DIN 912	Allen screw M8x35	4	55	ISO 7380	Allen screw M6x15	14
3	DIN 7984	Allen screw M5x15	6	56	12.05.11140	Motor protection left guard	1
4	08.05.00605	Rear cross slide wiper	1	57	12.05.11090	Fastening nut	1
5	01.05.01061	Adjustment gib screw	2	58	12.05.11115	Pulley 26–5M 25	1
6	12.05.00541	Cross slide gib	1	59	BT-91	Belt 565–5M25	1
7	08.05.00604	Front cross–slide wiper	1	60	12.05.11112	Motor fastening plate	1
8	DIN 6885	Key 5x5x20	1	61	DIN 6885	Key 6x6x30	1
9	12.05.10501	Ball screw MPL-665/MPL-810	1	62	DIN 912	Allen screw M8x20	4
10	DIN 912	Allen screw M5x15	4	63	DIN 7991	Countersunk screw Allen M6x20	1
11	DIN 912	Allen screw M6x45	4	64	12.05.11043	Washer	1
12	12.05.11103	Rubber washer	1	65	12.05.11114	Pulley 26–5M 25	1
13	12.05.10585	Rear stop	1	66	MO-123	Yaskawa .5KW motor	1
14	12.05.01002	Nut support for ball screw	1	67	12.05.11118	Motor protection right guard	1
15	12.05.11104	Front stop	1	68	12.05.11082	Motor protection front guard	1
16	DIN 912	Allen screw M8x30	2				
17	12.05.10597	Ball screw stop	1				
18	DIN 3760	O–ring 20x30x5	2				
19	DIN 628	Ball bearing 7202 CTDUH P4V	2	70	ISO 7380	Allen screw M6x15	14
20	12.05.11046	Separator bearing bushing	7	71	12.05.11122	Motor protection left guard	1
21	12.05.11092	Screw support	1	72	DIN 934	Hexagonal nut M6	2
22	DIN 912	Allen screw M4x15	6	73	12.05.11119	Motor protection guard	1
23	DIN 912	Allen screw M6x20	8	74	12.05.11124	Fastening nut	1
24	01.05.00553	Prism metal plate	2	75	12.05.11125	Pulley 26–5M 25	1
25	01.05.00539	Left V–wiper	1	76	BT-91	Belt 565–5M25	1
26	DIN 912	Allen screw M10x50	4	77	DIN 934	Hexagonal nut M10	1
27	01.04.00049	Apron pin	2	78	12.05.01092	Washer	1
28	12.05.10503	Longitudinal carriage	1	79	12.05.11110	Pulley 26–5M 25	1
29	01.05.00554	Straight metal plate	1	80		Key shank	1
30	01.05.00536	Rubber left flat wiper	1	81		Fanuc motor	1
31		Safety micro tailstock	1	82	12.05.11112	Motor fastening plate	1
32	ISO 7380	Allen screw M4x25	2	83	12.05.11113	Motor centring washer	1
33	01.05.00537	Rubber right flat wiper	1	84	DIN 912	Allen screw M10x25	4
34	01.05.00538	Right V–wiper	1	85	12.05.11123	Motor protection right guard	1
35				86	12.05.01105	Motor protection front guard	1
36							
37							
38	01.05.00526	Carriage rear gib	1				
39	DIN 933	Hexagonal screw M10x35	4				
40							
41							
42							
43	01.05.00527	Carriage front gib	1				
44	DIN 912	Allen screw M8x25	5				
45	12.02.11033	Screw nut support	1				
46	DIN 912	Allen screw M5x35	2				
47	12.05.01058	Oil distribution valve	1				
48	12.05.11137	Lubrication unit cover	1				
49		Centralized lubrication unit	1				
50	12.05.11138	Washer	2				
51	ISO 7380	Allen screw M8x25	2				
52	12.05.11139	Lubrication unit guard	1				
53	DIN 934	Hexagonal nut M5	2				



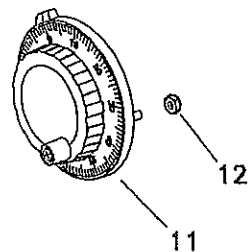
X AXIS

AGO-00

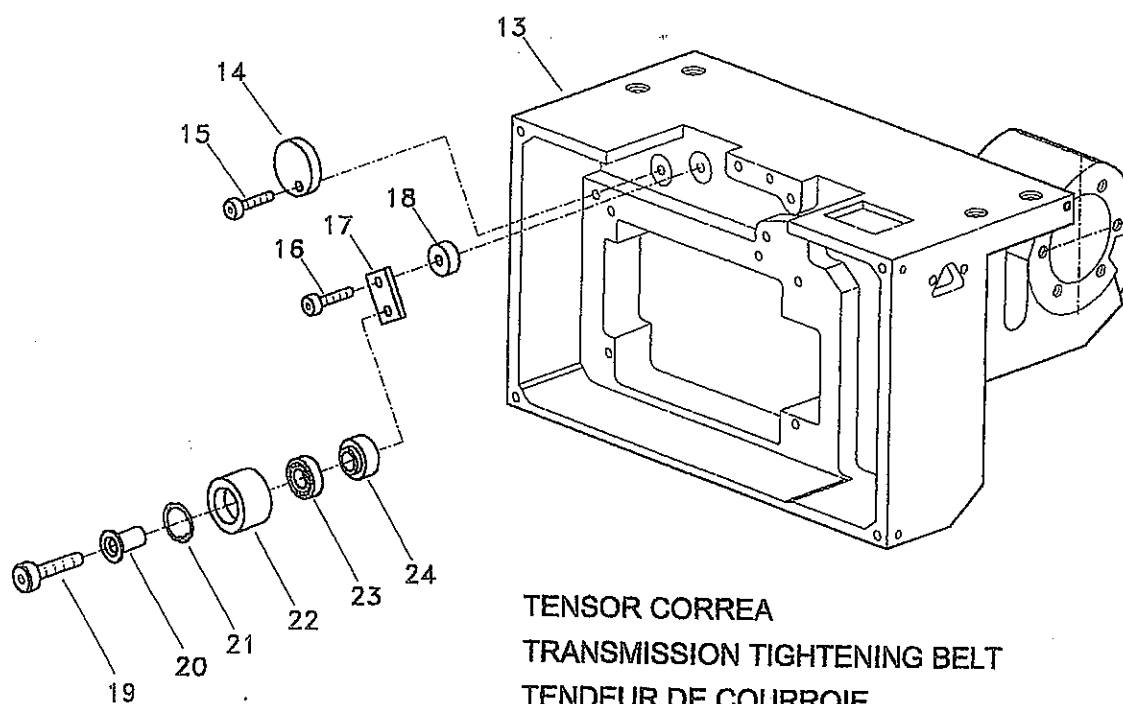
- 40 -



VOLANTES METOSA Z Y X
 Z & Y METOSA HANDWHEELS
 VOLANTS METOSA Z, X
 METOSA HANDRÄDER Z UND X
 VOLANTES METOSA Z E X



VOLANTES FAGOR Z Y X
 Z & Y FAGOR HANDWHEELS
 VOLANTS FAGOR Z, X
 FAGOR HANDRÄDER Z UND X
 VOLANTES FAGOR Z E X



TENSOR CORREA
 TRANSMISSION TIGHTENING BELT
 TENDEUR DE COURROIE
 TREIBRIEMENSANNER
 TENSOR DA CORREIA

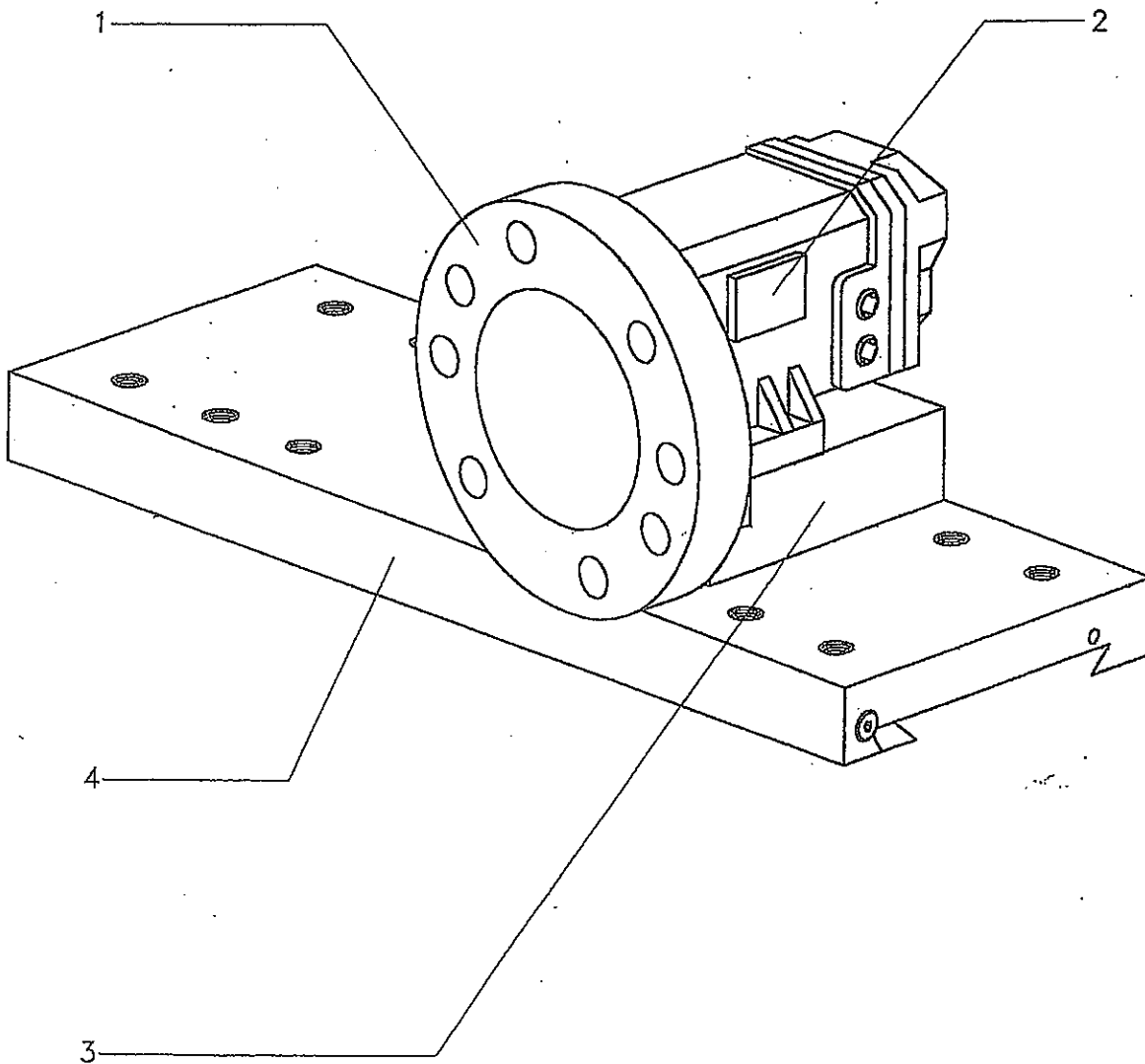
MT99275 I

AUTOMATIC TOOLPOST

CNC* -05/3

NOV-99

Item	Part N°	Description	Amo.
1	230-05-57	Toolholder disc DF1-20-145-8-B-08-S	1
2	230-05-58	Baruffaldi toolpost TOE-80 (8 POSITIONS)	1
2	230-05-59	Duplomatic toolpost BSV-N80 (8 POSITIONS)	1
3	12.05.00543	Toolpost base (180)	1
4	12.05.00504	Cross-slide carriage	1

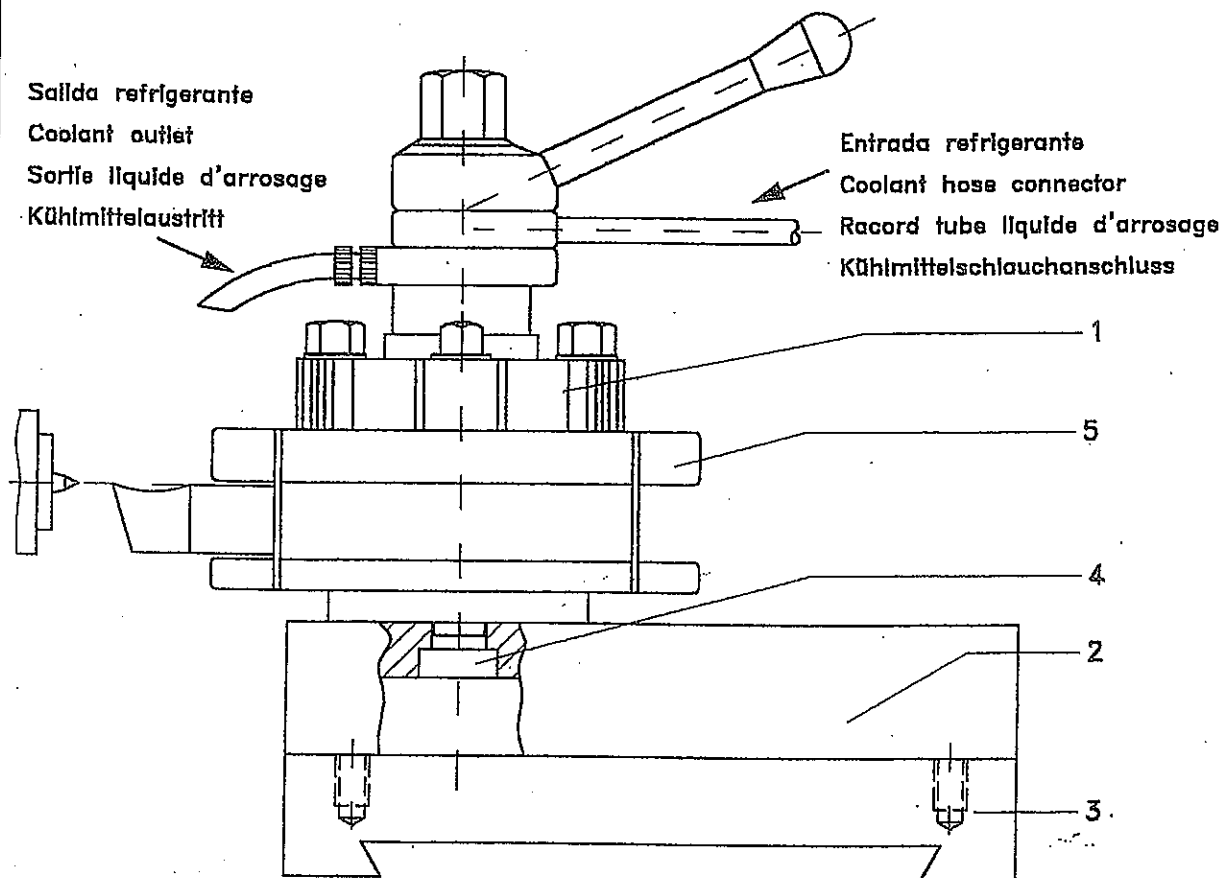


MT99276 |
CNC° -05/4

RAPID CHANGE TOOLPOST

NOV-99

Item	Part N°	Description	Amo.
1	230-05-60	ALGRA toolpost TGA-R-200	1
2			1
2	12.05.00558	Toolpost base (180)	1
3	12.05.00504	Crossslide carriage	1
4			1
4	12.05.00559	Shaft toolpost (180)	1
5	240-05-17	Tool holder	1

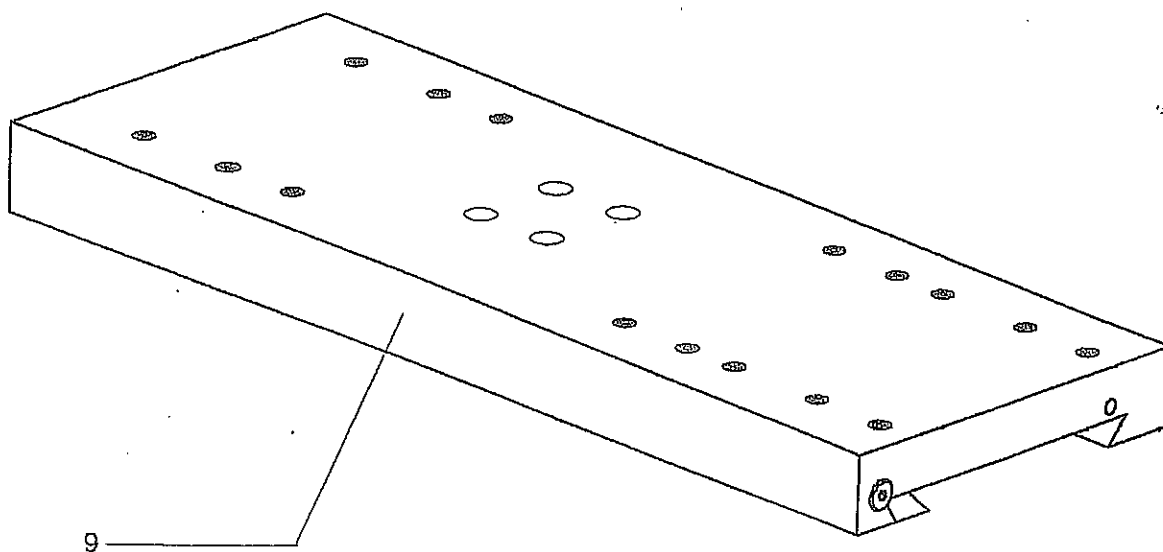
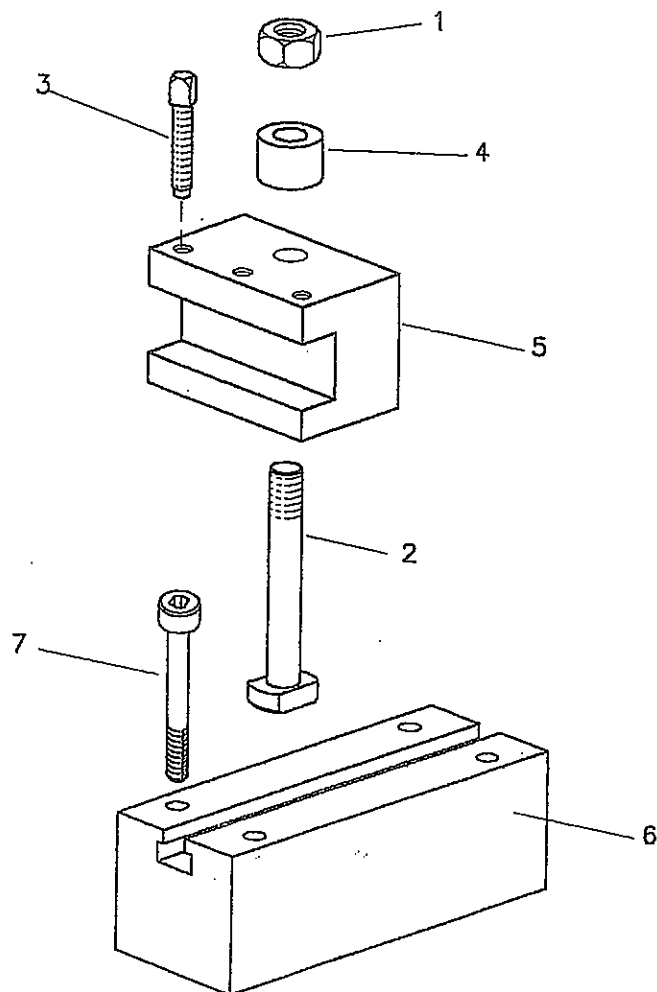


MT96171
CNC--05/5

MANUAL TOOLPOST

JUL-99

Item	Part N°	Description	Amo.
1	DIN 934	Nut M14	1
2	12.05.00528	Toolpost stud	1
3	12.05.00530	Tool fastening screw	3
4	12.05.00529	Bush	1
5	12.05.00525	Toolholder block	1
6	12.05.00523	Toolpost base (165)	1
6	12.05.00532	Toolpost base (180)	1
7	DIN 912	Allen screw M8x50 (165)	4
7	DIN 912	Allen screw M8x65 (180)	4
8			
9	12.05.00504	Crosslide carriage	1



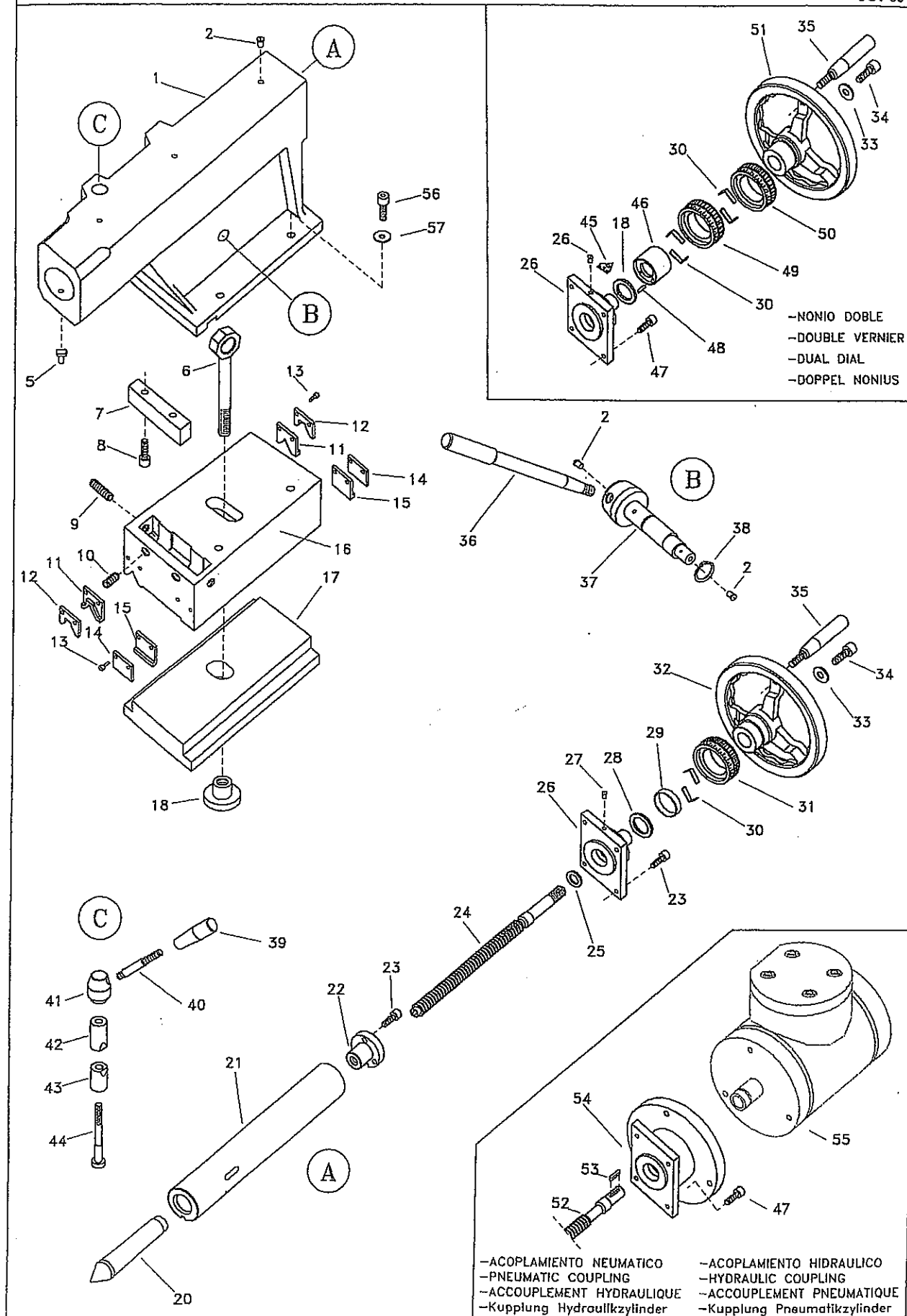
MT00342 I

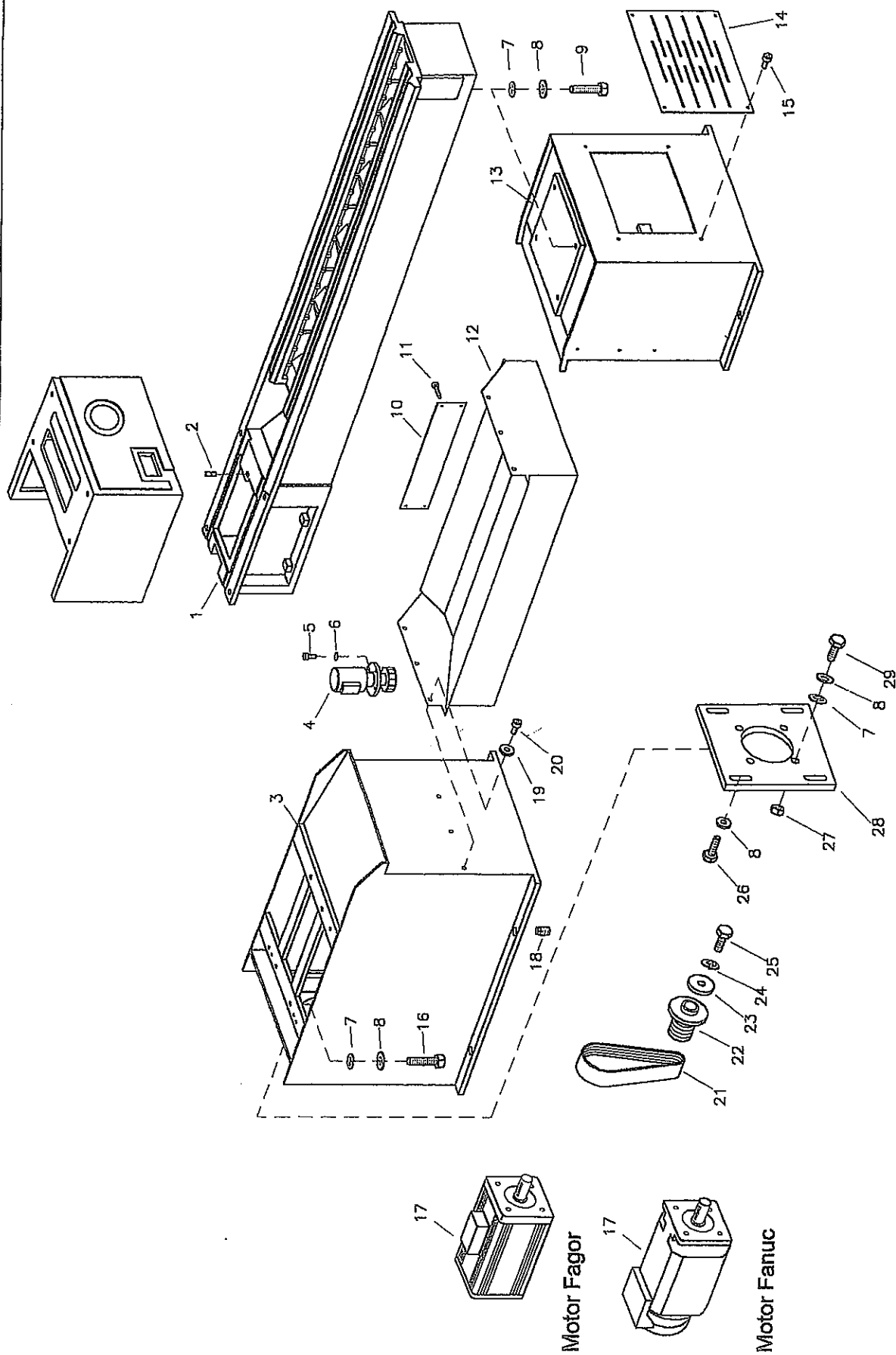
TAILSTOCK

OCT-00

Item	Pieza n°	Descripción	Cant.	Item	Pieza n°	Descripción	Cant.
1	12.07.00501	Tailstock framework	1	50	01.07.00544	Vernier h/h TPI version	1
2		Ball oiler ø6	6	50	01.07.05460	Vernier m/h TPI version	1
3				51	01.07.00541	Double vernier handwheel	1
4				52	12.07.00507	Tailstock screw mm version	1
5	01.07.00516	Shank key	1	52	12.07.00509	Tailstock screw T.P.I. version	1
6	01.07.05020	Lock screw Cobra	1	53	DIN 6885	Key 20x6x6	1
7	01.07.00528	Centering gib	1	54	12.07.00502	Pneumatic cylinder coupling	1
8	DIN 912	Allen screw M8x20	2	54	12.07.00503	Hydraulic cylinder coupling	1
9	DIN 914	Centering grub screw M10x30	2	55		Pneumatic cylinder	1
10	DIN 914	Attachment grub screw M10x15	2	55		Hydraulic cylinder	1
11	01.07.00524	Square bedwipers	2	56	DIN 912	Allen screw M10x35	2
12	01.07.00526	Square bedwipers plate	2	57	DIN 125	Washer ø10	2
13	DIN 912	Allen screw M4x12	8				
14	01.07.01027	Flat bedwipers plate	2				
15	01.07.01025	Flat bedwipers	2				
16	01.07.05002	Tailstock base Cobra	1				
17	01.07.00503	Attaching flange	1				
18	01.07.00522	Lock nut	1				
19							
20	01.07.00530	Fixed centre	1				
21	12.07.00504	Tailstock shank	1				
22	01.07.00505	Barrel nut mm version	1				
22	01.07.00545	Barrel nut T.P.I. version	1				
23	DIN 912	Allen screw M6x15	7				
24	12.07.00506	Tailstock screw mm version	1				
24	01.07.00546	Tailstock screw T.P.I. version	1				
25	DIN 5405	Axial bearing (WSB1103+AXK1730+AS1730)	1				
26	01.07.00507	Screw support	1				
27							
28	DIN 5405	Axial bearing (AXK2542)	1				
29	01.07.00509	Wheel bushing	1				
30	01.05.00060	Strip spring	4/8				
31	01.07.00508	Vernier mm version	1				
31	01.07.00547	Vernier T.P.I. version	1				
32	01.07.00510	Tailstock handwheel	1				
33	08.07.01050	Washer	1				
34	DIN 912	Allen screw M10x20	1				
35	01.04.00020	Wheel handle	1				
36	01.07.00518	Eccentric clamp handle	1				
37	01.07.00517	Eccentric clamp	1				
38	DIN 471	Spring ring 25x1,2	1				
39	01.01.00124	Handle knob	1				
40	01.01.00047	Barrel lock handle	1				
41	01.07.00514	Barrel lock knob	1				
42	01.07.00513	Barrel lock bushing	1				
43	01.07.00512	Barrel lock bushing	1				
44	01.07.00511	Barrel lock screw	1				
45		"0" Indicator	1				
46	01.07.00542	Double vernier handwheel bushing	1				
47	DIN 912	Allen screw M6x20	4				
48	DIN 7343	Spring pin ø4x15	1				
49	01.07.00543	Vernier m/m	1				
49	01.07.05450	Vernier h/m	1				

Tailstock limit switch SW-275

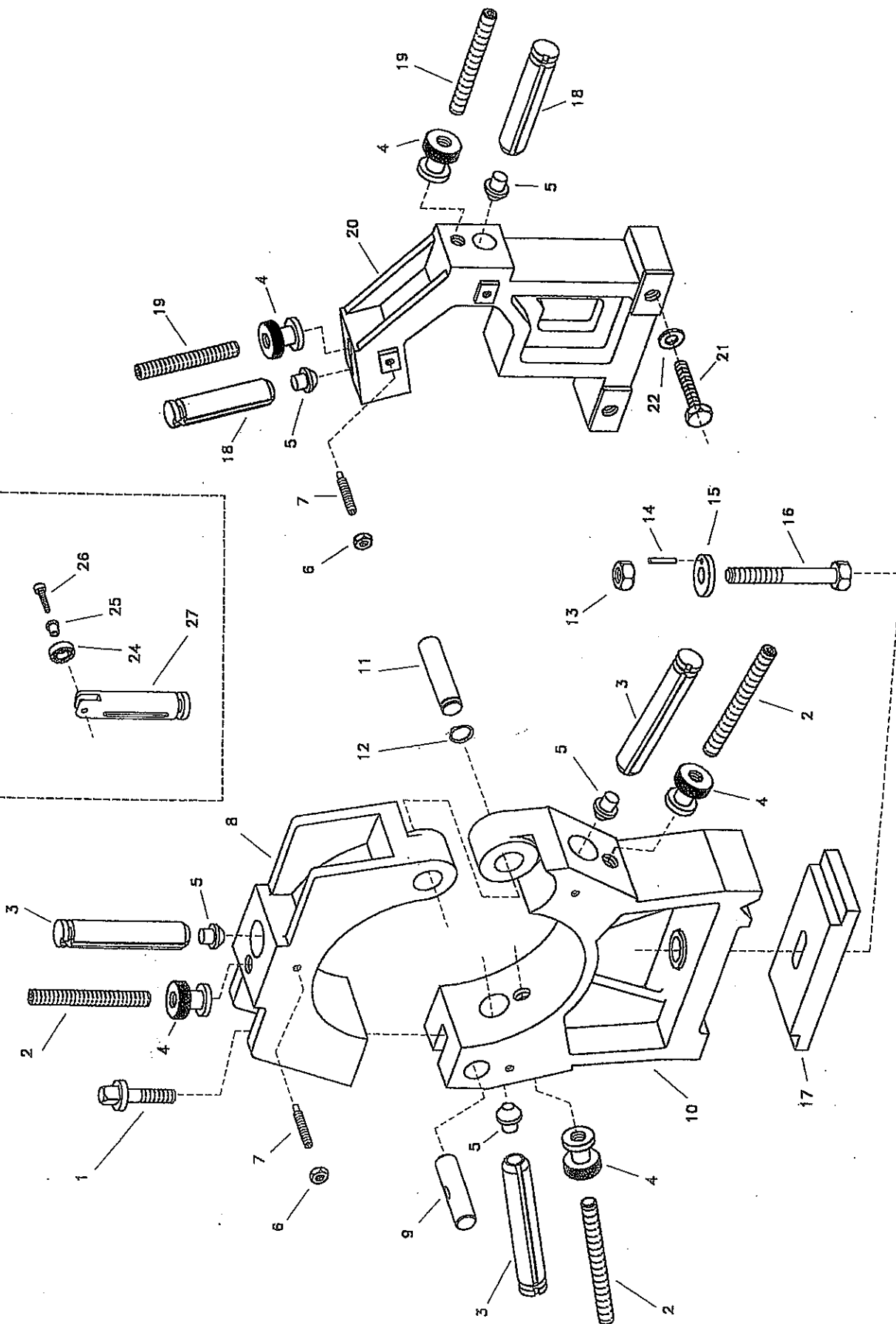




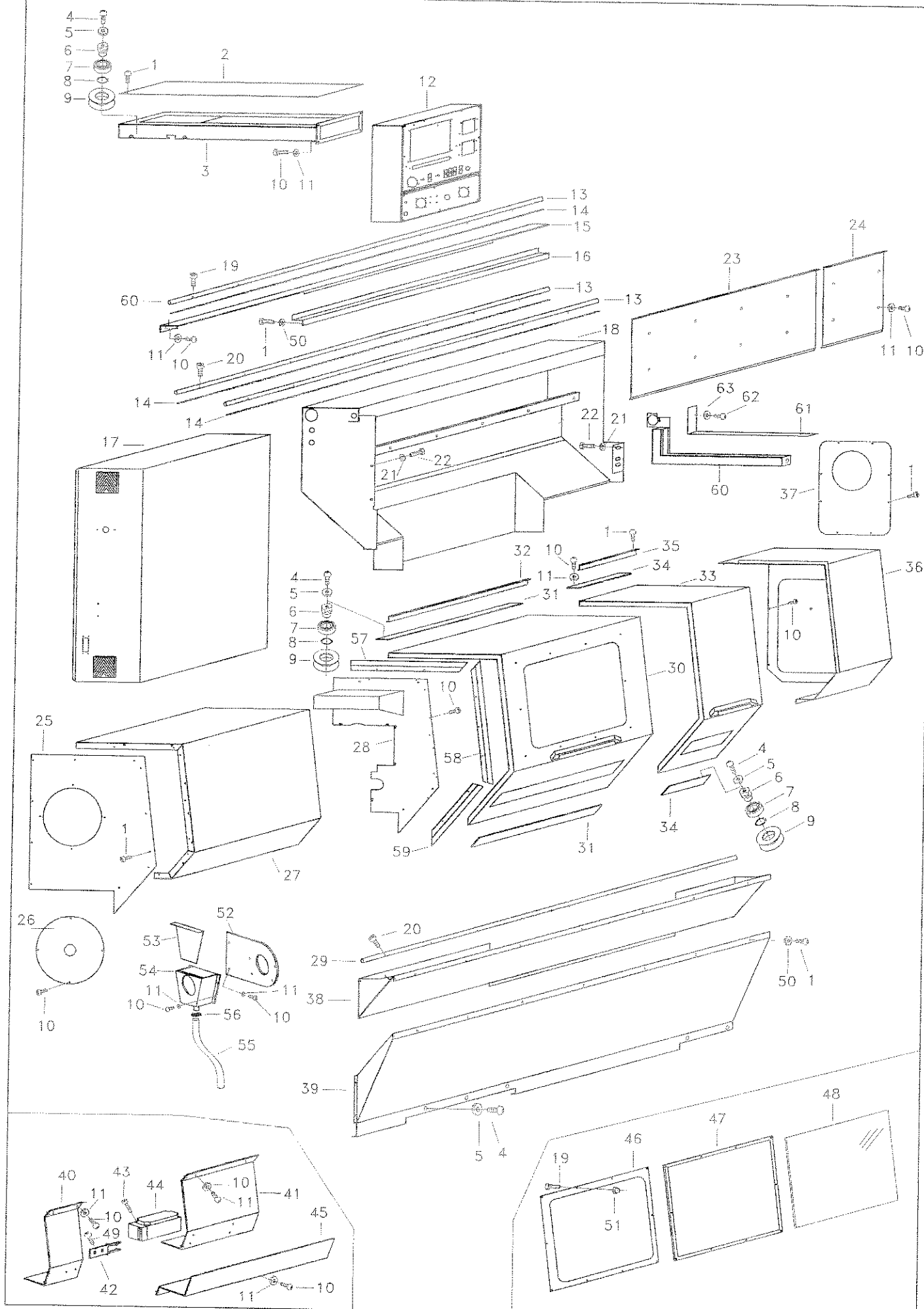
Cobra-09

ENE-00

- 54 -



Item	Part N°	Description	Amo.	Item	Part N°	Description	Amo.
1	ISO 7380	Round headed screw M5x10	49	52	15.08.00740	Receptor support of coolant	1
2	15.08.00700	Monitor arm cover	1	53	15.08.00741	Receptor cover of coolant	1
3	15.08.00701	Monitor arm	1	54	15.08.00742	Receptor of coolant	1
4	ISO 7380	Round headed screw M8x15	37	55		Tubo retorno taladrina	1
5	DIN 125	Flat washer ø8	37	56		Clamp	2
6	17.55.01004	Rear bearing shaft	32	57	15.08.00745	Profile of rubber	1
7		Bearing 6200 - 2RS	32	58	15.08.00746	Profile of rubber	1
8	DIN 471	Cir clip 10x1	32	59	15.08.00747	Profile of rubber	1
9	15.08.00005	Sliding wheels	32	60	15.08.00748	Wire guard	1
10	ISO 7380	Round headed screw M6x10	80	61	15.08.00749	Wire guard cover	1
11	DIN 125	Flat washer ø6	57	62	ISO 7380	Round headed screw M4x10	12
12	15.08.00702	Monitor cabinet	1	63	DIN 125	Flat washer ø4	12
13	15.08.00119	Countersunk bar guard	3				
14	15.08.00705	Bar guard supplement	3				
15	15.08.00707	Bar guard support	1				
16	15.08.00709	Chain rear guard support	1				
17	15.08.00710	Electric cabinet	1				
18	15.08.00712	Rear guard	1				
19	DIN 912	Allen screw M6x20	18				
20	DIN 912	Allen screw M6x25	24				
21	09.01.00517	Washer	5				
22	DIN 933	Hexagonal screw M12x20	5				
23	15.08.00715	Left rear guard cover	1				
24	15.08.00716	Right rear guard cover	1				
25	15.08.00717	Left headstock cover	1				
26	15.08.00718	Cover	1				
27	15.08.00719	Headstock guard	1				
28	15.08.00720	Right headstock cover	1				
29	15.08.00120	Threaded bar	1				
30	15.08.00721	Left door	1				
31	15.08.00722	Left sliding shaft support	2				
32	15.08.00723	Left sliding wheels cover	1				
33	15.08.00724	Right door	1				
34	15.08.00725	Right sliding shaft support	2				
35	15.08.00726	Right sliding wheels cover	1				
36	15.08.00728	Tailstock guard	1				
37	15.08.00729	Tailstock guard cover	1				
38	15.08.00731	Drip plate	1				
39	15.08.00733	Front skirt	1				
40	15.08.00734	Left safety micro support	1				
41	15.08.00735	Right safety micro support	1				
42		Safety micro (B)	1				
43	DIN 912	Allen screw M5x40	4				
44		Safety micro (A)	1				
45	15.08.00736	Chain support	1				
46	15.08.00737	Polycarbonate glass guard 2mm	1				
47	15.08.00738	Polycarbonate glass guard 8mm.	1				
48	15.08.00739	Polycarbonate glass	1				
49	ISO 7380	Round headed screw M5x16	2				
50	DIN 125	Flat washer ø5	12				
51		Nut	10				



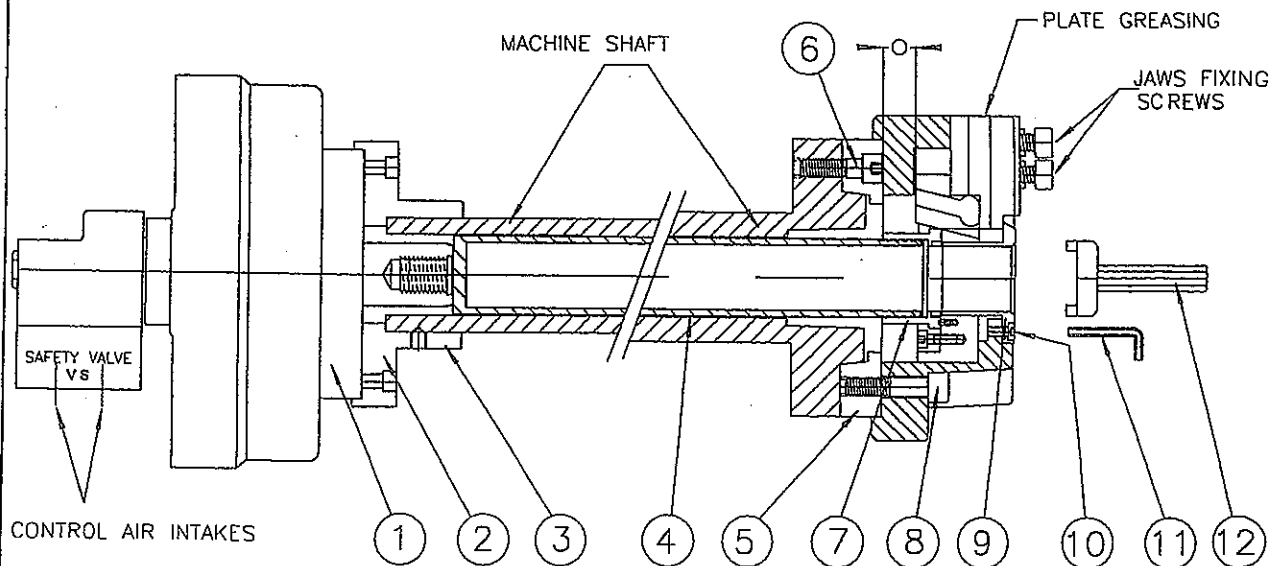
CYLINDERS AND PLATES HYDRAULIC AND PNEUMATIC

M-15

MOUNTING OF CYLINDER WITHOUT CENTRAL PASS AND PLATE WITH CENTRAL PASS

PNEUMATIC CYLINDER Mod. R.

PLATES Mod. HUSL-NHF-NHS



RECOMMENDATIONS FOR MOUNTING

- A PUT AND TIGHTEN THE TUBE ④ THREAD TO THE CYLINDER SHAFT ①
INTRODUCE THE TUBE ④ JOINED TO THE CYLINDER THROUGH THE MACHINE SHAFT.
- B PUT AND TIGHTEN THE SCREWS ② OF ADAPTER ③ WITH CYLINDER ①
- * C FIX THE PLATE-HOLDER ⑤ TO THE MACHINE SHAFT BY MEANS OF THE SCREWS.
- D REMOVE THE PROTECTION COVER ⑨ OF SCREWS ⑩
FROM THE PLATE SO AS TO BE ABLE TO OPERATE THE REGULATOR ⑥
- E THEN PUT THE PLATE ON THE PLATE-HOLDER ⑤ WHILE THREADING
THE REGULATOR ⑦ TO THE TUBE ④ BY MEANS OF THE WRENCH ⑫
UNTIL THE PLATE BASE FITS IN THE PLATE-HOLDER ⑤ SEAT ADJUSTING AT THE SAME TIME
THE JAWS STROKE WITH THE CYLINDER STROKE ①
- F PUT AND TIGHTEN THE SCREWS ⑧ WITH A MODERATE PRESSURE IN ORDER TO FIX
THE PLATE AND AVOID SO ITS EVENTUAL DEFORMATION
- G PUT THE PROTECTION COVER ⑨ AND FIX IT WITH THE SCREWS ⑩ BY MEANS OF THE WRENCH ⑫
- * WHEN THE DIMENSIONS OF THE MACHINE SHAFT SCREWS COINCIDE WITH THOSE
OF THE PLATE CHOSEN, THE PLATE-HOLDER ⑤ CAN BE MOUNTED ATTACHED TO THE PLATE
WITHOUT USING THE SCREWS ⑥

THE PLATE IS READY TO MOUNT THE JAWS AND OPERATE.

DISMOUNT BY REVERSING THE ABOVE STEPS

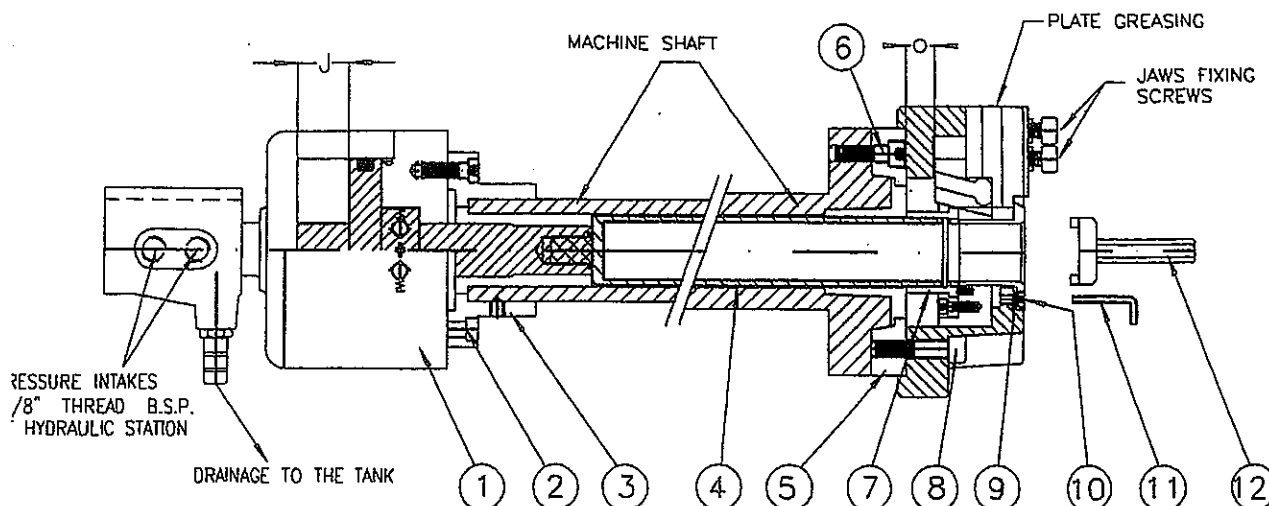
CYLINDERS AND PLATES HYDRAULIC AND PNEUMATIC

M-17

MOUNTING OF CYLINDER WITHOUT CENTRAL PASS AND PLATE WITH CENTRAL PASS

CYLINDER Mod. RHV

PLATES



RECOMMENDATIONS FOR MOUNTING

- A PUT AND TIGHTEN THE TUBE ④ THREAD TO THE CYLINDER SHAFT ①
INTRODUCE THE TUBE ④ JOINED TO THE CYLINDER THROUGH THE MACHINE SHAFT.
- B PUT AND TIGHTEN THE SCREWS ② OF ADAPTER ③ WITH CYLINDER ①
- * C FIX THE PLATE-HOLDER ⑤ TO THE MACHINE SHAFT BY MEANS OF THE SCREWS.
- D REMOVE THE PROTECTION COVER ⑨ OF SCREWS ⑩
FROM THE PLATE SO AS TO BE ABLE TO OPERATE THE REGULATOR ⑥
- E THEN PUT THE PLATE ON THE PLATE-HOLDER ⑤ WHILE THREADING
THE REGULATOR ⑦ TO THE TUBE ④ BY MEANS OF THE WRENCH ⑫
UNTIL THE PLATE BASE FITS IN THE PLATE-HOLDER ⑤ SEAT ADJUSTING AT THE SAME TIME
THE JAWS STROKE WITH THE CYLINDER STROKE ①
- F PUT AND TIGHTEN THE SCREWS ⑧ WITH A MODERATE PRESSURE IN ORDER TO FIX
THE PLATE AND AVOID SO ITS EVENTUAL DEFORMATION
- G PUT THE PROTECTION COVER ⑨ AND FIX IT WITH THE SCREWS ⑩ BY MEANS OF THE WRENCH ⑪
- * WHEN THE DIMENSIONS OF THE MACHINE SHAFT SCREWS COINCIDE WITH THOSE
OF THE PLATE CHOSEN, THE PLATE-HOLDER ⑤ CAN BE MOUNTED ATTACHED TO THE PLATE
WITHOUT USING THE SCREWS ⑥

THE PLATE IS READY TO MOUNT THE JAWS AND OPERATE.

DISMOUNT BY REVERSING THE ABOVE STEPS

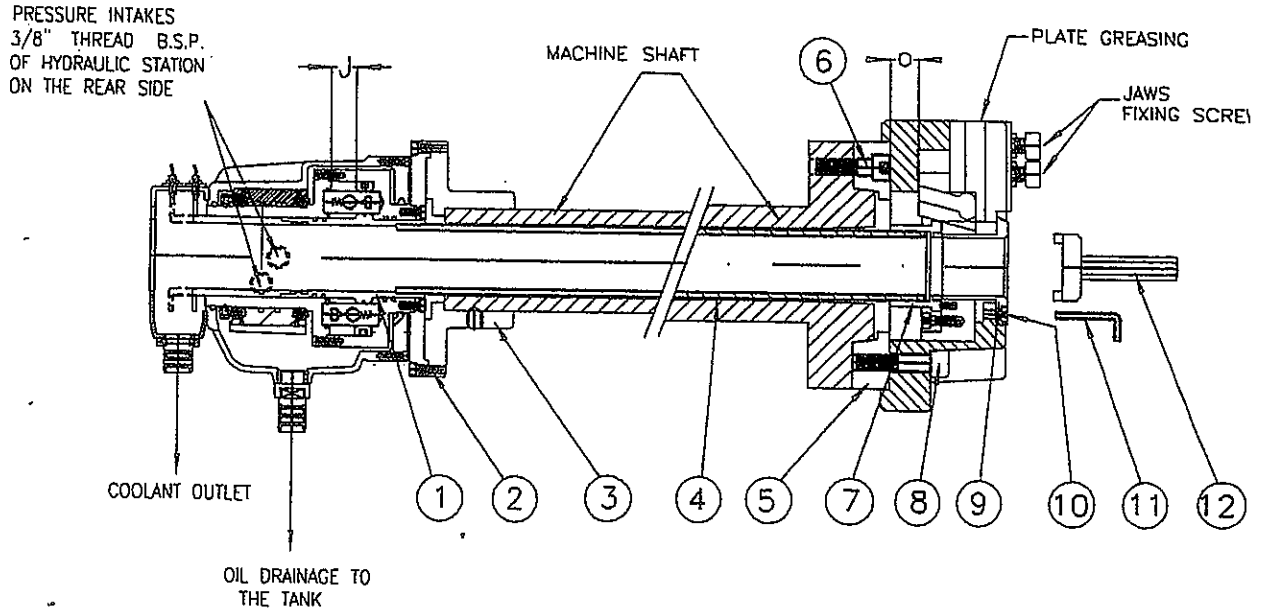
CYLINDERS AND PLATES HYDRAULIC AND PNEUMATIC

M-2

MOUNTING OF CYLINDER WITH CENTRAL PASS AND PLATE WITH CENTRAL PASS

CYLINDER Mod. BHV-M

PLATES Mod. HUSL-NHF-NHS



RECOMMENDATIONS FOR MOUNTING

- A PUT AND TIGHTEN THE TUBE (4) THREAD TO THE CYLINDER SHAFT (1)
INTRODUCE THE TUBE (4) JOINED TO THE CYLINDER THROUGH THE MACHINE SHAFT.
- B PUT AND TIGHTEN THE SCREWS (2) OF ADAPTER (3) WITH CYLINDER (1)
- * C FIX THE PLATE-HOLDER (5) TO THE MACHINE SHAFT BY MEANS OF THE SCREWS.
- D REMOVE THE PROTECTION COVER (9) OF SCREWS (10)
FROM THE PLATE SO AS TO BE ABLE TO OPERATE THE REGULATOR (6)
- E THEN PUT THE PLATE ON THE PLATE-HOLDER (5) WHILE THREADING
THE REGULATOR (7) TO THE TUBE (4) BY MEANS OF THE WRENCH (12)
UNTIL THE PLATE BASE FITS IN THE PLATE-HOLDER (5) SEAT ADJUSTING AT THE SAME TIME
THE JAWS STROKE WITH THE CYLINDER STROKE (1)
- F PUT AND TIGHTEN THE SCREWS (8) WITH A MODERATE PRESSURE IN ORDER TO FIX
THE PLATE AND AVOID SO ITS EVENTUAL DEFORMATION
- G PUT THE PROTECTION COVER (9) AND FIX IT WITH THE SCREWS (10) BY MEANS OF THE WRENCH (11)
- * WHEN THE DIMENSIONS OF THE MACHINE SHAFT SCREWS COINCIDE WITH THOSE
OF THE PLATE CHOSEN, THE PLATE-HOLDER (5) CAN BE MOUNTED ATTACHED TO THE PLATE
WITHOUT USING THE SCREWS (6)

THE PLATE IS READY TO MOUNT THE JAWS AND OPERATE.

DISMOUNT BY REVERSING THE ABOVE STEPS

A - CHANGING THE "X" AXIS BELT AND ENCODER

- Wind the carriage to the position of the inspection window situated at the right hand side of the front fixed protection.
- Switch off the electrical supply to the machine before proceeding any further.
- Remove the inspection window guard and the apron front cover to gain access to the inside of the apron.
- Remove the encoder (1) in accordance with the manufacturer instructions (page 76 of instruction book).
- To remove or replace the belt: slacken the belt screws number 19 and 26 (page 41) and Remove cover number 17 (page 39) and remove/replace the belt and assemble in reverse order.

B - CHANGING THE "Z" AXIS BELT AND ENCODER

- Remove the Aluminium cover on the front of the headstock.
- Remove the sheet metal "Z" axis motor guard (3 screws) to gain access to the encoder and belt.
- Remove the encoder (2) as per the manufacturers instructions (page 76 of instruction book).
- To remove or replace the belt: slacken the motor securing screws and remove cover number 7 (page 35) and remove/replace the belt and assemble in reverse order.

C - CHANGING THE MAIN MOTOR BELT AND HEADSTOCK ENCODER

- Remove the rear headstock cover item number 2 page 53.
- Remove the base louvre guard item 13 page 53.
- Remove the encoder as per the manufacturers instructions (page 76 of instruction book).
- To remove or replace the belt follow the transmission belt adjustment page 19 to slacken/tighten/replace the belt.

D - CHANGING THE "X" AND "Z" AXIS MANUAL HANDWHEEL ENCODER

- Remove the handwheel support cover for access to the encoders (4-5). Change encoders as per manufacturers instructions (page 76 of instruction book).

USE MOBILITH AW SERIES MULTIPURPOSE EP GREASE OR OTHER EQUIVALENT FOR ALL LUBE POINTS.

MOBILITH AW SERIES, MULTIPURPOSE EP GREASE	
PRODUCT NUMBER	64352-8
NLGI GRADE	1
COLOR	GREEN
STRUCTURE	SMOOTH/TACKY
SOAP TYPE	LITHIUM COMPLEX
MINERAL OIL VISCOSITY	
cST AT 40°C	150
cST AT 100°C	13
SUS AT 100°F	750
SUS AT 210°F	70
ISO VISCOSITY GRADE	150
PENETRATION AT 23°C (77°F), WORKED	325
DROPPING POINT, ASTM D 2265, °F	475
TIMKEN OK LOAD, ASTM D 2509, lb	40
FOUR-BALL EP TEST, ASTM D 2596,	
WELD LOAD, kg	250
LOAD WEAR INDEX	40
FOUR-BALL WEAR TEST, ASTM D 2266,	
SCAR DIAMETER, mm, MAX	0.5
CORROSION PREVENTION, ASTM D 1743	PASS
WHEEL BEARING TEST, ASTM D 4290	
MODIFIED, LEAKAGE, GRAM	5

MACHINES WITH 15,000 RPM AIR/OIL OPTION
USE MOBIL OIL DTE 24, OR EQUIVALENT
QUALITY SPINDLE OIL.

MOBIL DTE 24	
PRODUCT NUMBER	60262-3
98 CMCS CODE (ORUM)	98020E
SPECIFIC GRAVITY	0.871
POUR POINT, °C (°F), max	-18 (0)
FLASH POINT, °C (°F), min	200 (392)
VISCOSITY	
cST AT 40°C	32
cST AT 100°C	5.3
SUS AT 100°F	165
SUS AT 210°F	44
ISO VISCOSITY GRADE	32
VISCOSITY INDEX	95
RUST PROTECTION,	
ASTM D 665, A & B	PASS
COLOR, ASTM D1500, max	3.5
FZG GEAR TEST STAGES	12
PASSED DIN 51534	

MACHINES WITH AUTOLUBE OPTION USE MOBIL OIL
VACTRA 2, AMOCO WAYTAC No. 68, SUNOCO SUNWAY
LUBE No. 1180, OR EQUIVALENT QUALITY WAY OIL.

MOBIL VACTRA OIL No. 2	
PRODUCT NUMBER	60049-4
SPECIFIC GRAVITY, 60/60F	0.88
POUR POINT, °C (°F), max.	-9 (16)
FLASH POINT, °C (°F), min.	244 (472)
VISCOSITY	
cST AT 40°C	68
cST AT 100°C	8.6
SUS AT 100°F	356
SUS AT 210°F	55
VISCOSITY INDEX	97
ISO VG	68
COLOR, ASTM D 1500	4
FZG, PASS STAGES	11
4 BALL WELD, kg, ASTM D 2783	160
4 BALL WEAR, mm, ASTM D 4172	0.22
COPPER CORROSION, ASTM D 130	1B
RUST, D665A	PASS
VICKERS V-104C, mg D 2882 (MOD)	-
CMCO, P-SPEC, APPROVAL	P-47
BIJUR PT 37-1 APPROVAL	PASS
OKUMA APPROVAL	PASS

CLEAN AND FILL AIR FILTER / REGULATOR / OILER EVERY
WEEK FOR PROPER OPERATION OF ALL PNEUMATIC PARTS
FILL WITH MOBIL VELOCITE No. 10 OR OTHER EQUIVALENT
QUALITY AIR TOOL OIL.

MOBIL VELOCITE OIL No. 10	
PRODUCT NUMBER	60068-4
GRAVITY, API	32.0
POUR, °C (°F), max.	-4 (25)
FLASH, °C (°F), min.	182 (360)
VISCOSITY	
cST AT 40° C	22.0
cST AT 100° C	4.0
SUS AT 100° F	115
SUS AT 210° F	40
ISO VG	22
VISCOSITY INDEX	95
COLOR, ASTM D 1500	2.0
RUST PROTECTION, ASTM D 665	PASS
CINCINNATI MILACRON SPECIFICATION	P-45

REV.	DESCRIPTION		E.C.O. NO.	APP'D BY	DATE
 1400 HILL LANE VACONIA, NY 05387 USA	TITLE	MB/RH LUBRICATION DRAWING	SCALE 15:1	DWG No. 6-10-032-016	SIZE B
	APPLICATION	SOLID WAYS BED MILL	DATE 20 SEP 00	DRAWN BY DAHLKE	SHEET NO. 1 OF 1

