AUTOMATIC BAR FEEDER WITH HYDRAULIC SUSPENSION

ATTACHMENTS LIST
MANUAL FOR USE AND MAINTENANCE
KEYBOARD INSTRUCTION MANUAL
SPARE PARTS BOOK
SCHEMATICS
EC CONFORMITY DECLARATION FOR MACHINE

BOSS 332-545-551 E
BOSS 332r-545r-551r E

GB **MANUAL FOR USE AND MAINTENANCE**

Rel. 1 **Date** 24/06/03 **Cod.** 346005400

S/N

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MANUFACTURER:	**IEMCA division of IGMI S.p.A.**
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	TLX 550879
TYPE OF DOCUMENT:	**MANUAL FOR USE AND MAINTENANCE**
PRODUCT:	**AUTOMATIC BAR FEEDER WITH HYDRAULIC SUSPENSION**
MODEL:	**BOSS 332-545-551 E**
	BOSS 332r-545r-551r E

IEMCA S.p.A.
Via Granarolo, 167
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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.

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

1.1 TERMS OF WARRANTY

The warranty validity is subordinated to a correct assembly and coupling of the bar feeder to lathe. In particular, before the first start-up, carry out an accurate check to make sure the bar feeder is correctly aligned with the lathe and fastened with the expansion plugs as shown in section 4.

The product warranty is valid only if the bar loader is installed by an authorized technician with Original Installation Certificate. Please ask the technician, who will make the installation, to show the certificate, in order to ascertain the quality of the technical works being carried out.
The warranty shall begin from the date on the Installation Certificate duly filled in and signed.
The document must be sent per mail to:
CUSTOMER SERVICE
IEMCA division of IGMI spa
48018 Faenza (Ra) ITALY - Via Granarolo,167


IEMCA INSTALLATION CERTIFICATE N° 1005

Company		DATE	
Customer		Participants	
Country			
Bar feeder			
Serial nr.			
Equip./Type			

SUBJECT

1.2 MANUAL PURPOSE

This manual has been written and supplied by the manufacturer, the information herewith contained has been written in Italian (manufacturer's language) to be translated to other languages, in order to comply with legal and/or commercial requirements. This manual 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 injuries, exert the maximum caution.

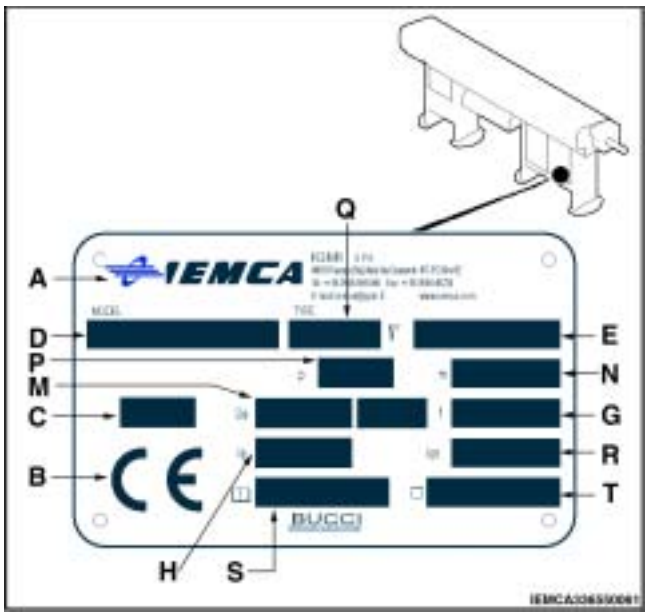
CAUTION - PRECAUTION
indicates measures to be adopted to avoid accidents or damages to property.

INFORMATION
technical instructions of particular importance.

For a quick search of topics see the table of contents.
In addition to this manual, which contains all the instructions for the bar feeder use and maintenance, one more is supplied: the "Push-button panel instruction manual".
The "Push-button panel instruction manual" contains all the instructions on how to use the installed software.

1.3 MANUFACTURER AND BAR FEEDER IDENTIFICATION

A Manufacturer's identification
B CE conformity marking
C Year of manufacture
D Bar feeder model
E Serial number
G Mains frequency
H Absorption power
M Feeding voltage
N Direct driving voltage
P Air pressure
Q Bar feeder and pusher length
R Breaking capacity
S Number of base wiring diagram
T Number of interface wiring diagram



INFORMATION:

Always provide the Manufacturer with the above mentioned specifications when requesting information or ordering spare parts, etc.

1.4 TECHNICAL ASSISTANCE

Whenever necessary, please apply to one of the Technical Assistance Centres shown in the attached list.

INFORMATION

when requesting technical assistance for the bar feeder, always specify the information shown on the machine dataplate.

1.5 ANNEXES ENCLOSED

- Push-button panel instruction manual.
- GUIDES - BAR PUSHER - REVOLVING TIPS - COLLETS. Manual for choice.
- Wiring diagram.
- Pneumatic diagram.

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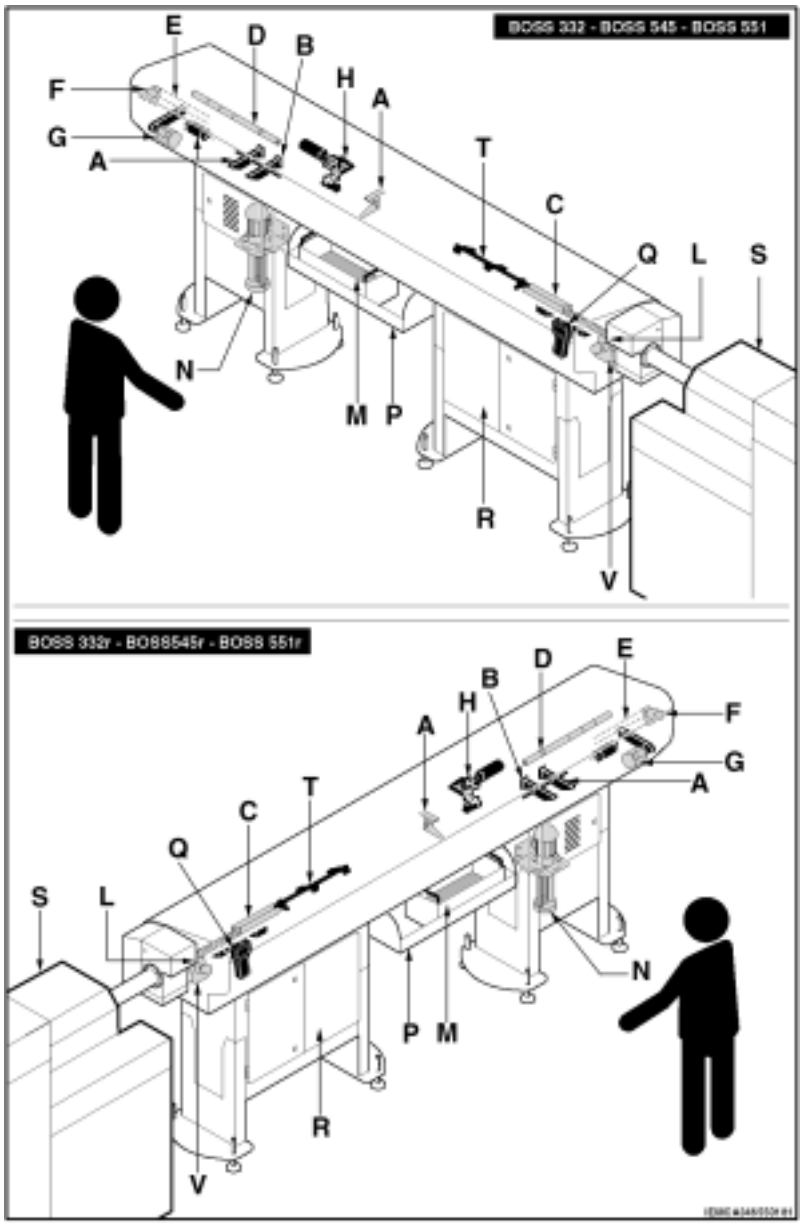
2.1 GENERAL BAR FEEDER DESCRIPTION

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 digital hand-held keyboard makes programming easier and allows the bar-feeder functions to be controlled without leaving the lathe.
The bar feeder can be used to feed bars, pipes and metallic as well as polymeric materials of different sections. Avoid flammable materials.
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.
Thanks to the use of a "BRUSHLESS" and electronically controlled motor, the bar speed, thrust value and feeding position may be determined at any time during the working 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:
BOSS 332 (standard version)
BOSS 332r (reversed version)
BOSS 545 (standard version)
BOSS 545r (reversed version)
BOSS 551 (standard version)
BOSS 551r (reversed version)
The texts, tables and illustrations contained in this manual concern, unless otherwise stated, the standard version (BOSS 332, BOSS 545 and BOSS 551) with the lathe on the operator's right.
As for the reverse version (BOSS 332r, BOSS 545r and BOSS551r), with the lathe on the operator's left, do not forget that the main parts are located on the opposite side, as mentioned below.

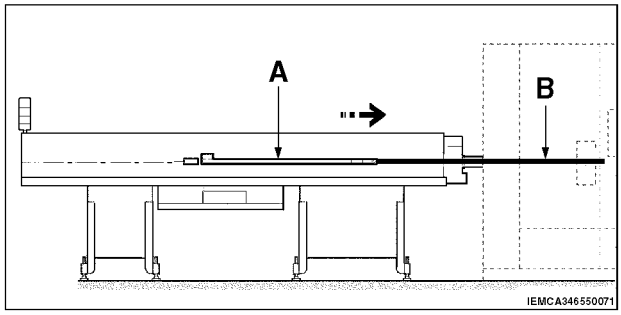
- **MAIN PARTS**



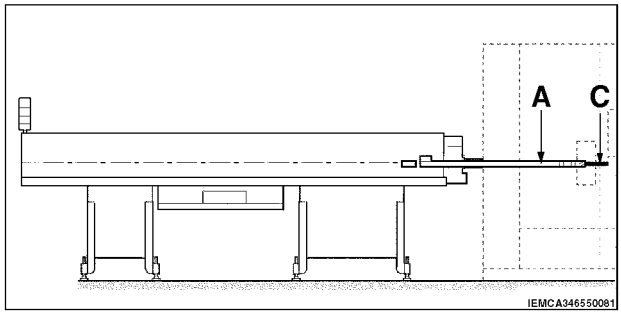
A Magazine; where bars are stored.
B Bar selection device; it allows the first bar to be lowered into the guides and holds back the remaining bars in the magazine.
C Guides; they guide the bars during machining.
D Bar-pusher; it pushes the bar during machining.
E Feed chain; it transmits motion from the drive system to the bar-pusher.
F Drive system; it drives the bar-pusher.
G 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.
H Clamps; they hold the bar during bar introduction in and extraction from the bar-pusher collet.
L Facing device; it sends a signal at bar passage.
M Remnant collection box; bar remnants are dropped into this box after extraction from the bar-pusher collet.
N Lubricating pump; it delivers oil to the guides.
P Oil recovery device; it collects oil flowing out of the guides.
Q Hand-held keyboard; it allows bar feeder programming and function actuation.
R Electric cabinet; it contains the electric switchboard.
S Lathe
T GUIDE CHANNELS OPENING SHAFT
V ENCODER

2.2 OPERATING CYCLE

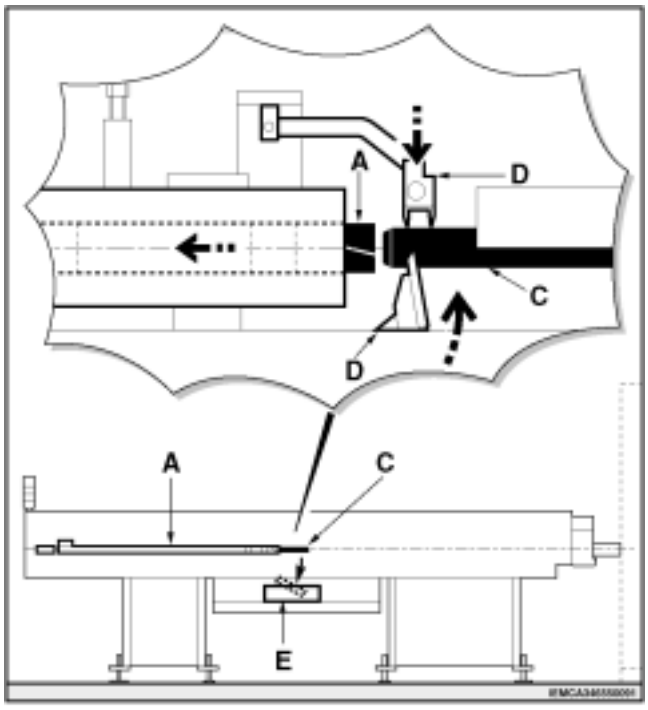
In the automatic operation mode, bar feeder movements are controlled in the sequence described below:
The bar-pusher "A" feeds bar "B" in the lathe by following lathe impulses until bar end.



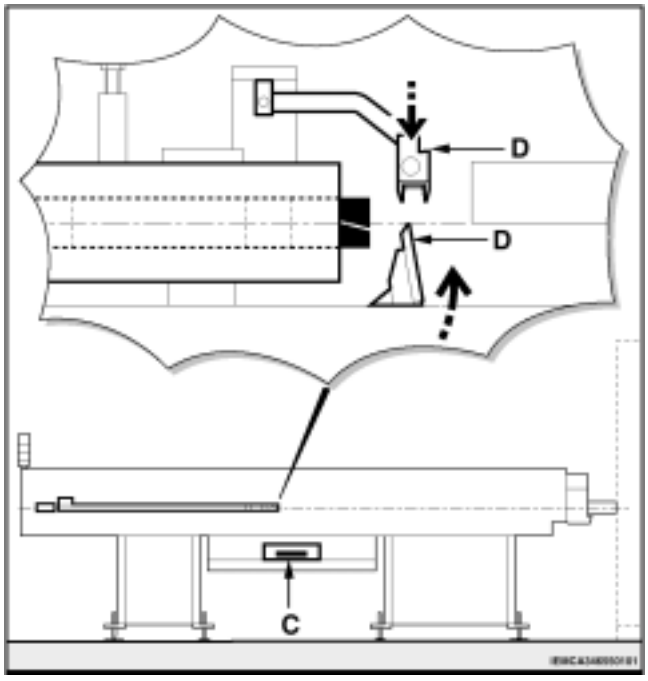
The bar-pusher A and remnant C are in their forwards limit stop position.



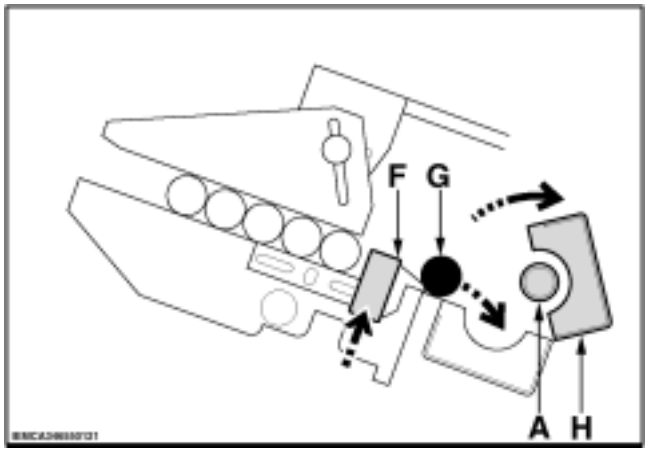
The bar-pusher A and remnant C reach their backwards limit stop position.
The clamps D close and the bar-pusher moves back; the remnant is extracted from the collet.
The clamps open and the remnant is dropped into the box E.



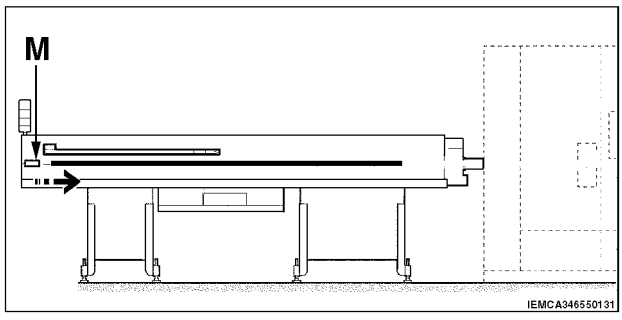
Clamps "D" close again to perform remnant "C" extraction check.
If the remnant is still inserted in the bar-pusher collet, the feeder stops; otherwise, it continues its cycle.



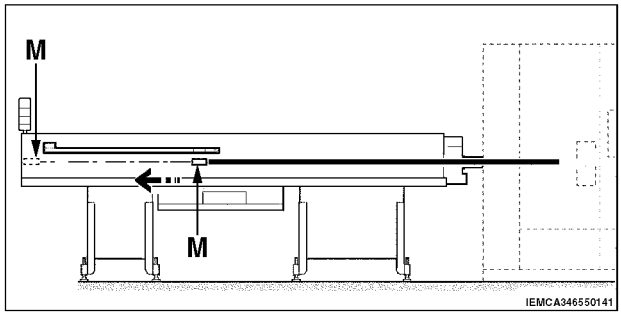
Upper guides "H" open together with bar pusher "A"; the bar selection device "F" moves upwards thereby raising the first bar and withholding the remaining bars. Bar "G" drips into the guide channel.
Bar selection device "F" is lowered.



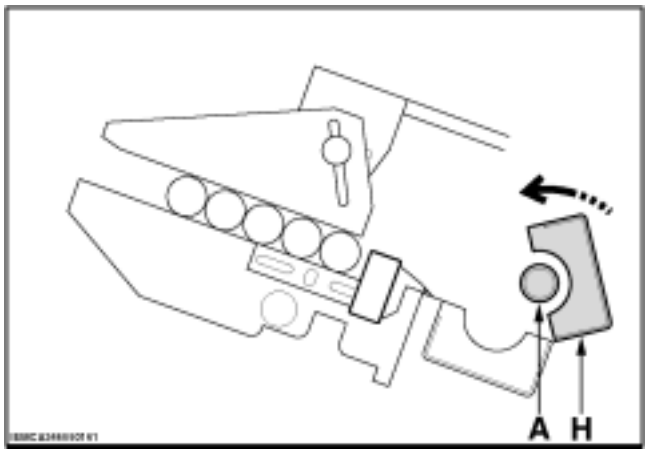
The small pusher truck "M" starts its stroke.



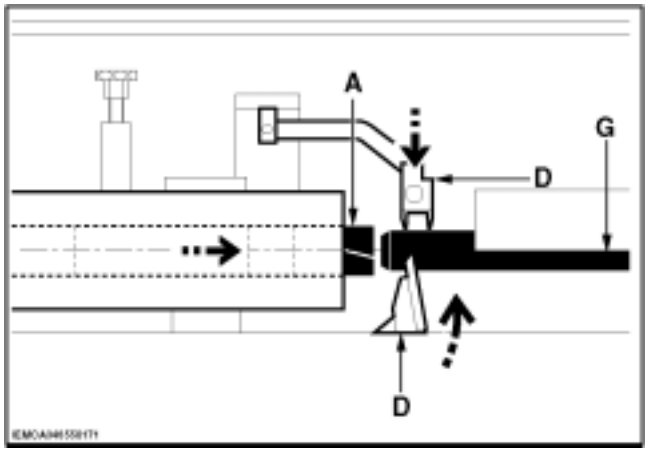
When the small pusher truck "M" completes its stroke, the required space has been created for bar-pusher insertion.
The small pusher truck executes its return stroke.



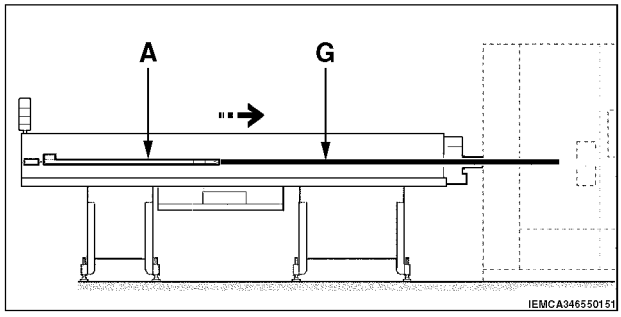
The upper guides H are closed; the bar-pusher A is positioned along the spindle axis.



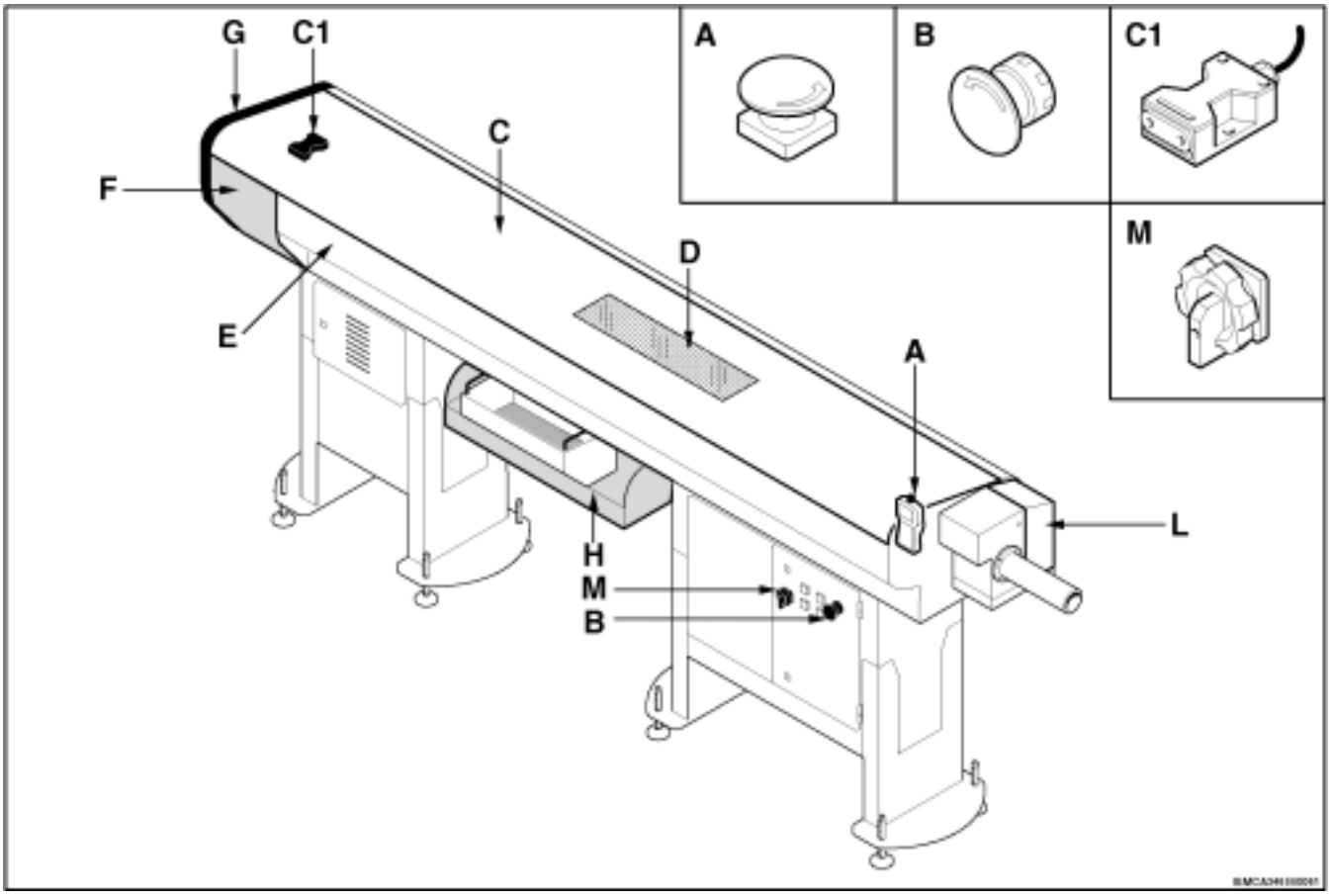
The clamps "D" close, the bar-pusher "A" moves forwards; the bar "G" is inserted into the bar-pusher collet.



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



2.3 SAFETY DEVICES



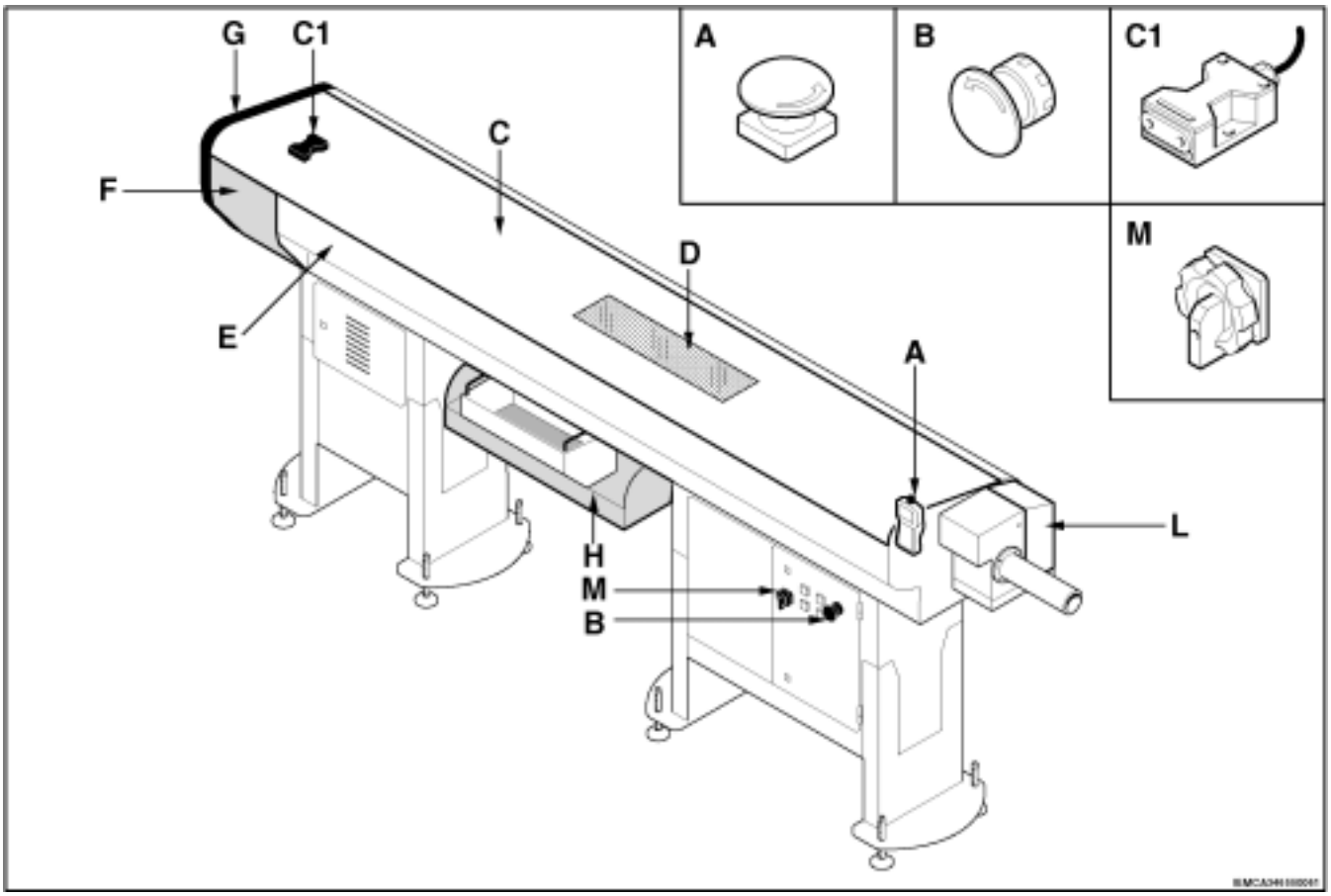
A Emergency button; by working it, all feeder and lathe functions are stopped in an emergency situation.

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

C Interlocked mobile guard: associated with microswitch C1.
According to the cycle setting, its functions are:

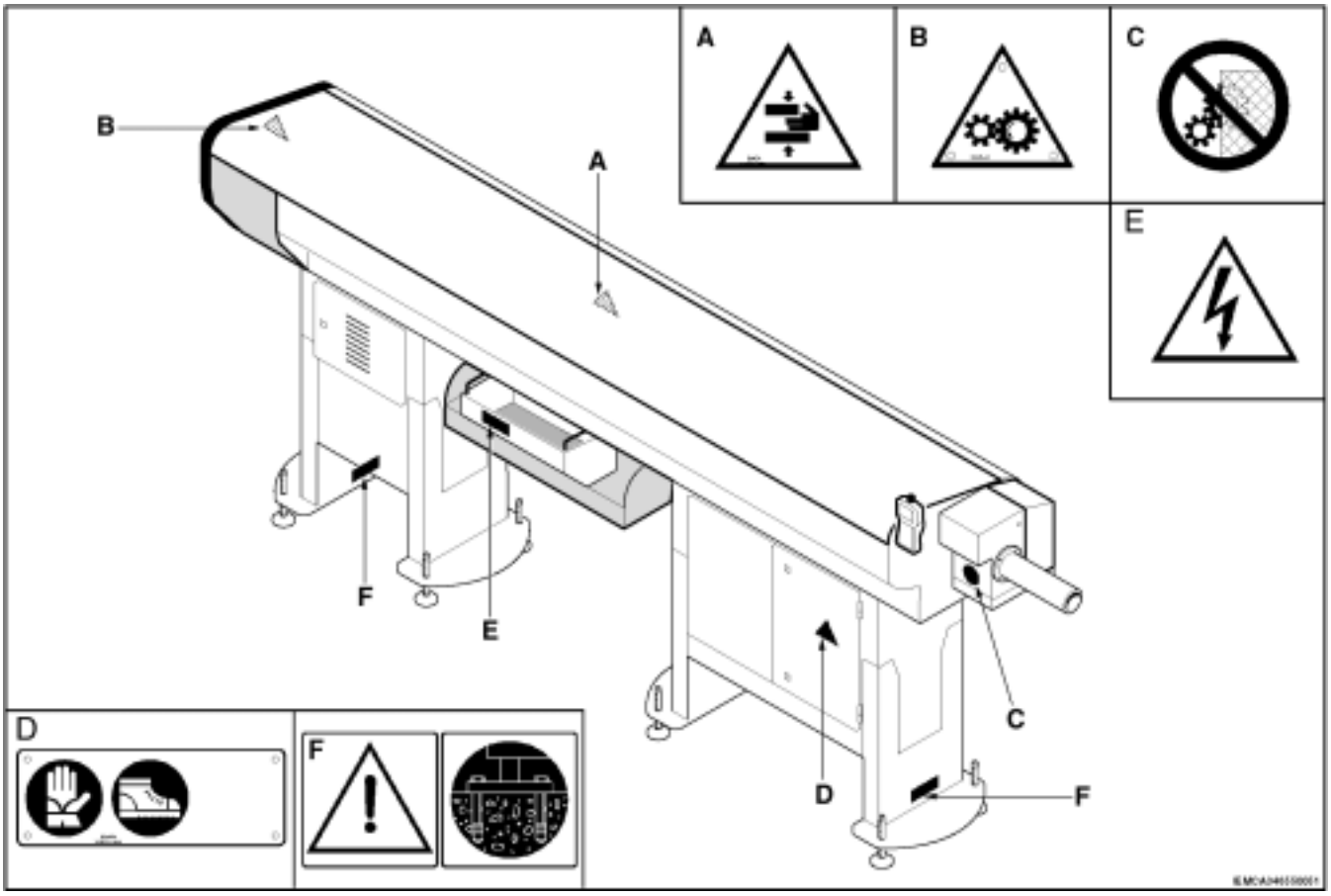
manual cycle;
- when the guard is opened the feeder will be stopped if the guides are not closed.
- when the guard is opened, if the guide channels are closed the feeder functions are not disabled because no operator risks are present.

automatic cycle;
- during the bar feeding phase guard opening may be necessary for the purpose of restocking the magazine. Even if the feeder functions are not disabled there are no operator hazards present inside the area.
- during the bar change procedure the feeder will stop when the guard is opened. Closing the guard allows the user to restart the feeder.



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.
L Fixed guard: it prevents accidental access to the bush-holder device.
M Main switch: cuts out the electric energy source during interventions in the electric switchboard and during the bar feeder periods of inactivity.

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.
E Caution! Danger of electric contact.
F Warning: fix the bar feeder to the ground.

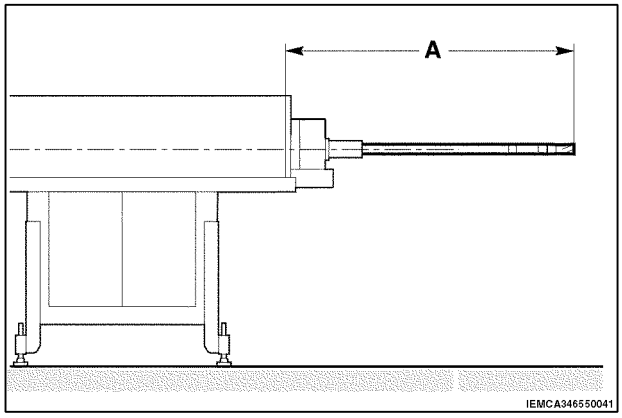
2.5 VERSION DESCRIPTION

Table 1. Maximum bar length

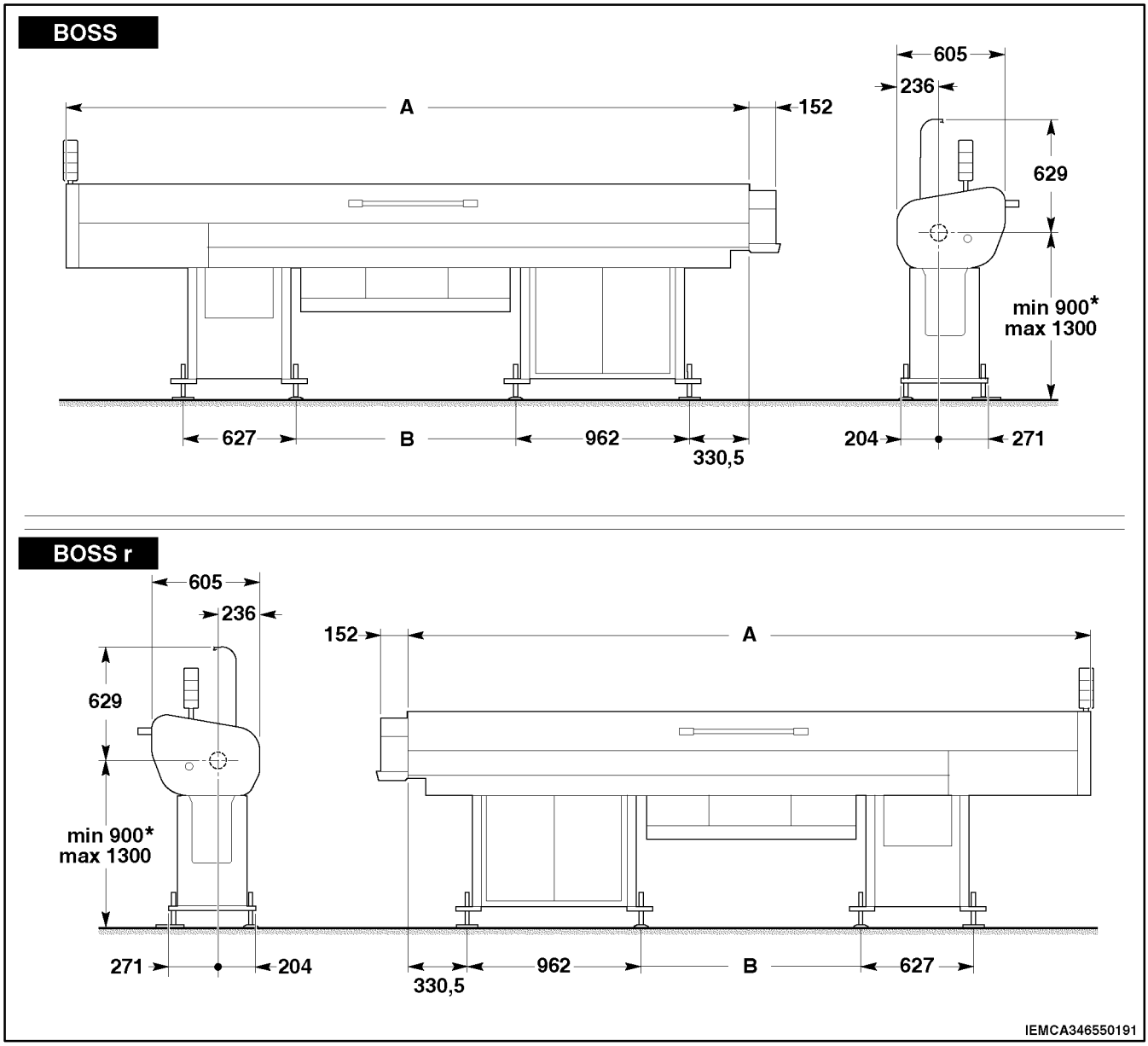
Model	Version	Max. length mm (ft)
BOSS 332 BOSS 545 BOSS 551	21	2080 (6,8)
	32	3200 (10,5)
	37	3740 (12,2)
	44	4400 (14,4)

Table 2. Max. bar-pusher extension

Model	Version	A – Max extension (mm)
BOSS 332 BOSS 545 BOSS 551	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)
BOSS 332 – BOSS 332r BOSS 545 - BOSS 545r BOSS 551 - BOSS 551r	21	2603	/
	32	3802	1220
	37	4342	1760
	44	5002	2420

Table 4. General technical specifications

	BOSS 432		**BOSS 545/551**	
Round bar size	Ø min 4 mm (5/32")	Ø max 32 mm (1" 1/4)	Ø min 5 mm (3/16")	Ø max 545 45 mm(1" 3/4) Ø max 551 51mm(2")(***)
Hex bar size (key socket)	min 4 mm (3/16")	max 27 mm (1" 1/16)	min 5 mm (3/16")	max 36 mm(*) (1" 7/16)
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. 21 – 2080 mm (6,9 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. 28 barre ø 10 mm (3/8")		n. 28 barre ø 10 mm (3/8")	
(Adjustable) feeding speed	Max 1000 mm/sec		Max 750 mm/sec	
(Adjustable) return speed	Max 1800 mm/sec		Max 1200 mm/sec	
Remnant length (standard version)	400 mm		Mod. 21 – 295 mm 400 mm	
Remnant length (oversize version *)	700 mm		700 mm	
Bar change-over time (with 3000 mm bar) Version 32	30 sec		30 sec	
Input voltage	230/400 Volt		230/400 Volt	
Mains frequency	50 Hz / 60 Hz		50 Hz / 60 Hz	
Control voltage	24 Volt D.C.		24 Volt D.C.	
Installed power	2 kW		2 kW	
Oil quantity	57 l		57 l	
Air max. pressure.	8 bar		8 bar	
Pneumatic energy average consumption (**)	20 NL/min		20 NL/min	
Dry weight	Mod. 32 – 835 kg. Mod. 37 – 900 kg. Mod. 44 – 980 kg.		Mod. 21 – 620 kg. Mod. 32 – 835 kg. Mod. 37 – 900 kg. Mod. 44 – 980 kg.	

(*) excluded version 32 LL and 21
(**) Approximate value depending on the number of activation cycles.
(***) valid also for prepared bars or normal bars machined with front remnant ejection.

Table 5. Working axis height

Model	Upper screws position	X (mm) Working axis height	Y (mm) Max. loading height Y
BOSS 332 BOSS 545 BOSS 551	**1**	900÷940	1090
	2	935÷975	1125
	3	970÷1010	1160
	4	1005÷1045	1195
	5	1040÷1080	1230
	6	1075÷1115	1265
	7	1110÷1150	1300
	8	1145÷1185	1335
	9	1180÷1220	1370
	10	1215÷1255	1405

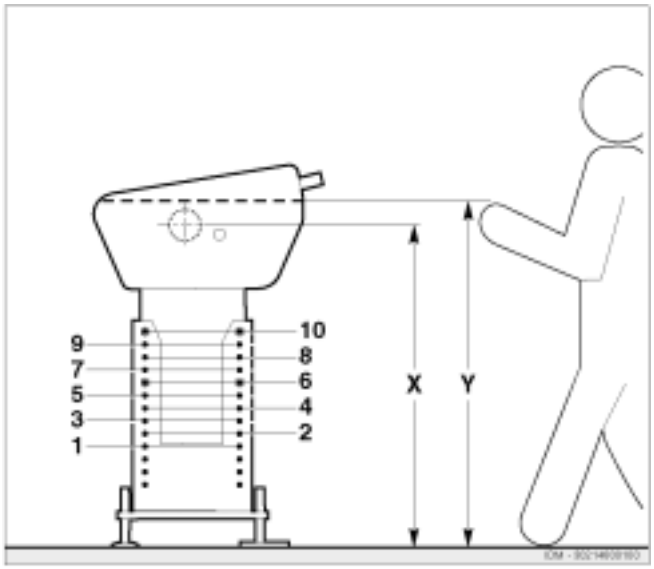


Table 6. BOSS 332 guide, bar pusher, bar and tube diameters

Model	Guide diameter (mm)	Bar-pusher diameter (mm)	Bar diameter (mm)		Largest tube diameter (mm) (*)
			Min.	Max.	
BOSS 332	13	10	3	8	10
		12	4	10	12
	17	15	5	13	15
		16	5	14	16
	21	18	5	16	18
		19	5	17	19
		20	5	18	20
	26	23	8	21	23
		25	8	23	25
	28	25	8	23	25
		27	8	25	27
	33	30	8	27	30
		31	8	28	31
		32	8	29	32
	36	32	8	29	32
		35	8	32	32

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

CAUTION:

Barstock diameters for any guide channel are only given as an example. A barstock diameter approximately 10 mm smaller than the guide channel diameter may cause vibration and failure to the bar feeder. Therefore, it may be necessary to slow down the bar rotation speed or to change the guide channel diameter in order to obtain the best performance for a specific application.

CAUTION:

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

INFORMATION:

The bar feeder is normally provided with a bar pusher with a diameter equal to the maximum barstock guide channel offered by the lathe. Sometimes, in order to ensure the best working conditions, it can be necessary to use a bar pusher with a smaller diameter.

Table 7. BOSS 545 guide, bar pusher, bar and tube diameters

Model	Guide diameter (mm)	Bar-pusher diameter (mm)	Bar diameter (mm)		Largest tube diameter (mm) (*)
			Min.	Max.	
BOSS 545	13	10	5	8	10
		12	5	10	12
	17	15	5	13	15
		16	5	14	16
	21	18	5	16	18
		19	5	17	19
		20	5	18	20
	26	23	8	21	23
		25	8	23	25
	28	25	8	23	25
		27	8	25	27
	33	30	8	27	30
		31	8	28	31
		32	8	29	32
	36	32	8	29	32
		35	8	32	35
	38	37	8	34	37
	43	40	10	37	40
		42	10	39	42
	46	42	10	39	42
		45	10	42	45
	52	51	12	45	45

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

CAUTION:

Barstock diameters for any guide channel are only given as an example. A barstock diameter approximately 10 mm smaller than the guide channel diameter may cause vibration and failure to the bar feeder. Therefore, it may be necessary to slow down the bar rotation speed or to change the guide channel diameter in order to obtain the best performance for a specific application.

CAUTION:

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

INFORMATION:

The bar feeder is normally provided with a bar pusher with a diameter equal to the maximum barstock guide channel offered by the lathe. Sometimes, in order to ensure the best working conditions, it can be necessary to use a bar pusher with a smaller diameter.

Table 8. BOSS 551 guide, bar pusher, bar and tube diameters

Model	Guide diameter (mm)	Bar-pusher diameter (mm)	Bar diameter (mm)		Largest tube diameter (mm) (*)
			Min.	Max.	
BOSS 551	13	10	5	8	10
		12	5	10	12
	17	15	5	13	15
		16	5	14	16
	21	18	5	16	18
		19	5	17	19
		20	5	18	20
	26	23	8	21	23
		25	8	23	25
	28	25	8	23	25
		27	8	25	27
	33	30	8	27	30
		31	8	28	31
		32	8	29	32
	36	32	8	29	32
		35	8	32	35
	38	37	8	34	37
	43	40	10	37	40
		42	10	39	42
	46	42	10	39	42
		45	10	42	45
	52	51	12	47	51

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

CAUTION:

Barstock diameters for any guide channel are only given as an example. A barstock diameter approximately 10 mm smaller than the guide channel diameter may cause vibration and failure to the bar feeder. Therefore, it may be necessary to slow down the bar rotation speed or to change the guide channel diameter in order to obtain the best performance for a specific application.

CAUTION:

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

INFORMATION:

The bar feeder is normally provided with a bar pusher with a diameter equal to the maximum barstock guide channel offered by the lathe. Sometimes, in order to ensure the best working conditions, it can be necessary to use a bar pusher with a smaller diameter.

Table 9. BOSS 332 guides lubricating oils

ISO/UNI rating	Make	Name
C class CKB 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	Vectra 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

Tab.10. BOSS 545/551 guides lubricating oils

ISO/UNI rating	Make	Name
C class CKB 150	Agip	Acer 150
	Api	Api Cis 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	Vectra Oil Heavy
	Olio FIAT	Daphne LPN 150
	Roloil	Arm V 150
	Shell	Vitrea 150 Tellus C 150
	Tamoil	Industrial Oil 150
	Texaco	Omnis 150
	Total	Cortis 150 Azolla ZS 150
	Q8	Verdi 150

Oil quantity: 57 l.

Tabella 11. Air lubricator oils

ISO/UNI DESIGNATION	BRAND	DENOMINATION
ISO VG10	BP	Energol HP 10
	Esso	Spinesso 10
	Mobil	DTE 21
	Shell	Tellus C 10

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 *) dB(A);
- hexagonal steel bars within 83 dB(A);
- brass hexagonal bars within 85 dB(A);

The noise lever depends on the lathe working condition as well as on the bar type being machined.
Whenever necessary, operators must wear PPE (personal protective equipment)provided for by the accident prevention regulations in force in the country in which the machine is installed.

- *) Measurements taken on round bar Ø35mm, guide channel Ø36mm , bar straightness < 5%, 3750 Rpm, on a Biglia B501 lathe, serial number.

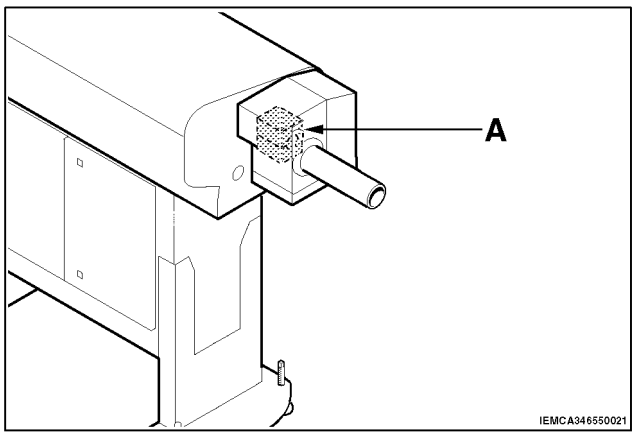
2.7 FITTINGS - FOREWORD

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

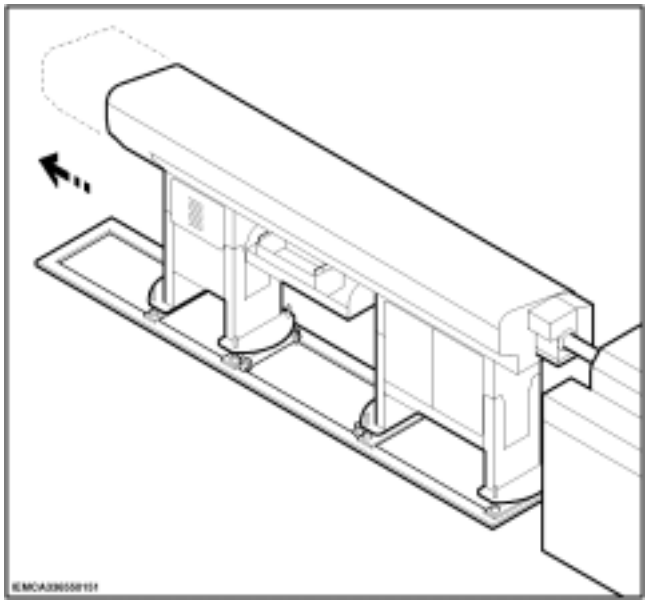
It is attached to the front part of the bar feeder. Its function its to reduce bar vibrations to a minimum, by keeping the bar centered during rotation through two half bushes A, which are coupled to form a round channel with a diameter just slightly larger than that of the bar being machined.
In many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



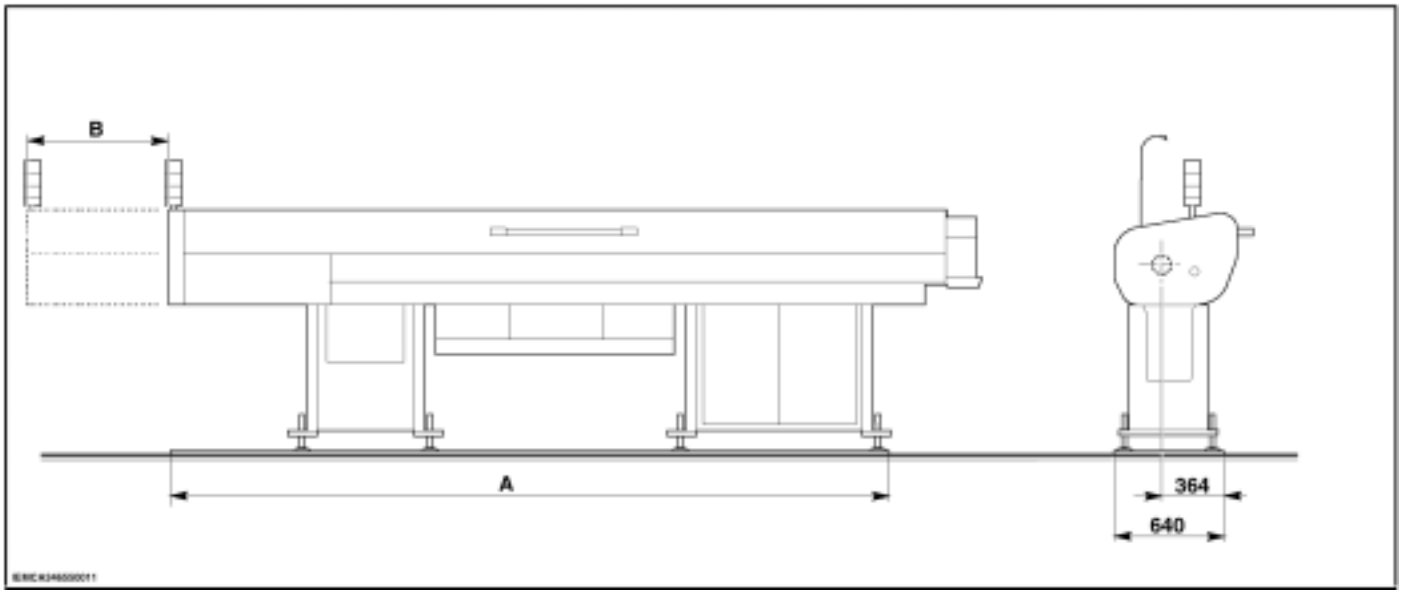


Table 12. Overall dimensions

Model	Version	A (mm)	B (mm)
BOSS 332 – BOSS 332r BOSS 545 - BOSS 545r BOSS 551 - BOSS 551r	21	1880	800
	32	3170	900
	37	3770	900
	44	4370	900

2.8 DEVICE FOR SLIDING HEADSTOCK LATHES - FOREWORD

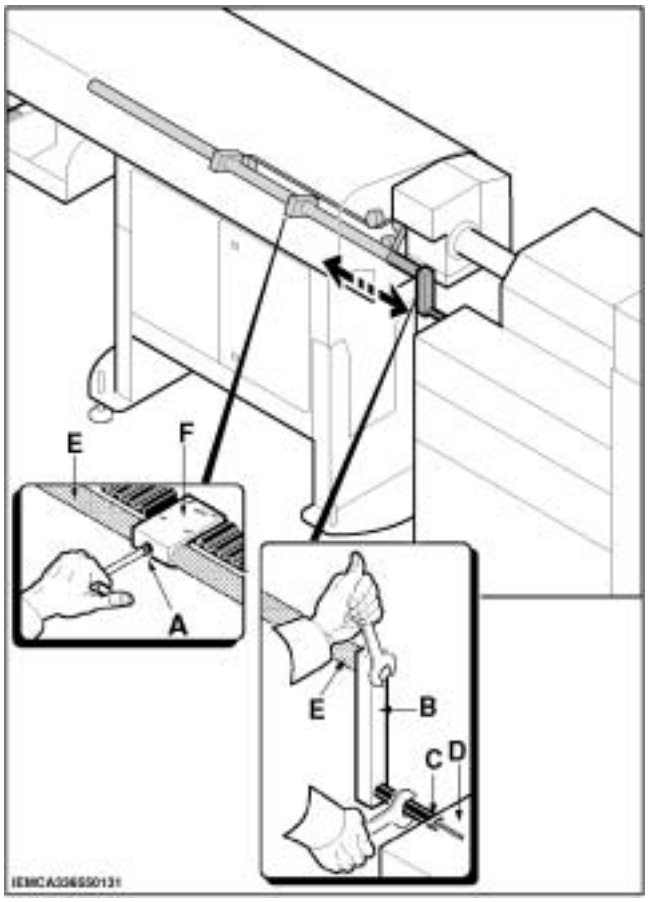
This feeder has been designed and manufactured to be coupled to sliding headstock lathes too. To do this, special devices are available which are listed and then described below:

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.

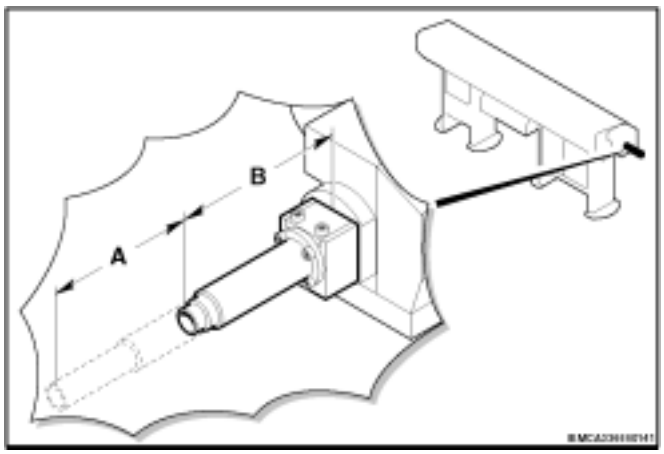


Table 13. Max stroke and overall dimensions

Model	Max stroke A (mm)	Overall dimensions B (mm)
BOSS 332 BOSS 545 BOSS 551	200	270
	210	270
	230	300
	280	430
	330	480

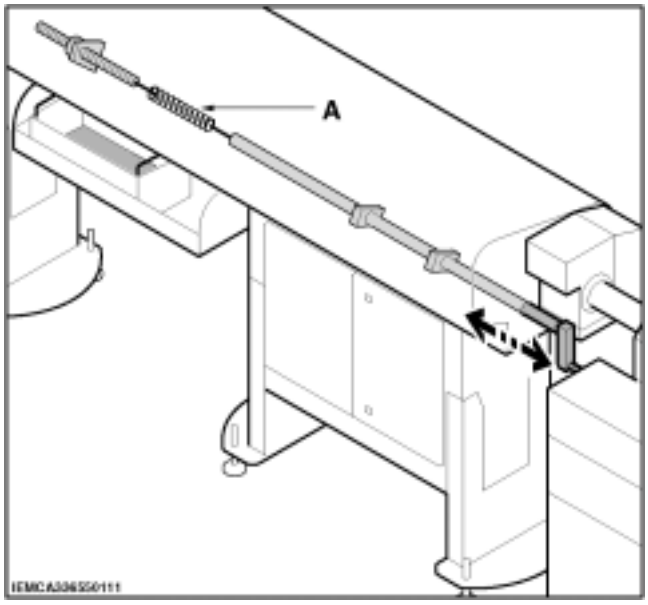
2.9 DEVICES FOR CAM LATHES - FOREWORD

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

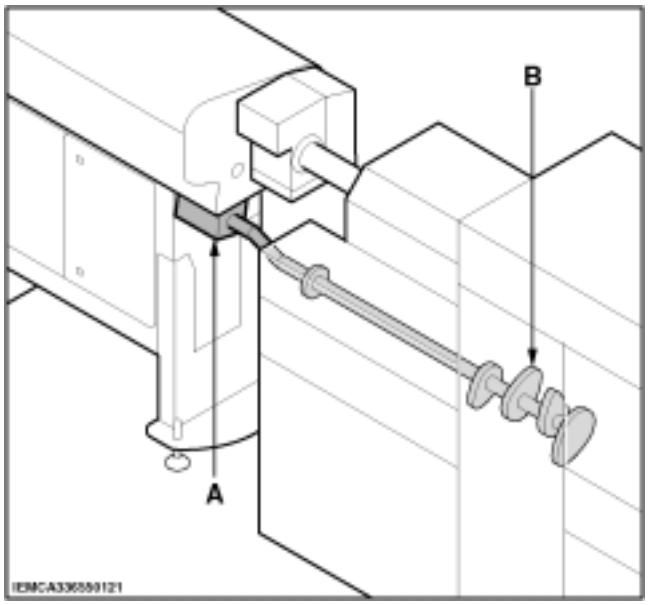
2.9.1 Headstock return device - Description

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

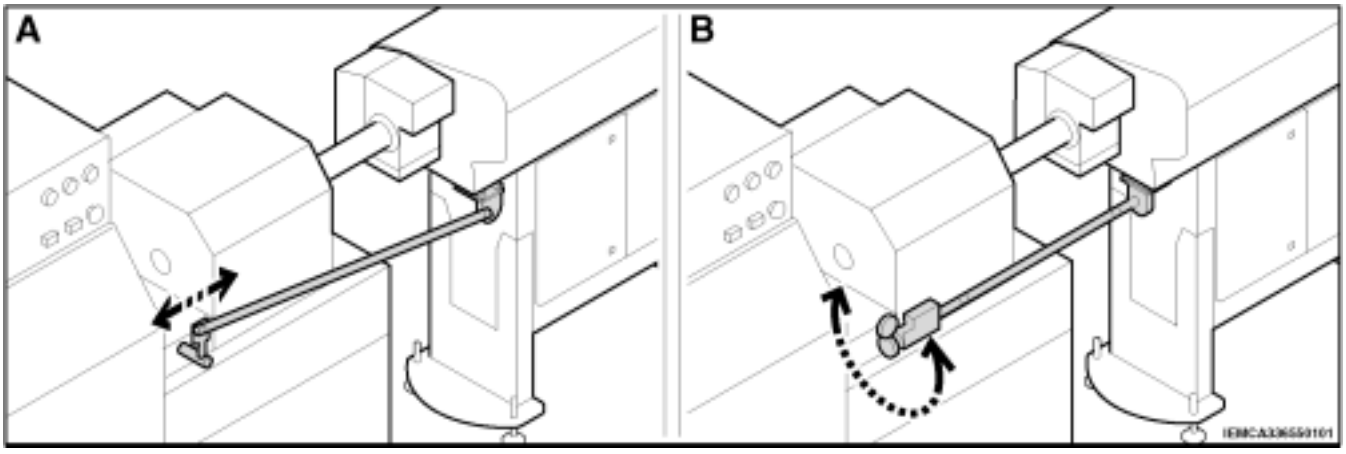
Used to synchronize the feeder and cam lathe movements. The cams located in the box A are connected to the lathe camshaft B.



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.

A Axial version
B Radial version



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3.1 GENERAL SAFETY PRESCRIPTIONS

It is of the utmost importance to read this manual carefully before installing, using or servicing the bar feeder or performing any other work . Constant compliance with the instructions in this manual is a guarantee of protection against injury.

- The operator and skilled engineer must perform only their specified duties.
- Do not tamper with the safety devices for any reason whatsoever.
- Comply strictly with the work health and safety regulations issued by the relevant authorities in the country of installation of the machine.
- IEMCA declines any liability whatsoever for injury to persons or damage to property if the relevant safety prescriptions are disregarded.

3.2 HANDLING AND INSTALLATION - Safety

- The bar feeder must be handled using suitable means and methods.
- Persons must not stand or transit underneath a suspended load, or within the range of action of the crane, lift truck or other suitable means of lifting and transportation.
- The working area and bar loading area must be cordoned off to prevent collisions between the operator and machines used to transport or handle the barstock or other materials.
- Correct positioning of the bar feeder, adequate lighting and a clean working environment are of the utmost importance as far as personal safety is concerned.
- The electric system connection must be made exclusively by skilled electricians.
- Make sure the electrical system is connected to an efficient earth circuit by means of a dedicated wire.

3.3 ADJUSTMENTS AND SETTING UP - Safety

- Carry out the adjustments as described in the user manual.
- Do not change working parameters to obtain performances other than those envisaged in the design and testing phases.
- Do not adjust the bar feeder when it is running unless expressly requested to do so in the manual.
- Do not feed the machine with bars having dimensions different from those recommended by the manufacturer.
- Do not use hoses as handholds.

3.4 USE AND OPERATION - Safety

- The working area around the bar feeder must always be kept clean and uncluttered and its surface must be slip resistant in order to allow immediate access to the emergency devices and bar loading to be performed without creating obstructions or danger.
- Perform the cycle starting sequence as prescribed.
- Keep hands and other parts of the body well clear of moving parts or live electrical parts.
- Remove bracelets, watches, rings and neckties.
- Whenever necessary, use strong work gloves with 5 fingers, which do not reduce the sensitivity or power of your grip.
- Wear working shoes as well as personal protection devices provided for by the accident prevention regulations in force in the country in which the machine is installed.
- Inform maintenance personnel of all operating anomalies that come to your attention.
- Before starting the bar feeder, make sure that there are no personnel engaged in servicing or cleaning the machine.

3.5 BAR FEEDER MAINTENANCE - Safety

- Do not allow unauthorized persons to carry out maintenance.
- Read this manual carefully before carrying out maintenance.
- Do not lubricate, repair or adjust the bar feeder while it is running, unless expressly indicated to do so in the manual.
- Stop the bar feeder in accordance with the prescribed methods before carrying out lubrication or other work.
- Do use matches, lighters or torches when servicing the machine in the presence of inflammable fluids.
- Keep spent oil in suitable containers and consign it to companies specialized in the storage and disposal of polluting waste products.
- Do not pollute the environment.
- Use original IEMCA spare parts only.

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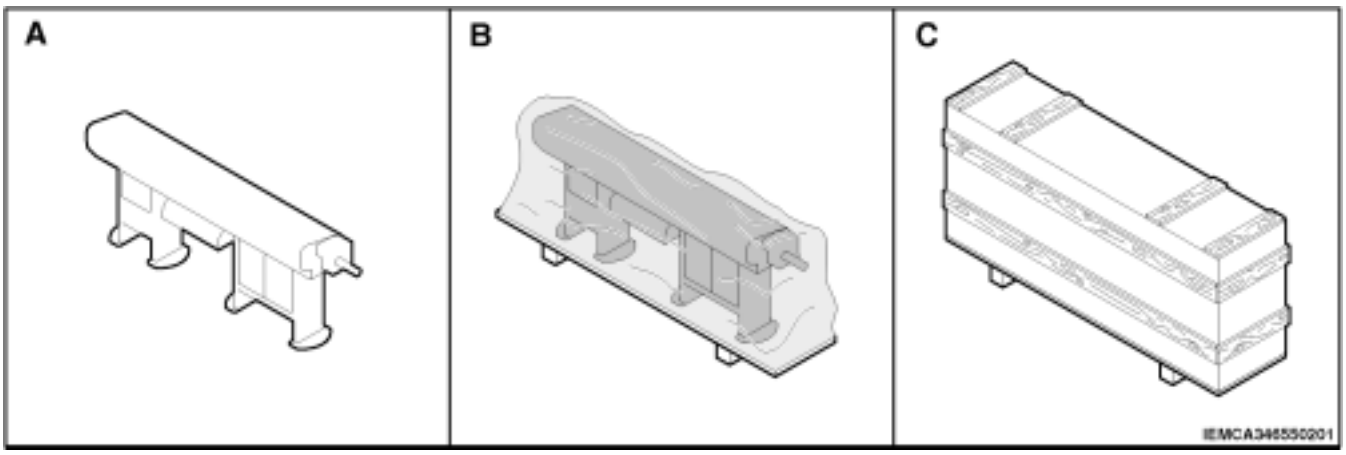
4.1 PACKAGING

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.



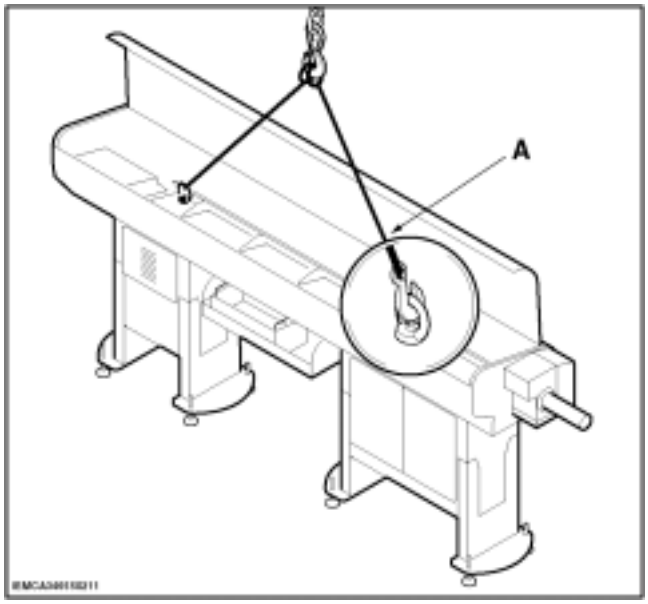
4.2 LIFTING

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.

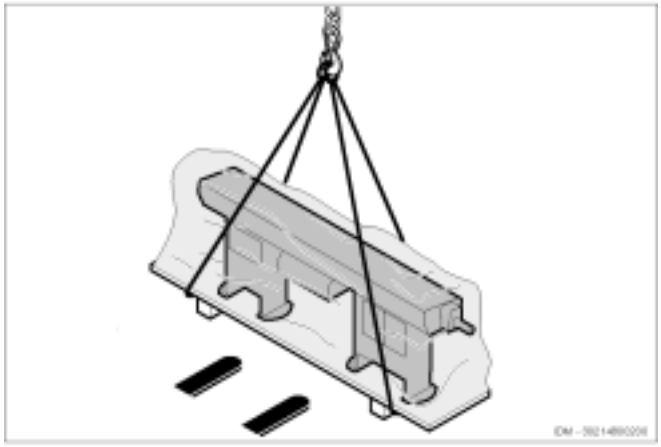
LIFTING WITH NO PACKAGING

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



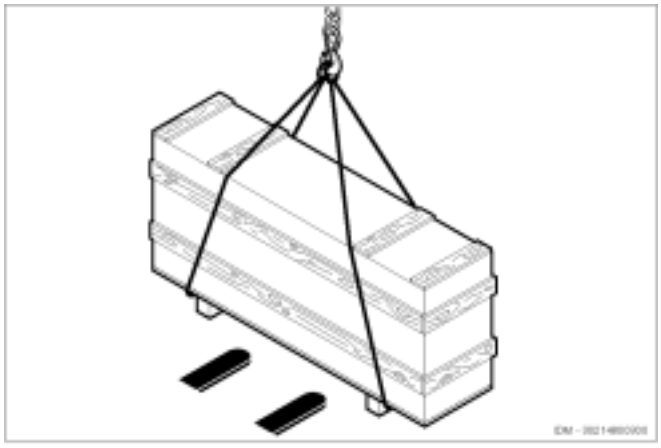
LIFTING WITH PALLET

- Use a hook (or fork) type lifting device or of suitable capacity (see information on packaging).



LIFTING WITH CRATE

- Use a hook (or fork)type lifting device of suitable capacity (see information on packaging).

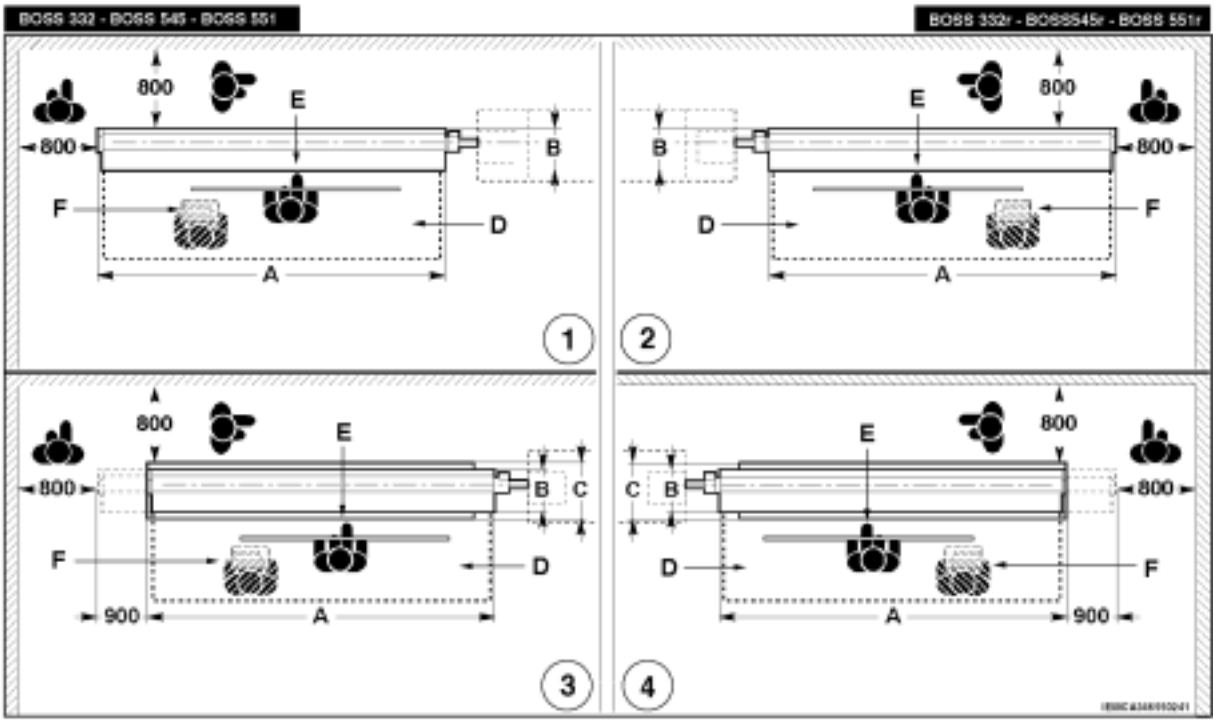


ATTENTION:

never use any different lifting system or device from the ones above.

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.



1-2 Without axial displacement
3-4 With axial displacement

Table 1. Overall dimensions

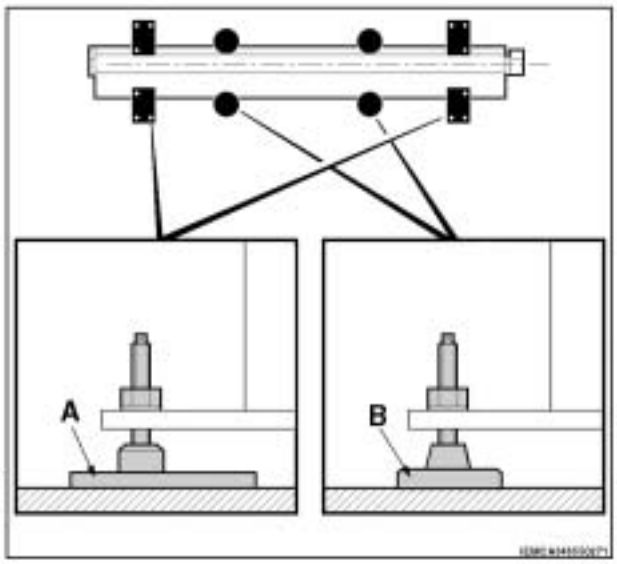
Model	Version	A (mm)	B (mm)	C (mm)
BOSS 332/332r BOSS 545/545r BOSS 551/551r	21	2603	605	640
	32	3802		
	37	4342		
	44	5002		

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).

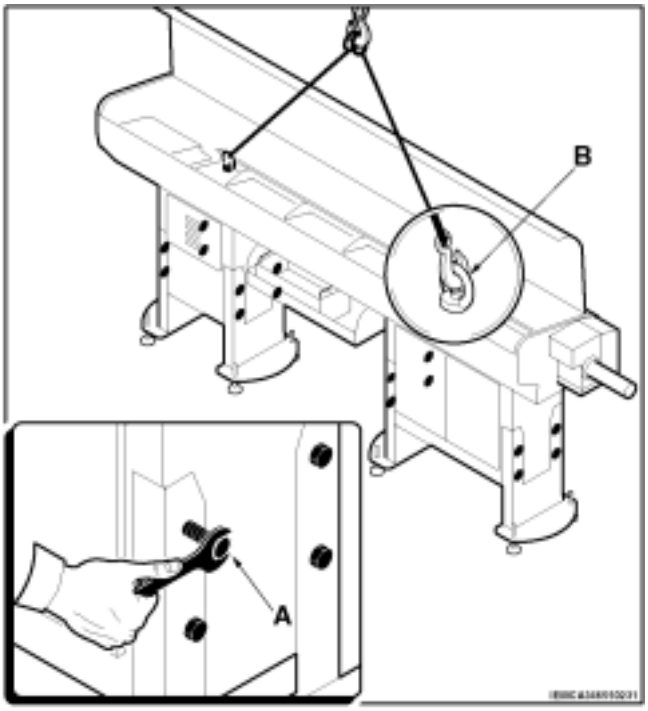
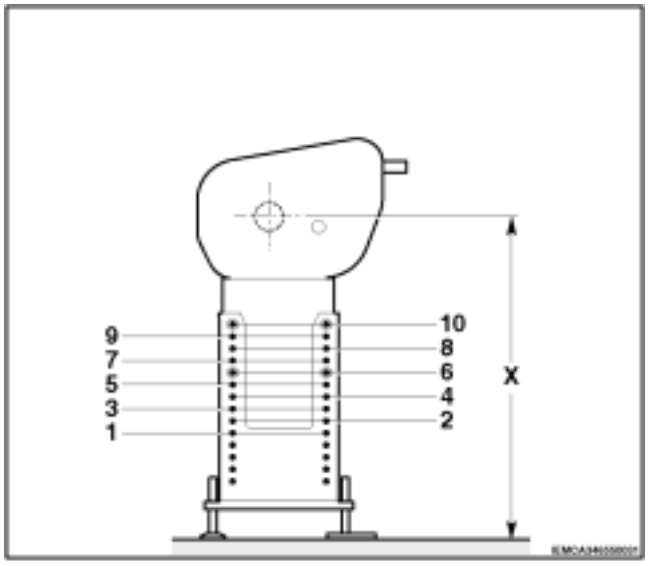


Table 2. Working axis height



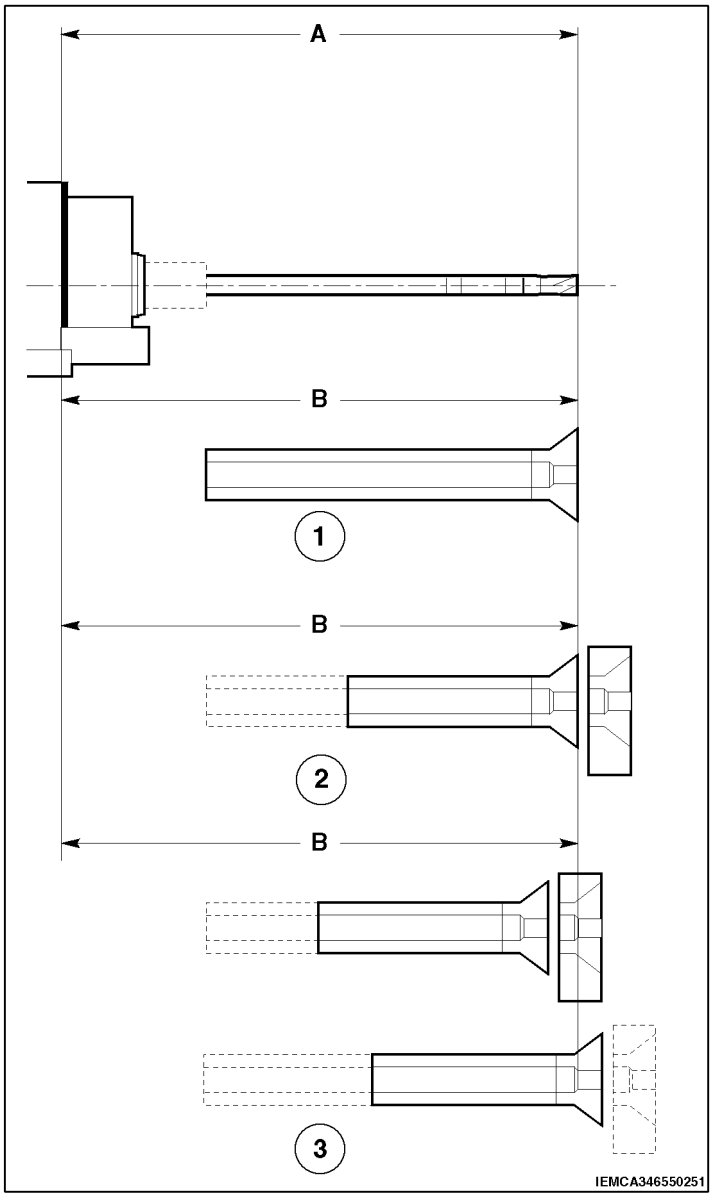
Model	Upper screws position	X (mm) Working axis height	Y (mm) Max. loading height Y
BOSS 332 BOSS 545 BOSS 551	**1**	900÷940	1090
	2	935÷975	1125
	3	970÷1010	1160
	4	1005÷1045	1195
	5	1040÷1080	1230
	6	1075÷1115	1265
	7	1110÷1150	1300
	8	1145÷1185	1335
	9	1180÷1220	1370
	10	1215÷1255	1405

- Tighten the "A" screws and remove the "B" eyebolts.

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".

1 Fixed headstock or steady rest lathe
2 Sliding headstock N.C. lathe
3 Sliding headstock cam lathe



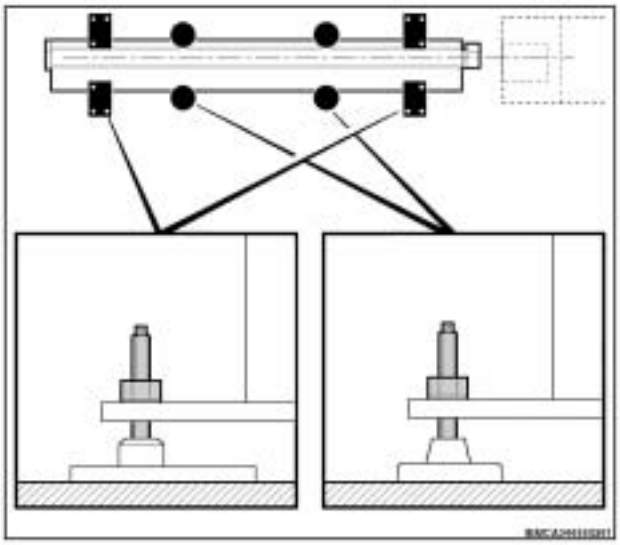
INFORMATION:

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.

Table 3. Max. bar-pusher extension

Model	Version	A – Max extension (mm)
BOSS 332 BOSS 545 BOSS 551	N	937
	L	1267
	LL	1597

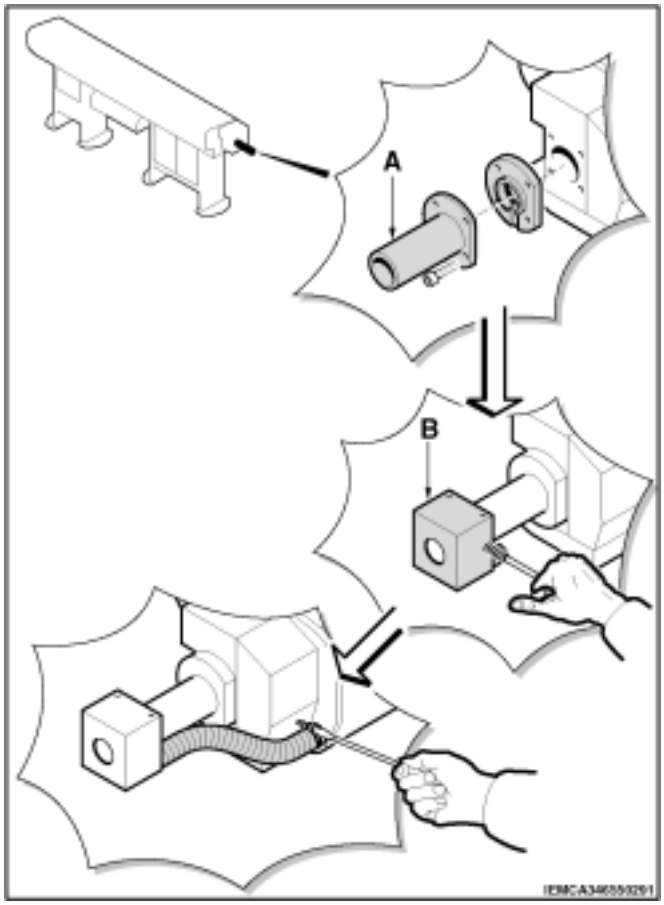
- Roughly adjust the working axis height to obtain alignment with the lathe by turning the feet screws.



4.4.4 Sleeve - Installation

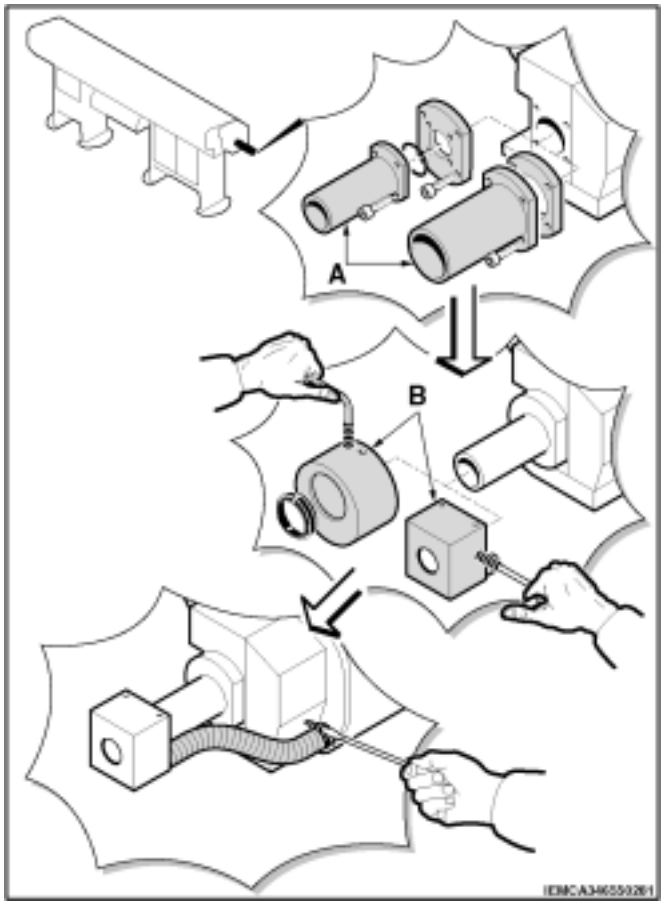
BOSS 332

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



BOSS 545 - BOSS 551

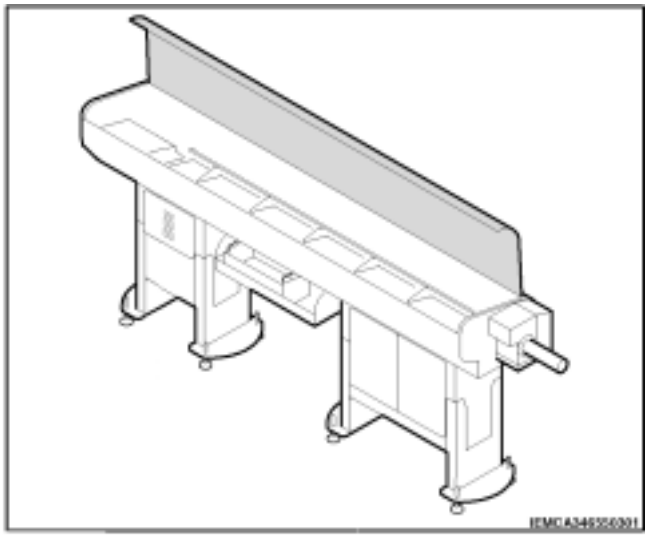
- Install the sleeve "A" in the bush holder device.
- Install the oil recovery device "B".
- Connect the drain pipe to the tank.



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.



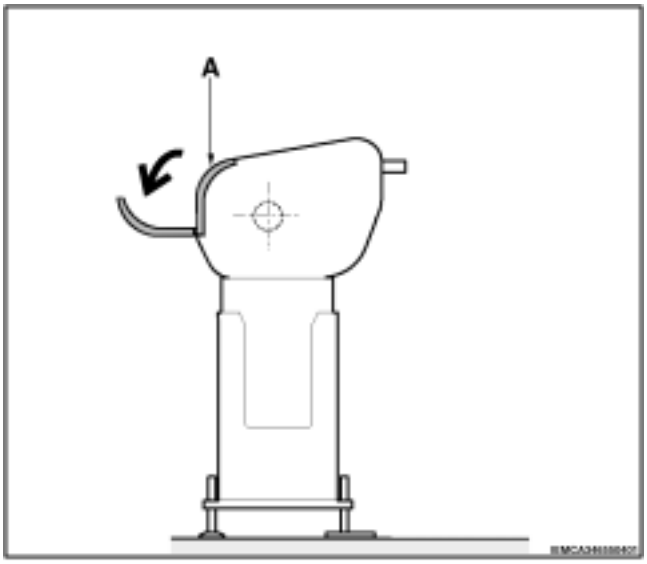
CAUTION:

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

PRELIMINARY PROCEDURE

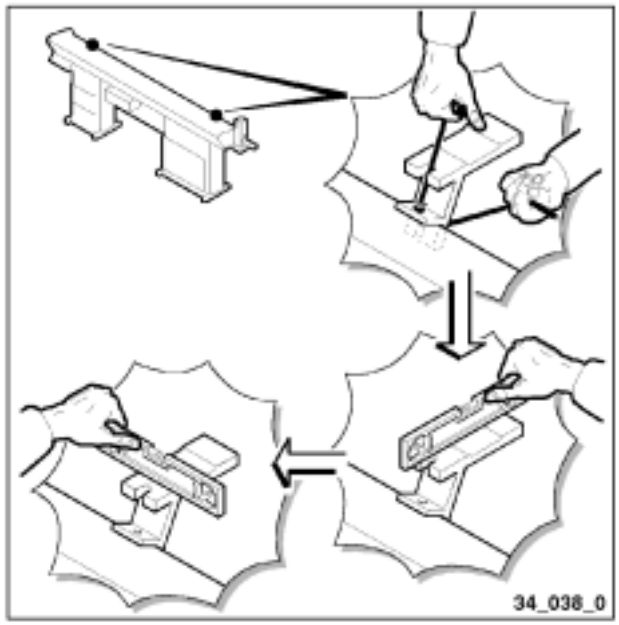
- Open the upper guard.

- Open rear guard "A".

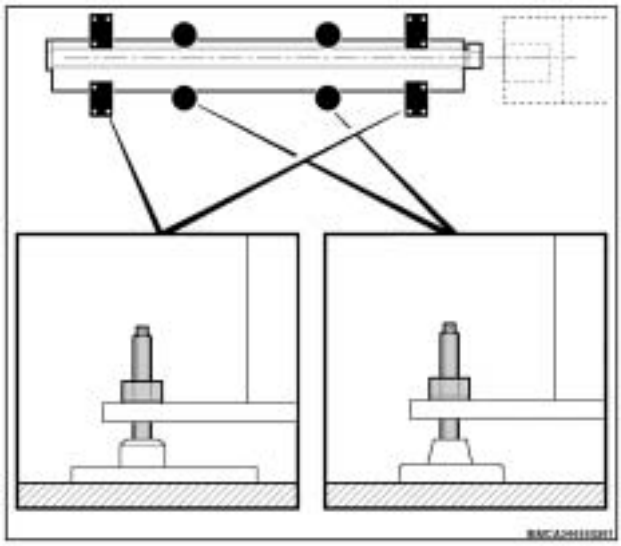


LEVELLING

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

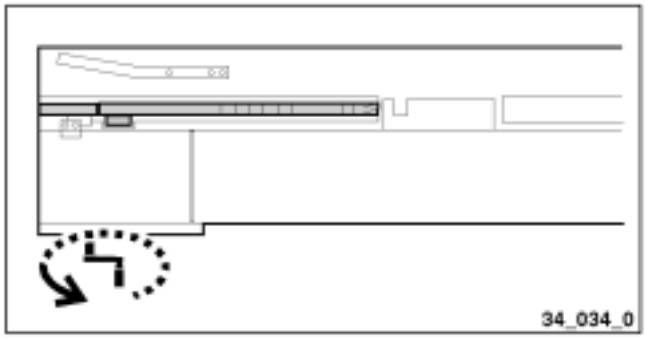


- Carry out the required connections by turning the feet screws.

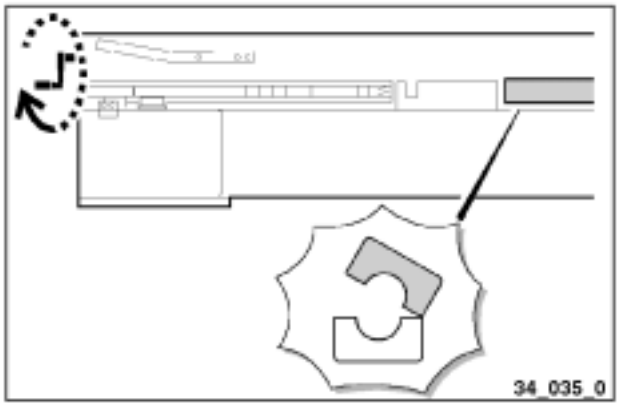


ALIGNMENT

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

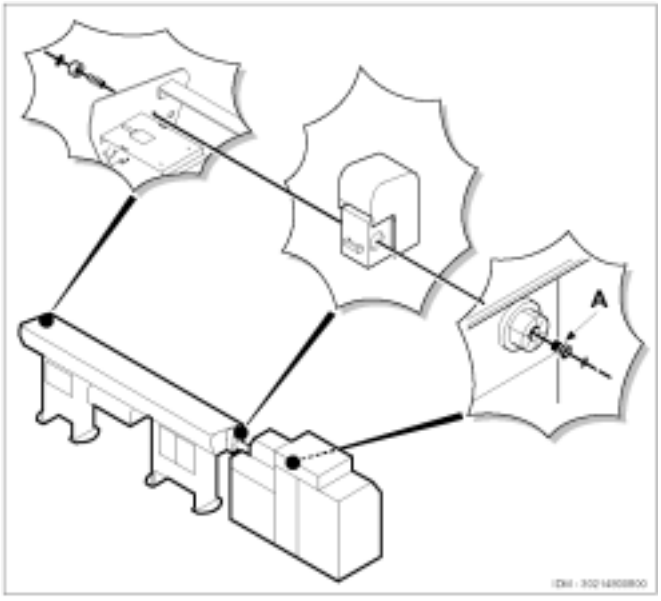


- Move the crank to the guide opening screw shaft and open the upper guides.



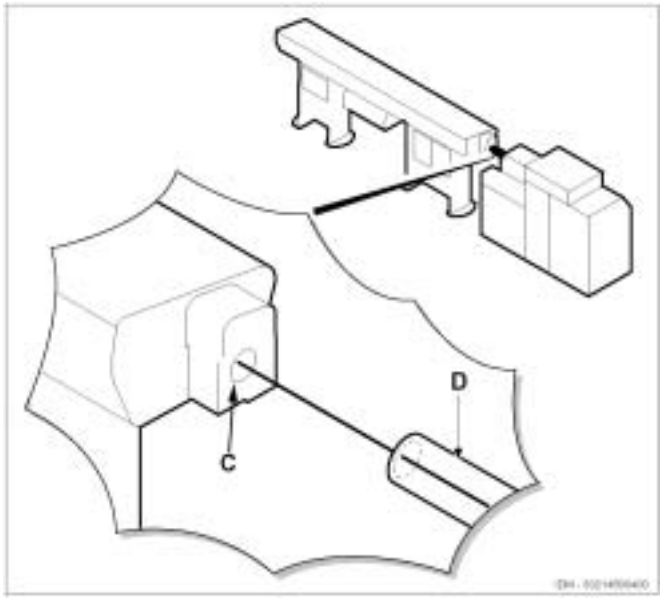
To obtain alignment lead a (ø 1 mm) nylon thread between the lathe collet and the feeder rear plate, then proceed as follows:

- place a drilled bush "A" in the lathe collet;
- stretch out the wire to the hole in the rear plate;



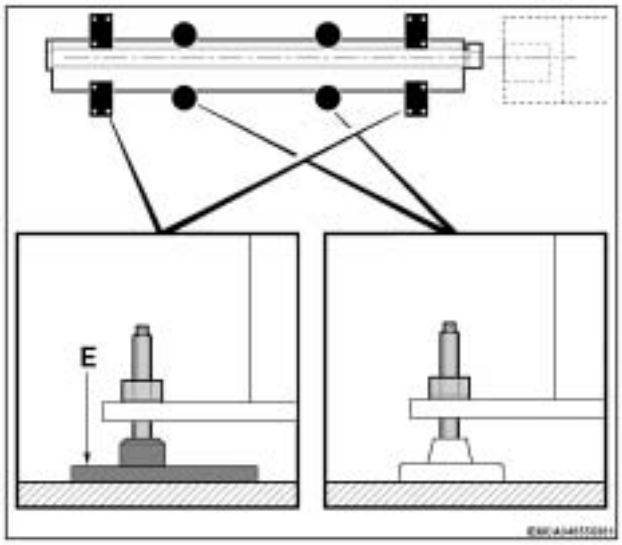
- use a sliding calliper to check alignment near the sleeve "C" and the spindle "D"; adopt a tolerance of 0.15 mm in all four directions.

- 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

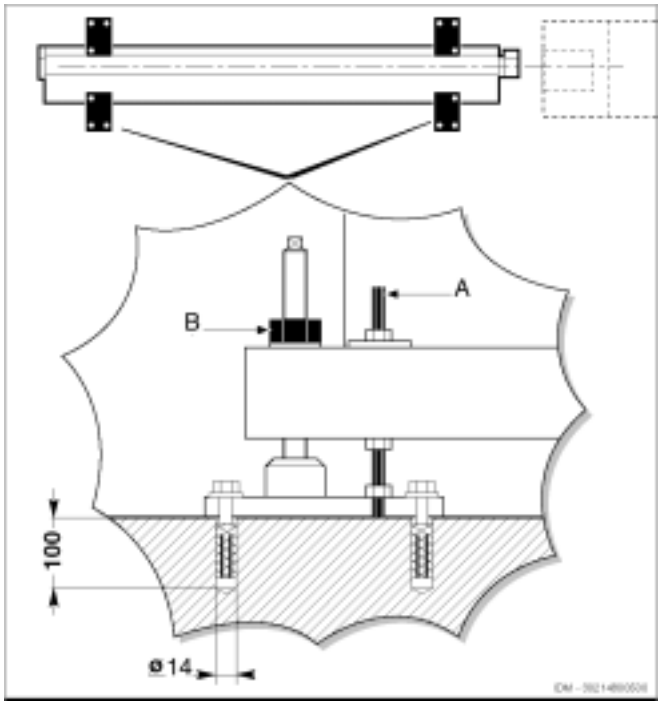
After checking alignment of the feeder with either the thread or the bar, any required corrections should be carried out.
Adjust height by turning the screws in the support feet; carry out lateral adjustment with calibrated mallet blows on the sides of plates "E".
During this phase, any adjustment carried 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

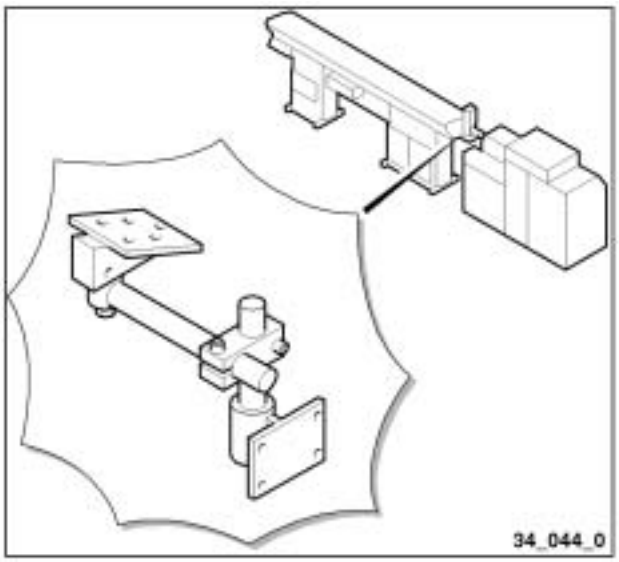
GROUND FASTENING

- 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

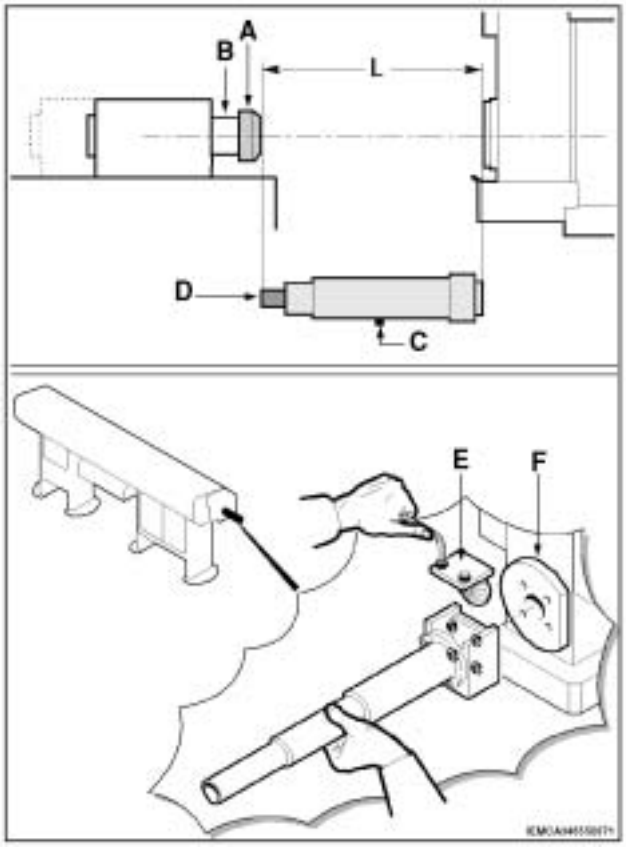
Wherever possible, the feeder should be fastened to the lathe through the suitable coupling unit according to lathe make and type. The figure shows a general example of fastening; contact IEMCA service department for more information.



4.4.7 Installation If the feeder

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).



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.

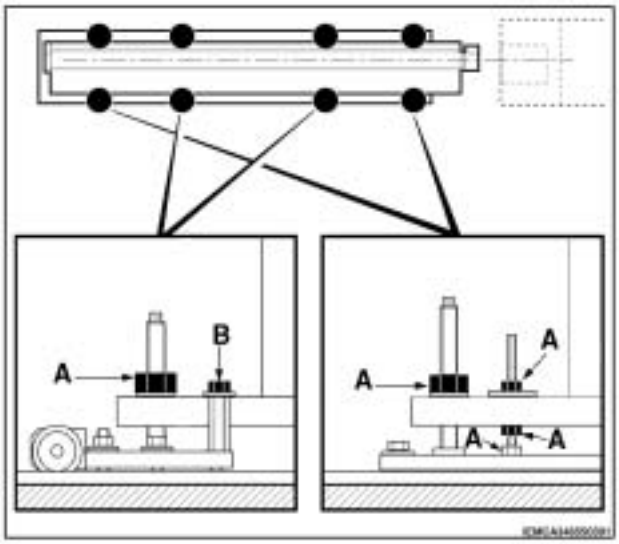
- Move the headstock to its "all the way back" position and measure the dimension "L". Take out the grub screw "C", compress the telescopic nose to its limit stop minus 5 mm and cut the pipe "D" to the measured dimension.
- Move the headstock to its "all the way forwards" position. Remove the cover "E", 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".

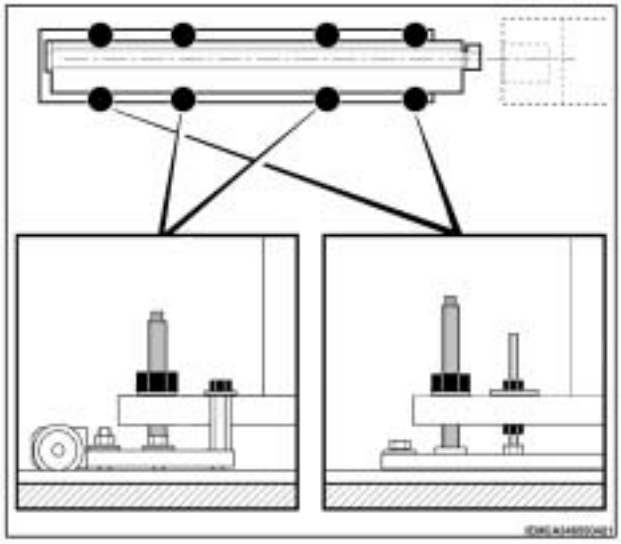


4.5.2 Height - Adjustment

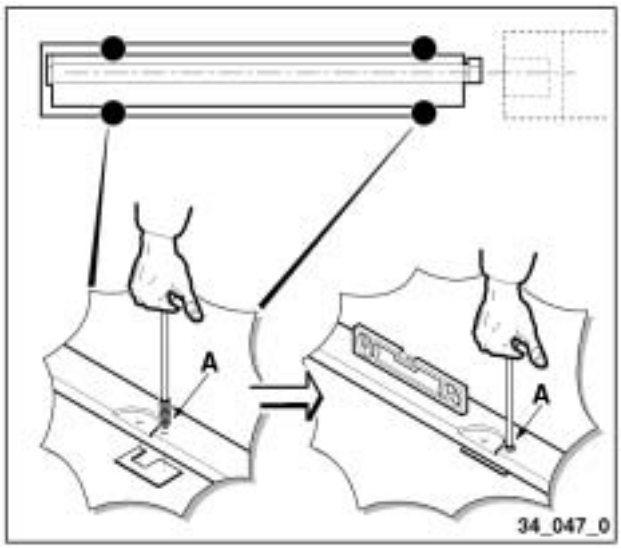
See paragraph 4.4.2; remember that the mentioned dimension "X" will not change when the feeder is equipped with an axial displacement device.

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.

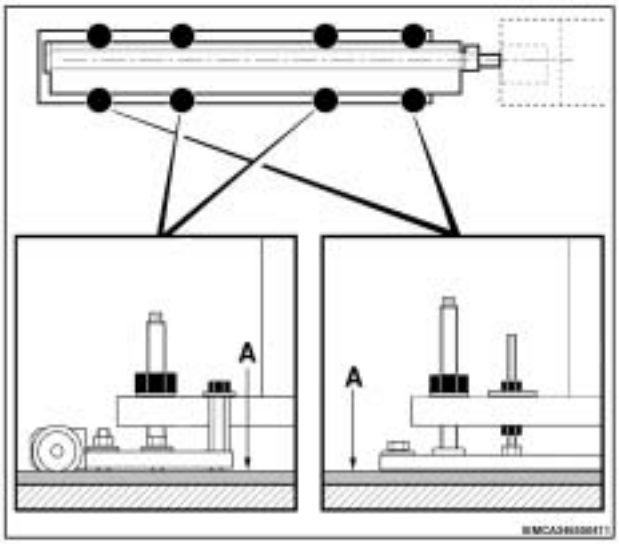
CAUTION:
bad alignment can be the main cause of feeder malfunction and resulting damage.

Preliminary procedure
See paragraph 4.4.5

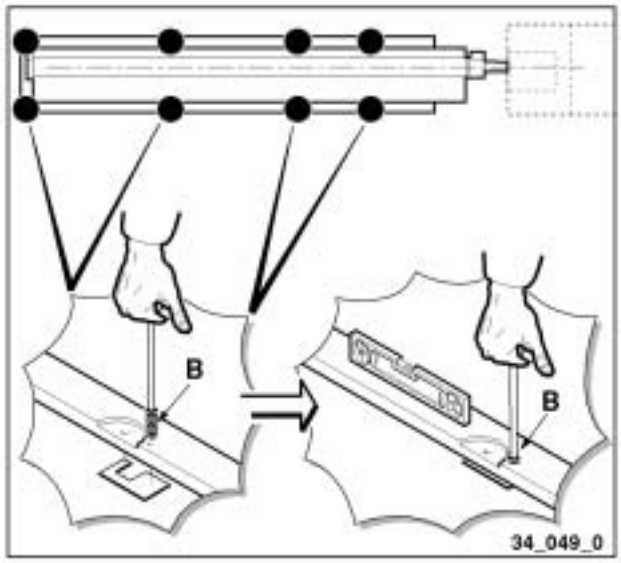
Levelling
See paragraph 4.4.5

Alignment
See paragraph 4.4.5

Positioning adjustment
After checking alignment of the feeder with either the thread, 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



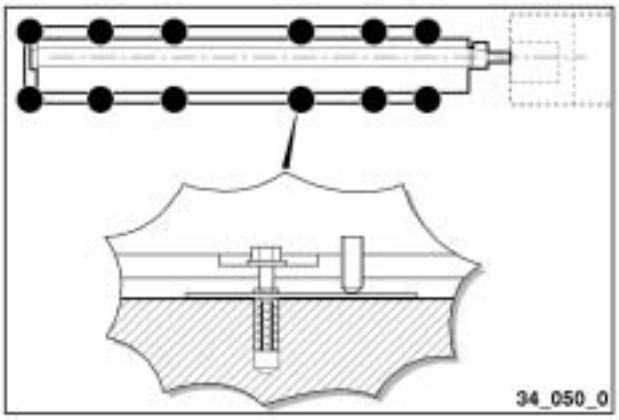
- Position the remaining eight plates under the axial sliding frame in the positions indicated in the figure, then tighten the cone end grub screws "B".



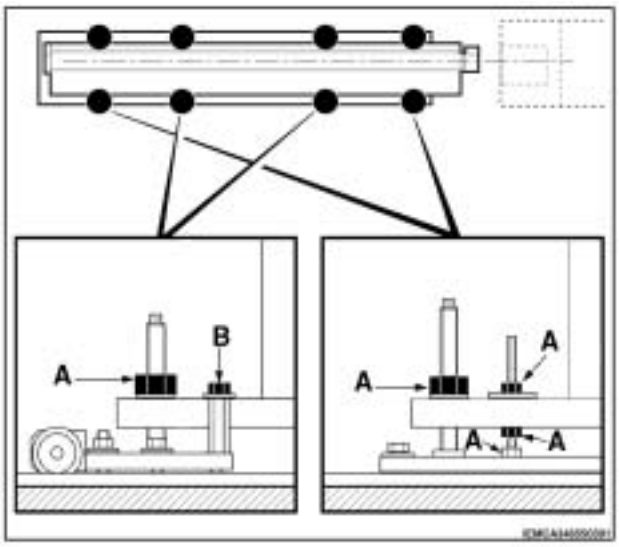
4.5.6 Feeder fastening

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

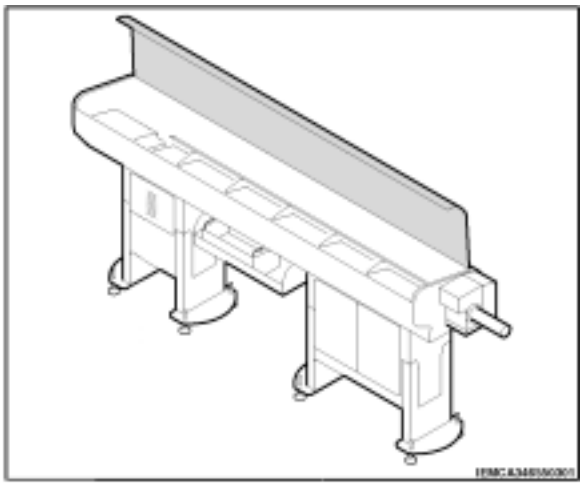
4.5.7 Telescopic nose - Installation

See paragraph 4.4.7

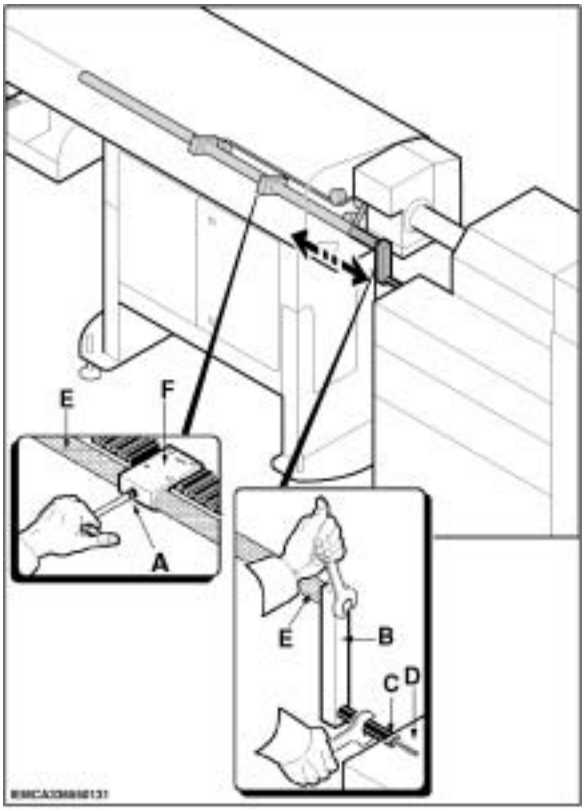
4.6 DEVICE FOR SLIDING HEADSTOCK LATHES - INSTALLATION

4.6.1 Bar/headstock synchronizing device

- Open the upper guard.



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

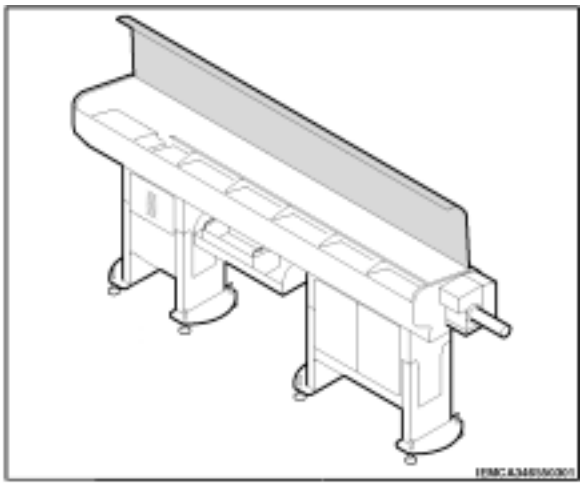


- Screw out the screw "A".
- Install the bar "B" and tie-rod "C" and make sure that the headstock "D" can run freely throughout its stroke together with shaft "E".
- Position the support "F" in such a way as not to hinder the headstock stroke and tighten the screw "A".

4.7 DEVICES FOR CAM LATHES - INSTALLATION

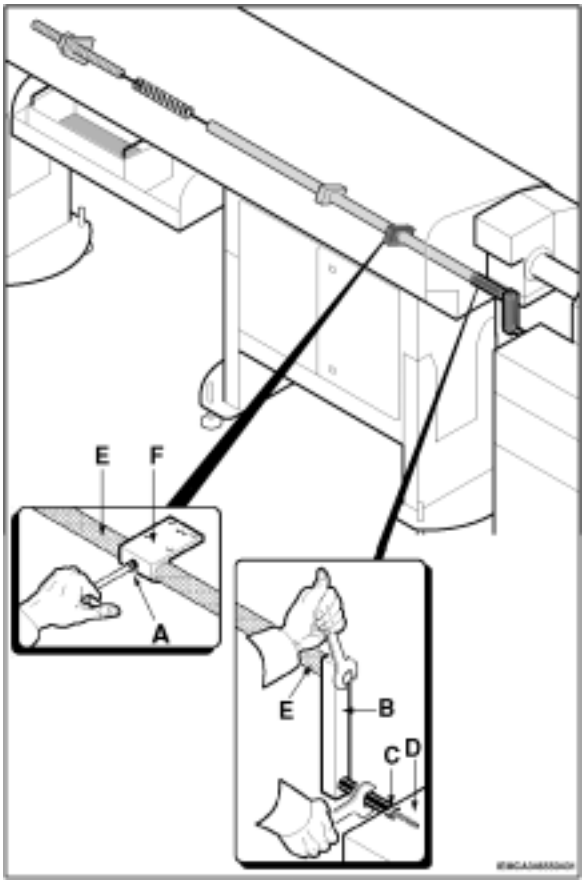
4.7.1 Headstock return device

- Open the upper guard.

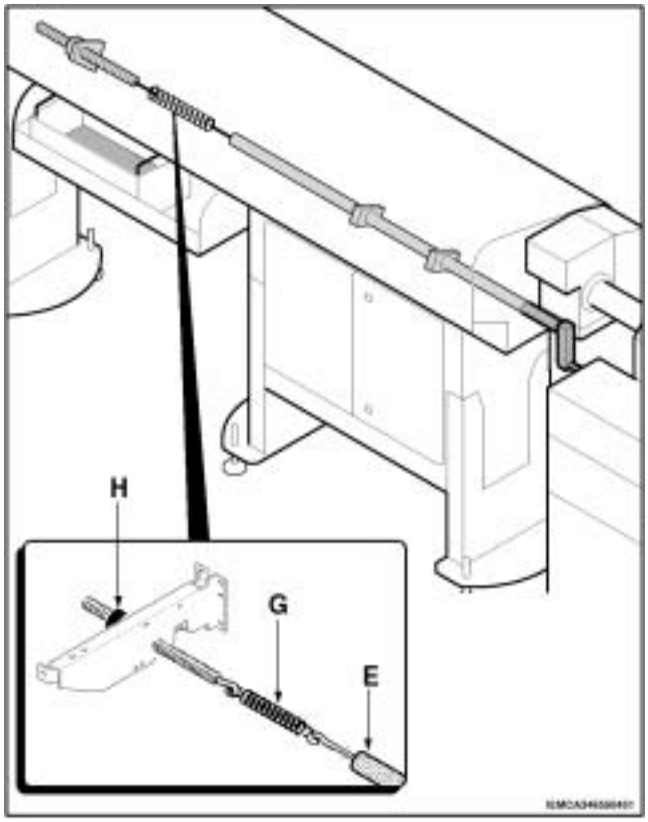


INFORMATION:
the figure shows a general example of installation; contact IEMCA service department for more information.

- 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".



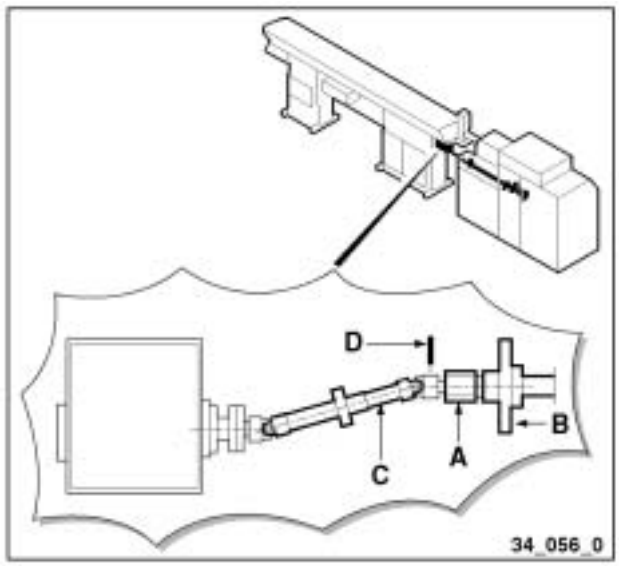
- Install the (original lathe) spring "G" and adjust its tension through the ring nut "H".



4.7.2 Cam box

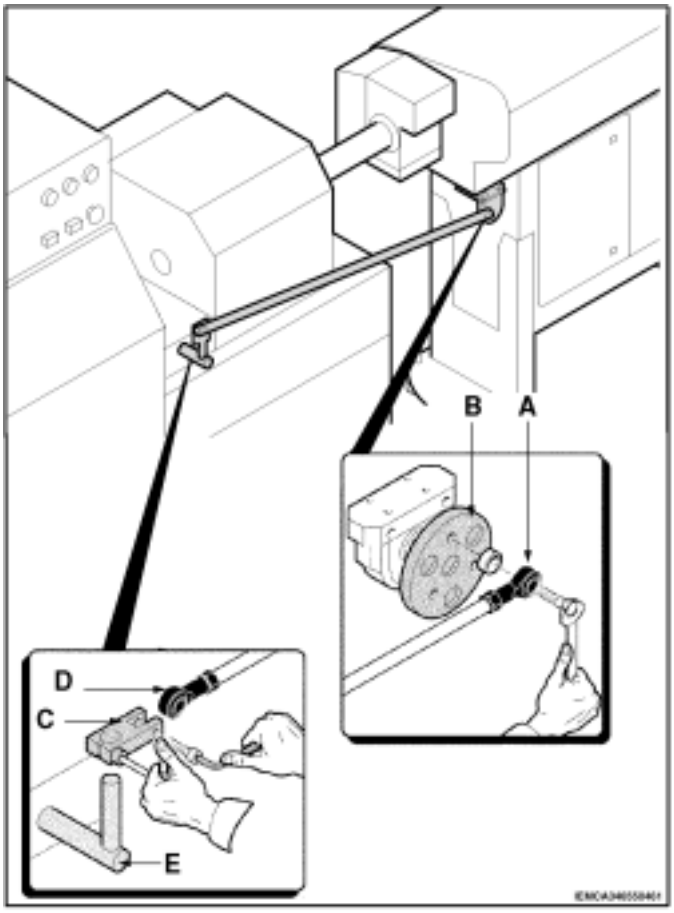
INFORMATION:
the figure shows a general example of installation; contact IEMCA service department for more information.

- 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

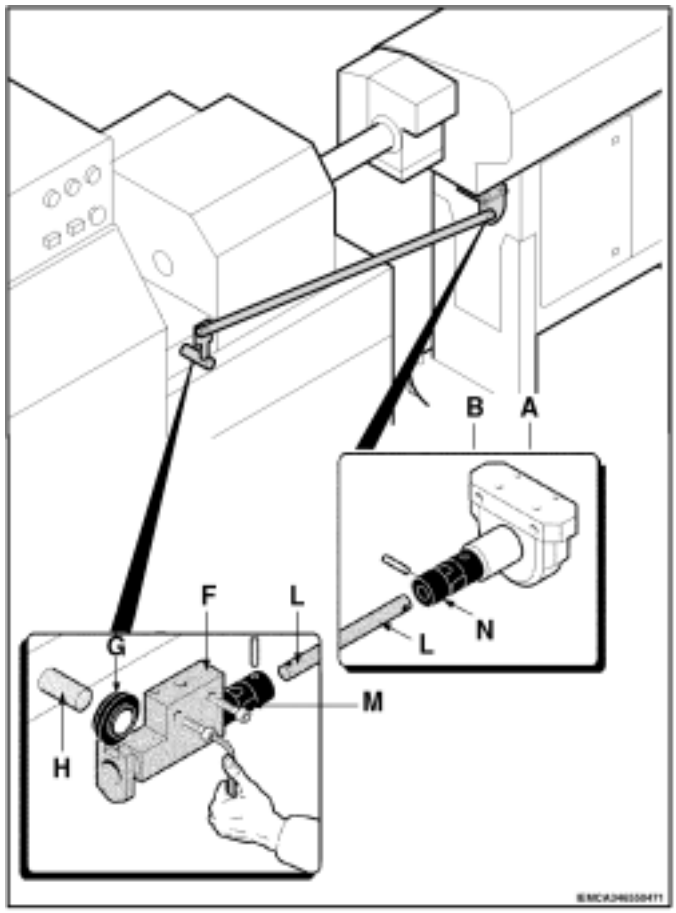
INFORMATION:
the figures show a general example of installation; contact IEMCA service department for more information.



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

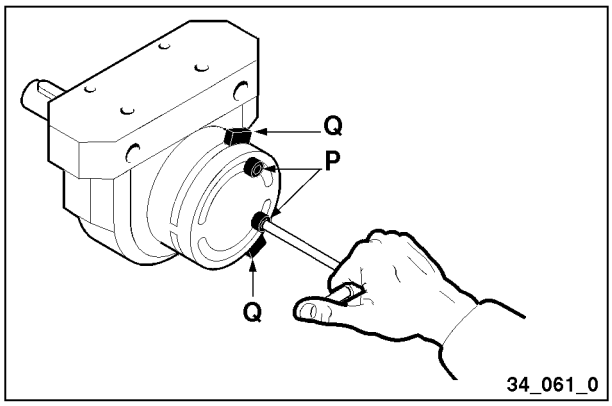
Axial version

- 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.
- Check the level by means of the "A" indicator.

Table 4. Guide lubricating oil characteristics

Model	Oil type	Quantity (l)
BOSS 332	Classe C – CKB 100	57
BOSS 545/551	Classe C – CKB 150	57

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.

With the following instructions we would like to underline the importance of the connection of the electrical interface.
The bar feeder is normally provided with one ore more multiple plugs to plug into the special lathe outlets. The interface signals are wired to these outlets and can be classified into three types:

- Three-phase power supply
- Safety signals
- Function signals

4.9.1 THREE-PHASE POWER SUPPLY

The bar feeder must be provided with three-phase voltage and with a suitable earthing connection.
The three-phase supply line should also be protected by means of a suitable temperature switch (check the installed capacity: see the plate on the door of the electric cabinet).

4.9.2 SAFETY SIGNALS

The above mentioned signals can be used by the hardware only and in agreement wiht the current electrical safety norms (see current machine directives).

INFORMATION:

As far as the safety class 3 is concerned (see the following points), please refer to the current safety norms.

4.9.2.1 EMERGENCY STOP

4 emergency channels are available, 2 from bar feeder towards to lathe and 2 from lathe to bar feeder.

- **Emergency signal from bar feeder to lathe (2 channels, open contacts=Emergency activated).**

It is used to transmit the active emergency from the bar feeder to the lathe.
These signals should be integrated with the lathe emergency signals, so that in case of an emergency stop, the whole unit (bar feeder/lathe) is stopped.

- **Emergency signal from lathe to bar feeder (2 channles, open contacts = Emergency activated).**

It is used to transmit the active emergency from the lathe to the bar feeder.
As soon as the bar feeder receives these signals, an emergency stop (safety class 3 compliant) is activated.

4.9.2.2 COVER SAFETY STOP (WHEN PROVIDED)

4 cover safety channels are available, 2 from bar feeder to lathe and 2 from lathe fo bar feeder.

- **Cover safety signal from bar feeder to lathe (2 channels, open contacts= open covers).**

Whenever the above mentioned signals are closed, the bar feeder informs the lahte that the covers are closed: all lathe operations as well as indexing are now allowed.
Whenever one of bar feeder covers is open, the signals are stopped: in this case, all dangerous operations on the lathe (i.e., on multispindle machines, spindle drum indexing) must be stopped immediately ,in agreement with safety class 3.
As soon as the contacts are closed, the lathe operation can be recovered.

- **Cover safety signal from lathe to bar feeder (2 channles, open contacts= open covers).**

Whenever the above mentioned signals are closed, the lathe informs the bar feeder that the covers are closed: the bar pusher can be pushed forward.
As soon as one the covers on the lathe is open, the bar pusher is stopped immediately, in agreement with safety class 3, to avoid injury to the operator.
Any jumper on the safety signals, which had been set for bar feeder final test, should be removed in order to restore the safety signals.

ATTENTION-DANGER !!!

Bar feeder safety depends on these connections, therefore IEMCA is not responsible for any enventual damage to persons or structures, caused by improper use of the above mentioned signals.

4.9.3 FUNCTION SIGNALS

The bar feeder can send and receive all the signals which are necessary to its correct operation.

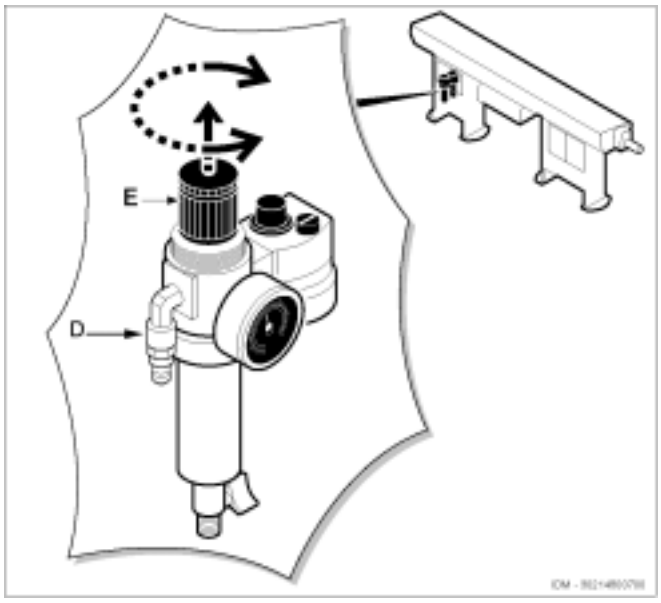
These signals are driven by a PLC, and can be grouped into: inputs (signals from lathe to bar feeder) and outputs (signals from bar feeder to lathe).
The signals that have been implemented are the result of our long experience and allow the application of the bar feeder on every lathe type: it is therefore possible that some of them are not used.

IMPORTANT:

for any other information you may need, please refer to the interface wiring plan or contact us: our Customer Service and Engineering Department are always at your disposal.

4.10 PNEUMATIC CONNECTION

- Fill the tank of lubricator "A" removing plug "B" or cup "C"; the oil level must reach the MAX. reference.
  For the oil comparison table, see section 2.6.
- Connect pipe "D" (1/4"Gas)to the compressed air ductwork system as shown in the figure, after connecting a three-way valve to adjust and release pressure. 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".



IMPORTANT:
Air must be filtered.

4.11 SOFTWARE PARAMETRING

There should be an adequate parametring of the bar feeder software according to the working needs and to the type of lathe.
To obtain any information about how to carry out this operation, check the "Push-button panel instruction manual".

INDEX

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 bar to be machined
5.4. Cam box - Timing

5.2 GENERAL ADJUSTMENTS - FOREWORD

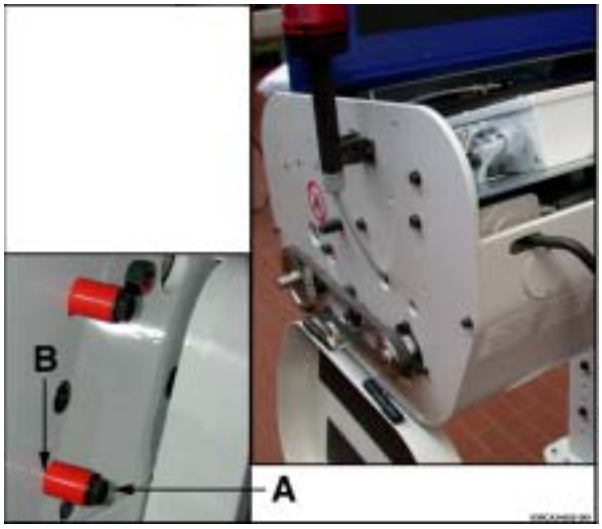
Including all the necessary adjustments for good feeder operation. They may become necessary after maintenance, trouble fixing or component replacement.

5.2.1 Feeding chain - Adjustment
5.2.2 Drive belt - Adjustment
5.2.3 Pressure switch - Adjustment

5.2.1 Feeding chain - Adjustment

For the chain that moves stock pusher , an adjusting screw A on the back plate of bar feeder is provided. After some hours of operation of bar feeder. chain tension has to be checked.

- If bush B of chain tension is still fast against rear plate then no chain extension took place.
- If on the contrary bush B moved away of 1- 2 mm from rear plate, then a chain extension took place, which is harmful for a trouble-free operation of bar feeder. So it is necessary to tighten screw A as long as bush B is clamped fast to end plate.

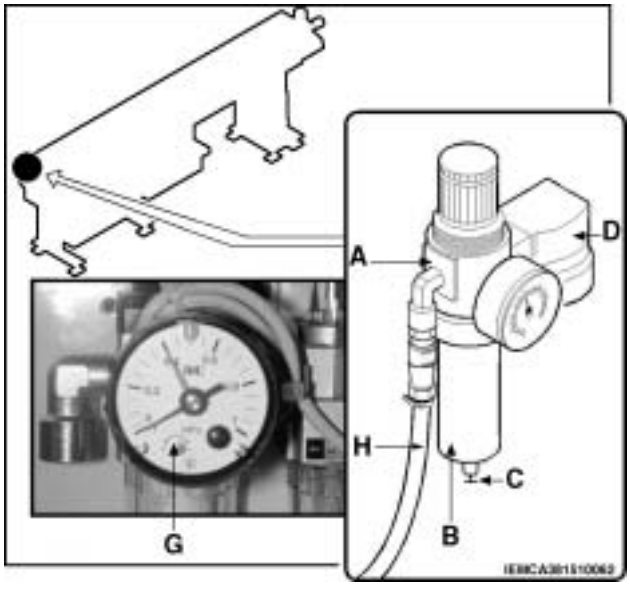


5.2.2 Setting the pressure switch

After unscrewing the glass protection, the pressure switch can be properly adjusted by turning the relevant adjusting screw (G). Proper setting is 4.5 bars (0.45 MPa).

CAUTION:

Do not further turn anti-clockwise when the green pointer is found on 0, as this may cause damage to the pressure switch.



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. BOSS 332 guide, bar pusher, bar and tube diameters

Model	Guide diameter (mm)	Bar-pusher diameter (mm)	Bar diameter (mm)		Largest tube diameter (mm) (*)
			Min.	Max.	
BOSS 332	13	10	3	8	10
		12	4	10	12
	17	15	5	13	15
		16	5	14	16
	21	18	5	16	18
		19	5	17	19
		20	5	18	20
	26	23	8	21	23
		25	8	23	25
	28	25	8	23	25
		27	8	25	27
	33	30	8	27	30
		31	8	28	31
		32	8	29	32
	36	32	8	29	32
		35	8	32	32

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

CAUTION:

Barstock diameters for any guide channel are only given as an example. A barstock diameter approximately 10 mm smaller than the guide channel diameter may cause vibration and failure to the bar feeder. Therefore, it may be necessary to slow down the bar rotation speed or to change the guide channel diameter in order to obtain the best performance for a specific application.

CAUTION:

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

INFORMATION:

The bar feeder is normally provided with a bar pusher with a diameter equal to the maximum barstock guide channel offered by the lathe. Sometimes, in order to ensure the best working conditions, it can be necessary to use a bar pusher with a smaller diameter.

Table 2. BOSS 545 guide, bar pusher, bar and tube diameters

Model	Guide diameter (mm)	Bar-pusher diameter (mm)	Bar diameter (mm)		Largest tube diameter (mm) (*)
			Min.	Max.	
BOSS 545	13	10	5	8	10
		12	5	10	12
	17	15	5	13	15
		16	5	14	16
	21	18	5	16	18
		19	5	17	19
		20	5	18	20
	26	23	8	21	23
		25	8	23	25
	28	25	8	23	25
		27	8	25	27
	33	30	8	27	30
		31	8	28	31
		32	8	29	32
	36	32	8	29	32
		35	8	32	35
	38	37	8	34	37
	43	40	10	37	40
		42	10	39	42
	46	42	10	39	42
		45	10	42	45
	52	51	12	45	45

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

CAUTION:

Barstock diameters for any guide channel are only given as an example. A barstock diameter approximately 10 mm smaller than the guide channel diameter may cause vibration and failure to the bar feeder. Therefore, it may be necessary to slow down the bar rotation speed or to change the guide channel diameter in order to obtain the best performance for a specific application.

CAUTION:

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

INFORMATION:

The bar feeder is normally provided with a bar pusher with a diameter equal to the maximum barstock guide channel offered by the lathe. Sometimes, in order to ensure the best working conditions, it can be necessary to use a bar pusher with a smaller diameter.

Table 3. BOSS 551 guide, bar pusher, bar and tube diameters

Model	Guide diameter (mm)	Bar-pusher diameter (mm)	Bar diameter (mm)		Largest tube diameter (mm) (*)
			Min.	Max.	
BOSS 551	13	10	5	8	10
		12	5	10	12
	17	15	5	13	15
		16	5	14	16
	21	18	5	16	18
		19	5	17	19
		20	5	18	20
	26	23	8	21	23
		25	8	23	25
	28	25	8	23	25
		27	8	25	27
	33	30	8	27	30
		31	8	28	31
		32	8	29	32
	36	32	8	29	32
		35	8	32	35
	38	37	8	34	37
	43	40	10	37	40
		42	10	39	42
	46	42	10	39	42
		45	10	42	45
	52	51	12	47	51

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

CAUTION:

Barstock diameters for any guide channel are only given as an example. A barstock diameter approximately 10 mm smaller than the guide channel diameter may cause vibration and failure to the bar feeder. Therefore, it may be necessary to slow down the bar rotation speed or to change the guide channel diameter in order to obtain the best performance for a specific application.

CAUTION:

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

INFORMATION:

The bar feeder is normally provided with a bar pusher with a diameter equal to the maximum barstock guide channel offered by the lathe. Sometimes, in order to ensure the best working conditions, it can be necessary to use a bar pusher with a smaller diameter.

Example 1
The previous machining cycle had been carried out under these conditions:

Guide diameter (mm)	Bar-pusher diameter (mm)	Bar diameter (mm)
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 must be adjusted.

Example 2
The previous machining cycle had been carried out under these conditions:

Guide diameter (mm)	Bar-pusher diameter (mm)	Bar diameter (mm)
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:

Guide diameter (mm)	Bar-pusher diameter (mm)	Bar diameter (mm)
17	15	8

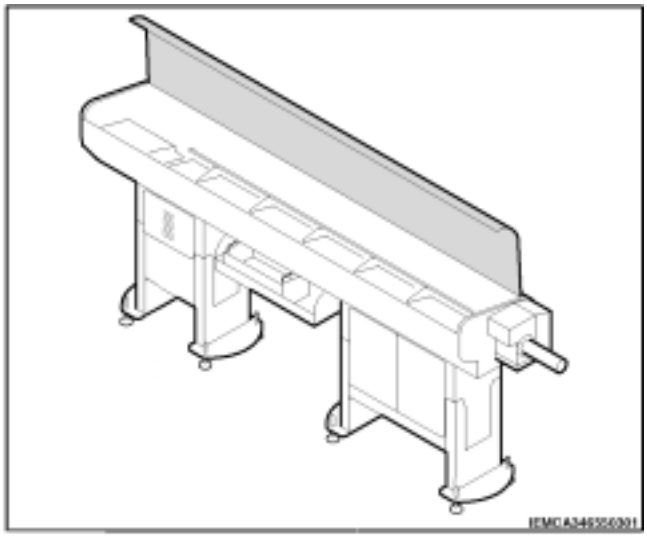
The new machining cycle requires feeding of 25 mm bars.
In this case, the guides, half bushes, bar pusher and bar-pusher collet must be replaced and the magazine must be adjusted.

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

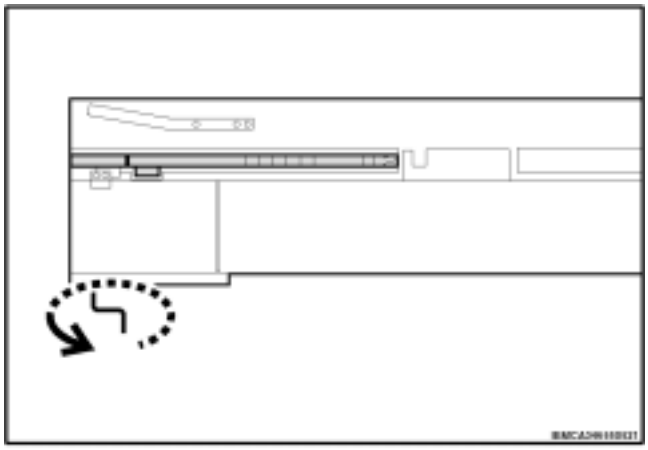
5.3.1 Guides, half bushes, bar-pusher and collet - Replacement

- When the magazine is empty (no bars) set the feeder to manual mode.
- Open the upper guard.
- Use the keyboard to move the bar pusher forwards beyond the area of the bar extraction/introduction clamps unit.
- (you can move the bar pusher from the keyboard in manual mode with the guard open and the guides closed).

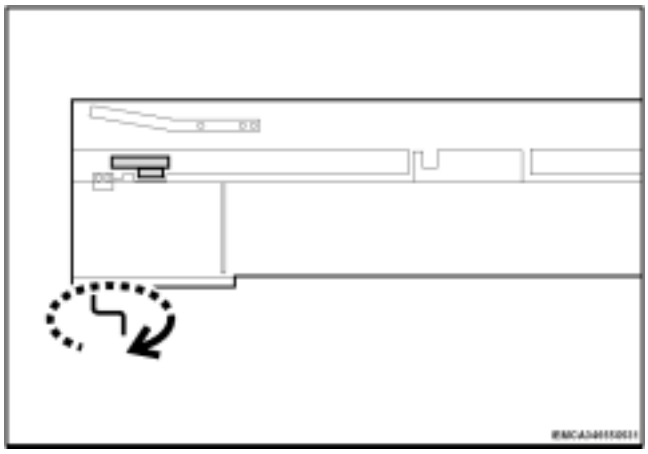


- Close the upper guard.
- On the keyboard press the blue buttons and the guides opening button simultaneously: now open the feeder guides.
- Open the upper guard.
- Remove the feeding motor protection so that you can fit the crank.

- Use the crank to bring the bar pusher to its backwards limit stop and then remove it from its seat. Bar pushers in the Ø=42...51 range must be removed from the bars magazine.

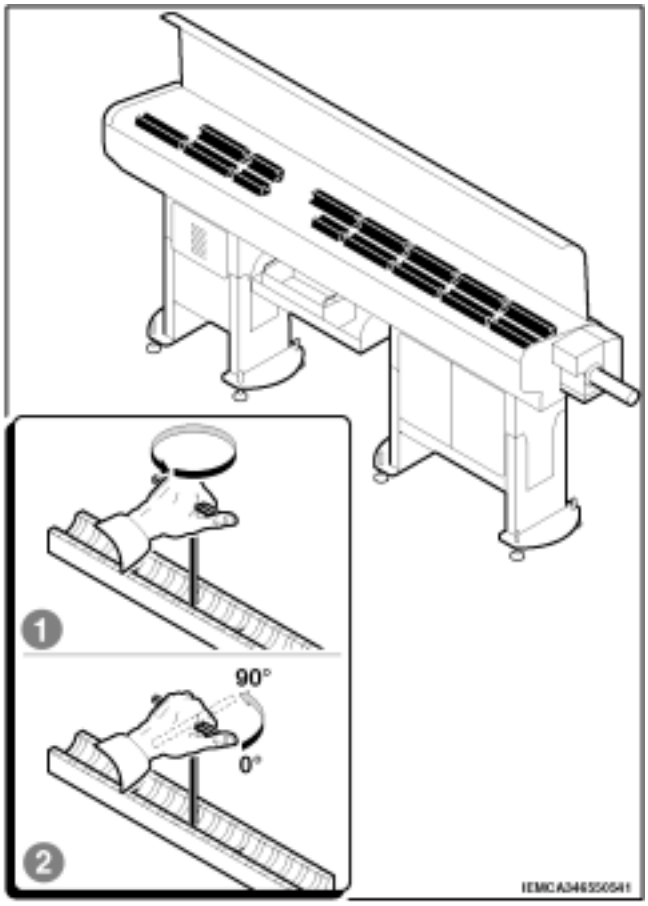


- Move the small pusher truck forwards until the flag reaches the opening, then remove the truck from its seat.

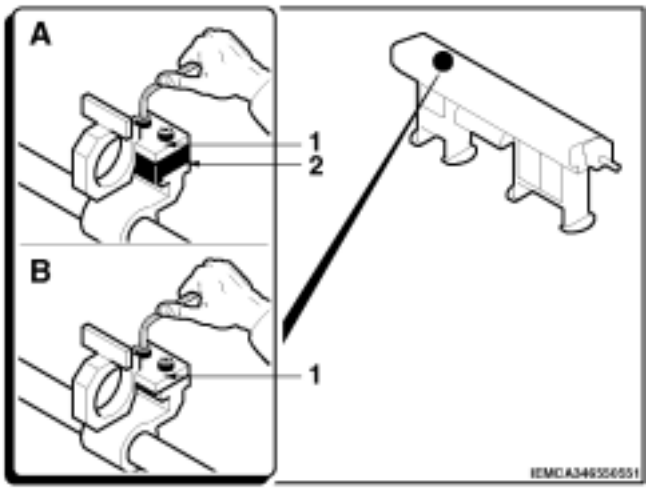


- Disassemble the lower guides
- Proceed disassembling the upper guides.

1 - Fastening screw version
2 - Quick fastening version



- Remove the bar pusher support.



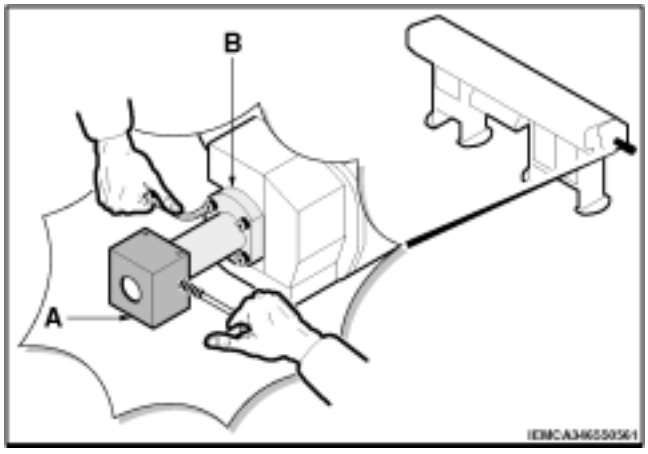
A Guides with Ø=13÷46
B Guide with Ø=52

1 Support
2 Spacer

Remove the nose in the following way:

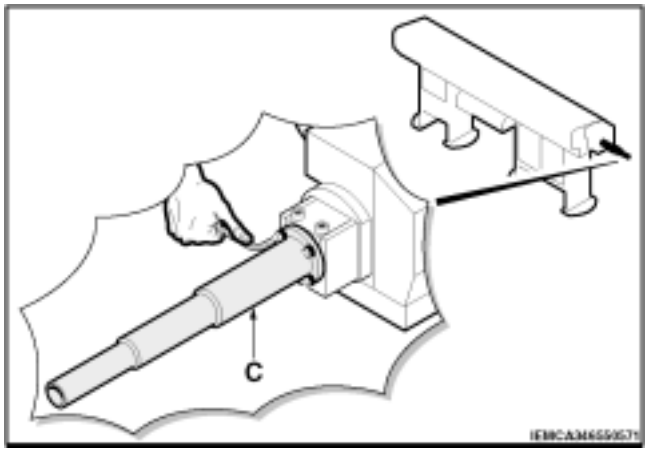
Fixed nose

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



Telescopic nose

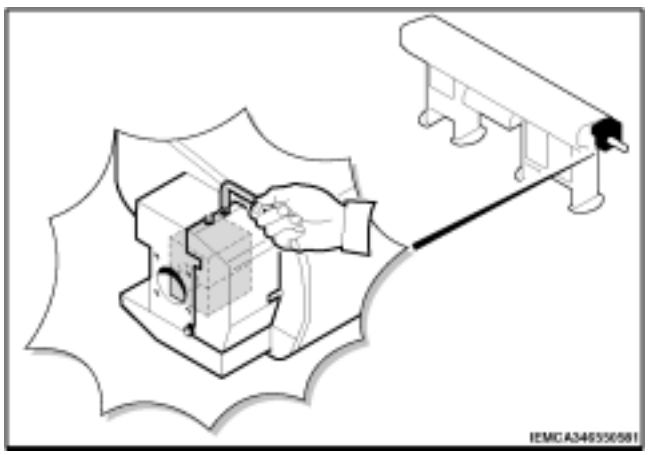
- Remove the nose "C".



Remove the front half bushes in the following way:

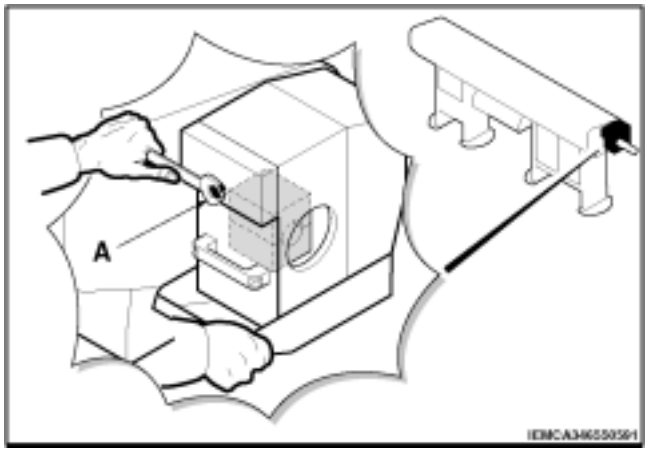
BOSS 332

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



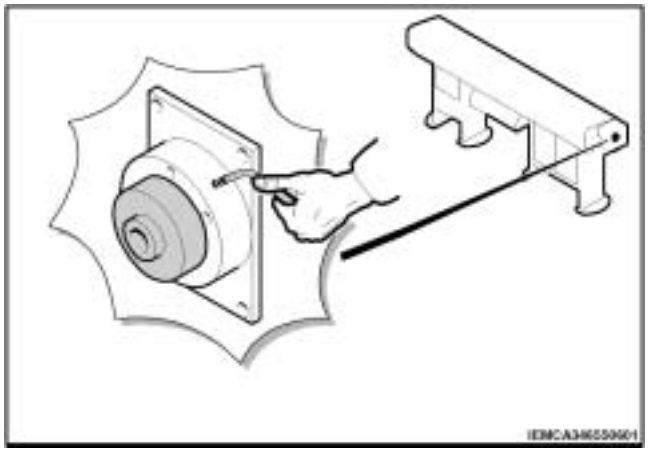
BOSS 545/551

- 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.

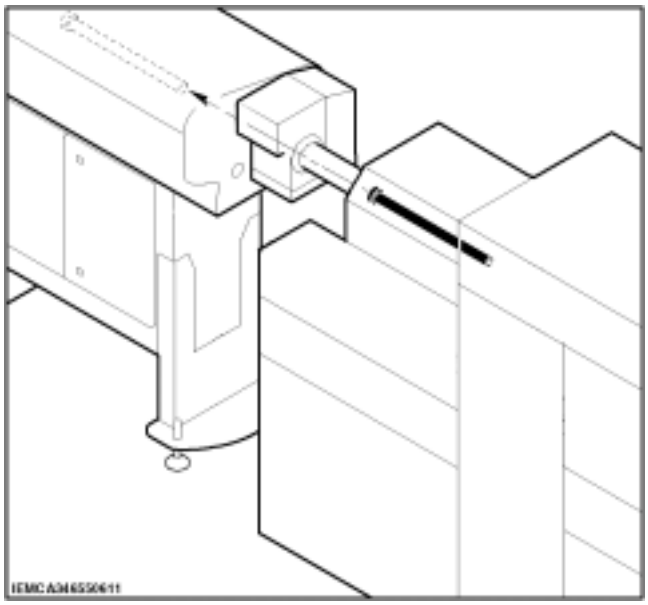


For BOSS 332 only

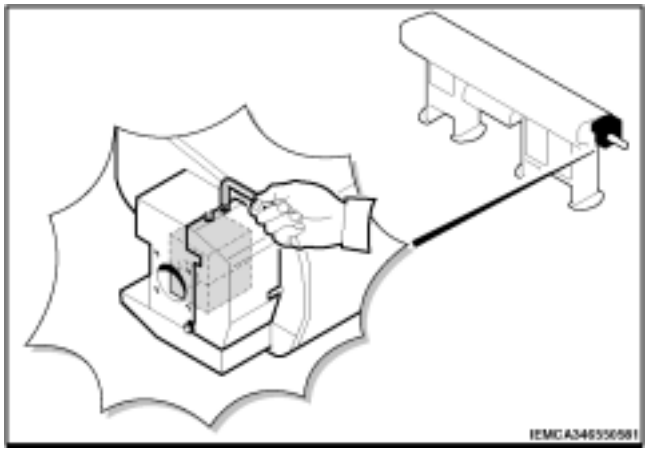
- Remove the internal sleeve.



- If necessary, remove the lathe spindle liner and install another one suitable for the diameter of the guides.

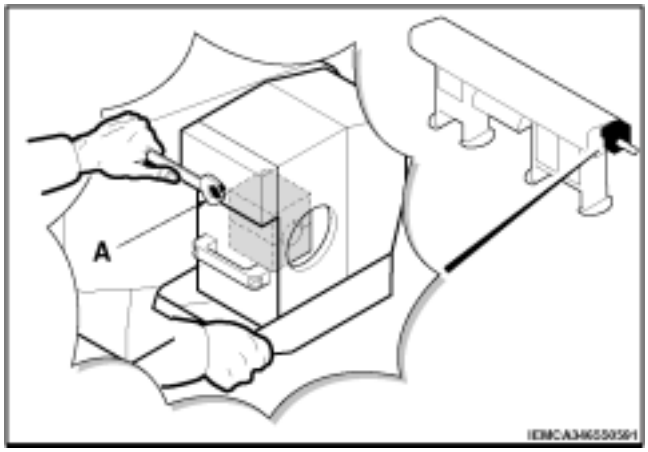


Install front half-bushings suitable for the bar in the following way:

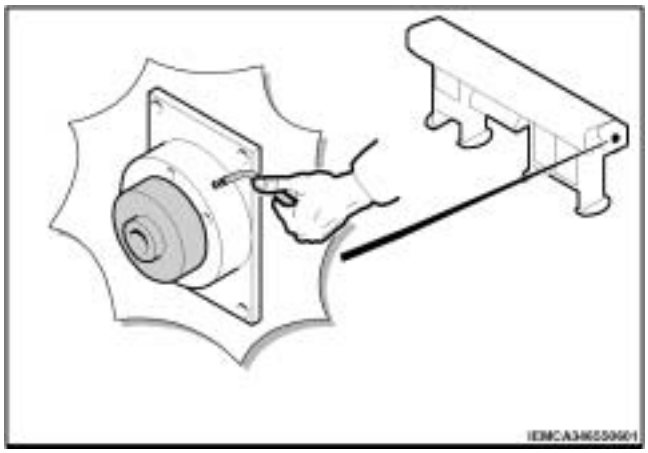


BOSS 332
- Insert the two half bushes and place the cover.

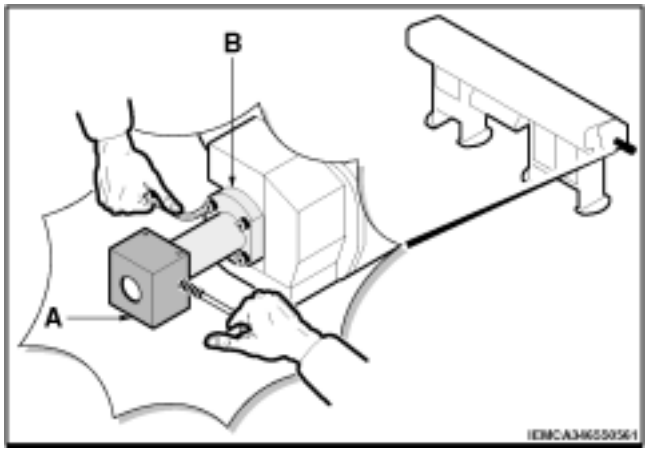
BOSS 545/551
- Insert the upper half bush, turn the shaft "A" and insert the lower half bush.
- Fully close the half bushes and place the cover.



For BOSS 332 only
- Install a nose suitable for the guide channel.



Place the nose back as follows:



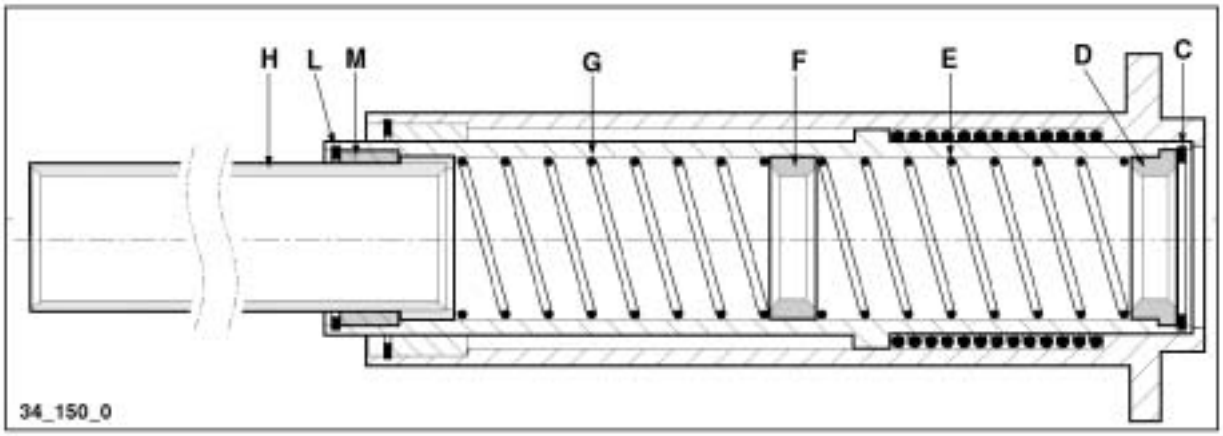
Fixed nose

- Install the nose "B" suitable for diameter of the guides and the oil recovery device "A".

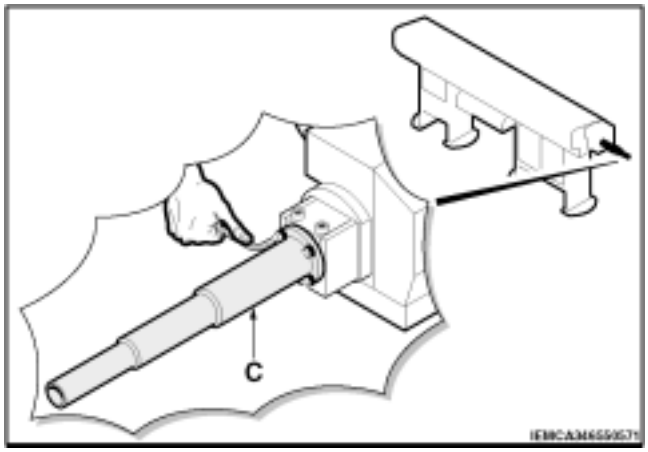
Telescopic nose

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 bushing M with another one suitable for the bar and replace the ring "L".
- Replace the nose "H", the spring "G", the bushing "F", the spring "E" and the bushing "D". The nose H and bushings "F" and "D" must be suitable for the bar.
- Replace the ring "C".



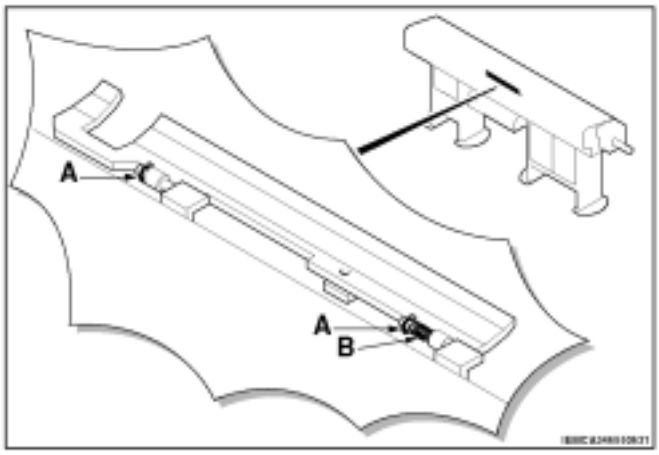
- Place the sleeve back into its seat.



For BOSS 332 only

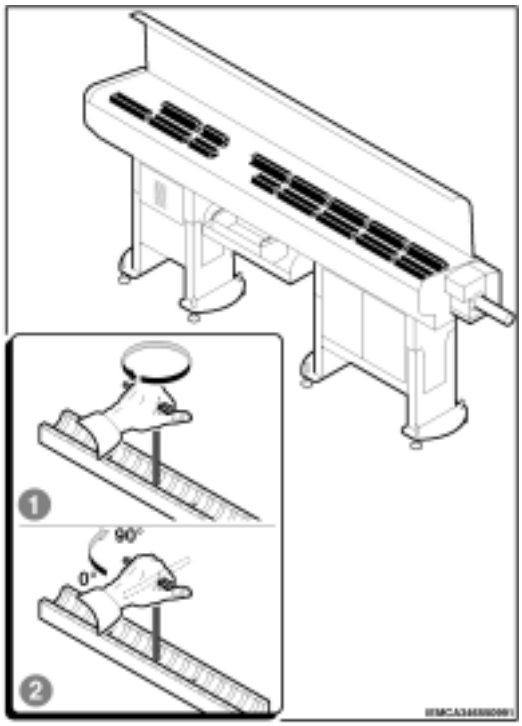
If the "new" guide diameter is 13 mm, the intermediate flag should be changed as follows.

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



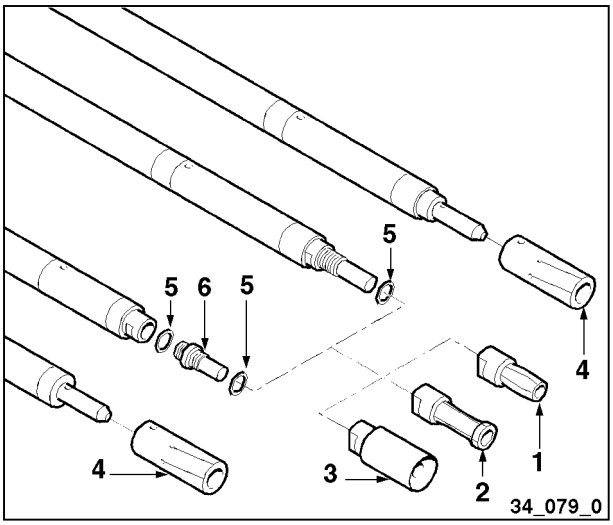
- Install top guides first, and then lower guides, suitable for the bar.

  1 Fastening screw version
  2 Quick fastening version



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

- Choose the right collet for the bar; refer to the manual "GUIDE CHANNELS - BAR PUSHERS - REVOLVING TIPS - COLLETS- Selection manual".

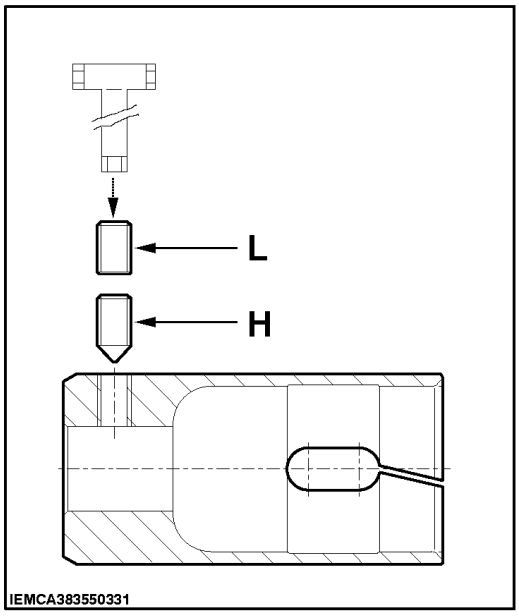


INFORMATION:
contact IEMCA After-Sales service for more information.

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

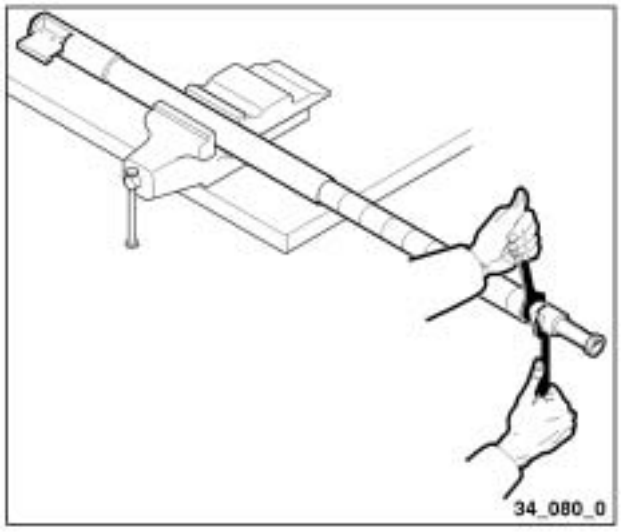
CAUTION-PRECAUTION :

At every collet change (modell 381p, 381p..011, 381p..021 e 386p) it is necessary to install the grub screw H and the counter screw L.



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.

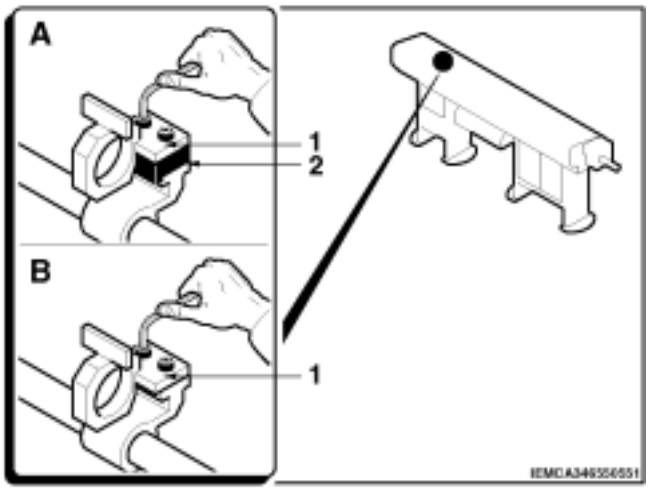
INFORMATION:

The picture shows a generic example of collet assembly.

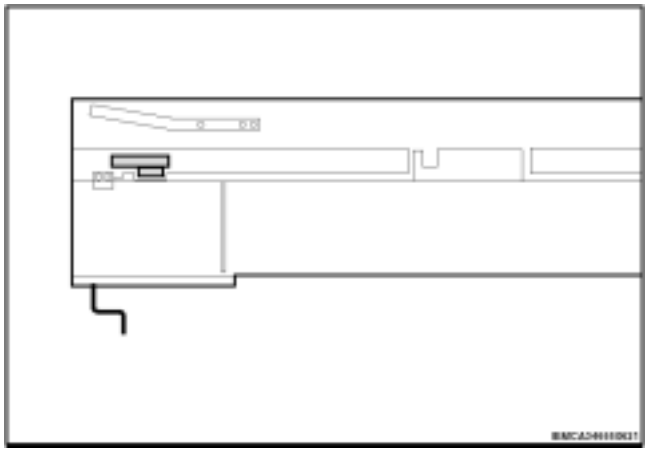
- Install a suitable bar pusher support in relation to the diameter of the bar pusher.

  A Guides with Ø=13÷46
  B Guide with Ø=52

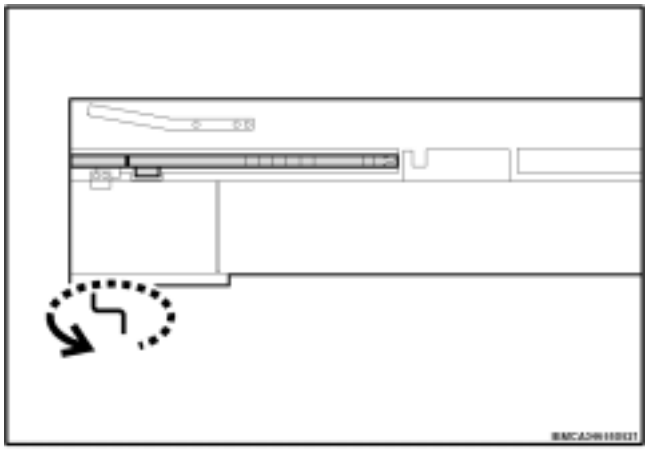
  1 Support
  2 Spacer



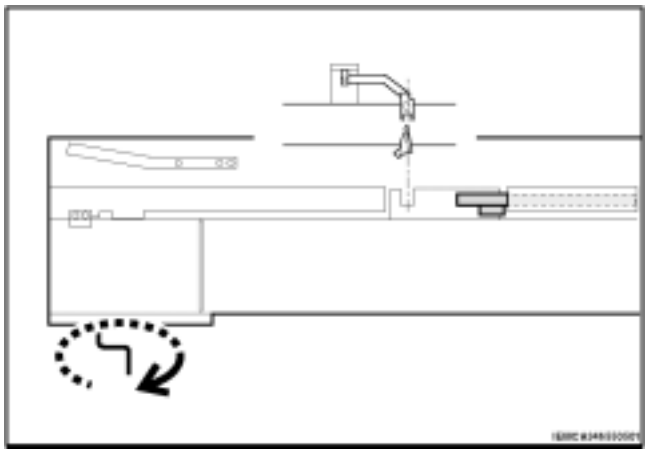
- Install the 1st feeding carriage into its seat.



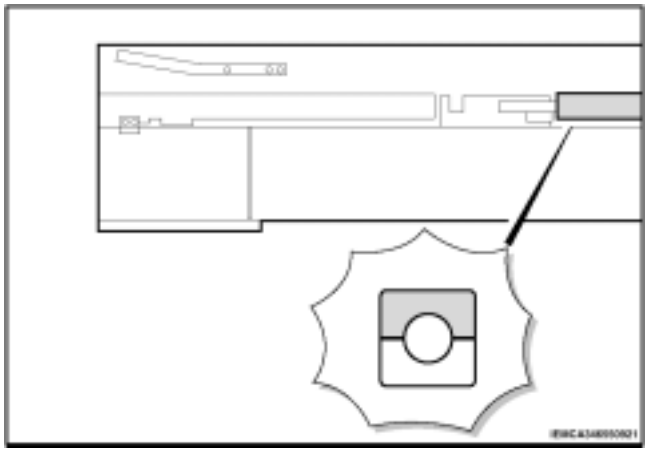
- Bring the 1st feeding carriage to its backward stroke limit and fit the bar pusher.



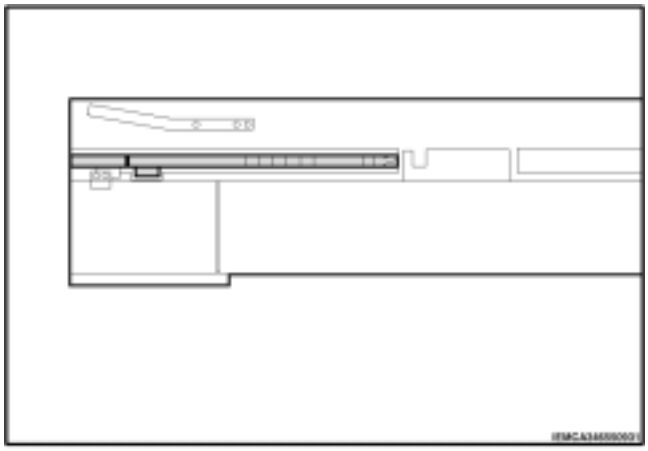
- Move the bar-pusher forwards past the clamps area.



- Close the guard.
- On the keyboard press the two blue buttons and the guides closing button simultaneously: now close the guides.

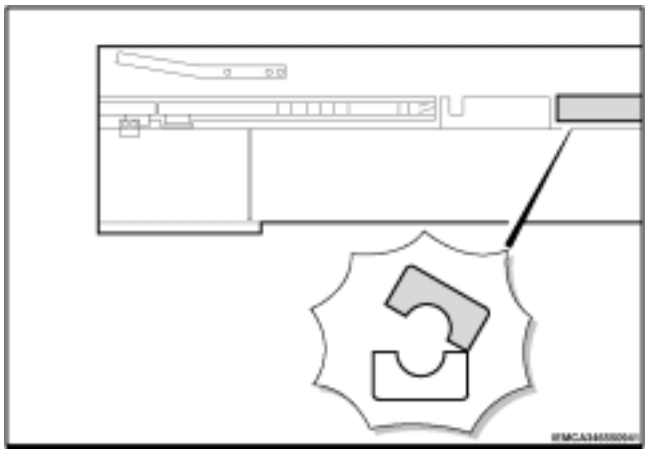


- Bring the bar pusher to its backward limit stop by means of the keyboard.



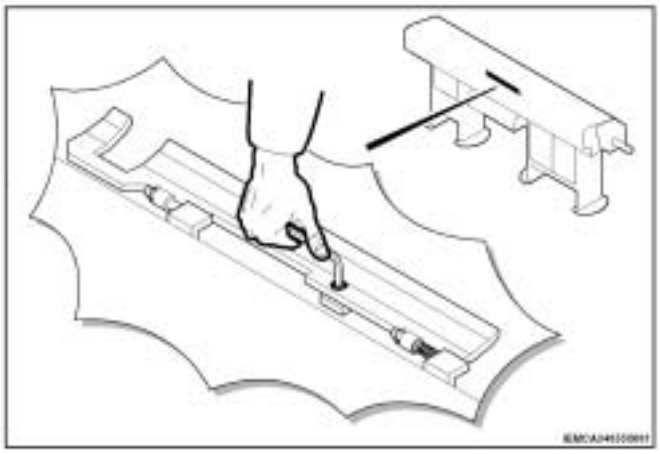
The upper surface of the intermediate flag must be flush with the lower guides; proceed as follows to obtain adjustment:

- Open the guides by means of the keypad, pressing the two blue buttons and the guides opening button simultaneously.

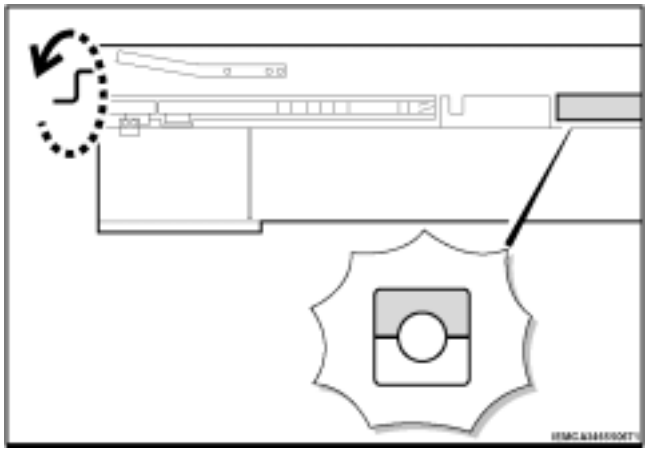


Open the guard and proceed as follows:

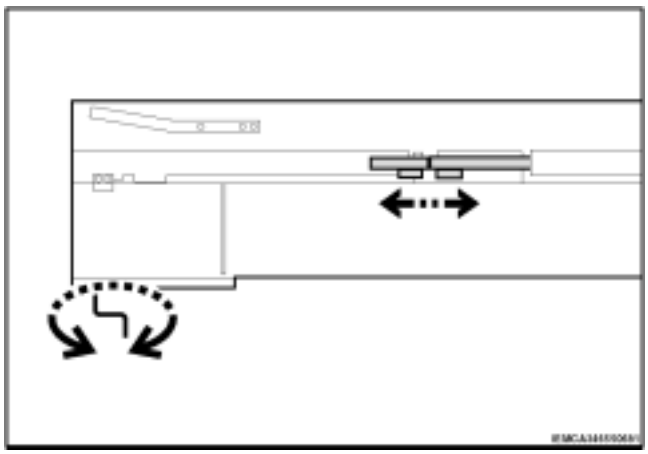
- Loose the screw, adjust the flag position and tighten the screw.



- Close the upper guides.



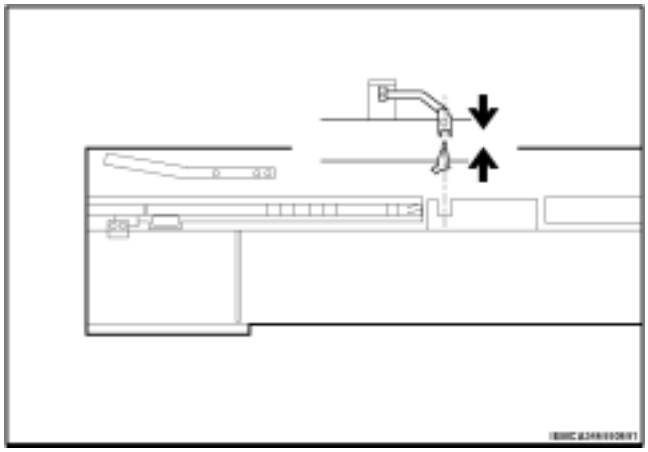
- Move the bar-pusher forwards and backwards in the flag area to make sure that its stroke is not hindered.



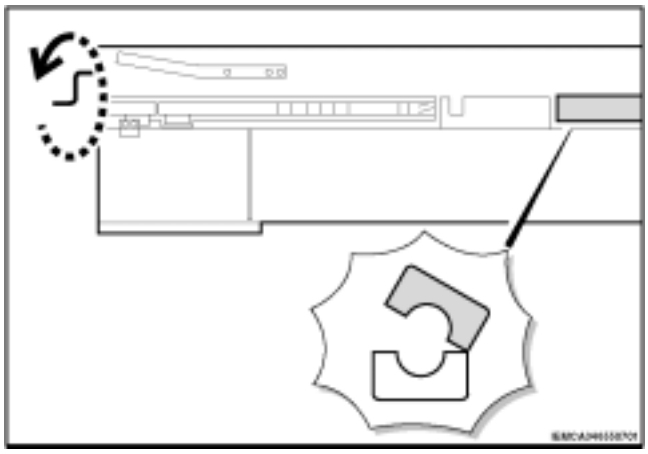
5.3.2 Clamps - Replacement

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:

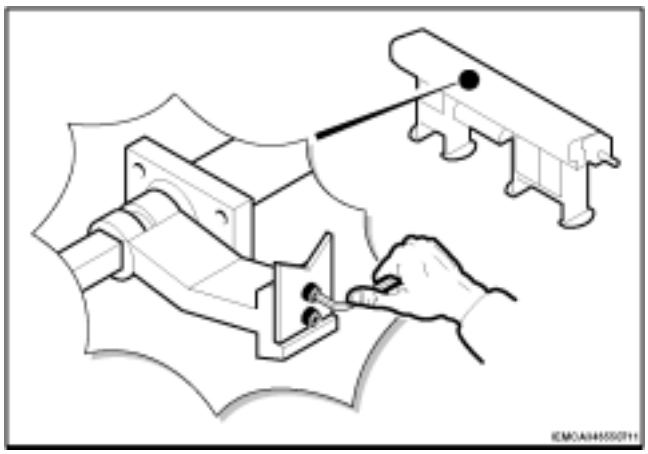
- With the feeder powered off and the compressed air supply disconnected, close the clamps manually.



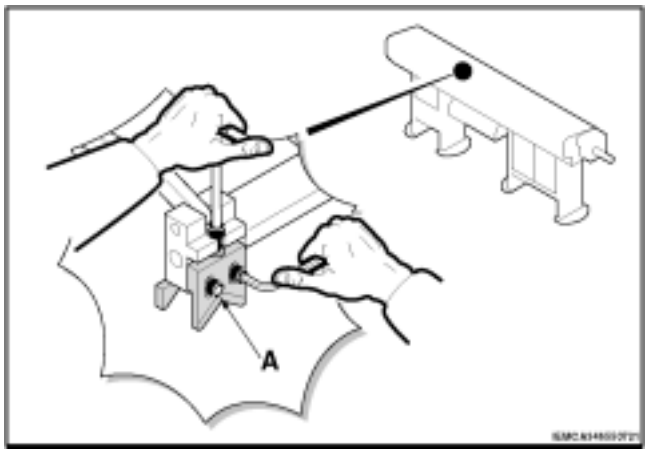
- Open the upper guides.



- Manually lift the lower lever and replace the clamp. Remove the intermediate flag if necessary (see paragraph 5.3.1).



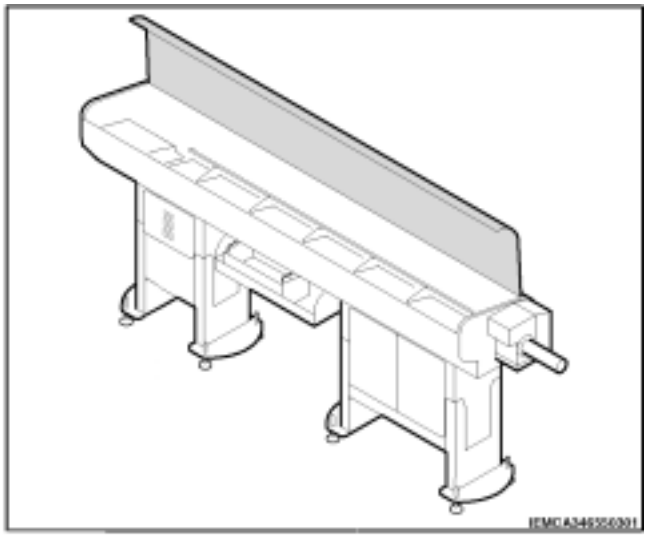
- Unscrew screws "A" and change the clamp.
- Restore the initial conditions of the bar feeder.



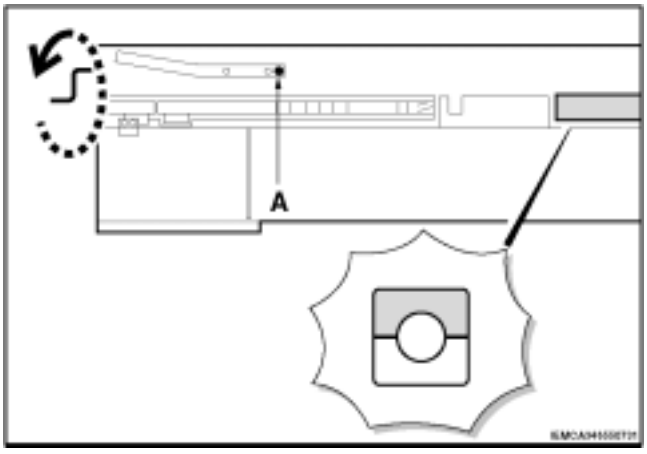
5.3.3 Bar guide plates and bar selectors - Adjustment

Preliminary procedure

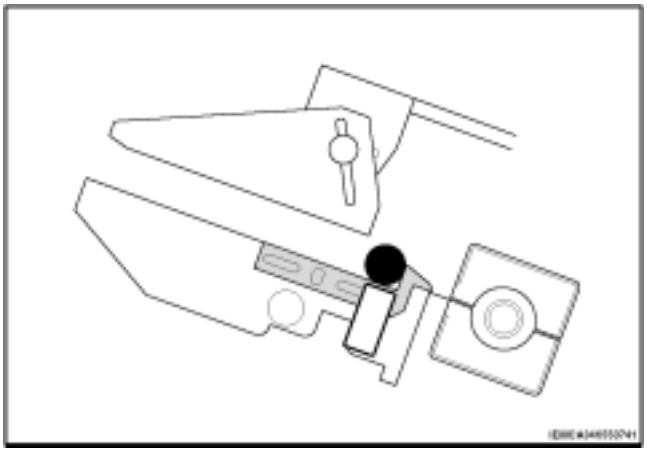
- Open the upper guard.



- Close the upper guides (sensor "A" must be energized)

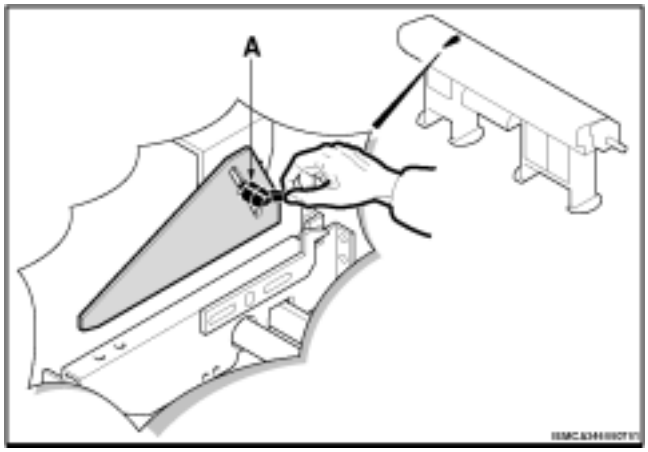


- Make sure that the bar selectors are lower than the magazine surface.
- Prepare two bar remnants having a length of 1200 mm.

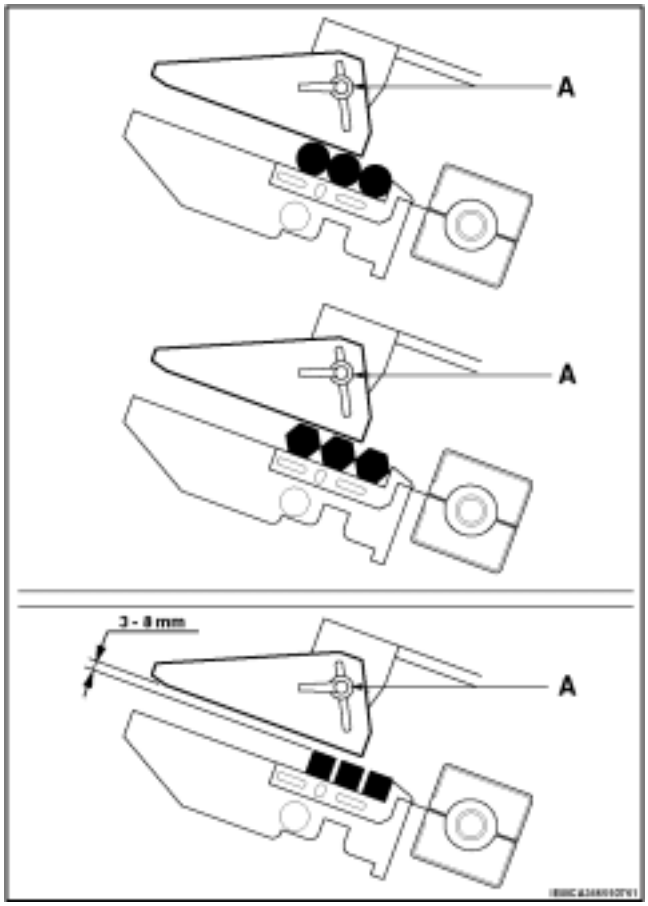


Adjustment of the bar guide plates

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



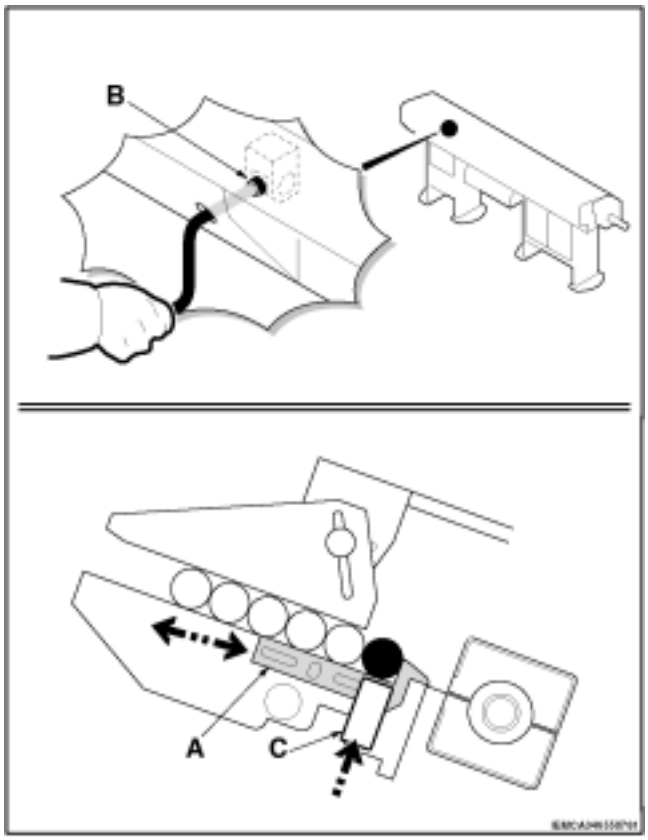
- If the bars are round or hexagonal, make sure that a little clearance is left between the plate and the bars. The clearance must be 3÷8 mm for square bars.
- Tighten the screws "A" on all plates.



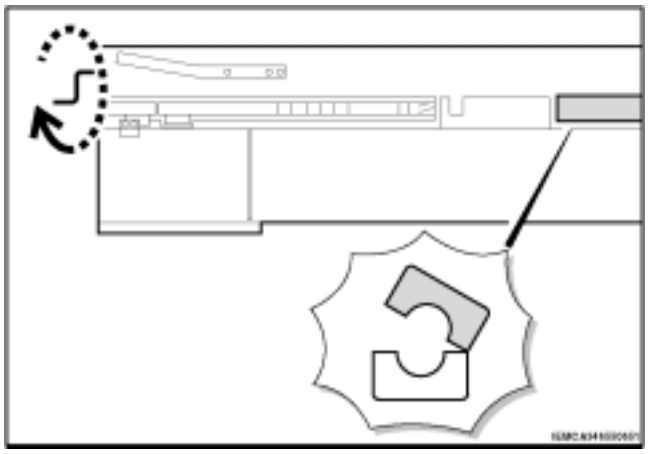
Adjusting the bar selectors

Make the adjustment as follows.

- Use screw "B" to adjust the transverse position of bar stop "A" so that selectors "C" lift just one 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.



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.

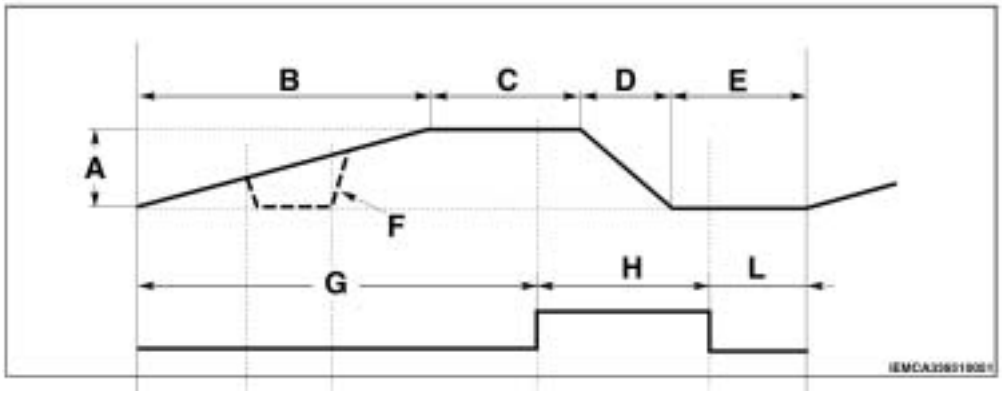
S99 - Camshaft stop
It determines the camshaft stop position when there is no thread (connected in series with a microswitch or relay located on the lathe).

CAM SETTING

LATHE CAM COMPLETE CYCLE

PHASE HEADSTOCK

PHASE COLLET LATHE

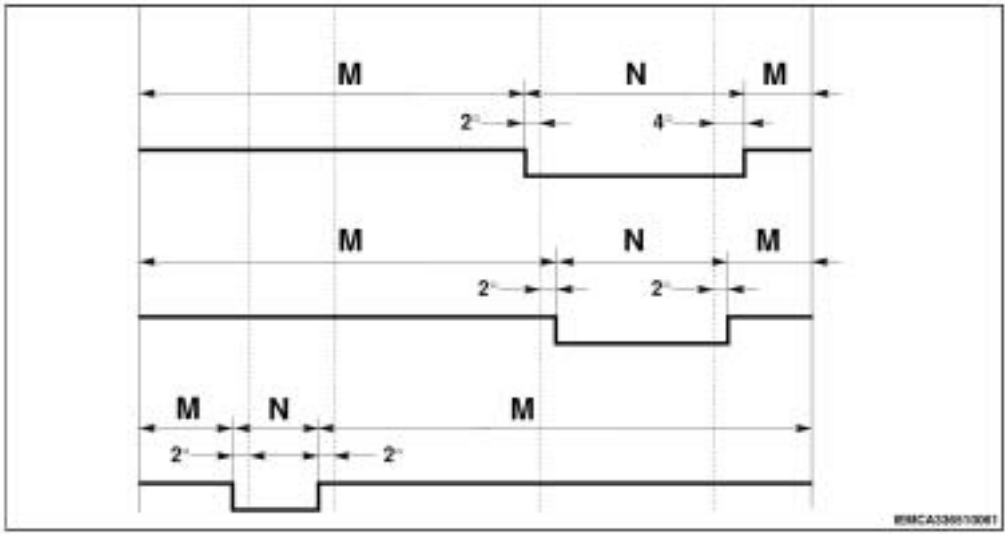


FEEDER CAM COMPLETE CYCLE

PHASE MICROSWITCH S90

PHASE MICROSWITCH S91

PHASE MICROSWITCH S92



A	STROKE	G	CLOSED
B	FEED	H	OPEN
C	FORWARD STOP	L	CLOSED
D	RETURN	M	DISABLED
E	BACKWARD STOP	N	ENABLED

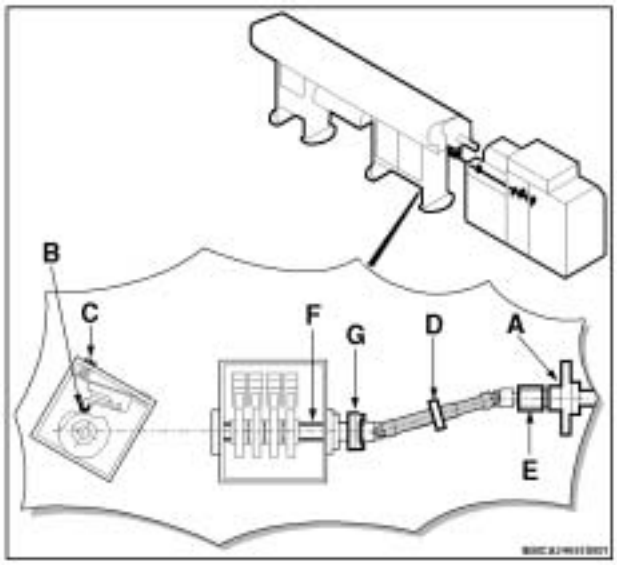
F HEADSTOCK RETURN WITH CLOSED COLLET IF REQUIRED FOR SPECIAL OPERATIONS

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.

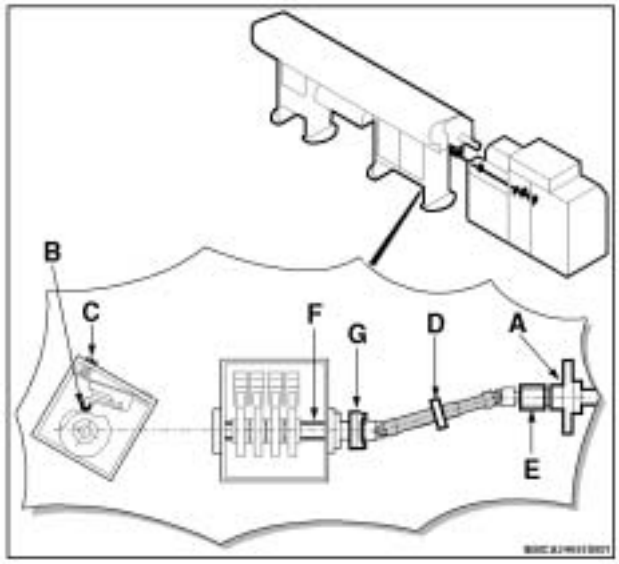
INFORMATION:

"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.

INDEX

6.1 DESCRIPTION OF THE CONTROLS

INFORMATION:

from the hand-held keyboard it is possible to start automatically the bar feeder, even when lathe 'MAN/AUT' signal is in Manual mode.

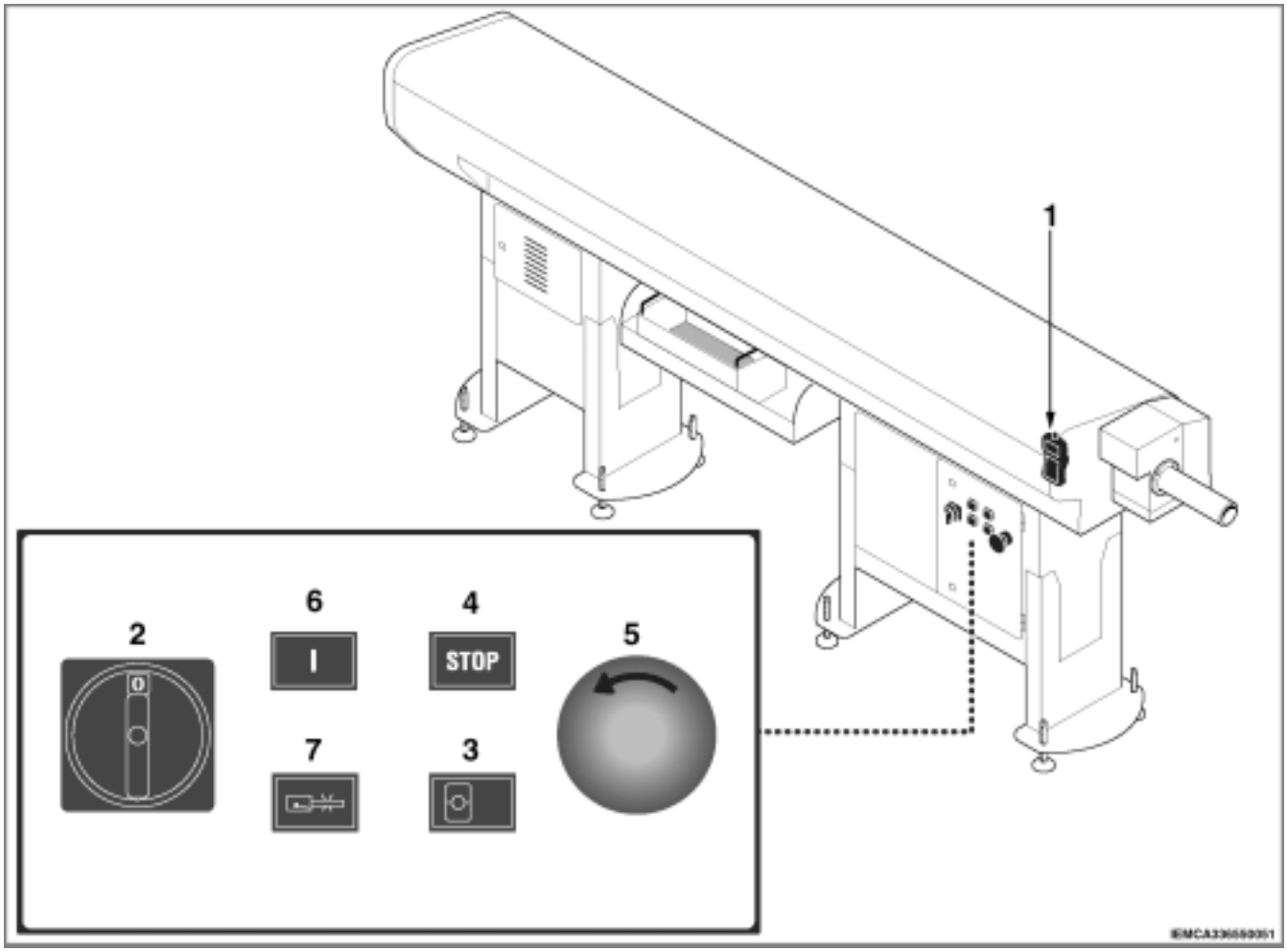
INFORMATION:

When Automatic mode is on, the bar feeding is possible only when lathe 'MAN/AUT' signal is in Automatic mode.

INFORMATION:

Pressing Manual mode button it is possible to prevent the bar feeder automatic start by the lathe.

The illustration shows the positions of both the electrical controls and hand-held keyboard "1".



2 MAIN SWITCH: turns the power supply on and off.
- Position 0 (OFF) the machine has no power supply.
- Position I (ON) the machine has power supply.

3 HALF-BUSHING OPENING AND CLOSING BUTTON (white light)
- During the "Manual" mode, when the bar feeder is in the required position, the half-bushings will close when this button is pushed. If pushed again, the half-bushing will open.
- During the "Automatic" mode, if pushed, the half-bushings will open and close, according to the selected sequence. If pressed again, the half-bushings will remain open during the entire operating cycle.

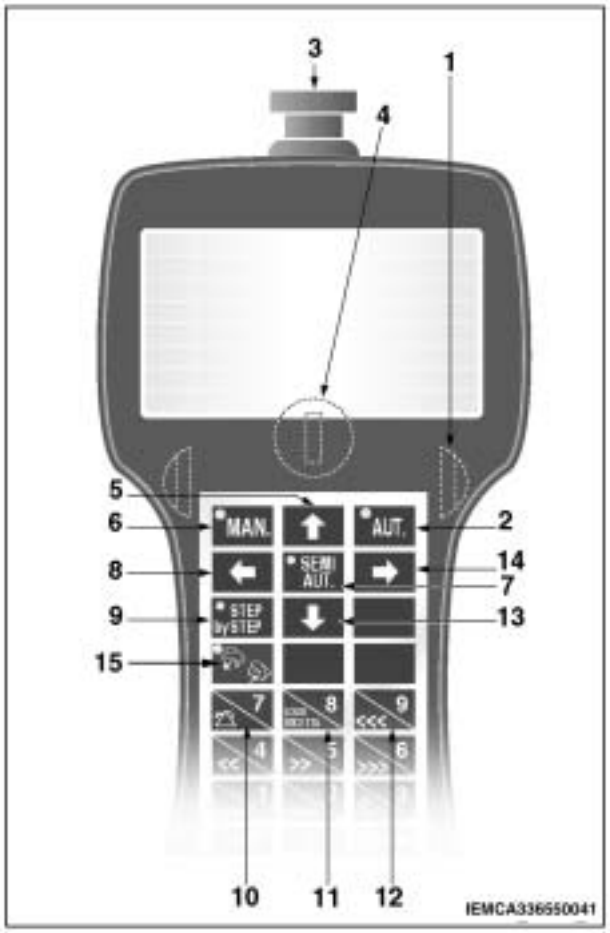
4 BAR FEEDER STOP BUTTON (red): to stop the bar feeder and to reset "Errors".

5 EMERGENCY STOP BUTTON: this button stops the bar feeder in an emergency situation. To restart, first you must manually unlock the button

6 BAR FEEDER START BUTTON (green light): to start the bar feeder, hold down the button until the button itself lights up.

7 REMNANT DETECTION DISABLING BUTTON (green light)
Press the button to feed a "new " bar without the detection of bar remnant in the bar pusher collet.

6.2 DESCRIPTION OF KEYBOARD CONTROLS



1 Start buttons: opposite buttons that when pushed together will start some procedures. Press the two buttons, and at the same time, the key corresponding to the required function.
2 Selects the automatic mode.
3 Stops the bar feeder: to restart you must manually un-lock the button.
4 Selects the keyboard modes:
- in the position; the "messages display" mode is selected.
- in the position the "parameters display" mode is selected.

5 Multifunction
- Allows you to scroll the page upwards.
- Moves the cursor upwards.
- Increases the preset data programming of date and time, by one unit.

6 Selects the manual mode.
7 Selects the semi-automatic mode. Push to select, press again to unselect.
8 Multifunction
- Selects the previous parameter.
- Moves the cursor towards the left.

9 Starts "step-by-step" movement of an operation cycle: every push of the key initiates a step in the cycle.
10 Multifunction
- Sets the font.
- Starts and turns off the oil pump. Push to start the pump and push again to turn it off.

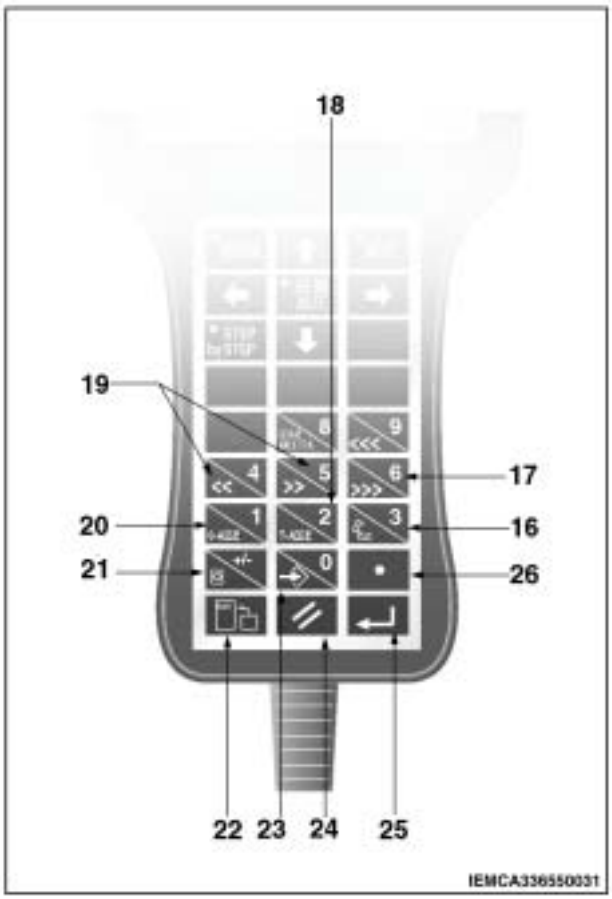
11 Multifunction
- Number setting.
- Loads the programme from the PLC (entering default settings in the parameters).

12 Multifunction
- Number setting.
- Moves the bar pusher to a high speed.

13 Multifunction
- Allows the downwards scrolling of the page.
- Moves the cursor downwards.
- Decreases the programming mode of date and time by one unit

14 Multifunction
- Selects the next parameter
- Moves the cursor towards the right.

15 Lifts and lowers the bar selectors (LED illuminated when selectors are at their "down" position).



16 Multifunction
- Number setting.
- Opens the guide channels.
  Hold down the two start buttons and then the key; release the two buttons and the key only when the movement has terminated.

17 Multifunction
- Number setting.
- Moves the bar pusher to a high speed.

18 Multifunction
- Number setting.
- Sets the carriage movement motor.
  During the daily use of the bar feeder this function must never be used.

19 Multifunction
- Number setting.
- Moves the bar pusher to a low speed.

20 Multifunction
- Number setting.
- Resets the "BAR FEEDER ZERO SETTING" of the carriage.
  Hold down the two start buttons and then the * key; release the two buttons and the key when the carriage starts moving towards the "BAR FEEDER ZERO SETTING".

21 Multifunction
- Number setting.
- Closes the guide channels.
  Push the two start buttons and then the * key; release the two buttons and the key only when the movement has terminated.

22 Goes to the MAIN MENU.

23 Multifunction
- Number setting.
- Recalls the cursor.

24 Multifunction
- Interrupts the selection mode.
- Resets the values held before the modifications, which were not confirmed.

25 Confirms the data entered.

26 Sets the 'point'

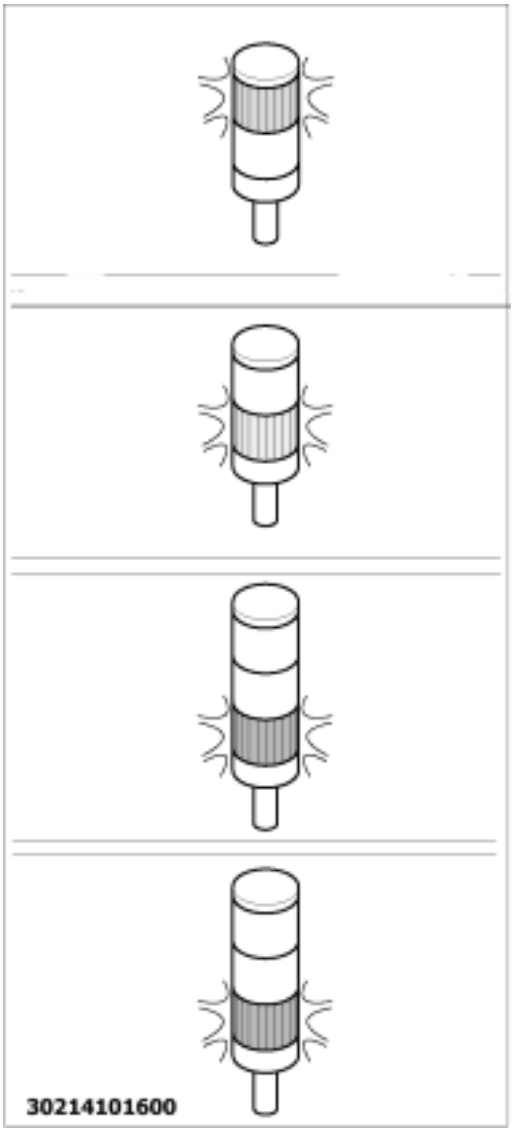
6.3 LUMINOUS INDICATOR - SIGNAL DESCRIPTION

BLINKIGN ORANGE LIGHT; the bar feeder magazine cover is open.

BLINKING GREEN LIGHT; it indicates that the bar feeder is in the automatic mode.

BLINKING RED LIGHT; signals that the bar feeder is not operating, or that it is in the manual mode. (OPTIONAL)

BLINKING BLUE LIGHT; signals that the bar feeder is carrying out the bar change.
FIXED BLUE LIGHT; signals that the PLC battery is exhausted. (OPTIONAL)



6.4 BARS TO BE MACHINED - CHARACTERISTICS AND PREPARATION

CAUTION:

do not feed bars having different sizes than the manufacturer's prescribed sizes.
clean the bar surface before loading bars.

Table 1. Maximum bar length

Model	Version	Max. length mm (ft)
BOSS 332 BOSS 545 BOSS 551	21	2080 (6,8)
	32	3200 (10,5)
	37	3740 (12,2)
	44	4400 (14,4)

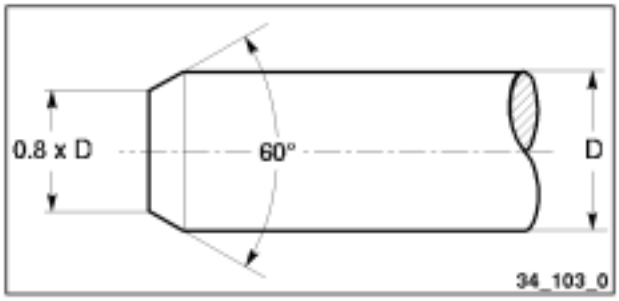
INFORMATION:

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

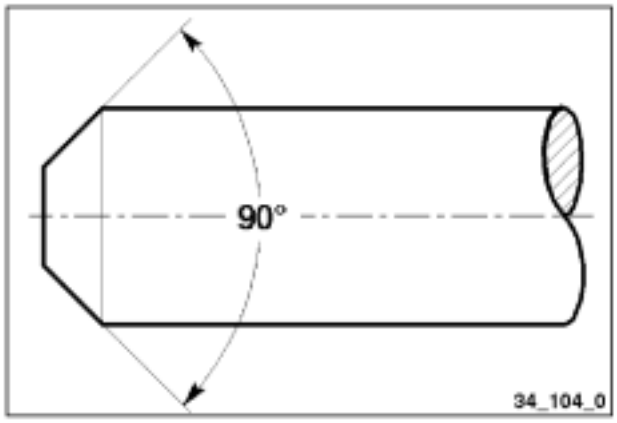
Please find herewith some advice to optimise the bar feeder performances.
Usually barstocks do not need any preliminary operations to be carried out on ends, nevertheless to obtain the best results when loading them, it is advisable to chamfer them.

SOLID BARS

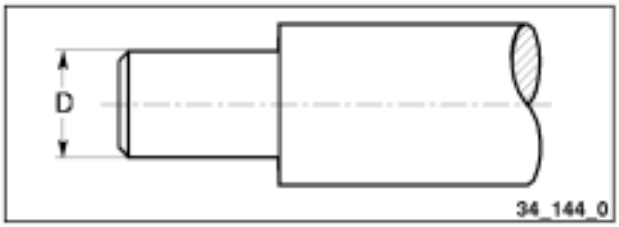
Check that there is not too much rag on bar head, which might hinder insertion in the lathe collet.
Check that there is not too much rag on bar rear end, which might hinder insertion in the bar-pusher collet. In any case, to improve operation during this phase, we advise to chamfer the bar as shown in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

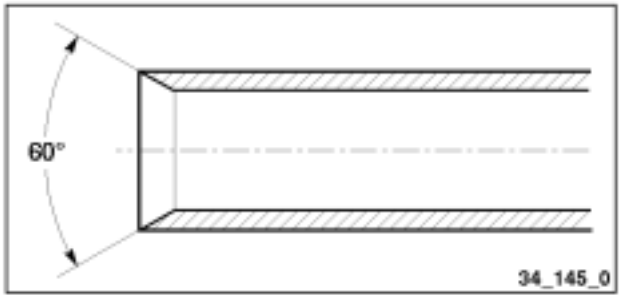


If bars have to be machined having a diameter equal to or only slightly smaller than the bar-pusher diameter, bar rear ends should be machine-turned; diameter "D" should be suitable for the collet size installed in the bar-pusher.



PIPES

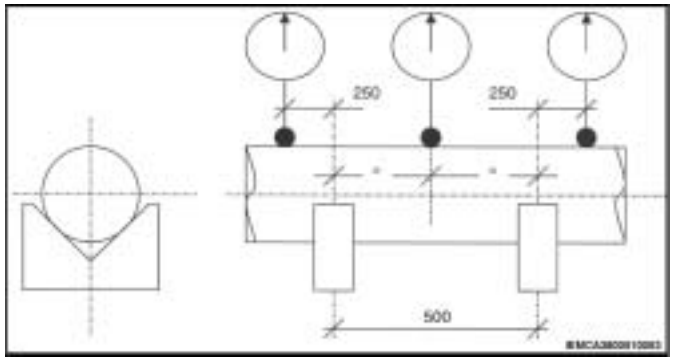
If pipes have to be machined, their rear ends should be chamfered as shown in the figure.



6.4.1 BAR STRAIGTHNESS - Measuration

The bar vibrations are partially caused by the condition of the bar itself: in case the bar is not perfectly straight, this can cause vibrations.

Round bars
As stated also in the UNI-10233/2 regulation, the bar straightness can be measured by positioning the bar on two V-supports and control its straightness. In that case, the measurement can be carried out as shown in the figure.
It is necessary to rotate the bar on itself and measure the three indicated sections. In this case the S-max value (difference between maximum and minimum reading on the comparator) should be interpreted as follows:



S max	Quality
< 0,25 mm	Good
0,25 < S max < 0,5 mm	Mediocre
> 0,5 mm	Problematic

In order to obtain a reliable value it is necessary to repeat measurements on the whole bar length by positioning it on a series of supports at a distance of 500 mm from each other and comparing the different values between prisms.

INFORMATION:

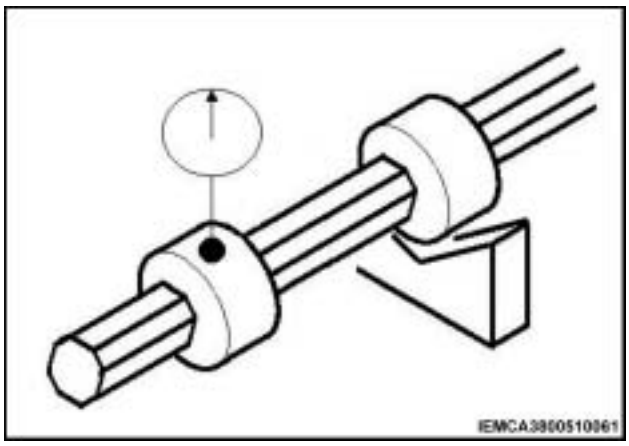
Obviously, bar straightness is proportional to the rigidity of the material and to the number of revolutions (RPM) the lathe is operated at. highly The lack of bar straightness highly influences the maximum number of revolutions reachable: the bigger the diameter the greater the influence. The data concerning bar straightness do not absolutely refer to local inflection and/or deformation that the bar shall not absolutely show. Instead, they refer to the bar uniform curvature.

INFORMATION:

For efficient operation of the feeder the use of rolled bar stock is not recommended.

Hexagonal, square and section bars

For non-round bars, insert some bushings on the bar to be controlled.
Position 2 bushings on the 2 V-supports.
In that case, the measurement can be carried out as shown in the figure.
Rotate the bar on itself and carry out the measurement on a bushing external to the two V-supports.

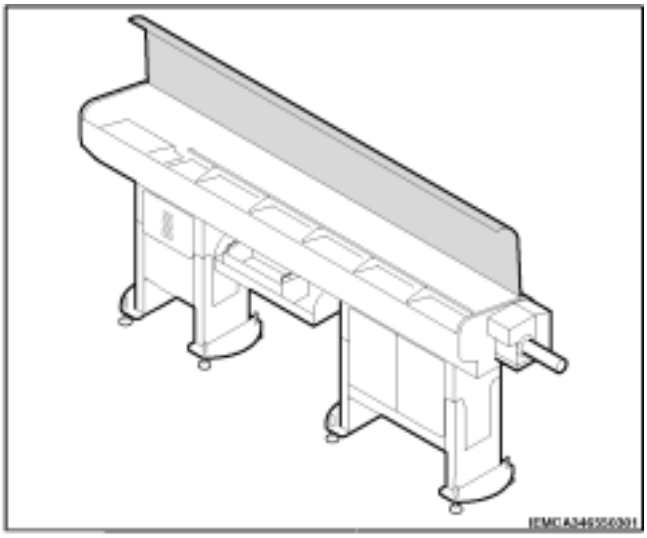


6.5 FEEDER SET-UP AND AUTOMATIC CYCLE START

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.

- Perform the software parametering (refer to the "Push-button panel instruction manual")
- 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.

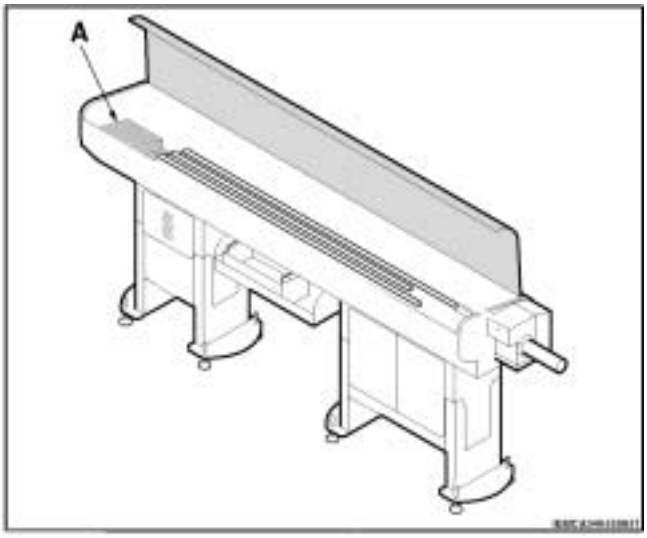
CAUTION:

wear personal protections according to the regulations in force.

Follow these instructions to load bars:

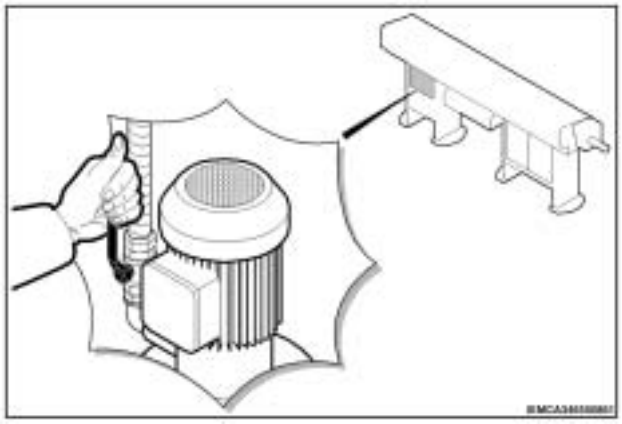
- open the upper guard;

- place bars against the guard "A" and close the upper guard.

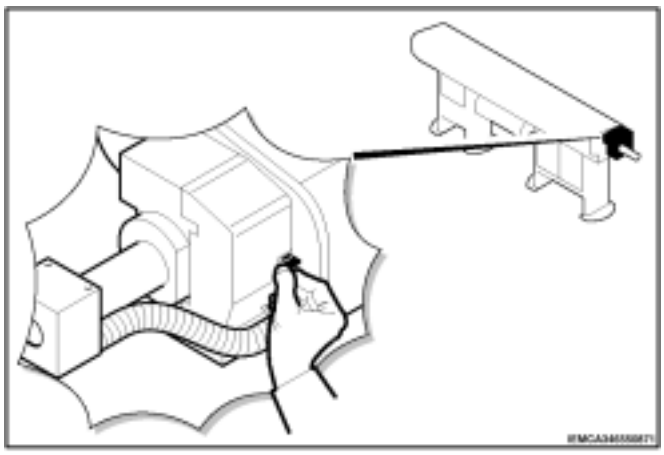


6.5.2 Lubrication oil - Flow adjustment

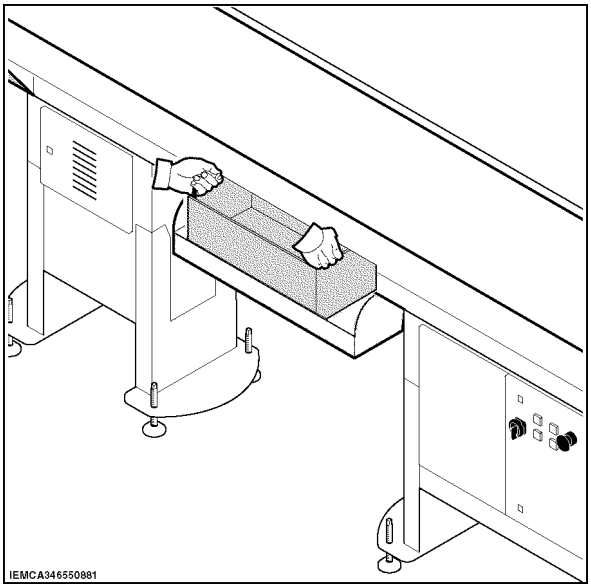
Oil flow in the guides and bush-holder device is automatically controlled during the feeder automatic cycle.
The pump is started after the feeder has completed bar change-over; it is stopped when the bar-pusher approaches the bush-holder device.
Oil flow should be adjusted according to bar diameter and profile through the valve located upstream from the installation.



- Adjust oil flow in the bushing holder device as well.



6.5.3 Automatic cycle start



- Power the lathe on.
- Turn the main power switch to the position I (ON).
- Press  to start the bar feeder.
- Press  to select the manual mode.
- Carry out a "BAR FEEDER ZERO SETTING" in the following way:

press the start buttons plus  , if the top guides are not closed, the bar feeder will not complete a "ZERO SETTING"; messages are displayed describing the operations to carry out in order to bring the top guides to the required position. After carrying out the required operations, press the start buttons plus  .

- Enter the parameter values (refer to the "Push-button panel instruction manual").
- Press  to move the bar fore end closer to the cutting tool.

  To start machining, press  , 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.
- Empty the remnant collection box during machining. Lift the remnant box over the tank and pull it off.

CAUTION:

do not manually lift loads with weights exceeding those prescribed by the applicable regulations in force.

ATTENTION:

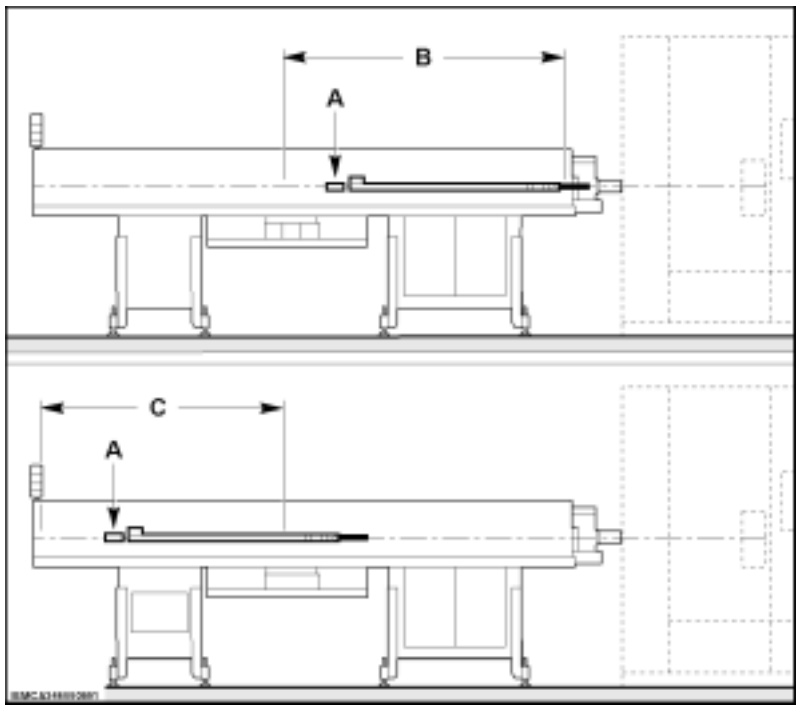
Keep hands out of remnant drop area after the remnant box has been pulled off.

CAUTION:

wear personal protections according to the regulations in force.

Place the box back under the remnant outlet.

6.5.4 Guide channel opening/closing procedure



The following instructions concern guide channel opening and closing in the manual function.

OPENING PROCEDURE

Open the guide channels by pressing the start buttons plus 3; if the carriage "A" is located in the area beyond the clamps (area "B"), the guide channels will open immediately. If the carriage is located in the area before the clamps (area "C"), the guide channels will only open after the carriage has automatically moved to the "BAR FEEDER ZERO SETTING" position.

CLOSING PROCEDURE

If the carriage "A" is located in the area beyond the clamps (area "B"), close the guide channels by pressing the start buttons plus .

If the carriage is located in the area before the clamps (area "C"), move it to the "BAR FEEDER ZERO SETTING" position by pressing any one of the following keys: 9 <<< 4 << 5 >> 6 >>>.

When the carriage reaches this position, the displayed message will be: "Carriage to back limit stop"

Close the guide channels by pressing the start buttons plus .

6.5.5 Cycle actuation mode in the STEP BY STEP function

Introduction
This mode can be used for many reasons, as for instance:
- to check a complete bar change cycle;
- to check the bar feeder mechanics;
- to load a single bar with the intent of checking the facing;
- eccetera.

Procedure
- Press I to start the bar feeder.
- Check that the bar feeder is under closed guide channel conditions.
- Press SEMI AUT. plus AUT. to select the semiautomatic function.
- Press STEP by STEP, the bar feeder performs the first step.
- Press STEP by STEP, the bar feeder performs the second step, and so on.

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.
- Stop the lathe.
- Turn the main power switch to the position O (OFF).

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 the start buttons plus 

 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 the start buttons plus 

.
- Check that the bar is in the required position in the lathe collet and that the collet is closed.
- 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.
- Turn the main power switch to the position I (ON).
- Press  to start the bar feeder
- Press 

 to select the manual mode.
- Press the start buttons plus 

 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.
- Turn the main power switch to the position I (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

- 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 the working parameters in the keyboard.
- Prepare the lathe for the new type of machining
- Start the automatic work cycle (paragraph 6.5.3).

6.9.2 Machining type change without guide change-over

- 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 the working parameters in the keyboard.
- Prepare the lathe for the new type of machining
- Start the automatic work cycle (paragraph 6.5.3).

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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

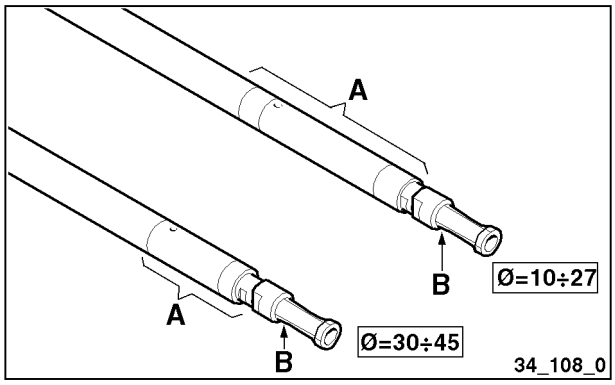
Table 1. Scheduled maintenance

Bar feeder part	Operation to carry out	Frequency					
		Hours			Regularly	Every year	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		•				
Guide opening screw	Greasing		•				
Oil recovery device brushes	Wear check		•				
Drive belt	Wear control	•					
	Tension check	•					
Guide opening belt	Wear check			•			
Bar/headstock synchronizing device (*)	Wear check						5000
Air filter	Check				•		
PLC battery	Replacement					•	
Safety devices	Check operatio (see "safety devices")	•					

(*) Only if installed.

7.2.1 Revolving tip and collet - Check

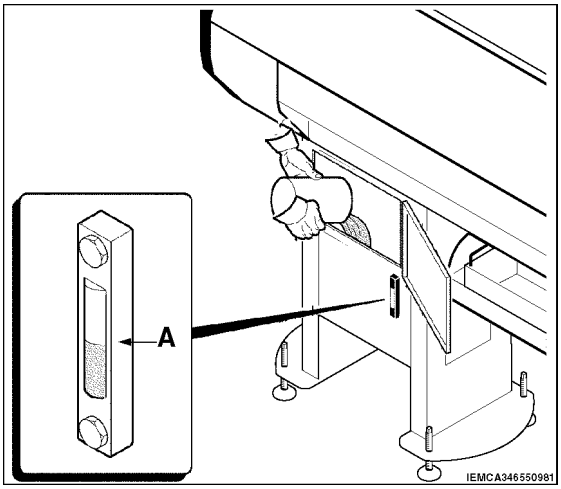
- Remove the bar-pusher as described under paragraph 5.3.1
- Check that the revolving tip "A" can turn freely without too much backlash.
  Also check the good state of repair of collet "B".



7.2.2 Lubricating oil - Level check

CAUTION:

wear personal protections according to the regulations in force.



- Wait until the bar feeder has been off for at least 6 hours.
- Check the level by means of the "A" indicator.
  For any topping up, pour the oil directly into the base

Table 2. Guide lubricating oil characteristics

Model	Oil type
BOSS 332	Classe C – CKB 100
BOSS 545/551	Classe C – CKB 150

See paragraph 2.6. for the comparative table.

7.2.3 Lubricating oil - Change

CAUTION:

wear personal protections according to the regulations 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.
- For loading, pour the oil directly into the tank and check its level by means of the "A" indicator.

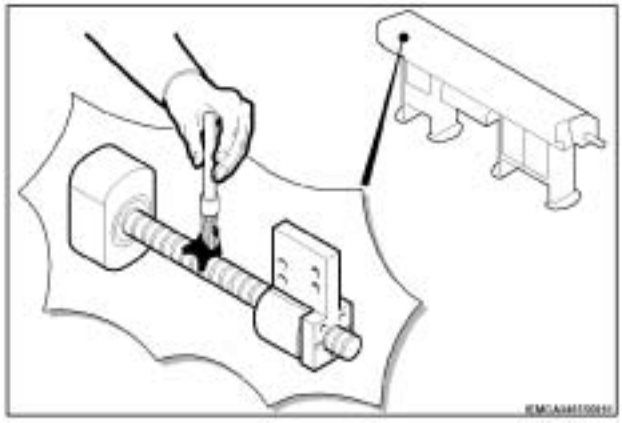
Table 3. Guide lubricating oil characteristics

Model	Oil type	Quantity (l)
BOSS 332	Classe C – CKB 100	57
BOSS 545/551	Classe C – CKB 150	57

See paragraph 2.6. for the comparative table.

7.2.4 Guide opening screw - Greasing

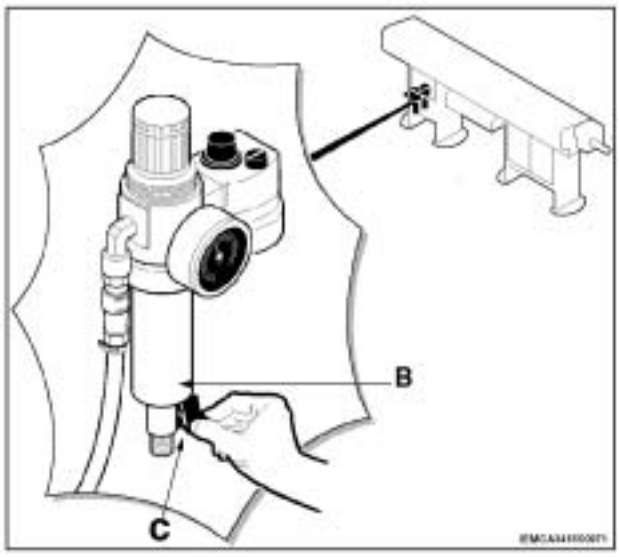
- Open the upper guard and carry out greasing.



7.2.5 Air filter unit - Check

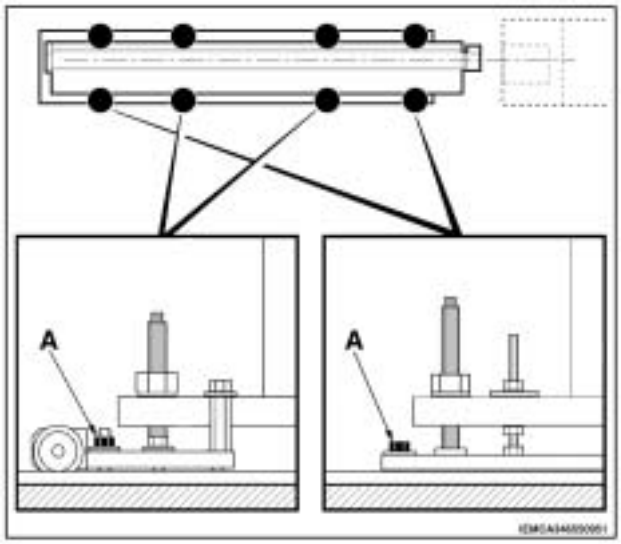
FILTER A

- Make sure that cup "B" is not full of condensate. If need be, bleed the condensate by valve "C".
- Check the pressure switch adjustment, see paragraph 5.2.2.

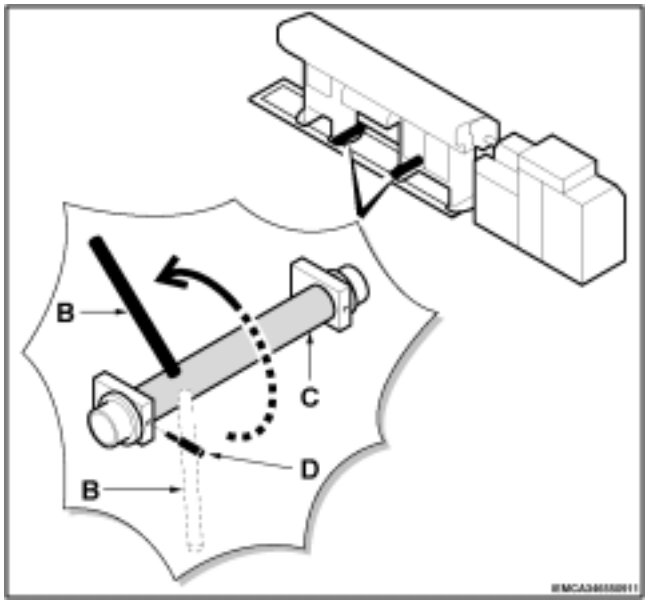


7.3 AXIAL DISPLACEMENT DEVICE - USE

- 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. Be careful not to damage any connection wires (e.g. the lathe interface power lead, the camshaft disengagement device lead, the hand-held keyboard lead, the pneumatic connection cable, etc).
- Carry out all lathe maintenance operations.
- Cause the bar feeder to slide forwards and restore its initial conditions.



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8.1 GENERAL FAULTS

TROUBLE	CAUSES	CURES
The bar feeder will not start	No power	Check the electric connections
	Open guard	Close the guard
	Emergency systems on	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

PROBLEMS	CAUSES	REMEDIES
During the loading operation the bar cannot be inserted into the magazine	The bar contrast strips are too low	Adjust the position of the contrast strips
The first bar in the magazine fails to drop into the guides	The bar contrast strips are incorrectly adjusted	Adjust the bar contrast strips (see chapter 5.3.3).

8.3 INSERTION IN THE COLLET - Faults

PROBLEMS	CAUSES	CORRECTIVE ACTION
Bar fails to enter collet.	Collet diameter not suitable for bar diameter.	Change collet.
	Excessive rag on bar rear end.	Trim rag before feeding.

8.4 BAR FEEDING - Faults

PROBLEMS	CAUSES	CORRECTIVE ACTION
Difficult bar introduction into lathe spindle	Bar feeder not aligned with lathe.	Check and correct alignment.
Difficult bar introduction into lathe collet	Excessive rag on bar rear end.	Trim rag before feeding.

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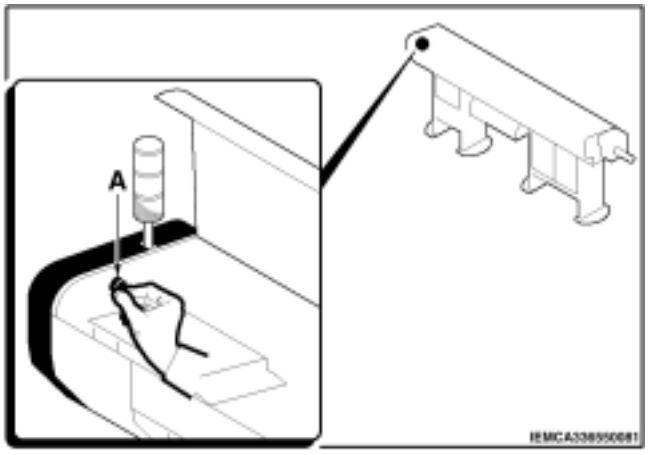
9.1 FEED CHAIN - REPLACEMENT

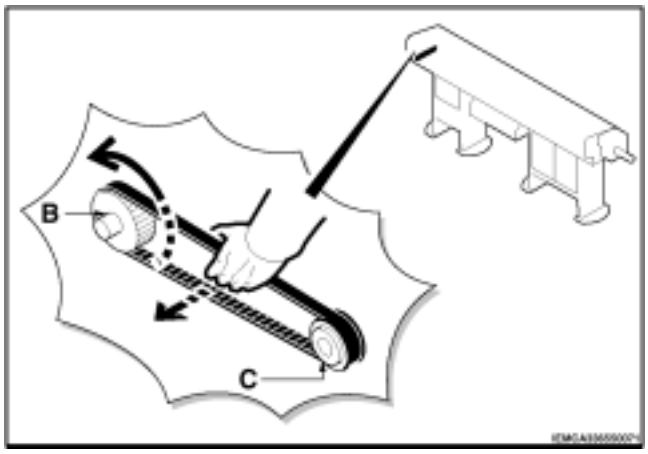
Replacement of the feed chain is a highly complex operation; call IEMCA after-sales service.

9.2 GUIDE OPENING BELT - REPLACEMENT

- Open the guard by unscrewing the fastening screws.



- Manually turn the pulley "B" and simultaneously pull the belt all the way out.
- Place a new belt in the pulley "C", lead it into the pulley "B" and turn the belt until it is fully inserted.
- Re-close the previously opened guard.



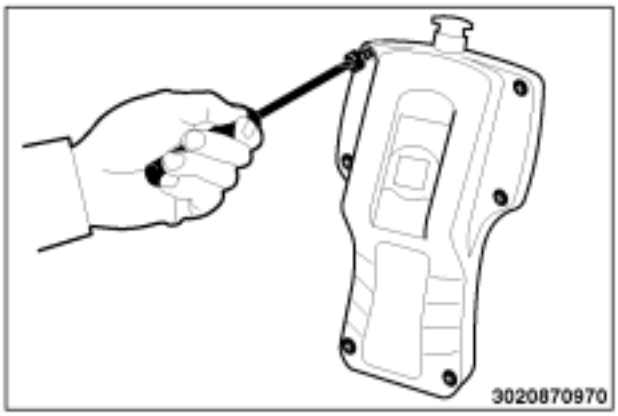
9.3 KEYBOARD BATTERY - REPLACEMENT

Replace the battery at least every year, and when the following message is displayed "KEYBOARD BATTERY EXHAUSTED":

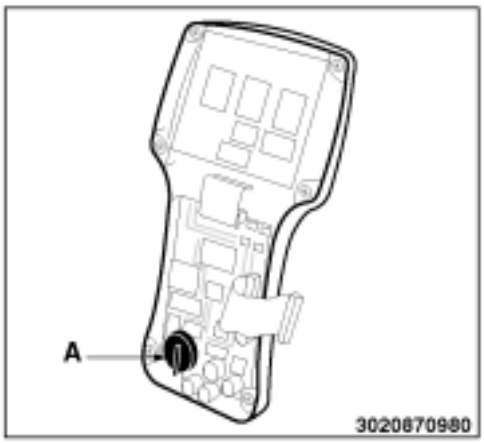
INFORMATION:

failure to replace the battery can cause the calendar - clock memory to be deleted.

- Disconnect power.
- Screw out the six screws and remove the two half-shells.



- Remove battery A from its housing.
- Insert the new battery (type DURACELL DL2430).



DANGER - WARNING:

danger of battery explosion if the battery is mounted with inverted polarity.

- Reassemble the two half-shells and screw down the six screws.
- Reconnect mains supply.

INFORMATION:

Discard used batteries in appropriate waste containers. Avoid environment pollution.

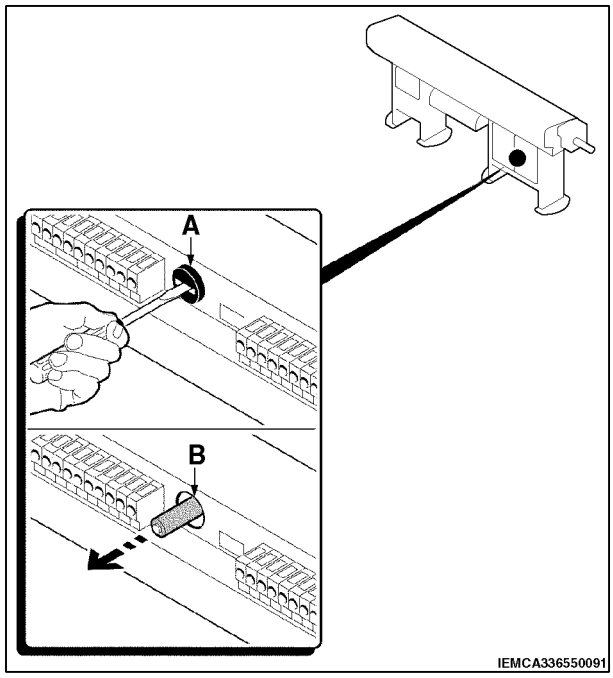
9.4 PLC BATTERY - REPLACEMENT

Replace the battery at least every year, and when the following message is displayed: "PLC battery exhausted"

INFORMATION:

when this message is displayed, the battery should be replaced within one day, otherwise, the "PLC/NC Software" data will be deleted.

- Unscrew cap "A"and pull out battery "B";
- Insert a new battery (AA 3.6 volts lithium-type battery) and make sure that it is introduced correctly, then tighten the cap "A".



9.5 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

Model	Code	Name	Characteristics	Notes	Qty
BOSS 332 BOSS 545 BOSS 551	Tav.06 n.13 Spare Parts Book	Feed chain			1
	Tav.06 n.12 Spare Parts Book	Connection link			1
	32210401	Limit switch	BERO 3RG4012-0AG33 SIEMENS		1
	32210004	Limit switch	BERO 3RG4012-0AG07 SIEMENS		3
	Tav.101-201 Spare Parts Book	Bar-pusher		Specify diameter and length	1
	Tav.100-200 Spare Parts Book	Revolving tip		Specify diameter	1
		Collet		Specify inside and outside diameter	1
	38130001	Battery	Battery 3 Volt VARTA CR2032	Hand held and fixed kieyboards	1
	38130009	Battery	Battery 3,6 Volt	Plc Arteco	1

9.6 Machine Dismantling [qualification]

This operation is to be carried out by specialized workers, according to the workplace safety laws in force.
Do not disperse non-biodegradable items, lubricant oils and non-ferrous components (rubber, PVC, resins etc.) in the environment.
Dispose of them according to the laws in force.

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10.1 LIST OF AFTER-SALES CENTERS

UK :	Kitagawa Europe Ltd.	7 Dolphin Industrial Estate, Southampton Road SP12NB Salisbury	Phone ++44 1722 439721 Fax ++44 1722 421071 www.kitagawaeurope.com
FRANCE:	IEMCA France	Z.I. Des Grands Pres 145, rue Louis Armand 74300 Cluses	Tel +33 450 896960 Telefax +33 450 896135 Email : iemca@iemca.fr
GERMANY: *(West - Nord-Deutschl.)*	Hoßfeld GmbH	Königsberger Straße 10 D-58511 Lüdenscheid	Tel. ++49 02351 / 80521 Fax ++49 02351 / 860442 Email : HossfeldgmbH@t-online.de
GERMANY: *(Neue Länder)*	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: *(Süd-Deutschl)*	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
ITALY:	IEMCA S.p.A.	Via Granarolo, 167 I-48018 Faenza (RA)	Tel. 0546 / 698208 Fax 0546 / 698290 Email : iemca@igmi.it
SWITZERLAND: *(Canton Ticino)*	IEMCA S.p.A.	Via Granarolo, 167 I-48018 Faenza (RA)	Tel. 0546 / 698208 Telefax 0546 / 698290 Email : iemca@igmi.it
SWEDEN	Kenson Component AB	Box,114 44139 Alingsaes	Phone ++46 322 637890 Fax ++46 322 633367 E-mail:info@kenson.se - www.kenson.se
SWITZERLAND: *(Suisse Française)*	BARSPEED	Zone industrielle CH- 2607 Cortébert	Tel. ++41 032 / 4892726 Telefax ++41 032 / 4892729
TAIWAN (ROC):	GIMCO	No9, 19th Road Taichung Industrial Park - Taichung - Taiwan R.O.C	Tel. ++886-4-23596980 Telefax ++886-4-23586838 Email : gimcoint.@ms19.hinet.net
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