

**BOSS 542 CNC
BOSS 542r CNC
MINI BOSS 325 CNC
MINI BOSS 325r CNC**

Ⓒ MANUAL FOR USE AND MAINTENANCE

REL. DATA COD.

S/N

BOSS 542 CNC
BOSS 542r CNC
MINI BOSS 325 CNC
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**AUTOMATIC BAR FEEDER WITH
HYDRAULIC SUSPENSION**

 **MANUAL FOR USE AND MAINTENANCE**

 IEMCA

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1 GENERAL INFORMATION

1.1. MANUAL PURPOSE	3
1.2. MANUFACTURER AND BAR FEEDER IDENTIFICATION	4
1.3. TECHNICAL ASSISTANCE	4
1.4. ANNEXES ENCLOSED	4












2 TECHNICAL INFORMATION

2.1. GENERAL BAR FEEDER DESCRIPTION	5
2.2. OPERATING CYCLE - GENERAL DESCRIPTION	7
2.3. SAFETY DEVICES	10
2.4. SAFETY PLATES - LOCATION AND DESCRIPTION	11
2.5. VERSION DESCRIPTION	12
2.6. TECHNICAL SPECIFICATIONS	13
2.6.1 Noise levels	17
2.7. FITTINGS - FOREWORD	18
2.7.1 Bush-holder device - Description	18
2.7.2 Axial displacement device - Description	19
2.8. DEVICE FOR SLIDING HEADSTOCK LATHES - FOREWORD	20
2.8.1 Bar/headstock synchronizing device - Description	20
2.8.2 Telescopic nose - Description	20
2.9. DEVICES FOR CAM LATHES - FOREWORD	21
2.9.1 Headstock return device - Description	21
2.9.2 Cam box - Description	21
2.9.3 Camshaft release device - Description	22



3 SAFETY PROCEDURES - GENERAL INFORMATION


3.1. SAFETY GENERAL INSTRUCTIONS	23
3.2. HANDLING AND INSTALLATION - SAFETY PROCEDURES	23
3.3. ADJUSTMENTS AND SETTING UP - SAFETY PROCEDURES	24
3.4. USE AND OPERATION - SAFETY PROCEDURES	24
3.5. BAR FEEDER MAINTENANCE SAFETY PROCEDURES	24

4 HANDLING AND INSTALLATION


4.1. PACKAGING	25
 4.2. LIFTING	25
 4.3. INSTALLATION AREA - CHARACTERISTICS	27
 4.4. FEEDER WITHOUT AXIAL DISPLACEMENT DEVICE - INSTALLATION	28
4.4.1 Support plates and feet - Installation	28
4.4.2 Height - Adjustment	29
4.4.3 Preliminary positioning	30
4.4.4 Sleeve - Installation	31
4.4.5 Levelling and alignment	32
4.4.6 Feeder fastening	35
4.4.7 Telescopic nose - Installation	36
 4.5. FEEDER WITH AXIAL DISPLACEMENT DEVICE - INSTALLATION	37
4.5.1 Preliminary operations	37
4.5.2 Height - Adjustment	37
4.5.3 Preliminary positioning	38
4.5.4 Sleeve - Installation	38
4.5.5 Levelling and alignment	39
4.5.6 Feeder fastening	40
4.5.7 Telescopic nose - Installation	40
 4.6. DEVICE FOR SLIDING HEADSTOCK LATHES - INSTALLATION	41
4.6.1 Bar/headstock synchronizing device	41
 4.7. DEVICES FOR CAM LATHES - INSTALLATION	42
4.7.1 Headstock return device	42
4.7.2 Cam box	43
4.7.3 Camshaft release device	44
 4.8. LUBRICATING OIL - FILLING	45
 4.9. ELECTRIC CONNECTION	45
 4.10. PNEUMATIC CONNECTION	46
 4.11. ADDITIONAL PUSH-BUTTON PANEL - INSTALLATION	46
 4.12. SELF-LEARNING DIMENSIONS - PROGRAMMING	46

5 ADJUSTMENTS AND SETTING-UP



 5.1. ADJUSTMENT AND SETTING-UP - FOREWORD	47
 5.2. GENERAL ADJUSTMENTS - FOREWORD	47
5.2.1 Feeding chain - Adjustment	48


5.2.2	Drive chains - Adjustment	48
5.2.3	Clutch - Adjustment	49
5.3.	SET-UP ACCORDING TO THE BAR TO BE MACHINED	50
5.3.1	Guides, half bushes, bar-pusher and collet - Replacement	52
5.3.2	Clamps - Replacement	60
5.3.3	Bar guide plates and bar selectors - Adjustment	62
5.3.4	Clamps - Adjustment	65
	5.4. CAM BOX - TIMING	66

6 USE AND OPERATION





6.1.	PUSH-BUTTON PANEL - DESCRIPTION OF CONTROLS	69
6.2.	ADDITIONAL PUSH-BUTTON PANEL - DESCRIPTION OF CONTROLS	73
6.3.	INDICATOR LIGHTS - DESCRIPTION OF INDICATIONS	73
6.4.	BARS TO BE MACHINED - CHARACTERISTICS AND PREPARATION	74
6.5.	FEEDER SET-UP AND AUTOMATIC CYCLE START	75
6.5.1	Bar magazine - Filling	75
6.5.2	Lubrication oil - Flow adjustment	76
6.5.3	Automatic cycle start	77
6.6.	FEEDER STOP	78
6.7.	AUTOMATIC CYCLE START AFTER MANUAL CYCLE OPERATIONS	78
6.8.	AUTOMATIC CYCLE START - RESUMING WORK AFTER POWER-OFF	79
	6.9. MACHINING CHANGE - QUICK GUIDE	80
6.9.1	Machining type change with guide change-over	80
6.9.2	Machining change without guide change-over	80

7 BAR FEEDER MAINTENANCE








	7.1. MAINTENANCE - GENERAL RULES	81
	7.2. SCHEDULED MAINTENANCE	82
7.2.1	Revolving tip and collet - Check	82
7.2.2	Lubricating oil - Level check	83
7.2.3	Lubricating oil - Change	83
7.2.4	Clutch oil - Check	84
7.2.5	Clutch oil - Change	85
7.2.6	Clutch disks - Wear check	86
7.2.7	Guide opening screw - Greasing	87
7.2.8	Driving motor brushes - Wear inspection	88

7.2.9	Air filter unit - Check	89
	7.3. AXIAL DISPLACEMENT DEVICE - USE	90

8 TROUBLES - CAUSES - CURES

	8.1. GENERAL FAULTS	91
	8.2. BAR MAGAZINE - FAULTS	91
	8.3. INSERTION IN THE COLLET - FAULTS	92
	8.4. BAR FEEDING - FAULTS	92

9 PART REPLACEMENT

	9.1. FEED CHAIN - REPLACEMENT	93
	9.2. PRIMARY CHAIN AND PINION - REPLACEMENT	93
	9.3. GUIDE OPENING BELT - REPLACEMENT	94
	9.4. EEPROM - REPLACEMENT	95
	9.5. BOARD - REPLACEMENT	96
	9.6. FEED MOTOR DRIVE - REPLACEMENT	98
	9.7. RECOMMENDED SPARE PARTS	99

INDEX ANALYTICAL	101
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Before carrying out any servicing whatsoever on the bar feeder, it is of the utmost importance to read this manual carefully.

1.1. MANUAL PURPOSE

This manual has been written and supplied by the manufacturer and is integral part of the bar feeder and of its equipment.

The compliance with the instructions contained herein ensures the operator and bar feeder safety as well as a running economy and a longer life of the bar feeder itself.

In order to allow a quick search of contents, consult the descriptive index.

Particularly important parts of this manual have been highlighted in bold type and preceded by the following symbols:



DANGER - WARNING: shows impending danger which might cause serious harm, hence it is necessary to pay the greatest attention.



CAUTION: in order to avoid accidents or damages to property, suitable measures shall be adopted.



INFORMATION: Information: technical instructions having particular importance.

In order to allow a quick search of contents, consult the descriptive index.

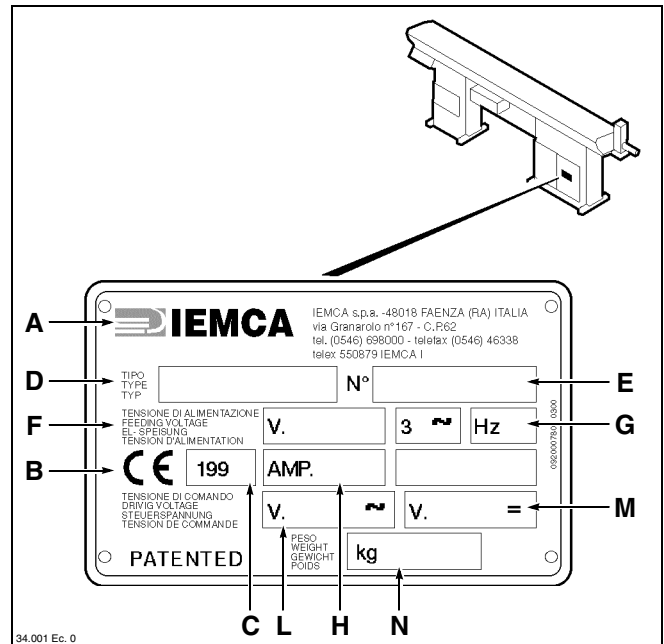


Operations described in paragraphs showing this symbol, must be performed by qualified and skilled personnel only. Any other operation can be performed either by qualified personnel or by professional bar feeder operators.

1.2. MANUFACTURER AND BAR FEEDER IDENTIFICATION

- A - Manufacturer's identification
- B - CE conformity marking
- C - Year of manufacture
- D - Bar feeder model
- E - Serial number
- F - Feeding voltage
- G - Mains frequency
- H - Amperage
- B - Alternate driving voltage
- C - Direct driving voltage
- D - Bar feeder weight.

i **INFORMATION:** Always provide the Manufacturer with the above mentioned specifications in order to obtain information or whenever ordering spare parts, etc.



1.3. TECHNICAL ASSISTANCE

Whenever necessary, please apply to one of the Technical Assistance Departments listed in the annex enclosed herein.

i **INFORMATION:** As far as technical servicing relevant to the bar feeder is concerned, always specify the technical data printed nameplate.

1.4. ANNEXES ENCLOSED

- Technical assistance departments list.
- Collet summary tables.
- Push-button panel instruction manual.
- Wiring diagram.
- Pneumatic diagram.
- Lathe coupling instructions.

2.1. GENERAL BAR FEEDER DESCRIPTION

The **BOSS** automatic bar feeder is used in the machine-tool industry and in particular, for automatic lathe feeding. It is particularly suitable for feeding fixed or sliding headstock lathes, numerical control or cam lathes.

The working cycle is controlled by a control panel with built-in PLC, which is able to dialogue with the lathe control.

The main control digital push-button panel makes programming easier. An additional push-button panel can be detached to control the main functions without leaving the lathe.

The bar feeder can be used to feed bars, pipes and various sections.

The guide channel is fully closed during machining; a pump is provided to maintain a continuous oil flow inside the channel, creating a hydrodynamic support effect; these characteristics allow the bar to rotate at a high r.p.m. number, with no vibrations and no surface damaging.

The use of a DC motor and of an electronically controlled clutch make it possible to adjust the feeding speed and thrust to ideal values at any time during the machining cycle.

Bar remnant ejection can be caused by bar-pusher feeding or next bar feeding.

Bar feeder series **BOSS** are produced in the following models:

MINI **BOSS** 325 CNC (standard version)

MINI **BOSS** 325r CNC (reversed version)

BOSS 542 CNC (standard version)

BOSS 542r CNC (reversed version)

To make the consultation of this manual easier, the names of the four models have been shortened as follows:

MINI **BOSS** CNC is shortened to **MINI BOSS**

MINI **BOSS** 325r CNC is shortened to **MINI BOSSr**

BOSS 542 CNC is shortened to **BOSS**

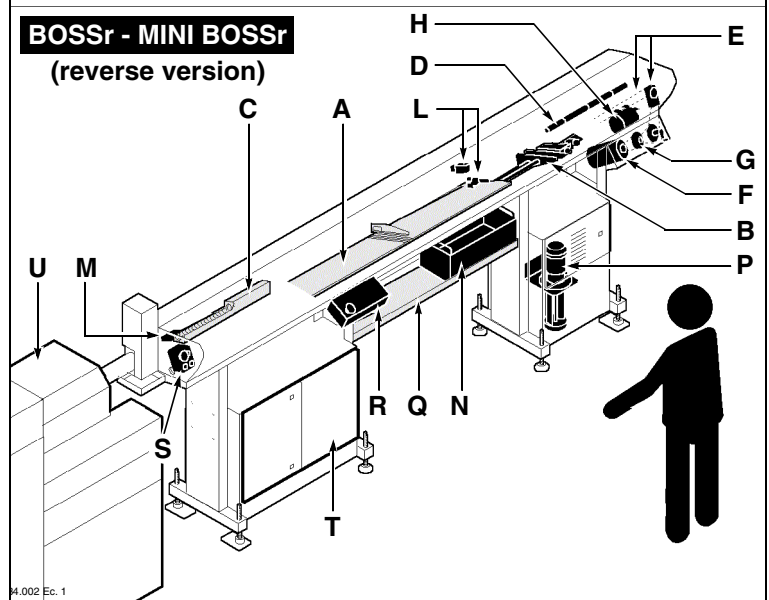
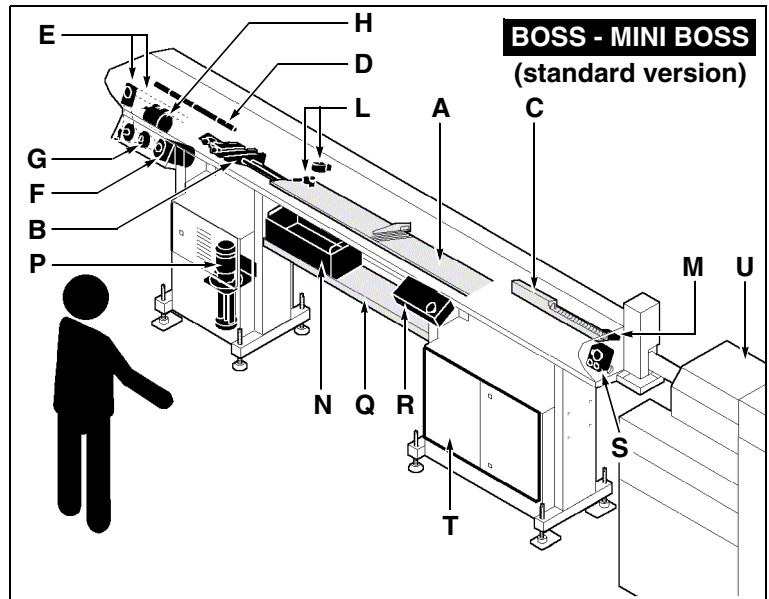
BOSS 542r CNC is shortened to **BOSSr**

The texts, tables and illustrations contained in this manual concern, unless otherwise stated, the standard version (MINI **BOSS** and **BOSS**) with the lathe on the operator's right.

As for the reverse version (MINI **BOSSr** and **BOSSr**), with the lathe on the operator's left, do not forget that the main parts are located on the opposite side, as mentioned below.

□ Main parts

- A - Magazine;** where bars are stored.
- B - Bar selection device;** it allows the first bar to be lowered into the guides and holds back the remaining bars in the magazine.
- C - Guides;** they guide the bars during machining.
- D - Bar-pusher;** it pushes the bar during machining.
- E - Feed chain;** it transmits motion from the drive system to the bar-pusher.
- F - Drive system;** it drives the bar-pusher.
- G - Clutch;** it transmits motion from the drive system to the feed chain. It can be set to obtain thrust adjustment.
- H - Insertion/extraction drive;** it drives the bar feeder parts controlling bar insertion into the collet and subsequent bar remnant extraction. It also drives the bar feeder parts controlling guide opening/closing and bar selection.
- B - Clamps;** they hold the bar during bar introduction in and extraction from the bar-pusher collet.
- C - Facing device;** it sends a signal at bar passage.
- D - Remnant collection box;** bar remnants are dropped into this box after extraction from the bar-pusher collet.
- F - Lubricating pump;** it delivers oil to the guides.
- G - Oil recovery device;** it collects oil flowing out of the guides.
- H - Main push-button panel;** feeder functions are programmed and controlled from this panel.
- I - Additional panel;** it makes it possible to control the main feeder functions without leaving the lathe.



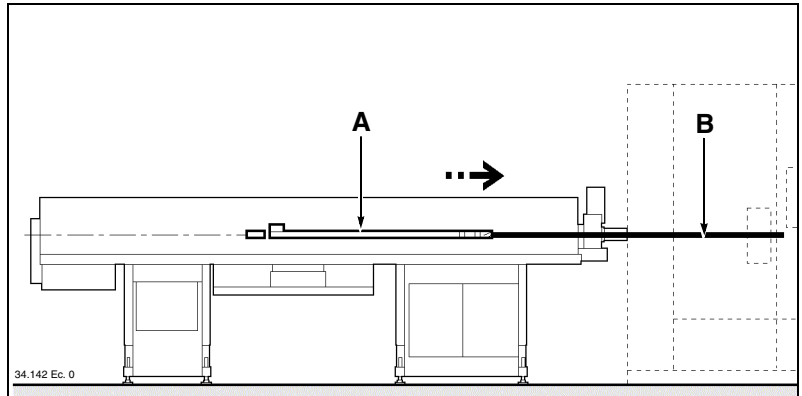
J - Electric cabinet; it contains the electric switch-board.

K - Lathe

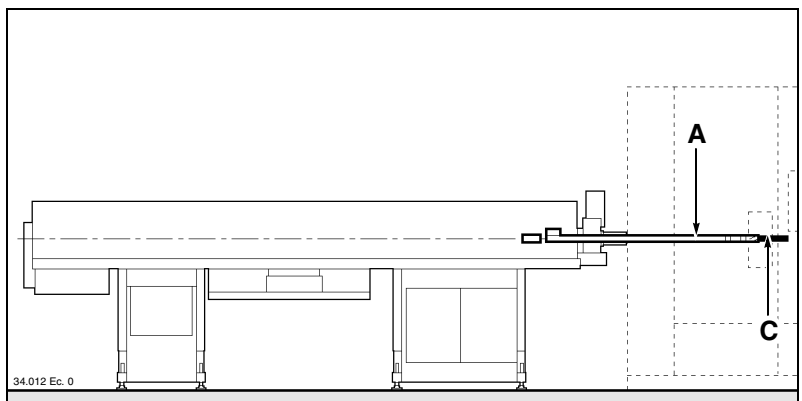
2.2. OPERATING CYCLE - General description

In the automatic operation mode, bar feeder movements are controlled in the sequence described below:

The bar-pusher **A** feeds bar **B** in the lathe by following lathe impulses until bar end.

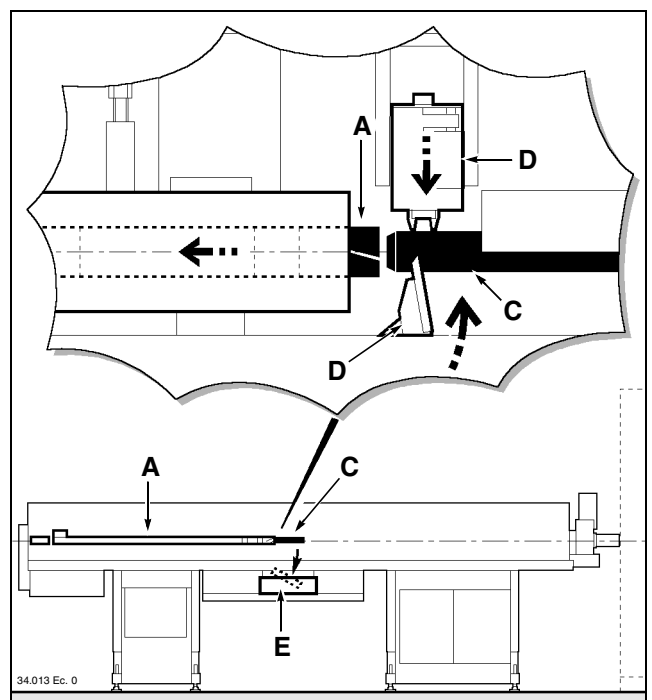


The bar-pusher **A** and remnant **C** are in their forwards limit stop position.



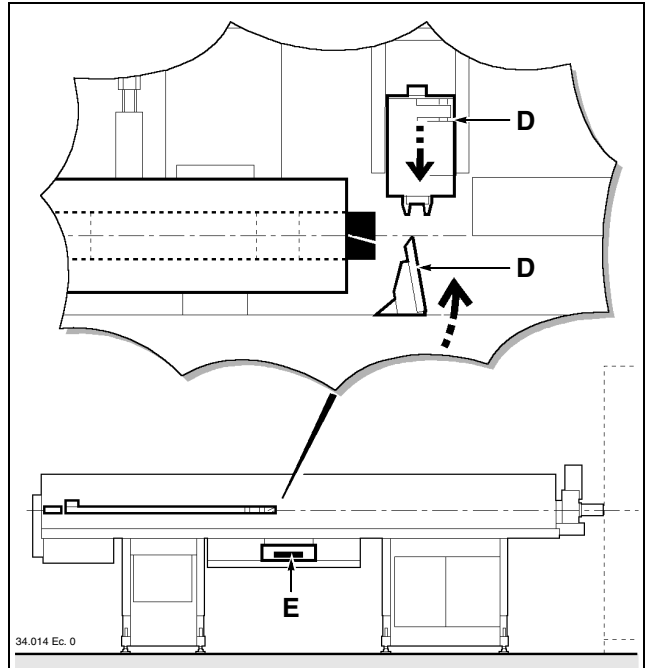
The bar-pusher **A** and remnant **C** reach their backwards limit stop position.

The clamps **D** close and the bar-pusher moves back; the remnant is extracted from the collet. The clamps open and the remnant is dropped into the box **E**.

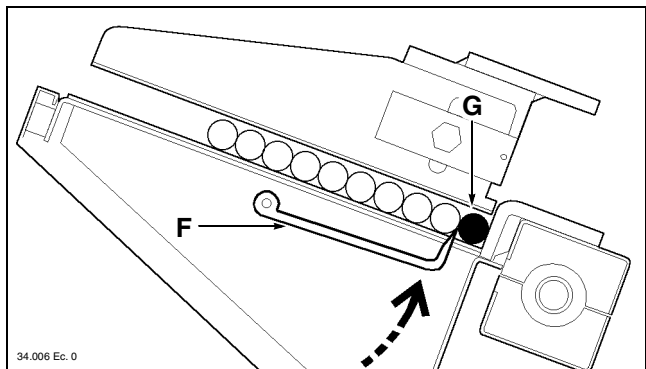


Clamps **D** close again to perform remnant **E** extraction check.

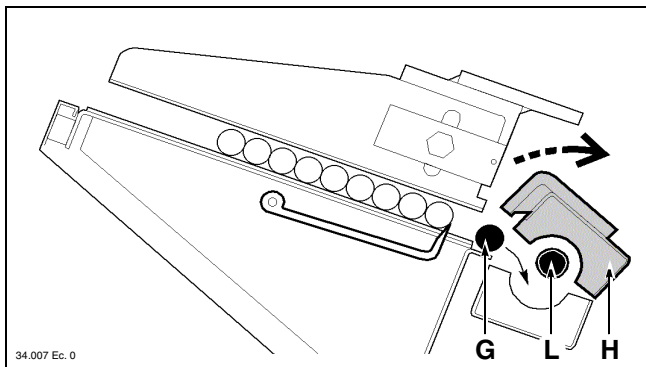
If the remnant is still inserted in the bar-pusher collet, the feeder stops; otherwise, it continues its cycle.



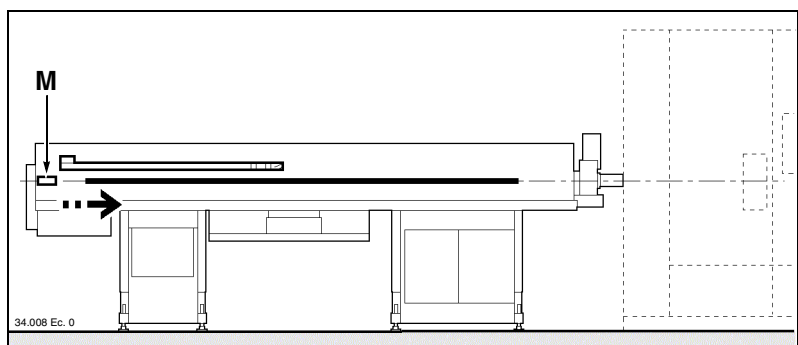
The bar selection device **F** goes up: all the bars in the magazine are held back except the first bar **G**.



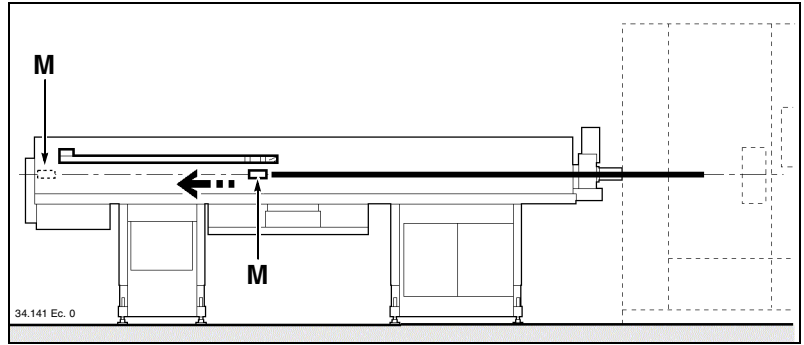
The upper guides **H** and the bar-pusher **L** are opened; the bar **G** is dropped into the guide.



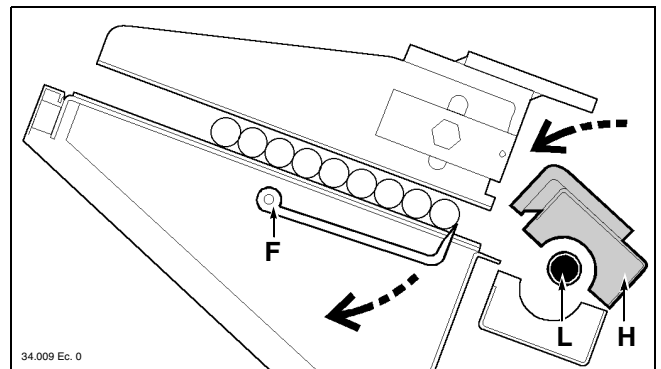
The small pusher truck **M** starts its stroke.



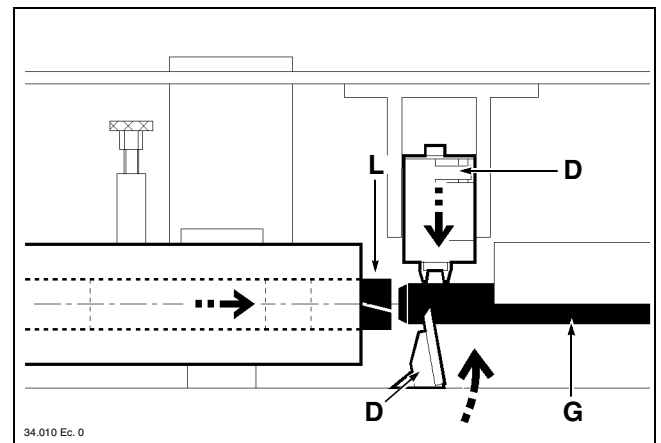
When the small pusher truck **M** completes its stroke, the required space has been created for bar-pusher insertion. The small pusher truck executes its return stroke.



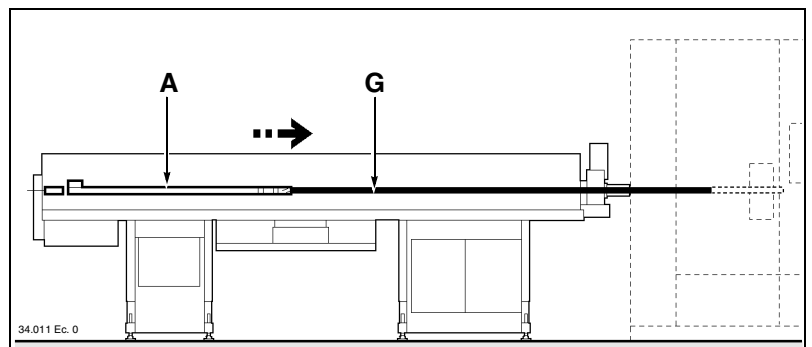
The upper guides **H** are closed; the bar-pusher **L** is positioned along the spindle axis.



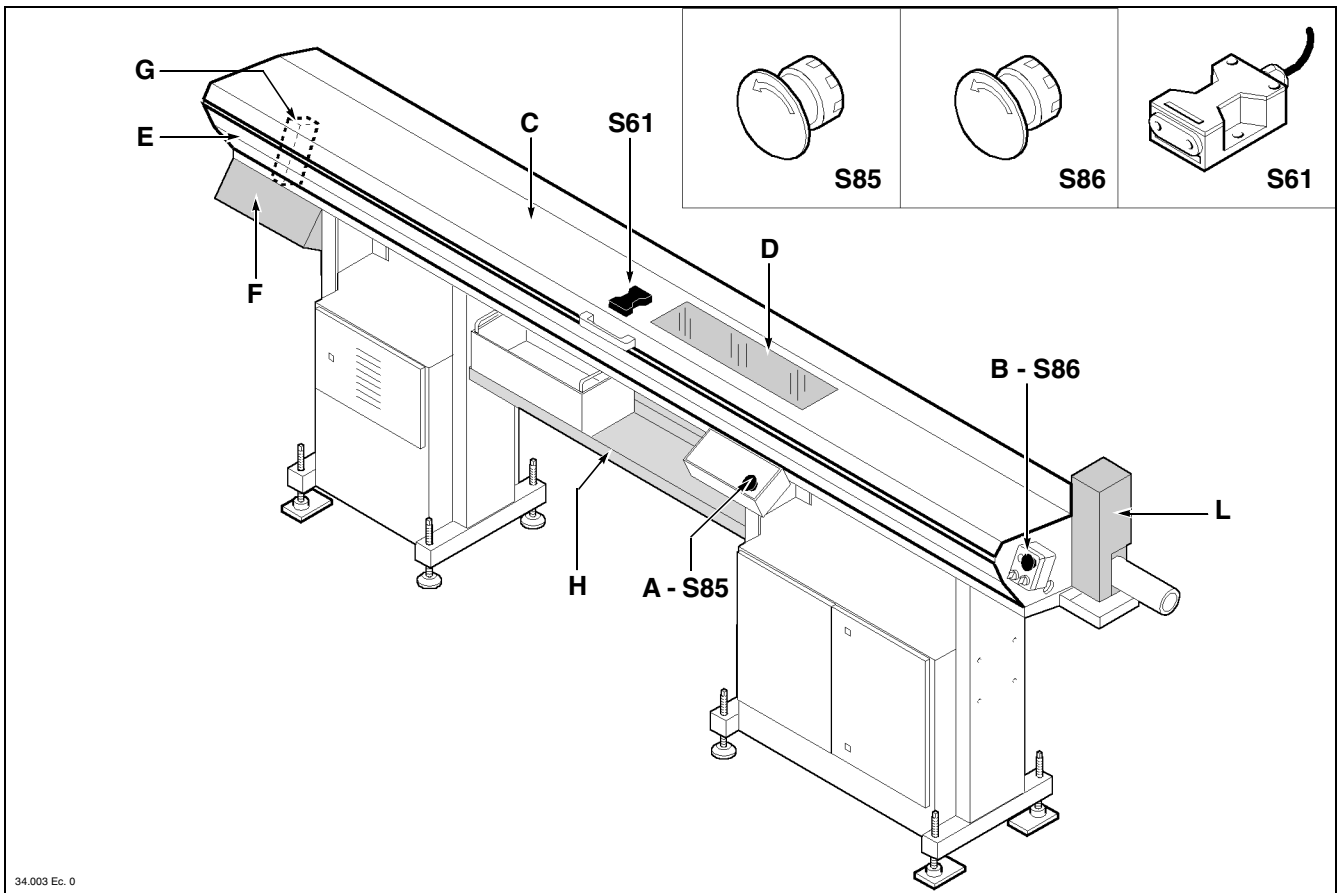
The clamps **D** close, the bar-pusher **L** moves forwards; the bar **G** is inserted into the bar-pusher collet. The bar selection device **F** is lowered.



The bar-pusher **A** and bar **G** execute their facing stroke. A new automatic work cycle is started.



2.3. SAFETY DEVICES



34.003 Ec. 0

A - Emergency button S85; by working it, all feeder and lathe functions are stopped in an emergency situation.

B - Emergency button S86; by working it, all feeder and lathe functions are stopped in an emergency situation.

C - Interlocked mobile guard: associated with microswitch **S61**.

According to the selected cycle, its functions are: manual cycle; when the guard is opened, the feeder and lathe functions are stopped. By closing the guard, the operator can restart the cycle; automatic cycle;

- during the bar feeding phase, the guard is opened to refill the magazine. There are no risks for the operator in the involved area even if the feeder and lathe functions are not stopped.
- during the bar change-over phase, feeder and lathe functions are stopped when the guard is opened. The operator can restart the cycle by closing the guard. There are no risks for the operator in the involved area even if the feeder and lathe functions are not stopped.

D - Fixed guard: it is made from transparent material to allow visual inspection of the bar magazine area.

E - Fixed guard: it prevents accidental access to the bar selection area.

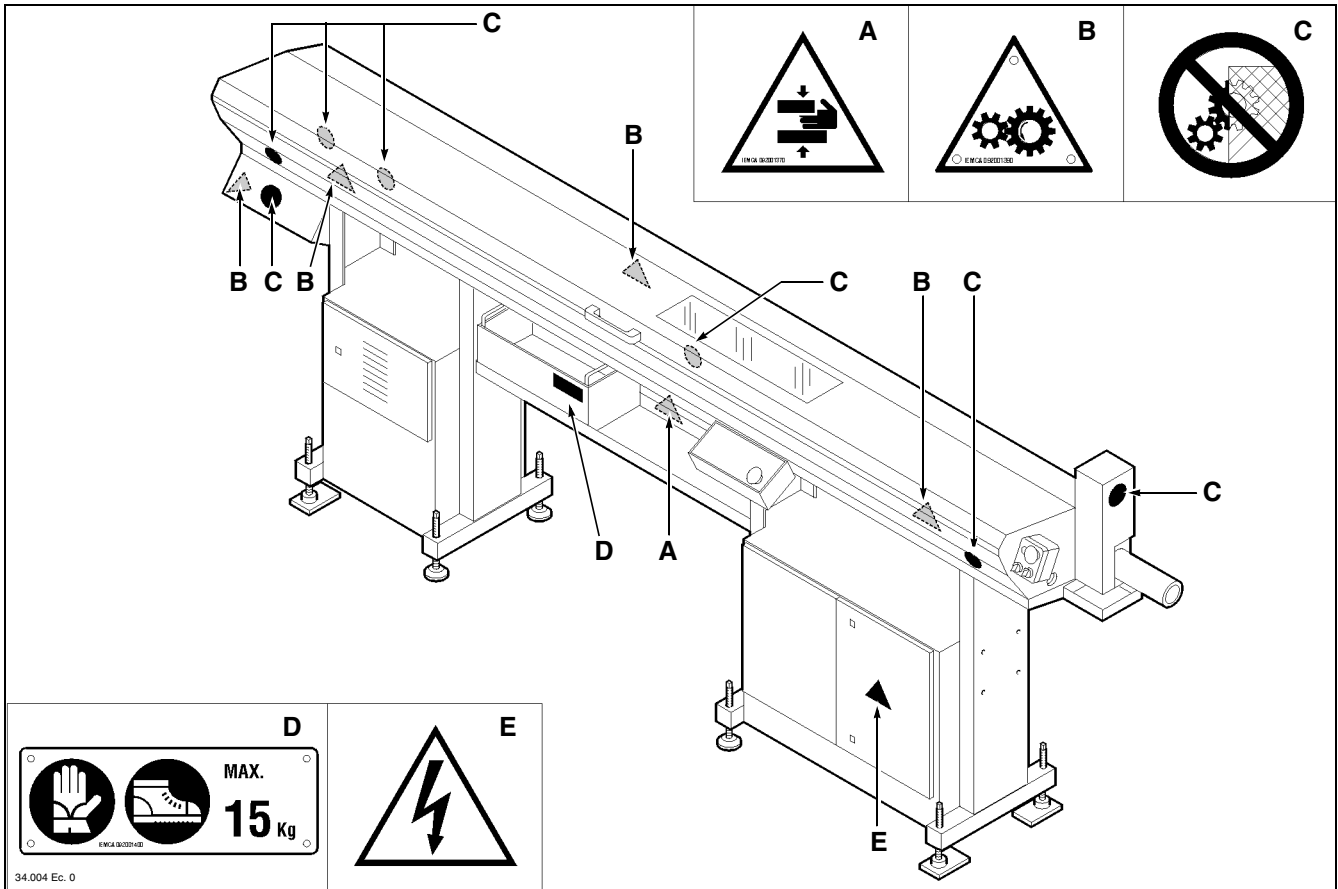
F - Fixed guard: it prevents accidental access to the drive area.

G - Fixed guard: it prevents accidental access to the drive belt area.

H - Remnant collection tank: it also acts as a fixed guard to prevent accidental access to moving parts.

B - Fixed guard: it prevents accidental access to the bush-holder device.

2.4. SAFETY PLATES - Location and description



A - Danger of upper limb crushing.

B - Caution! Moving parts.

C - Do not remove the safety barriers.

D - Wear safety gloves and shoes. Do not lift loads exceeding 15 kg manually.

E - Caution! Danger of electric contact.

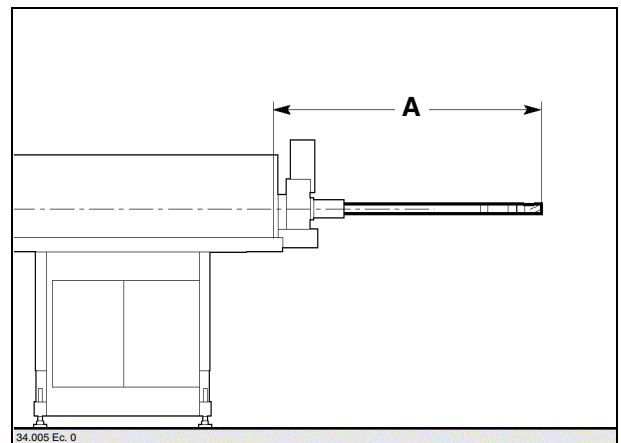
2.5. VERSION DESCRIPTION

Table 1. Maximum bar length

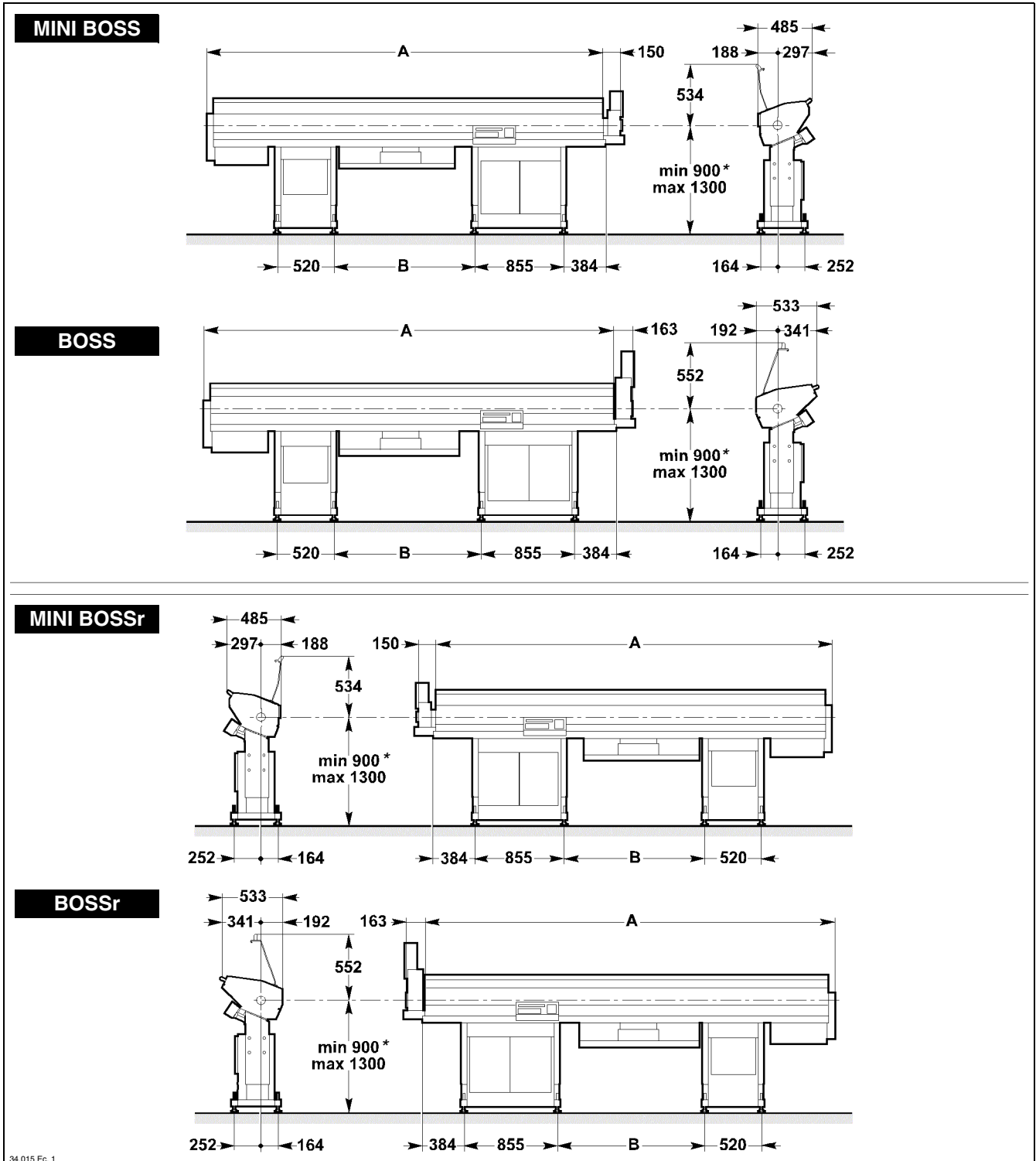
<i>Model</i>	<i>Version</i>	<i>Max. length mm (ft)</i>
<i>MINI BOSS BOSS</i>	32	3200 (10,5)
	37	3740 (12,2)
	44	4400 (14,4)

Table 2. Max. bar-pusher extension

<i>Model</i>	<i>Version</i>	<i>A - Max extension (mm)</i>
<i>MINI BOSS BOSS</i>	N	937
	L	1267
	LL	1597



2.6. TECHNICAL SPECIFICATIONS



(*) Without axial displacement device, the minimum dimension can be reduced to 850 mm.

Table 3. Overall dimensions

Model	Version	A (mm)	B (mm)
MINI BOSS - BOSS	32	3750	1327
	37	4290	1867
	44	4950	2527

Table 4. General technical specifications

	MINI BOSS		BOSS	
Round bar diameter	∅ min 3mm (1/8")	∅ max 25 mm (1")	∅ min 5 mm (3/16")	∅ max 42 mm (1"21/32)
Hex bar diameter	∅ min 3mm (1/8")	∅ max 22 mm (7/8")	∅ min 4,4 mm (11/64")	∅ max 36 mm (1"13/32)
Max bar length	mod 32 - 3200 mm (10,5 ft) mod 37 - 3740 mm (12,2 ft) mod 44 - 4400 mm (14,4 ft)		mod 32 - 3200 mm (10,5 ft) mod 37 - 3740 mm (12,2 ft) mod 44 - 4400 mm (14,4 ft)	
Magazine capacity (working width)	n. 26 barre ∅ 10 mm (3/8")		n. 28 barre ∅ 10 mm (3/8")	
(Adjustable) feeding speed	max 750 mm/sec		max 750 mm/sec	
(Adjustable) return speed	max 800 mm/sec		max 800 mm/sec	
Remnant length (standard version)	400 mm		400 mm	
Remnant length (oversize version (*))	700 mm		700 mm	
Bar change-over time (with 3000 mm bar)	25 sec		23 sec	
Input voltage	380 Volt		380 Volt	
Mains frequency	50 Hz		50 Hz	
Control voltage	24 Volt D.C.		24 Volt D.C.	
Installed power	1,5 kW		2kW	
Oil quantity	40 l		40 l	
Air pressure	6 bar		6 bar	
Pneumatic energy average consumption (**)	20 NL/min		20 NL/min	
Dry weight	mod 32 - 900 kg mod 37 - 1000 kg mod 44 - 1100 kg		mod 32 - 900 kg mod 37 - 1000 kg mod 44 - 1100 kg	

(*) excluded version 32 LL

(**) Approximate value depending on the number of activation cycles.

Table 5. Working axis height

Model	Upper screws position	X (mm)
MINI BOSS BOSS	1	900÷939
	2	940÷969
	3	970÷1009
	4	1010÷1039
	5	1040÷1079
	6	1080÷1109
	7	1110÷1149
	8	1150÷1179
	9	1180÷1200

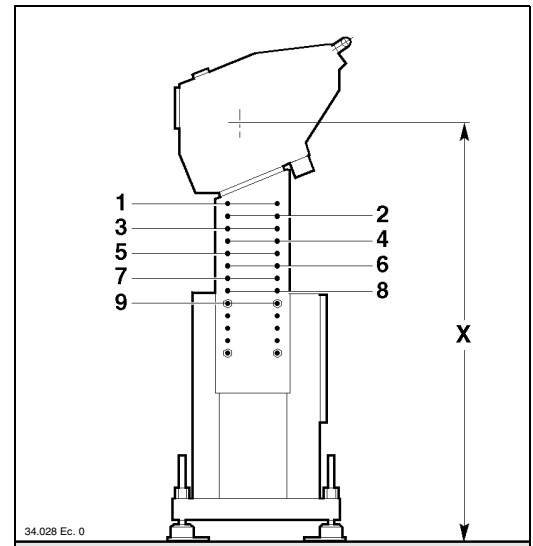


Table 6. Diameters of guides, bar-pusher, bars and pipes

Model	Guide diameter (mm)	Bar-pusher diameter (mm)	Bar diameter (mm)		Pipe diameter (mm) (*)	
			MIN	MAX		
MINI BOSS	13	10	3	8	10	
		12	3	10	12	
	17	15	5	13	15	
		16	5	14	16	
	21	16	5	14	16	
		18	5	16	18	
		19	5	17	19	
		20	5	18	20	
	26	23	5	21	23	
		25	5	23	25	
	28	25	5	23	25	
		27	5	25	27	
	BOSS	13	10	5	8	10
			12	5	10	12
17		15	5	13	15	
		16	5	14	16	
21		16	5	14	16	
		18	5	16	18	
		19	5	17	19	
		20	5	18	20	
26		23	5	21	23	
		25	5	23	25	
28		25	5	23	25	
		27	5	25	27	
33		30	5	27	30	
		31	5	28	31	
		32	5	29	32	
36		32	5	29	32	
		35	5	32	35	
43		40	10	37	40	
		42	10	39	42	
46		42	10	39	42	
	45	10	42	/		

(*) valid also for prepared bars or normal bars machined with front remnant ejection

Table 7. MINI BOSS guides lubricating oils

<i>ISO and UNI symbols</i>	<i>Make</i>	<i>Name</i>
CB 100	Agip	Acer 100
	Api	Api Cis 100
	BP	Energol CS 100
	Castrol	Magna 100
	Chevron	Circulating Oil 100
	Elf	Movixa 100
	Esso	Nuto 100
	Fina	Solna 100
	IP	IP Hermea 100
	Klüber	Crucolan 100
	Mobil	Vactra Oil Heavy
	Olio Fiat	Daphne LPN 100
	Roloil	Arm V 100
	Shell	Vitrea 100
		Tellus C 100
	Tamoil	Industrial Oil 100
	Texaco	Omnis 100
	Total	Cortis 100
		Azolla ZS 100
Q8	Verdi 100	

Table 8. BOSS guides lubricating oils

<i>ISO and UNI symbols</i>	<i>Make</i>	<i>Name</i>
CB 150	Agip	Acer 150
	Api	Api Cis 150
	Aral	Aral Degol Tu 150
	BP	Energol CS 150
	Castrol	Magna 150
	Chevron	Circulating Oil 150
	Elf	Movixa 150
	Esso	Nuto 150
	Fina	Solna 150
	IP	IP Hermea 150
	Klüber	Crucolan 150
	Mobil	Vactra Oil Extra Heavy
	Olio Fiat	Daphne Hidrobak 150 HL
	Roloil	Arm V 150
	Shell	Vitrea 150
		Tellus C 150
	Tamoil	Hydraulic Oil 150
	Texaco	Rando Oil HD 150
	Total	Cortis 150

Table 9. Air lubricator oils

<i>Model</i>	<i>Make</i>	<i>Name</i>
MINI BOSS BOSS	BP	Energol HLP10
	Esso	Spinesso 10
	Mobil	DTE 21
	Shell	Tellus C10

2.6.1 Noise levels

Bar feeder does not cause acoustic noise.

Noise occurs when lathe, connected to the bar feeder, is working and the bar is rotating into bar feeder guides.

In such a case, noise level emitted depends on the following conditions:

- *perfect alignment and levelling of the lathe-bar feeder unit;*
- *proper fastening to the floor both of lathe and bar feeder;*
- *suitable bar gripping device fitted on lathe;*
- *dimensions of guide channel and bar-pusher suited to the bar stock;*
- *front guide bush of suitable diameter (if supplied);*
- *bar with a straightness within prescribed limits (max. arrows equal to 0.5 ‰ mm of the bar length);*
- *spindle liner having the same diameter as the bar feeder guide channel diameter;*
- *spindle rotation speed suitable for the material to be machined;*
- *as to the bar feeder, use of oil having features suitable for the diameter of the bar to be machined;*
- *all bar feeder panels must be closed.*

Should the above mentioned conditions be met, the noise level emitted during bar rotation into the guide channel, measured in compliance with the international standards, will be within the following limits:

- *brass and steel round bars within 80 dbA*
- *hexagonal steel bars within 83 dbA*
- *brass hexagonal bars within 85 dbA*

2.7. FITTINGS - Foreword

To improve the feeder performance and increase its versatility, a few optional devices are available which are listed and then described below.

2.7.1 Bush-holder device - Description

2.7.2 Axial displacement device - Description

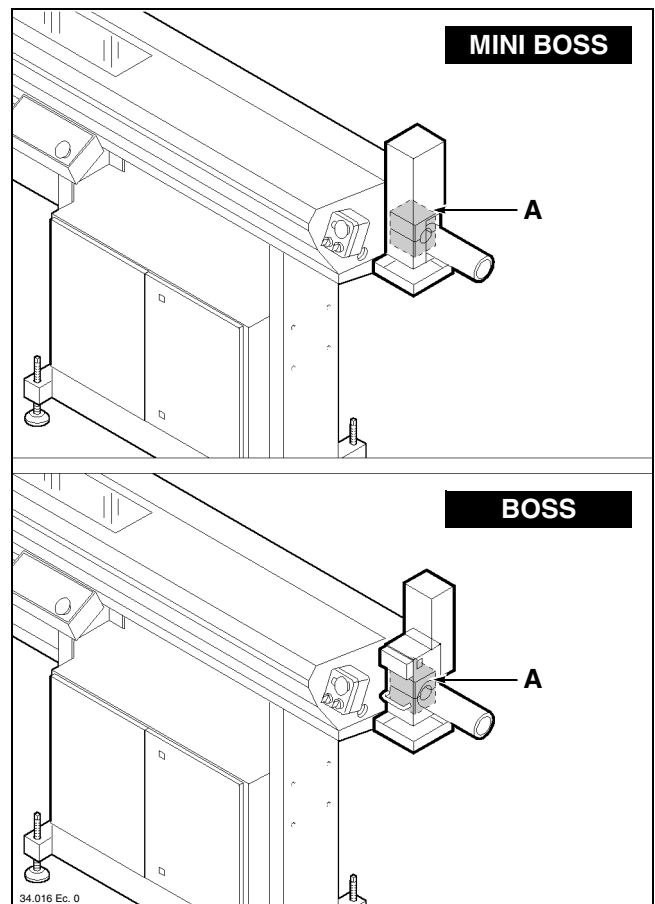
2.7.1 Bush-holder device - Description

It is attached to the front part of the bar feeder. Its function is to reduce bar vibrations to a minimum, by keeping the bar centered during rotation through two half bushes **A**, which are coupled to form a round channel with a diameter just slightly larger than that of the bar being machined.

In many cases, this device can be used (by only changing the diameter of the half bushes) to greatly extend the range of diameters which can be machined without having to replace the guide channel.

Operation

- When the bar is dropped into the guide channel, the two half bushes are open.
- Closure is controlled by a pneumatic cylinder after the feeder has completed the bar feeding cycle. Closure also controls lubricating oil flow for lubrication and machined bar support purposes.
- When the bar-pusher approaches the device, the half bushes open up to allow its passage; oil flow is then discontinued.



2.7.2 Axial displacement device - Description

It allows the feeder to be moved away from the lathe to allow maintenance, cleaning or any other servicing of the lathe.

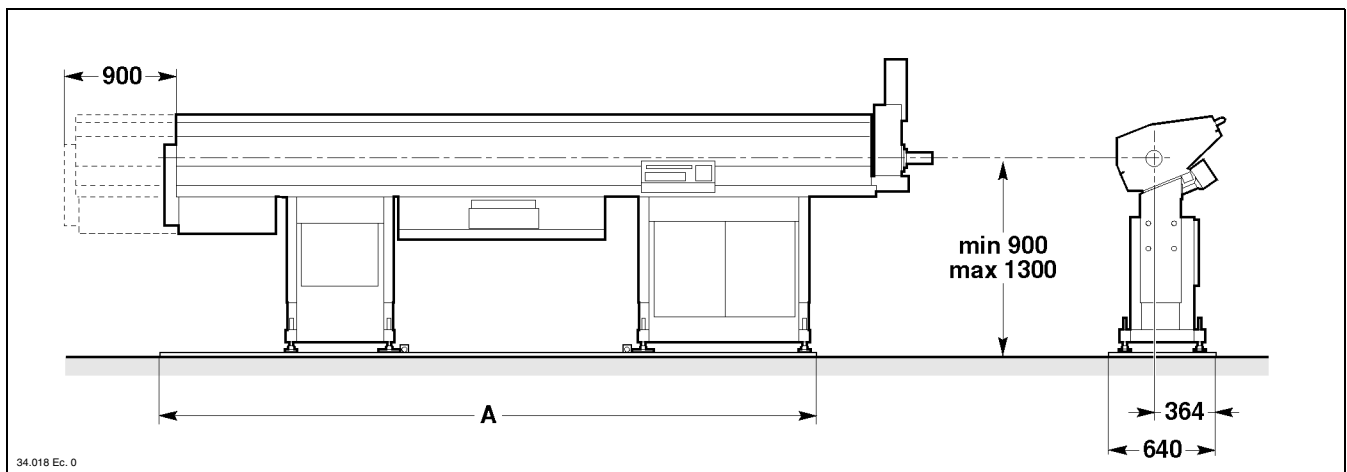
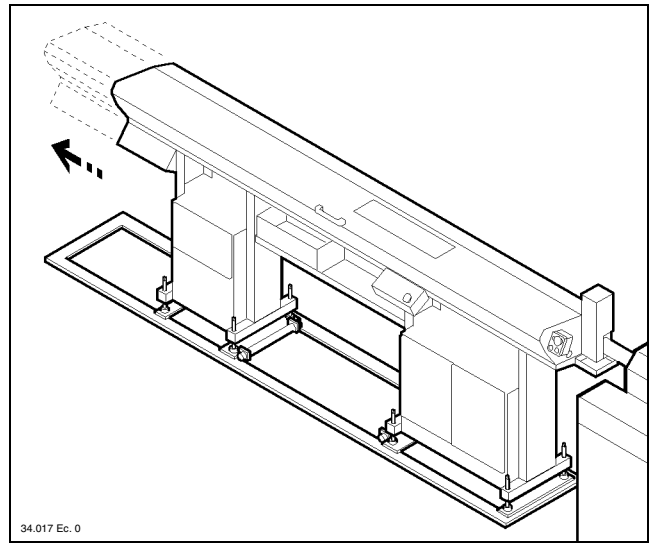


Table 10. Overall dimensions

Model	Version	A (mm)
MINI BOSS BOSS	32	3170
	37	3770
	44	4370

2.8. DEVICE FOR SLIDING HEADSTOCK LATHES - Foreword

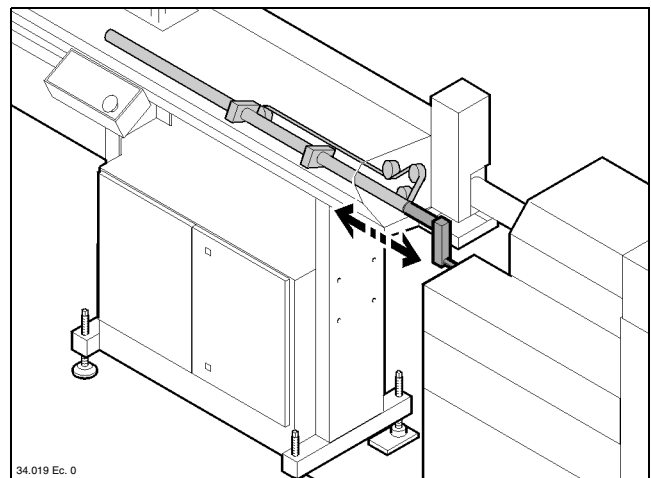
This feeder has been designed and manufactured to be coupled to sliding headstock lathes too. To do this, special devices are available which are listed and then described below:

2.8.1 Bar/headstock synchronizing device - Description

2.8.2 Telescopic nose - Description

2.8.1 Bar/headstock synchronizing device - Description

It is used to connect the bar-pusher (and consequently, the bar) to the lathe headstock, to obtain their synchronized forwards/backwards movement.

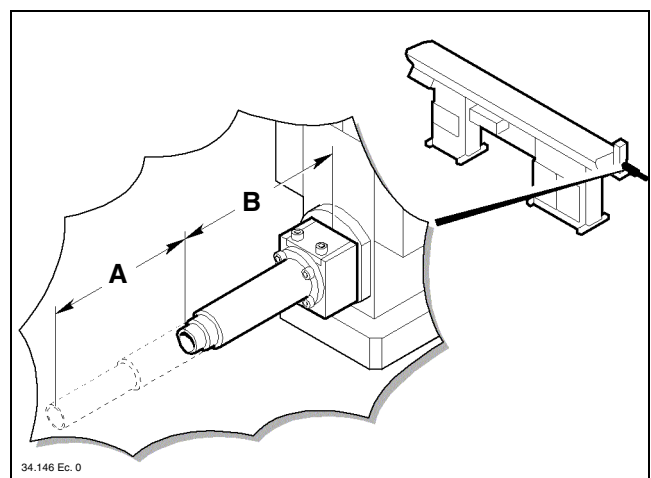


2.8.2 Telescopic nose - Description

It is used to optimize bar guiding between the bush-holder device and the lathe spindle.

Table 11. Max stroke and overall dimensions

<i>Model</i>	<i>Max stroke A (mm)</i>	<i>Overall dimensions B (mm)</i>
<i>MINI BOSS BOSS</i>	200	270
	210	270
	230	300
	280	430
	330	480



2.9. DEVICES FOR CAM LATHES - Foreword

This feeder has been designed and manufactured to be coupled to cam lathes too. To do this, special devices are available which are listed and then described below:

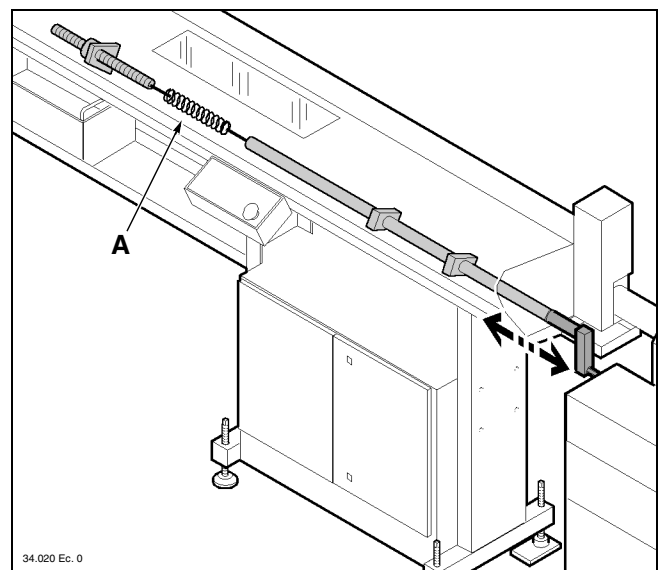
2.9.1 Headstock return device - Description

2.9.2 Cam box - Description

2.9.3 Camshaft release device - Description

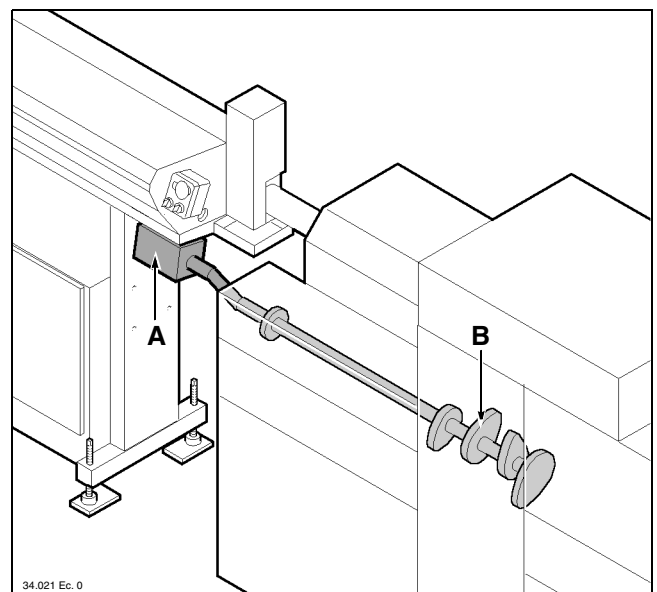
2.9.1 Headstock return device - Description

Necessary when the lathe headstock return spring size hinders feeder installation. The original lathe spring **A** is then installed inside the feeder.



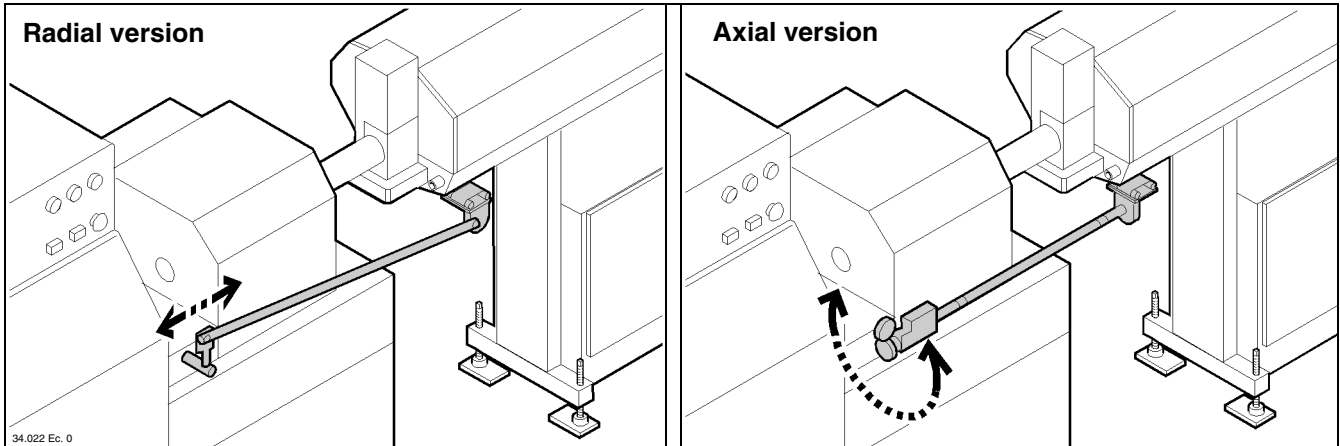
2.9.2 Cam box - Description

Used to synchronize the feeder and cam lathe movements. The cams located in the box **A** are connected to the lathe camshaft **B**.



2.9.3 Camshaft release device - Description

Used to release and engage the camshaft during bar changeover.
A **radial version** and an **axial version** of this device are available.



3.1. SAFETY GENERAL INSTRUCTIONS



It is of the utmost importance to read carefully this manual before carrying out any installation, use, maintenance or other servicing on the bar feeder. The compliance with the instructions contained herein ensures safety both of man.

- Both the operator and skilled engineer in charge shall keep to their task.
- Do not tamper with the safety devices for any reason whatsoever.
- Safety labour regulations issued by each country authority shall be strictly complied with.
- IEMCA declines any liability whatsoever for damages to people or property due to the non-observance of the above mentioned regulations.

3.2. HANDLING AND INSTALLATION - Safety procedures

- Bar feeder shall be handled using suitable means and methods.
- People shall not stand underneath a suspended load, within the crane, lift truck or other suitable means of lifting or transportation operating range.
- The working and bar feeding area shall be delimited in order to prevent collisions between the operator and transportation or handling means, if any, either of the materials to be machined or other material.
- A proper bar feeder installation, as well as lighting and cleaning of the area, are of the utmost importance as far as personal safety is concerned.
- The electric system connection shall be carried out by skilled personnel only.
- Make sure the electric system is earth connected through a suitable cable.

3.3. ADJUSTMENTS AND SETTING UP - Safety procedures

- Carry out the adjustments according to the use and maintenance manual.
- Do not change the working parameters to obtain performances different from those designed and tested.
- Do not adjust the bar feeder when it is running unless otherwise specified in the use and maintenance manual.
- Do not feed the machine with barstocks having dimensions different from those recommended by the manufacturer.
- Do not use hoses as grips.

3.4. USE AND OPERATION - Safety procedures

- The working area around the bar feeder shall always be kept clean and empty in order to allow an immediate access to the emergency devices, thus allowing the bar feeding operations without causing danger and hindrance.
- Carry out the starting cycle sequence as recommended.
- Do not introduce hands or other parts near or inside running parts or energised parts.
- Take off bracelet, watch, ring and tie.
- Whenever necessary, use strong working 5 finger gloves, which do not reduce sensitivity and gripping.
- Use working shoes as well as personal protections as provided for by the accident prevention regulations in force in every country.
- Personnel in charge of maintenance shall be informed should the machine fail to work properly.
- Before starting the bar feeder, make sure that there is no personnel carrying out maintenance or cleaning operations.

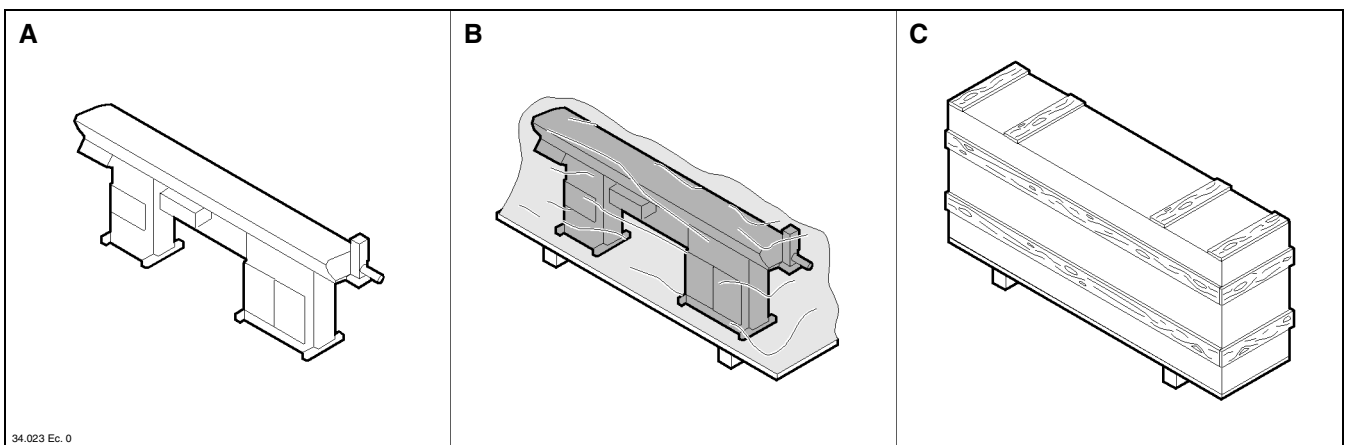
3.5. BAR FEEDER MAINTENANCE - Safety procedures

- Non-authorized people are not allowed to carry out maintenance.
- Read carefully this manual before carrying out any maintenance whatsoever.
- Do not lubricate, repair or adjust the bar feeder during its working cycle, unless otherwise specified by this manual.
- Stop the bar feeder in accordance with the safety procedures before carrying out lubrication.
- Do not light the working area with matches, lighters or torches when servicing the machine using inflammable fluids.
- Preserve the exhausted oil in suitable containers and deliver it to stocking and disposal of polluting wastes companies.
Do not pollute environment.
- Use original IEMCA spare parts only.

4.1. PACKAGING

There are three possible bar feeder packagings:

- A - With no packaging.**
- B - With pallet:** the feeder is placed on a pallet and wrapped in protective film.
- C - With crate:** the feeder is placed in a crate wrapped in protective film.



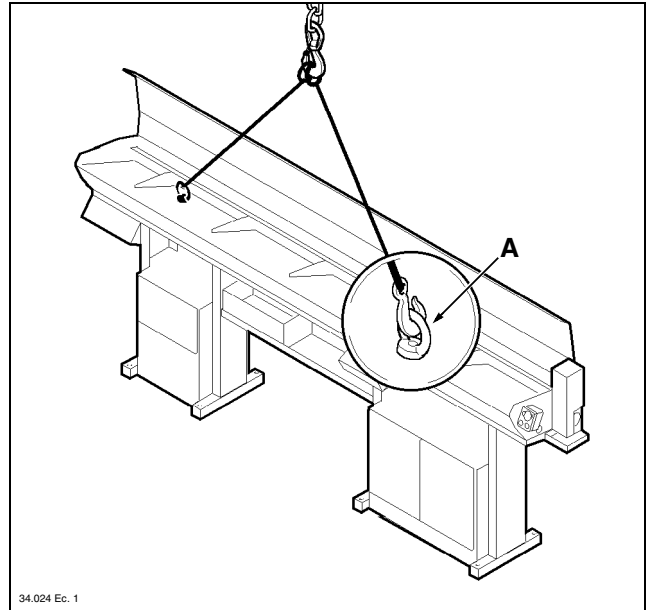
4.2. LIFTING

⚠ DANGER - WARNING: handling and lifting operations should be carried out with suitable equipment (see weight table in paragraph 2.6.) by specially trained and experienced personnel.

According to the packaging choice, lifting is carried out as shown in the next page.

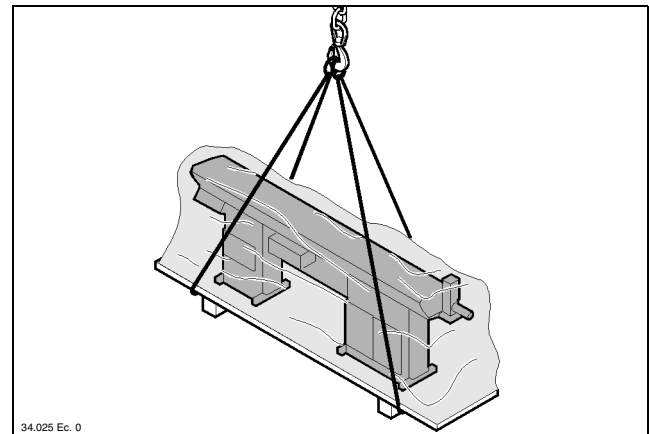
□ Lifting with no packaging

- Insert the two eyebolts with threaded shanks **A** (type 1 UNI - ISO3266 M20).
- Use a hook type lifting device of suitable capacity.



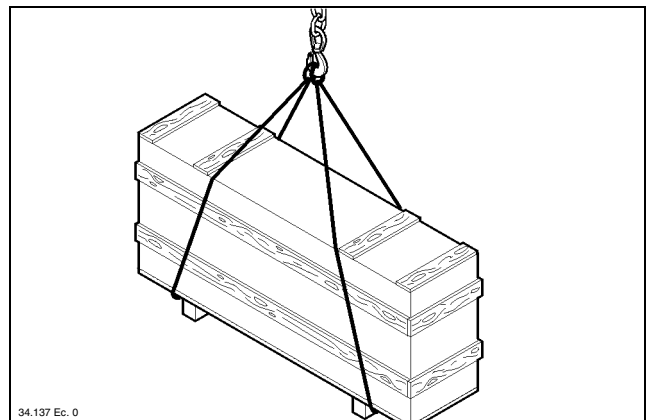
□ Lifting with pallet

- Use a hook type lifting device of suitable capacity.

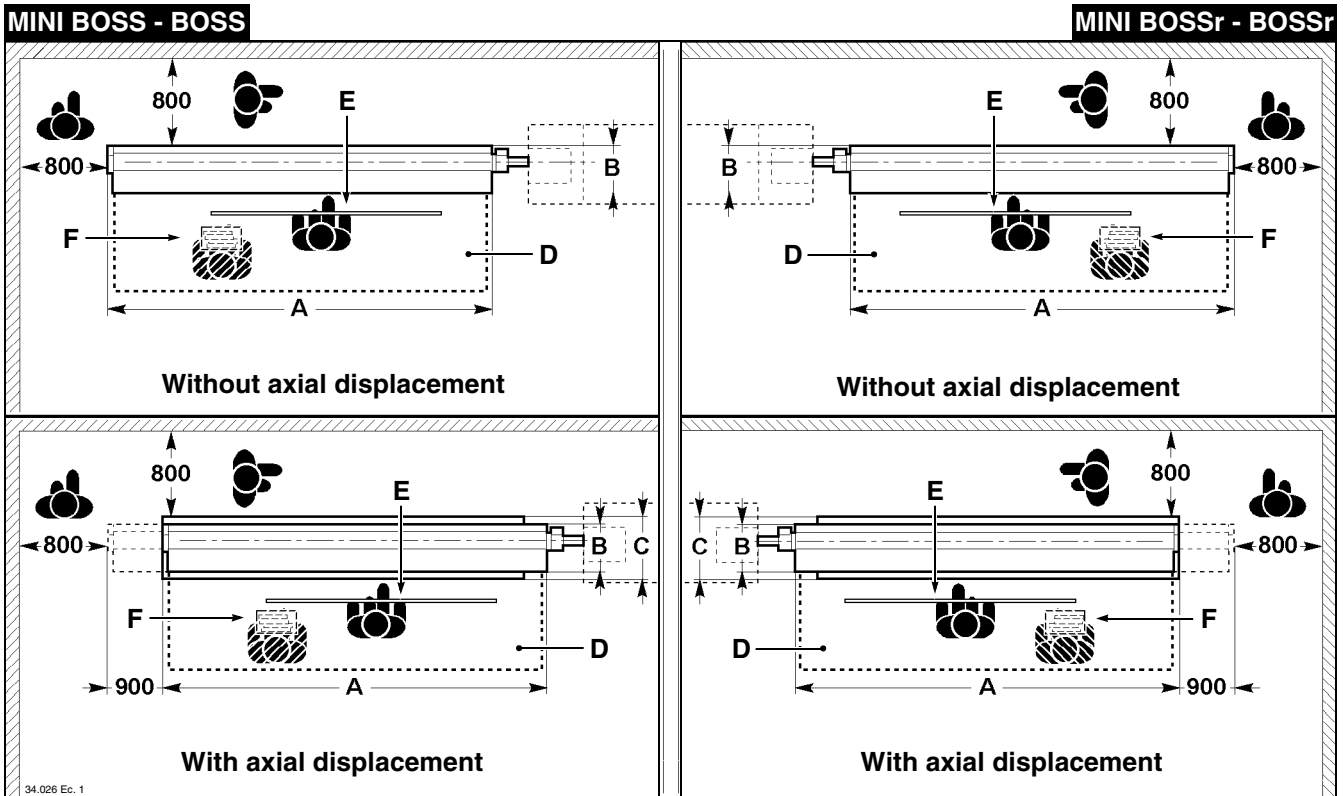


□ Lifting with crate

- Use a hook type lifting device of suitable capacity.



4.3. INSTALLATION AREA - Characteristics



The floor should be stable and levelled to guarantee good fastening to the ground.

Provide an area of suitable dimensions according to the type of feeder use.

The areas: **D** (work area), **E** (bar feeding area) and **F** (remnant discharge area) should be properly delimited to prevent collisions between the operator and any handling equipment or transport vehicles travelling near the bar feeder.

The selected bar feeder setting should be suitably lit and provided with an electric power and air outlets.

During operation, the feeder will release small amount of oil vapors. Make sure that the premises where the feeder is installed are suitably ventilated.

The feeder has not been designed and built for use in an explosive atmosphere.

Table 1. Overall dimensions

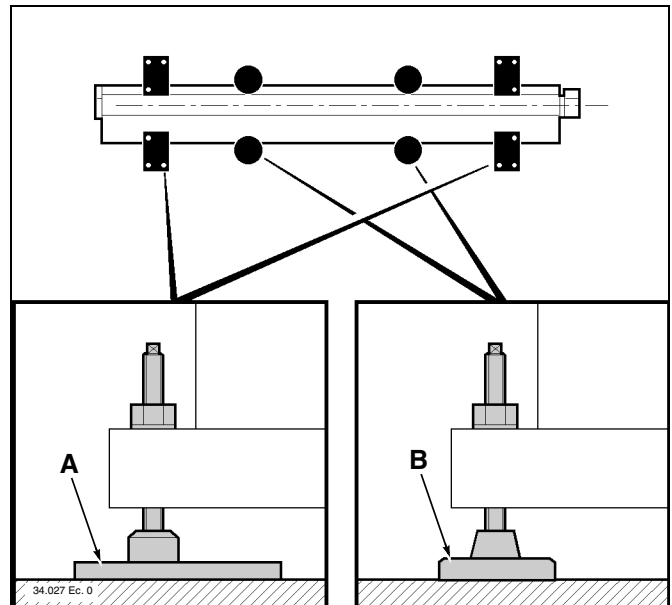
Model	Version	A (mm)	B (mm)	C (mm)
MINI BOSS MINI BOSSr	32	3750	485	640
	37	4290		
	44	4950		
BOSS BOSSr	32	3750	533	640
	37	4290		
	44	4950		

4.4. FEEDER WITHOUT AXIAL DISPLACEMENT DEVICE - Installation

Before carrying out feeder installation, check lathe stability; make sure that it is firmly fastened to the ground and with a horizontal spindle axis.

4.4.1 Support plates and feet - Installation

- Position the feeder next to the lathe.
- Keep it lifted and install the plates **A** and feet **B** in the positions shown in the figure.

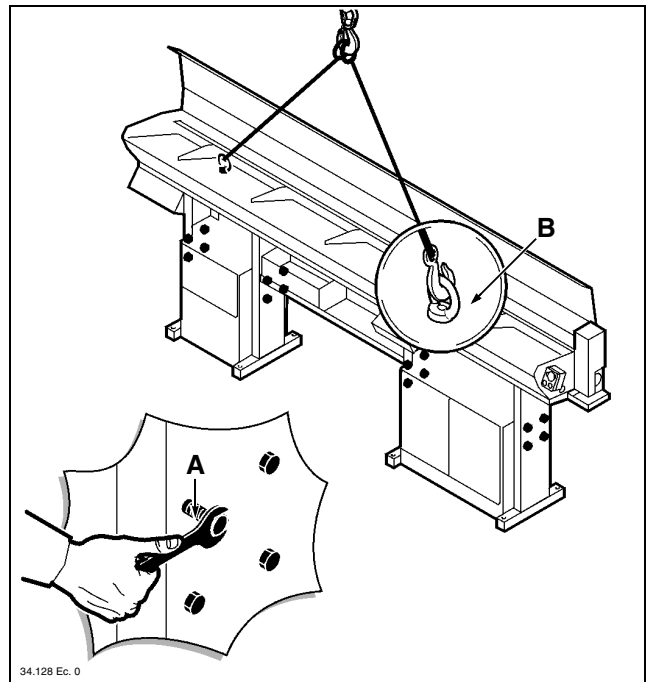


4.4.2 Height - Adjustment

The feeder is normally factory-preset to have a working axis height adjusted to lathe height.

However, if feeder height needs adjustment, proceed as follows:

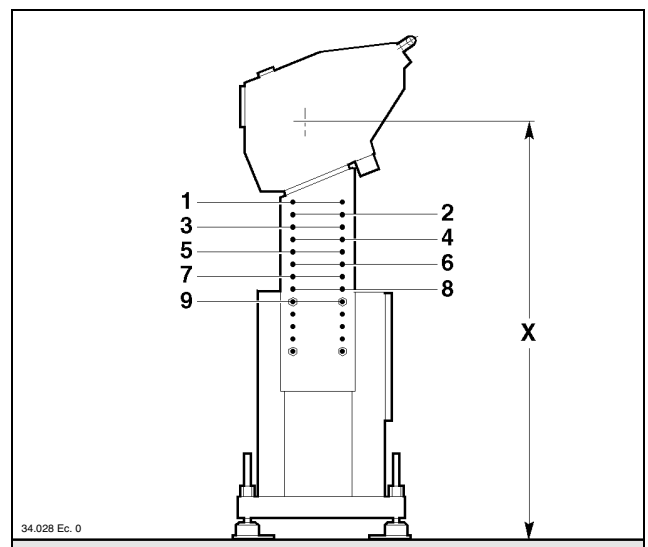
- *tighten the lifting chains and remove the 16 screws A.*



- *lift the feeder according to the required dimension X (see table):*

Table 2. Working axis height

Model	Upper screws position	X (mm)
MINI BOSS BOSS	1	900÷939
	2	940÷969
	3	970÷1009
	4	1010÷1039
	5	1040÷1079
	6	1080÷1109
	7	1110÷1149
	8	1150÷1179
	9	1180÷1200



- *screw down the screws A and remove the eyebolts B.*

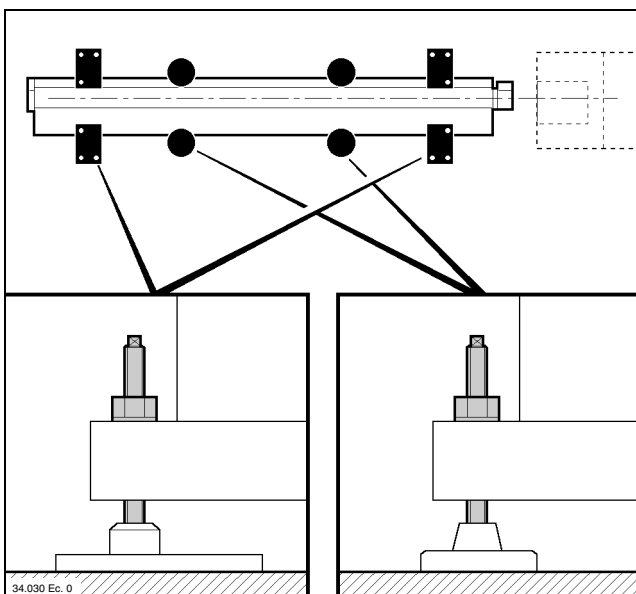
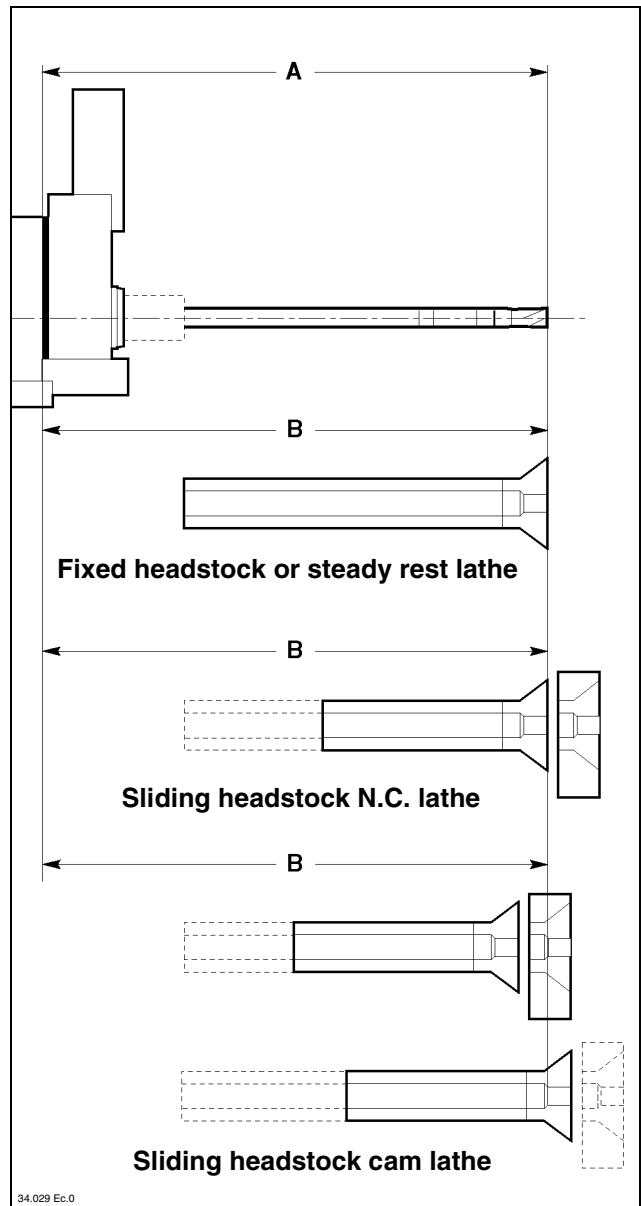
4.4.3 Preliminary positioning

- Position the feeder behind the lathe, by taking into account the overall dimensions and side plays of both machines. The coupling distance **B** should not exceed the bar-pusher max. extension **A**.

Table 3. Max. bar-pusher extension

Model	Version	A - Max extension (mm)
MINI BOSS BOSS	N	937
	L	1267
	LL	1597

i **INFORMATION:** it is not always necessary to control the bar-pusher all the way out. In fixed headstock lathes, its stroke can be reduced to 100 mm to allow the feeder to be brought as close as possible to the lathe; contact IEMCA After-sales Service for more information.

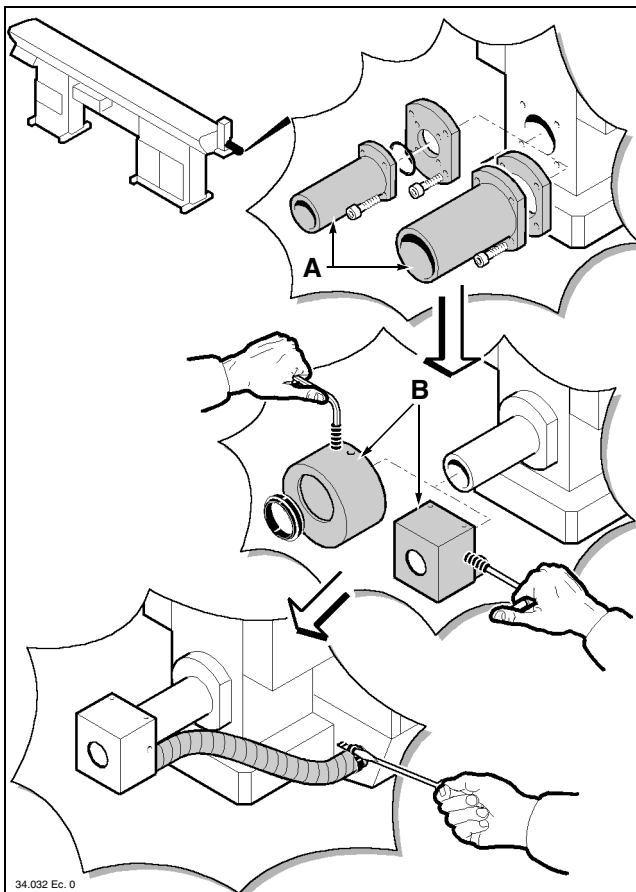
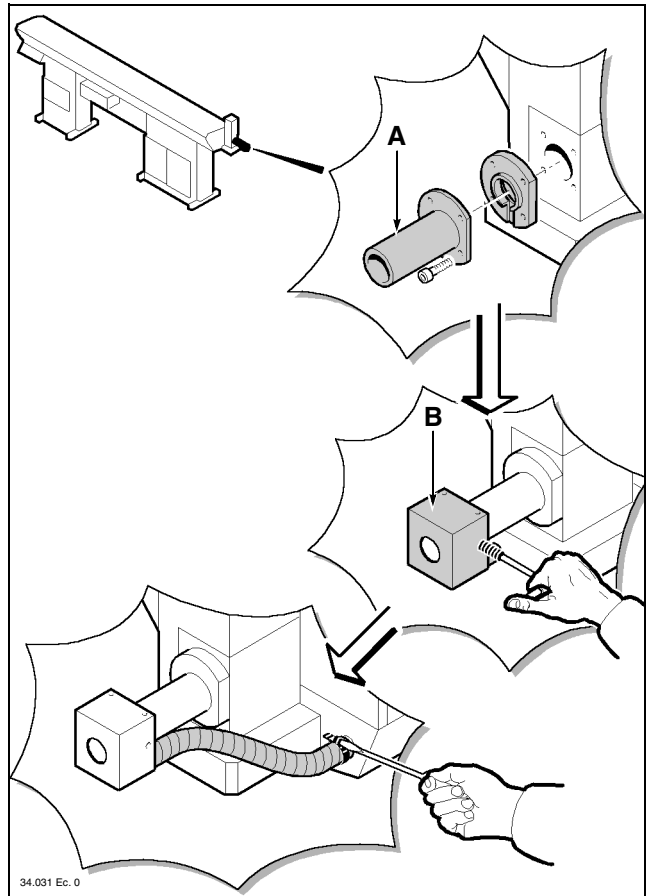


- Roughly adjust the working axis height to obtain alignment with the lathe by turning the feet screws.

4.4.4 Sleeve - Installation

□ MINI BOSS

- Install the sleeve **A** in the bush holder device.
- Install the oil recovery device **B**.
- Connect the drain pipe to the tank.



□ BOSS

- Install the sleeve **A** in the bush holder device.
- Install the oil recovery device **B**.
- Connect the drain pipe to the tank.

4.4.5 Levelling and alignment

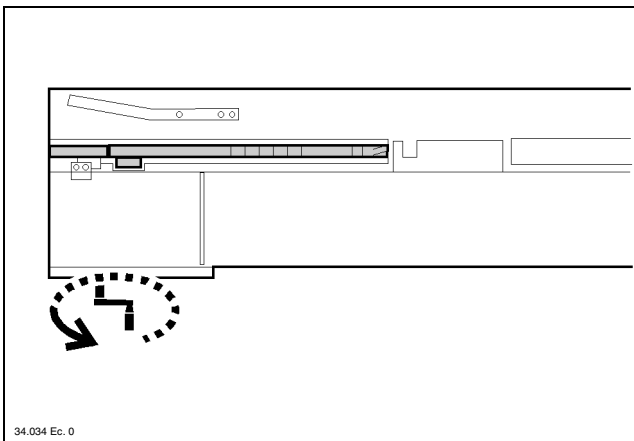
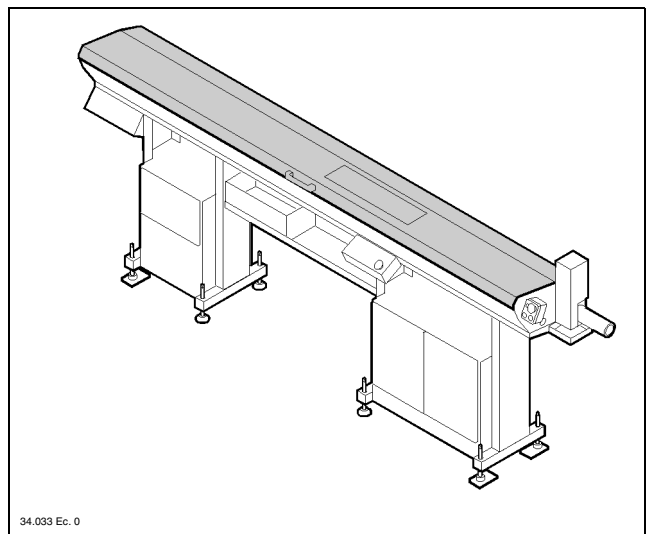
□ Foreword

Alignment between the feeder and lathe is the most critical installation phase; therefore, this operation should be carried out by experienced personnel with the greatest accuracy.

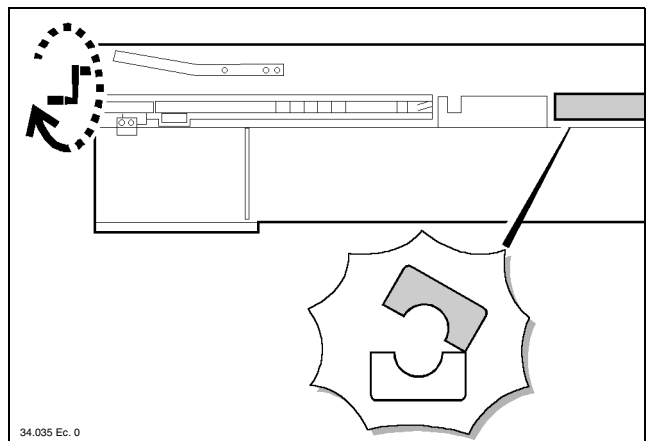
CAUTION: bad alignment can be the main cause of feeder malfunction and resulting damage.

□ Preliminary procedure

- *Open the upper guard.*

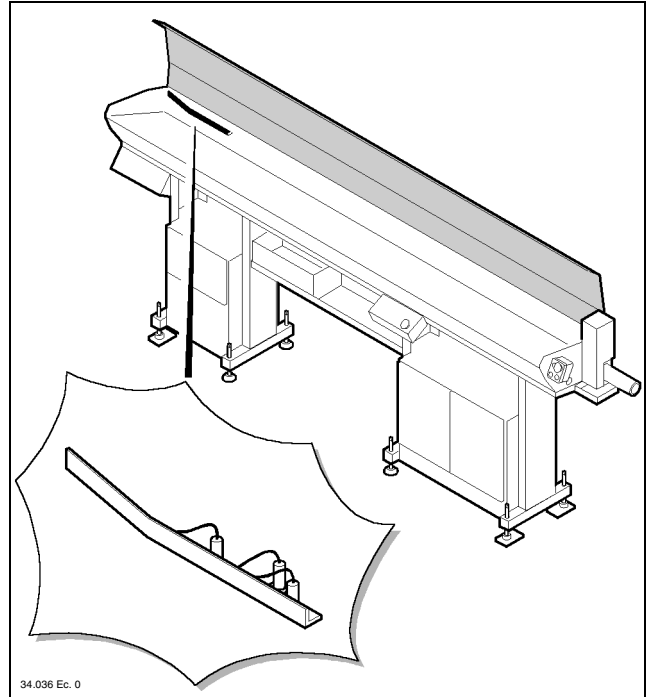


- *Insert the (supplied) crank in the intermediate drive shaft and move the bar-pusher to its backwards limit stop.*

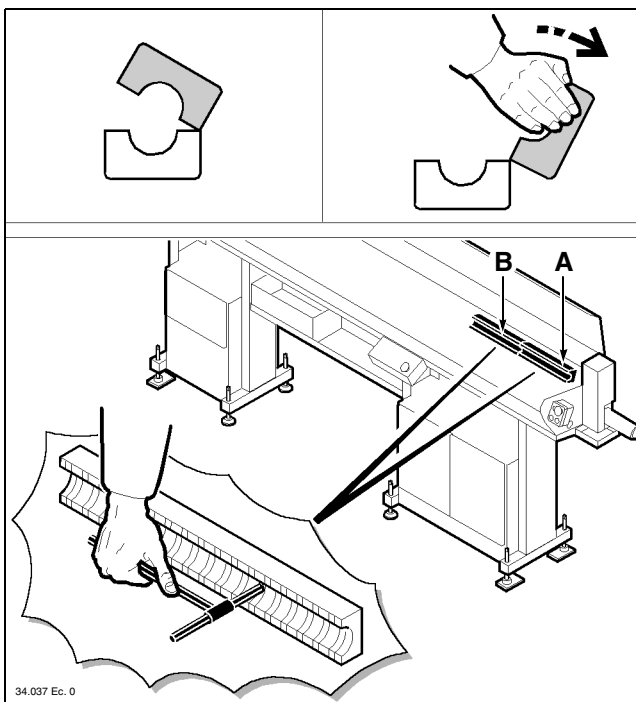


- *Move the crank to the guide opening screw shaft and open the upper guides.*

- Remove the upper guard and sensor support; leave the guard hanging from the input wires.

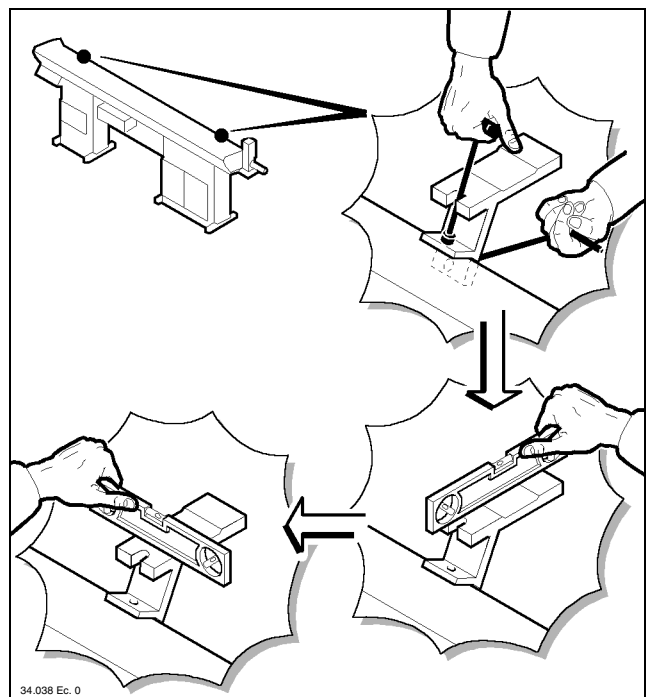


34.036 Ec. 0



34.037 Ec. 0

- Manually overturn the upper guides and, according to feeder version, remove either the first guide **A** (for version 32) or the second guide **B** (for versions 37 or 44).



34.038 Ec. 0

□ Levelling

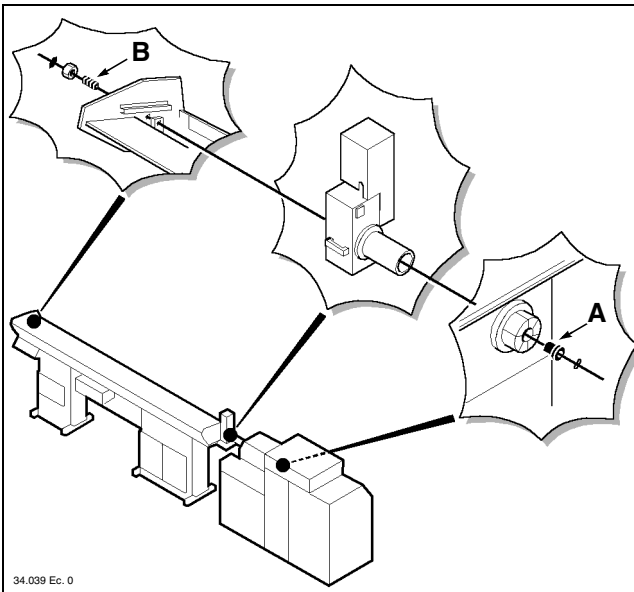
- Insert the templates in the specially provided holes in the beam.
- Check levelling by positioning the level crosswise and lengthwise.

- Carry out the required connections by turning the feet screws.

□ Alignment

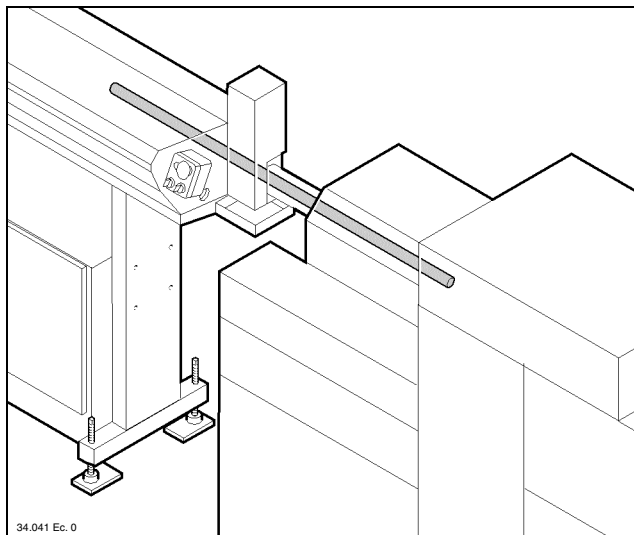
To obtain alignment lead a (∅ 1 mm) nylon thread between the lathe collet and the feeder rear plate, then proceed as follows:

- place a drilled bush **A** in the lathe collet;
- stretch the thread to reach the (red) drilled screw **B** located in the rear plate;

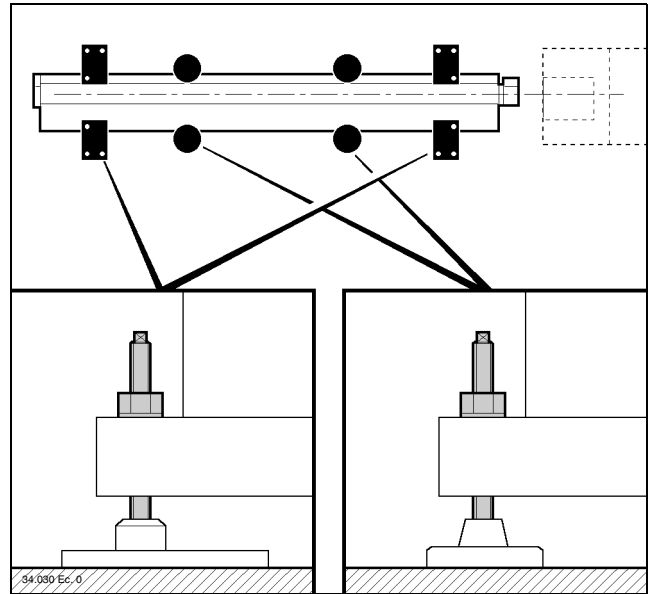


34.039 Ec. 0

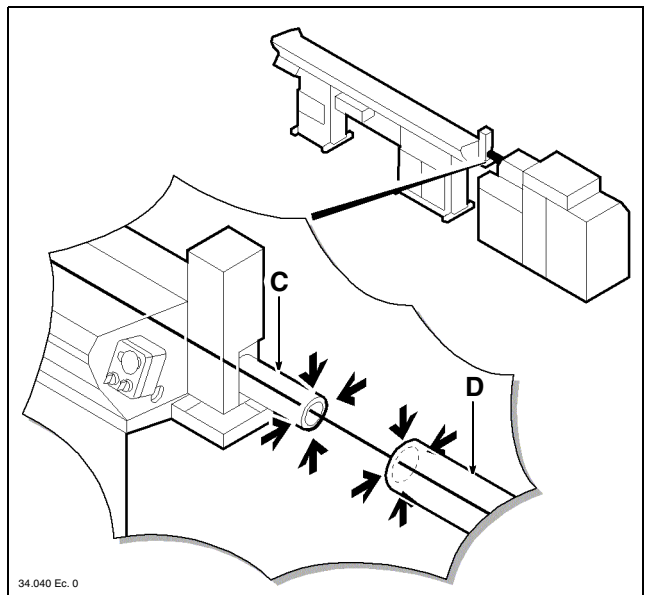
- use a sliding calliper to check alignment near the sleeve **C** and the spindle **D**; adopt a tolerance of ± 0.15 mm in all four directions.



34.041 Ec. 0



34.030 Ec. 0



34.040 Ec. 0

It is also possible to carry out alignment by placing a bar in the guides. Proceed as follows:

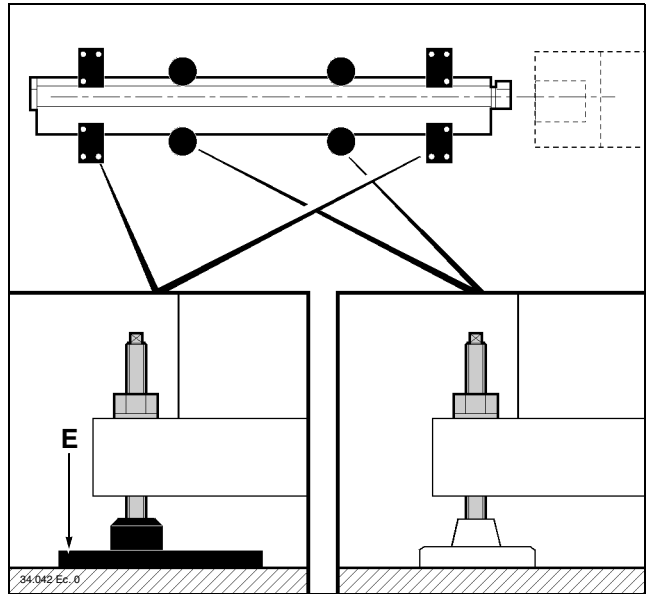
- prepare a perfectly straight ground bar, having an outside diameter equal to the max. spindle bar passage and a length equal to twice the coupling distance (see item **B** paragraph 4.4.3);
- place the bar in the guide and cause it to slide forwards and backwards in the spindle, until almost reaching the lathe collet area.

□ Positioning adjustments

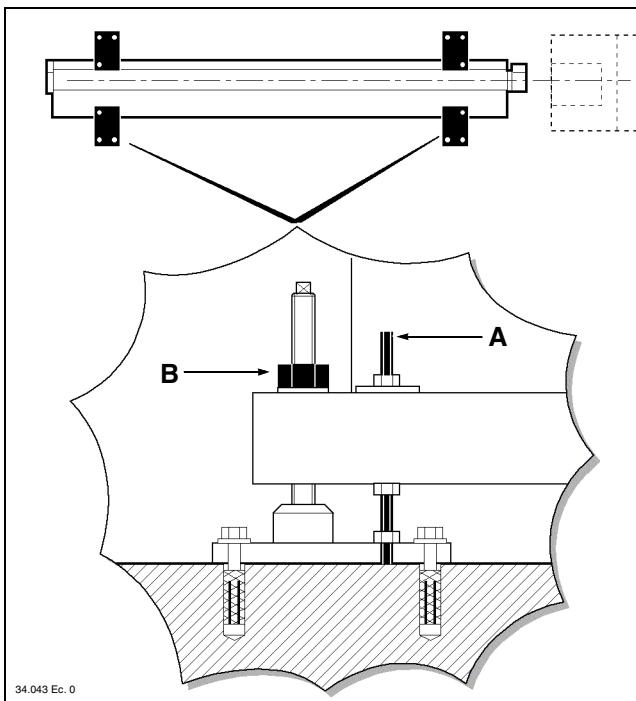
After checking alignment of the feeder with either the thread or the bar, any required corrections should be carried out.

Adjust height by turning the screws in the support feet; carry out lateral adjustment with calibrated mallet blows on the sides of plates **E**.

During this phase, any adjustment carried out during levelling should be preserved; therefore, in most cases, feeder positioning will be the result of a good adjustment compromise.



4.4.6 Feeder fastening

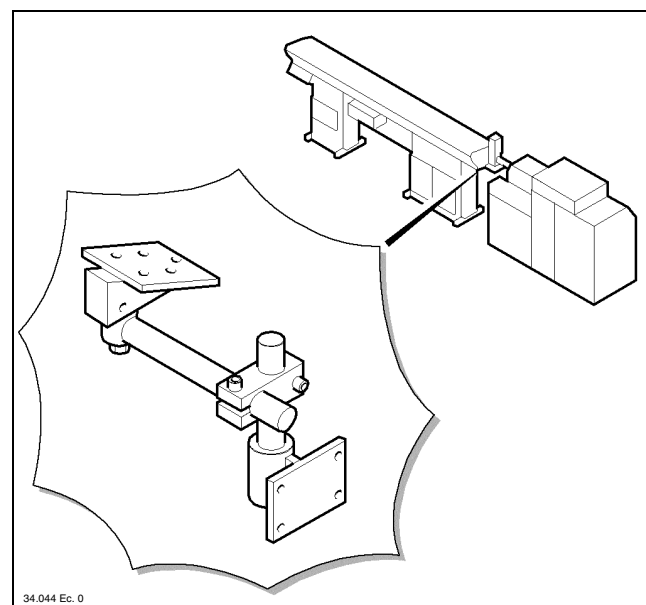


□ Ground fastening

- Drill the floor and fix the backing plates with expansion plugs.
- Fix the feeder to the plates through the tie-rods **A** and lock with nuts **B**.
- Perform another levelling and alignment check.
- Remove all the equipment used for levelling and alignment and restore initial feeder conditions.

□ Fastening to the lathe

Wherever possible, the feeder should be fastened to the lathe through the suitable coupling unit according to lathe make and type. The figure shows a general example of fastening; contact IEMCA service department for more information.



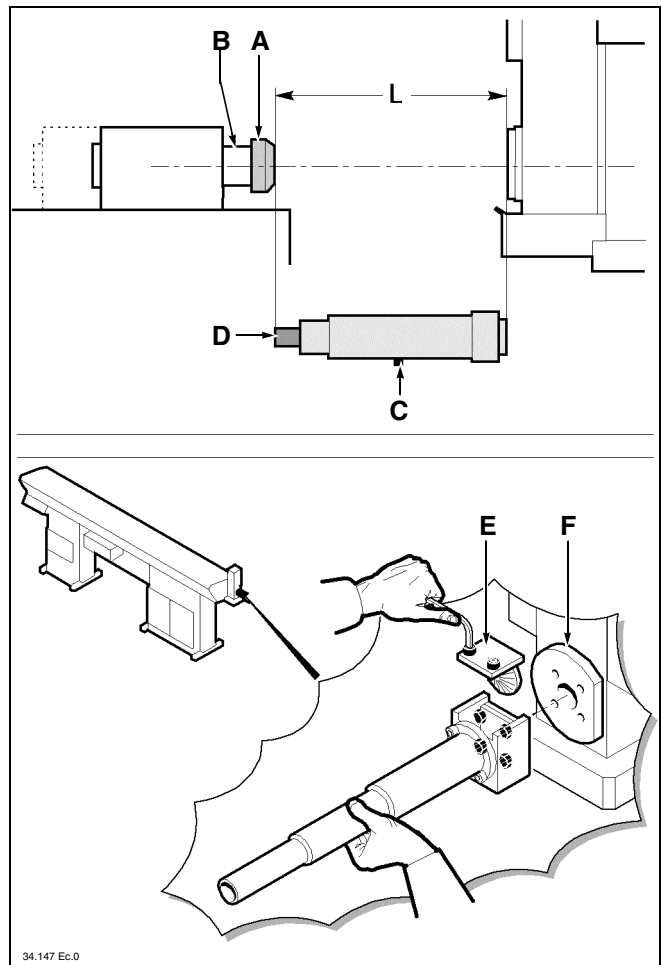
4.4.7 Telescopic nose - Installation

If the feeder is equipped with a telescopic nose, proceed as described below:

- Remove the fixed sleeve that had been installed to obtain alignment between the feeder and the lathe.
- Fix the flange **A** (a general example is shown in the figure).

i **INFORMATION:** the lathe spindle nose **B** should not turn. If it does, a bearing or another similar device should be mounted to prevent telescopic nose turning after it has been installed.

- Move the headstock to its "all the way back" position and measure the dimension **L**. Take out the grub screw **C**, compress the telescopic nose to its limit stop minus 5 mm and cut the pipe **D** to the measured dimension.
- Move the headstock to its "all the way forwards" position. Remove the cover **E**, install the sleeve in the flange **F** and place back the cover **E**.
- Check smooth sliding of the telescopic nose by moving the headstock forwards and backwards.

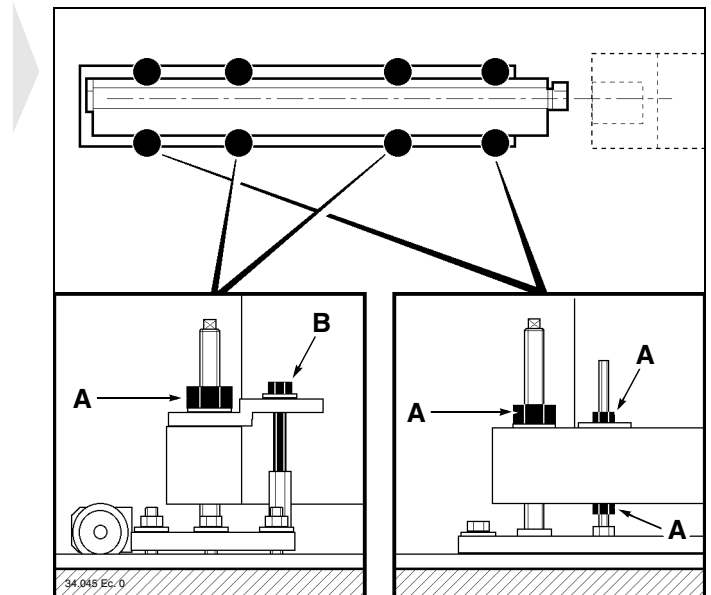


4.5. FEEDER WITH AXIAL DISPLACEMENT DEVICE - Installation

Before carrying out feeder installation, check lathe stability; make sure that it is firmly fastened to the ground and with a perfectly horizontal spindle axis.

4.5.1 Preliminary operations

- Roughly position the feeder behind the lathe.
- Screw out nuts **A** and screws **B**.

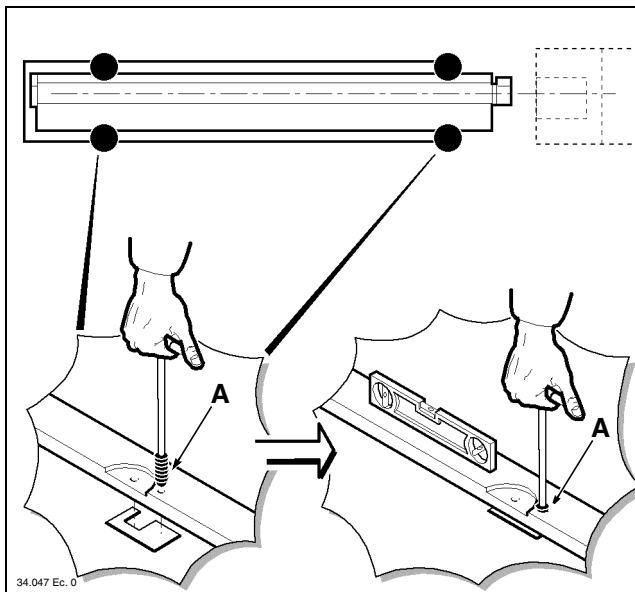
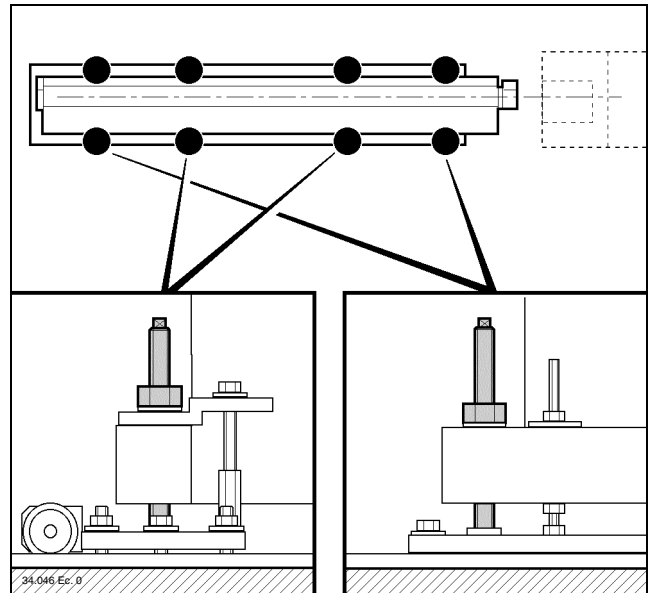


4.5.2 Height - Adjustment

See paragraph 4.4.2; remember that the mentioned dimension X will not change when the feeder is equipped with an axial displacement device.

4.5.3 Preliminary positioning

- Position the feeder behind the lathe, by taking into account the overall dimensions and side plays of both machines and the coupling distance (see item **B** paragraph 4.4.3)
- Roughly adjust the working axis height to obtain alignment with the lathe by turning the feet screws.



- Place four plates under the axial sliding frame in the positions shown in the figure, and screw down the cone end grub screws **A**.
- Check frame levelling crosswise and lengthwise; adjust if required through the screws **A**.
- Roughly restore working axis height and alignment with the lathe if required.

4.5.4 Sleeve - Installation

See paragraph 4.4.4

4.5.5 Levelling and alignment

□ Foreword

Alignment between the feeder and lathe is the most critical installation phase; therefore, this operation should be carried out by experienced personnel with the greatest accuracy.



CAUTION: bad alignment can be the main cause of feeder malfunction and resulting damage.

□ Preliminary procedure

See paragraph 4.4.5

□ Levelling

See paragraph 4.4.5

□ Alignment

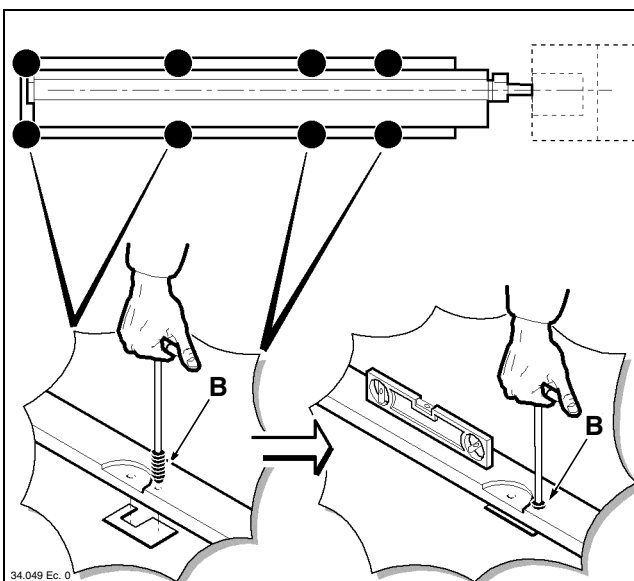
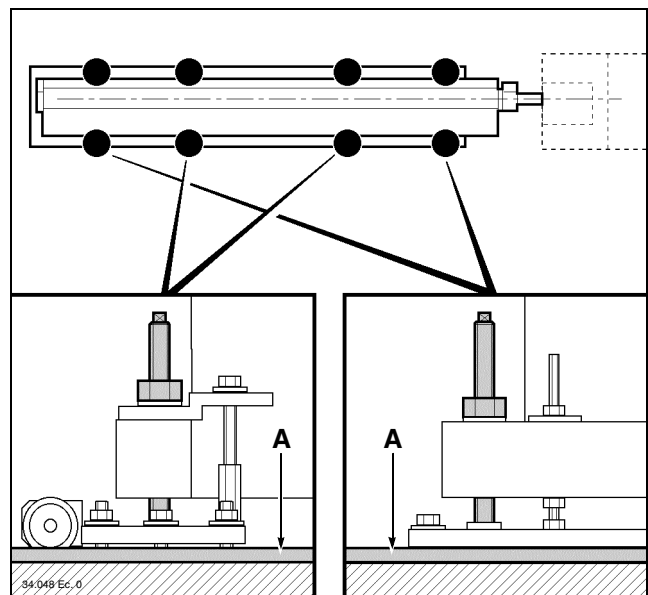
See paragraph 4.4.5

□ Positioning adjustment

After checking alignment of the feeder with either the thread or the bar, any required corrections should be carried out.

Adjust height by turning the screws in the support feet; carry out lateral adjustment with calibrated mallet blows on the sides of frame **A**.

During this phase, any adjustment carried out during levelling should be preserved; therefore, in most cases, feeder positioning will be the result of a good adjustment compromise

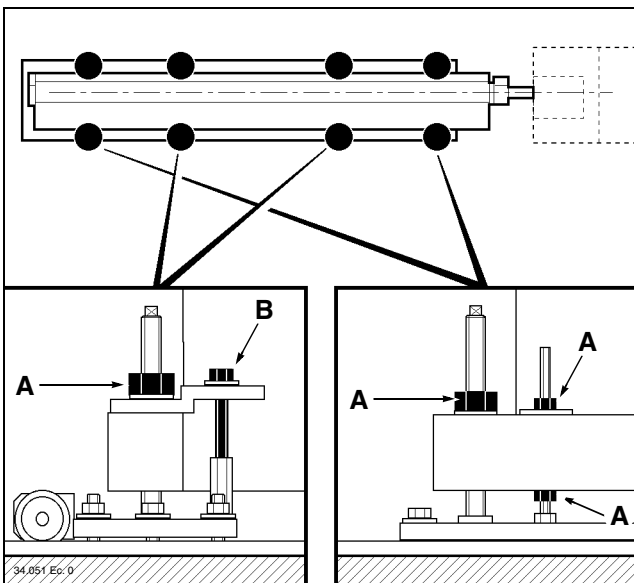
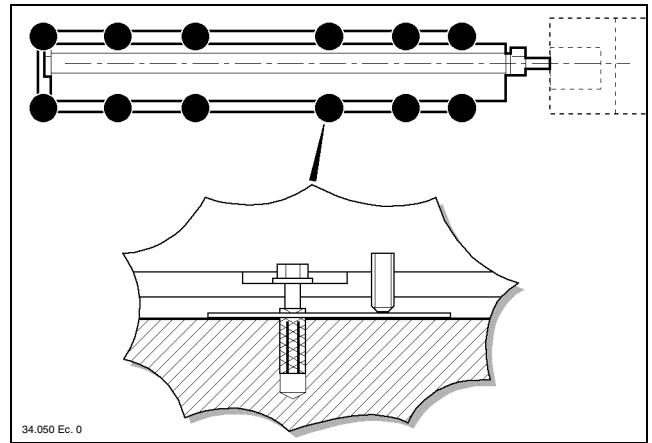


- Position the remaining eight plates under the axial sliding frame in the positions indicated in the figure, then tighten the cone end grub screws **B**.

4.5.6 Feeder fastening

□ Ground fastening

- Drill the floor and fix the (axial sliding) frame with expansion plugs.
- Perform a levelling and alignment check.



- Tighten nuts **A** and screws **B**.
- Perform another levelling and alignment check.
- Remove all the equipment used for levelling and alignment and restore initial feeder conditions.

□ Fastening to the lathe

See paragraph 4.4.6

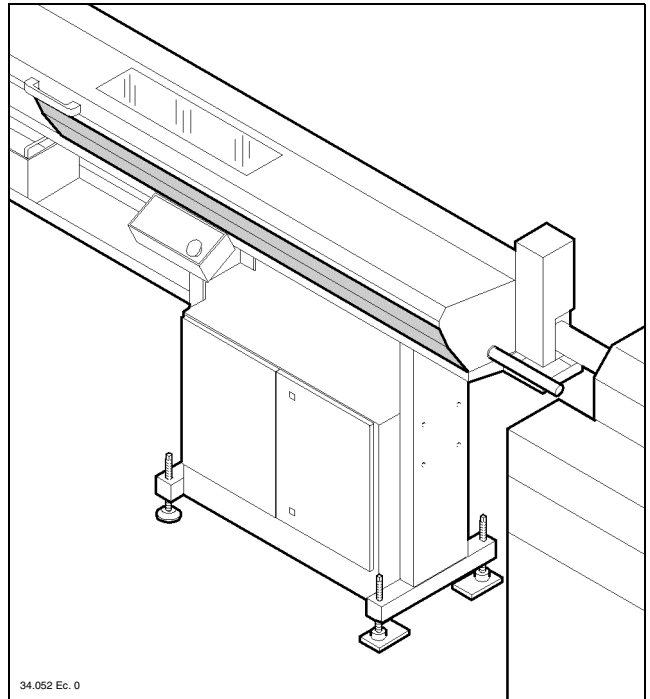
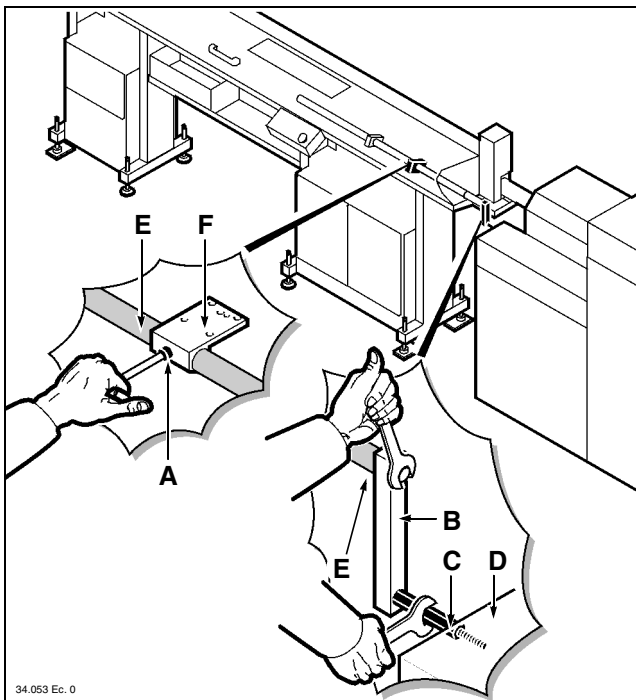
4.5.7 Telescopic nose - Installation

See paragraph 4.4.7

4.6. DEVICE FOR SLIDING HEADSTOCK LATHES - Installation

4.6.1 Bar/headstock synchronizing device

- Remove the side guard.



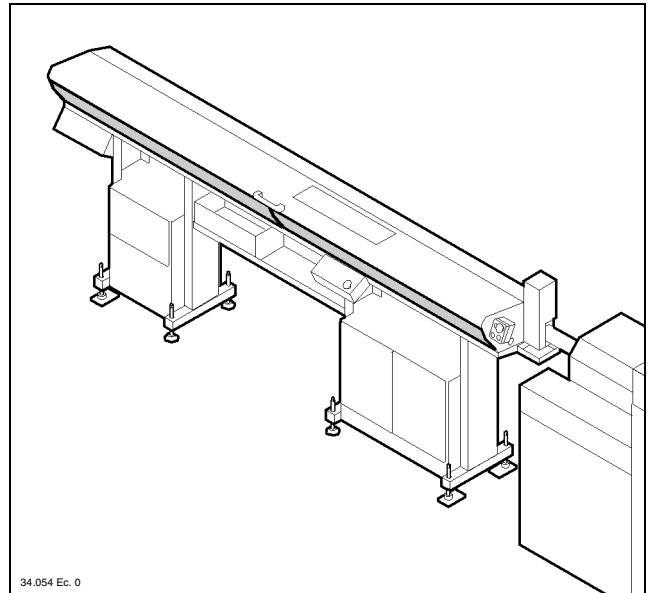
i **INFORMATION:** the figure shows a general example of installation; contact IEMCA service department for more information.

- Screw out the screw **A**
- Install the bar **B** and tie-rod **C** and make sure that the headstock **D** can run freely throughout its stroke together with shaft **E**.
- Position the support **F** in such a way as not to hinder the headstock stroke and tighten the screw **A**.
- Replace the side guard which had previously been removed.

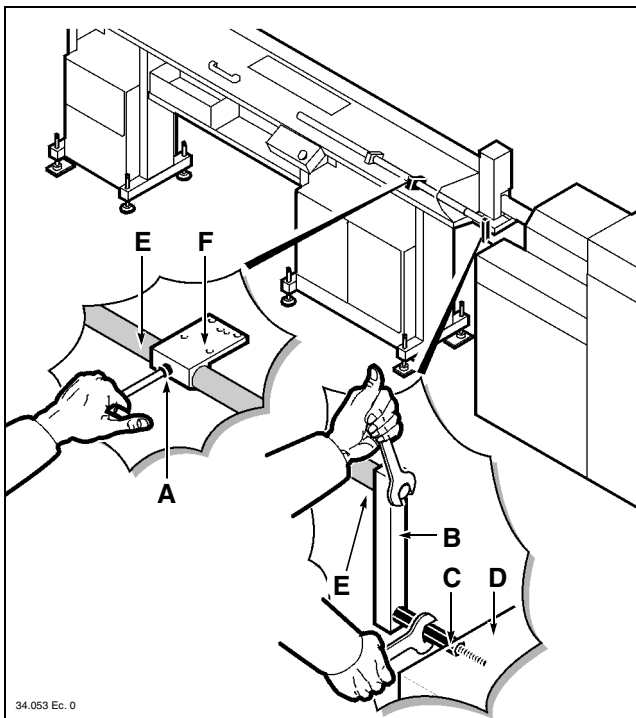
4.7. DEVICES FOR CAM LATHES - Installation

4.7.1 Headstock return device

- Remove the side guards.



34.054 Ec. 0

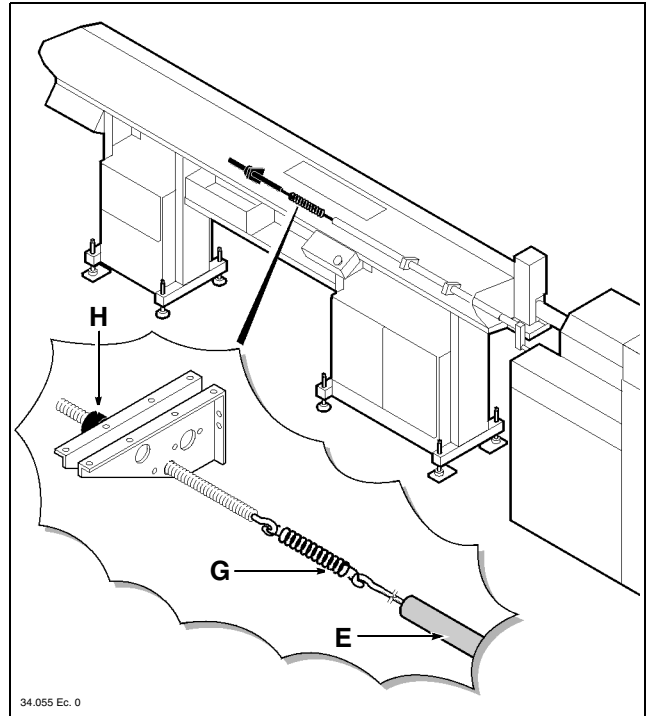


34.053 Ec. 0

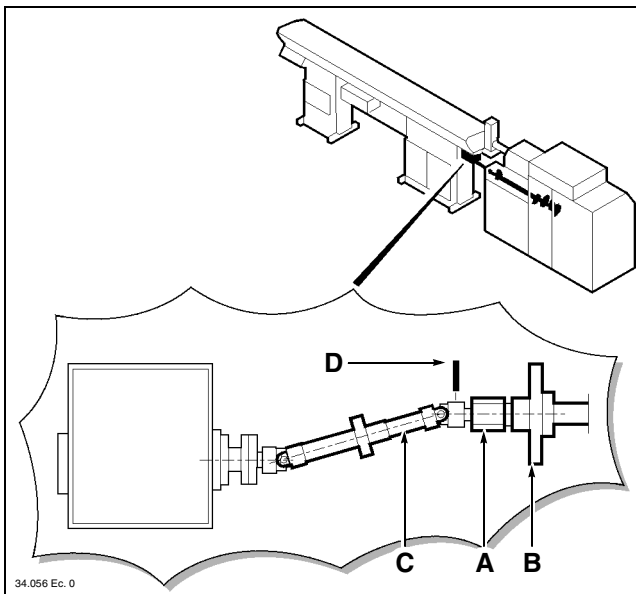
i **INFORMATION:** the figure shows a general example of installation; contact IEMCA service department for more information.

- Remove the original headstock return unit from the lathe.
- Loosen the screw **A**
- Install the bar **B** and tie-rod **C** and make sure that the headstock **D** can run freely throughout its stroke together with shaft **E**.
- Position the support **F** in such a way as not to hinder the headstock stroke and tighten the screw **A**.

- Install the (original lathe) spring **G** and adjust its tension through the ring nut **H**.
- Replace the side guards which had previously been removed.



4.7.2 Cam box



i **INFORMATION:** the figure shows a general example of installation; contact IEMCA service department for more information.

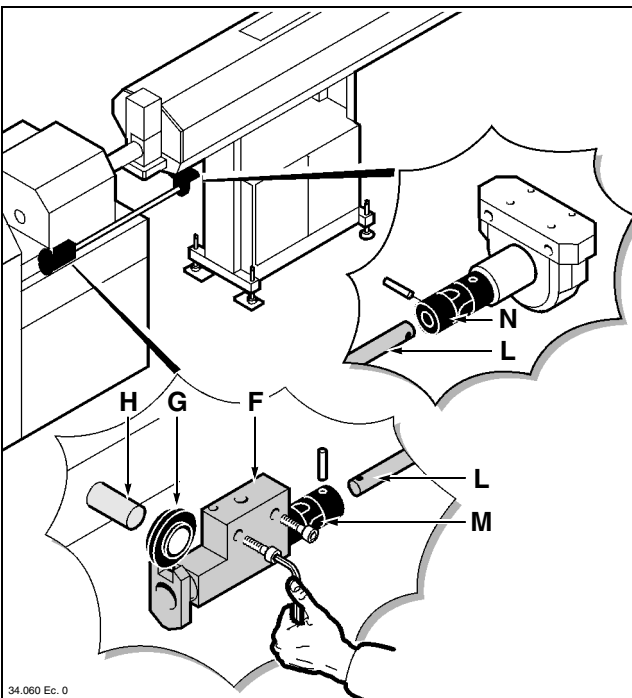
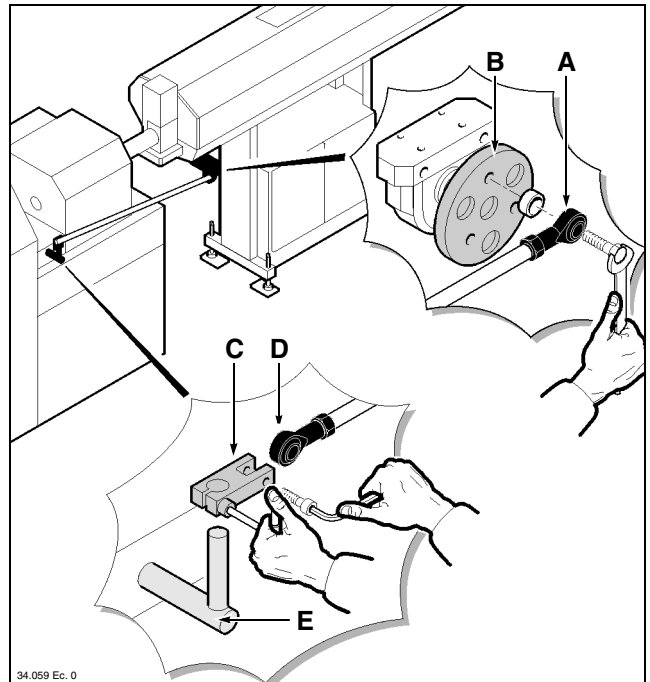
- Install the sleeve **A** on the lathe camshaft **B**.
- Connect the shaft **C** to the sleeve through the pin **D**.

4.7.3 Camshaft release device

i **INFORMATION:** the figures show a general example of installation; contact IEMCA service department for more information.

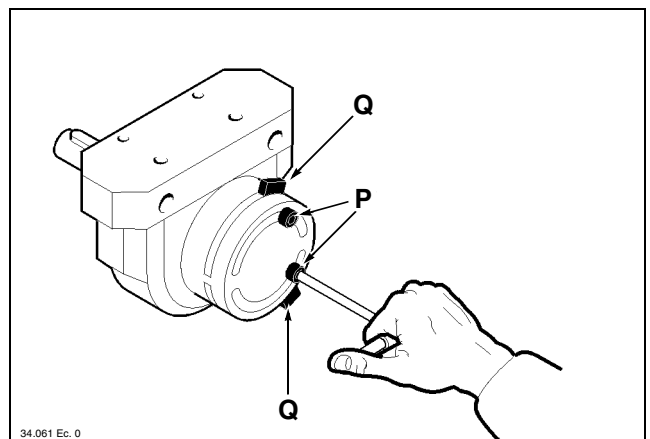
□ Radial version

- Mount the articulation **A** in the flange **B**.
- Mount the joint **C** in the articulation **D** and in the lathe control **E**.



□ Axial version

- Cut a hole and thread in the lathe casing to fix the transmission unit **F** and mount the disk **G** in the control **H**.
- Insert the shaft **L** in the joint **M** and lock with a pin; insert the other end of shaft **L** in joint **N** and lock with a pin.



After completing the above-described operations, the actuator rotation stroke should be adjusted (this operation is necessary for both the radial version and the axial version).

- Loosen the screws, move the slides **Q**, retighten the screws **P**.

4.8. LUBRICATING OIL - Filling

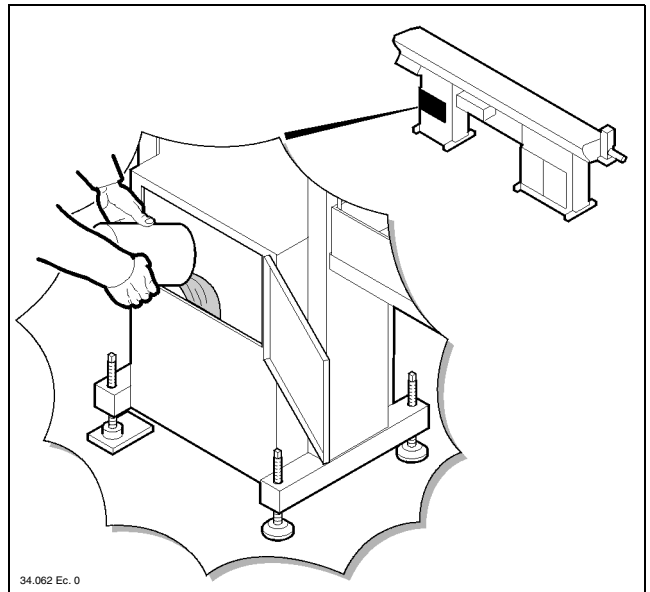
⚠ CAUTION: wear personal protections according to the regulations in force.

- Open the rear base door and pour oil into the machine.

Table 4. Guide lubricating oil characteristics

Model	Oil type	Quantity (l)
MINI BOSS	ESSO - NUTO 100	40
BOSS	ESSO - NUTO 150	40

- See paragraph 2.6. for the comparative table.



4.9. ELECTRIC CONNECTION

⚠ DANGER - WARNING: this type of operation should only be entrusted to skilled technical staff to comply with the applicable standards and statutory regulations in force.

⚠ DANGER - WARNING: the feeder must be electrically connected to the lathe, which in turn, must be connected to the plant wiring system in compliance with the applicable regulations in force.

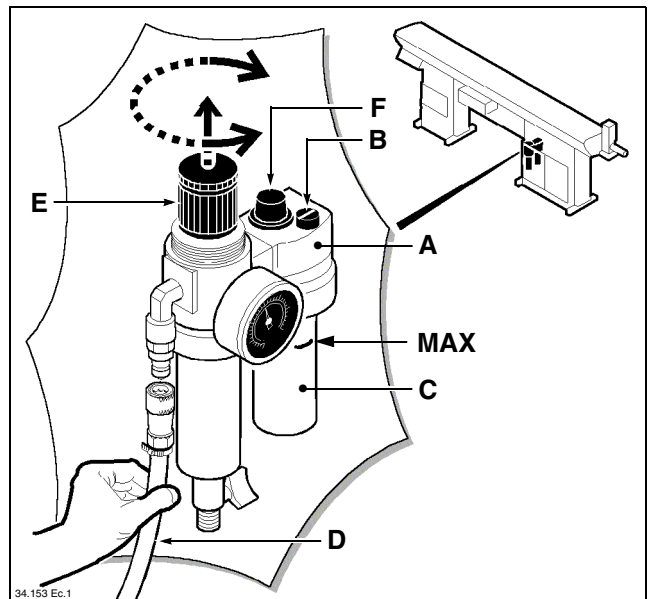
The feeder is normally provided with a multiple plug to plug into the special lathe outlet; refer to the “Wiring diagram” if necessary.

4.10. PNEUMATIC CONNECTION

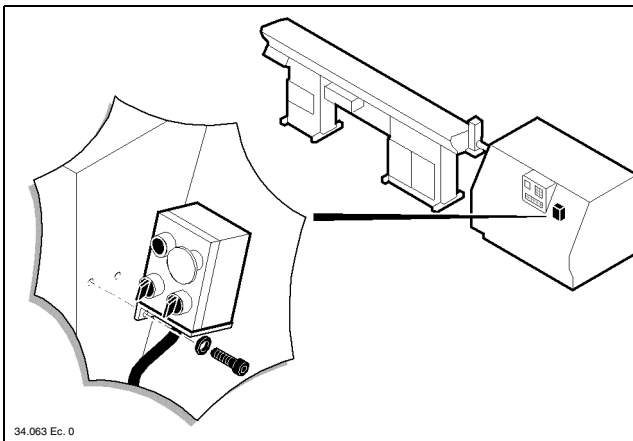
- Fill the tank of lubricator **A** removing plug **B** or cup **C**; the oil level must reach the **MAX.** reference.

Oil characteristics: 9÷11 cSt at 40°C ISO VG 10.
See paragraph 2.6. for the comparative table.

- Connect pipe **D** to the compressed air ductwork system as shown in the figure. With knob **E**, adjust the pressure at 6 bar.
- Check air lubrication (1-12 drops per 1000 l. of air); adjust by turning the screw **F**.



4.11. ADDITIONAL PUSH-BUTTON PANEL - Installation



According to working requirements, the additional push-button panel can be removed from its seat and installed near the lathe push-button panel.

4.12. SELF-LEARNING DIMENSIONS - Programming

Self-learning data depend on the type and size of the lathe to which the feeder is coupled.

This operation is necessary because these dimensions will determine bar movements.

For information on this operation, refer to the "Push-button panel instruction manual".

5.1. ADJUSTMENT AND SETTING-UP - Foreword



DANGER - WARNING: do not perform any adjustment while the feeder is in motion unless explicitly requested in the manual.

In addition to normal adjustments throughout its service life, this bar feeder also needs set-up according to the type of operation. According to bar size and type of machining, setting up may also include replacement of a few components.

These operations are listed and then described below:

5.2. General adjustments - Foreword

5.3. Set-up according to the type of bar to be machined

5.4. Cam box - Timing

5.2. GENERAL ADJUSTMENTS - Foreword

Including all the necessary adjustments for good feeder operation. They may become necessary after maintenance, trouble fixing or component replacement.

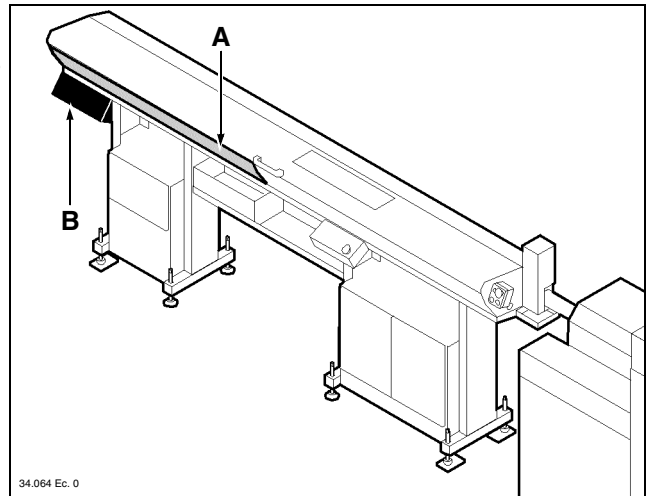
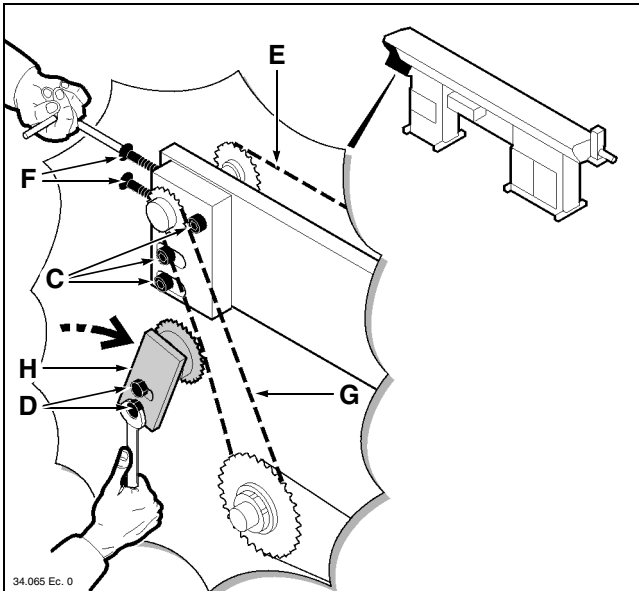
5.2.1 Feeding chain - Adjustment

5.2.2 Drive chain - Adjustment

5.2.3 Clutch - Adjustment

5.2.1 Feeding chain - Adjustment

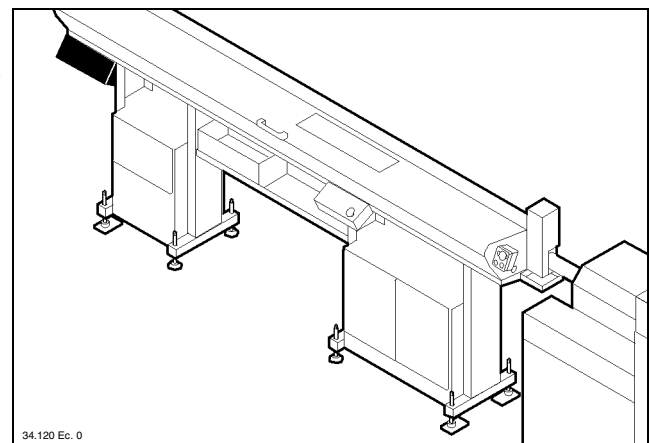
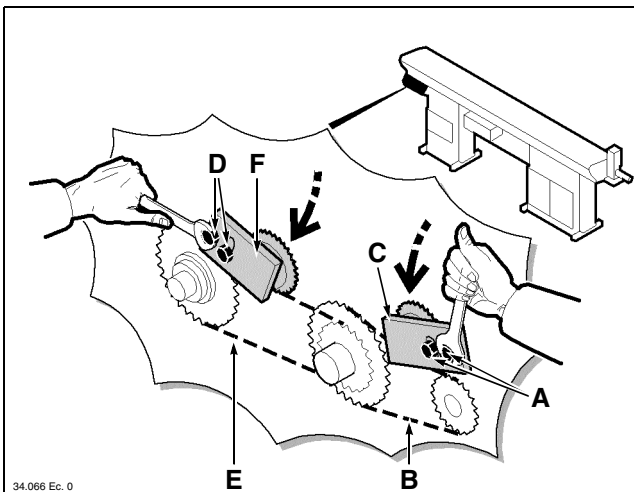
- Remove the guards **A** and **B**.



- Loosen the screws **C** and **D**.
- Stretch the chain **E** through the screws **F** and tighten the screws **C** again.
- Stretch the chain **G** by pressing the support **H** in the direction of the arrow and tighten the screws **D**.
- Replace the guards that had previously been removed.

5.2.2 Drive chains - Adjustment

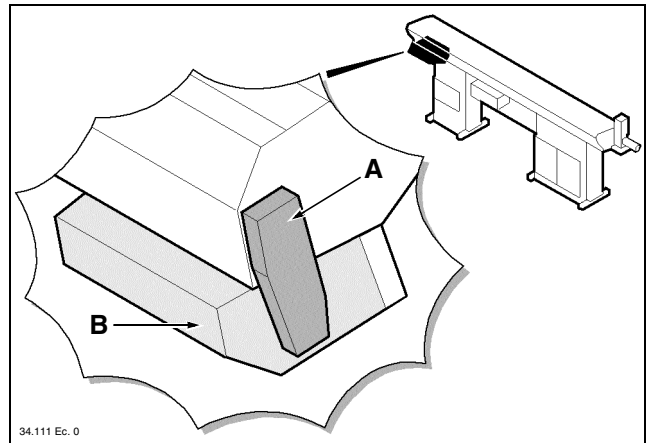
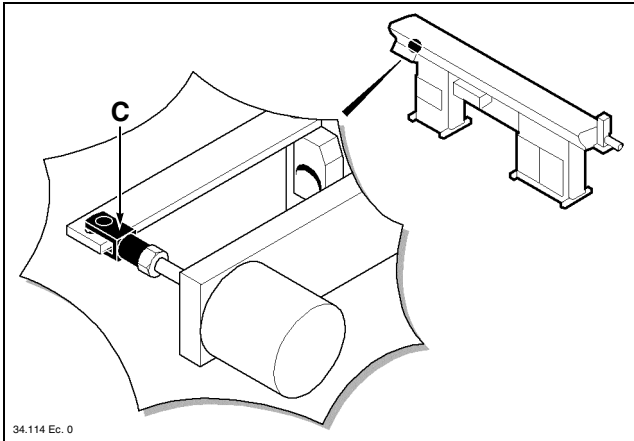
- Remove the drive system guard.



- Loosen the screws **A**, stretch the primary chain **B** by pressing the support **C** in the direction of the arrow then tighten the screws **A** again.
- Loosen the screws **D**, stretch the secondary chain **E** by pressing the support **F** in the direction of the arrow then tighten the screws **D**.
- Replace the guard that had previously been removed.

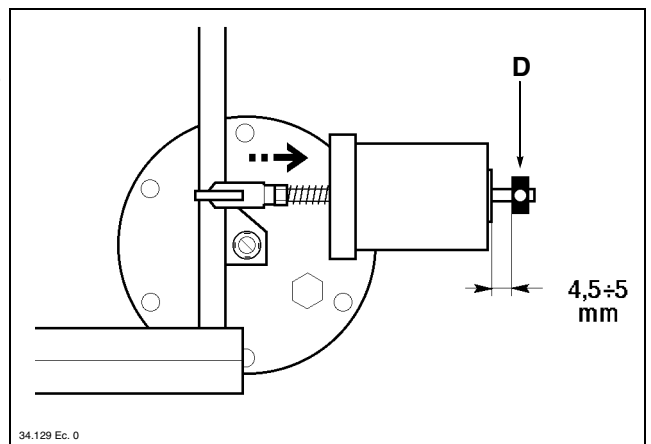
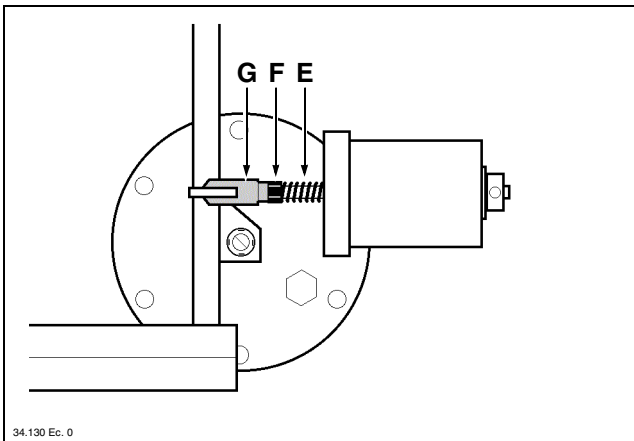
5.2.3 Clutch - Adjustment

- Remove both guards **A** and **B**.



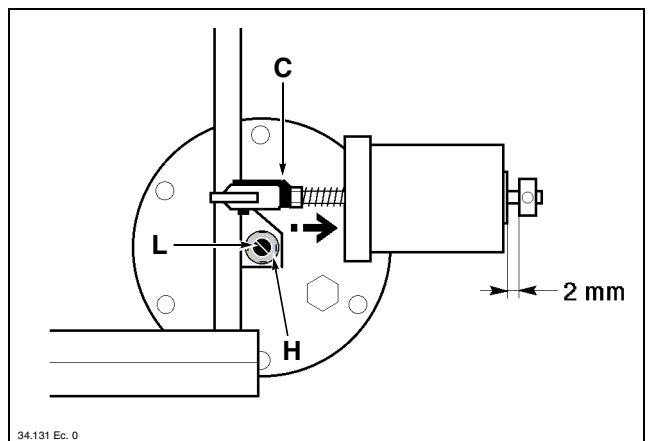
- Remove the pin **C**.

- Move the solenoid shaft in the direction of the arrow to the end of its stroke, then check the indicated dimension. If adjustments are required, move the bush **D** after loosening its lock screw.



- The spring **E** must be released. Release it if required by working the nut **F** and fork **G**.

- Mount the pin **C** and loosen the ring nut **H**. Move the solenoid shaft in the direction of the arrow and turn the screw **L** to adjust the solenoid shaft position to the indicated dimension. Tighten the ring nut **H**.
- Manually check that the clutch is free to turn.
- Replace the guards that had previously been removed.



5.3. SET-UP ACCORDING TO THE BAR TO BE MACHINED

According to the “new” bar diameter, a few or several operations must be carried out based on the diameter of the previously machined bar.

The table shows the available guide diameters with the corresponding range of bar-pushers to be mounted and the range of diameters of the bars to be machined.

Table 1. Diameters of guides, bar-pusher, bars and pipes

Model	Guide diameter (mm)	Bar-pusher diameter (mm)	Bar diameter (mm)		Pipe diameter (mm) (*)	
			MIN	MAX		
MINI BOSS	13	10	3	8	10	
		12	3	10	12	
	17	15	5	13	15	
		16	5	14	16	
	21	16	5	14	16	
		18	5	16	18	
		19	5	17	19	
		20	5	18	20	
	26	23	5	21	23	
		25	5	23	25	
	28	25	5	23	25	
		27	5	25	27	
	BOSS	13	10	5	8	10
			12	5	10	12
17		15	5	13	15	
		16	5	14	16	
21		16	5	14	16	
		18	5	16	18	
		19	5	17	19	
		20	5	18	20	
26		23	5	21	23	
		25	5	23	25	
28		25	5	23	25	
		27	5	25	27	
33		30	5	27	30	
		31	5	28	31	
		32	5	29	32	
36		32	5	29	32	
		35	5	32	35	
43		40	10	37	40	
		42	10	39	42	
46		42	10	39	42	
	45	10	42	/		

(*) Also applicable to prepared bars or standard machined bars with front remnant ejection.

□ Example 1

The previous machining cycle had been carried out under these conditions:

<i>Guide diameter (mm)</i>	<i>Bar-pusher diameter (mm)</i>	<i>Bar diameter (mm)</i>
17	15	8

The new machining cycle requires feeding of 10 mm bars. In this case, the half bushes and bar-pusher collet must be replaced and the magazine and clamps must be adjusted.

□ Example 2

The previous machining cycle had been carried out under these conditions:

<i>Guide diameter (mm)</i>	<i>Bar-pusher diameter (mm)</i>	<i>Bar diameter (mm)</i>
17	15	8

The new machining cycle requires feeding of 14 mm bars. In this case, the half bushes, bar-pusher and bar-pusher collet must be replaced and the magazine and clamps must be adjusted.

□ Example 3

The previous machining cycle had been carried out under these conditions:

<i>Guide diameter (mm)</i>	<i>Bar-pusher diameter (mm)</i>	<i>Bar diameter (mm)</i>
17	15	8

The new machining cycle requires feeding of 25 mm bars. In this case, the guides, half bushes, bar-pusher and bar-pusher collet must be replaced and the magazine and clamps must be adjusted.

The information contained in this paragraph refers to Example 3, i.e. to the cases where it is necessary to carry out all adjustment operations and feeder set-up.

These operations are listed and then described below.


5.3.1 Guides, half bushes, bar-pusher and collet - Replacement

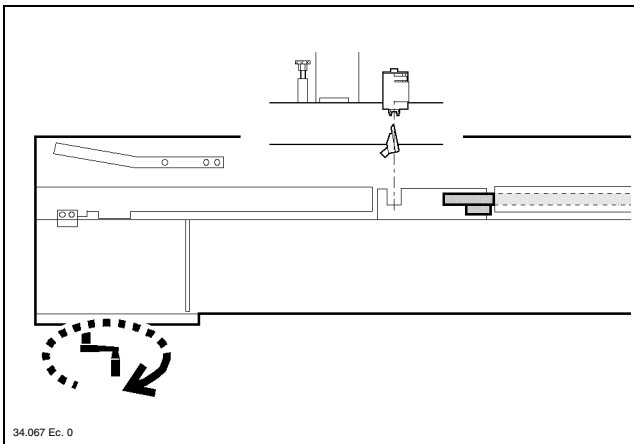
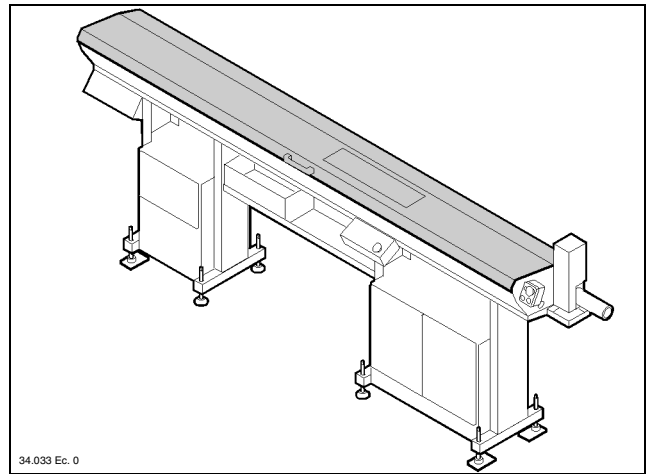
5.3.2 Clamps - Replacement

5.3.3 Bar guide plates and bar selectors - Adjustment

5.3.4 Clamps - Adjustment

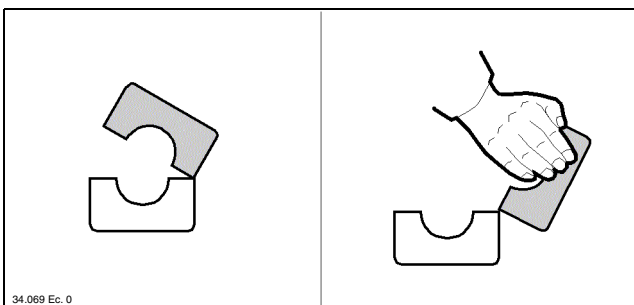
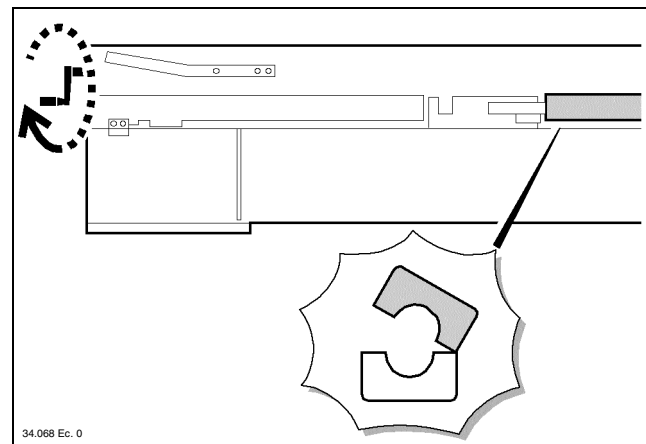
5.3.1 Guides, half bushes, bar-pusher and collet - Replacement

- Press  to start the feeder.
- Press  to select the manual cycle.
- Open the upper guard.



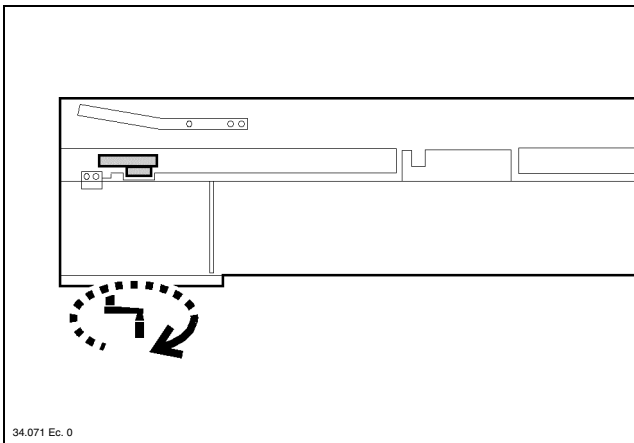
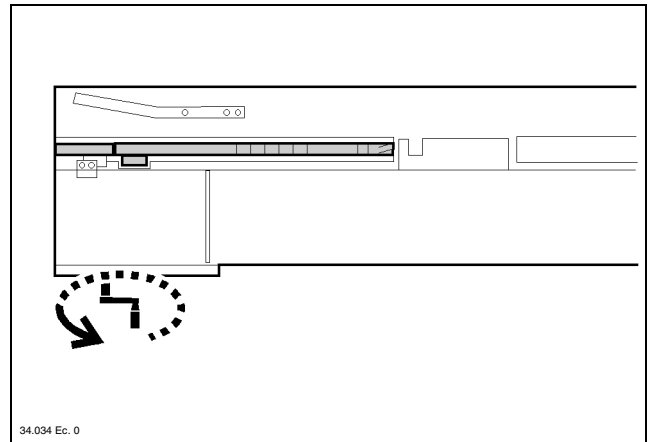
- Insert the (supplied) crank in the intermediate drive shaft and move the bar-pusher forwards past the clamps area.

- Move the crank to the guide opening screw shaft and open the upper guides.

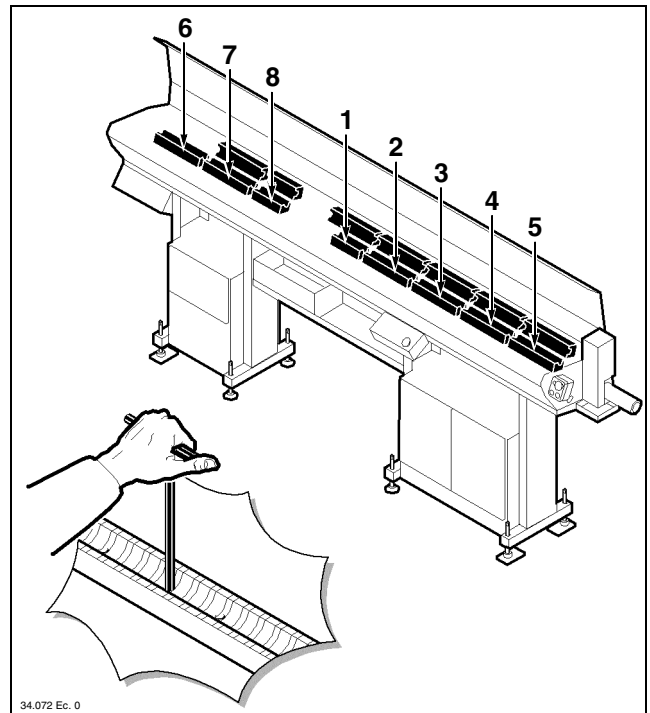


- Manually overturn them.

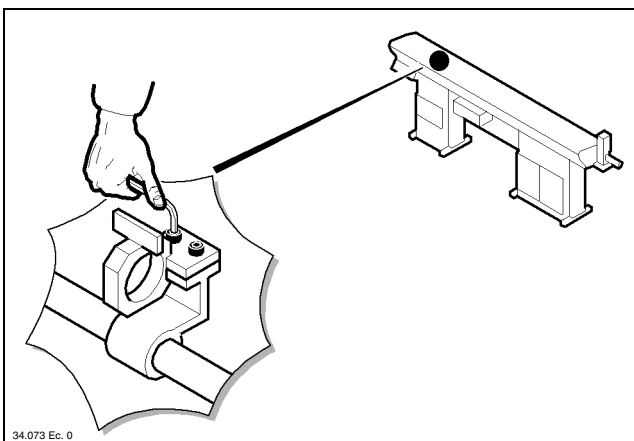
- Bring the bar-pusher to its backwards limit stop and remove it from its seat. \varnothing 42 bar-pushers: they must be removed from the bar magazine (remove all the contained bars if necessary).



- Move the small pusher truck forwards until the flag reaches the opening, then remove the truck from its seat.



- Disassemble the lower guides in the sequence shown in the figure. It is not necessary to remove the screws for disassembly: just loosen them by approx. 3 turns and cause the guide to slide from right to left to extract it. It is only necessary to remove the screws for the last guide (number 6).
- Now disassemble the upper guides by removing their screws.

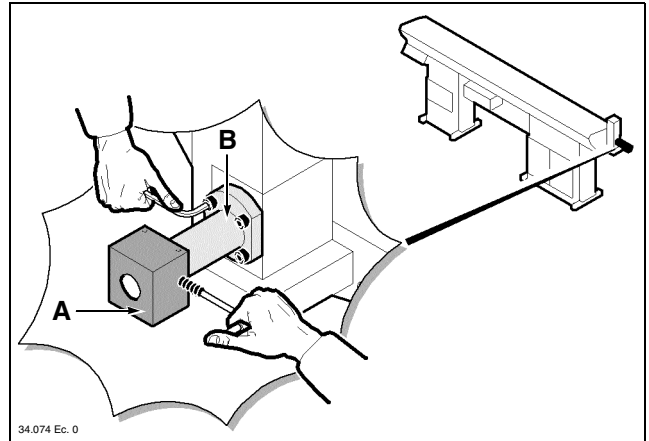


- Remove the bar-pusher support.

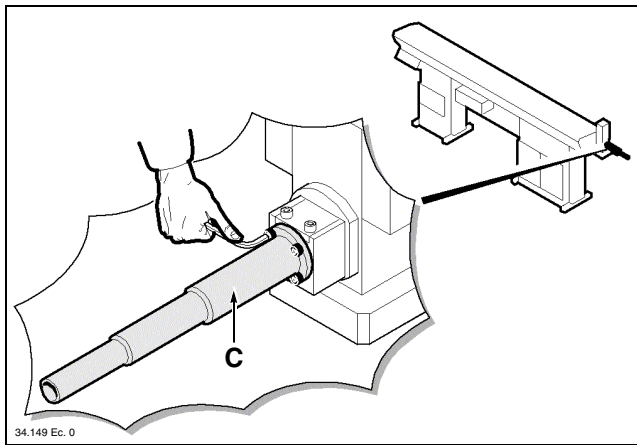
Remove the nose in the following way:

Fixed nose

- Remove the oil recovery device **A** and nose **B**.



34.074 Ec. 0



34.149 Ec. 0

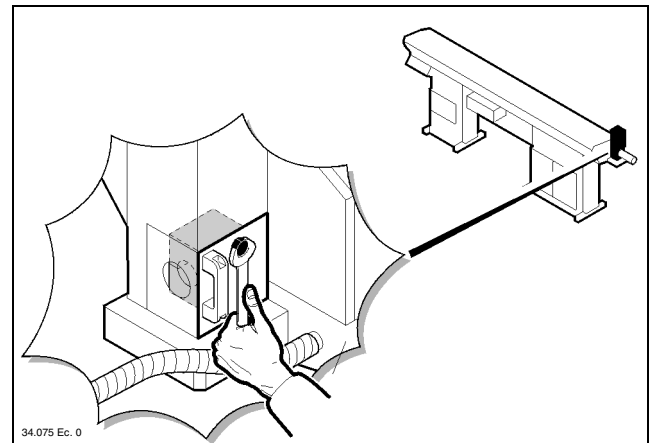
Telescopic nose

- Remove the nose **C**.

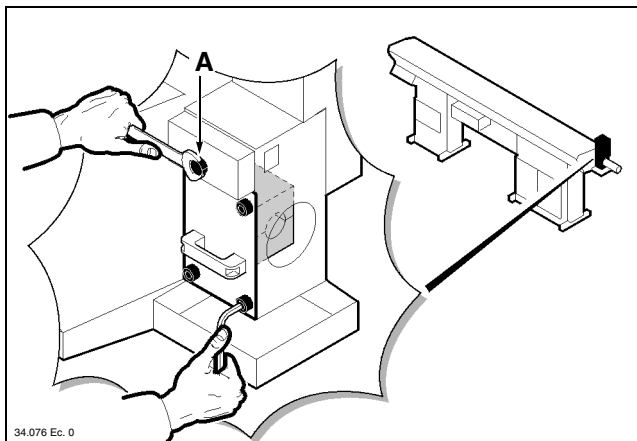
Remove the front half bushes in the following way:

MINI BOSS

- Remove the cover and manually extract the two half bushes.



34.075 Ec. 0



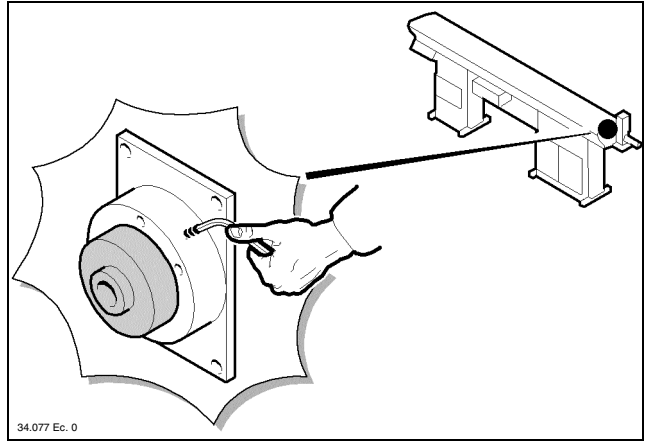
34.076 Ec. 0

BOSS

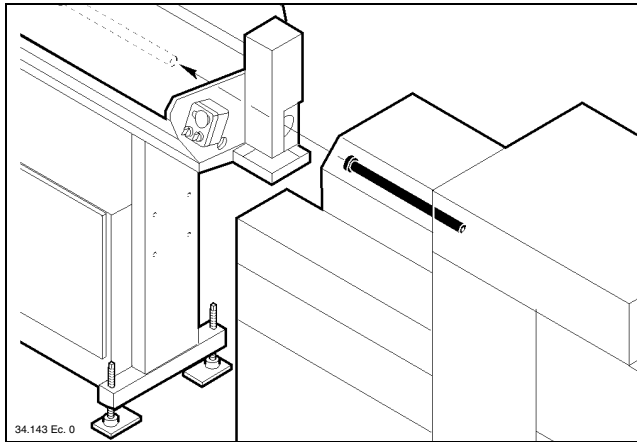
- Remove the cover, fully open the two half bushes by manually turning the shaft **A** and extract the lower bush
- Close the remaining half bush by working the shaft **A** again and extract it.

For MINI BOSS only:

- Remove the internal sleeve.



34.077 Ec. 0



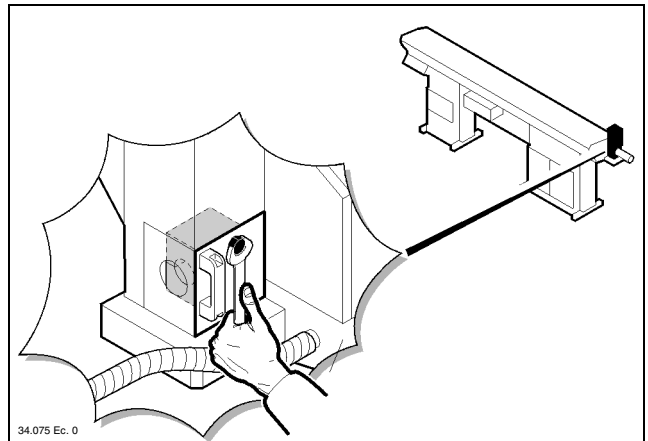
34.143 Ec. 0

- Remove the lathe spindle liner if required and install a suitable liner for the “new” diameter.

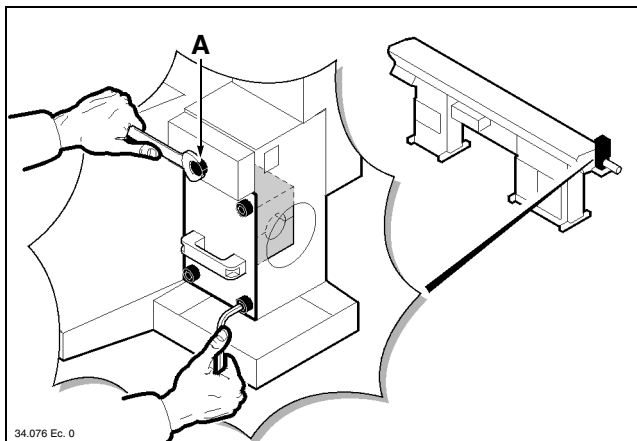
Install suitable front half bushes for the “new” diameter in the following way:

MINI BOSS

- Insert the two half bushes and place the cover.



34.075 Ec. 0



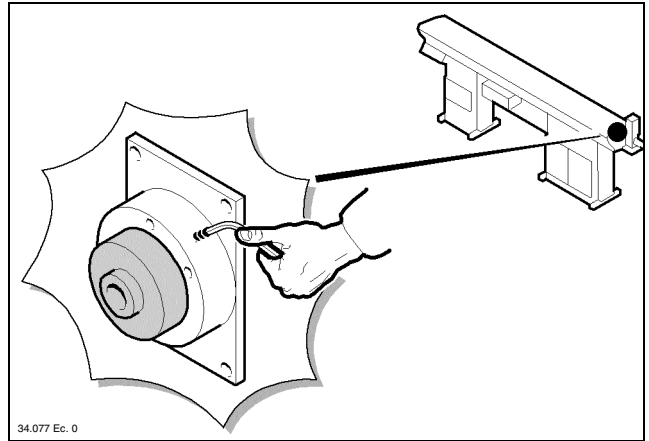
34.076 Ec. 0

BOSS

- Insert the upper half bush, turn the shaft **A** and insert the lower half bush.
- Fully close the half bushes and place the cover.

For MINI BOSS only:

- Mount a spindle liner suitable for the "new" diameter.

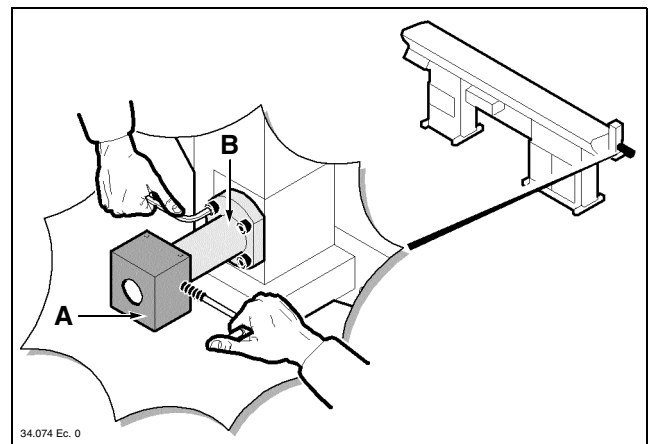


34.077 Ec. 0

Place the nose back as follows:

Fixed nose

- Mount a nose **B** suitable for the "new" diameter and the oil recovery device **A**.



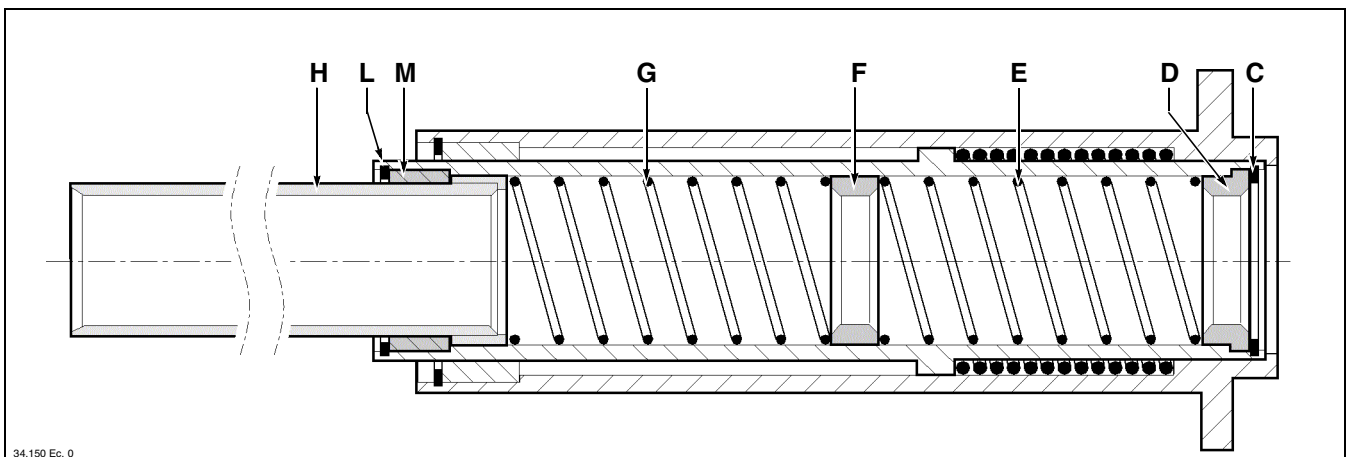
34.074 Ec. 0

Telescopic nose

It is not necessary to change the whole telescopic nose assembly: only a few components supplied as a spare part kit need to be changed.

- Compress the intermediate stage to the end of its stroke and remove the ring **C**. Extract the bush **D**, the spring **E**, the bush **F**, the spring **G** and the sleeve **H**.

- Remove the ring **L**, replace the bush **M** with another one suitable for the "new" diameter and place the ring **L** back.
- Reinstall the sleeve **H**, the spring **G**, the bush **F**, the spring **E** and the bush **D**. The sleeve **H** and the bushes **F** and **D** must be suitable for the "new" diameter. Place the ring **C** back.



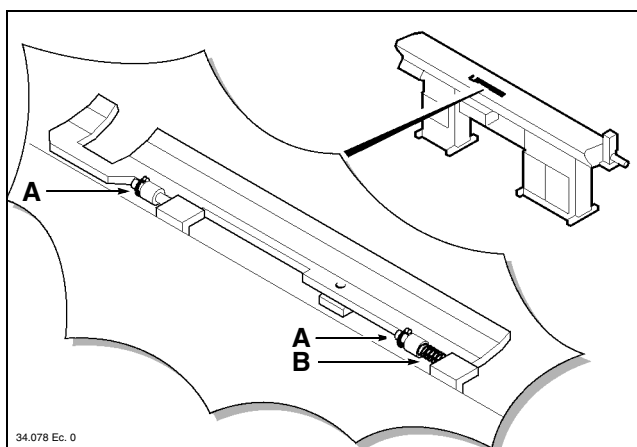
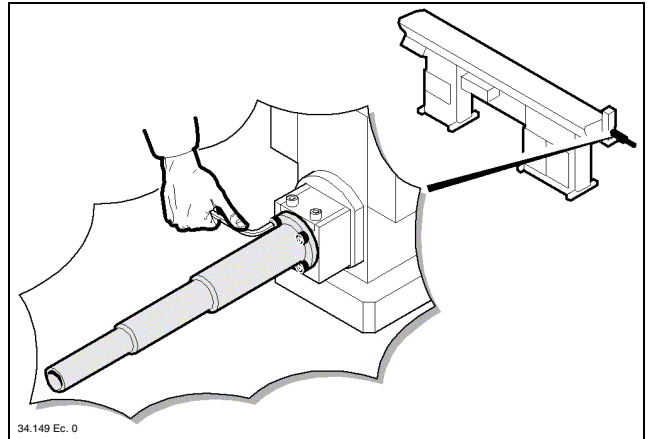
34.150 Ec. 0

- Place the sleeve back into its seat.

For MINI BOSS only

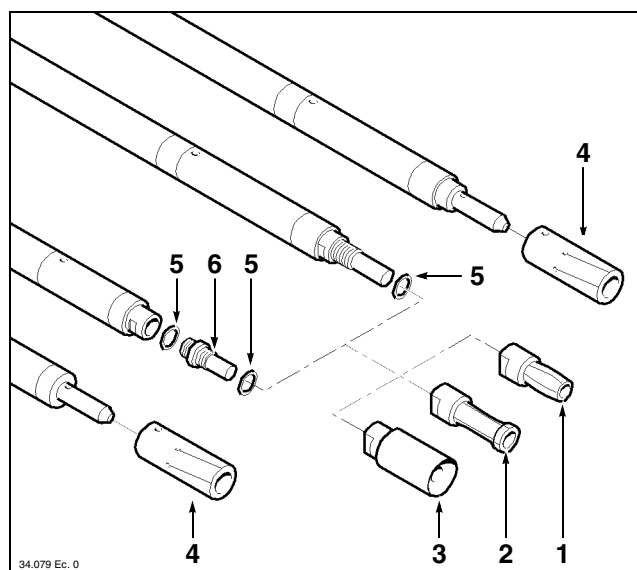
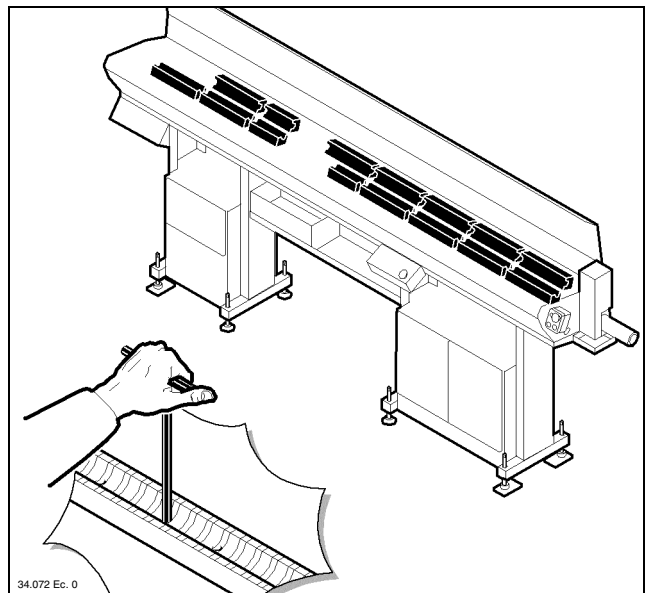
If the "new" guide diameter is 13 mm, the intermediate flag should be changed as follows.

- Remove the two rings **A**, the spring **B** and the flag
- Mount the 13 mm guide flag then replace the spring and two rings.



- Mount the upper guides and then the lower guides (suitable for the "new" diameter) by reversing the order of disassembly operations.

i **INFORMATION:** make sure that the lower guide screws have an oil inlet hole.



- Choose a suitable collet for the bar diameter and profile; check the attached summary tables.

i **INFORMATION:** contact IEMCA After-Sales service for more information.

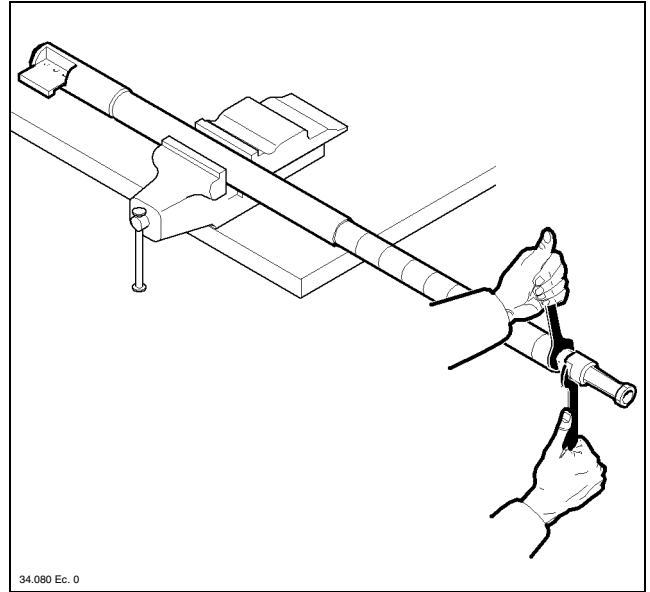
Legend:

- 1 - "IEMCA" collet for pipes
- 2 - "IEMCA" collet for bars
- 3 - "IEMCA" collet for machined bars with remnant front ejection
- 4 - "SCHLENKER" collet for bars
- 5 - Ring
- 6 - Collet connection

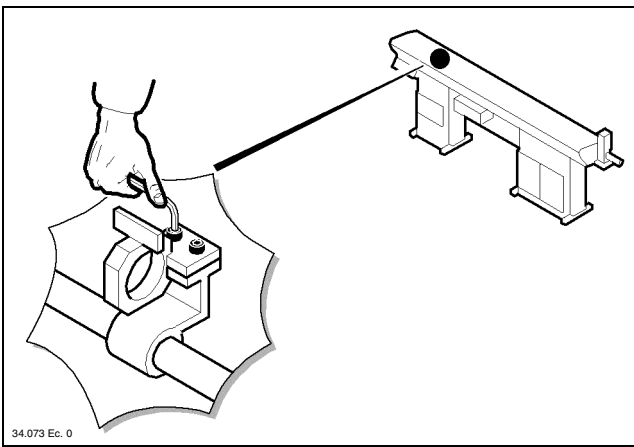


CAUTION: the collet outside diameter should be at least 0.5 mm smaller than the bar-pusher outside diameter.

- Install the collet in the bar-pusher and make sure that the rings are riveted in their special recesses to prevent accidental collet unscrewing from its connection.
- Mount a bar-pusher support suitable for the "new" diameter.

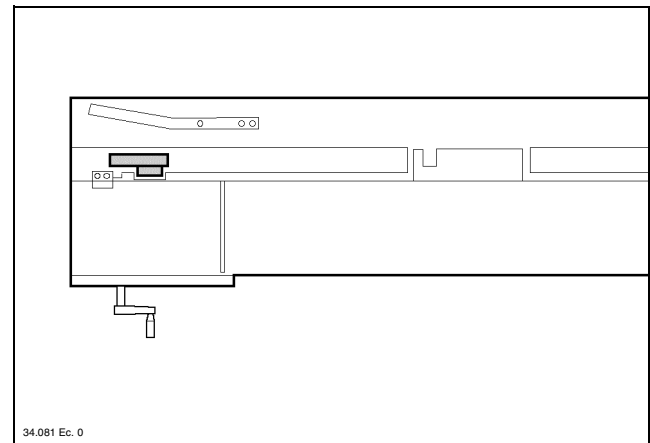


34.080 Ec. 0



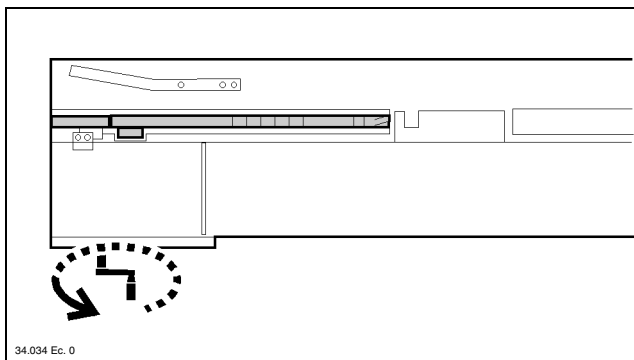
34.073 Ec. 0

- Insert a small pusher truck suitable for the "new" diameter in its special seat.



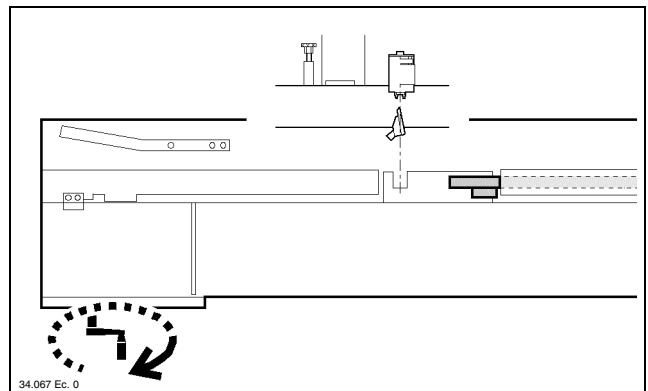
34.081 Ec. 0

- Move the small pusher truck to its rear limit stop and insert a bar-pusher suitable for the "new" diameter.



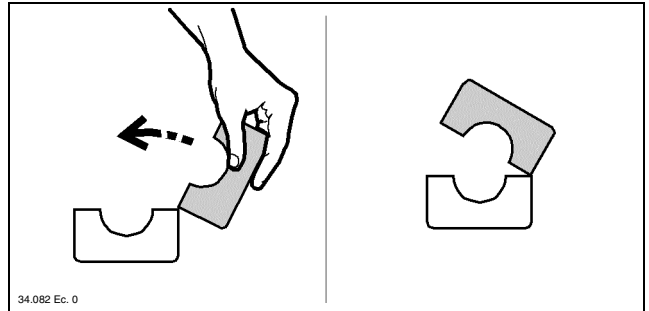
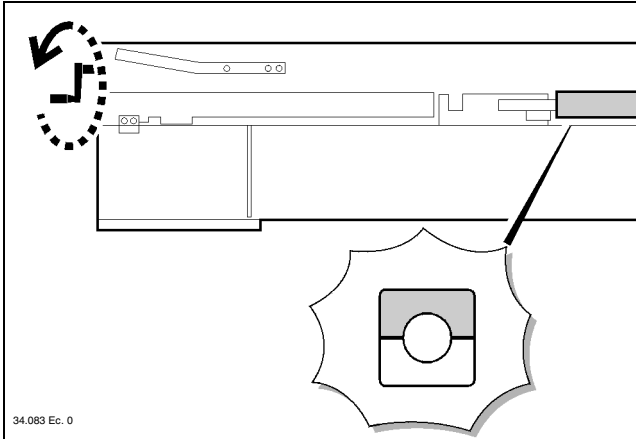
34.034 Ec. 0

- Move the bar-pusher forwards past the clamps area.

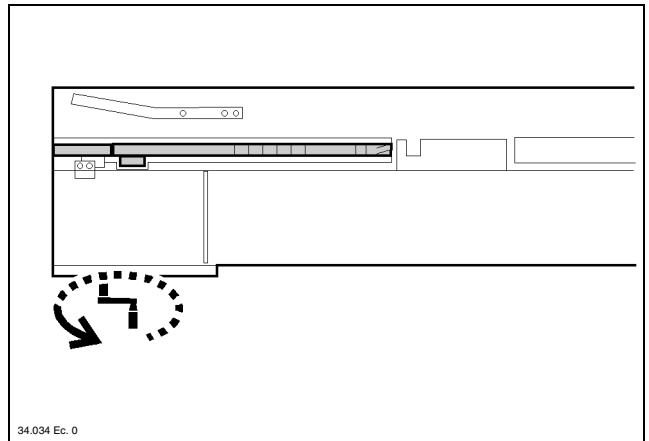


34.067 Ec. 0

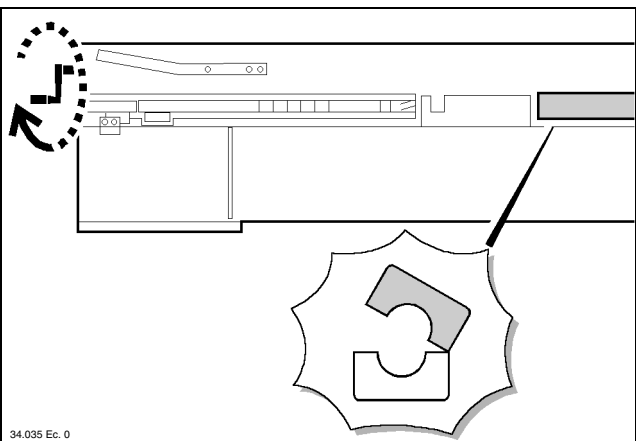
- Manually overturn the guides.



- Close the guides.

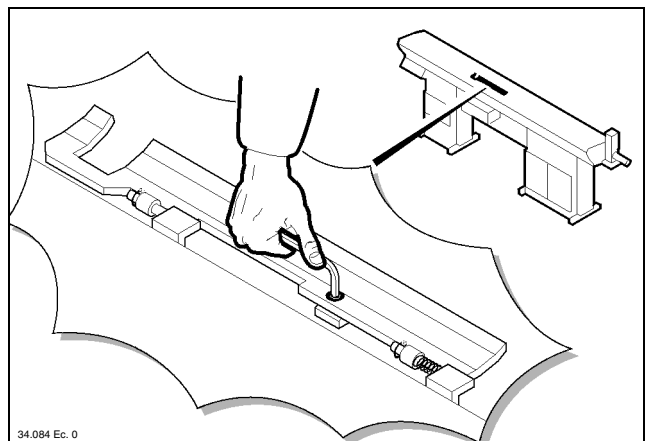


- Move the bar-pusher back to its rear limit stop.



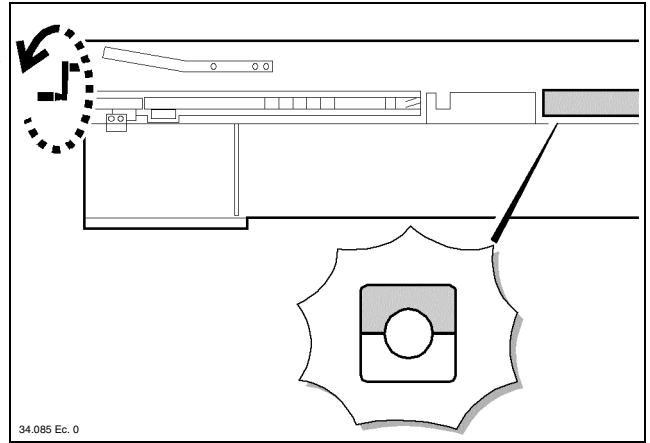
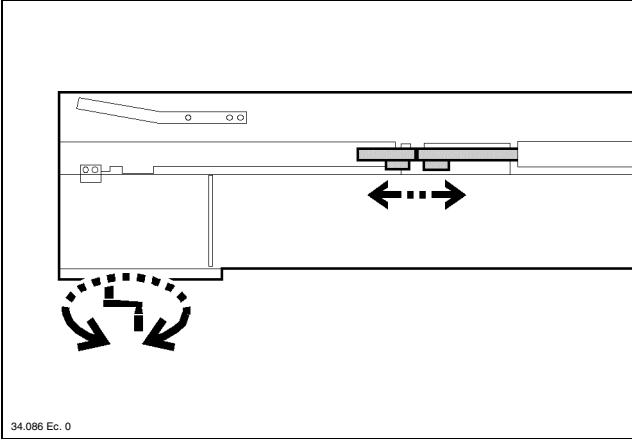
The upper surface of the intermediate flag must be flush with the lower guides; proceed as follows to obtain adjustment:

- Open the upper guides.



- Loose the screw, adjust the flag position and tighten the screw.

- Close the upper guides.



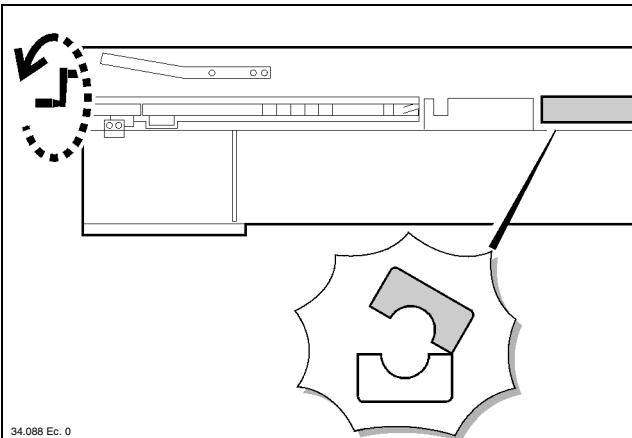
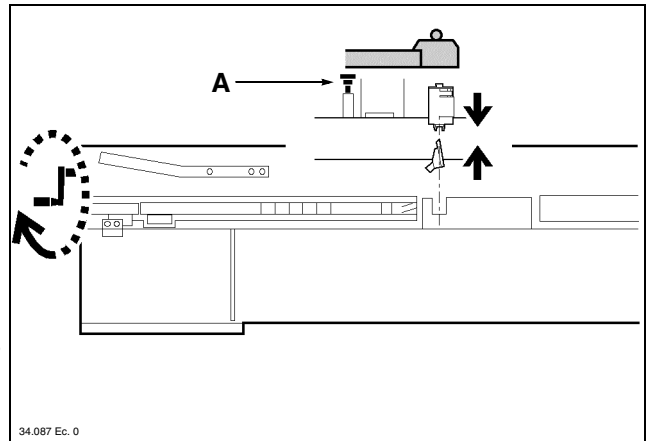
- Move the bar-pusher forwards and backwards in the flag area to make sure that its stroke is not hindered.

5.3.2 Clamps - Replacement

Clamp replacement becomes necessary when the new bars to be machined have a different profile from the previously machined bars (e.g. when changing over from round bars to square or hexagonal bars). Contact IEMCA after-sales service for more information.

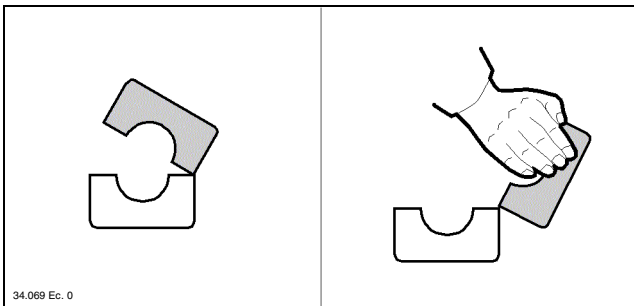
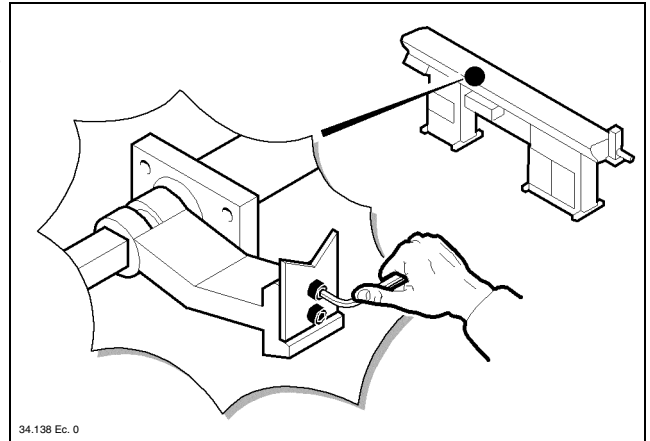
Proceed as follows to replace the clamps:

- Close the clamps and tighten hard the screw of knob **A** to lift the lower clamp as much as possible.



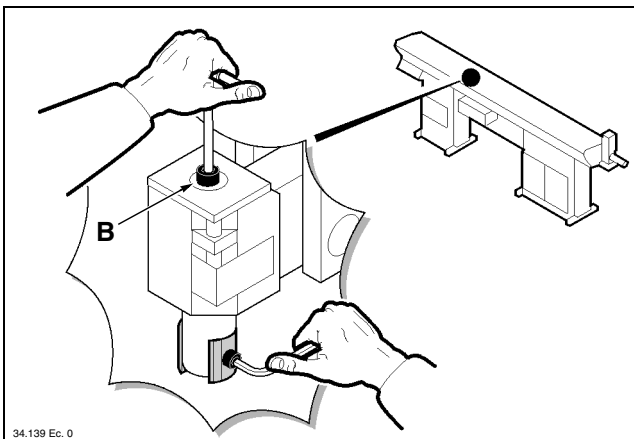
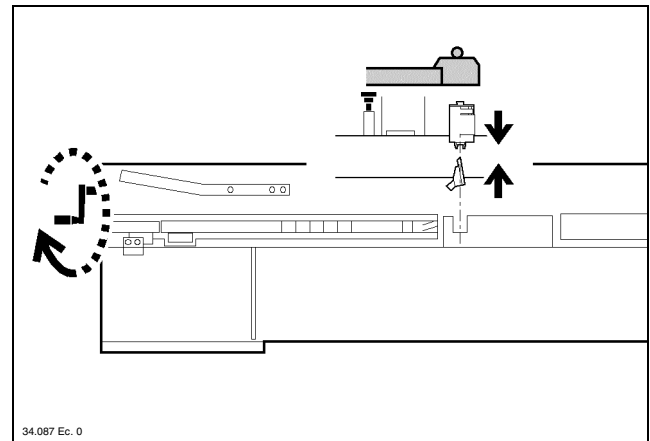
- Open the upper guides.
- Manually lift the lower lever and replace the clamp.

Remove the intermediate flag if necessary (see paragraph 5.3.1).



- Manually overturn the upper guides.

- Close the clamps.

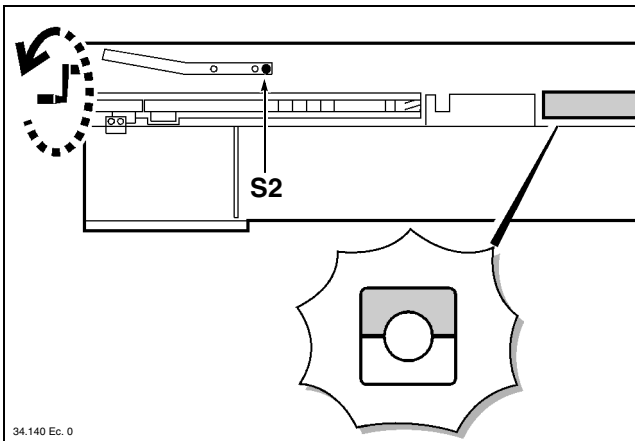
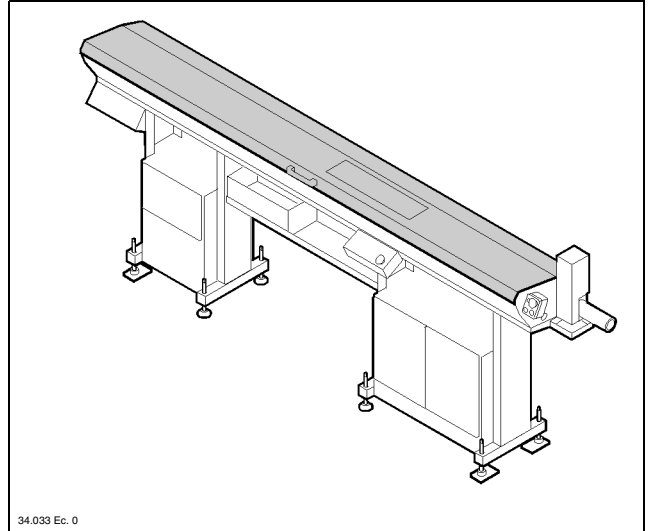


- Screw the screw **B** down to extract the clamps and replace them.
- Restore the initial feeder conditions.

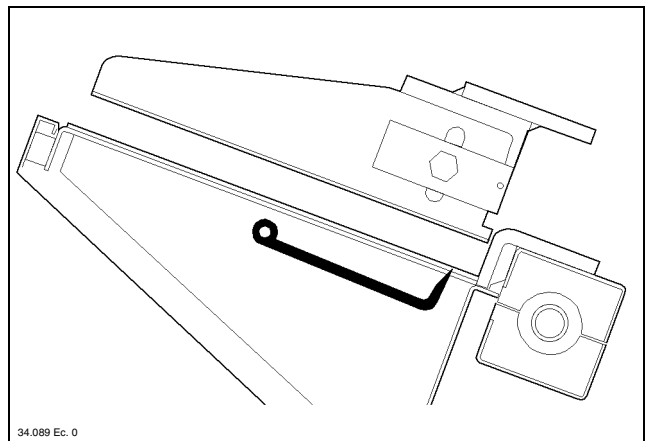
5.3.3 Bar guide plates and bar selectors - Adjustment

□ Preliminary procedure

- Open the upper guard



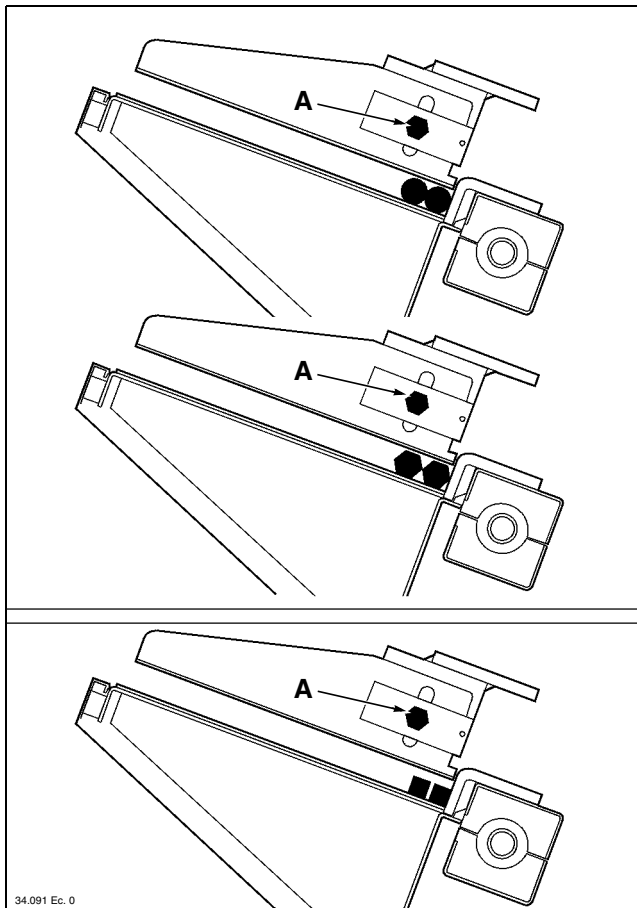
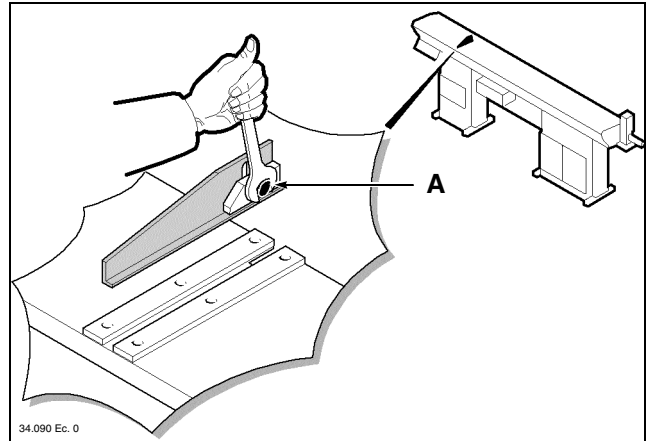
- Close the upper guides (sensor **S2** must be energized)



- Make sure that the bar selectors are lower than the magazine surface.
- Prepare two bar remnants having a length of 1200 mm.

□ Adjustment of the bar guide plates

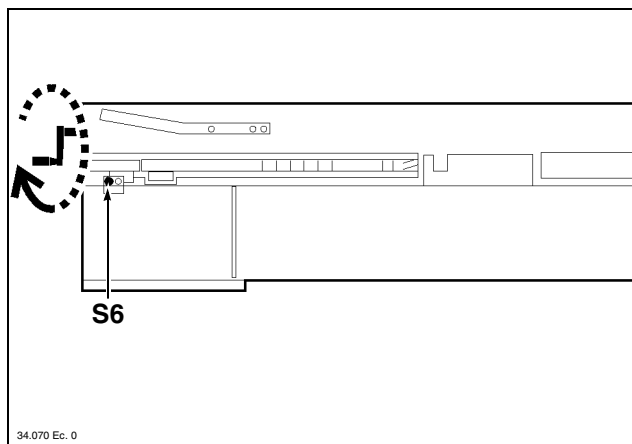
- Loosen the screw **A**, lift the plate and tighten the screw **A**; repeat this operation on all the plates.
- Feed two bars to the magazine, loosen the screws **A** and drop the plates which will stop against the bars.



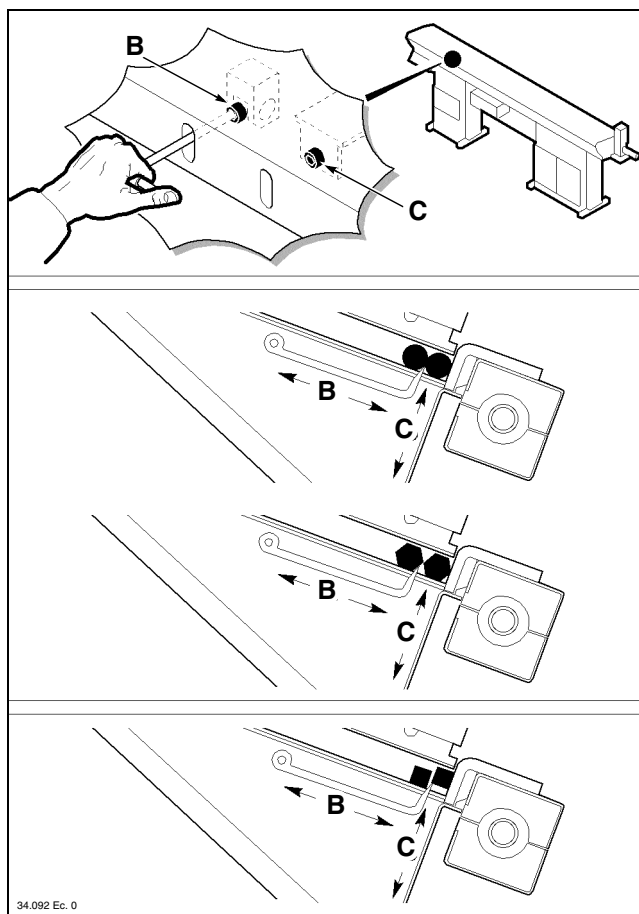
- If the bars are round or hexagonal, make sure that a little clearance is left between the plate and the bars. The clearance must be 3-8 mm for square bars.
- Tighten the screws **A** on all plates.

□ Adjustment of the bar selectors

- Lift the bar selectors to their maximum lifting point (the sensor **S6** must be energized).



34.070 Ec. 0



34.092 Ec. 0

Carry out this adjustment according to bar profile.

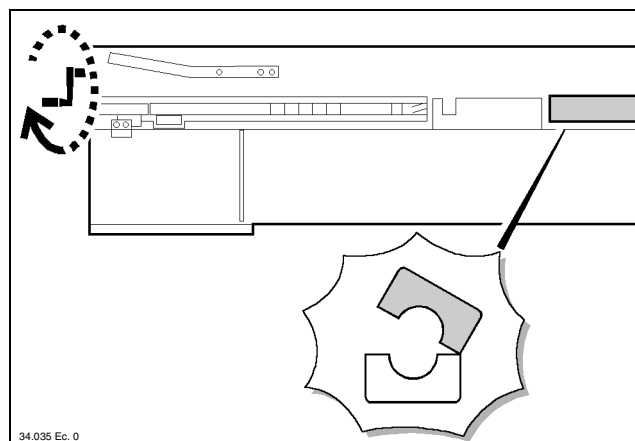
Round or hex bars

- Turn the screw **B** to adjust the bar selectors transversally (the tips must be positioned between the two bars).
- Turn the screw **C** to adjust the bar selector height (the tips must touch the two bars only just, without lifting them).

Square bars

- Turn the screws **B** and **C** to adjust the bar selector transversal position and height (the tips must lift the first bar and at the same time, hold the second bar).

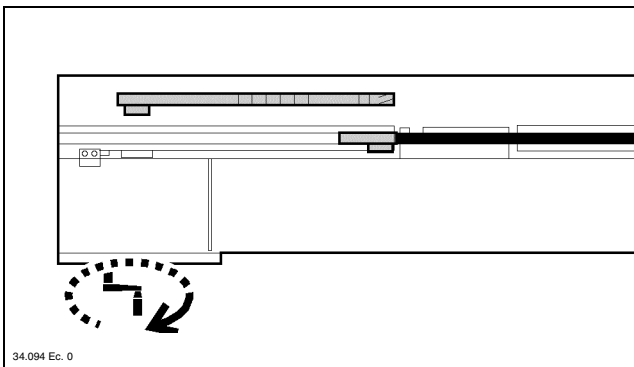
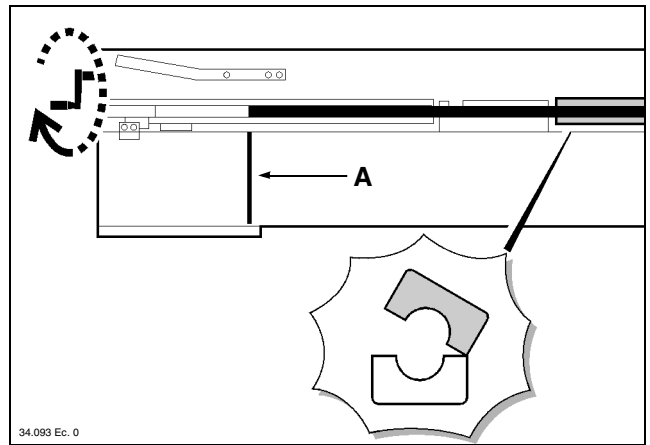
- Open the upper guides; the first bar must be dropped into the guides, while the second bar should be retained in the magazine until the next bar closure.



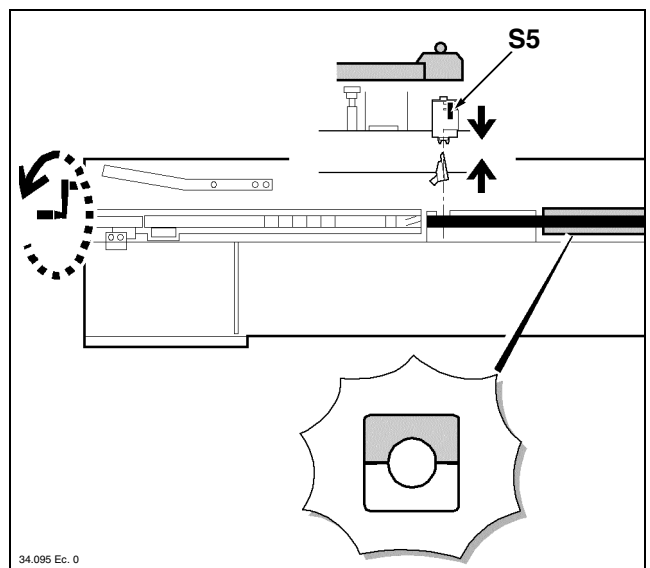
34.035 Ec. 0

5.3.4 Clamps - Adjustment

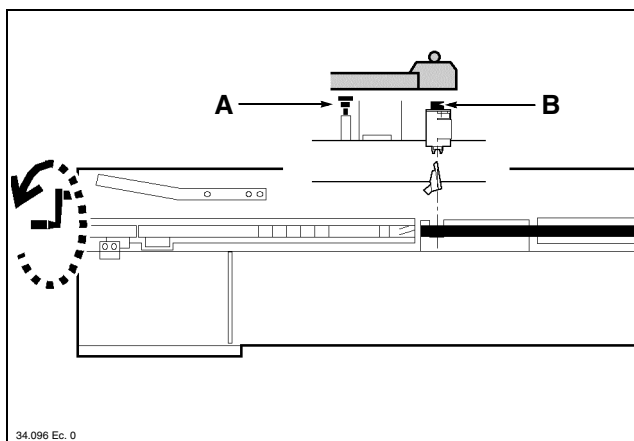
- The feeder upper guides must be open and the bar must be in the lower guides, flush with the plate **A**.



- Bring the bar flush with the bar-pusher collet plus 1 mm, then move the small pusher truck back to its rear limit stop.

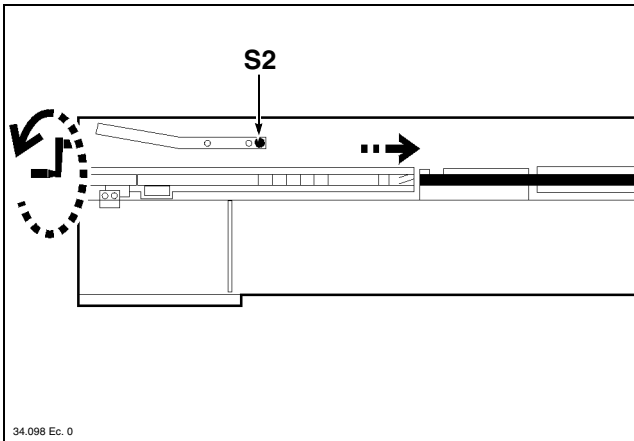
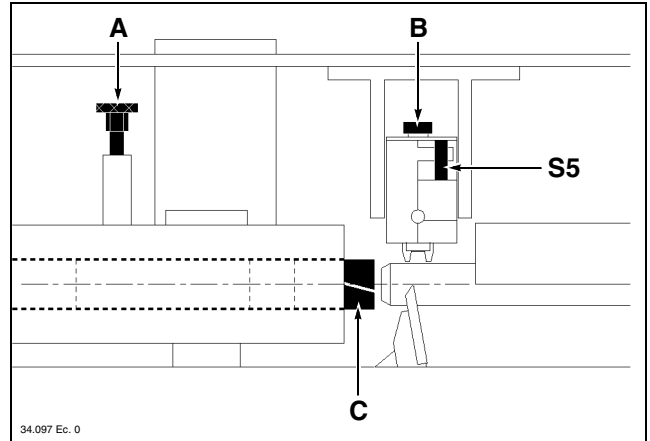


- Close the upper guides and continue to turn the crank until the clamps close or the sensor **S5** becomes energized.



- In the latter case, loosen the clamps by turning the knob **A** and screw **B** and continue to turn the crank until the clamps are fully closed.

- Turn the knob **A** to lift the lower clamp until the bar axis is lifted to approx. 2 mm over the bar-pusher axis **C**. Turn the screw **B** to lower the upper clamp until the bar axis becomes aligned with the bar-pusher **C** axis again (the sensor **S5** must not be energized).



- Turn the crank vigorously to obtain bar introduction into the bar-pusher collet. Make sure that the clamps do not let go of the bar during this operation. Repeat this operation two or three times to make sure that good adjustment has been obtained. Then continue to turn the crank until sensor **S2** becomes energized.

5.4. CAM BOX - TIMING

If the feeder is equipped with a cam box, each cam should be timed to its own microswitch. The timing procedure is as follows.

□ Microswitch function

S90 - Bar feed enabling

It controls the bar feeding motor start/stop. It must be operated at each collet opening. In addition, it also controls operation of the bar/headstock synchronizing device.

S91 - Bar change-over enabling

It signals lathe collet opening/closing to the feeder. It determines the camshaft stop position at bar end.

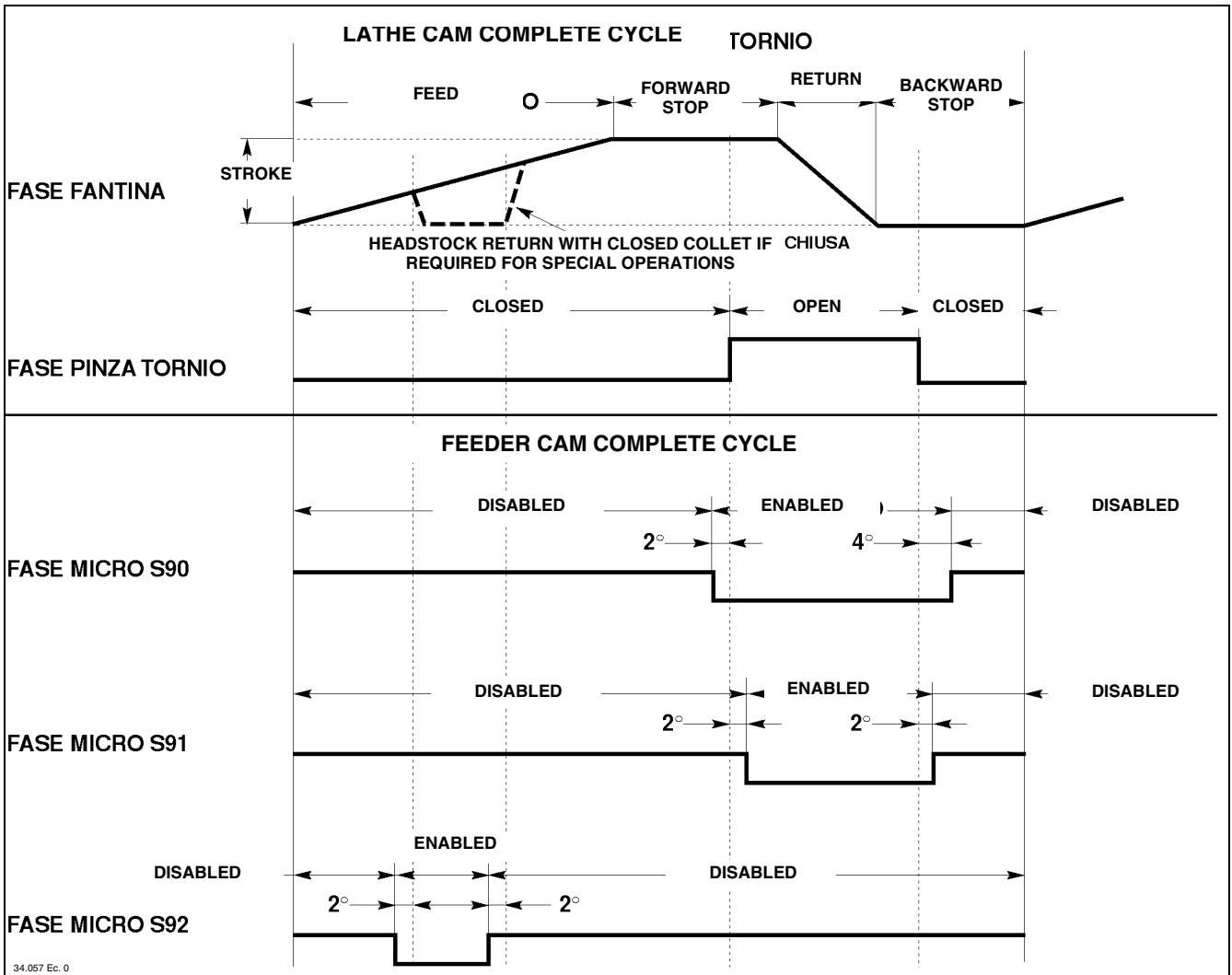
S92 - Feed stop enabling

Only used in sliding headstock lathes. It disables the feeding thrust during any operations requiring headstock return with a closed collet.

S99 - Camshaft stop

It determines the camshaft stop position when there is no thread (connected in series with a microswitch or relay located on the lathe).

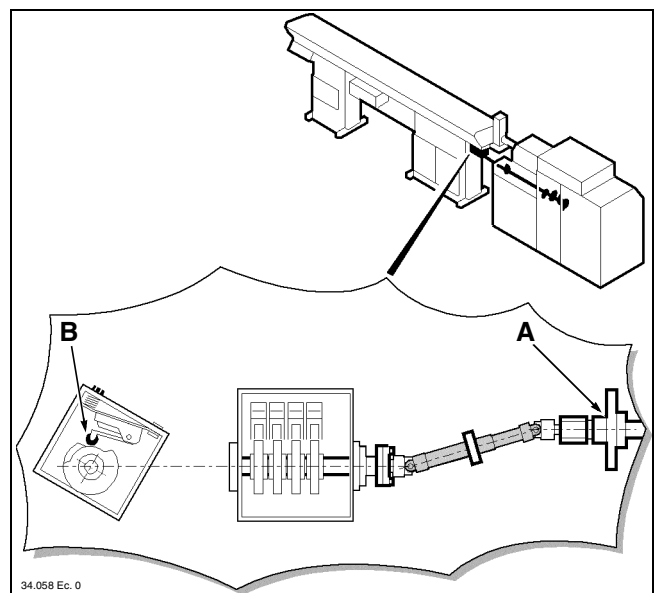
Cam setting



Microswitches S90 and S91

- Rotate manually shaft **A** up to a distance of 10° approx. from the collet opening, then **S90** microswitch cam until wheel **B** is released.
- Turn shaft **A** until the collet opens.
- Turn **S91** microswitch cam to release the wheel.
- Rotate shaft **A** until the collet closes.
- Turn the cam to lift **S91** microswitch cam.
- Rotate shaft **A** of 10° approx., then lift **S90** microswitch wheel.

i INFORMATION: S90 and S91 microswitch wheels must lower when the headstock is in a forward position and lift when the headstock is backwards, in any case before the following feeding.



Microswitch S92

- Rotate manually shaft **A** until the headstock starts its return stroke with closed collet.
- Release **S92** microswitch wheel.
- Continue rotation until the headstock has completed its return stroke.
- Lift wheel **S92**.

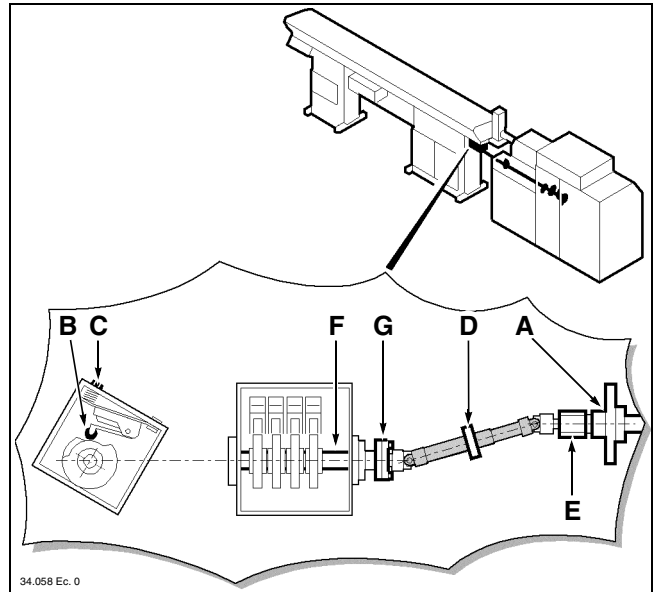
Microswitch S99

When the threading tool starts its return stroke, lower **S99** microswitch wheel and lift it before the stroke is over.

Should microswitch **S99** be fitted on lathe, setting adjustments are to be performed on lathe cam.

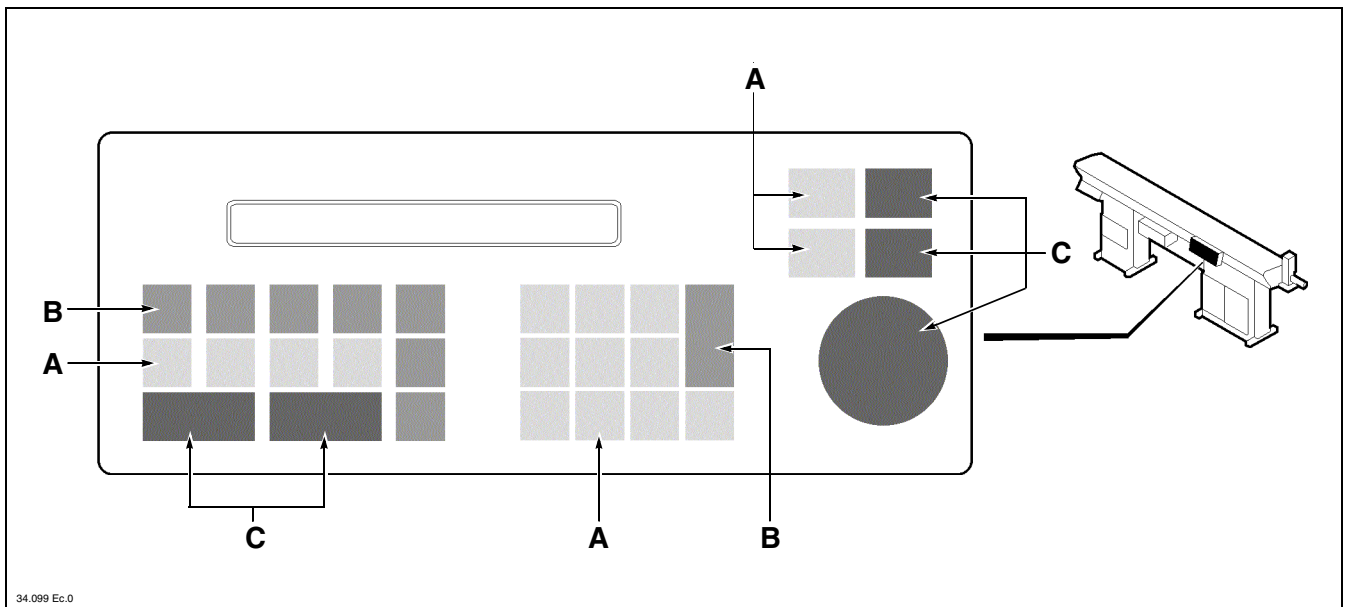
□ General remarks

- Microswitch activation can be either delayed or advanced through screw **C**.
- Whenever servicing the camshaft, disconnect the cam box, according to the following procedure:
 - loosen clamp **D** and unscrew sleeve **E**;
 - service the lathe camshaft;
 - screw sleeve **E** and tighten clamp **D**;
 - should shaft **F** be out of phase, loosen sleeve **G** screws, rotate it and tighten the screws.




34.058 Ec. 0

6.1. PUSH-BUTTON PANEL - Description of controls




The push-button panel controls are divided as follows:


A - Manual and programming function controls

 They control the bar feeder movements and program parameter functions.

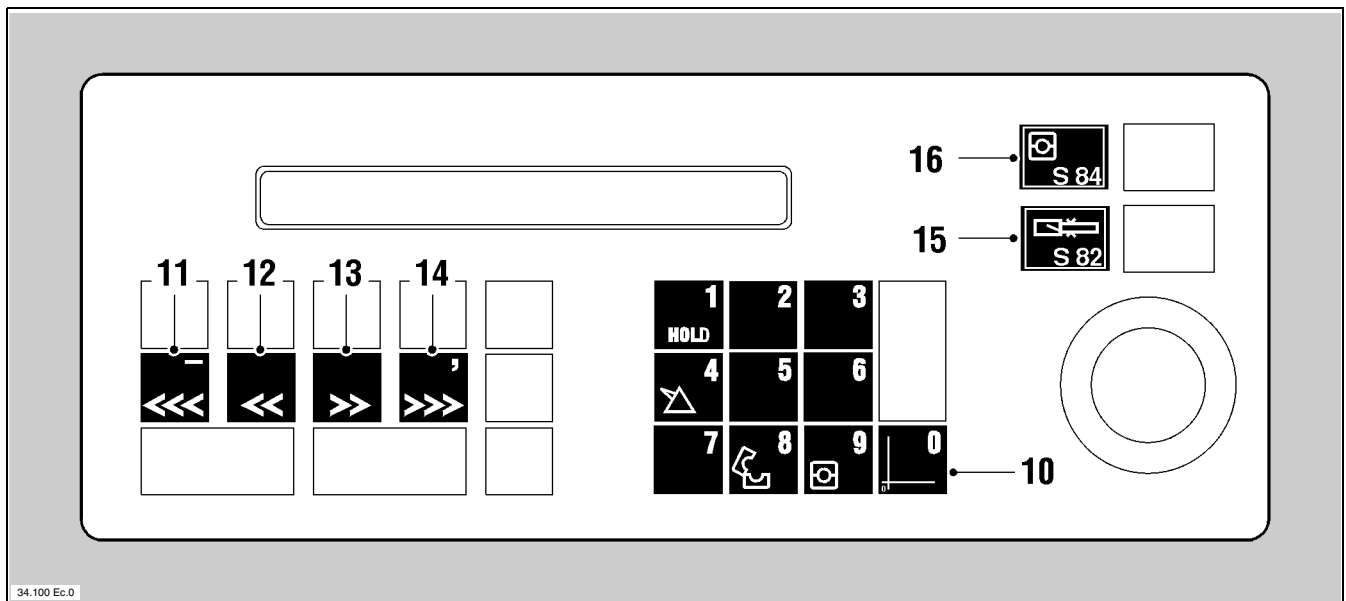
B - Programming controls

 They program both functions and parameters.


C - Main functions controls


 They are used for starting, stopping, and for the selection of the working cycle.


□ Controls for manual functions and programming





34.100 Ec.0


1-  **Key to disconnect power to the D.C. motor** or for number 1.


2-  **Key for number 2.**


3-  **Key for number 3.**


4-  **Key to disconnect the lubricating pump (in the manual mode) or for number 4.**


5-  **Key for number 5.**


6-  **Key for number 6.**


7-  **Key for number 7.**


8-  **Key to open the upper guides (in the manual mode) (it should be pressed simultaneously with the push-button S82) or for number 8.**


9-  **Key to close the upper guides (in the manual mode) (it should be pressed simultaneously with the push-button S82) or for number 9.**


10-  **Key for "BAR FEEDER ZERO SETTING" or for number 0.**


11-  **Key for bar-pusher return or for the "minus" sign.**

12-  **Key for bar-pusher small backwards movements.**

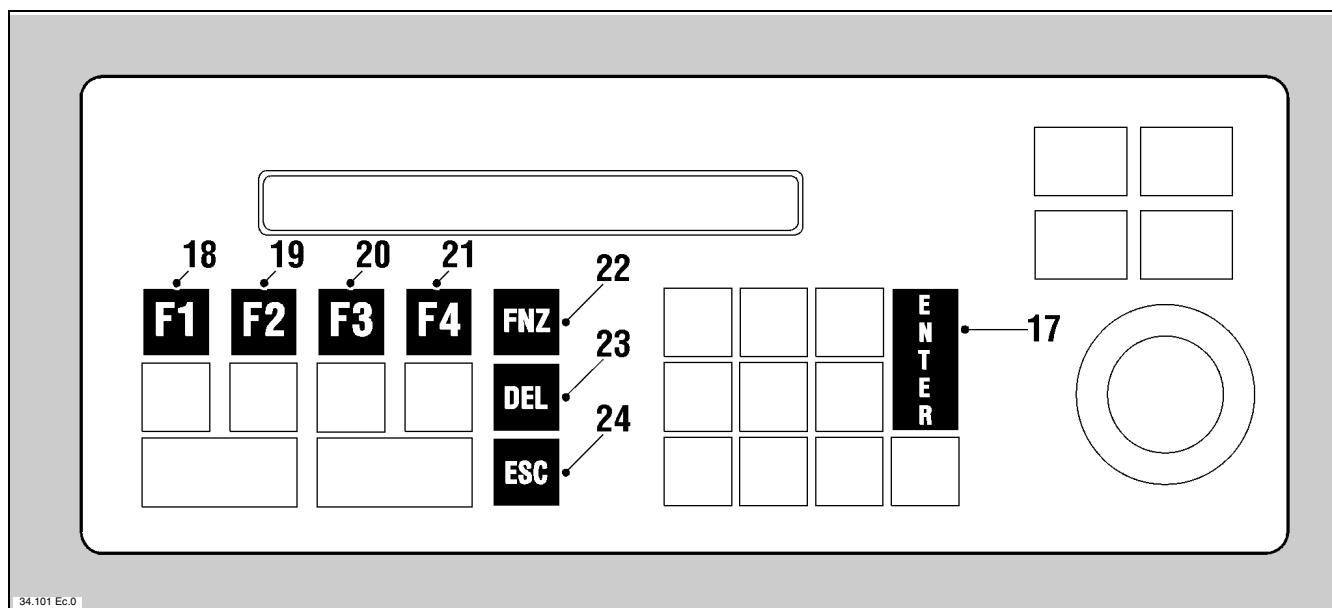
13-  **Key for bar-pusher small forwards movements.**

14-  **Key for bar-pusher feeding or for the "point" sign.**


15-  **Green push-button to override the "remnant safety" function or to allow motions controlled by keys 8 and 9 (the push-button and one of the keys have to be pressed simultaneously).**


16-  **White lighted push-button to open or close the front half bushes.**


□ Programming controls





17-  Input data validation key.

18-  Function key F1.


19-  Function key F2.

20-  Function key F3.


21-  Function key F4.

22-  Key for:

- recalling the access code,
- visualizing functions,
- selecting the function following the one displayed.

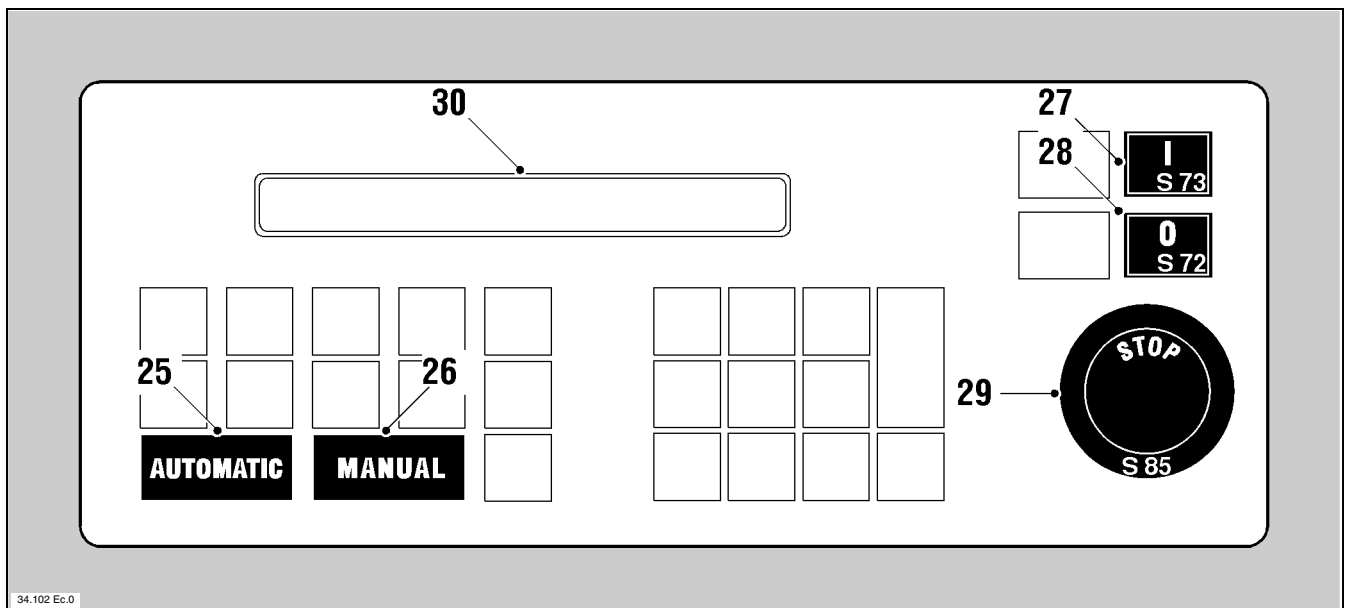
23-  Key for:


- deleting numbers in the parameters,
- selecting the function preceding the one displayed.


24-  Key for:

- parameter exit,
- learning program exit,
- function exit.


□ Main functions controls




25-  Feeder automatic function selecting key.

26-  Feeder manual function selecting key.





27-  Green lighted push-button. It starts the feeder.

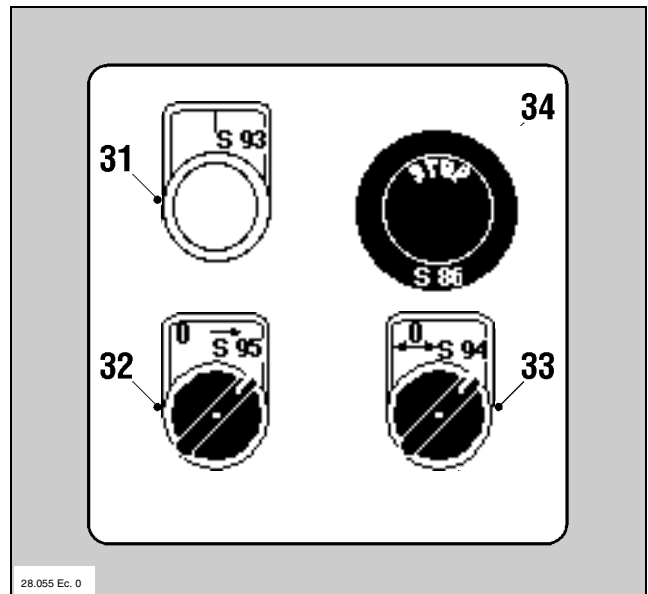
28-  Red lighted push-button. It stops the feeder.

29-  **Emergency push-button.** It stops the feeder. The feeder can be re-started only after the push-button has been manually released.

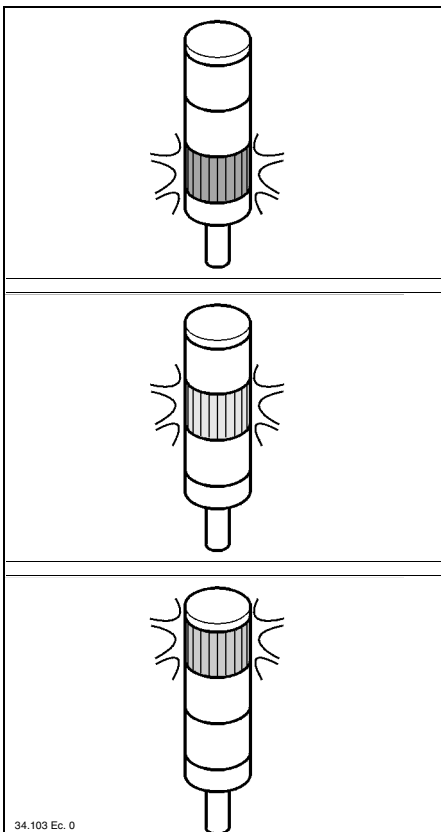
30-Display.
 i **INFORMATION:** for detailed information on programming, read the "Push-button panel operation guide".

6.2. ADDITIONAL PUSH-BUTTON PANEL - Description of controls

- 31-  **Green push-button** controlling bar feeder start.
- 32-  **Selector** to switch between automatic and manual cycles:
position 0: *manual cycle*
position →: *automatic cycle*
- 33-  **Selector** to control bar-pusher feeding or return:
position ←: *bar-pusher return*
position →: *bar-pusher feeding*
- 34-  **Emergency push-button** to stop the bar feeder which can only be restarted after manual push-button release.



6.3. INDICATOR LIGHTS - Description of indications



Red light; signals that the bar feeder is not operating, or that it is in the manual mode.

Green light; it indicates that the bar feeder is in the automatic mode.

Orange light; signals that the bar feeder is carrying out the bar change, that it is not operating, or that manual motions are being carried out.

6.4. BARS TO BE MACHINED - Characteristics and preparation

CAUTELA - PRECAUZIONE: do not feed bars having different sizes than the manufacturer's prescribed sizes.

Table 1. Maximum bar length

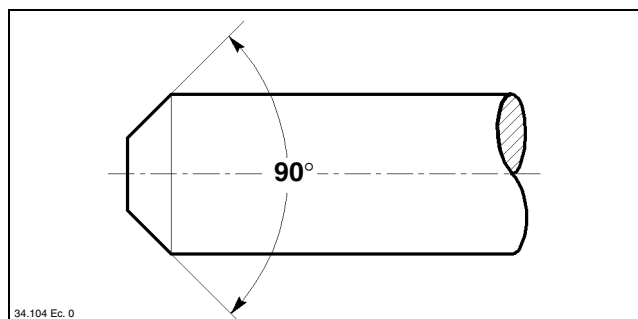
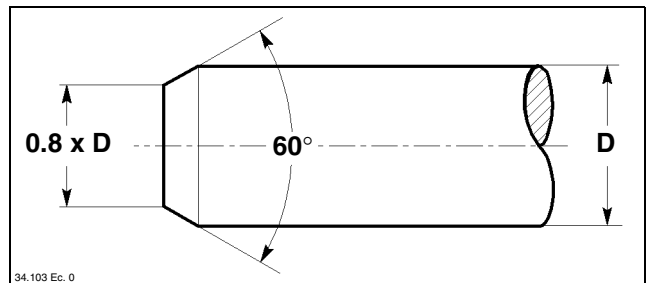
Model	Version	Max. length mm (ft)
MINI BOSS BOSS		

Bar must not present a straightness defect above 0.5 per 1000.

□ Solid bars

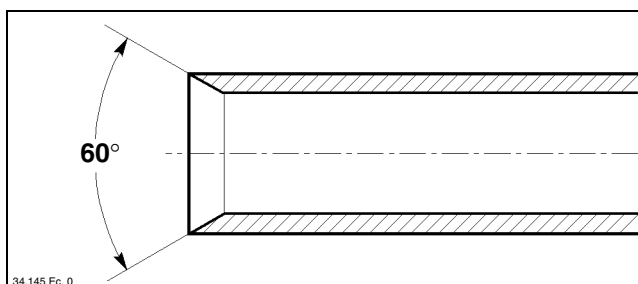
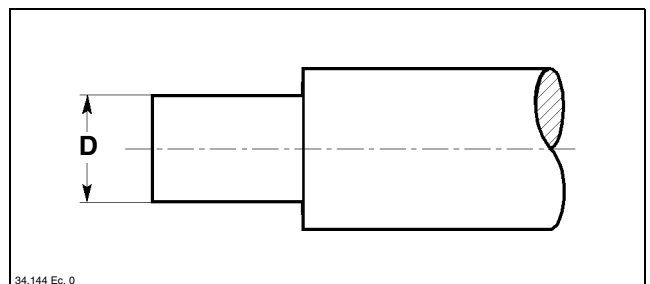
Check that there is not too much rag on bar head, which might hinder insertion in the lathe collet.

Check that there is not too much rag on bar rear end, which might hinder insertion in the bar-pusher collet. In any case, to improve operation during this phase, we advise to chamfer the bar as shown in the figure.



If bars with front remnant ejection have to be machined, we advise to chamfer the bar rear end as shown in the figure.

If bars have to be machined having a diameter equal to or only slightly smaller than the bar-pusher diameter, bar rear ends should be machine-turned; diameter **D** should be suitable for the collet size installed in the bar-pusher.



□ Pipes

If pipes have to be machined, their rear ends should be chamfered as shown in the figure.

6.5. FEEDER SET-UP AND AUTOMATIC CYCLE START

The following list is a sequence of feeder set-up and automatic cycle start operations required if the feeder has to be started up for the first time.

- Carry out feeder set-up according to the bar to be machined (paragraph 5.3.)
- Prepare the bars to be machined (paragraph 6.4.).
- Feed bars to the magazine (paragraph 6.5.1).
- Adjust lube oil flow (paragraph 6.5.2).
- Start the automatic cycle (paragraph 6.5.3).

6.5.1 Bar magazine - Filling



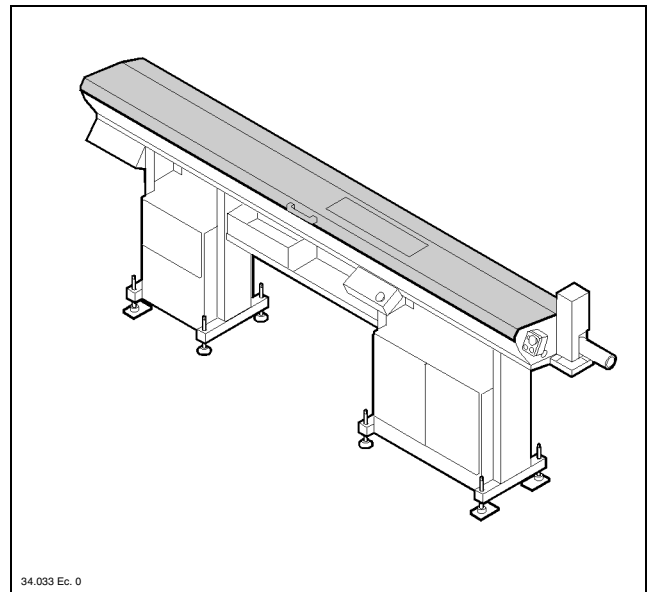
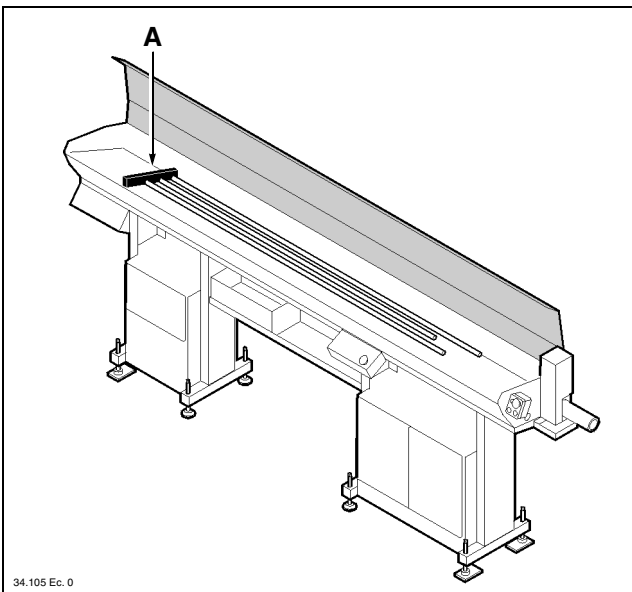
CAUTION: do not manually lift loads with weights exceeding those prescribed by the applicable regulations in force; ask for another worker's help if necessary.



CAUTION: wear personal protections prescribed by the applicable regulations in force.

Follow these instructions to load bars:

- open the upper guard;



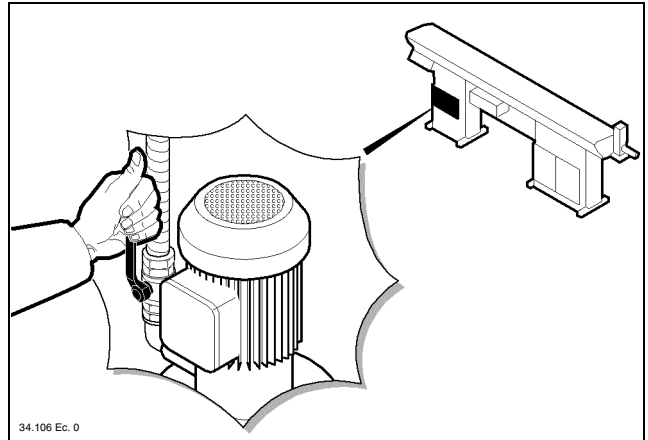
- place bars against the plate **A** and close the upper guard.

6.5.2 Lubrication oil - Flow adjustment

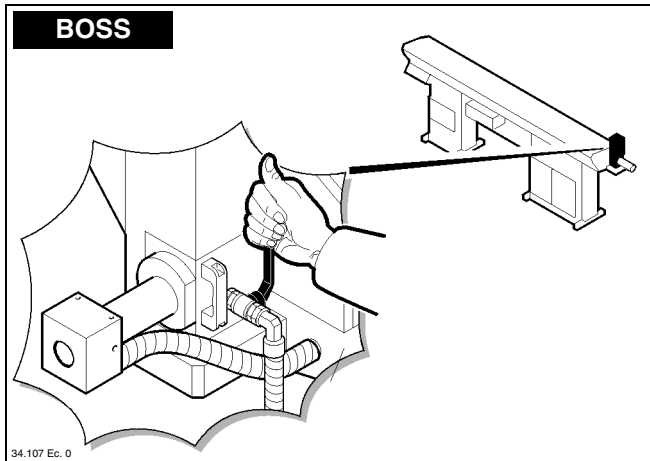
Oil flow in the guides and bush-holder device is automatically controlled during the feeder automatic cycle.

The pump is started after the feeder has completed bar change-over; it is stopped when the bar-pusher approaches the bush-holder device.

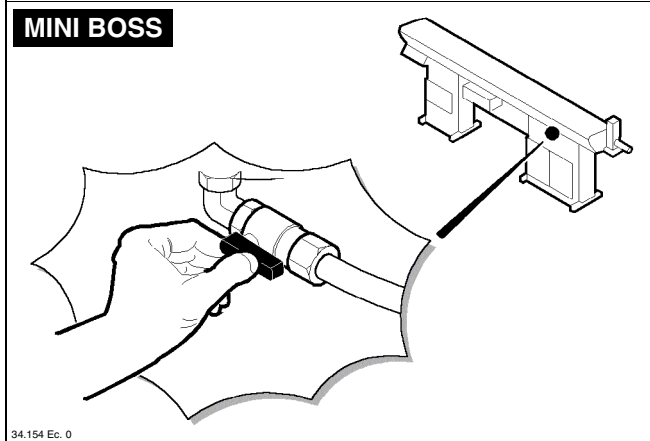
Oil flow should be adjusted according to bar diameter and profile through the valve located upstream from the installation.



34.106 Ec. 0



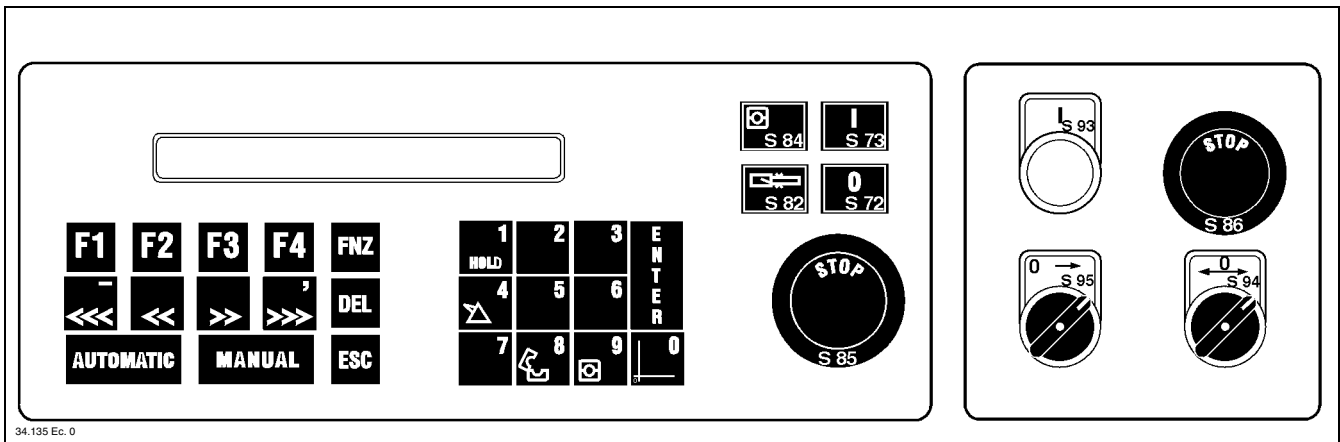
34.107 Ec. 0



34.154 Ec. 0

Adjust oil flow in the bushing holder device as well.

6.5.3 Automatic cycle start



• Power the lathe on.



• Press  to start the bar feeder.

• Press  to select the manual mode.

• Perform “BAR FEEDER ZERO SETTING” IN THE FOLLOWING WAY press  + 


if the upper guides are not closed, the feeder will not perform “BAR FEEDER ZERO SETTING”; messages are displayed concerning the operations to carry out in order to bring the guides to the required position.

After carrying out the required operations;

press  + 

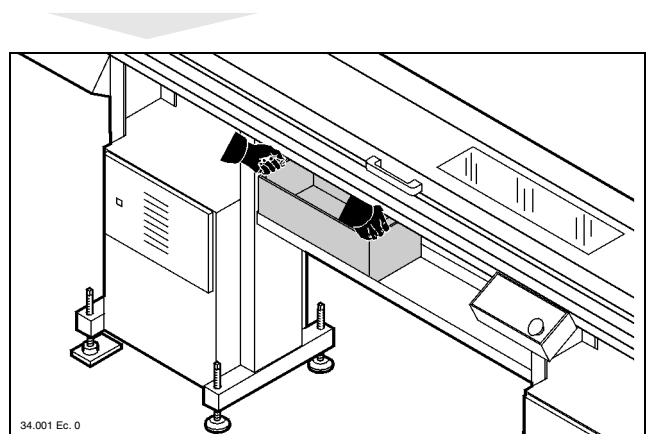
- Enter the parameter values (refer to the “Push-button panel instruction manual” paragraph “Parameters - Description and entry”).
- Check and modify the feed clutch thrust value if required (refer to the “Push-button panel instruction manual” paragraph “CN functions - Description and use”).

- Turn the selector **S95** to position 0. Turn the selector **S94** to position ' to move the bar head closer to the cutting tool. To start machining, turn the selector **S95** to position ' when the lathe collet is closed. In this way, you will obtain automatic bar feeding until bar running out or according to the selected program.
- If you wish to refill the magazine during machining, follow the procedure described under paragraph 6.5.1.
- Empty the remnant collection box during machining.

 **CAUTION:** do not manually lift weights exceeding those prescribed by the applicable regulations in force; ask for another worker’s help if necessary.

 **CAUTION:** wear personal protections prescribed by the applicable regulations in force.


Place the box back under the remnant outlet.



34.001 Ec. 0


6.6. FEEDER STOP


☐ Feeder emergency stop

 **CAUTION:** if the emergency stop is used during lathe machining, before resuming work make sure that the sudden stop has not created any hazardous condition (e.g., if the tool was cutting chips, move the tool away from the workpiece before restarting the lathe).

- To stop the feeder in an emergency, press an emergency push-button, either that of the lathe or that of the feeder.



☐ Feeder stop at work end

 **CAUTION:** do not use emergency buttons for normal machine stop.

- Complete the operations in your work schedule.
- Stop the feeder by pressing the button .
- Stop the lathe.



6.7. AUTOMATIC CYCLE START AFTER MANUAL CYCLE OPERATIONS

- If the bar-pusher has been moved while electric power was disconnected, a “BAR FEEDER ZERO SETTING” should be performed in the following way:

press  + 

if the upper guides are not closed, the feeder will not perform “BAR FEEDER ZERO SETTING”; messages are displayed concerning the operations to carry out in order to bring the guides to the required position.

After carrying out the required operations;

press  + 



- Check that the bar is in the required position in the lathe collet and that the collet is closed.

- Move the feeder to the “WORKING” phase as follows:

press  + 

if the feeder is not in the right status, it will not move to the “MACHINING” phase; messages are displayed concerning the operations to carry out in order to obtain to the appropriate feeder status.

After carrying out the required operations:

press  + 

- Press 

to select the automatic mode; the feeder will wait for an “OPEN COLLET” signal from the lathe.

6.8. AUTOMATIC CYCLE START - Resuming work after power-off

□ If the bar-pusher has been moved while electric power was disconnected



• Power the lathe on.

• Press 

to start the bar feeder

• Press 

to select the manual mode.

• Press  + 

to perform "BAR FEEDER ZERO SETTING"

• Move the bar in the lathe collet to the required position and make sure that the collet is closed.

• Press 

□ If the bar-pusher has not been moved while electric power was disconnected

• Power the lathe on.

• Press 

to start the feeder

• Make sure that the lathe collet is closed.

• Press 

6.9. MACHINING CHANGE - Quick guide

The purpose of this paragraph is to provide the operator with a quick guide to the operations required for machining type change (either with or without guide change-over). The relevant information is contained in the paragraphs listed below and then described.

6.9.1 Machining type change with guide change-over

6.9.2 Machining type change without guide change-over


6.9.1 Machining type change with guide change-over

- Press the push-button **MANUAL**
- Choose a guide diameter suitable for the bar diameter to be machined (paragraph 5.3.)
- Replace the guides, the half bushes, the bar-pusher and the collet (paragraph 5.3.1)
 - remove the bar-pusher and the small pusher truck ;
 - remove the lower guides first and then the upper guides;
 - remove the bar-pusher support;
 - remove the front nose;
 - remove the half bushes;
 - remove the lathe spindle liner if necessary;
 - install a new set of parts by reversing the order of the above operations;
 - mount a collet suitable for the "new" bar in the bar-
- pusher;
 - insert the bar-pusher in the guides;
 - adjust the intermediate flag position;
- Change the clamps if necessary (paragraph 5.3.2)
- Adjust the bar guide plates and bar selectors (paragraph 5.3.3).
- Place the bar in the guides and adjust the clamps (paragraph 5.3.4).
- Check all working parameters in the push-button panel; key **F2**
- Check the feed thrust in the push-button panel; key **F1**
- Prepare the lathe for the new type of machining
- Start the automatic work cycle (paragraph 6.5.3).

6.9.2 Machining change without guide change-over

- Press the push-button **MANUAL**
- Replace the half bushes and collet (paragraph 5.3.1)
 - remove the bar-pusher;
 - remove the half bushes;
 - mount the new half bushes;
 - mount a collet suitable for the "new" bar in the bar-pusher;
 - insert the bar-pusher in the guides;
- Change the clamps if necessary (paragraph 5.3.2)
- Adjust the bar guide plates and bar selectors (paragraph 5.3.3).
- Place the bar in the guides and adjust the clamps (paragraph 5.3.4).
- Check all working parameters in the push-button panel; key **F2**
- Check the feed thrust in the push-button panel; key **F1**
- Prepare the lathe for the new type of machining
- Start the automatic work cycle (paragraph 6.5.3).


7.1. MAINTENANCE - General rules

 **DANGER - WARNING:** carry out machine maintenance and cleaning while the machine is off.

Regular cleaning and maintenance are critical to ensure smooth operation and longer machine service life.

It is recommended to regularly and effectively clean the machine, its accessories and work area, which also increases operator's safety.

Do not use petrol or solvents which would damage the painted and transparent parts, the cable sheaths etc.

 **INFORMATION:** oxidation can damage metal parts and electric equipment.

To protect the bar feeder when you expect not to use it for long periods of time, disconnect it from mains voltage and from compressed air supply and cover it with a suitable protective sheet.

Any protection used should not be fully closed or sealed at the base; it should have ventilation holes to make sure that air within the envelope cannot condense due to lack of circulation.

7.2. SCHEDULED MAINTENANCE

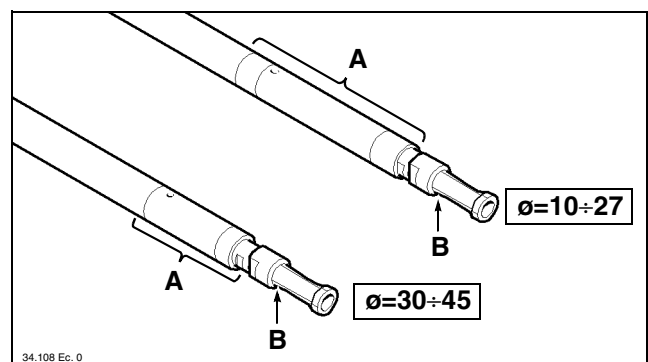
Table 1. Scheduled maintenance

Bar feeder part	Operation to carry out	Frequency				
		Hours			Regularly	Cycles
		200	1250	2500		
Revolving tip and collet	Wear check	•				
Half-bushing	Wear check	•				
Lubrication system	Oil level check	•				
	Oil change			•		
Guides	Repair and cleanness check		•			
Clutch	Oil level check	•				
	Oil change			•		
	Disk wear check		•			
Guide opening screw	Greasing		•			
Oil recovery device brushes	Wear check		•			
Feed chain	Lubrication	•				
	Tension check	•				
Driving motor brushes	Wear inspection		•			
Drive chain	Lubrication	•				
	Tension check	•				
Guide opening belt	Wear check			•		
Bar/headstock synchronizing device (*)	Wear check					5000
Air filter	Check				•	

(*) Only if installed.

7.2.1 Revolving tip and collet - Check

- Remove the bar-pusher as described under paragraph 5.3.1
- Check that the revolving tip **A** can turn freely without too much backlash. Also check the good state of repair of collet **B**.



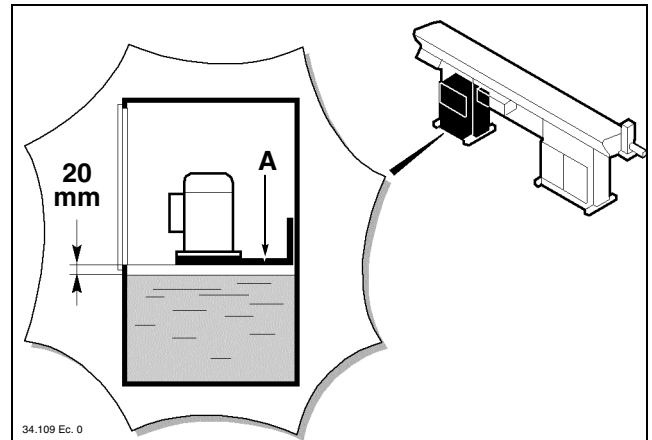
7.2.2 Lubricating oil - Level check

- Perform this check when the bar feeder has been off for at least 6 hours.
- Oil level should be approximately 20 mm below the plate **A**.
Top up if required by pouring oil directly into the base.

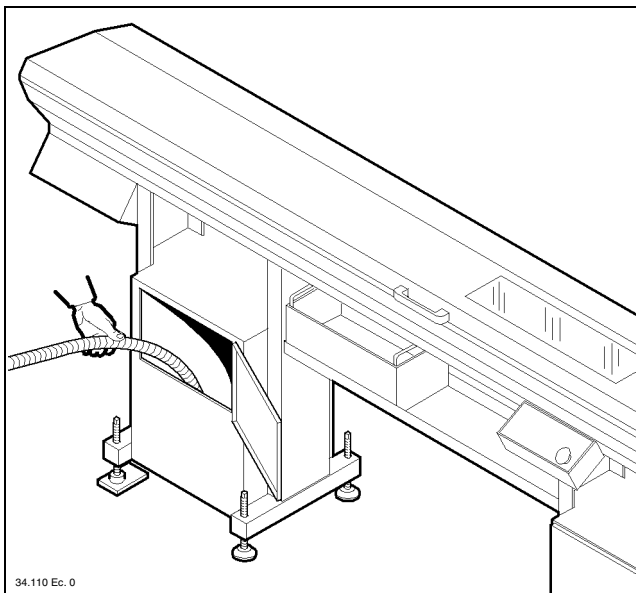
Table 2. Guide lubricating oil characteristics

Model	Oil type
MINI BOSS	ESSO - NUTO 100
BOSS	ESSO - NUTO 150

See paragraph 2.6. for the comparative table.



7.2.3 Lubricating oil - Change



CAUTION: wear the personal protections prescribed by the applicable standards in force.



INFORMATION: store spent oil in special containers to be delivered to companies specialized in pollutant disposal and storage. Do not pollute the environment.

- Drain the tank using an auxiliary pump. Clean the tank bottom and pump suction system.
- Fill up by pouring oil directly into the tank.

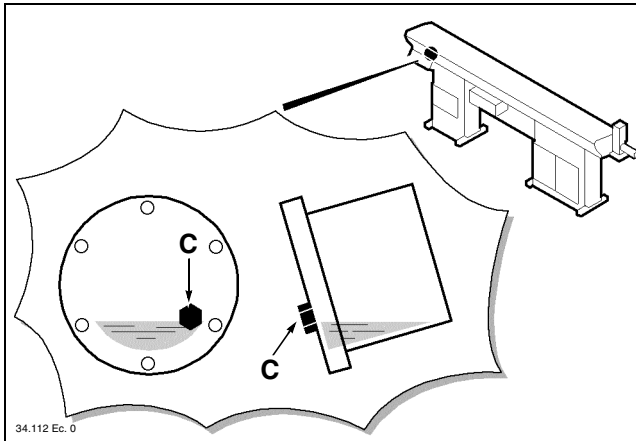
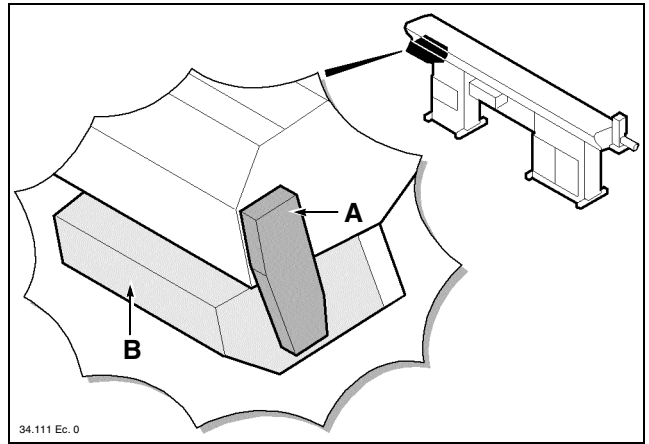
Table 3. Guide lubricating oil characteristics

Model	Oil type	Quantity (l)
MINI BOSS	ESSO - NUTO 100	40
BOSS	ESSO - NUTO 150	40

See paragraph 2.6. for the comparative table.

7.2.4 Clutch oil - Check

- Remove both guards **A** and **B**.



- Position the clutch in such a way as to position the plug **C** as shown in the figure. Remove the plug and make sure that the oil level is just up to the hole.
- Top up if necessary by pouring oil **BP Energol HLP - D32**

7.2.5 Clutch oil - Change

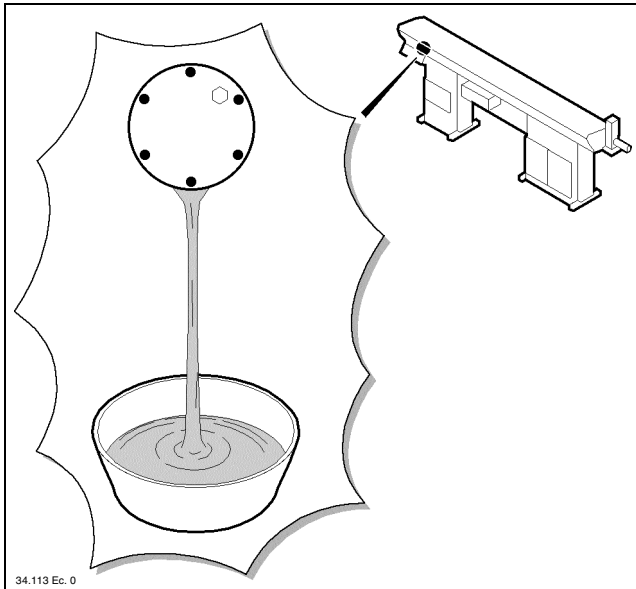
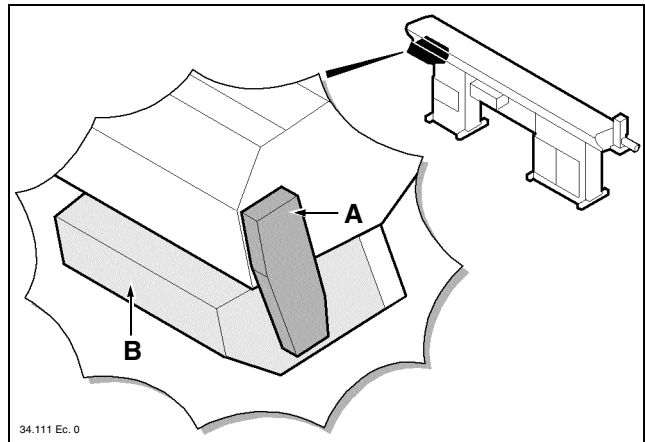


CAUTION: wear the personal protections prescribed by the applicable standards in force.



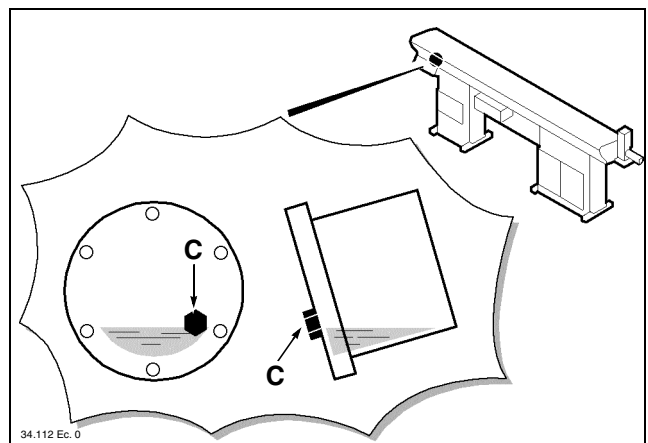
INFORMATION: store spent oil in special containers to be delivered to companies specialized in pollutant disposal and storage. Do not pollute the environment.

- Remove both guards **A** and **B**



- Position one container under the clutch, loosen the six cover screws and let oil flow out.

- Retighten the six screws and position the clutch in such a way as to position the plug **C** as shown in the figure. Remove the plug and pour oil type BP Energol HLP - D32. Make sure that the oil level is just up to the plug hole.

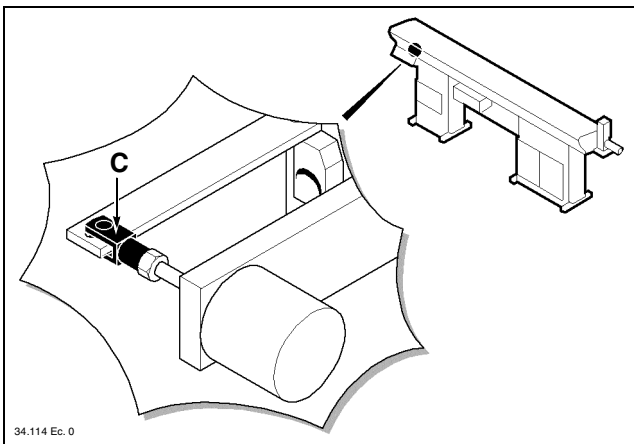
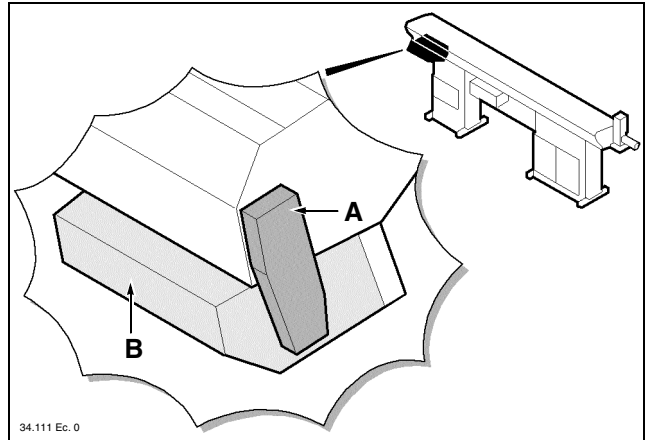


7.2.6 Clutch disks - Wear check



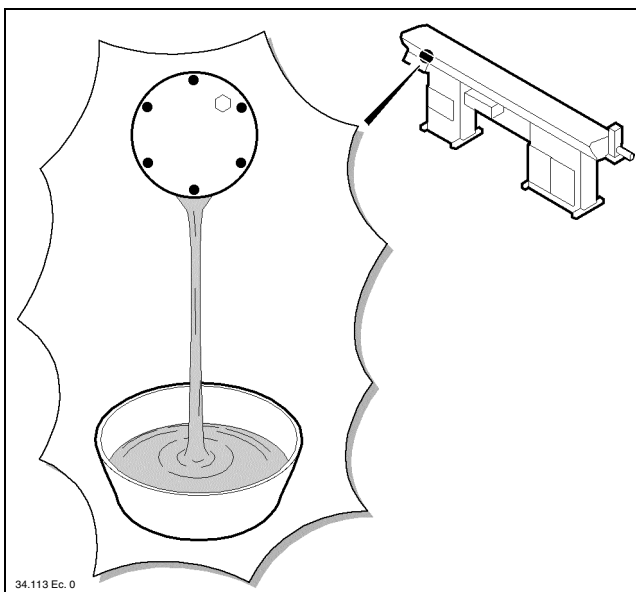
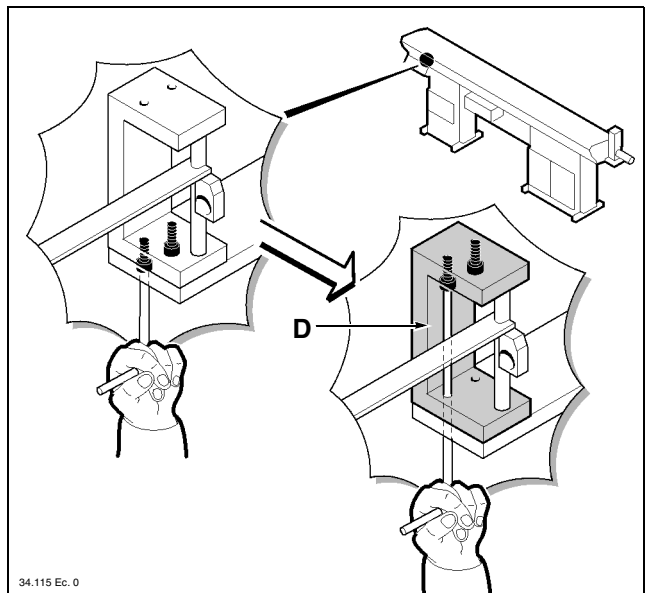
CAUTION: wear the personal protections prescribed by the applicable standards in force.

- Remove both guards **A** and **B**



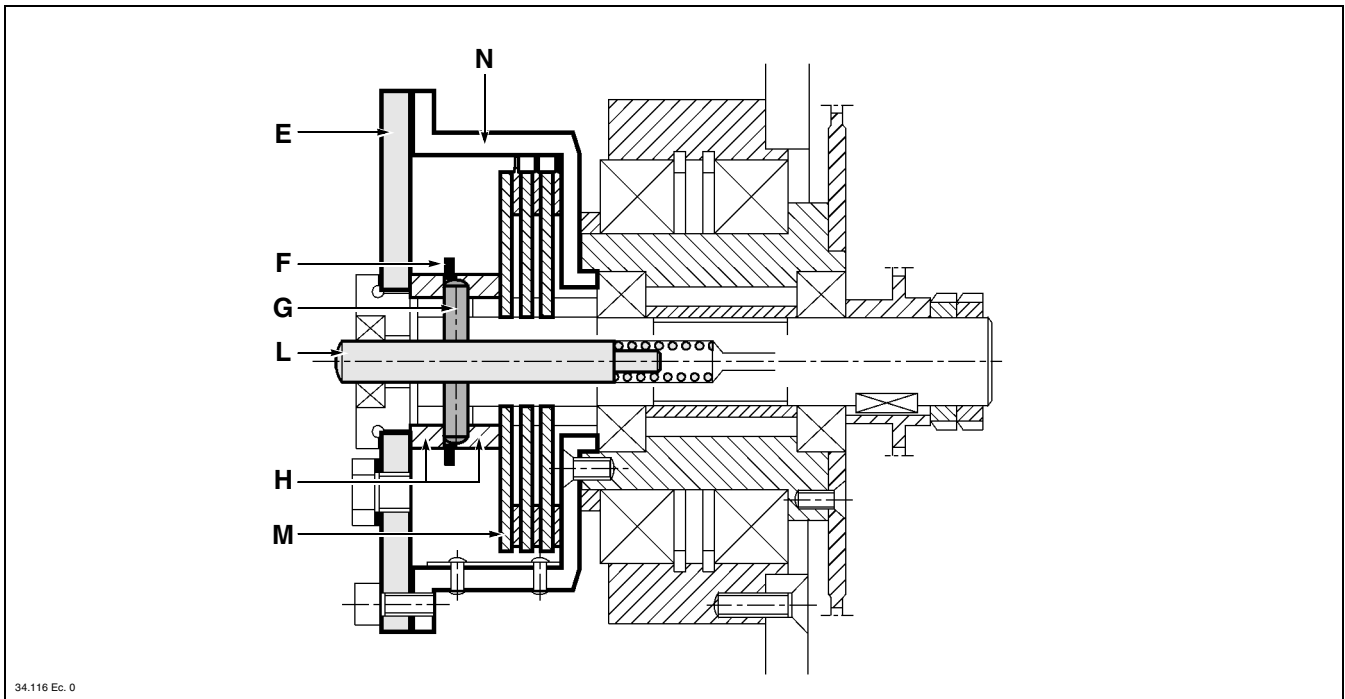
- Remove the pin **C**.

- Remove the two lower screws then the upper screws; remove the support **D** with the electromagnet lever.



- Place a container under the clutch, loosen the six cover screws and let oil flow out.

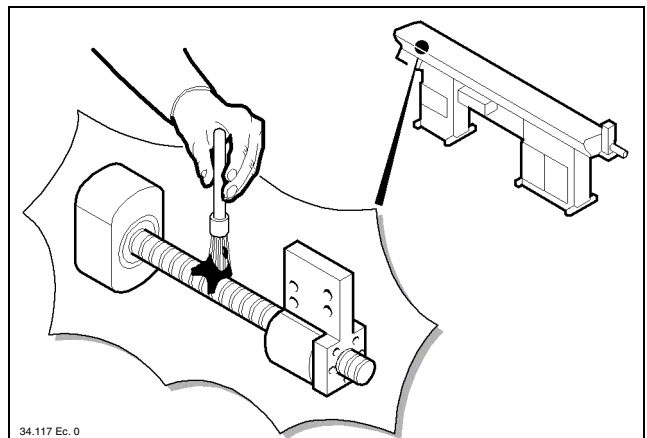
- *Remove in this order:*
the cover E;
the circlip F;
the pin G;
the spacer H;
the pin L with its special spring;
the disks M.
- *Clean the box N inside and the main shaft. Clean the disks and check their wear; place them back or replace them.*
- *Reassemble in this order:*
the pin L with its special spring;
the spacer H;
the pin G;
the circlip F;
the cover E.
- *Top oil up as is described in paragraph 7.2.5.*
- *Adjust the clutch as is described in paragraph 5.2.3.*



34.116 Ec. 0

7.2.7 Guide opening screw - Greasing

- *Open the upper guard and carry out greasing.*



34.117 Ec. 0

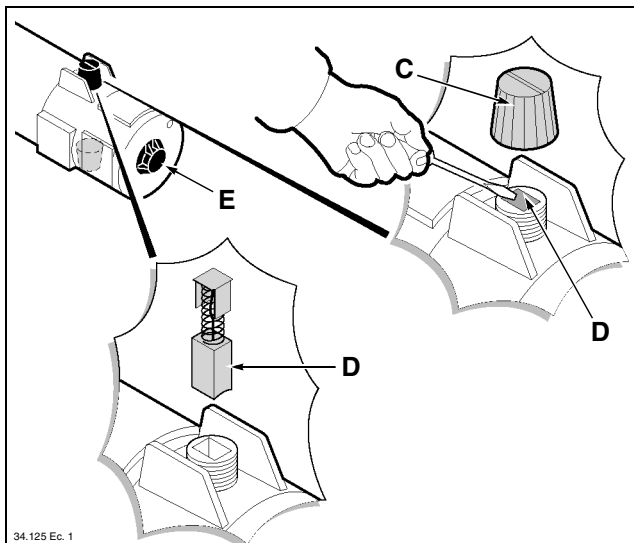
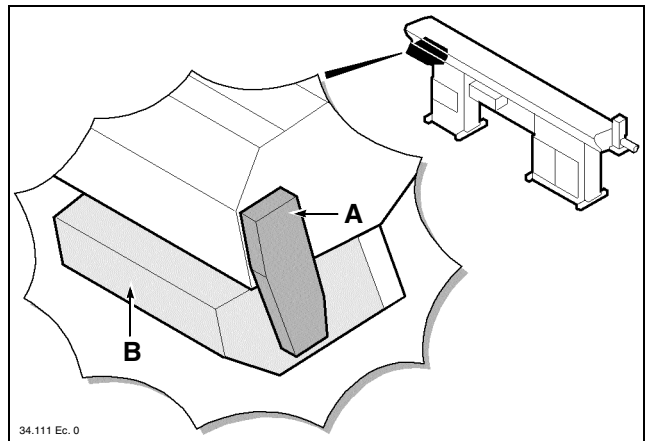
7.2.8 Driving motor brushes - Wear inspection

The brush wear inspection has to be carried out every 1250 hours, or when, after enabling the lathe power supply, the following message appears:

ATTENTION: execute motor mainten.

Inspect brushes as follows:

- Remove two guards **A** and **B**.

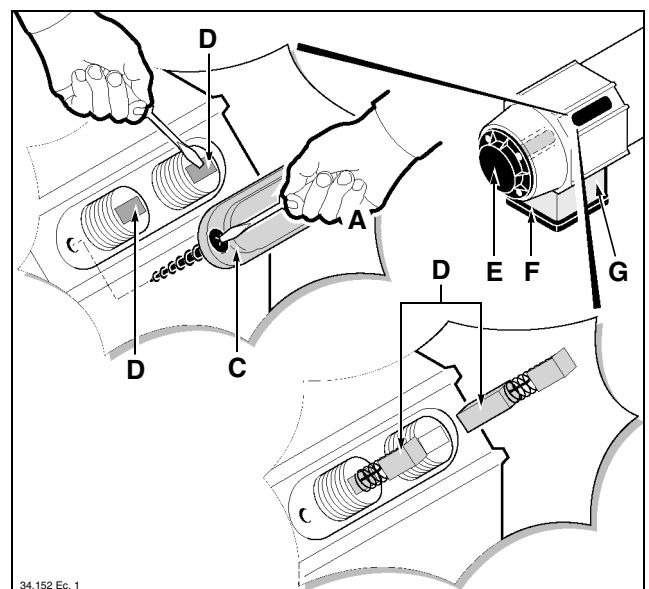


□ MINI BOSS

- Remove plugs **C**, brushes **D** and bell **E**.
- Blow air into brush housings **D** and into bell hole **E** in order to completely eliminate the inner dust due to the brush wear.
- Replace brushes **D** if they are less than 9 mm in length.
- Reassemble bell **E**, plugs **C** and the guards previously removed.

□ BOSS

- Remove plugs **C**, brushes **D**, bell **E** and cover **F**.
- Blow air into brush housings **D**, bell hole **E** and terminal board housing **G**, in order to completely eliminate the inner dust due to the brush wear.
- Replace brushes **D** if they are less than 11 mm in length.
- Reassemble cover **F**, bell **E**, plugs **C** and the guards previously removed.



□ MINI BOSS and BOSS

After the brush inspection and - if need be - replacement, the partial hour counter has to be reset, so that once the following 1250 hours are over, the message previously mentioned appears again.

For resetting, refer to "Control Panel Instruction Manual", paragraph "CN functions protected by access code - Description and use".

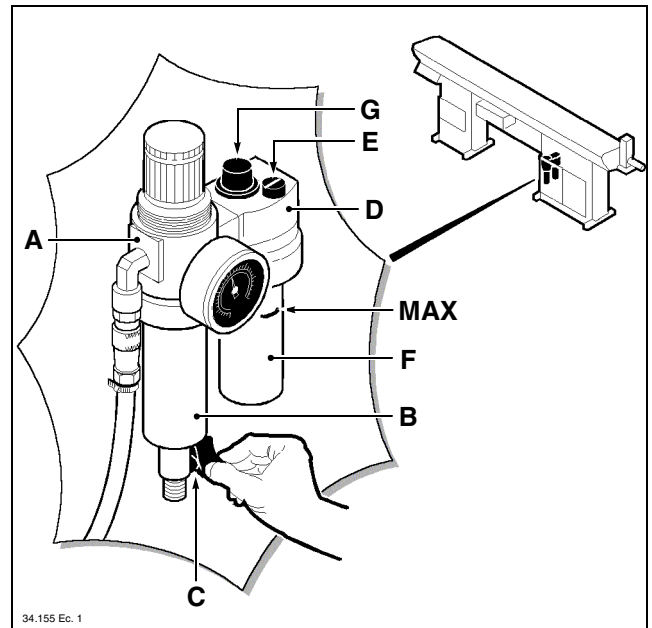
7.2.9 Air filter unit - Check

□ Filter A

- Make sure that cup **B** is not full of condensate. If need be, bleed the condensate by valve **C**.

□ Lubricator D

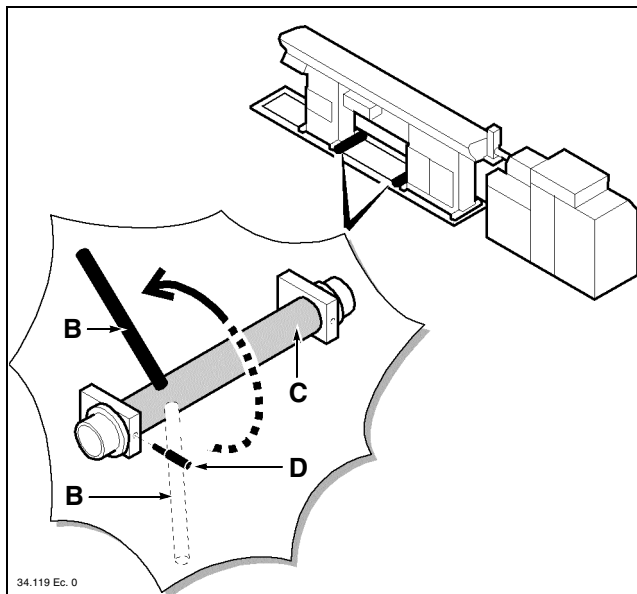
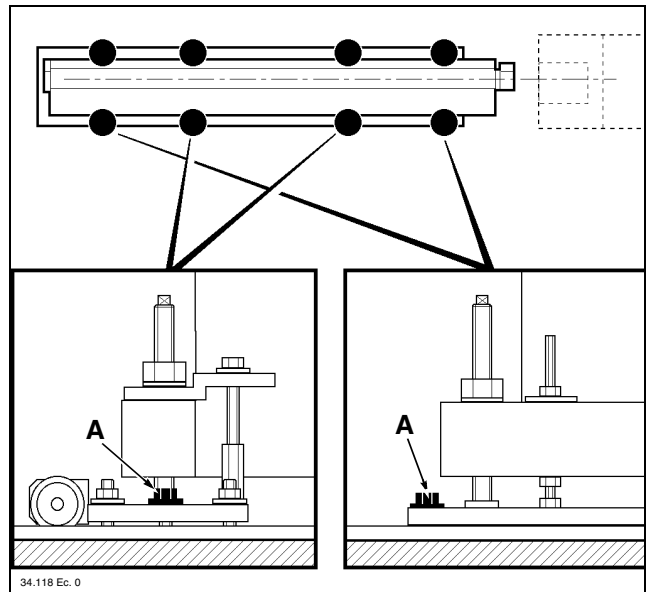
- Check that the oil level is not under the suction level.
- If need be, top up as follows:
 - disconnect the compressed air supply.
 - fill the tank removing plug **E** or cup **F**; the oil level must reach the **MAX.** reference.
- 9÷11 Cst at 40°C ISO VG 10.
- See paragraph 2.6. for the comparative table.
- Reset the compressed air supply.
- Check air lubrication (1-12 drops every 1000 l. of air), adjust by turning the screw **G**.



34.155 Ec. 1

7.3. AXIAL DISPLACEMENT DEVICE - Use

- If the feeder is fixed to the bar, release it. Disconnect any installed devices (e.g. the bar/headstock synchronizing device, the cam box, the camshaft release device etc.).
- Remove the eight screws **A**.



- Insert the (supplied) rod **B** in its special hole, turn the shaft **C** and insert the (supplied) pin **D**.
- Cause the bar feeder to slide backwards by taking care not to damage the connection cables, if any (e.g. the lathe interface wire, the camshaft release device cable, the additional push-button panel cable, the pneumatic connection hose etc.)
- Carry out all lathe maintenance operations.
- Cause the bar feeder to slide forwards and restore its initial conditions.

8.1. GENERAL FAULTS

<i>TROUBLE</i>	<i>CAUSES</i>	<i>CURES</i>
The bar feeder will not start.	No power.	Check the electric connections.
	Open guard.	Close the guard.
	Actuated emergency devices.	Disconnect the emergency devices.
	Motor thermal switch tripped	Reset the motor overload cut-out with the special push-buttons.
The bar feeder has been reset but the automatic cycle will not start.	No lathe signal.	Check electric connection to the lathe.
The pneumatic devices will not respond to controls.	No air.	Check the air system.
The pre-feed and feed suddenly stop.	Motor thermal switch tripped.	Reset the motor overload cut-out with the special push-buttons.

8.2. BAR MAGAZINE - Faults

<i>TROUBLES</i>	<i>CAUSES</i>	<i>CURES</i>
The bar will not enter the magazine during feeding.	The bar plates are too low.	Adjust the plates position.
The first magazine bar is not dropped into the guides.	Wrong adjustment of the bar selectors.	Adjust the bar selectors.
All the magazine bars are dropped into the guides.	Wrong adjustment of the bar selectors.	Adjust the bar selectors.

8.3. INSERTION IN THE COLLET - Faults

TROUBLES	CAUSES	CURES
The bar will not be inserted in the collet.	Bad clamps adjustment.	Adjust the clamps.
	Collet diameter not suitable for bar diameter.	Change the collet.
	Too much rag on bar rear end.	Trim bar rag before feeding.

8.4. BAR FEEDING - Faults

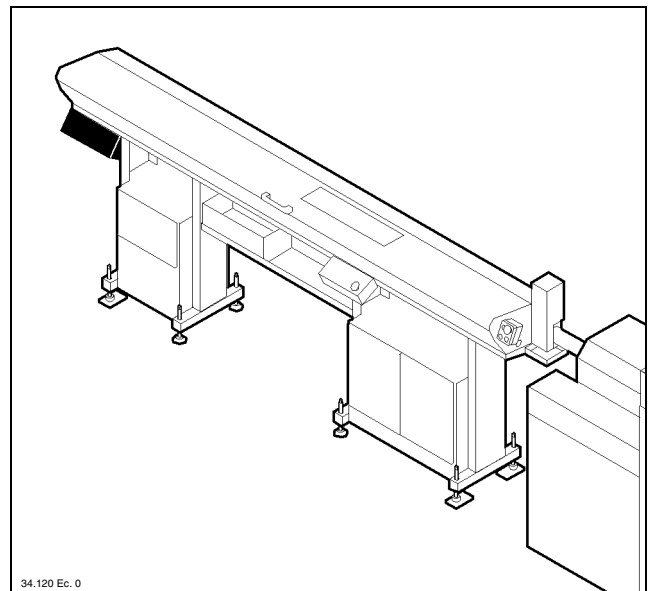
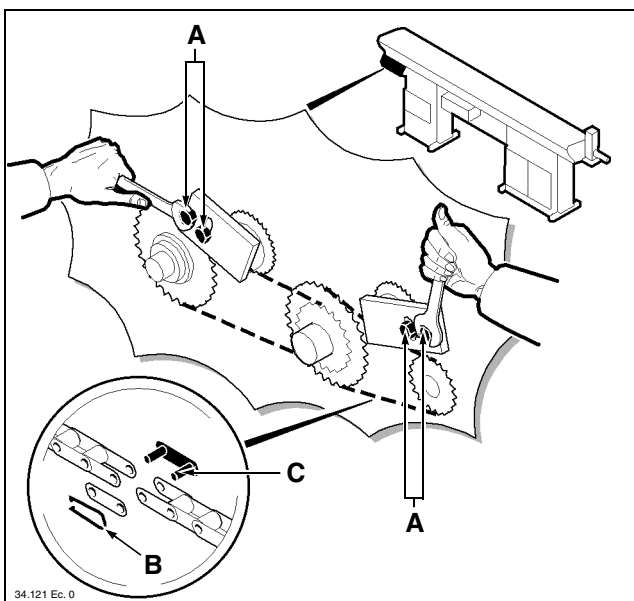
<i>TROUBLES</i>	<i>CAUSES</i>	<i>CURES</i>
Difficult bar introduction in the lathe spindle	The bar feeder is not aligned with the lathe.	Check and correct alignment.
Difficult bar introduction in the lathe collet	Excessive rag on bar rear ends.	Trim bar rag before feeding.

9.1. FEED CHAIN - Replacement

Replacement of the feed chain is a highly complex operation; call IEMCA after-sales service.

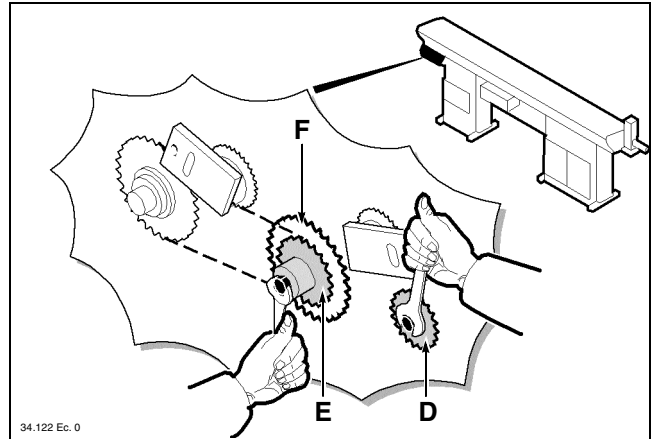
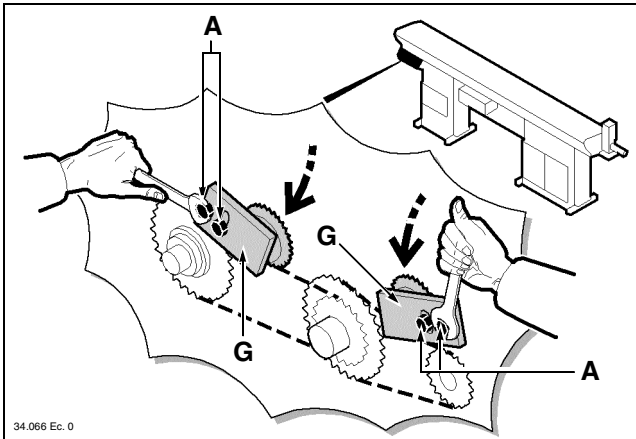
9.2. PRIMARY CHAIN AND PINION - Replacement

- Remove the drive system guard.



- Loosen the screws **A** and slacken both chains.
- Remove the fork **B**, extract the connection link **C** and remove the primary chain.

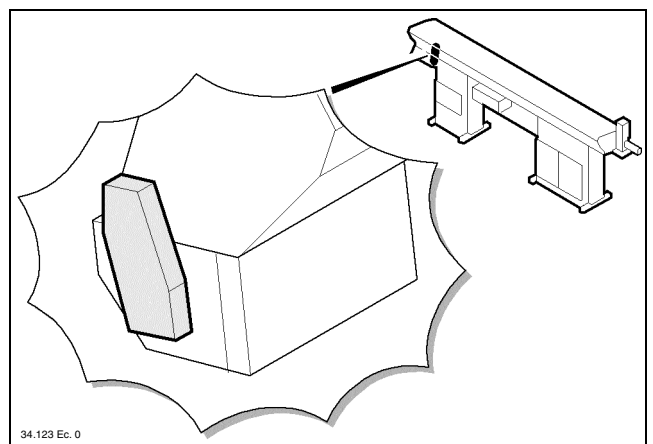
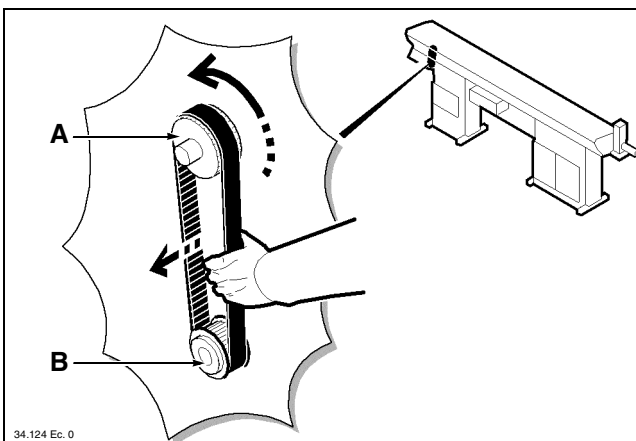
- Remove the pinion **D**, the pinion **E** and the crown wheel **F**.
- Mount the new crown wheel **F**, the pinion **E** and the new pinion **D**.



- Install the new primary chain, tension both chains by pressing the supports **G** in the direction of the arrow then tighten the screws **A**.
- Place back the guard which had previously been removed.

9.3. GUIDE OPENING BELT - Replacement

- Remove the guard.

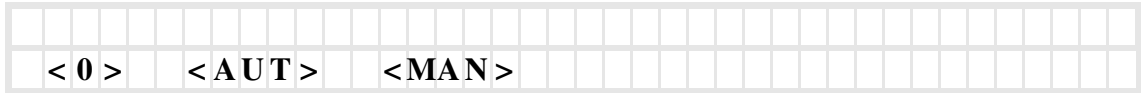


- Manually turn the pulley **A** and simultaneously pull the belt all the way out.
- Place a new belt in the pulley **B**, lead it into the pulley **A** and turn the belt until it is fully inserted.
- Place back the guard which had previously been removed.

press



displayed:



press



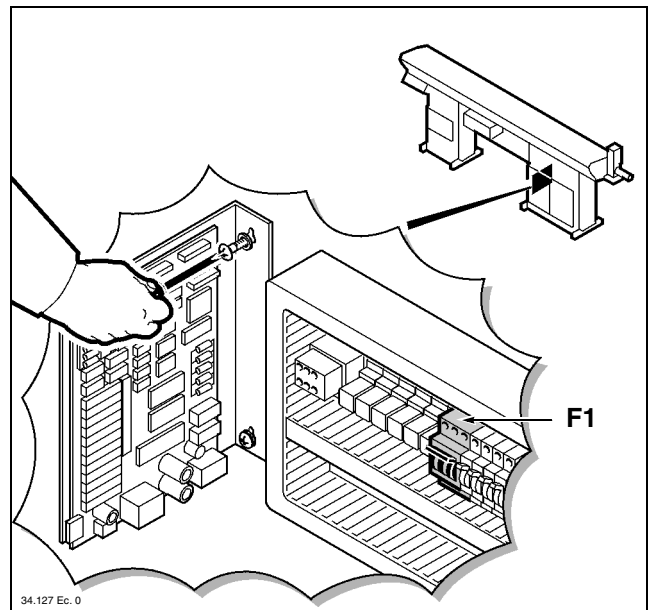
- Assign values to parameters and to parameters protected by the access code previously noted (see the "Push-button panel instruction manual").

9.5. BOARD - Replacement

To be replaced following a failure.

To replace it, follow the procedure below.

- Collect and note values of parameters protected by the access code (see the "Push-button panel instruction manual").
- To resume machining, collect and note parameter values before replacing the board (see the "Push-button panel instruction manual").
- Check and note down the total and partial operation hours of the driving motor (see "Control Panel Instruction Manual"). The hour amount will be reset after the card replacement and cannot be set again.
- Disconnect the electric control board through the automatic three-phase switch **F1**.
- Disconnect all connectors (six). Remove the board and install the new board. Fit all connectors carefully.



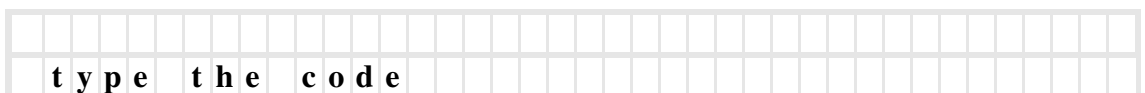
- Keep push-button pressed **F2**

and switch on the bar feeder through the automatic three-phase switch **F1**.

Release push-button

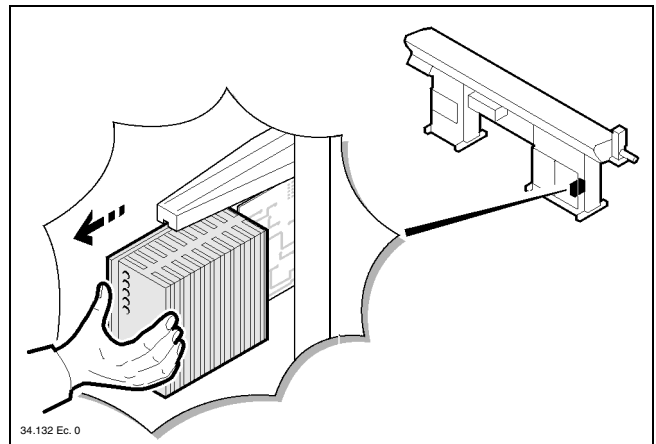


displayed:



9.6. FEED MOTOR DRIVE - Replacement

- Disconnect power and remove the faulty drive from its seat; insert the new drive and power the feeder back on.
- Motor setting should now be checked (function T. offset); this operation is also necessary if one of the boards needs replacement.
- Move the bar-pusher to a position where it can move forwards or backwards.
Enter the fourth screen display containing the functions protected by access codes (refer to the "Push-button panel instruction manual", paragraph "CN functions protected by access codes - Description and use").



the display must show:



press:

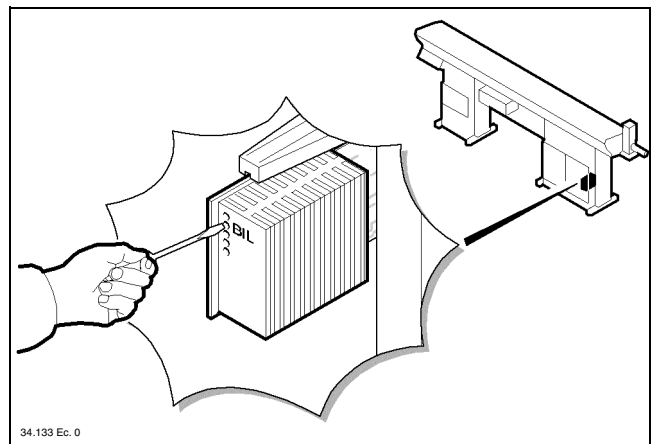


the bar-pusher should not move (not even by decimal displacements, see the display).

- If the bar-pusher moves, motor set-up must be performed.

! DANGER - WARNING: live control panel, danger of electric contact.

Turn the screw (BIL) clockwise or counterclockwise with small sharp movements until the bar-pusher is stopped.



- Check the setting that you have carried out:

press twice:



the display will show



press:



the bar-pusher should not move (not even by decimal displacements, see the display).

- Restore the bar feeder initial conditions.

9.7. RECOMMENDED SPARE PARTS

The heavy-wear parts or easily broken parts are listed below (this list refers to bar feeder requirements for a two year's period of normal use).

Table 1. Original spares table

<i>Model</i>	<i>Code</i>	<i>Name</i>	<i>Characteristics</i>	<i>Notes</i>	<i>Quantity</i>
<i>MINIBOSS BOSS</i>	24150243	Clutch disk	15L81 D97		3
		Clutch oil	BP ENERGOL HLP -D32		500 gr
	24220019	Primary chain	8x3		1
	24290602	Connection link	8x3		1
	24220030	Feed chain	3/8"x5/32"		1
	24290603	Connection link	3/8"x5/32"		1
	34320040	Motor brushes	SIBONI 5x10 L54R		4
	32210401	Limit switch	BERO 3RG4611-0AB04 SIEMENS		1
	32210004	Limit switch	BERO 3RG4012-0AG07 SIEMENS		3
	34320042	Motor brushes	6x9x22 L59 MPC	(BOSS)	4
	34320043	Motor brushes	12x7x18 L59 MPC	(MINI BOSS)	2
		Bar-pusher		Specify diameter and length	1
		Revolving tip		Specify diameter	1
		Collet		Specify inside and outside diameter	1

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GERMANY: <i>(West-Nord-Deutschl.)</i>	Hoßfeld GmbH	Königsberger Straße 10 D-58511 Lüdenscheid	Tel. ++49 02351 / 80521 Fax ++49 02351 / 860442 Email : HossfeldgmbH@t-online.de
GERMANY: <i>(Neue Länder)</i>	Heyde Maschinen Service	Albin-Trommler-Str. 3 D-08297 Zwönitz	Tel. ++49 037754 / 5090 Telefax ++49 037754 / 50920 - Email Heyde-maschinen-service@t-online.de Heyde-zwoenitz@t-online.de
GERMANY: <i>(Süd-Deutschl)</i>	Reimo Lobers	Elektro-Mechanischer Betrieb Rebgartenweg 5/1 D-79576 Weil am Rhein	Tel. ++49 07621 / 69551 Fax ++49 07621 / 69491 Email : Mail@lobers.de
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BOSS 542 CNC
BOSS 542r CNC
MINI BOSS 325 CNC
MINI BOSS 325r CNC

**AUTOMATIC BAR FEEDER WITH
HYDRAULIC SUSPENSION**

01/06/98

1 GENERAL INFORMATION

1.1. PUSH-BUTTON PANEL - Description of controls.....	3
1.2. MAIN MENU - Access mode and description	7

2 INSTALLATION PROCEDURE

2.1. SELF-LEARNING VALUES - Entry into program.....	9
DIMENSION B - Small pusher truck stroke value entry	13
DIMENSION BO - Half bush opening point value entry	14
DIMENSION L - Lubrication stop point value entry	15
DIMENSION C - Bar facing stroke value entry	16
DIMENSION F - Bar-pusher furthest feeding point value entry.....	18

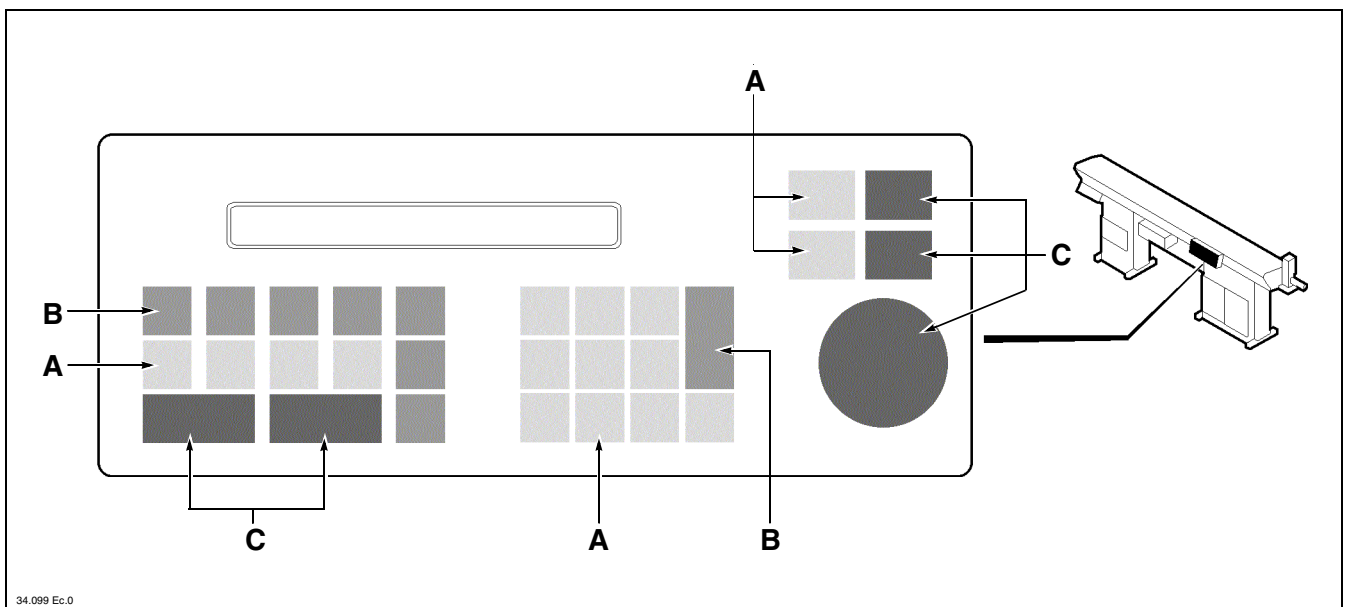
3 OPERATION INFORMATION

3.1. PARAMETERS - Description and entry	21
3.1.1 DESCRIPTION OF PARAMETERS.....	24
3.2. PARAMETERS PROTECTED BY THE ACCESS CODE - Description	35
3.2.1 DESCRIPTION OF PROTECTED PARAMETERS.....	37
3.3. NC FUNCTIONS - Description and operation	38
3.4. NC FUNCTIONS PROTECTED BY THE ACCESS CODE - Description and operation.....	40
3.4.1 PROTECTED FUNCTIONS - Description and operation	42
3.5. ERRORS - CAUSES - CURES	48

4 INFORMATION AIMED AT THE AUTHORISED TECHNICIAN


4.1. PARAMETERS PROTECTED BY THE ACCESS CODE - Description and entering	63
4.1.1 DESCRIPTION OF PROTECTED PARAMETERS.....	63
4.2. PARAMETERS PROTECTED BY RESERVED CODE - Description and entering	70
4.2.1 DESCRIPTION OF RESERVED PARAMETERS	71
4.3. DRIVING MOTOR TOTAL HOUR COUNTER - Resetting procedure	79

1.1. PUSH-BUTTON PANEL - Description of controls



34.099 Ec.0

The push-button panel controls are divided as follows:


A - Manual and programming function controls;

 they control the bar feeder movements and program parameter functions.

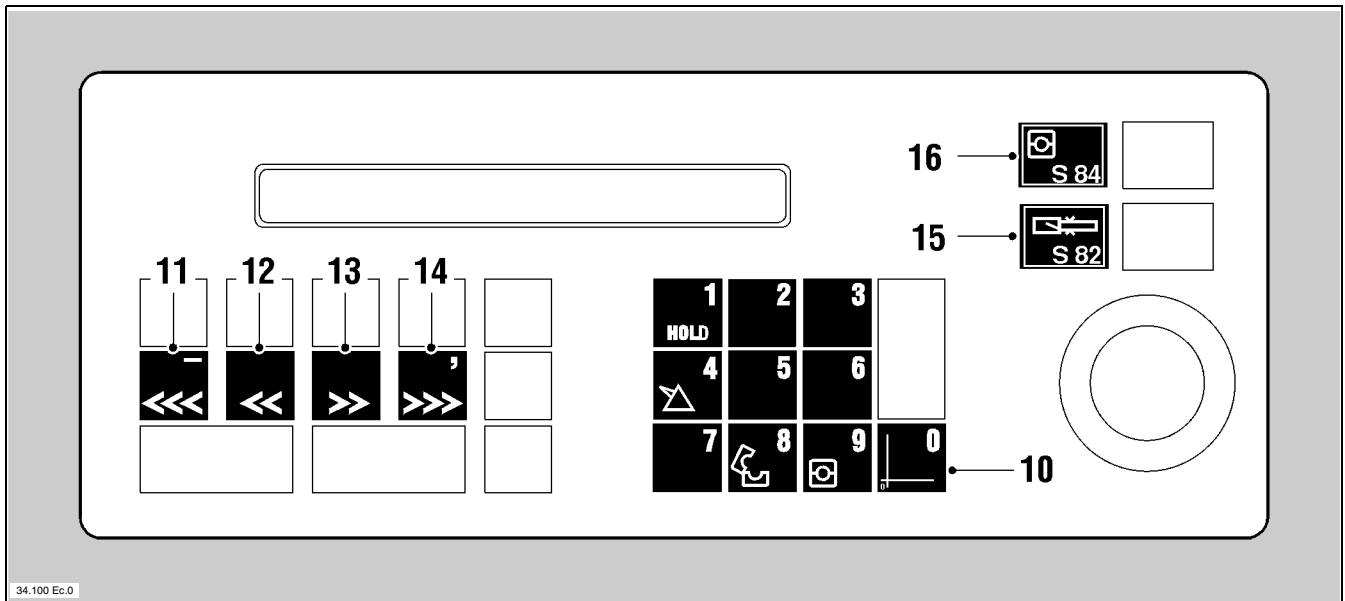
B - Programming controls;


 they program both functions and parameters.


C - Main functions controls;


 they are used for starting, stopping, and for the selection of the working cycle.


□ Programming and manual functions controls





1 -  **Key to disconnect power to the D.C. motor** or for number 1.


2 -  **Key for number 2.**


3 -  **Key for number 3.**


4 -  **Key to disconnect the lubricating pump (in the manual mode) or for number 4.**


5 -  **Key for number 5.**


6 -  **Key for number 6.**


7 -  **Key for number 7.**


8 -  **Key to open the upper guides (in the manual mode) (it should be pressed simultaneously with the push-button S82) or for number 8.**


9 -  **Key to close the upper guides (in the manual mode) (it should be pressed simultaneously with the push-button S82) or for number 9.**


10 -  **Key for "BAR FEEDER ZERO SETTING" or for number 0.**

11 -  **Key for bar-pusher return or for the "minus" sign.**

12 -  **Key for bar-pusher small backwards movements.**

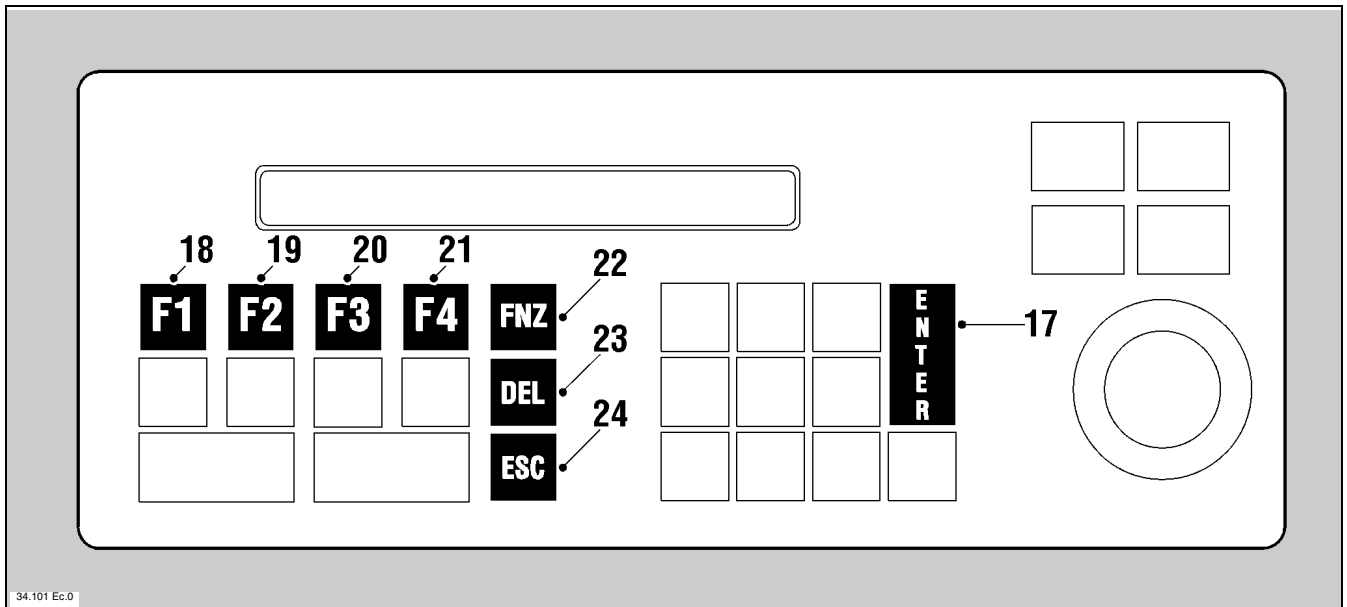
13 -  **Key for bar-pusher small forwards movements.**

14 -  **Key for bar-pusher feeding or for the "point" sign.**

15 -  **Green push-button to override the "remnant safety" function or to allow motions controlled by keys 8 and 9 (the push-button and one of the keys have to be pressed simultaneously).**

16 -  **White lighted push-button to open or close the front half bushes.**

□ **Programming controls**



34.101 Ec.0

17 - **ENTER** Input data validation key



18 - **F1** Function key F1.



19 - **F2** Function key F2.



20 - **F3** Function key F3.



21 - **F4** Function key F4.



22 - **FNZ** Key for:



- recalling the access code,
- visualizing functions,
- selecting the function following the one displayed.

23 - **DEL** Key for:



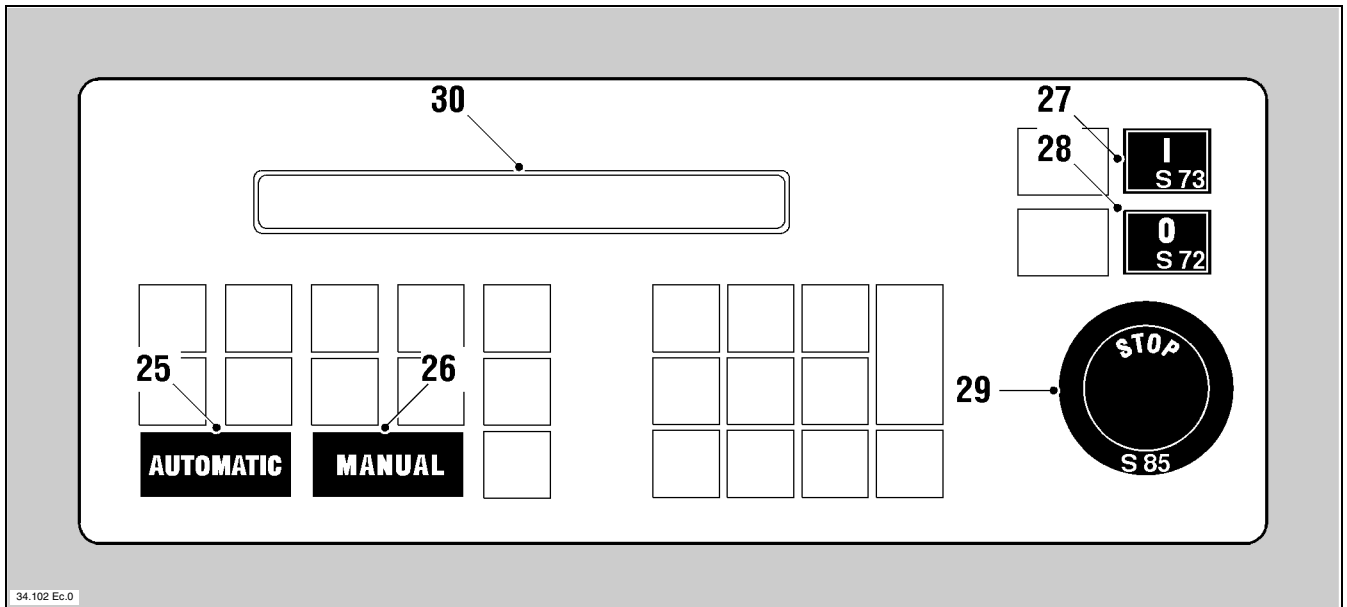
- deleting numbers in the parameters,
- selecting the function preceding the one displayed.


24 - **ESC** Key for:




- parameter exit,
- learning program exit,
- function exit.

□ **Main functions controls**




25 -  Feeder automatic function selecting key.

26 -  Feeder manual function selecting key.

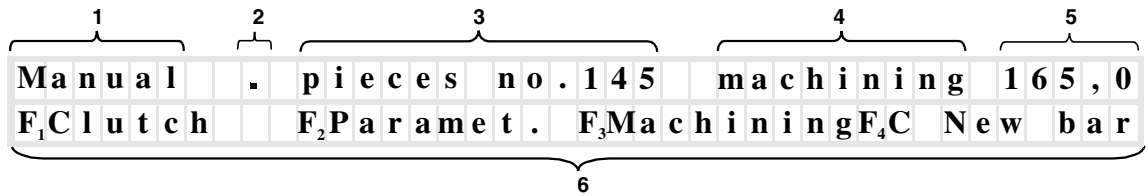
27 -  Green lighted push-button; it starts the feeder.

28 -  Red push-button; it stops the feeder.

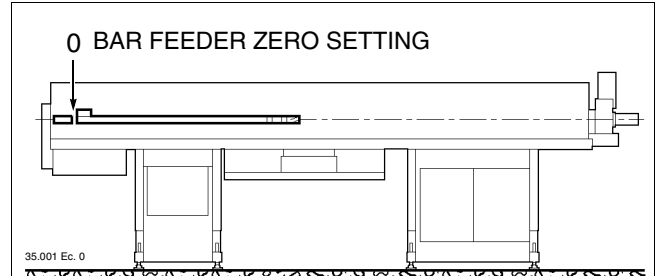
29 -  **Emergency push-button**; it stops the feeder. The feeder can be re-started only after the push-button has been manually released.

30 - Display.

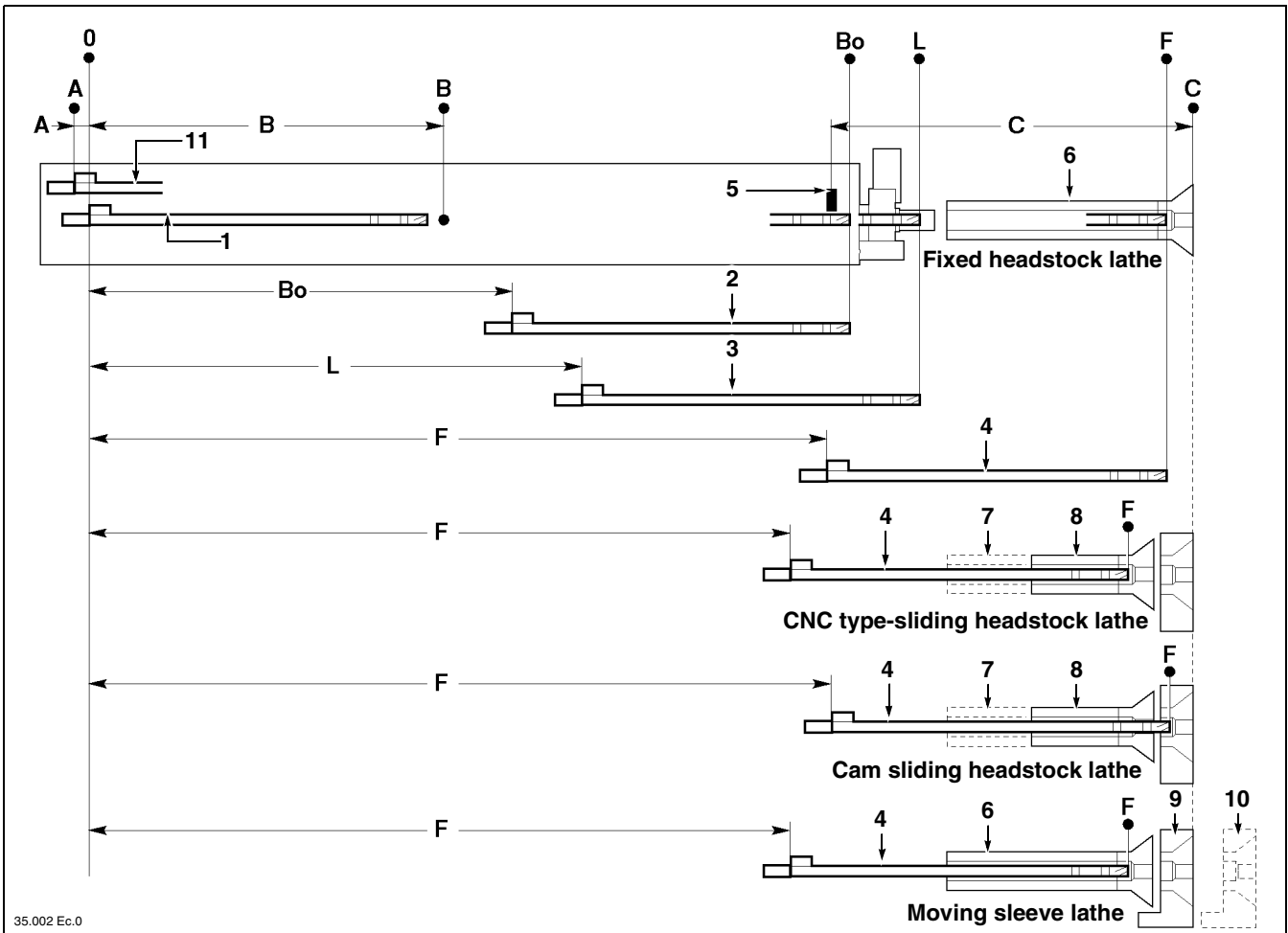
□ **Description**



- 1 - Shows the bar feeder mode:
reset or **manual** or **automatic** or **emergency** mode.
- 2 - **Point character**: displays the bar end signal.
Lathe is machining the last bar stock.
- 3 - **pieces no.**: shows the quantity of bars already machined.
- 4 - Shows the cycle phases, thus displaying:
machining: lathe is machining bars;
opening: the upper guides are opening or are open or are closing;
closing: the upper guides are closed;
facing: the bar feeder is performing the facing stroke.
- 5 - It shows the small pusher truck and bar-pusher position with respect to "BAR FEEDER ZERO SETTING".
- 6 - Shows functions not requiring an access code, see paragraph "NC functions - Description and operation".



□ **Description of self-learning values**



35.002 Ec.0

Legend:

- | | |
|---|---|
| <p>1 - "All the way back" bar-pusher position</p> <p>2 - Bar-pusher position at bush-holder device inlet (opening of half bushes)</p> <p>3 - Bar-pusher position at nose outlet (lubrication stop).</p> <p>4 - "All the way forwards" bar-pusher position</p> <p>5 - Facing flag</p> <p>6 - Spindle</p> | <p>7 - "All the way back" headstock position</p> <p>8 - "All the way forwards" headstock position</p> <p>9 - "All the way back" sleeve position</p> <p>10 - "All the way forwards" sleeve position</p> <p>11 - "All the way back" bar-pusher position after the extraction movement.</p> |
|---|---|

DIMENSION B; small pusher truck stroke, it is the distance between the point **0** and the point **B**.

DIMENSION Bo; half bushes opening point, it is the distance between the point **0** and the point **Bo** (as referred to the bar-pusher rear part).

DIMENSION L; lubrication stop point, it is the distance between the point **0** and the point **L** (as referred to the bar-pusher rear part).

These dimensions are preset values to allow bar feeder testing at set-up completion. These values should be checked and modified if required according to the values listed in the following table.

<i>Version</i>			
	32N	37N	44N
B	1060	1060	1060
Bo	2390	2930	3590
L	2710	3250	3910
<i>Version</i>			
	32L	37L	44L
B	1390	1390	1390
Bo	2060	2600	3260
L	2380	2920	3580
<i>Version</i>			
	32LL	37LL	44LL
B	1720	1720	1720
Bo	1730	2270	2930
L	2050	2590	3250

DIMENSION C; bar facing stroke, it is the distance between the (feeder) facing flag and the (lathe collet) facing point.

DIMENSION F; bar-pusher furthest feeding point, it is the distance between the point **0** and the point **F** (as referred to the bar-pusher rear part).

These dimensions are preset values to allow bar feeder testing at set-up completion. These values should be modified according to lathe type and dimensions.

DIMENSION C-B; it is a dimension the value of which is automatically learnt by the program. No operator's action is needed.

DIMENSION C=XXXX; it is a variable-value dimension referred to point **C**. No operator's action is needed.

DIMENSION A=-36,0; fixed value dimension. It is the "all the way back" bar-pusher position after the extraction movement. No operator's action is needed.

To return to the main menu

press:




DIMENSION B - Small pusher truck stroke value entry

Scroll the following functions up:

press:  five times

or scroll them down

by pressing:  once

the display will read:

F₁L e a r n i n g s F₂V e r s i o n F₃S . p i e c e s F₄I n s . S e l f - l e a r .

by pressing:



the display will read:

1 = B (p r e - f) 2 = C - B 3 = C 4 = B u s h 5 = L u b . 6 = E n d

press:



key in the value. E.g.: **1390** +




	<i>Version</i>		
	32N	37N	44N
B	1060	1060	1060
	<i>Version</i>		
	32L	37L	44L
B	1390	1390	1390
	<i>Version</i>		
	32LL	37LL	44LL
B	1720	1720	1720

DIMENSION Bo - Half bush opening point value entry

Scroll the following functions up:

press:  five times

or scroll them down

by pressing:  once

the display will read:

F₁L e a r n i n g s F₂V e r s i o n F₃S . p i e c e s F₄I n s . S e l f - l e a r .

by pressing:



the display will read:

1 = B (p r e - f) 2 = C - B 3 = C 4 = B u s h 5 = L u b . 6 = E n d

press:



key in the value. E.g.: **2600** +

(see table)



		Version		
Bo	32N	37N	44N	
	2390	2930	3590	
		Version		
Bo	32L	37L	44L	
	2060	2600	3260	
		Version		
Bo	32LL	37LL	44LL	
	1730	2270	2930	

DIMENSION L - Lubrication stop point value entry

Scroll the following functions up:

press: **FWZ** five times



or scroll them down

by pressing: **DEL** once



the display will read:

F₁L e a r n i n g s F₂V e r s i o n F₃S . p i e c e s F₄I n s . S e l f - l e a r .

by pressing:



the display will read:

1 = B (p r e - f) 2 = C - B 3 = C 4 = B u s h 5 = L u b . 6 = E n d

press:

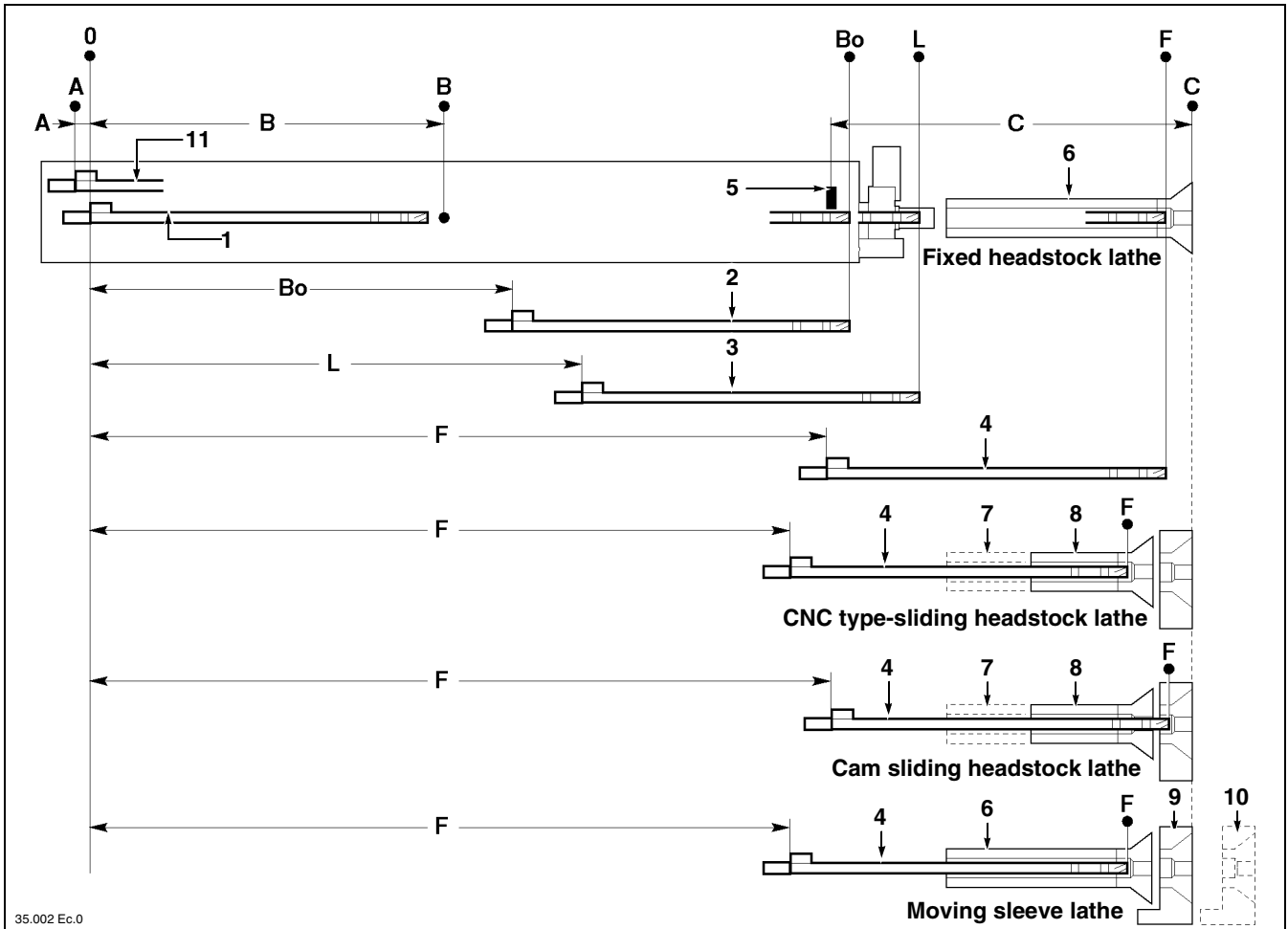


key in the value. E.g.: **2920** +



		Version		
L	32N	37N	44N	
	2710	3250	3910	
		Version		
L	32L	37L	44L	
	2380	2920	3580	
		Version		
L	32LL	37LL	44LL	
	2050	2590	3250	

DIMENSION C - Bar facing stroke value entry



35.002 Ec.0

Legend:

- 1 - "All the way back" bar-pusher position
- 2 - Bar-pusher position at bush-holder device inlet (opening of half bushes)
- 3 - Bar-pusher position at nose outlet (lubrication stop).
- 4 - "All the way forwards" bar-pusher position
- 5 - Facing flag
- 6 - Spindle
- 7 - "All the way back" headstock position
- 8 - "All the way forwards" headstock position
- 9 - "All the way back" sleeve position
- 10 - "All the way forwards" sleeve position
- 11 - "All the way back" bar-pusher position after the extraction movement.

Use a measuring instrument to read the distance between the facing flag 5 and the point C.

Scroll the following functions up:

press:  five times

or scroll them down

by pressing:  once

the display
will read:

F	1	L	e	a	r	n	i	n	g	s	F	2	V	e	r	s	i	o	n	F	3	S	.	p	i	e	c	e	s	F	4	I	n	s	.	S	e	l	f	-	l	e	a	r	.
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

by pressing:

F4

the display
will read:

1	=	B	(p	r	e	-	f)	2	=	C	-	B	3	=	C	4	=	B	u	s	h	5	=	L	u	b	.	6	=	E	n	d
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

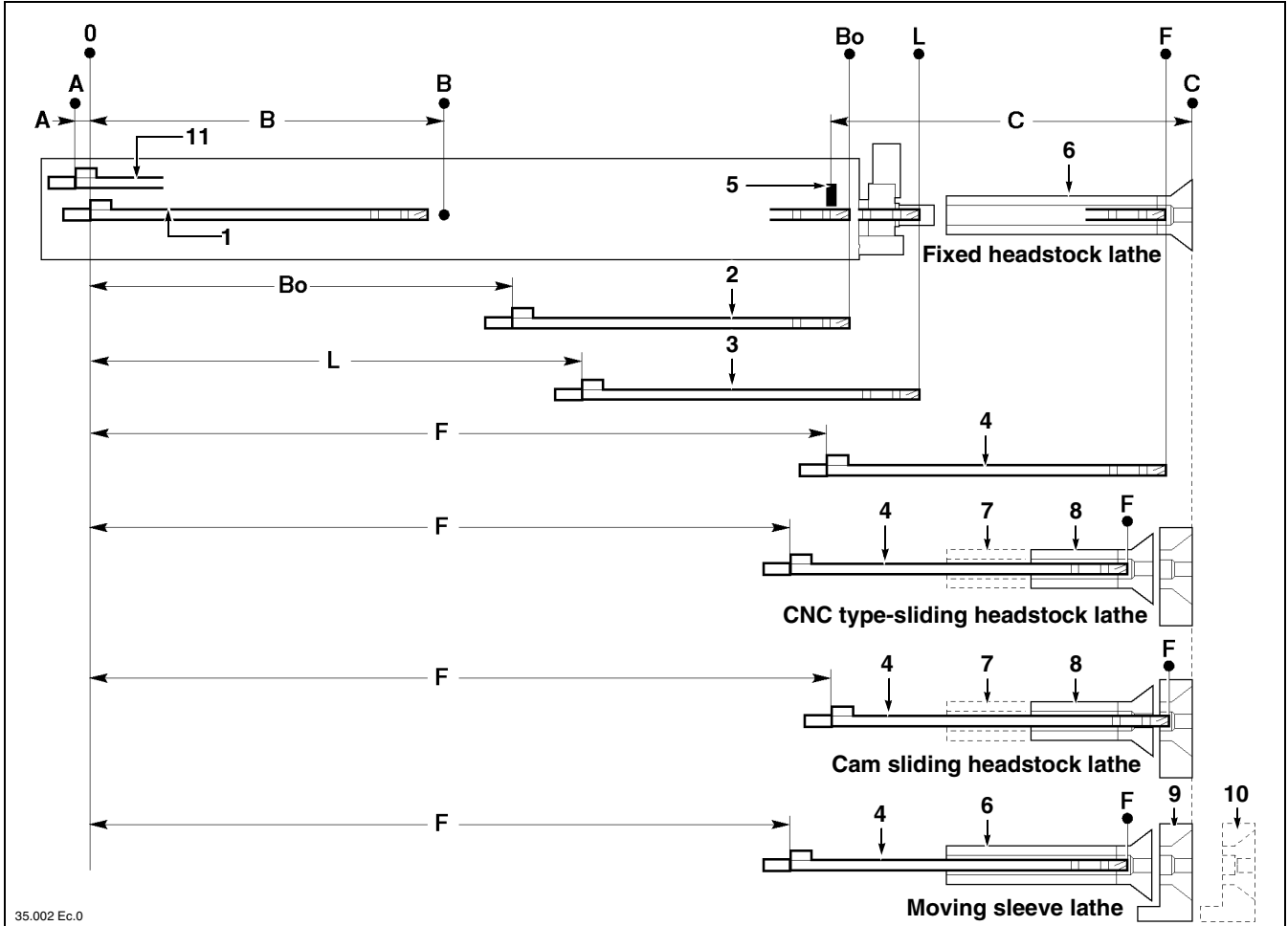
press:

\$

enter the value detected. E.g.: **1200** +

ENTER

DIMENSION F - Bar-pusher furthest feeding point value entry



35.002 Ec.0

Legend:

- 1 - "All the way back" bar-pusher position
- 2 - Bar-pusher position at bush-holder device inlet (opening of half bushes)
- 3 - Bar-pusher position at nose outlet (lubrication stop).
- 4 - "All the way forwards" bar-pusher position
- 5 - Facing flag
- 6 - Spindle
- 7 - "All the way back" headstock position
- 8 - "All the way forwards" headstock position
- 9 - "All the way back" sleeve position
- 10 - "All the way forwards" sleeve position
- 11 - "All the way back" bar-pusher position after the extraction movement.

To carry out this operation, it is necessary to have the bar-pusher and collet assembly installed in the bar feeder. See the "Operation and maintenance manual", paragraph "Guides, half bushes, bar-pusher and collet - Replacement".

Move the front end of the bar-pusher against collet (point F)

press:



and detect the value displayed.

Scroll the following functions up:

press: **FHZ** five times



or scroll them down

by pressing: **DEL** once



the display will read:

F ₁	L	e	a	r	n	i	n	g	s	F ₂	V	e	r	s	i	o	n	F ₃	S	.	p	i	e	c	e	s	F ₄	I	n	s	.	S	e	l	f	-	l	e	a	r	.
----------------	---	---	---	---	---	---	---	---	---	----------------	---	---	---	---	---	---	---	----------------	---	---	---	---	---	---	---	---	----------------	---	---	---	---	---	---	---	---	---	---	---	---	---	---

press:



the following screenful will be displayed:

1	=	B	(p	r	e	-	f)	2	=	C	-	B	3	=	C	4	=	B	u	s	h	5	=	L	u	b	.	6	=	E	n	d
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

press:



enter the value detected. E.g.: **3740** +



☐ To display all values entered

Scroll functions up

press:  five times



or scroll them down

by pressing:  once



the display will read:

F ₁	L	e	a	r	n	i	n	g	s	F ₂	V	e	r	s	i	o	n	F ₃	S	.	p	i	e	c	e	s	F ₄	I	n	s	.	S	e	l	f	-	l	e	a	r	.
----------------	---	---	---	---	---	---	---	---	---	----------------	---	---	---	---	---	---	---	----------------	---	---	---	---	---	---	---	---	----------------	---	---	---	---	---	---	---	---	---	---	---	---	---	---

by pressing:



the display will read. Ex:

F = 3 7 4 0	L = 2 9 2 0	B o = 2 6 0 0	C = X X X X		
B = 1 3 9 0	C - B = - 1 9 0	C = 1 2 0 0	A = - 3 6 , 0		


☐ To exit from functions protected by the access code

Scroll functions up

press:  five times



or scroll them down

by pressing:  once



the following message will be displayed:

F ₁	U	s	e	r		m	o	d	e	F ₂	0			p	i	e	c	e	s		F ₃	M	o	t	.	T		h	o	u	r	F ₄	M	o	t	.	P		h	o	u	r
----------------	---	---	---	---	--	---	---	---	---	----------------	---	--	--	---	---	---	---	---	---	--	----------------	---	---	---	---	---	--	---	---	---	---	----------------	---	---	---	---	---	--	---	---	---	---

press:



3.1. PARAMETERS - Description and entry

Preamble

Parameter entry allows the automatic cycle programming of the bar feeder, according to machining requirements and lathe type.

i **INFORMATION:** the parameter entry allows the bar feeder to be interfaced with lathes or similar machines, whatever their type. Procedures described below are general and are mostly relevant to NC lathes. It is not necessary to enter all parameters: their partial or complete use depends on the type of lathe and machining.

Some parameters have a default value (pre-set value). Should said values not be changed, the bar feeder will perform the automatic cycle.

Parameters are relevant either to the working or bar change-over phase.

In the working phase, lathe performs machining, whereas during the bar change-over, the lathe stops to allow the bar feeder to change the bar.

□ General instructions

Start from the main menu.

Manual	.	pieces no.	0	machining	0,0
F ₁ Clutch		F ₂ Paramet.	F ₃ Machining	F ₄ C New bar	

press:



the last displayed parameter is shown.

To select sequential parameters

To select a parameter successive to the parameter displayed

press:



To select the previous parameter

press:



4

Phase	Default	n o . 4 s h o r t f e e d s a f e t y																			
machining	0 mm	:	>																		(mm)

Controls the bar feeding to a minimum pre-set value. Should the bar fail to advance, the bar feeder stops in an “EMERGENCY” when lathe clears the open collet signal.

The workpiece length entered must be some millimetres less.

i **INFORMATION:** the control system is not active in the first part during the bar change-over phase and in the first part when shifting from the manual cycle to the automatic cycle.

5

Phase	Default	n o . 5 l o n g f e e d s a f e t y																			
machining	0 mm	:	>																		(mm)

Controls that the bar feeding does not exceed the value entered. Otherwise, the bar feeder stops in an “EMERGENCY”.

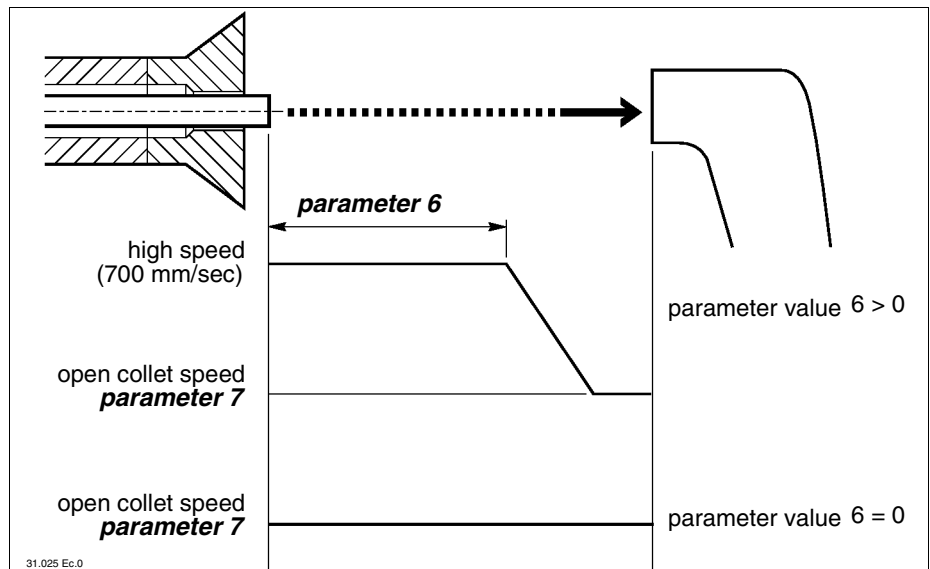
Increase the workpiece length of at least two millimetres.

i **INFORMATION:** in sliding headstock lathes, this parameter can be used to check a possible tool break; enter a value of a few millimetres (max. 5 mm).

6

Phase	Default	n o . 6 q u i c k p a t h																			
machining	0 mm	:	>																		(mm)

Controls the section length for each feeding, increasing speed before the open collet speed section (**parameter 7**). Should value entered be zero, the bar feeds at open collet speed all along the feeding stroke.





7

Phase	Default
machining	7

n o . 7	o p e n	c o l l e t	s p e e d																	
:	>																			

Defines the "OPEN COLLET" speed value.
 Accepts values from 0 to 7.

- Examples: value 0..... speed 0 mm/sec
- value 1,5..... speed 150 mm/sec
- value 7..... speed 700 mm/sec

i INFORMATION: during the MANUAL cycle, press  or , to move the carriage according to the speed entered.

8

Phase	Default
machining	0 sec.

n o . 8	o p e n	c o l l e t	t h r u s t	l a g															
:	>				(s e c)														

When receiving the "OPEN COLLET" signal from lathe, the bar-pusher delays feeding, according to the time previously entered.
 Application example: to be used when the mechanical collet opening is slow (double cone collet).

9

Phase	Default
machining	0 sec.

n o . 9	c l o s e d	c o l l e t	t h r u s t	l a g															
:	>				(s e c)														

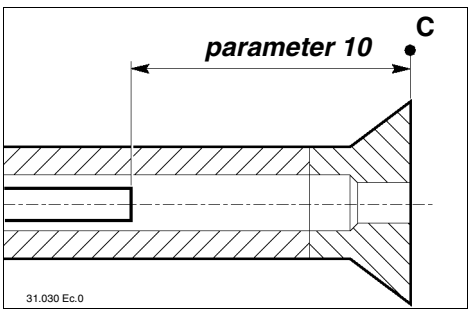
When receiving the "CLOSED COLLET" signal from lathe, the bar-pusher continues to push, according to the time previously entered.
 Application example: to be used when the mechanical collet closing is slow (double cone collet).

10

Phase	Default
bar change over	150 mm

n o . 10	c o l l e t	e n t r y	s l o w i n g	d o w n															
:	>				(m m)														

Controls the slowing down section length before the entry into collet. This value concerns point C (facing point).
 Along said section, the bar moves according to the entry into collet speed (parameter 11).



15

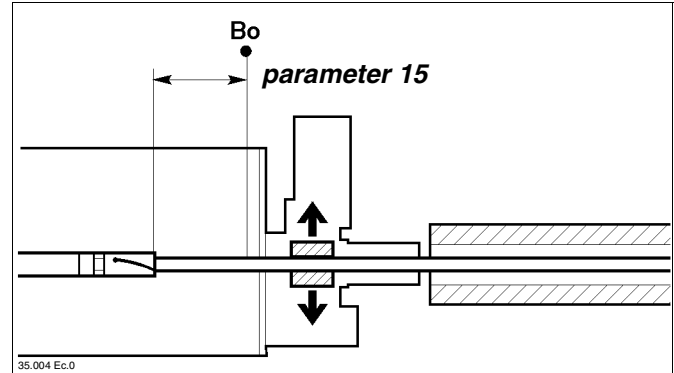
Phase	Default
machining	80 mm

n o . 1 5 b u s h o p e n i n g

: > (m m)

It sets the point where advanced half bush opening occurs at bar-pusher passage with respect to the point **Bo** (half bushes opening point).

The default setting should not normally be modified; there are cases, however, where it can be useful to increase this value to prevent bar vibrations.



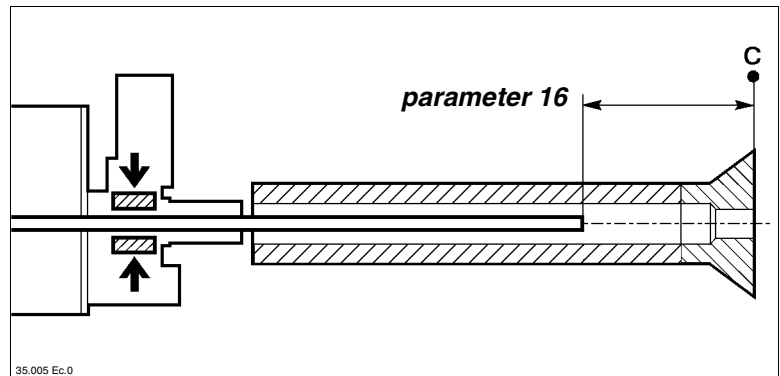
16

Phase	Default
bar change over	150 mm

n o . 1 6 b u s h i n g c l o s i n g

: > (m m)

It sets the point where half bush closing occurs during the facing stroke. It is a dimension referred to point **C** (facing point).



17

Phase	Default
bar change over	0 sec.

n o . 1 7 s p i n d l e i m p u l s e s o n

: > (s e c)

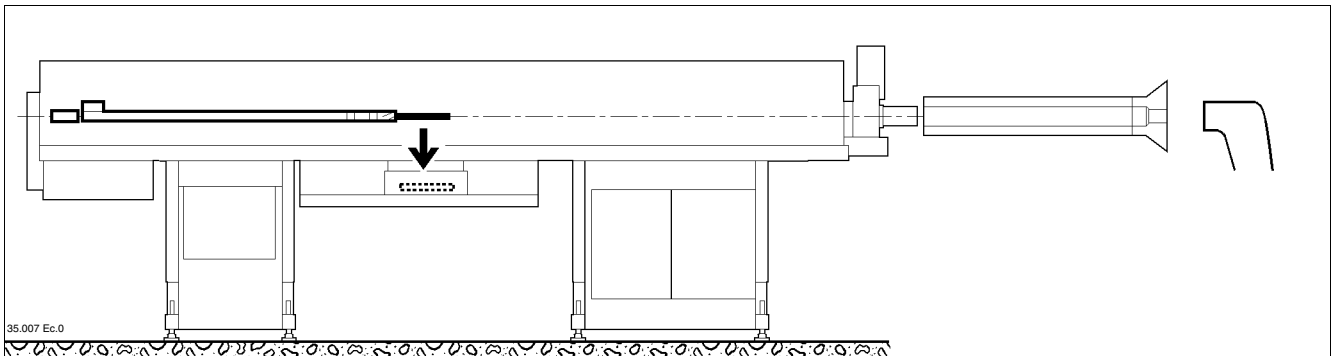
Controls the time of impulse ON, received by the lathe to turn the spindle.

It makes the shaped bar entry into collet easier.

Description of phases:

- the bar is fed along the slowing down section (**parameter 10**);
- the bar meets with the obstacle (collet) and the lathe receives the impulse to turn the spindle, according to the time previously entered;
- the spindle slows down and stops (according to the time entered into **parameter 18**);
- the bar receives the feeding impulse;
- if the bar enters into collet, the cycle continues;
- otherwise, all phases previously described are to be repeated

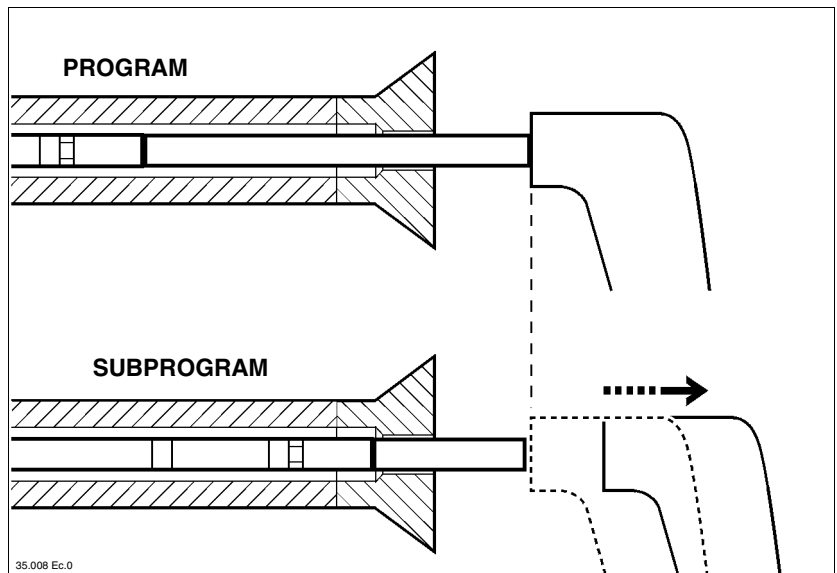
- the bar-pusher and remnant reach the “all the way back” position, the remnant is extracted from the collet and dropped into the collection box.



Mode 2 - “Ejection” or 3 - “Bar change-over advance”

Preamble

to activate one of the above mentioned conditions, the lathe must allow the programming of a subprogram. The subprogram allows the catch to move away, thus ejecting the bar remnant from the lathe side.



2 - “Ejection”

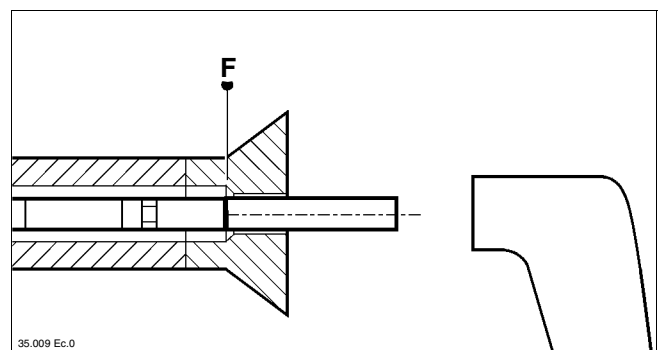
There are two selections possible:

- Ejection through the new bar.*
- Ejection through the bar-pusher.*

a) *Ejection through the new bar.*

Description of phases:

- the lathe receives the “BAR END” signal from the bar feeder, machines the last workpiece, shifts into the subprogram (the catch moves away) and sends the “OPEN COLLET” and “BAR CHANGE-OVER” signals;
- the bar-pusher reaches point **F** (max. bar-pusher feeding point) and the bar feeder changes the bar;
- the new bar is fed, thus ejecting the bar remnant and then reaching the facing position.

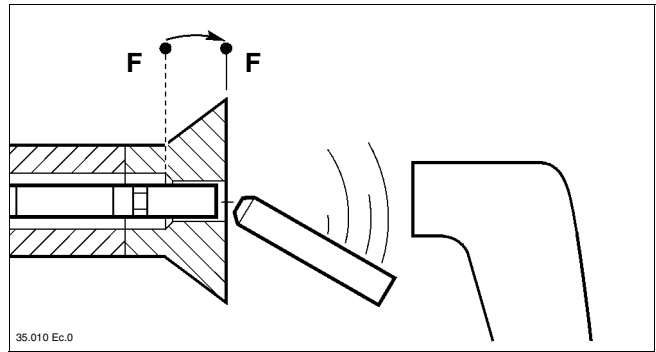


b) *Ejection through the bar-pusher.*

Align point **F** (max. bar-pusher feeding point, *parameter 28*) with the collet.

Description of phases:

- the lathe receives the "BAR END" signal from the bar feeder, machines the last workpiece, shifts into the subprogram (the catch moves away) and sends the "OPEN COLLET" and "BAR CHANGE-OVER" signals;
- the bar pusher reaches point **F** and ejects the bar remnant, thus allowing the bar feeder to change the bar.



3 - "Bar change-over advance"

Allows the bar feeder to change the bar, while lathe is starting to machine the last workpiece. The bar change-over is thus advanced, without waiting until the last workpiece has been machined or the bar-pusher has reached point **F**. The remnant is ejected with the new bar.

Necessary conditions

- Input 449 must be enabled, through the following options:
 - connect common wire 251 to wire 449 (see the bar feeder interfacing diagram);
 - fit a switch (S59) controlling the bar change-over cycle into the electric control panel (see the electric diagram);
 - use the lathe "BAR CHANGE-OVER ADVANCE" signal (if supplied).

Description of phases:

- the lathe receives the "BAR END" signal from the bar feeder, thus activating input 449;
- the bar feeder pusher strokes back, inserts the new bar into the guide and waits for the "OPEN COLLET" and "BAR CHANGE-OVER" signals;
- as soon as lathe has machined the last workpiece, it shifts into the subprogram (the bar catch moves away) and sends the "OPEN COLLET" and "BAR CHANGE-OVER" signals;
- the new bar ejects the bar remnant and moves to the facing position.

21

Phase	Default
machining	0 sec.

n o . 2 1 o p e n c o l l e t t i m e o u t
: > (s e c)

Max. "OPEN COLLET" time.

Should the feeding control ("OPEN COLLET" signal from lathe) fail to be deactivated within the time previously entered, the bar feeder stops in an "EMERGENCY".

22

Phase	Default
machining	0 sec.

n o . 2 2 w o r k p i e c e t i m e o u t
: > (s e c)

Max. time allowed to machine a workpiece.

Should machining exceed the time previously set, the bar feeder stops in an "EMERGENCY"

24

Phase	Default
machining	0

no . 2 4 b a r p u s h e r s t o p w i t h c l o s e d c o l l e t
: >

- 0 - (no) Parameter function deactivated.
- 1 - (yes) Fixed headstock lathes only: during the workpiece machining, the bar-pusher is behind the bar, locking it in this position and recovering backward movements, if any.

If **parameter 20** is in mode **2** - “Ejection”, bar-pusher stop during workpiece machining occurs automatically, even if this parameter is in mode **0** - (no).

25

Phase	Default
machining	0

no . 2 5 p i e c e s p r i o r t o l a t h e s t o p
: >

- 0 - Parameter function deactivated.
- >0 - As soon as the number of workpieces entered has been reached, the bar feeder stops the lathe with “OPEN COLLET”.

26

Phase	Default
machining	0 min

no . 2 6 m i n u t e s p r i o r t o m a c h i n e s t o p
: > (m i n)

- 0 - Parameter function deactivated.
- >0 - When minutes entered have elapsed, the bar feeder stops lathe with “OPEN COLLET”.

27

Phase	Default
machining	7

no . 2 7 c l o s e d c o l l e t t h r u s t v o l t a g e
: > (V)

It sets the voltage received by the feed motor during bar thrust with a closed collet.

It will accept values from 0 to 7.

This parameter is only active when **parameter 33** is in mode **2** - (SLIDING).

28

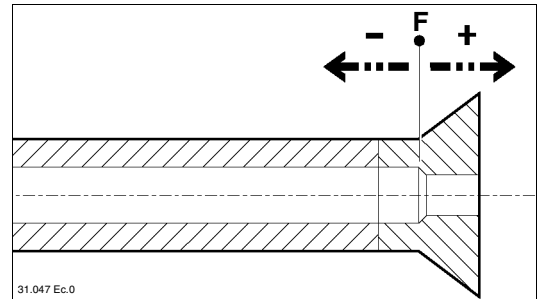
Phase	Default
bar change over	0 mm

no . 2 8 m a x . f e e d i n g p o s i t i o n m o d i f i c a t i o n
: > (mm)

Controls point **F** adjustments, (max. bar-pusher feeding point), by increasing or reducing values, according to the self-learning values entered during the setting phase.

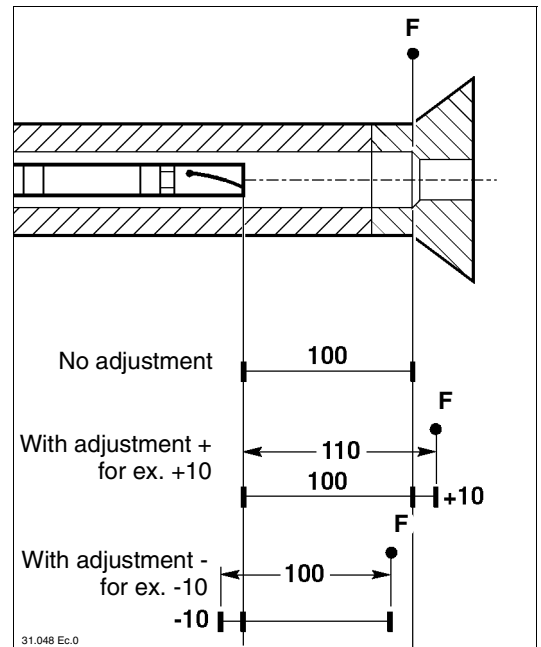
Application examples:

- to be used whenever ejection occurs through the bar-pusher (point b, **parameter 20**);
- to be used whenever the lathe collet is replaced with a collet having different dimensions.



31.047 Ec.0

When adjusting point **F**, **parameter 1** changes as shown in the figure.



31.048 Ec.0

30

Phase	Default
/	/

no . 3 0 l a n g u a g e
: >

Controls the language of the information displayed:

- 1 - (Italiano)
- 2 - (Français)
- 3 - (English)
- 4 - (Deutsch)
- 5 - (Español)
- 6 - (Svenska) or (Suomi)

3.2. PARAMETERS PROTECTED BY THE ACCESS CODE - Description

Preamble

These parameters allow the bar feeder to be interfaced with lathe. They must not be changed. The access to the above mentioned parameters, as well as their change, is necessary whenever the electronic board has to be replaced or if the bar feeder has to be connected to another type of lathe.

□ Access to parameters protected by the code

Start from the main menu

M	a	n	u	a	l	.	p	i	e	c	e	s	n	o	.	0	m	a	c	h	i	n	i	n	g	0	,	0					
F ₁	C	l	u	t	c	h	F ₂	P	a	r	a	m	e	t	.	F ₃	M	a	c	h	i	n	i	n	g	F ₄	C	N	e	w	b	a	r

press: **FNZ**

the following message will be displayed:

t	y	p	e	t	h	e	c	o	d	e
---	---	---	---	---	---	---	---	---	---	---

enter the access code: **0546** + **ENTER**
(not displayed)

Should the code be false,

the following message will be displayed:

w	r	o	n	g	c	o	d	e	,	p	r	e	s	s	a	n	y	k	e	y
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

press any key. Ex: **ESC**
and repeat the procedure.

If the code is correct,

the following message will be displayed:

r	i	g	h	t	c	o	d	e
---	---	---	---	---	---	---	---	---

□ General procedure

Start from the main menu.

M	a	n	u	a	l	.	p	i	e	c	e	s	n	o	.	0	m	a	c	h	i	n	i	n	g	0	,	0					
F ₁	C	l	u	t	c	h	F ₂	P	a	r	a	m	e	t	.	F ₃	M	a	c	h	i	n	i	n	g	F ₄	C	N	e	w	b	a	r

by pressing: **F2**

the last parameter will be displayed.

3.2.1 DESCRIPTION OF PROTECTED PARAMETERS

31

Phase	Default
/	1

n o . 3 1 b a r f e e d e r i n t e r f a c e c o n t r o l
: >

- 1 - (RETURN)
- 2 - (K13 IMMEDIATE)
- 3 - (IMMEDIATE RETURN)
- 4 - (FEEDING)
- 5 - (K1 ENABLED)

32

Phase	Default
/	0

n o . 3 2 K 1 i m m e d i a t e e x i t
: >

- 0 - (no)
- 1 - (yes)

33

Phase	Default
/	1

n o . 3 3 t y p e o f h e a d s t o c k
: >

- 1 - (FIXED)
- 2 - (SLIDING)
- 3 - (SLIDING BUSH)

34

Phase	Default
/	1

n o . 3 4 f e e d i n g s t o p m o d e
: >

- 0 - (when contact is off)
- 1 - (when contact is on)
- 2 - (impulse)

65

Phase	Default
/	1

n o . 6 5 t y p e o f s t a r t s i g n a l f r o m l a t h e
: >

- 1 - (disabled)
- 2 - (active open impulse contact)
- 3 - (active continuous open contact)
- 4 - (active closed impulse contact)
- 5 - (active closed continuous contact)

66

Phase	Default
/	0

n o . 6 6 t y p e o f a u t o m a t i c s i g n a l f r o m l a t h e
: >

- 0 - (when contact is off)
- 1 - (when contact is on)
- 2 - (man. from lathe, aut. from bar feeder)

3.3. NC FUNCTIONS - Description and operation

Functions displayed by the main menu.

Manual . pieces no. 0 machining 0,0
 F₁Clutch F₂Paramet. F₃Machining F₄C New bar

Function F1

Function used to display or modify the value of the thrust applied by the bar-pusher to the bar during machining; its sets the voltage value received by the clutch electromagnet.

by pressing:



the display will read:

F₁ F₁ - F₂ + c l u t c h = 0

To reduce value

press:



To increase value

press:



Clutch	kg	V
25		
50		
75		
100		
125		

Enter the thrust value according to the bar dimensions and features (min. 0 - max. 125).



INFORMATION: should thrust be too weak, the bar fails to feed or has some difficulty during feeding; should thrust be too strong, the bar feeding might damage both the lathe and the bar.

Function F2

Allows access to parameters, see paragraph "Parameters - Description and entry".

Function F3

press:



Positions bar feeder in the "WORKING" phase

Function F4

It is the function which automatically starts a bar change cycle. Lathe and bar feeder must be in the following conditions

Lathe:

- the spindle must be without bar or bar remnant;
- it must be in the "OPEN COLLET " and "BAR CHANGE-OVER" condition.

Bar feeder:

- must be in the "WORKING" phase;
- bar must be in the magazine only.

press:



The bar pusher accomplishes a forward stroke.

The bar pusher accomplishes a backward stroke, and as it is with no remnant, the function "remnant safety" has to be overridden.

press:



The bar pusher concludes the bar change cycle.

3.4. NC FUNCTIONS PROTECTED BY THE ACCESS CODE - Description and operation

□ Access to functions protected by the code

Start from the main menu

Manual . pieces no. 0 machining 0,0
F₁Clutch F₂Paramet. F₃MachiningF₄C New bar

press: **FNZ**

the following message will be displayed:

type the code

enter the access code: 0546 + **ENTER**
(not displayed)

Should the code be false,

the following message will be displayed:

wrong code, press any key

press any key. Ex: **ESC**
and repeat the procedure.

If the code is correct,

the following message will be displayed:

right code

Scroll functions up

press: **FNZ**

or scroll them down

by pressing: **DEL**

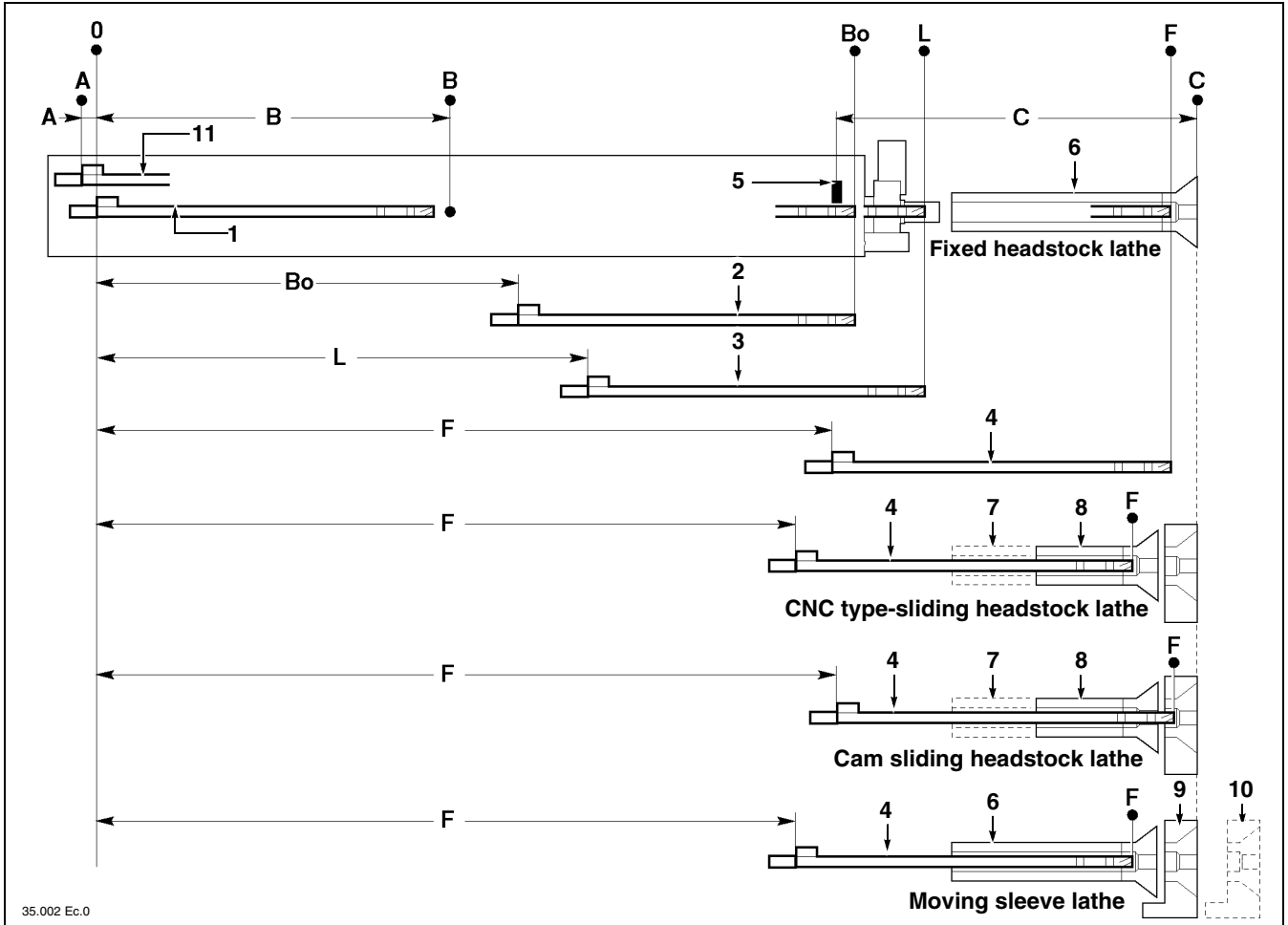
The following sequence will be displayed:

Manual . pieces no. 0 machining 0,0
F₁Clutch F₂Paramet. F₃MachiningF₄C New bar
↓
F₁Points F₂Go to... F₃<-- F₄-->
↓
F₁Flag openF₂Flag cl. F₃Bush openF₄Bush cl.
↓
F₁User modeF₂0 pieces F₃Mot.T hourF₄Mot.P hour
↓
F₁T.offset F₂Phases F₃Show in F₄Showout
↓
F₁LearningsF₂VersionF₃S.piecesF₄Ins.Self-lear.

3.4.1 PROTECTED FUNCTIONS - Description and operation

F ₁	P	o	i	n	t	s	F ₂	G	o	t	o	...	F ₃	<	-	-	F ₄	-	-	>
----------------	---	---	---	---	---	---	----------------	---	---	---	---	-----	----------------	---	---	---	----------------	---	---	---

Function F1 Displays and shifts to self-learning values.



35.002 Ec.0

Legend:

- 1 - "All the way back" bar-pusher position
- 2 - Bar-pusher position at bush-holder device inlet (opening of half bushes)
- 3 - Bar-pusher position at nose outlet (lubrication stop).
- 4 - "All the way forwards" bar-pusher position
- 5 - Facing flag
- 6 - Spindle
- 7 - "All the way back" headstock position
- 8 - "All the way forwards" headstock position
- 9 - "All the way back" sleeve position
- 10 - "All the way forwards" sleeve position
- 11 - "All the way back" bar-pusher position after the extraction movement.

by pressing:



the display will read:

A	0	B	C	C1	Bush . Lub .	End	
0	1	2	3	4	5	6	7

By pressing the relevant numeric key, the bar-pusher moves to the required point.
Example: to move bar-pusher to point F.

press:



Function F2

Function used to move the small pusher truck or bar-pusher to the required destination with respect to "BAR FEEDER ZERO SETTING".

press:



enter the position value (mm). Ex:

200 +



Function F3

Function used to move back the bar-pusher small pusher truck.
For a short shift

press:



and release it quickly.

To obtain a continuous shift

press:



and keep it pressed.

Function F4

Function for feeding the small pusher truck or the bar-pusher
For a short shift

press:



and release it quickly.

To obtain a continuous shift

press:



and keep it pressed.

F ₁	F	l	a	g		o	p	e	n	F ₂	F	l	a	g		c	l	.		F ₃	B	u	s	h		o	p	e	n	F ₄	B	u	s	h		c	l	.
----------------	---	---	---	---	--	---	---	---	---	----------------	---	---	---	---	--	---	---	---	--	----------------	---	---	---	---	--	---	---	---	---	----------------	---	---	---	---	--	---	---	---

Use these functions to test the facing flag and bush-holder device efficiency.

Function F1

press:

F1

Function used to open the facing flag.

Function F2

press:

F2

Function used to close the facing flag.

Function F3

press:

F3

Function used to open the bush-holder device

Function F4


press:

F4



Function used to close the bush-holder device

F ₁	U	s	e	r	m	o	d	e	F ₂	0	p	i	e	c	e	s	F ₃	M	o	t	.	T	h	o	u	r	F ₄	M	o	t	.	P	h	o	u	r
----------------	---	---	---	---	---	---	---	---	----------------	---	---	---	---	---	---	---	----------------	---	---	---	---	---	---	---	---	---	----------------	---	---	---	---	---	---	---	---	---


Function F1

Allows the exit from parameters and from functions protected by the access code
 press: 

Function F2

Resets the piece counter
 press:  + 


Function F3



It is the function to display the total amount of the driving motor operation hours.
 press: 

Such amount has to be reset if the motor replacement takes place.

i **INFORMATION:** if the card has to be replaced, check and note down the hour amount, as it is to be reset and cannot be set again.

Function F4

It is the function to display the partial amount of the driving motor operation hours.
 press: 
 to reset

press:  + 

When power supply is connected from the lathe

it appears:

A	T	T	E	N	T	I	O	N	:	e	x	e	c	u	t	e	m	o	t	o	r	m	a	i	n	t	e	n	.
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

it means that 1250 partial operation hours are over, and that the motor brush inspection is needed (see "Use and maintenance manual").

After servicing, the hour counter has to be reset following the above-mentioned instructions.

Such hour amount has to be reset also if the motor replacement takes place.

i **INFORMATION:** if the card has to be replaced, check and note down the hour amount, as it is to be reset and cannot be set again.

F ₁	T	.	o	f	f	s	e	t	F ₂	P	h	a	s	e	s	F ₃	S	h	o	w	i	n	F ₄	S	h	o	w	o	u	t
----------------	---	---	---	---	---	---	---	---	----------------	---	---	---	---	---	---	----------------	---	---	---	---	---	---	----------------	---	---	---	---	---	---	---

Function F1

Controls the D/C motor operation, thus allowing setting up procedures

press:



Function F2

Performs the required phase.

Phase list:

- machining
- upwards
- downwards
- facing

press:



to scroll phases up

press:



to scroll them down

press:



the bar feeder performs the pre-set phase

press:



Function F3

Displays values assigned to the electronic board inputs

press:



Function F4

Displays values assigned to the electronic board outputs

press:



F ₁	L	e	a	r	n	i	n	g	s	F ₂	V	e	r	s	i	o	n	F ₃	S	.	p	i	e	c	e	s	F ₄	I	n	s	.	S	e	l	f	-	l	e	a	r	.
----------------	---	---	---	---	---	---	---	---	---	----------------	---	---	---	---	---	---	---	----------------	---	---	---	---	---	---	---	---	----------------	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Function F1

Displays the self-learning values

press:



Function F2

displays identification data of the installed EPROM.

press:



Function F3

Assigns an initial value to the piece counter.

*Example: assign value 1000;
start machining;
value 1001 will be displayed after the first workpiece.*

press:



enter the value. Ex: 1000 +

Function F4

Enters or changes the self-learning values; see “Self-learning values - entry into program”.

3.5. ERRORS - CAUSES - CURES

During the bar feeder setting up or the machining, errors occurred will be accordingly displayed.

Said errors might be due to a wrong programming, an operation error or mechanical or electric failure.

Errors cause the bar feeder to stop; to reset the automatic cycle, follow the procedure below:

- reset the manual cycle
- remove the error cause;
- reset the automatic cycle.

Error messages, possible causes and cures are listed below.

201

E r r o r : p o s i t i o n l i m i t s (2 0 1)

ERROR	CAUSE	CURE
The encoder has detected a shift exceeding the prescribed limit, with respect to the "BAR FEEDER ZERO SETTING". The max. limit is defined by <i>parameter 81</i> .	<i>Parameter 81</i> value is too low.	Apply to IEMCA service department.

202

E r r o r : w r o n g b a r - p u s h e r m o v e m e n t (2 0 2)

ERROR	CAUSE	CURE	
Bar-pusher or small pusher truck feeding not smooth.	The bar-pusher or small pusher truck cannot run freely.	Remove the cause preventing the regular sliding.	
	Electromagnetic clutch operation fault (Y10)	Check and/or replace the electromagnet.	
	Electromagnetic clutch bad adjustment.	Adjust the electromagnetic clutch.	
	Clutch operation fault.	Check the clutch oil level and disk wear.	
	Encoder failure.		Check the electric connection.
			Check the encoder splining into the pinion shaft.
Faulty board.		Replace the encoder.	
		Check and/or replace the board.	

203

Error : lack of flag position (2 0 3)

ERROR	CAUSE	CURE
The facing flag has not been opened by bar passage during the facing stroke and the sensor (S3) detecting flag opening has nevertheless been energized.	The flag part in contact with the bar is bent.	Change the flag.

204

Error : remnant (2 0 4)

ERROR	CAUSE	CURE
During the remnant dropping control phase, the remnant has been detected by the clamps.	The remnant is too long due to a wrong parameter 1 setting.	Check and correct the value.
	Because of bar length, it is impossible to obtain a remnant having a length compatible with the bar feeder.	Adjust bar length according to the type of machining.
	The remnant is too long with respect to bar feeder max compatible length.	Contact IEMCA after-sales service to modify the bar feeder accordingly (special parts for oversize remnant dropping).
	Extraction from the bar-pusher collet has not occurred due to wrong clamp adjustment or clamps not suitable for bar profile.	Adjust or change the clamps.

206

Error : facing ahead (2 0 6)

ERROR	CAUSE	CURE
During its pre-feed or facing stroke, the bar has gone too far beyond the point C .	Value of parameter 2 is too much negative.	Check and adjust the value.
	Encoder failure.	Check the electric connection.
		Check the encoder splining into the pinion shaft.
	Value C is lesser than the real bar pre-feeding (value B less 270 mm).	Replace the encoder.
		Check and correct value C . In addition, make sure that the bar feeder has not been installed too close to the lathe.

207

Error : no remnant (2 0 7)

ERROR	CAUSE	CURE
During remnant extraction, the clamps have not detected the remnant which has probably been left in the lathe.	Not enough bar-pusher collet grip.	Change the collet.
	The lathe sleeve is too tight.	Adjust the sleeve.
	Rag left by the cutting tool.	Sharpen the cutting tool.
	Clamp sensor (S5) malfunction.	Check and/or replace the sensor.

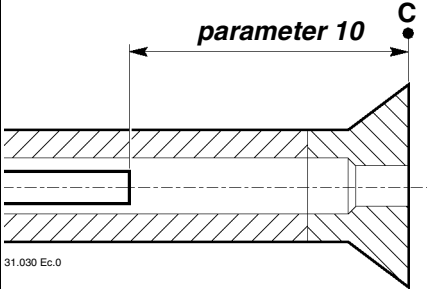
208

Error : no bar (2 0 8)

ERROR	CAUSE	CURE
During bar change-over, the clamps have not detected bar presence.	Bars have run out in the magazine.	Load bars.
	Bad adjustment of bar selectors.	Adjust bar selectors.
	Clamp sensor (S5) malfunction.	Check and/or replace the sensor.

209

Error: the bar fails to enter into the collet (209)

ERROR	CAUSE	CURE
<p>The bar met with the first obstacle in the section controlled by parameter 10 and failed to overcome it.</p> 	<p>The bar fails to pass into the collet or into the lathe bush.</p>	<p>Check values of the following parameters.</p> <ul style="list-style-type: none"> 10 - Collet entry slowing down 11 - Collet entry speed 12 - Collet entry clutch 13 - Impulse number 14 - Impulse stroke 17 - Spindle impulses ON 18 - Spindle impulses OFF 19 - Cycle start lag
		<p>Make sure there is no interference between the bar and collet or guiding bush diameter.</p>
	<p>Electromagnetic clutch operation fault (Y10)</p>	<p>Check and/or replace the electromagnet.</p>
	<p>Electromagnetic clutch bad adjustment.</p>	<p>Adjust the electromagnetic clutch.</p>
	<p>Clutch operation fault.</p>	<p>Check the clutch oil level and disk wear.</p>
	<p>Encoder failure.</p>	<p>Check the electric connection.</p>
		<p>Check the encoder splining into the pinion shaft.</p>
<p>Faulty board</p>	<p>Replace the encoder.</p>	
	<p>Check and/or replace the board.</p>	

210

Error: flag open (210)

ERROR	CAUSE	CURE
<p>At pre-feed stroke start, the facing flag is not closed.</p>	<p>An obstacle has prevented flag closure.</p>	<p>Remove the obstacle.</p>
	<p>Malfunction of solenoid valve (EV4) for the door closing.</p>	<p>Check and/or replace the solenoid valve.</p>
	<p>Flag closure sensor (S3) malfunction.</p>	<p>Check and/or replace the sensor.</p>

211

Error: short feed (2 1 1)

ERROR	CAUSE	CURE	
The bar failed to reach the value entered into parameter 4 , following the "COLLET CLOSING" phase.	Parameter 4 value exceeds the bar feed.	Check the bar feed and enter into parameter 4 a value at least 2 mm less.	
	The lathe collet fails to open properly.	Check the lathe collet.	
	The thrust received by the bar is not sufficient.	Check and increase thrust value (see paragraph "NC functions - Description and operation")	
	Electromagnetic clutch operation fault (Y10)	Check and/or replace the electromagnet.	
	Electromagnetic clutch bad adjustment.	Adjust the electromagnetic clutch.	
	Clutch operation fault.	Check the clutch oil level and disk wear.	
	Encoder failure.		Check the electric connection.
			Check the encoder splining into the pinion shaft.
		Replace the encoder.	
Faulty board.	Check and/or replace the board.		

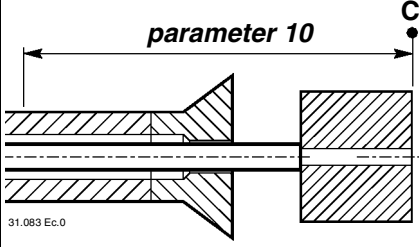
212

Error: long feed (2 1 2)

ERROR	CAUSE	CURE	
The bar exceeds value entered into parameter 5 during feeding.	Parameter value 5 is too low, less than the bar feed.	Check the bar feed and enter a value at least 2 mm higher into parameter 5 .	
	The lathe bar catch is not correctly positioned.	Check the bar catch.	
	Electromagnetic clutch operation fault (Y10)	Check and/or replace the electromagnet.	
	Electromagnetic clutch bad adjustment.	Adjust the electromagnetic clutch.	
	Clutch operation fault.	Check the clutch oil level and disk wear.	
	Encoder failure		Check the electric connection.
			Check the encoder splining into the pinion shaft.
			Replace the encoder.
Faulty board.	Check and/or replace the board.		

213

Error: stationary position after impulses (2 1 3)

ERROR	CAUSE	CURE
<p>The bar must cover the section defined in parameter 10; it has overcome the first obstacle (collet); then it meets with another obstacle (bush or other) and fails to overcome it.</p>  <p>31.083 Ec.0</p>	The bar found an obstacle.	<p>Make sure there is no mechanical jam.</p> <p>Check the lathe guiding bush.</p>
	The bar thrust is not sufficient.	Check and increase thrust value entered into parameter 12 .
	Electromagnetic clutch operation fault (Y10)	Check and/or replace the electromagnet.
	Electromagnetic clutch bad adjustment.	Adjust the electromagnetic clutch.
	Clutch operation fault.	Check the clutch oil level and disk wear.
	Encoder failure.	Check the electric connection.
		Check the encoder splining into the pinion shaft.
	Replace the encoder.	
Faulty board.	Check and/or replace the board.	

214

Error: lack of bar feeder zero (2 1 4)

ERROR	CAUSE	CURE
<p>The bar-pusher has reached the "BAR FEEDER ZERO SETTING" position, but the encoder has detected a different "ZERO SETTING" position. If the difference between the two "BAR FEEDER ZERO SETTING" positions exceeds 100 mm, error 214 is displayed.</p>	"BAR FEEDER ZERO SETTING" position failure.	Perform the "BAR FEEDER ZERO SETTING".
	The "BAR FEEDER ZERO SETTING" sensor has been energized by an object other than the bar-pusher.	Remove the object.
	Encoder failure.	Check the electric connection.
		Check the encoder splining into the pinion shaft.
	Replace the encoder.	
Faulty board.	Check and/or replace the board.	

215 Error: carriage motor timeout (215)

ERROR	CAUSE	CURE
During the bar-pusher stroke backwards, in the "BAR CHANGE-OVER" phase, the encoder will detect the "BAR FEEDER ZERO SETTING" position but the BAR FEEDER ZERO SETTING sensor has not detected the bar-pusher.	The sensor is out of position.	Adjust the sensor position.
	Failure of the sensor (S7).	Replace it.

216 Error: M3 timeout (216)

ERROR	CAUSE	CURE
Remnant extraction or upper guide lifting or bar selection movements (controlled by motor M3) are not smooth.	Movements are hindered by an obstacle.	Remove the obstacle
	Movement detecting sensors (S1, S2, S8) malfunction.	Check and/or replace the sensors



217 Error: open collet timeout (217)

ERROR	CAUSE	CURE
The open collet signal exceeded the max. time previously entered into <i>parameter 21</i> .	During the working phase	
	<i>Parameter 21</i> value is less than the real lathe collet opening.	Check the real "COLLET OPENING" time and enter one more second into <i>parameter 21</i> .
	i INFORMATION: should parameter 21 value be zero, its function is overridden.	
	During the bar change-over phase	
	The bar reached point C but the "CLOSED COLLET" signal from lathe fails to arrive within the prescribed time.	Check the "CYCLE START" signal from bar feeder. Check the "CLOSED COLLET" signal from lathe.

218 Error: door safety (218)

ERROR	CAUSE	CURE
The bar feeder stopped or fails to start.	One of the lathe doors enabling the signal is open.	Check the door closing.
	The "CLOSED DOOR" signal fails to reach the bar feeder board.	Make sure wire 453 of terminal board X4 is powered (24V D/C).

219 Error: emergency (219)

ERROR	CAUSE	CURE
The bar feeder stopped or fails to start	An emergency push-button has been pressed.	Release the push-button.
	The stop push-button  has been pressed	Press the  start push-button.
	There is an emergency signal from lathe.	Restore the lathe start and make sure wire 426 of terminal board X2 and wire 459 of terminal board X4 are powered.
The thermal switch (Q2) of motor (M3) controlling guide opening and insertion/extraction has tripped.	Motor overheating.	Check motor rated current.
The thermal switch (Q1) of motor (M2) controlling the lubricating system has tripped.		Check current range at phase wires.
		Check thermal switch setting.
		If motor absorption is higher than the rated value (see the data plate), check the motor-controlled mechanics.

220 Error: spindle timeout (220)

ERROR	CAUSE	CURE
Relay K29 (spindle impulses) has been activated for more than three minutes.	The impulse number entered into parameter 13 is too high.	Reduce parameter 13 value.
	Parameter 51 value is too high.	To access this parameter, enter the reserved code; apply to IEMCA service department.

221

Error: movement with open collet (221)

ERROR	CAUSE	CURE
Only for sliding headstock or sliding sleeve lathes. <i>parameter 33</i> in modes 2 - (SLIDING) or 3 - (SLIDING BUSH).		
During the "OPEN COLLET" phase, the bar feeding length has exceeded the length entered in <i>parameter 5</i> .	For sliding headstock lathes.	
	Cutting tool break.	Replace the tool.
	Lathe program error.	Check the program.
	For sliding headstock lathes.	
	Wrong <i>parameter 5</i> value.	Correct <i>parameter 5</i> value.
	The bar catch in the lathe is not in the right position.	Check the bar catch.
	Bar/headstock synchronizing device fault.	Check the device.

222

Error: closed collet (222)

ERROR	CAUSE	CURE
Working phase		
The "OPEN COLLET" signal from lathe lasted less than the value entered into <i>parameter 8</i> .	Time entered into <i>parameter 8</i> is higher than the real "COLLET OPENING" time.	Reduce <i>parameter 8</i> value (must be less than the real "COLLET OPENING" time) or increase the lathe "COLLET OPENING" time.
Bar change-over phase		
The bar machining is over. The lathe sends the "OPEN COLLET" and "BAR CHANGE-OVER" signals. The bar-pusher delays for some (programmable) time, before moving backwards; the "OPEN COLLET" signal has been interrupted before the time previously entered has elapsed.	The lathe cycle failed to stop regularly.	Check the "CYCLE STOP" signal from bar feeder. Check lathe mode.
Only for bar feeder having <i>parameter 20</i> in mode 1- (extraction) or 2 - (ejection). Bar feeder has achieved the bar change and awaits the "OPEN COLLET" signal from lathe. The signal has a delay of more than 60 secs.	Failure from lathe.	Check lathe mode.

223

Error: workpiece timeout (2 2 3)

ERROR	CAUSE	CURE
The bar working cycle has lasted longer than the time entered into <i>parameter 22</i> .	The bar working cycle has lasted longer than the time entered into <i>parameter 22</i> .	Check the real time of the cycle and enter at least 1 more second.
	The bar working cycle has been interrupted or slowed down.	Check the bar machining.
	i INFORMATION: should parameter 22 value be zero, its function is overridden.	

224

Error: thread safety (2 2 4)

ERROR	CAUSE	CURE
Lathe failed to thread the workpiece to be machined.	Failure of the threading device.	Check the device.
	Failure of the threading control device.	Check the device.


225

Error: start from lathe signal disabled (2 2 5)

ERROR	CAUSE	CURE
Bar feeders with <i>parameter 65</i> into 3 - (active continuous open contact) or 5 - (active closed continuous contact) mode only. The "START" signal from lathe fails to be continuous.	Failure of lathe interfacing.	Check lathe interfacing and condition.
	Faulty board.	Check and/or replace the board.

226

Error: open guides (2 2 6)

ERROR	CAUSE	CURE
During the machining phase, the guides are not fully closed (the sensor S2 is not energized).	Faulty sensor (S2) which detects guide closure.	Check and/or replace the sensor.
	The guides have been (possibly just partially) opened using the crank.	Close the guides.
	 CAUTION: never open the guides when machining is in progress.	

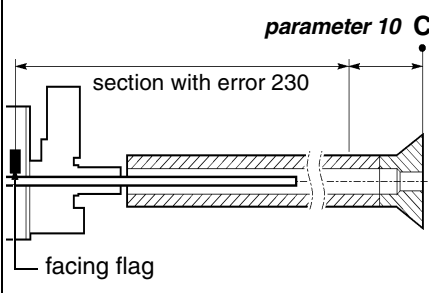
227

Error: protected motor drive (227)

ERROR	CAUSE	CURE
The feed motor has stopped or cannot be restarted.	Motor brushes are worn out.	Replace brushes.
	Short circuit in the motor	Check the motor.
	Failure of the speedometer dynamo	
	Temperature of the drive dissipator has reached the max. value.	

230

Error: stationary position before impulses (230)

ERROR	CAUSE	CURE
<p>During the facing stroke, the bar met with an obstacle, before reaching the section defined in parameter 10.</p>  <p>parameter 10 C</p> <p>section with error 230</p> <p>facing flag</p> <p>35.012 Ec.0</p>	There is an obstacle inside the spindle.	Remove the obstacle.
	Difetto di funzionamento dell'innesto elettromagnetico (Y10) d'innesto frizione.	Verificare e/o sostituire l'elettromagnete.
	L'innesto elettromagnetico della frizione é mal regolato.	Regolare l'innesto elettromagnetico.
	Difetto di funzionamento della frizione.	Verificare il livello dell'olio della frizione e lo stato di usura dei dischi.
	Encoder failure.	Check the electric connection.
		Check the encoder splining into the pinion shaft.
		Replace the encoder.
	Faulty board.	Check and/or replace the board.

Customer	Date
Bar feeder model	Y/N
Machine tool model	

LIST OF THE SELF-LEARNING VALUES

Self-learning values	Assigned value	Page
DIMENSION B - Small pusher truck stroke value	mm	13
DIMENSION Bo - Half bush opening point value	mm	14
DIMENSION L - Lubrication stop point value	mm	15
DIMENSION C - Bar facing stroke value	mm	16
DIMENSION F - Bar-pusher furthest feeding point value	mm	18

HARDWARE IDENTIFICATION DATA

PLC card	serial number:
Enabling card	serial number:
EEPROM	model:

Customer	Date
Bar feeder model	Y/N
Machine tool model	

LIST OF PARAMETERS

no. par.	Description of parameters	Phase	Default value	Assigned value	Page
1	Bar end adjustment	machining	100 mm	mm	24
2	Facing length	bar change-over	0 mm	mm	24
3	Facing mode	bar change-over	1		24
4	Short feed safety	machining	0 mm	mm	25
5	Long feed safety	machining	0 mm	mm	25
6	Quick path	machining	0 mm	mm	25
7	Open collet speed	machining	7		26
8	Open collet thrust lag	machining	0 sec.	sec.	26
9	Closed collet thrust lag	machining	0 sec.	sec.	26
10	Collet entry slowing down	bar change-over	150 mm	mm	26
11	Collet entry speed	bar change-over	100 mm/sec	mm/sec	27
12	Collet entry clutch	bar change-over	80		27
13	Impulse number	bar change-over	8		27
14	Impulse stroke	bar change-over	10 mm	mm	27
15	Bush opening	machining	80 mm	mm	28
16	Bushing closing	bar change-over	150 mm	mm	28
17	Spindle impulses on	bar change-over	0 sec.	sec.	28
18	Spindle impulses off	bar change-over	0 sec.	sec.	29
19	Cycle start lag	bar change-over	0 sec.	sec.	29
20	Remnant handling	bar change-over	1		29
21	Open collet timeout	machining	0 sec.	sec.	31
22	Workpiece timeout	machining	0 sec.	sec.	31
23	Use of synchronisation	machining	1		32
24	Bar pusher stop with closed collet	machining	0		33
25	Pieces prior to lathe stop	machining	0		33
26	Minutes prior to machine stop	machining	0 min	min	33
27	Closed collet thrust voltage	machining	7		33
28	Max. feeding position modification	bar change-over	0 mm	mm	34
30	Language	/	/		34

LIST OF PARAMETERS PROTECTED BY THE ACCESS CODE

31	Bar feeder interface control	/	1		37
32	K1 immediate exit	/	0		37
33	Type of headstock	/	1		37
34	Feeding stop mode	/	1		37
65	Type of start signal from lathe	/	1		37
66	Type of automatic signal from lathe	/	0		37

