

# AUTOMATIC BAR FEEDER

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

## MASTER 80 HF

EN

**MANUAL FOR USE AND MAINTENANCE**

Rel. 1.0

Date 15/07/2012

Cod.



S/N

**COMPILER:** Bosi Andrea

**ON APPROVAL:** Sbarzaglia Ivan

This manual is a translation of the original document



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**TYPE OF DOCUMENT: MANUAL FOR USE AND MAINTENANCE**

**PRODUCT: AUTOMATIC BAR FEEDER**

**MODEL: MASTER 80 HF**




<b>1</b>	<b>GENERAL INFORMATION</b>	<b>MASTER 80 HF</b>
<b>2</b>	<b>TECHNICAL INFORMATION</b>	<b>MASTER 80 HF</b>
<b>3</b>	<b>SAFETY PROCEDURES - GENERAL INFORMATION</b>	<b>MASTER 80 HF</b>
<b>4</b>	<b>HANDLING AND INSTALLATION</b>	<b>MASTER 80 HF</b>
<b>5</b>	<b>ADJUSTMENTS AND SETTING-UP</b>	<b>MASTER 80 HF</b>
<b>6</b>	<b>USE AND OPERATION</b>	<b>MASTER 80 HF</b>
<b>7</b>	<b>BAR FEEDER MAINTENANCE</b>	<b>MASTER 80 HF</b>
<b>8</b>	<b>TROUBLES - CAUSES - CURES</b>	<b>MASTER 80 HF</b>
<b>9</b>	<b>PART REPLACEMENT</b>	<b>MASTER 80 HF</b>
<b>10</b>	<b>GUIDE CHANNELS-BAR PUSHER-REVOLVING TIPS</b>	<b>MASTER 80 HF</b>
<b>11</b>	<b>COLLETS</b>	<b>MASTER 80 HF</b>

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**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 .....	4
1.5	GLOSSARY AND TERMINOLOGY.....	4
1.6	ATTACHMENT LIST .....	5

 The operations described in the paragraphs 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:

<b>Ditta</b>	<b>Data</b>
Tecnico Installatore	N° Rapporto di Intervento
<b>Presso:</b>	
<b>Cliente</b>	<b>Partecipante/i</b> <small>(Scrivere stampatello 1 a lato)</small>
<b>Nazione</b>	
<b>Caricatore</b>	
<b>Matricola</b>	
<b>Macc./Tipo</b>	

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.	
<b>NOTA - Ferrogazione del periodo di garanzia è subordinata a:</b> - 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.



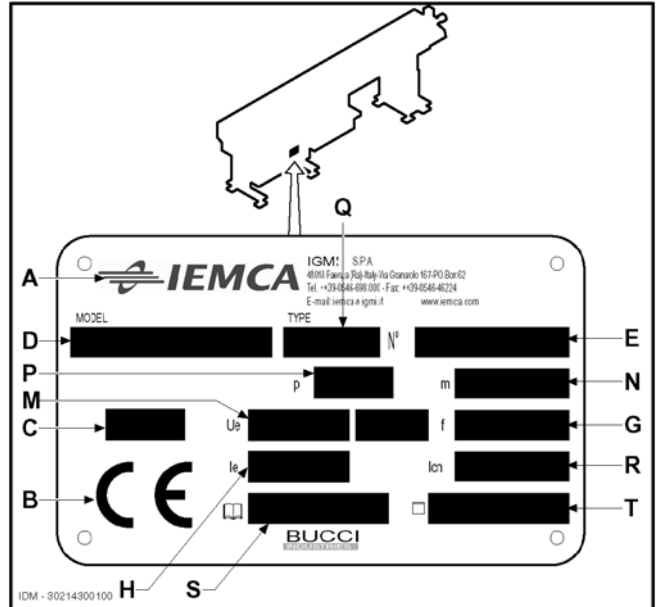
**INFORMATION:**

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

*IEMCA can apply changes in the model described in this publication at any time for any technical or 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 Base 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

Whenever necessary, please apply to one of the centres shown in the "LIST OF THE CUSTOMER SERVICE CENTRES".



**INFORMATION:**

*when requesting technical assistance for the bar feeder, always specify the data shown on the identification plate.*

### 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 electrotechnic 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 the 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 ATTACHMENT LIST**

- Spare parts catalogue
- Keyboard instruction manual
- Interface wiring diagram
- CD:
  - Depliant
  - Spare parts catalogue
  - Instruction manual
  - Operation and maintenance manual
  - Base wiring diagram
  - List of customer service centres.



## INDEX

2.1	BAR FEEDER GENERAL DESCRIPTION .....	2
2.1.1	Bar feeder - Main components .....	3
2.1.2	Hydraulic system - Main components .....	4
2.1.3	Pneumatic system - Main components .....	5
2.2	OPERATING CYCLE .....	6
2.3	BAR FEEDER – SAFETY DEVICES .....	10
2.4	SAFETY PLATES - LOCATION AND DESCRIPTION .....	11
2.5	VERSION DESCRIPTION .....	12
2.6	TECHNICAL DATA .....	14
2.6.1	Noise levels .....	19
2.7	ACCESSORIES - FOREWORD.....	20
2.7.1	Bush holder device - Description .....	20

## **2.1 BAR FEEDER GENERAL DESCRIPTION**

The MASTER 80 HF automatic bar feeder is used in the machine-tool industry and in particular, for automatic lathe feeding.

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 digital handheld keyboard makes programming easier and allows the bar feeder functions to be controlled without leaving the lathe.

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

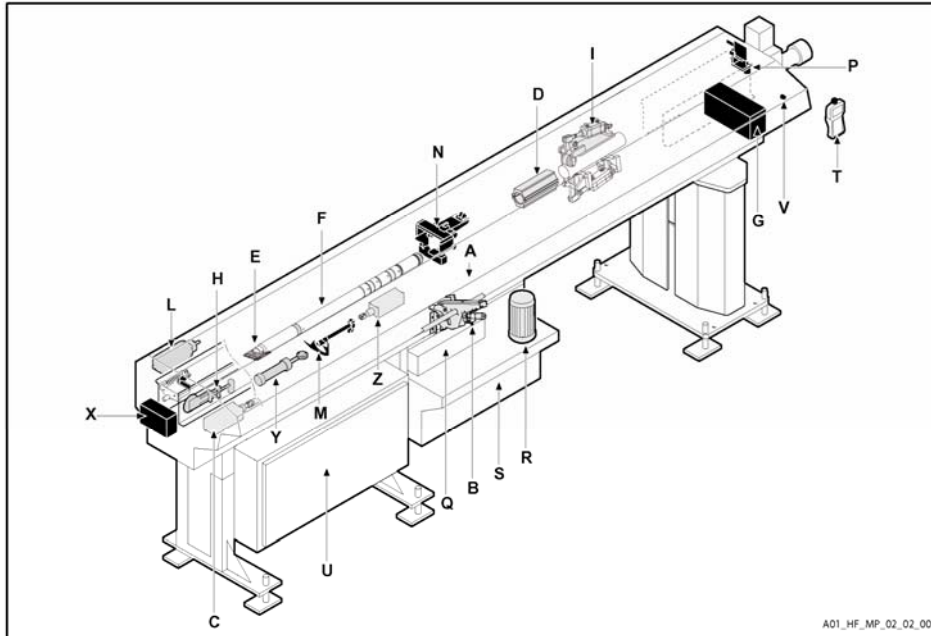
The guide channel is completely closed during machining; a pump is provided to maintain a continuous oil flow inside the guide channel, creating a hydrodynamic support effect; these features allow the bar to rotate at high r.p.m., with no vibrations and no surface damaging.

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.

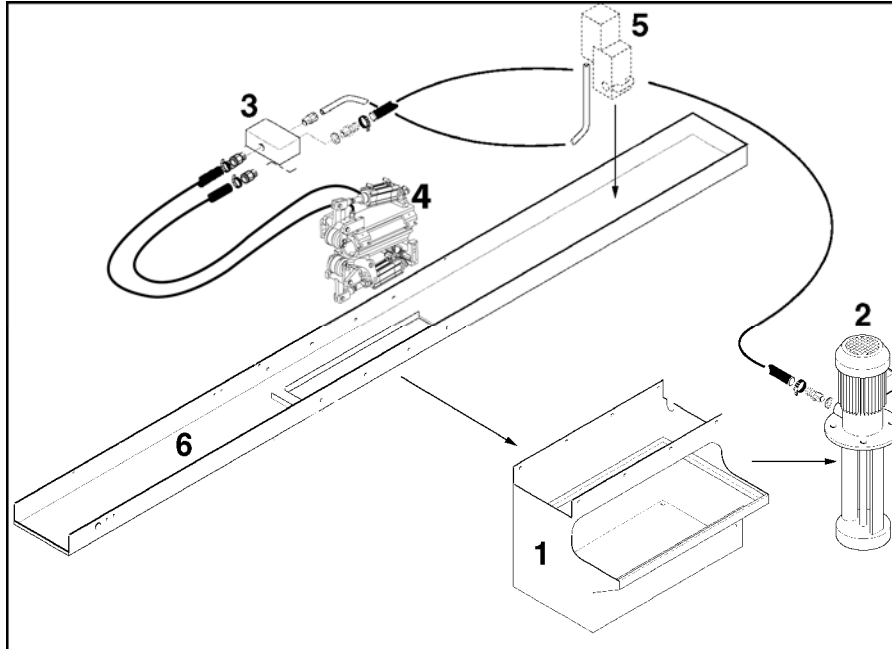
The bar remnant ejection can be performed by the bar pusher feeding or next bar feeding.

The lathe tooling and maintenance can be easily carried out thanks to the axial displacement of the bar feeder body.

### 2.1.1 Bar feeder - Main components



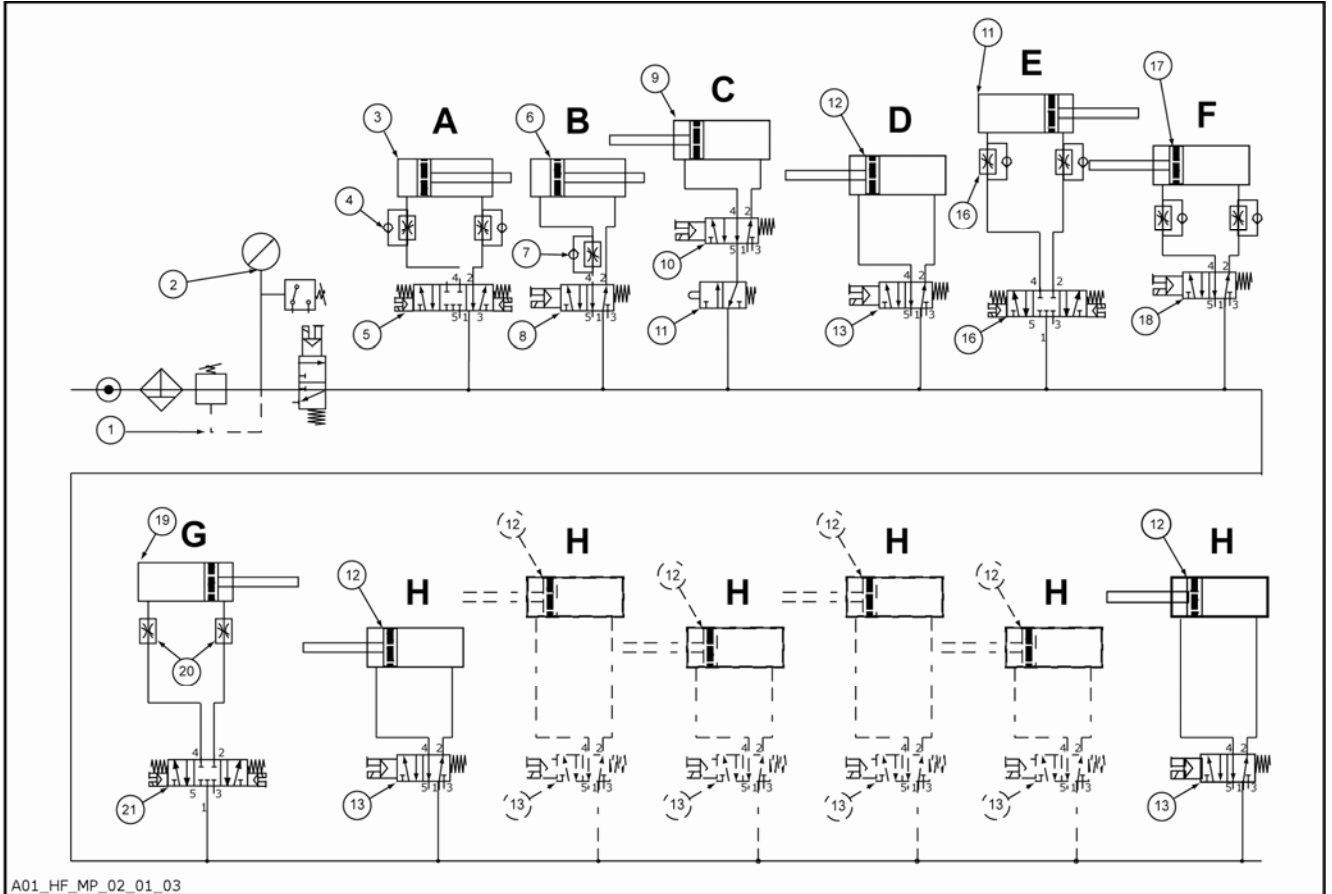
- A Magazine; stores the bars.
- B Bar selectors; select the first bar contained in the magazine, so that it can be afterwards loaded by the lifting devices.
- C Bar lifting devices; lift the first bar available in the magazine.
- D Guide channels; drive the bar during the machining.
- E First feeding carriage; moves the bar forwards until the necessary space for the bar pusher introduction has been created.
- F Bar-pusher; pushes the bar during the machining. The collet is fixed on its front end.
- G Bar pusher motor drive; moves the bar pusher.
- H Feeding chain; transmits the motion from the motor drive to the bar pusher.
- I Bar-pusher locking device; with the bar-pusher near the device the rollers close by locking in place.
- L Guide channel opening/closing cylinder.
- Y Upper guide channel unlocking.
- M Pneumatic bar drop control levers; control the bar during the drop into the guide channels.
- N Clamps; hold the bar during the loading and removal from the collet of the bar pusher.
- P Facing device; sends a signal during the bar passage.
- Q Remnant recovery box; collects the bar remnant.
- R Lubrication pump; delivers oil to the guide channels.
- S Oil tank; contains the lubricating oil.
- T Hand-held keyboard; allows the bar feeder programming and function activation.
- U Electric cabinet; houses the electrical control panel.
- V Axial displacement; allows moving the bar feeder body away from the lathe.
- Z Pneumatic bar drop control cylinder
- X Pneumatic clamp cylinder

**2.1.2 Hydraulic system - Main components**

The oil performs the following cycle: it is forced by pump (2) of tank (1), it flows into the guide channels (4) and bush holder device (5) in order to lubricate the bars during the machining. From these two devices, the oil is gathered in the recovery tank (6) and filtered in the oil tank, from where it flows again for a new lubrication cycle.



2.1.3 Pneumatic system - Main components



A01\_HF\_MP\_02\_01\_03

- A - PNEUMATIC BAR DROP CONTROL UNIT
- B - FACING CYLINDER
- C - BUSHING DRIVE UNIT
- D - PNEUMATIC CLAMP UNIT
- E - BAR SELECTION UNIT
- F - GUIDE CHANNEL PNEUMATIC LOCKING UNIT
- G - GUIDE CHANNEL OPENING UNIT
- H - BAR-PUSHER LOCKING TIPS

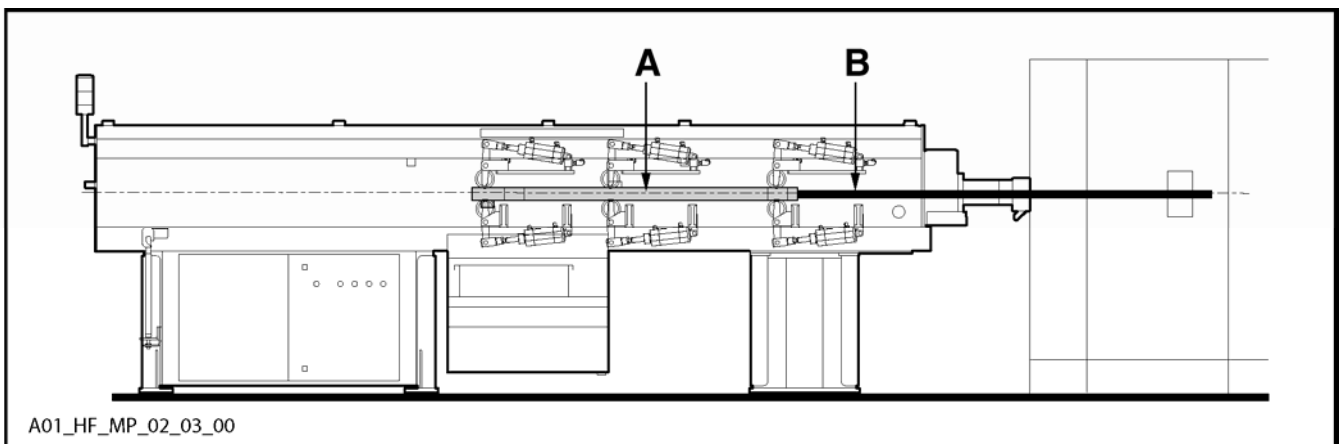
POS.	Description
1	FILTER
2	PRESSURE GAUGE
3	CYLINDER
4	REGULATOR
5	SOLENOID VALVE
6	CYLINDER
7	REGULATOR
8	SOLENOID VALVE
9	CYLINDER
10	SOLENOID VALVE
11	VALVE

POS.	Description
12	CYLINDER
13	SOLENOID VALVE
14	CYLINDER
15	REGULATOR
16	SOLENOID VALVE
17	CYLINDER
18	SOLENOID VALVE
19	CYLINDER
20	REGULATOR
21	SOLENOID VALVE

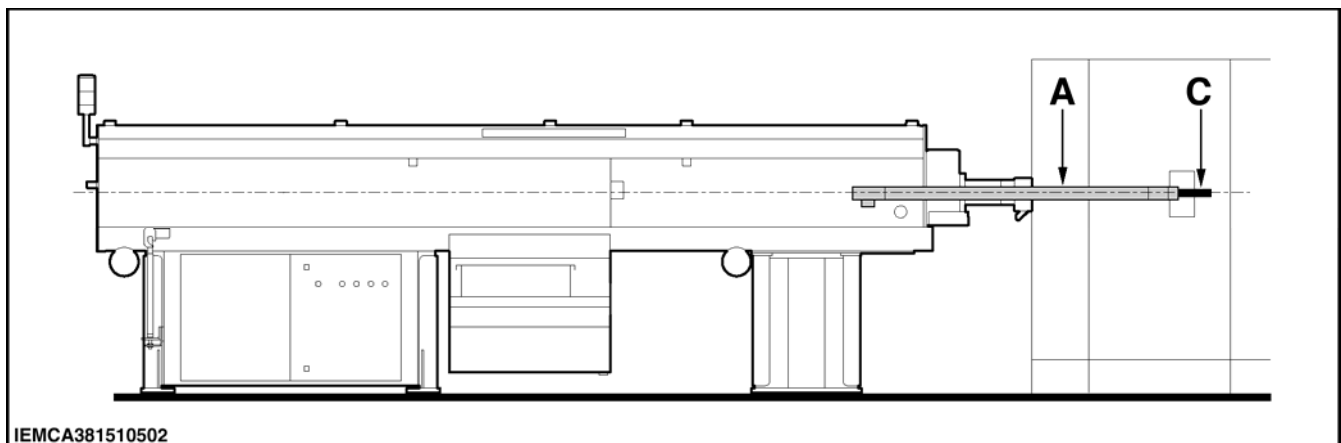
## 2.2 OPERATING CYCLE

The automatic mode controls the movements of the bar feeder according to the sequence described below.

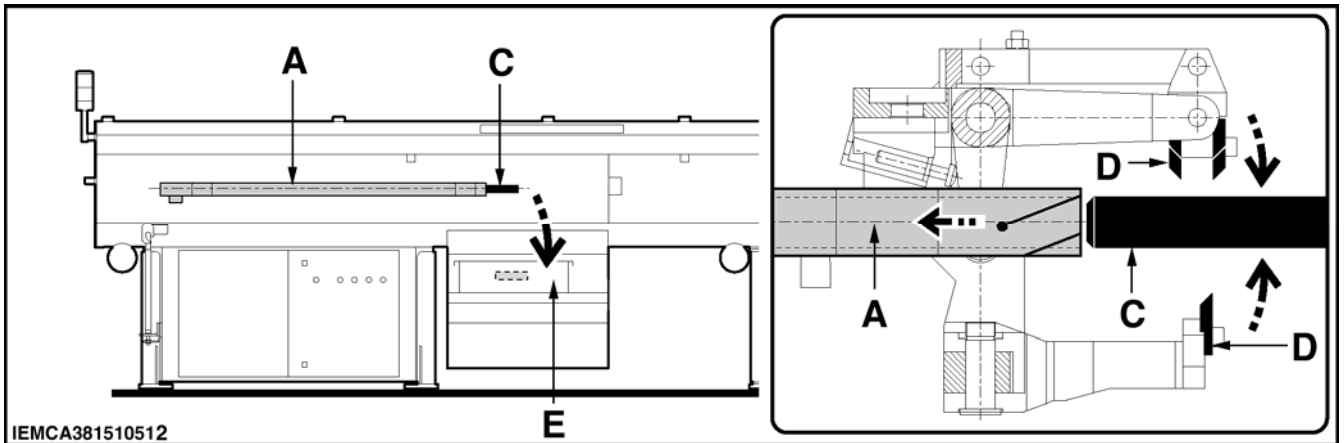
- The bar pusher (A) makes bar (B) move forwards into the lathe until the bars are finished. The bar pusher (A), during the machining phase, in fixed points (see operation manual Par.80), activates the locking devices to increase rigidity of the bar pusher and decrease vibrations.



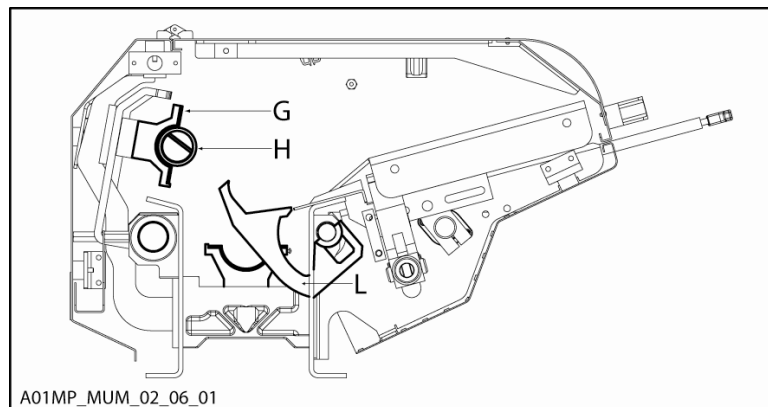
- The bar pusher (A) and remnant (C) reach the forwards limit stop position.



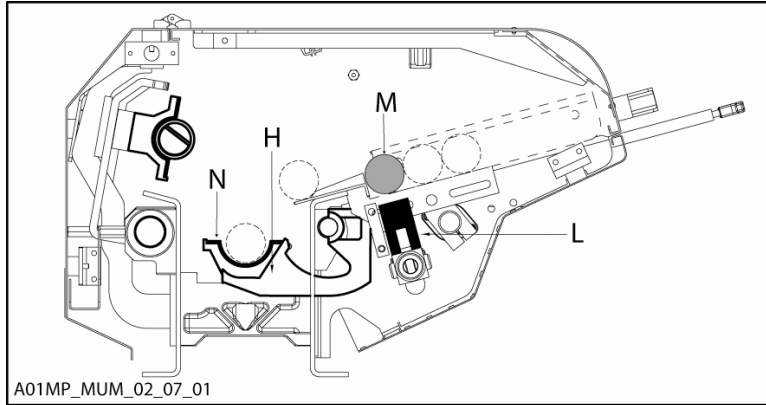
- The bar pusher (A) and remnant (C) reach the backwards limit stop position.
- The clamps (D) close and the bar pusher moves backwards; the remnant is removed from the collet. The clamps open, the bar pusher (A) moves forward and the remnant falls in the box (E), then the bar pusher moves backwards, the clamps (D) open and close to perform the remnant drop check.



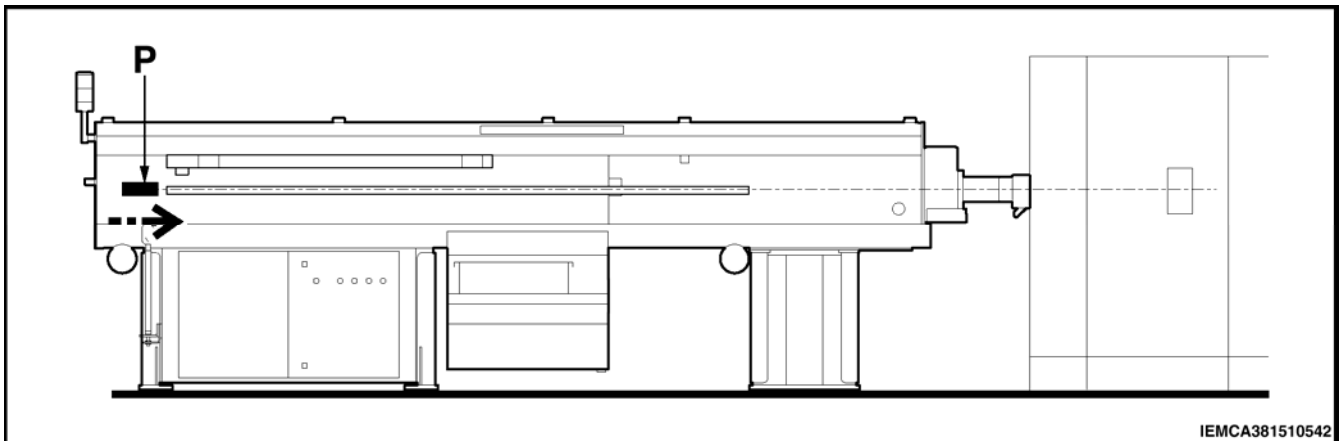
- During the drop, remnant (C) enables control device (E). If the remnant is still inserted in the bar pusher collet, the bar feeder stops; otherwise, it continues its cycle.
- The upper guide channels (G) are lifted together with the bar pusher (H), and also the bar drop control levers L are lifted.



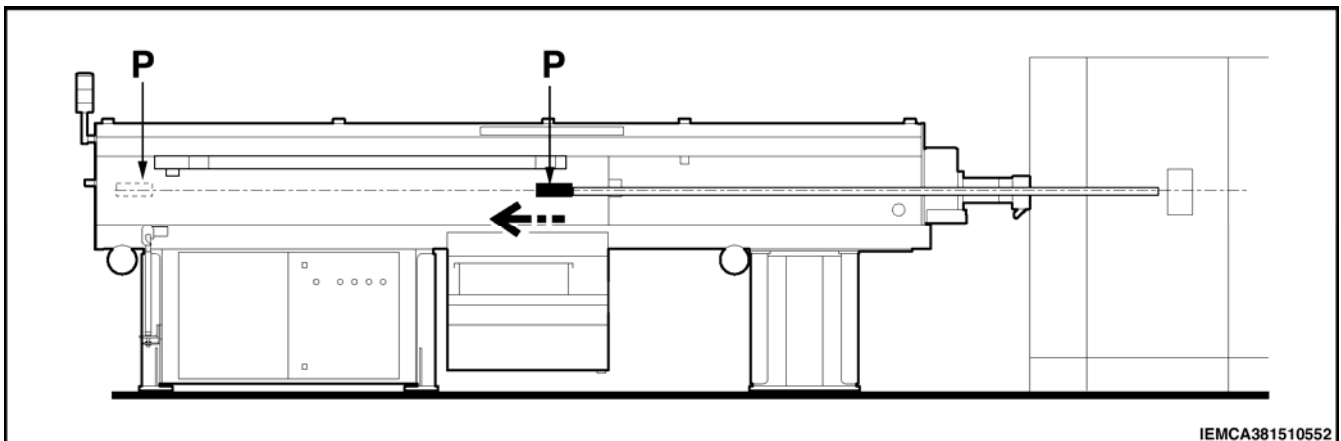
- The bar lifting devices (L) load bar (M) that falls into the lower guide channels (N) with the help of levers (H).



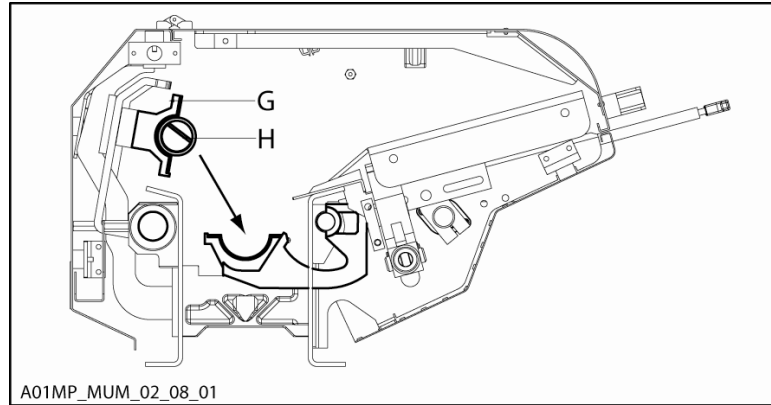
- The first feeding carriage (P) starts its stroke.



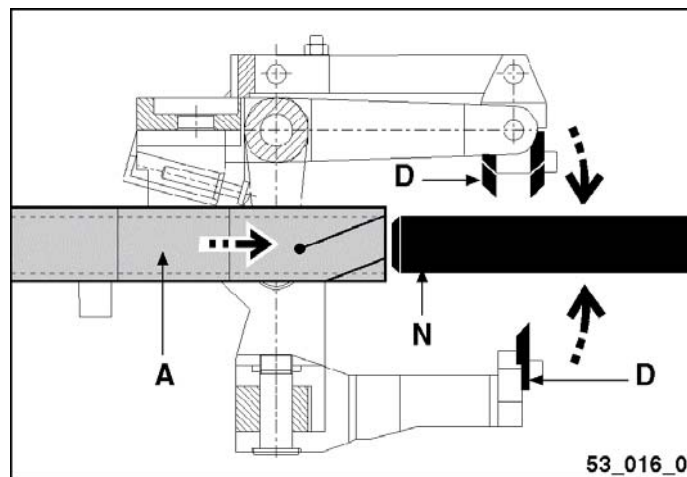
- When the first feeding carriage (P) completes its stroke, the required space for the bar pusher introduction has been created.
- The first feeding carriage performs its return stroke.



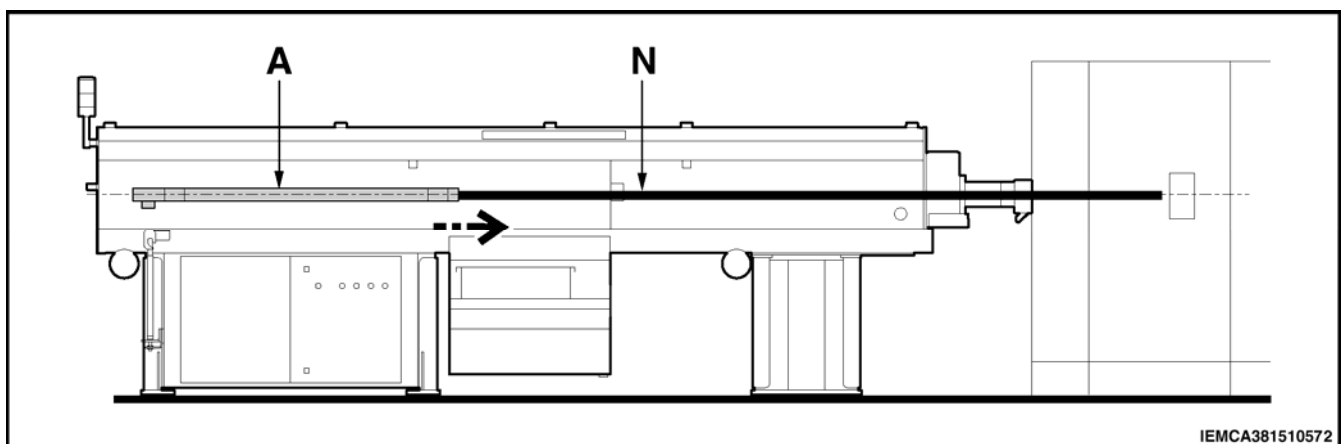
- The upper guide channels (G) close; the bar pusher (H) is positioned along the spindle axis.



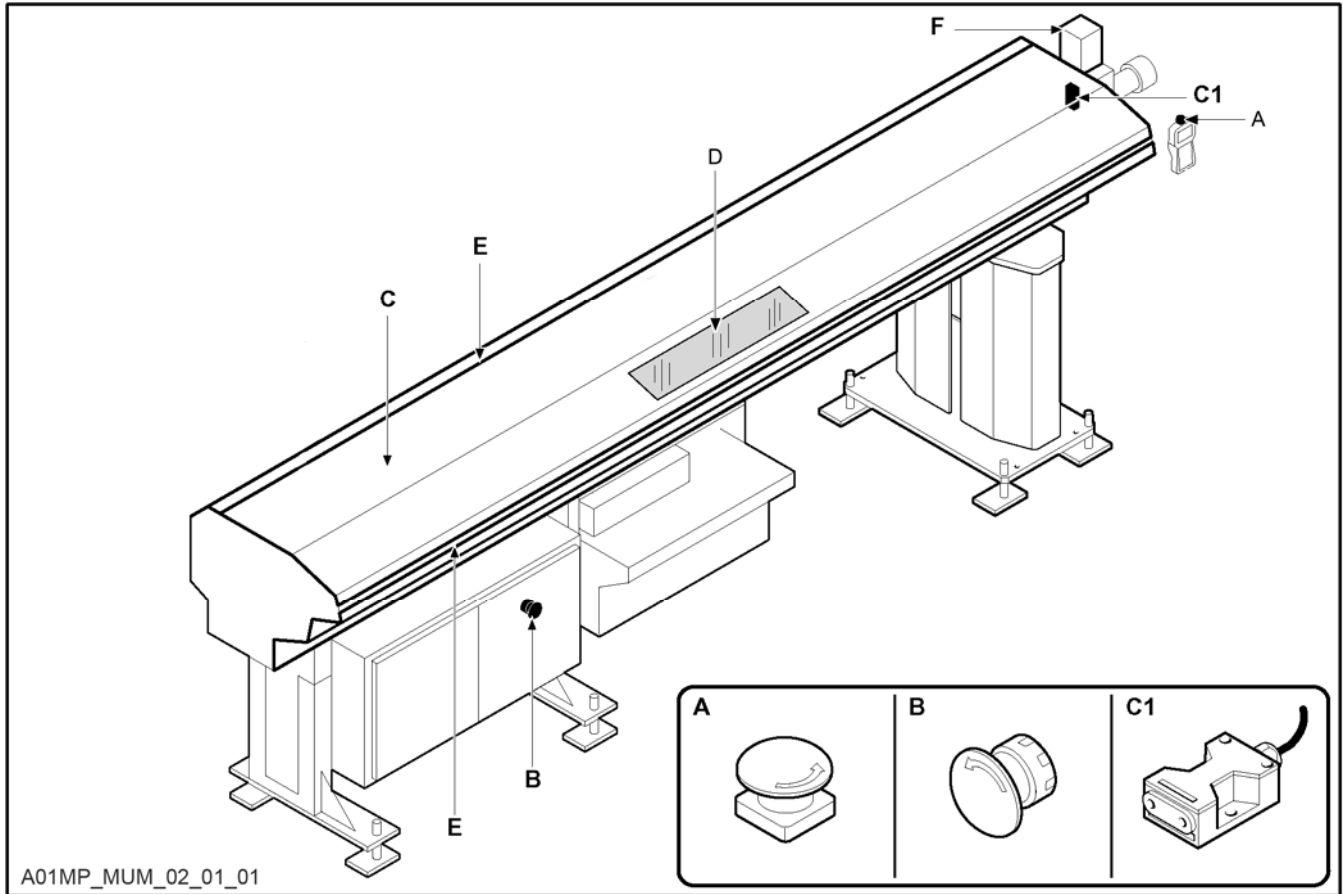
- The clamps (D) close, the bar pusher (A) moves forwards; the bar (N) is inserted into the bar pusher collet.



- The bar pusher (A) and bar (N) perform their facing stroke. A new automatic working cycle is started.

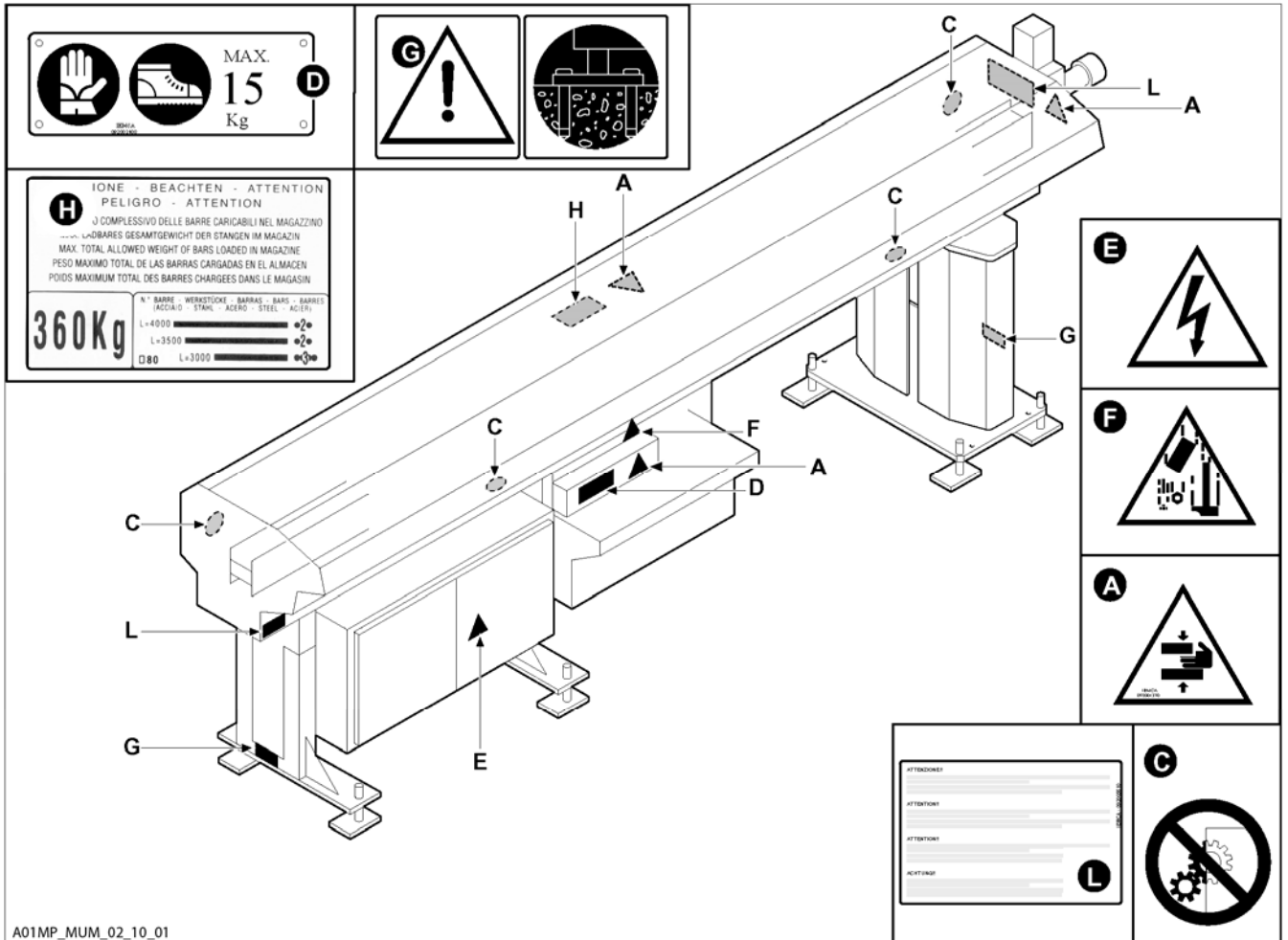


### 2.3 BAR FEEDER – SAFETY DEVICES



- A-B Emergency button; when pressed, all the bar feeder and lathe functions stop in emergency condition.
- C Interlocked sliding guard: it is linked to microswitch C1.  
It is necessary to open the guard in order to load the magazine. The bar feeder and lathe functions do not stop until the guide channels remain closed avoiding dangers situations for the operator. If at the guide channel opening the loading is not yet finished, the bar feeder and the lathe stop. By closing the guard it is possible to restart the cycle.
- D Fixed guard: made of transparent material to allow visual inspection of the bar feeder devices.
- E Fixed guard: prevents an accidental access to the moving components.
- F Fixed guard: prevents an accidental access to the bush holder device area.

2.4 SAFETY PLATES - LOCATION AND DESCRIPTION



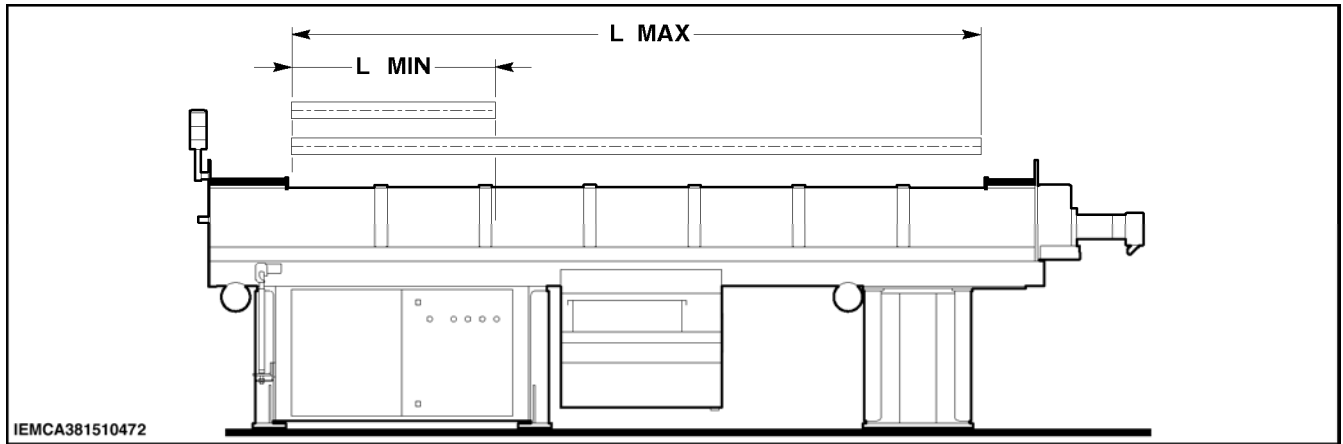
A01MP\_MUM\_02\_10\_01

- A Crushing danger of the upper limbs.
- C Prohibition of removing the safety enclosures.
- D Wear safety gloves and shoes.  
Do not manually lift loads exceeding 15 kg.
- E Warning; danger of electric contact.
- F Warning; danger of material falling.
- G Warning; fix the bar feeder to the ground.
- H Maximum overall weight of the magazine loadable bars.
- L Warning; axial displacement
- N Warning; follow the correct assembly direction of the guide channels.

## 2.5 VERSION DESCRIPTION

*Bar length*

Model	Version	Maximum length mm (ft)	Minimum length mm (ft)
MASTER 80 HF	33	3300 (10,8)	1000 (3,2)
	38	3800 (12,4)	
	43	4300 (14,1)	

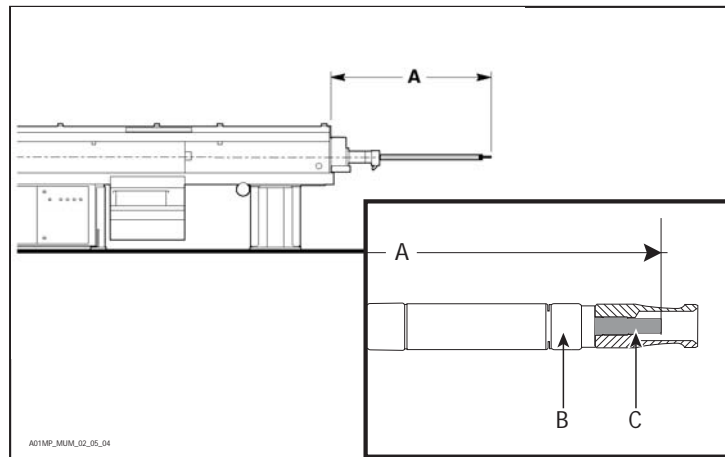


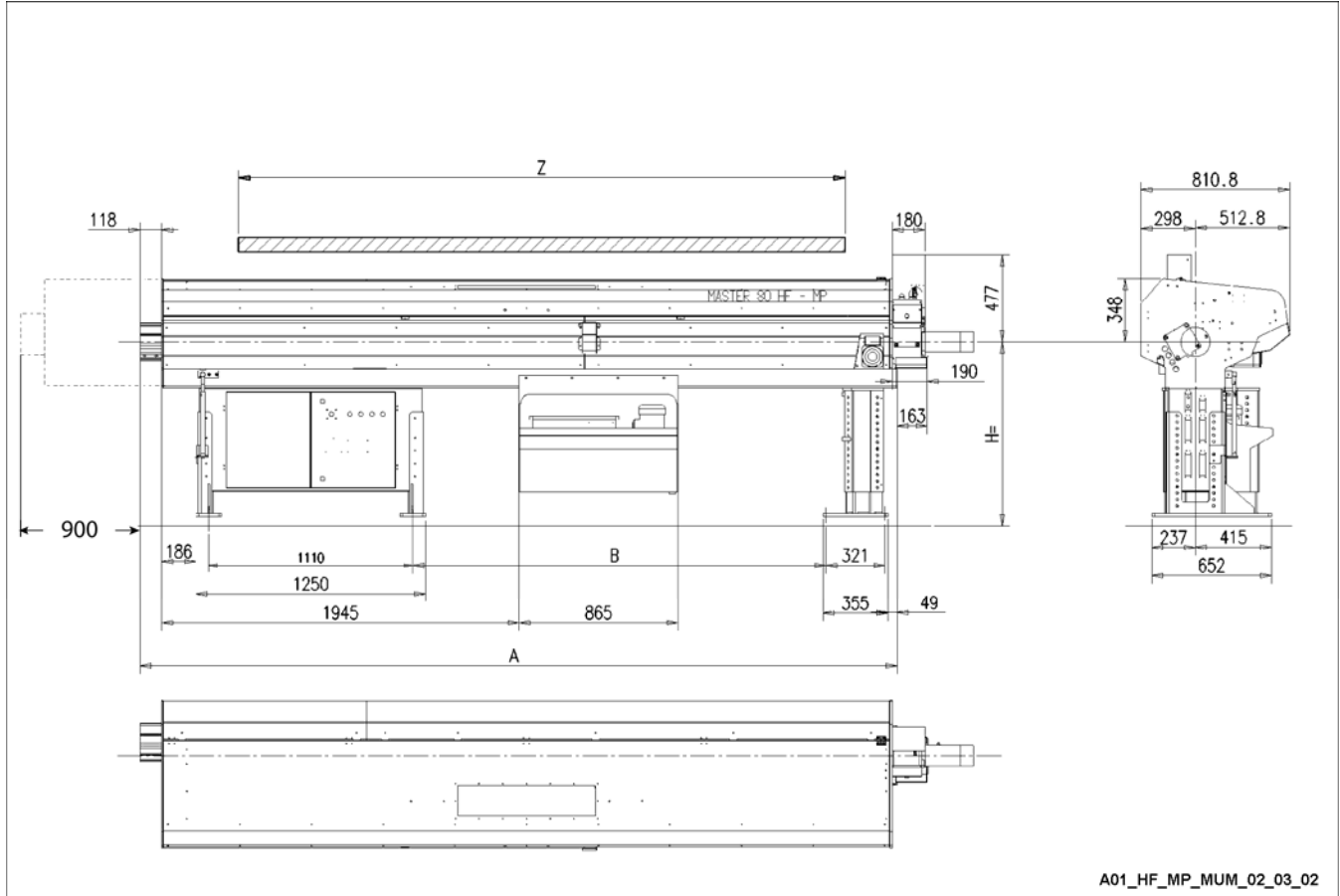


Max. bar pusher extension

Model	Version	Version	A – Max. extension (mm)
MASTER 80 HF	33-38-43	L	1295
	33-38-43	LL	1545
	38-43	XLL	1795

- B - Revolving tip
- C - Nipple



**2.6 TECHNICAL DATA**


Overall dimensions versions 33, 38, 43

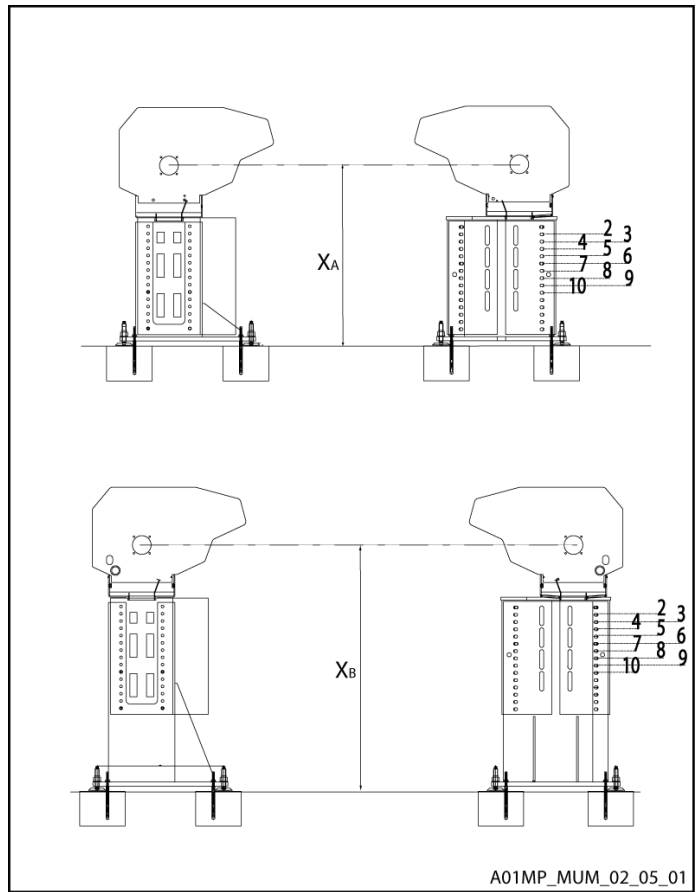
Model	Version	A (mm)	B (mm)	Z (mm)
MASTER 80 HF	33	4120	2249	3300
	38	4620	2749	4800
	43	5120	3249	4300

*General technical data*

	<b>MASTER 80 HF</b>	
Round bar size	(*) Ø Min 20mm	Ø Max 80 mm
Hexagonal bar size (key socket)	MinCh.20 mm	MaxCh.65 mm
Square bar side	MinCh.15mm	MaxCh. 50 mm
Minimum bar length	Ver. 33-38-43 – 1500 mm (4,9 ft)	
Maximum bar length	Ver. 33 – 3300 mm (10,8 ft) Ver. 38 – 3800 mm (12,4 ft) Ver. 43 – 4300 mm (14,1 ft)	
Magazine capacity (working width)	270÷320 mm (e.g. no. 14 bars of Ø 20 mm, no. 4 bars of Ø 80 mm)	
Maximum bar weight	120 kg	
Magazine maximum capacity (weight)	360 kg	
(Adjustable) feeding speed	150 mm/sec	
(Adjustable) return speed	950 mm/sec	
Maximum remnant length	Ø 8÷65 mm = 400 mm Ø 66÷80 mm = 250 mm	
Minimum remnant length	120 mm	
Bar change time (with 3,000 mm bar)	40 sec (according to the bar Ø)	
Power supply voltage	230 / 400 Volt	
Mains frequency	50 / 60 Hz	
Control voltage	24 Volt A.C. - 24 Volt D.C.	
Installed power	3 kW	
Oil quantity	80 l	
Air pressure	6 bar	
Air consumption	35 NI/bar change	
Bar feeder weight	Ver. 33 – 1360 kg. Ver. 38 – 1440 kg. Ver. 43 – 1520 kg.	

*Working axis height*

Model	Screw position	X <sub>B</sub> (mm) High base	X <sub>A</sub> (mm) Low base
MASTER 80 HF	<b>2</b>	1221 ÷ 1254	905 ÷ 939
	<b>3</b>	1255 ÷ 1289	940 ÷ 974
	<b>4</b>	1290 ÷ 1324	975 ÷ 1009
	<b>5</b>	1325 ÷ 1359	1010 ÷ 1044
	<b>6</b>	1360 ÷ 1394	1045 ÷ 1079
	<b>7</b>	1395 ÷ 1429	1080 ÷ 1114
	<b>8</b>	1430 ÷ 1464	1115 ÷ 1149
	<b>9</b>	1465 ÷ 1499	1150 ÷ 1184
	<b>10</b>	1500 ÷ 1534	1185 ÷ 1220



Guide channel, bar pusher, bar and pipe diameter.

Model	Guide channel diameter (mm)	Bar pusher diameter (mm)	Bar diameter (mm)		Pipe diameter (mm) (*)
			Minimum	Maximum	
MASTER 80 HF	21	20	8	18	20
	26	25	8	23	25
	33	32	10	29	31
	36	35	10	32	35
	38	37	11	35	37
	43	42	12	39	42
	46	45	15	42	45
	52	51	(**) 15/20	47	51
	57	56	(**) 15/20	52	55
	61	60	(**) 15/20	56	59
	66	65	(**) 15/20	61	64
	69	68	(**) 15/20	63	67
	71	70	(**) 15/20	65	69
	73	72	(**) 15/20	67	71
	76	75	(**) 15/20	70	74
	81	80	(**) 15/20	75	79
86	85	(**) 15/20	80	80	

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



**WARNING – CAUTION:**

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

Guide channel lubricating oils.

ISO/UNI rating	Brand	Name
<b>CLASSE C CKB 150</b>	<b>BP</b>	ENERGOL CS 150
	<b>Agip</b>	Acer 150
	<b>Api</b>	Api Cis 150
	<b>Aral</b>	Aral Degol Tu 150
	<b>Castrol</b>	Magna 150
	<b>Chevron</b>	Circulating Oil 150
	<b>Elf</b>	Movixa 150
	<b>Esso</b>	Nuto 150
	<b>Fina</b>	Solina 150
	<b>IP</b>	IP Hermea 150
	<b>Klüber</b>	Crucolan 150
	<b>Olio FIAT</b>	Daphne Hidrobak 150 HL
	<b>Roloil</b>	Arm V 150
	<b>Shell</b>	Vitrea 150 Tellus C 150
	<b>Tamoil</b>	Hydraulic Oil 100
	<b>Texaco</b>	Rando oil HD 150
<b>Total</b>	Cortis 150	

Oil quantity: 80 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 assembly;
- 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 a front guide bush of suitable diameter (if supplied);
- 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 with suitable features for the diameter of the bar to be machined;
- 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:

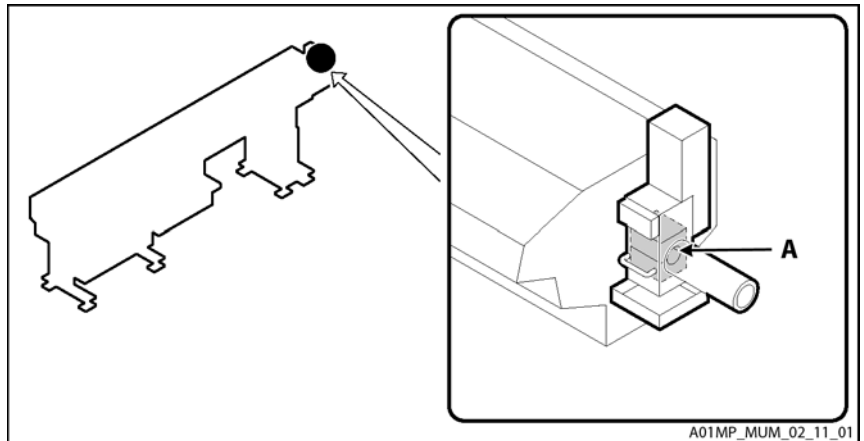
- brass and steel round bars within 80 dbA
- hexagonal steel bars within 83 dbA
- brass hexagonal bars within 85 dbA

## 2.7 ACCESSORIES - FOREWORD

To increase the bar feeder performance and flexibility, it may be provided with the accessory described below.

### 2.7.1 Bush holder device - Description

It is applied to the front part of the bar feeder. Its function is to reduce bar vibrations to a minimum, by keeping the bar centred during the rotation by means of two half-bushings (A), which are coupled to form a round guide channel with a diameter just slightly larger than the one of the bar being machined. In many cases, this device may be used (by only changing the diameter of the half-bushings) to greatly extend the range of diameters which can be machined without having to replace the guide channel.



#### OPERATION

- When the bar is dropped into the guide channel, the two half-bushes are open.
- The closing phase is controlled by a pneumatic cylinder 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 half-bushes open up to allow its passage; the oil flow stops.
- By enabling subparameter B of Parameter 17 (see INSTRUCTION MANUAL, sec 2) it is possible to close the half-bushings (A) on the bar pusher, making the approach to the lathe spindle liner more stable.



**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 .....	5
3.6	EC CONFORMITY DECLARATION.....	6
3.7	General Description of Supply .....	7

### 3.1 GENERAL SAFETY REGULATIONS



***It is of the utmost importance to read this manual carefully before installing, using, 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 the specified duties only.
- Do not tamper with the safety devices for any reason whatsoever.
- Comply strictly with the health and safety regulations at work issued by the relevant authorities in each country.
- IEMCA declines any liability whatsoever for injury to persons or damage to property if the relevant safety regulations are disregarded.

### **3.2 HANDLING AND INSTALLATION - Safety**

- The bar feeder must be handled using suitable means and methods only.
- People must 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 as far as personal safety is concerned.
- 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 working parameters to obtain performances other than those envisaged in the design and testing phases.
- Do not adjust the bar feeder when running unless expressly requested in the manual.
- Do not feed the machine with bars having dimensions other than those recommended by the manufacturer.
- Do not use flexible pipes as handholds.

### **3.4 USE AND OPERATION - Safety**

- The working area around the bar feeder must always be kept clean and uncluttered so as to allow immediate access to the emergency devices and to perform the bar loading without creating obstructions or danger.
- Perform the starting sequence of the working cycle as recommended.
- Do not put hands or anything else near or inside the moving parts or parts in tension.
- Remove 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 devices 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 the lubrication or other operations.
- Do not use matches, lighters or torches as lighting 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.
- Considering that oil and polyurethane material is used, the disposal of the guide channels will be performed according to the regulations in force in the installation country.

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

Mr TOMASO TAROZZI, acting as MANAGING IEMCA with legal office 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**

<b>MASTER</b>	
(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, 03/07/2012

.....  
(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.

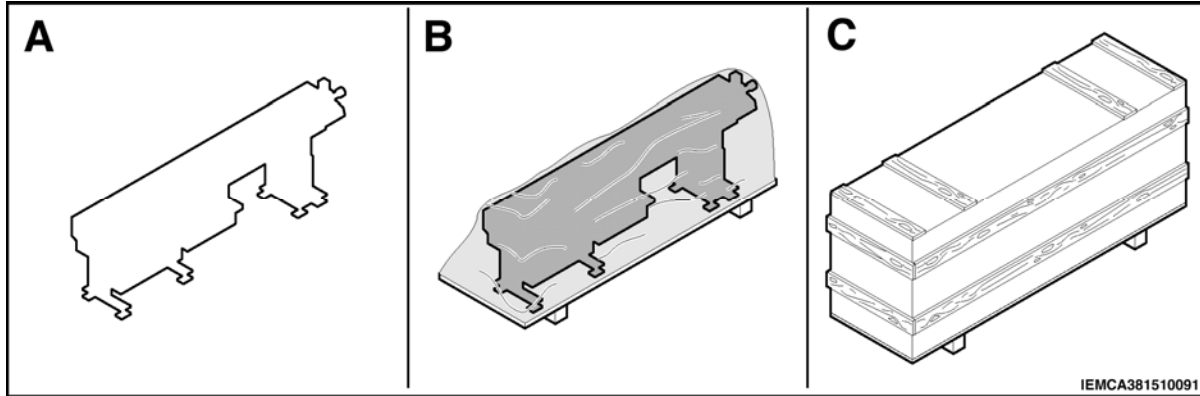




## INDEX

4.1	PACKAGING.....	2
4.2	LIFTING  .....	2
4.2.1	Bar feeder without packaging - Lifting .....	3
4.2.2	Bar feeder with pallet - Lifting.....	4
4.2.3	Bar feeder with crate - Lifting .....	4
4.3	INSTALLATION AREA - FEATURES  .....	5
4.4	BAR FEEDER INSTALLATION - FOREWORD .....	6
4.4.1	Backing plates and support feet - Installation.....	6
4.4.2	Height - Adjustment.....	7
4.4.3	Preliminary positioning .....	8
4.4.4	Sleeve - Installation .....	9
4.4.5	Levelling and alignment.....	10
4.4.6	Bar feeder fastening.....	15
4.5	LUBRICATION OIL - FILLING  .....	16
4.6	ELECTRICAL CONNECTION  .....	16
4.7	PNEUMATIC DEVICE LAYOUT .....	17
4.7.1	PNEUMATIC CONNECTION  .....	19
4.7.2	BAR FEEDER HANDLING WITHOUT POWER SUPPLY .....	19
4.8	SOFTWARE PARAMETERIZATION  .....	20

#### 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.

#### 4.2 LIFTING



**DANGER - WARNING:**

*lifting and handling shall be carried out using suitable means and performed by skilled personnel only.*

### 4.2.1 Bar feeder without packaging - Lifting

- Assemble both crosspieces A supplied.
- Use a hook type lifting device of suitable capacity.



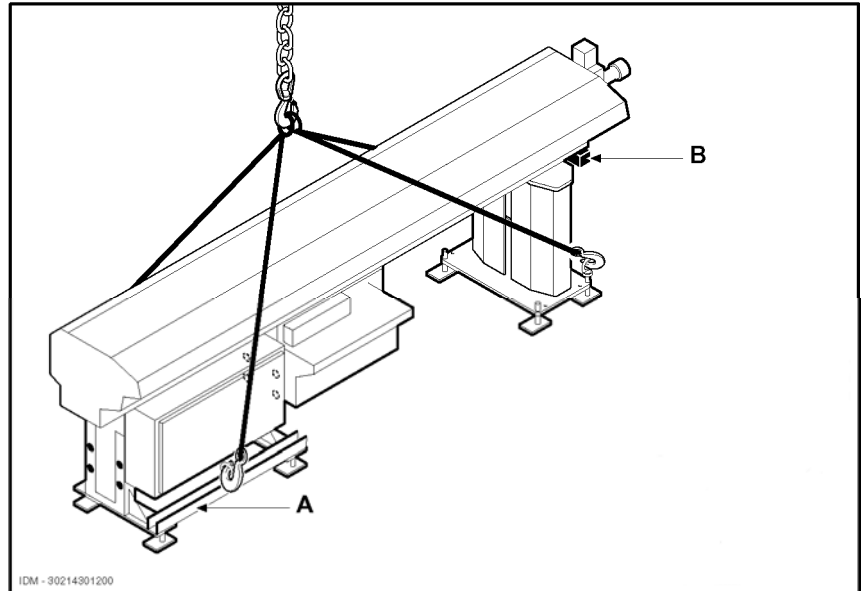
**WARNING – CAUTION:**  
*during the lifting and installation phases pay special attention to the motor area (B).*



**INFORMATION:**

*Use minimum length belts as shown in the table.*

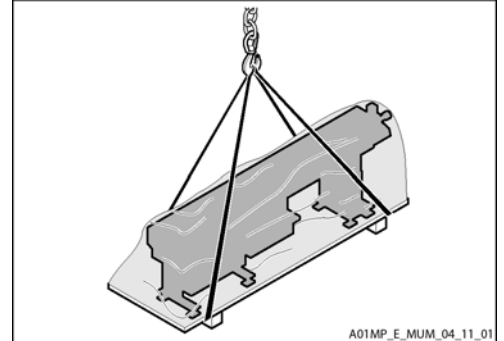
*The dimensions specified may change on the basis of the magazine and the (front/rear) coupling positions. In the rear position, the minimum belt length is approx. 500 mm shorter than the one of the belts at the front position of the bar feeder.*



Model	Version	Rear (mm)	Front (mm)
MASTER 80 HF	33	2800	3200
	38	3300	3700
	43	3800	4200

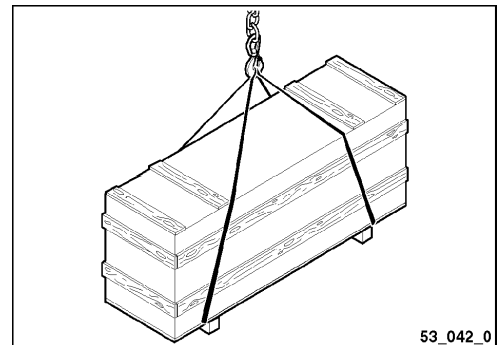
### 4.2.2 Bar feeder with pallet - Lifting

Use a hook type lifting device of suitable load capacity.

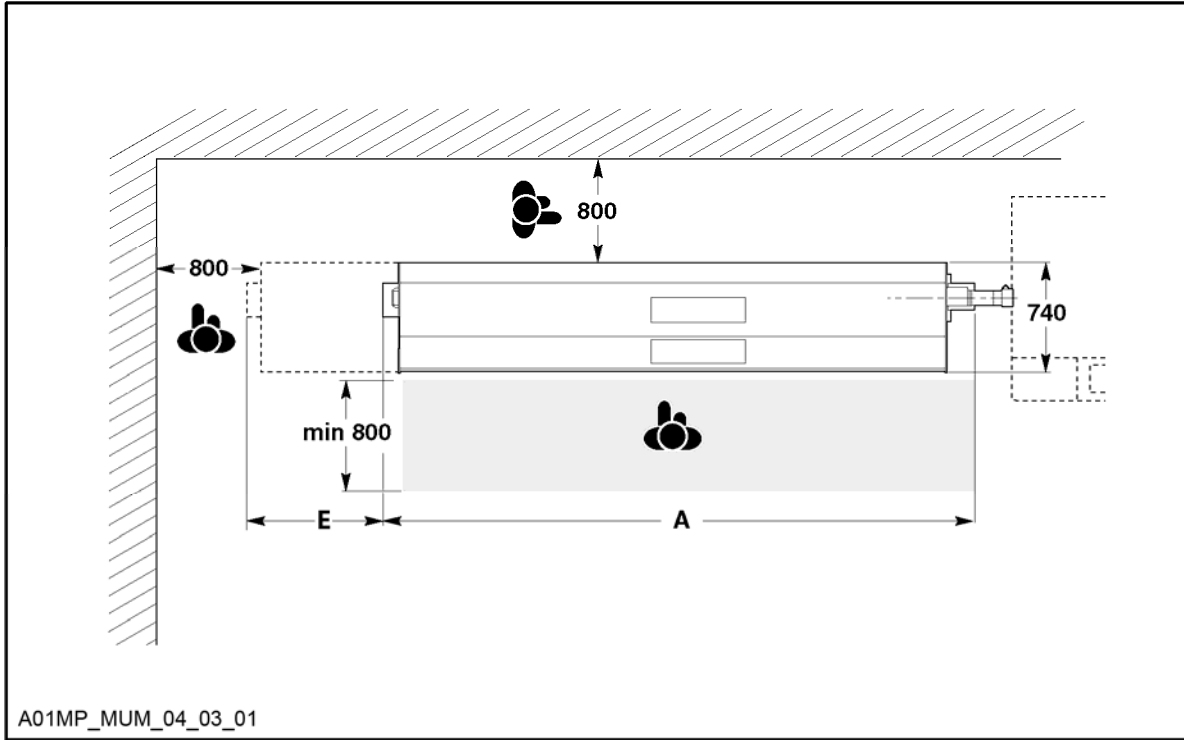


### 4.2.3 Bar feeder with crate - Lifting

Use a hook type lifting device of suitable load capacity.



4.3 INSTALLATION AREA - FEATURES 



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 area (A) (working area, bar feeding area, remnant ejection area) should be properly delimited to prevent collisions between the operator and any handling equipment or means of transport 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. The bar feeder has not been designed for use in an explosive atmosphere.

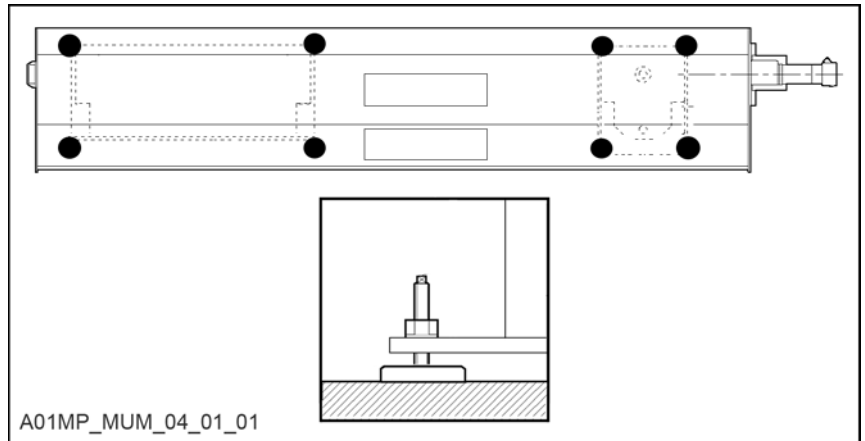
MODEL	VERSION	A (mm)	E (mm)
MASTER 80 HF	33	4275	1000
	38	4775	1000
	43	5275	1000

#### 4.4 BAR FEEDER INSTALLATION - FOREWORD

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

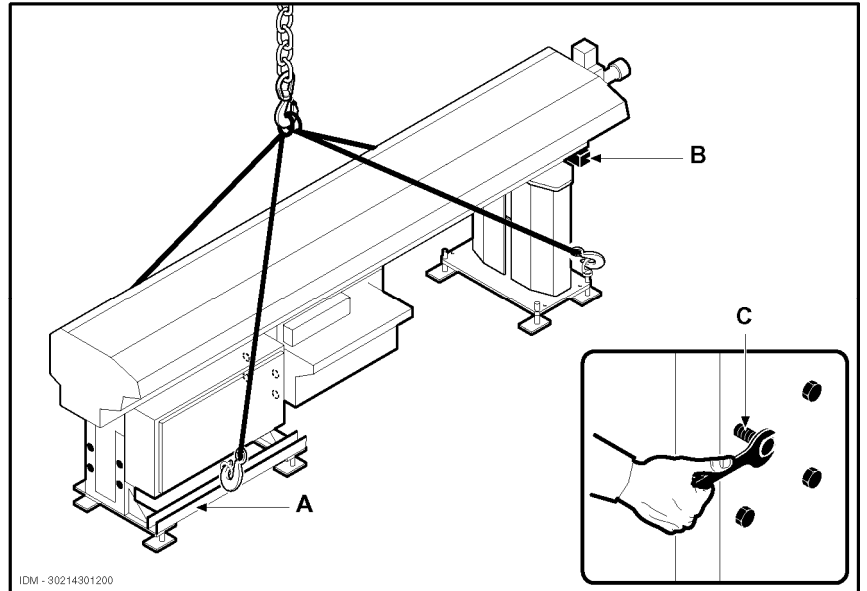
- Position the bar feeder next to the lathe.
- Lift it and install the plates as shown in the figure.



### 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:

- stretch the lifting belts and remove screws (C) in the front and rear bases;



**WARNING – CAUTION:**  
*during the lifting and installation phases pay special attention to the motor area (B).*

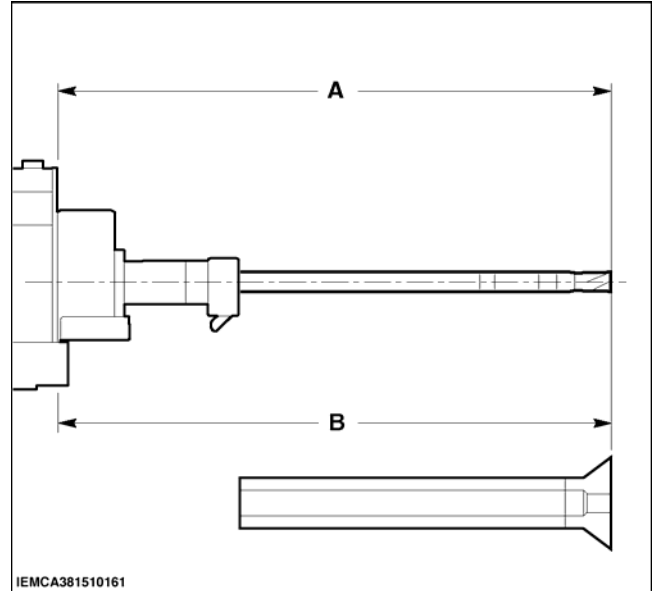
- lift or lower the bar feeder according to the necessary X value, see table.
- tighten screws (C); remove the crosspiece and the eyebolts used for lifting purposes.

#### *Working axis height*

- The height of the working axis may be adjusted according to the data indicated in the table of the "Technical data" section.

### 4.4.3 Preliminary positioning

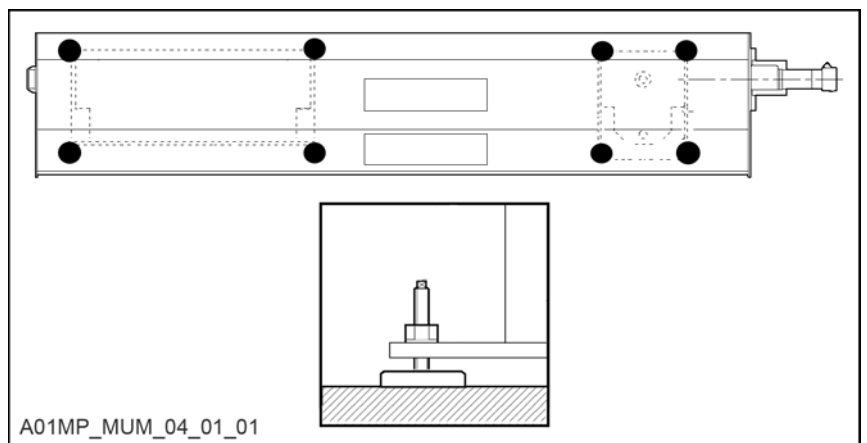
- Place the bar feeder behind the lathe, considering the fixed and moving dimensions of both machines. The coupling distance (B) should not exceed the bar pusher maximum extension (A).



*Max. bar pusher extension*

Model	Version	Version	A – Max. extension (mm)
MASTER 80 HF	33-38-43	L	1350
	33-38-43	LL	1600
	38-43	XLL	1850

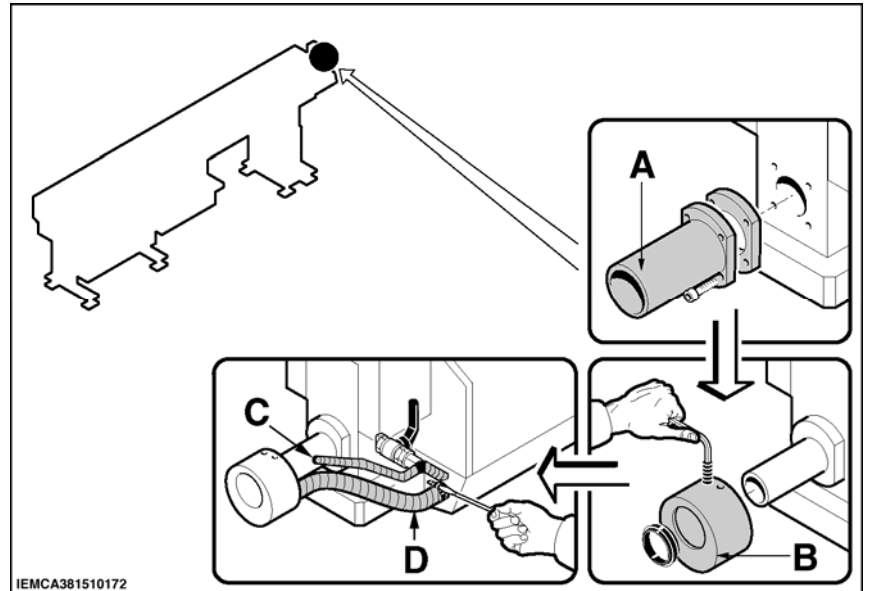
- Roughly adjust the height of the working axis and the alignment with the lathe by turning the screws of plates (A).





#### 4.4.4 Sleeve - Installation

- Install the sleeve (A) in the bush holder device.
- Install the oil recovery tank (B).
- Connect the lubrication pipe (C) to the sleeve.
- Connect the drain pipe (D) to the tank



#### 4.4.5 Levelling and alignment

##### FOREWORD

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



**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.*

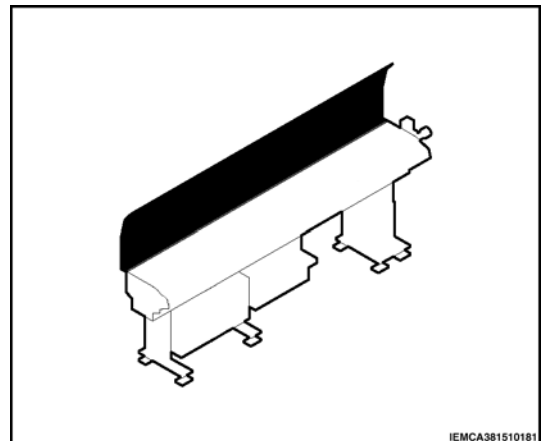




**WARNING – CAUTION:**

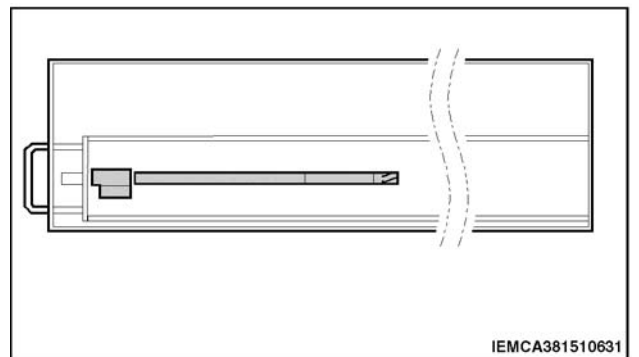
*do not perform manual movements (i.e. using the special crank) when the electric power supply is on.*




##### PRELIMINARY PROCEDURE

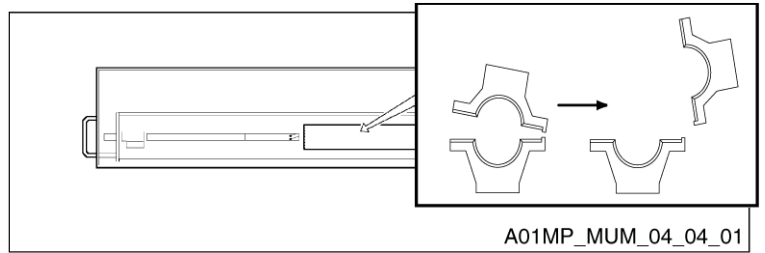
- Open the upper guard.



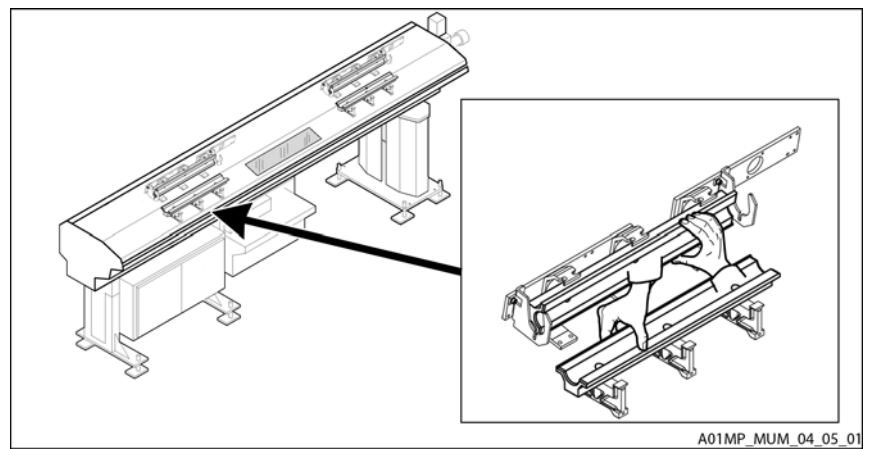
- To bring the bar pusher to the backwards limit stop, in manual mode, press  or  on the handheld keyboard.



- Press  and  to select the semiautomatic function. Press  several times until the upper guide channels open; "GUIDE CHANNEL FULL OPENING" should appear on the display.

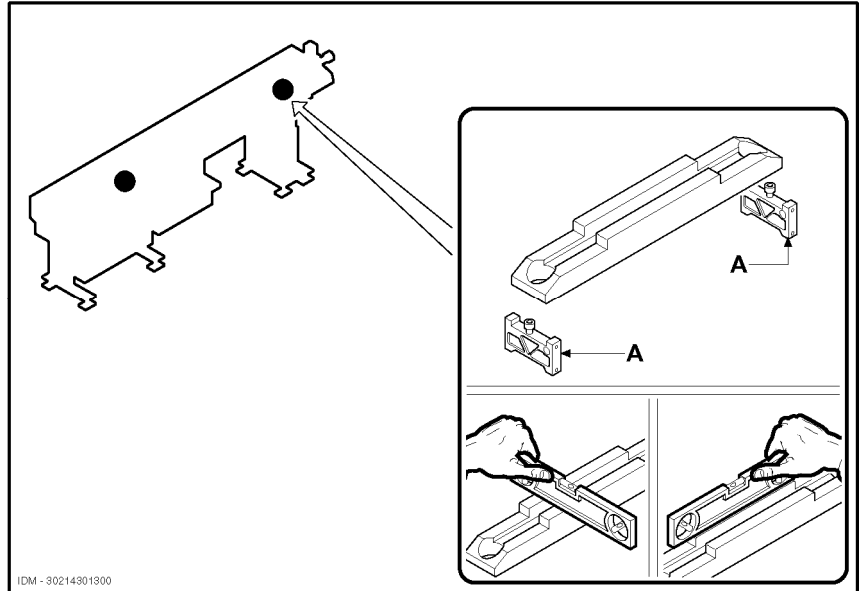


- Remove the first and last lower guide channel.

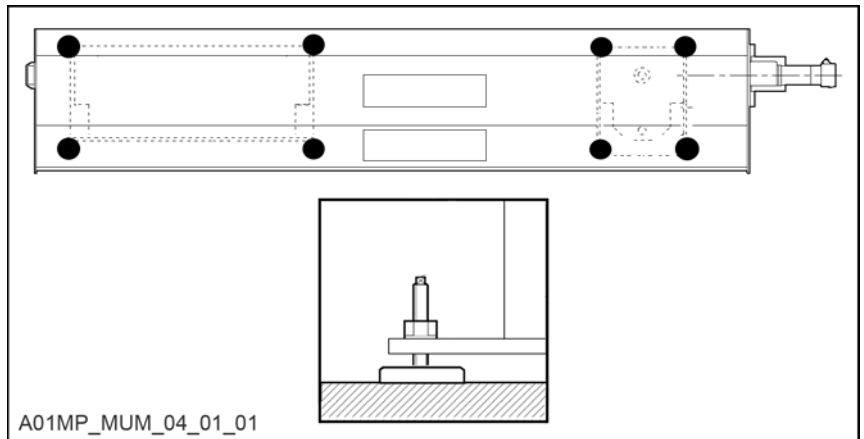


**LEVELLING**

- Rest the special shelf on the supports (A).
- Check the levelling by positioning the level crosswise and lengthwise.



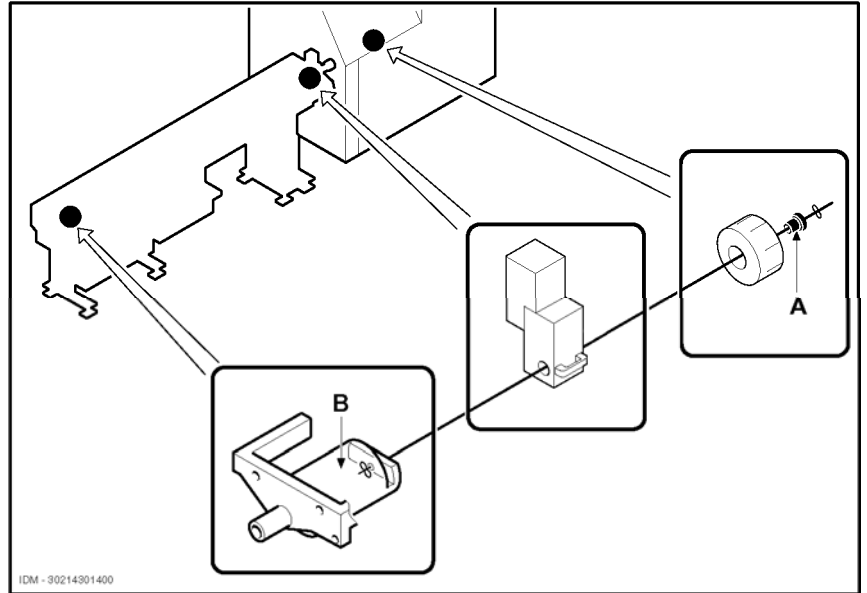
- Carry out the required corrections by turning screw (A).



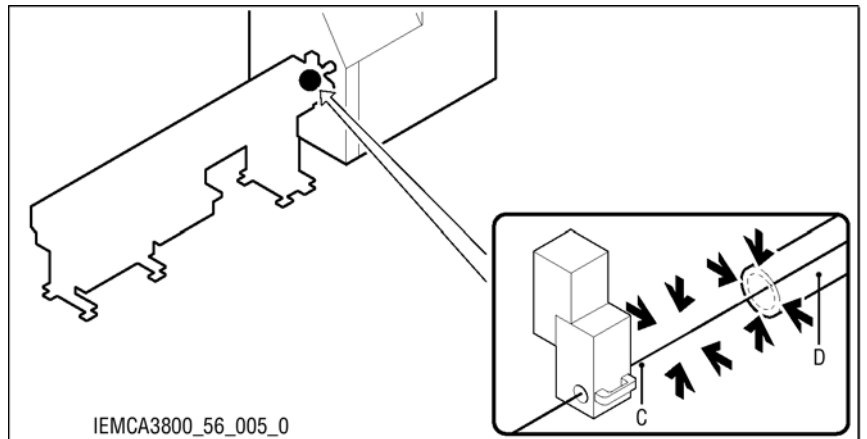
**ALIGNMENT**

The alignment is obtained by fitting a nylon thread ( $\varnothing 1 \text{ mm}$ ) between the lathe collet and the first feeding carriage, proceeding as follows:

- place a drilled bush (A) in the lathe collet;
- stretch the thread between the bush and the hole in the first feeding carriage (B).

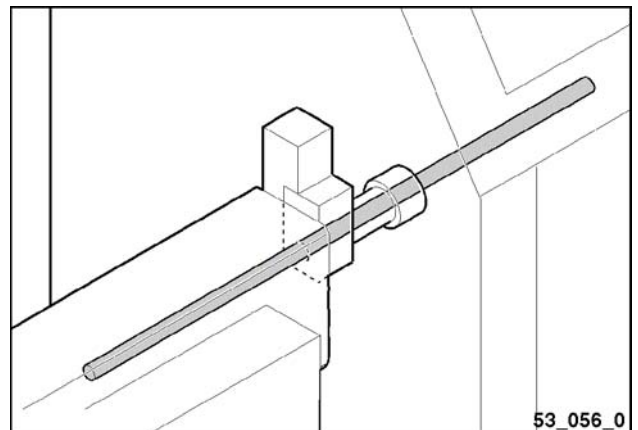


- check with a sliding caliper, the alignment near the bush (C) and the spindle (D); use a tolerance of  $\pm 0.15 \text{ mm}$  in the four directions.



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

- 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.
- 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**

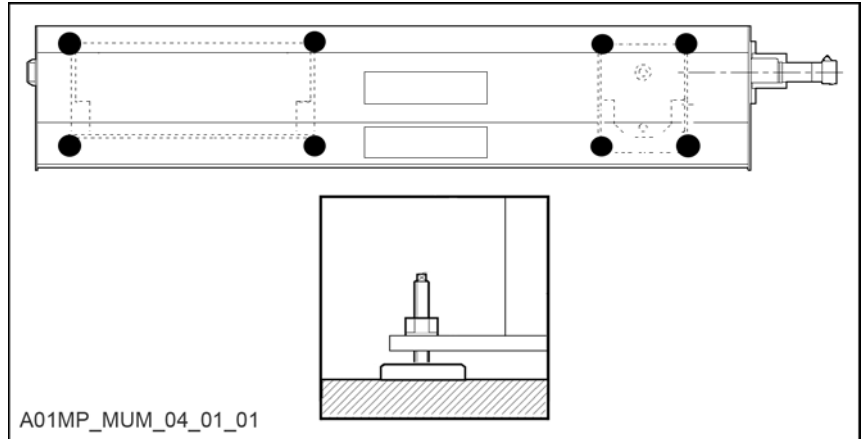
After checking the alignment of the bar feeder with either the thread or the bar, any required corrections should be carried out.

Adjust the height by turning screw (A) of the support feet; carry out lateral adjustments with calibrated mallet blows on the plate sides.

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.



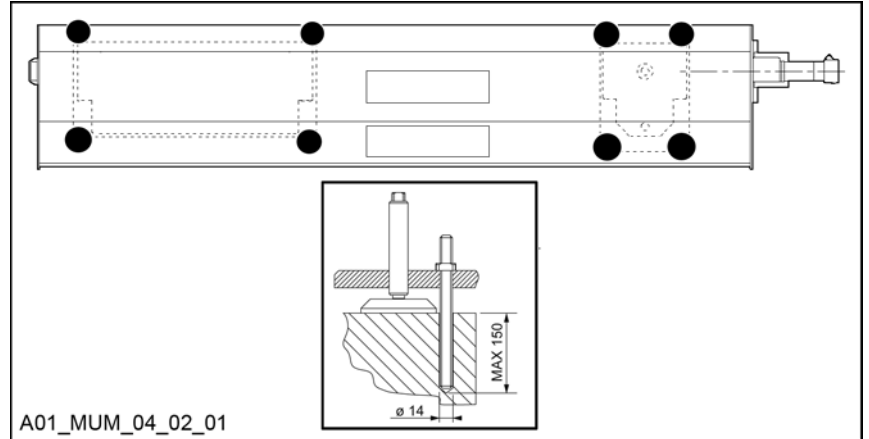
#### 4.4.6 Bar feeder fastening



**WARNING – CAUTION:**

*failure to perform or a wrong bar feeder fastening to the ground may be the major cause of a bad operation of the bar feeder and of its consequent damage.*

- Drill the floor and fix the backing plates with expansion plugs. Use the higher number of expansion plugs to ensure a correct fastening.
- 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.



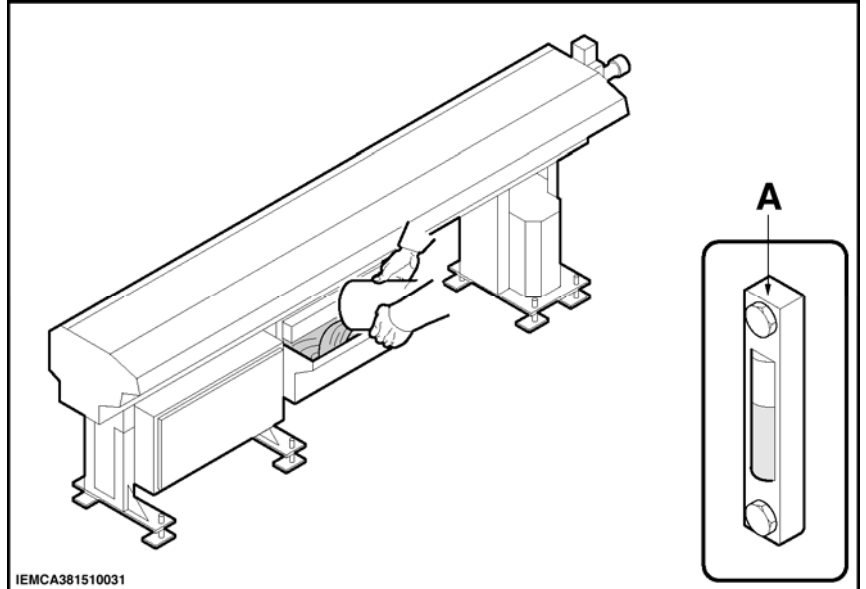
#### 4.5 LUBRICATION OIL - FILLING



**WARNING – CAUTION:**  
*wear personal protections according to the regulations in force.*

- Pour the oil directly into the tank and check the level through the relevant indicator (A).

Oil features: Class (C) - CKB 150, quantity 80 l.



#### 4.6 ELECTRICAL CONNECTION



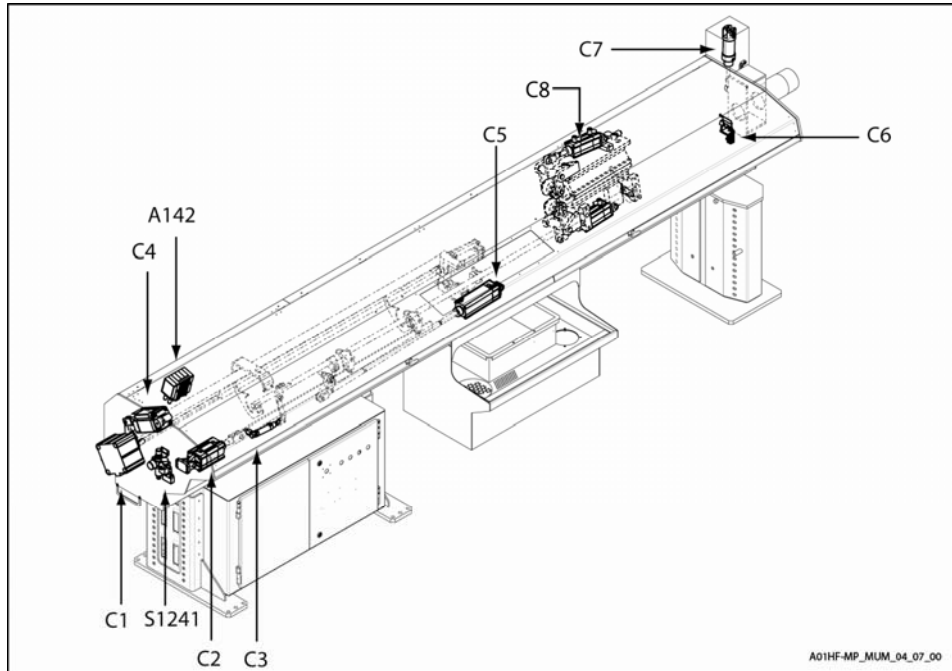
**DANGER - WARNING:**

*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. The feeder must be electrically connected to the lathe, which in turn, must be connected to the electrical installation in compliance with the applicable regulations in force.*

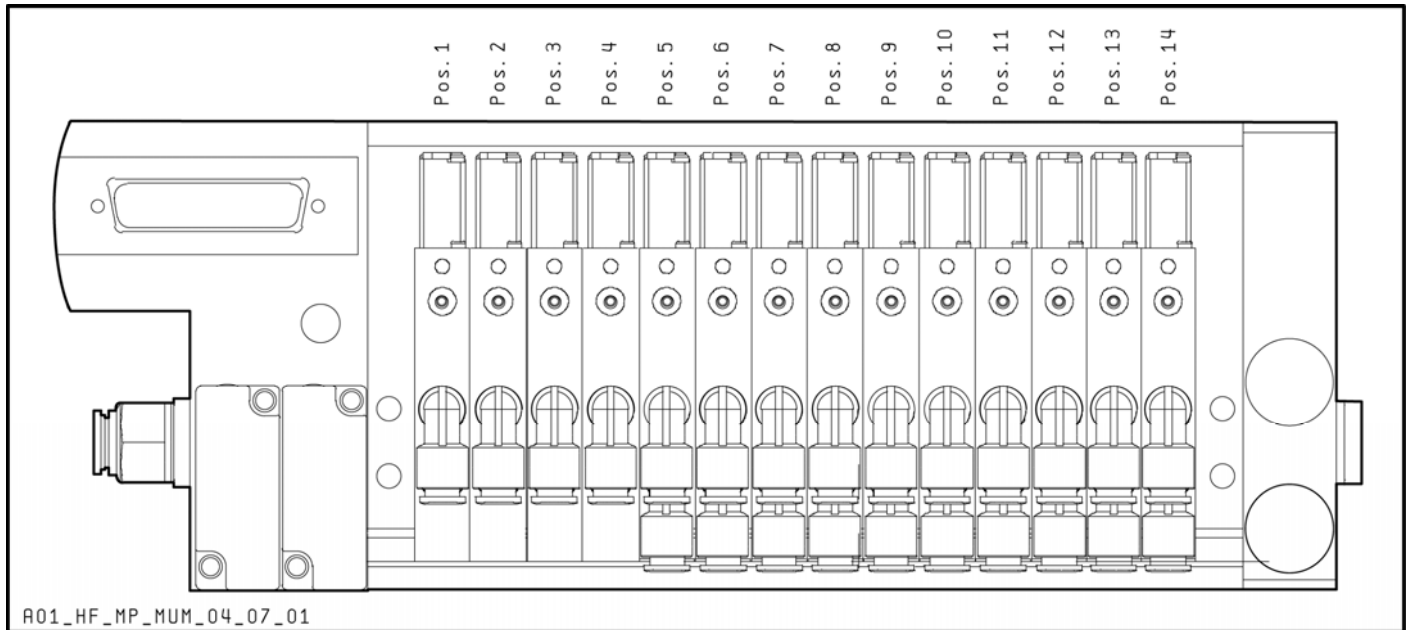
The bar feeder is normally equipped with a multiple plug to be inserted into the special lathe socket; refer to the "Wiring diagram" if necessary.



4.7 PNEUMATIC DEVICE LAYOUT



ABBREVIATION	DESCRIPTION	FUNCTION
C1	Cylinder	Enables the clamp opening and closing
C2	Cylinder	Enables the bar loading
C3	Cylinder	Enables the guide channel locking
C4	Cylinder	Enables the guide channel upstroke and downstroke
C5	Cylinder	Controls the bar drop control devices upstroke and downstroke
C6	Cylinder	Enables the short feed gate upstroke
C7	Cylinder	Enables the bush opening and closing
C8	Cylinder	Enables the bar pusher locking
A142	Solenoid valve unit	Cylinder or piston control device (see description Solenoid valve box)
S1241	Distributor + pressure switch	Dispenses and adjusts the supply flow inside the pneumatic system



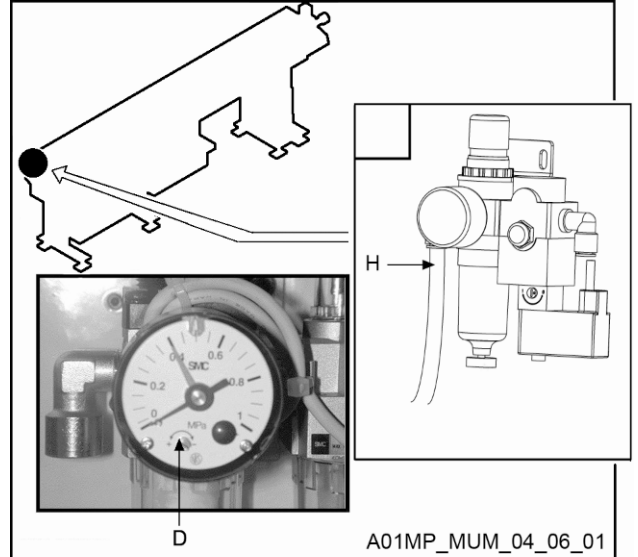
ABBREVIATION	DESCRIPTION	FUNCTION
<b>Pos.1</b>	Bar drop control device solenoid valve	Control device upstroke
<b>Pos.2</b>	Bar drop control device solenoid valve	Bar drop control devices downstroke
<b>Pos.3</b>	Guide channel control solenoid valve	Guide channel closing
<b>Pos.4</b>	Guide channel control solenoid valve	Guide channel opening
<b>Pos.5</b>	Clamp control solenoid valve	Clamp closing
<b>Pos.6</b>	Guide channel unlocking control device solenoid valve	Guide channel unlock
<b>Pos.7</b>	Bar loading control solenoid valve	Bar drop upstroke
<b>Pos.8</b>	Flag control solenoid valve	Facing flag upstroke
<b>Pos.9</b>	Bar pusher locking control device solenoid valve	Bar pusher locking
<b>Pos.10</b>	Bar pusher locking control device solenoid valve	Bar pusher locking
<b>Pos.11</b>	Bar pusher locking control device solenoid valve	Bar pusher locking
<b>Pos.12</b>	Bar pusher locking control device solenoid valve	Bar pusher locking
<b>Pos.13</b>	Not used	Not used
<b>Pos.14</b>	Not used	Not used

### 4.7.1 PNEUMATIC CONNECTION

- Connect pipe H of the pneumatic system as shown in the figure.



**WARNING – CAUTION:**  
*to adjust the pressure follow the instructions indicated in the relative section.*



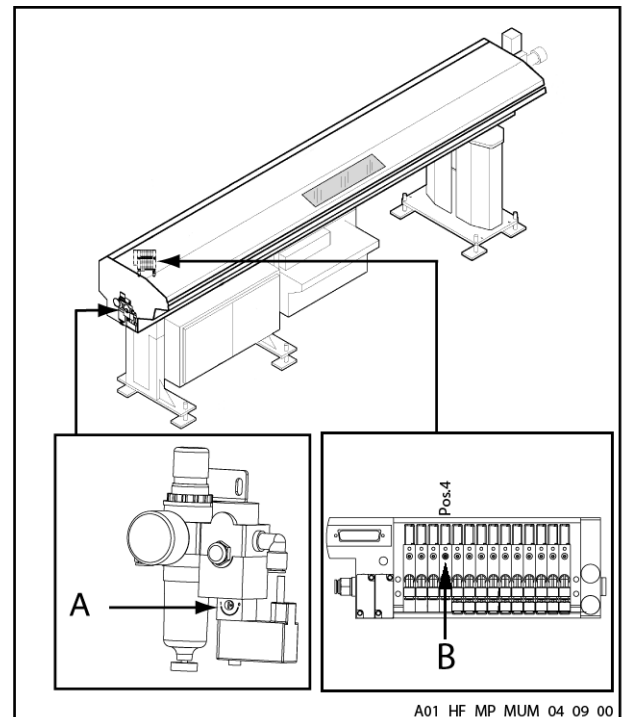
### 4.7.2 BAR FEEDER HANDLING WITHOUT POWER SUPPLY

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

- By means of a small screwdriver turn switch A to position 1.
- With the same tool turn switches B (upper guide channel opening example), placed on each solenoid valve, to move the unit.



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






#### **4.8 SOFTWARE PARAMETERIZATION**

The bar feeder software should be correctly parameterized according to the working needs and the lathe type.

For further information on how to carry out this operation, check the "Keyboard instruction manual".

**INDEX**

5.1	ADJUSTMENT AND SETUP - FOREWORD 	2
5.2	GENERAL ADJUSTMENTS - FOREWORD 	2
5.2.1	Feeding chain - Adjustment	2
5.2.2	Pressure switch - Adjustment	4
5.3	BAR FEEDER SETUP 	5
5.3.1	Guide channels, half-bushings, bar pusher and collet - Replacement	5
5.3.2	BAR PUSHER REPLACEMENT PROCEDURE	14
5.3.3	Bar selectors - Adjustment	16

## 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.***

This bar feeder requires, besides the ordinary adjustments necessary during its life, also adjustments depending on the bar dimensions and the magazine type.

## 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.

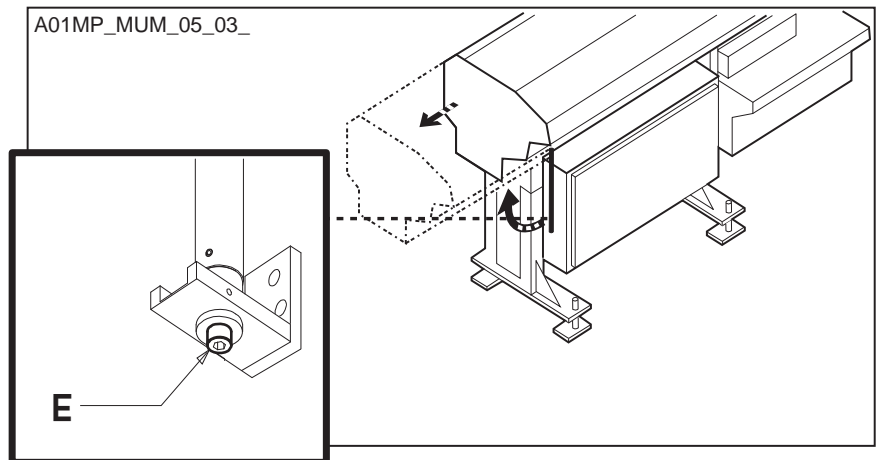
### 5.2.1 Feeding chain - Adjustment

- Remove the screw (E), lift the rear lever and move the bar feeder body backwards.

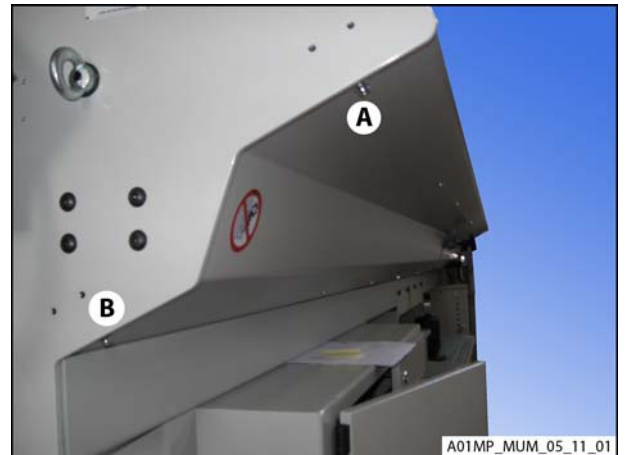


### **WARNING – CAUTION:**

***before performing this operation, open the upper guard.***



- Disassemble the lower guard by unscrewing the upper "A" and lower "B" fixing screws.

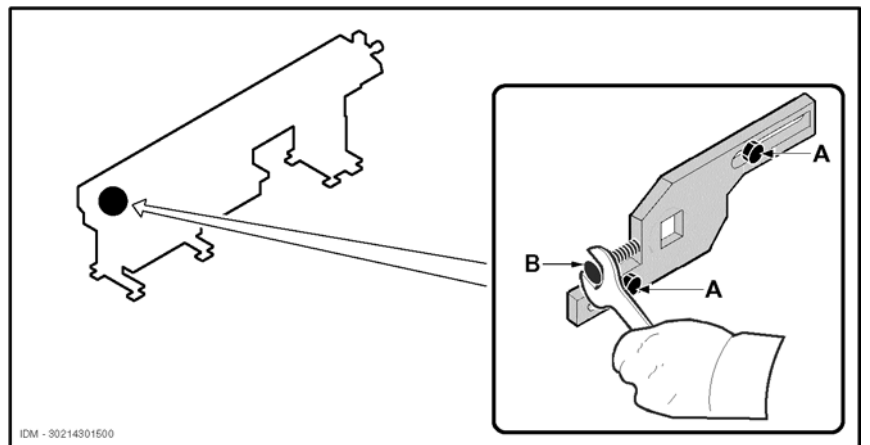


- Loosen both screws (A) and adjust the chain tension by turning screw (B).
- Restore the bar feeder initial operating conditions.



**WARNING - CAUTION**

*Perform the chain adjustment by means of a torque wrench, tighten screw (B) by setting the torque to 4N/meter, then tighten both fixing screws (A).*



- Move the bar feeder body forwards and lift the rear lever.

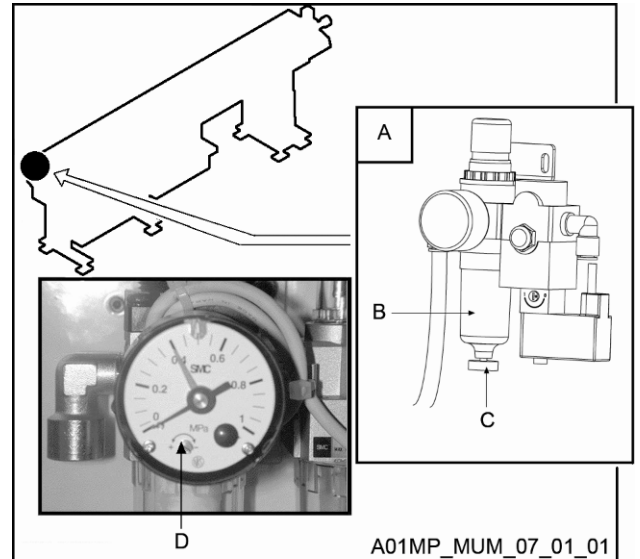
### 5.2.2 Pressure switch - Adjustment

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



**WARNING – CAUTION:**

*Do not further turn anticlockwise when the green pointer is on 0, as this may cause damage to the pressure switch.*



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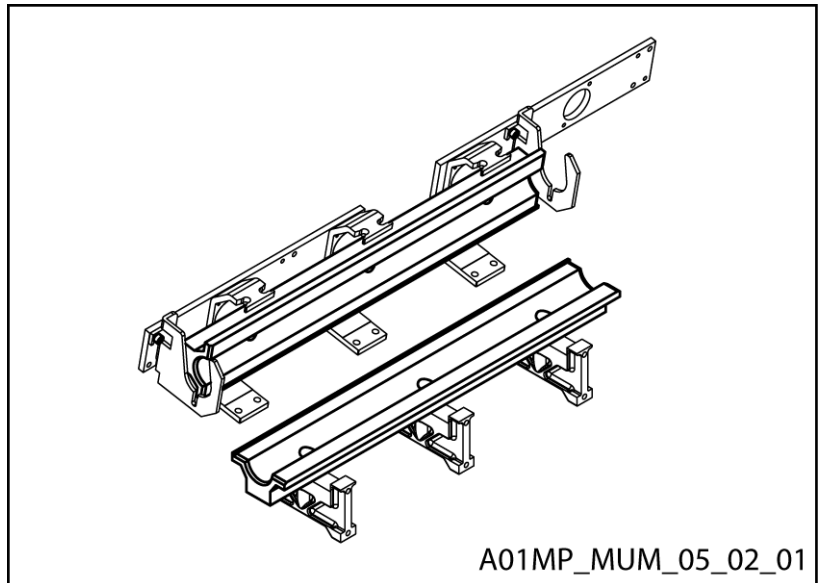
### 5.3 BAR FEEDER SETUP


If the diameter of the bars to be machined changes, it may be necessary to perform adjustments on the machine.  
Refer to table "Guide channel, bar pusher, bar and pipe diameter" section 2.

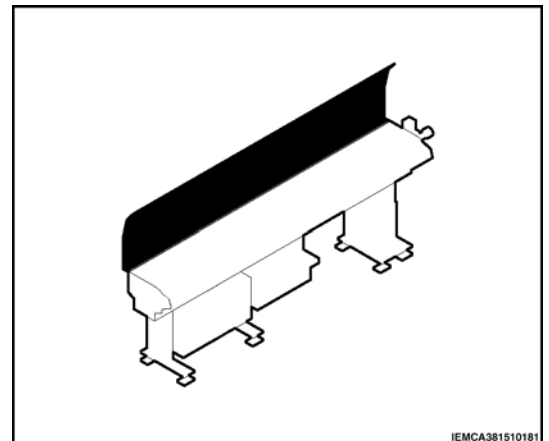
#### 5.3.1 Guide channels, half-bushings, bar pusher and collet - Replacement



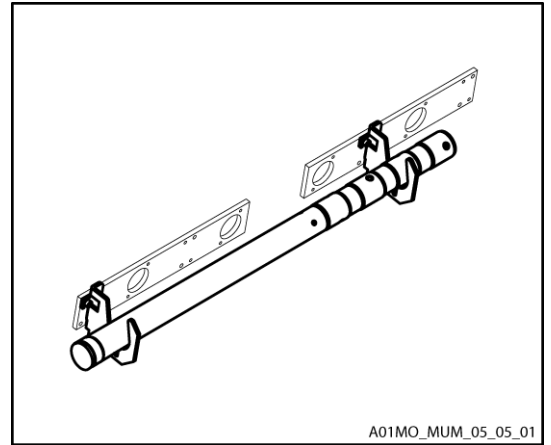
- Press  to start the bar feeder.
- Press  and  to select the semiautomatic function.
- Press  several times until the upper guide channels open; "GUIDE CHANNEL FULL OPENING" should appear on the display.



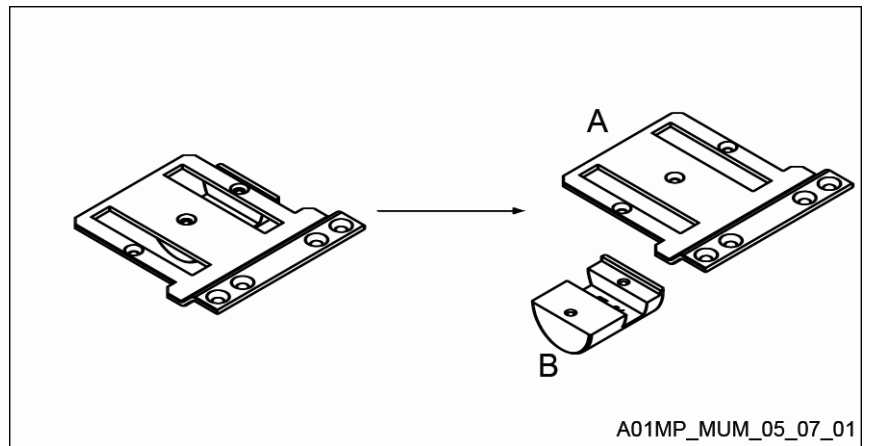
- Press  and open the upper guard.



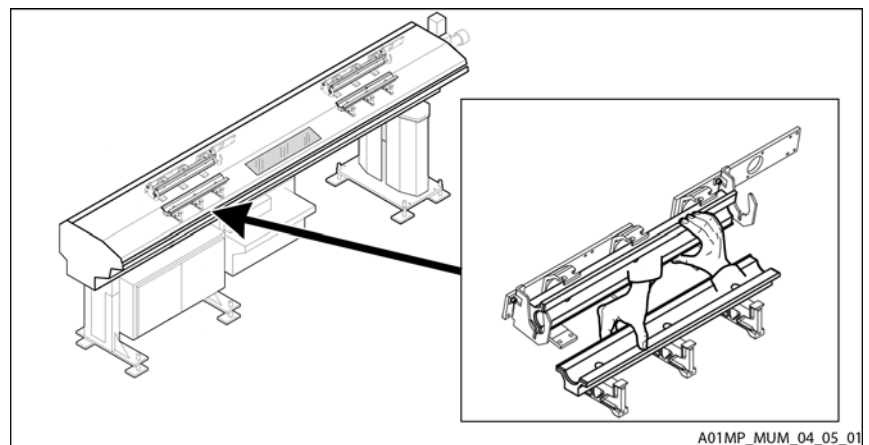
- Remove the bar pusher from both supports.  
For the bar pusher replacement refer to the next section.



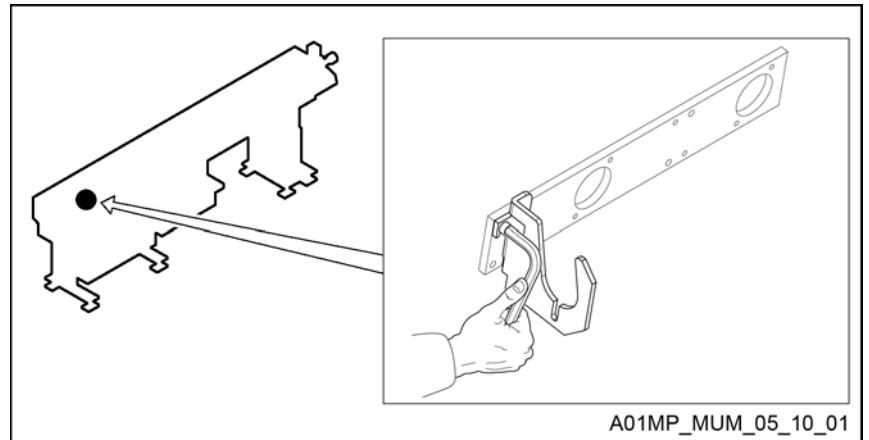
- Disassemble the first feeding pin (B) from the flag (A).



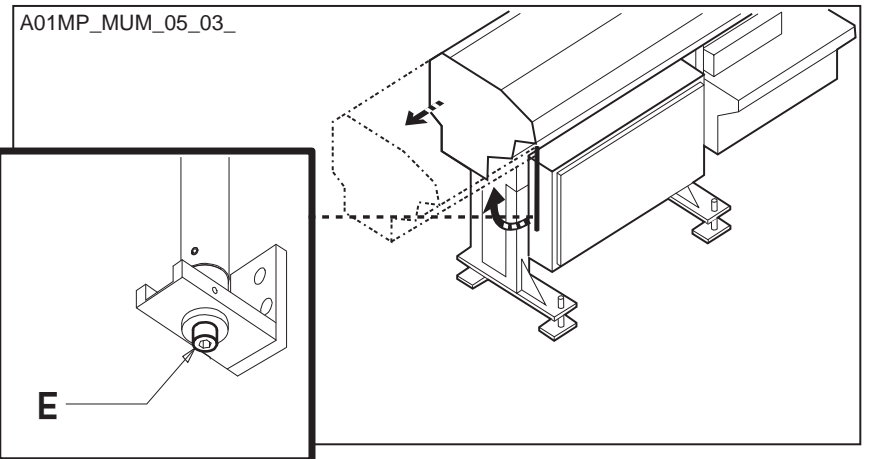
- Remove snap-shut hook guides towards the top.



- Replace the bar pusher supports with those of "new" diameter.

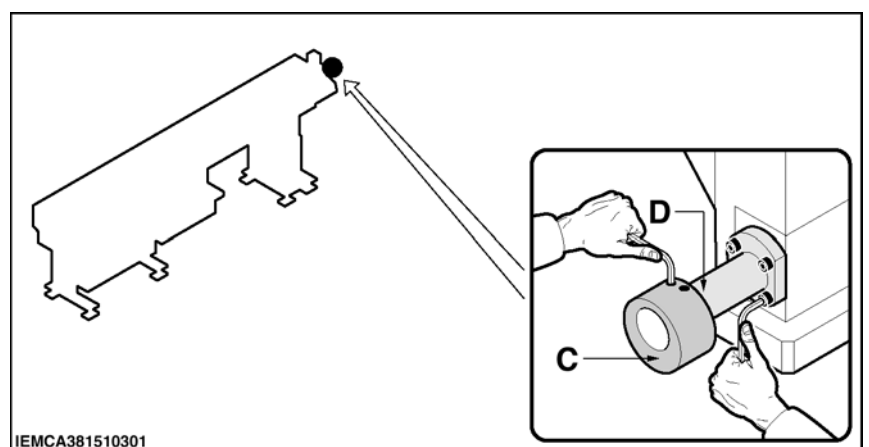


- Remove the screw (E), lift the rear lever and move the bar feeder body backwards.

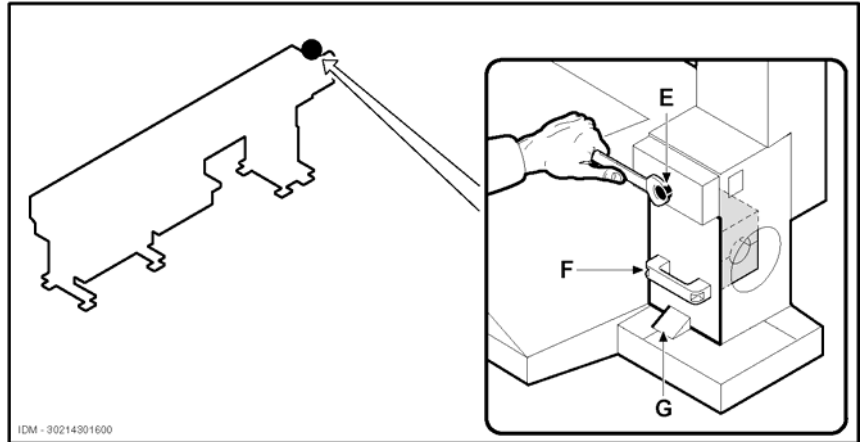


**WARNING – CAUTION:**  
before performing this operation, open the upper guard.

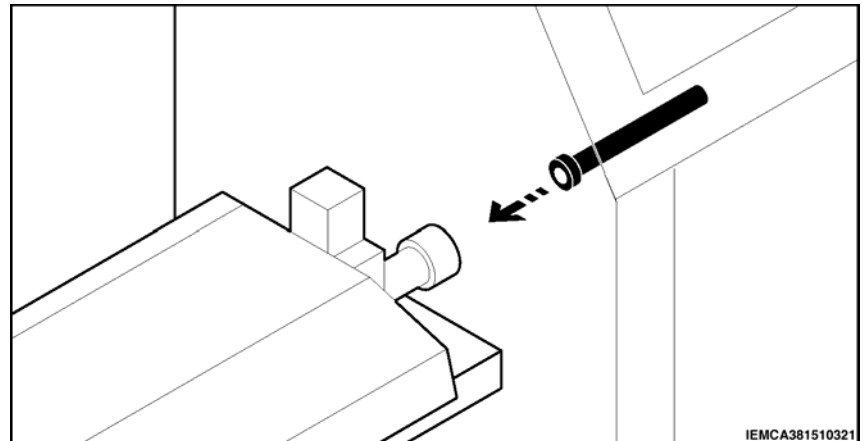
- Remove the oil recovery device (C) and sleeve (D).



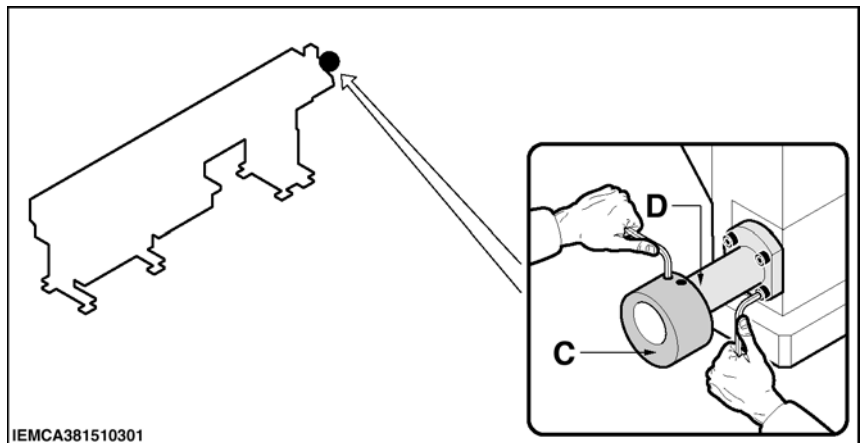
- Lower spring (G) and remove cover (F), completely open the two half-bushings by manually turning shaft (E) and remove the lower half-bushing.
- Close the upper half-bushing by turning the shaft again then replace it.
- Turn the shaft and fit the lower half-bushing.
- Close the half-bushing completely and install the cover.



- Remove the lathe spindle liner if required and install a suitable liner for the "new" diameter, if necessary.

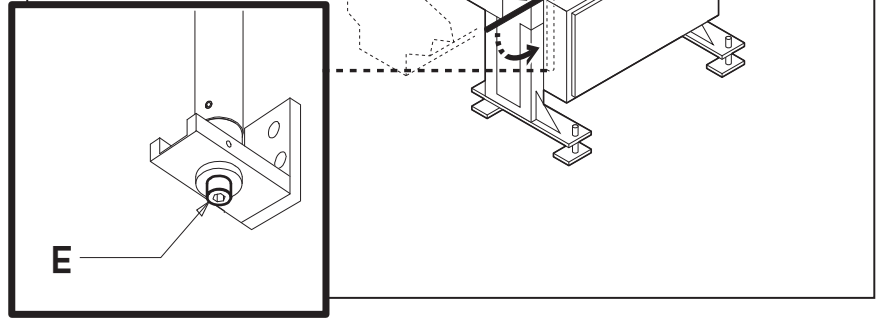


- Assemble sleeve (D) of the "new" diameter and the oil recovery (C).



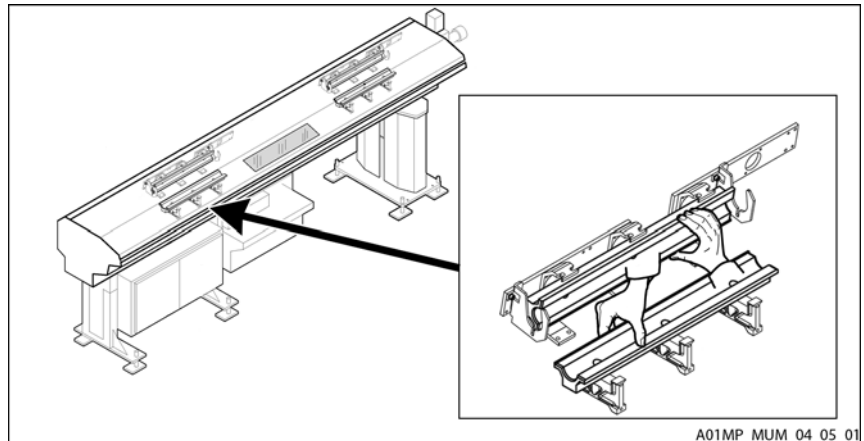
- Move the bar feeder body forwards and lower the rear lever, turn screw (E) clockwise to block the lever.

A01MP\_MUM\_05\_03\_01



**WARNING** –  
**CAUTION:**  
*gradually bring the bar feeder body up to the stop placed on the tank, thereby eliminating the risk of damaging the displacement device.*

- Assemble the guide channels of the "new" diameter.



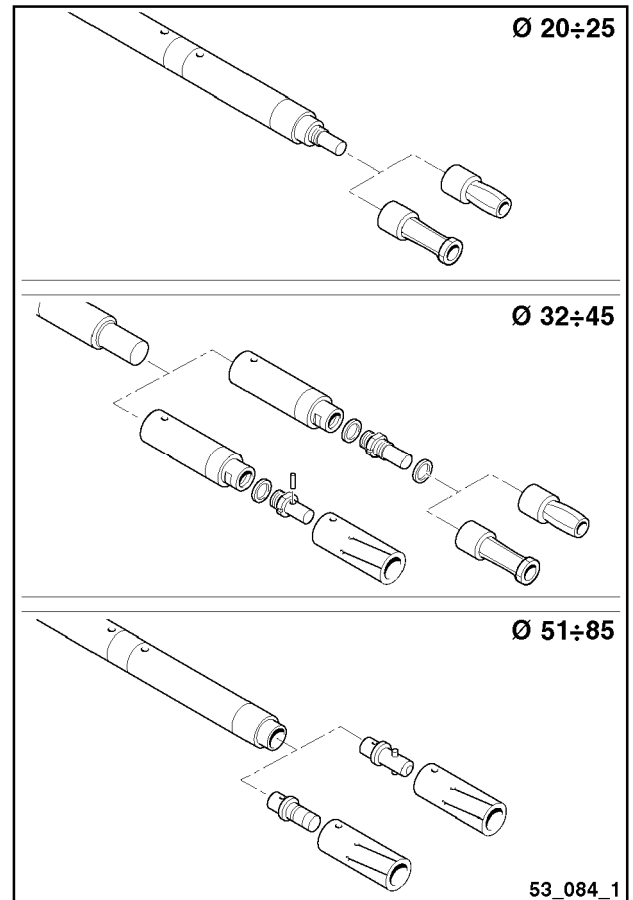
A01MP\_MUM\_04\_05\_01

- Choose an appropriate collet for the bar diameter and profile; see "GUIDE CHANNELS-BAR PUSHER-REVOLVING TIPS" and "COLLETS" section.



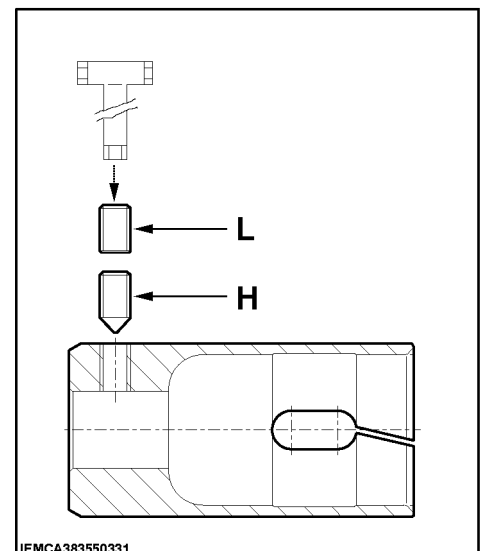
**INFORMATION:**

*contact IEMCA service department for further information.*



**WARNING – CAUTION:**

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

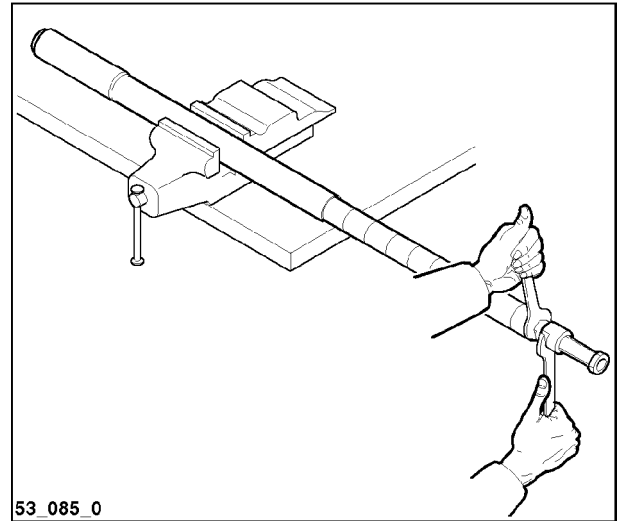




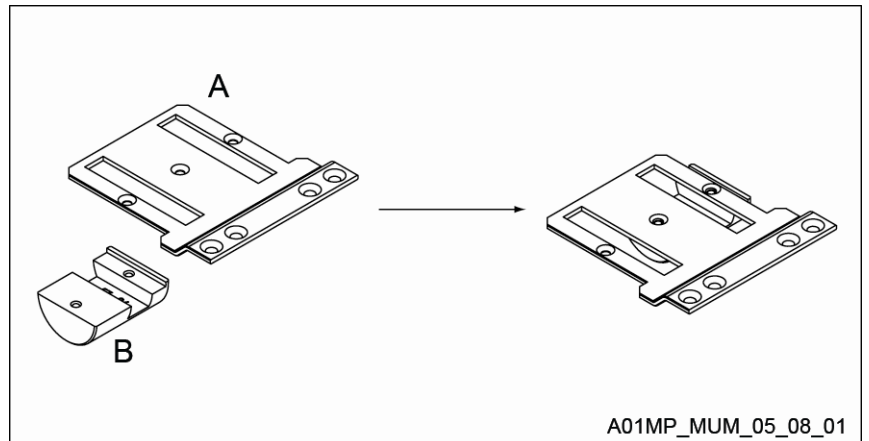
**WARNING – CAUTION:**

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

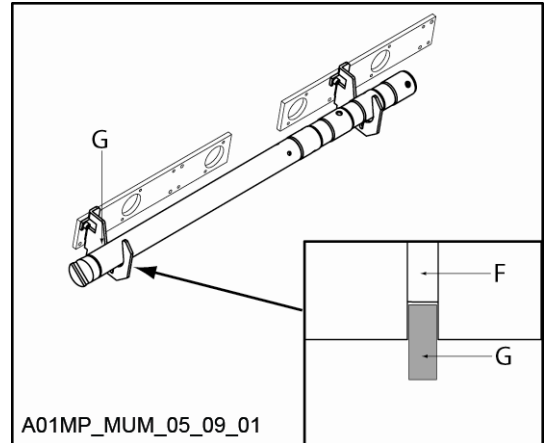
- Install the collet in the bar pusher and make sure that the rings are riveted in their special niches to prevent accidental unscrewing of the collet and/or relative connection.



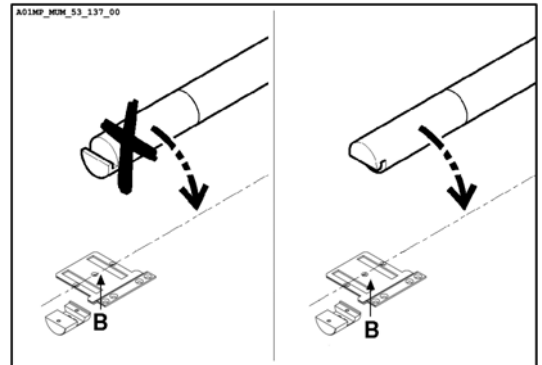
- Assemble the first feeding pin (B) of the "new" diameter on the flag (A).



- Insert the bar pusher into both supports. Properly position the bar pusher in the axial direction, so that (F) groove matches pusher support (G).




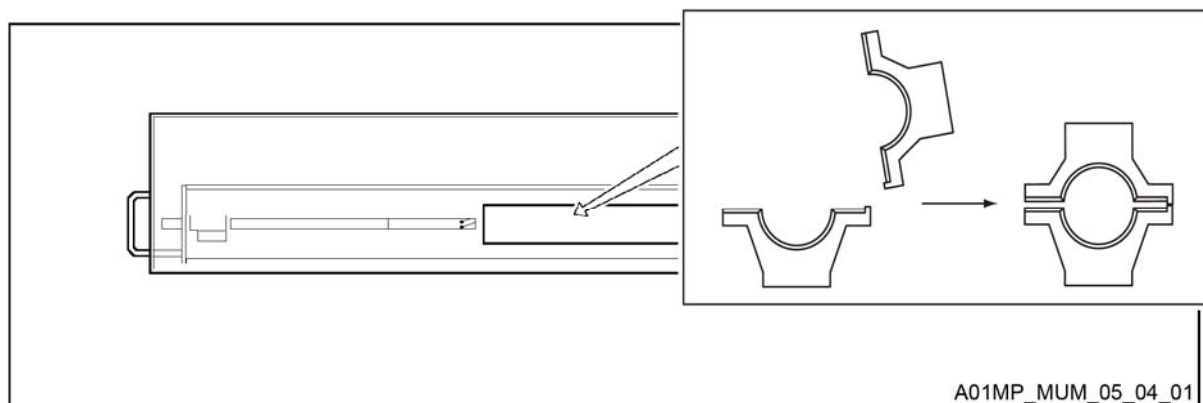
- Properly position the bar pusher in the radial direction so that in the next phase of the upper guide channel closing, the coupling between the bar pusher and the first feeding carriage (B) occurs correctly.

**WARNING – CAUTION:**

*the above mentioned positioning has to be always assured. Therefore during the setup or maintenance operations, if the bar pusher is struck involuntarily, it has to be correctly repositioned.*



- Press the start buttons together with  to close the guide channels.  
The machine is now ready to load the bar.  
Perform a cycle in the "STEP by STEP" function.






### 5.3.2 BAR PUSHER REPLACEMENT PROCEDURE



#### **WARNING - CAUTION**


***Never perform the following procedure when a bar is detected in the bar pusher collet!***

The replacement of the bar pusher, for a working cycle change or maintenance, may be performed as follows:

- set the bar feeder to manual mode , with close guide channels;
- press and hold  to start the automatic procedure, which allows the bar feeder to move to the appropriate condition for the bar pusher replacement.
- In particular, by pressing , the bar pusher is positioned past the clamp device, the guide channels open, the bar pusher moves to the completely backwards position and the bar drop control devices are lifted allowing for the bar pusher removal.



#### **INFORMATION**

***If during the above mentioned operations  is released, the procedure will stop. By pressing the button again, the procedure will start from where it was paused.***

### NEW BAR PUSHER INTRODUCTION

- To load a new bar pusher, position it on the bar drop control devices and press [pupa\_boss \_accomp] until the relative LED turns on.



#### **WARNING - CAUTION**

***Check if the bar pusher has been correctly introduced into the first feeding carriage housing.***

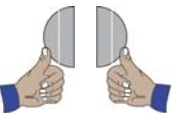

- Close the bar feeder guard, reset the start button [pupa\_boss \_avvio], enter in manual mode



and press

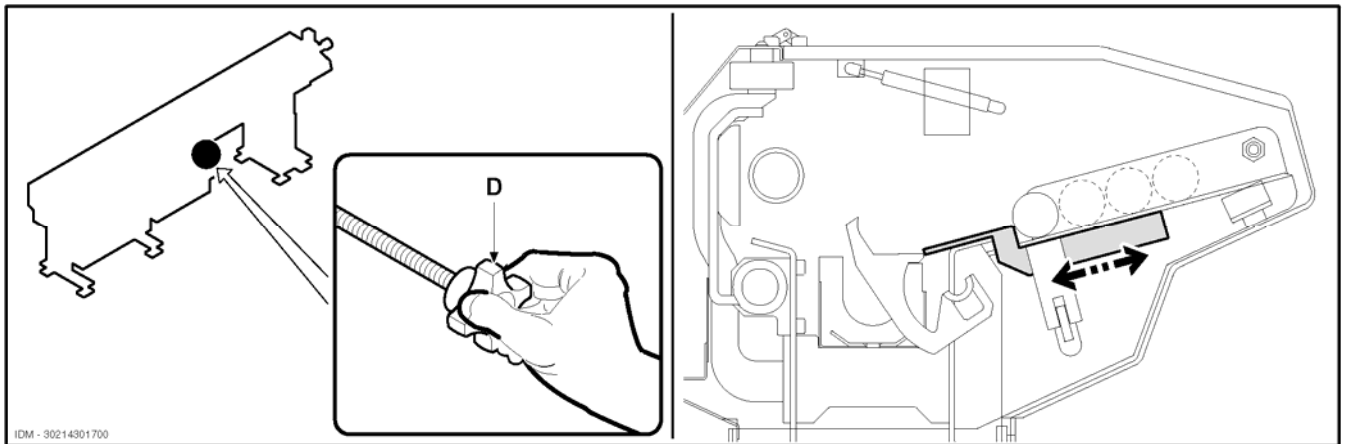
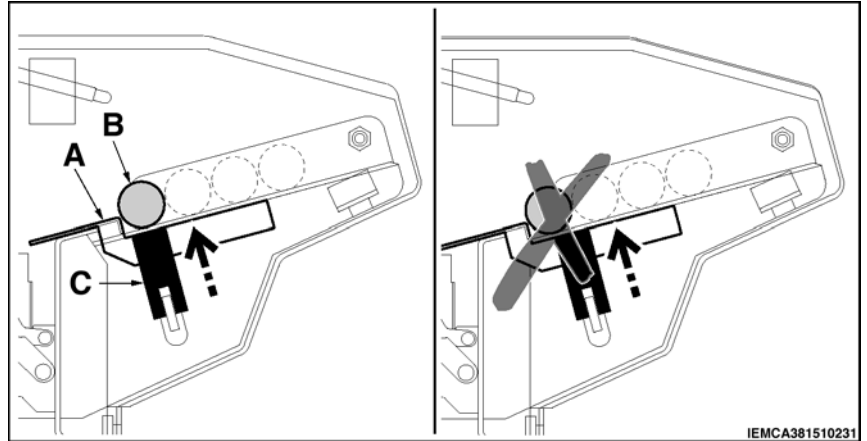


to move the bar pusher forwards until the clamp position is exceeded of at least 200 mm.

- Close the guide channels  and .
- Restore the machining cycle of the bar feeder.

### 5.3.3 Bar selectors - Adjustment

- Adjust the position of the selectors A, so that only the first bar B is positioned on the path of movement of the lifting devices C.



- Turn knob D for the adjustment.

**INDEX**

6.1	CONTROL DESCRIPTION .....	2
6.2	KEYBOARD CONTROL DESCRIPTION.....	4
6.3	LIGHT INDICATOR - SIGNAL DESCRIPTION .....	8
6.4	BAR FEEDER TOOLING.....	9
6.5	BARS TO BE MACHINED - FEATURES AND PREPARATION .....	9
6.5.1	BAR STRAIGHTNESS - Measurement .....	11
6.6	BAR MAGAZINE - LOADING .....	12
6.7	AUTOMATIC CYCLE START .....	13
6.8	BAR LOADING - PROCEDURE.....	14
6.9	LUBRICATING OIL - FLOW ADJUSTMENT .....	17
6.10	BAR FEEDER STOP.....	17
6.11	CYCLE PERFORMING MODE IN THE "STEP-BY-STEP" FUNCTION .....	18

## 6.1 CONTROL DESCRIPTION



**INFORMATION:**

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



**INFORMATION:**

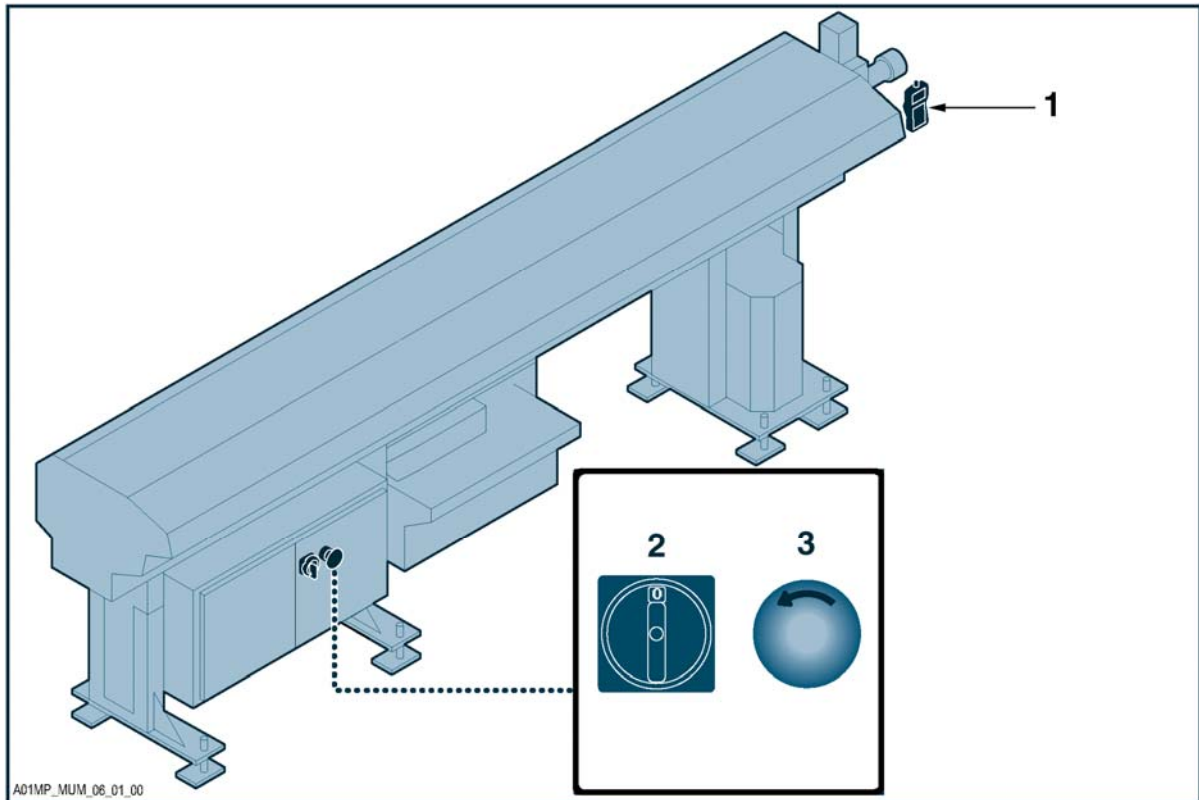
*When the bar feeder is in Automatic mode, the bar feeding is possible only when the Lathe "MAN/AUT" signal is in Automatic mode.*



**INFORMATION:**



*By pressing the Manual mode button on the handheld keyboard it is possible to prevent the bar feeder Automatic start by the lathe.*

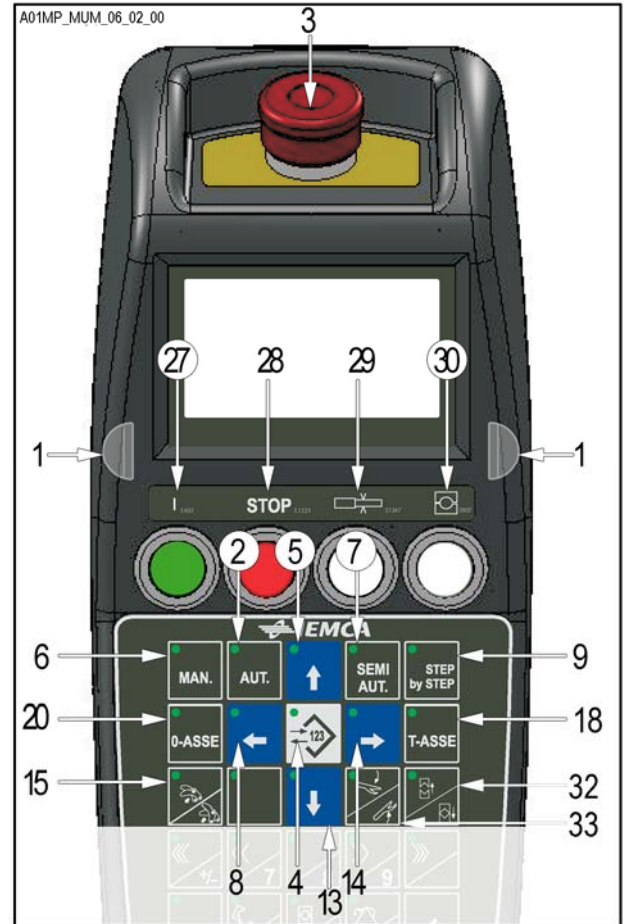
The figure indicates the positions of both the electrical and handheld keyboard "1" controls.



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

## 6.2 KEYBOARD CONTROL DESCRIPTION

- 1 Start buttons: opposite buttons enabling the keys for some functions. Press both buttons and simultaneously the button corresponding to the desired function.
- 2 It selects the automatic function.
- 3 It stops the bar feeder: for restart, manually release the push-button.
- 4 Selects the keyboard modes:
  - with LED off ; selects the "message display" mode.
  - with LED on ; selects the "parameter display" 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 It selects the manual mode.
- 7 It selects the semiautomatic function. Press to select, press again to unselect.
- 8 Multifunction
  - Selects the previous parameter.
  - Moves the selection cursor leftwards.
- 9 It activates the "step by step" operating cycle: every time the button is pressed, one step is performed.
- 10 Multifunction
  - Sets the font.
  - Turns on/off the oil pump. Press to turn on the pump and press again to turn it off.
- 11 Multifunction
  - Sets the numerical value.
  - Loads the program from the PLC. (entering the default values in the parameters).
- 12 Multifunction
  - Sets the font.
  - Moves the bar pusher at a high speed.
- 13 Multifunction
  - Allows scrolling the page downwards.
  - Moves the selection cursor downwards.
  - Decreases by one the value set in the date and time programming mode.
- 14 Multifunction
  - Selects the next parameter
  - Moves the selection cursor rightwards.





- 15 Lifts and lowers the bar selectors (LED on when selector switches are at their "down" position).
- 32 Opens/Closes the clamps (the LED is on when clamps are open).
- 33 Lifts and lowers the pneumatic bar drop control devices (the LED is on when the devices are in the "bottom" position).

**16 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.

**17 It moves the bar pusher at high speed.**
**18 Sets the carriage movement motor.**

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

**19 Multifunction**

- Sets the numerical value.
- Moves the bar pusher at a low speed.

**20 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.

**21 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.

**22 Multifunction**

- Sets the numerical value.
- Recalls the main menu (MAIN MENU).

**23 Multifunction**

- Sets the numerical value.
- Recalls the selection cursor.

**24 Multifunction**

- Stops the selection function.
- Restores the value prior to the non-confirmed modification.

**25 Confirms the entered data.**
**26 Sets the comma.**

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

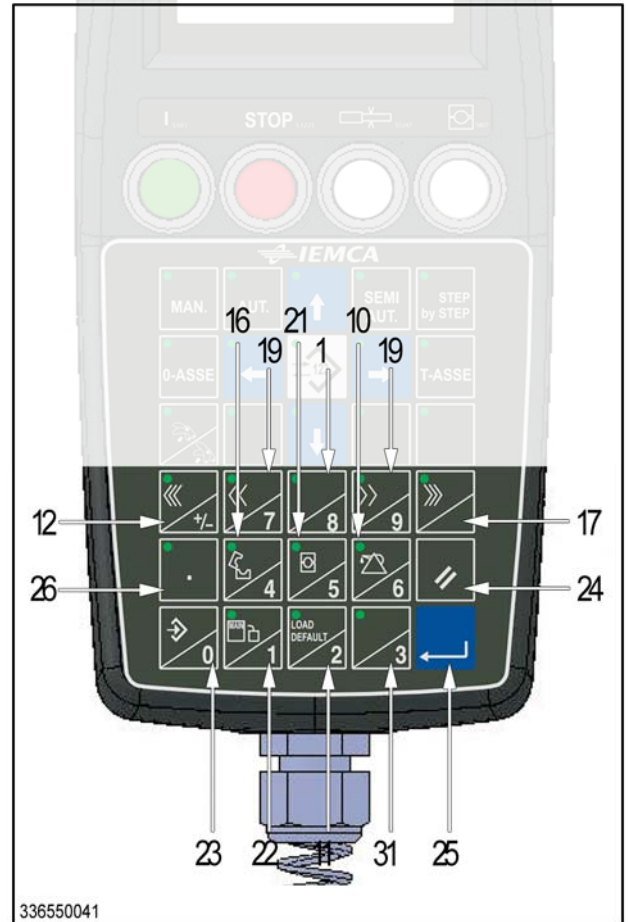
**28 Bar feeder stop button (red light):** press this button to stop the bar feeder and reset the "Errors".

**29 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.

**30 Half-bush opening and closing button (white light)**

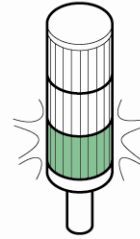
- In "Manual" mode, when the bar feeder is in the required position, the half-bushes will close when this button is pressed. If pressed again, the half-bushes will open.



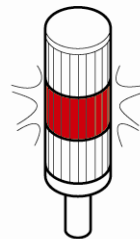
- In "Automatic" mode, if pressed, the half-bushes will open and close, according to the preset sequence. If pressed again, the half-bushes will remain open during the entire operating cycle.

### 6.3 LIGHT INDICATOR - SIGNAL DESCRIPTION

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

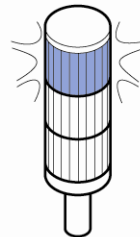


FIXED RED LIGHT; it indicates that the bar feeder is not operating, or that it is in the manual mode. (OPTIONAL)



BLINKING BLUE LIGHT; indicates that the bar feeder is carrying out the bar change.

FIXED BLUE LIGHT; indicates that the PLC battery is exhausted. (OPTIONAL)



A01MP\_MUM\_06\_01\_01

## 6.4 BAR FEEDER TOOLING

This is a list of all the bar feeder tooling phases, assuming that the bar feeder is started for the first time.

- Perform the bar feeder setup according to the bar to be machined.
- Prepare the bar to be machined.
- Load the bar magazine.
- Start the automatic cycle.
- Adjust the lubricating oil flow.

## 6.5 BARS TO BE MACHINED - FEATURES AND PREPARATION



### **WARNING – CAUTION:**

*do not insert bars having different sizes than the ones set by the manufacturer.  
For maximum length of the bar see section "VERSION DESCRIPTION" in Chapter 2.*



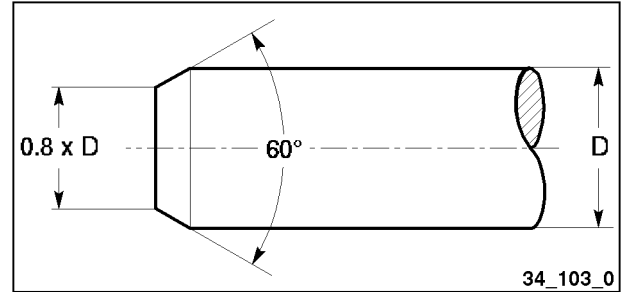
### **INFORMATION:**

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

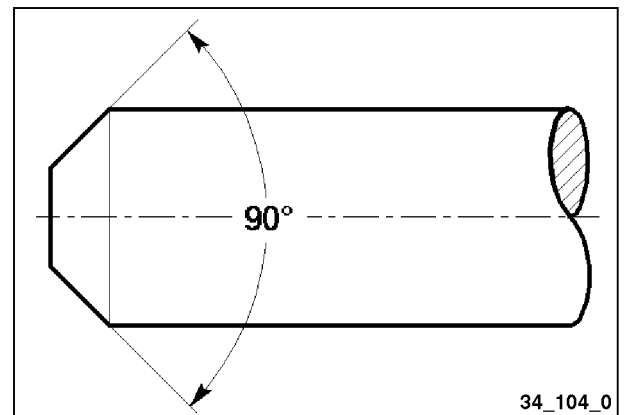
Please find hereafter some advices to optimise the bar feeder performances. Usually it is not necessary to perform preliminary operations on the bar ends, but to obtain optimum results during loading, it is advisable to chamfer them.

**SOLID BARS**

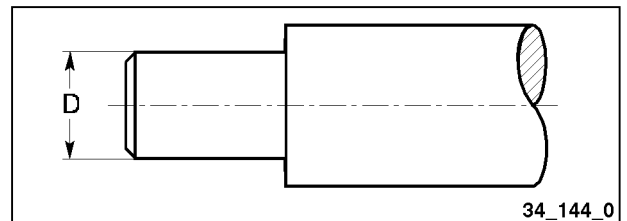
Make sure that there is not too much rag on the front end, which might hinder from entering the lathe collet. The bar rear end must be chamfered as indicated in the figure.



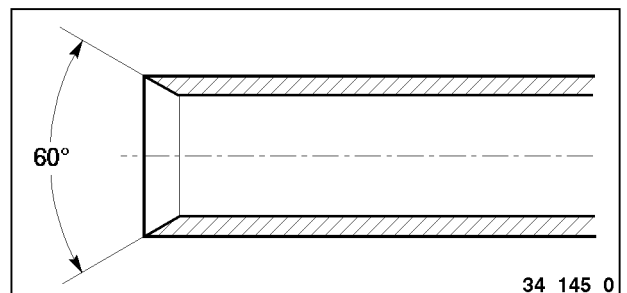
If bars with front remnant ejection have to be machined, we advise to chamfer the bar rear end as shown in the figure.



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.

**PIPES**

If pipes are to be machined, the rear end of the pipe must be chamfered as shown in the figure.



### 6.5.1 BAR STRAIGHTNESS - Measurement

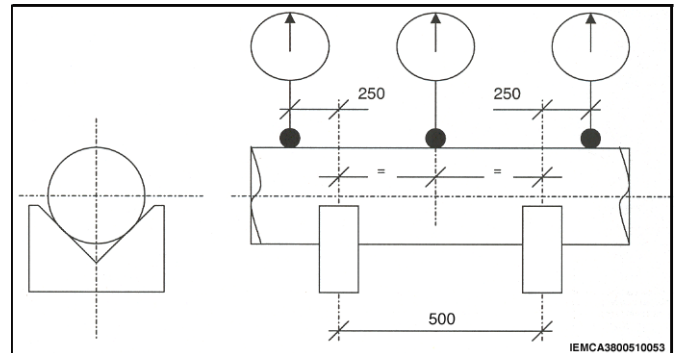
The bar vibrations are partially due to the state of the bar itself: if the bar is not perfectly straight, it can cause vibrations.

#### 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.*

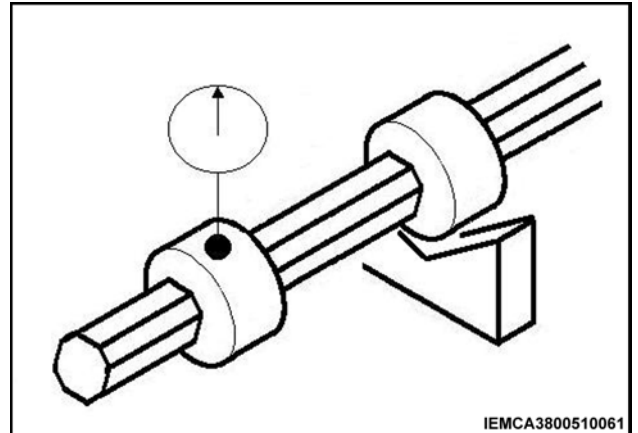
### Hexagonal, square and section bars

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

Position 2 bushes 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.



#### **INFORMATION:**

*The use of the bar feeder for polygonal bar machining (hexagonal, square bars, etc.) is allowed, accepting that this will lead to:*

- higher wear of the guide channel (in comparison to round bars).*
- bar rotation speed decrease (in comparison to round bars).*

*The higher wear of the guide channel is due to the shape of the bars as well as to the material straightness and rigidity.*

### 6.6 BAR MAGAZINE - LOADING



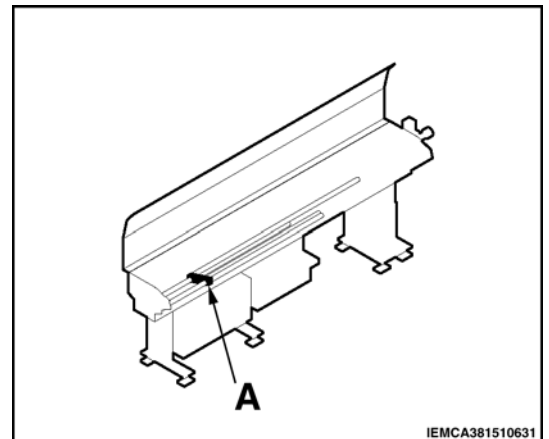
#### **WARNING – CAUTION:**

*do not manually lift weights exceeding those foreseen by the applicable regulations in force; ask for help, if necessary.*



#### **WARNING – CAUTION:**

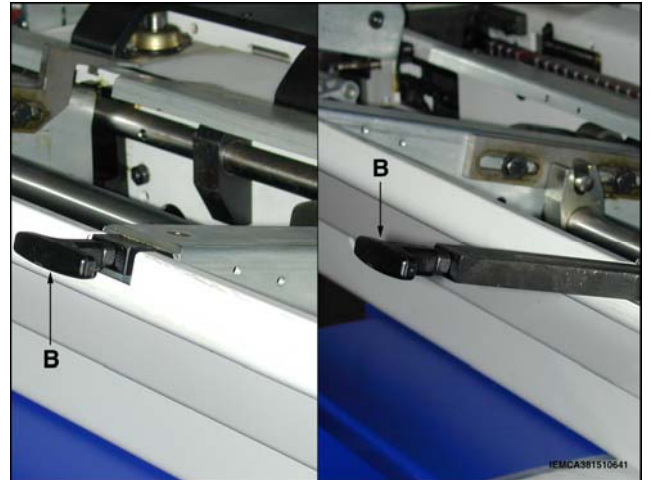
*wear personal protections according to the regulations in force.*



- Open the upper guard.
- Position the bars against plate A and close the guard.




To facilitate the bar loading, supports B can be extracted from the magazine.




### 6.7 AUTOMATIC CYCLE START


- Power the lathe on.
- Turn the main switch to position I (ON).



- Press  to start the bar feeder.



- Press , to select the manual mode.
- Carry out a "bar feeder zero setting" in the following way:

-press the start buttons and ;



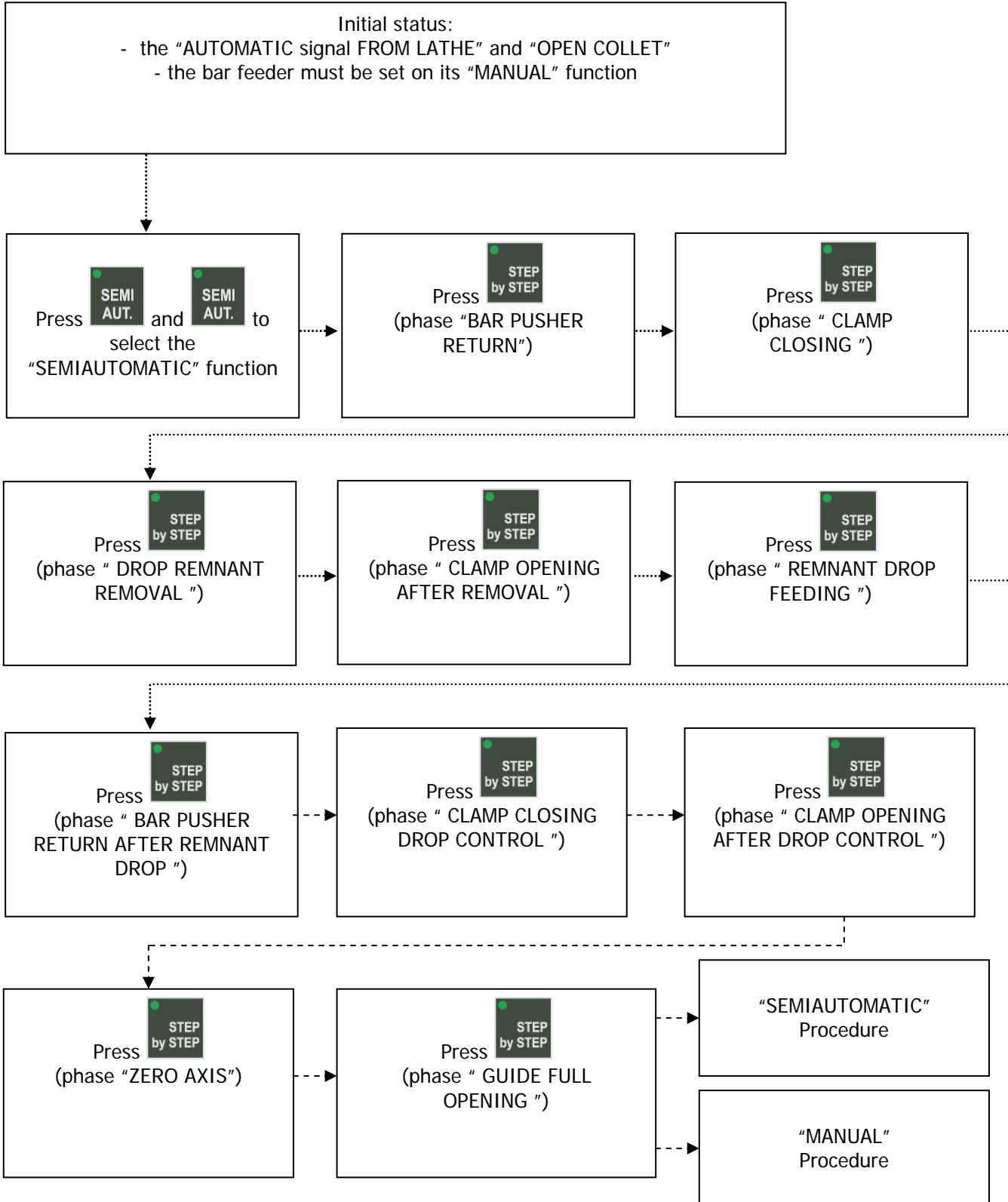
**INFORMATION:**

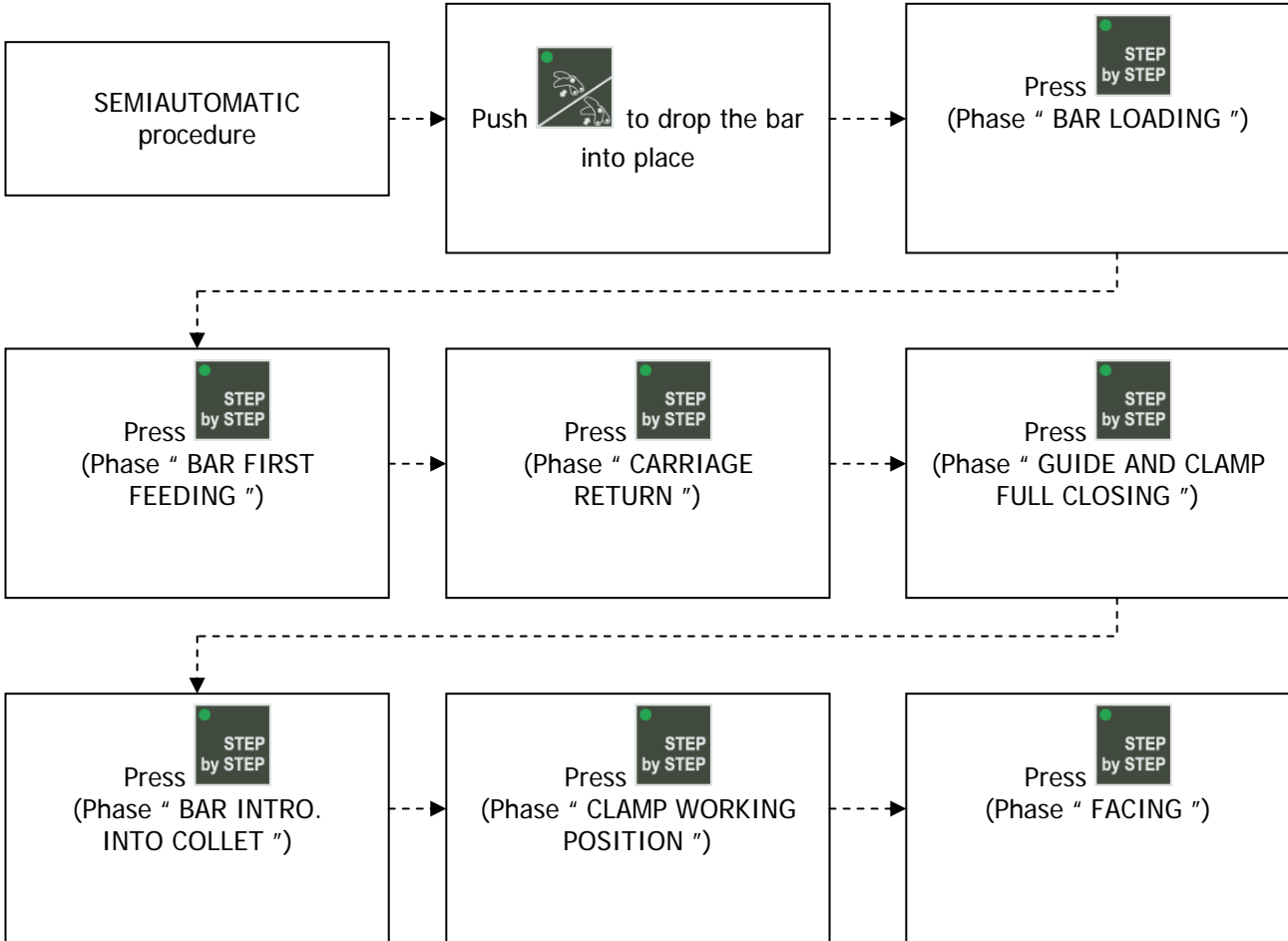
*The zero axis can be performed with open or closed guide channels.*

*Before performing the zero axis, make sure the bar pusher is not in the "back limit stop" position.*

- Load one bar in the guide channels and start the automatic cycle.

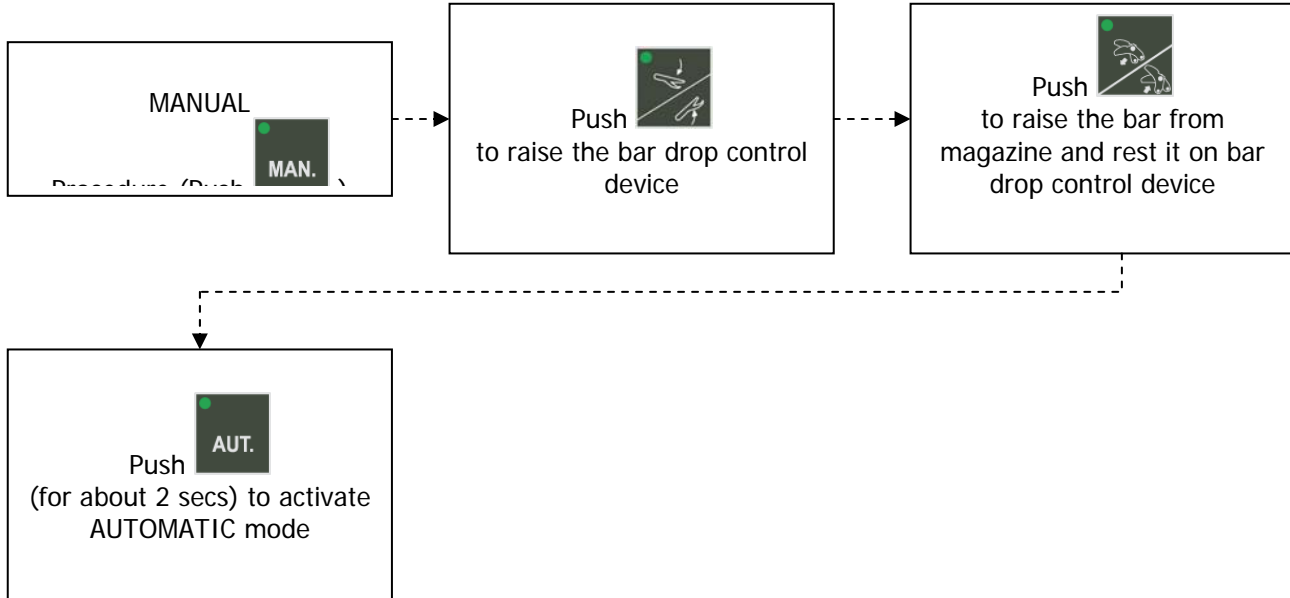
### 6.8 BAR LOADING - PROCEDURE





**INFORMATION:**

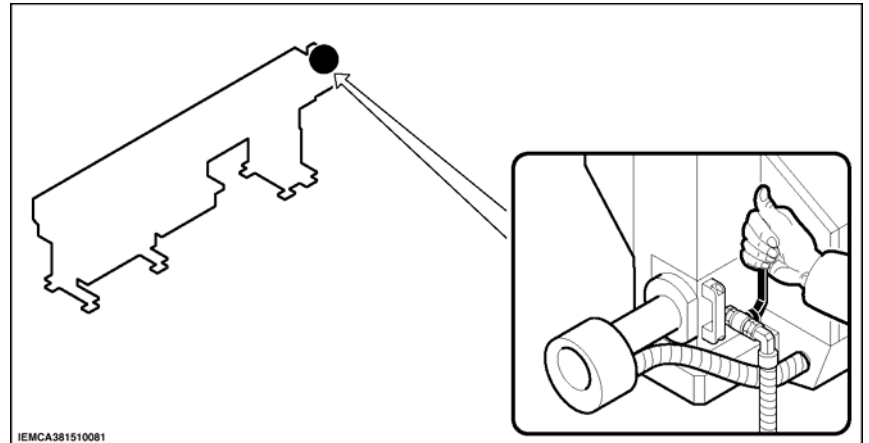
*the bar drop control devices will not go up if, during the "GUIDE CHANNEL FULL OPENING" phase there is a bar in the guide channels that has prevented the short feed gate resetting.*



## 6.9 LUBRICATING OIL - FLOW ADJUSTMENT

The oil flow in the guide channels and bush holder device is automatically controlled during the bar feeder automatic cycle. The pump is started when the bar feeder has completed the bar change and stops when the bar pusher approaches the bush holder device.

It is necessary to adjust the oil flow in the bush holder device according to the bar diameter and profile.



## 6.10 BAR FEEDER STOP

### BAR FEEDER EMERGENCY STOP



**WARNING – CAUTION:**

*if the emergency stop is activated whilst the lathe is working, before restarting the working cycle, check that no dangerous conditions have been created 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.*

- Complete the operations in your working schedule.



- Stop the bar feeder by pressing .
- Stop the lathe.
- Turn the main switch to the OFF position.






## 6.11 CYCLE PERFORMING MODE IN THE "STEP-BY-STEP" FUNCTION

### FOREWORD




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

- to check a complete bar change cycle;
- to check the bar feeder mechanics;
- et cetera.

### Procedure

- press  to start the bar feeder;
- press  and  to select the "semiautomatic" function;
- press , the bar feeder performs the first step;
- press , the bar feeder performs the second step, and so on.

**INDEX**

7.1	MAINTENANCE – GENERAL RULES 	2
7.2	SCHEDULED MAINTENANCE 	3
7.2.1	Lubricating oil - Level check	4
7.2.2	Lubricating oil - Change	4
7.2.3	Air filter unit - Check	5
7.3	LUBRICATION POINT DIAGRAM 	6

## 7.1 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.



**7.2 SCHEDULED MAINTENANCE** 
*Scheduled maintenance*

Model	Bar feeder section	Operation to be carried out	Frequency					
			Hours				Every year	Regularly
			200	500	1250	2500		
<b>MASTER 80 HF</b>	Revolving tip and collet	Wear check	•					
	Half bushes	Wear check	•					
	Lubrication system	Oil level check	•					
		Oil change				•		
	Guide channels	Integrity and cleanness check			•			
	Guide channel opening screw	Greasing			•			
	Feeding chain	Lubrication	•					
		Tensioning check			•			
	Guide channel opening belt	Wear check				•		
	Air filter	Check						•
Keyboard battery	Replacement					•		
PLC battery	Replacement					•		

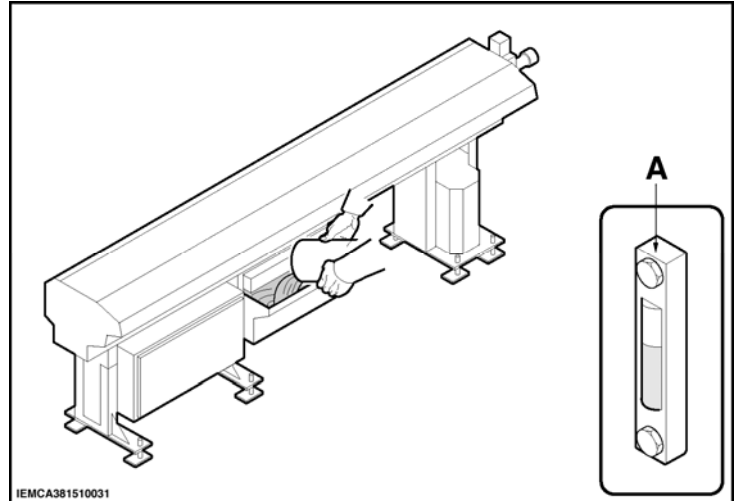
### 7.2.1 Lubricating oil - Level check



**WARNING – CAUTION:**

*wear personal protections according to the regulations in force.*

- Wait until the bar feeder has been turned off for at least 6 hours.
- Check the level by means of the indicator (A).
- Pour the oil directly in the tank to fill up, if necessary.
- Oil features: Class (C) - CKB 150.



### 7.2.2 Lubricating oil - Change



**WARNING – CAUTION:**

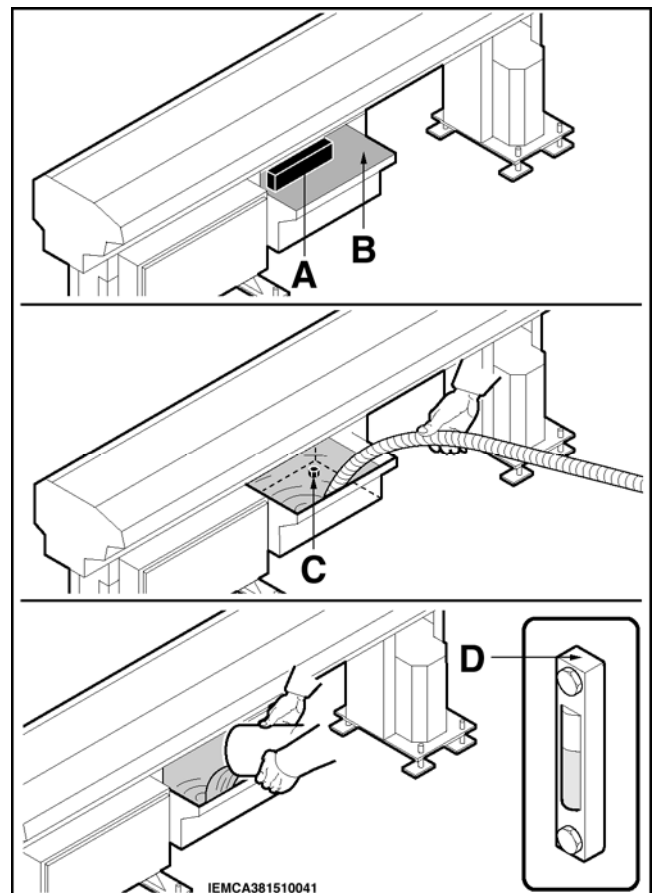
*wear personal protections according to the regulations in force.*



**INFORMATION:**

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

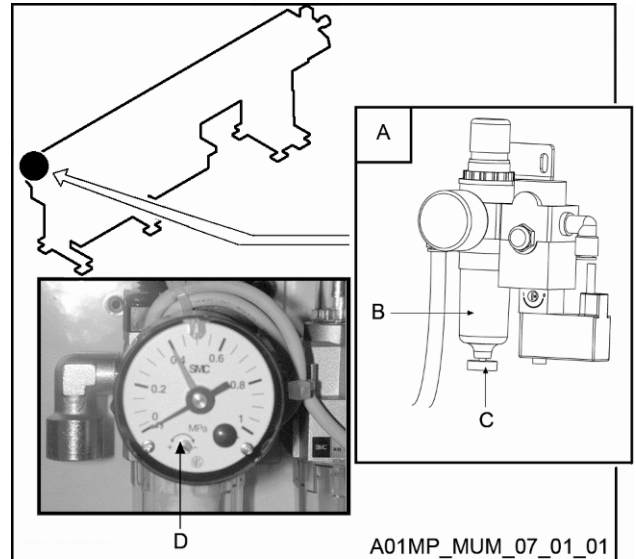
- Remove cover (A) and grid (B).
- Empty the tank with the use of an auxiliary pump, or by means of the drain plug (C). Clean the tank bottom and the pump suction system.
- For the loading, pour the oil directly in the tank and check the level through the indicator (D).
- Oil features: Class C - CKB 150, quantity 80 l.



### 7.2.3 Air filter unit - Check

#### **FILTER (A)**

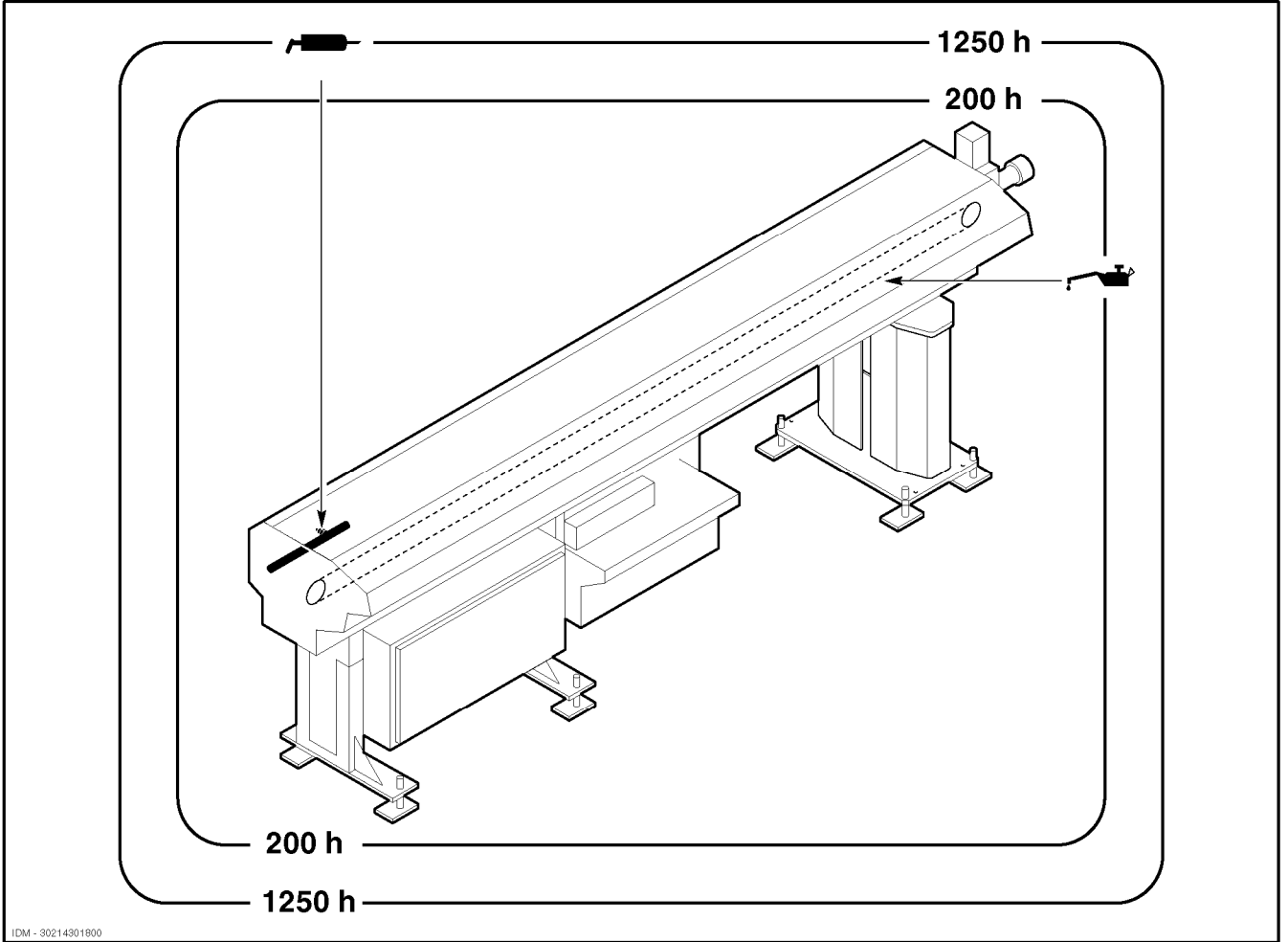
- Make sure that cup (B) is not full of condensate. Drain the condensate by means of valve (C), if necessary.
- The filter is equipped with a control pressure switch, set to a pressure of 4.5 bar.
- To adjust the pressure switch proceed as follows:
  - remove the pressure gauge glass protection;
  - turn the adjusting screw (D) counter clockwise (+) to increase pressure or clockwise (-) to decrease it;
  - once finished, replace the pressure gauge glass protection.





#### **WARNING – CAUTION:**

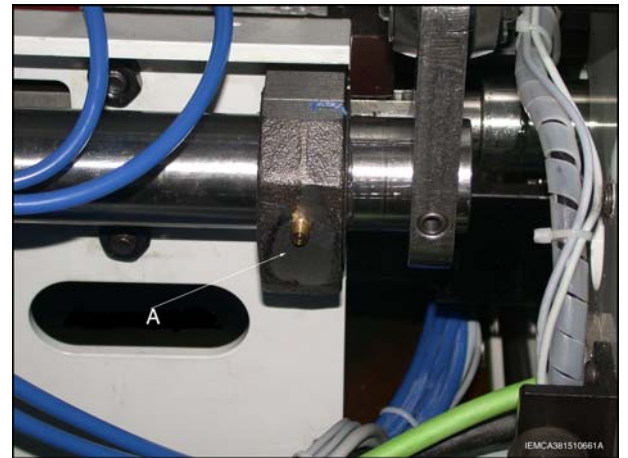
*should the pressure switch pointer show a Pressure=0, do not possibly turn the adjusting screw (D) clockwise (-), as it may cause the pressure switch breakage.*

**7.3 LUBRICATION POINT DIAGRAM** 



-  Grease
-  Oil

Grease position (A) using the suitable grease pump inserted in the lubricator.





**INDEX**

8.1	GENERAL FAILURES 	.....2
8.2	FEEDING INTO COLLET – Failures 	.....2
8.3	BAR FEEDING - Failures 	.....2

**8.1 GENERAL FAILURES** 

TROUBLES	CAUSES	SOLUTIONS
<b>The bar feeder cannot start</b>	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.
<b>The bar feeder has been reset but the automatic cycle will not start.</b>	No lathe signal.	Check the electrical connection with the lathe.
<b>The pneumatic devices do not respond to controls.</b>	No air.	Check the air system.
<b>The first feeding and feeding are stopped unexpectedly.</b>	Motor thermal circuit breaker burnt.	Reset the motor circuit breaker with the special buttons.

**8.2 FEEDING INTO COLLET – Failures** 




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



**INDEX**

9.1	FEEDING CHAIN – REPLACEMENT 	.....2
9.2	PLC BATTERY – REPLACEMENT 	.....3
9.3	RECOMMENDED SPARE PARTS 	.....4
9.4	DISPOSAL OF THE BAR FEEDER OR PARTS OF IT	.....4

## 9.1 FEEDING CHAIN – REPLACEMENT

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

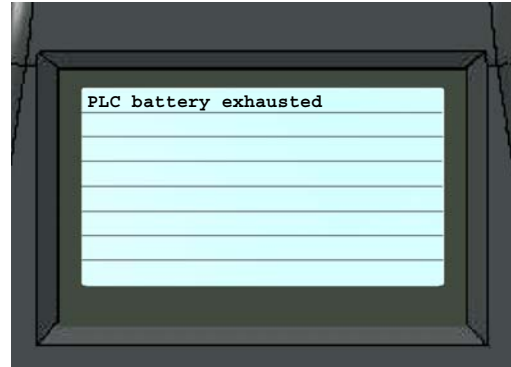
## 9.2 PLC BATTERY – REPLACEMENT

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

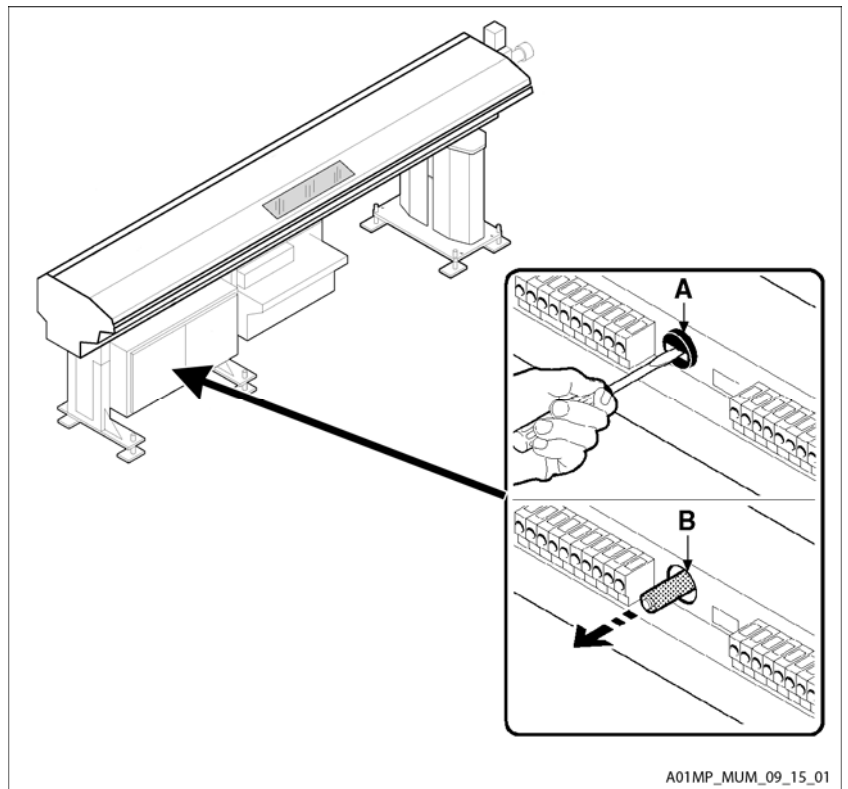


**INFORMATION:**

*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".



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### 9.3 RECOMMENDED SPARE PARTS

The parts subject to wear or easily breakable parts are listed below (for a period of two years, normal use of the bar feeder).

Model	Code	Name	Features	Notes	Qty
MASTER 80 HF	24220108	Feeding chain	1/2"x5/16"	Model 33	1
	24220109	Feeding chain	1/2"x5/16"	Model 38	1
	24220121	Feeding chain	1/2"x5/16"	Model 43	1
	24290606	Connecting link	1/2"x5/16"		1
	32210004	Sensor	3RG4012-0AG07		1
	32210013	Sensor	3RG4012-0AG33		1
	32210017	Sensor	3RG4012-0AG00		1
	32210019	Sensor	3RG4012-0AG33-Z		1
		Bar pusher		Specify diameter and length	1
		Revolving tip		Specify diameter	1
		Collet		Specify internal and external diameter	1

To order the parts refer to the Spare Parts Catalogue.

### 9.4 DISPOSAL OF THE BAR FEEDER OR PARTS OF IT



**INFORMATION:**

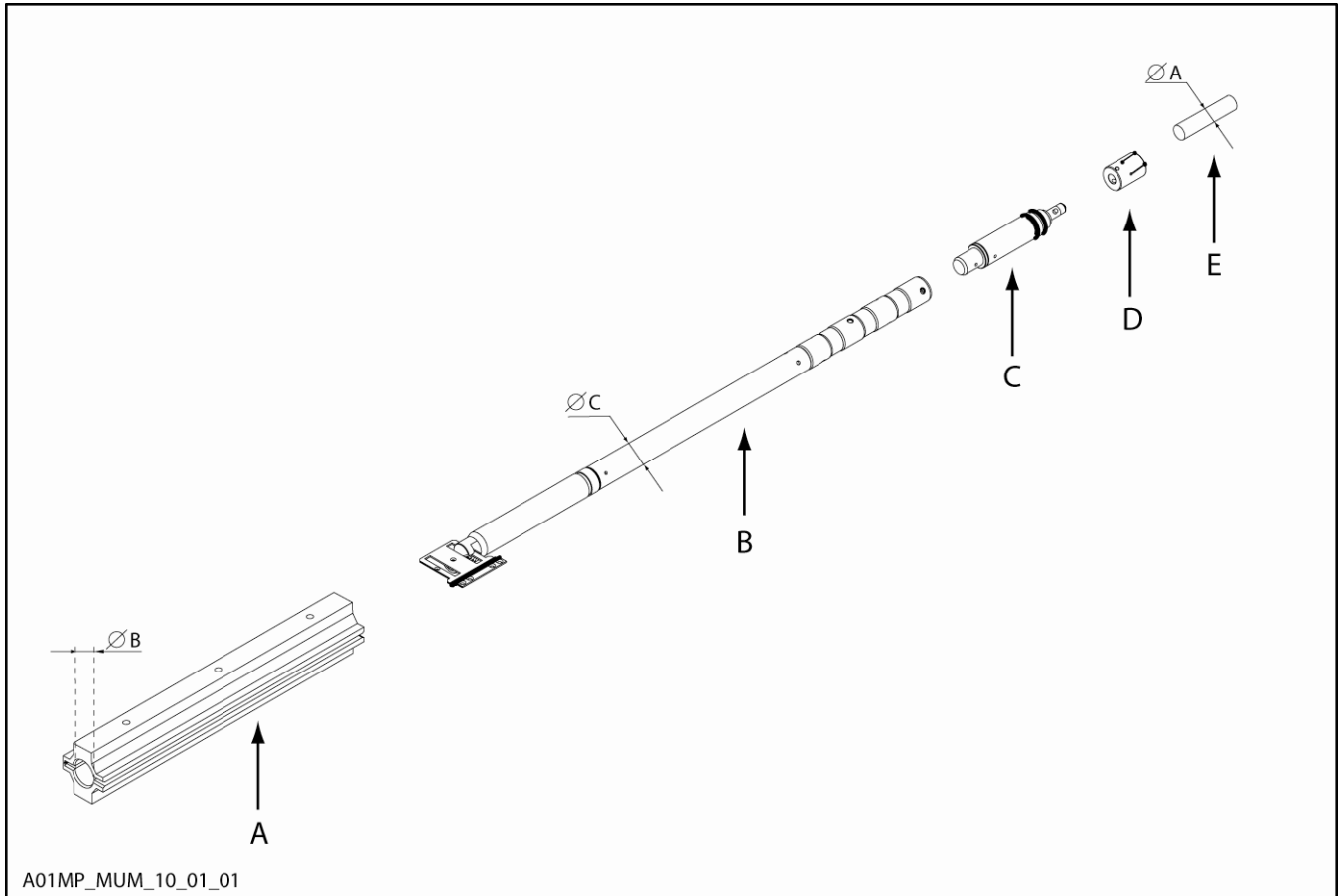
*this operation must be carried out by specialized operators, in accordance with the laws in force on safety at work. Do not throw non-biodegradable products, lubricating oils and non-ferrous components (rubber, PVC, resins, etc.) in the environment. Dispose of the materials in compliance with the laws in force.*

**INDEX**

10.1	GUIDE CHANNELS AND BAR PUSHER.....	2
10.2	REVOLVING TIP - TABLE .....	3
10.3	Revolving tips $\varnothing$ GR 20 $\div$ 25 - Table .....	5
10.4	Revolving tips $\varnothing$ GR 20 $\div$ 25 - Table .....	6
10.5	Revolving tips $\varnothing$ GR 32 $\div$ 81 - Table .....	7

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

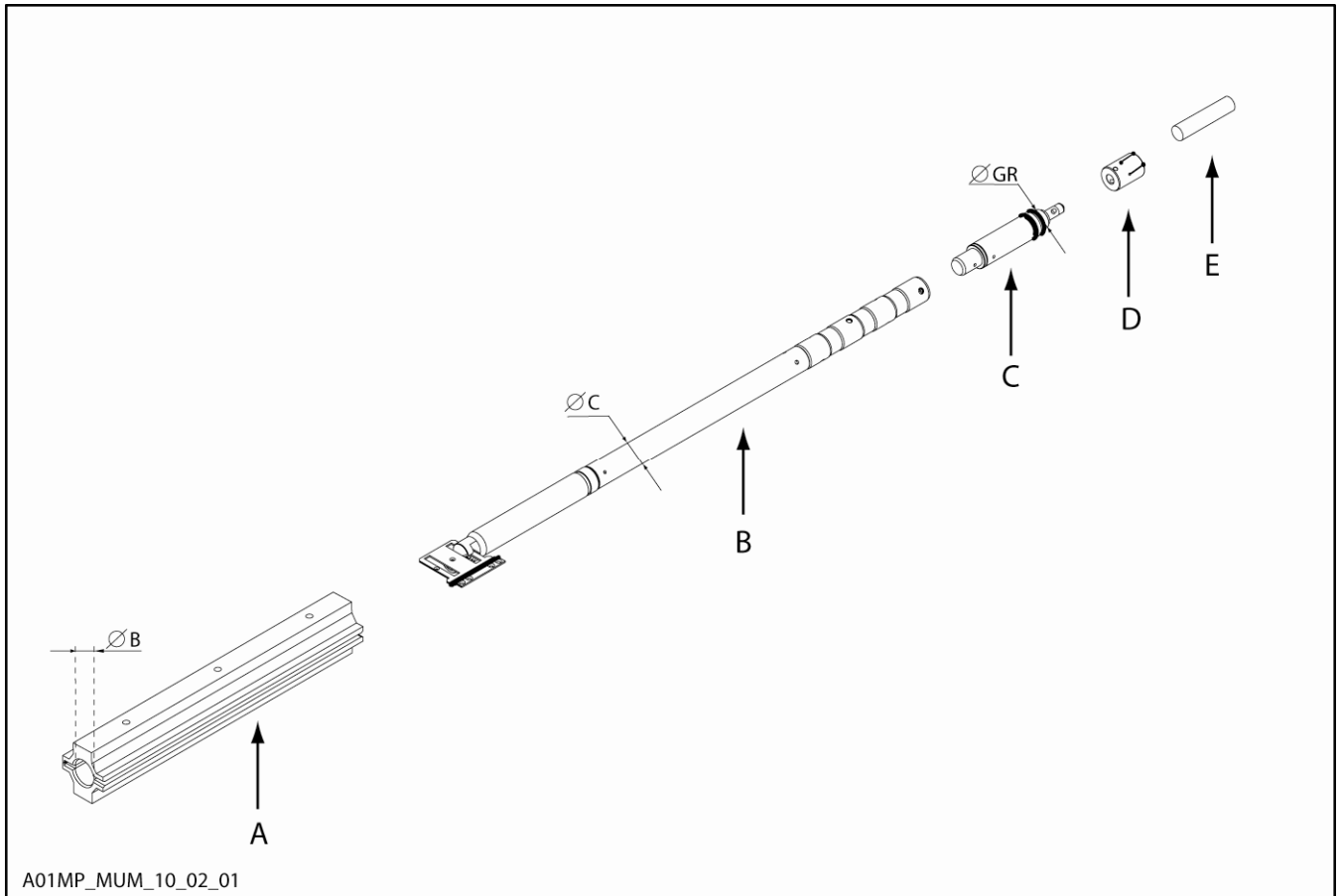


**INFORMATION:**

*upon customer's request and according to the internal diameter of lathe spindle hole, the bar pusher and the revolving tips may be supplied with dimensions other than the ones indicated in the table.*

## 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.



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

øB (mm) Guide channel diameter	øC (mm) Bar pusher diameter	Collet version – D (type of coupling)	øGR (mm) Revolving tip diameter	Revolving tip code
21	20	Threaded (IEMCA)	20	D02152050
		With quick coupling pin		D02152051
26	25	Threaded (IEMCA)	25	D02152550
		With quick coupling pin		D02152551
33	32	Threaded (IEMCA)	32	D02153250
		With quick coupling pin		
36	35	Threaded (IEMCA)	35	D02153550
		With quick coupling pin		
38	37	Threaded (IEMCA)	37	D02153750
		With quick coupling pin		
43	42	Threaded (IEMCA)	42	D02154250
		With quick coupling pin		
46	45	Threaded (IEMCA)	45	D02154550
52	51	With quick coupling pin (IEMCA) With quick coupling screw (IEMCA) Threaded "OPTIONAL"	51	D02155150
57	56		56	D02155650
61	60		60	D02156050
66	65		65	D02156550
69	68		68	D02156850
71	70		70	D02157050
73	72		72	D02157250
76	75		75	D02157550
81	80		80	D02158050
86	85		85	D02158550

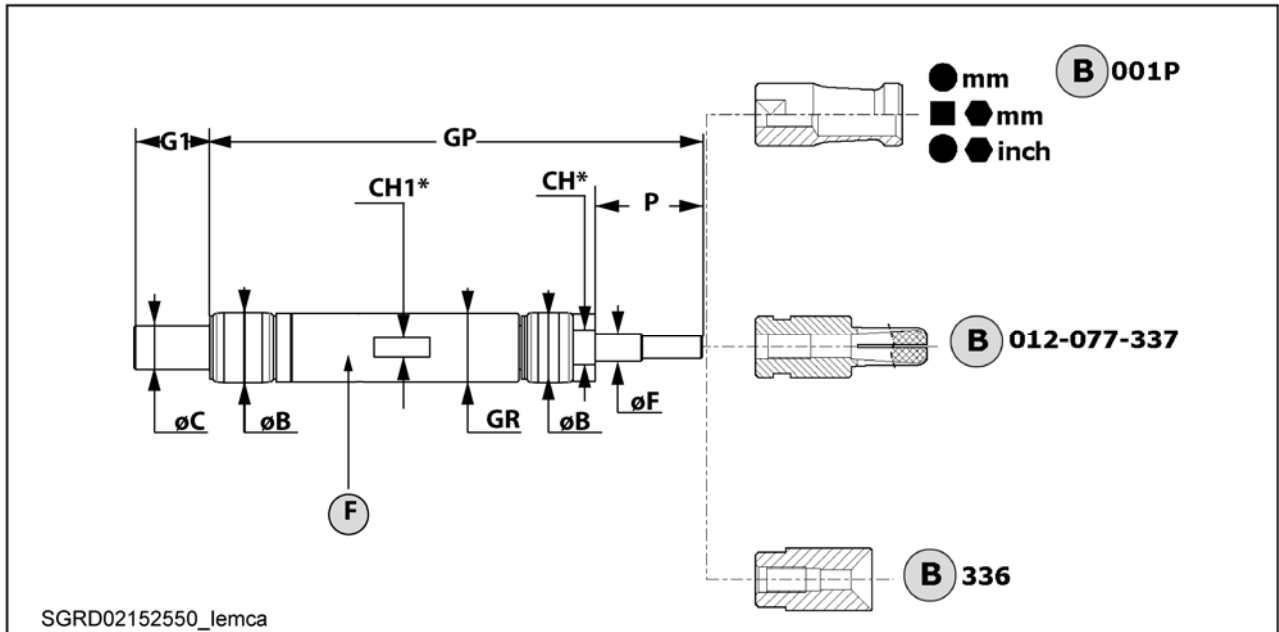


**IMPORTANT:** the single components of the bar pusher and revolving tips are showed in the spare parts catalogue.



10.3 Revolving tips  $\varnothing$ GR 20÷25 - Table

- For collets with threaded coupling (IEMCA)



CH\*: double-ended fork wrench DIN3110

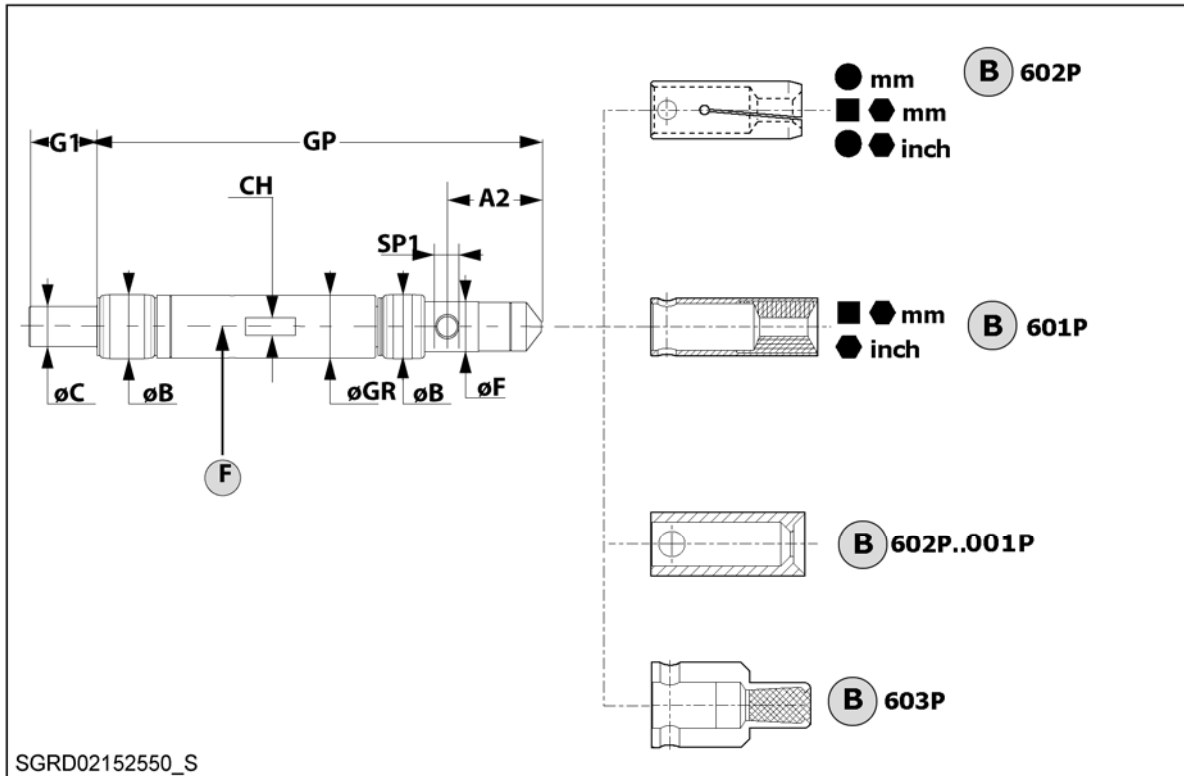
B See conversion table therefore collet table

F Revolving tip

$\varnothing$ GR (mm)	Revolving tip code	$\varnothing$ F	$\varnothing$ B (mm)	GP (mm)	G1 (mm)	$\varnothing$ C (mm)	P (mm)	CH1 (mm)	CH (mm)
20	D02152050	M10x1	20.5	172.2	29	M12	38.5	19	15
25	D02152550	M10x1	25.5	172.2	29,8	M16	38.5	24	21

### 10.4 Revolving tips $\varnothing$ GR 20÷25 - Table

- For collets with quick coupling pin "OPTIONAL"

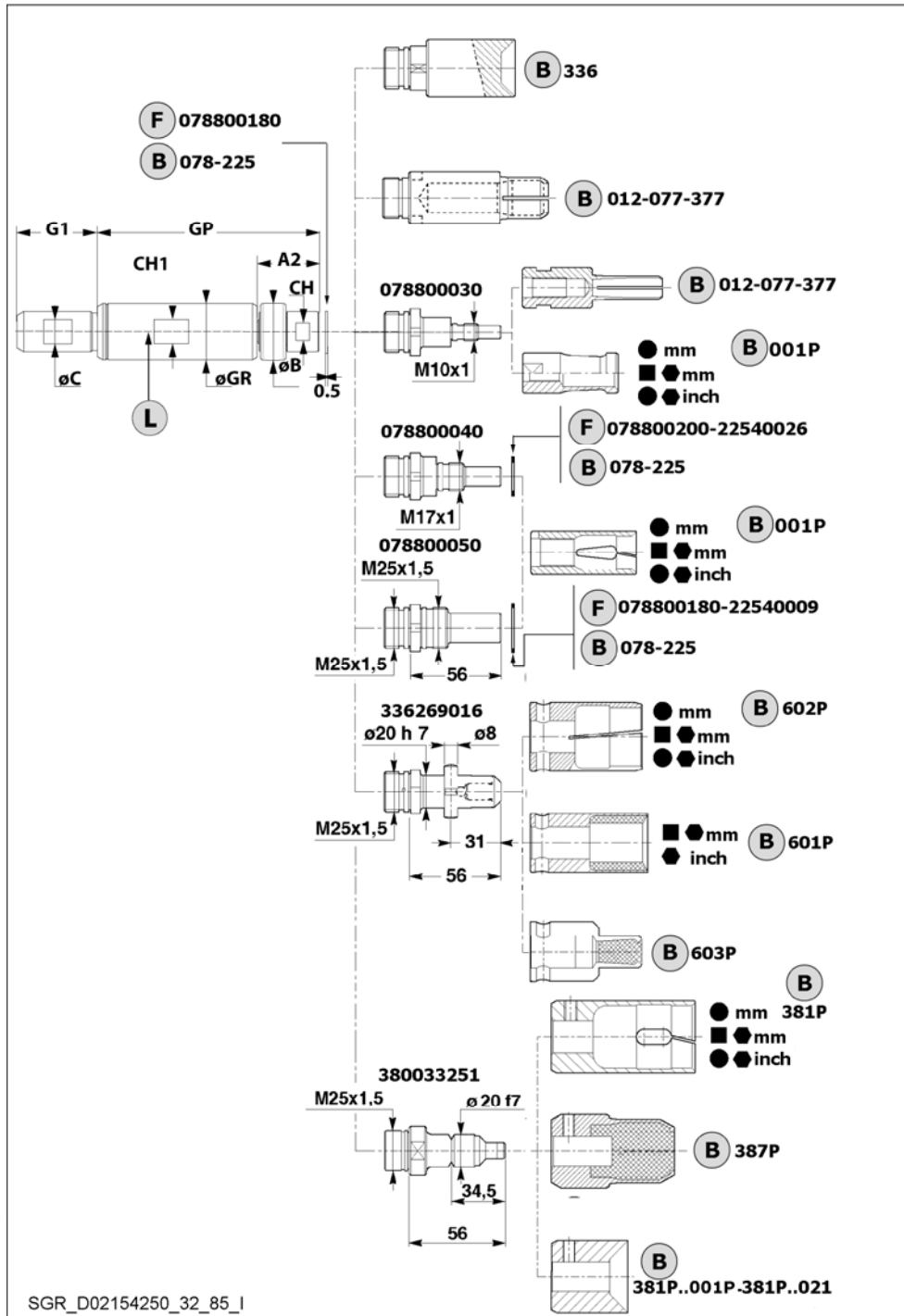


CH\*: double-ended fork wrench DIN3110  
 B See conversion table therefore collet table  
 F Revolving tip

$\varnothing$ GR (mm)	Revolving tip code	A2	$\varnothing$ F	$\varnothing$ B (mm)	GP (mm)	G1 (mm)	$\varnothing$ C (mm)	CH (mm)
20	D02152051	37,5	$\varnothing$ 14	20.5	172.7	29	M12	19
25	D02152551	37,5	$\varnothing$ 20	25.5	172.5	29,8	M16	21

10.5 Revolving tips  $\varnothing GR 32 \div 81$  - Table

- For collets with threaded coupling (IEMCA)



CH\*: double-ended fork wrench DIN3110  
 B See conversion table therefore collet table  
 F Ring  
 L Revolving tip

<b>øGR</b> (mm)	Revolving tip code	<b>CH</b> (mm)	<b>CH1</b> (mm)	<b>CH2</b> (mm)	<b>øB</b> (mm)
32	D02153250	27	30	20	32,5
35	D02153550	27	32	20	35,5
37	D02153750	27	32	20	37,5
42	D02154250	24	38	24	42,5
45	D02154550	26	42	26	45,5
51	D02155150	32	45	38	51,5
56	D02155650	32	50	38	56,5
60	D02156050	32	55	40	60,5
65	D02156550	32	55	46	65,5
68	D02156850	32	64	48	68,5
70	D02157050	32	65	46	70,5
72	D02157250	32	68	50	72,5
75	D02157550	32	72	54	75,5
80	D02158050	32	75	58	80,5
85	D02158550	32	82	58	85,5

<b>øGR</b> (mm)	Revolving tip code	<b>øC</b> (mm)	<b>G1</b> (mm)	<b>GP</b> (mm)	<b>A2</b> (mm)
32	D02153250	M24X2	50,75	165	46
35	D02153550	M24X2	50,75	165	46
37	D02153750	M24X2	50,75	165	46
42	D02154250	M30X2	60	165	46
45	D02154550	M30X2	60	165	46
51	D02155150	M42X2	60	181	50
56	D02155650	M42X2	60	181	43
60	D02156050	M45X2	60	202	43
65	D02156550	M50X2	60	202	43
68	D02156850	M54X2	60	202	50
70	D02157050	M54X2	60	202	50
72	D02157250	M54X2	60	202	50
75	D02157550	M60X2	60	202	50
80	D02158050	M64X2	60	202	50
85	D02158550	M64X2	60	202	50

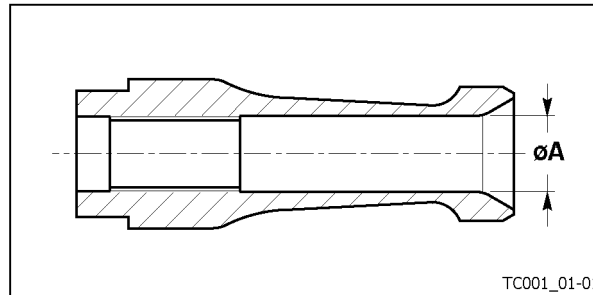
**INDEX**

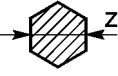

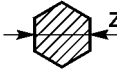

11.1	CONVERSION TABLES 001 .....	3
11.2	HEXAGONAL BARS (unit of measurement "millimetres") - Table.....	3
11.3	SQUARE BARS (unit of measurement "millimetres") - Table .....	5
11.4	HEXAGONAL BARS (unit of measurement "inches") - Table.....	6
11.5	ROUND BARS - (unit of measurement "inches") - Table.....	7
11.6	CONVERSION TABLE Inches/Millimetres .....	8
11.7	COLLETS FOR 011P BARS.....	10
11.8	COLLETS FOR BARS - Table.....	10
11.9	PIPE COLLETS 012-077-377 .....	13
11.10	PIPE COLLETS - Table .....	13
11.11	EJECTOR 336 .....	17
11.12	EJECTOR – Guide channels $\varnothing < 30$ - Table.....	17
11.13	EJECTOR – Guide channels $\varnothing > 32$ - Table.....	19
11.14	COLLETS FOR BARS 602P.....	21
11.15	COLLET FOR BARS - Table.....	21
11.16	BORING COLLETS FOR BARS 601P.....	23
11.17	BORING COLLETS FOR SQUARE AND HEXAGONAL BARS - Table .....	23
11.18	EJECTORS 602P..011 .....	25
11.19	EJECTORS - Guide channels $\varnothing 13 \div 28$ - Table.....	25
11.20	PIPE COLLETS 603P .....	27
11.21	PIPE COLLETS - Table .....	27
11.22	COLLETS FOR BARS 381P.....	30
11.23	COLLET FOR BARS - Table.....	30
11.24	EJECTORS 381P..011 - 381P..021 .....	33
11.25	381P..021 EJECTORS - Guide channels $\varnothing 33 \div 46$ - Table .....	33
11.26	381P..011 EJECTORS - Guide channels $\varnothing 52 \div 86$ - Table .....	35

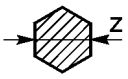
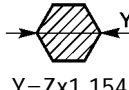
11.27	PIPE COLLETS 386P .....	37
11.28	PIPE COLLETS - Table .....	37
11.29	RINGS FOR COLLETS 078-225 .....	39
11.30	RINGS FOR COLLETS - Table .....	39

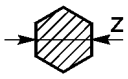
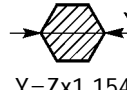
**11.1 CONVERSION TABLES 001**
**11.2 HEXAGONAL BARS (unit of measurement "millimetres") - Table**

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

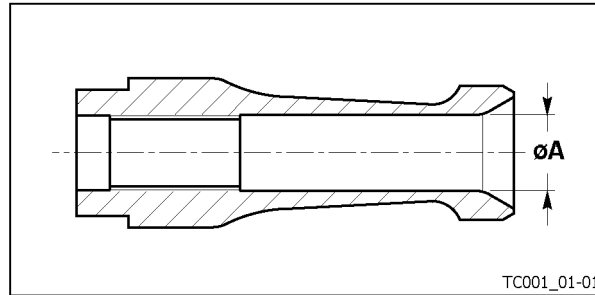
	 Y=Zx1,154	<b>ØA</b>
mm	mm	mm
23	26.55	26.2
24	27.71	27.5
25	28.86	28.5
26	30.02	29.8
27	31.17	31

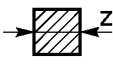

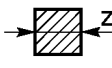
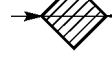
	 Y=Zx1,154	<b>ØA</b>
mm	mm	mm
72	83.08	82.5
75	86.55	86
80	92.32	91.75
85	98.1	97.5



**11.3 SQUARE BARS (unit of measurement "millimetres") - Table**

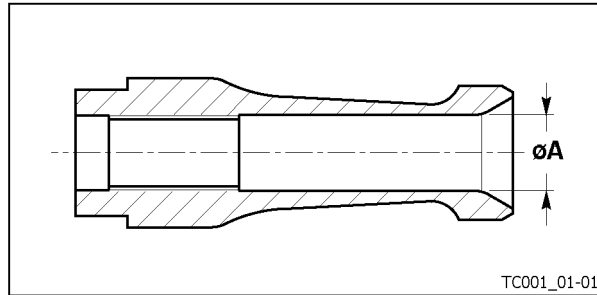
Before selecting the steel collet, define the internal diameter  $\varnothing A$  by referring to the table below.

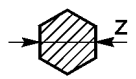


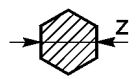
	 $Y=Z \times 1,414$	$\varnothing A$		 $Y=Z \times 1,414$	$\varnothing A$
mm	mm	mm	mm	mm	mm
1	1.41	1.3	20	28.28	27.5
1.5	2.12	2	22	31.10	30.5
2	2.82	2.7	23	32.52	32
2.5	3.53	3.4	24	33.93	33
3	4.24	4	25	35.35	34.5
4	5.65	5.5	26	36.76	36
4.5	6.36	6.2	27	38.17	37.5
5	7.07	6.8	28	39.59	38.5
5.5	7.77	7.5	30	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

### 11.4 HEXAGONAL BARS (unit of measurement "inches") - Table

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

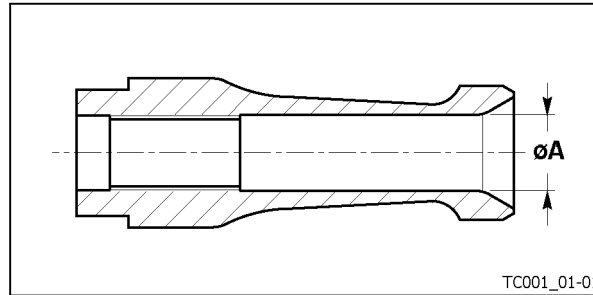


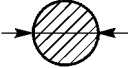
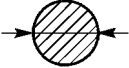
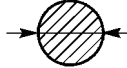
 inches	$\varnothing A$	
	mm	inches
1/8	3.5	9/64
3/16	5.25	13/64
1/4	7	9/32
5/16	8.75	11/32
3/8	10.75	27/64
7/16	12.5	31/64
1/2	14.25	9/16
9/16	16.25	41/64
5/8	18	45/64
11/16	19.75	25/32
3/4	21.75	55/64
13/16	23.5	59/64
7/8	25.25	63/64
15/16	27.25	1"5/64
1"	29	1"9/64
1"1/16	30.75	1"13/64
1"1/8	32.5	1"9/32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

 inches	$\varnothing A$	
	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

**11.5 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		

### 11.6 CONVERSION TABLE Inches/Millimetres

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

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

### 11.7 COLLETS FOR 011P BARS

### 11.8 COLLETS FOR BARS - Table



**WARNING – CAUTION:**

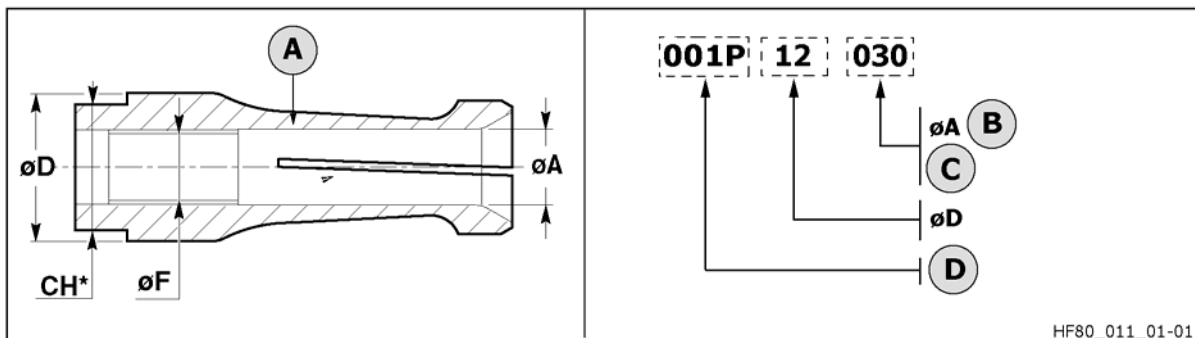
*the collet external diameter should be at least 0.5 mm smaller than the bar pusher external diameter.*



**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.*

**Code structure**



CH\*: double-ended fork wrench DIN3110

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

External diameter (mm) <b>øD</b>	Diameter (mm) <b>øF</b>	Internal diameter (mm) <b>øA</b>	
		MIN	MAX
7,5	M5x0,5	2	6,4
8,5	M5x0,5	5,6	7,4
9,5	M5x0,5	6,6	7,4
10	M6x0,75	2	8
12	M7x0,75	2	10
15	M8x1	3	13
16	M8x1	10	14
17	M8x1	11	15
18	M8x1	12	16,2
19	M8x1	13	17
20	M10x1	3	18
23	M10x1	14	21
25	M10x1	18	23
27	M10x1	20	25,5
30	M10x1	21	27
32	M25x1,5	23	30
34	M25x1,5	27	32
35	M25x1,5	29	32
37	M25x1,5	32	34
38	M25x1,5	31	33
40	M25x1,5	33	37
42	M25x1,5	37	40
45	M25x1,5	39	42
48	M25x1,5	40	44
50	M25x1,5	44	46
51	M25x1,5	46	47
52	M25x1,5	47	48
55	M25x1,5	48	51
56	M25x1,5	51	52

External diameter (mm) <b>øD</b>	Diameter (mm) <b>øF</b>	Internal diameter (mm) <b>øA</b>	
		MIN	MAX
58	M25x1,5	52	54
60	M25x1,5	54	56
64	M25x1,5	56	59
65	M25x1,5	59	61
68	M25x1,5	61	64
70	M25x1,5	64	66
72	M25x1,5	66	67
74	M25x1,5	67	70
76	M25x1,5	70	72
80	M25x1,5	72	75



## 11.9 PIPE COLLETS 012-077-377

### 11.10 PIPE COLLETS - Table



**WARNING – CAUTION:**

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



**INFORMATION:**

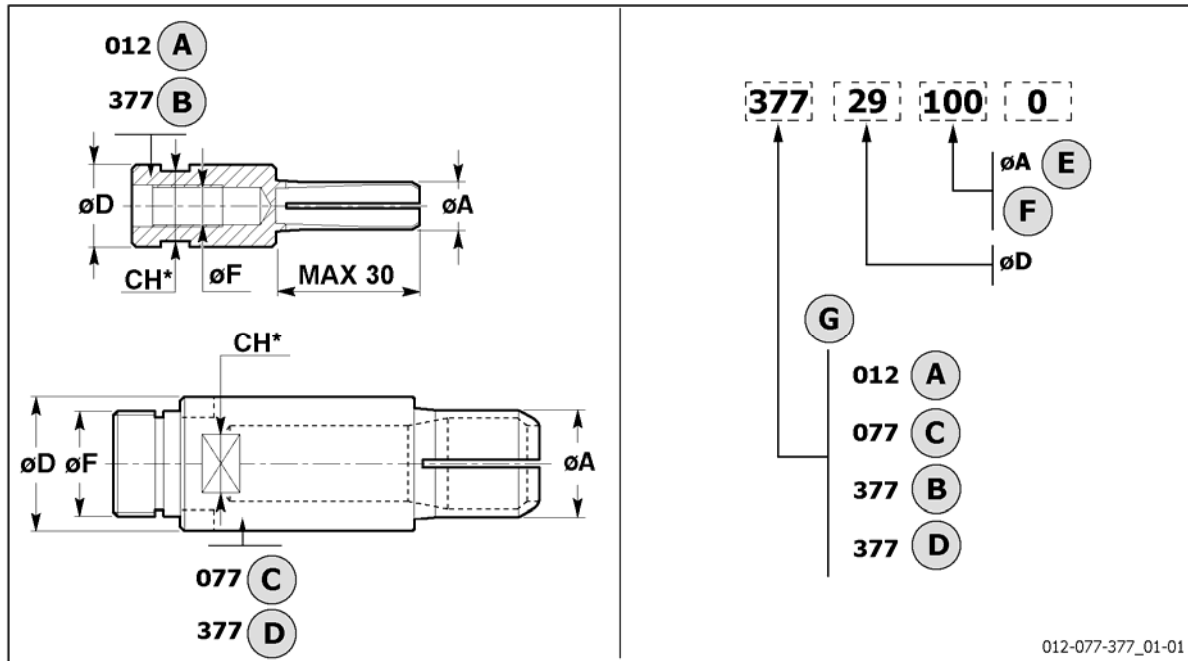
*collets 377... (bar feeder BOSS) with  $\varnothing F$  M10x1 have been designed to be assembled on lower revolving tips with  $\varnothing 28$ ; if mounted on the revolving tips with diameter greater than  $\varnothing 30$  and with nipples 078800030, it is necessary to lengthen the bar pusher carriage first feeding value by 7.5 mm.*



**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.*

**Code structure**



012-077-377\_01-01

CH\*: double-ended fork wrench DIN3110

- A Collets for pipe (type AS)  $\phi F$  M7x0.75 - M8x1
- B Collets for pipe (type BOSS)  $\phi F$  M10x1
- C Collets for pipe (type T560)  $\phi F$  M17x1 - M25x1
- D Collets for pipe (type T560)  $\phi F$  M25x1.5
- E Bar diameter
- F Example:
  - 5 mm = 060
  - 10 mm = 100
  - 12.5 mm = 125
- G Category

External diameter (mm) <b>øD</b>	Diameter (mm) <b>øF</b>	External diameter (mm) <b>øA</b>	
		MIN	MAX
10	M6x0,75	5,9	6
12	M7x0,75	5	9,5
15	M8x1	5	13
16	M8x1	13,5	14
20	M10x1	6	18
23	M10x1	8	21,75
24	M17x1	6	23,5
25	M10x1	14	23,5
27	M17x1	23	25,5
29	M17x1	22	27
29	M25x1,5	8	27
30	M25x1,5	25	26,75
32	M25x1,5	27	30,25
35	M25x1,5	29	33
37	M25x1,5	33,5	33,5
38	M25x1,5	32	33
40	M25x1,5	33,25	37

External diameter (mm) <b>øD</b>	Diameter (mm) <b>øF</b>	External diameter (mm) <b>øA</b>	
		MIN	MAX
42	M25x1,5	37,5	40
44-45	M25x1,5	40	42,5
49	M25x1,5	43	46,5
54-55	M25x1,5	46,5	52,5
59	M25x1,5	52,5	56
64	M25x1,5	56,5	61
68	M25x1,5	61,5	66

11.11 EJECTOR 336

11.12 EJECTOR – Guide channels  $\varnothing < 30$  - Table



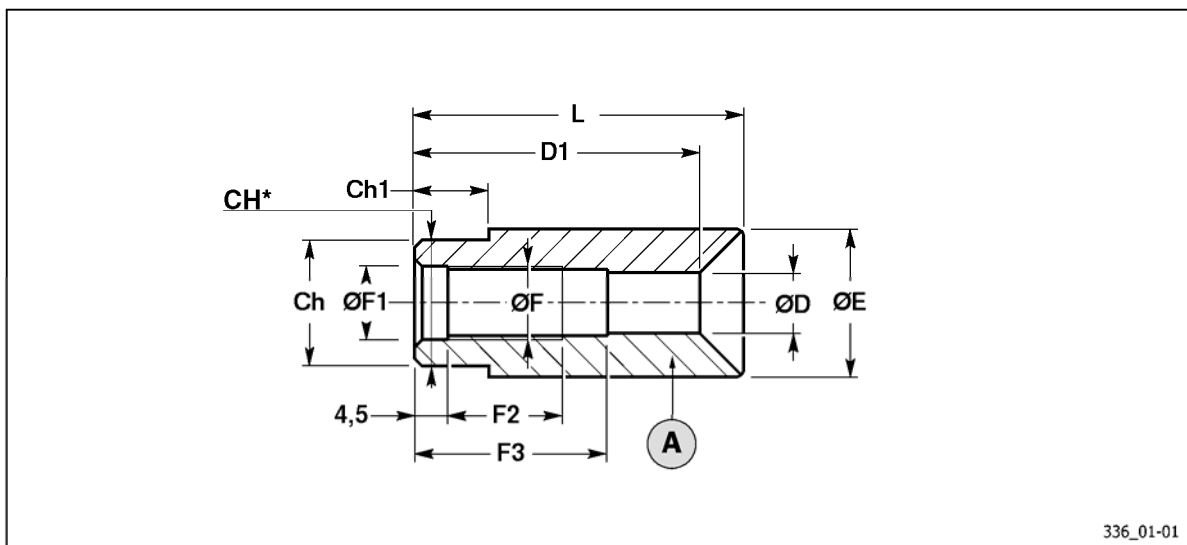
**WARNING – CAUTION:**

*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.*



336\_01-01

CH\*: double-ended fork wrench DIN3110

A Ejector

<b>øF</b>	<b>F1</b> (mm)	<b>F2</b> (mm)	<b>F3</b> (mm)	<b>øE</b> (mm)	<b>L</b> (mm)	<b>øD</b> (mm)	<b>D1</b> (mm)	<b>Ch</b> (mm)	<b>Ch1</b> (mm)	Code no.
M7x0.75	7	12	18	12	29.75	5.5	26.5	10	6	336803120
M8x1	8	12	18	15	30.75	6.5	26.5	13	10	336803150
M8x1	8	12	18	18	32	6.5	26.5	15	10	336803180
M10x1	10	15.5	26	20	44.4	8.2	38.5	17	10	336803200
M10x1	10	15.5	26	23	46	8.2	38.5	19	10	336803230
M10x1	10	15.5	26	25	47	8.2	38.5	22	12	336803250
M10x1	10	15.5	26	27	48	8.2	38.5	24	12	336803270
M10x1	10	15.5	26	29	49	8.2	38.5	27	12	336803290

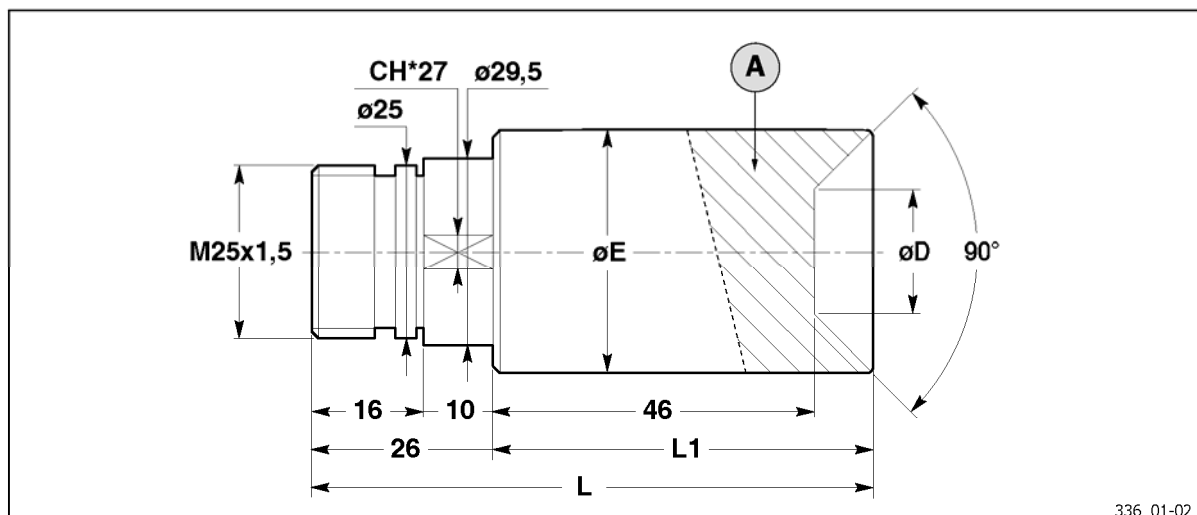
11.13 EJECTOR – Guide channels  $\varnothing > 32$  - Table

**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.*



CH\*: double-ended fork wrench DIN3110

A Ejector

<b>øE</b> (mm)	<b>øD</b> (mm)	<b>L</b> (mm)	<b>L1</b> (mm)	Code no.
31	10	82.5	56.5	336803310
32	14	81	55	336803320
35	18	80.5	54.5	336803350
40	18	83	57	336803400
42	18	84	58	336803420
44	20	84	58	336803440
45	21	84	58	336803450
50	23	84	58	336803500
52	25	84	58	336803520
55	28	84	58	336803550
60	33	84	58	336803600
65	38	84	58	336803650
70	43	84	58	336803700



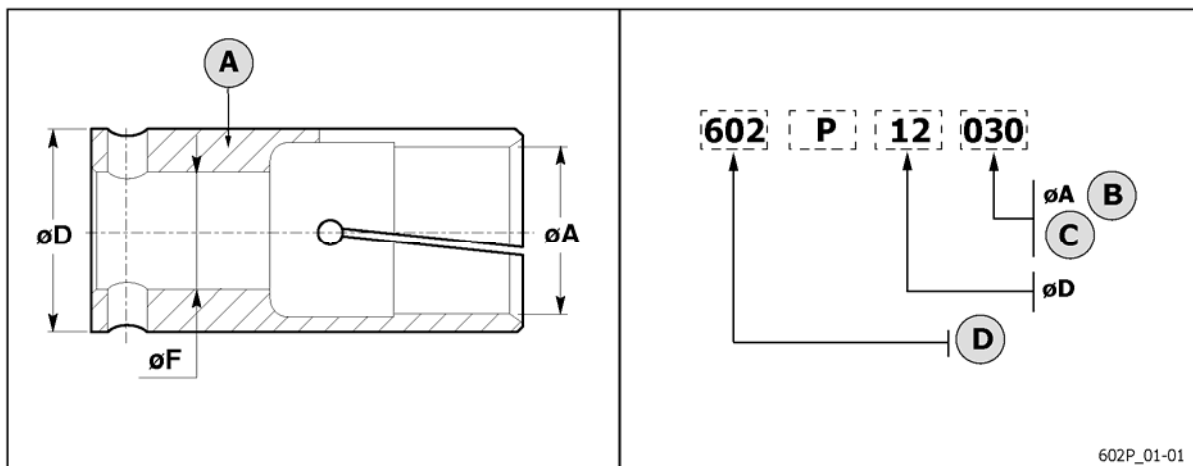
**11.14 COLLETS FOR BARS 602P**
**11.15 COLLET FOR BARS - Table**

**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.*

**Code structure**


- 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) $\varnothing D$	Diameter (mm) $\varnothing F$	Internal diameter (mm) $\varnothing A$	
		MIN	MAX
10	$\varnothing 7$ G6	3	8
12	$\varnothing 8$ G6	3	10
15	$\varnothing 11$ G6	4	13
16	$\varnothing 11$ G6	11	14
18	$\varnothing 11$ G6	8	16
20	$\varnothing 14$ G6	6	18
21	$\varnothing 14$ G6	16,5	19
23	$\varnothing 14$ G6	14	21
25	$\varnothing 20$ G6	4,3	23
27	$\varnothing 20$ G6	21	25,5
29	$\varnothing 20$ G6	22,75	27
32	$\varnothing 20$ G6	6	30
35	$\varnothing 20$ G6	27	32
36	$\varnothing 20$ G6	26	34
39	$\varnothing 20$ G6	32	37
42	$\varnothing 20$ G6	31	40
45	$\varnothing 20$ G6	33	42
51	$\varnothing 20$ G6	39,75	47
52	$\varnothing 20$ G6	44	49
56	$\varnothing 20$ G6	47	52

11.16 BORING COLLETS FOR BARS 601P

11.17 BORING COLLETS FOR SQUARE AND HEXAGONAL BARS - Table



**INFORMATION:**

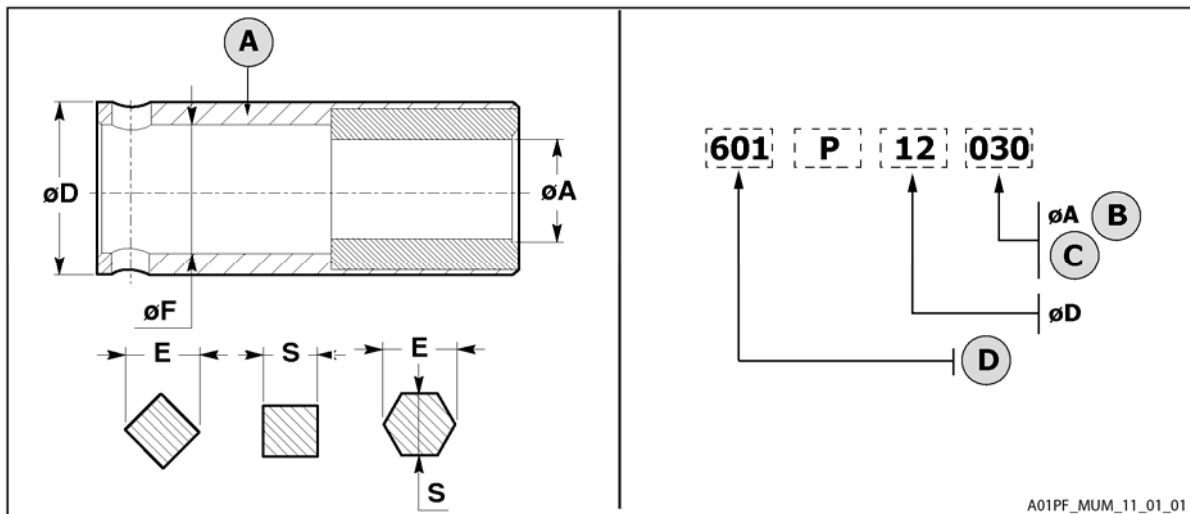
to determine the internal diameter  $\varnothing A$ , do not refer to file "001 - Conversion Tables", but refer directly to the table below.



**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.

Code structure



A01PF\_MUM\_11\_01\_01

- 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
10	12	8,5	19	25	Ø20 G6
13	15	/	/	25	M5x0,5
16	17	/	/	29	Ø8 G6
/	/	17	* 7/8"	29	Ø20 G6
18	20	/	/	32	Ø11 G6
/	/	20	25	32	Ø20 G6
		21	* 1" 1/8	36	Ø20 G6
21	23	/	/	36	Ø14 G6
/	/	* 1" 1/16	* 1" 1/16	40	Ø20 G6



**WARNING: Values indicated with \* are expressed in inches.**

## 11.18 EJECTORS 602P..011

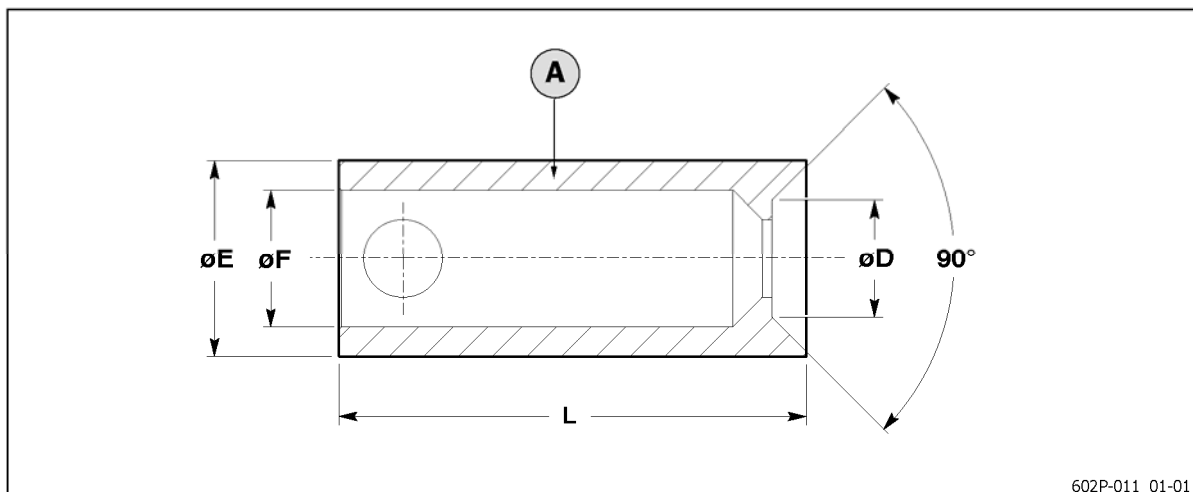
 11.19 EJECTORS - Guide channels  $\varnothing 13 \div 28$  - Table

**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

<b>øE</b> (mm)	<b>øF</b> (mm)	<b>øD</b> (mm)	<b>L</b> (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
25	20	12	50.5	602P25011
27	20	12	51.5	602P27011
29	20	14	51.5	602P29011
30	20	15	51.5	602P30011
35	20	18	51.5	602P35011
40	20	18	55	602P40011
45	20	19	56	602P45011
51	20	25	56	602P51011

## 11.20 PIPE COLLETS 603P

### 11.21 PIPE COLLETS - Table



**WARNING – CAUTION:**

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



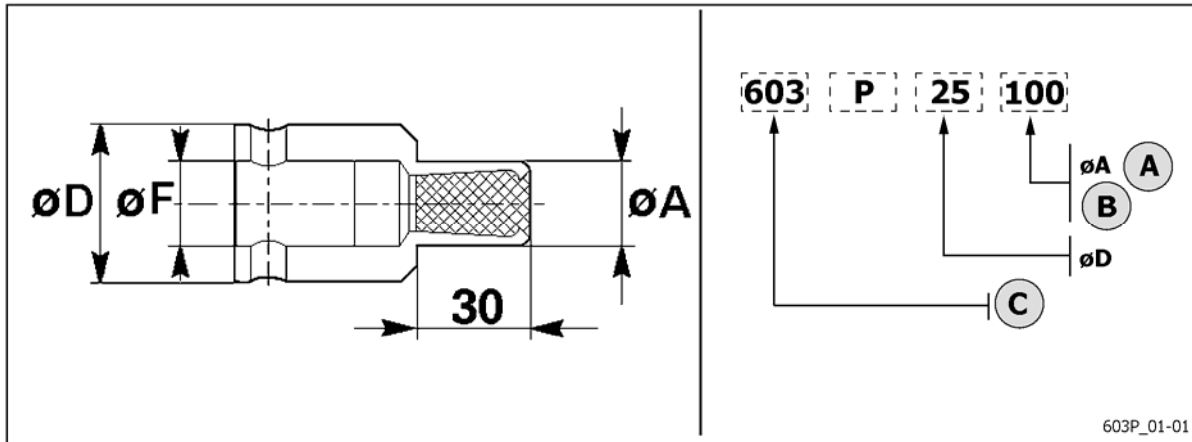
**INFORMATION:**

*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.*

**Code structure**


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



External diameter (mm) <b>øD</b>	Diameter (mm) <b>øF</b>	External diameter (mm) <b>øA</b>	
		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
25	Ø20 G6	10	23
27	Ø20 G6	21.5	25
29	Ø20 G6	25,5	27
32	Ø20 G6	15	30
35	Ø20 G6	23	33
40	Ø20 G6	34	37
42	Ø20 G6	23	40
44-45	Ø20 G6	39,5	42,5
49	Ø20 G6	30	45

## 11.22 COLLETS FOR BARS 381P

### 11.23 COLLET FOR BARS - Table



**WARNING – CAUTION:**

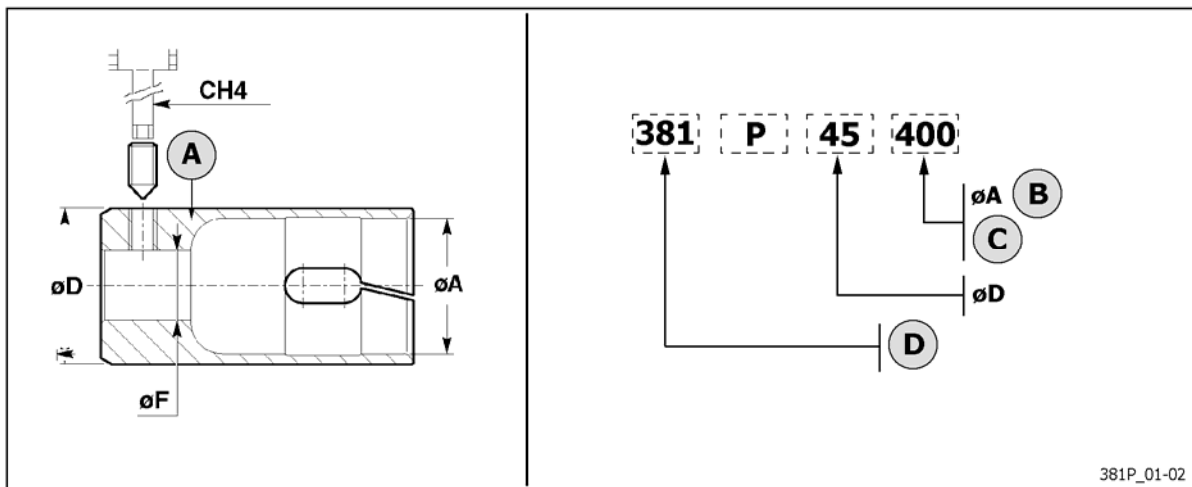
*the collet external diameter should be at least 0.5 mm smaller than the bar pusher external diameter.*



**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.*

#### Code structure



- A Collet
- B Bar diameter
- C Example:  
40 mm = 400  
39.75 mm = 397
- D Category

CH4: T Allen wrench - DIN911

External diameter (mm) <b>øD</b>	Diameter (mm) <b>øF</b>	Internal diameter (mm) <b>øA</b>	
		MIN	MAX
32	Ø20 G6	10	29
35	Ø20 G6	27	32
37	Ø20 G6	29	34
40	Ø20 G6	30	33
42	Ø20 G6	33,25	39
44	Ø20 G6	38	38,75
45	Ø20 G6	39	42
48	Ø20 G6	40	42,75
49	Ø20 G6	43	43,75
50	Ø20 G6	44	47
51	Ø20 G6	45	47
52	Ø20 G6	45	47,75
54	Ø20 G6	48	49,75
56	Ø20 G6	49,75	52
58	Ø20 G6	51	52,75
59	Ø20 G6	53	53,75

External diameter (mm) <b>øD</b>	Diameter (mm) <b>øF</b>	Internal diameter (mm) <b>øA</b>	
		MIN	MAX
60	Ø20 G6	54	56
62	Ø20 G6	56	56,75
64	Ø20 G6	57	60
65	Ø20 G6	59	61
66	Ø20 G6	60	62
68	Ø20 G6	61,25	63,75
70	Ø20 G6	64	65,75
72	Ø20 G6	65,25	67
74-75	Ø20 G6	67,25	70
76	Ø20 G6	69	70
78	Ø20 G6	70,25	72
80	Ø20 G6	69,75	76,75
85	Ø20 G6	74	80

11.24 EJECTORS 381P..011 - 381P..021

11.25 381P..021 EJECTORS - Guide channels  $\varnothing 33 \div 46$  - Table



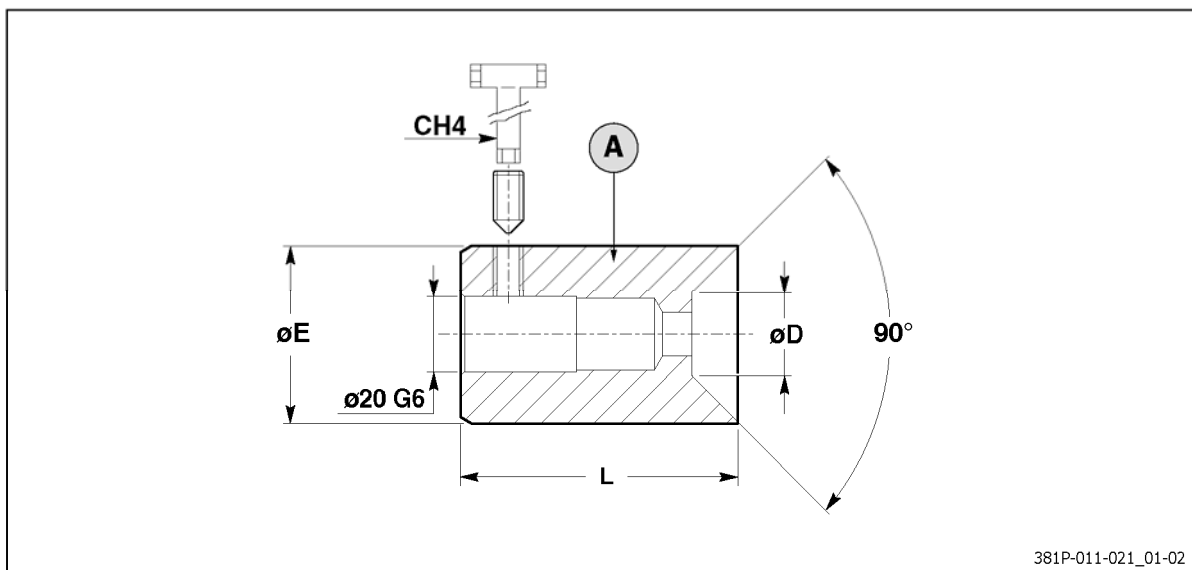
**WARNING – CAUTION:**

*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.*



381P-011-021\_01-02

CH4: T Allen wrench - DIN 911

A Ejector

<b>øE</b> (mm)	<b>øD</b> (mm)	<b>L</b> (mm)	Code no.
30	12	69	381P30021
31	13	70	381P31021
32	14	71	381P32021
35	18	69	381P35021
37	18	70	381P37021
40	18	71.5	381P40021
42	18	72.5	381P42021
45	21	72.5	381P45021

11.26 381P..011 EJECTORS - Guide channels  $\varnothing 52 \div 86$  - Table



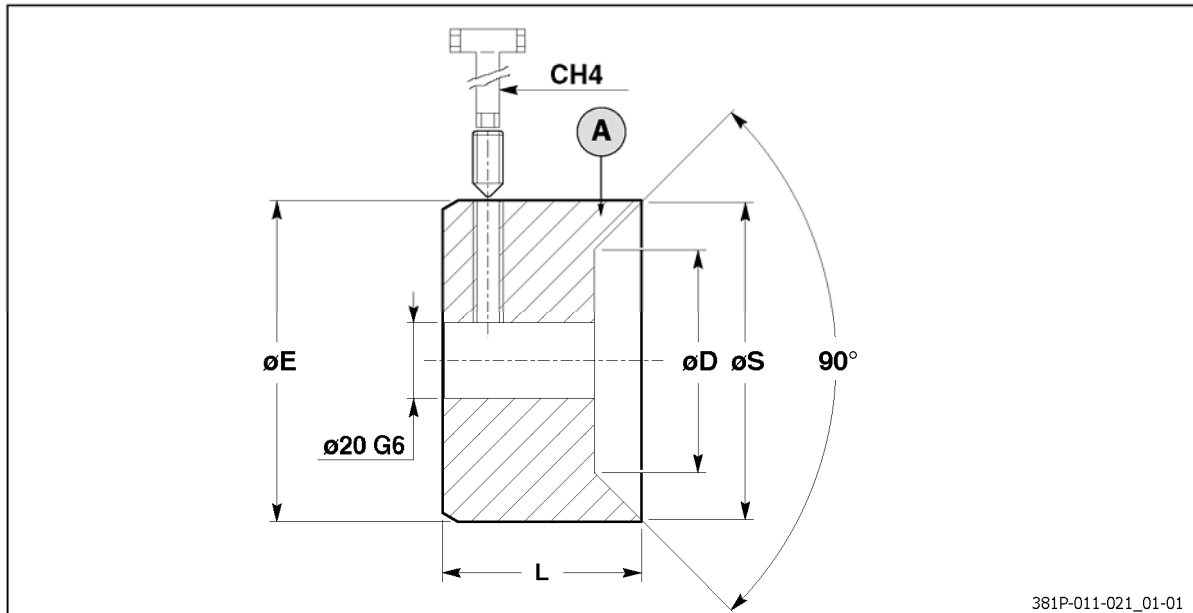
**WARNING – CAUTION:**

*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.*



CH4: T Allen wrench - DIN 911

A Ejector

<b>øE</b> (mm)	<b>L</b> (mm)	<b>øS</b> (mm)	<b>øD</b> (mm)	Code no.
51	52.5	50	25	381P51011
56	52.5	55	30	381P56011
60	52.5	59	34	381P60011
65	52.5	64	39	381P65011
68	52.5	67	42	381P68011
70	52.5	69	44	381P70011
72	52.5	71	46	381P72011
75	52.5	74	50	381P75011
80	52.5	79	55	381P80011
85	52.5	84	60	381P85011



11.27 PIPE COLLETS 386P

11.28 PIPE COLLETS - Table



**WARNING – CAUTION:**

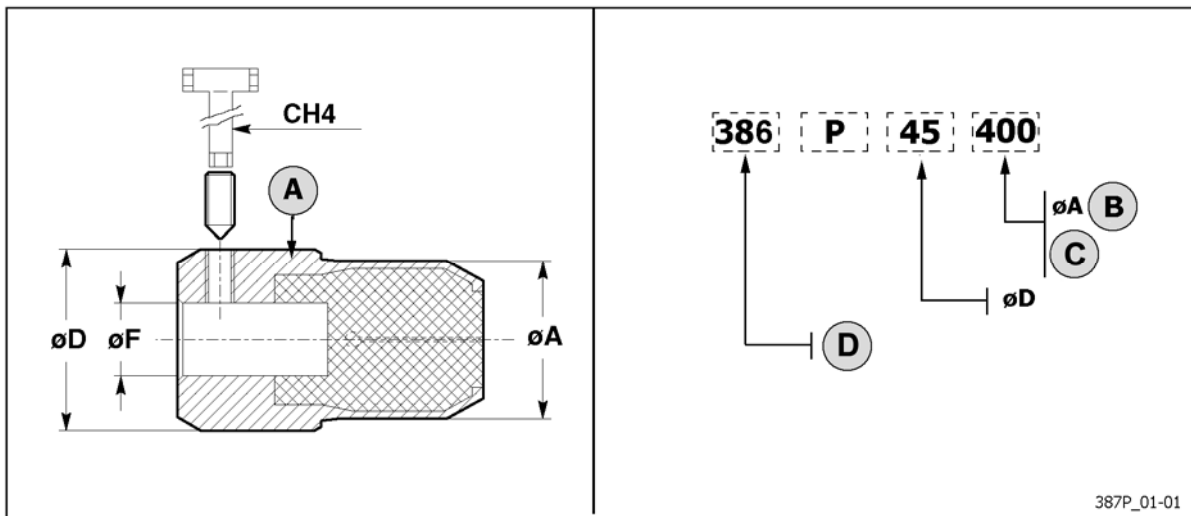
*the collet external diameter should be at least 0.5 mm smaller than the bar pusher external diameter.*



**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.*

Code structure



387P\_01-01

A Collet

B Bar diameter

C Example:

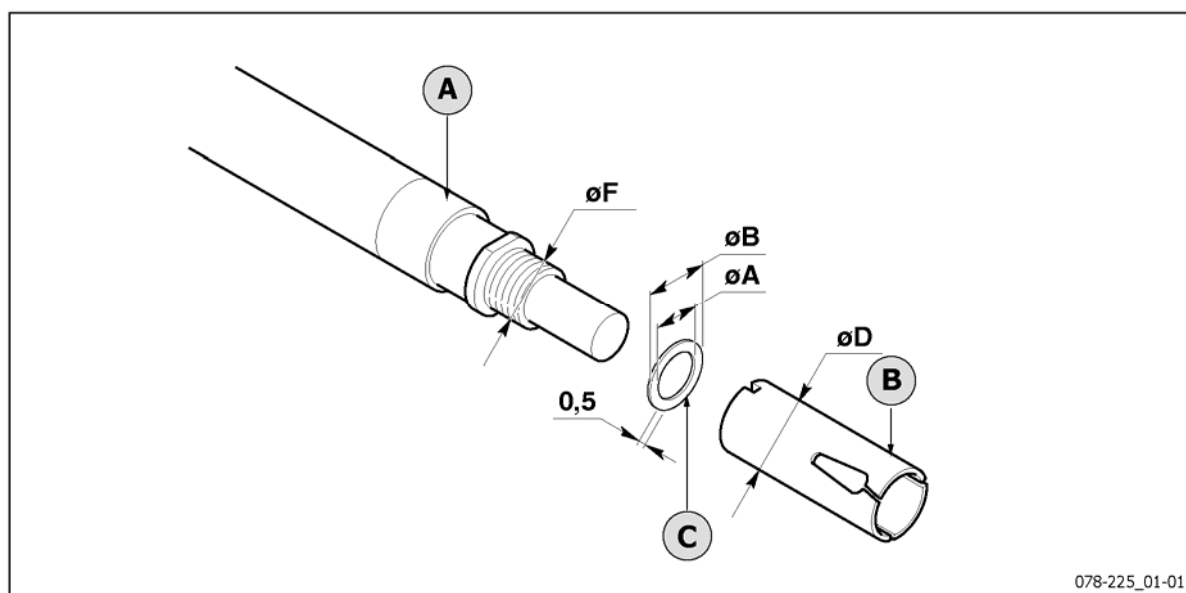
40 mm = 400

39.75 mm = 397

D Category

CH4: T Allen wrench - DIN911

External diameter (mm) $\varnothing D$	Diameter (mm) $\varnothing F$	External diameter (mm) $\varnothing A$	
		MIN	MAX
40	$\varnothing 20$ G6	23	34,75
41	$\varnothing 20$ G6	35	37
44	$\varnothing 20$ G6	36	40
45	$\varnothing 20$ G6	40,25	42
49	$\varnothing 20$ G6	42	45,5
50	$\varnothing 20$ G6	43	47
54	$\varnothing 20$ G6	46	50
56	$\varnothing 20$ G6	49	52,25
59	$\varnothing 20$ G6	52,5	54,75
60	$\varnothing 20$ G6	54	56,75
64	$\varnothing 20$ G6	57	58,75
65	$\varnothing 20$ G6	59	60,75
68	$\varnothing 20$ G6	61	63,75
70	$\varnothing 20$ G6	64	65,75
71	$\varnothing 20$ G6	66	66,75
75	$\varnothing 20$ G6	67	70
80	$\varnothing 20$ G6	70	77,5
85	$\varnothing 20$ G6	74,25	76

**11.29 RINGS FOR COLLETS 078-225**
**11.30 RINGS FOR COLLETS - Table**


- A Revolving tip
- B Collet
- C Ring

$\varnothing A$ (mm)	$\varnothing B$ (mm)	$\varnothing D$ (mm)	$\varnothing F$	Ring p/n.
8	14	16		22540008(*)
12	18	20		22540004(*)
12	25	25		078800220(*)
17	24	30	M17x1	22540026
17	30	35		078800200
25	30	30	M25x1.5	078800220
25	35	40		22540009
25	45	51		078800230

(\*) Only for collets 316 (TAL)

