



Operation Manual & Parts List For ML21

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metosa



SYMBOL OF PRECISION

DESCRIPTION

CAPACITY

Centre height.....

Distance between centres.....

Swing over bed.....

Swing over carriage.....

Swing over crossslide.....

Bed width.....

HEADSTOCK

Main spindle bore.....

Main spindle nose.....

Main spindle taper.....

N° speed ranges.....

Variable spindle speed r.p.m.

(1ª game)

(2ª game)

FEEDS

Z,X working feed (mm/min.).....

Z,X rapid motion (m/min.).....

TAILSTOCK

Tailstock shank diameter.....

Tailstock shank travel.....

Tailstock taper.....

MOTORS

Main motor power in Kw.....

Power of Z axis motor, C.A. in Nm.....

Power of X axis motor, C.A. in Nm.....

Pump motor power in Kw.....

STEADIES

Max-min. capacity of fixed steady.....

Max-min. capacity of fixed steady.....

Max-min. capacity of travelling steady.....

Taurus-260**Taurus-310**

mm.

mm.

260

310

1000-1500
2000-30001000-1500
2000-3000

530

620

475

580

315

415

350

350

80

80

CAMLOCK-nº8
DIN 55027-nº8CAMLOCK-nº8
DIN 55027-nº8

5

5

2

2

0-625
625-25000-625
625-25000-7000
100-7000
10

72

72

180

180

5

5

11

11

7.9

7.9

3.9

3.9

0,57

0,57

10-185
100-300
10-12510-185
100-300
10-125**MAXIMUM ADMITTED DIAMETER IN TURNING AND GRINDING DEPENDING ON TURRET**

MODELO	AUTOMATIC TURRET BARUFALDI	RAPID CHANGE TURRET ALGRA	MANUAL TURRET	MODELO BARUFALDI	MODELO ALGRA
	ØMAX. ADMIT.	ØMAX. ADMIT.	ØMAX. ADMIT.		
Taurus-260	445	475	475	BARUFALDI TS-160 DISCO DFI-30-295-8+90-B-16-S	TGA-R-250
Taurus-310	445	530	580		

Mod. *Taurus 260*

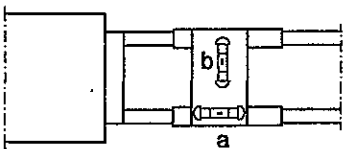
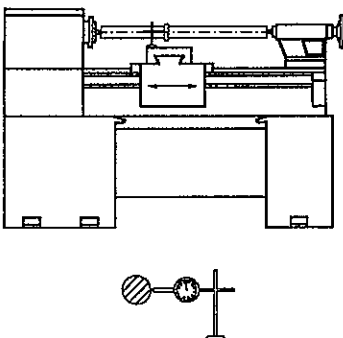
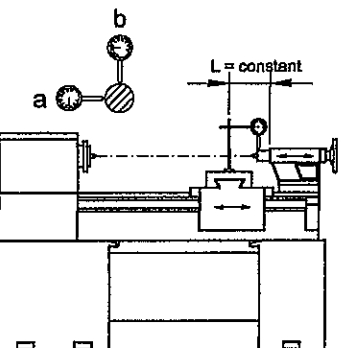
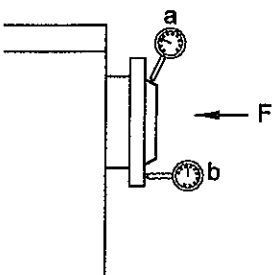
1500

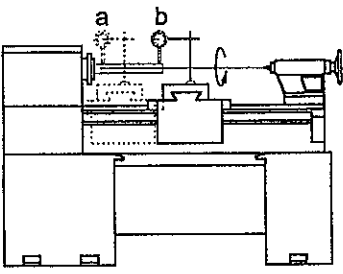
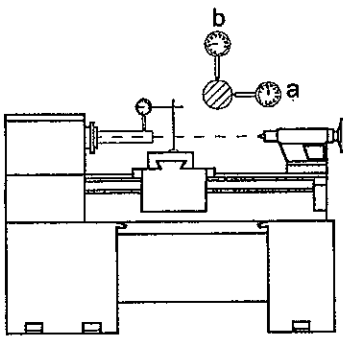
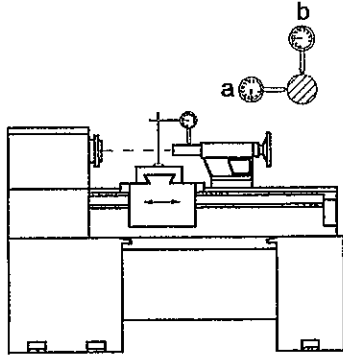
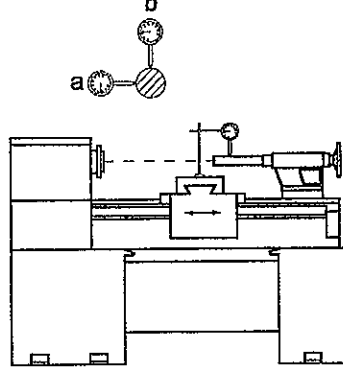
N° *41579*

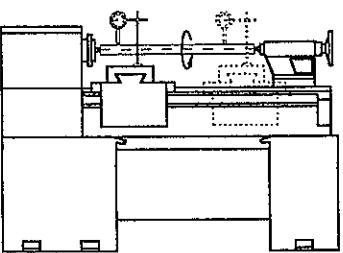
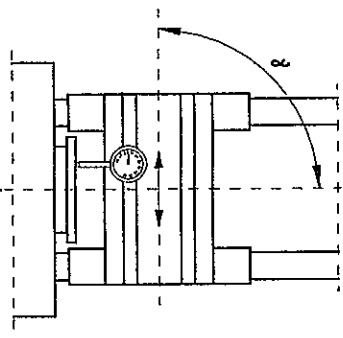
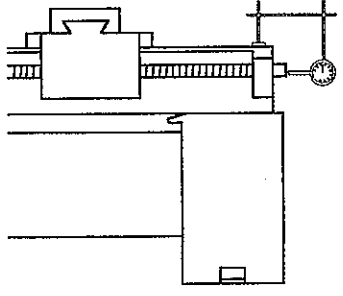
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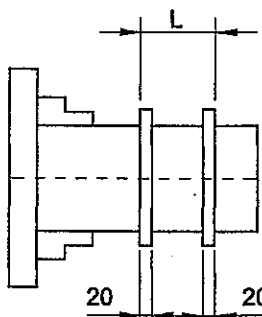
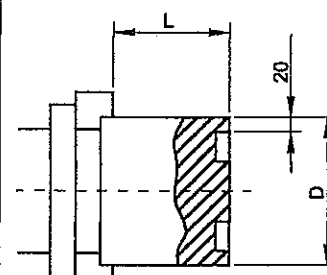
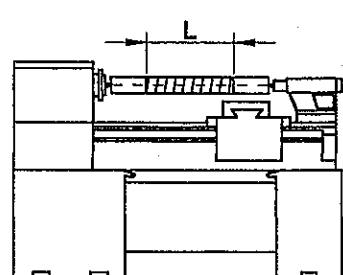
HP Hz

7021 ET 3ULP4
6020 2Z

N°	Diagram	Objectives of the measurement	Measuring devices	Testing Instructions	Tolerances	
					Admissible	Measurement
1		Levelling the lathe. a) Longitudinally. b) Transversely.	Precision level	Position the longitudinal carriage on the centre of the bed. Measurements should be made at different points, at regular distances along the length of the bed. The precision levels can be placed on the cross slide carriage	a) Distance Between centers (DBC) 1000=0,02. Local tolerance of 0,0075 at L of 250 DBC 1000 increase 0,01 per 1000 mm. extra between the centres. b) 0,04/1000	a. 0,02 b. 0,015
2		Checking the straightness of the horizontal displacement, or in the plane defined by the line between the centres and the tip of the tool.	For lengths up to 1.500 mm. use a precision dial indicator which meets DIN 879. A measuring bar or rule up to 500 mm. long.	Position the measuring bar between the centres and place the precision dial indicator on the carriage bed making sure that the point of the indicator is on the horizontal plane of the measuring bar. Move the carriage bed along the length bed the measuring bar.	0,02 mm. 500 up to 1000 mm. DBC. When the length of the work piece is more than 1000 mm. you must increase the admissible difference for every other 1000 mm. by 0,005 mm. making sure not to exceeded a maximum admissible difference of 0,03 mm.	0,02
3		The parallelism of the movement of the carriage bed and the tailstock. a) on the horizontal plane. b) on the vertical plane.	Precision dial indicator which meets DIN 879.	Place the precision dial indicator on the carriage bed with the point of the indicator on the tailstock shaft. The tailstock shaft must be locked in one position so that the indicator always marks the same point. Move the carriage and tailstock along the complete length of the bed.	a) 0,03 mm. Local tolerance 0,02 mm. for a length of 500 mm. b) 0,03 mm. Local tolerance 0,02 mm. for a length of 500 mm.	a. 0,02 b. 0,02
4		a) measuring the turning eccentricity at the far end of the main spindle. b) measuring the axial displacement of the front spindle face.	Precision dial indicator which meets DIN 879.	Position the precision dial indicator perpendicularly to faces a) and b). Slowly turn the spindle.	a) 0,01 mm. b) 0,01 mm.	a. 0,01 b. 0,01

N°	Diagram	Objectives of the measurement	Measuring devices	Testing Instructions	Tolerances	
					Admissible	Measurement
5		Measuring the eccentricity of rotation of the fixed centre's interior taper. a) at the mouth of the taper. b) at a distance of not more than 300 mm. from the mouth of the taper.	Precision dial indicator which meets DIN 879. Measuring bar with a taper housing.	Position the precision dial indicator on the measuring bar which has been placed in the centre's interior taper and slowly turn the spindle. measurement at a). measurement at b).	a) 0,01 mm. b) 0,02 mm. For a length of 300 mm.	a. <u>0,01</u> b. <u>0,01</u>
6		The parallelism of the main spindle with the movement of the longitudinal carriage. a) on the horizontal plane. b) on the vertical plane.	Precision dial indicator which meets DIN 879. Measuring bar with a taper housing.	Position the precision dial indicator on a measuring bar which has been placed in the centre's interior taper and move the longitudinal carriage. measurement at a). measurement at b).	a) 0,015 mm. over 100 mm. in the direction of the cutting tool. b) 0,02 mm. over 100 mm. in an upwards direction.	a. <u>0,015</u> b. <u>0,015</u>
7		The parallelism of the tailstock shank with the movement of the longitudinal carriage. a) on the horizontal plane. b) on the vertical plane.	Precision dial indicator which meets DIN 879.	Position the precision dial indicator on the tailstock shank and move the longitudinal carriage. measurement at a). measurement at b).	a) 0,015 mm. over 100 mm. in the direction of the cutting tool. b) 0,02 mm. over 100 mm. in an upwards direction.	a. <u>0,015</u> b. <u>0,015</u>
8		The parallelism of the interior taper of the tailstock shank with the movement of the longitudinal carriage. a) on the horizontal plane. b) on the vertical plane.	Precision dial indicator which meets DIN 879. Measuring bar with a taper housing.	Position the precision dial indicator on a measuring bar which has been placed inside the opening of the shank and move the longitudinal carriage. The shank must be locked off. measurement at a). measurement at b).	a) 0,03 mm. over 100 mm. in the direction of the cutting tool. b) 0,03 mm. over 100 mm. in an upwards direction.	a. <u>0,03</u> b. <u>0,03</u>

N°	Diagram	Objectives of the measurement	Measuring devices	Testing Instructions	Tolerances	
					Admissible	Measurement
9		Measuring of the difference in height between the centres of the headstock and of the tailstock.	Precision dial indicator which meets DIN 879. Measuring bar which can be seated between the centres.	Place the precision dial indicator over the top side of a cylinder positioned between the centres. The tailstock and shank must be locked off.	0,04 mm. The tailstock being higher.	0,235
10		The perpendicularity of the main spindle shaft with regard to the movement of the cross slide carriage.	Precision dial indicator which meets DIN 879. A measuring disk, or a rule attached to the main spindle.	Position the precision dial indicator on the carriage and take a measurement of a flat disk clamped in the plate. Move the cross slide carriage.	0,02 mm. /300 $\alpha > 90^\circ$	0,21
11		Axial displacement of the leadscrew.	Precision dial indicator which meets DIN 879.	Using the precision dial indicator make a measurement at the far end of the main spindle. Move the carriage in both directions.	0,015 mm. in each direction	0,015 0,015
12		Verification of the accumulated error generated by the leadscrew.	Verification checked by the manufacturer of the leadscrew in accordance with DIN69051. See attached sheet.		0,04 mm. for a length of 300 mm.	

N°	Diagram	Objectives of the measurement	Measuring devices	Testing Instructions	Tolerances	
					Admissible	Measurement
P1		Machining cylindrical pieces mounted on the chuck. a) Roundness. b) Cylindricalness. The possible tapering will be such that the largest diameter will be on the headstock side.	Micrometer.	Bore a 2 diameter cylinder with a maximum length of 20 mm. Check with the micrometer.	a) 0,01 mm. b) 0,04 mm. For L = 300 mm.	a. _____ b. _____
P2	 $D \geq 0,5$ diameter over the bed L max. = diameter over the bed / 8	Machining cylindrical pieces clamped in the chuck. The ground face must be concave or flat.	Rule and callipers.	Grind a face perpendicular to the cylinder's axis. Check with a rule and callipers.	0,025 mm. For a 300 mm. diameter. Surface flatness. Difference admissible only on the concave surface.	_____
P3		Accuracy of the threads. Triangular ISO thread. ISO norm 68, L = 300	Precision devices.	The diameter and thread can be chosen depending on the speed of the spindle. Check with the precision devices.	DBC < 2000 0,04 over 300 DBC > 2000 increase the tolerance by 0,005 for every extra meter. Local tolerance 0,015 mm. at a length of 60 mm. at any point.	_____

THE TESTER



INTRODUCTION

TOGETHER WITH THE MACHINE, YOU WILL RECEIVE THIS INSTRUCTION MANUAL WHICH WE ADVISE YOU TO READ CAREFULLY, OBSERVING ITS CONTENT.

THE PURPOSE OF THIS MANUAL, APART FROM THE INSTRUCTIONS FOR STARTING UP THE MACHINE AND ITS FUNCTIONS, IS TO SOLVE ANY DOUBTS WHICH MIGHT ARISE WITH RESPECT TO ANY MECHANISM BY CONSULTING THE RELATIVE PAGE NUMBER.

VERIFICATION CERTIFICATE

MACHINE TYPE/MODEL:
MANUFACTURING NUMBER:
MANUFACTURER: METOSA

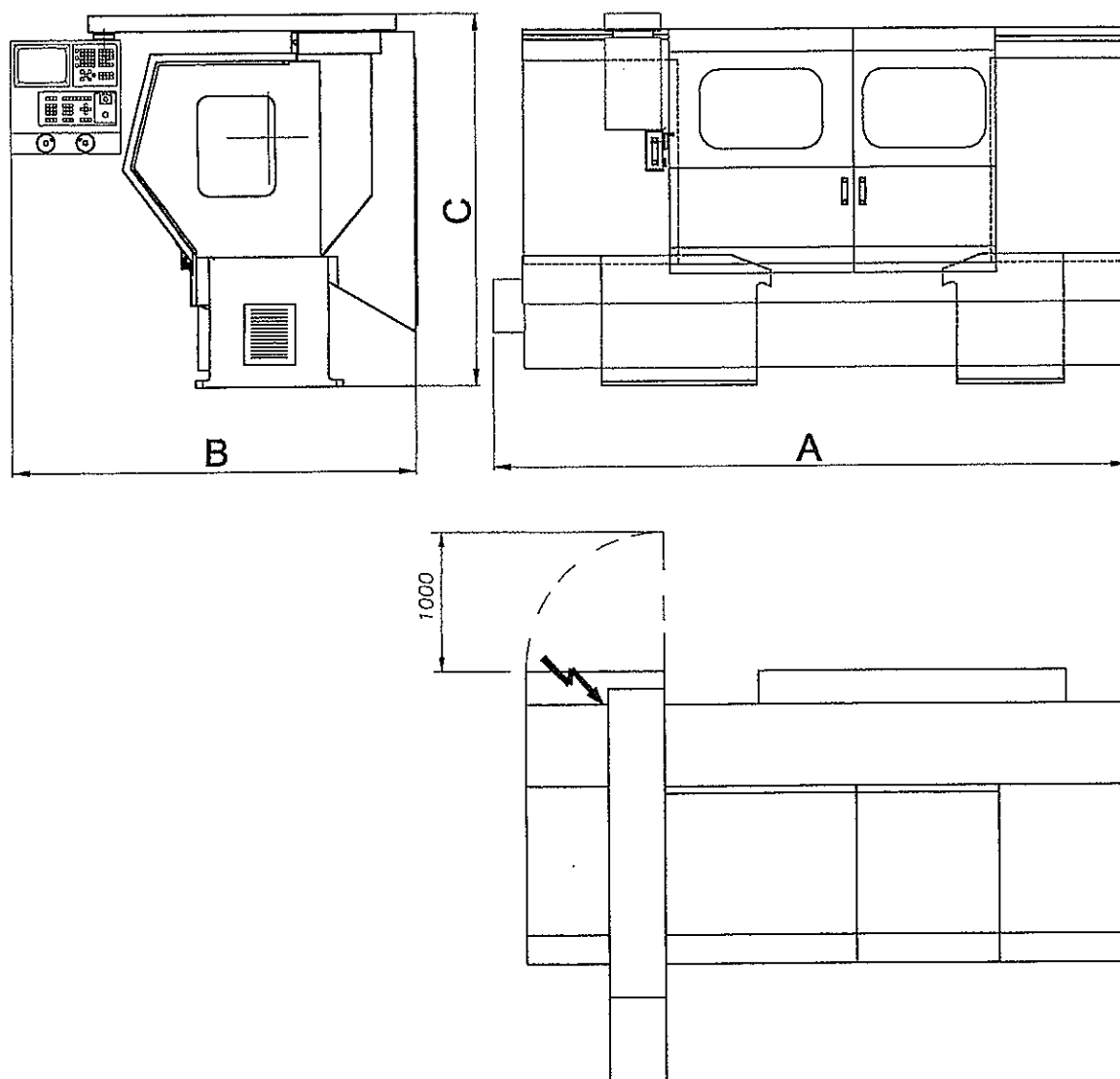
WE HEREBY CERTIFY THAT:

- THE ABOVE MACHINE HAS BEEN VERIFIED ACCORDING TO DIN 8606 STANDARDS.
- THE VERIFICATION HAS PROVED THE CORRECT OPERATION OF THE MACHINE IN ALL ITS ASPECTS.
- THE MACHINE IS SUPPLIED EX-FACTORY WITHOUT ANY MANUFACTURING DEFECT. COMPLYING WITH THE SAFETY REGULATION REQUIREMENTS FOR MACHINES.
- NOISE LEVEL $85 \leq \text{dB}$

NOTE: THE VERIFICATION TESTS WHICH FIGURE IN THE SHEET OF STANDARDS WHICH HAVE BEEN CARRIED OUT IN THE FACTORY, MUST BE APPROVED BEFORE USING THE LATHE; THEY HAVE TO CONFORM WITH THOSE OBTAINED IN THE ABOVE MENTIONED VERIFICATION SHEETS.
A CENTESIMAL LEVEL MUST BE USED FOR THIS OPERATION.

WE RECOMMEND A PERIODICAL REVISION OF THE LEVELLING UNTIL THE FOUNDATIONS ARE COMPLETELY SET.

INSTALLATION



	Taurus			A	B	C
	260	310				
	2875	3180	1000	2970	1720	1820
	3095	3265	1500	3970		
KGS. NETO NET NETTO	3350	3510	2000	4980		

- 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 be 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.

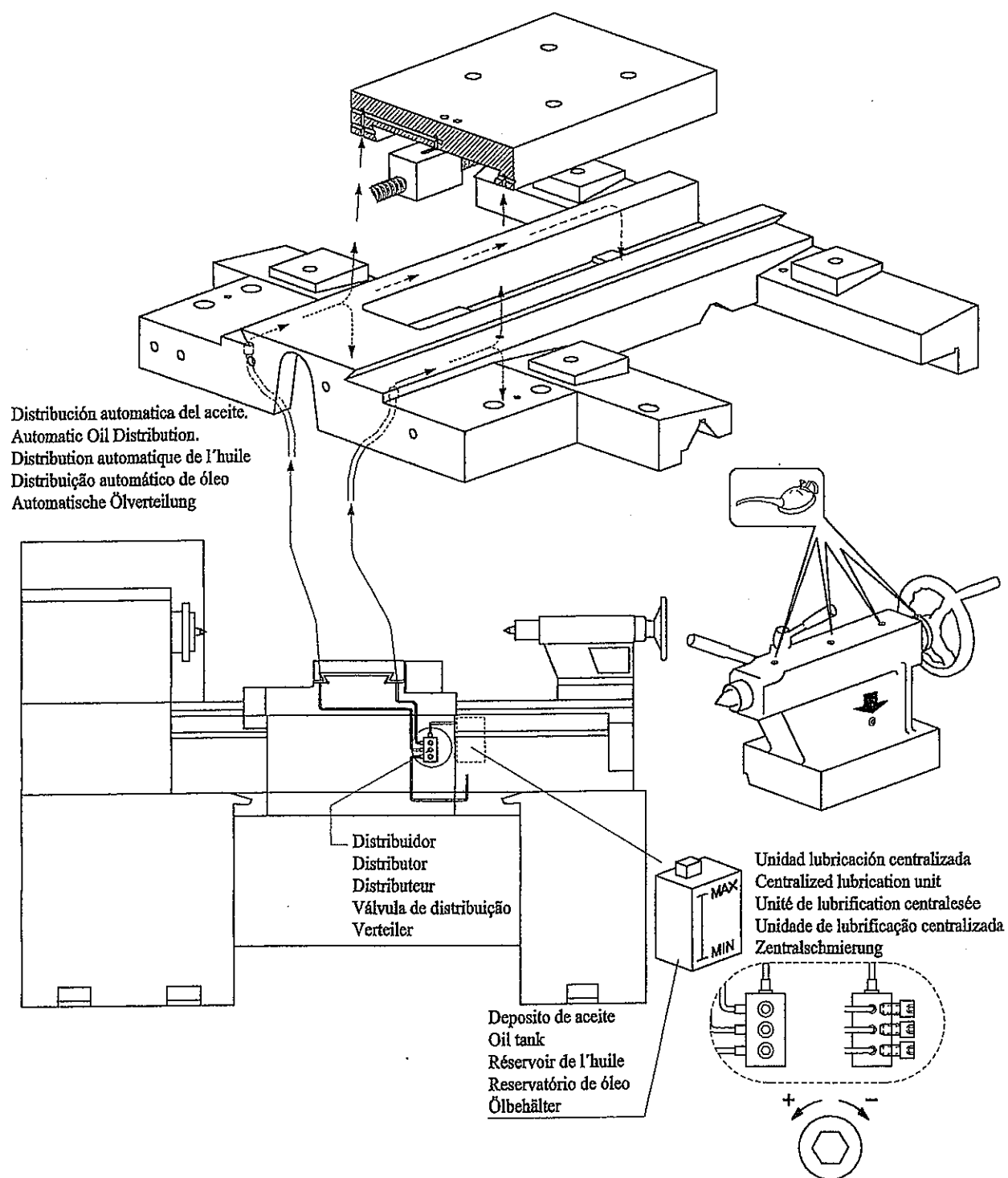
When the oil level goes down a message will appear on the monitor screen, (OIL LEVEL LOW), and if the machine is in automatic mode the programme will be interrupted. Lubrication takes place automatically every 45 minutes and last 10 seconds - this can be adjusted. At the same time using key  you can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



		CEPSA	Esso	Mobil	REPSOL	Shell	FUCHS
	8 h.	Premium SAE 30	Esso extra Motor Oil 3	Mobiloil A	Motor oil SAE 30	K100 Motor Oil 30	Renolin 30
	1 l.	Guias 68	Febis K68	Vactra N°2 LC	Zeus guia68	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 (See page 8).

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

-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.

-Fit the tightening plate (F). * Only for models with distance between centres 2000 and 1500.

-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) until you get an approximate reading on the precision levels.

-Move the longitudinal carriage towards the headstock and tailstock in turn, and by means of the 4 end tightening devices 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.

-Turn screws (I) of the central tightener (F*) down onto the steel plate 200x400 (See page 8) Tighten the bushing (H) until you can fit support (G) tighten bushing (H) again until the support touches the bed without any variation in the levelling.

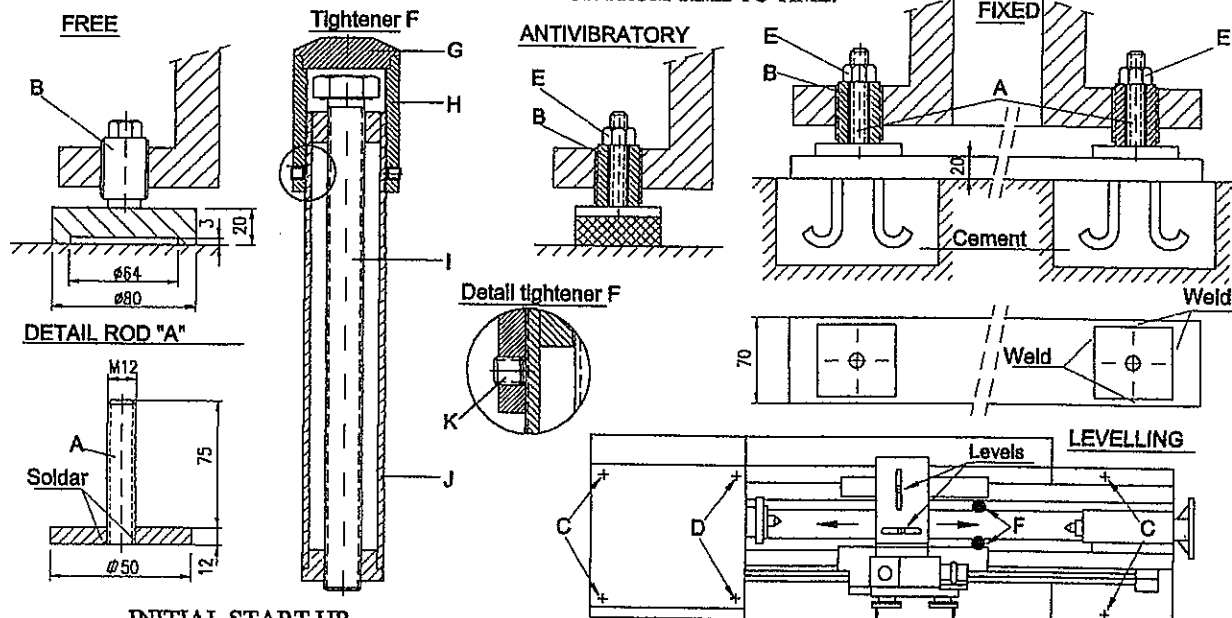
-Lock with nuts (E) and check the levelling again.

-Lock the bushing (H) on cylinder (J) with grub screws (K) 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.

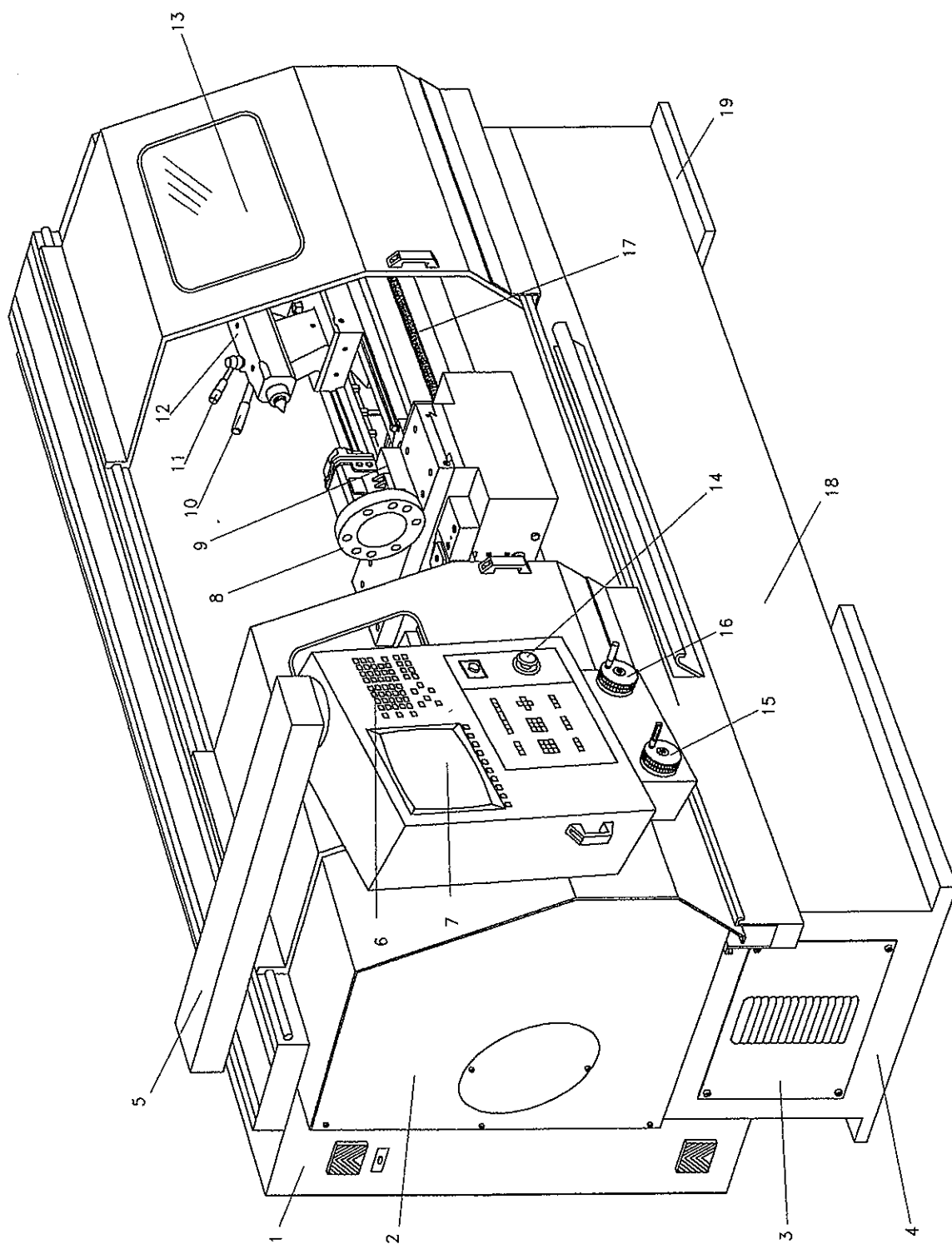
Connect the motor and the controls to a suitable electricity supply in accordance with all the local codes. Before connecting the motor, make sure that all the voltages and other current requirements of the motor adapt to the electrical power supply. When the connection has been made, check that the 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

CNC-*

FEB-99

- 14 -



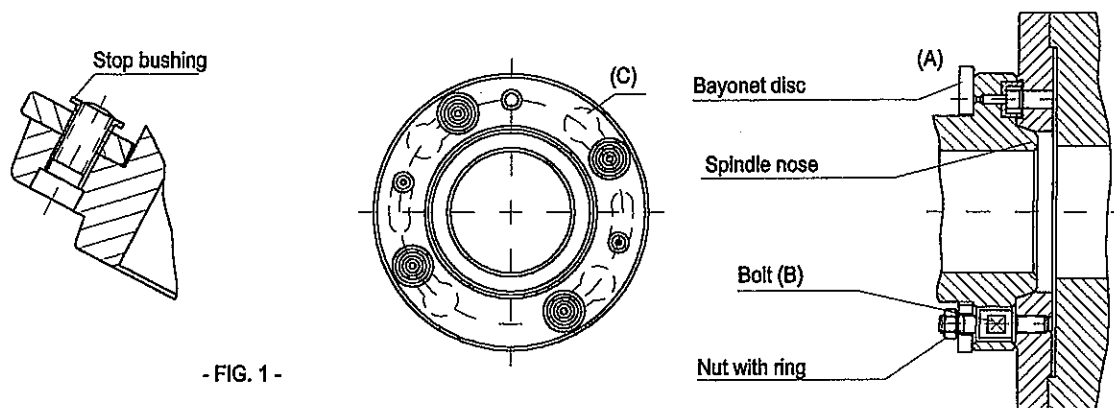
FACE PLATE MOUNTING INSTRUCTIONS

08- *

JUL-99

*** 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.

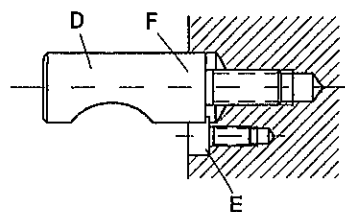


FIG. 2

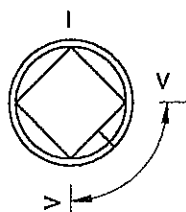


FIG. 3

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

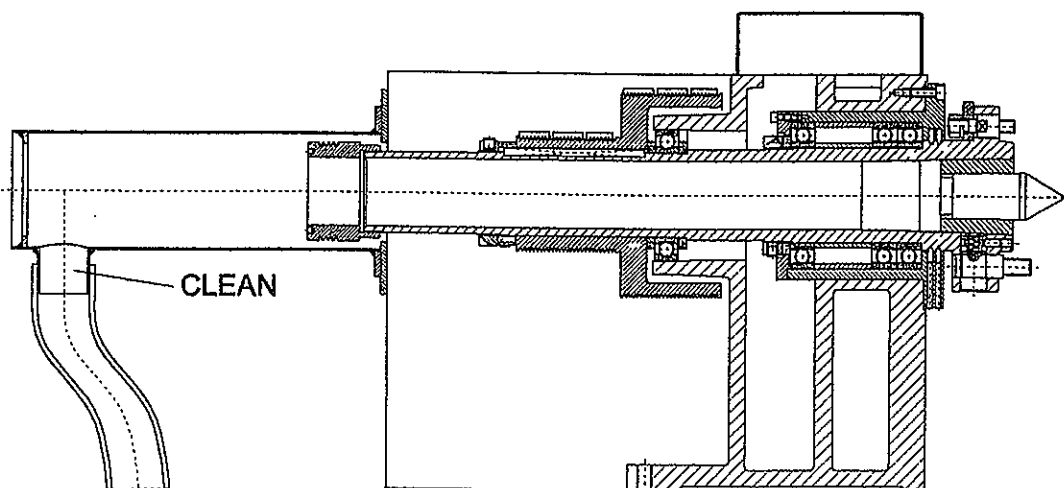
The set-over of the headstock or lack of parallelism of the headstock with the bed, is corrected by adjusting nut (J) in one direction or another, as necessary.

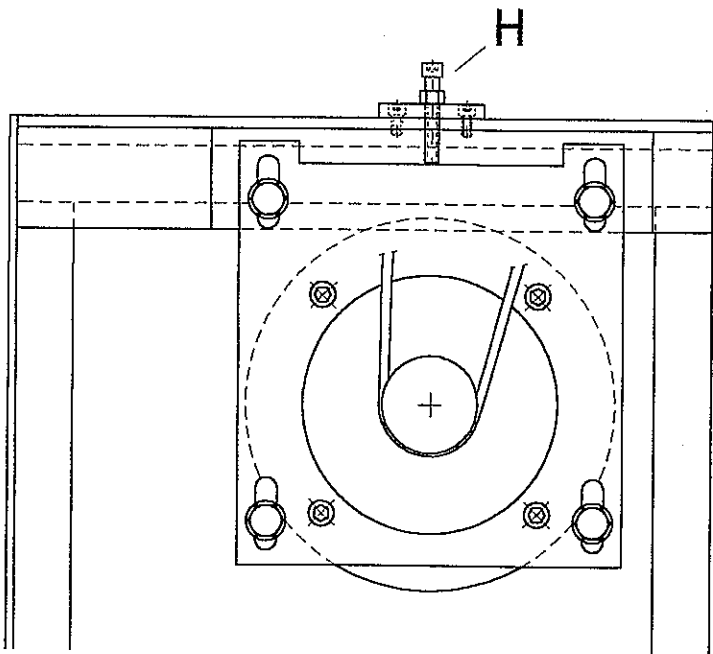
To do this, the four attachment screws of the headstock or bed must be slackened beforehand.

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.

CLEANING OF HEADSTOCK COOLANT RETURN TUBE

IMPORTANT. It is necessary at all times to keep the coolant return tube free from all impurities and cuttings.





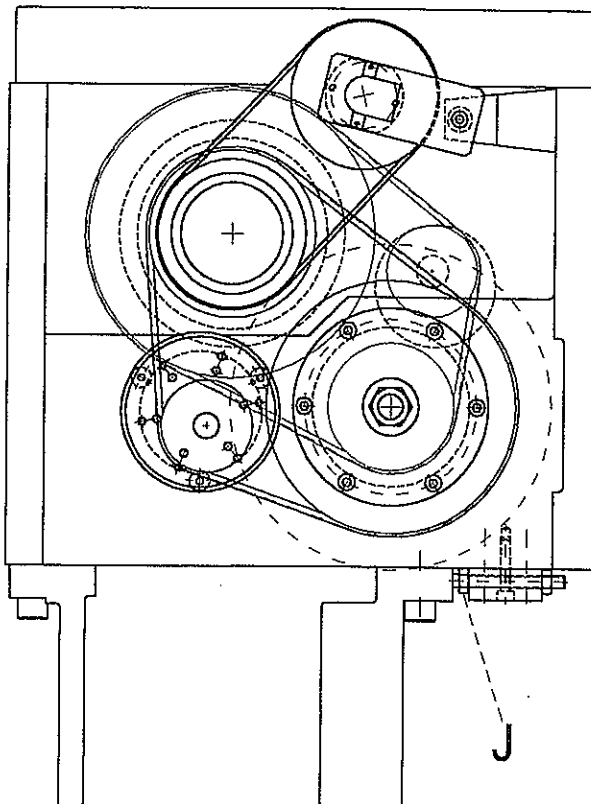
AJUSTE TENSION CORREA MOTOR

MOTOR BELT ADJUSTMENT

REGLAGE DE LA TENSION DE LA COURROIE DU MOTEUR

EINSTELLUNG DES ZAHNRIEMENS, HAUPTANTRIEB

AJUSTE DA TENSÃO DA CORREIA DO MOTOR



CORRECCION DESCENTRAMIENTO CABEZAL

HEADSTOCK OFF-CENTER ADJUSTMENT

CORRECTION DESALIGNEMENT POUPÉE

SPINDELSTOCK-JUSTIERUNG

CORRECÇÃO DO DESCENTRAMENTO DO CABEÇOTE

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

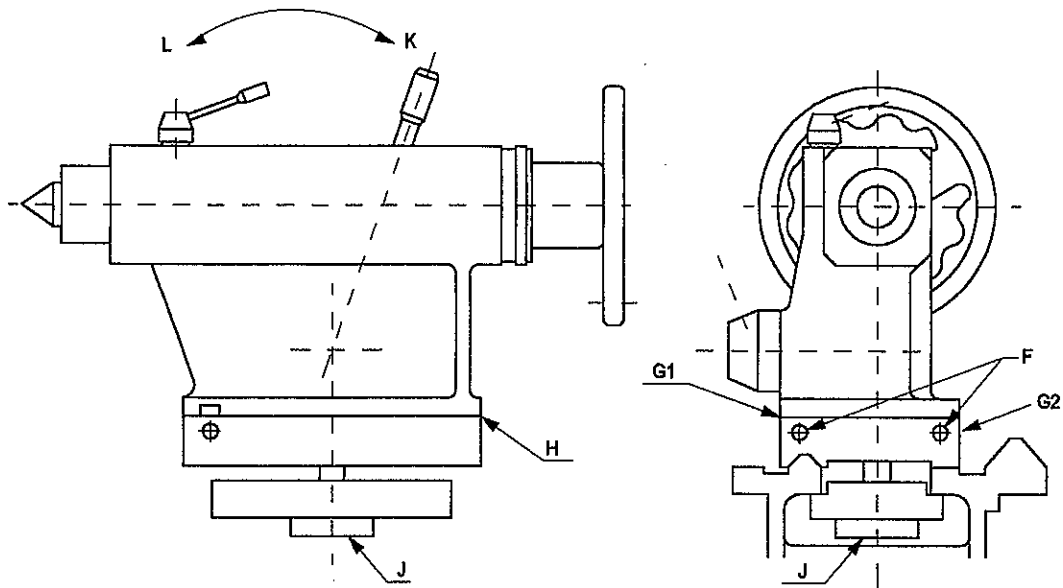
- The angular locking position of the lock lever can be adjusted with the tailstock lock released, turning nut (J) to the right (more locking pressure) or the left (less locking pressure).

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

REFERE D'ALIGNEMENT DE LA CONTRE-POINTE

MARKIERUNG ZUM AUSRICHTEN

MARCAS DE ALINHAMENTO

(J)

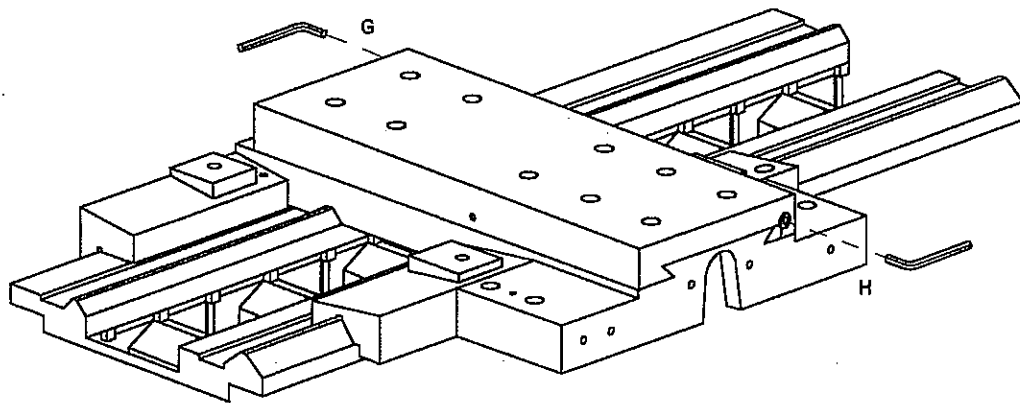
FRENO DEL CONTRAPUNTO

TAILSTOCK CLAMPING LEVER

BLOCAGE DE LA CONTRE-POINTE

VERSTELLUNG DER KLEMMSCHRAUBEN

TRAVÃO DO CONTRAPUNTO



REGLAS CONICAS DE AJUSTE

ADJUSTMENT TAPER RULERS

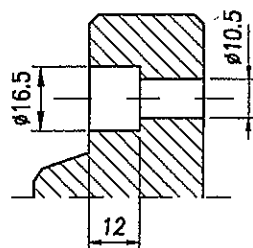
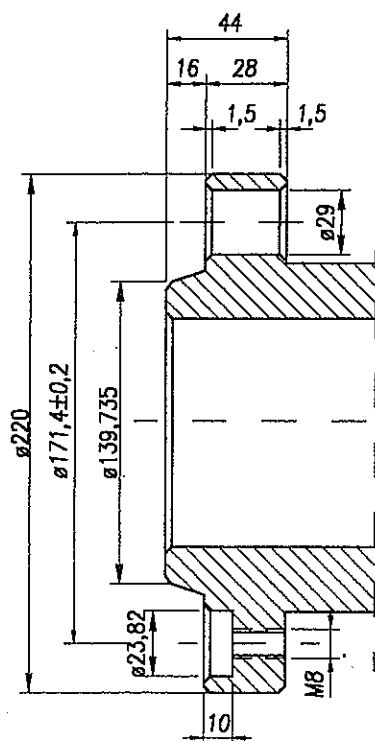
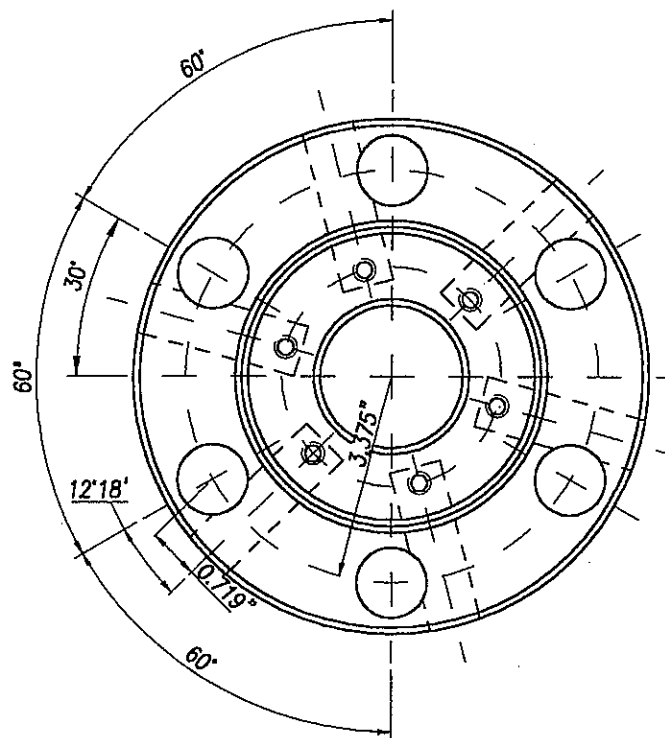
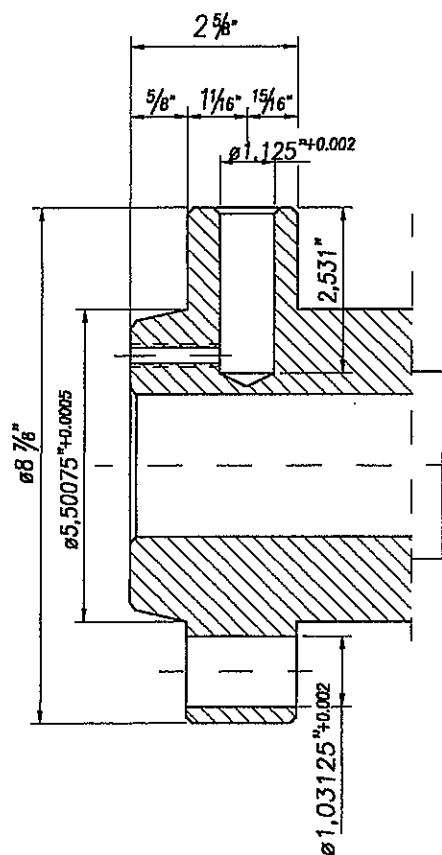
REGLES CONIQUES DE REAJUSTEMENT

KEILBISTE FÜR PLANSCHLITTEN

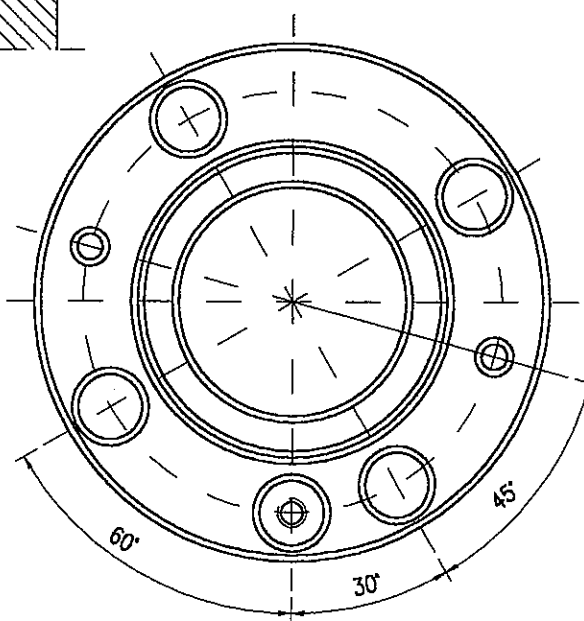
RÉGUAS CÔNICAS PARA AJUSTE

MOD. Taurus 260-310

DIN-55029, CAM-LOCK n°8



DIN-55027 n°8



MT99135 I

JUL-99

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:

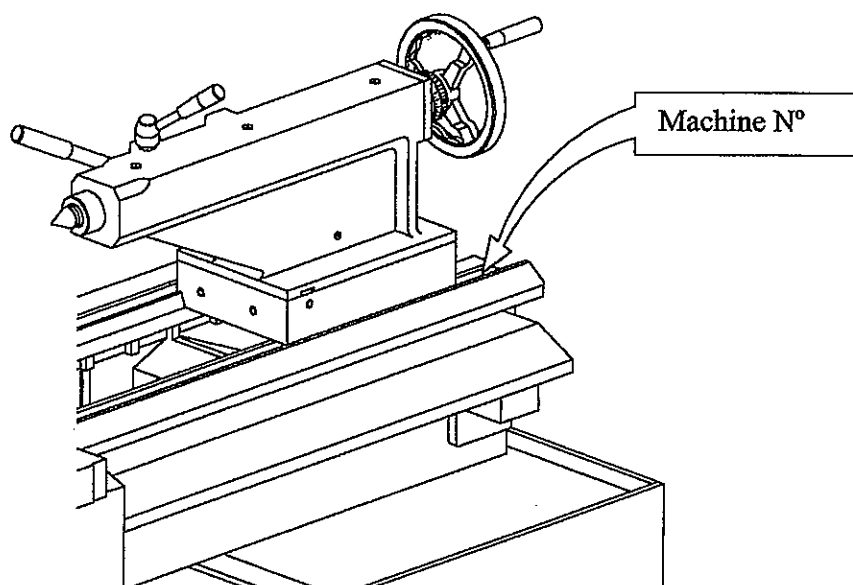
- Page no. of manual.
- Part number and description.

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.



ASSEMBLY	<u>PAGE</u>
- HEADSTOCK Main spindle	27
- HEADSTOCK Input shat	29
- HEADSTOCK Roller tightener	31
- Z AXIS BALL SCREW	35
- X AXIS BALL SCREW	39
- "Z" & "X" HANDWHEELS	41
- AUTOMATIC TURRET	43
- QUICK CHANGE TURRET	45
- MANUAL TURRET	47
- TAILSTOCK	51
- BED - LEGS	53
- STEADIES CAPACITY $\varnothing 125, \varnothing 185$	55
- STEADIES CAPACITY $\varnothing 300$	55 A
- FRONT GUARD	57

HEADSTOCK

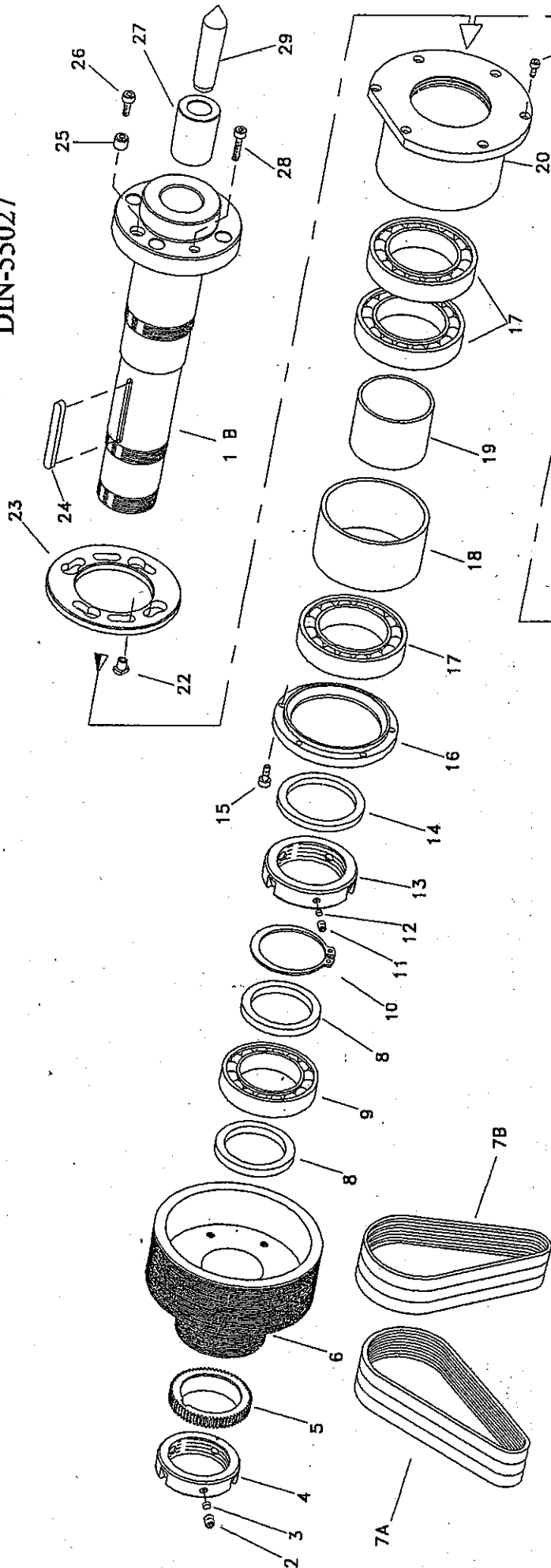
OCT-00

*Taurus

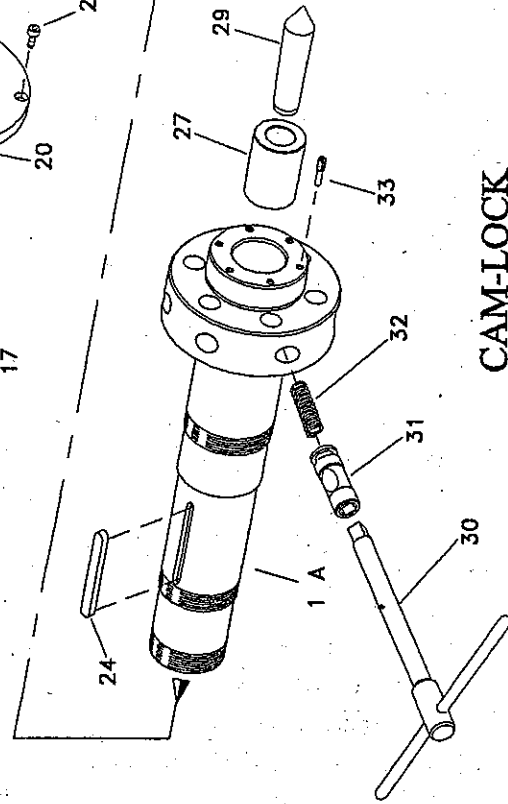
Item	Part number	Description	Qua.	Item	Part number	Description	Qua.
1A	15.01.00018	Main spindle CAM-LOCK N°8	1	50		Sprung coupling EK9 / 21 (6-6)	1
1B	15.01.00017	Main spindle DIN 55027 N°8	1	51	DIN 7984	Allen screw M6x15	2
2	DIN 913	Allen grub screw M12x12	3	52	15.01.00081	Support for Fanuc motors	1
3	01.01.00131	Adjusting nut plug	3				
4	01.01.00127	Main spindle nut lock	1				
5	15.01.00019	Main spindle toothed pulley	1				
6	15.01.00095	Main spindle double pulley	1				
7A	Belt POLY - V Profile PK Lefe.= 954(9 grooves)		3				
7B	Belt POLY - V Profile PK Lefe.=1020(9 grooves)		3				
8	15.01.00084	Bearing tightening bushing	2				
9	DIN 625	Bearing 6020- 2Z	1				
10	DIN 471	Cir clip A-100	1				
11	DIN 913	Allen grub screw M10x10	3				
12	10.01.02053	Adjusting nut plug	3				
13	15.01.00022	Main spindle nut lock	1				
14	15.01.00042	Bearing tightening bushing	1				
15	DIN 912	Allen screw M6x20	6				
16	15.01.00024	Main spindle rear cover	1				
17	DIN 628	Bearing 7021 ET 3ULP4 BG-110	3				
18	15.01.00040	Bearing separator bushing	1				
19	15.01.00041	Bearing separator bushing	1				
20	15.01.00023	Main spindle bearing sleeve	1				
21	DIN 912	Allen screw M8x30	6				
22	01.01.00067	Bayonet disk bushing	2				
23	01.01.00154	Bayonet disk	1				
24	DIN 6885	Key 12x7x140	1				
25	01.01.00055	Main spindle nose bushing	1				
26	DIN 912	Allen screw M8x15	1				
27	01.01.00130	Main spindle conical bushing	1				
28	DIN 912	Allen screw M8x30	2				
29	01.01.00042	Main spindle fixed centre	1				
30	01.01.00103	Eccentric key	1				
31	01.01.00096	Eccentric Cam - Lock	6				
32	01.01.00135	Eccentric spring	6				
33	01.01.00094	Eccentric grub screw	6				
34	DIN 912	Allen screw M8x40	1				
35	15.01.00033	Encoder connecting rod washer	1				
36	15.01.00031	Encoder connecting rod	1				
37	DIN 6885	Key 6x6x15	1				
38	DIN 7984	Allen screw M6x15	2				
39	DIN 912	Allen screw M3x8	2				
40		HEDL encoder 5640 - A13	1				
41	15.01.00030	Pulley shaft ENCODERS	1				
42	DIN 625	Bearing 6004-2Z BG-115	1				
43	15.01.00032	Encoder connecting rod cover	1				
44	15.01.01034	Encoder toothed pulley	1				
45	15.01.00035	Washer	1				
46	DIN 912	Allen screw M6x15	1				
47		Belt 670 5M 09	1				
48	EO-38	Encoder1024	1				
49	DIN 912	Allen screw M3x12	3				

Inverter PS-53
 Converter PS-54
 Spindle encoder
 9595
 Spindle motor
 MO-114
 Regulator filter
 NU-105

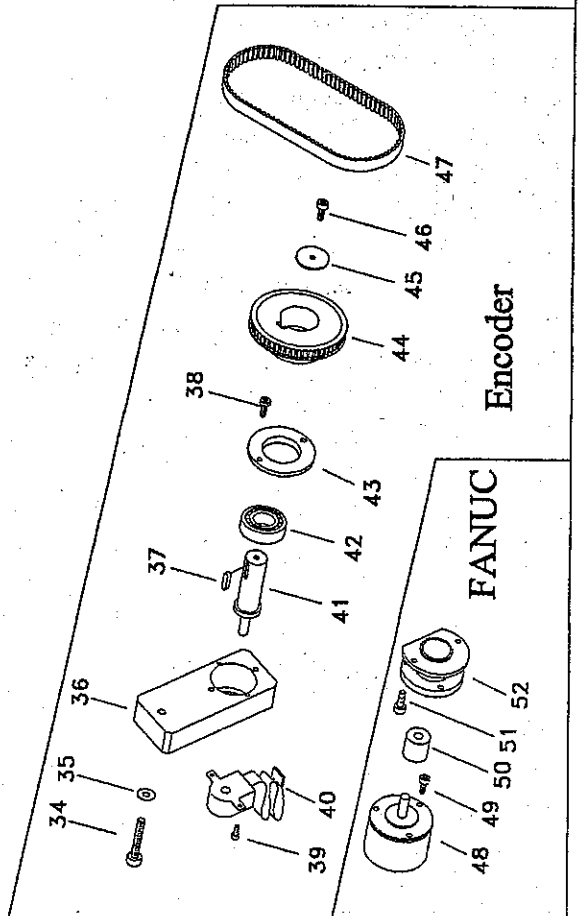
DIN-55027



CAM-LOCK



Encoder

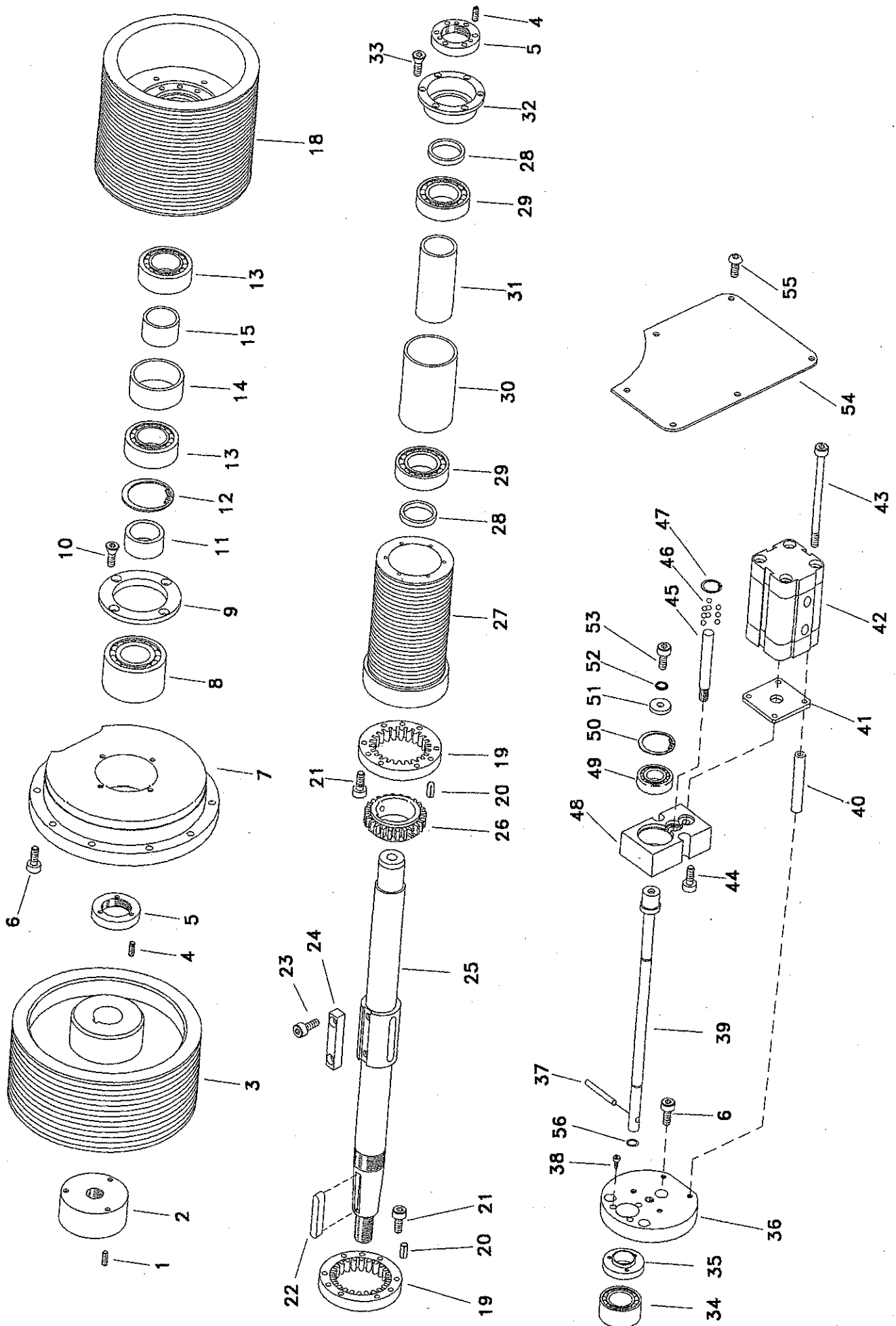


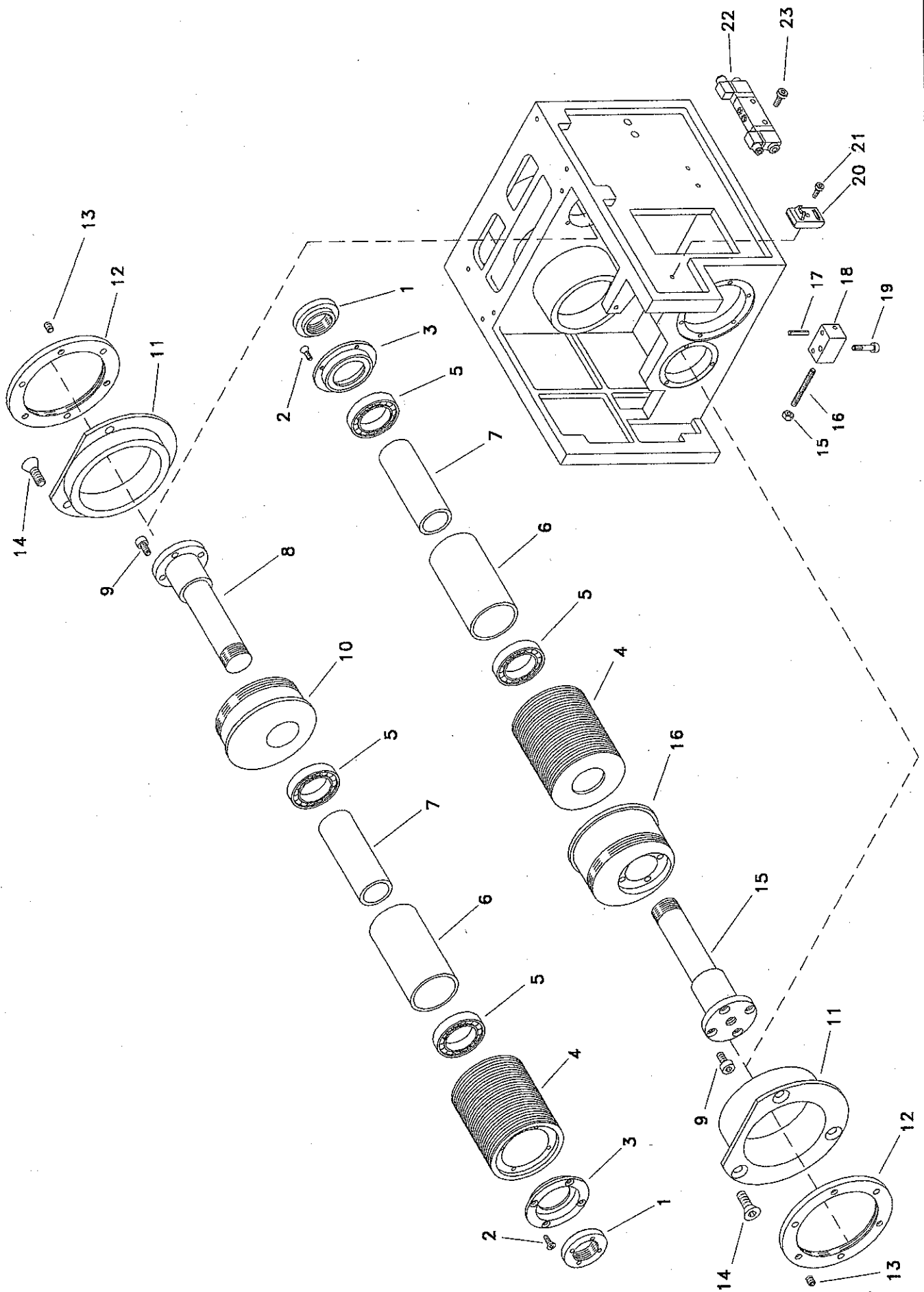
HEADSTOCK

*-Taurus

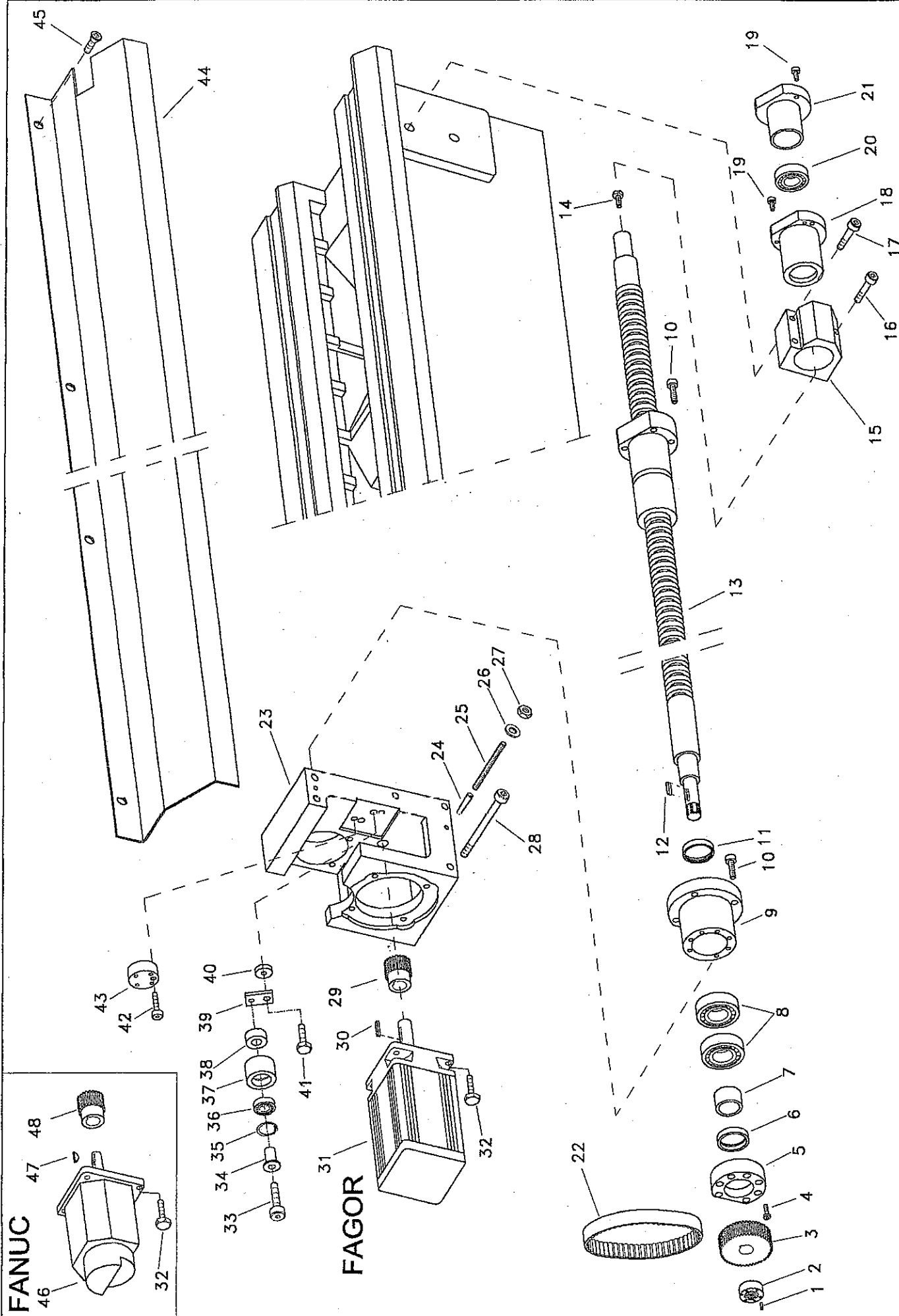
DIC-00

Item	Part number	Description	Qua.	Item	Part number	Description	Qua.
1	DIN 913	Allen grub screw M6x20	3	51	01.01.00565	Washer	1
2	15.01.00088	Nut input shaft	1	52		AET washer ø8	1
3	15.01.00096	Input shaft pulley Taurus ø 80	1	53	DIN 912	Allen screw M8x10	1
3	15.01.00005	Input shaft pulley Taurus ø105	1	54		Encoder cylinder cover	1
4	DIN 913	Allen grub screw M5x10	6	55	ISO 7380	Round headed screw M6x10	5
5	15.01.01074	Nut	2	56	DIN 3770	O-ring 10x12x1	2
6	DIN 912	Allen screw M8x20	8				
7	15.01.00004	Pulley shaft cover	1				
8	DIN 628	Bearing 3207-2Z	1				
9	15.01.00082	Cover	1				
10	DIN 7991	Countersunk Allen screw M6x10	4				
11	15.01.00028	Bearing separator bushing	1				
12	DIN 472	Cir clip J-62	4				
13	DIN 628	Bearing 6007-2Z	2				
14	15.01.00083	Exterior bushing	1				
15	15.01.00015	Interior bushing	1				
16	DIN 912	Allen screw M6x25	6				
17	15.01.00006	Pulley support cover	1				
18	15.01.00093	Input shaft exterior pulley	1				
19	15.01.00009	Pulley shaft interior gear 34 Z	2				
20	DIN 1481	Sprung pin ø6x15	6				
21	DIN 7984	Allen screw M6x12	12				
22	DIN 6885	Key 8x10.5x42	1				
23	DIN 912	Allen screw M5x10	2				
24	15.01.00010	Pulley shaft key	1				
25	15.01.00102	Input shaft	1				
26	15.01.00008	Pulley shaft gear 34 Z	1				
27	15.01.00094	Pulley	1				
28	15.01.01070	Bushing	2				
29	DIN 625	Bearing 7007-X2	2				
30	15.01.00072	Exterior bushing	1				
31	15.01.00071	Interior bushing	1				
32	15.01.01073	Cover	1				
33	DIN 7991	Countersunk Allen screw M4x12	6				
34		Bearing 3205-2Z	1				
35	15.01.01053	Gear displacement bushing	1				
36	15.01.00014	Cylinder change fastening disk cover	1				
37	DIN 7343	Sprung pin ø6x60	1				
38	DIN 912	Allen screw M4x12	3				
39	15.01.00012	Speed change rod	1				
40	15.01.00016	Connecting rod shaft guide	4				
41	15.01.01081	Supplement sheet metal plate	1				
42		Pneumatic cylinder SMC-CQ2-6050/25	1				
43	DIN 912	Allen screw M6x125	4				
44	DIN 912	Allen screw M8x30	1				
45	15.01.01063	Connecting rod shaft guide	1				
46	DIN 5401	Ball ø4	12				
47	DIN 472	Cir clip J-20	1				
48	15.01.00013	Connecting rod changer	1				
49	DIN 630	Bearing 6004 2RS	1				
50	DIN 472	Cir clip J 42	1				



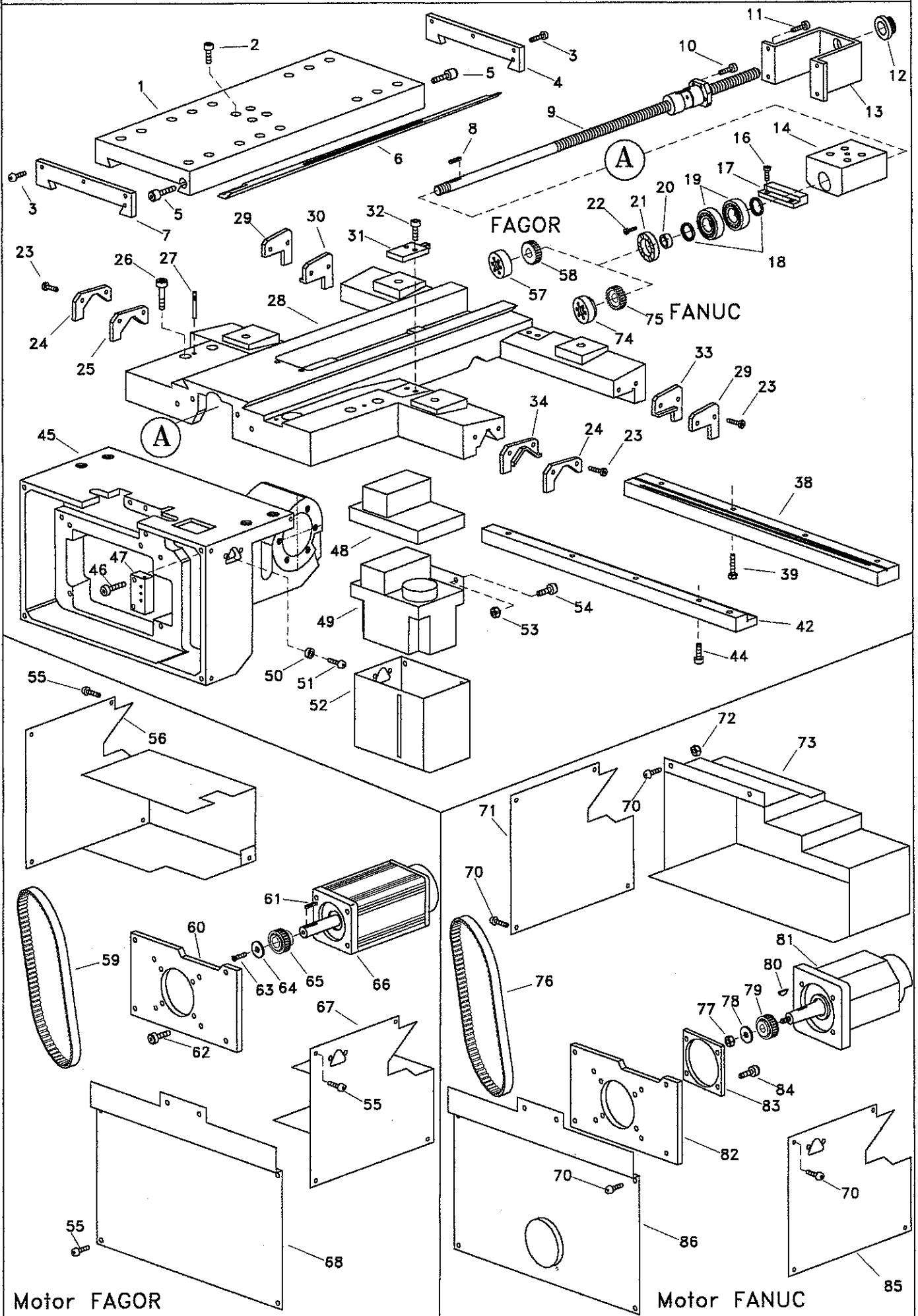


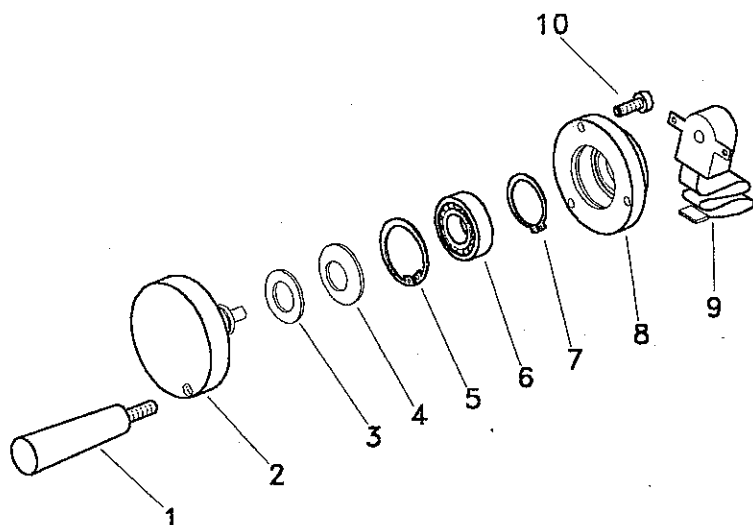
Item	Part number	Description	Qua.
1	DIN 914	Grub screw M6x10	3
2	12.02.10041	Fastening nut	1
3	12.02.10042	Pulley 48-5M 34	1
4	DIN 7984	Allen screw M6x20	4
5	12.02.10036	Headstock side cover	1
6	DIN 3760	Retainer 32x45x7	1
7	12.02.11005	Bearing end spacer	1
8	DIN 628	Bearing 7205 ~~ETD~~ UHP4V BG-67	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	12.02.10012	Ball screw Lathe 750	1
13	12.02.10011	Ball screw Lathe 1000	1
13	12.02.10013	Ball screw Lathe 2000	1
13			
14	DIN 931	Hexagonal screw M8x20	1
15	12.02.11015	Leadscrew support Tailstock side	1
16	DIN 912	Allen screw M8x80	1
17	DIN 912	Allen screw M8x65	2
18	12.02.10038	Tailstock side cover	1
19	DIN 912	Allen screw M6x15	6
20	DIN 625	Bearing 6205-2RS	1
21	12.02.10039	Tailstock side cover	1
22		Belt 400-5M 34	1
23	12.02.10003	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 M10x75	5
29	12.02.10043	Pulley 24-5M 34	1
30	DIN 6885	Key 6x6x30	1
31		Fagor 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 BG-92	1
37	12.02.10045	Belt tightener roller	1
38	12.02.11045	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	6/8
46		Fanuc Motor	1
47		Half round key	1
48	12.02.10046	Pulley 24-5M 34	1



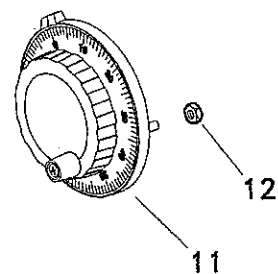
*-Taurus

Item	Part N°	Description	Quant	Item	Part N°	Description	Quant
1	12.05.00004	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	08.05.00121	Rear cross slide wiper	1	57	12.05.11090	Fastening nut	1
5	01.05.01061	Adjustment gib screw MLT0332	2	58	12.05.11115	Pulley 26-5M 25 MLT-386	1
6	01.05.00002	Cross slide gib	1	59		Belt 565-5M25 BT-91	1
7	08.05.00120	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	12.05.10001	Ball screw	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 M8x20	4	64	12.05.11043	Washer	1
12	12.05.11103	Rubber washer	1	65	12.05.11114	Pulley 26-5M 25 MLT0386	1
13	12.05.00089	Rear stop	1	66		Fagor motor	1
14	12.05.01002	Nut support for ballscrew-MLT0341	1	67	12.05.11118	Motor protection right guard	1
15				68	12.05.11082	Motor protection front guard	1
16	DIN 7984	Allen screw M5x10	2	69	DIN 913	Allen grub screw M5x5	2
17	12.05.00090	Front stop	1				
18	DIN 3760	O-ring 20x30x5	2				
19	DIN 628	Ball bearing 7202 CTDI BG-133	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 MPL-876	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	01.05.00055	Prism metal plate	2	75	12.05.11125	Pulley 26-5M 25 MLT-386	1
25	01.05.00043	Left V-wiper	1	76		Belt 565-5M25 BT-91	1
26	DIN 912	Allen screw M10x60	4	77	DIN 934	Hexagonal nut M10	1
27	01.04.00049	Apron pin	2	78	12.05.01092	Washer	1
28	12.05.10003	Longitudinal carriage	1	79	12.05.11110	Pulley 26-5M 25 MLT-386	1
29	01.05.00054	Straight metal plate	1	80		Key shank	1
30	01.05.00043	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	01.05.00038	Rubber right flat wiper	1	84	DIN 912	Allen screw M10x25	4
34	01.05.00042	Right V-wiper	1	85		Motor protection right guard	1
35				86		Motor protection front guard	1
36							
37							
38	01.05.00026	Carriage rear gib	1			X axis motor MO-123	
39	DIN 933	Hexagonal screw M10x35	4				
40							
41							
42							
43	01.05.00027	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				

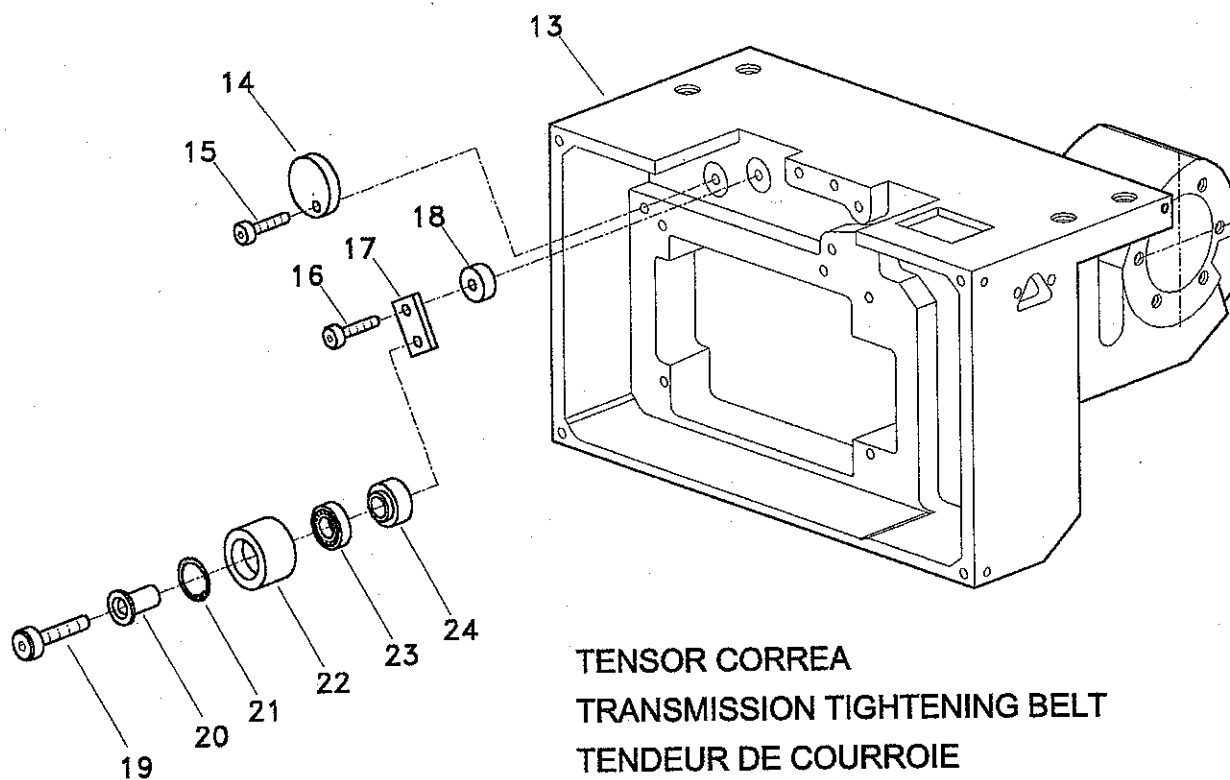




VOLANTES METOSA Z Y X
 Z & Y METOSA HANDWHEELS
 VOLANTS METOSA Z, X
 METOSA HANDRÄDER Z UND X
 VOLANTES METOSA Z E X



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

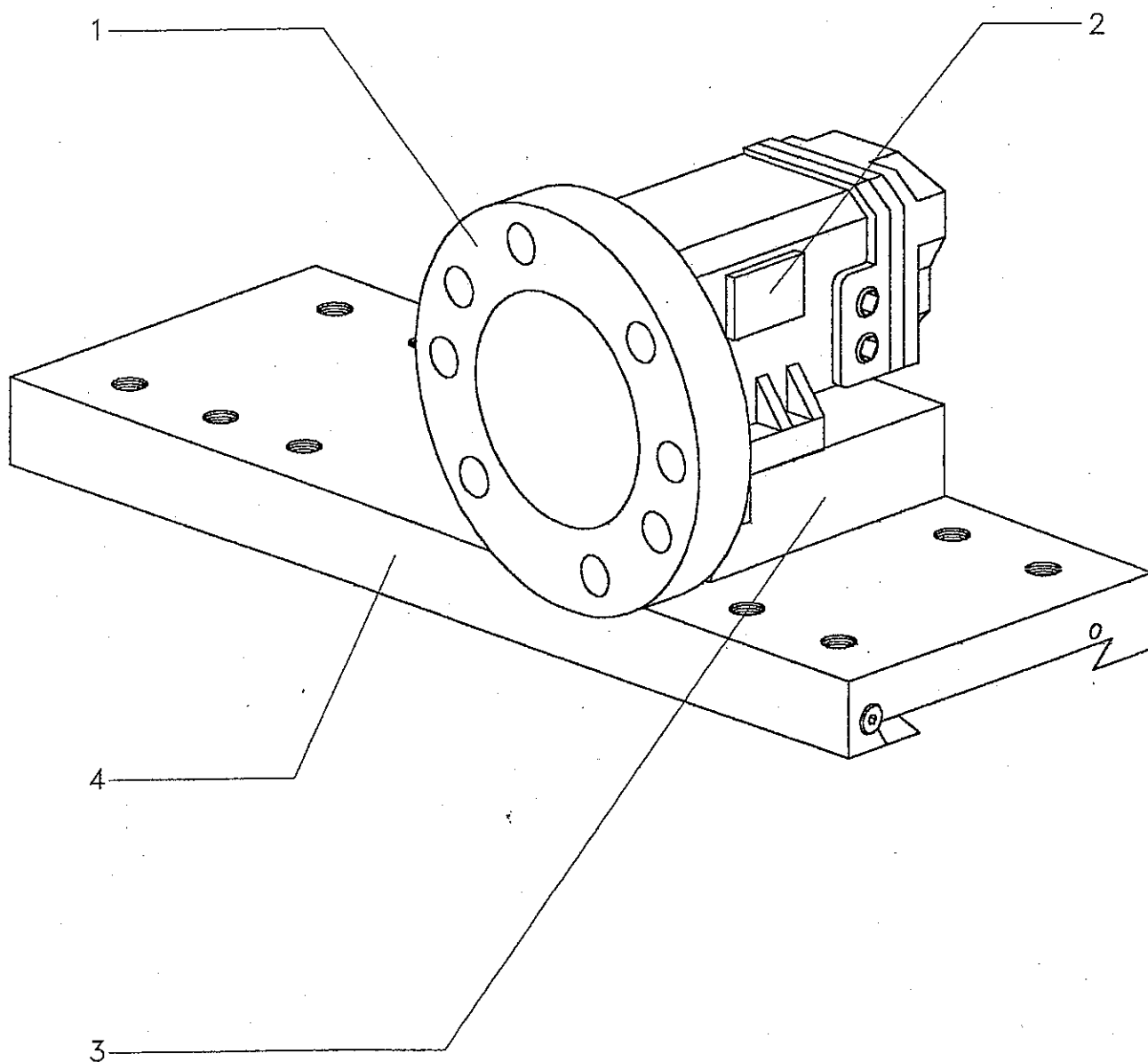
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AUTOMATIC TOOLPOST MUSTANG 200-225

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AUTOMATIC TOOLPOST TAURUS 260-310

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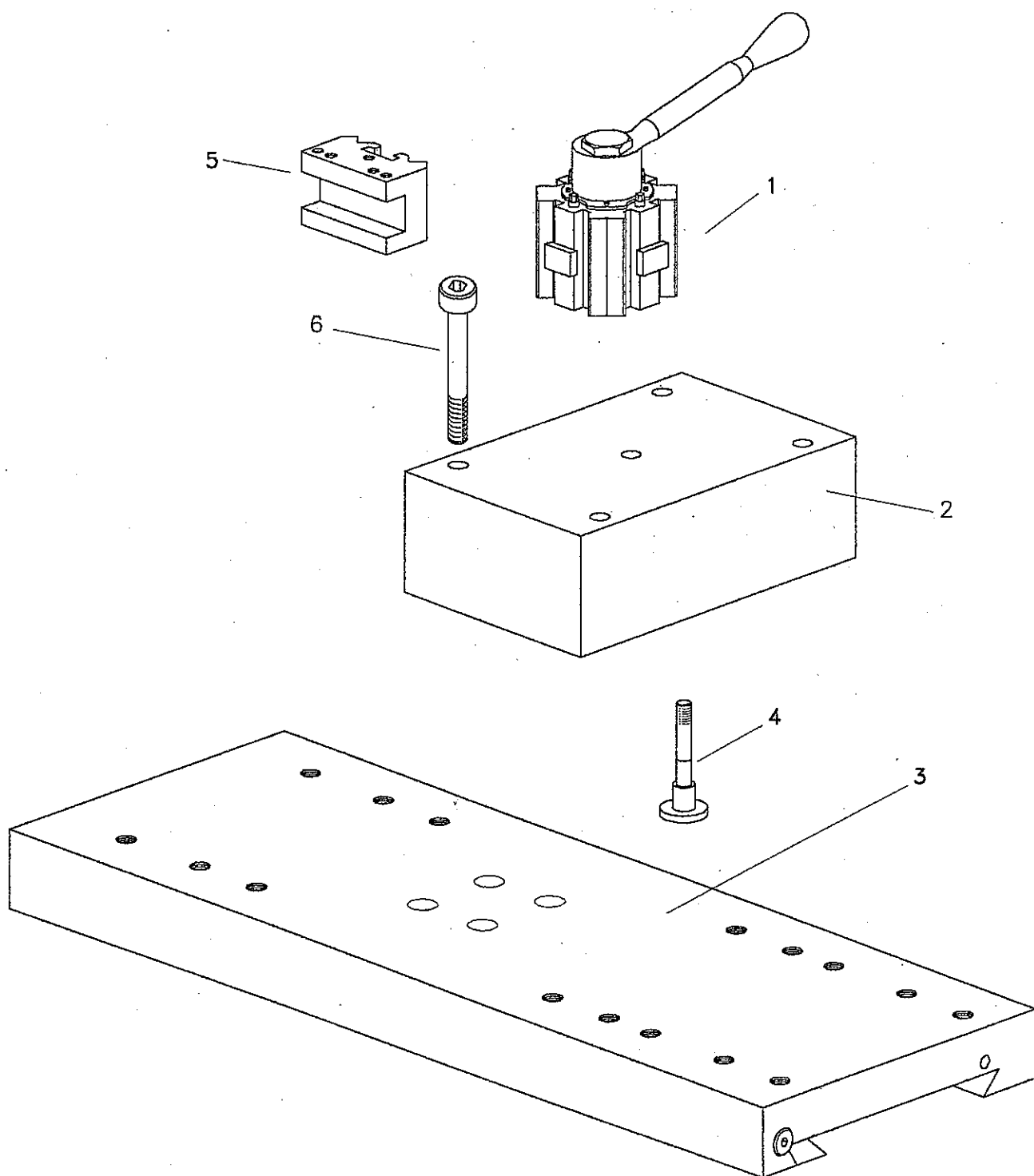
Item	Part N°	Description	Amo.
1	230-05-60	ALGRA toolpost TGA-R-200	1
2	12.05.00550	Toolpost base (180)	1
3	12.05.00504	Cross-slide carriage	1
4	12.05.00538	Toolpost shaft (180)	1
5	240-05-17	Tool holder	1
6	Din 912	Allen screw M8x65	4

RAPID CHANGE TOOLPOST MUSTANG 200-225

Item	Part N°	Description	Amo.
1	230-05-54	ALGRA toolpost TGA-R-250	1
2	12.05.01207	Toolpost base (200)	1
2	12.05.01208	Toolpost base (225)	1
3	12.05.01004	Cross-slide carriage	1
4	12.05.01205	Toolpost shaft (200)	1
4	12.05.01206	Toolpost shaft (225)	1
5	240-05-12	Tool holder	1
6	Din 912	Allen screw M10x65 (200)	4
6	Din 912	Allen screw M10x95 (225)	4

RAPID CHANGE TOOLPOST TAURUS 260-310

Item	Part N°	Description	Amo.
1	230-05-54	ALGRA toolpost TGA-R-250	1
2	12.05.00072	Toolpost base (260)	1
2	12.05.00073	Toolpost base (310)	1
2	12.05.00074	Toolpost base (285)	1
3	12.05.00004	Cross-slide carriage	1
4	12.05.00067	Toolpost shaft (260)	1
4	12.05.00066	Toolpost shaft (310)	1
4	12.05.00071	Toolpost shaft (285)	1
5	240-05-07	Tool holder	1
6	Din 912	Allen screw M10x115 (260)	4
6	Din 912	Allen screw M10x165 (310)	4
6	Din 912	Allen screw M10x140 (285)	4



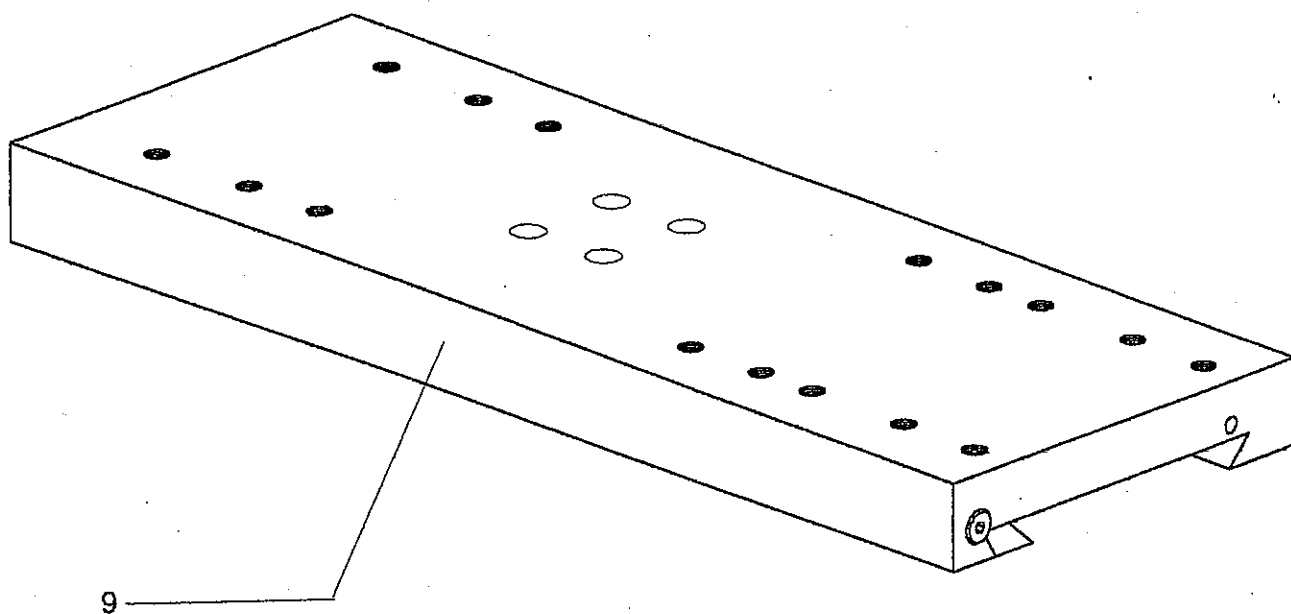
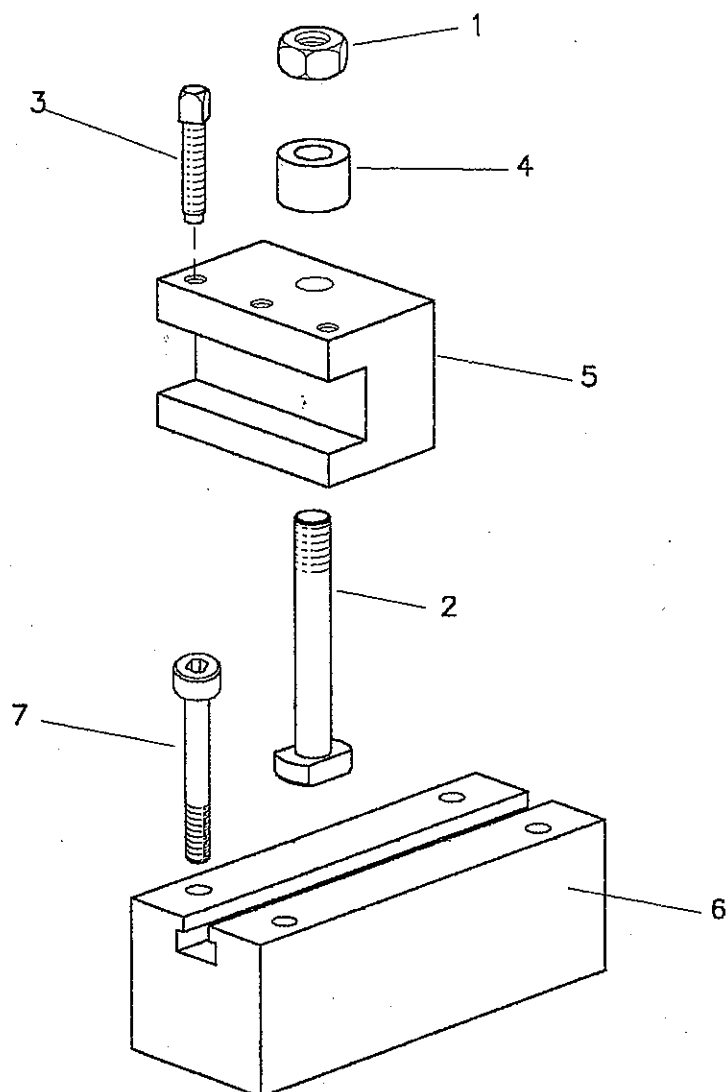
Item	Part N°	Description	Amo.
1	DIN 934	Nut M14	1
2	12.05.00528	Toolpost stud	1
3	12.05.00530	Tool fastening screw	3
4	12.05.00529	Bush	1
5	12.05.00525	Toolholder block	1
6	12.05.00532	Toolpost base (180)	1
7	DIN 912	Allen screw M8x65 (180)	4
8			
9	12.05.00504	Cross-slide carriage	1

MANUAL TOOLPOST MUSTANG 200-225

Item	Part N°	Description	Amo.
1	DIN 934	Nut M20	1
2	12.05.01028	Toolpost stud	1
3	12.05.01030	Tool fastening screw	3
4	01.15.00006	Bush	1
5	12.05.01025	Toolholder block	1
6	12.05.01024	Toolpost base (200)	1
6	12.05.01029	Toolpost base (225)	1
7	DIN 912	Allen screw M10x65 (200)	4
7	DIN 912	Allen screw M10x90 (225)	4
8			
9	12.05.01004	Cross-slide carriage	1

MANUAL TOOLPOST TAURUS 260-310

Item	Part N°	Description	Amo.
1	DIN 934	Nut M20	1
2	12.05.01028	Toolpost stud	1
3	12.05.01030	Tool fastening screw	3
4	01.15.00006	Bush	1
5	12.05.01025	Toolholder block	1
6	12.05.00024	Toolpost base (260)	1
6	12.05.00043	Toolpost base (310)	1
7	DIN 912	Allen screw M10x30	4
8			
9	12.05.00004	Cross-slide carriage	1



RAPID CHANGE TOOLPOST MH COBRA 180

CNC* -05/4

MAR-01

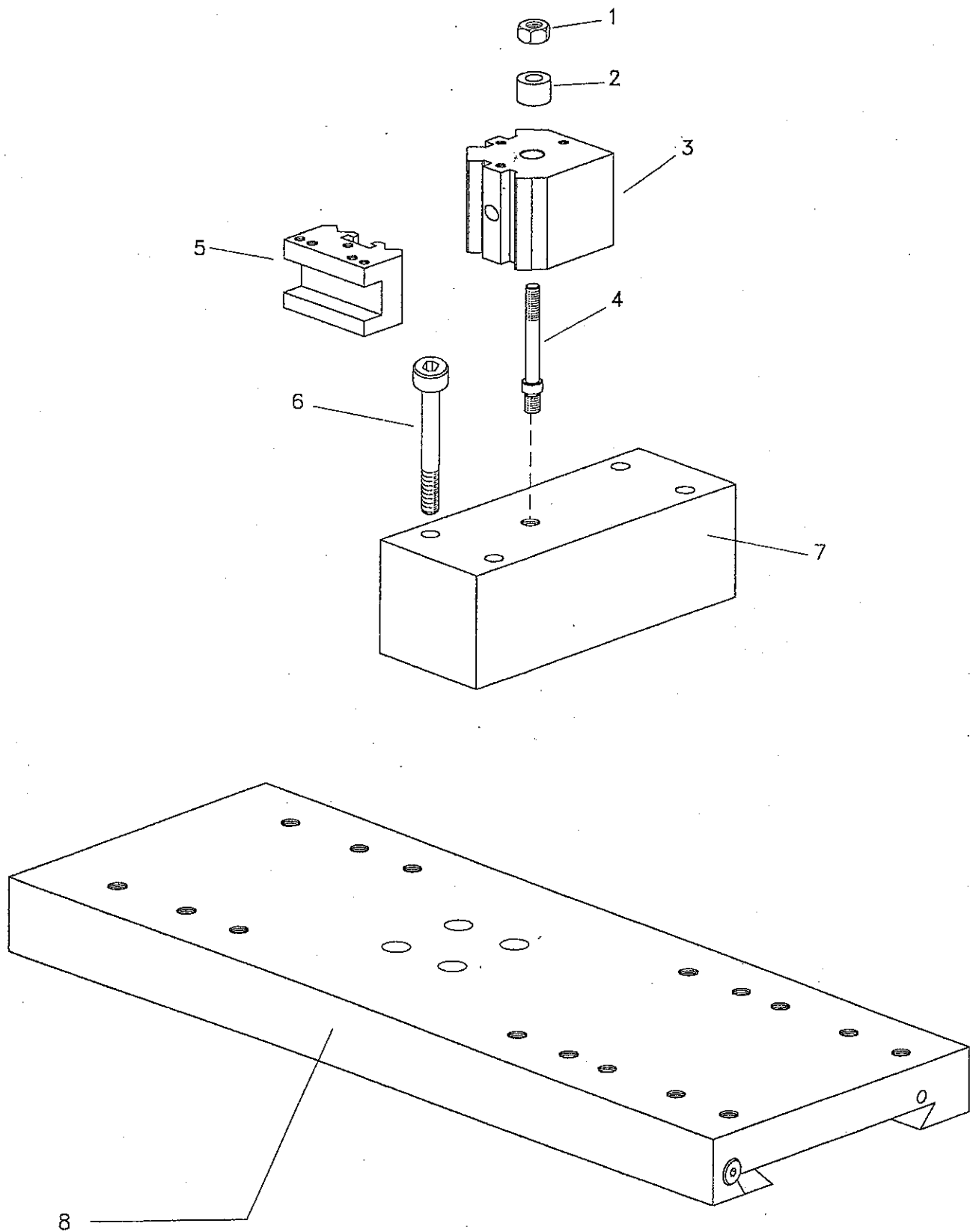
Item	Part N°	Description	Amo.
1	DIN 934	Nut M18	1
2	01.05.05071	Bushing	1
3	240-05-16	MH-90 toolpost	1
4	01.05.00523	Toolpost shaft	1
5	240-05-17	Tool holder	1
6	Din 912	Allen screw M8x65	4
7	12.05.00545	Toolpost base (180)	1
8	12.05.00504	Cross-slide carriage	1

RAPID CHANGE TOOLPOST MH MUSTANG 200-225

Item	Part N°	Description	Amo.
1	DIN 934	Nut M20	1
2	01.05.01071	Bushing	1
3	240-05-11	MH-115 toolpost	1
4	01.05.00029	Toolpost shaft	1
5	240-05-12	Tool holder	1
6	Din 912	Allen screw M10x65 (200)	4
6	Din 912	Allen screw M10x95 (225)	4
7	12.05.01065	Toolpost base (200)	1
7	12.05.01066	Toolpost base (225)	1
8	12.05.01004	Cross-slide carriage	1

RAPID CHANGE TOOLPOST MH TAURUS 260-310

Item	Part N°	Description	Amo.
1	DIN 934	Nut M20	1
2	01.05.00571	Bushing	1
3	240-05-06	MH-130 toolpost	1
4	01.05.00029	Toolpost shaft	1
5	240-05-07	Tool holder	1
6	Din 912	Allen screw M10x115 (260)	4
6	Din 912	Allen screw M10x165 (310)	4
6	Din 912	Allen screw M10x140 (285)	4
7	12.05.00048	Toolpost base (260)	1
7	12.05.00049	Toolpost base (310)	1
7	12.05.00100	Toolpost base (285)	1
8	12.05.00004	Cross-slide carriage	1

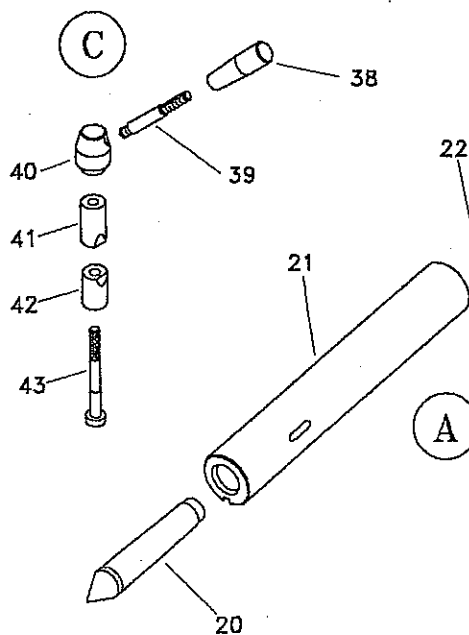
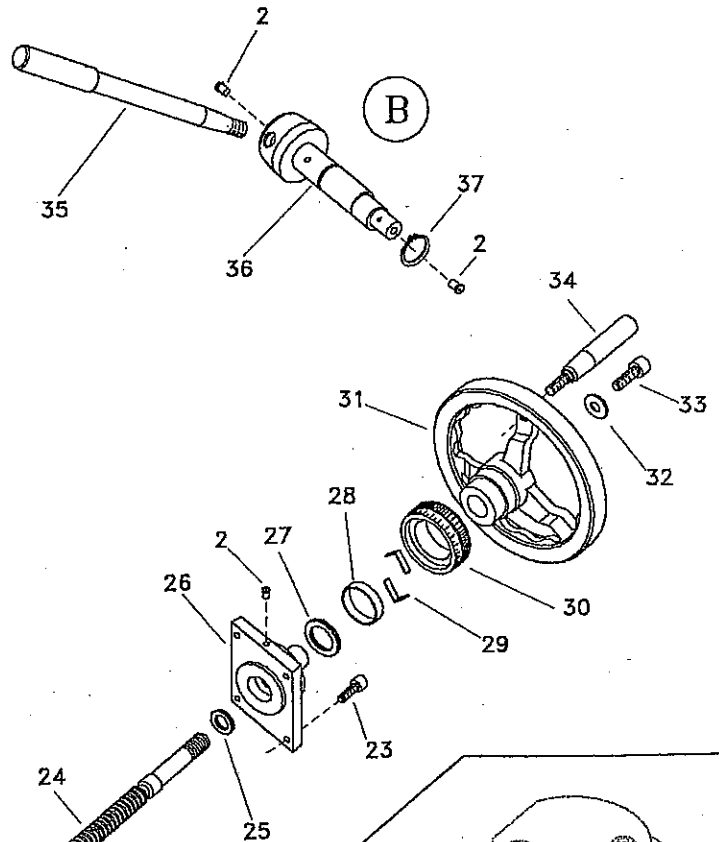
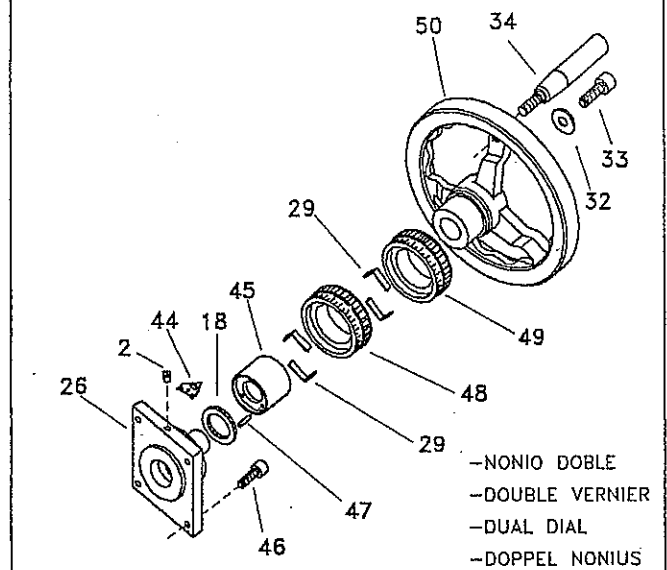
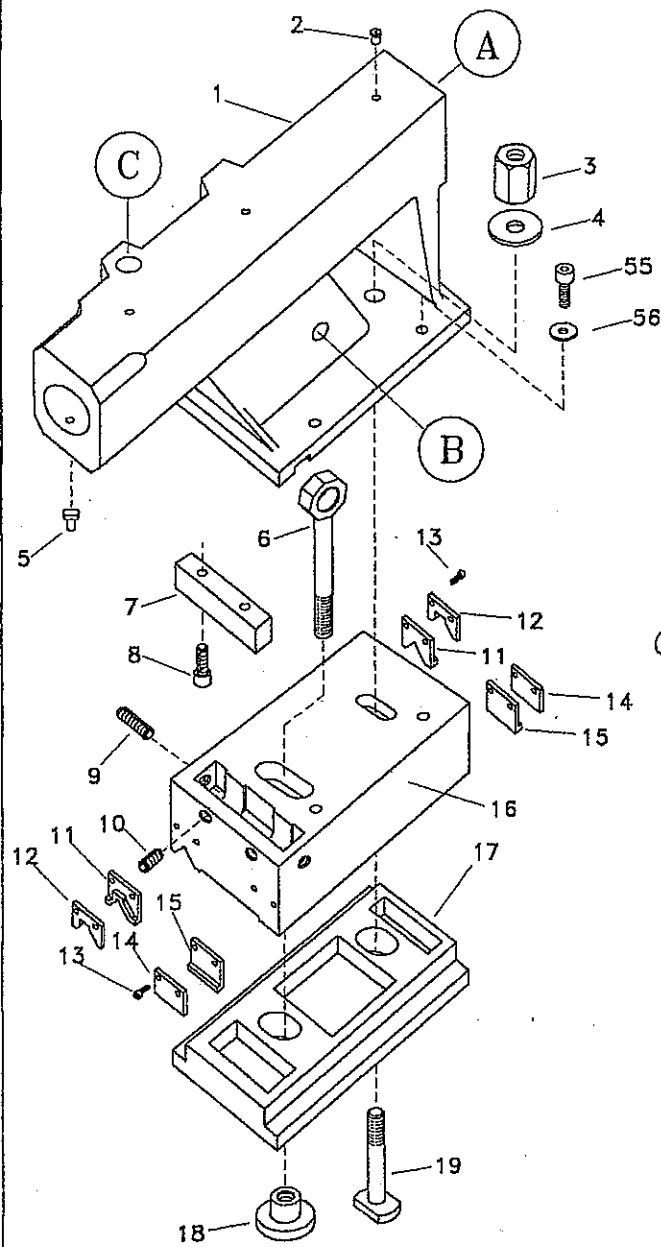


TAILSTOCK

*-Taurus

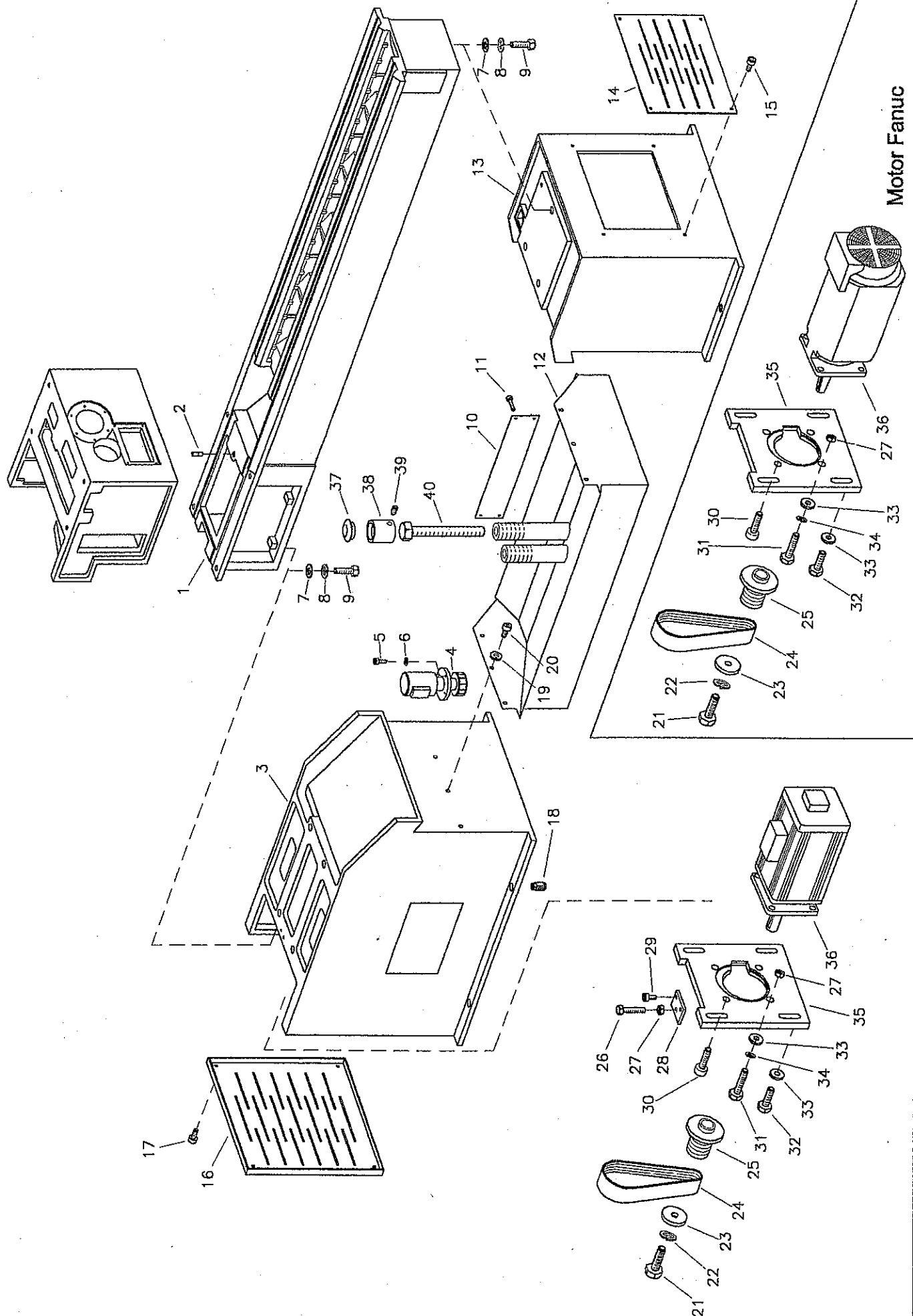
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Item	Part N°	Description	Amo.	Item	Part N°	Description	Amo.
1	12.07.00001	Tailstock framework	1	48	01.07.00043	Vernier m/m	1
2		ø8 ball oiler	6	48	01.07.00044	Vernier h/m	1
3	01.07.00023	Hexagonal brake nut	1	49	01.07.00450	Vernier h/h version TPI	1
4	01.01.00072	Lock washer	1	49	01.07.00460	Vernier m/h version TPI	1
5	01.07.01016	Shank key	1	50	01.07.00041	Double vernier handwheel	1
6	01.07.00020	Lock screw Taurus 260	1	51	12.07.00007	Screw tailstock version mm.	1
6	01.07.00019	Lock screw Taurus 310	1	51	12.07.00009	Screw tailstock version TPI	1
7	01.07.00028	Centering gib	1	52	DIN 6885	Key 20x6x6	1
8	DIN 912	Allen screw M10x25	2	53	12.07.00002	Pneumatic cylinder coupling	1
9	DIN 914	Centring grub screw M14x40	2	53	12.07.00003	Hydraulic cylinder coupling	1
10	DIN 914	Attachment grub screw M14x20	2	54		Pneumatic cylinder	1
11	01.07.00024	Rubber prism wiper	2	54		Hydraulic cylinder	1
12	01.07.00026	Metal plate prism wiper	2	55	DIN 912	Allen screw M12x35	2
13	DIN 912	Allen screw M4x12	8	56	DIN 914	Washer ø12	2
14	01.07.00031	Metal plate straight wiper	2				
15	01.07.00025	Rubber straight wiper	2				
16	01.07.00002	Tailstock base Taurus 260	1				
16	01.07.00015	Tailstock base Taurus 310	1				
17	01.07.00003	Attaching flange	1				
18	01.07.00022	Lock nut	1				
19	01.07.00021	Lock screw Taurus 260	1				
19	01.07.00027	Lock screw Taurus 310	1				
20	01.07.00030	Morse 5 taper fixed centre	1				
21	12.07.00004	Tailstock shank	1				
22	01.07.00005	Barrel nut tailstock	1				
22	01.07.00045	Barrel nut tailstock version TPI	1				
23	DIN 912	Allen screw M8x20	7				
24	12.07.00006	Screw tailstock version mm.	1				
24	01.07.00046	Screw tailstock version TPI	1				
25	DIN 5405	Ax.b.(WS81104+AXK2035+AS2035)	1		MLA0159		
26	01.07.00007	Screw support	1				
27	DIN 5405	Axial bearing (AXK3047-AS3047)	1		MLA0159		
28	01.07.00009	Vernier washer	1				
29	01.05.00060	Strip spring MLA-161	5/10				
30	01.07.00008	Vernier version mm.	1				
31	01.07.00047	Vernier version TPI	1				
31	01.07.00010	Tailstock handwheel	1				
32	08.07.00050	Washer	1				
33	DIN 912	Allen screw M12x25	1				
34	01.04.00020	Handle	1		MLA0167		
35	01.07.00018	T.S. clamp handle	1				
36	01.07.00017	Eccentric	1				
37	DIN 471	Spring ring 30x1.5	1				
38	01.01.00124	Handle knob	1				
39	01.01.00047	Lock handle	1				
40	01.07.00014	Barrel lock knob	1				
41	01.07.00013	Barrel lock bushing	1				
42	01.07.00012	Barrel lock bushing	1				
43	01.07.00011	Barrel lock screw	1				
44		"O" indicator	1				
45	01.07.00042	Double vernier wheel bushing	1				
46	DIN 912	Allen screw M8x25	4				
47	DIN 7343	Spring pin ø4x15	1				

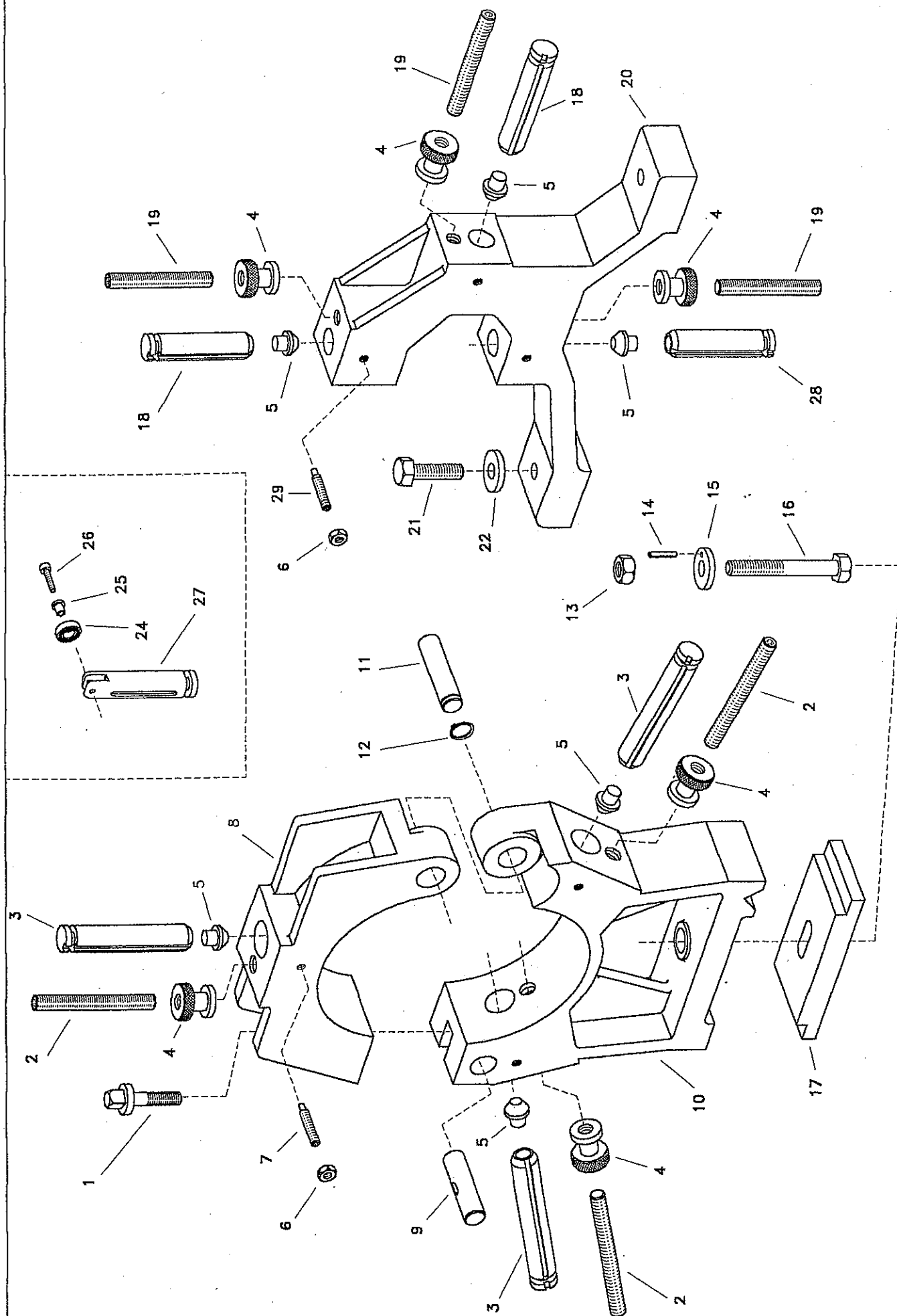


-ACOPLEMENTOS HIDRAULICO Y NEUMATICO
 -Hydraulische und Pneumatische Kupplung
 -ACCOUPLEMENT HYDRAULIQUE ET PNEUMATIQUE
 -HYDRAULIC AND PNEUMATIC COUPLING

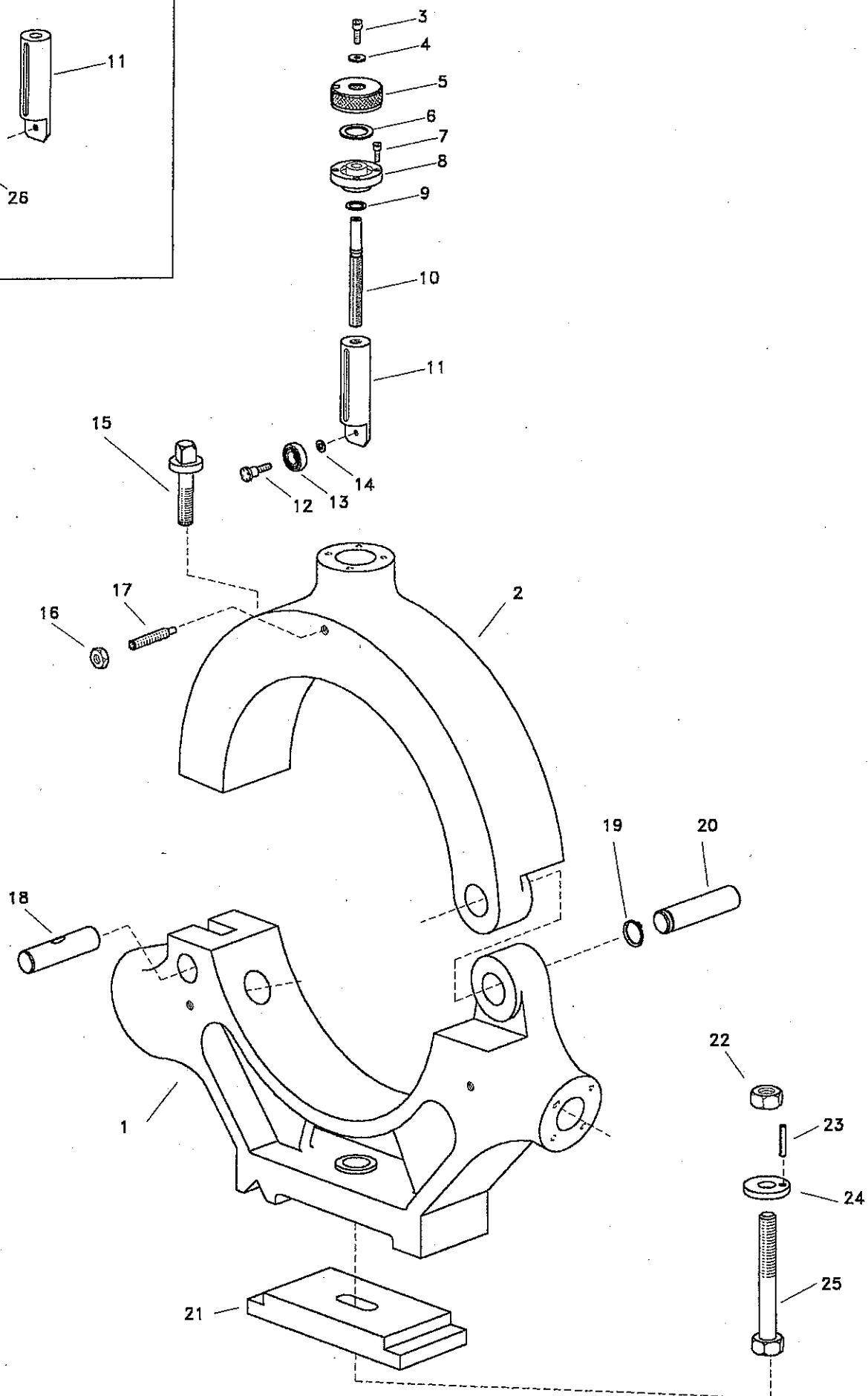
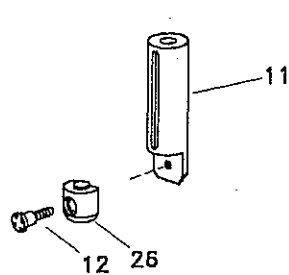
Item	Part N°	Description	Quant
1	01.06.00001	Bed 1000	1
1	01.06.00002	Bed 1500	1
1	01.06.00003	Bed 2000	1
2	01.01.01099	Headstock centering pin	1
3	15.08.00012	Front leg	1
4		Cooling pump motor	2
5	DIN 912	Allen screw M6x12	4
6	DIN 7980	Grower washer ø6.2	4
7	DIN 125	Washer A-18	7
8	DIN 7980	Grower washer ø18.2	7
9	DIN 933	Hexagonal screw M16x80	7
10	01.06.00002	Rear cover	1
11	DIN 912	Allen screw M6x20	4
12	12.08.00004	Chip tray 1000	1
12	12.08.00005	Chip tray 1500	1
12	12.08.00006	Chip tray 2000	1
13	15.08.00013	Rear leg	1
14	01.08.00008	Rear vented cover plate	1
15	ISO 7380	Round headed screw M6x12	4
16		Fagor front vented cover plate	1
16		Fanuc front vented cover plate	1
17	ISO 7380	Round headed screw M6x20	4
18	01.08.00007	Levelling tightening device	6
19	DIN 125	Washer A-8	6
20	DIN 912	Allen screw M8x10	6
21	DIN 933	Hexagonal screw M10x35	1
21	DIN 933	Hexagonal screw M12x35	1
22	DIN 7980	Grower washer ø10.2	1
22	DIN 7980	Grower washer ø12.2	1
23		Washer	1
24		Transmission belt	1
25		Fagor motor pulley	1
25		Fanuc motor pulley	1
26	DIN 933	Hexagonal screw M12x70	1
27	DIN 934	Nut M12	5
28		Motor tightening plug	1
29	DIN 912	Allen screw M10x16	2
30	DIN 912	Allen screw M12x40	2
31	DIN 933	Hexagonal screw M12x50	2
32	DIN 933	Hexagonal screw M12x60	4
33	DIN 125	Washer A-12	4
34	DIN 7980	Grower washer ø12.2	2
35		Motor plate	1
36		Fagor motor	1
36		Fanuc motor	1
37	12.08.00205	Bed load support	2
38	12.08.00206	Levelling regulating bushing	2
39	DIN 913	Allen grub screw M12x12	2
40	12.08.00207	Levelling regulating screw	2



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OPCIONAL

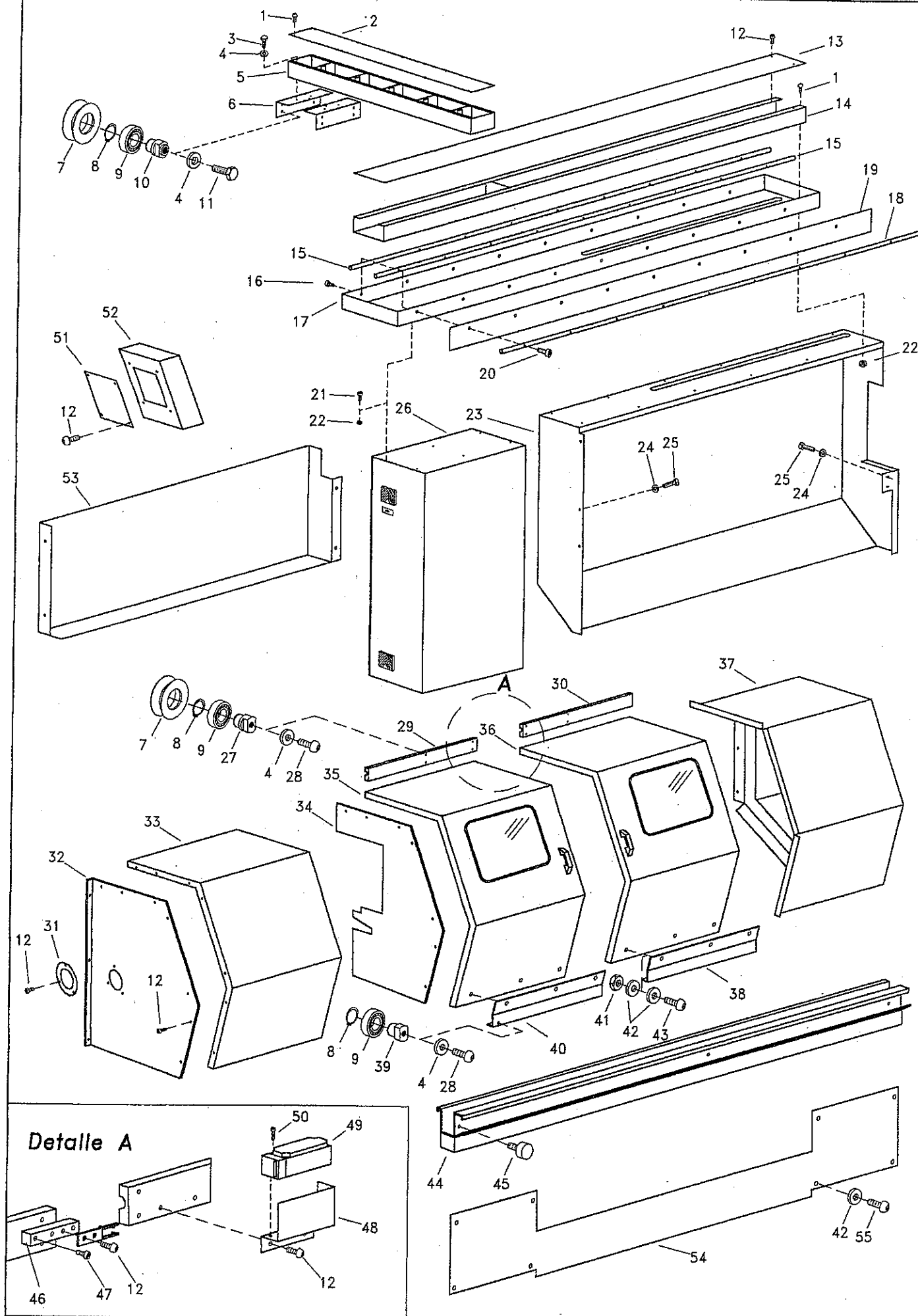


PROTECTION GUARDS

*-Taurus

DIC-00

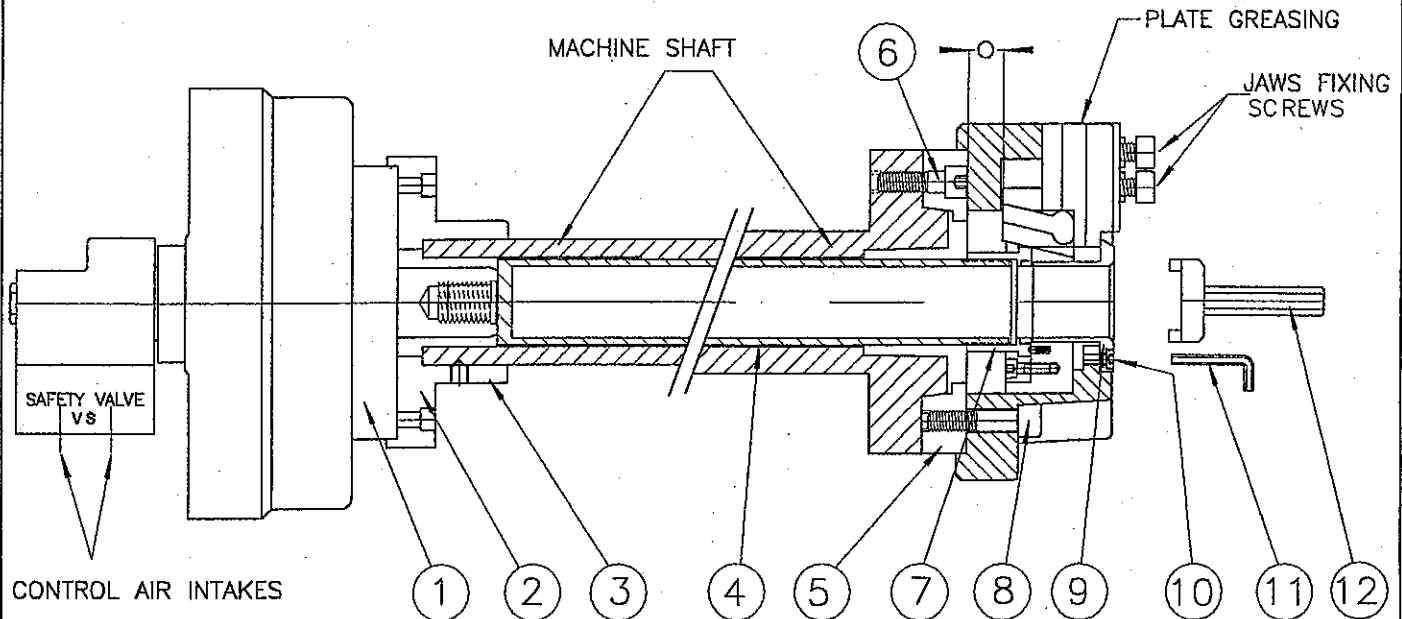
Item	Part N°	Description	Amo.	Item	Part N°	Description	Amo.
1	ISO 7380	Round headed screw M6x10	22	32	15.08.00061	Left headstock cover 310x1000/1500	1
2	15.08.00016	Bridge cover	1	32	15.08.00062	Left headstock cover 310x2000	1
3	DIN 933	Hexagonal screw M10x10	6	33	15.08.00041	Headstock guard 1000/1500	1
4	DIN 125	Flat washer ø10	14	33	15.08.00042	Headstock guard 2000	1
5	15.08.00017	Monitor arm	1	34	15.08.00043	Right headstock cover 260	1
6	15.08.00018	Sliding shaft support	2	34	15.08.00064	Right headstock cover 310	1
7	15.08.00005	Sliding wheels	16	35	15.08.00045	Left door 1000/1500	1
8	DIN 471	Cir clip 10x1	24	35	15.08.00046	Left door 2000	1
9	MPS-623	Bearing 6200 - 2RS	24	36	15.08.00047	Right door 1000	1
10	15.08.00004	Rear bearing shaft	8	36	15.08.00048	Right door 1500	1
11	DIN 933	Hexagonal screw M10x20	8	36	15.08.00049	Right door 2000	1
12	ISO 7380	Round headed screw M5x10	12	37	15.08.00050	Tailstock guard 1000	1
13	15.08.00019	Cable guard cover 1000	1	37	15.08.00051	Tailstock guard 1500	1
13	15.08.00020	Cable guard cover 1500	1	37	15.08.00052	Tailstock guard 2000	1
13	15.08.00021	Cable guard cover 2000	1	38	15.08.00069	Right support sliding shafts 1000	1
14	15.08.00022	Cable guard 1000	1	38	15.08.00070	Right support sliding shafts 1500	1
14	15.08.00023	Cable guard 1500	1	38	15.08.00071	Right support sliding shafts 2000	1
14	15.08.00024	Cable guard 2000	1	39	15.08.00001	Front bearing shaft	8
15	15.08.00011	Threaded bar guard 1000	2	40	15.08.00053	Left support sliding shafts 1000/1500	1
15	15.08.00007	Threaded bar guard 1500	2	40	15.08.00054	Left support sliding shafts 2000	1
15	15.08.00009	Threaded bar guard 2000	2	41	DIN 934	Hexagonal screw M8	6
16	DIN 912	Allen screw M6x30	9	42	DIN 125	Flat washer ø8	12
17	15.08.00025	Sliding bar support 1000	1	43	ISO 7380	Round headed screw M8x10	6
17	15.08.00026	Sliding bar support 1500	1	44	15.08.00055	Drip plate 1000	1
17	15.08.00027	Sliding bar support 2000	1	44	15.08.00056	Drip plate 1500	1
18	15.08.00010	Countersunk bar guard 1000	1	44	15.08.00057	Drip plate 2000	1
18	15.08.00006	Countersunk bar guard 1500	1	45		Rubber plug	3
18	15.08.00008	Countersunk bar guard 2000	1	46	15.08.00088	Safety micro shaft support	1
19	15.08.00028	Sliding bar sheet metal support 1000	1	47	DIN 912	Allen screw M6x30	2
19	15.08.00029	Sliding bar sheet metal support 1500	1	48	15.08.00068	Safety micro body support	1
19	15.08.00030	Sliding bar sheet metal support 2000	1	49		Safety micro	1
20	DIN 912	Allen screw M6x25	9	50	DIN 912	Allen screw M5x40	4
21	DIN 912	Allen screw M6x10	6	51	15.08.00514	Fagor monitor cabinet cover	1
22	DIN 934	Hexagonal screw M6	12	52	15.08.00515	Fagor monitor cabinet	1
23	15.08.00031	Rear guard 1000	1	52	15.08.00063	Fanuc monitor cabinet	1
23	15.08.00032	Rear guard 1500	1	53	15.08.00058	Rear cable guard 1000	1
23	15.08.00033	Rear guard 2000	1	53	15.08.00059	Rear cable guard 1500	1
24	09.01.00517	Washer	4	53	15.08.00060	Rear cable guard 2000	1
25	DIN 933	Hexagonal screw M12x20	4	54	15.08.00072	Front skirt 1000	1
26	15.08.00516	Electric cabinet	1	54	15.08.00073	Front skirt 1500	1
27	15.08.00004	Door bearing shaft	8	54	15.08.00074	Front skirt 2000	1
28	ISO 7380	Round headed screw M6x15	8	55	ISO 7380	Round headed screw M8x15	4
29	15.08.00034	Left sliding shaft guard 1000/1500	1				
29	15.08.00035	Left sliding shaft guard 2000	1				
30	15.08.00036	Right sliding shaft guard 1000	1				
30	15.08.00037	Right sliding shaft guard 1500	1				
30	15.08.00038	Right sliding shaft guard 2000	1				
31	15.08.00066	Main shaft cover ø80	1				
31	15.08.00067	Main shaft cover ø105	1				
32	15.08.00039	Left headstock cover 260x1000/1500	1				
32	15.08.00040	Left headstock cover 260x2000	1				



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 (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)

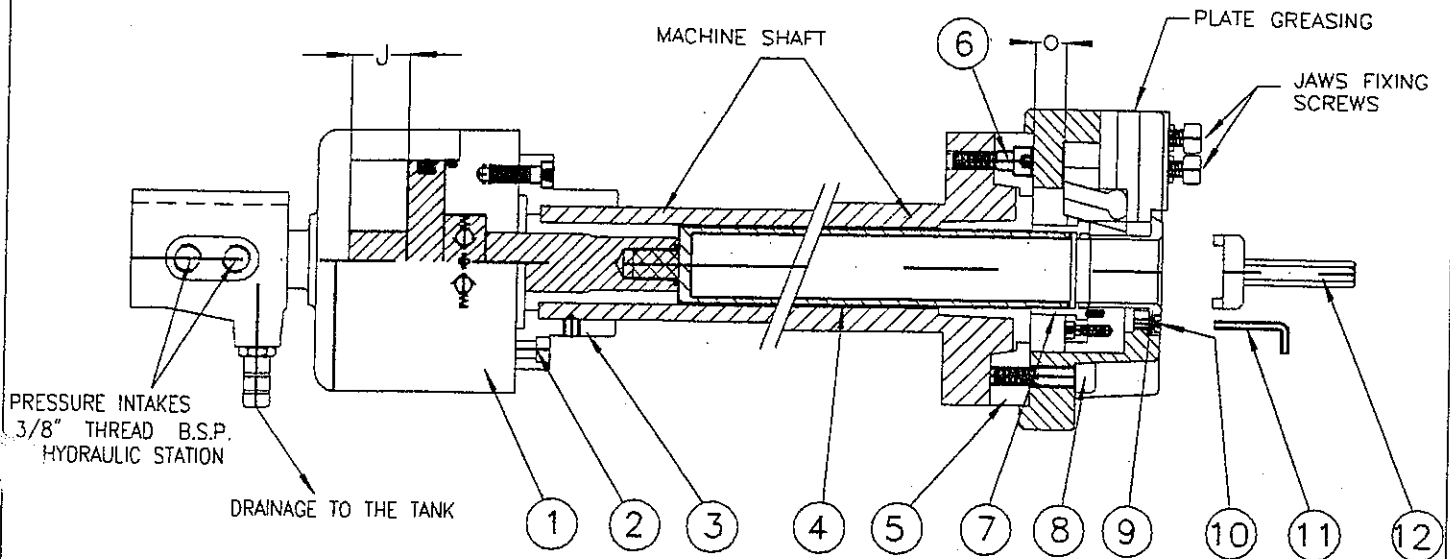
THE PLATE IS READY TO MOUNT THE JAWS AND OPERATE.

DISMOUNT BY REVERSING THE ABOVE STEPS

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.

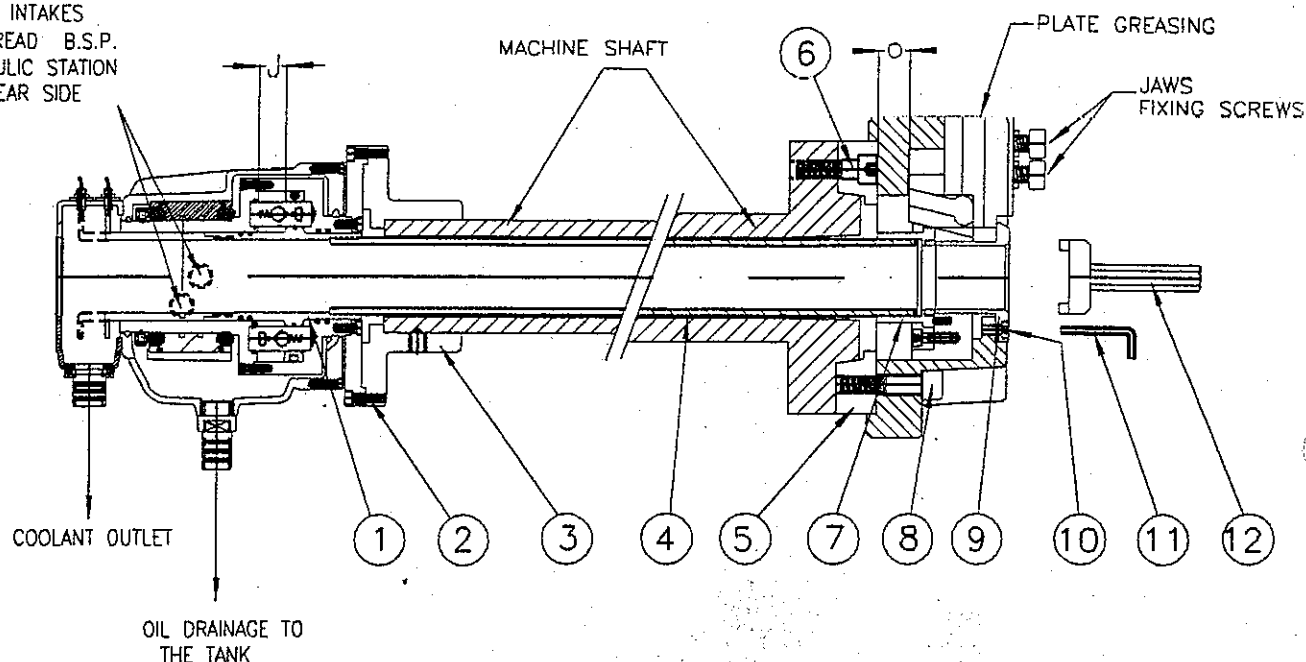
DISMOUNT BY REVERSING THE ABOVE STEPS

MOUNTING OF CYLINDER WITH CENTRAL PASS AND PLATE WITH CENTRAL PASS

CYLINDER Mod. BHV-M

PLATES Mod. HUSL-NHF-NHS

PRESSURE INTAKES
3/8" THREAD B.S.P.
OF HYDRAULIC STATION
ON THE REAR SIDE



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