

AUTOMATIC BAR FEEDER

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

Elite112-220Evo

EN

MANUAL FOR USE AND MAINTENANCE

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PRODUCT: AUTOMATIC BAR FEEDER

MODEL: Elite112-220Evo







INDEX

1	GENERAL INFORMATION Elite112_220_Evo_SIII.....	1
1.1	WARRANTY CONDITIONS.....	2
1.2	PURPOSE OF THE MANUAL.....	3
1.3	MANUFACTURER AND BAR FEEDER IDENTIFICATION.....	4
1.4	ASSISTANCE REQUEST MODE.....	5
1.5	GLOSSARY AND TERMINOLOGY.....	5
1.6	ATTACHED DOCUMENTS.....	6
2	TECHNICAL INFORMATION Elite112_220_Evo_SIII.....	1
2.1	BAR FEEDER GENERAL DESCRIPTION.....	2
2.1.1	Pneumatic system - Main components.....	5
2.2	OPERATING CYCLE.....	6
2.2.1	MACHINE PHASES - Status of cycle control sensors.....	10
2.3	SAFETY DEVICES.....	18
2.4	SAFETY PLATES - LOCATION AND DESCRIPTION.....	20
2.5	VERSION DESCRIPTION.....	21
2.6	TECHNICAL DATA.....	22
2.6.1	Noise levels.....	27
2.7	DEVICE FOR SLIDING HEADSTOCK LATHES - FOREWORD.....	28
2.7.1	Axial displacement device (Optional) - Description.....	28
2.7.2	Bar/headstock synchronization device - Description.....	29
2.7.3	Diaphragm bushing device OPTIONAL (for Elite 220 only) - Description.....	30
2.7.3.1	Additional bush device - Optional - Description .....	30
2.7.4	Telescopic front nose - Description.....	31
2.8	DEVICES FOR CAM LATHES - FOREWORD.....	32
2.8.1	Cam box - Description.....	32
2.8.2	Camshaft release device - Description.....	32
3	SAFETY – GENERAL INFORMATION Elite112_220_Evo_SIII.....	1
3.1	GENERAL SAFETY REGULATIONS.....	2
3.2	HANDLING AND INSTALLATION - Safety.....	3
3.3	ADJUSTMENTS AND SETUP - Safety.....	3
3.4	USE AND OPERATION - Safety.....	4








INDEX

3.5	BAR FEEDER MAINTENANCE - Safety	4
3.6	EC DECLARATION OF CONFORMITY	5
3.7	GENERAL DESCRIPTION OF SUPPLY	6
3.8	RESIDUAL RISKS	7
3.9	FORESEEABLE MISUSES	12
4	HANDLING AND INSTALLATION Elite112_220_Evo_SIII.....	1
4.1	PACKAGING 	3
4.1.1	BAR SUPPORT DISASSEMBLING	3
4.2	LIFTING 	3
4.3	INSTALLATION AREA - FEATURES (with and without displacement) 	5
4.4	BAR FEEDER - INSTALLATION 	6
4.4.1	Backing plates and support feet - Installation	6
4.4.2	Height - Adjustment	6
4.4.3	Preliminary positioning	7
4.4.4	Front nose - Installation	8
4.4.5	Levelling and alignment	9
4.4.7	Bar feeder fastening	16
4.5	DEVICE FOR SLIDING HEADSTOCK LATHES - INSTALLATION 	17
4.5.1	Bar-headstock synchronization device	17
4.5.2	Telescopic front nose - Installation.....	18
4.6	DEVICES FOR CAM LATHES - INSTALLATION 	19
4.6.1	Cam box 19	
4.6.2	Camshaft release device	20
4.7	LUBRICATION OIL - FILLING 	22
4.8	ELECTRICAL CONNECTION 	23
4.8.1	THREE-PHASE POWER SUPPLY.....	23
4.8.2	SAFETY SIGNALS	23
4.8.2.1	EMERGENCY STOP	24
4.8.2.2	GUARD SAFETY STOP (IF PROVIDED).....	24
4.8.3	FUNCTION SIGNALS.....	26





INDEX

4.9	PNEUMATIC DEVICE LAYOUT	27
4.9.1	PNEUMATIC CONNECTION 	30
4.10	MACHINING PARAMETERS SETTING 	32
4.11	BAR FEEDER TESTING 	32
5	ADJUSTMENT AND SETUP Elite112_220_Evo_SIII	1
5.1	ADJUSTMENT AND SETUP - FOREWORD 	2
5.2	GENERAL ADJUSTMENTS - FOREWORD 	2
5.2.1	Feed chains - Adjustment	3
5.2.2	Pressure switch - Adjustment.....	4
5.3	SETUP ACCORDING TO THE BAR TO BE MACHINED.....	5
5.3.1	Guide channels, half bushes, bar pusher and collet - Replacement	7
5.3.2	Diaphragm bushing device - Description (for Elite 220 only).	11
5.3.4	Front nose - Replacement.....	13
5.4	CAM BOX - TIMING	14
5.5	BAR SUPPORT ASSEMBLY	17
5.6	Removal/Feeding clamp device - Adjustment 	18
5.7	Sloped rack magazine enabling (for Elite 220 only)	19
5.7.1	Sloped rack magazine disabling (for Elite 220 only)	20
5.7.2	Bar guide plates and bar selectors - Adjustment (for Elite 220 only)	21
6	USE AND OPERATION Elite112_220_Evo_SIII	1
6.1	PRELIMINARY NOTE ON USE AND OPERATION.....	2
6.2	CONTROL DESCRIPTION.....	2
6.3	KEYBOARD CONTROL DESCRIPTION	5
6.4	LIGHT INDICATOR DESCRIPTION.....	9
6.5	BARS TO BE MACHINED - FEATURES AND PREPARATION	10
6.5.1	BAR TO BE MACHINED - SOLID BARS.....	10
6.5.2	BARSTOCK - PIPES	13
6.5.3	BAR STRAIGHTNESS - Measurement.....	14
6.6	BAR FEEDER SETUP AND AUTOMATIC CYCLE START	16

INDEX


6.6.1	Bar magazine - Filling	17
6.6.2	Lubrication oil - Flow adjustment.....	19
6.6.3	Automatic cycle start.....	20
6.6.4	Guide channel opening/closing procedure	21
6.6.5	Cycle performing mode in the STEP BY STEP function.....	22
6.7	BAR FEEDER STOP	23
6.8	AXIS CALIBRATION PROCEDURE	24
6.9	MACHINING CHANGE - QUICK GUIDE 	25
6.9.1	Machining type change with guide channel change	25
6.9.2	Machining type change without guide channel change.....	25
7	BAR FEEDER MAINTENANCE Elite112_220_Evo_SIII.....	1
7.1	PRELIMINARY NOTE ON MAINTENANCE.....	2
7.2	SCHEDULED MAINTENANCE	2
7.3	MAINTENANCE – GENERAL RULES 	3
7.4	SCHEDULED MAINTENANCE 	4
7.4.1	Revolving tip and collet - Check.....	4
7.5	Lubricating oils - Change	5
7.5.1	Lubricating oil - Level check.....	6
7.5.2	Lubricating oil - Change	7
7.5.3	Air filter unit - Check.....	7
7.6	GREASING POINTS.....	8
7.7	DISPLACEMENT DEVICE USE	9
8	TROUBLES – CAUSES - SOLUTIONS Elite112_220_Evo_SIII.....	1
8.1	GENERAL FAILURES 	2
8.2	FEEDING INTO COLLET – Failures 	2
8.3	BAR FEEDING - Failures 	2
8.4	GUIDE CHANNEL IRREGULAR MOVEMENT - Failures 	2
9	PART REPLACEMENT Elite112_220_Evo_SIII.....	1


INDEX

9.1	FEEDING BELT – REPLACEMENT 	2
9.2	PLC BATTERY – REPLACEMENT 	3
9.3	RECOMMENDED SPARE PARTS 	4
9.4	Machine dismantling 	4
10	GUIDE CHANNELS-BAR PUSHER-REVOLVING TIPS Elite	1
10.1	GUIDE CHANNELS AND BAR PUSHER	2
10.2	REVOLVING TIP - TABLE	3
10.3	Revolving tips øGR 5 - Table	6
10.4	Revolving tips øGR 7.5 - Table	7
10.5	Revolving tips ØGR 10÷23 - Table	8
10.6	Revolving tips ØGR 10÷23 - Table	10
11	COLLETS Elite	1
11.1	HEXAGONAL BARS (unit of measurement "millimetres") - Table	2
11.2	SQUARE BARS (unit of measurement "millimetres") - Table	4
11.3	HEXAGONAL BARS (unit of measurement "inches") - Table	5
11.4	ROUND BARS - (unit of measurement "inches") - Table	6
11.5	CONVERSION TABLE Inches/Millimetres	7
11.6	COLLETS FOR BARS 001P - Table	9
11.7	COLLETS FOR BARS 222 - Table	11
11.8	COLLETS FOR BARS 602P - Table	12
11.9	BORING COLLETS FOR SQUARE AND HEXAGONAL BARS 601P - Table	14
11.10	EJECTORS 602P - Guide channels ø14÷24 - Table	16
11.11	PIPE COLLETS 603P - Table	17
11.12	COLLETS FOR BARS 22164 - Table	19

INDEX

1.1	WARRANTY CONDITIONS.....	2
1.2	PURPOSE OF THE MANUAL.....	3
1.3	MANUFACTURER AND BAR FEEDER IDENTIFICATION.....	4
1.4	ASSISTANCE REQUEST MODE	5
1.5	GLOSSARY AND TERMINOLOGY.....	5
1.6	ATTACHED DOCUMENTS.....	6

 The operations described in the sections that are preceded by this symbol must be performed by qualified and skilled personnel with specific abilities and precise technical competence only.
Any other operation can be performed either by qualified personnel and/or by professional bar feeder operators.

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

1.1 WARRANTY CONDITIONS

The applicable warranty period is subordinated to a correct assembly and coupling of the bar feeder to the lathe. In particular, prior to the first start-up, accurately make sure that the bar feeder is correctly aligned with the lathe and fixed with the expansion plugs as shown in chapter 4.

The product warranty is valid only if the bar feeder 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 operations being carried out.

The warranty shall begin from the date on the "Installation Certificate" duly filled in and signed.

The document must be sent by mail to:

**TECHNICAL SERVICE DEPARTMENT
IEMCA division of IGMI spa
48018 Faenza (Ra) ITALY - Via Granarolo, 167**

IEMCA CERTIFICATO DI INSTALLAZIONE N° 0517 /02

IMPORTANTE: Il presente modulo, compilato in ogni sua parte, deve essere spedito in IEMCA Italia per dare corso al periodo di garanzia.

Installazione e training eseguito da:

Ditta	Data
Tecnico Installatore	N° Rapporto di Intervento
Presso:	
Cliente	Partecipante/i <small>(Scrivere stampatello i nomi)</small>
Nazione	
Caricatore	
Matricola	
Macc./Tipo	

A R G O M E N T O	
Descrizione generale del caricatore e del suo funzionamento, spiegazione del ciclo di lavoro.	<input type="checkbox"/>
Istruzioni per attrezzare il caricatore e come eseguire il cambio di lavorazione.	<input type="checkbox"/>
Descrizione e cambio di: guide, spingibarra, pinze, semiboccole, carnotto anteriore e di riduzione.	<input type="checkbox"/>
Spiegazione tastiera operatore. Spiegazione dei parametri e loro utilizzo.	<input type="checkbox"/>
Procedure di programmazione in base al tipo di lavorazione da eseguire.	<input type="checkbox"/>
Errori - Cause - Rimedi: spiegazione dei principali allarmi riportati sui manuali.	<input type="checkbox"/>
Presenza visione della manualistica e delle indicazioni di manutenzione preventiva; Modalità per contattare l'assistenza tecnica autorizzata IEMCA.	<input type="checkbox"/>
Presenza visione della manualistica e delle indicazioni di manutenzione preventiva; Modalità per contattare l'assistenza tecnica autorizzata IEMCA.	<input type="checkbox"/>
Gli argomenti contrassegnati sono stati trattati in modo completo ed esauritivo. I partecipanti si dichiarano completamente soddisfatti del Training effettuato. Firma a lato per accettazione.	
NOTA - Ferogazione del periodo di garanzia è subordinata a: - installazione eseguita da un tecnico autorizzato IEMCA - svolgimento del sopraccitato "training"	
La decorrenza della garanzia si intende valida per 12 mesi dalla data di installazione e comunque, non oltre i 18 mesi dalla data di consegna. La validità della garanzia entra in vigore dalla data di sottoscrizione incondizionata del presente modulo che dovrà essere restituito alla IEMCA, completo di ogni sua parte via posta entro 15 giorni, o tramite il tecnico installatore.	Timbro e firma del cliente

1.2 PURPOSE OF THE MANUAL

This manual has been written and supplied by the manufacturer, the information herein 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 equipment.

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

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



DANGER - WARNING:

indicates impending danger which might cause serious injuries; exert the maximum caution.



WARNING - CAUTION:

indicates that it is necessary to adopt suitable behaviours so as to avoid accidents or damages to property.



INFORMATION:

these are technical instructions of particular importance.

For a quick search of the topics, see the table of contents.

This manual, which contains all the instructions for the bar feeder operation and maintenance, is supplied with: the "Keyboard instruction manual".

The "Keyboard instruction manual" contains all the instructions on how to use the installed software.

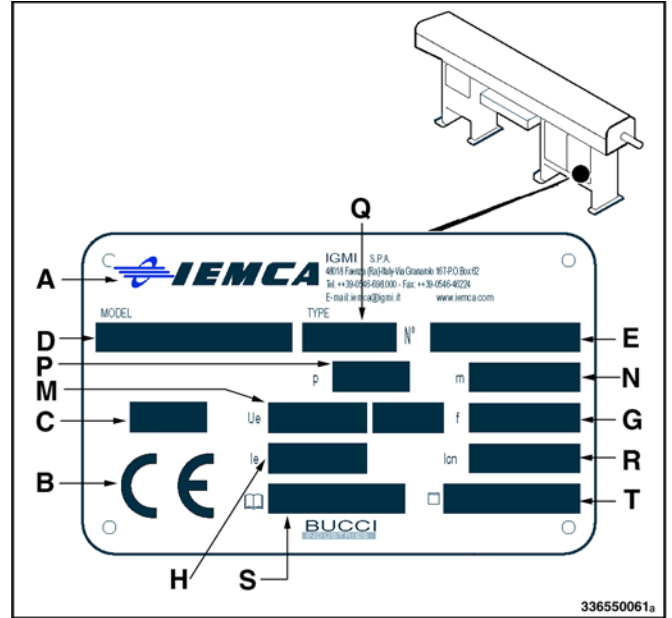
The data included in this publication are only given as an example.

IEMCA may apply changes to the models described in this publication at any time for any technical and business reason.

Contact IEMCA service department for further information.

1.3 MANUFACTURER AND BAR FEEDER IDENTIFICATION

- A Manufacturer identification.
- B EC mark of conformity.
- C Year of manufacture.
- D Bar feeder model.
- E Serial number.
- G Mains frequency.
- H Power consumption.
- M Supply voltage.
- N Bar feeder weight.
- P Pneumatic system pressure.
- Q Bar feeder and bar pusher length.
- R Interrupting power.
- S Basic Wiring Diagram Number.
- T Interface Wiring Diagram Number.


INFORMATION:

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

1.4 ASSISTANCE REQUEST MODE

For any need apply to an authorised service centre.

For any request of technical assistance concerning the bar feeder, indicate the data on the identification plate, the approximate hours of use and the kind of defect found.

1.5 GLOSSARY AND TERMINOLOGY

Some recurrent words in the manual are here described in order to provide a more complete understanding of their meaning.

Routine maintenance: set of operations necessary to ensure the appropriate operation and efficiency of the bar feeder. Usually these operations are programmed by the manufacturer who defines the necessary competence and the assistance procedures.

Extraordinary maintenance: set of operations necessary to ensure the appropriate operation and efficiency of the bar feeder. These operations are not programmed by the manufacturer and must be carried out by the maintenance technician.

Expert technician: authorized person chosen among those who have the requirements, competence and information needed for the installation, operation and unscheduled maintenance of the bar feeder.

Expert operator: authorized person chosen among those who have the requirements, competence and information needed for the installation, operation and scheduled maintenance of the bar feeder.

Loading axis: axis of the bar coinciding with the spindle axis of the lathe.

Remnant: final ejection portion of the machined bar.

Facing position: position of the bar in the lathe, during the facing phase.

Solenoid valve: is essentially a valve that allows a fluid (liquid or gaseous) to pass through an opening detected by the same valve; the actuator of the mechanical drive of the valve is electrically controlled.

Magneto-thermal switch: also called automatic relay, is an electrotechnical device able to stop a circuit in case of overvoltage.

Threading tool: the tap is a threading device, which can be used manually with the tap wrench or mechanically fitted to the tap wrench. It kirves the female threads inside the holes for the internal screw threads and nuts. The thread carried out with the tap wrench is called tapping.


An actuator is a mechanism through which an agent (examples of actuators are electrical motors, the hydraulic cylinders, the relays, the electroactive polymers, the pneumatic devices) acts on the environment. The agent can either be an artificial intelligent agent or any other self-governing being (human, animal).

1.6 ATTACHED DOCUMENTS

Together with this manual, the customer receives the following documents.

- Keyboard instruction manual; it contains all the operation instructions for the operational parameter setting.
- Interface wiring diagram.
- Spare parts catalogue, contains the coded drawings of the bar feeder components to use in case it is necessary to place an order of parts that need to be replaced.
- CD-Rom containing all the above-mentioned documents, inclusive of the Operation and Maintenance Manual, the Brochure with all the technical requirements of the bar feeder, the wiring diagram and a list of the service centres.

INDEX

2.1	BAR FEEDER GENERAL DESCRIPTION	2
2.1.1	Pneumatic system - Main components	5
2.2	OPERATING CYCLE	6
2.2.1	MACHINE PHASES - Status of cycle control sensors	10
2.3	SAFETY DEVICES	18
2.4	SAFETY PLATES - LOCATION AND DESCRIPTION	20
2.5	VERSION DESCRIPTION	21
2.6	TECHNICAL DATA	22
2.6.1	Noise levels	27
2.7	DEVICE FOR SLIDING HEADSTOCK LATHES - FOREWORD	28
2.7.1	Axial displacement device (Optional) - Description	28
2.7.2	Bar/headstock synchronization device - Description	29
2.7.3	Diaphragm bushing device OPTIONAL (for Elite 220 only) - Description	30
2.7.3.1	Additional bush device - Optional - Description 	30
2.7.4	Telescopic front nose - Description	31
2.8	DEVICES FOR CAM LATHES - FOREWORD	32
2.8.1	Cam box - Description	32
2.8.2	Camshaft release device - Description	32

2.1 BAR FEEDER GENERAL DESCRIPTION

The ELITE 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 operating cycle is controlled by a PLC, integrated in the electrical control panel, which is able to communicate with the lathe control system.

The bar feeder can be used to feed bars, pipes, various sections and metallic as well as polymeric materials. Do not use flammable materials.

The guide channel is completely closed during machining; a pump is provided to maintain a continuous oil flow inside the guide channel, creating a hydrodynamic support effect; these features allow the bar to rotate at high r.p.m., with no vibrations and no surface damaging. Thanks to the use of a "BRUSHLESS" and electronically controlled motor, the bar speed, torque value and bar feeding position may be determined at any time during the working cycle.

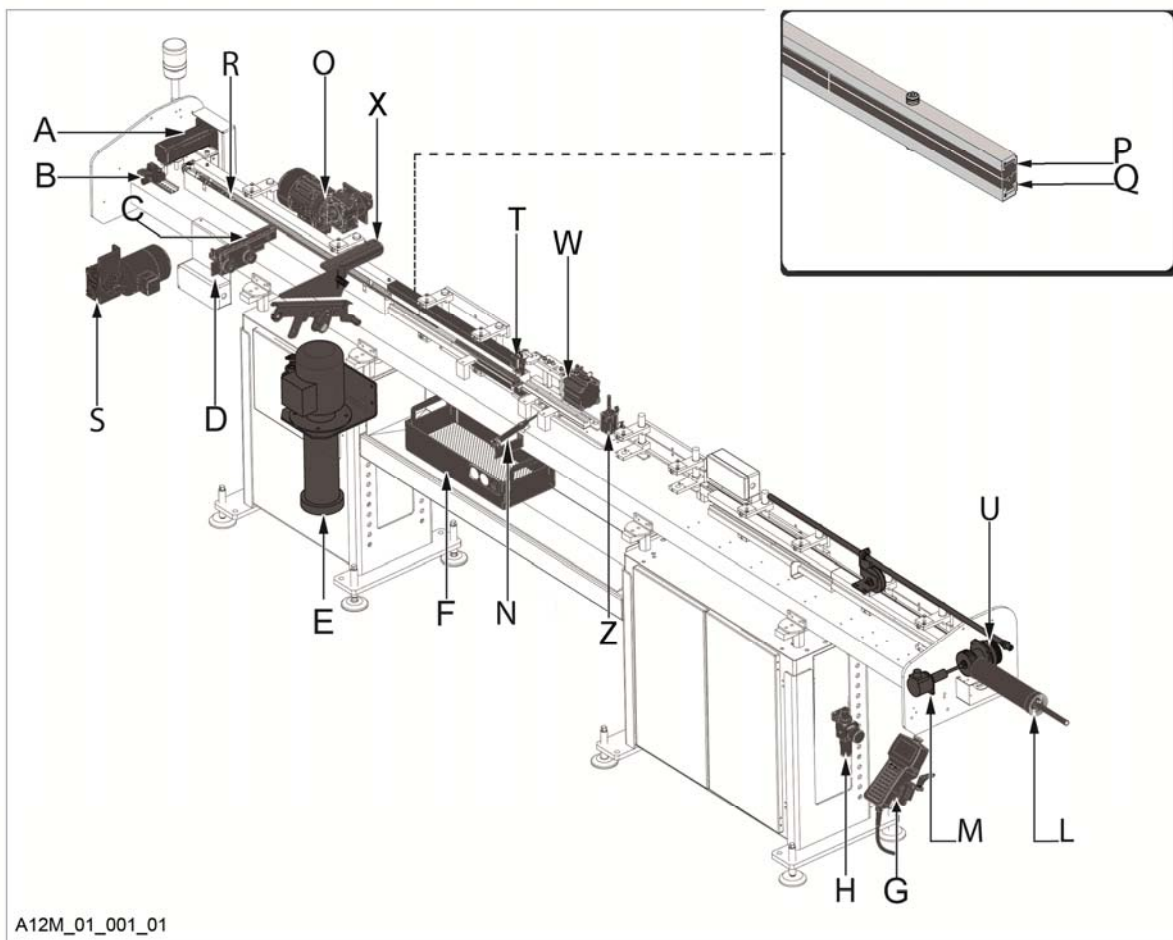
The bar remnant ejection can be performed by the bar pusher feeding or next bar feeding.

The ELITE bar feeders are available in the following models:

ELITE (standard version)

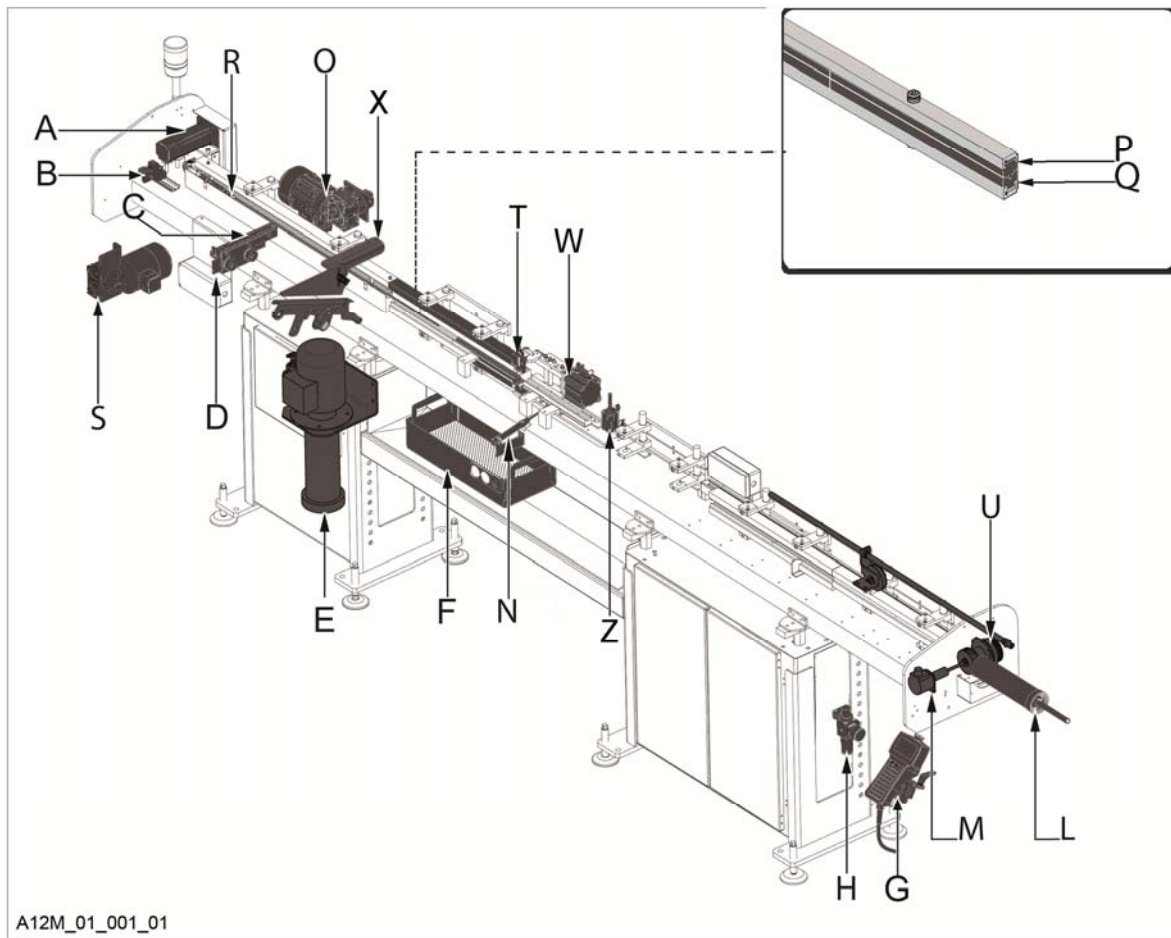
ELITE (reversed version)

When not otherwise specified, the texts, tables and pictures of this manual refer to the standard version (ELITE) with the lathe on the operator's right.



• **MAIN PARTS**

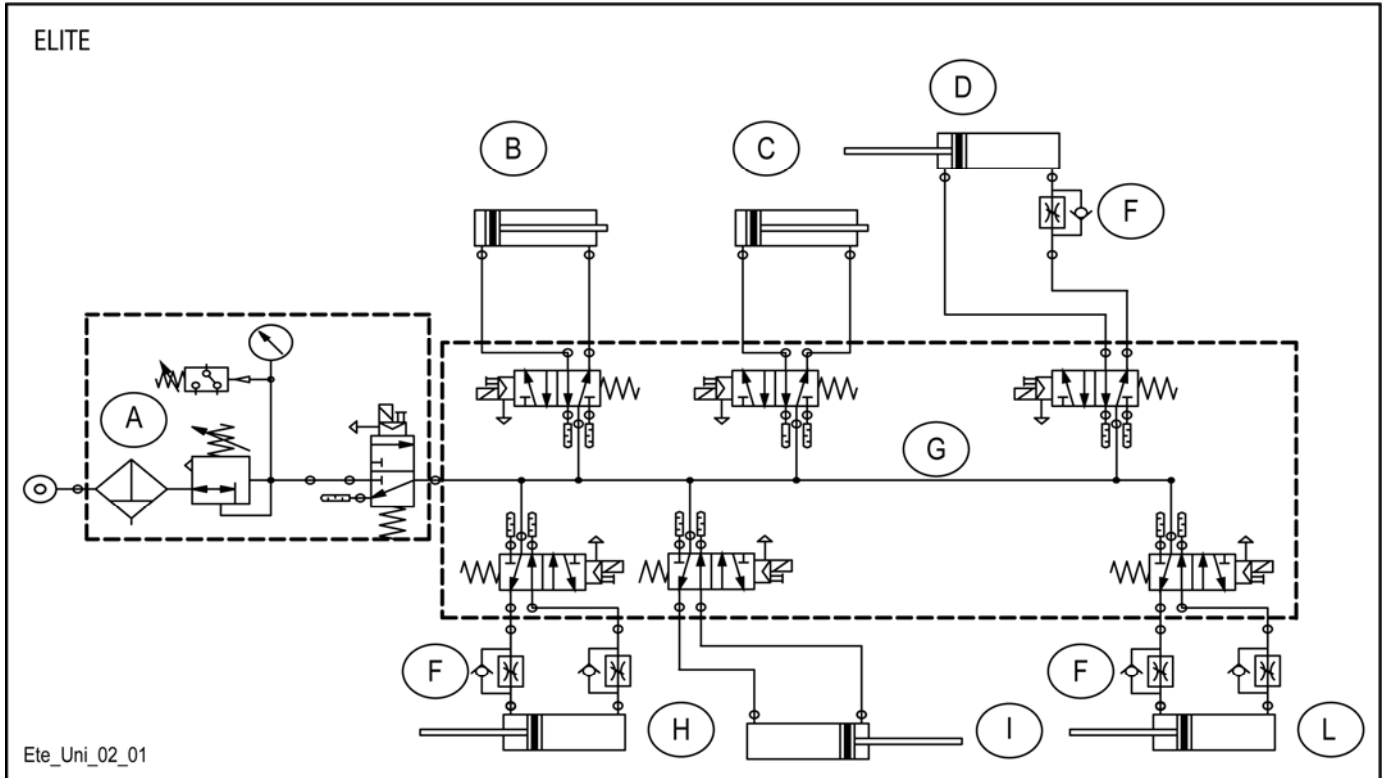
- A MOTOR; moves the bar pusher.
- B SOLENOID VALVE UNIT; sends signals to the pneumatic components.
- C BAR POSITIONING DEVICE; allows finding the bar loading position on the magazine rack.
- D MAGAZINE WITH PILGRIM STEP; stores the bars.
- E LUBRICATION PUMP; delivers oil to the guide channels.
- F REMNANT RECOVERY BOX; bar remnants are dropped into this box after extraction from the bar pusher collet.
- G KEYBOARD; it allows bar feeder programming and function actuation.
- H PRESSURE REGULATOR; to adjust the pressure of the pneumatic devices.
- L TELESCOPIC NOSE; allows bar guidance between the bar feeder and the headstock.
- M ENCODER; adjusts the bar pusher position, the value is shown on the keyboard display.



A12M_01_001_01

- N OPENING/CLOSING PNEUMATIC CYLINDER; to provide motion to the pneumatic devices that allow the lower guide channel opening/closing for the remnant drop.
- O MOTOR DRIVE; opens and closes the guide channels.
- P UPPER GUIDE CHANNELS; drive the bar during the machining.
- Q LOWER GUIDE CHANNELS; drive the bar during the machining.
- R BAR PUSHER; pushes the bar during the machining.
- S MOTOR DRIVE; moves the bar magazine to drop the bar onto the lower guide channel.
- T CLAMPS; hold the bar during the loading and removal from the bar pusher collet (for Elite 220 only).
- W OPENING/CLOSING PNEUMATIC CYLINDER; to provide motion to the pneumatic devices that allow upper and lower clamp opening/closing.
- U SYNCHRONIZATION DEVICE; allows the synchronized movement of bar pusher and lathe headstock.
- X SLOPED MAGAZINE, stores the bars (for Elite 220 only).
- Z OPENING/CLOSING PNEUMATIC CYLINDER; to provide motion to the pneumatic devices that allow the upper guide channel opening/closing for the remnant drop.

2.1.1 Pneumatic system - Main components



A - REGULATOR FILTER GROUP

B - FACING CYLINDER

C - PNEUMATIC CLAMP CYLINDER

D - UPPER GUIDE CHANNEL OPENING / CLOSING CYLINDER – REMNANT DROP

F - REGULATOR

G - SOLENOID VALVE UNIT

H - BAR SELECTION UNIT (for Elite 220 only)

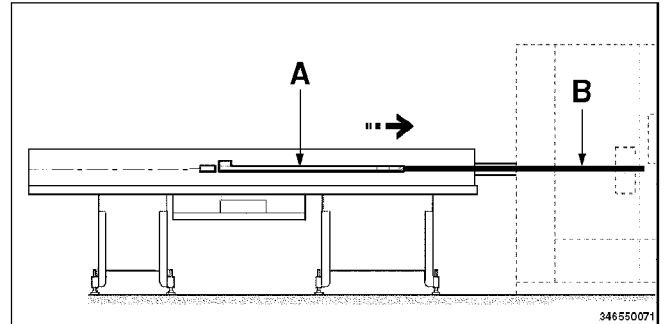
I - BUSHING DRIVE UNIT (Optional - for Elite 220 only)

L – LOWER GUIDE CHANNEL OPENING / CLOSING CYLINDER – REMNANT DROP

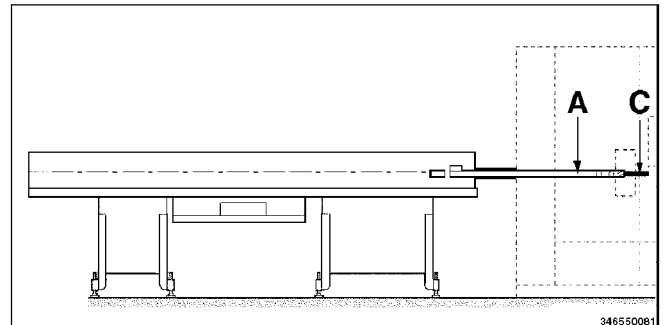
2.2 OPERATING CYCLE

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.

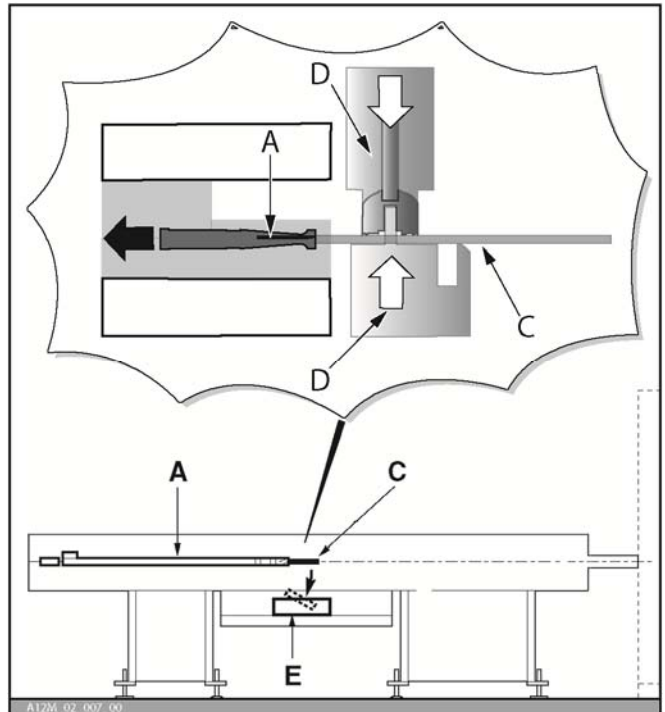


The bar-pusher (A) and remnant (C) are in their forwards limit stop position.



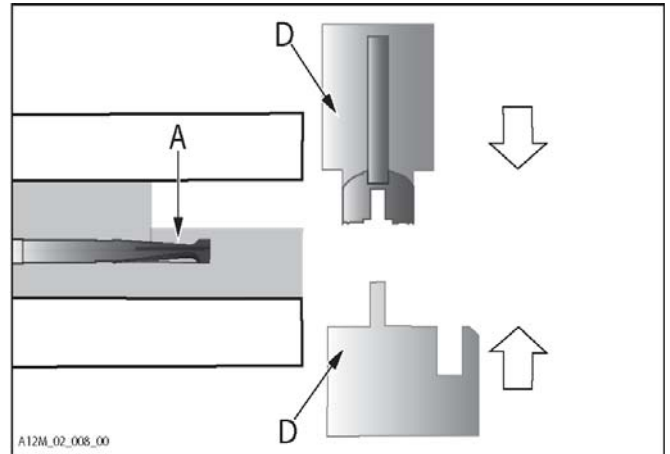
The bar pusher (A) and remnant (C) are in their backwards limit stop position.

The clamps (D) close and the bar pusher moves backwards; the remnant is removed from the collet. The clamps open and the remnant is dropped into the box (E).



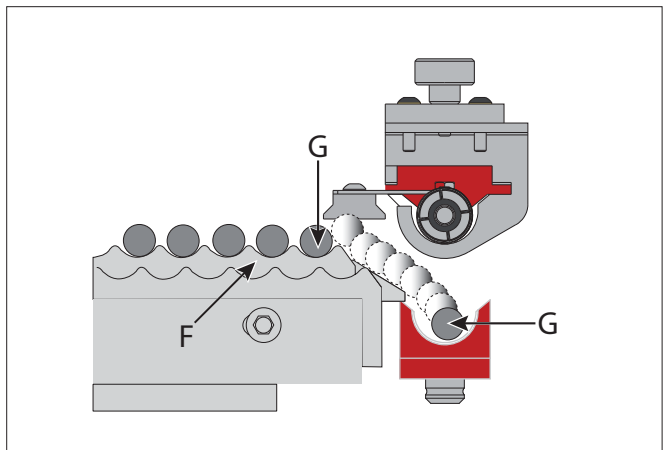
Clamps (D) close again to perform remnant (C) extraction check.

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



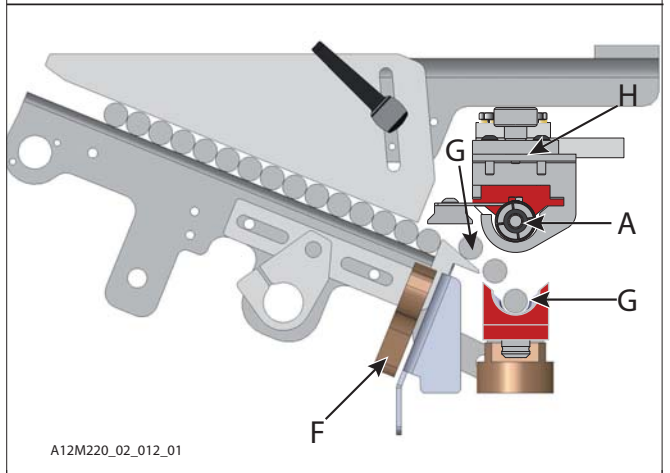
Bar Drop from the Horizontal Rack (Pilgrim Step Magazine)

Upper guide channels (H) open, magazine bar feeding device (F) rises and lifts first bar (G) which falls onto the guide channel. The bar selection device (F) is lowered.



Bar Drop from the Sloped Rack (for Elite 220 only)

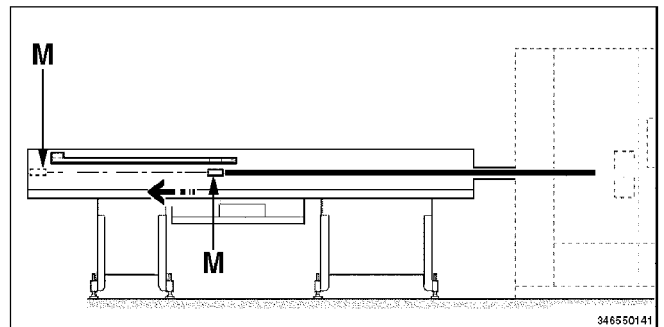
Upper guide channels (H) open together with bar pusher (A); bar selection device (F) moves upwards thereby lifting the first bar and withholding the remaining bars; bar (G) drops into the guide channel.



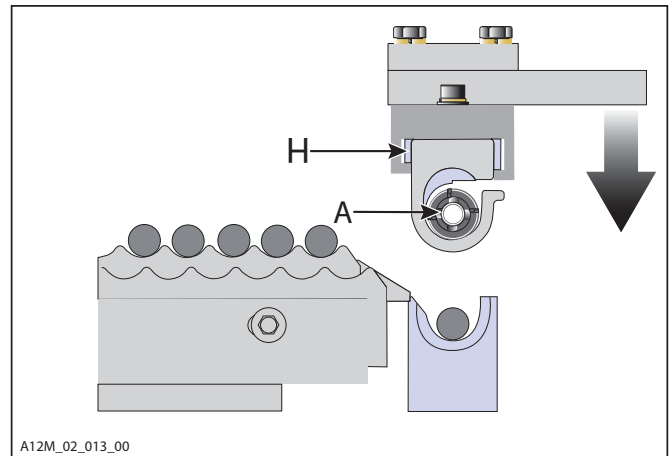
The first feeding carriage (M) starts its stroke



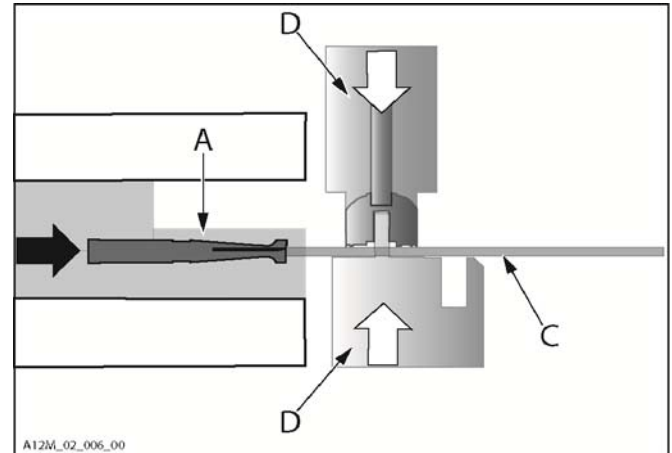
When the first feeding carriage (M) completes its stroke, the required space has been created for bar-pusher insertion. The first feeding carriage performs the return stroke.



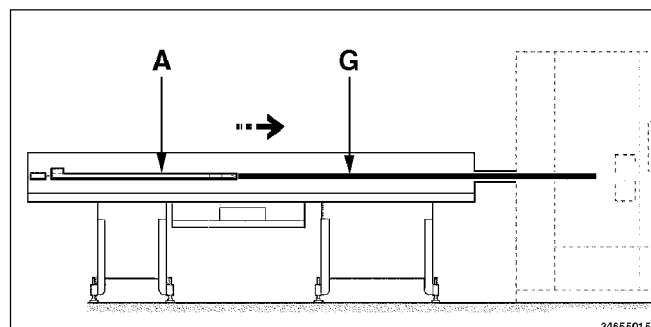
The upper guide channels (H) close; the bar pusher (A) is positioned along the spindle axis.



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

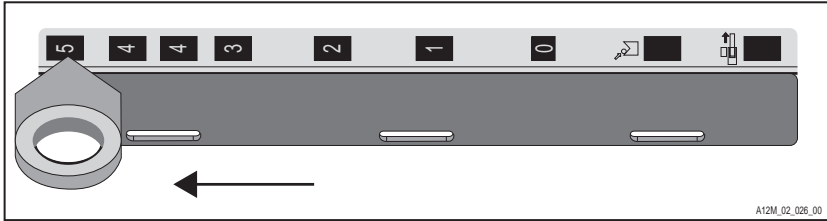


The bar pusher (A) and bar (G) carry out their facing stroke. A new automatic working cycle is started.

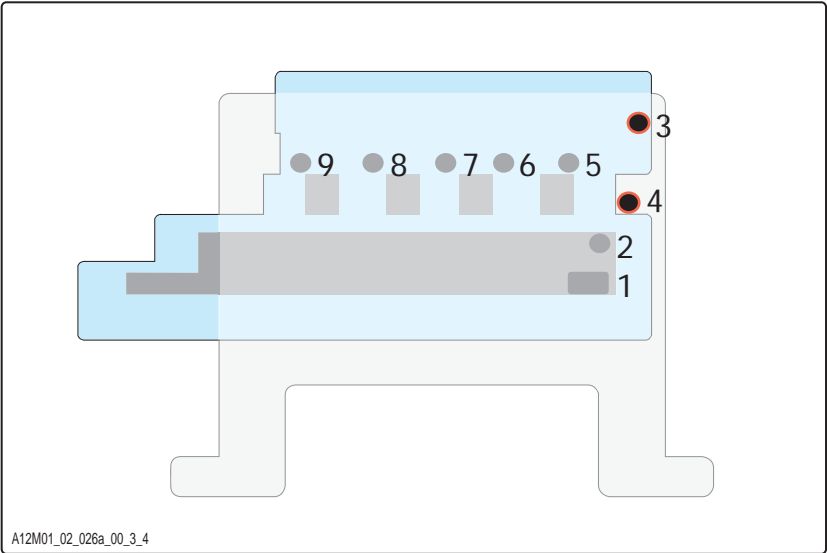


2.2.1 MACHINE PHASES - Status of cycle control sensors

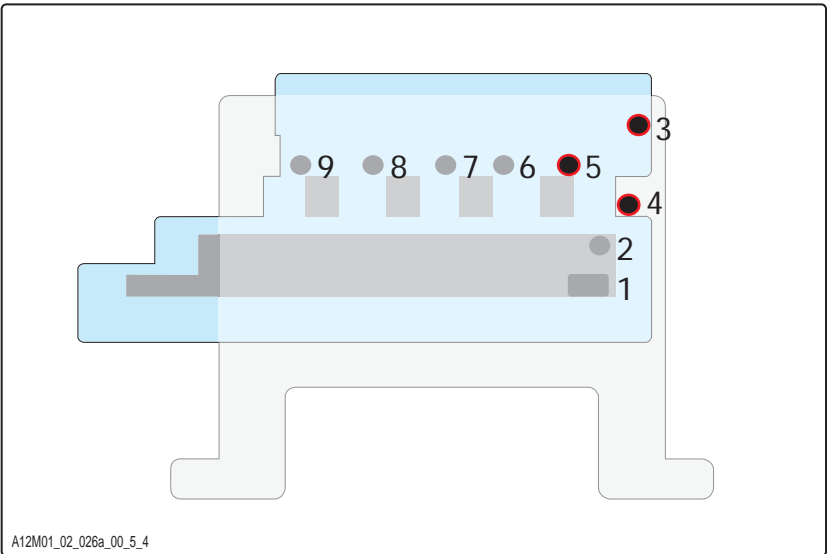
PHASE-0 BAR MACHINING



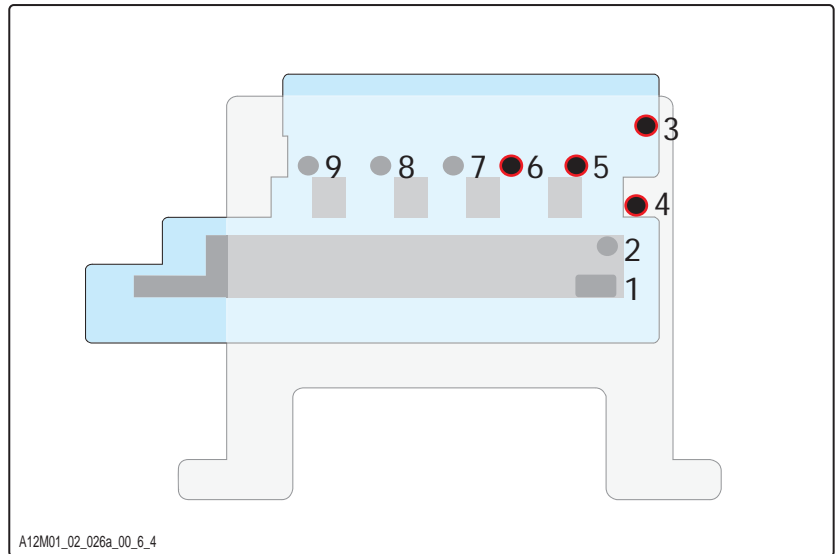
After feeding a long bar (equal to, or slightly shorter than the magazine length) and after the facing phase. The active rack sensors are sensors number 3 and number 4.



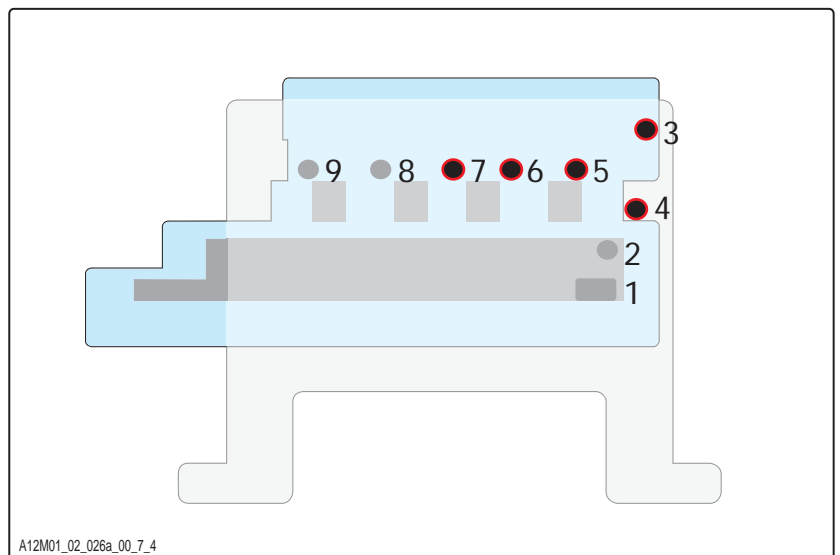
From this position, when the bar pusher reaches the preset encoder value, the guide channel control cam moves until sensors number 5+4 switch on, thus opening the first guide channel.



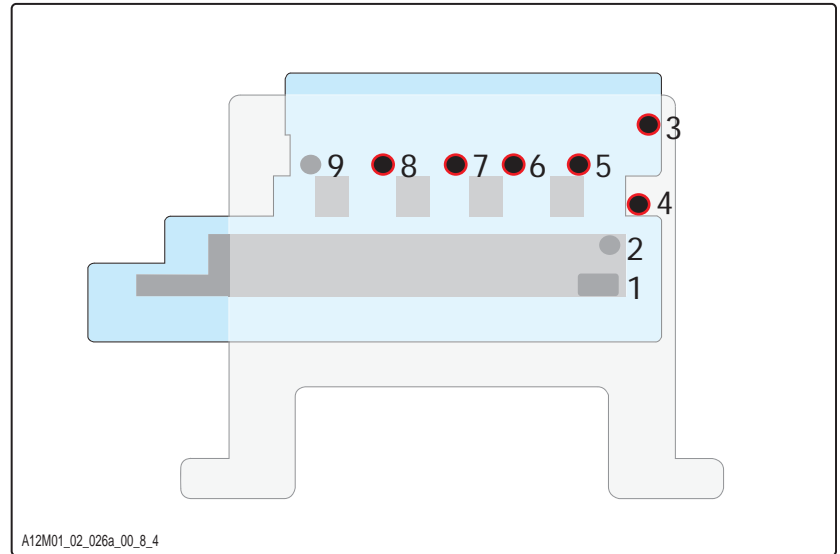
Following the same sequence, when the bar pusher moves forwards, the guide channel control cam opens the third guide channel stopping on sensors 6+4.



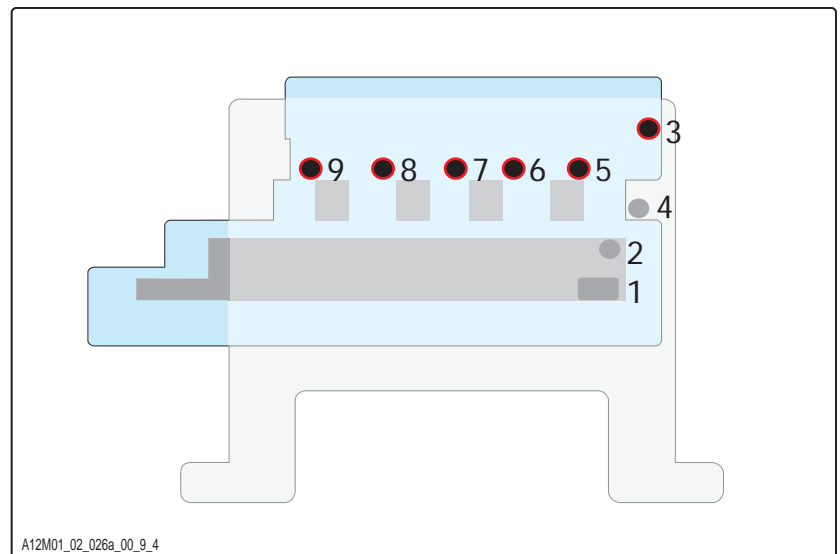
Following the same sequence, when the bar pusher moves forwards, the guide channel control cam opens the fourth guide channel stopping on sensors 7+4.



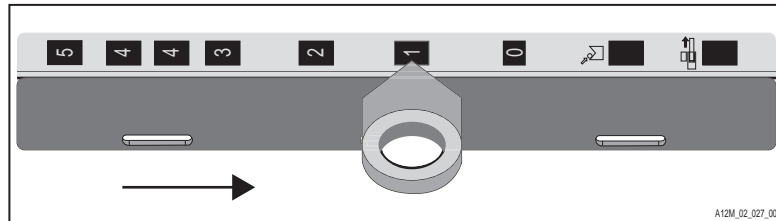
Following the same sequence, when the bar pusher moves forwards, the guide channel control cam opens the fifth guide channel stopping on sensors 8+4.



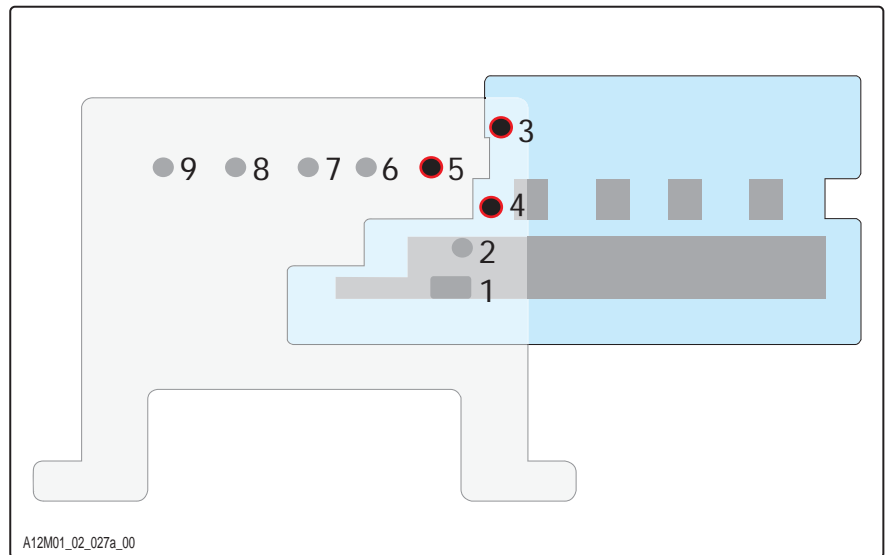
Following the same sequence, when the bar pusher moves forwards, the guide channel control cam opens the sixth guide channel stopping on sensors 9. When the guide channels 1, 3, 4, 5 and 6 are lifted, sensors 3, 5, 6, 7, 8 and 9 are all active. Notice that even during the facing phase, if the guide channel lifting values are reached, the guide channel control cam must be positioned up to the opening of the corresponding sectors. Guide channel number 2 is pneumatic and follows the logics like the other guide channels.



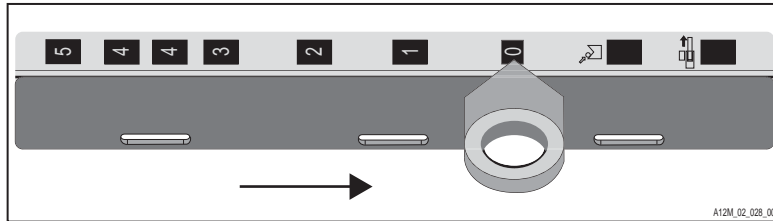
PHASE-1 BAR PUSHER RETURN



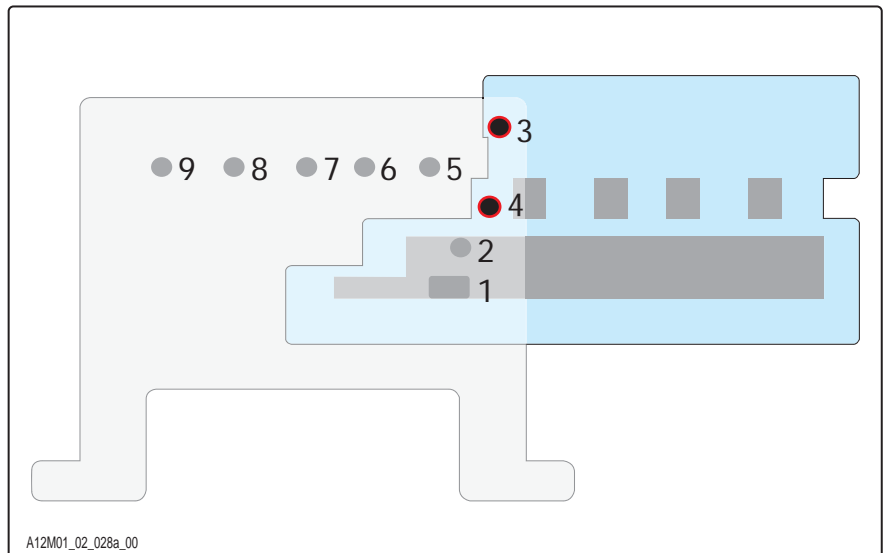
The bar change phase starts and the bar pusher moves back to the removal/feeding value. During the return stroke, guide channels 1, 3, 4, 5 and 6 progressively close by performing the opening procedure in reverse order until the preset values are reached. To close the sixth guide channel again, the guide channel control cam must move until sensor 9 switches off and sensor 4 switches on, to close the fifth guide channel sensor 8 should be OFF and sensor 4 ON, to close the fourth guide channel sensor 7 should be OFF and sensor 4 ON, to close the third guide channel sensor 6 should be OFF and sensor 4 should be ON and to close the first guide channel, it must disengage sensor 5 and engage sensor 4. When all guide channels are closed again, the only active sensors will be 3 and 4. Even during the bar pusher feeding and backward stroke in manual mode, the guide channel sectors will have to raise and close in sequence, like in the automatic cycle. Guide channel number 2 is pneumatic and follows the logics like the other guide channels.



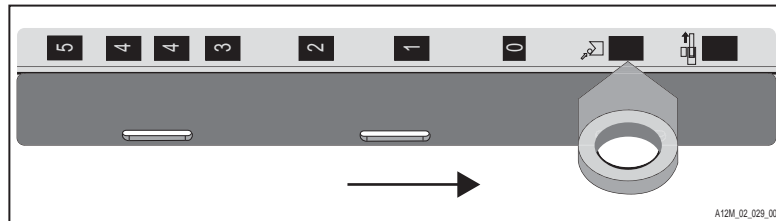
PHASE-2/3/4/5/6/7 CLAMP CLOSING - REMNANT REMOVAL - CLAMP OPENING AFTER REMOVAL - CLAMP CLOSING FOR REMNANT CHECK - CLAMP OPENING AFTER REMNANT CHECK - ZERO AXIS



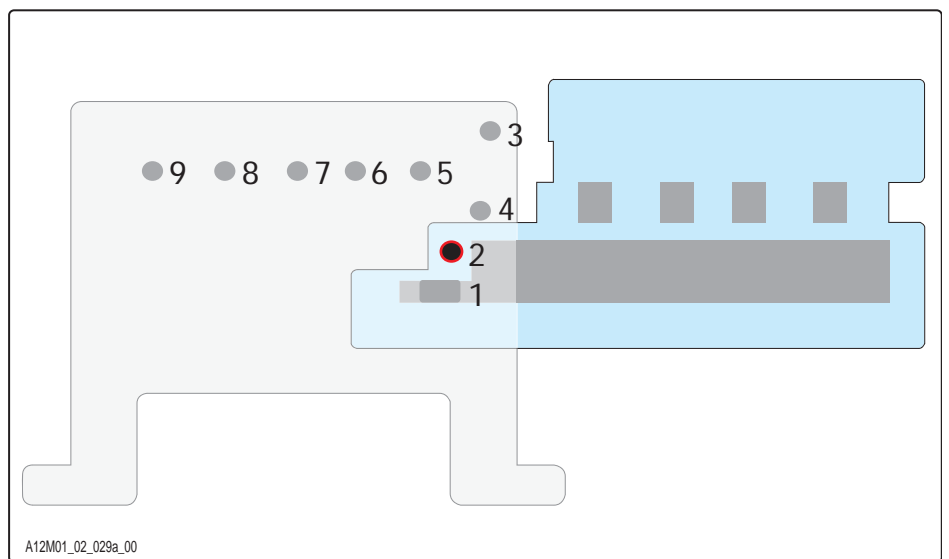
When working in removal mode, the pneumatic clamps close and hold the bar; the bar/remnant detection sensor checks for the remnant presence. If the cycle is set to removal or to bar change advance, phases number 2, 3, 4, 5 and 6 are skipped. Via the feeding motor, the remnant is removed at the preset value. The clamps open and the remnant falls down. The clamps close again to make sure that the remnant is no longer there and test the remnant/bar detection sensor. The clamps open again after checking the remnant absence. The bar feeder performs the zero axis until the zero position sensor switches on.



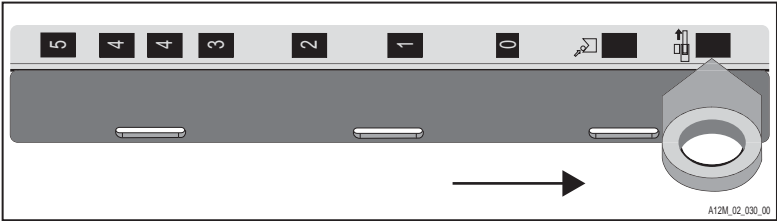
PHASE-8/9 GUIDE CHANNEL FULL OPENING - BAR FEEDING



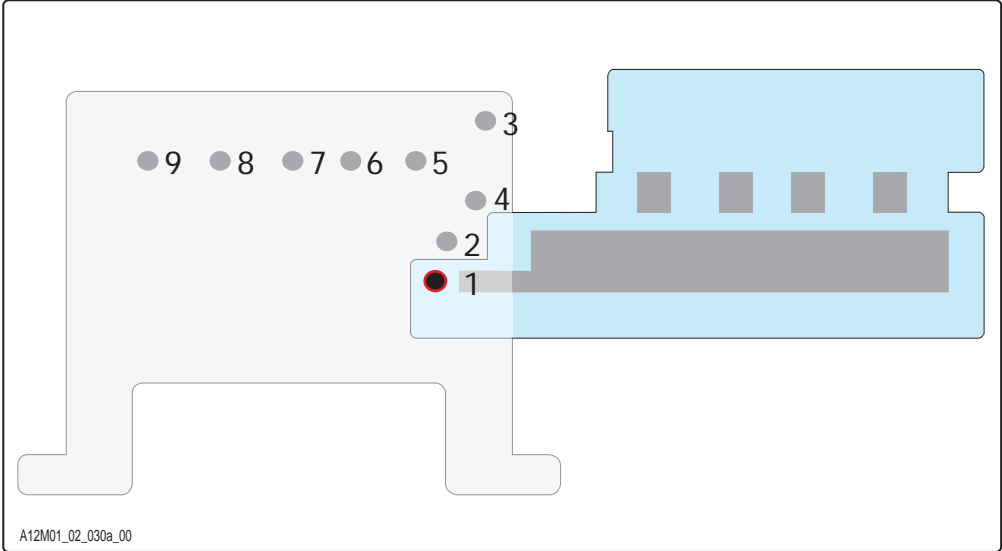
The guide channel control cam moves until it switches on sensor number 2, which is the only active sensor. All four guide channels open. The magazine performs a step and a new bar is fed into the guide channel.



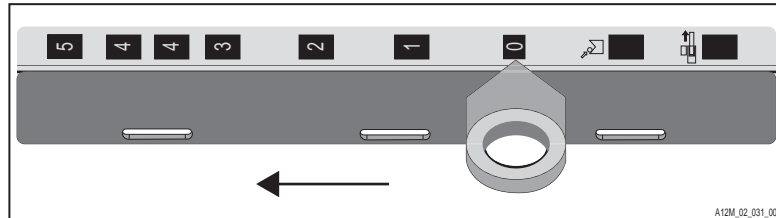
PHASE-10/11/12 GUIDE CHANNEL PARTIAL CLOSING - BAR FIRST FEEDING - RETURN AFTER FIRST FEEDING



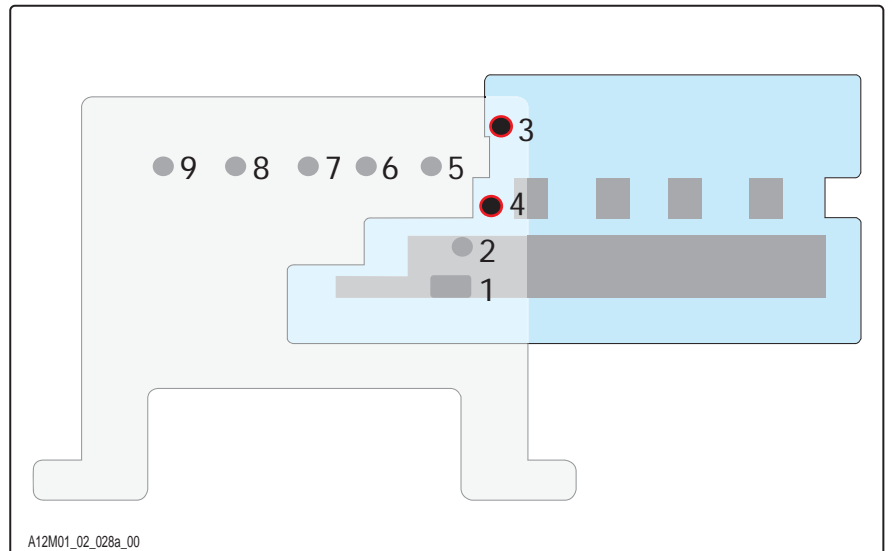
The guide channel control cam moves until it switches on sensor number 1, which is the only active sensor. After the Feeding/Removal clamp device the guide channels close. The carriage moves up to the first feeding value set. When the carriage reaches the first feeding value, the first feeding carriage carries out the return stroke to zero.



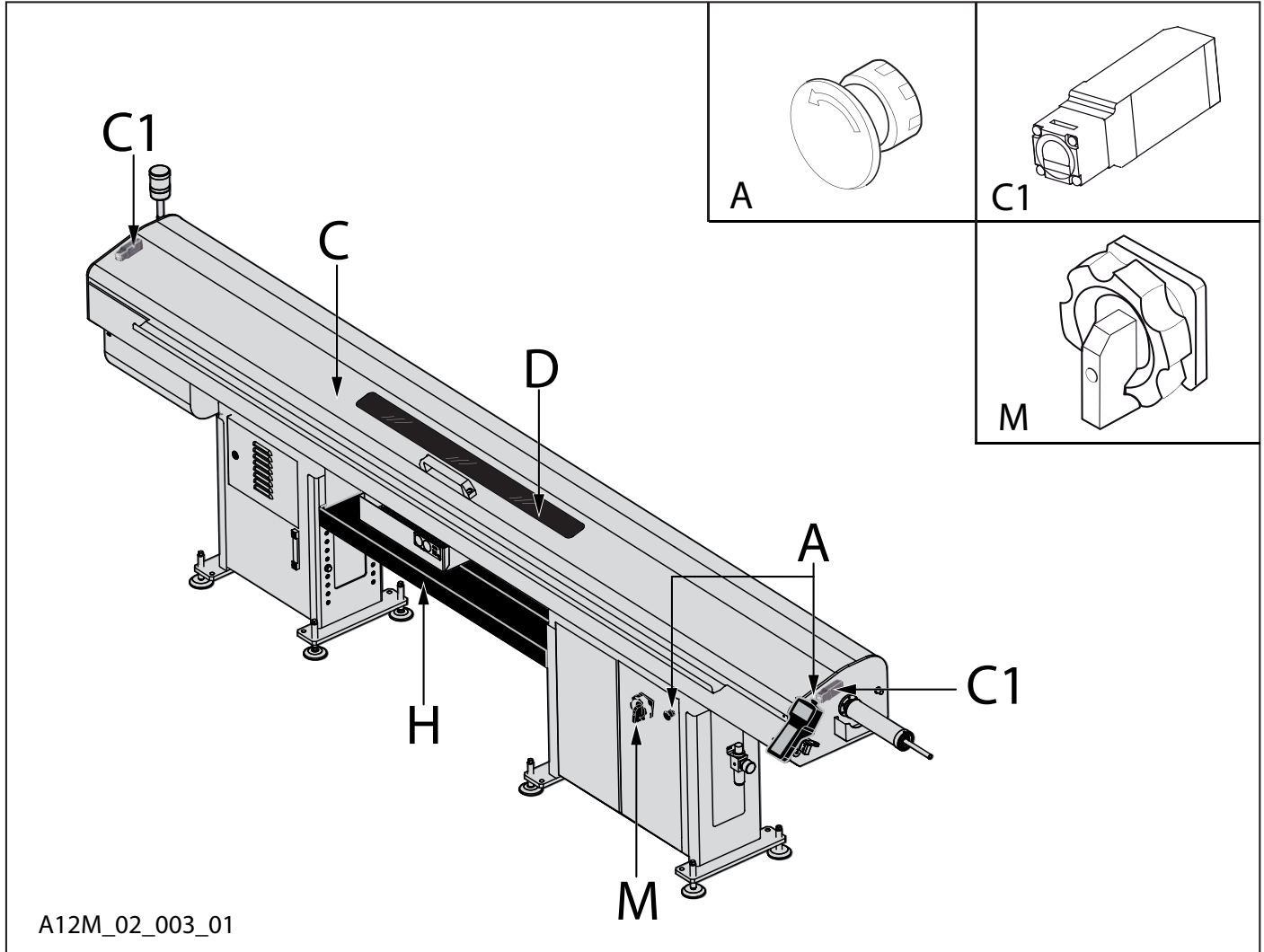
PHASE-13/14/15/16 GUIDE CHANNEL AND CLAMP CLOSING - FEEDING - CLAMP WORK POSITION - FACING



The guide channel control cam moves until it switches on sensors 3 and 4, which are the only active ones. All guide channels close and also the clamps close to lock the bar; during the clamp closure, the new bar is detected via the remnant/bar detection sensor. Via the feeding motor, the new bar is fed into the collet, the clamps open and the facing stroke is carried out. Restart from the 0 phase.

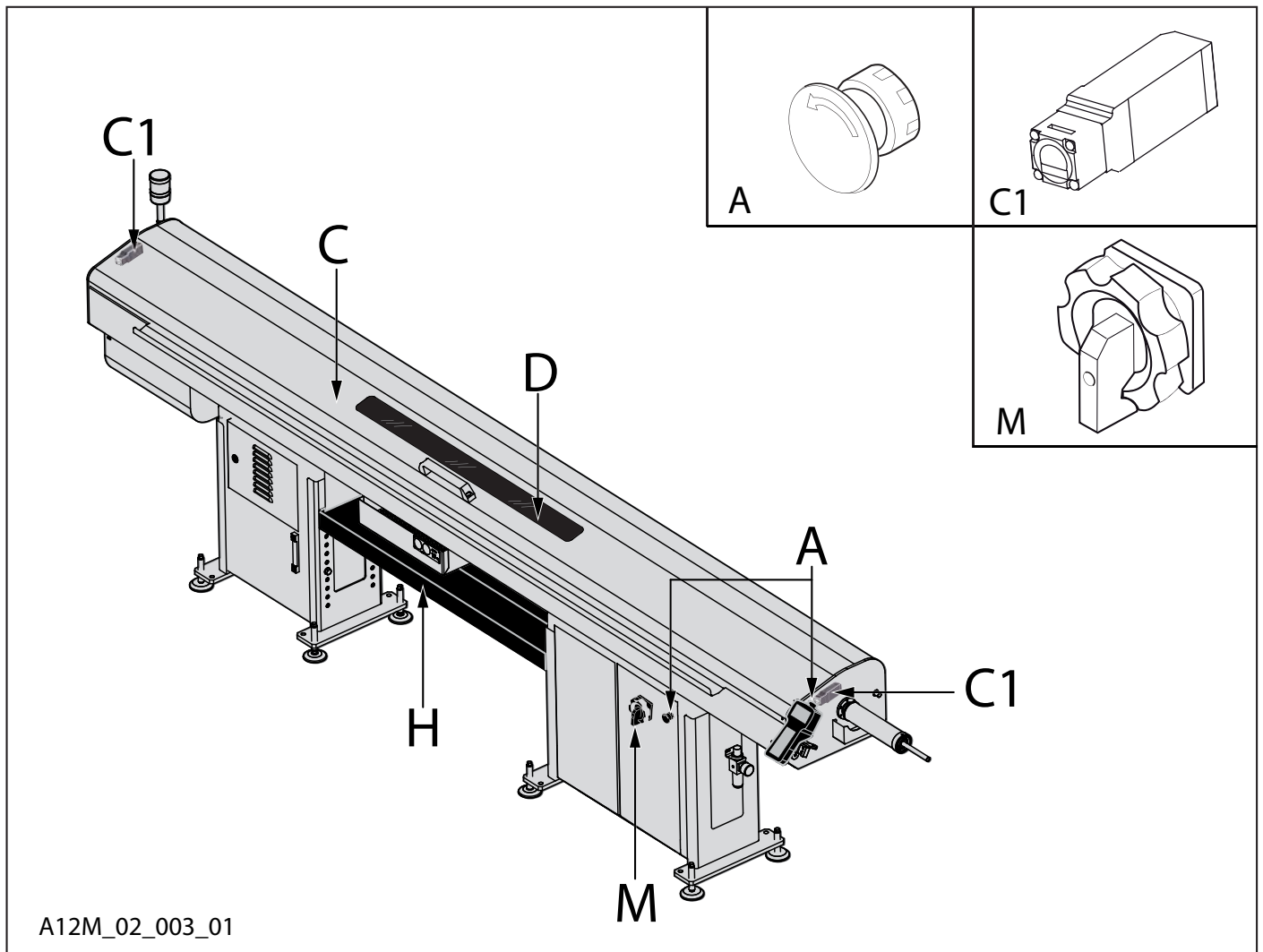


2.3 SAFETY DEVICES



A12M_02_003_01

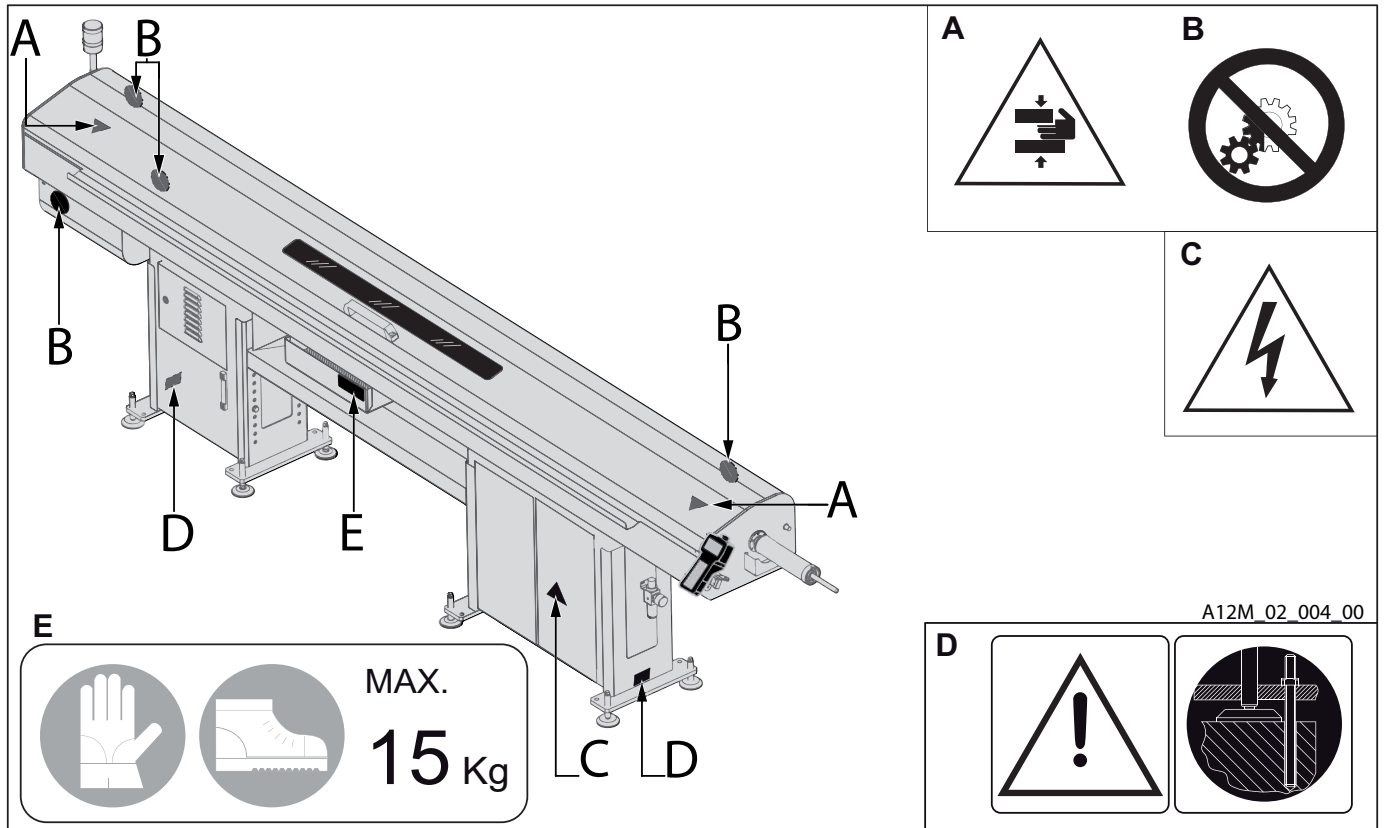
- A EMERGENCY BUTTON; when pressed, all bar feeder and lathe functions are stopped in an emergency condition.
- C SLIDING GUARD: linked to microswitch C1.
according to the cycle setting, its functions are:
- manual cycle;
 - during guard opening, the feeder will be stopped if the guide channels are not closed.
 - during guard opening, if the guide channels are closed, the bar feeder functions are not disabled because no risks for the operator are present.
 - automatic cycle;
 - during the bar feeding phase, the guard opening may be necessary for the purpose of filling the magazine. Even if the bar feeder functions are not stopped, there are no hazards for the operator inside the area.
 - during the bar change procedure, the bar feeder will stop when the guard is opened. To start the bar feeder again the operator should close the guard.



- D **FIXED GUARD:** it is made of transparent material to allow visual inspection of the bar magazine area.
- H **REMNANT RECOVERY BOX:** it also acts as a fixed guard to prevent accidental access to moving parts.
- M **MAIN SWITCH:** disconnects the electric power supply during the operations in the electrical control panel and during the bar feeder inactivity periods.

2.4 SAFETY PLATES - LOCATION AND DESCRIPTION

The figure indicates the position of the signals put on the bar feeder.



- A- Risk of crushing your arms: do not put hands inside when there are components in motion.
- B- Do not remove guards: it is forbidden to use the bar feeder without the guards installed and in operating conditions.
- C- Electrocution hazard: do not enter the powered elements.
- D- Risk of inopportune movements: before carrying out the first start make sure that the bar feeder is adequately anchored to the ground.
- E- Obligation of wearing appropriate clothes and maximum capacity of the remnant recovery box expressed in kilograms.

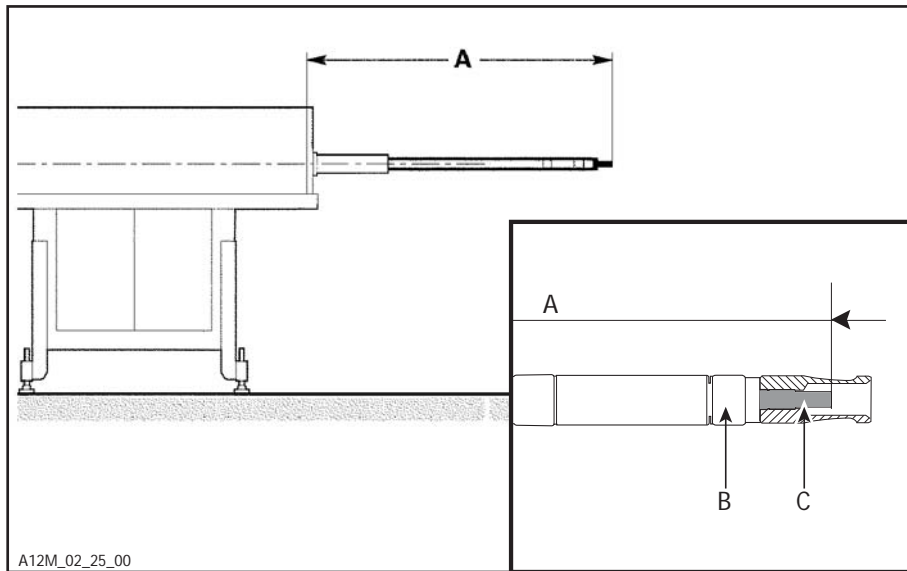
2.5 VERSION DESCRIPTION

Maximum - minimum bar length

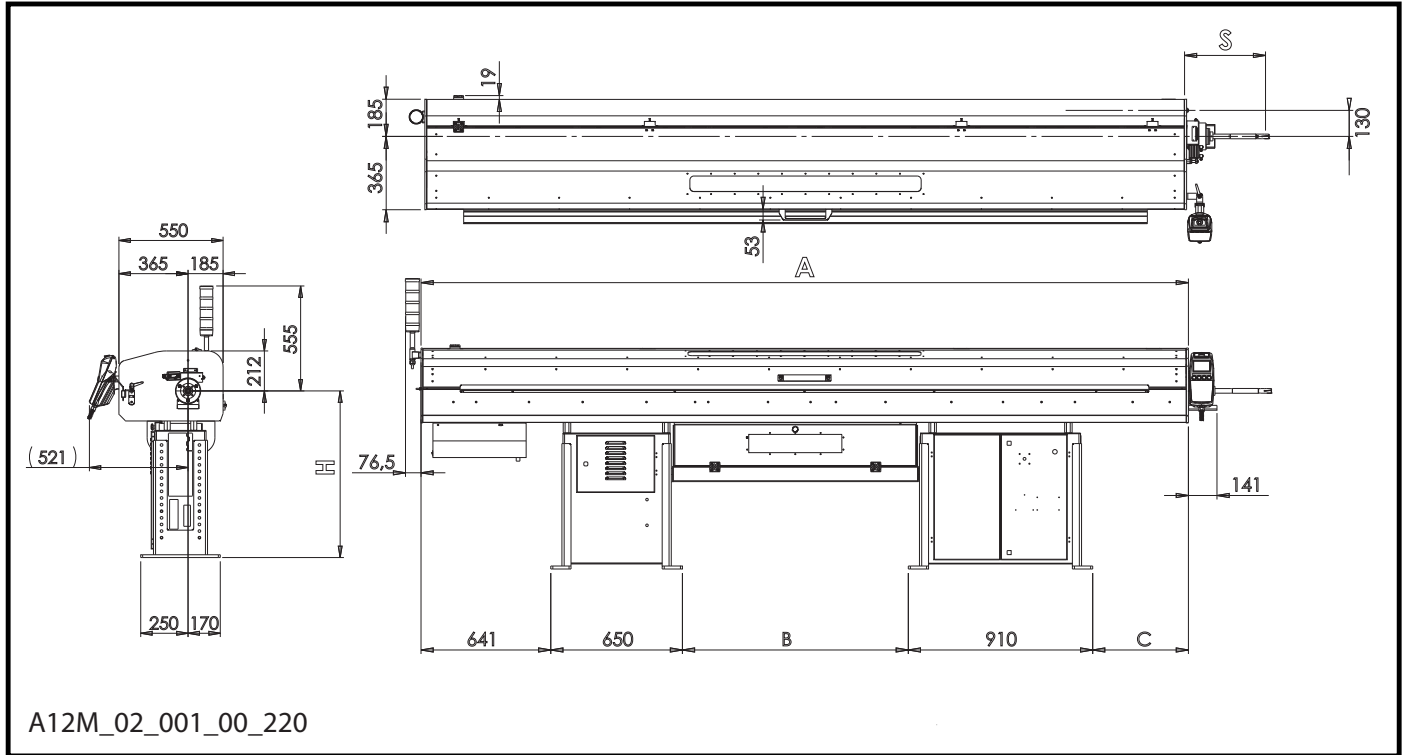
Model	Version	Maximum length mm (ft)	Minimum length mm
Elite	32	3200 (10,5 ft)	1200
	37	3700 (12 ft)	1200

Max. bar pusher extension

Model	Version	Version	A -Max. extension(mm)
Elite	32 - 37	L	915
		LL	1200
		XL	1485



- B - Revolving tip
- C - Nipple

2.6 TECHNICAL DATA


Overall dimensions 32, 37.

Model	Version	A (mm)	B (mm)	C (mm)	H (mm)
Elite	32	3788	1114	473	900-1200
	37	4358	1635	522	900-1200

General technical data

	Elite 220 Evo	
Round bar size	Ø min. 2 mm (5/64")	Ø max 20 mm (25/32")
Hexagonal bar size (key socket)	min.1,7 mm	max17 mm
Maximum bar length	Mod. 32 - 3200 Mod.37 - 3700	
Minimum bar length	450 mm	
Magazine capacity (working width)	(*) no.42 bars Ø 1mm (3/64") - Ø 6mm (1/4")Ø 6,0 mm (1/4") (**) no.14 bars Ø20mm (25/32")Ø 10 mm (1/2") no.70 barsØ 4 mm	
(Adjustable) feeding speed	Max 1000 mm/sec.	
(Adjustable) return speed	max 1600 mm/sec.	
Remnant length (standard version)	min.80 mm max 400 mm	
Bar change time (with 3,000 mm bar) Version 32	26 sec	
Power supply voltage	230/400 Volt	
Mains frequency	50 Hz/ 60 Hz	
Control voltage	24 Volt D.C.	
Installed power	1.3 kW	
Oil quantity	40 l	
Maximum air supply pressure	8 bar	
Minimum air supply pressure	6 bar	
Pneumatic energy average consumption (**)	1,2 NL/min	
Dry weight	Mod. 32 - 645 Kg Mod.37 - 680 Kg	

(*) Step by Step Magazine (P=6).

(**) Magazine with Sloped Rack.

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

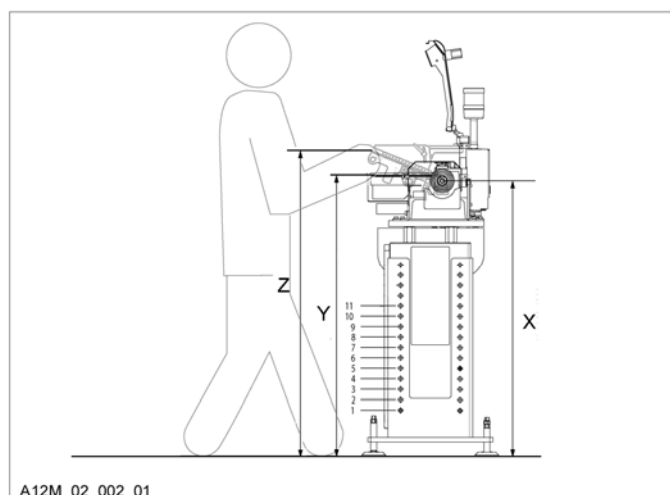
General technical data

	Elite 112 Evo	
Round bar size	Ø min. 1 mm (3/64")	Ø max 12,7 mm (1/2")
Hexagonal bar size (key socket)	min.1,7 mm	max11 mm (9/16")
Maximum bar length	Mod. 32 - 3200 Mod.37 - 3700	
Minimum bar length	450 mm	
Magazine capacity (working width)	no.42 bars Ø 1mm (3/64") - Ø 6mm (1/4")	
(Adjustable) feeding speed	Max 1000 mm/sec.	
(Adjustable) return speed	max 1600 mm/sec.	
Remnant length (standard version)	min.80 mm max 400 mm	
Bar change time (with 3,000 mm bar) Version 32	26 sec	
Power supply voltage	230/400 Volt	
Mains frequency	50 Hz/ 60 Hz	
Control voltage	24 Volt D.C.	
Installed power	1.3 kW	
Oil quantity	40 l	
Maximum air supply pressure	8 bar	
Minimum air supply pressure	6 bar	
Pneumatic energy average consumption (***)	1,2 NL/min	
Dry weight	Mod. 32 - 645 Kg Mod.37 - 680 Kg	

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

Working axis height

Model	Lower screw position	X (mm) Working axis height	Y (mm) Pilgrim step magazine max. loading height	Z (mm) Magazine with sloped rack max.loading height
Elite	1	905 ÷ 945	960	1065
	2	940 ÷ 980	995	1100
	3	975 ÷ 1015	1030	1135
	4	1010 ÷ 1050	1065	1170
	5	1045 ÷ 1085	1100	1205
	6	1080 ÷ 1120	1135	1240
	7	1115 ÷ 1155	1170	1275
	8	1150 ÷ 1190	1205	1310
	9	1185 ÷ 1225	1240	1345
	10	1220 ÷ 1260	1275	1380
	11	1255 ÷ 1300	1315	1415



ELITE guide channel lubricating oils

ISO/UNI rating	Brand	Name
CLASSE C CKB 32	Agip	Acer 32
	Api	Api Cis 32
	BP	Energol CS 32
	Castrol	Magna 32
	Chevron	Circulating Oil 32
	Elf	Movixa 32
	Esso	Nuto 32
	Fina	Solna 32
	IP	IP Hermea 32
	Klüber	Crucolan 32
	Mobil	Vectra Oil Heavy
	Olio FIAT	Daphne LPN 32
	Roloil	Arm V 32
	Shell	Vitrea 32 Tellus C 32
	Tamoil	Industrial Oil 32
	Texaco	Omnis 32
	Total	Cortis 32
Q8	Verdi 32	

Oil quantity: 40 litres.

2.6.1 Noise levels

The bar feeder does not cause acoustic noise.

The noise occurs when the lathe, to which the bar feeder is connected, is working and the bar is rotating into the bar feeder guide channels.

In this case, the noise level depends on the following conditions:

- perfect alignment and levelling of the lathe-bar feeder unit;
- proper fixing to the floor both of the lathe and bar feeder;
- suitable bar gripping device fitted on lathe;
- use of a guide channel and a bar pusher with suitable dimensions as regards to the bar diameter;
- use of bars with a straightness within the set limits (maximum deflection in mm equal to 0.5 ‰ of the bar length);
- use of a 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 machined bar;
- all bar feeder guards must be closed.

Should the above mentioned conditions be met, the noise level emitted during the 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 level depends on the working conditions of the lathe to which the bar feeder is applied as well as on the bar type.

Whenever necessary, operators must wear PPE (personal protective equipment) in accordance with the regulations in force in the country in which the machine is installed.

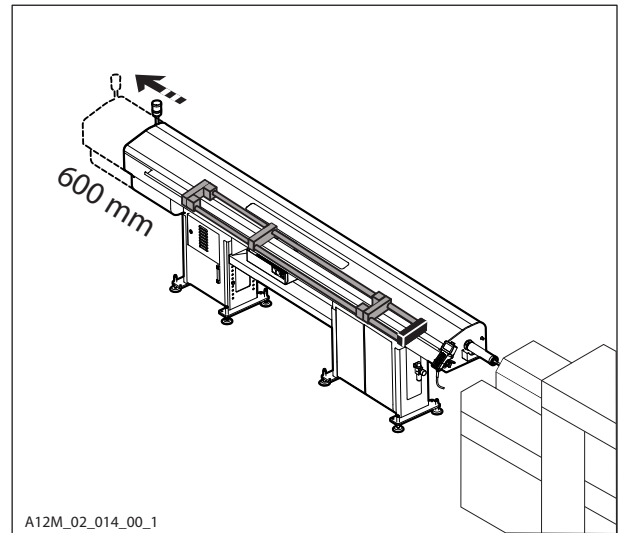
- *) Measurements taken on round bar Ø14 mm, guide channel Ø17 mm, bar straightness < 5% at 3,750 Rpm, on a Star-RNC16 lathe, serial number.

2.7 DEVICE FOR SLIDING HEADSTOCK LATHES - FOREWORD

This bar feeder has been designed and manufactured to be coupled to sliding headstock lathes too. To this purpose, the following special device is available.

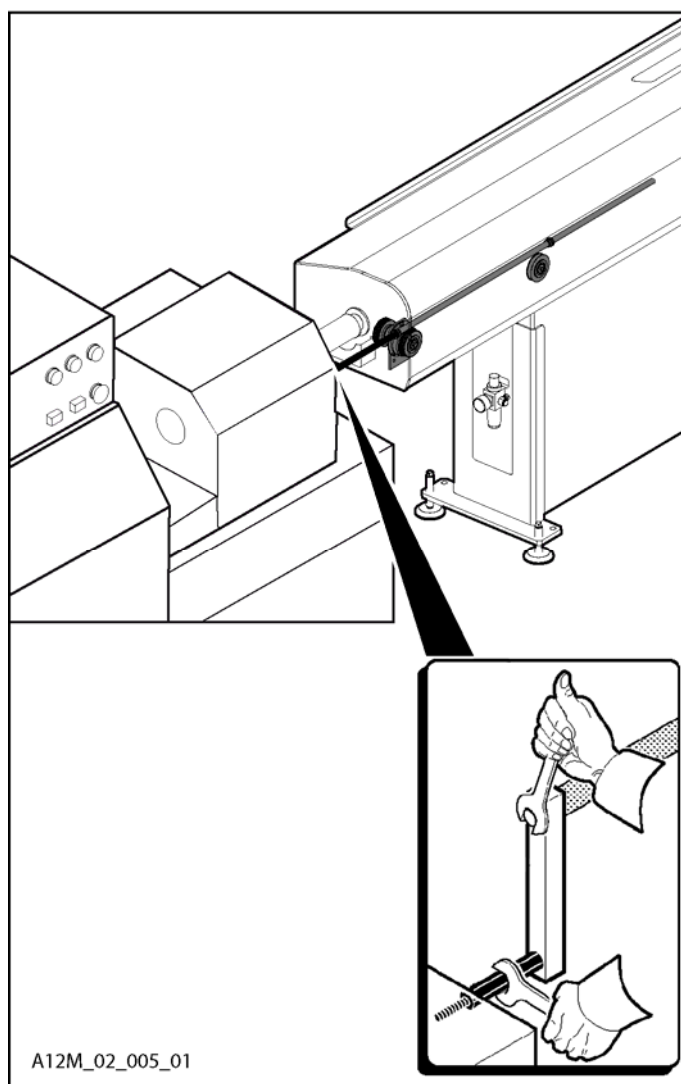
2.7.1 Axial displacement device (Optional) - Description

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



2.7.2 Bar/headstock synchronization 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.



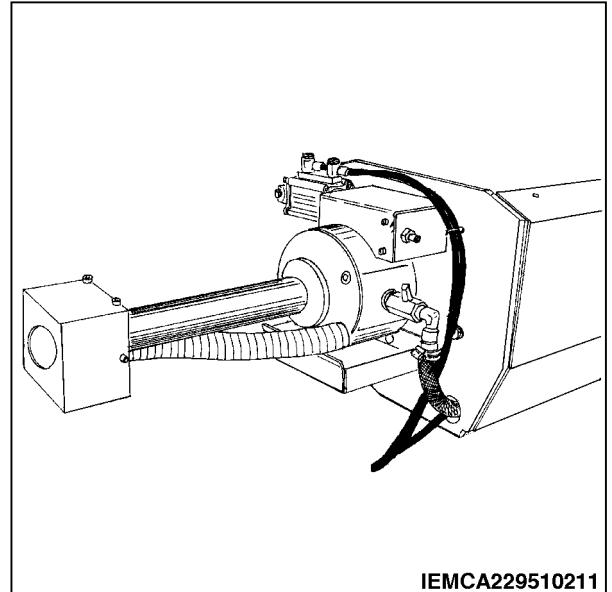
2.7.3 Diaphragm bushing device OPTIONAL (for Elite 220 only) - Description

This device, attached to the front of the bar feeder, reduces bar vibration to a minimum by keeping the bar centered during rotation. It uses three diaphragms, which, when closed, form a semi-circular channel with a diameter slightly larger than that of the bar being machined.

The channel created by the diaphragms must be adjusted every time a bar with a different diameter is loaded.

OPERATION:

- When the bar is dropped into the guide channel, the diaphragm bushing device remains open.
- The closing phase is controlled by a pneumatic cylinder and occurs when the bar feeder has completed the bar loading cycle. The oil flow for the machined bar lubrication and support starts together with the closing phase.
- When the bar pusher approaches the device, the diaphragm baffle plates open to allow it to transit and the oil flow is simultaneously discontinued.



2.7.3.1 Additional bush device - Optional - Description

The additional bush (B) is installed in the rear part of the sliding headstock lathe and allows keeping the bar guided for a space additional to the opening of the first bush (A).

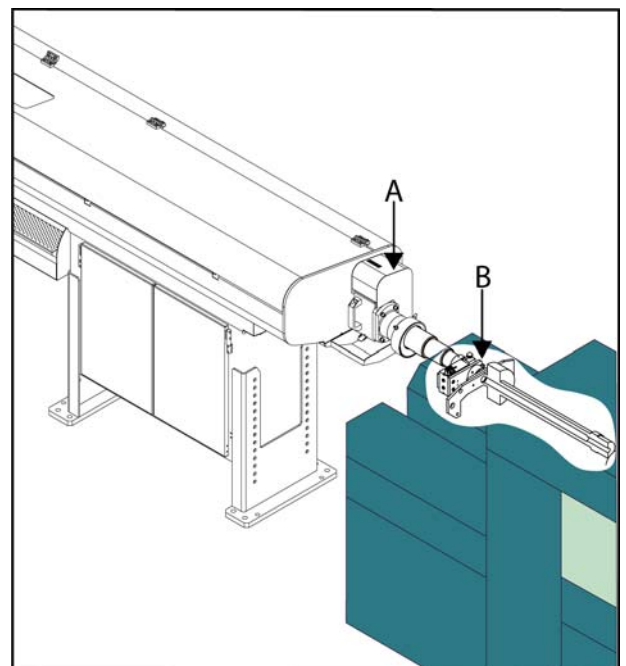
The additional bush (B) performs the opening and closing movement in automatic mode and it is activated by the value set in the "Bar End Adjustment 1" subparameter.

For more detailed information please refer to the instruction manual.



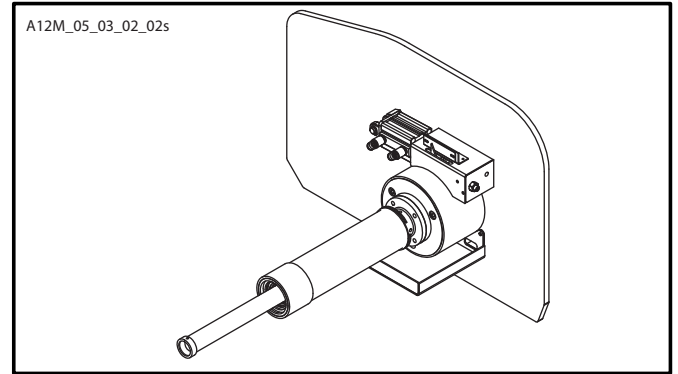
INFORMATION:

The additional bush accessory on the lathe is installed if applicable from the lathe-bar feeder mechanical interface or upon customer's request.

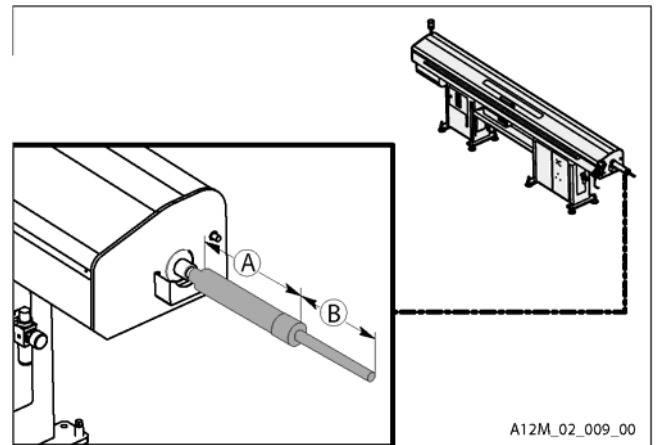


2.7.4 Telescopic front nose - Description

It is used to optimize bar guiding between the front portion of the bar feeder and the lathe spindle, example with diaphragm bush (for Elite 220 only).



Example Elite 112 Evo



Maximum stroke and overall dimension

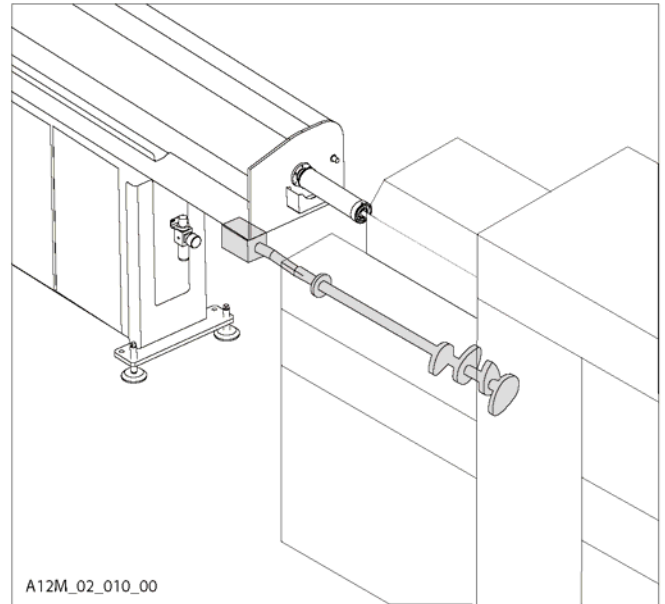
Model	Max stroke A (mm)	Overall dimensions B (mm)
Elite	120	230
	160	320
	170	200
	220	260
	320	310

2.8 DEVICES FOR CAM LATHES - FOREWORD

This bar 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.

2.8.1 Cam box - Description

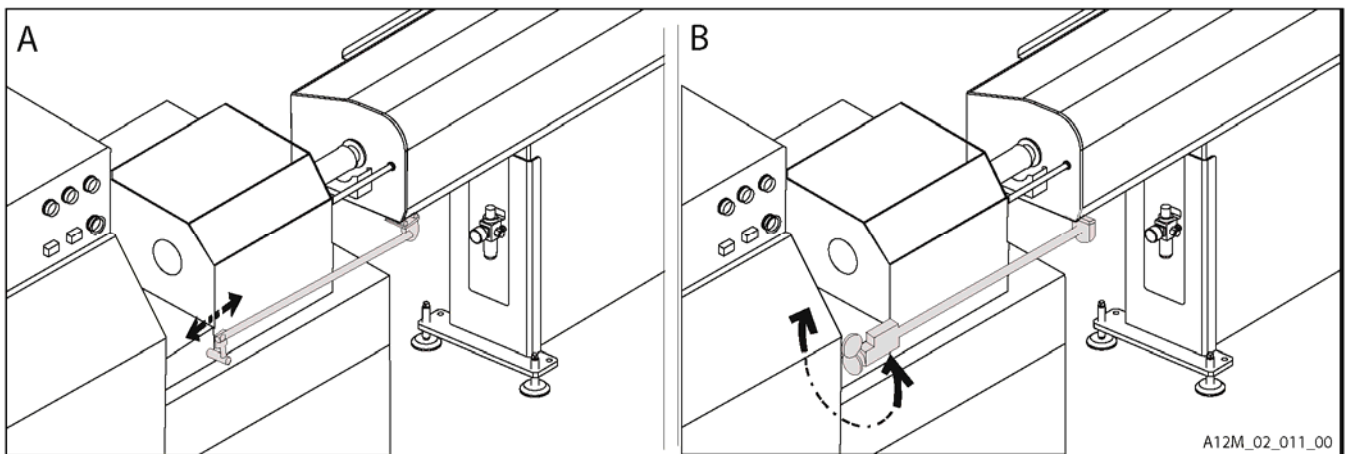
Used to synchronize the bar feeder and cam lathe movements. The cams located in the box (A) are connected to the lathe camshaft (B).



2.8.2 Camshaft release device - Description

Releases and engages the camshaft during the bar change phase. A radial version and an axial version of this device are available.

- A Radial version
- B Axial version



INDEX

3.1	GENERAL SAFETY REGULATIONS.....	2
3.2	HANDLING AND INSTALLATION - Safety	3
3.3	ADJUSTMENTS AND SETUP - Safety.....	3
3.4	USE AND OPERATION - Safety.....	4
3.5	BAR FEEDER MAINTENANCE - Safety	4
3.6	EC DECLARATION OF CONFORMITY	5
3.7	GENERAL DESCRIPTION OF SUPPLY	6
3.8	RESIDUAL RISKS	7
3.9	FORESEEABLE MISUSES	12

3.1 GENERAL SAFETY REGULATIONS



It is of the utmost importance to read this manual carefully before installing, operating and servicing the bar feeder or performing any other work on it. The constant compliance with the instructions in this manual ensures the operator safety.

- The user and expert operator must perform their specific tasks only.
- Do not tamper with the safety devices for any reason whatsoever.
- Strictly comply with the health and safety regulations at work issued by the relevant authorities in each country.
- IEMCA declines any liability for injury to persons or damage to property if the relevant safety regulations are disregarded.
- The bar feeder must only be used for the procedures indicated by IEMCA: no other improper use is allowed.
- During operation, the bar feeder will release small amounts of oil mist. Install the bar feeder in a suitably ventilated area.
The bar feeder has not been designed for use in an explosive atmosphere.
- Do not use the bar feeder in places subject to extreme temperatures: the bar feeder must work in closed environments at temperatures also accessible to the operator.
- Do not use the bar feeder in places with explosive atmosphere.

3.2 HANDLING AND INSTALLATION - Safety

- The bar feeder must be handled using suitable means and methods only.
- Do not stand or transit underneath a suspended load, or within the range of action of the crane, lift truck or other suitable lifting and transport means.
- The bar machining and loading area must be delimited to prevent collisions between the operator and the means of transport or handling of the material to be machined or of other kinds.
- Correct positioning of the bar feeder, lighting and cleanliness of the working environment are of the utmost importance for personal safety.
- The connection to the electrical installation must be carried out by skilled personnel only.
- Make sure that the electrical installation is connected to an efficient earthing system by means of an appropriate cable.

3.3 ADJUSTMENTS AND SETUP - Safety

- Carry out the adjustments as described in the operation manual.
- Do not change the machining 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 in the manual.
- Do not feed the machine with bars of dimensions other than 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 starting sequence of the operating cycle as recommended.
- Do not put hands or anything else near or inside the moving parts or parts in tension.
- Do not wear bracelets, watches, rings and ties.
- If necessary, use strong work gloves with five fingers, which do not reduce the grip sensitivity or power.
- Wear work shoes as well as personal protection equipment as provided for by the safety regulations in force in all countries.
- Inform the maintenance personnel of any operating anomalies.
- Before starting the bar feeder, make sure that there is no personnel engaged in servicing or cleaning the machine.

3.5 BAR FEEDER MAINTENANCE - Safety

- Do not allow unauthorized personnel to carry out maintenance operations.
- Read this manual carefully before carrying out maintenance operations.
- Do not lubricate, repair or adjust the bar feeder while running, unless expressly indicated in the manual.
- Stop the bar feeder in accordance with the foreseen procedures before carrying out lubrication or other operations.
- Do not use matches, lighters or torches as lightning means during operations with inflammable fluids.
- Keep drain oil in suitable containers and deliver it to companies specialized in the storage and disposal of polluting waste products.
- Avoid environmental pollution.
- Use original IEMCA spare parts only.

3.6 EC DECLARATION OF CONFORMITY**EC CONFORMITY DECLARATION
(2006/42/ EC Regulation, Enclosure II, Part A)**

Mr. TOMASO TAROZZI, acting as MANAGING DIRECTOR CEO and delegated by the company I G M I S.p.A. DIVISIONE IEMCA with legal office and establishment in Via Granarolo, 167 – 48018 FAENZA (RA) as manufacturer,

DECLARES

on his own responsibility that the machine:

AUTOMATIC BAR FEEDER

ELITE	
(type/model)	(registration number)

- is in compliance with the requirements of 2006/42/ EC regulation and with the national implementing regulations,
- is in compliance with the following European regulations:
 - o 2006/95/ EC regulation (low tension);
 - o 2004/108/ EC regulation (electromagnetic compatibility).

Otherwise he declares that the person in charge for the technical issue editing is Mr. Giampaolo Morandi, General director of the a.m. company.

TOMASO TAROZZI – Managing Director CEO

FAENZA, 08/05/2014

.....
(delegate signature)

3.7 GENERAL DESCRIPTION OF SUPPLY

The bar feeder you bought is a machine designed to feed machine tools properly prepared for bar machining. It consists of:

A basic unit made up of a metal structure, a control panel, safety devices and protections in compliance with the EU regulations governing this sector.

A set of format parts related to the specific machining processes that the machine will perform. According to the terminology used by Iemca these parts are named: guide channels, bar pushers, revolving tips, collets, bushes and front noses. Because of the kind of use, these parts are subject to wear.

Any additional parts can be supplied upon request.

Applicable Safety Regulation

According to Directive 2006/42/EC article 2B, the bar feeder is an interchangeable equipment and is supplied with the appropriate safety devices.

Together with the supply you will find the EC declaration of conformity in compliance with the above-mentioned Directive.

The list of the safety devices is shown in section 2, paragraph 2.3, of this manual.

The bar feeder should be installed according to the manufacturer's instructions which are highlighted in the supplied check list.

Should the bar feeder be used together with machine tools that do not have the CE marking, Iemca reminds to their clients that they should assess if the device is in compliance with Directive 2009/104/EC and subsequent amendments even after installing the bar feeder.

Safety warning. Only qualified and properly trained personnel can work with machine tools and the related interchangeable equipments.

3.8 RESIDUAL RISKS

- The following residual risks exist:

PNEUMATIC POWER

- Presence of pneumatic energy in the supply system to the machine actuators.

Here are some examples of the warnings referenced above:

Before doing regular maintenance or any other service on the machine pneumatic actuators it is essential to stop the pneumatic energy supply by disconnecting the supply hose (see chapter 4). Make sure that the pressure gauge on the pressure adjustment device is indicating zero.

ELECTRIC POWER

- CAPACITOR
- DISCONNECT THE ELECTRIC POWER VIA THE INTERFACE CABLE OR SWITCH OFF THE LATHE

Here are some examples of the warnings referenced above:

In case of maintenance within the electrical control panel, please note that, even after the bar feeder has been turned off through the main switch, residual voltage remains.

To operate in safety, it is necessary to follow these indications:

- wait 60 sec. until the capacitor is discharged
- remove the three-phase voltage by operating on the disconnecting device upstream from the supply line (or disconnect the interface connector)

FLUID LEAKAGE RISK

- It is forbidden to top up the lubricating oil tank while the oil pump is running.
- Do not let the oil or coolant leak from the lathe out to the bar feeder.

Here are some examples of the warnings referenced above:

Switch off the bar feeder and wait at least 10 minutes for the oil to decant inside the tank.

CRUSHING DANGER

- Crushing danger in the area of the moving parts of the bar feeder.

Here are some examples of the warnings referenced above:

In order to operate safely, always wear your personal protective equipment. Pay attention to the warnings concerning the risk of crushing on the machine.

- 1) Switch off the power supply or press the bar feeder emergency button before starting to replace the front bushes.
- 2) When the bar feeder is in automatic mode and the magazine guard is open, pay attention to avoid any contact with moving parts.

Here are some examples of the warnings referenced above:

- 1) Bush replacement or maintenance work inside the bushing holding equipment should only be performed after switching the bar feeder off.*
- 2) With the bar feeder in automatic mode, there is a potential crushing risk if you reach your hands and arms into the guide channel area (bar pusher movement).*

BAR FEEDER FASTENING IN AN UNSTEADY EQUILIBRIUM

- 1) If during installation the floor proves not to be level, the authorized technician will level out and align the bar feeder using the levelling screws of the fastening plates in the outer part of the bar feeder and in the anti-vibration plugs in the inner part.
- 2) If applicable, from the bar feeder/lathe mechanical interface layout, anchor the bar feeder to the lathe by means of a mechanical anchorage after aligning the bar feeder to the lathe and securing it to the ground.
- 3) If a customer chooses not to secure the bar feeder to the ground, he will be responsible for the bar feeder becoming unstable or falling to the ground.

Here are some examples of the warnings referenced above:

- 1) *Once installation is complete, all supporting screws used to align the lathe spindle line with the bar feeder line should be inserted in the plates supplied with the installation material.*
- 2) *Equipped on all cam lathes and on some CNC sliding-headstock lathes.*
- 3) *The technician will perform installation without securing the bar feeder to the ground. However, in the report to the customer certifying that installation has been completed, he will state that the customer requested that the machine be not secured to the ground.*

BREAKING RISK DURING OPERATION

- 1) After performing scheduled or unscheduled maintenance work, remove any foreign objects from inside the bar feeder inner area.
- 2) Stop lathe spindle rotation during the magazine loading phase.

Here are some examples of the warnings referenced above:

- 2) *Avoid loading the magazine when there are parts rotating inside the guide channels. If they break, they can seriously harm the operator.*

RISKS FROM MOVING PARTS

- 1) When the guard opens during the work phase for loading the bars into the magazine, avoid any contact with moving parts.
- 2) The bar pre-loading area has no guards at all and gives the operator direct access to the work area.

Here are some examples of the warnings referenced above:

- 1) *Bar or revolving tip rotation, bar pusher feeding, moving the synchronization device (if present).*
- 2) *This area has no protection guard. Please note that areas with moving parts (bar pusher) can be reached during the bar change phase.*

FIXED GUARDS

- If you have removed some fixed guards in order to be able to perform maintenance on the bar feeder, put them back in place and secure them soon after completing your work. Make sure they are secured so as to prevent access to moving parts during work.

Here are some examples of the warnings referenced above:

After removing the fixed guards, be sure that the fastening screws remain on the bar feeder frame.

NOISE

- The bar feeder is not a noise source, except for the bar loading phases and the subsequent feeding of the bar into the lathe, which all have a limited duration. However, the noise level will never be higher than 75 dB.

EMISSIONS OF DANGEROUS SUBSTANCES

- Do not open the magazine guard during the work phase to avoid breathing in any gaseous materials from oil atomization or being hit by the oil drops expelled by centrifugal motion during bar rotation.

Here are some examples of the warnings referenced above:

Stop the oil flow using the cock provided, put the bar feeder in manual mode and switch off the oil pump by pressing the key on the keyboard.

ACCESS TO THE INTERVENTION POINTS USED FOR MAINTENANCE

- 1) Press the stop button before moving the bar pusher forward using the crank.
- 2) During the work phase, if protection guards have been removed, it is strictly forbidden to insert the crank into the area used for moving the bar pusher forward and opening the guide channels.

Here are some examples of the warnings referenced above:

- 1) If any third party presses the feed or return button causing the crank to rotate while the operator is moving the bar pusher by means of the crank
- 2) If work is done on two shifts, there is the chance that a guard is removed mechanically by different operators. Failing to restore will enable direct access to the areas with moving parts. Please train your personnel accordingly.

ALARM DEVICES

- 1) Do not tamper with light indicators, for example by painting them a colour different from the original one.
- 2) Make sure that light indicators are clearly visible from all directions at all times.

Here are some examples of the warnings referenced above:

1)The colour loses intensity.

2)Other pieces of equipment or panels placed too close to the warning lamps on the bar feeder.

THERE ARE CIRCUITS NOT INTERRUPTED BY THE DISCONNECTING DEVICE

- There is danger caused by voltages from the lathe signals that are not interrupted by disconnectors in the bar feeder.

During installation, check if it is possible to disconnect the system upstream from the bar feeder using protection devices.

SEQUENCE OF PHASES

- It is very important that the operator knows the sequence of the bar feeder work phases. These can be found in the Instruction Manual supplied with the machine.

DIFFERENTIAL CURRENT DEVICE UPSTREAM FROM THE MACHINE, USED TO PREVENT HAZARDOUS CONDITIONS IN CASE OF A FAILURE

- Make sure that the bar feeder is powered by a three-phase power supply protected through a differential switch with interrupting power (for example, of 30 mA).









RULES FOR ELECTRIC POWER SUPPLY




- Before performing the electrical connection of the bar feeder, check that the three-phase power supply voltage that reaches it matches what is indicated on the identification plate located on the electrical control panel door.

3.9 FORESEEABLE MISUSES

- Do not tamper with the machine's safety devices (for example, the safety microswitches of the openable guard to access the bar magazine)
- Do not use the lubrication pump for other purposes (for example, to pour different liquids)
- Do not use the oil tank for other purposes and do not pour into it liquids or substances different from those recommended by the manufacturer
- Do not load bars made of flammable materials
- Do not load bars with a greater straightness than the one recommended by the manufacturer
- Do not load bars with sizes or shapes different than those recommended by the manufacturer
- Do not interfere with any body part on the bar feed axis
- Do not approach the bar feeder with open flames or very hot objects (for examples, cigarettes). Danger of oil flammability.
- Do not draw electricity or pneumatic energy from the bar feeder to power other machines or tools
- Keep hands out of the remnant recovery zone. Residual risks of upper limbs crushing! (Risk due to remnant drop and clamp device).

INDEX

4.1	PACKAGING 	3
4.1.1	BAR SUPPORT DISASSEMBLING	3
4.2	LIFTING 	3
4.3	INSTALLATION AREA - FEATURES (with and without displacement) 	5
4.4	BAR FEEDER - INSTALLATION 	6
4.4.1	Backing plates and support feet - Installation	6
4.4.2	Height - Adjustment	6
4.4.3	Preliminary positioning	7
4.4.4	Front nose - Installation	8
4.4.5	Levelling and alignment	9
4.4.7	Bar feeder fastening	16
4.5	DEVICE FOR SLIDING HEADSTOCK LATHES - INSTALLATION 	17
4.5.1	Bar-headstock synchronization device	17
4.5.2	Telescopic front nose - Installation	18
4.6	DEVICES FOR CAM LATHES - INSTALLATION 	19
4.6.1	Cam box	19
4.6.2	Camshaft release device	20
4.7	LUBRICATION OIL - FILLING 	22
4.8	ELECTRICAL CONNECTION 	23
4.8.1	THREE-PHASE POWER SUPPLY	23
4.8.2	SAFETY SIGNALS	23
4.8.2.1	EMERGENCY STOP	24
4.8.2.2	GUARD SAFETY STOP (IF PROVIDED)	24

4.8.3	FUNCTION SIGNALS.....	26
4.9	PNEUMATIC DEVICE LAYOUT.....	27
4.9.1	PNEUMATIC CONNECTION 	30
4.10	MACHINING PARAMETERS SETTING 	32
4.11	BAR FEEDER TESTING 	32

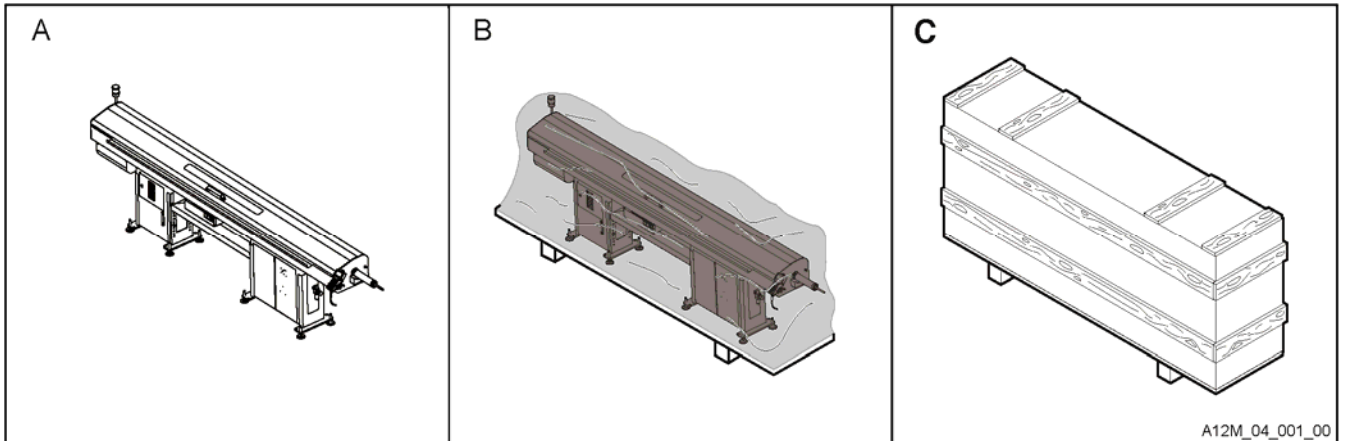
4.1 PACKAGING

There are three possible bar feeder packaging:

A WITHOUT PACKAGING.

B WITH PALLET: the bar feeder is placed on a pallet and wrapped with protective film.

C WITH CRATE: the bar feeder is contained in a crate and wrapped with protective film.



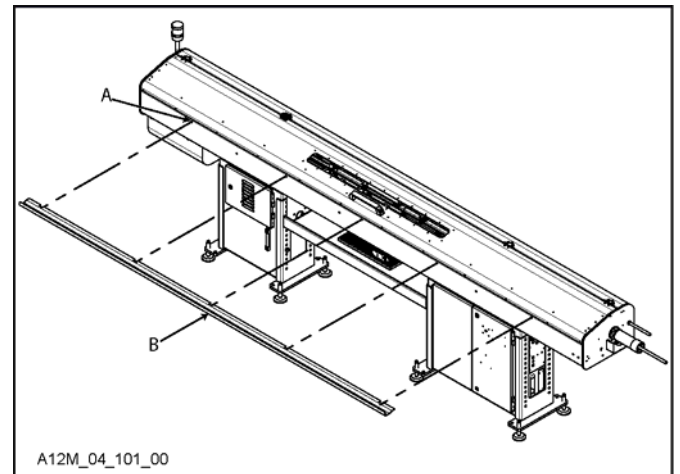
4.1.1 BAR SUPPORT DISASSEMBLING



WARNING - CAUTION:

Bar support B should be disassembled during the transport and handling phase.

- Loosen screws (A)
- Remove bar support
- Tighten screws (A)



4.2 LIFTING



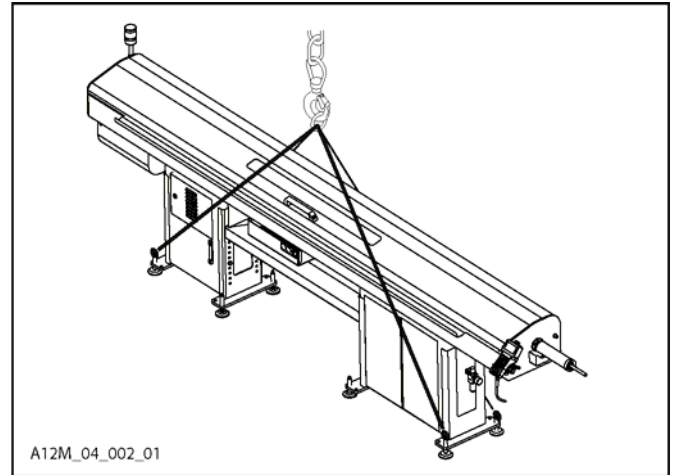
DANGER - WARNING:

handling and lifting operations should be carried out with suitable equipment (see weight table in section 2.6.) and by specially trained and experienced personnel.

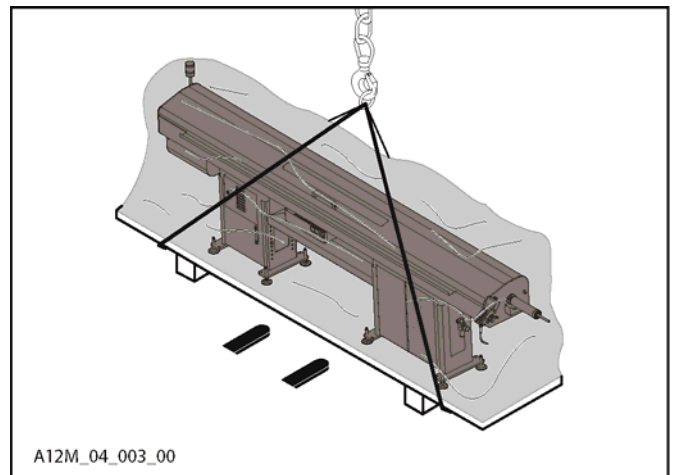
According to the packaging choice, lifting is carried out as shown in the next page.

LIFTING WITH NO PACKAGING

- Insert the four eyebolts into the plates inside the bar feeder foot, as shown in the picture.
- Use a hook lifting device of adequate capacity.

**LIFTING WITH PALLET**

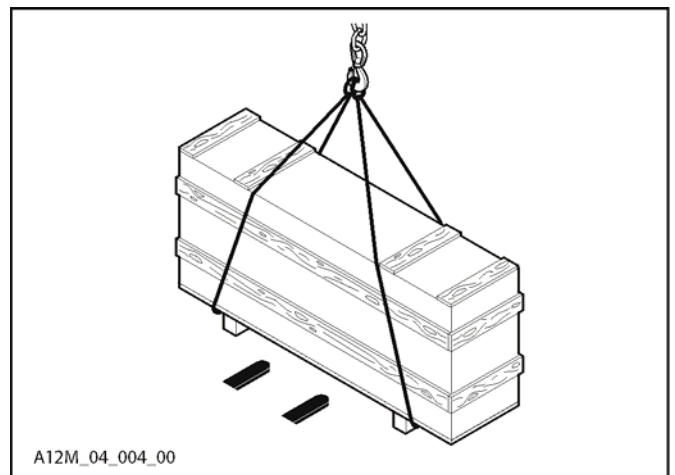
- Use a hook or fork type lifting device of suitable capacity (see information on packaging).

**LIFTING WITH CRATE**

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

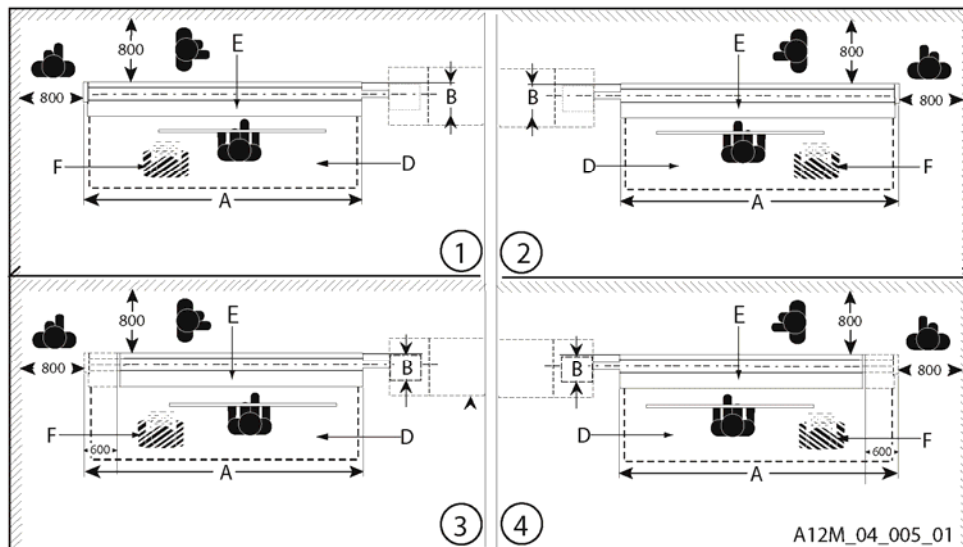
**DANGER - WARNING:**

never use any lifting systems or devices different from the ones above.



4.3 INSTALLATION AREA - FEATURES (with and without displacement)

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 bar feeder used. The areas (D) (work area), (E) (bar feeding area) and (F) (remnant ejection 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 area should be illuminated and provided with an electric and pneumatic power supply socket. During operation, the bar feeder will release small amounts of oil mist. Install the bar feeder in a suitably ventilated area but not exposed to weather conditions. The bar feeder has not been designed for use in an explosive atmosphere.



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

Overall dimensions

MODEL	VERSION	A (mm)	B (mm)
ELITE	32	3788	550
	37	4358	



INFORMATION:

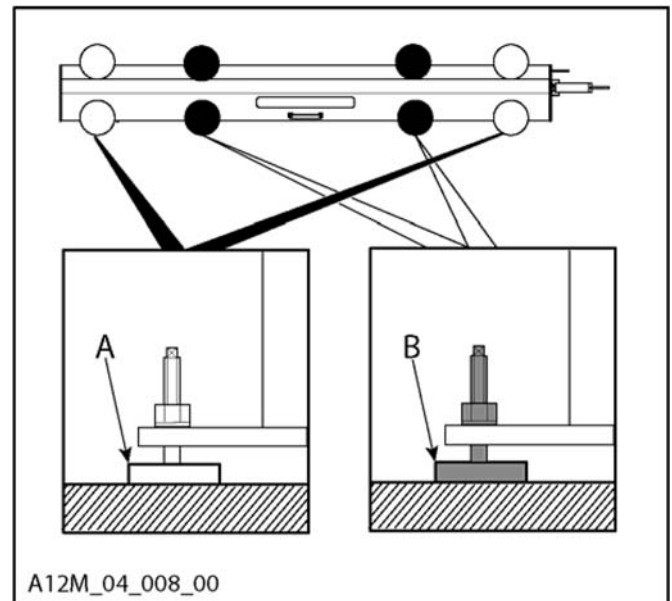
carry out the bar feeder installation in a place which is sheltered from bad weather.

4.4 BAR FEEDER - INSTALLATION

Before carrying out the bar feeder installation, check the lathe stability; make sure that it is firmly fixed to the ground and that the spindle axis is perfectly in horizontal position.

4.4.1 Backing plates and support feet - Installation

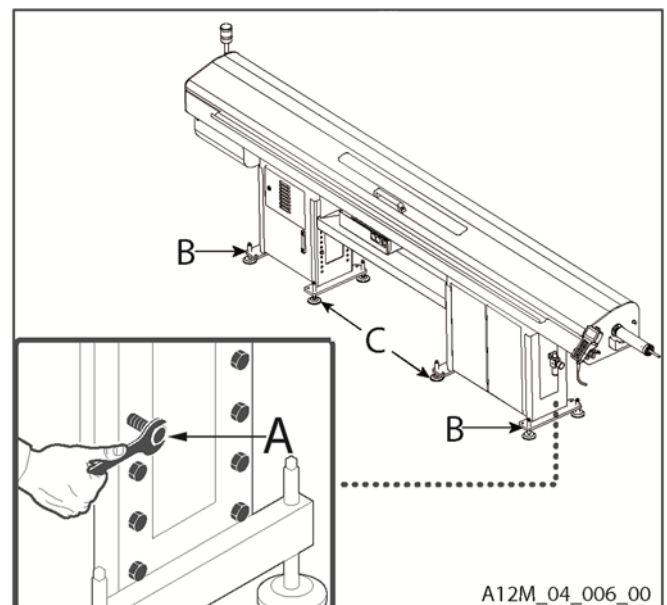
- Position the bar feeder next to the lathe.
- Keep it lifted and install the plates (A) and feet (B) in the positions shown in the figure.



4.4.2 Height - Adjustment

The bar feeder is normally supplied with the working axis height adjusted to the lathe height. However, if an adjustment is needed, proceed as follows:

- remove the 8 screws (A) from the plates (B) on the outer side of bar feeder feet.
- fix the plates with the screws (A) on the suitable position to reach value "X" (see the "Working axis height" table, section 2).
- repeat these steps also in the feet inner plates (C).



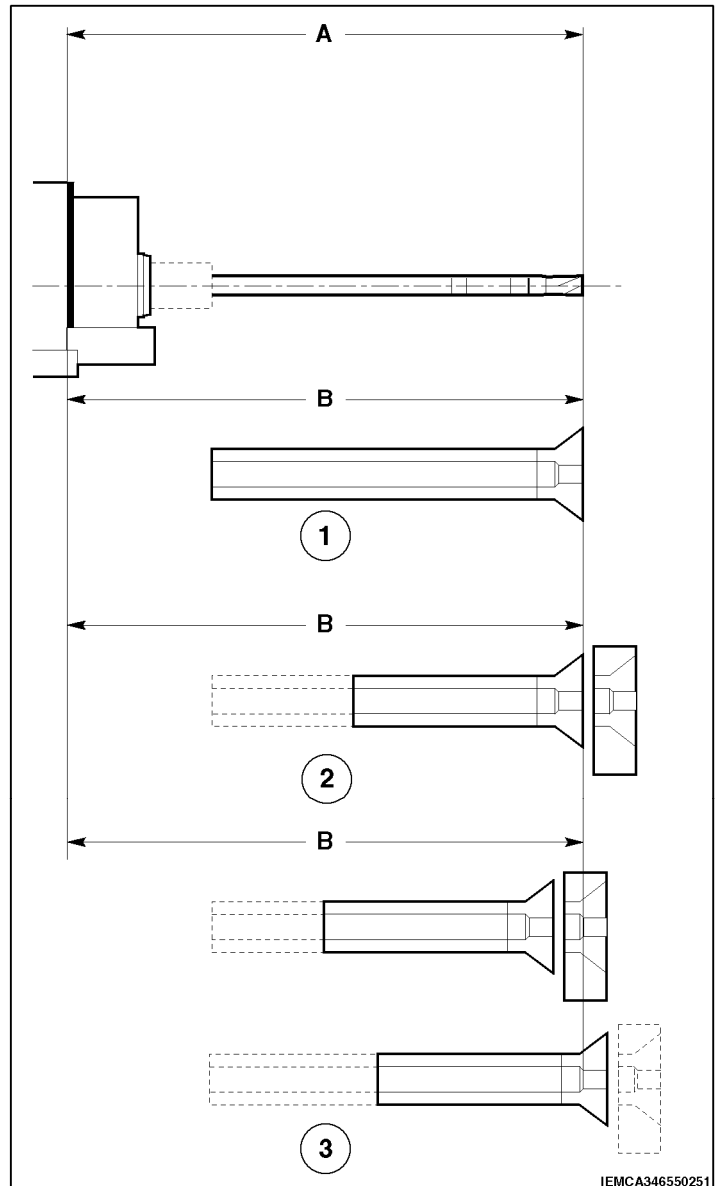
4.4.3 Preliminary positioning

- Position the bar feeder behind the lathe, considering the fixed and moving dimensions of both machines. The coupling distance (B) should not exceed the bar pusher maximum extension (A).
- 1 Fixed headstock or sliding rest lathe
 - 2 Sliding headstock CNC lathe
 - 3 Sliding headstock cam lathe

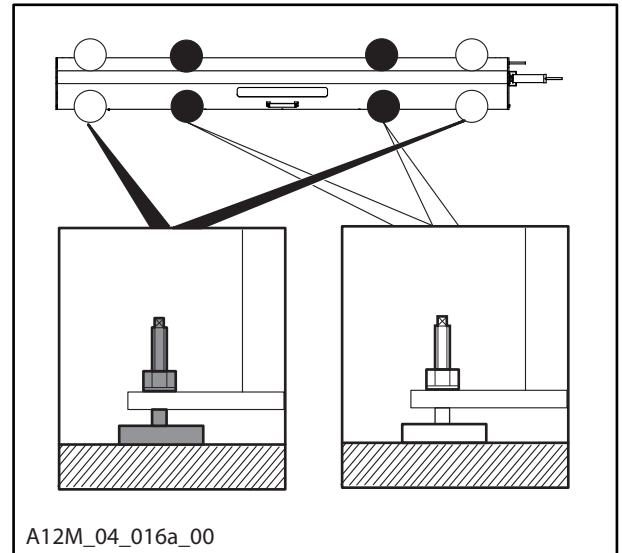


INFORMATION:

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



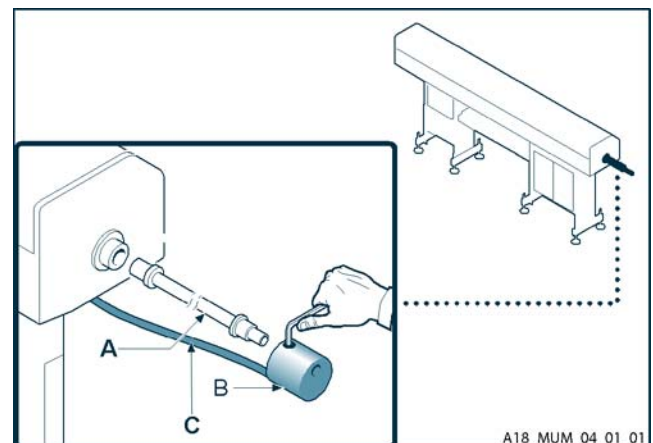
- Roughly adjust the height of the working axis and the alignment with the lathe by turning the screws of the support feed.



4.4.4 Front nose - Installation

ELITE

- Install the front nose (A) on the front plate.
- Install the oil recovery tank (B).
- Connect the drain pipe (C) to the tank.



4.4.5 Levelling and alignment

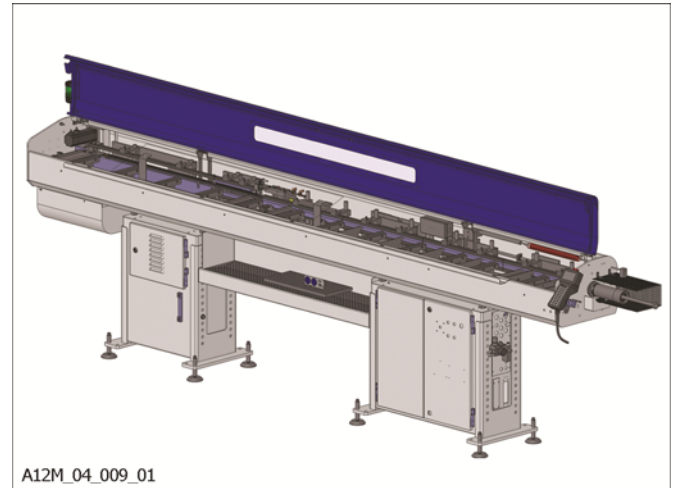
FOREWORD

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



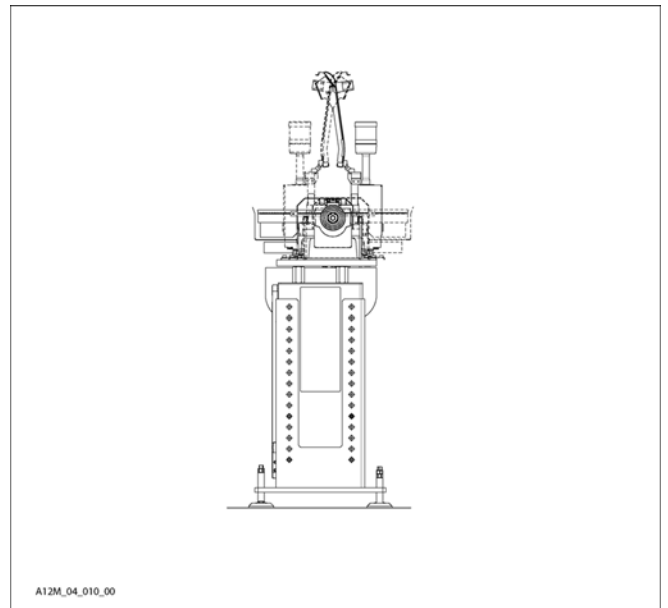
WARNING - CAUTION:

an error during the alignment may be the major cause of a bad operation of the bar feeder and of its consequent damage.



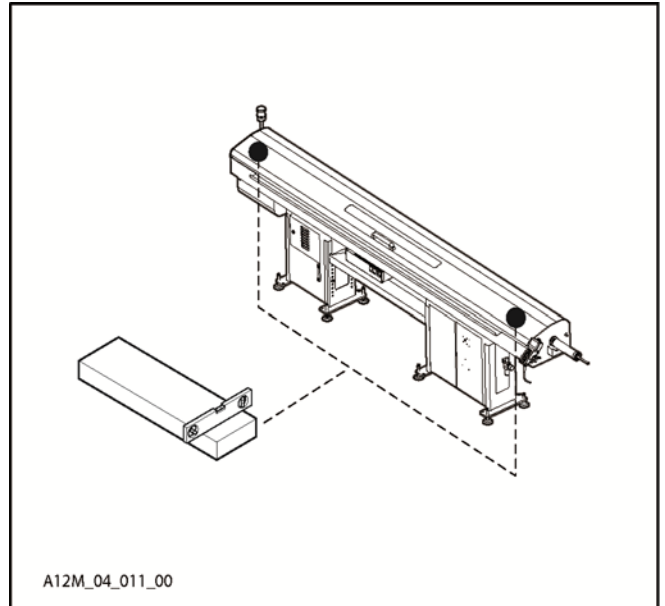
PRELIMINARY PROCEDURE

- Open the upper guard.

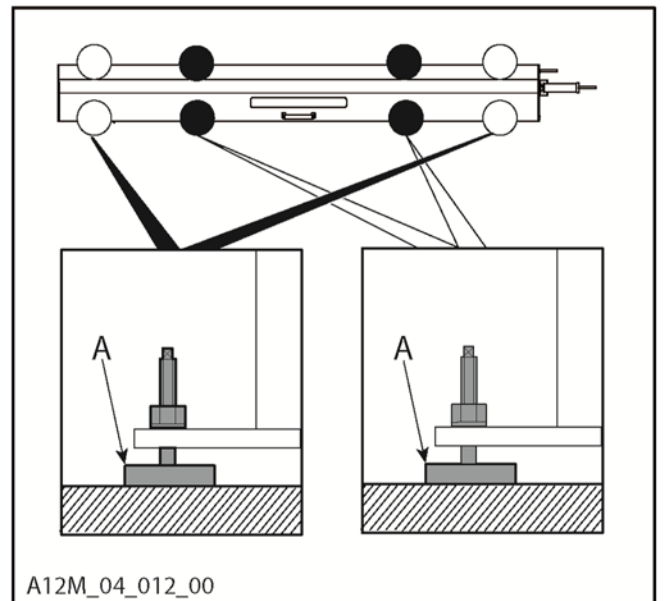


LEVELLING

- Check oil levelling by positioning the level crosswise and lengthwise on the supports of the lower guide channel.



- Carry out the required modifications by turning the screws (A) on the support feet

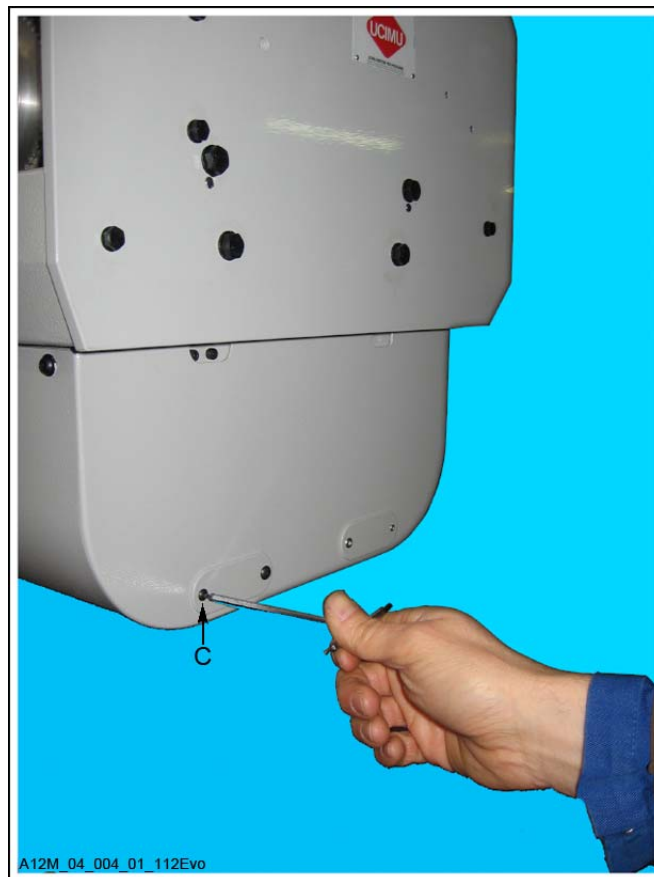


4.4.6**ALIGNMENT**

- Insert the supplied (CH8) wrench in the intermediate drive shaft and move the bar pusher to its backwards limit stop.
- To access the shaft you need to remove the protection guard (A).
- To access the guide channel opening and closing shaft, you need to remove the protection guard (B).



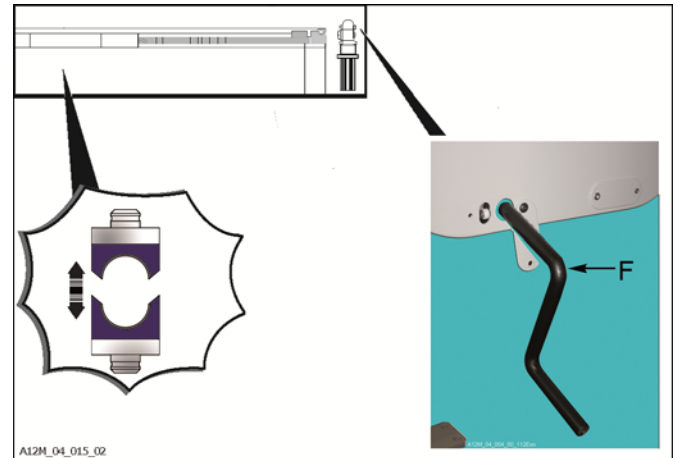
- Loosen screw (C).



- Leave screw (E) to support the guard; the microswitch (D) is now free and the display shows the message "18 Error: Bar Feeder Emergency" (see instruction manual).

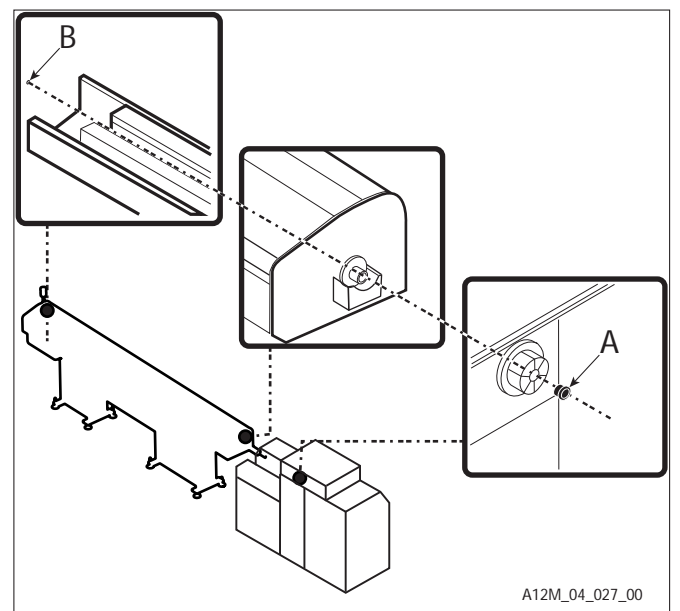


- Insert the wrench into the guide channel opening shaft and open the upper guide channels.

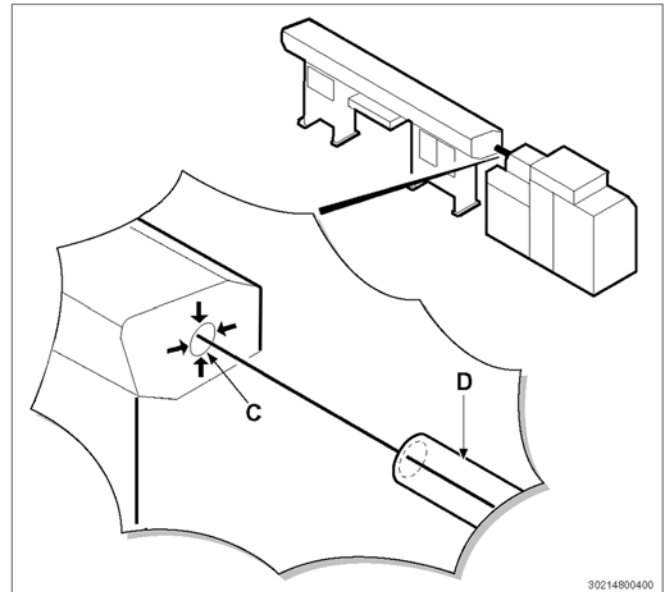


To obtain alignment lead a (\varnothing 1 mm) nylon thread between the lathe collet and the bar feeder rear plate, then proceed as follows:

- place a drilled bush (A) in the lathe collet;
- stretch out the thread to the hole in the rear plate (B).



- check with a sliding caliper, the alignment near bushing (C) and spindle (D); use a tolerance of ± 0.15 mm in the four directions.
- prepare a perfectly straight ground bar, with an external diameter equal to the maximum spindle bar passage and with a length equal to the double coupling distance (see (B) in the "Preliminary Positioning" section, Chap. 4);
- place the bar in the guide channel and cause it to slide forwards and backwards in the spindle, until the lathe collet area is reached.



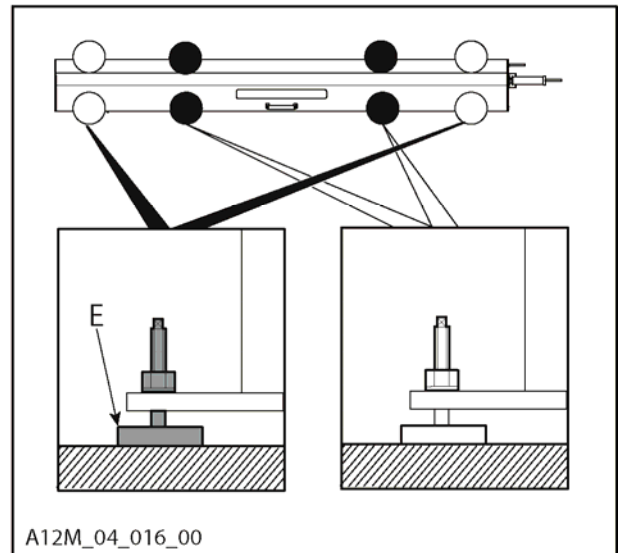
**POSITIONING
ADJUSTMENTS**

After checking the alignment of the bar 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 adjustments with calibrated mallet blows on the sides of plates (E).

During this phase, any adjustment carried out during the levelling phase should be preserved; therefore, in most cases, it is necessary to find the correct adjustment of the bar feeder position.

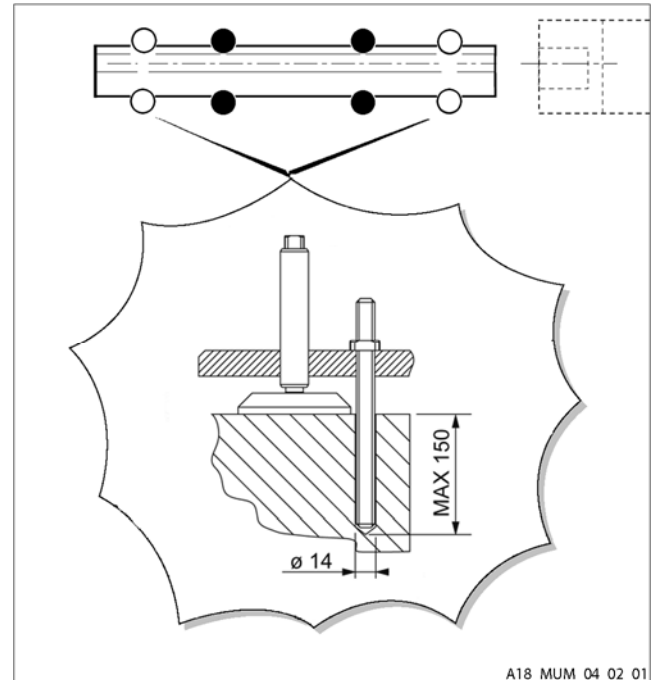
- To access the shaft you need to remove the protection guard (B).



4.4.7 Bar feeder fastening

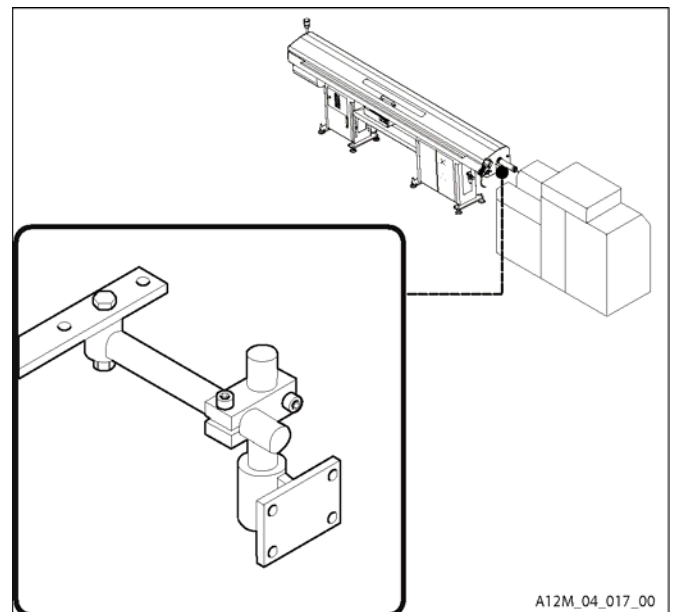
GROUND FASTENING

- Drill the floor and fix the lifting foot with expansion plugs.
- Check the levelling and alignment once more.
- Remove all the equipment used for the levelling and alignment phases and restore the initial bar feeder conditions.



FASTENING TO THE LATHE

Wherever possible, the bar feeder should be fixed to the lathe with a suitable coupling unit according to lathe brand and type. The figure shows a general example of fixing; contact IEMCA service department for more information.



4.5 DEVICE FOR SLIDING HEADSTOCK LATHES - INSTALLATION

4.5.1 Bar-headstock synchronization device

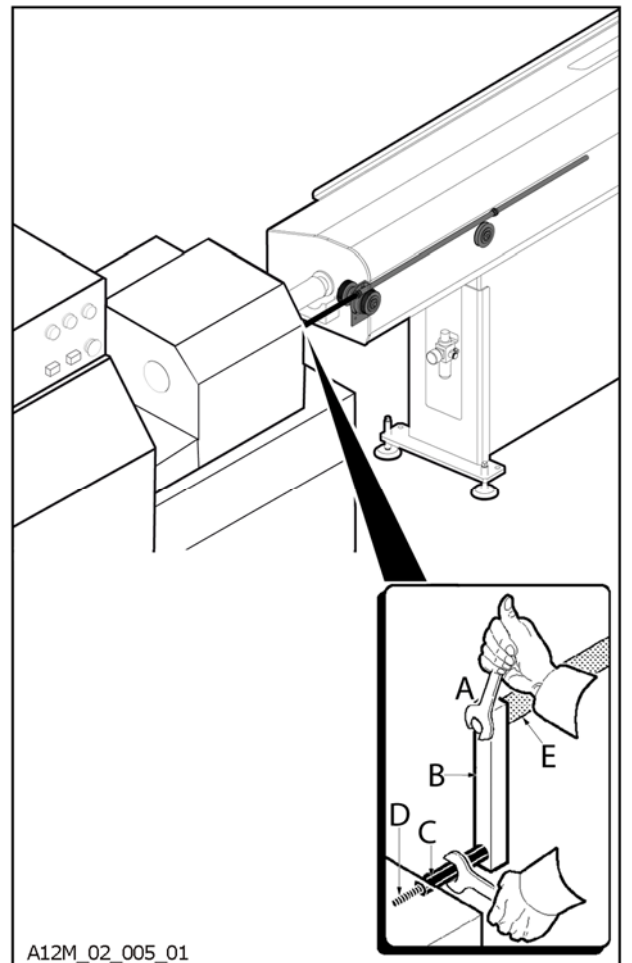
- Open the upper guard.



INFORMATION:

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

- Loosen 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).



4.5.2 Telescopic front nose - Installation

If the bar feeder is equipped with a telescopic front nose, proceed as described below.

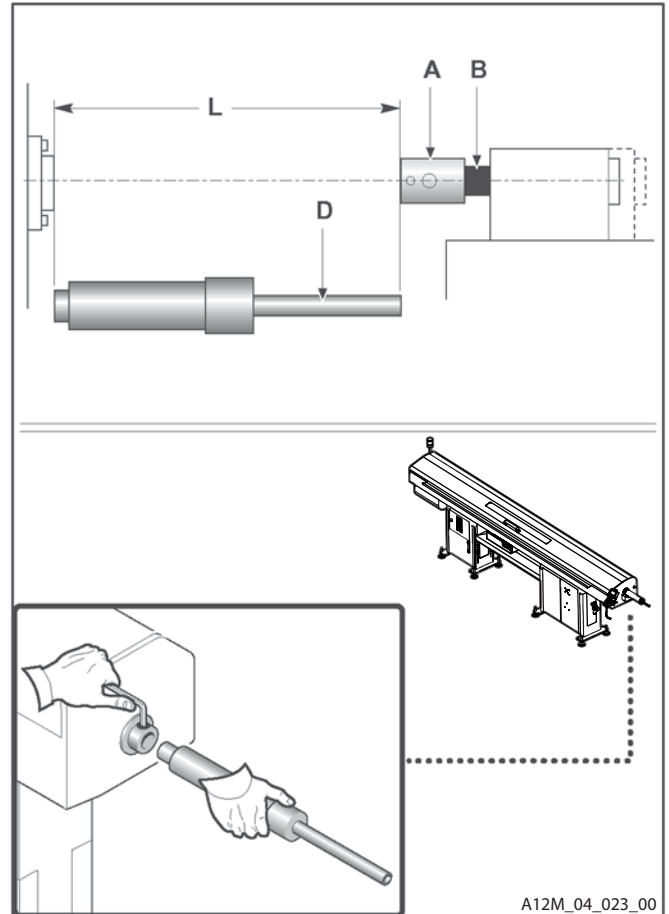
- Remove the fixed front nose that had been installed to obtain alignment between the bar feeder and the lathe.
- Fix the flange (A) (a general example is shown in the figure).



INFORMATION:

the lathe spindle front nose (B) should not turn. If it does, a support or another similar device should be fitted to prevent telescopic front nose turning after it has been installed.

- Move the headstock to its "completely backwards" position and measure the value "L". Push the telescopic front nose to its stroke end (less 5 mm) and cut tube (D) by the value measured.
- Move the headstock to its "completely forwards" position. Install the front nose on the plate (F).
- Check smooth sliding of the telescopic front nose by moving the headstock forwards and backwards.



4.6 DEVICES FOR CAM LATHES - INSTALLATION

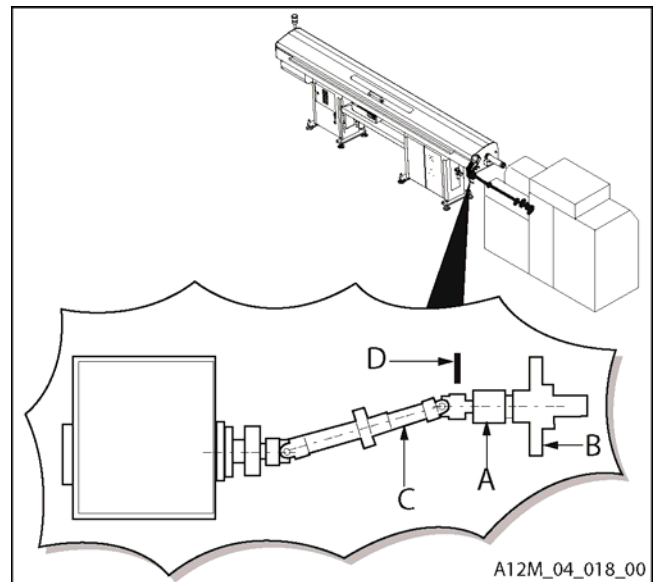
4.6.1 Cam box



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).



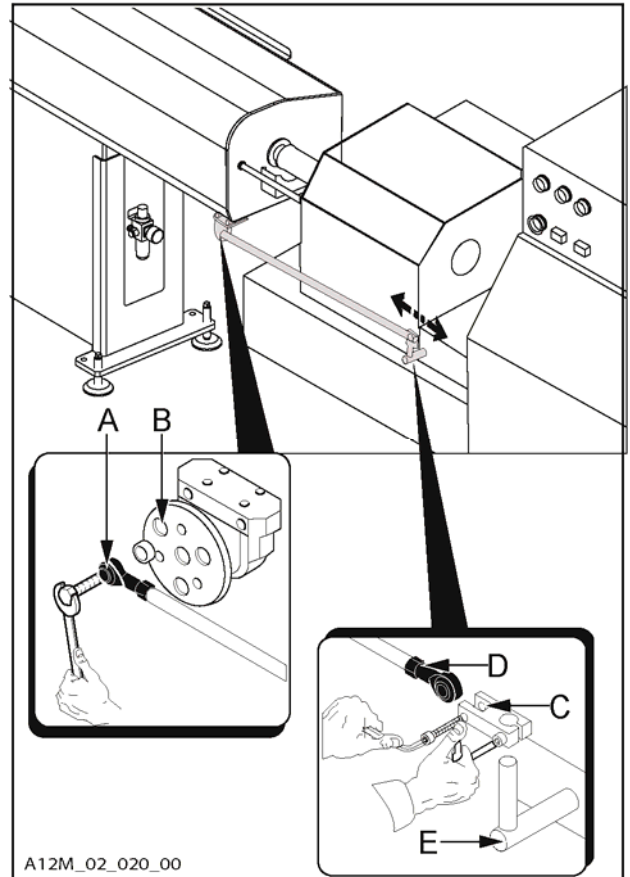
4.6.2 Camshaft release device

**INFORMATION:**

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

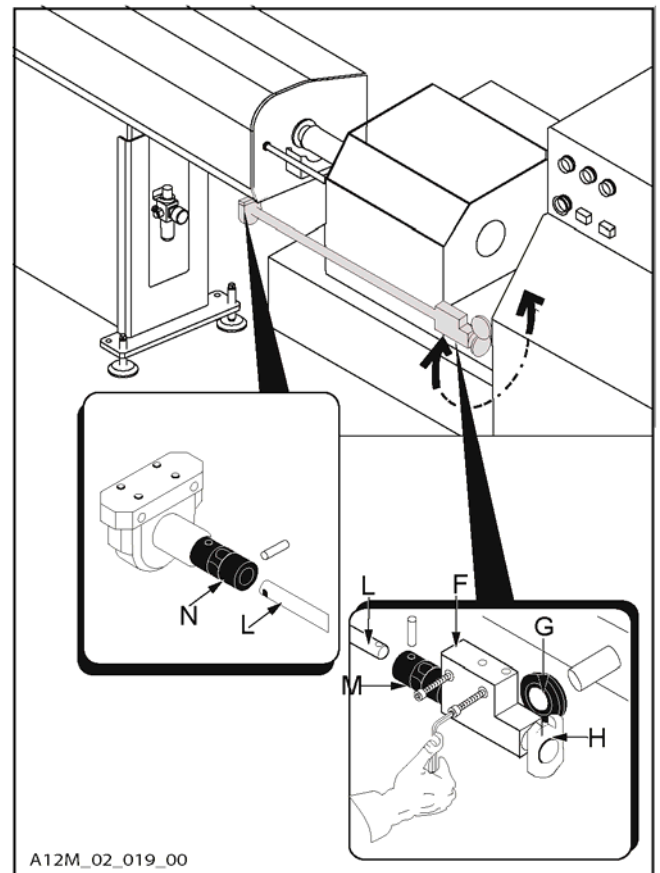
Radial version

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



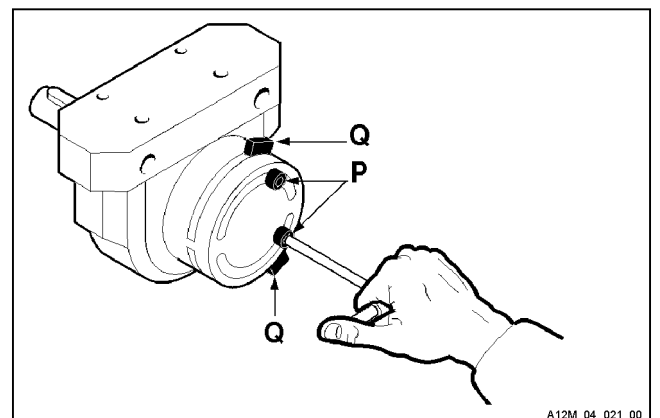
Axial version

- Drill and thread the lathe housing to fix the transmission unit (F).
- Fit disc (G) to control (H).
- Insert shaft (L) into joint (M) and fix it using a pin (O).
- Insert the other end of shaft (L) into joint (N) and fix it using pin (R).



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 screws (P), position cursors (Q) to the mechanical limit stop and tighten screws (P).



4.7 LUBRICATION OIL - FILLING



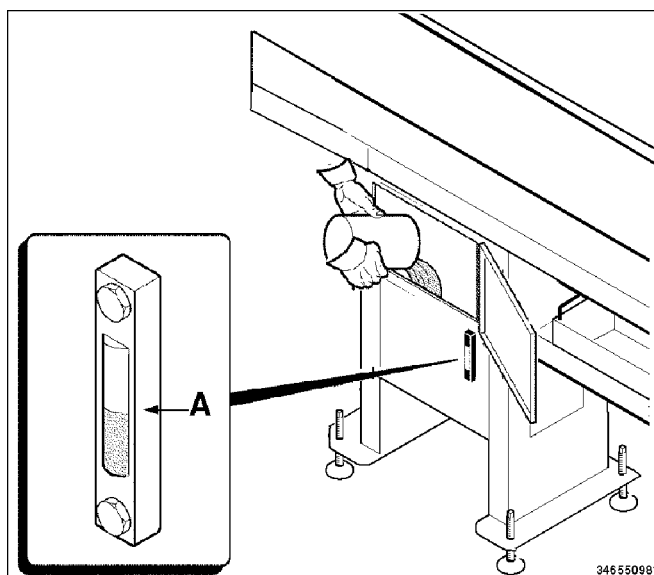
WARNING - CAUTION:

wear personal protections according to the regulations in force.

- Open the rear base door and pour oil into the tank.
- Check the level by means of the indicator (A).



See § "Technical Data", in Chap. 2, for the comparative table.



4.8 ELECTRICAL CONNECTION



DANGER - WARNING:

this type of operation should only be entrusted to skilled personnel with precise technical competence and specific abilities to comply with the applicable standards and regulations in force.



DANGER - WARNING:

the bar feeder must be electrically connected to the lathe, which in turn, must be connected to the plant electrical installation 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 or 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

4.8.1 THREE-PHASE POWER SUPPLY

The robot must be provided with a three-phase voltage and with a suitable earthing connection. The three-phase supply line should also be protected by means of a suitable magneto-thermal switch (check the installed power on the plate of the electrical control panel door).

4.8.2 SAFETY SIGNALS

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



INFORMATION:

when the safety class 3 is mentioned in the following points, please refer to the relevant regulation.

4.8.2.1 EMERGENCY STOP

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

- **Emergency from bar feeder to lathe (2 channels, contacts off = 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 (lathe/bar feeder) is stopped.
- **Emergency signal from lathe to bar feeder (2 channels, contacts off = Emergency activated).**
It is used to transmit the active emergency state from the lathe to the bar feeder.
As soon as the bar feeder receives these signals, it performs an emergency stop (safety class 3).

4.8.2.2 GUARD SAFETY STOP (IF PROVIDED)

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

- **Guard safety signal from the lathe to the robot (2 channels, contacts off = open guards).**
Whenever the above mentioned channels are closed, the bar feeder informs the lathe that the guards are closed and the lathe can so carry out all the movements, displacement as well as.
Whenever one of the bar feeder guards is open, these signals are stopped: in this case, the lathe immediately stops (safety class 3) all the movements that may harm the operator (e.g. in the multispindle, the spindle drum displacement).
As soon as the contacts are closed, the lathe will start operation again.
- **Guard safety signal from lathe to bar feeder (2 channels, contacts off = open guards).**
Whenever the above mentioned contacts are closed, the lathe informs the bar feeder that the guards are closed: the bar pusher can be pushed forward.
As soon as one of the guards on the lathe is open, the bar pusher is stopped immediately, in agreement with safety class 3, to avoid injury to the operator.
Any jumpers on the safety signals, which had been set for robot final test, should be removed in order to restore the safety devices.



DANGER-WARNING!!!

**DANGER - WARNING:**

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

4.8.3 FUNCTION SIGNALS

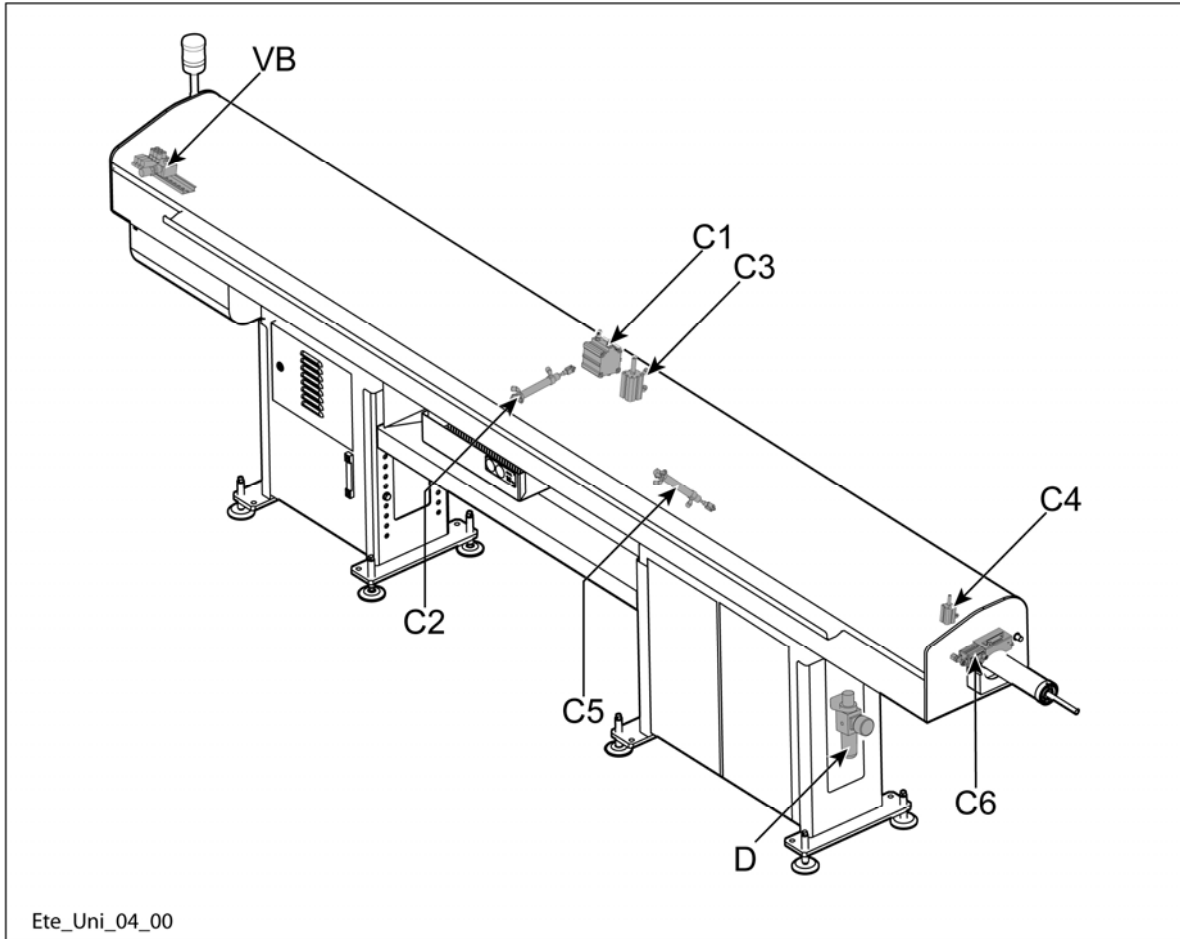
The bar feeder can send and receive all the signals which are necessary to its correct operation. These signals are managed by a PLC, and can be grouped into: inputs (signals from lathe to bar feeder) and outputs (signals from bar feeder to lathe).

The signals that have been implemented are the result of our long experience and allow the connection with every type of lathe: it is therefore possible that only some of them are used.

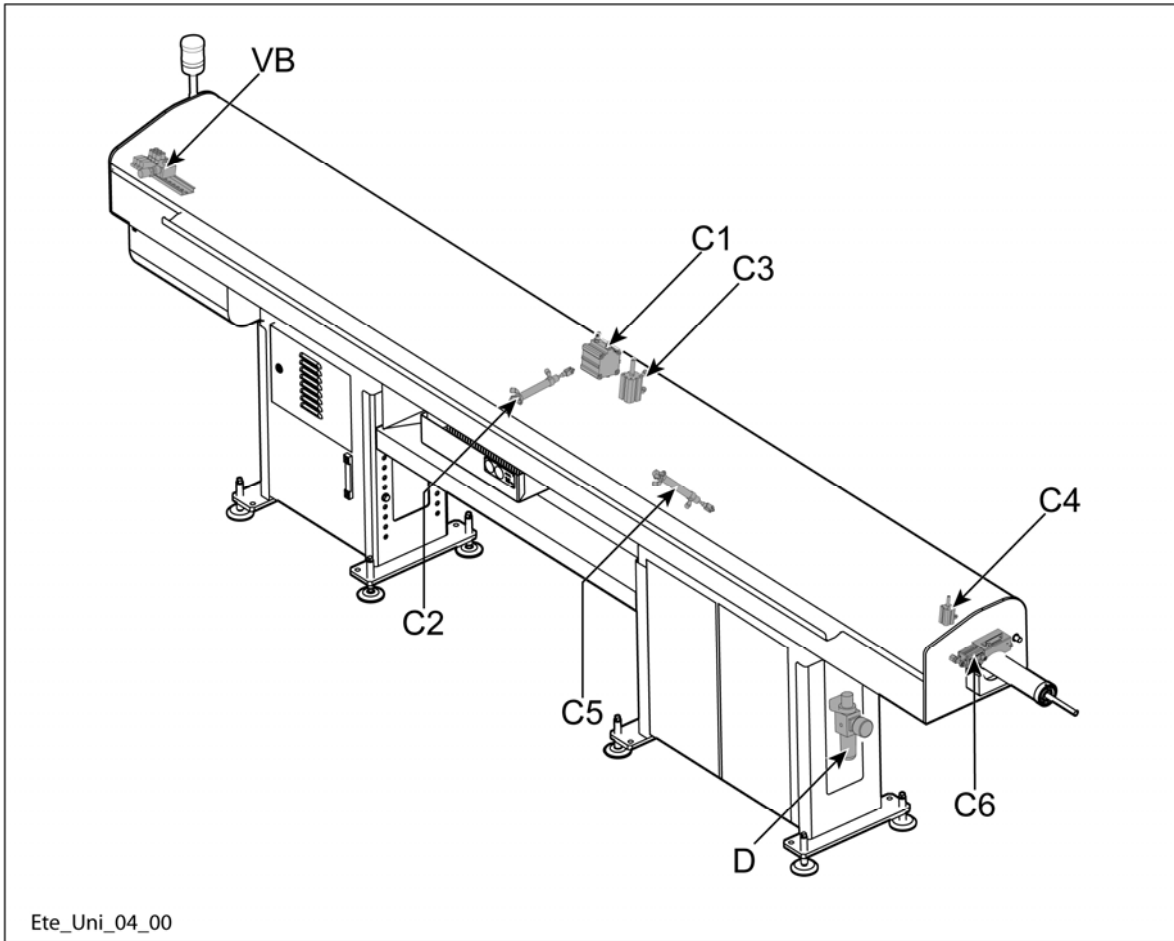
**IMPORTANT:**

for further information, please refer to the interface wiring diagram supplied with the bar feeder, or contact our Customer Service and Engineering Department, which is always at your disposal.

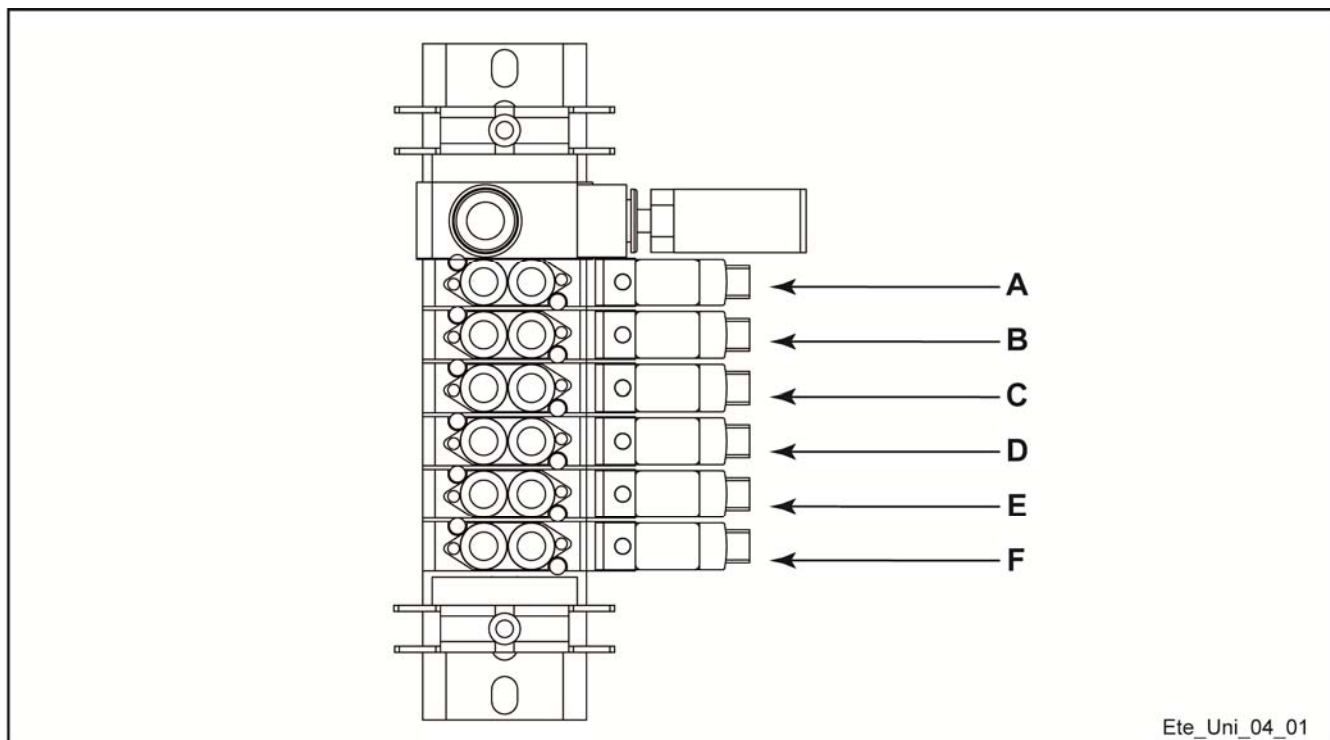
4.9 PNEUMATIC DEVICE LAYOUT



ABBREVIATION	DESCRIPTION	FUNCTION	112 Evo	220 Evo
C1	Cylinder	Controls the clamp opening and closing.	✓	✓
C2	Cylinder	Controls the upstroke of the remnant drop lower guide channel.	✓	✓
C3	Cylinder	Controls the upstroke of the remnant drop upper guide channel.	✓	✓
C4	Cylinder	Controls the short feed gate upstroke.	✓	✓



ABBREVIATION	DESCRIPTION	FUNCTION	112 Evo	220 Evo
C5	Cylinder	Controls the bar lifting plate upstroke and downstroke.		✓
C6	Cylinder	Controls the fore bush opening and closing.		✓
D	Distributor + pressure switch	Dispenses and adjusts the supply flow inside the pneumatic system.	✓	✓
VB	Solenoid valve unit	Cylinder or piston control device (see description Solenoid valve box).	✓	✓



ABBREVIATION	DESCRIPTION	FUNCTION
A	Remnant drop solenoid valve	Remnant drop upper guide channel opening/closing
B	Bar lifting upstroke control solenoid valve	Bar selection plate upstroke-downstroke (**)
C	Fore bush control solenoid valve	Fore bush opening-closing (*) (**)
D	Clamp device control solenoid valve	Clamp device closing
E	Remnant drop solenoid valve	Remnant drop lower guide channel opening/closing
F	Facing control device solenoid valve	Facing control device resetting

* Optional

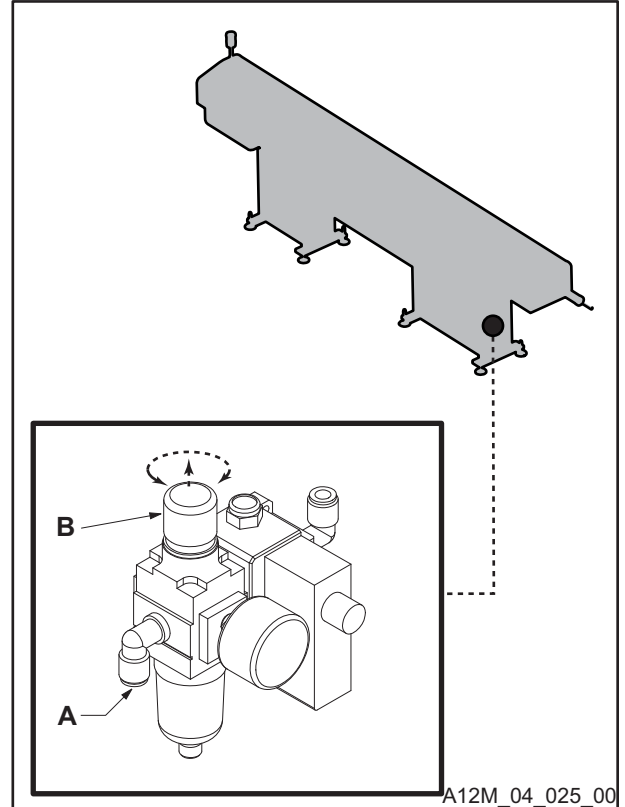
** For Elite 220 Evo only

4.9.1 PNEUMATIC CONNECTION

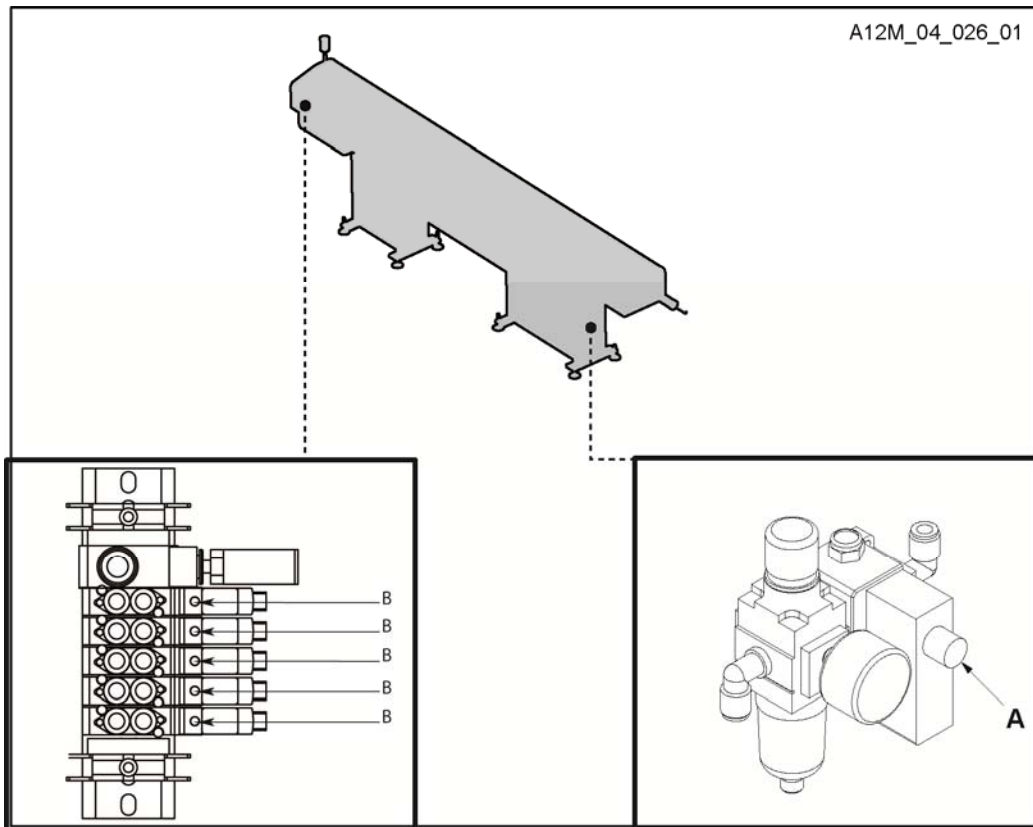
- Connect the pipe with $\varnothing 8$ of the pneumatic network to the quick coupling connection (A). Install an upstream 3-way cock to perform the sectioning and the pressure release. With knob (B), adjust the pressure at 6 bar.



IMPORTANT:
the supply air must be filtered.



4.9.2 BAR FEEDER HANDLING WITHOUT POWER SUPPLY



Without power supply or in case of an emergency it is possible to move the pneumatic units using the solenoid valves manually:

- keep button (A) pressed;
- using a small screwdriver press the buttons (B), present on the individual solenoid valves, to move the unit.



INFORMATION:

For the movement description of each solenoid valve, refer to section 4.10 "Pneumatic device layout".

4.10 MACHINING PARAMETERS SETTING

By means of a handheld keyboard you can assign the different parameter values according to the operating characteristics of lathe - bar feeder coupling and to the working needs. See the "Keyboard instruction manual" to assign adequate values.

4.11 BAR FEEDER TESTING






INFORMATION:

the bar feeder testing must be carried out following a preset procedure, which is possibly indicated and authorised by the manufacturer.

During the bar feeder testing phase, check if the safety conditions are adequate and start it only if this requirement is in conformity with the standards required.

INDEX

5.1	ADJUSTMENT AND SETUP - FOREWORD 	2
5.2	GENERAL ADJUSTMENTS - FOREWORD 	2
5.2.1	Feed chains - Adjustment	3
5.2.2	Pressure switch - Adjustment	4
5.3	SETUP ACCORDING TO THE BAR TO BE MACHINED	5
5.3.1	Guide channels, half bushes, bar pusher and collet - Replacement	7
5.3.2	Diaphragm bushing device - Description (for Elite 220 only)	11
5.3.4	Front nose - Replacement	13
5.4	CAM BOX - TIMING	14
5.5	BAR SUPPORT ASSEMBLY	17
5.6	Removal/Feeding clamp device - Adjustment 	18
5.7	Sloped rack magazine enabling (for Elite 220 only)	19
5.7.1	Sloped rack magazine disabling (for Elite 220 only)	20
5.7.2	Bar guide plates and bar selectors - Adjustment (for Elite 220 only)	21

5.1 ADJUSTMENT AND SETUP - FOREWORD



DANGER - WARNING:

do not perform any adjustment when the bar feeder is running unless expressly 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, setup may also include replacement of a few components. These operations are listed and then described below.

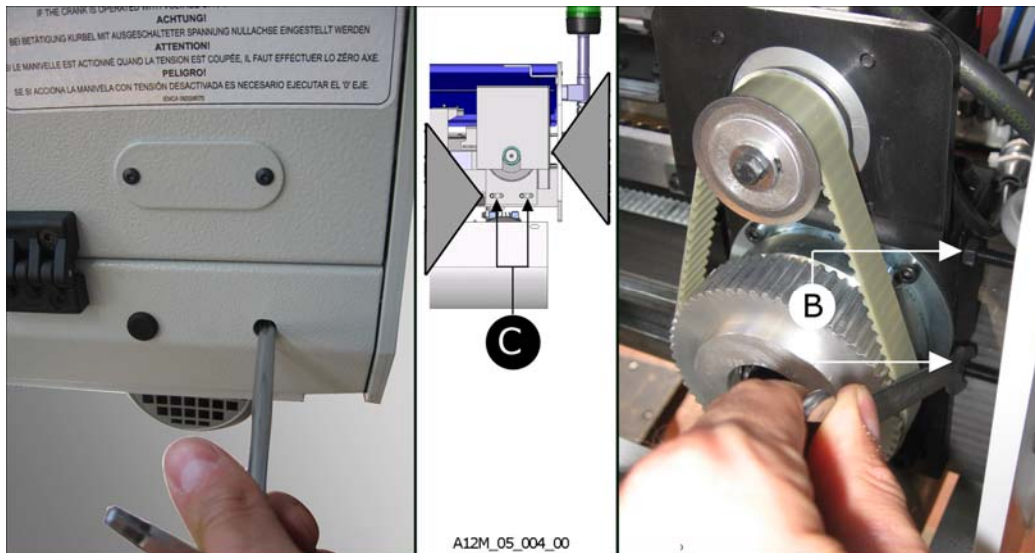
5.2 GENERAL ADJUSTMENTS - FOREWORD

All the necessary adjustments for correct bar feeder operation are included. They may become necessary for maintenance, troubleshooting or component replacement.

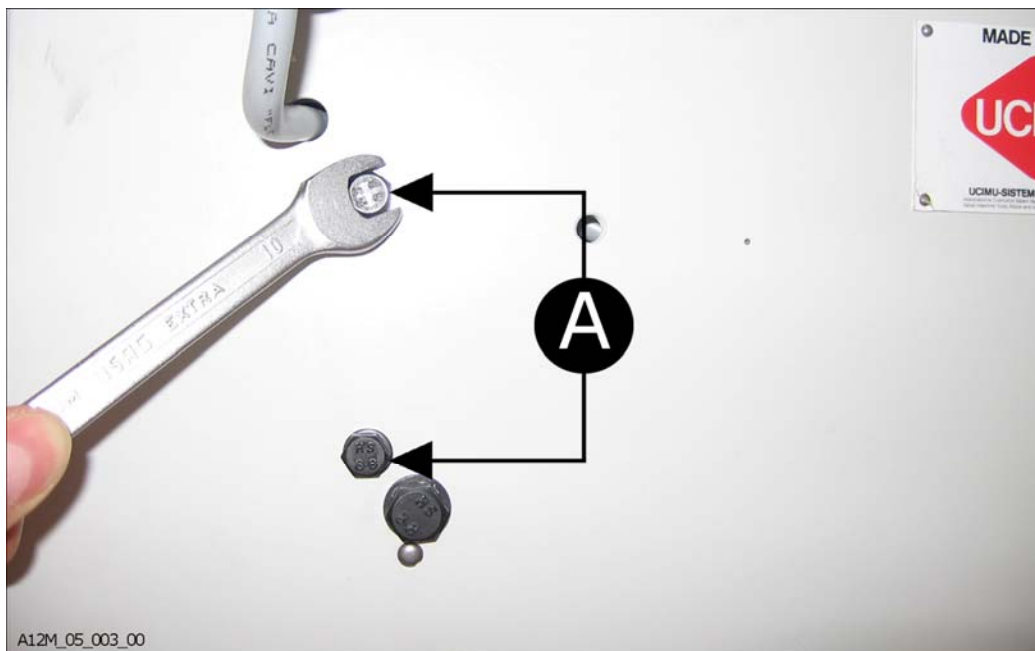
5.2.1 Feed chains - Adjustment

After operating the bar feeder for some hours you should always check the tensioning of the bar pusher feeding chains.

The chains must be adjusted as follows:



- loosen two nuts (B) and two screws (C);



- adjust the chains tension through screws (A);
- restore the bar feeder initial operating conditions.

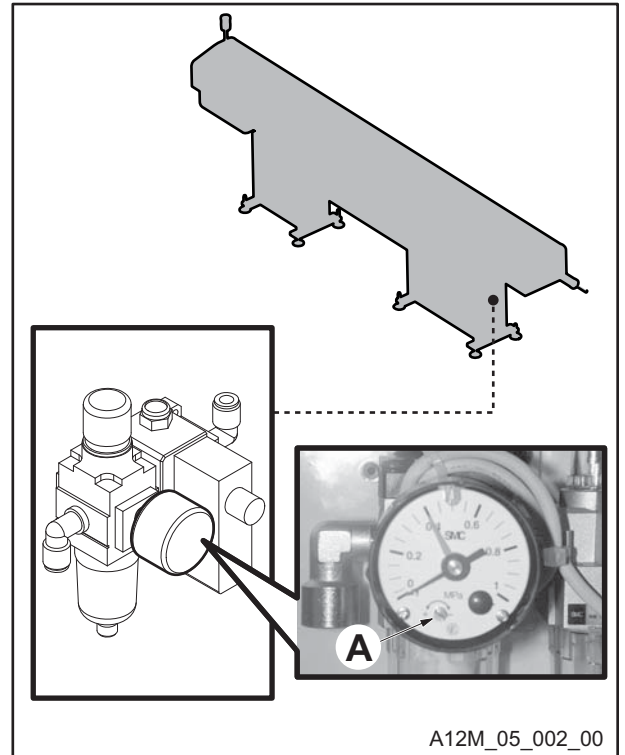
5.2.2 Pressure switch - Adjustment

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



WARNING - CAUTION:

Do not further turn anticlockwise when the green pointer is on 0. This may cause damage to the pressure switch.



5.3 SETUP ACCORDING TO THE BAR TO BE MACHINED

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

The table (regarding the ELITE guide channel, bar pusher, bar and pipe diameter) reports the diameters of available guides as well as the range of the bar pushers that can be assembled, and the diameters of the bar to be machined.

ELITE 220 guide channel, bar pusher, bar and pipe diameters.

	GUIDE DIAMETER (mm)	REVOLVING TIP DIAMETER(mm)	BAR DIAMETER(mm)		LARGEST TUBE DIAMETER (mm) (*)
			MIN	MAX	
ELITE	6	5,5	2 (1,6)	4,7	5,5
	8	7,5	2	6,4	7
	11	8,5	3	7,4	8
	11	10,5	3	8	10
	14	12,5	3	10	12
	14	13,5	3	11	13
	16	15,5	4	13	15
	18	16,5	4	14	16
	18	17,5	4	15	17
	20	18,5	4	16	18
	20	19,5	4	17	19
	22	20,5	5	18	20
	22	21,5	5	19	20
	24	22,5	6	19	20
24	23,5	6	20	20	

ELITE 112 guide channel, bar pusher, bar and pipe diameters.

	GUIDE DIAMETER (mm)	REVOLVING TIP DIAMETER(mm)	BAR DIAMETER(mm)		LARGEST TUBE DIAMETER(mm) (*)
			MIN	MAX	
ELITE	5	4,5	0,8	3,5	4
	6	5,5	1,5	4,7	5
	8	7,5	2	6	7
	11	10,5	4	8	10
	14	12,5	5	10	12
		13,5	5	11	13
16	15,5	6	12,7	13	

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

**WARNING - CAUTION:**

barstock diameters for any guide channel are only given as an indication. A diameter of a bar to be machined approximately 6 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.

**WARNING - CAUTION:**

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

**INFORMATION:**

the bar feeder is usually supplied with a bar pusher whose diameter is equal to the lathe spindle drawbar hole. Sometimes, in order to ensure the best working conditions, it may be necessary to use a bar pusher with a smaller diameter.

5.3.1 Guide channels, half bushes, bar pusher and collet - Replacement

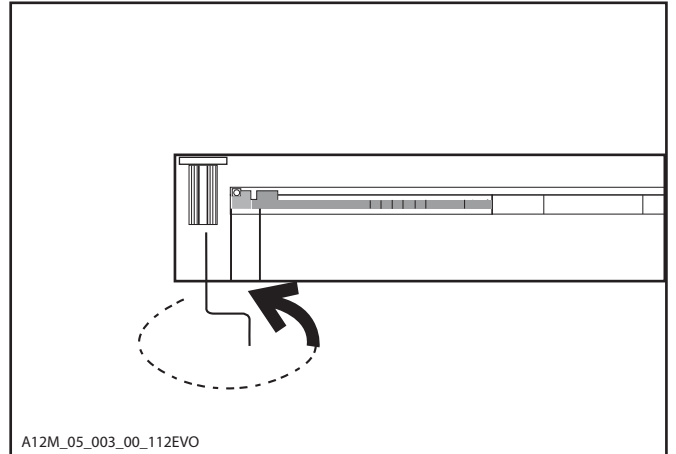
- When the magazine is empty (no bars) set the



feeder to manual mode



- Press on the keyboard or use the socket screw key to bring the bar pusher backwards to its limit stop.



- Open the upper guard.

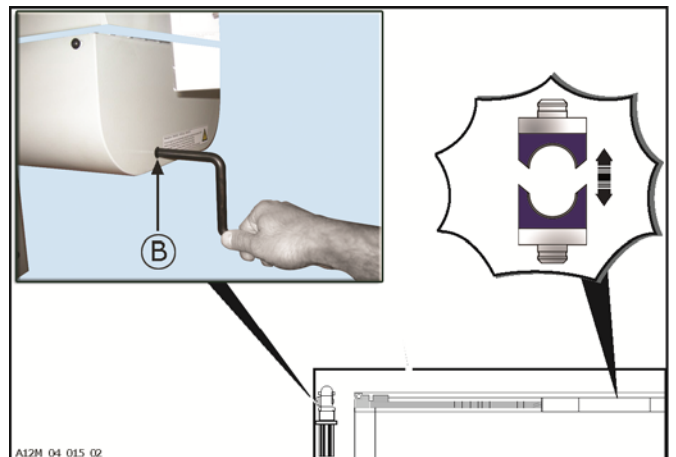


- Open the upper guide channels using the supplied allen wrench (for further information, refer to the "BAR FEEDER HANDLING WITHOUT POWER SUPPLY" section, Chap. 4).



DANGER - WARNING:

Before using the crank, press the STOP button.

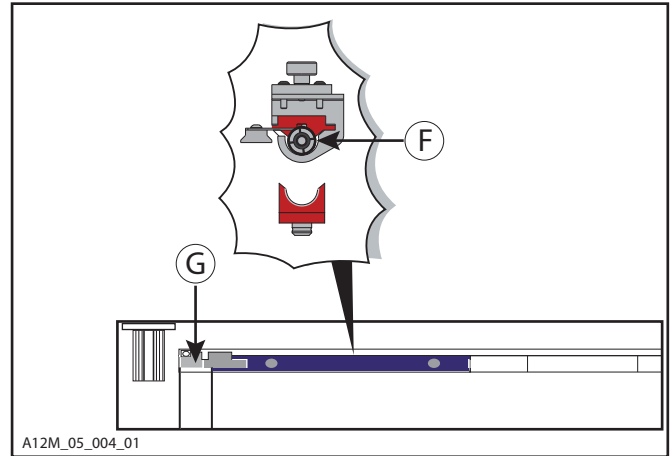


- Remove and replace the bar pusher.

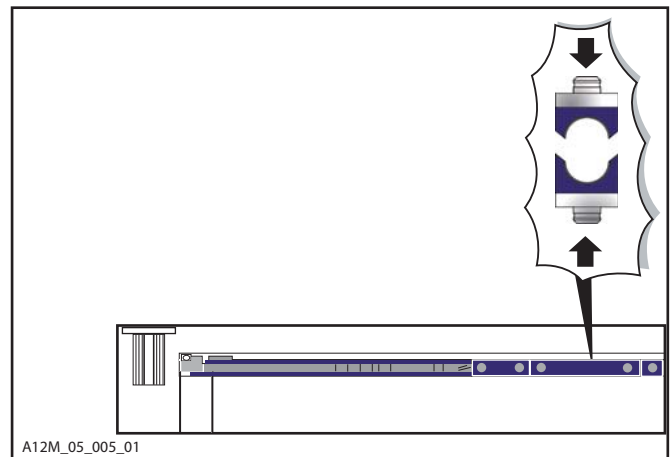


INFORMATION:

In case of new setup (lathe-bar feeder), the bar feeder supports (F) and the first feeding device (G) must not be replaced, even when changing the bar feeder diameter.



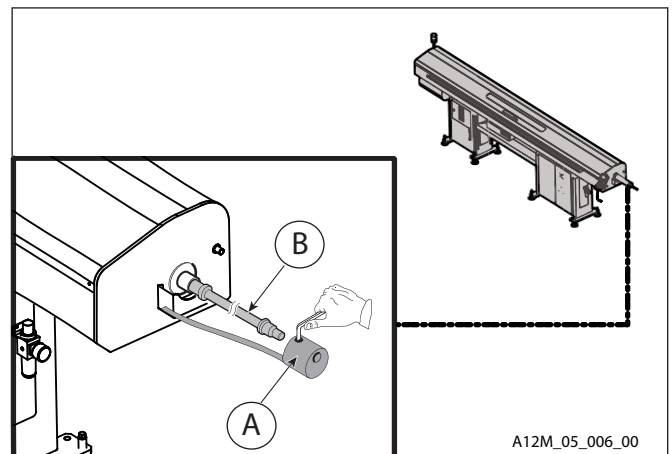
- Now remove and replace the upper and lower guide channels.



Remove the front nose as follows:

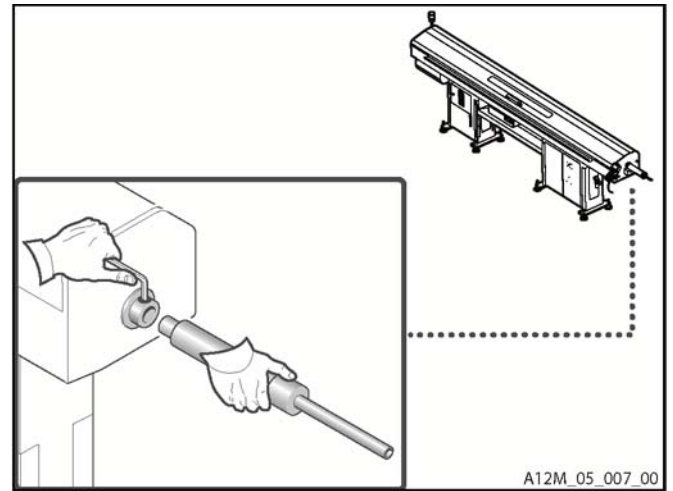
Fixed front nose

- Remove the oil recovery device (A) and front nose (B).

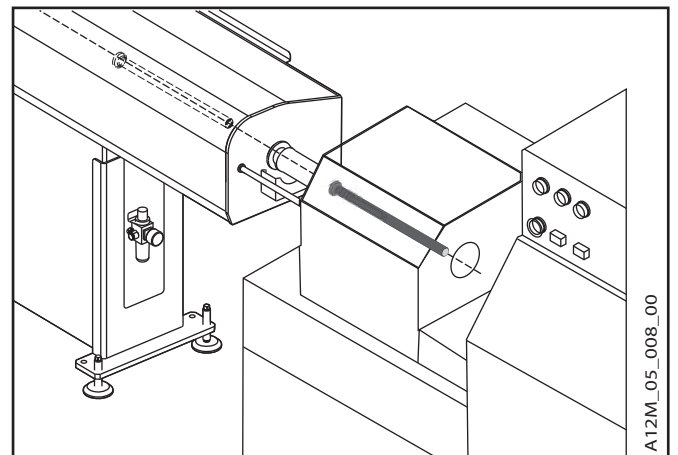


Telescopic front nose

- Remove front nose(C).



- Remove the internal front nose.
- If necessary, remove the lathe spindle liner and install another one suitable for the diameter of the guide channel.



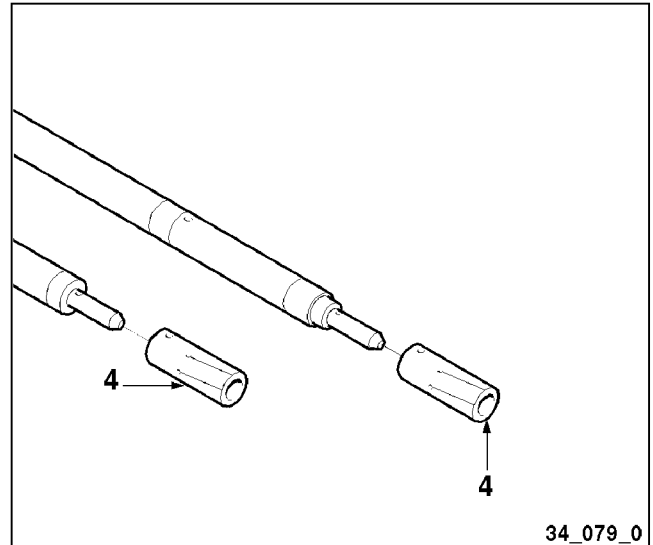
- Choose the right collet for the bar; refer to the "GUIDE CHANNELS - BAR PUSHERS - REVOLVING TIPS - COLLETS" selection chapter.

**INFORMATION:**

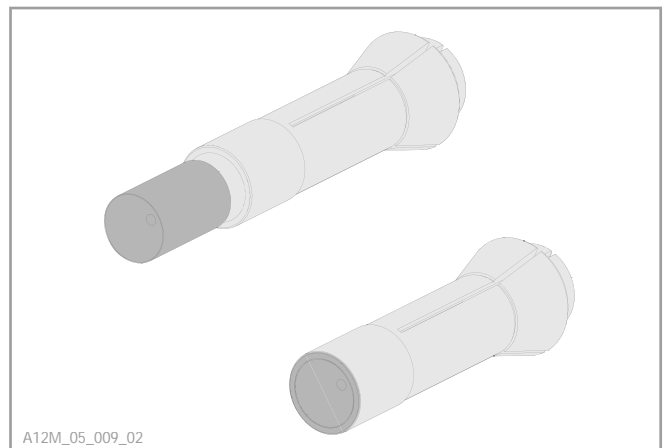
contact IEMCA service department for further information.

Legend:

4 Quick coupling collet for bars



To facilitate the bar entry into the lathe collet, if the diameter of the bars to be machined is $< 3\text{mm}$, it is necessary to insert a bush with a central hole equal to the diameter of the bar feeder guide channels with a 45° kirving; the material with which to make the bush can be brass or teflon.

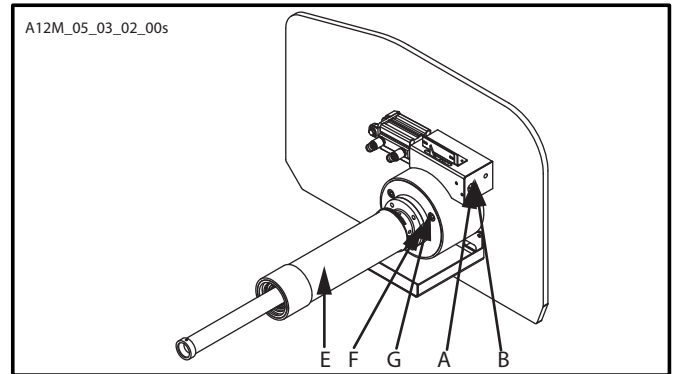


5.3.2 Diaphragm bushing device - Description (for Elite 220 only).

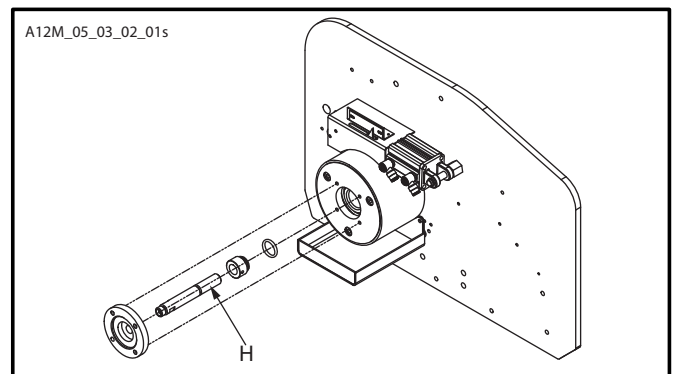
The diaphragm bushing device (optional) should be adjusted according to the bar diameter. Perform the operations described below with the open and active cylinder (D) (under pressure).

- Loosen the nut (A) and adjust the screw (B) until the index (C) reaches the diameter of the bar to be machined.
- Further adjust the regulation during bar rotation if necessary.

If you are using guide channels D= 6mm and D= 8mm we recommend to disable the device by inserting also the appropriate front noses into the device.



- Remove the front nose (E) and the flanges (F) and (G).
- Assemble the front nose (H) supplied with the bar feeder that has the same diameter of the guide channel following the diagram below.
- Reassemble the flange (F) and the front nose (E).
- Open the bush completely and adjust it as described at the beginning of section 5.3.2

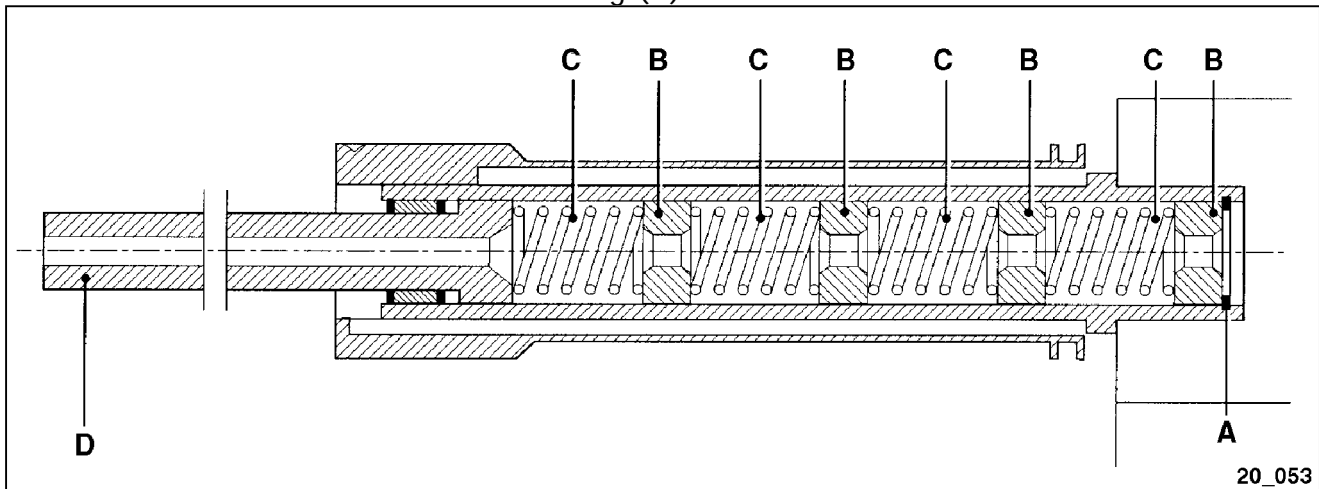


5.3.3 Telescopic front nose adjustment

TELESCOPIC FRONT NOSE (STROKE 120/160)

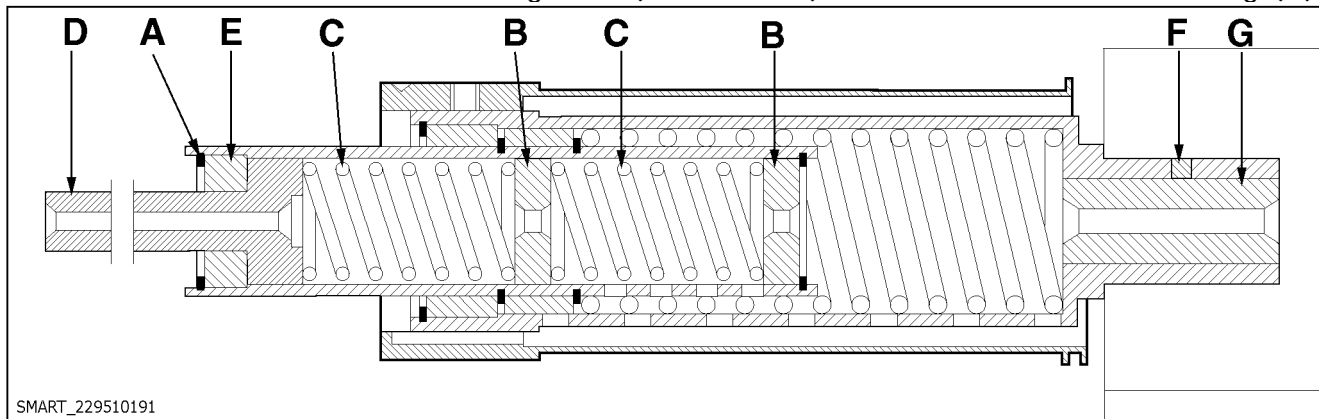
When replacing the telescopic front nose, it is not necessary to change completely the unit, but only some parts supplied with the spare parts kit.

- Remove the front nose from its housing.
- Remove ring (A).
- Remove bushes (B), springs (C) and front nose (D).
- Reassemble front nose (D), bushes (B) and springs (C). The front nose and bushings must be suitable for the bar. Reassemble ring (A).



TELESCOPIC FRONT NOSE (STROKE 170/220/320)

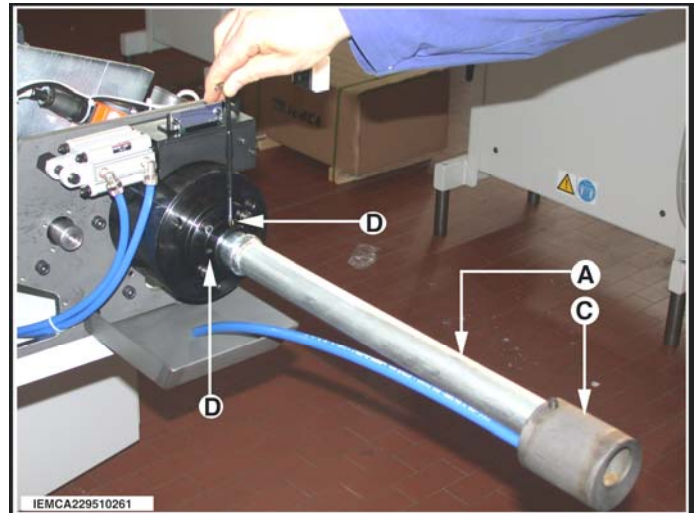
- Remove the front nose from its housing.
- Remove ring (A).
- Remove bush (E), front nose (D), springs (C) and bushes (B).
- Put back in place the bushings (B), the springs (C) and the front nose (D); the bushings and the front nose must be suitable for the bar.
- Put back in place bush (E), its substitution depends on the external diameter of front nose (D). Reassemble ring (A).
- Loosen the screw (F) and remove the ring (G), then replace it with another ring suitable for the bar. As far as max. diameter guides ($\varnothing = 22$ mm) are concerned, do not fit ring (G).



5.3.4 Front nose - Replacement

With diaphragm bushing device (for Elite 220 only)

- Remove the oil recovery device (C).
- Loosen grub screws (D).
- Replace the front nose (A) with another front nose suitable for the bar. Length (B) must cover the distance between the bar feeder and the lathe.
- Fit the oil recovery device and position the drain pipe inside the tank.
- Tighten grub screws (D) to lock the front nose.



5.4 CAM BOX - TIMING

If the bar 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 feeding enabling signal

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 synchronization device.

S91 - Bar change enabling

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

S92 - Feeding stop enabling

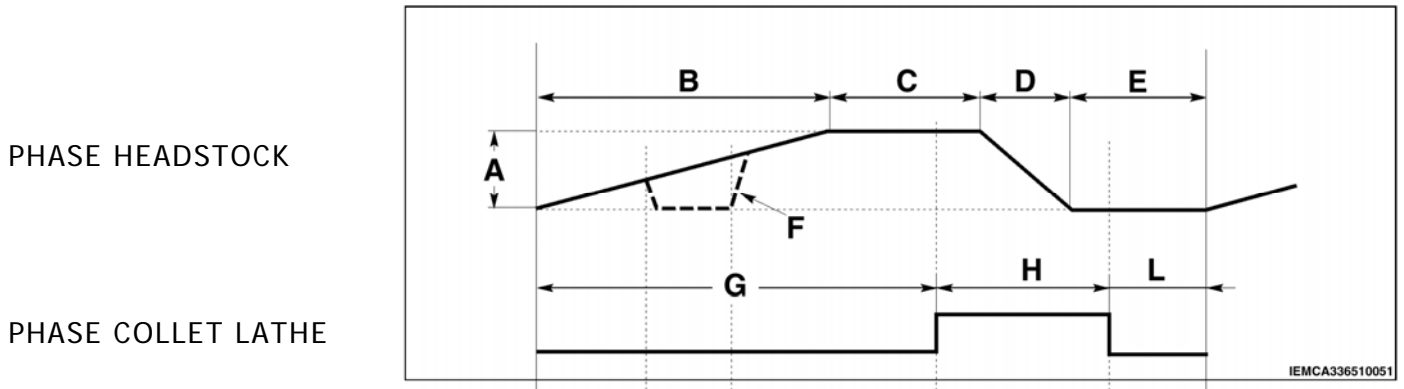
Only used in sliding headstock lathes. It disables the bar feeder feed thrust during any operations requiring headstock return with closed collet.

S99 - Camshaft stop

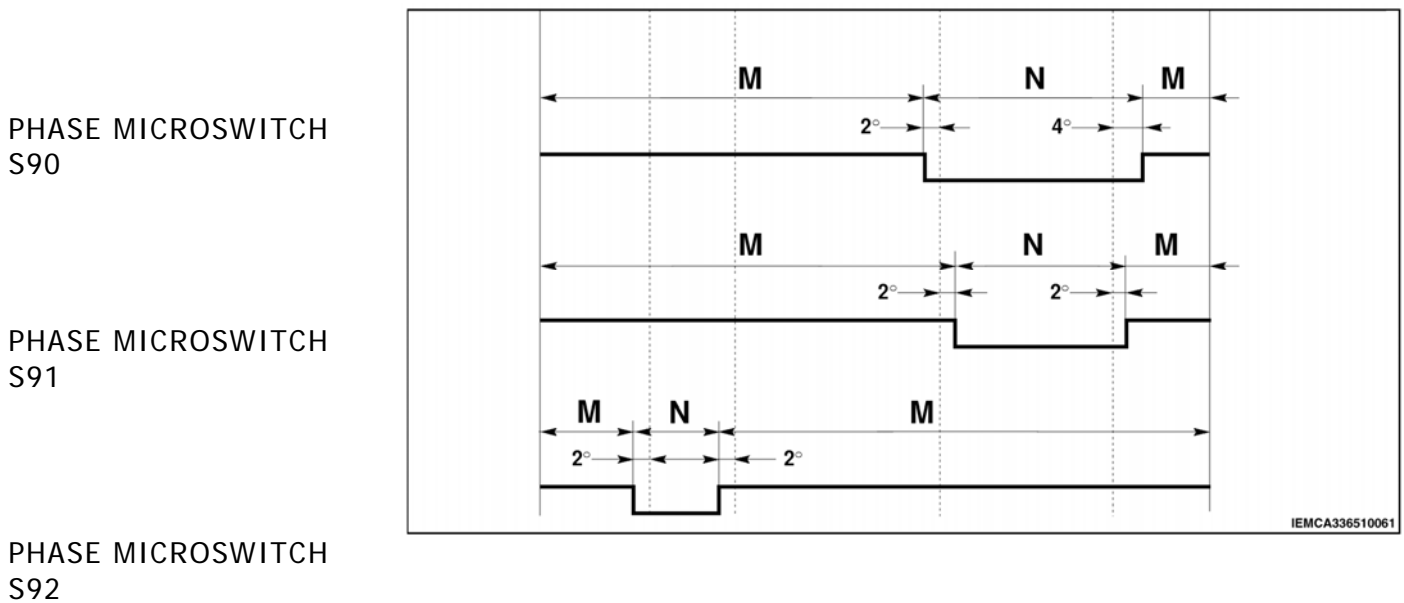
It determines the camshaft stop position when there is no thread (connected in series with a microswitch or relay located on the lathe).

CAM TIMING

LATHE CAM COMPLETE CYCLE



BAR FEEDER CAM COMPLETE CYCLE



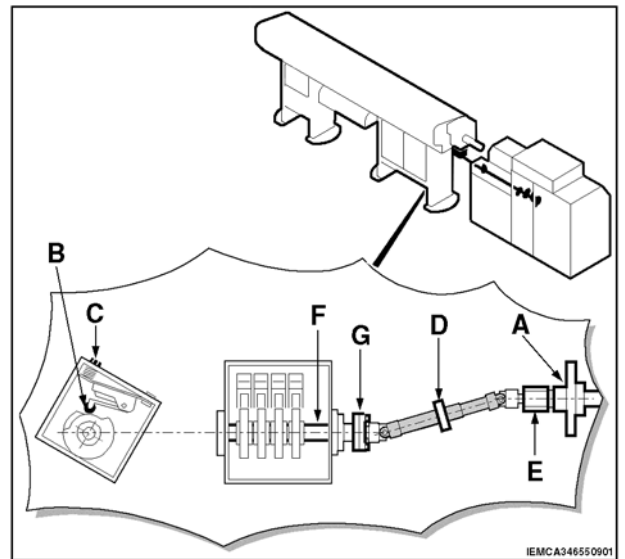
- | | | | |
|---|---------------|---|----------|
| A | STROKE | G | CLOSED |
| B | FEEDING | H | OPEN |
| C | FORWARD STOP | L | CLOSED |
| D | RETURN | M | DISABLED |
| E | BACKWARD STOP | N | DISABLED |
- F Possible headstock return with closed collet for special operations

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 wheel.
- Rotate shaft (A) by 10° approx., then also 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.



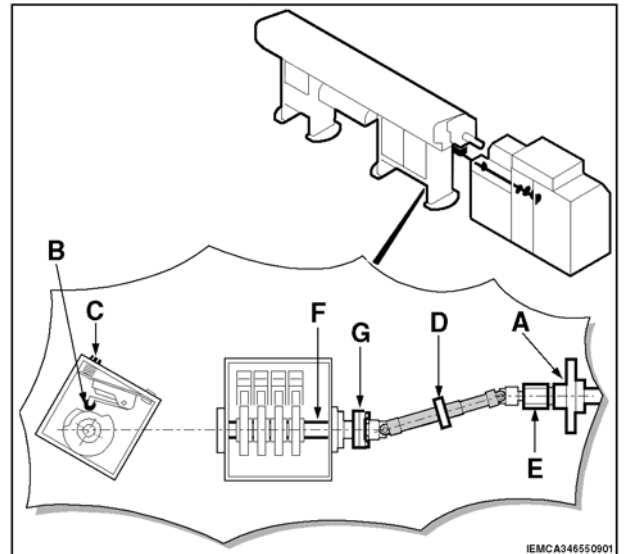
Microswitch S92

- Rotate manually shaft (A) until the headstock starts its return stroke with closed collet.
- Release the "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, timing is to be performed on lathe cam.

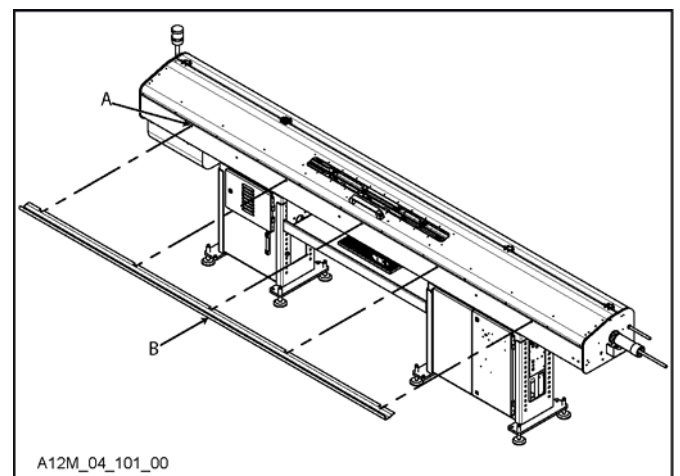

GENERAL REMARKS

- Microswitch activation can be either delayed or advanced through screw (C).
- Whenever servicing the camshaft of the lathe, 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.

5.5 BAR SUPPORT ASSEMBLY

The small diameter bar support is disassembled and placed on the magazine during transport. During installation it should be fixed to the tank.

- Loosen screws (A)
- Insert the thin bar support (B)
- Tighten the screws (A)



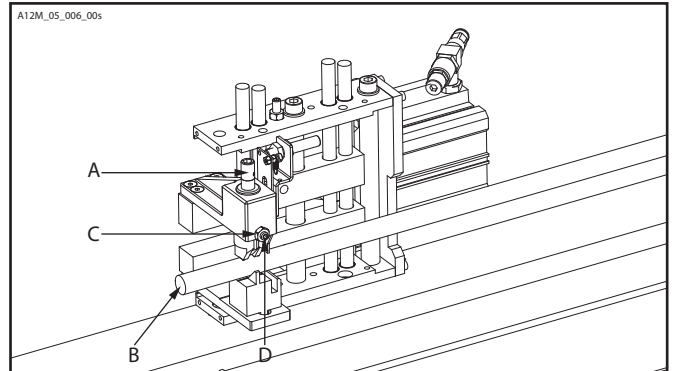
5.6 Removal/Feeding clamp device - Adjustment

This operation, that is usually not necessary, allows to change vertically the bar position during the feeding phase. It is necessary if bar pushers with reduced diameter are used (e.g. guide channel D=24mm and bar pusher D=22.5mm).

- Place a bar in the clamp area as shown in the image.
- Close the clamps pneumatically.
- Move the bar pusher collet near to the bar.
- Loosen nut (C) and screw (D).
- Loosen the screw (A) until the bar is aligned with the bar pusher collet.
- Tighten the screw (D) and the nut (C).



DANGER - WARNING:
Pneumatic power.

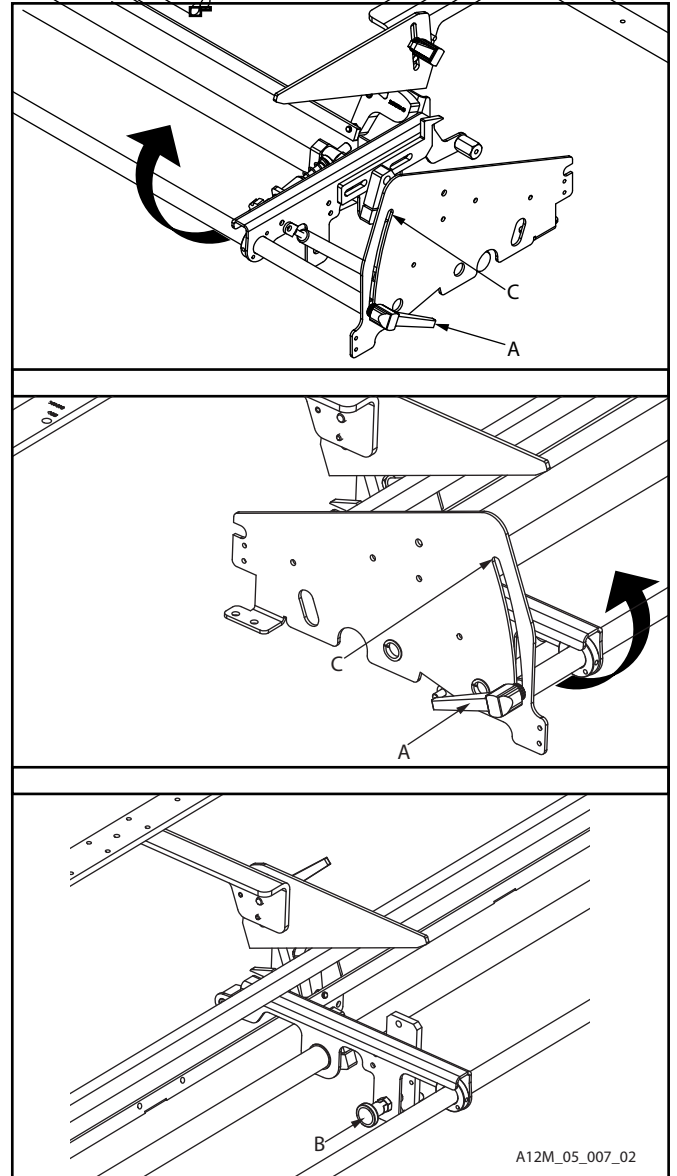


5.7 Sloped rack magazine enabling (for Elite 220 only)

To activate the "Sloped Rack Magazine" and deactivate the "Pilgrim Step Magazine" follow the procedure described below.

- Loosen the handle (A) at the end of the bar magazine.
- Release the safety pin (B).
- Move the magazine upwards until the pin (B) enters again in the appropriate reference hole "Magazine high".
- Lock the handles (A) making sure that the magazine is at its limit stop (upwards), i.e. at the end of the guide slots (C).

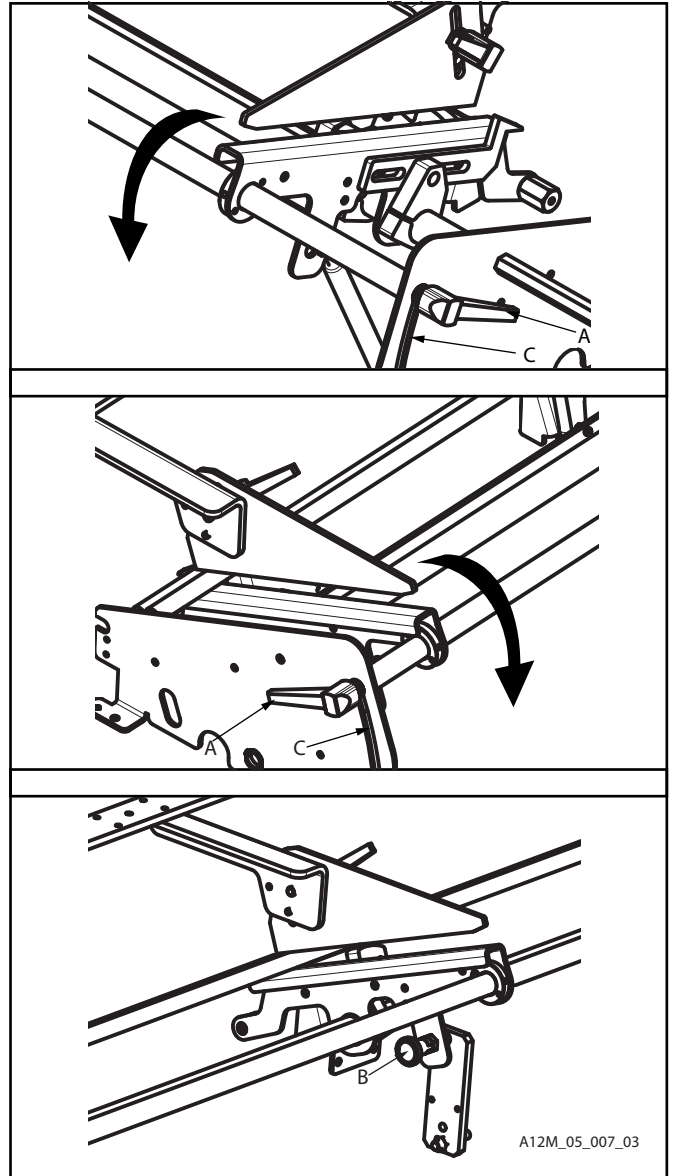
During automatic operation with the guard closed it is possible to check the magazine currently used by selecting the parameter "16 Magazine mode" on the handheld push-button panel (see Instruction Manual section 2.9).



5.7.1 Sloped rack magazine disabling (for Elite 220 only)

To disable the Sloped Rack magazine and activate the Pilgrim Step magazine follow the procedure described below.

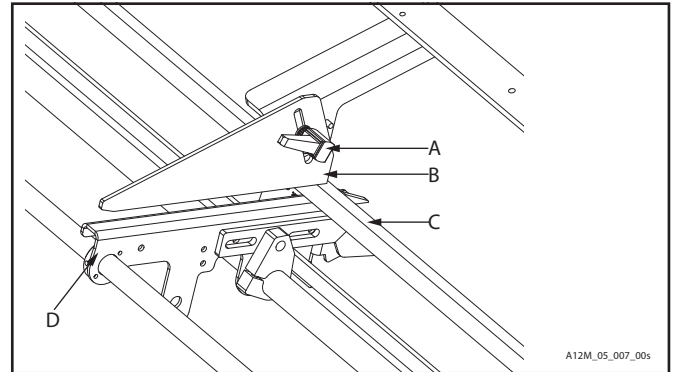
- Loosen the handle (A) at the end of the bar magazine.
- Release the safety pin (B).
- Bend the magazine until the pin (B) enters again into the appropriate reference hole "Magazine low".
- Lock the handles (A) making sure that the magazine is at its limit stop (downwards), i.e. at the end of the guide slots (C).



5.7.2 Bar guide plates and bar selectors - Adjustment (for Elite 220 only)

Bar guide plate adjustment

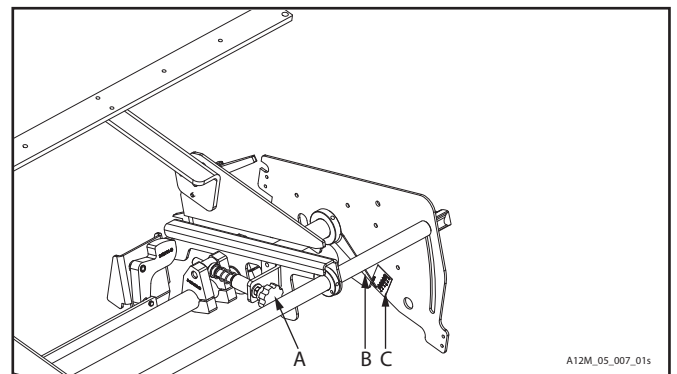
- Loosen the handle (A) and lift the backing plate (B) to create the space for inserting the bar (if necessary).
- Load at least two bars (C) on the racks (D).
- Place the backing plate (B) on the bars and pull it back by 2-3mm.
- Tighten the handle (A).




Bar selector adjustment

Bar selection stop adjustment (only if the sloped rack magazine is available).

- With the magazine high and locked turn the knob (A) until the index (B) reaches the diameter of the bar on the graduated scale (C).



INDEX

6.1	PRELIMINARY NOTE ON USE AND OPERATION	2
6.2	CONTROL DESCRIPTION	2
6.3	KEYBOARD CONTROL DESCRIPTION.....	5
6.4	LIGHT INDICATOR DESCRIPTION.....	9
6.5	BARS TO BE MACHINED - FEATURES AND PREPARATION	10
6.5.1	BAR TO BE MACHINED - SOLID BARS	10
6.5.2	BARSTOCK - PIPES	13
6.5.3	BAR STRAIGHTNESS - Measurement	14
6.6	BAR FEEDER SETUP AND AUTOMATIC CYCLE START	16
6.6.1	Bar magazine - Filling.....	17
6.6.2	Lubrication oil - Flow adjustment	19
6.6.3	Automatic cycle start.....	20
6.6.4	Guide channel opening/closing procedure.....	22
6.6.5	Cycle performing mode in the STEP BY STEP function	23
6.7	BAR FEEDER STOP.....	24
6.8	AXIS CALIBRATION PROCEDURE	25
6.9	MACHINING CHANGE - QUICK GUIDE 	26
6.9.1	Machining type change with guide channel change	26
6.9.2	Machining type change without guide channel change.....	26

6.1 PRELIMINARY NOTE ON USE AND OPERATION



INFORMATION:

the incidence of injuries caused by the use of machines, depends on many factors that cannot always be prevented and checked. Some accidents can depend on some unpreventable environmental factors, others can be especially due to the operators' behaviour. The operators, apart from being authorised and appropriately informed, at the first use will have to carry out some manoeuvres to test the controls and the main functions. Exclusively use the machine according to the instructions provided by the manufacturer and do not tamper with any devices to obtain different performances. Before use, make sure that the safety devices are perfectly installed and efficient. Besides satisfying the above-mentioned requirements, users must enforce and follow all safety regulations and carefully read the control description and the commissioning.

6.2 CONTROL DESCRIPTION



INFORMATION:

From the keyboard it is possible to start the bar feeder in automatic mode, even when lathe "MAN/AUT" signal is in Manual mode.



INFORMATION:

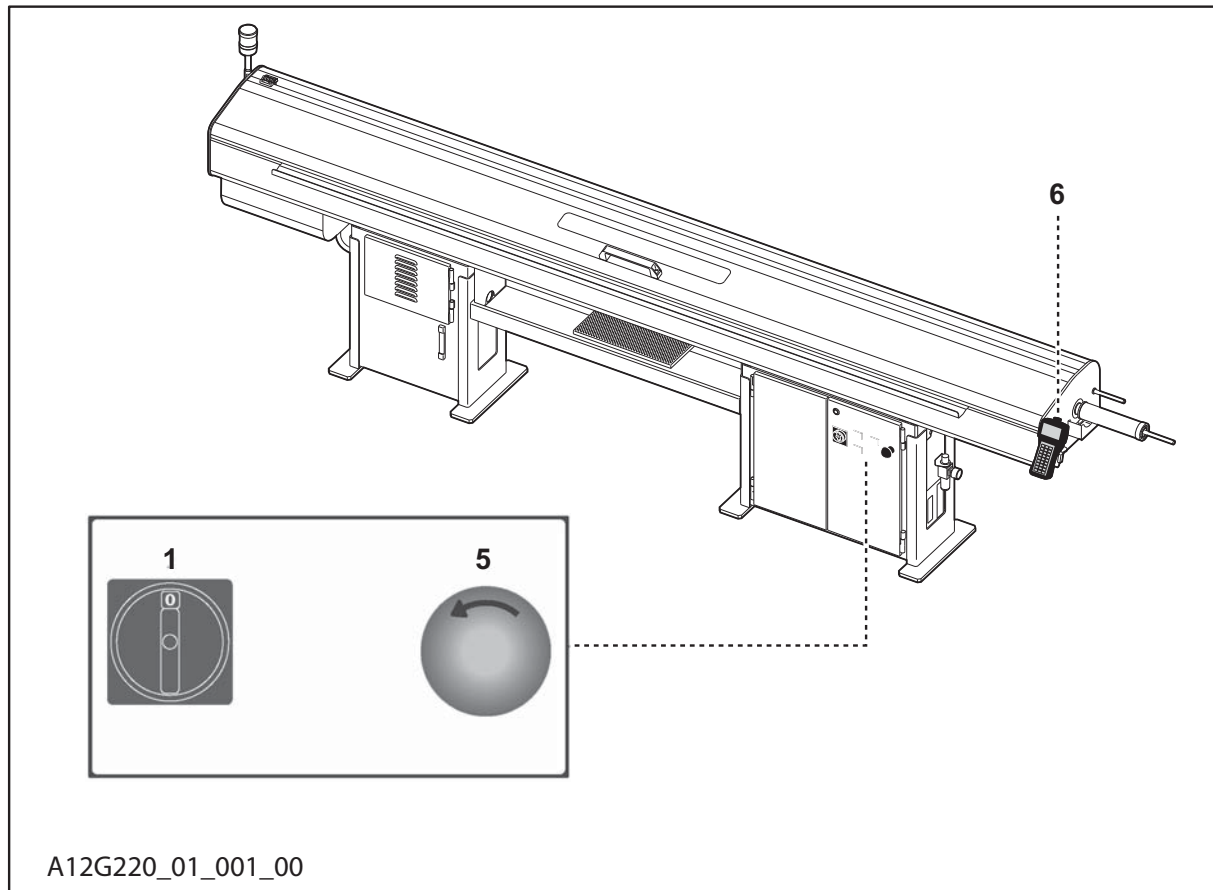
When the bar feeder is in Automatic mode, the bar feeding is possible only when the Lathe "MAN/AUT" signal is in Automatic mode.



INFORMATION:

By pressing the Manual mode button on the keyboard it is possible to prevent the lathe from starting the bar feeder in Automatic mode.

The illustration shows the position of the electrical controls and the keyboard controls.



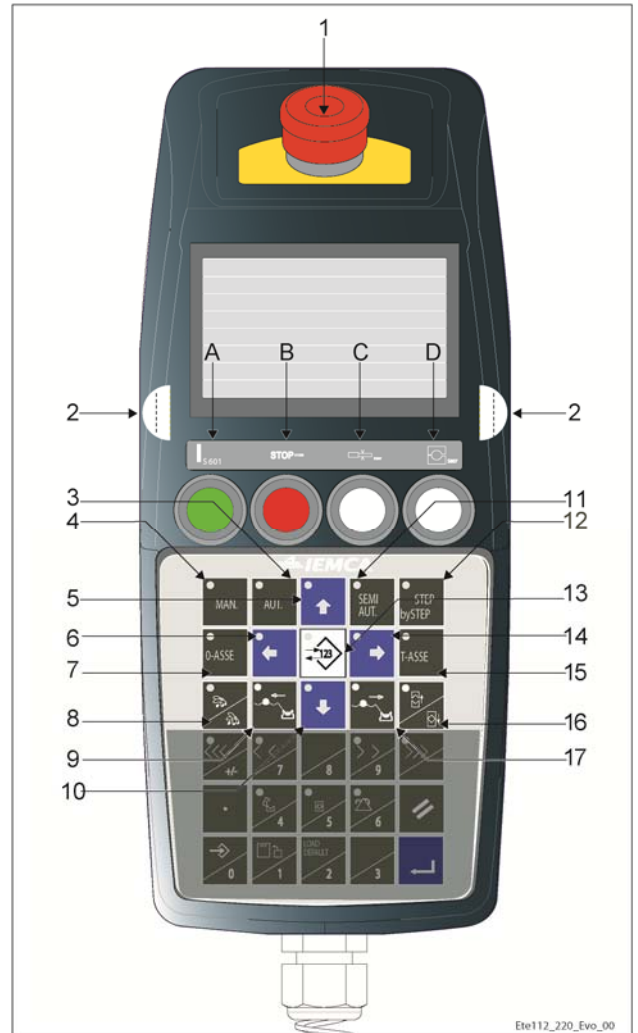
- 1 MAIN SWITCH: turns the power supply on and off.
 - Position 0 (OFF) the machine is not powered.
 - Position I (ON) the machine is powered.
- 5 EMERGENCY STOP PUSH-BUTTON: stops the bar feeder in case of emergency. For restart release the push-button manually.
- 6 KEYBOARD: display and main controls.

6.3 KEYBOARD CONTROL DESCRIPTION



- 1 It stops the bar feeder: for restart, manually release the push-button.
- 2 Start buttons: opposite buttons enabling the keys for some functions. Press both buttons and simultaneously the button corresponding to the desired function.
- 3 Selects the automatic mode.
- 4 Selects the manual mode.
- 5 Multifunction
 - Allows scrolling the page upwards.
 - Moves the selection cursor upwards.
 - Increases by one the value set in the date and time programming mode.
- 6 Multifunction
 - Selects the previous parameter.
 - Moves the selection cursor leftwards.
- 7 It resets the "BAR FEEDER ZERO SETTING" of the carriage.

Hold down both start buttons and then the key; release both buttons and the key when the carriage starts moving towards the "BAR FEEDER ZERO SETTING" position.
- 8 Lifts and lowers the bar selectors (LED on when selector switches are at their "down" position).
- 9 Magazine step by step backward button, every time the button is pressed the bar in the magazine moves backwards by one step.
- 10 Multifunction
 - Allows scrolling the page downwards.
 - Moves the selection cursor downwards.
 - Decreases by one the value set in the date and time programming mode.
- 11 Selects the semiautomatic mode.

Press the button to select a mode and press again to deselect it.
- 12 Activates the "step by step" operating cycle: every time the button is pressed, one step is performed.



13 Selects the keyboard modes:

- with LED off ; selects the "message display" mode.
- with LED on ; selects the "parameter display" mode.

14 Multifunction

- Selects the next parameter
- Moves the selection cursor rightwards.

15 Sets the carriage movement motor.

During the daily use of the bar feeder this function must never be used.

16 Opens and closes the clamps in manual mode.

Press to close and press again to open.

17 Magazine step by step forward button, every time the button is pressed the bar in the magazine moves forward by one step.

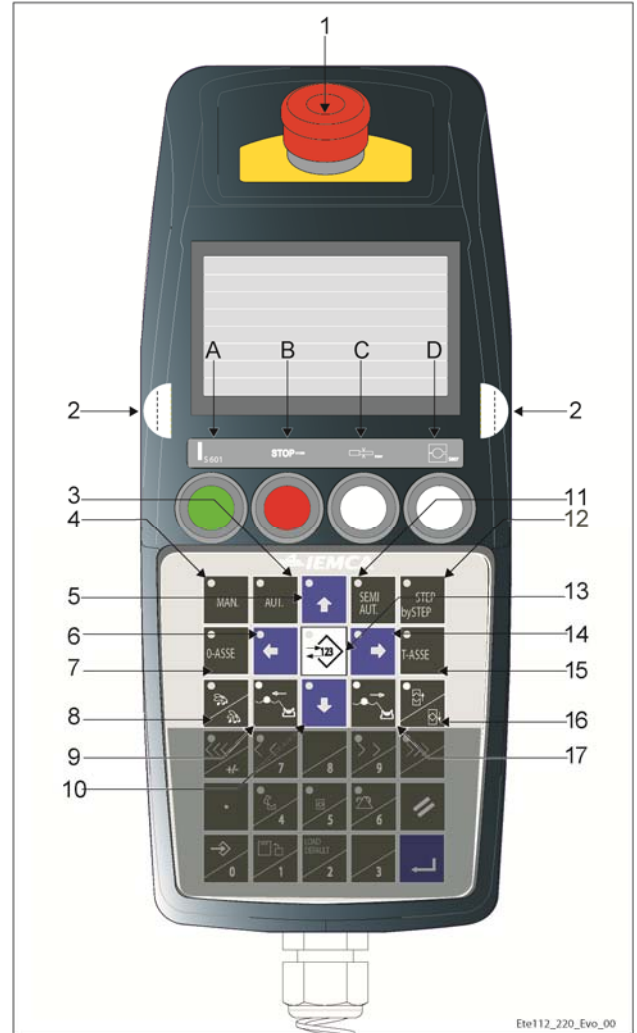
A Bar feeder start button (green light): press the button to start the bar feeder and hold it down until the button lights up.

B Bar feeder stop button (red): press this button to stop the bar feeder and reset the "Errors".

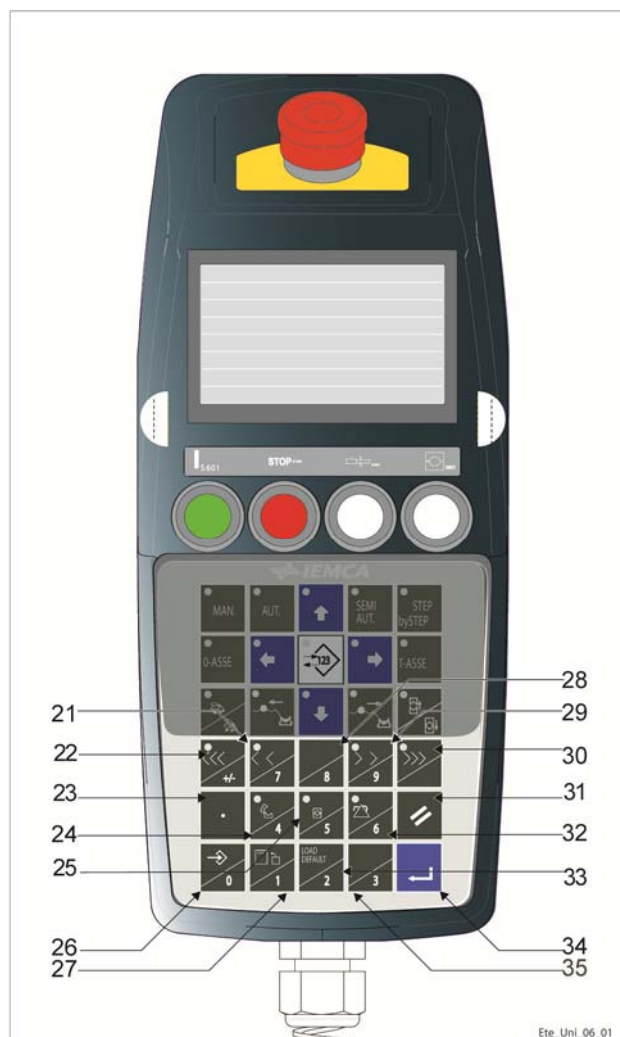
C Remnant detection disabling button (white light) Press the button to feed a "new" bar without the detection of bar remnant in the bar pusher collet.

D Half-bushes opening and closing button (white light)

- In "Manual" mode, when the bar feeder is in the required position, the half-bushes will close when this button is pressed. If pressed again, the half-bushes will open.
- In "Automatic" mode, if pressed, the half-bushes will open and close, according to the preset sequence. If pressed again, the half-bushes will remain open during the entire operating cycle.

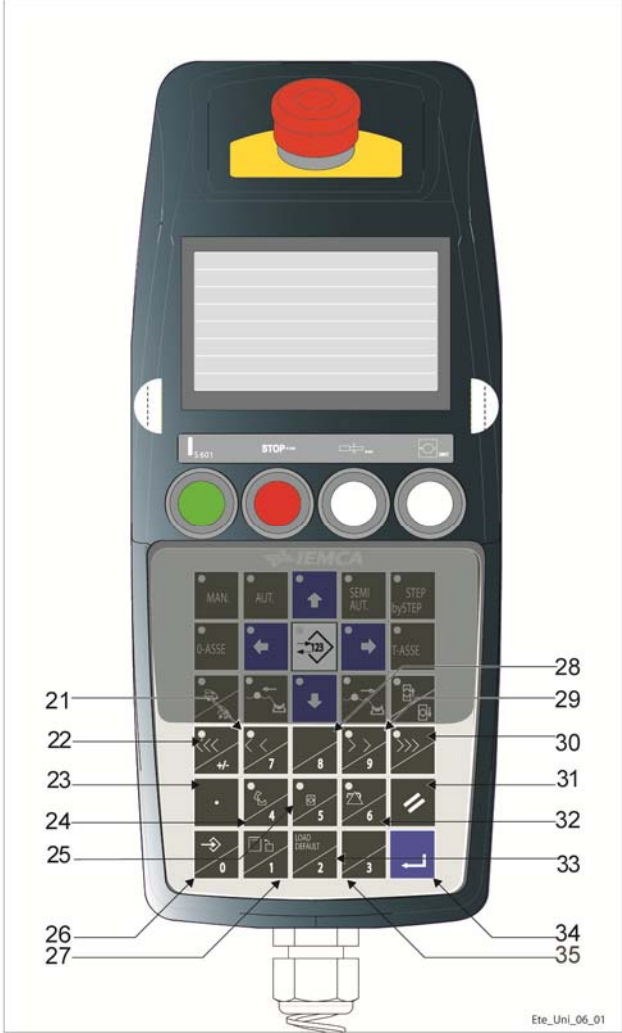


- 21 Multifunction
- Sets the numerical value.
 - Moves the bar pusher at a low speed.
- 22 Multifunction
- Sets the font.
 - Moves the bar pusher at a high speed.
- 23 Sets the comma.
- 24 Multifunction
- Sets the numerical value.
 - Opens the guide channels.
 - Push both start buttons and then the key; release both buttons and the key only when the movement is finished.
- 25 Multifunction
- Sets the numerical value.
 - Closes the guide channels.
 - Push both start buttons and then the key; release both buttons and the key only when the movement is finished.
- 26 Multifunction
- Sets the numerical value.
 - Recalls the selection cursor.



Ete_Uni_06_01

- 27 Multifunction
 - Sets the numerical value.
 - Recalls the main menu (MAIN MENU).
- 28 Multifunction
 - Sets the numerical value.
 - Moves the bar pusher at a low speed.
- 29 It moves the bar pusher at high speed.
- 30 Multifunction
 - Stops the selection function.
 - Restores the value prior to the non-confirmed modification.
- 31 Multifunction
 - Sets the font.
 - Turns on/off the oil pump.
Press to turn on the pump and press again to turn it off.
- 32 Multifunction
 - Sets the numerical value.
 - Loads the program from the PLC. (entering the default values in the parameters).
- 33 Confirms the entered data.
- 34 Sets the numerical value.



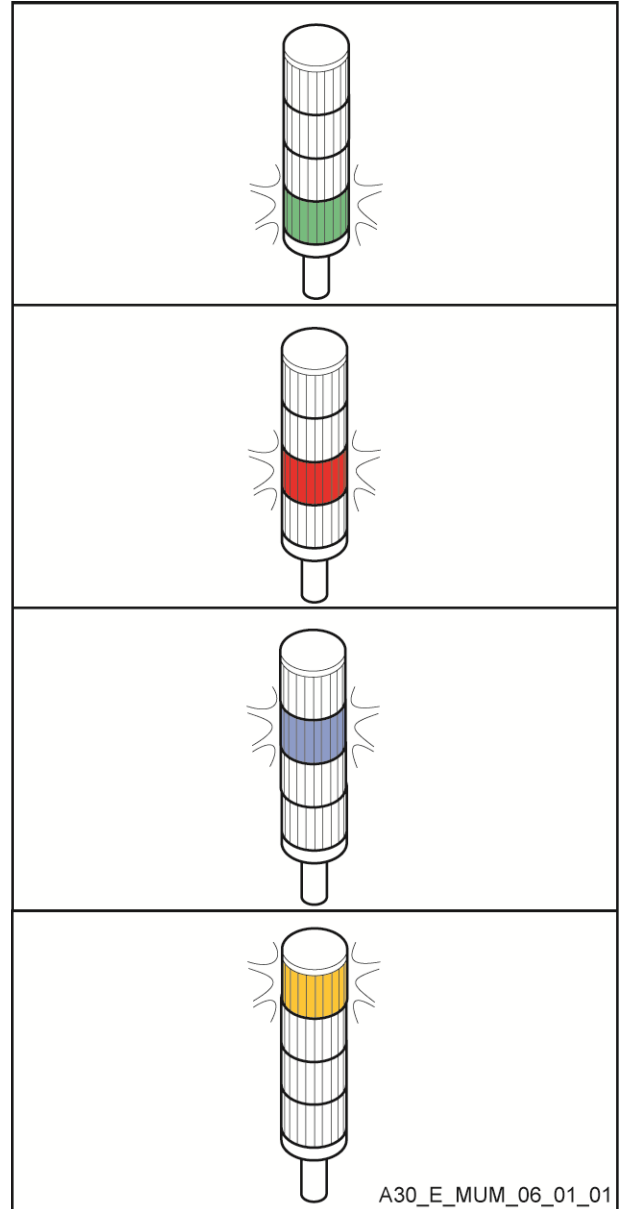
6.4 LIGHT INDICATOR DESCRIPTION

Green light: Signals that the bar feeder is working in automatic mode.

Red light (OPT): signals that the bar feeder is in stopping conditions, or that it is working in manual mode.

Blinking blue light (OPT): indicates that the bar feeder is carrying out the bar change.

Orange light (OPT): signals that there is only one bar in the magazine. This signal will continue until the bars in the magazine have run out.



6.5 BARS TO BE MACHINED - FEATURES AND PREPARATION



WARNING - CAUTION:

do not load bars having sizes different from those recommended by the manufacturer (see reference table in § "VERSION DESCRIPTION", Chap. 2).

Clean the bar surface before loading bars.



INFORMATION:

the bar must not have a straightness defect above 0.5 per 1,000.

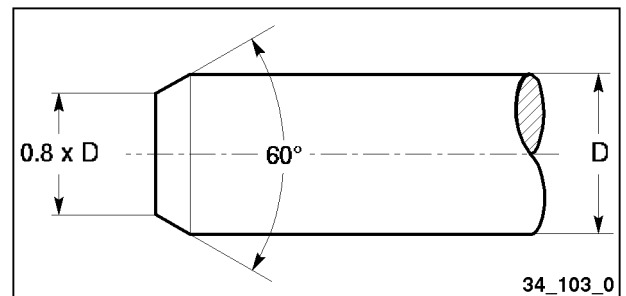
Please find hereafter some advices to optimise the bar feeder performances.

Usually it is not necessary to perform preliminary operations on the bar ends, but to obtain optimum results during loading, it is advisable to chamfer them.

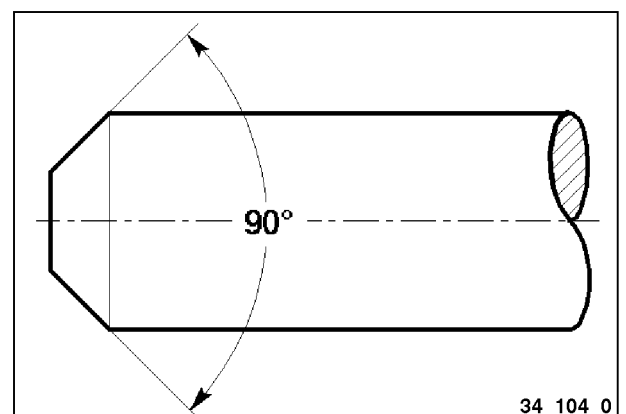
6.5.1 BAR TO BE MACHINED - SOLID BARS

Make sure that there is not too much rag on the front end, which might hinder from entering the lathe collet.

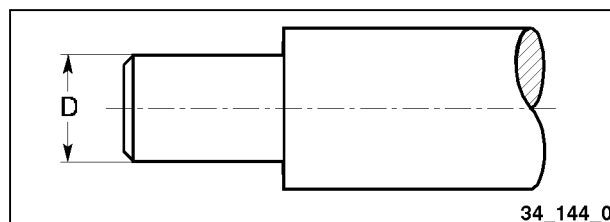
Check that there is not too much rag on bar rear end, which might hinder insertion in the bar pusher collet. In any case, to improve operation during this phase, we advise to chamfer the bar as shown in the figure.



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



When machining bars having a diameter equal to or only slightly smaller than the bar pusher diameter, it is necessary to turn the bar rear ends; diameter "D" should be suitable for the collet installed in the bar pusher.

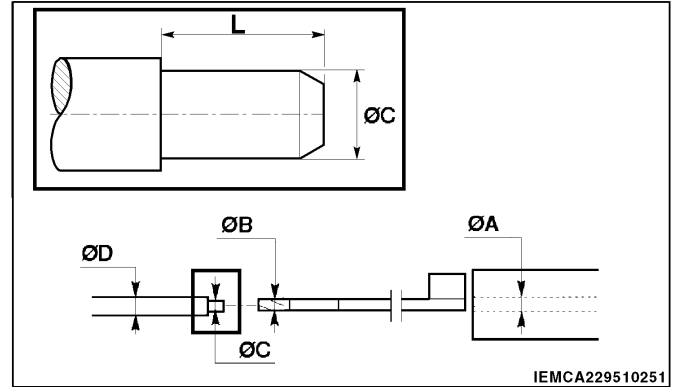


If the bars to be machined have a diameter equal to or only slightly smaller than the bar-pusher diameter, without replacing the guide channels and the bar feeder, bar rear ends should be machine-turned to allow the collet hold.



INFORMATION:

assuming the lathe spindle bar capacity is adequate, and if the appropriate diameter guide channels and bar pusher are installed, there is no need to turn the rear end of the bars.



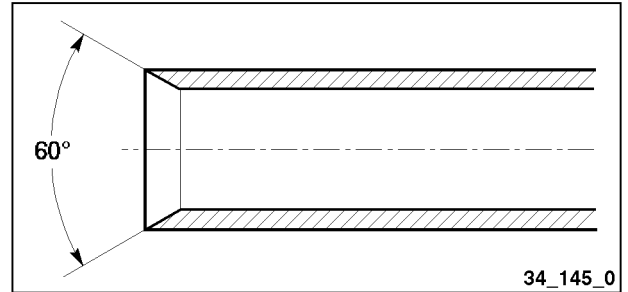
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Guide channel, revolving tip, turning, bar diameters and turning length (Elite112/220Evo).

Model	Guide channel diameter Ø A (mm)	Revolving tip diameter Ø B (mm)	Turning maximum diameter Ø C (mm)	Turning length L (mm)	Bar diameter Ø D (mm)
Elite 112/220	5	4,5	3	16	3,6÷4,0
	6	5,5	4	16	4,8÷5,0
	8	7,5	5,5	16	6,1÷7,0
	11	8,5	6,5	16	6,6÷8
	11	10,5	7,5	16	8,1÷10
	14	12,5	9,5	16	10,1÷12
	14	13,5	10,5	16	11,1÷13
	16	15,5	12,5	16	12,8÷13
	18	17,5	14,5	16	15,1÷17
	20	19,5	16,5	16	17,1÷19
	22	21,5	17,5	21	18,1÷20
	24	23,5	19,5	21	20,1÷22

6.5.2 BARSTOCK - PIPES

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



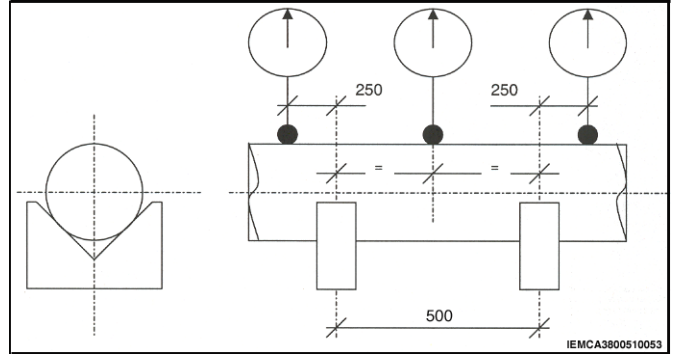
6.5.3 BAR STRAIGHTNESS - Measurement

The bar vibrations are partially due to the state of the bar itself: if the bar is not perfectly straight, it 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 controlling 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 value on the comparator) should be interpreted as follows:



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

In order to obtain a reliable value it is necessary to repeat the 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 values between the different prisms.



INFORMATION:

The bar straightness is obviously proportional to the rigidity of the material and to the number of revolutions (RPM) to which the lathe must operate. The lack of bar straightness highly influences the maximum number of revolutions that may be reached: the bigger the diameter the greater the influence. The data concerning the bar linearity or straightness refer to the bar constant bending and not to the localized inflection and/or deformation that the bar shall not absolutely show.



INFORMATION:

For a correct operation of the bar feeder do not use rolled material.

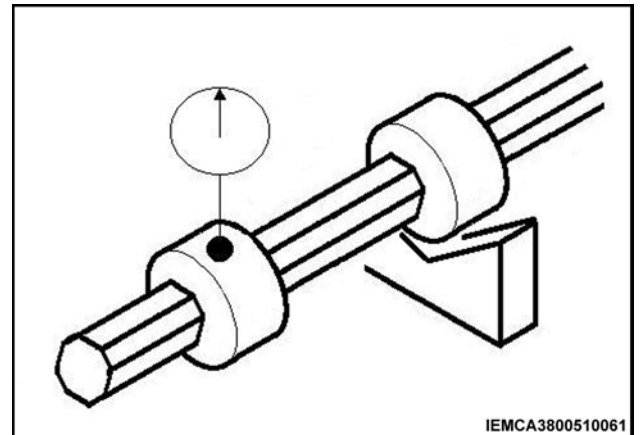
Hexagonal, square and section bars

With shaped bars, insert some bushes on the bar to be controlled.

Position 2 bushings on both 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 bush external to both V-supports.



6.6 BAR FEEDER SETUP AND AUTOMATIC CYCLE START

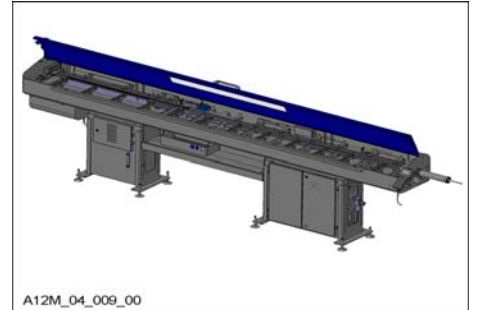
The following list is a sequence of feeder set-up and automatic cycle start operations required if the feeder has to be started up for the first time.

- Perform the software parameterization (refer to the "Keyboard Instruction Manual")
- Set up according to the bar to be machined (section "Setup according to the bar to be machined" Chap. 5).
- Prepare the bars to be machined (section "Bars to be machined – features and preparation" Chap. 6).
- Loading the bar magazine (section "Bar magazine – Loading", Chap. 6).
- Adjust the lubricating oil flow (section "Lubricating oil – flow regulation" Chap. 6).
- Start the automatic cycle (section "Automatic cycle start" Chap. 6).

6.6.1 Bar magazine - Filling

**WARNING - CAUTION:**

do not manually lift loads with weights exceeding those foreseen by the applicable regulations in force; if necessary use a suitable lifting device.

**WARNING - CAUTION:**

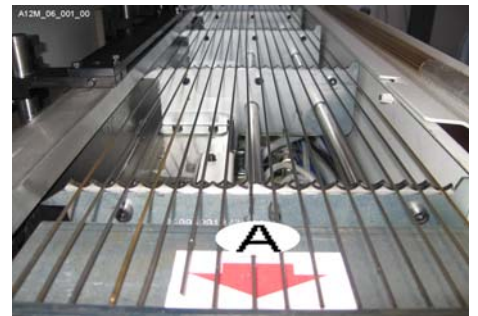
wear personal protections according to the regulations in force.

Follow these instructions to load bars:

- make sure the guide channels are closed;
- open the upper guard;

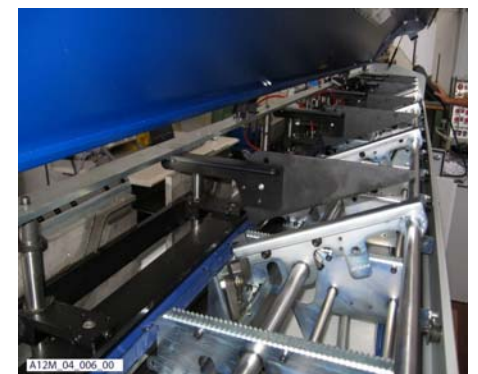
Pilgrim Step Magazine Configuration

- position the bars against the reference level "A" and close the upper guard.

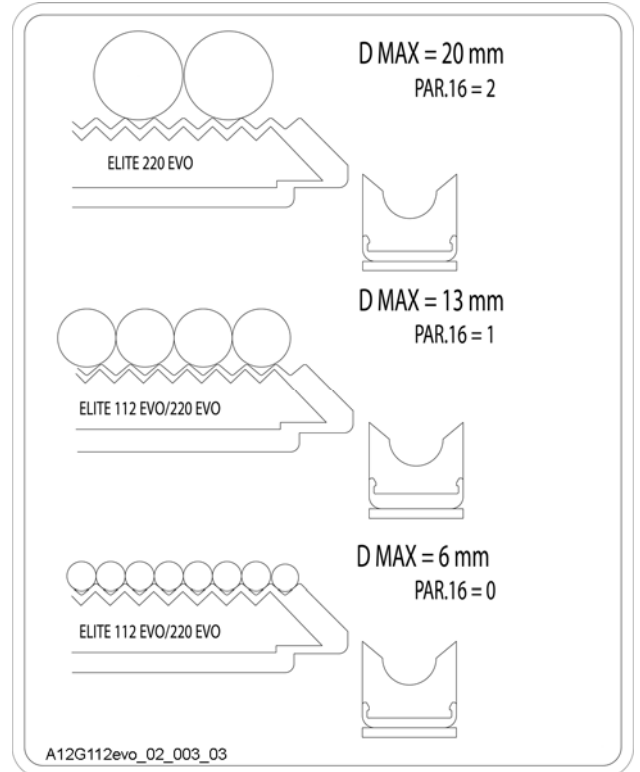


Sloped Rack Magazine Configuration (for Elite 220 only)

- position the bars against the reference level "A" and close the upper guard.

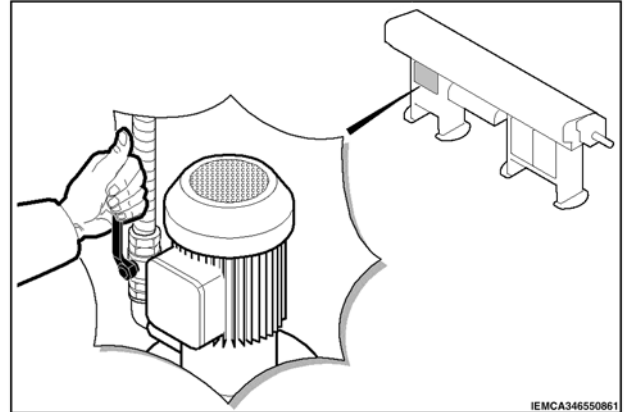


Prepare the bars according to the diameter and set parameter 16 as shown in the figure.






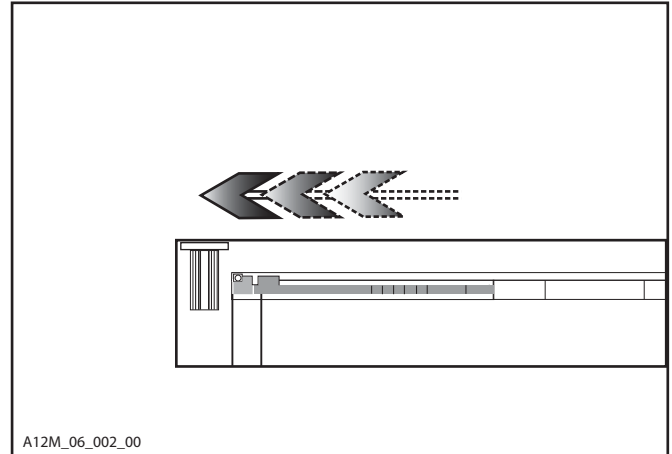
6.6.2 Lubrication oil - Flow adjustment

Oil flow in the guides is automatically controlled during the feeder automatic cycle. The pump is started when the bar feeder has completed the bar change and stops when the bar pusher approaches the bar end position. Oil flow should be adjusted according to bar diameter and profile through the valve placed upstream.



6.6.3 Automatic cycle start


- Power on the lathe.
- Turn the main switch to position I (ON).
- Press  to start the bar feeder.
- Press , to select the manual mode.
- If the bar pusher has been moved while power supply was disconnected, the bar feeder zero setting should be performed when turning the machine on again, as follows:
 - with upper guide channels closed or open,
 - press .



IF THE BAR PUSHER HAS NOT BEEN MOVED WHILE POWER SUPPLY WAS DISCONNECTED, "ZERO AXIS" CONTROL MAY NOT BE PERFORMED WHEN TURNING THE MACHINE ON AGAIN.

After carrying out the above-mentioned operations, perform next step:

- Enter the parameter values (refer to the "Keyboard Instruction Manual").
- Press the manual feed button to bring the bar fore end near the cutting tool.

To start machining, press , when the lathe collet is closed. From now on, you will obtain automatic bar feeding until bars are ended or according to the set program.

- During machining, empty the remnant recovery box. Remove the box after lifting it over the tank edge.

**WARNING - CAUTION:**

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

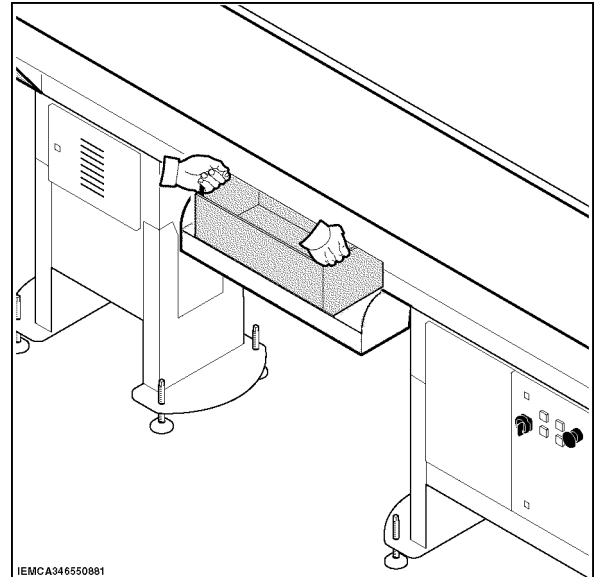
**WARNING-CAUTION:**

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

**WARNING - CAUTION:**

wear personal protections according to the regulations in force.


Place the box back under the remnant outlet.




6.6.4 Guide channel opening/closing procedure

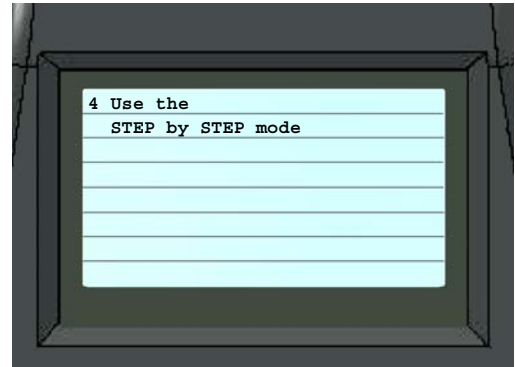
The following instructions concern guide channel opening and closing in the manual function.

OPENING PROCEDURE

By pressing  4 with upper guide channels closed, the display will show:

To open the guide channels, follow the instructions in section 6.5.5: step by step cycle performing operations. If the guide channels are in an intermediate position (upper guide channels not closed nor open), press the

key  4 to open completely.

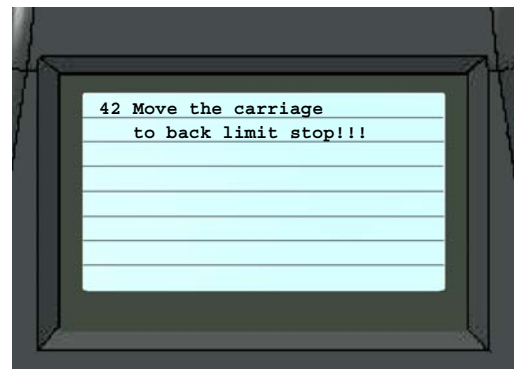


CLOSING PROCEDURE


If the upper guide channels are open and the first feeding carriage is moved from its "ZERO AXIS"

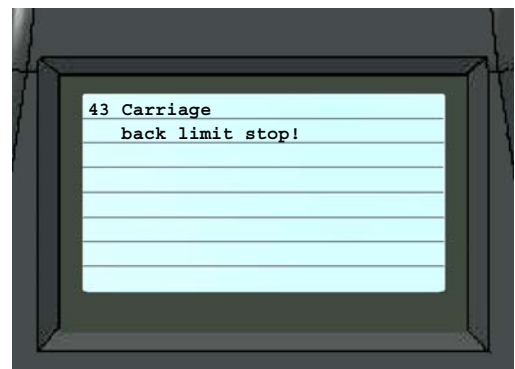
position, by pressing  5 the following will appear:

move the carriage to "ZERO AXIS" position by pressing the manual return key.



As soon as the carriage reaches this position, the following message will be displayed:

Close the guide channels by pressing  5.




6.6.5 Cycle performing mode in the STEP BY STEP function



Foreword


This mode may be used for many reasons, as for instance:


- to open the guide channels;
- to check a complete bar change cycle;
- to check the bar feeder mechanics;
- to load a single bar so as to check the facing;
- etc.


Procedure


- 1 press  to start the bar feeder;
- check that the guide channels of the bar feeder are closed. If not, close the guide channels in manual mode.

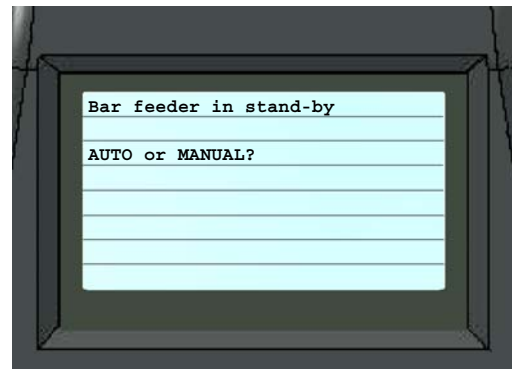
2. press  and then  to select the semiautomatic function;

- 3 press , the bar feeder performs the first step (bar pusher return);

- 4 press , the bar feeder performs the second step, and so on.

- 5 once the maximum opening condition of the upper guide channels is reached, press  to start the bar feeder device.

- 6 press , the bar feeder carries out the first feeding return, and so on until the new bar is positioned into the lathe spindle.



6.7 BAR FEEDER STOP

BAR FEEDER EMERGENCY STOP



WARNING - CAUTION:

if the emergency stop is activated whilst the lathe is working, before restarting the machining cycle, check that no dangerous conditions arose due to the sudden stop.

Example: if the tool was removing chips, before restarting the lathe, distance the tool from the piece.

- To stop the bar feeder in emergency, press one of the emergency buttons of the bar feeder or lathe.

BAR FEEDER STOP AT THE WORKING CYCLE END



WARNING - CAUTION:

when stopping the machine normally, do not use the emergency buttons.

1. Complete the operations of your working schedule.



2. Stop the bar feeder:
3. Stop the lathe.
4. Turn off the electrical supply of the bar feeder by turning the main switch to the 0 (OFF) position.


6.8 AXIS CALIBRATION PROCEDURE

Foreword:


This procedure is aimed at optimizing the movements of the bar feeder axis. This procedure should not be performed daily, but it is advisable to repeat it at regular intervals (recommended time: once a month) to compensate any wear of the mechanical feeding units that could alter the AXIS control operations.

Procedure:

Move the feeding carriage from its completely

backwards position in manual mode , then

simultaneously press [Zero_Macchina_sx-dito] 

and  for at least 2 seconds, until Offset appears on the display. Now the operator may release the buttons.



INFORMATION:

Before performing the above mentioned procedure make sure that the mechanics have no clearances (e.g.: feeding belt not tensioned properly) and that the zero axis sensor is positioned correctly (it shall not be too retracted).

6.9 MACHINING CHANGE - QUICK GUIDE

This section aims at providing the operator with a quick guide to the operations to be carried out in order to perform the machining change. In some cases, this can imply changing the guide channels.

The relevant information is contained in the sections listed below and then described.



6.9.1 Machining type change with guide channel change

- Select the diameter of the guide channels according to the bar to be machined (section "Setup according to the bar to be machined" Chap. 5).
- Replace the guide channels, the bar pusher and the collet (section "Guide channels, bar pusher and collet - Replacement" Chap. 5).
 - remove the bar pusher;
 - remove the lower and upper guide channels;
 - remove the front nose;
 - if necessary, remove the lathe spindle liner;
 - 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 guide channels;
- Check all the machining parameters on the keyboard.
- Prepare the lathe for a new machining cycle.
- Start the working automatic cycle (§ "Automatic cycle start" Chap. 6).

6.9.2 Machining type change without guide channel change

- Replace the collet (§"Guide channels, bar pusher and collet - Replacement" Chap. 5)
- Check all the machining parameters on the keyboard.
- Prepare the lathe for a new machining cycle.
- Start the working automatic cycle (§ "Automatic cycle start" Chap. 6).

INDEX

7.1	PRELIMINARY NOTE ON MAINTENANCE.....	2
7.2	SCHEDULED MAINTENANCE	2
7.3	MAINTENANCE – GENERAL RULES 	3
7.4	SCHEDULED MAINTENANCE 	4
7.4.1	Revolving tip and collet - Check	4
7.5	Lubricating oils - Change	5
7.5.1	Lubricating oil - Level check.....	6
7.5.2	Lubricating oil - Change.....	7
7.5.3	Air filter unit - Check	7
7.6	GREASING POINTS	8
7.7	DISPLACEMENT DEVICE USE.....	9

7.1 PRELIMINARY NOTE ON MAINTENANCE



INFORMATION:

before carrying out any maintenance, start all safety devices provided and check if it is necessary to inform the staff operating around and people close to the area. In particular, it is recommended to adequately signal the adjacent areas and to prevent anyone from approaching any of the devices that, if activated, could cause unexpected dangerous situations and injure people.

7.2 SCHEDULED MAINTENANCE



IMPORTANT:

keep the bar feeder in conditions of maximum efficiency, carrying out the programmed maintenance operations provided by the manufacturer. Good maintenance will allow the best performances, a longer service life as well as constant adhering to safety requirements.

7.3 MAINTENANCE – GENERAL RULES

***DANGER - WARNING:***

carry out the cleaning and maintenance operations when the bar feeder is off.

Regular cleaning and maintenance are essential to ensure a correct operation and a long bar feeder service life.

A regular and effective cleaning of the bar feeder, its accessories and working area, is recommended as it increases the operator safety as well.

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 during long inactivity periods, disconnect it from the mains voltage, remove the compressed air and cover it with a cloth of suitable material.

Any protection should not be completely closed or sealed at the base; it should be equipped with ventilation holes so as to ensure that humidity may not condense due to lack of circulation.

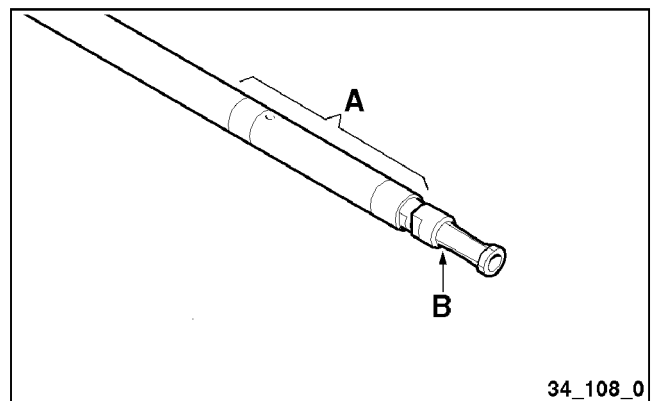
7.4 SCHEDULED MAINTENANCE

Scheduled maintenance

Machine section	Operation to be carried out	Frequency					
		Hours			Regularly	Every year	Cycles
		200	1250	2500			
Revolving tip and collet	Wear check	•					
Lubrication system	Oil level check	•					
	Oil change			•			
Guide channels	Integrity and cleanness check		•				
Feed chains	Lubrication	•					
	Tensioning check	•					
Air filter	Check				•		
PLC battery	Replacement					•	
Safety devices	Check the efficiency (see "Safety devices")	•					

7.4.1 Revolving tip and collet - Check

- Remove the bar pusher as described in § "Guide channels, bar pusher and collet - Replacement" Chap5.
- Check that the revolving tip "A" can turn freely without too much backlash. Also check the good state of repair of collet "B".



7.5 Lubricating oils - Change



INFORMATION:

Use an external pump or when the bar feeder pump is not in use (off).

Change with an auxiliary pump

Disconnect the oil supply pipe (B) by loosening the clamp (A).

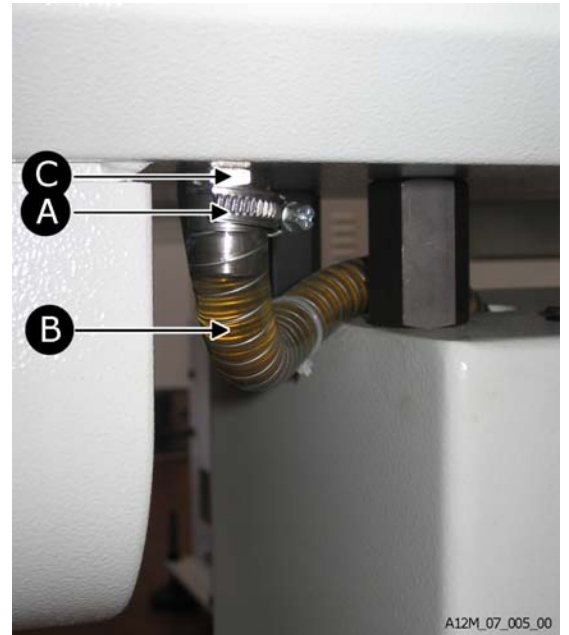
Place the free end of the pipe in a container having a minimum capacity of 50 litres.

Operate the bar feeder pump and drain the tank until you hear the pump is sucking air.

Reconnect pipe (B) to coupling (C) and tighten the clamp (A).

In order to remove the rest of the oil, place a container (minimum capacity 10 l) under the tank and remove plug (D).

Unscrew the drain plug and let the oil be drained out. Clean the tank bottom.



7.5.1 Lubricating oil - Level check

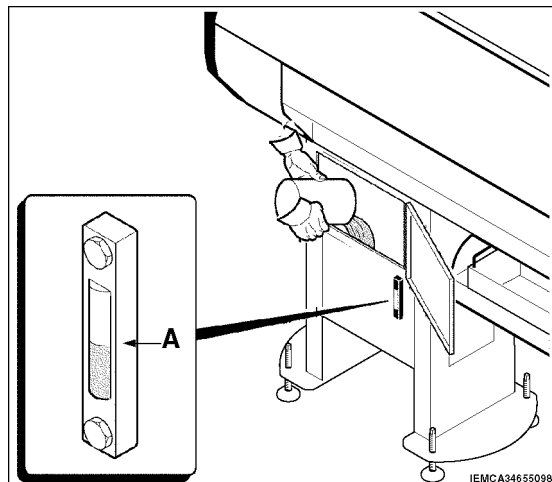


WARNING - CAUTION:

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 indicator (A). Open the rear base door and pour oil into the machine to top up.

See section "Technical Data", in Chap. 2, for the comparative table.



7.5.2 Lubricating oil - Change



WARNING - CAUTION:

wear personal protections according to the regulations in force.



INFORMATION:

store drain oil in special containers to be delivered to companies specialised in pollutant disposal and storage.

Avoid environmental pollution.

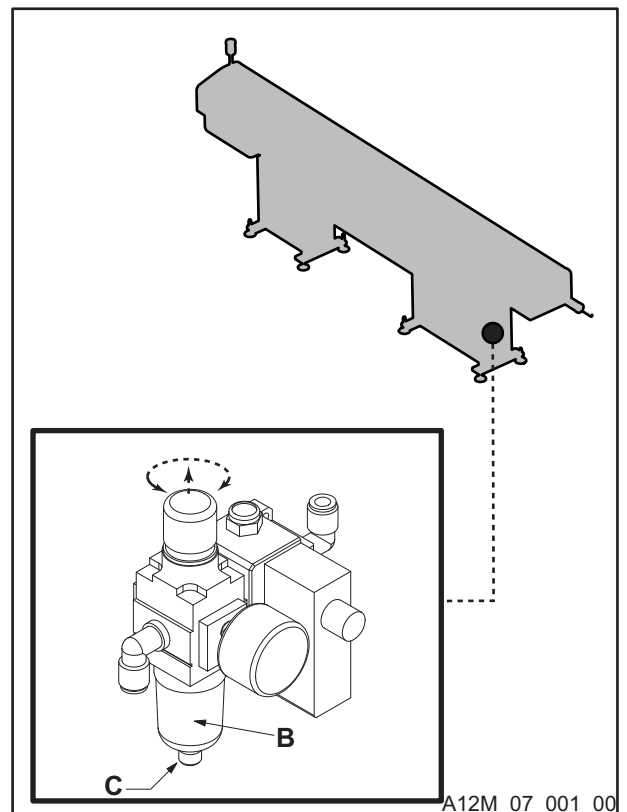
- Drain the tank using an auxiliary pump. Clean the tank bottom and the pump suction system.
- For the loading, pour the oil directly in the tank and check the level through the indicator (A).

See section "Technical Data", in Chap. 2, for the comparative table and the required quantities.

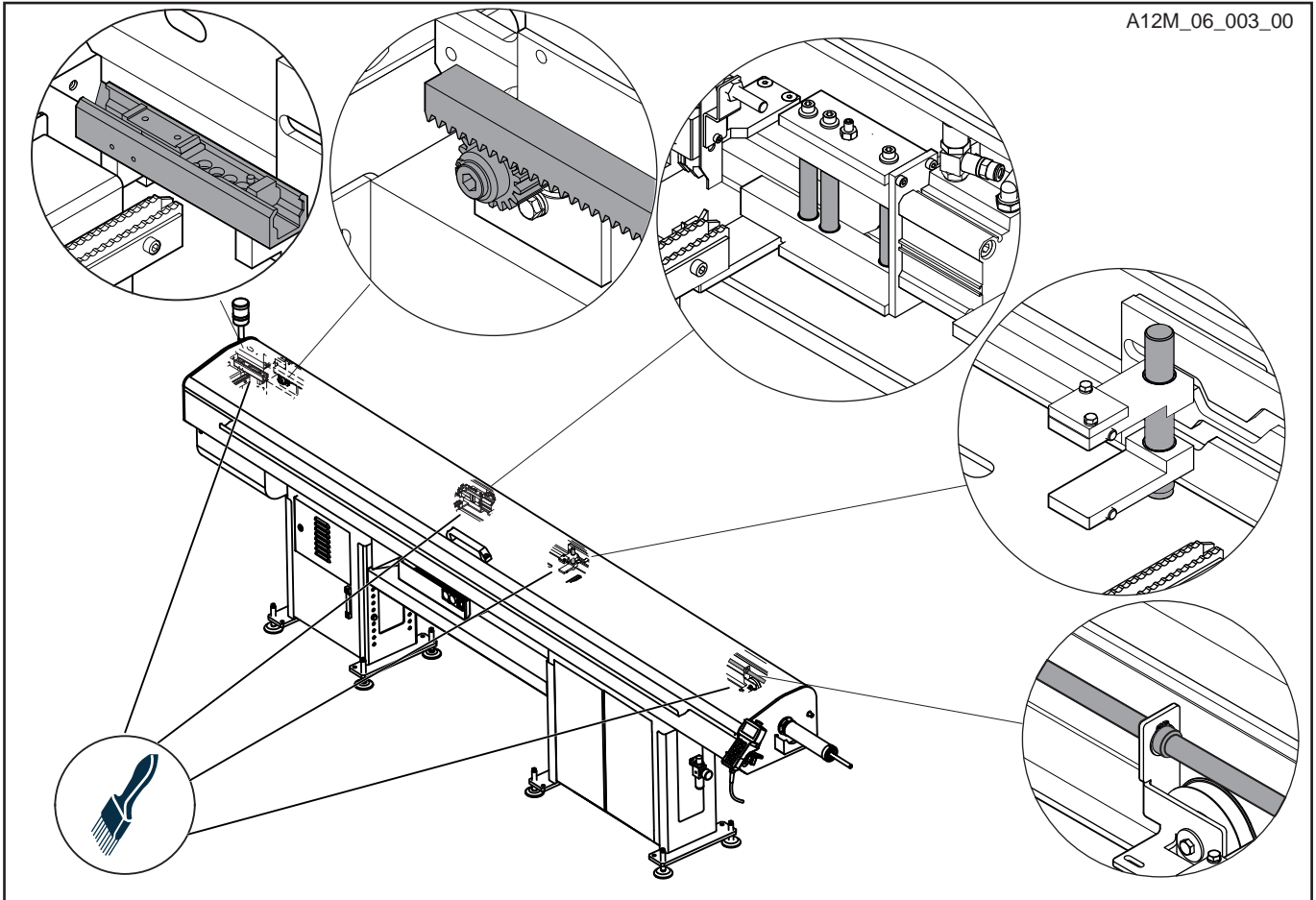
7.5.3 Air filter unit - Check

FILTER A

- Make sure that cup (B) is not full of condensate. Drain the condensate by means of valve (C), if necessary.
- Check pressure switch adjustment, see section "Pressure switch – Adjustment", Chap. 5.



7.6 GREASING POINTS



Grease

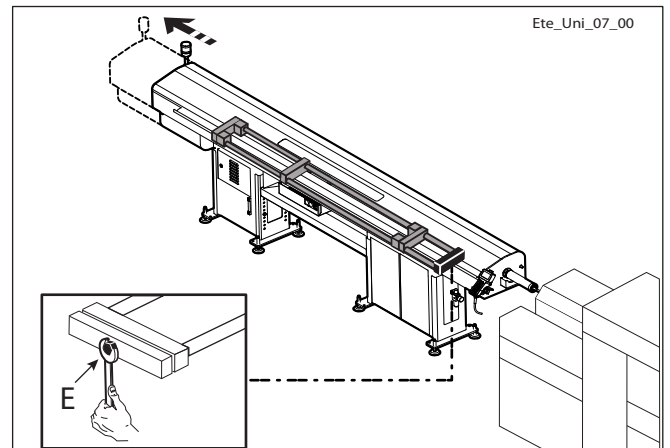
7.7 DISPLACEMENT DEVICE USE



WARNING - CAUTION:

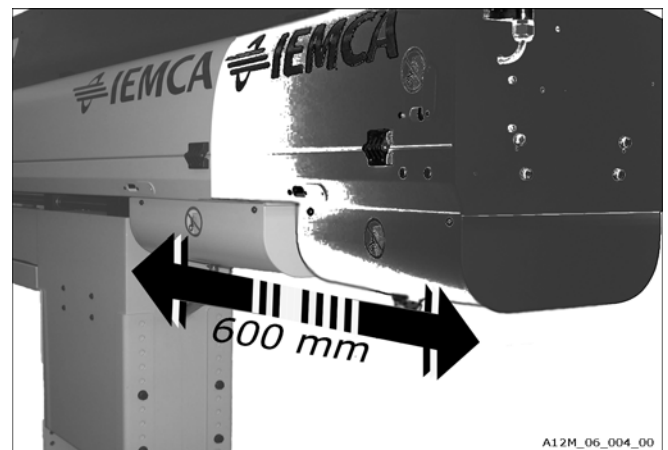
before carrying out this intervention, disconnect the bar feeder power supply. During this operation, take extreme care so as not to damage the connection cables.

- Turn the screw counter-clockwise to move the bar feeder body backwards.







Perform this operation following the instructions given hereunder.

- Disconnect the bar feeder-lathe fastening unit (if installed).
- Remove the safety screw (E).
- Move the bar feeder until the completely backwards position is reached ($L_{max}=600mm$).
- Carry out all lathe tooling and/or maintenance operations required.
- Put the bar feeder again in its initial position.
- Place back the safety screw (E).



INDEX

8.1	GENERAL FAILURES 2
8.2	FEEDING INTO COLLET – Failures 2
8.3	BAR FEEDING - Failures 2
8.4	GUIDE CHANNEL IRREGULAR MOVEMENT - Failures 2

8.1 GENERAL FAILURES 

TROUBLES	CAUSES	SOLUTIONS
The bar feeder cannot start	No power.	Check the electrical connection.
	Open guard.	Close the guard.
	Emergency systems on.	Disconnect the emergency devices.
	Motor thermal circuit breaker burnt.	Reset the thermal circuit breaker with the special buttons.
The bar feeder has been reset but the automatic cycle will not start.	No lathe signal.	Check the electrical connection with the lathe.
The pneumatic devices do not respond to controls.	No air.	Check the air system.
The first feeding and feeding are stopped unexpectedly.	Motor thermal circuit breaker burnt.	Reset the thermal circuit breaker with the special buttons.

8.2 FEEDING INTO COLLET – Failures 

TROUBLES	CAUSES	SOLUTIONS
Bar fails to enter collet	Collet diameter not suitable for bar diameter	Change collet
	Excessive rag on bar rear end	Trim rag before feeding





8.3 BAR FEEDING - Failures 

TROUBLES	CAUSES	SOLUTIONS
Difficult bar introduction into lathe spindle	Bar feeder not aligned with lathe	Check and correct the alignment
Difficult bar introduction into lathe collet	Excessive rag on bar fore end	Trim rag before feeding

8.4 GUIDE CHANNEL IRREGULAR MOVEMENT - Failures 

TROUBLES	CAUSES	SOLUTIONS
The guide channel closes on the bar pusher.	Detected bar pusher position inconsistent with the real bar pusher position.	Encoder joint replacement. Contact Iemca service department.

INDEX

9.1	FEEDING BELT – REPLACEMENT 2
9.2	PLC BATTERY – REPLACEMENT 3
9.3	RECOMMENDED SPARE PARTS 4
9.4	Machine dismantling 4

9.1 FEEDING BELT – REPLACEMENT

The replacement of the feeding belt is a very complex operation; contact IEMCA service department.

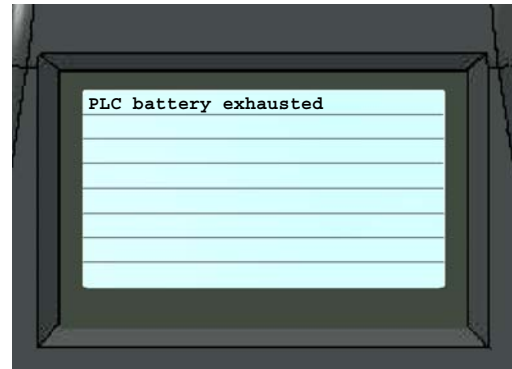
9.2 PLC BATTERY – REPLACEMENT

Replace the battery every year, or when the following message is displayed: "PLC battery exhausted"

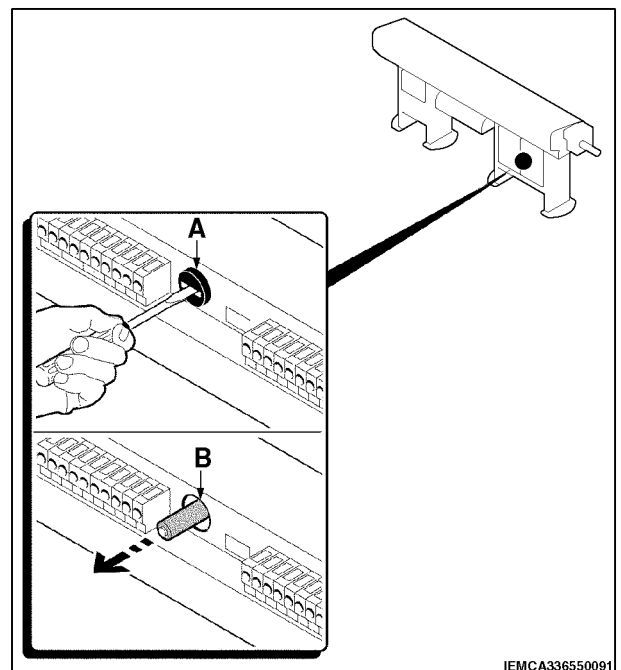


INFORMATION:

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



- unscrew plug "A" and remove battery "B";
- insert a new battery (AA 3.6 volts lithium-type battery) and make sure it is properly fitted, then tighten plug "A".



IEMCA336550091

9.3 RECOMMENDED SPARE PARTS

To receive the list of the recommended spare parts, contact IEMCA service department.

To order the parts refer to the Spare Parts Catalogue.

9.4 Machine dismantling

This operation is to be carried out by expert operators, according to the safety at work regulations in force.

Do not throw non-biodegradable products, lubricating oils and non-ferrous components (rubber, PVC, resins, etc.) in the environment.

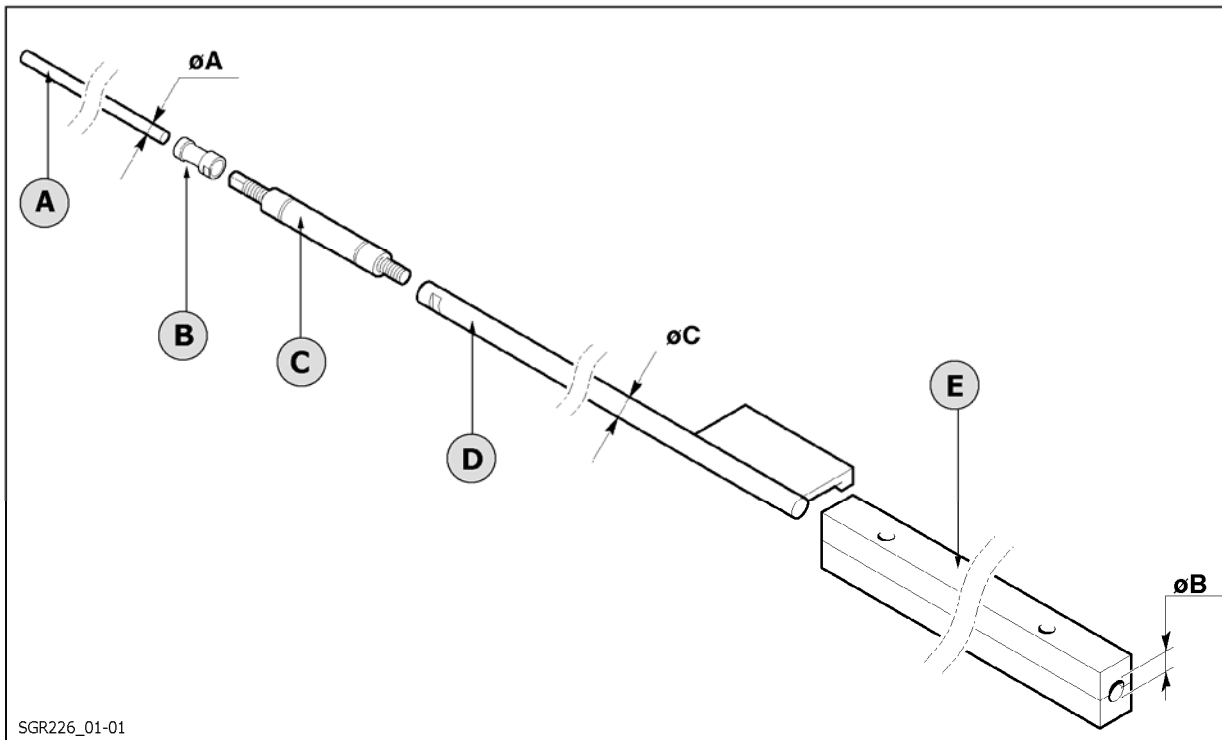
Dispose of the same according to the regulations in force.

INDEX

10.1	GUIDE CHANNELS AND BAR PUSHER.....	2
10.2	REVOLVING TIP - TABLE	3
10.3	Revolving tips \emptyset GR 5 - Table.....	6
10.4	Revolving tips \emptyset GR 7.5 - Table	7
10.5	Revolving tips \emptyset GR 10÷23 - Table.....	8
10.6	Revolving tips \emptyset GR 10÷23 - Table.....	10

10.1 GUIDE CHANNELS AND BAR PUSHER

The choice of the guide channels and the bar pusher must be made according to the diameter of the bar to be machined. The bar feeder is usually supplied with a bar pusher whose diameter is equal to the maximum bar passage of the lathe. Sometimes, in order to ensure the best working conditions, it may be necessary to use a bar pusher with a smaller diameter.



- A Bar
- B Collet
- C Revolving tip
- D Bar pusher
- E Guide channels

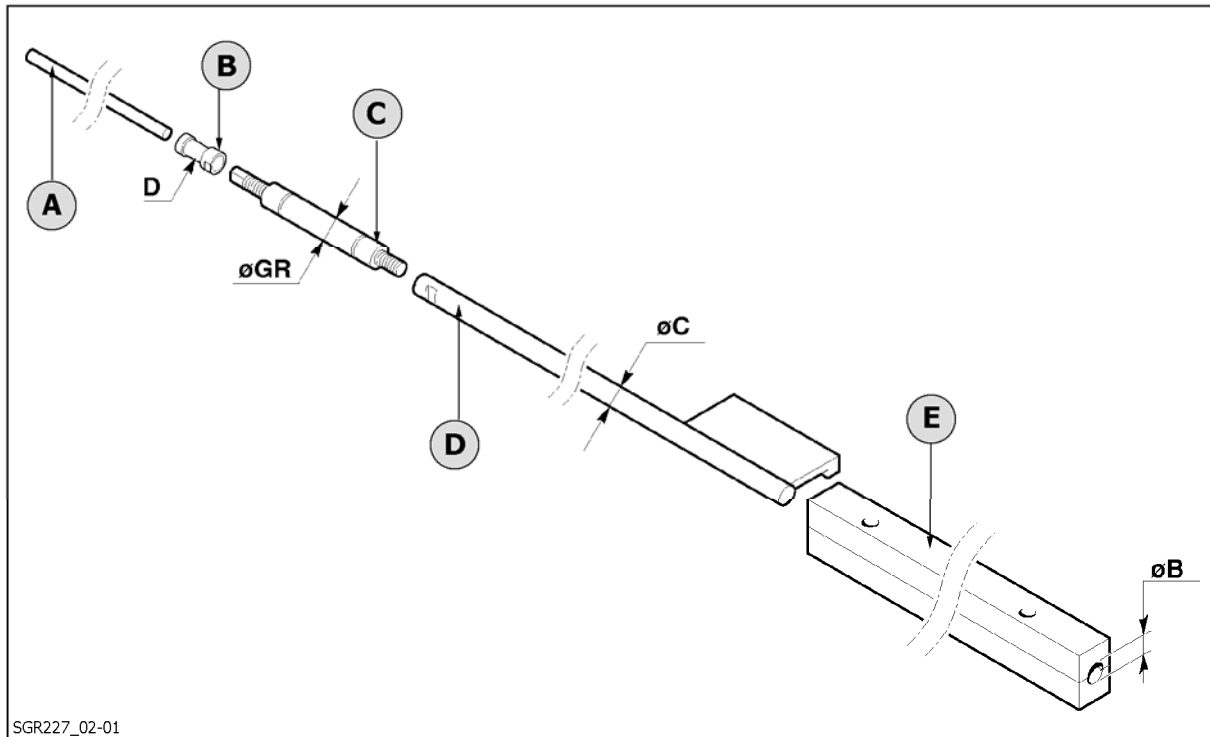


INFORMATION:

upon specific request, non standard collets with reduced thickness (which are not mentioned in this table) may be supplied as well. Their durability is however below the durability of standard collets.

10.2 REVOLVING TIP - TABLE

The choice of the revolving tip depends on the diameter of the guide channel, and bar pusher and on the version of the collet coupling.

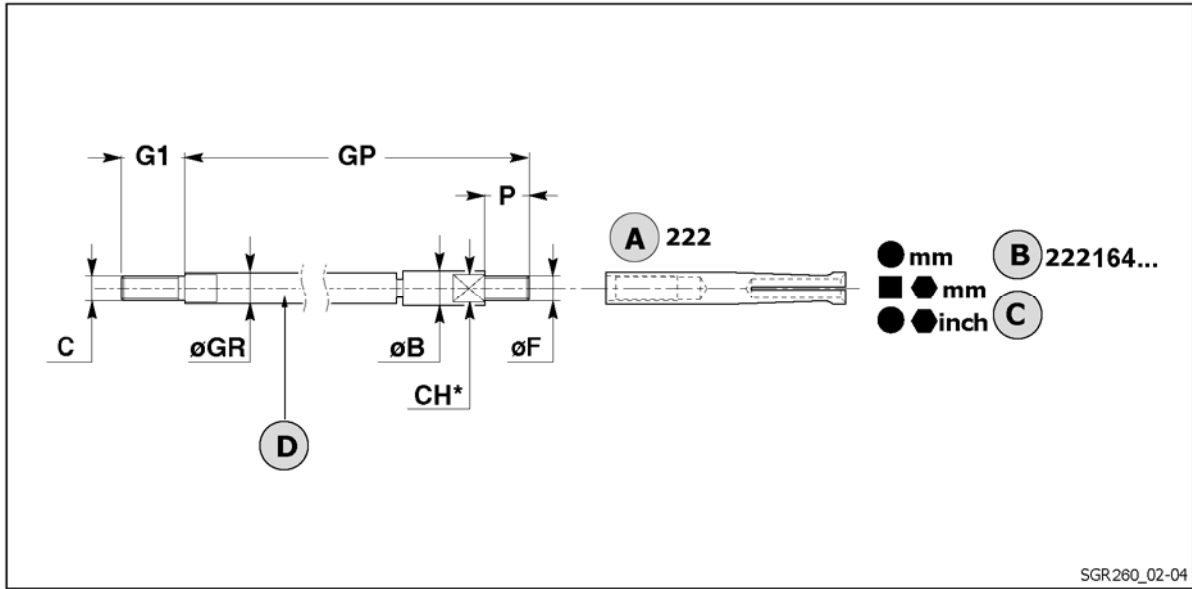


Guide channel diameter ϕB (mm)	Bar pusher diameter ϕC (mm)	Collet version– D (type of coupling)	Revolving tip diameter ϕGR (mm)	Revolving tip code		
6	5,5	Threaded(IEMCA)	5,5	D00150500		
				D00150501		
8	7	Threaded(IEMCA)	7.5	D73150705		
11	8	Threaded(IEMCA)	8,5	D73150805		
	10	With quick coupling pin	10,5	D71151010 D71151011		
14	13	Threaded(IEMCA)	13,5	D71151310		
	12	With quick coupling pin	12,5	D71151210		
	13		13,5	D71151311		
	12		12,5	D71151211		
16	14		Threaded(IEMCA)	14,5	D71141510	
	15	With quick coupling pin	15,5	D71151510		
			14,5	D71141510		
			15,5	D71151510		
18			15	Threaded(IEMCA)	15,5	D71151510
	With quick coupling pin	D71151511				
	17	15	Threaded(IEMCA)	16,5	D71151610	
			With quick coupling pin		D71151611	
		17	17	Threaded(IEMCA)	17,5	D71151710
				With quick coupling pin		D71151711

Guide channel diameter $\varnothing B$ (mm)	Bar pusher diameter $\varnothing C$ (mm)	Collet version– D (type of coupling)	Revolving tip diameter $\varnothing GR$ (mm)	Revolving tip code
20	18	Threaded(IEMCA)	18,5	D71151810
			19,5	D71151910
		With quick coupling pin	18,5	D71151811
			19,5	D71151911
22	20	Threaded(IEMCA)	20,5	D71152010
			21,5	D71152110
		With quick coupling pin	20,5	D71152011
			21,5	D71152111
24	20	Threaded(IEMCA)	21,5	D71152110
			22,5	D71152210
		With quick coupling pin	21,5	D71152111
	22,5		D71152211	
	23		22,5	D71152310
		23,5	D71152311	

10.3 Revolving tips \varnothing GR 5 - Table

- For collets with threaded coupling (IEMCA-SCHL)



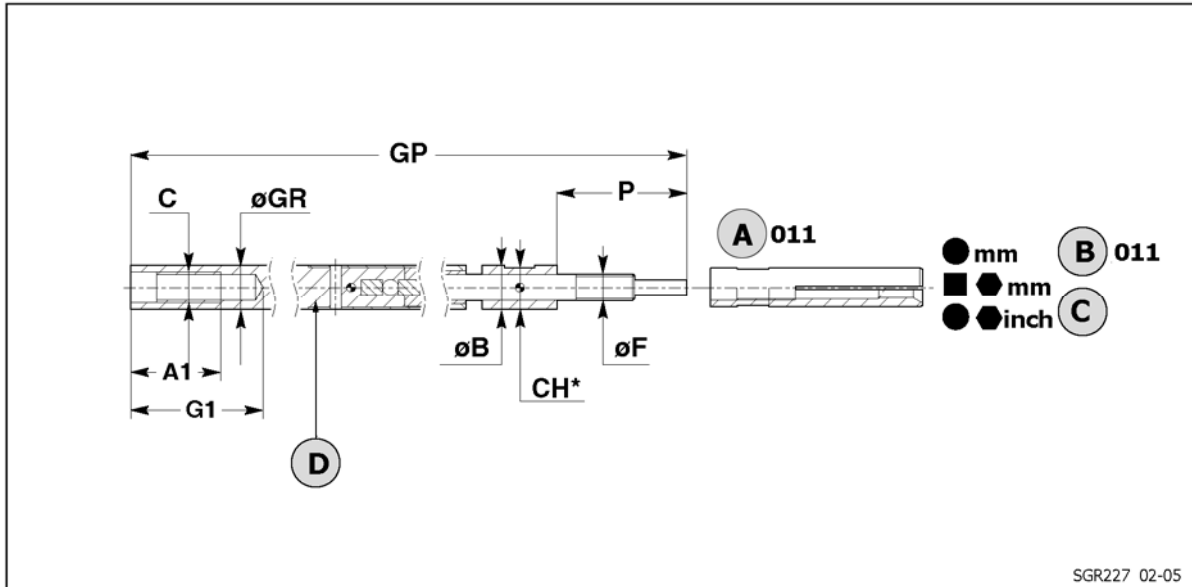
- A Collet
- B See file
- C See file 001 then 222
- D Revolving tip

CH*: double-ended fork wrench DIN3110

\varnothing GR (mm)	Revolving tip code	\varnothing F (mm)	\varnothing B (mm)	GP (mm)	G1 (mm)	C (mm)	P (mm)	CH (mm)	
5	D00150500	M4	5.5	80	10	M4	7	5	SCHLENKER
5	D00150501	M4	5.5	81	10	M4	7	5	ANDRE FREY

10.4 Revolving tips \varnothing GR 7.5 - Table

- For collets with threaded coupling (IEMCA)



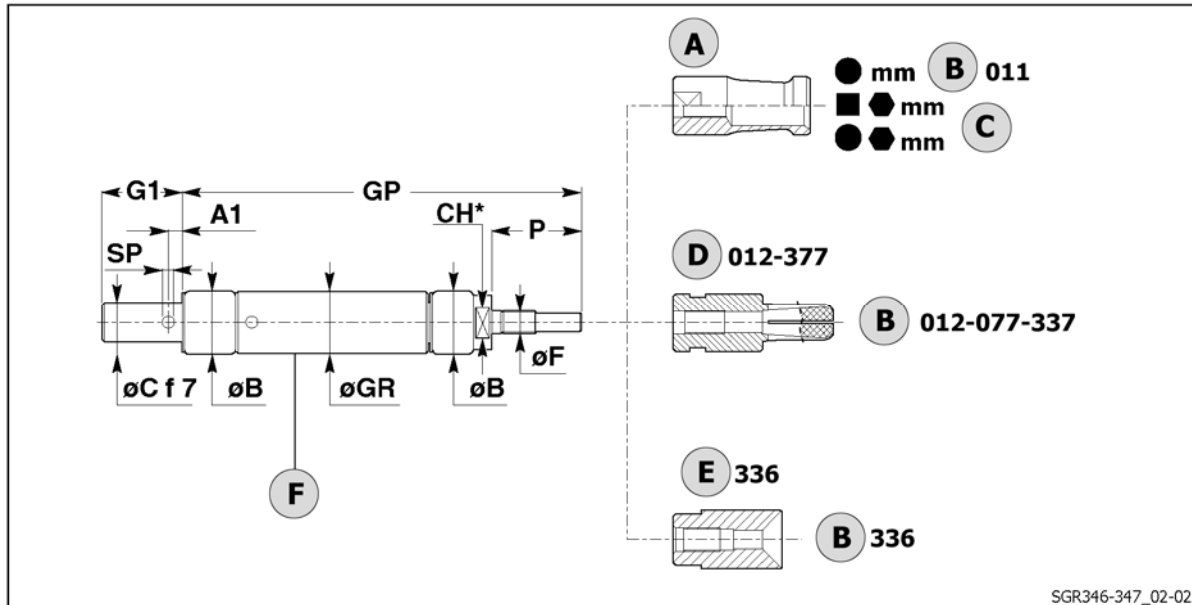
- A Collet
- B See file
- C See file 001 then 011
- D Revolving tip

CH*: double-ended fork wrench DIN3110

\varnothing GR (mm)	Revolving tip code	\varnothing F (mm)	\varnothing B (mm)	GP (mm)	G1 (mm)	C (mm)	A1 (mm)	P (mm)	CH (mm)
7.5	D73150705	M5x0.5	7.5	151	25	M6x0.75	17	24.5	7

10.5 Revolving tips ØGR 10÷23 - Table

- For collets with threaded coupling (IEMCA)



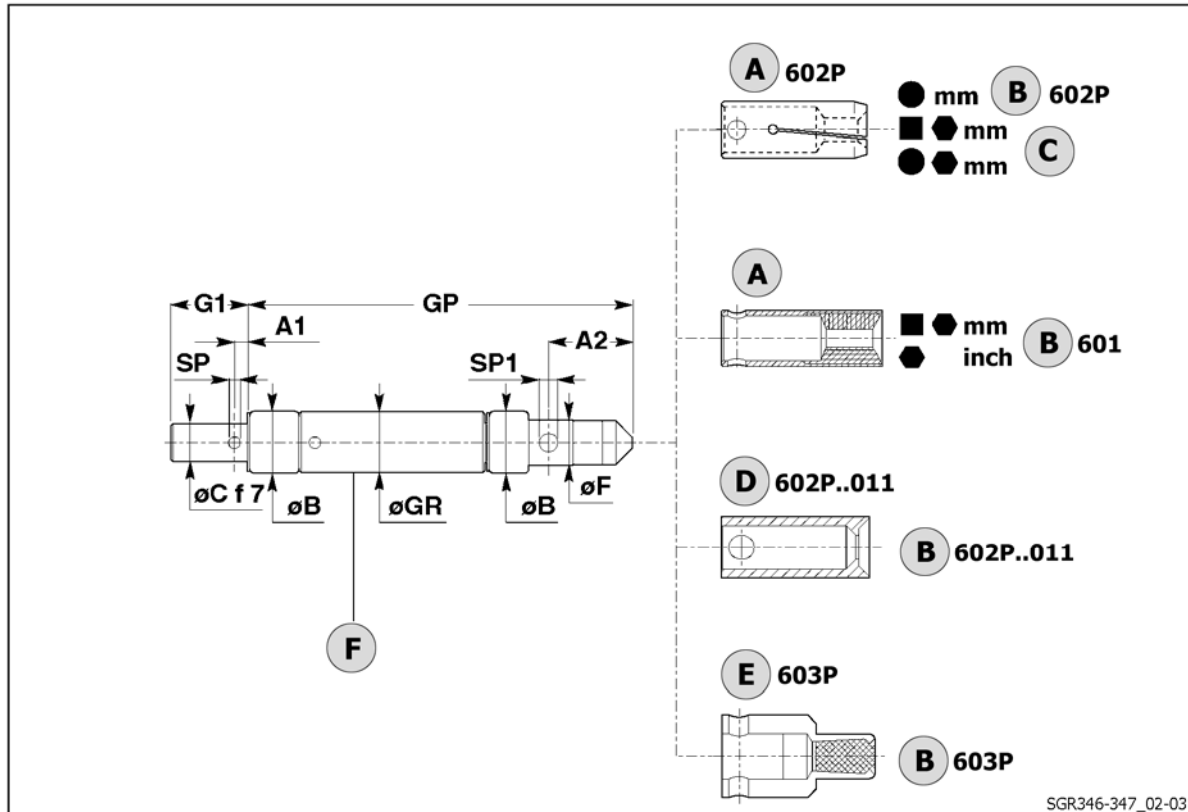
- | | |
|--------------------------------|-----------------|
| A Collet | D Pipe collet |
| B See file | E Ejector |
| C See file - 001
then - 011 | F Revolving tip |

CH*: double-ended fork wrench DIN3110

øGR (mm)	Revolving tip code	øF	øB (mm)	GP (mm)	G1 (mm)	C (mm)	A1 (mm)	øSP (mm)	P (mm)	CH (mm)
10	D71151010	M6x0.75	10.5	137	30	8	6	3	24.5	8
12	D71151210	M7x0.75	12.5	143	30	8	6	3	26.5	10
13	D71151310	M7x0.75	13.5	143	30	8	6	3	26.5	10
14	D71151410	M8x1	14.5	160	35	12	6	3	26.5	13
15	D71151510	M8x1	15.5	160	35	12	6	3	26.5	13
16	D71151610	M8x1	16.5	160	35	12	6	3	26.5	13
17	D71151710	M8x1	17.5	160	35	12	6	3	26.5	13
18	D71151810	M8x1	18.5	160	35	12	6	4	26.5	13
19	D71151910	M8x1	19.5	160	35	12	6	4	26.5	13
20	D71152010	M10x1	20.5	172.5	35	14	6	4	38.5	15
21	D71152110	M10x1	21.5	172.5	35	14	6	4	38.5	15
22	D71152210	M10x1	22.5	172.5	35	14	6	4	38.5	15
23	D71152310	M10x1	23.5	172.5	35	14	6	4	38.5	15

10.6 Revolving tips \varnothing GR 10÷23 - Table

- For collets with quick coupling pin



- A Collet
- B See file
- C See file - 001
then - 602P
- D Ejector
- E Pipe collet
- F Revolving tip

øGR (mm)	Revolving tip code	øF (mm)	øB (mm)	GP (mm)	G1 (mm)	C (mm)	A1 (mm)	øSP (mm)	A2 (mm)	øSP1 (mm)
10	D71151011	7	10.5	143	30	8	6	3	18	4
12	D71151211	8	12.5	143	30	8	6	3	18	4
13	D71151311	8	13.5	143	30	8	6	3	18	4
14	D71151411	11	14.5	160	35	12	6	3	18.5	6
15	D71151511	11	15.5	160	35	12	6	3	18.5	6
16	D71151611	11	16.5	160	35	12	6	3	18.5	6
17	D71151611	11	17.5	160	35	12	6	3	18.5	6
18	D71151811	11	18.5	160	35	12	6	4	18.5	6
19	D71151911	11	19.5	160	35	12	6	4	18.5	6
20	D71152011	14	20.5	172.5	35	14	6	4	37.5	8
21	D71152111	14	21.5	172.5	35	14	6	4	37.5	8
22	D71152211	14	22.5	172.5	35	14	6	4	37.5	8
23	D71152311	14	23.5	172.5	35	14	6	4	37.5	8

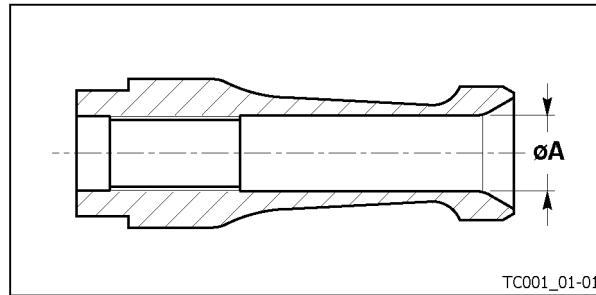
INDEX

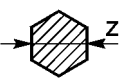
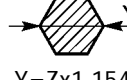
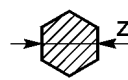
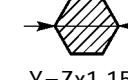
11.1	HEXAGONAL BARS (unit of measurement "millimetres") - Table.....	2
11.2	SQUARE BARS (unit of measurement "millimetres") - Table	4
11.3	HEXAGONAL BARS (unit of measurement "inches") - Table.....	5
11.4	ROUND BARS - (unit of measurement "inches") - Table.....	6
11.5	CONVERSION TABLE Inches/Millimetres	7
11.6	COLLETS FOR BARS 001P - Table	9
11.7	COLLETS FOR BARS 222 - Table	11
11.8	COLLETS FOR BARS 602P - Table	12
11.9	BORING COLLETS FOR SQUARE AND HEXAGONAL BARS 601P - Table.....	14
11.10	EJECTORS 602P - Guide channels $\varnothing 14 \div 24$ - Table.....	16
11.11	PIPE COLLETS 603P - Table.....	17
11.12	COLLETS FOR BARS 22164 - Table.....	19

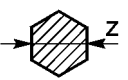
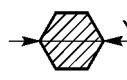
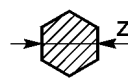
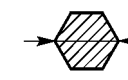
11 CONVERSION TABLES 001

11.1 HEXAGONAL BARS (unit of measurement "millimetres") - Table

Before selecting the steel collet, define the internal diameter $\varnothing A$ by referring to the table below.



	 $Y=Z \times 1,154$	$\varnothing A$		 $Y=Z \times 1,154$	$\varnothing A$
mm	mm	mm	mm	mm	mm
1.5	1.73	1.7	28	32.33	32
2	2.31	2.2	29	33.48	33.2
2.5	2.89	2.8	30	34.64	34.5
3	3.48	3.25	31	35.79	35.5
3.5	4.04	3.8	32	36.95	36.8
4	4.61	4.5	33	38.10	37.8
4.5	5.19	5	34	39.25	39
5	5.77	5.5	35	40.41	40.2
5.5	6.35	6.2	36	41.56	41.3
6	6.92	6.8	38	43.87	43.5
6.5	7.50	7.3	39	45.03	44.8
7	8.08	7.8	40	46.18	46
7.5	8.66	8.5	41	47.34	47
8	9.23	9	42	48.49	48.2
9	10.39	10.2	43	49.65	49.5
10	11.54	11.3	44	50.80	50.5
11	12.70	12.5	45	51.96	51.8
12	13.85	13.5	46	53.11	52.8
13	15.02	14.8	48	55.42	55
14	16.16	16	50	57.73	57.5
15	17.32	17.2	52	60.04	59.5
16	18.47	18.3	55	63.50	63
17	19.62	19.5	57	65.78	65.25
18	20.78	20.6	60	69.24	68.75
19	21.93	21.8	62	71.55	71
20	23.09	22.8	65	75	74.5
21	24.24	24	67	77.3	76.75
22	25.40	25.2	70	80.78	80.25

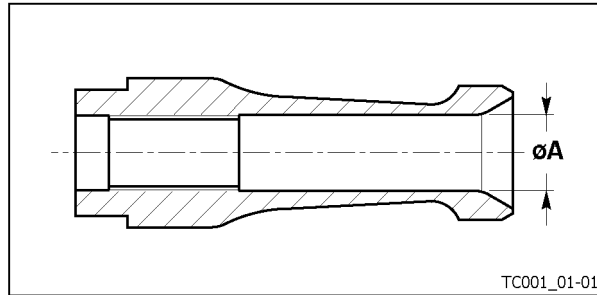
		$\varnothing A$			$\varnothing A$
---	---	-----------------	---	---	-----------------

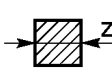
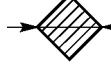
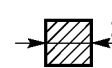
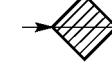
	Y=Zx1,154	
mm	mm	mm
23	26.55	26.2
24	27.71	27.5
25	28.86	28.5
26	30.02	29.8
27	31.17	31

	Y=Zx1,154	
mm	mm	mm
72	83.08	82.5
75	86.55	86
80	92.32	91.75
85	98.1	97.5

11.2 SQUARE BARS (unit of measurement "millimetres") - Table

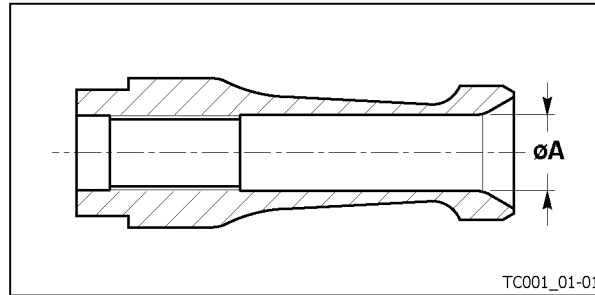
Before selecting the steel collet, define the internal diameter $\varnothing A$ by referring to the table below.

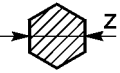


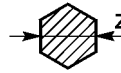
	 $Y = Z \times 1,414$	$\varnothing A$		 $Y = Z \times 1,414$	$\varnothing A$
mm	mm	mm	mm	mm	mm
1	1.41	1.3	20	28.28	27.5
1.5	2.12	2	22	31.10	30.5
2	2.82	2.7	23	32.52	32
2.5	3.53	3.4	24	33.93	33
3	4.24	4	25	35.35	34.5
4	5.65	5.5	26	36.76	36
4.5	6.36	6.2	27	38.17	37.5
5	7.07	6.8	28	39.59	38.5
5.5	7.77	7.5	30	42.42	41.5
6	8.48	8.3	32	45.24	44.5
6.5	9.19	9	34	48.07	47
7	9.89	9.7	35	49.49	48.5
8	11.31	11	36	50.90	50
8.5	12.01	11.8	37	52.31	51.5
9	12.72	12.5	38	53.73	52.5
10	14.14	13.8	39	55.15	54.5
10.5	14.84	14.5	40	56.56	55.5
11	15.55	15	41	57.97	57
12	16.97	16.5	42	59.38	58.5
12.5	17.67	17	43	60.08	59
13	18.38	18	44	62.21	61
14	19.79	19.5	45	63.63	62.5
15	21.21	20.8	46	65.04	64
16	22.62	22	50	70.7	69.5
17	24.04	23.5	55	77.77	76.75
18	25.52	25	60	84.84	83.75
19	26.86	26	65	91.91	91

11.3 HEXAGONAL BARS (unit of measurement "inches") - Table

Before selecting the steel collet, define the internal diameter $\varnothing A$ by referring to the table below.

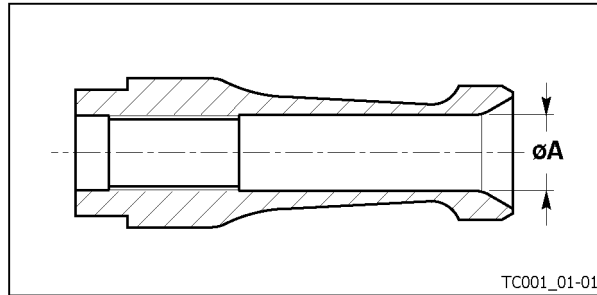


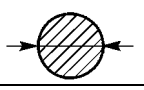
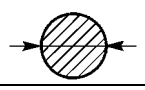
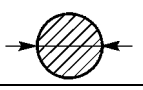
	$\varnothing A$	
	mm	inches
1/8	3.5	9/64
3/16	5.25	13/64
1/4	7	9/32
5/16	8.75	11/32
3/8	10.75	27/64
7/16	12.5	31/64
1/2	14.25	9/16
9/16	16.25	41/64
5/8	18	45/64
11/16	19.75	25/32
3/4	21.75	55/64
13/16	23.5	59/64
7/8	25.25	63/64
15/16	27.25	1"5/64
1"	29	1"9/64
1"1/16	30.75	1"13/64
1"1/8	32.5	1"9/32
1"3/16	34.25	1"11/32
1"1/4	36.25	1"27/64
1"5/16	38	1"1/2

	$\varnothing A$	
	mm	inches
1"3/8	39.75	1"9/16
1"7/16	41.75	1"41/64
1"1/2	43.5	1"23/32
1"9/16	46.5	1"53/64
1"5/8	47.25	1"55/64
1"11/16	49	1"15/16
1"3/4	50.75	2"
1"13/16	52.75	2"5/64
1"7/8	54.5	2"9/64
1"15/16	56.25	2"7/32
2"	58	2"9/32
2"1/16	59.75	2"11/32
2"1/8	61.5	2"27/64
2"3/16	63.5	2"1/2
2"1/4	65.25	2"37/64
2"1/2	72.5	2"55/64
2"3/4	79.75	3"9/64
3"	87	3"27/64
3"1/4	94.25	3"23/32

11.4 ROUND BARS - (unit of measurement "inches") - Table

Before selecting the steel collet, define the internal diameter $\varnothing A$ by referring to the table below.



	$\varnothing A$		$\varnothing A$		$\varnothing A$
inches	mm	inches	mm	inches	mm
1/32	0.8	17/32	13.5	1"1/8	28.5
3/64	1.2	35/64	14	1"3/16	30.25
1/16	1.6	9/16	14.25	1"1/4	31.75
5/64	2	37/64	14.75	1"5/16	33.25
3/32	2.4	19/32	15	1"3/8	35
7/64	2.8	39/64	15.5	1"7/16	36.25
1/8	3.2	5/8	16	1"1/2	38
9/64	3.6	41/64	16.25	1"9/16	39.75
5/32	4	21/32	16.75	1"5/8	41.25
11/64	4.4	43/64	17	1"11/16	43
3/16	4.8	11/16	17.5	1"3/4	44.5
13/64	5.2	45/64	18	1"13/16	46
7/32	5.6	23/32	18.25	1"7/8	47.75
15/64	6	47/64	18.75	1"15/16	49.25
1/4	6.4	3/4	19	2"	50.75
17/64	6.8	49/64	19.5	2"1/16	52.5
9/32	7.2	25/32	19.75	2"1/8	54
19/64	7.6	51/64	20.25	2"3/16	55.5
5/16	8	13/16	20.75	2"1/4	57.25
21/64	8.4	53/64	21	2"5/16	58.75
11/32	8.8	27/32	21.5	2"3/8	60.5
23/64	9.1	55/64	21.75	2"7/16	62
3/8	9.6	7/8	22.25	2"1/2	63.5
25/64	10	57/64	22.75	2"9/16	65
13/32	10.4	29/32	23	2"5/8	66.75
27/64	10.8	59/64	23.5	2"11/16	68.25
7/16	11.25	15/16	24	2"3/4	70
29/64	11.5	61/64	24.25	2"13/16	71.5
15/32	12	31/32	24.75	2"7/8	73
31/64	12.5	63/64	25	2"15/16	74.75
1/2	12.75	1	25.5	3"	76.25
33/64	13.25	1"1/16	27		

11.5 CONVERSION TABLE Inches/Millimetres

Inch fraction		Inch fraction			
		1	2	3	4
		Millimetres			
0	0	0	25,400 0	50,800 0	76,200 0
1/64	0,015 625	0,396 9	25,796 9	51,196 9	76,596 9
1/32	0,031 25	0,793 8	26,193 8	51,593 8	76,993 8
3/64	0,046 875	1,190 6	26,590 6	51,990 6	77,390 6
1/16	0,062 5	1,587 5	26,987 5	52,387 5	77,787 5
5/64	0,078 125	1,984 4	27,384 4	52,784 4	78,184 4
3/32	0,093 75	2,381 2	27,781 2	53,181 2	78,581 2
7/64	0,109 375	2,778 1	28,178 1	53,578 1	78,978 1
1/8	0,125	3,175 0	28,575 0	53,985 0	79,375 0
9/64	0,140 625	3,571 9	28,971 9	54,371 9	79,771,9
5/32	0,156 25	3,968 8	29,368 8	54,768 8	80,168 8
11/64	0,171 875	4,365 6	29,765 6	55,165 6	80,565 6
3/16	0,187 5	4,762 5	30,162 5	55,562 5	80,962 5
13/64	0,203 125	5,159 4	30,559 4	55,959 4	81,359 4
7/32	0,218 75	5,556 2	30,956 2	56,356 2	81,756 2
15/64	0,234 375	5,953 1	31,353 1	56,753 1	82,153 1
1/4	0,25	6,350 0	31,750 0	57,150 0	82,550 0
17/64	0,265 625	6,746 9	32,146 9	57,546 9	82,946 9
9/32	0,281 25	7,143 8	32,543 8	57,943 8	83,343 8
19/64	0,296 875	7,540 6	32,940 6	58,340 6	83,740 6
5/16	0,312 5	7,937 5	33,337 5	58,737 5	84,137 5
21/64	0,328 125	8,334 4	33,734 4	59,134 4	84,534 4
11/32	0,343 75	8,731 2	34,131 2	59,531 2	84,931 2
23/64	0,359 375	9,128 1	34,528 1	59,928 1	85,328 1
3/8	0,375	9,525 0	34,925 0	60,325 0	85,725 0
25/64	0,390 625	9,921 9	35,321 9	60,721 9	86,121 9
13/32	0,406 25	10,318 8	35,718 8	61,118 8	86,518 8
27/64	0,421 875	10,715 6	36,115 6	61,515 6	86,915 6
7/16	0,437 5	11,112 5	36,512 5	61,912 5	87,312 5
29/64	0,453 125	11,509 4	36,909 4	62,309 4	87,709 4
15/32	0,468 75	11,906 2	37,306 2	62,706 2	88,106 2
31/64	0,484 375	12,303 1	37,703 1	63,103 1	88,503 1
1/2	0,5	12,700 0	38,100 0	63,500 0	88,900 0
33/64	0,515 625	13,096 9	38,496 9	63,896 9	89,296 9
17/32	0,531 25	13,493 8	38,893 8	64,293 8	89,693 8
35/64	0,546 875	13,890 6	39,290 6	64,690 6	90,090 6
9/16	0,562 5	14,287 5	39,687 5	65,087 5	90,487 5
37/64	0,578 125	14,684 4	40,084 4	65,484 4	90,884 4
19/32	0,593 75	15,081 2	40,481 2	65,881 2	91,281 2
39/64	0,609 375	15,478 1	40,878 1	66,278 1	91,678 1
5/8	0,625	15,875 0	41,275 0	66,675 0	92,075 0
41/64	0,640 625	16,271 9	41,671 9	67,071 9	92,471 9
21/32	0,656 25	16,668 8	42,068 8	67,468 8	92,868 8
43/64	0,671 875	17,065 6	42,465 6	67,865 6	93,265 6

Inch fraction		Inch fraction			
		1	2	3	4
		Millimetres			
11/16	0,687 5	17,462 5	42,862 5	68,262 5	93,662 5
45/64	0,703 125	17,859 4	43,259 4	68,659 4	94,059 4
23/32	0,718 75	18,256 2	43,656 2	69,056 2	94,456 2
47/64	0,734 375	18,653 1	44,053 1	69,453 1	94,853 1
3/4	0,75	19,050 0	44,450 0	69,850 0	95,250 0
49/64	0,765 625	19,446 9	44,846 9	70,246 9	95,646 9
25/32	0,781 25	19,843 8	45,243 8	70,643 8	96,043 8
51/64	0,796 875	20,240 6	45,640 6	71,040 6	96,440 6
13/16	0,812 5	20,637 5	46,037 5	71,437 5	96,837 5
53/64	0,828 125	21,034 4	46,434 4	71,834 4	97,234 4
27/32	0,843 75	21,431 2	46,831 2	72,231 2	97,631 2
55/64	0,859 375	21,828 1	47,228 1	72,628 1	98,028 1
7/8	0,875	22,225 0	47,625 0	73,025 0	98,425 0
57/64	0,890 625	22,621 9	48,021 9	73,421 9	98,821 9
29/32	0,906 25	23,018 8	48,418 8	73,818 8	99,218 8
59/64	0,921 875	23,415 6	48,815 6	74,215 6	99,615 6
15/16	0,937 5	23,812 5	49,212 5	74,612 5	100,012 5
61/64	0,953 125	24,209 4	49,609 4	75,009 4	100,409 4
31/32	0,968 75	24,606 2	50,006 2	75,406 2	100,806 2
63/64	0,984 375	25,003 1	50,403 1	75,803 1	101,203 1

11.6 COLLETS FOR BARS 001P - Table



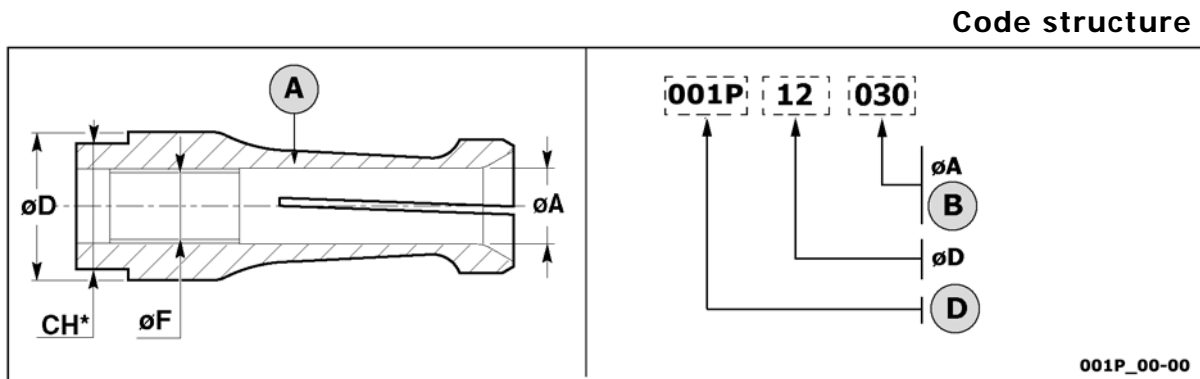
WARNING - CAUTION:

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



INFORMATION:

upon specific request, non standard collets with reduced thickness (which are not mentioned in this table) may be supplied as well. Their durability is however below the durability of standard collets.

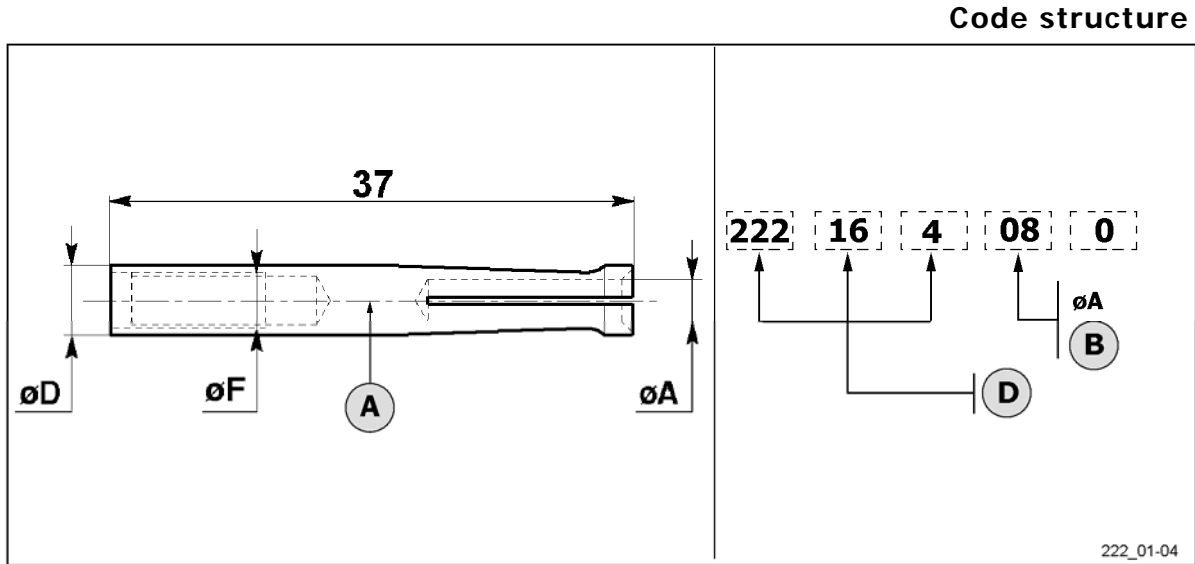


CH*: double-ended fork wrench DIN3110

- A Collet
- B Bar diameter
- Example:
 - 0.8 mm = 008
 - 3 mm = 030
 - 12.25 mm = 122
 - 12.5 mm = 125
- D Category

External diameter(mm) øD	Diameter(mm) øF	Internal diameter(mm) øA	
		MIN	MAX
7,5	M5x0,5	2	6,4
10	M6x0,75	3	8
12	M7x0,75	3	10
15	M8x1	4	13
16	M8x1	13	14
17	M8x1	14	15
18	M8x1	15	16,2
19	M8x1	16,2	17
20	M10x1	5	18
23	M10x1	14	21

11.7 COLLETS FOR BARS 222 - Table



- A Collet
- B Bar diameter
- Example:
0.8 mm = 08
3 mm = 30
- D Category

External diameter(mm) øD	Diameter(mm) øF	Internal diameter(mm) øA	
		MIN	MAX
5	M4x0,5	0,7	3,5
5,4	M4x0, 5	3,6	4,7

11.8 COLLETS FOR BARS 602P - Table



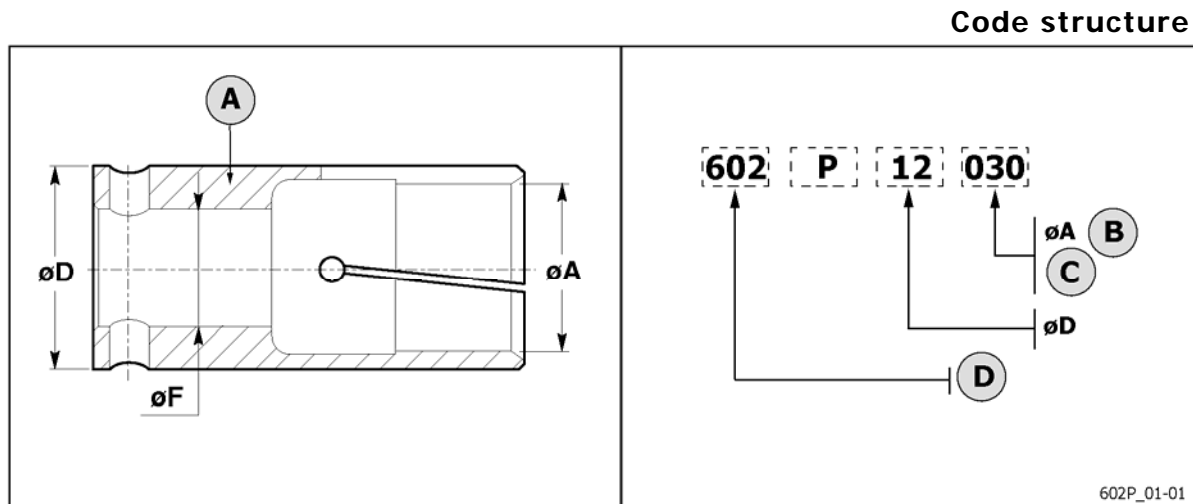
WARNING - CAUTION:

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



INFORMATION:

upon specific request, non standard collets with reduced thickness (which are not mentioned in this table) may be supplied as well. Their durability is however below the durability of standard collets.



- A Collet
- B Bar diameter
- C Example:
 - 3 mm = 030
 - 3.5 mm = 035
 - 12.5 mm = 125
 - 12.75 mm = 127
- D Category

External diameter(mm) øD	Diameter(mm) øF	Internal diameter(mm) øA	
		MIN	MAX
10	Ø7 G6	3	8
12	Ø8 G6	3	10
15	Ø11 G6	4	13
16	Ø11 G6	11	14
18	Ø11 G6	8	16
20	Ø14 G6	6	18
21	Ø14 G6	16,5	19
23	Ø14 G6	14	21

11.9 BORING COLLETS FOR SQUARE AND HEXAGONAL BARS 601P - Table



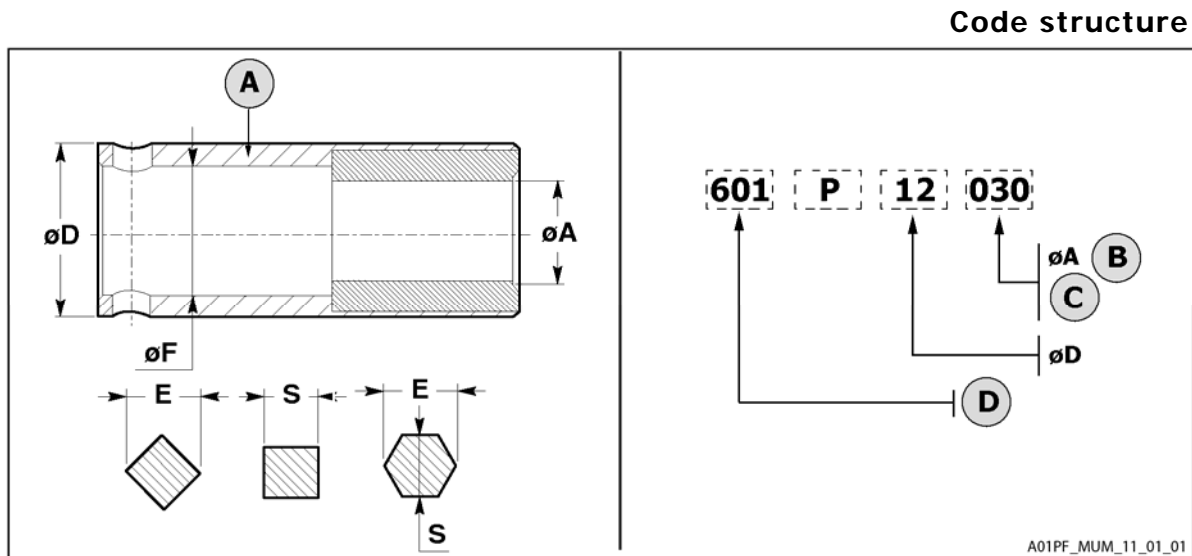
INFORMATION:

to determine the internal diameter ϕA , do not refer to file "001 - Conversion Tables", but refer directly to the table below.



INFORMATION:

upon specific request, non standard collets with reduced thickness (which are not mentioned in this table) may be supplied as well. Their durability is however below the durability of standard collets.



- A Collet
- B Bar diameter
- C Example:
 3 mm = 030
 3.5 mm = 035
 12.5 mm = 125
 12.75 mm = 127
- D Category

S square bars (S=E/1,414)		S hexagonal bars (S=E/1,154)		External diameter(mm) øD	Diameter(mm) øF
MIN	MAX	MIN	MAX		
3	3	3	4	7,5	M5x0,5
4	6	5	7	12	Ø8 G6
6	10	6	13	18	Ø11 G6
7	12	* 5/16"	15	21	Ø14 G6

11.10 EJECTORS 602P - Guide channels $\varnothing 14\div 24$ - Table



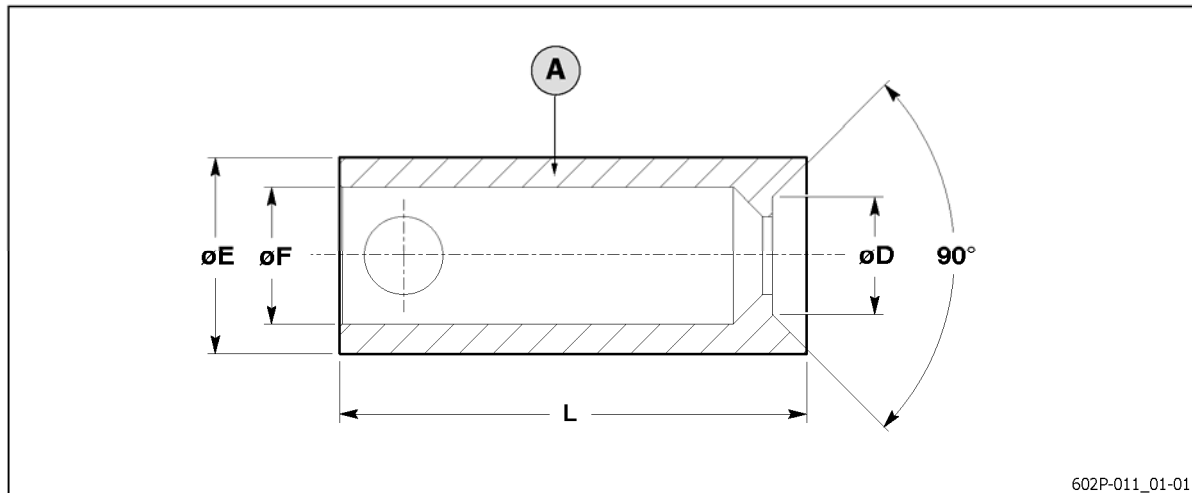
WARNING - CAUTION:

the external diameter of the ejector must be at least 0.5 mm less than the external diameter of the bar pusher.



INFORMATION:

upon specific request, non standard collets with reduced thickness (which are not mentioned in this table) may be supplied as well. Their durability is however below the durability of standard collets.



602P-011_01-01

A Ejector

$\varnothing E$ (mm)	$\varnothing F$ (mm)	$\varnothing D$ (mm)	L (mm)	Code no.
12	8	8	24	602P12011
15	11	11	26	602P15011
16	11	12	26	602P16011
18	11	12	27.5	602P18011
19	11	12	28	602P19011
20	14	12	47.5	602P20011
23	14	12	49	602P23011

11.11 PIPE COLLETS 603P - Table



WARNING - CAUTION:

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



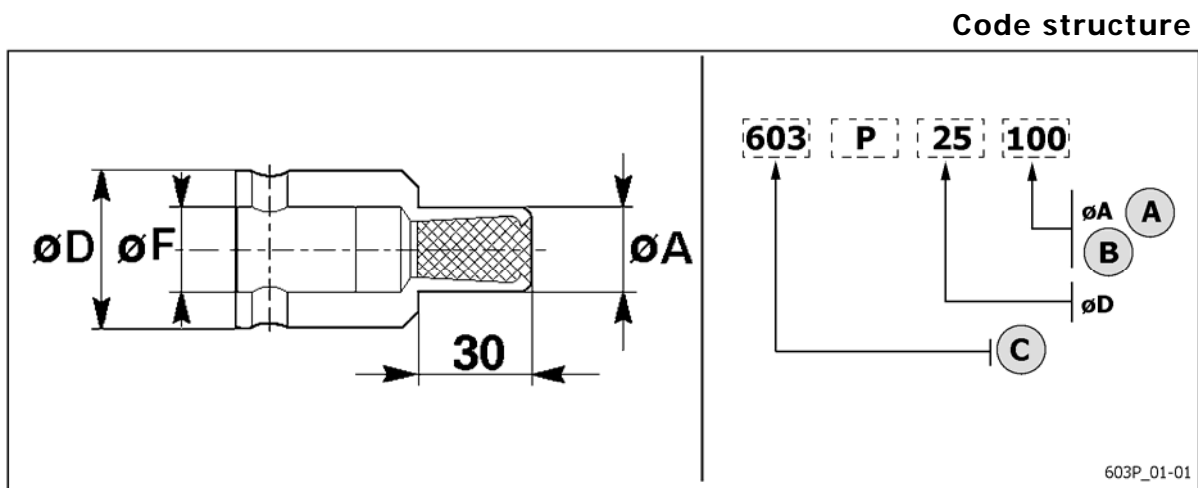
INFORMATION:

For the 603P collets.... fitted with a quick coupling, allowing the assembly on the revolving tips, are designed with an oversized length. Therefore, the first feeding value of the bar pusher carriage shall be increased of 7.5 mm with respect to the standard value.



INFORMATION:

upon specific request, non standard collets with reduced thickness (which are not mentioned in this table) may be supplied as well. Their durability is however below the durability of standard collets.

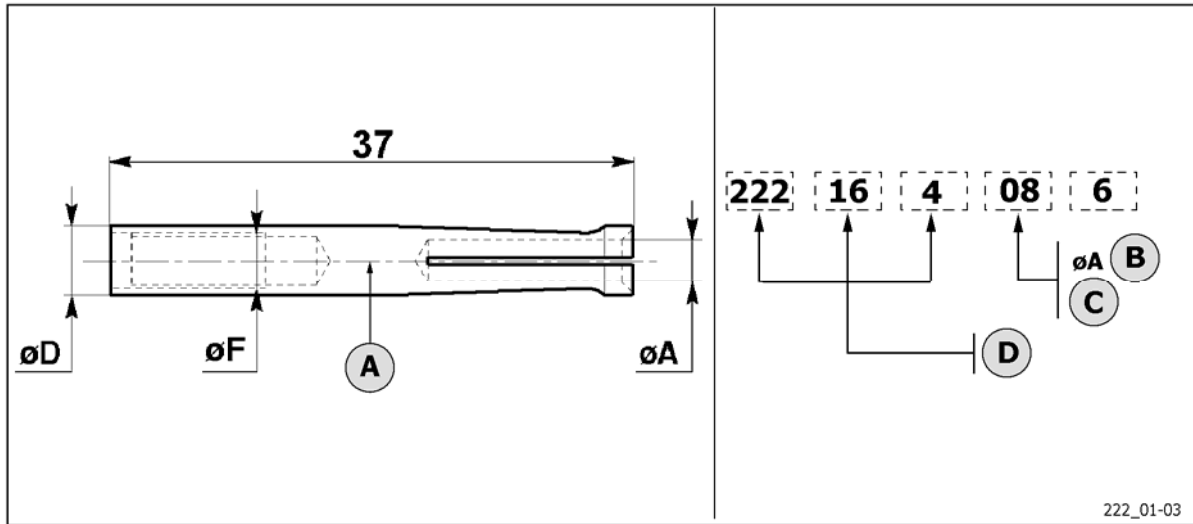


- A Bar diameter
- B Example:
5 mm = 060
10 mm = 100
12.5 mm = 125
- C Category

External diameter(mm) øD	Diameter(mm) øF	External diameter(mm) øA	
		MIN	MAX
12	Ø8 G6	5	9,5
15	Ø11 G6	5	11
15-16	Ø11 G6	11,5	14
20	Ø14 G6	6	18

11.12 COLLETS FOR BARS 22164 - Table

Code structure



- A Collet
- B Code structure
- C Bar diameter
- D Example:
0.8 mm = 08
3 mm = 30
- E Category

External diameter(mm) øD	Diameter(mm) øF	Internal diameter(mm) øA	
		MIN	MAX
5	M4	0,7	4,7

