

# AUTOMATIC BAR FEEDER

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

## Master 80 UP HyperFlexible

EN

MANUAL FOR USE AND MAINTENANCE

Rel. 0

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S/N

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This manual is a translation of the original document



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**PRODUCT: AUTOMATIC BAR FEEDER**

**MODEL: Master 80 UP HyperFlexible**












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

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

## 1.1 WARRANTY CONDITIONS

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

The product warranty is valid only if the bar feeder is installed by an authorized technician with Original Installation Certificate.

Please ask the technician who will make the installation to show the certificate, in order to ascertain the quality of the technical operations being carried out.

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

The document must be sent by mail to:

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

**IEMCA** CERTIFICATO DI INSTALLAZIONE N° 0517 /02

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

<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 i nomi)</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, canotto 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 dell'operato "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, compilato di ogni sua parte via posta entro 15 giorni, o tramite il tecnico installatore.	<b>Timbro e firma del cliente</b>

## 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.

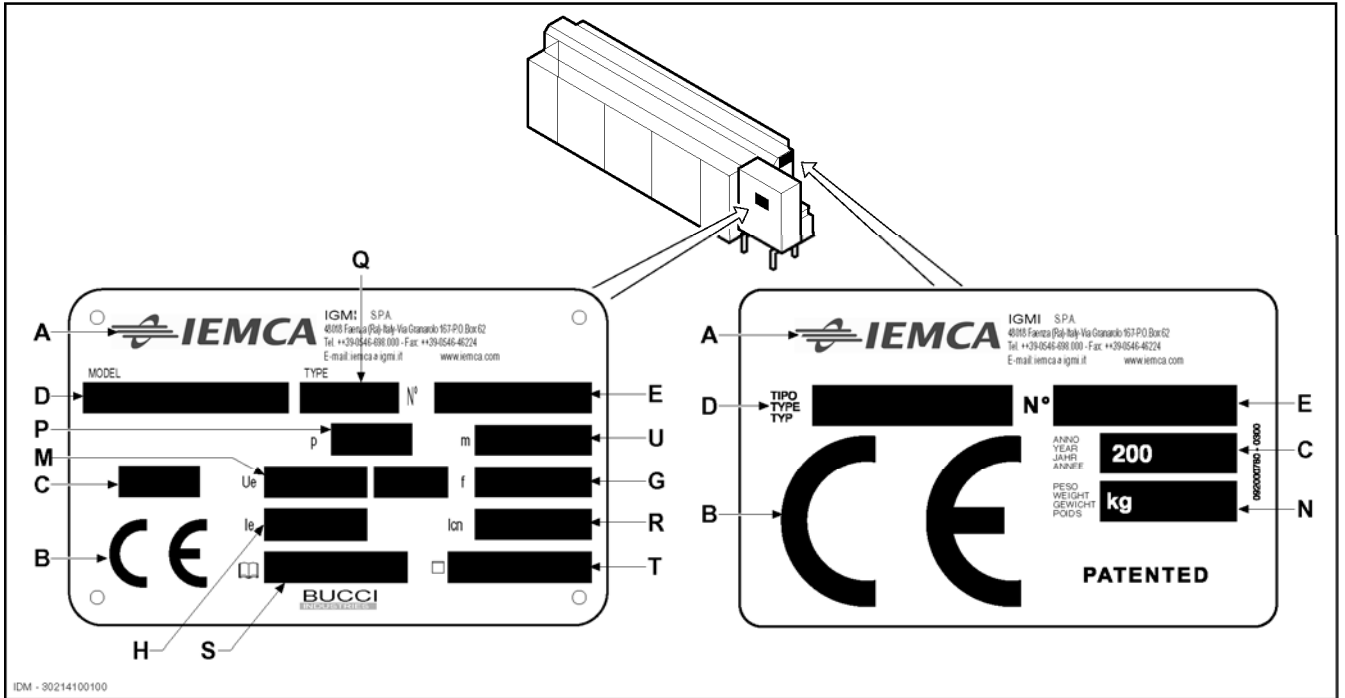


**INFORMATION:**

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

*IEMCA may apply changes to 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 Basic Wiring Diagram Number.
- T Interface Wiring Diagram Number.
- U Electric cabinet weight



#### **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 ATTACHMENT LIST

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





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## 2.1 BAR FEEDER GENERAL DESCRIPTION

The MASTER 80 HF UP 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

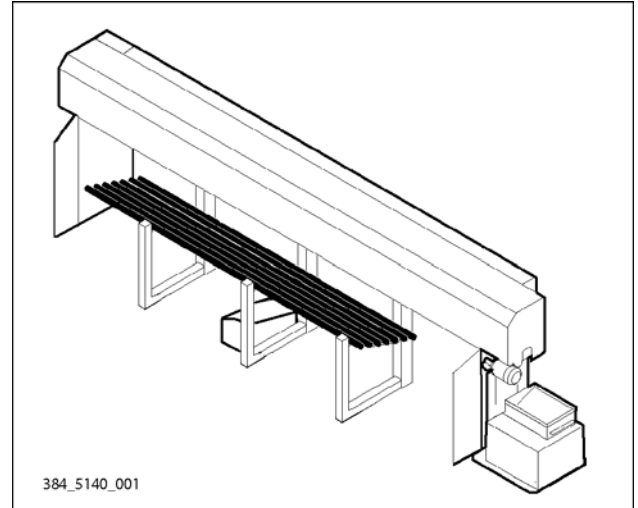
features allow the bar to rotate at high r.p.m., with no vibrations and no surface damaging.

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 pusher returns with the machined bar remnant: the remnant is removed and dropped onto the conveyor, which drops it onto the collection box.

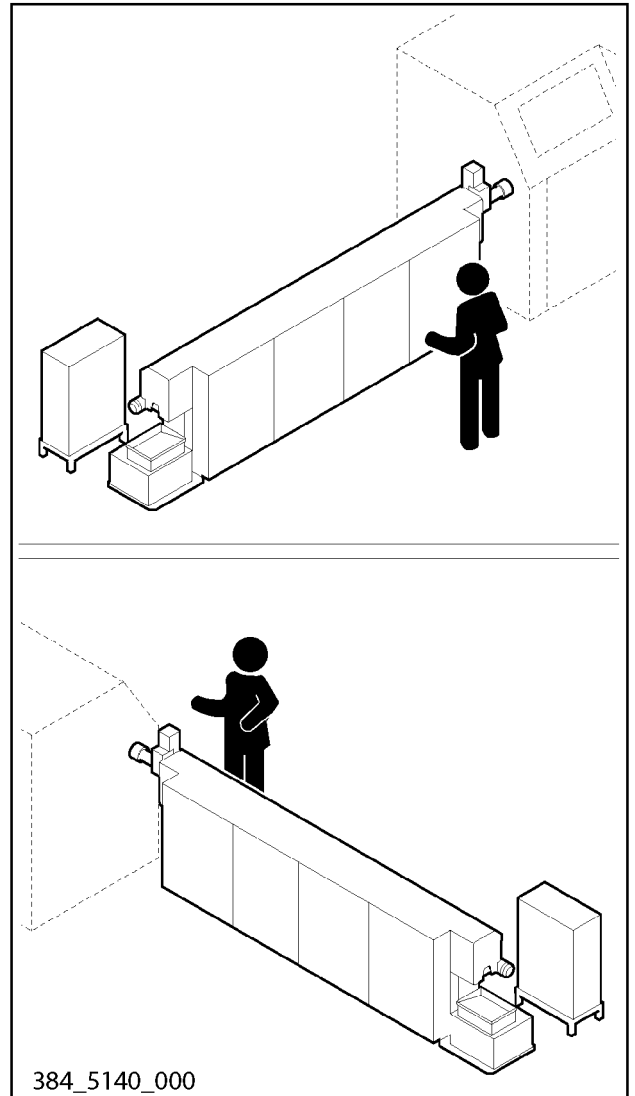
The bar remnant ejection can be performed by the bar pusher feeding or next bar feeding.

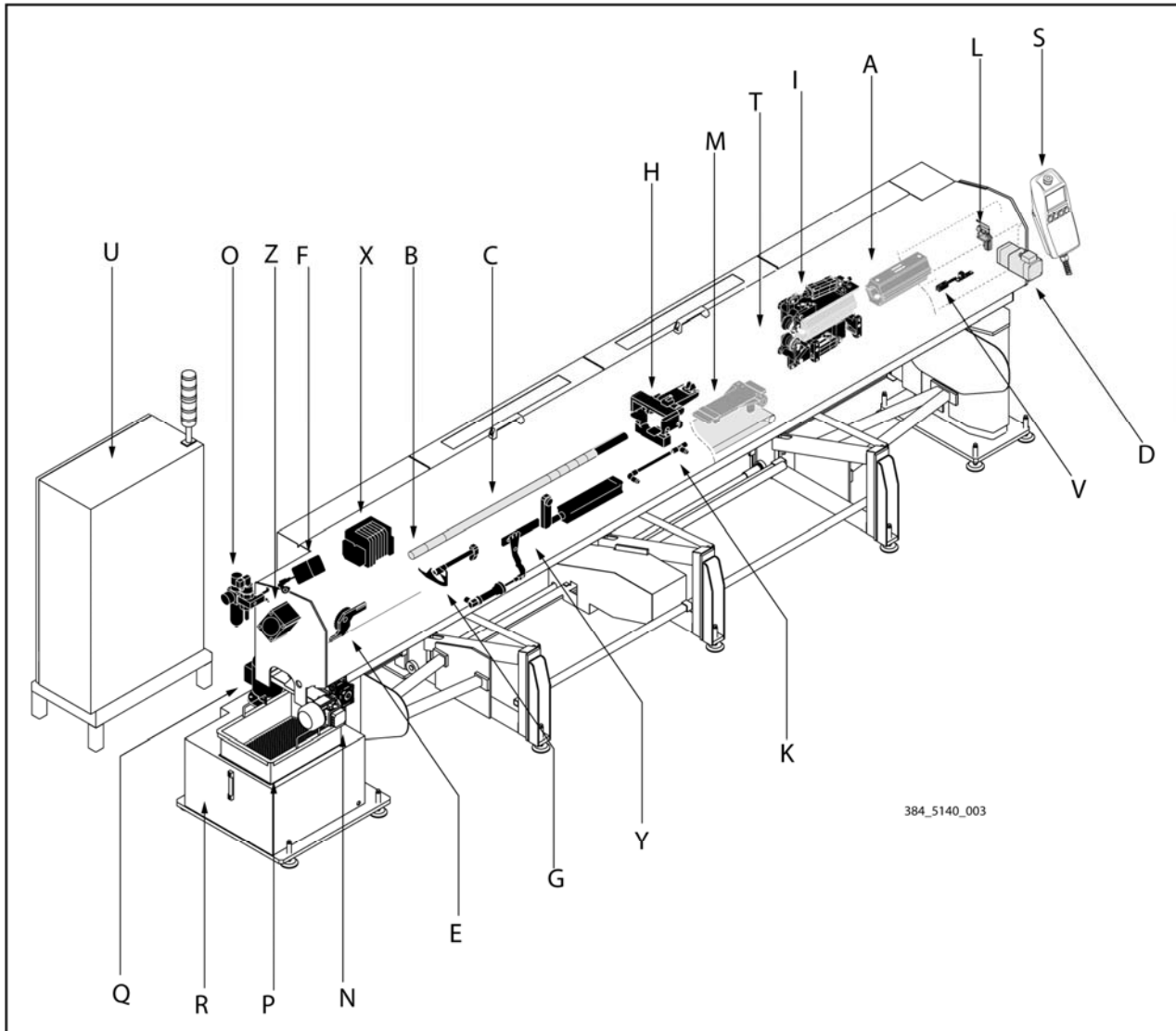
The lathe tooling and maintenance can be easily carried out thanks to the axial displacement of the bar feeder body.



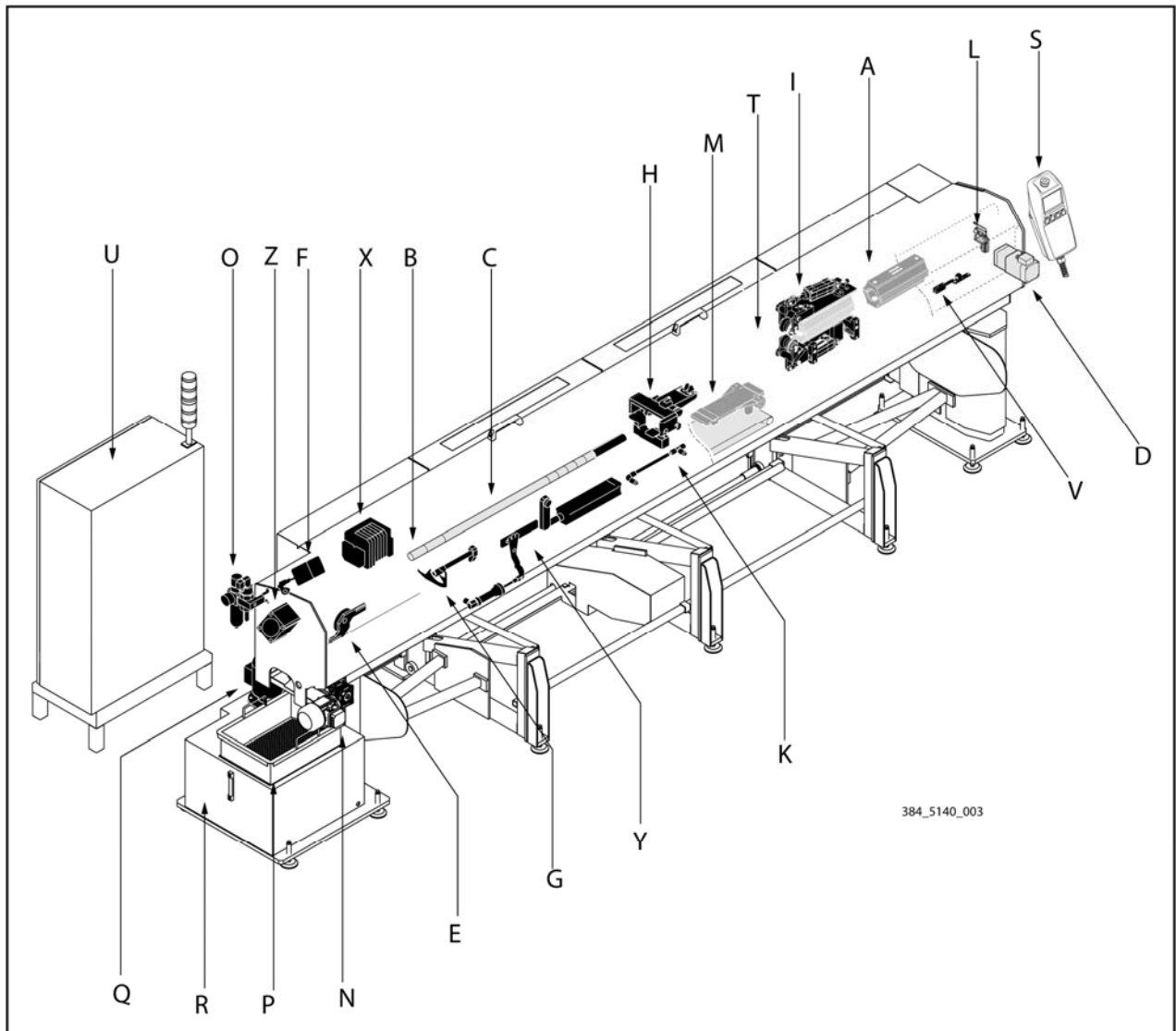
The MASTER 80 HF UP bar feeders are available in the following models:  
MASTER 80 HF UP (standard version) rack magazine  
MASTER 80r HF UP (reversed version) rack magazine

When not otherwise specified, the texts, tables and pictures of this manual refer to the standard version. As far as the reversed version is concerned, consider that the magazine and the electric cabinet are placed on the opposite side.



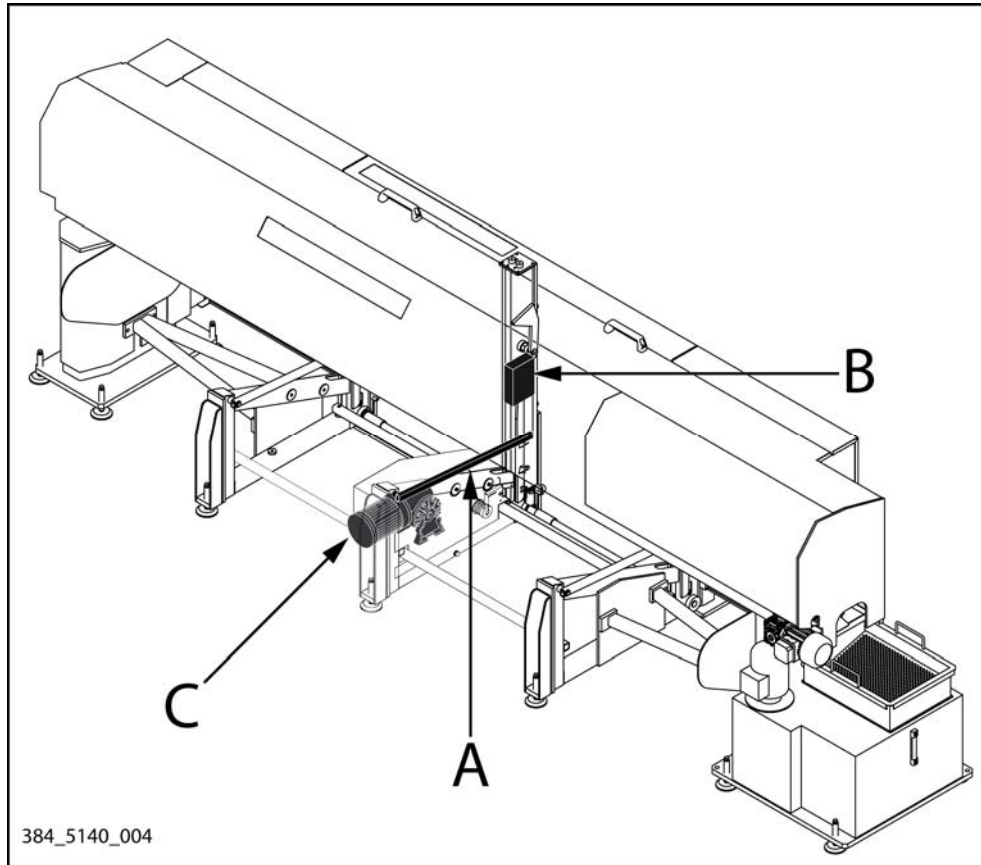
**2.1.1 Bar feeder - Main components**


- A GUIDE CHANNELS; drive the bar during the machining.
- B FIRST FEEDING CARRIAGE; moves the bar forwards until the necessary space for the bar pusher introduction has been created.
- C BAR PUSHER; pushes the bar during the machining. The collet is fixed on its front end.
- D BAR PUSHER MOTOR DRIVE; moves the bar pusher.
- E FEED CHAIN; transmits the motion from the motor drive to the bar pusher.
- F GUIDE CHANNEL OPENING/CLOSING CYLINDER
- Y UPPER GUIDE CHANNEL UNLOCKING.
- G PNEUMATIC BAR DROP CONTROL LEVERS; guide the bar during the drop into the guide channels.
- H PNEUMATIC CLAMPS; hold the bar during the loading and removal from the collet of the bar pusher.
- K LUBRICATION SYSTEM
- L FACING DEVICE; it sends a signal when the bar passes.

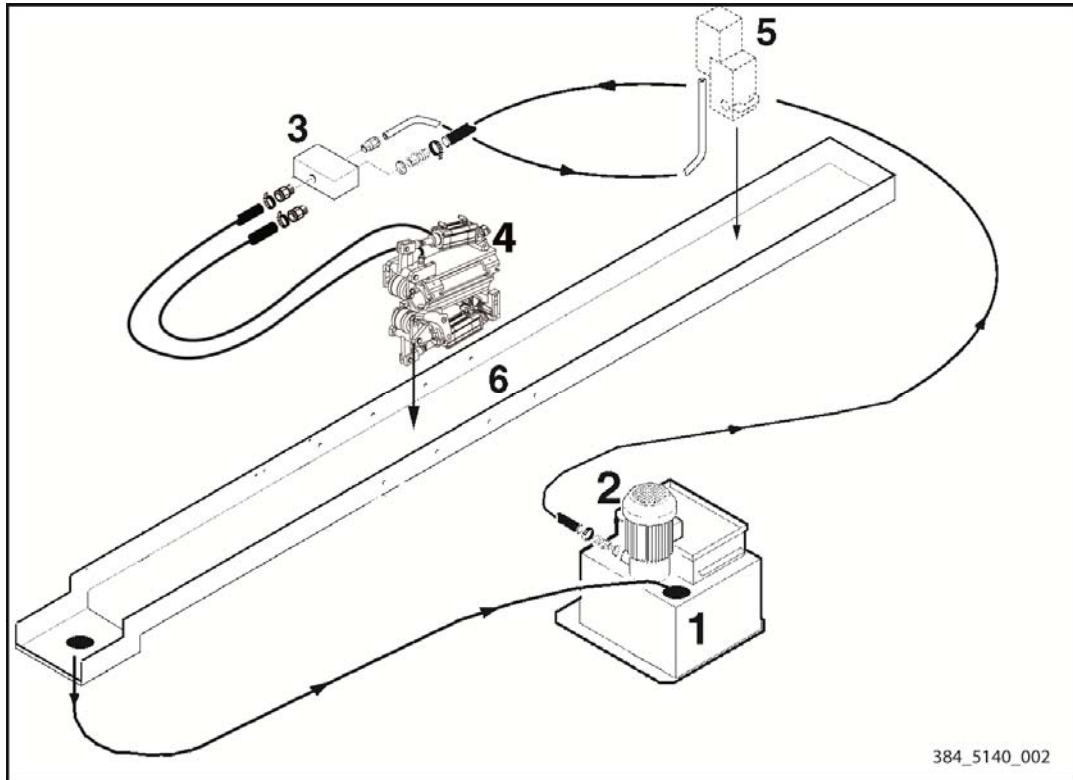


- M REMNANT CONVEYOR BELT; carries the bar remnant from the ejection area to the recovery box.
- N REMNANT CONVEYOR BELT DRIVE; it moves the remnant conveyor belt.
- P REMNANT RECOVERY BOX; collects the bar remnant.
- Q LUBRICATION PUMP; delivers the lubricating oil to the guide channels.
- R OIL TANK; contains the lubricating oil.
- S 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.
- X PNEUMATIC SOLENOID VALVES.
- Z PNEUMATIC CLAMP CYLINDER

### 2.1.2 Magazine - Main components

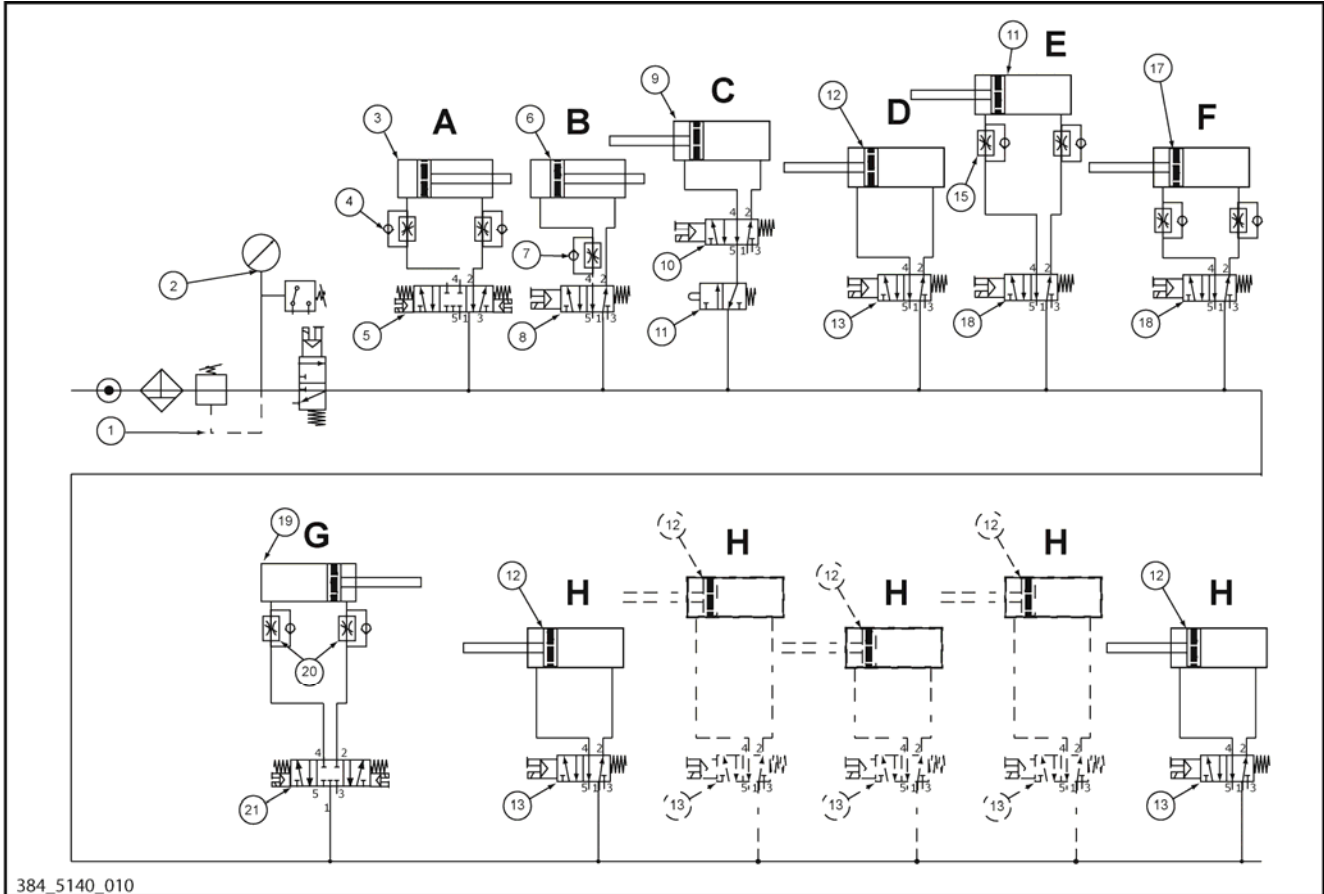


- A BAR SUPPORT BRACKET; supports the bars. Thanks to its inclination, the bars lean against the elevator uprights.
- B ELEVATOR CARRIAGES; move the bars from the magazine to the bar feeder guide channels.
- C ELEVATOR CARRIAGE DRIVE; drives the elevator carriages upstroke and downstroke.

**2.1.3 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.

### 2.1.4 Pneumatic system - Main components



- A - PNEUMATIC BAR DROP CONTROL DEVICE UNIT
- B - FACING CYLINDER
- C - BUSHING DRIVE UNIT
- D - PNEUMATIC CLAMP UNIT
- E - REMNANT DROP 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



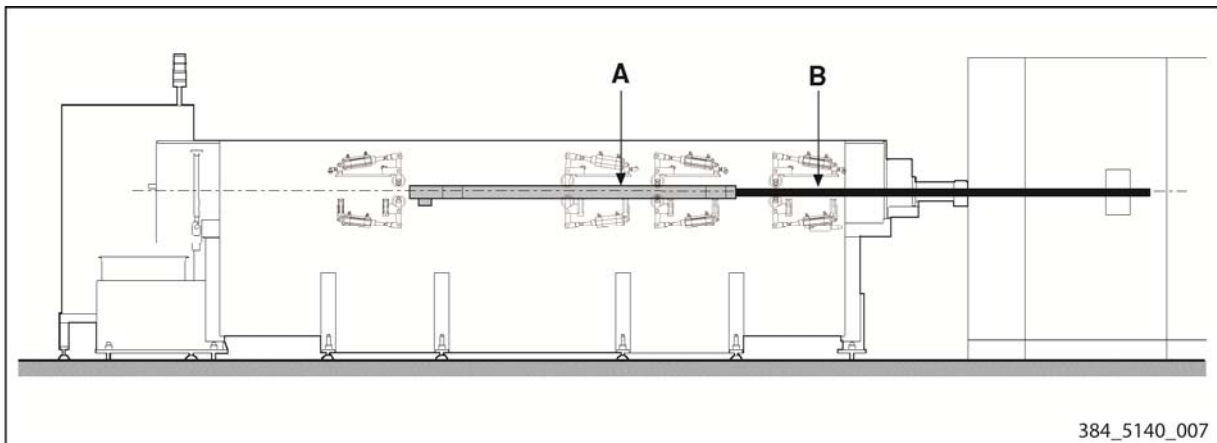


## 2.2 OPERATING CYCLE - GENERAL DESCRIPTION

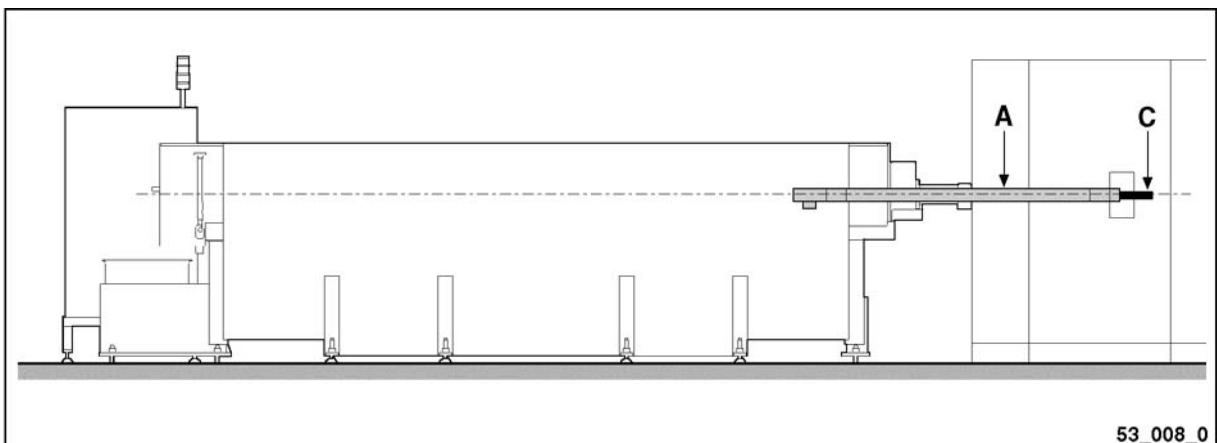
### 2.2.1 OPERATING CYCLE

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

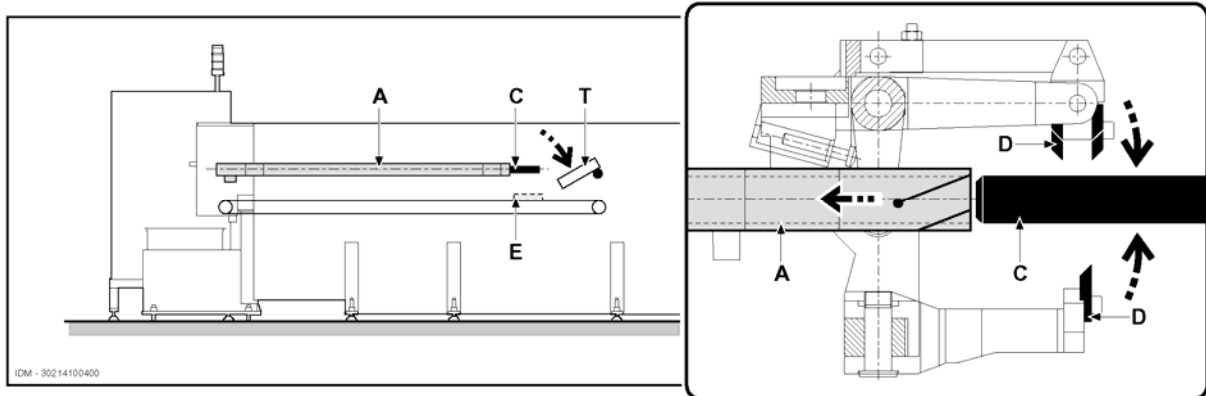
- The bar pusher (A) makes bar (B) move forwards into the lathe until the bars are finished. The bar pusher (A), during the machining phase, in fixed points (see operation manual Par.80), activates the locking devices to increase rigidity of the bar pusher and decrease vibrations.



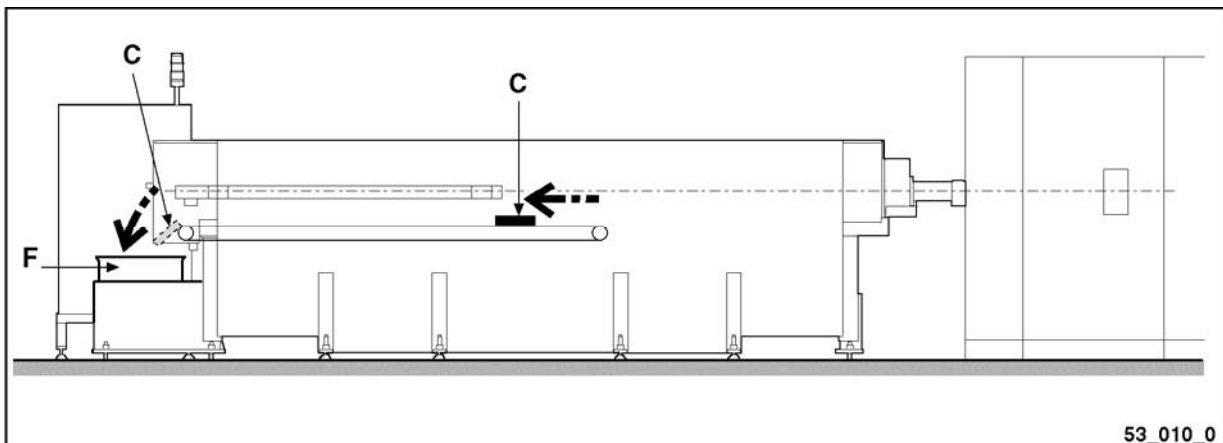
The bar pusher (A) and remnant (C) are in their forwards limit stop position.



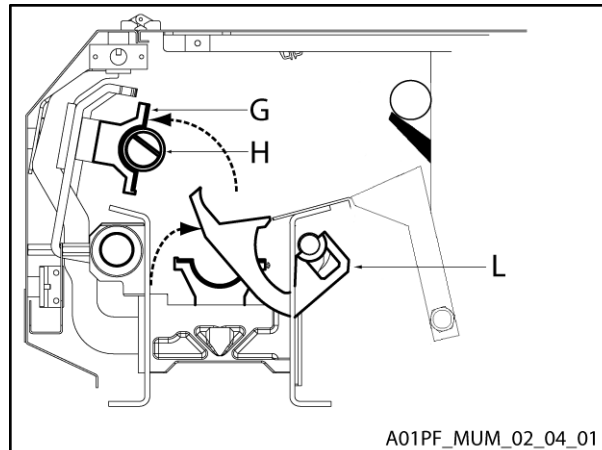
The bar pusher (A) and remnant (C) are in their backwards limit stop position. The clamps (D) close and the bar pusher moves backwards; the remnant is removed from the collet. The clamps open, the bar pusher (A) moves forwards and place the remnant on the drop guide (T), then bar pusher moves backwards, the clamps (D) close and open again for the remnant drop check, and finally the remnant drop guide (T) is lowered and the remnant drops on the remnant conveyor belt (E).



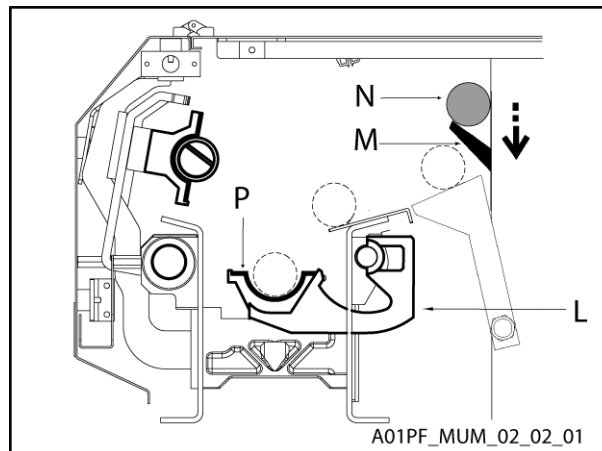
Remnant (C) is driven to the rear side and dropped in box (F). A sensor detects the remnant during the path; if the remnant is still in the bar pusher collet the bar feeder stops, otherwise the cycle goes on.



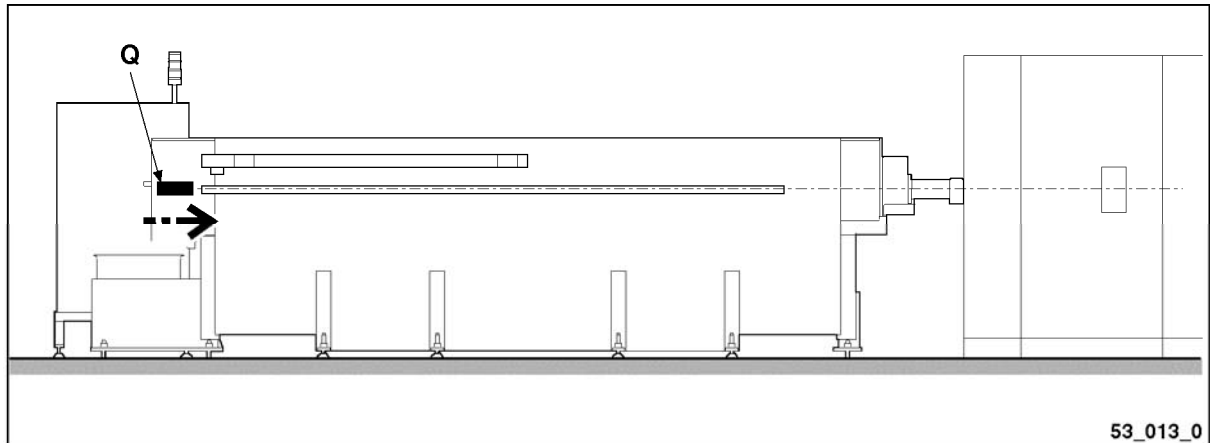
The upper guide channels (G) are lifted together with the bar pusher (H), and also the bar drop control levers L are lifted.



The elevator carriages (M) lower, the bar (N) drops on the lower guide channels (P) accompanied by the levers (L).

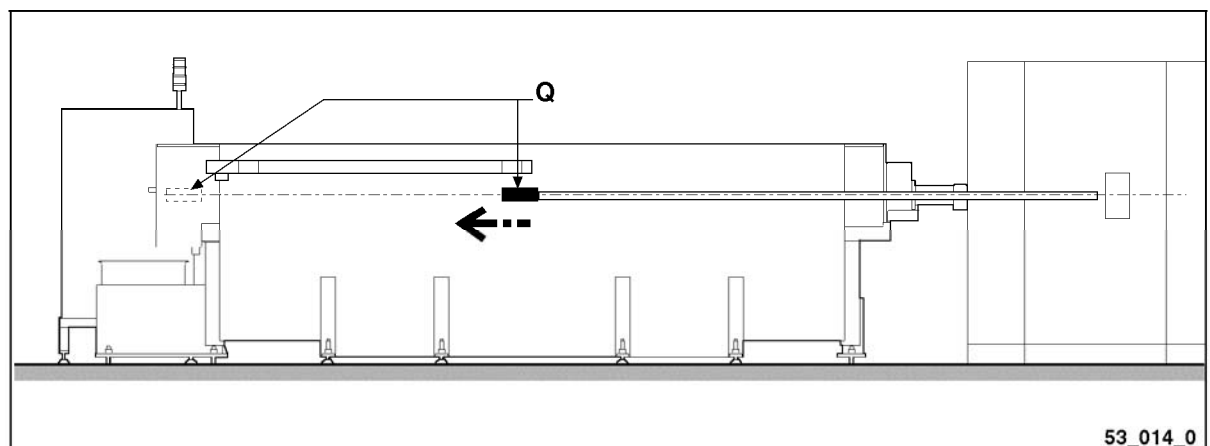


The first feeding carriage (Q) stroke begins.

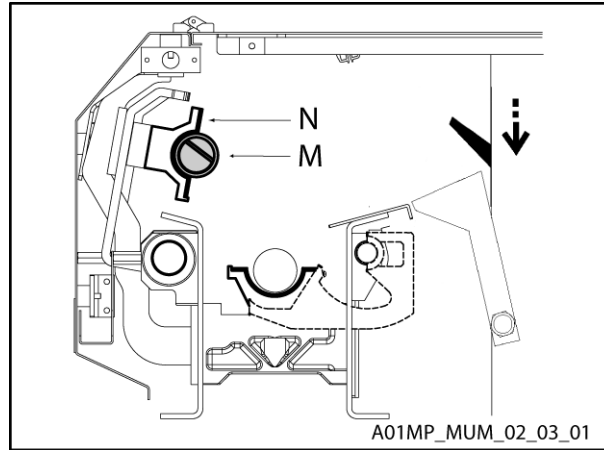


When the first feeding carriage (Q) completes its stroke, the required space for bar pusher introduction has been created.

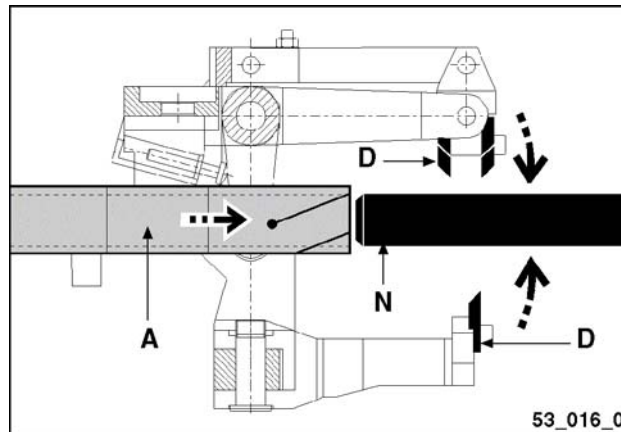
The first feeding carriage performs the return stroke.



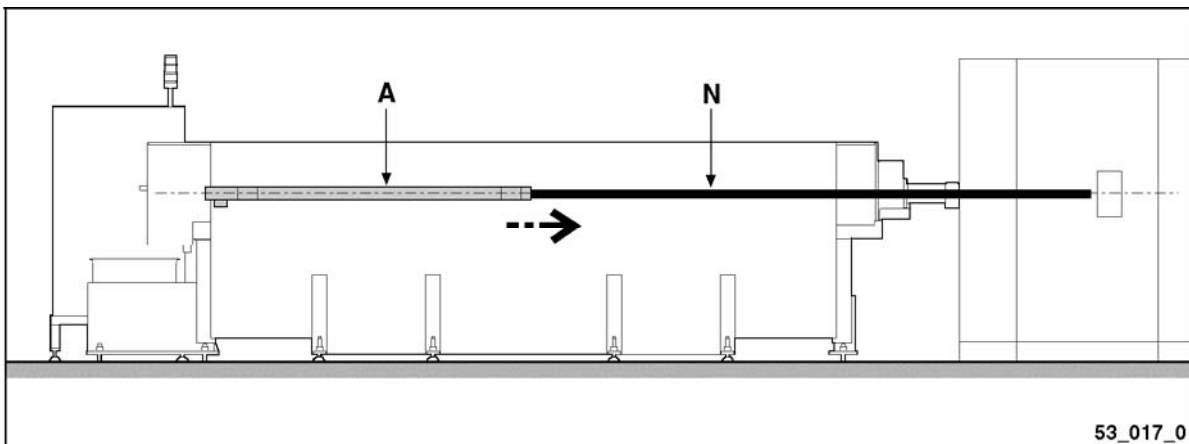
The upper guide channels (N) close; the bar pusher (M) is positioned along the spindle axis.



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

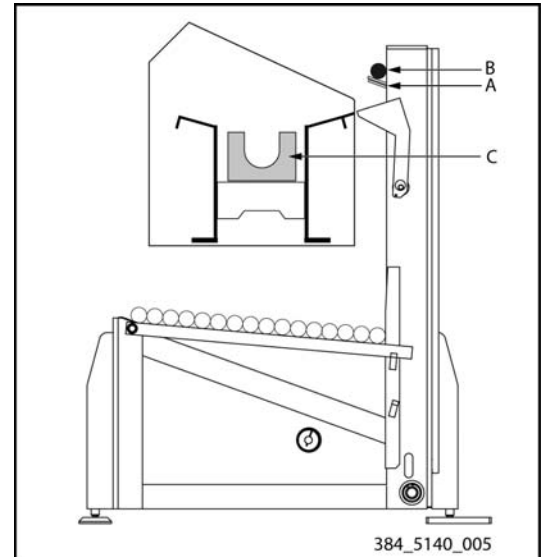


The bar pusher (A) and bar (N) perform the facing stroke. A new automatic working cycle is started.



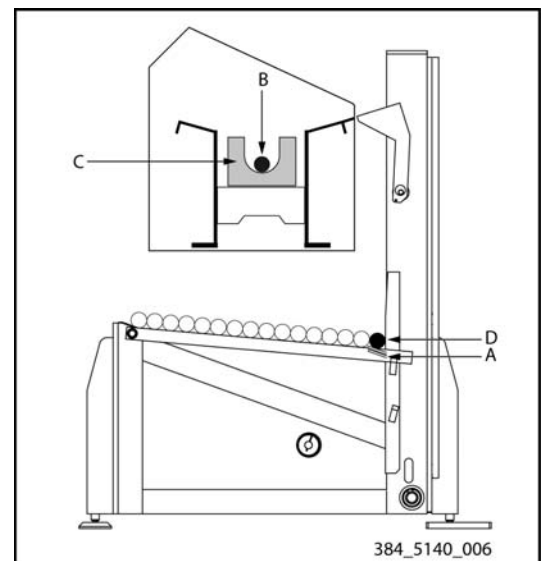
### 2.2.2 Magazine - Operating cycle

The automatic mode controls the magazine movements according to the sequence described below.  
 The elevator carriages (A) are in the highest position and support bar (B), which is ready to be unloaded in the guide channels (C).  
 The elevator carriages (A) lower and let the bar (B) fall into the guide channels (C).



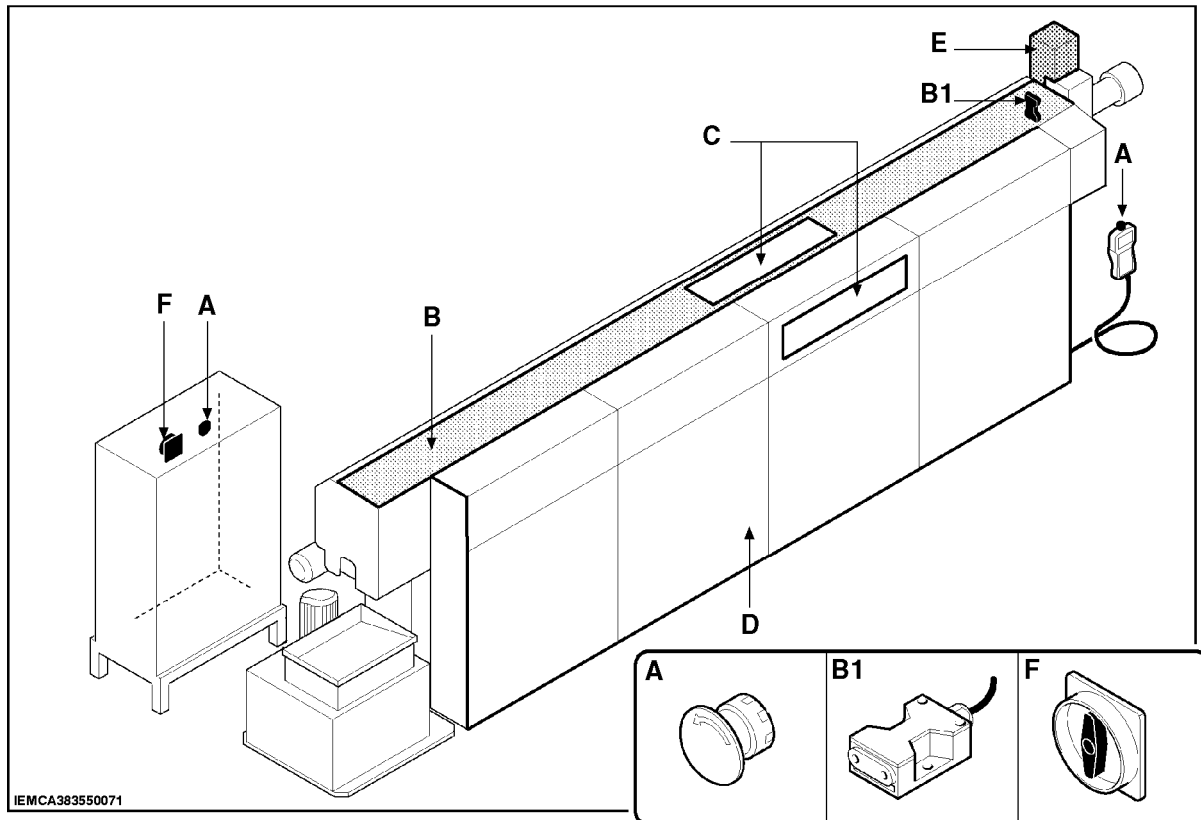
The carriages continue lowering until they reach bar (D) and bring it in the highest position.

The cycle goes on until the bars are finished.



## 2.3 SAFETY DEVICES - POSITION AND DESCRIPTION

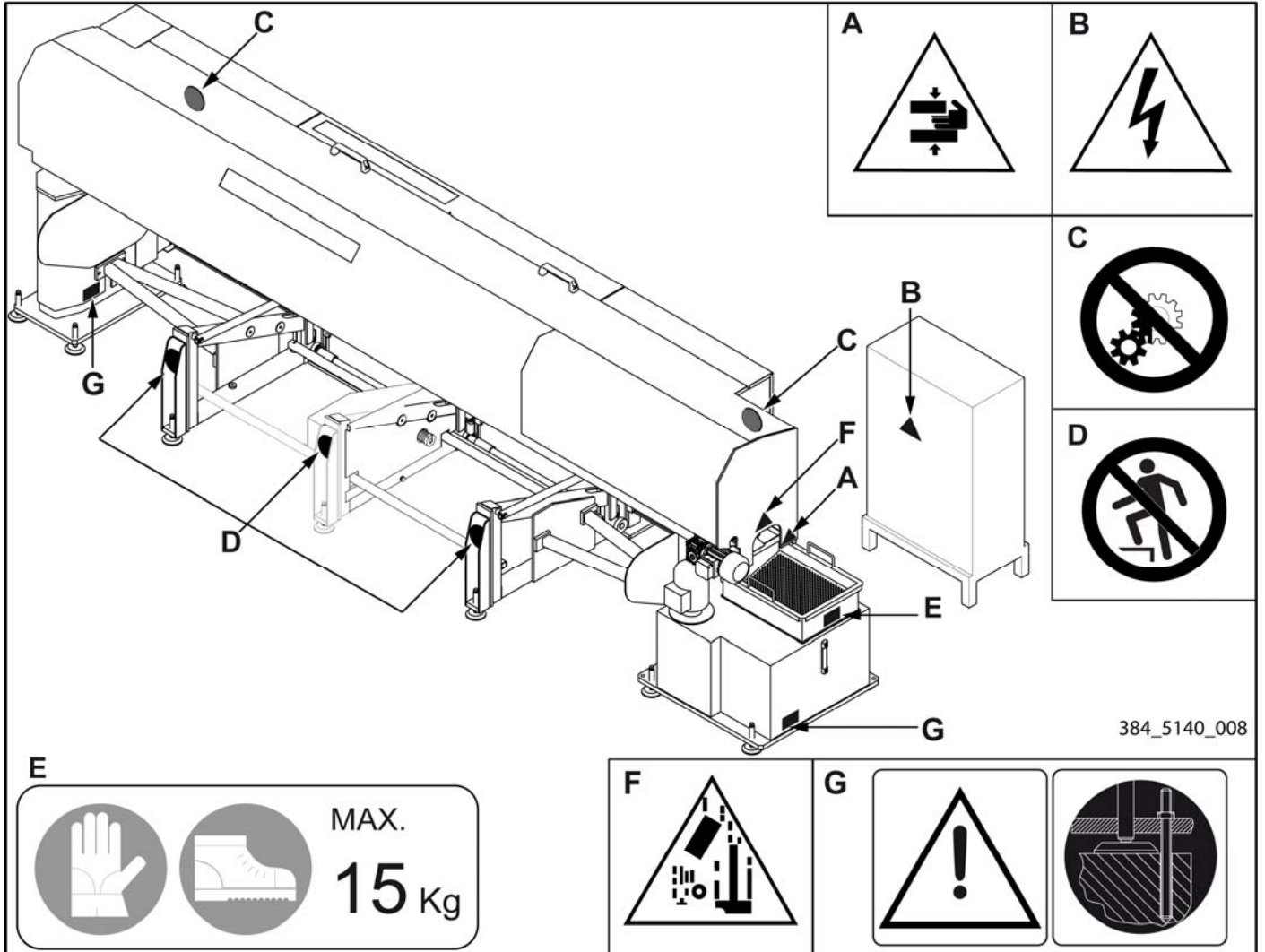
### 2.3.1 Bar feeder - Safety devices



- A EMERGENCY BUTTON; when pressed, all bar feeder and lathe functions are stopped in an emergency condition.
- B INTERLOCKED SLIDING GUARD; linked to microswitch B1. When the guard is opened, the bar feeder and lathe functions are suspended. When the guard is closed, the user can start the cycle again.
- C FIXED GUARD: made of transparent material to allow the visual detection of the bar drop area in the guide channels.
- D FIXED GUARD: hinders an accidental access to the moving components.
- E FIXED GUARD: prevents an accidental access to the bush holder device area.
- F MAIN SWITCH: disconnects the electric power supply during the operations in the electrical control panel, and during the bar feeder inactivity periods.



2.4 SAFETY PLATES - LOCATION AND DESCRIPTION

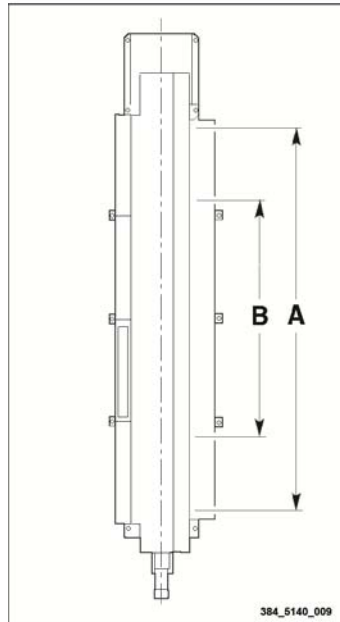


- A Crushing danger of the upper limbs.
- B Warning; danger of electric contact.
- C Pay attention to the moving parts.
- D Warning; it is forbidden to climb on the machine.
- E Wear safety gloves and shoes.  
Do not manually lift loads exceeding 15 kg.
- F Warning; danger of material falling.
- G Warning; fix the bar feeder to the ground.

## 2.5 VERSION DESCRIPTION

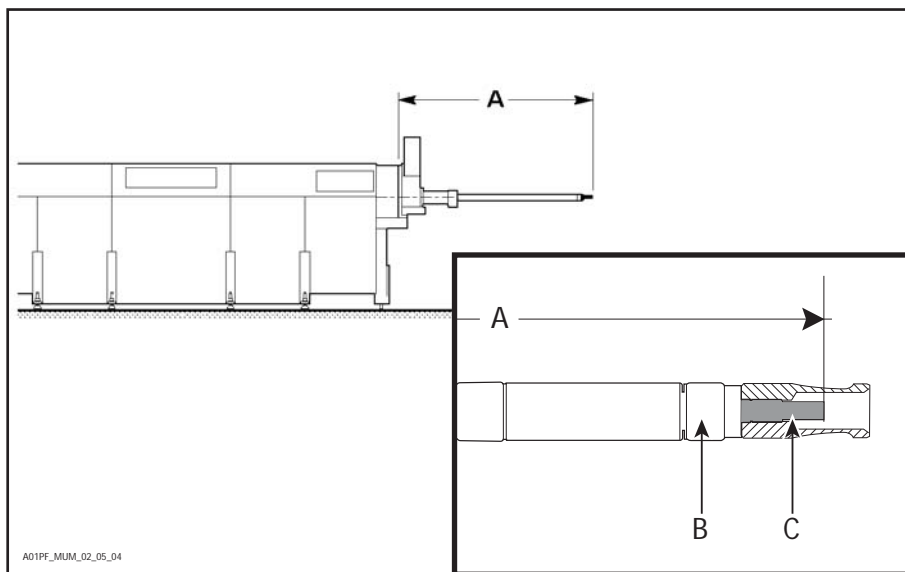
*Bar length*

Model	Version	Maximum length mm (ft) - A	Minimum length mm (ft) - B	Intermediate feelers
MASTER 80 UP HyperFlex	33	3300 (10,8)	2000 (6,5)	/
	38	3800 (12,4)	2500 (8,2)	/
	43	4300 (14,1)	3000 (9,8)	/

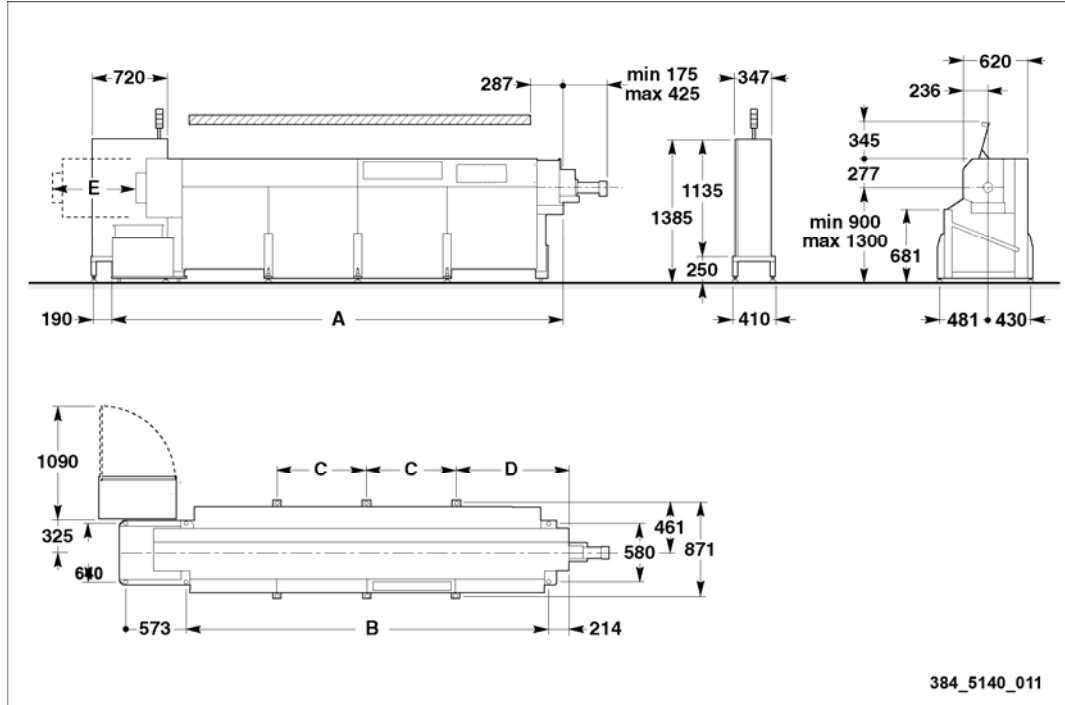


Max. bar pusher extension

Model	Version	Version	A –Max. extension(mm)
MASTER 80 UP HyperFlex	33-38-43	N	1045
	33-38-43-63	L	1295
	38-43	LL	1545
	38-43	XLL	1795
	38-43	XXL	2045



- B - Revolving tip
- C - Nipple

**2.6 TECHNICAL DATA**


*Overall dimensions*

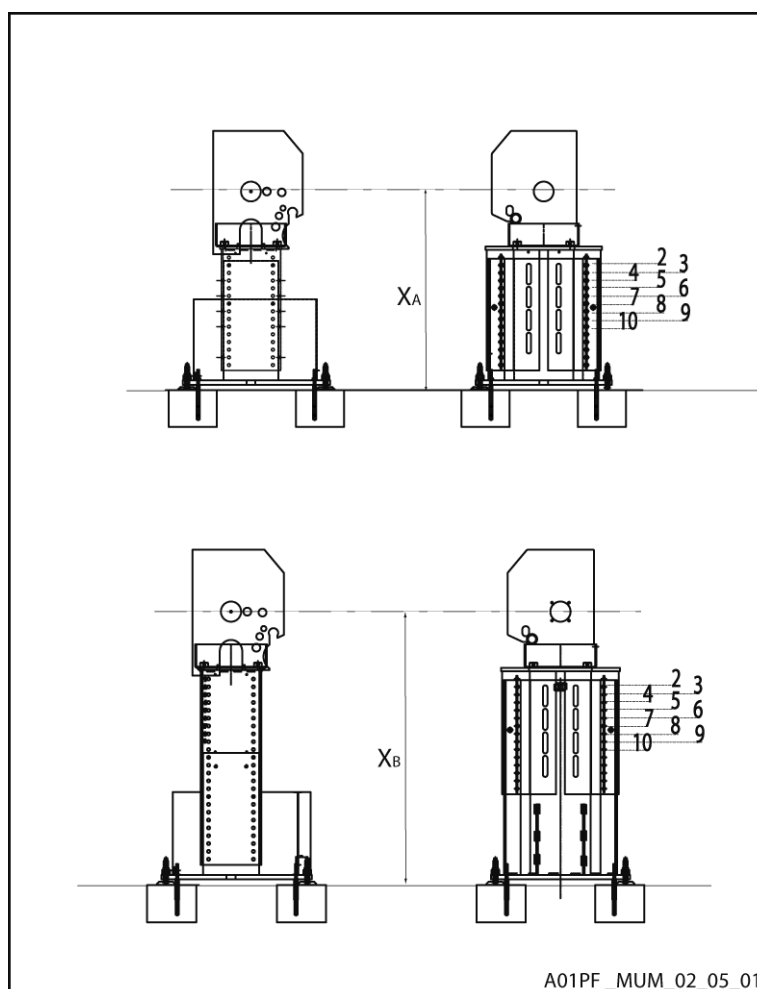
<b>Model</b>	<b>Version</b>	<b>A (mm)</b>	<b>B (mm)</b>	<b>C (mm)</b>	<b>D (mm)</b>	<b>E (mm)</b>
MASTER 80 UP HyperFlex	33	4330	3640	860	1250	800
	38	4830	4140	1110		800
	43	5330	4640	1360		800

*General technical data*

	<b>MASTER 80 UP HyperFlex</b>	
Round bar size	Ø Min 8 mm (5/16")	Ø Max 80 mm (3")
Hexagonal bar size (key socket)	Min 7 mm (5/16")	Max 65 mm (2" 1/4)
Square bar side	Min 7 mm (5/16")	Max 50 mm (2")
Minimum bar length	Ver.33 – 1500 mm (4,9 ft) Ver.38 – 2000 mm (6,5 ft) Ver.43 – 2000 mm (6,5 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)	600mm (ex:n?60 bars of ø 10mm) (ex:n?7 bars of ø 80mm)	
Maximum bar weight	120 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	110 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 - 1500 kg Ver.38 - 1600 kg Ver.43 - 1700 kg	
Electric cabinet weight	140 kg	

*Working axis height*

Model	Screw position	X <sub>B</sub> (mm) High base	X <sub>A</sub> (mm) Low base
MASTER 80 UP HyperFlex	2	1221 ÷ 1255	906 ÷ 940
	3	1256 ÷ 1290	941 ÷ 975
	4	1391 ÷ 1325	976 ÷ 1010
	5	1326 ÷ 1360	1011 ÷ 1045
	6	1361 ÷ 1395	1046 ÷ 1080
	7	1396 ÷ 1430	1081 ÷ 1115
	8	1431 ÷ 1465	1116 ÷ 1150
	9	1466 ÷ 1500	1151 ÷ 1185
	10	1501 ÷ 1535	1186 ÷ 1220



Guide channel, bar pusher, bar and pipe diameter.

Model	Guide channel diameter(mm )	Bar pusher diameter(m m)	Bar diameter(mm)		Pipe diameter(m m) (*)
			Minimum	Maximum	
MASTER 80 UP HyperFlex	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.

(\*\*) Ø 20mm brass.



**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 unit;
- proper fixing to the floor both of the lathe and bar feeder;
- suitable bar gripping device fitted on lathe;
- use of a guide channel and a bar pusher with suitable dimensions as regards to the bar diameter;
- use of 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 having features suitable for the diameter of the machined bar;
- all bar feeder guards must be closed.

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

- brass and steel round bars within 80 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.

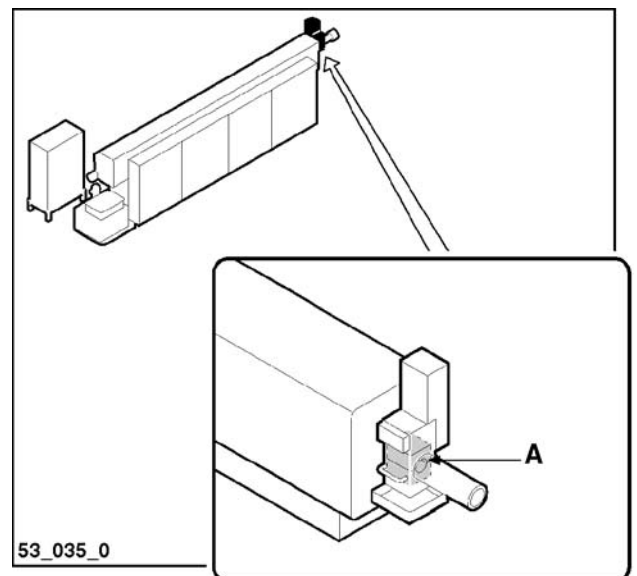
### 2.7.1 Bush holder device - Description

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 and 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.





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### 3.1 GENERAL SAFETY REGULATIONS



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

- The user and expert operator must perform their specific tasks only.
- Do not tamper with the safety devices for any reason whatsoever.
- Strictly comply with the health and safety regulations at work issued by the relevant authorities in each country.
- IEMCA declines any liability for injury to persons or damage to property if the relevant safety regulations are disregarded.

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

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

### **3.3 ADJUSTMENTS AND SETUP - Safety**

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

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

- The working area around the bar feeder must always be kept clean and uncluttered 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 operating cycle as recommended.
- Do not put hands or anything else near or inside the moving parts or parts in tension.
- Do not wear bracelets, watches, rings and ties.
- If necessary, use strong work gloves with five fingers, which do not reduce the grip sensitivity or power.
- Wear work shoes as well as personal protection equipment as provided for by the safety regulations in force in all countries.
- Inform the maintenance personnel of any operating anomalies.
- Before starting the bar feeder, make sure that there is no personnel engaged in servicing or cleaning the machine.



### **3.5 BAR FEEDER MAINTENANCE - Safety**

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

**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, 28/08/2014

.....  
(delegate signature)

### **3.7 General Description of Supply**

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

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

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

Any additional parts can be supplied upon request.

#### **Applicable Safety Regulation**

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

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

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

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

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

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

### **3.8 RESIDUAL RISKS**

- The following residual risks exist:

#### **PNEUMATIC POWER**

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

*Here are some examples of the warnings referenced above:*

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

#### **ELECTRIC POWER**

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

Here are some examples of the warnings referenced above:

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

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

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

#### **FLUID LEAKAGE RISK**

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

*Here are some examples of the warnings referenced above:*

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

#### **CRUSHING DANGER**

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

*Here are some examples of the warnings referenced above:*

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

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

*Here are some examples of the warnings referenced above:*

*1) Bush replacement or maintenance work inside the bushing holding equipment should only be performed after switching the bar feeder off.*

*2) With the bar feeder in automatic mode, there is a potential crushing risk if you reach your hands and arms into the guide channel area (bar pusher movement).*

## **BAR FEEDER FASTENING IN AN UNSTEADY EQUILIBRIUM**

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

*Here are some examples of the warnings referenced above:*

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

## **BREAKING RISK DURING OPERATION**

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

*Here are some examples of the warnings referenced above:*

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

## **RISKS FROM MOVING PARTS**

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

*Here are some examples of the warnings referenced above:*

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

## **FIXED GUARDS**

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

*Here are some examples of the warnings referenced above:*

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

## **NOISE**

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

## **EMISSIONS OF DANGEROUS SUBSTANCES**

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

*Here are some examples of the warnings referenced above:*

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

## **ACCESS TO THE INTERVENTION POINTS USED FOR MAINTENANCE**

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

Here are some examples of the warnings referenced above:

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

## **ALARM DEVICES**

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

*Here are some examples of the warnings referenced above:*

1) *The colour loses intensity.*

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

### **THERE ARE CIRCUITS NOT INTERRUPTED BY THE DISCONNECTING DEVICE**

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

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

### **SEQUENCE OF PHASES**

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

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

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

### **RULES FOR ELECTRIC POWER SUPPLY**

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









### **3.9 FORESEEABLE MISUSES**

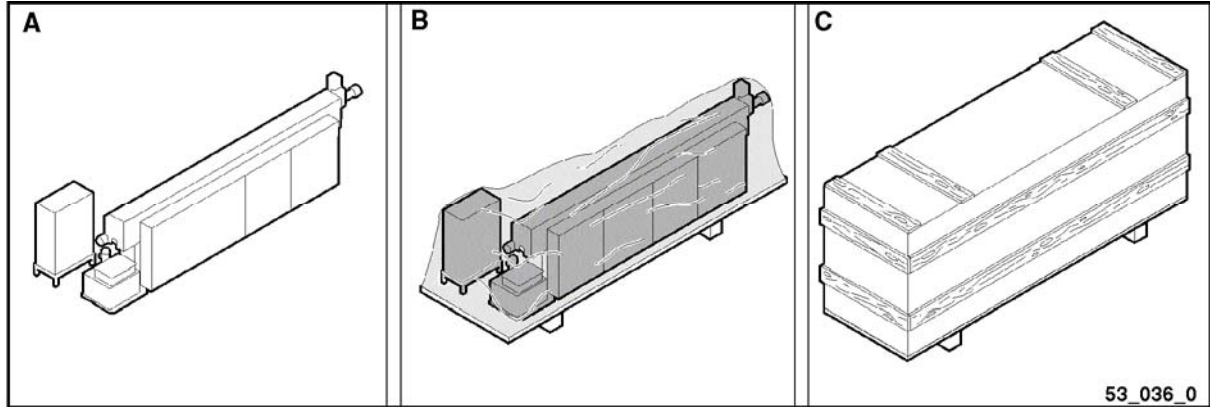
- Do not tamper with the machine's safety devices (for example, the safety microswitches of the openable guard to access the bar magazine)
- Do not use the lubrication pump for other purposes (for example, to pour different liquids)
- Do not use the oil tank for other purposes and do not pour into it liquids or substances different from those recommended by the manufacturer
- Do not load bars made of flammable materials
- Do not load bars with a greater straightness than the one recommended by the manufacturer
- Do not load bars with sizes or shapes different than those recommended by the manufacturer
- Do not interfere with any body part on the bar feed axis
- Do not approach the bar feeder with open flames or very hot objects (for examples, cigarettes). Danger of oil flammability.
- Do not draw electricity or pneumatic energy from the bar feeder to power other machines or tools
- Keep hands out of the remnant recovery zone. Residual risks of upper limbs crushing! (Risk due to remnant drop and clamp device).
- The magazine having no guards, it is forbidden to climb on it.
- Keep your limbs out of the bar feeding magazine zone when near the elevators. Residual risks of elevator downward slipping leading to limb crushing!



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## 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

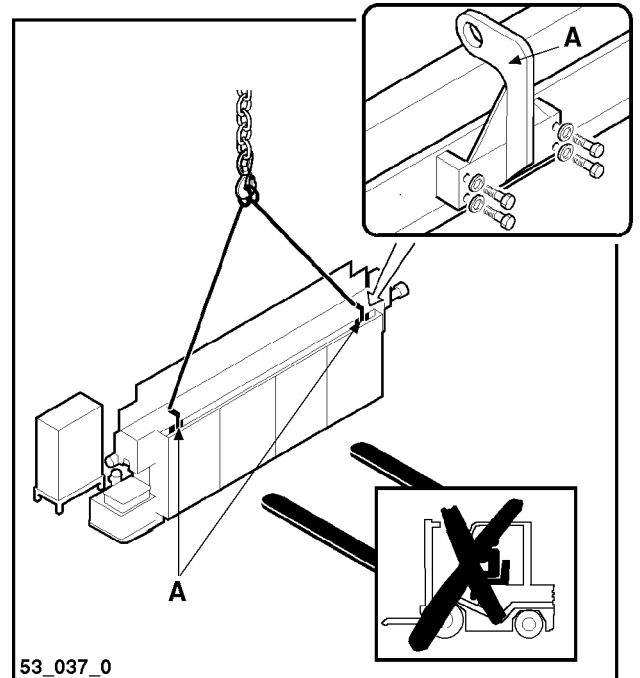


**DANGER - WARNING:**

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

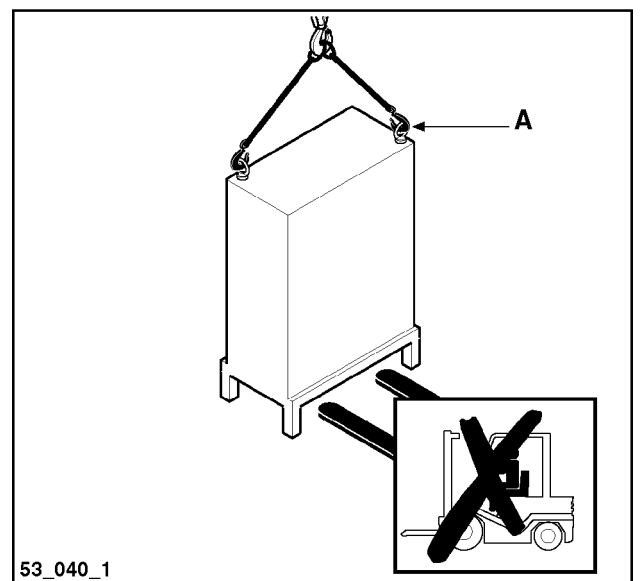
#### 4.2.1 Bar feeder without packaging - Lifting

- Fit the two lifting brackets (A) (at a distance of 2,710 mm from each other with magazine L=33).
- Use a hook lifting device of adequate capacity.



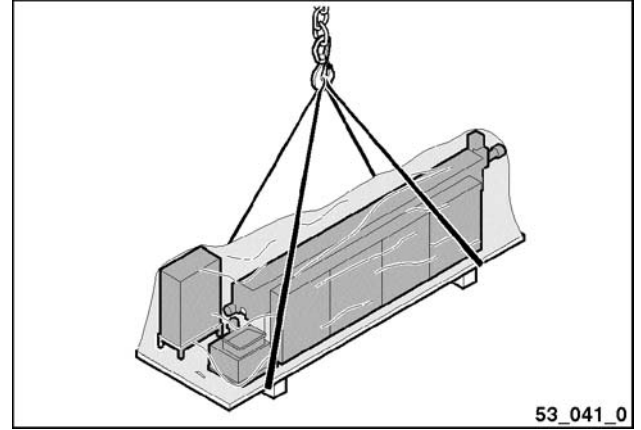
#### ELECTRIC CABINET

- Install two round eyebolts (A) with threaded stem (1 UNI - ISO3266 M10).
- Use a hook lifting device of adequate capacity.



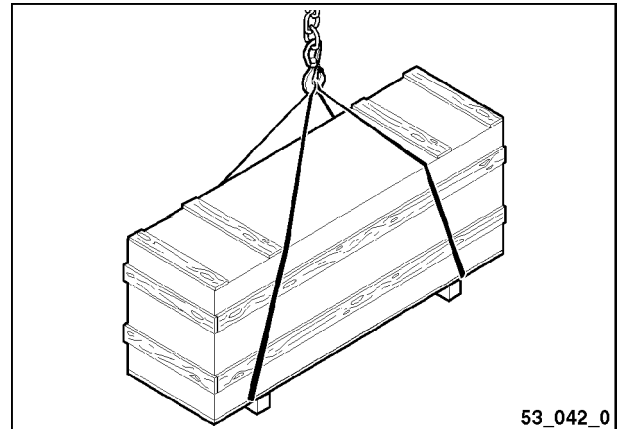
#### 4.2.2 Bar feeder with pallet - Lifting

Use a hook type lifting device of suitable load capacity.

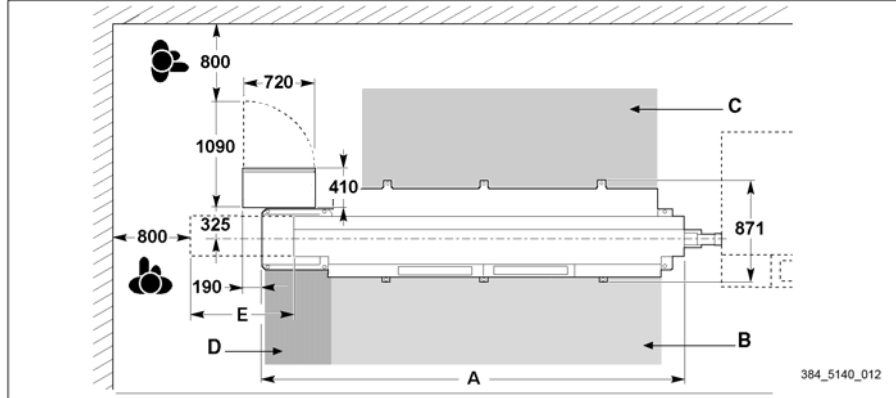


#### 4.2.3 Bar feeder with crate - Lifting

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 areas (B) (working area), (C) (bar loading area) and (D) (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.

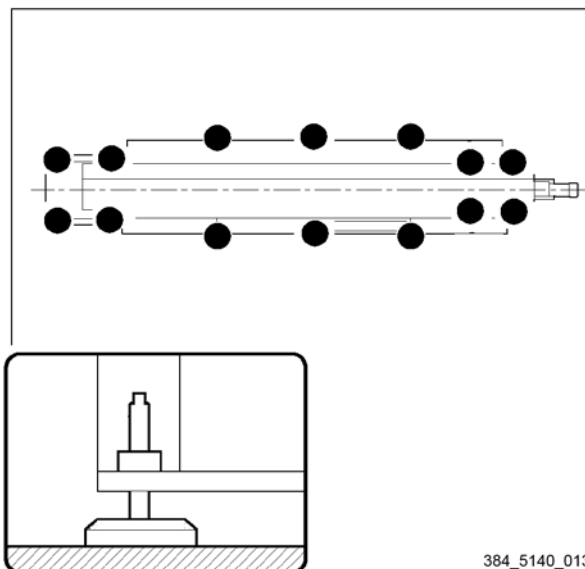
Model	Version	A (mm)	E (mm)
MASTER 80 UP HyperFlex	33	4330	800
	38	4830	800
	43	5330	800

### 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 in the positions shown in the figure.

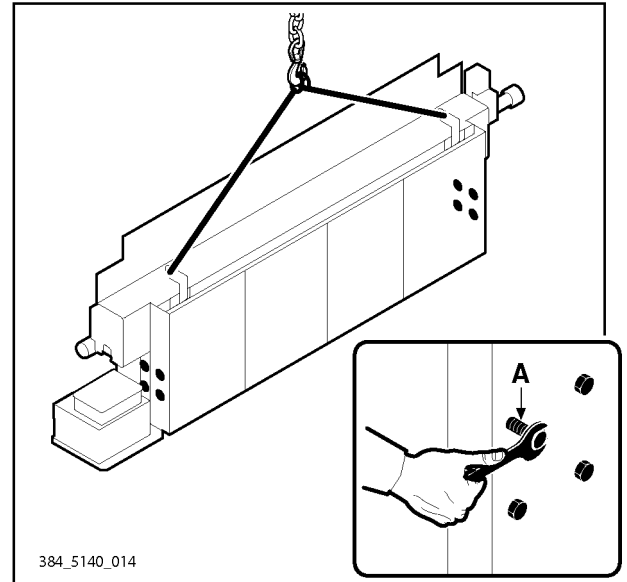




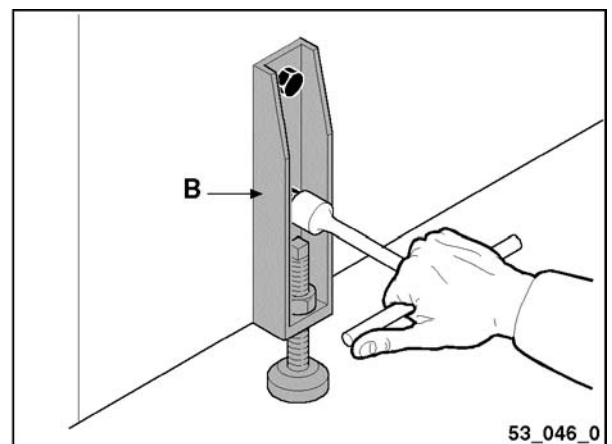
### 4.4.2 Height - Adjustment

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

- stretch the lifting chains and remove screws (A) in the front and rear bases;

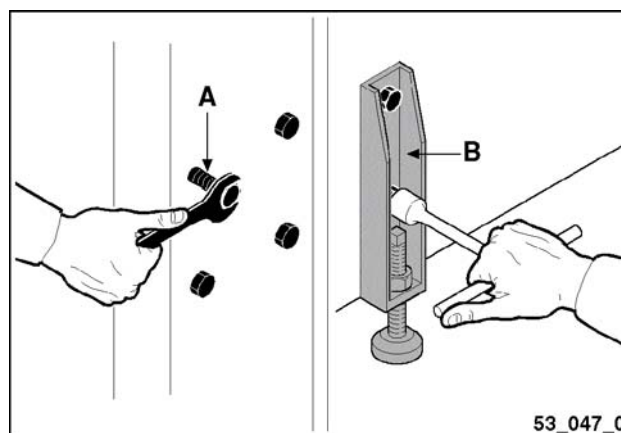


- remove all the brackets (B) of the magazine feet.



- lift or lower the bar feeder according to the necessary X value, see table.
- The height of the working axis may be adjusted according to the data indicated in the table of the "Technical data" section.

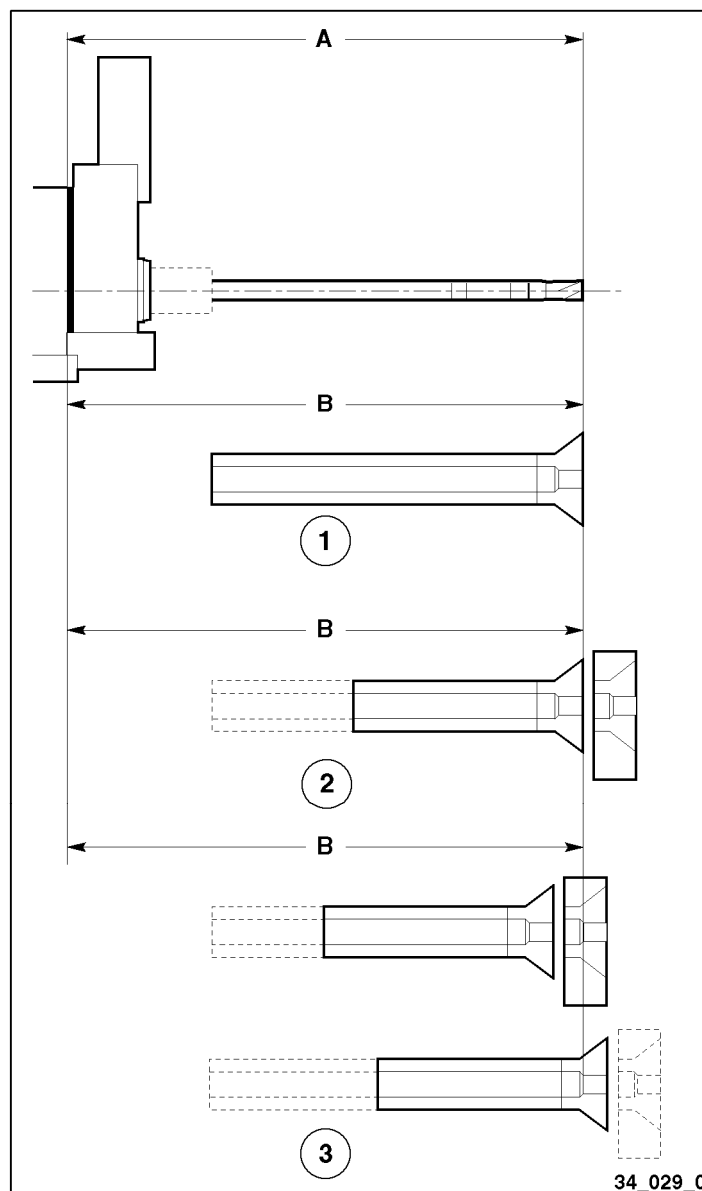
- tighten screws (A) and fit brackets (B) again.



### 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).

- 1 Fixed headstock or sliding rest lathe
- 2 Sliding headstock CNC lathe
- 3 Sliding headstock cam lathe

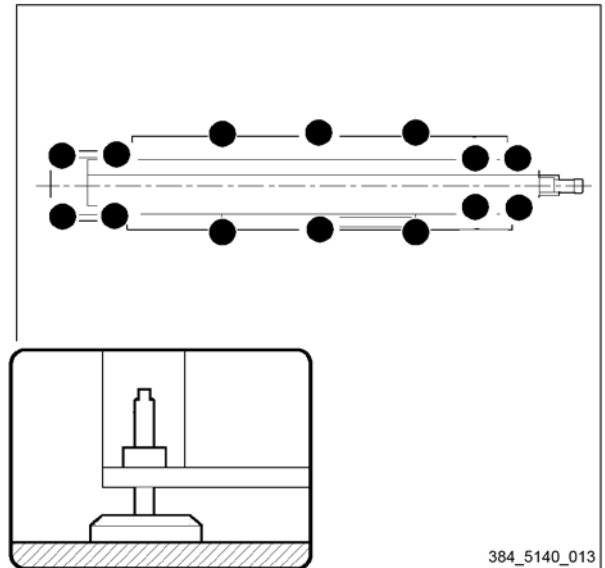


*Max. bar pusher extension*

34\_029\_0

Model	Version	Version	A -Max. extension(mm)
MASTER 80 UP HyperFlex	33-38-43	N	1100
		L	1350
		LL	1600
		XLL	1850
		XXL	2100

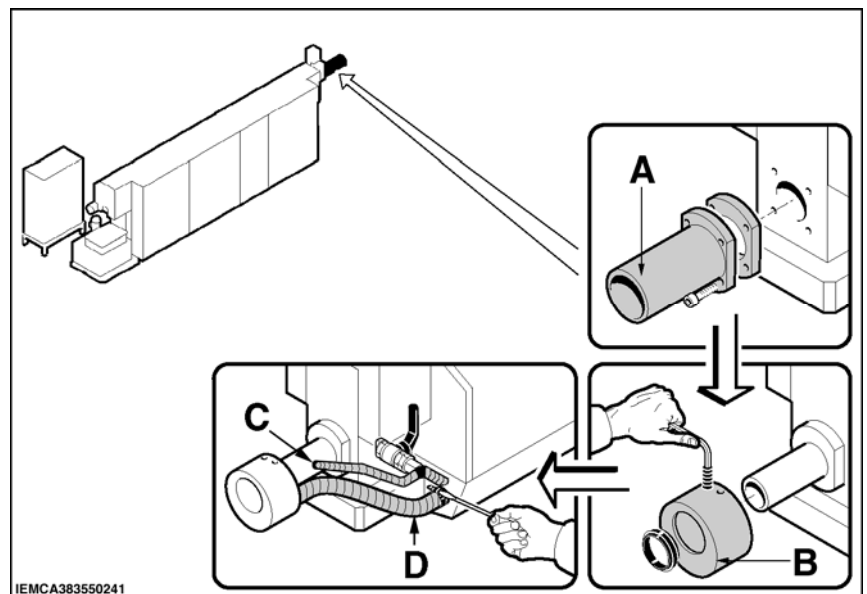
- Roughly adjust the height of the working axis and the alignment with the lathe by turning the screws of the support feet.



384\_5140\_013

#### 4.4.4 Front nose - Installation

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



IEMCA383550241

#### 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.

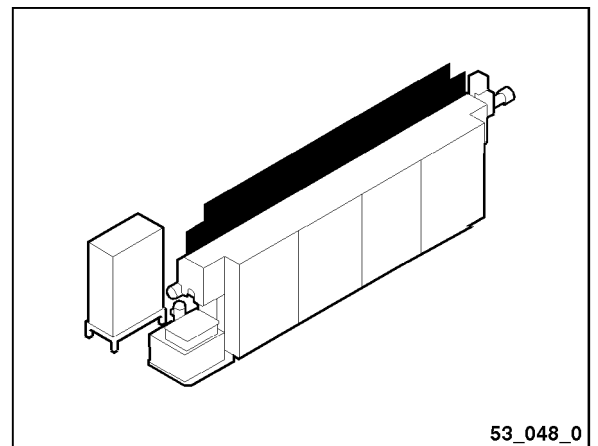




**WARNING - CAUTION:**

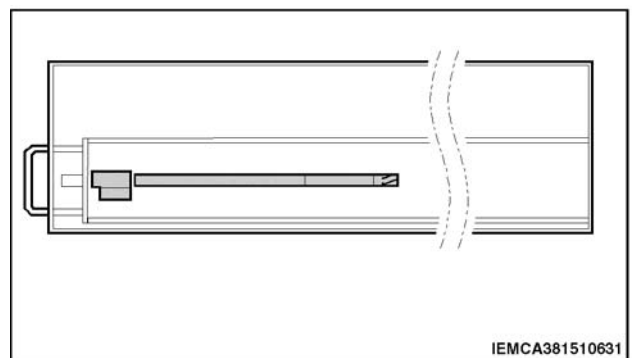
*an error during the alignment may be the major cause of a bad operation of the bar feeder and of its consequent damage.*




##### PRELIMINARY PROCEDURE

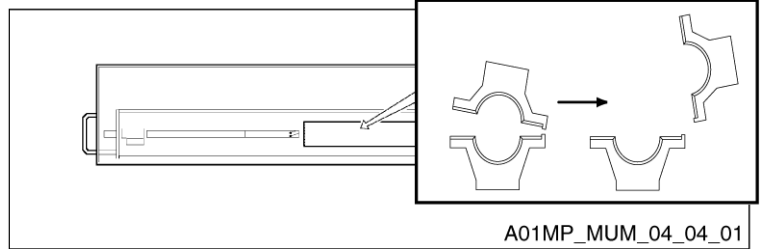
- Open the upper guard.



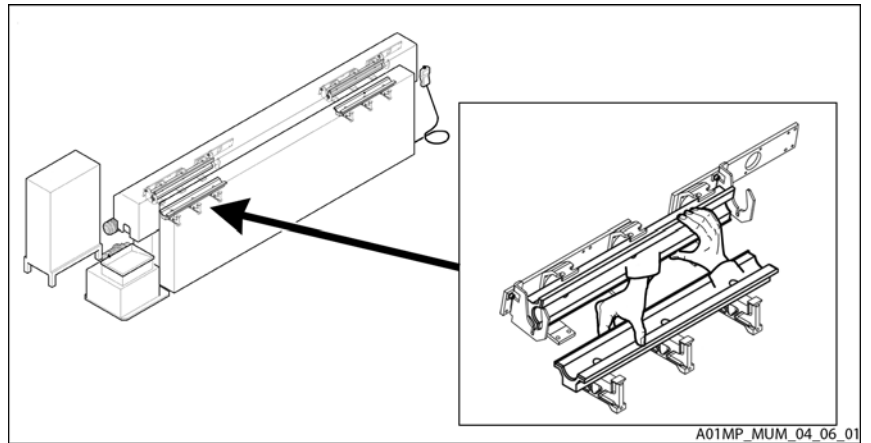
- To bring the bar pusher to its backward limit stop, press the  or  button in manual mode on the handheld keyboard.



- 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.

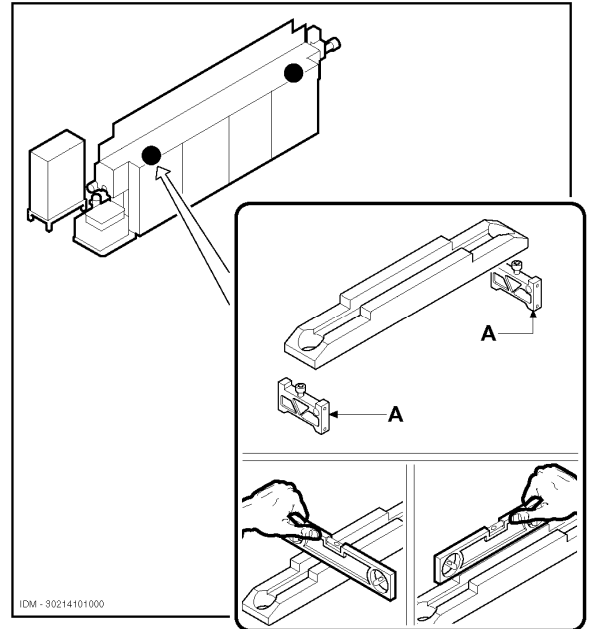


- Remove the first and last lower guide channels by pressing on the pressure couplings.

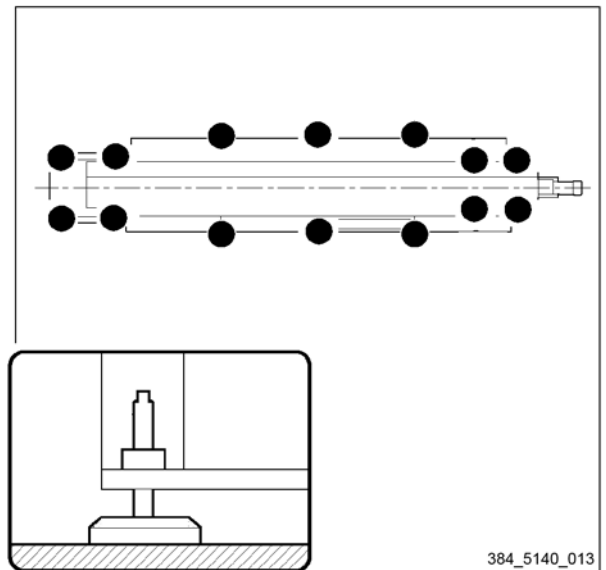


**LEVELLING**

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



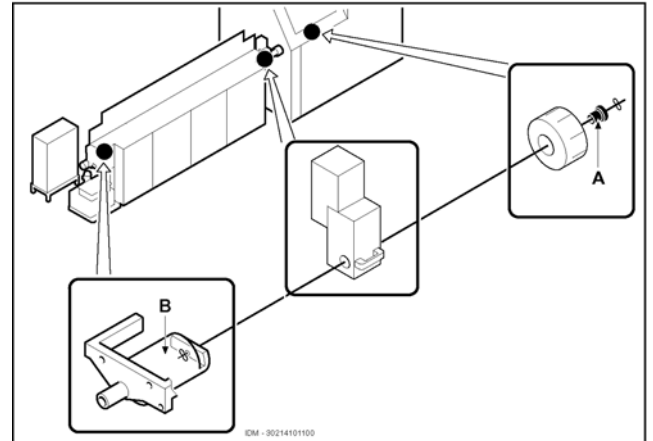
- Carry out the required corrections by turning the support feet screws.



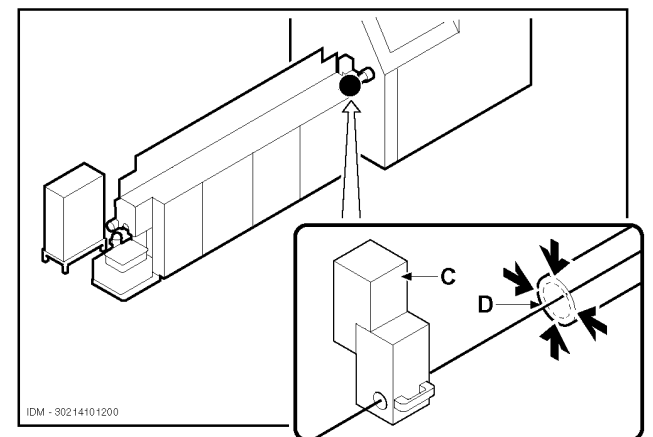
**ALIGNMENT**

The alignment is obtained by fitting a nylon thread ( $\varnothing$  1 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).

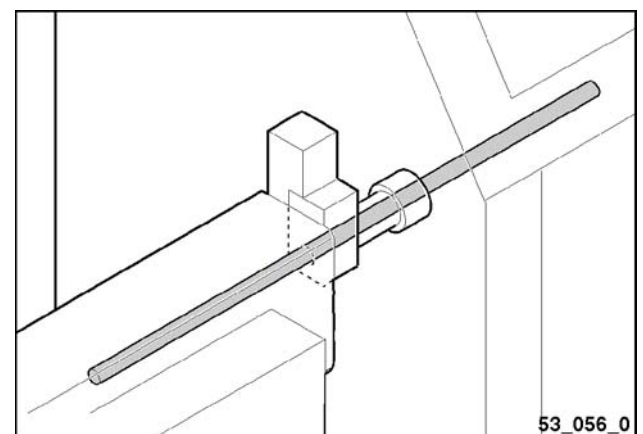


- check with a sliding caliper, the alignment near the bush (C) and the spindle (D); use a tolerance of  $\pm$  0.15 mm in the four directions.



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 (see (B) in section 4.4.3);
- 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.



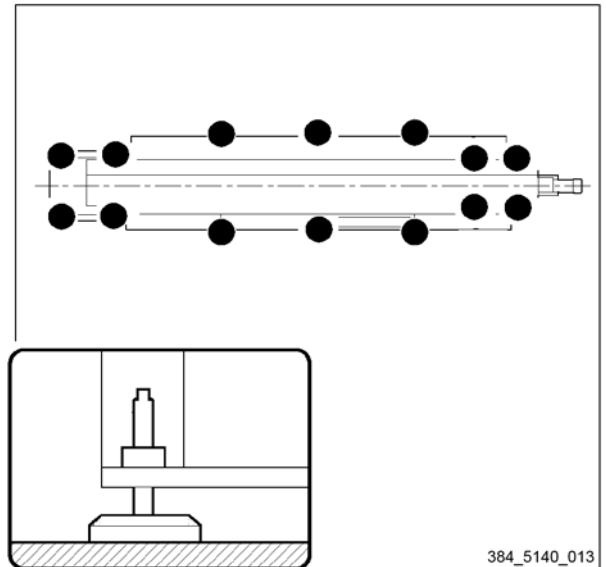


**POSITIONING ADJUSTMENTS**

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 the support feet screws.

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.



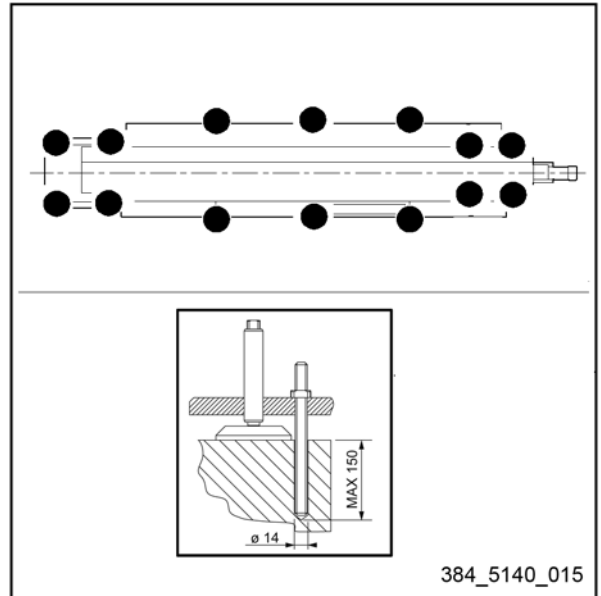
#### 4.4.6 Bar feeder fastening



**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.



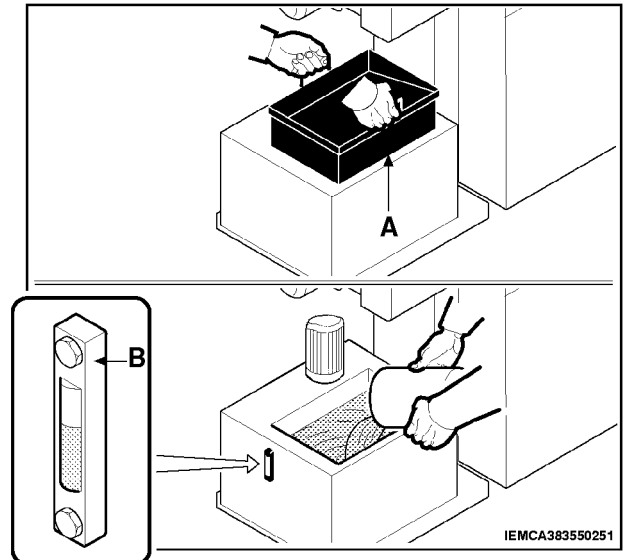
#### 4.5 LUBRICATION OIL - FILLING



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

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

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



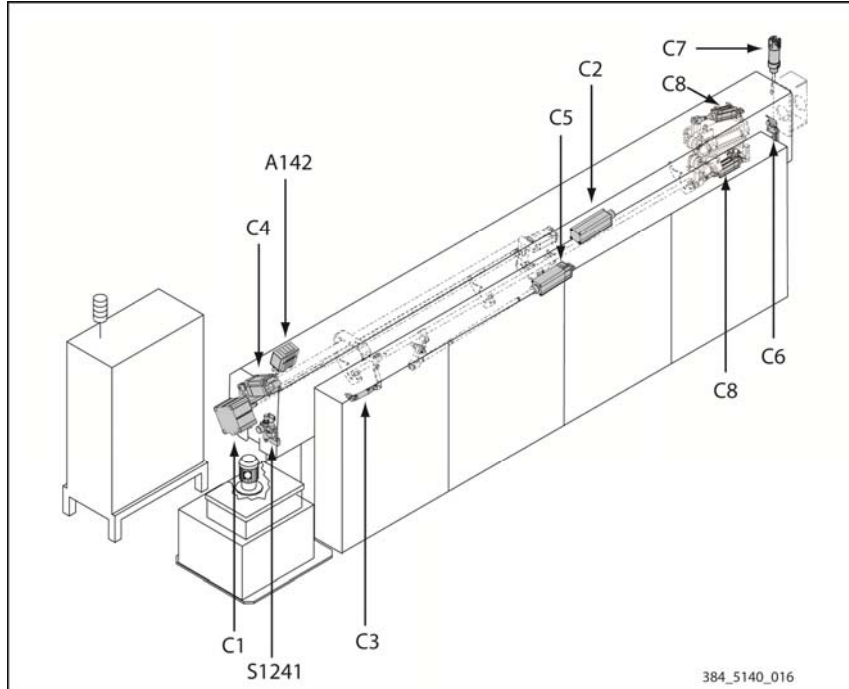
#### 4.6 ELECTRICAL CONNECTION



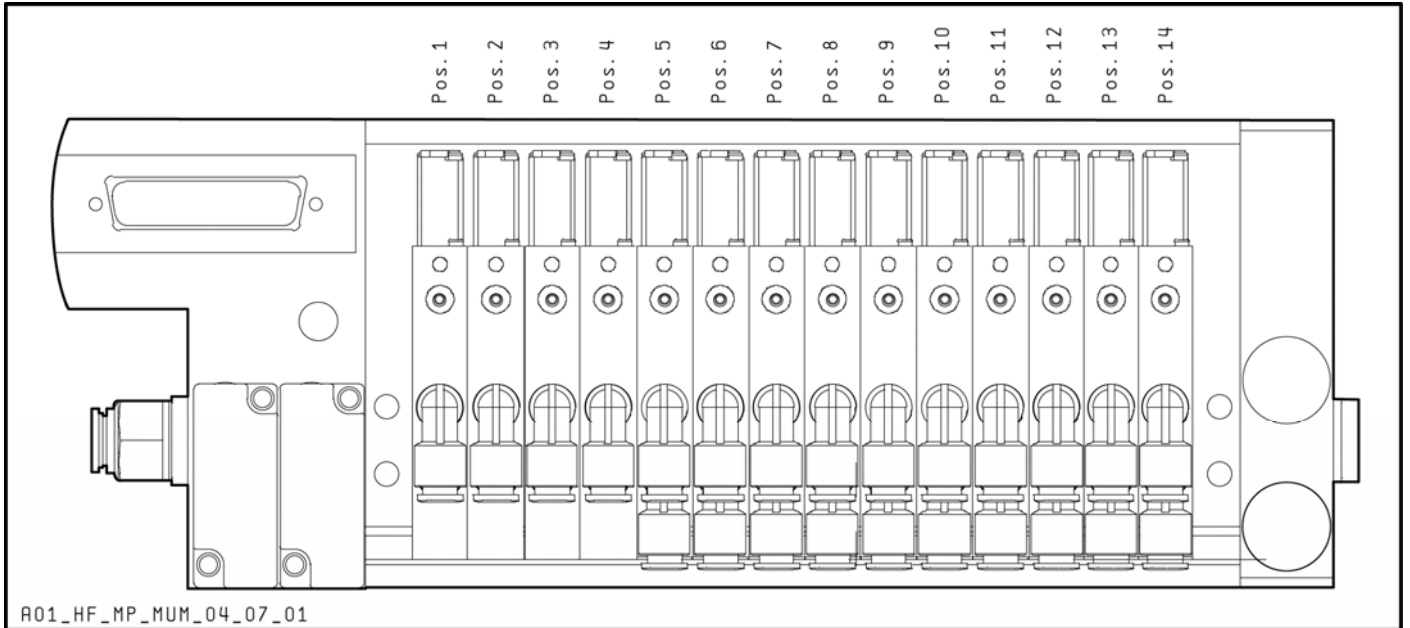
**DANGER - WARNING:**  
*this type of operation should only be entrusted to skilled personnel with precise technical competence and specific abilities to comply with the applicable standards and regulations in force. The feeder must be electrically connected to the lathe, which in turn, must be connected 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
<b>C1</b>	Cylinder	Enables the clamp opening and closing
<b>C2</b>	Cylinder	Enables the guide channel downstroke for the remnant drop
<b>C3</b>	Cylinder	Enables the guide channel locking
<b>C4</b>	Cylinder	Enables the guide channel upstroke and downstroke
<b>C5</b>	Cylinder	Controls the bar drop control devices upstroke and downstroke
<b>C6</b>	Cylinder	Resets the short feed gate
<b>C7</b>	Cylinder	Enables the bush opening and closing
<b>C8</b>	Cylinder	Enables the bar pusher locking.
<b>A142</b>	Solenoid valve unit	Cylinder or piston control device (see description Solenoid valve box)
<b>S1241</b>	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	Bar drop control devices 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>	Remnant drop feeding control solenoid valve	Remnant drop downstroke
<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

**INFORMATION:**

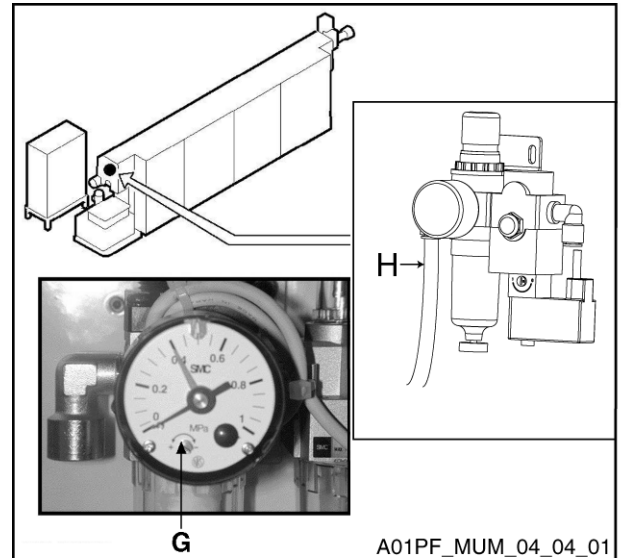
*the solenoid valves from position n°9 to position n°14 are used according to the bar feeder configuration.*

### 4.7.1 PNEUMATIC CONNECTION

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



**WARNING - CAUTION:**  
to adjust the pressure follow the instruction manual.



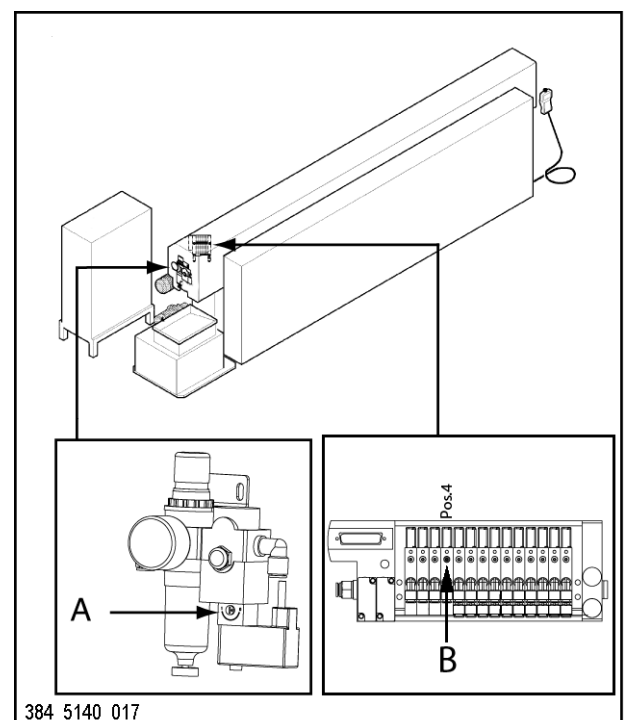
### 4.7.2 BAR FEEDER HANDLING WITHOUT POWER SUPPLY

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, 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".



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## 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.

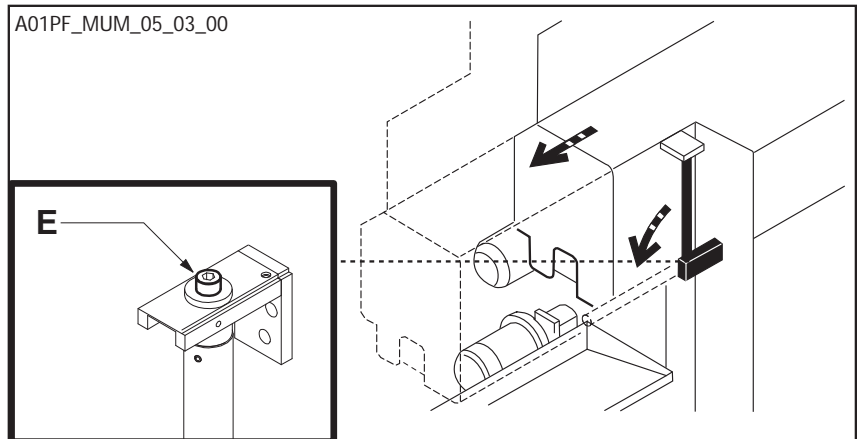
### 5.2.1 Feeding chain - Adjustment

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



### **WARNING - CAUTION:**

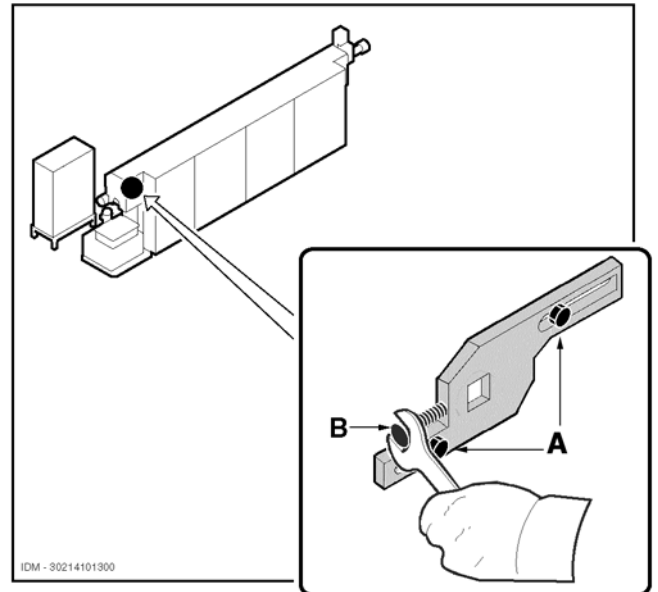
***before performing this operation, open the upper guard and power the lathe off.***



- 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).*



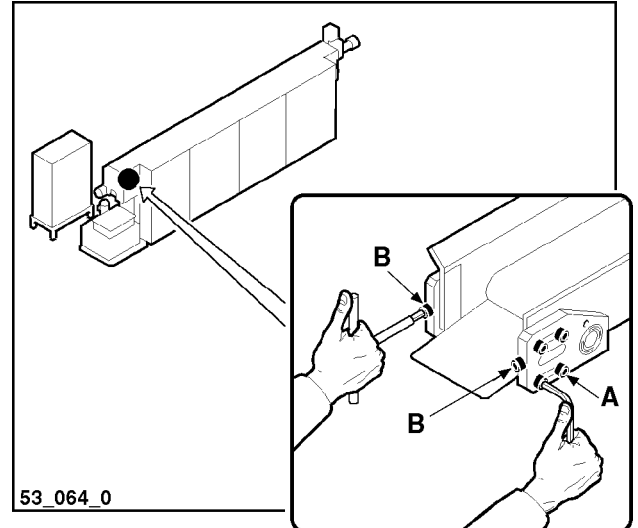
### 5.2.2 Remnant conveyor belt - Adjustment



**INFORMATION:**

*Check and if necessary adjust the belt tension after the first 20-30 working hours of the bar feeder.*

- Move the bar feeder body backwards.
- Loosen the eight screws (A).
- Adjust the conveyor belt tension through screws (B).



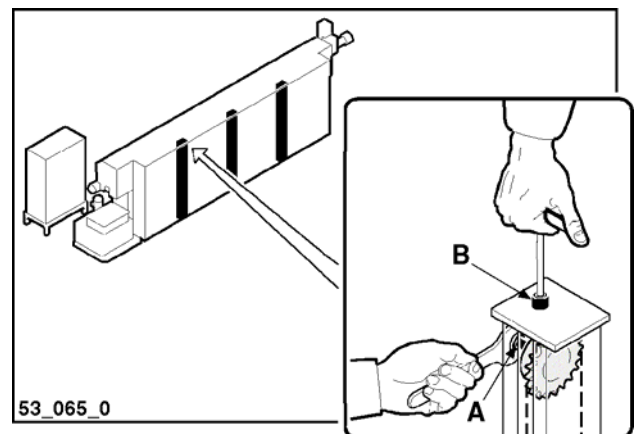
**INFORMATION:**

*screw or unscrew the right and left screws by making the same number of turns.*

- Tighten the screws (A).
- If during operation the conveyor belt does not turn in a centred way, it will be necessary to adjust the centring by using one of the two screws (B).

### 5.2.3 Elevator carriage chains - Adjustment





- Loosen screw (A).
- Act on screw (B) to adjust the chain tension.
- Tighten screw (A).
- Repeat the procedure for all elevator carriages, if necessary.

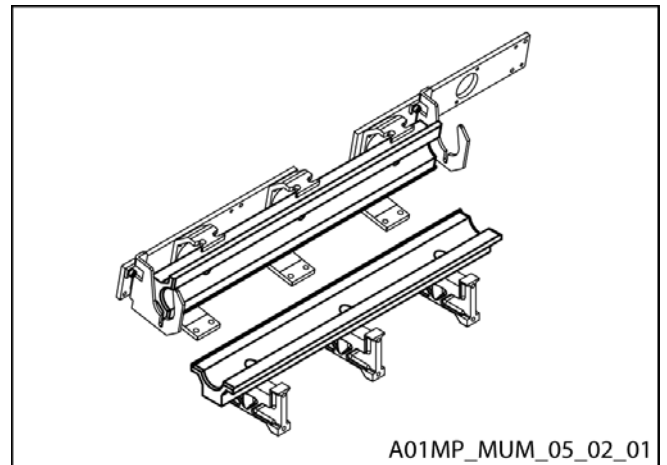



### 5.3 BAR FEEDER SETUP

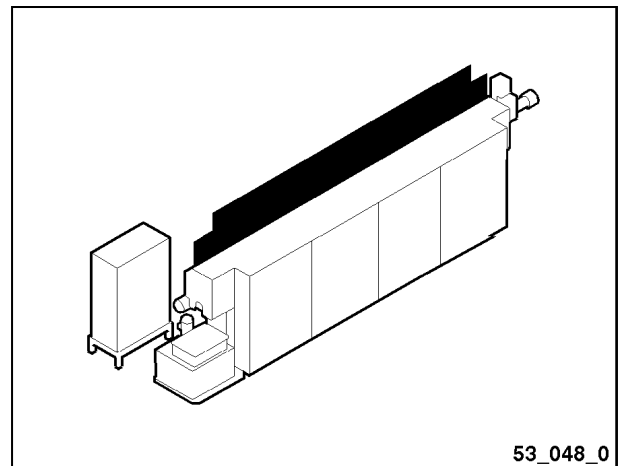
If the diameter of the bars to be machined changes, it may be necessary to perform adjustments on the machine.  
Refer to the "Guide channel, bar pusher, bar and pipe diameter" table in section 2.

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

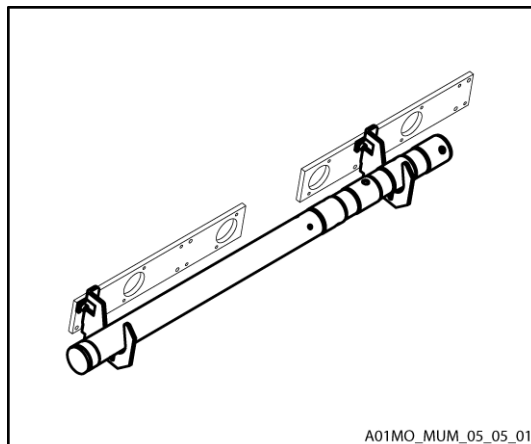
- Press  to start the bar feeder.
- press  and  to select the semiautomatic function.
- Press  several times until the upper guide channels open; "GUIDE CHANNEL FULL OPENING" should appear on the display.



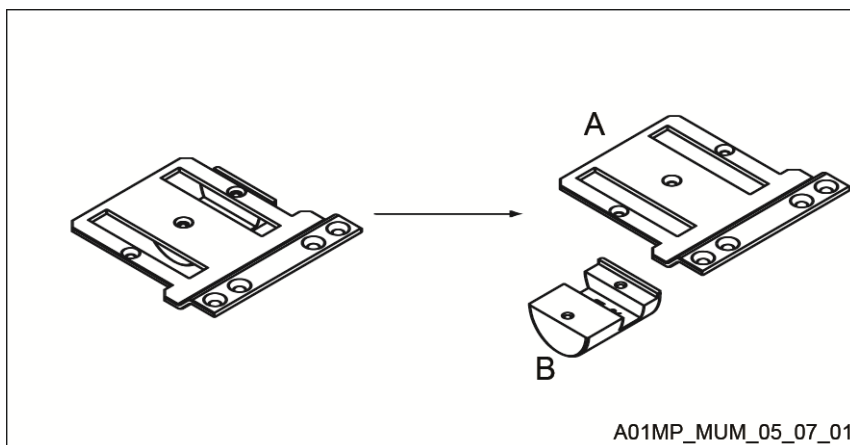
- Press  and open the upper guard.



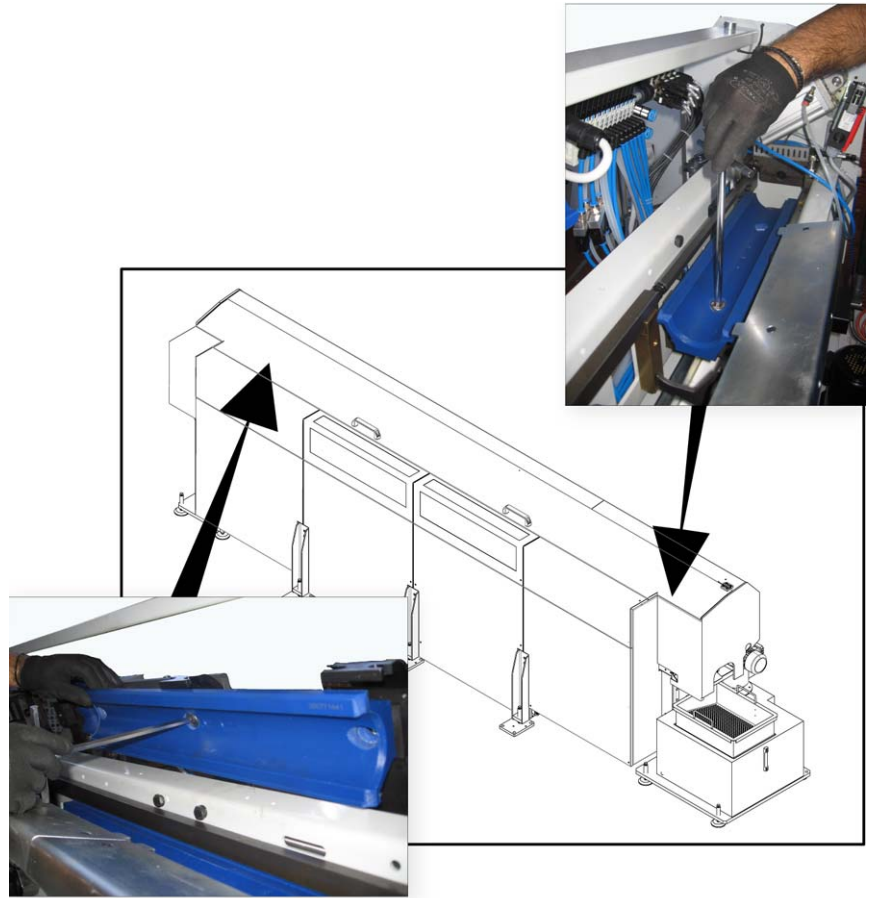
- Remove the bar pusher from both supports.  
For the bar pusher replacement refer to the next section.



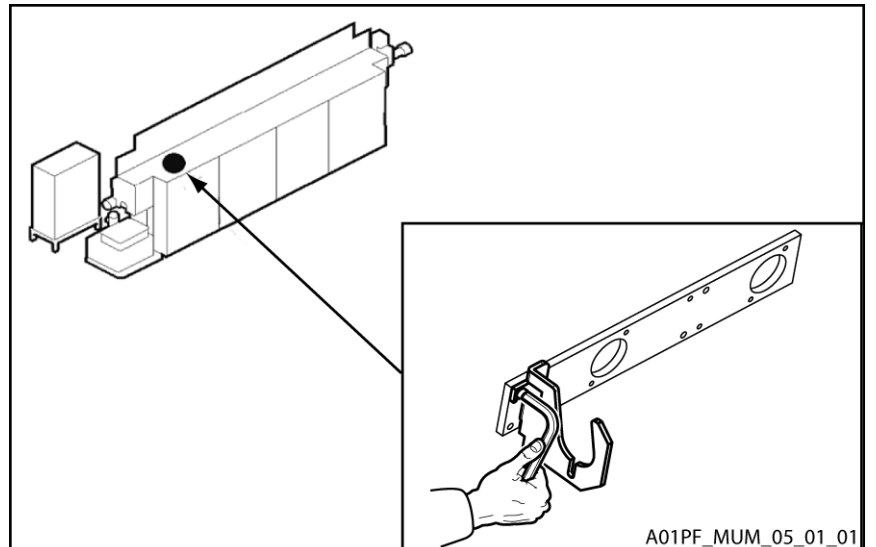
- Disassemble the first feeding pin (B) from the flag (A).



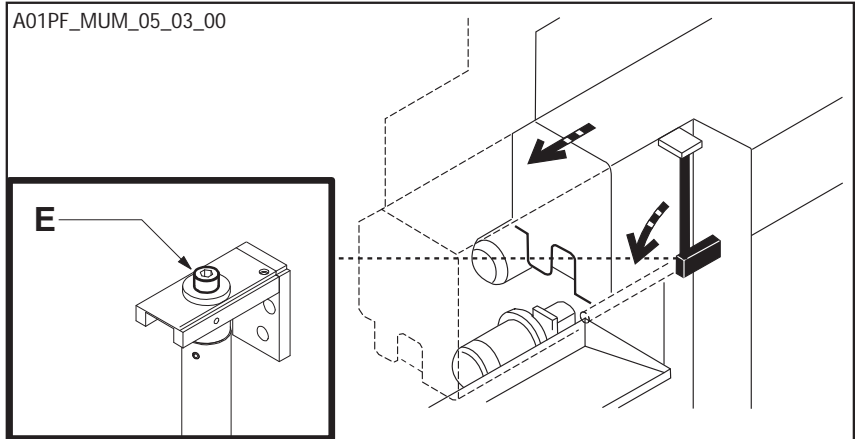
- Remove the lower and upper guide channels.




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

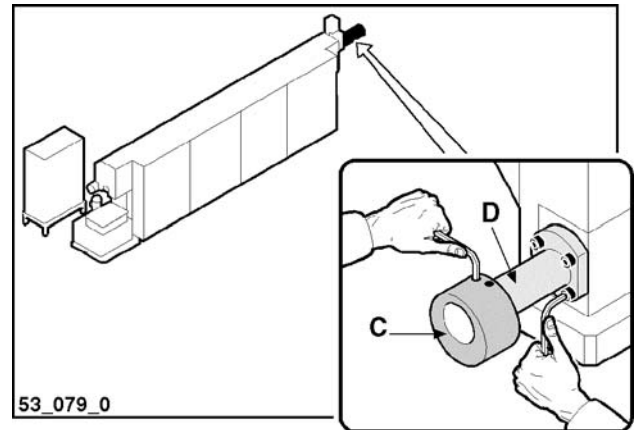


- Remove the screw (E), lower the rear lever and move the bar feeder body backwards.

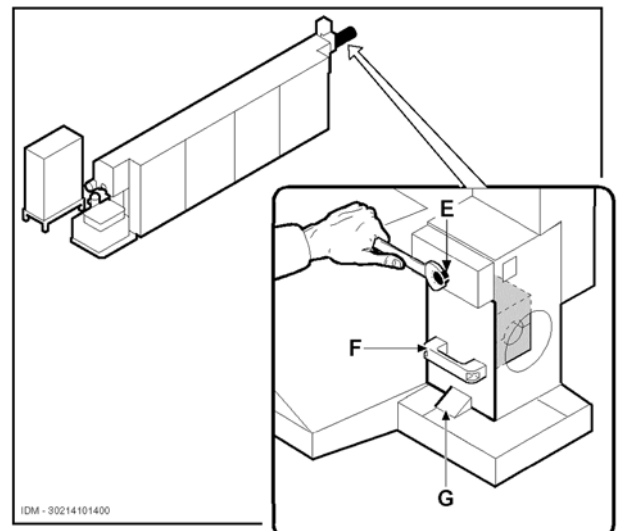


 **WARNING - CAUTION:**  
*before performing this operation, power the lathe off.*

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

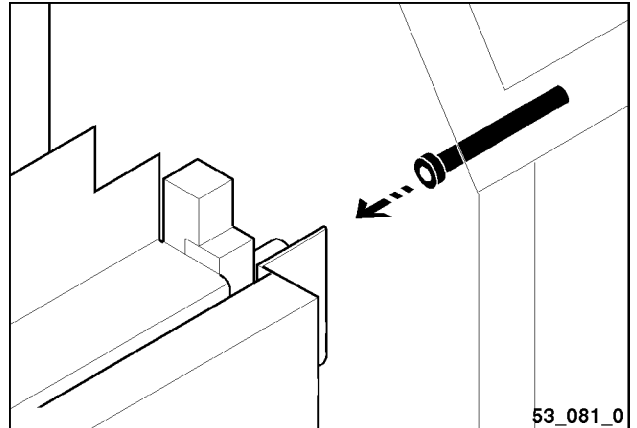


- Lower spring (G) and remove cover (F), completely open the two half-bushings by manually turning shaft (E) and remove the lower half-bushing.
- Close the upper half-bushing by turning the shaft again then replace it.
- Turn the shaft and fit the lower half-bushing.
- Close the half bushes completely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

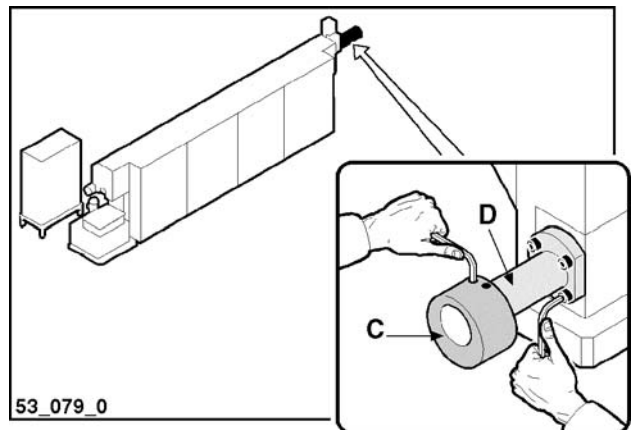




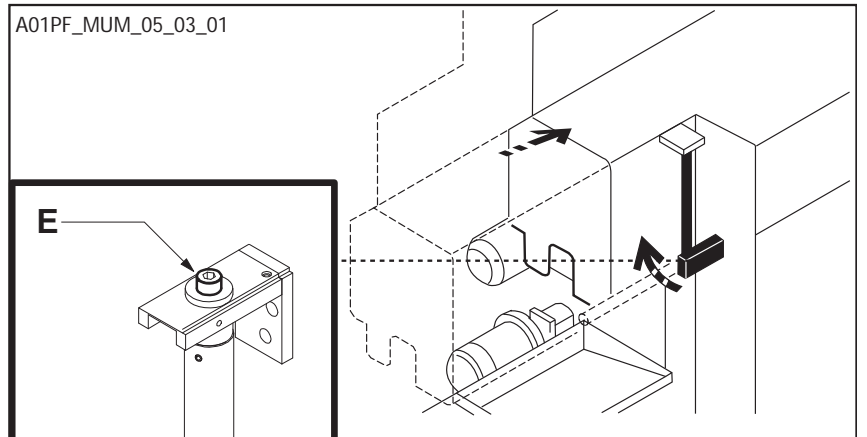
- Remove the lathe spindle liner if required and install a suitable liner for the "new" diameter, if necessary.



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



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



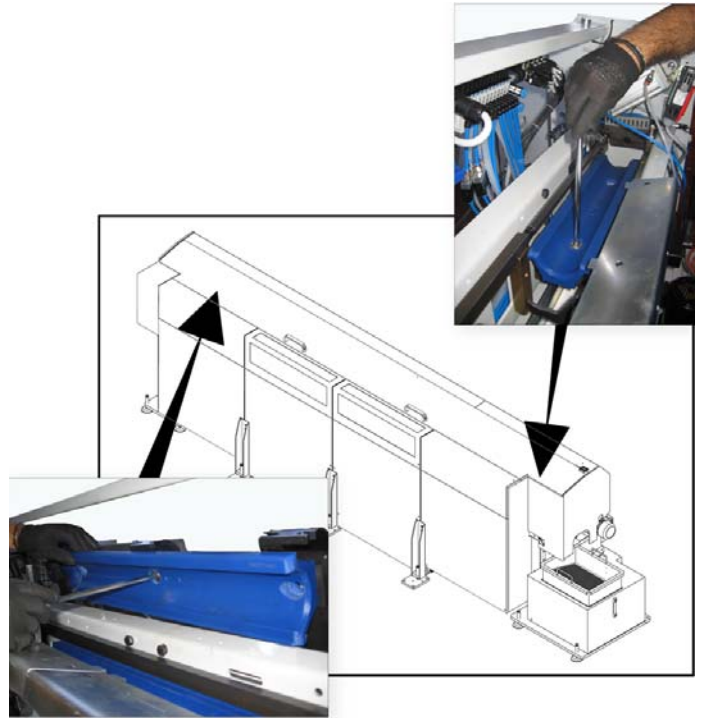
**WARNING - CAUTION:**

*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 lower and upper guide channels of the "new" diameter.


**INFORMATION:**

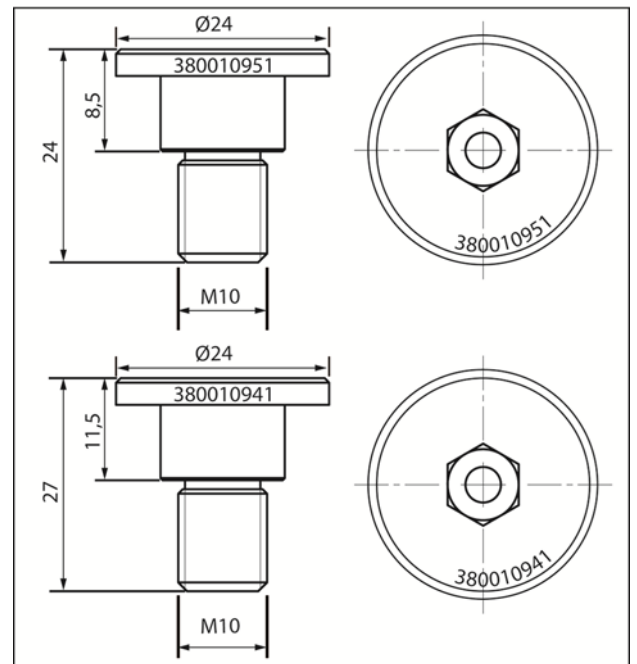
*Warning; follow the correct assembly direction of the guide channels.*


**WARNING - CAUTION:**

*Use the specific screws allowing to lock the guide channels. The screws have a printed code and can be classified into two types:*

*Upper guide channel fastening screws 380010951.*

*Lower guide channel fastening screws 380010941.*

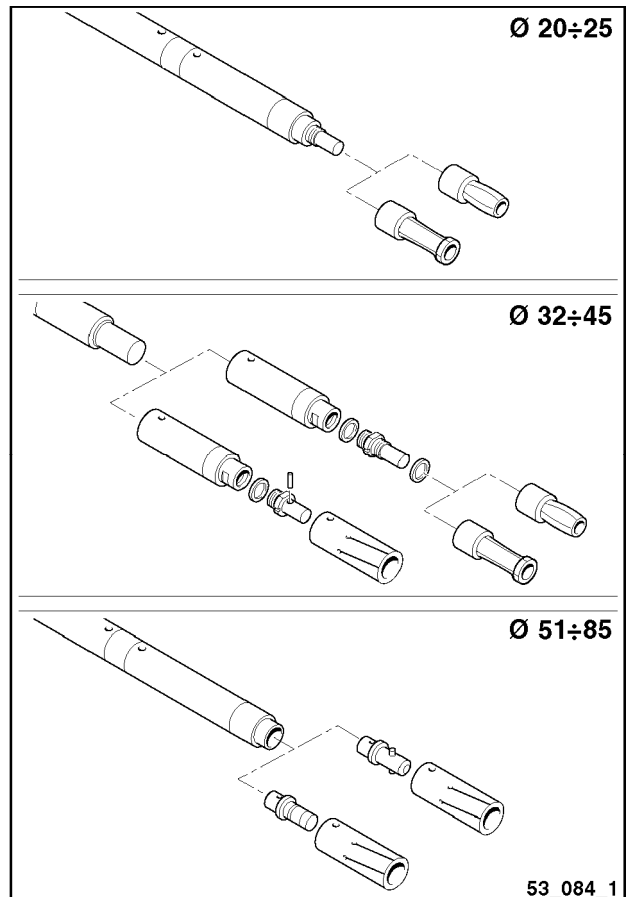


- Choose an appropriate collet for the bar diameter and profile; see "GUIDE CHANNELS-BAR PUSHER-REVOLVING TIPS" and "COLLETS" section.



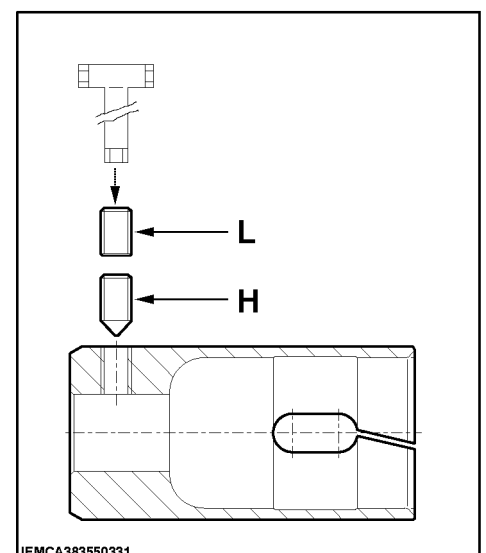
**INFORMATION:**

*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.*

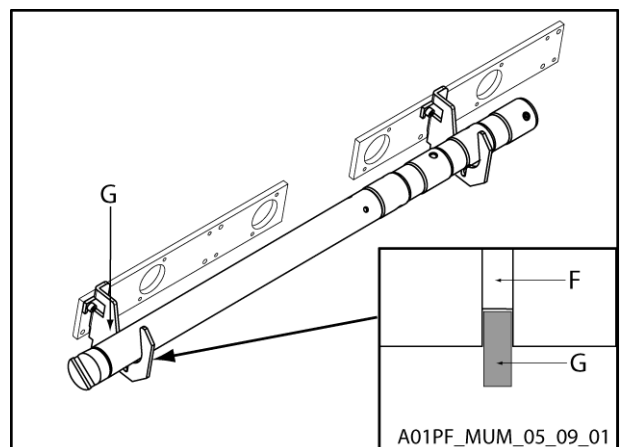
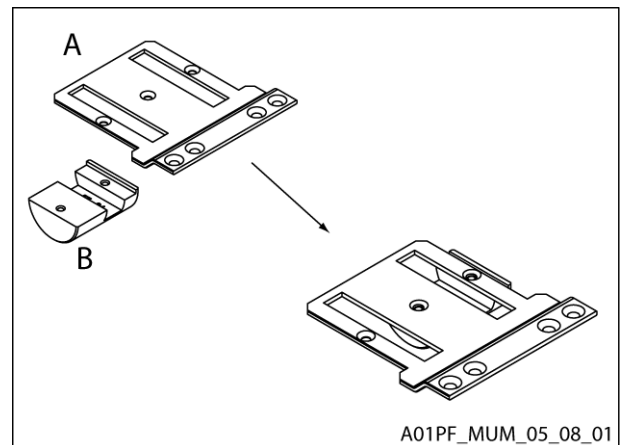
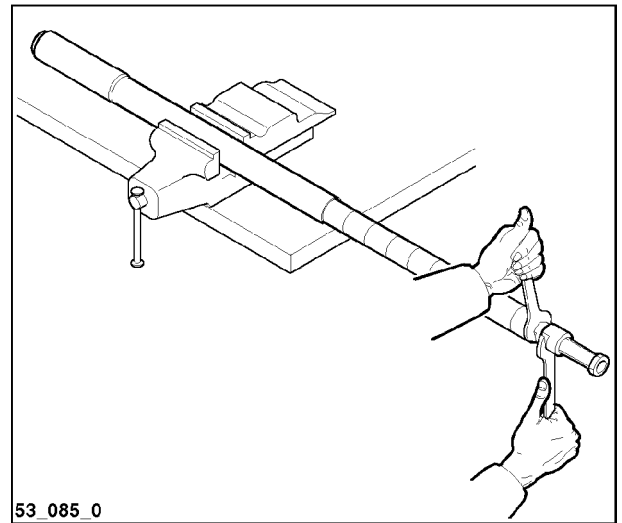




**WARNING - CAUTION:**

*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 recess to prevent accidental loosening of the collet and/or its 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 support (G).

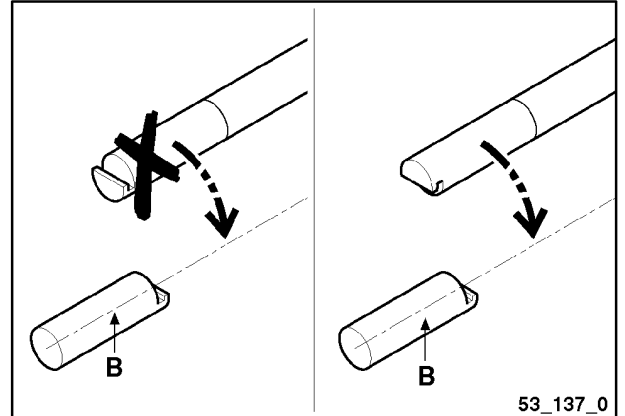


- Properly position the bar pusher in the radial direction so that in the next phase of the upper guide channel closing, the coupling between the bar pusher and the first feeding carriage (B) occurs correctly.




**WARNING - CAUTION:**

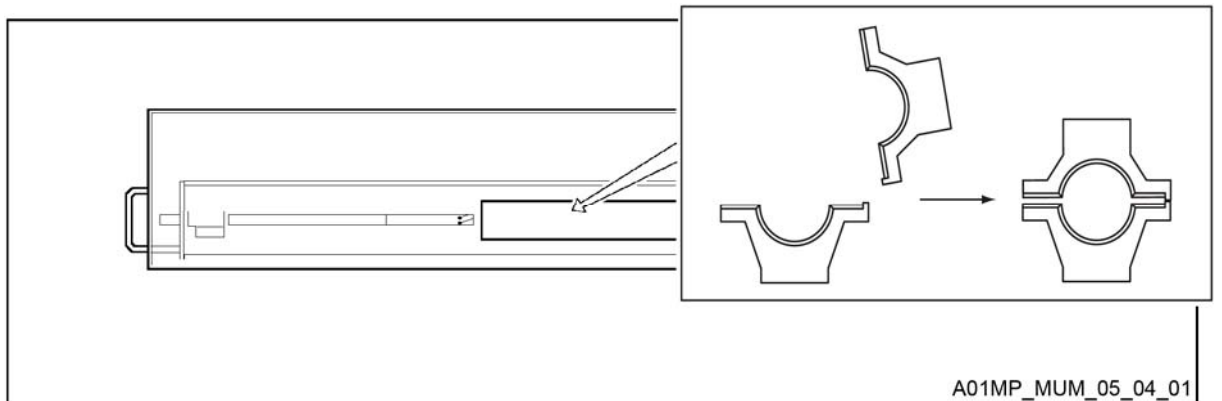
*the above mentioned positioning has to be always assured. Therefore during the setup or maintenance operations, if the bar pusher is struck involuntarily, it has to be correctly repositioned.*



53\_137\_0



- 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.



A01MP\_MUM\_05\_04\_01



**INFORMATION:**

*Warning; follow the correct assembly direction of the guide channels.*




### 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.




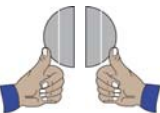

#### **WARNING - CAUTION**

***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-1], enter manual mode



and, by pressing , move the bar pusher forwards until the clamp position is exceeded of at least 200 mm.

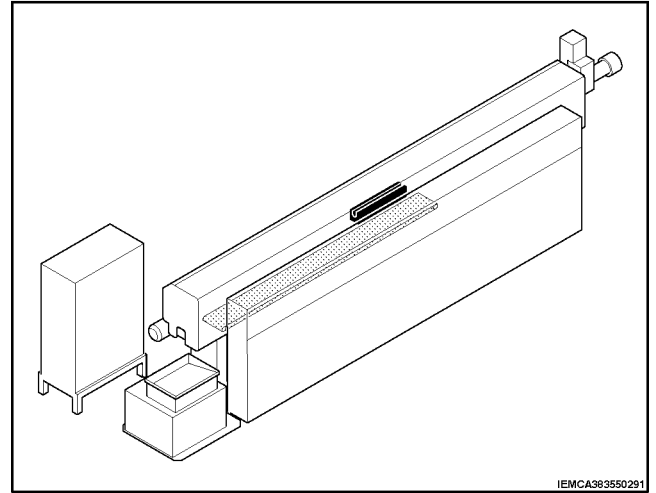
- Close the guide channels  and .
- Restore the machining cycle of the bar feeder.

### 5.3.3 Remnant passage door spring - Adjustment

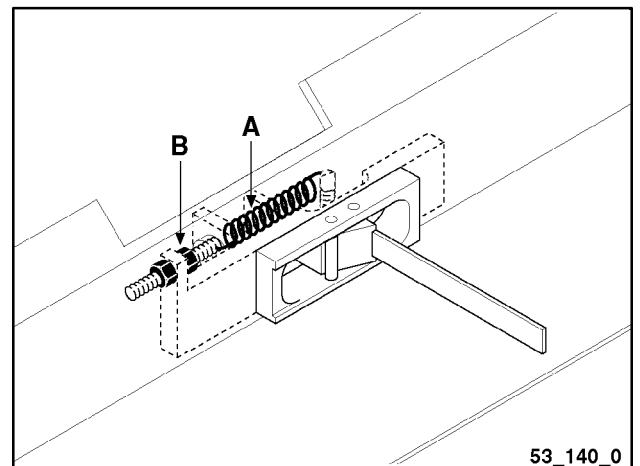
The remnant passage door is kept closed by a spring. The remnant passage has to win the spring resistance, so that the door may intercept the detection sensor.

The bar feeder is normally supplied with the spring adjusted for large diameter bars; with small diameter bars it could be necessary to reduce the spring preload proceeding as follows.

- Remove the lower guide channel in correspondence to the door.
- Adjust the preload of spring (A) by turning nuts (B).
- Restore the bar feeder initial operating conditions.



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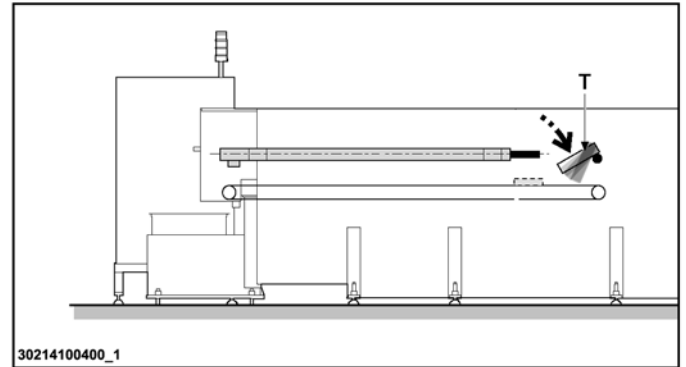


53\_140\_0



### 5.3.4 REMNANT DROP CHUTE – ENABLING

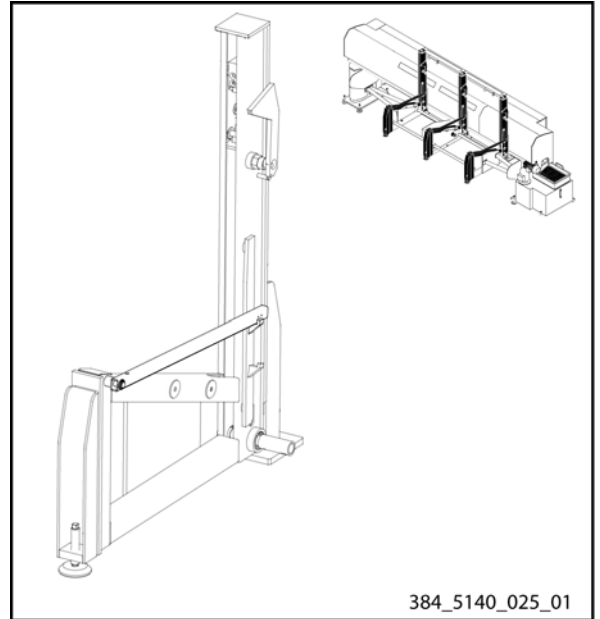
If a remnant does not drop onto the remnant conveyor belt after the guide drop (T), parameter 45 can be enabled (see description in the instruction manual) so that the guide starts vibrating and the remnant drops.



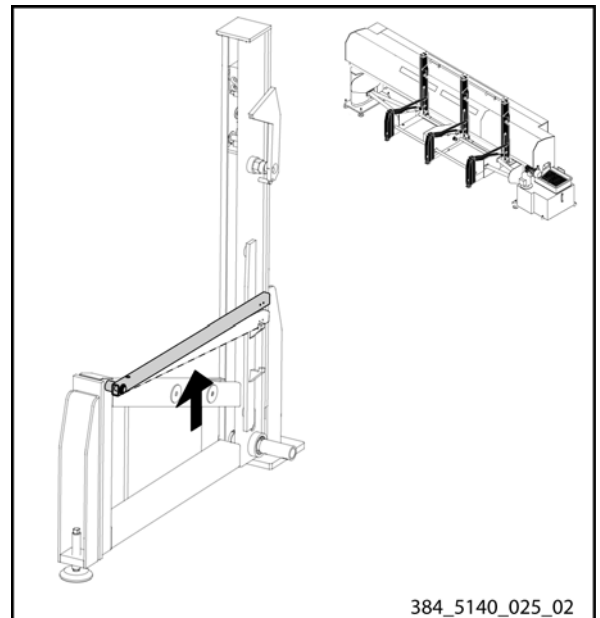
## 5.4 MAGAZINE SETUP

### 5.4.1 Bar supporting bracket - Setup

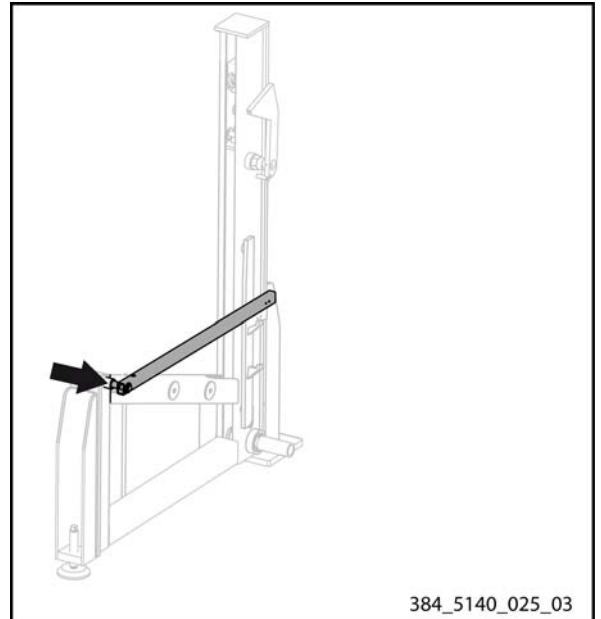
- Adjust the inclination of the bar supporting bracket.



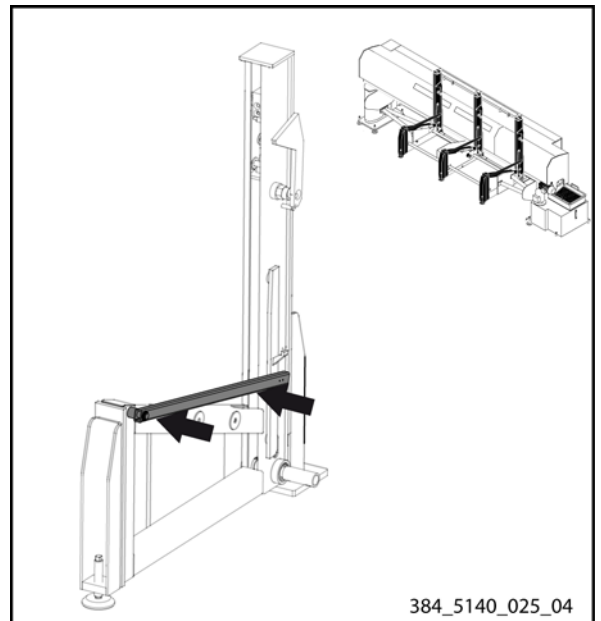
- Move the supporting bracket upwards.



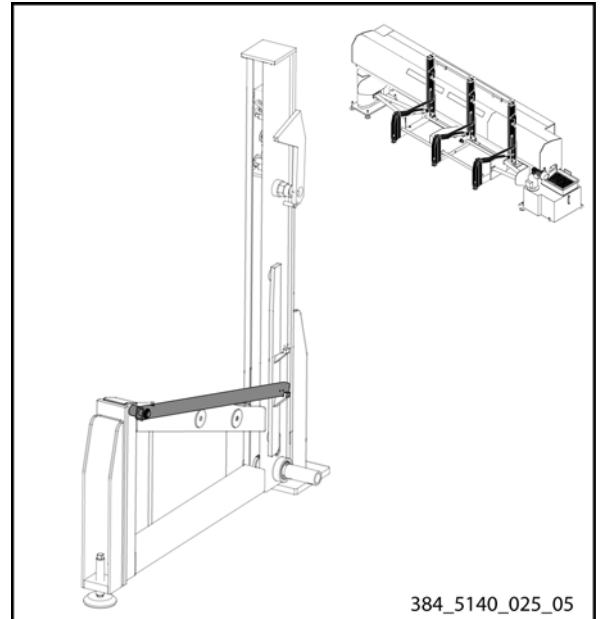
- Remove the bracket crosswise from left to right.



- Move the supporting bracket downwards and reposition the pin by moving it crosswise from left to right.



- Attach the bracket to the hook in the new position.



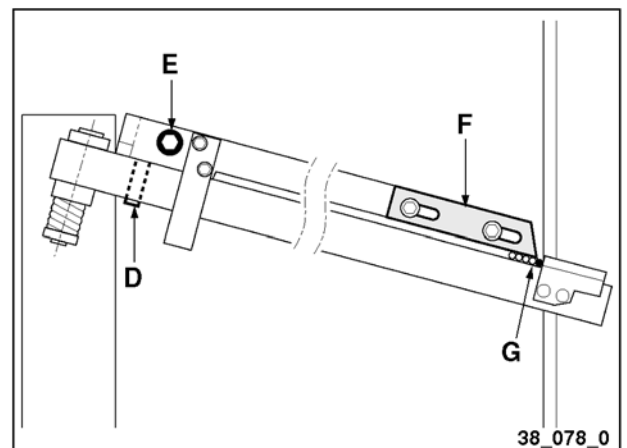
#### **BAR CONTAINMENT BRACKET (OPTIONAL)**

This device aligns the bars having a smaller diameter than 12 mm, so as to avoid that they may overlap.

It can also be used to keep the shaped bars with special profiles in position.

Adjust as follows:

- install the containment bracket inserting pin (D) in the special hole;
- loosen screw (E) and lift the bracket;
- position two spacers, slightly thicker (approx. 0.5 mm) than the diameters of the bars to be machined, under the bracket;
- keep the bracket pressed against the spacers and tighten screw (E);
- adjust the position of push-rod (F) so as to leave the necessary space for the passage of the first bar (G);
- repeat the previous operations in all the bar supporting brackets.



### 5.4.2 Elevator carriage drive - Adjustment

The safety joint has to be adjusted so that the bar is lifted and, at the same time, the motor drive is deactivated when the bar cannot be lifted for whatever reason.

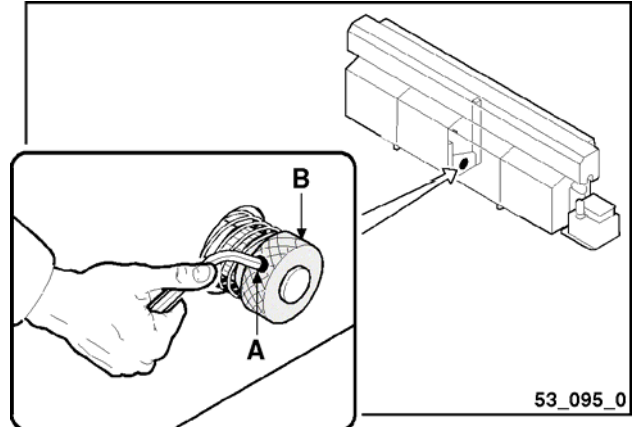
Adjust as follows:

- Loosen screw (A);
- tighten or loosen ring nut (B);
- tighten screw (A).



**WARNING - CAUTION:**

*do not screw the ring nut too much; the joint could be locked.*

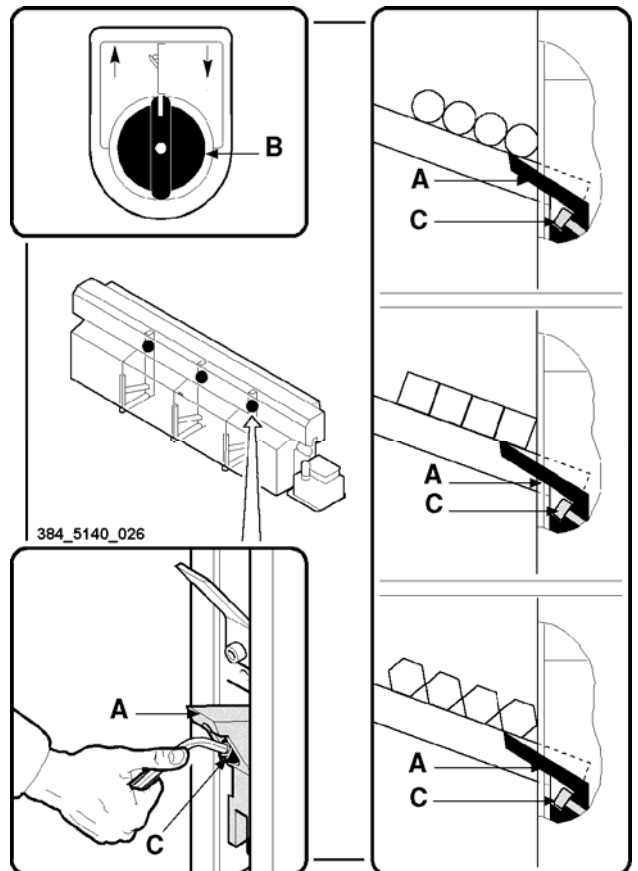


### 5.4.3 Elevator carriages - Setup

Adjust the position of the bar gripping lever (A) according to the bar diameter and section.

Adjust as follows:

- bring the elevator carriages at about half-stroke by means of selector switch (B) to make the operation easier;
- tighten or loosen screw (C).





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## 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:**

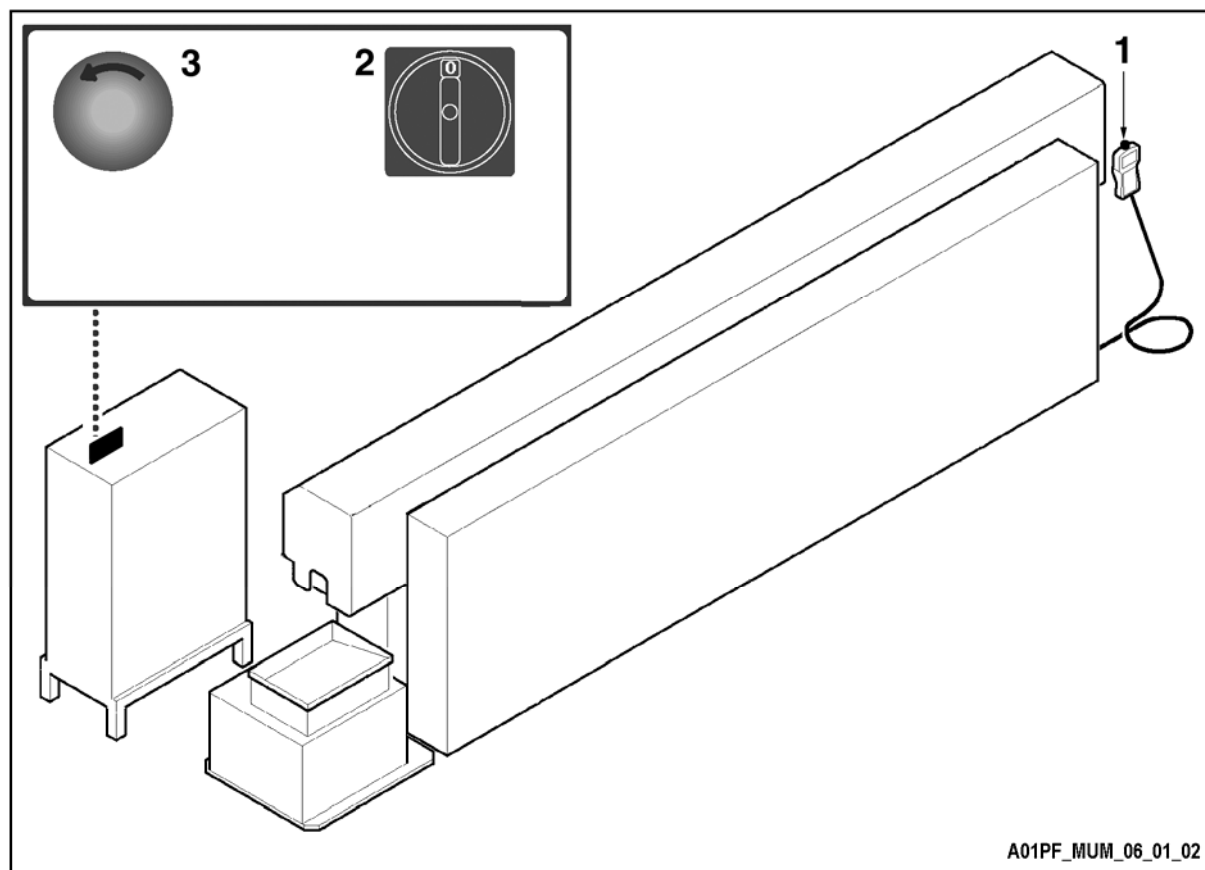
*When the bar feeder is in Automatic mode, the bar feeding is possible only when the Lathe "MAN/AUT" signal is in Automatic mode.*

**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.

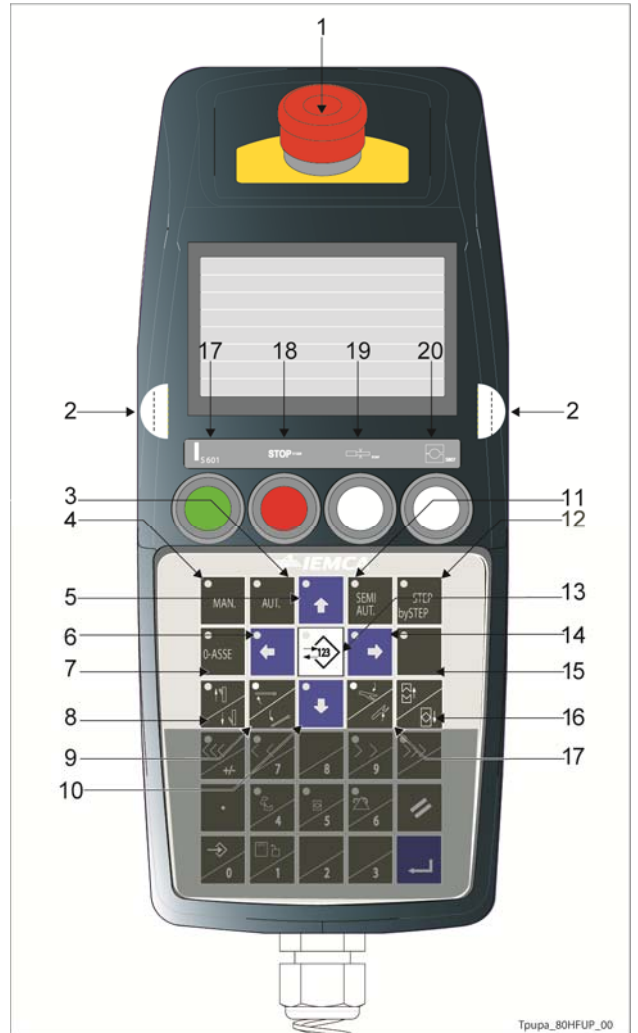


- 2 MAIN SWITCH: turns the power supply on and off.
  - Position 0 (OFF) the machine is not powered.
  - Position I (ON) the machine is powered.
- 3 EMERGENCY STOP PUSH-BUTTON: stops the bar feeder in case of emergency. For restart release the push-button manually.



## 6.2 KEYBOARD CONTROL DESCRIPTION

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



### **WARNING - CAUTION:**

**List of causes that require to carry out the 0-Axis in manual mode.**



**Carrying out the manual 0-Axis periodically is recommended.**

**If the bar pusher axis is moved by means of the crank with the bar feeder powered off (no power supply).**

**If the feeding chain is tightened (by means of the mechanical chain tightener, see Operation and Maintenance Manual, "Feeding chain - Adjustment").**

- 8 Bar elevator upstroke/downstroke (LED on when the elevators are in their high position).
- 9 Lifts/lowers the remnant dropping chute (LED on with chute in "up" position).
- 10 Multifunction
  - Allows scrolling the page downwards.
  - Moves the selection cursor downwards.
  - Decreases by one the value set in the date and time programming mode.
- 11 Selects the semiautomatic mode.  
Press the button to select a mode and press again to deselect it.
- 12 Activates the "step by step" operating cycle: every time the button is pressed, one step is performed.

13 Selects the keyboard modes:

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

14 Multifunction

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

15 Selects the feeding of a new bar until the facing position is reached.

- Press both opposite start buttons; you can release the keys from the beginning of the feeding. The procedure will continue until the facing position is reached.

16 Opens/Closes the clamps (the LED is on when clamps are open).

17 Lifts and lowers the pneumatic bar drop control devices (the LED is on when the devices are in the "bottom" position).

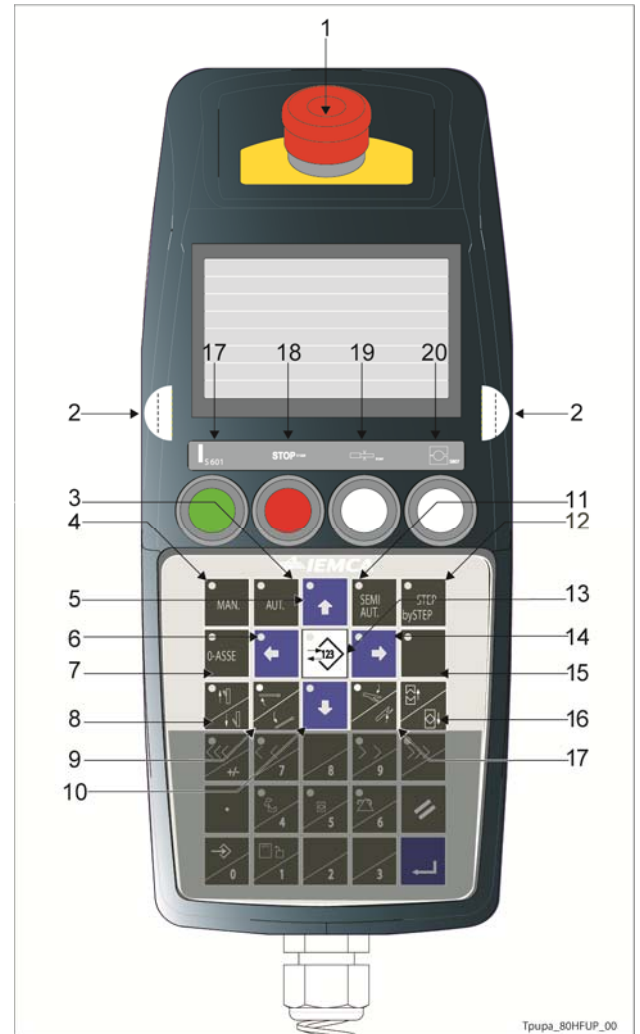
18 "Errors" reset button.

19 Bar feeder stop button (red); press this button to stop the bar feeder.

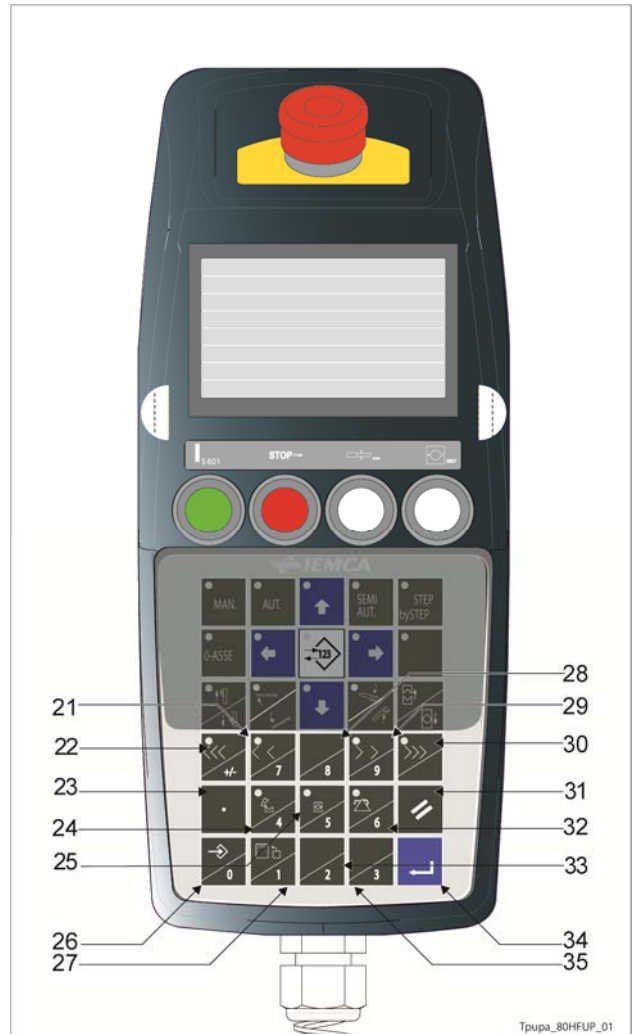
20 Remnant detection disabling button (white light)  
Press the button to feed a "new" bar without the detection of bar remnant in the bar pusher collet.

21 Half-bush opening and closing button (white light)

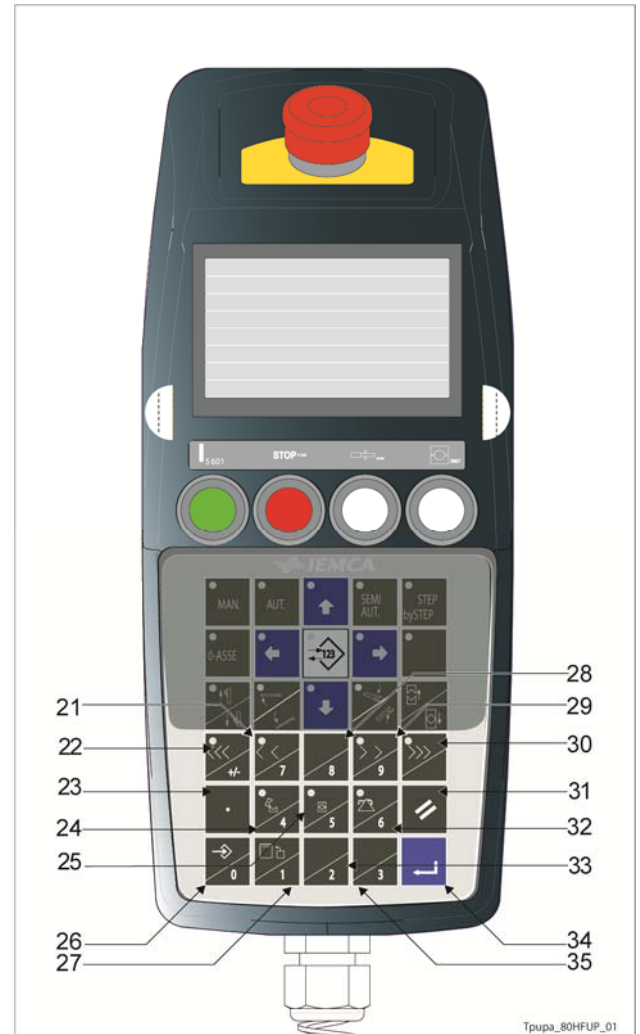
- In "Manual" mode, when the bar feeder is in the required position, the half-bushes will close when this button is pressed. If pressed again, the half-bushes will open.
- In "Automatic" mode, if pressed, the half-bushes will open and close, according to the preset sequence. If pressed again, the half-bushes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



- 22 Multifunction
  - Sets the numerical value.
  - Moves the bar pusher at a low speed.
- 23 Multifunction
  - Sets the font.
  - Moves the bar pusher at a high speed.
- 24 Sets the comma.
- 25 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.
- 26 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.
- 27 Multifunction
  - Sets the numerical value.
  - Recalls the selection cursor.





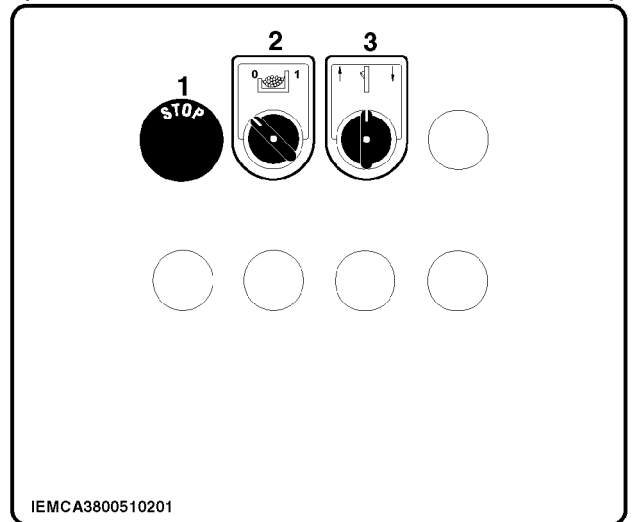
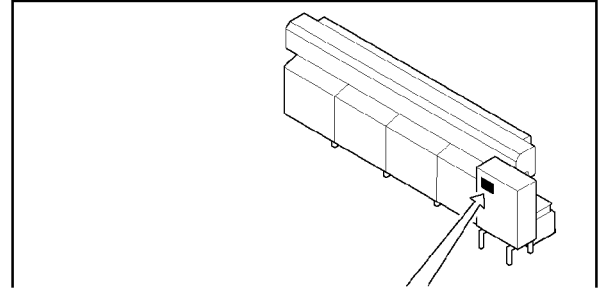
- 28 Multifunction
  - Sets the numerical value.
  - Recalls the main menu (MAIN MENU).
- 29 Sets the numerical value.
- 30 Multifunction
  - Sets the numerical value.
  - Moves the bar pusher at a low speed.
- 31 It moves the bar pusher at high speed.
- 32 Multifunction
  - Stops the selection function.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



### 6.3 MAGAZINE PUSH-BUTTON PANEL - CONTROL DESCRIPTION

**MASTER 880 P**

- 1 Emergency button for stopping the bar feeder; it will be possible to start it again only after the button has been manually released.
- 2 Selector switch for setting the magazine in the manual or automatic mode.  
position 0: the magazine is preset for the manual function;  
position 1: the magazine is preset for the automatic function.
- 3 Selector switch for controlling the elevator carriages upstroke and downstroke.  
position : elevator carriages upstroke;  
position : elevator carriages downstroke;



## 6.4 LIGHT INDICATOR - SIGNAL DESCRIPTION

**BLINKING ORANGE LIGHT;** indicates that, with the bar feeder in automatic mode, the magazine is in manual mode.

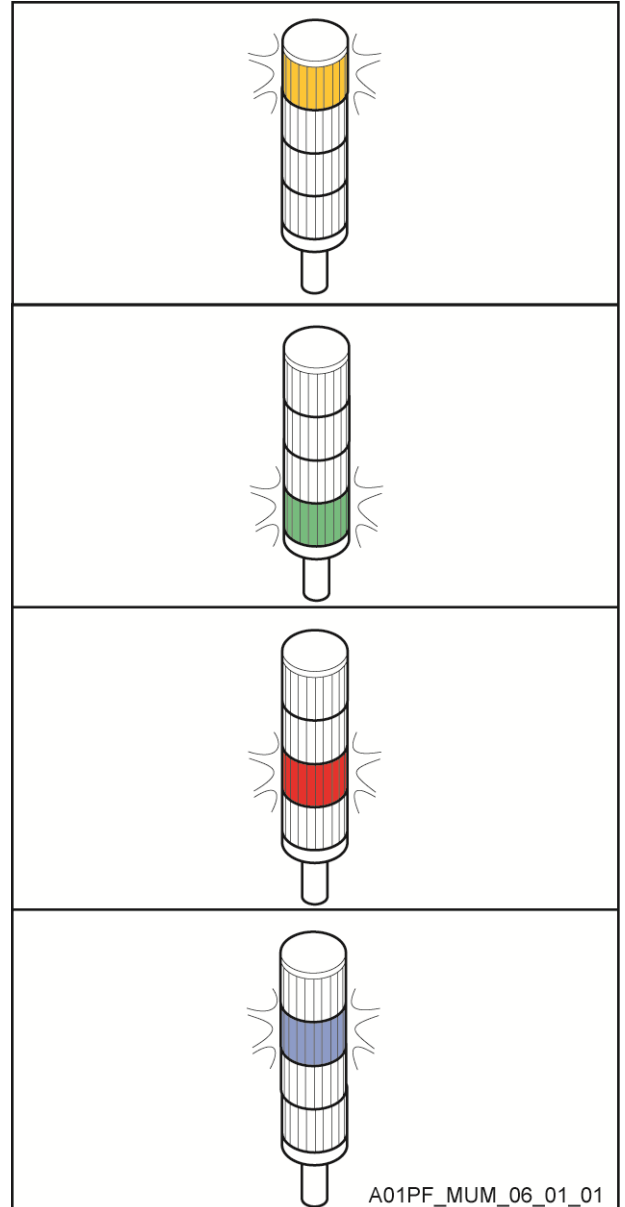
**BLINKING ORANGE LIGHT;** indicates that the magazine is open. (OPTIONAL)

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

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

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

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





## 6.5 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.

## 6.6 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:**

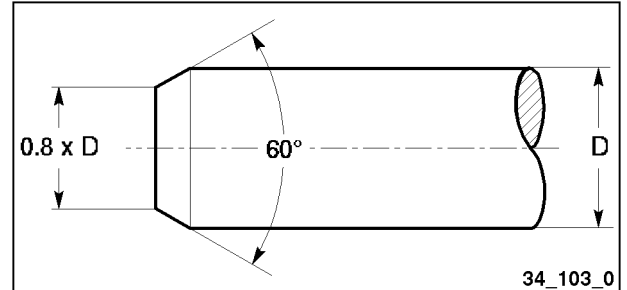
***the bar must not have a straightness defect above 0.5 per 1,000.***

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.

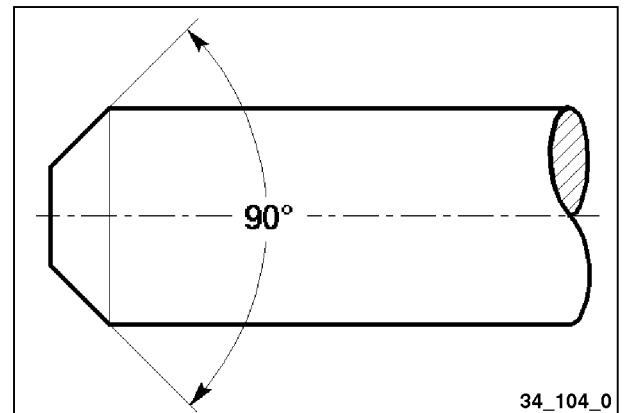
**SOLID BARS**

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

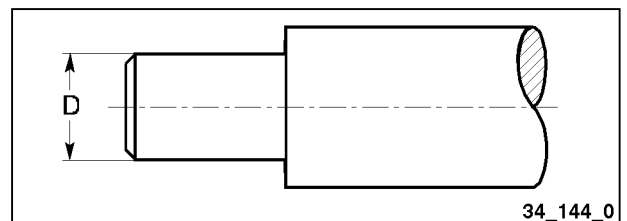
The bar rear end must be chamfered as indicated in the figure.



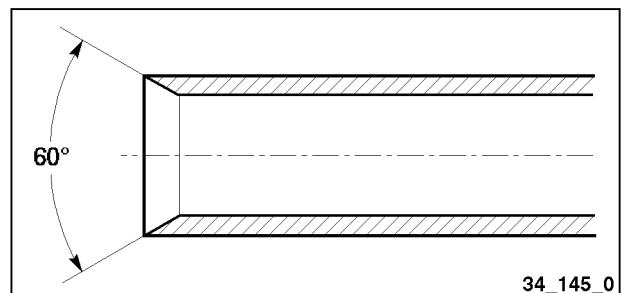
If bars with front remnant ejection have to be machined, we advise to chamfer the bar rear end as shown in the figure.



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.



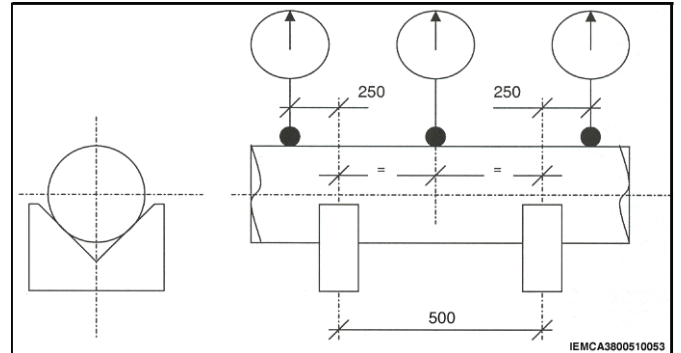
### 6.6.1 BAR STRAIGHTNESS - Measurement

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.

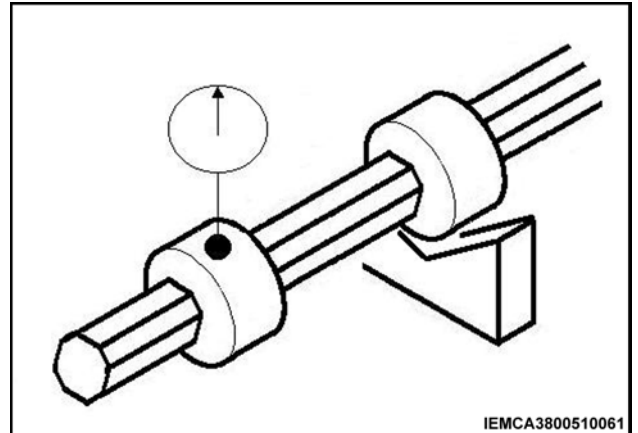


#### **INFORMATION:**

*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.*



## 6.7 BAR MAGAZINE - LOADING



**WARNING - CAUTION:**

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

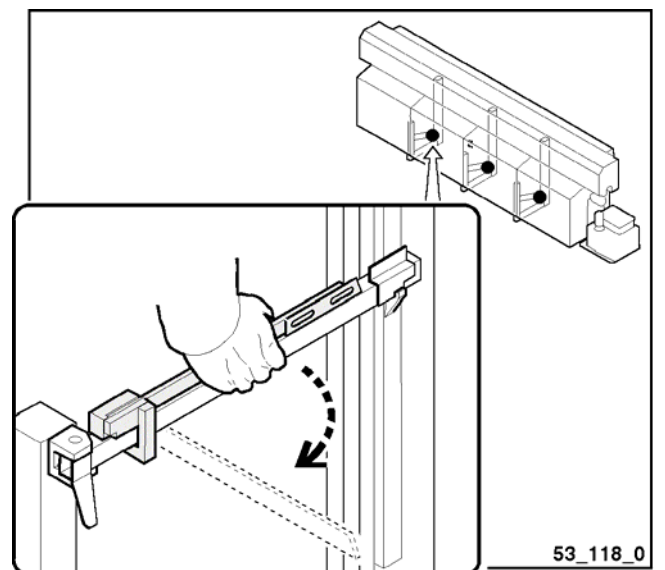
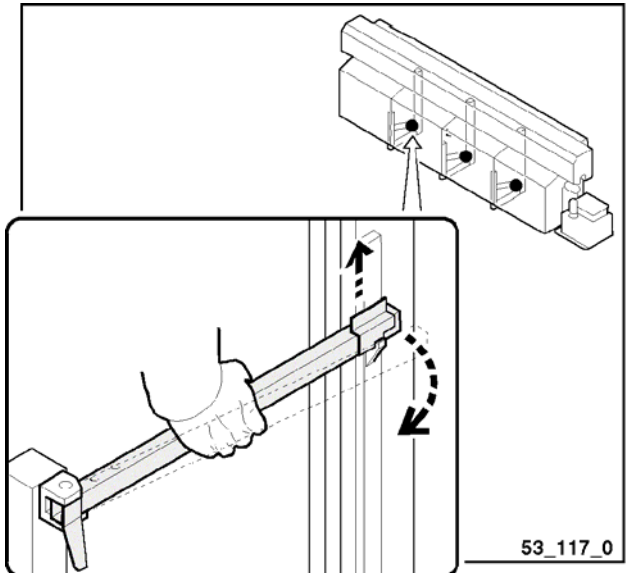


**WARNING - CAUTION:**

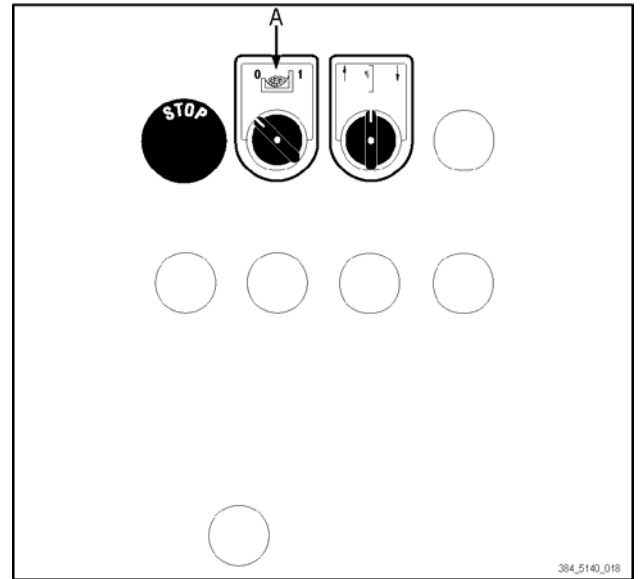
*wear personal protections according to the regulations in force.*

### MAGAZINE

- If the bar containment brackets are installed, remove them from their housing and make them turn of 90°.
- Place the bars on the rack.

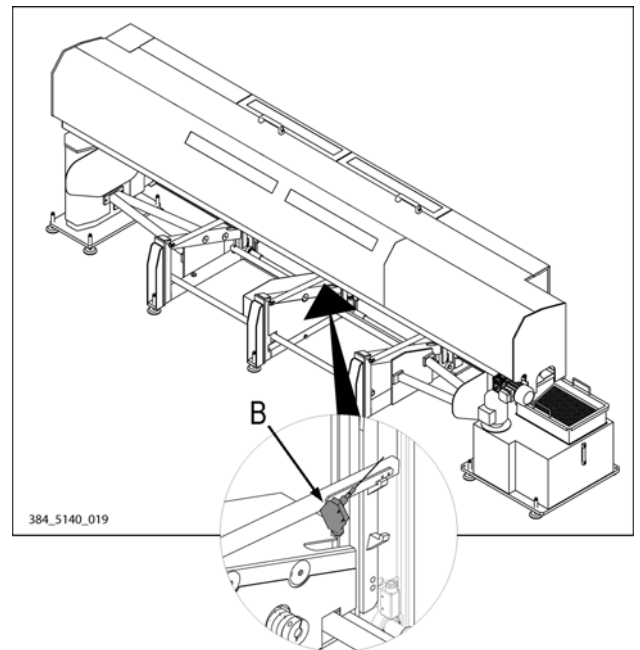


- Rotate the selector switch (A) from 0 to 1 magazine in automatic mode.



### 6.7.1 Empty magazine (OPTIONAL)



Sensor (B) detects the presence of the bar in the magazine, the orange light blinks to signal that the magazine is empty (see section 6.4).




## 6.8 AUTOMATIC CYCLE START

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



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

-press the start buttons and ;



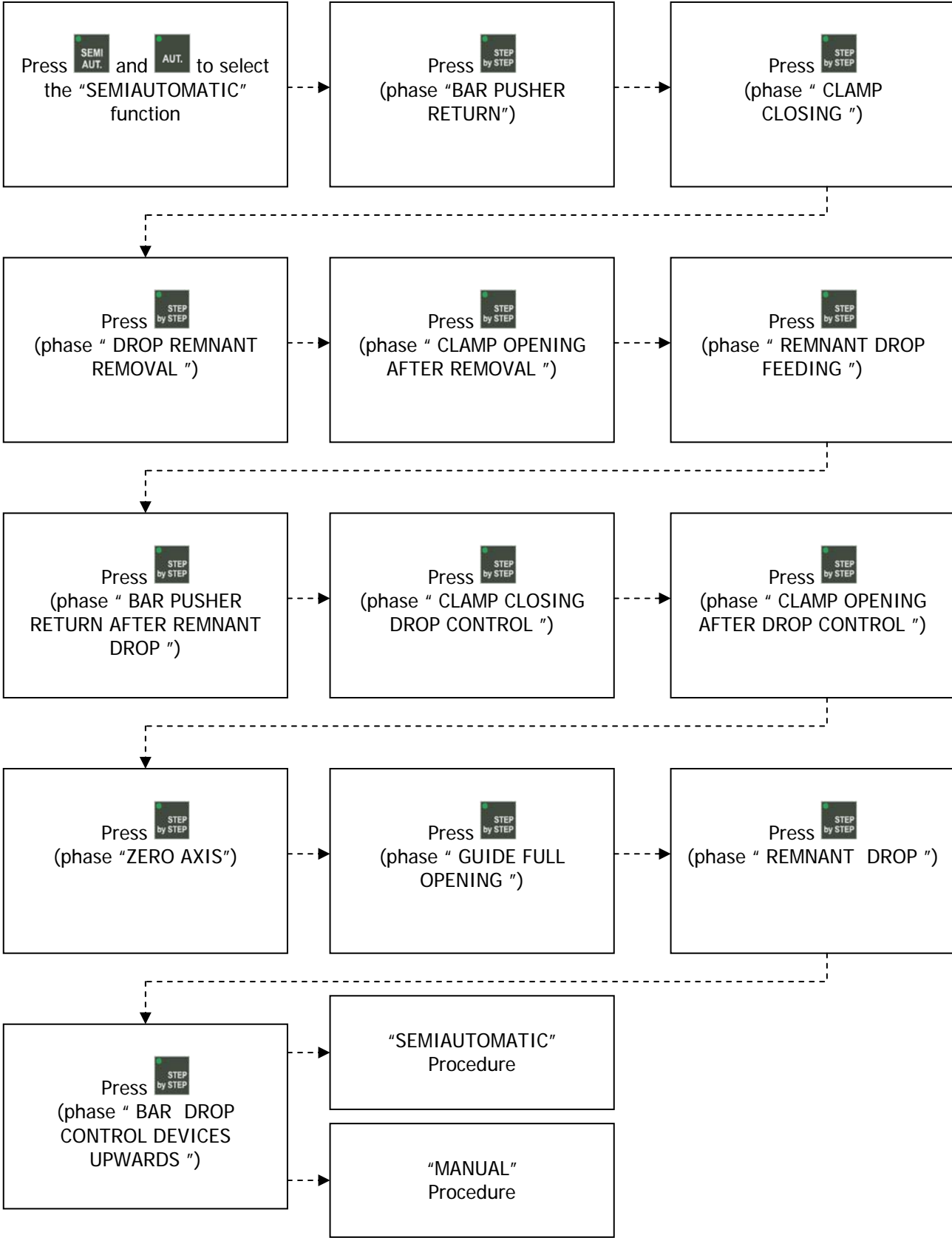
### **INFORMATION:**

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

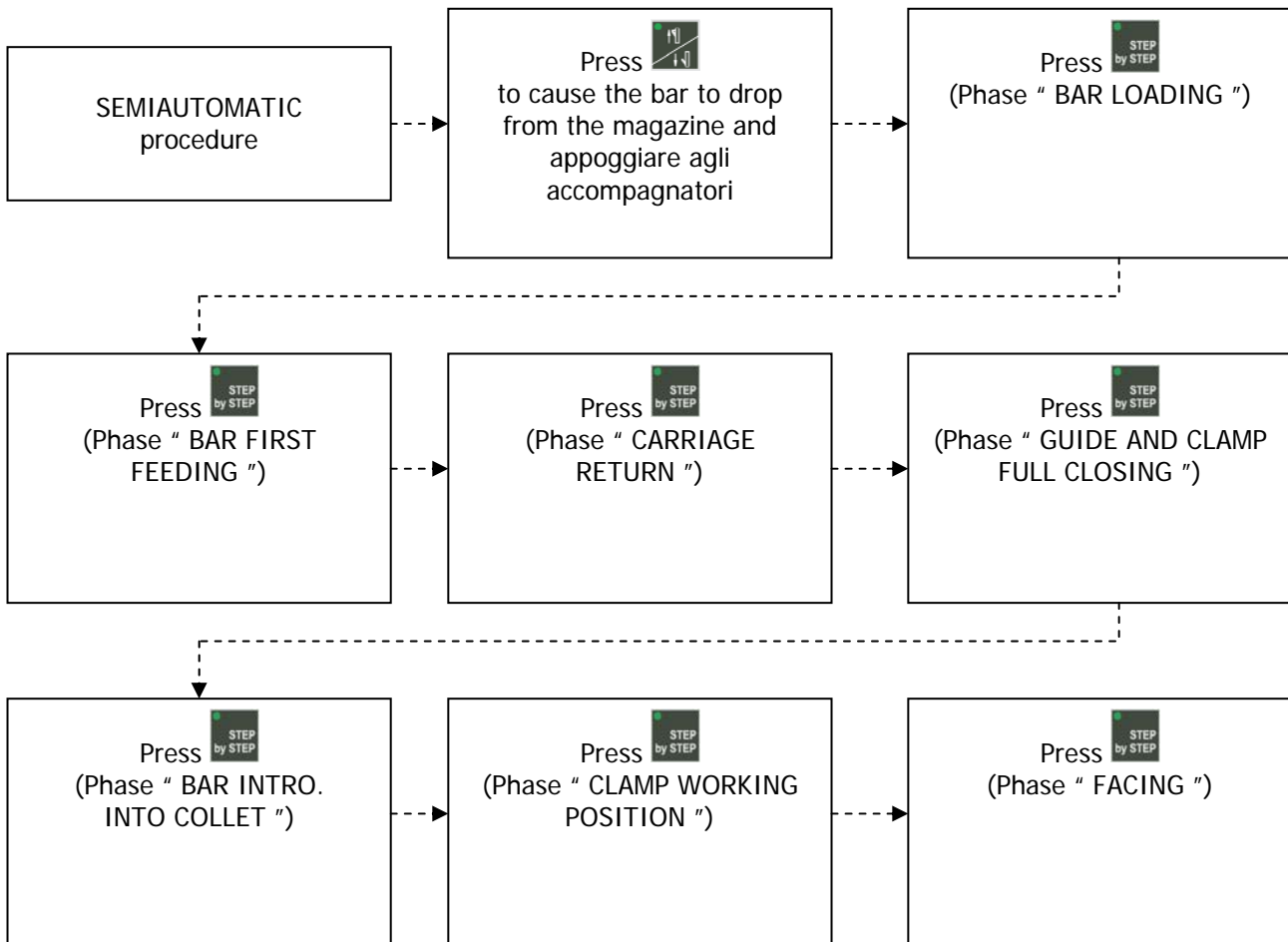
*Before performing the zero axis, make sure the bar pusher is not in the "back limit stop" position.*

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

### 6.9 BAR LOADING - PROCEDURE

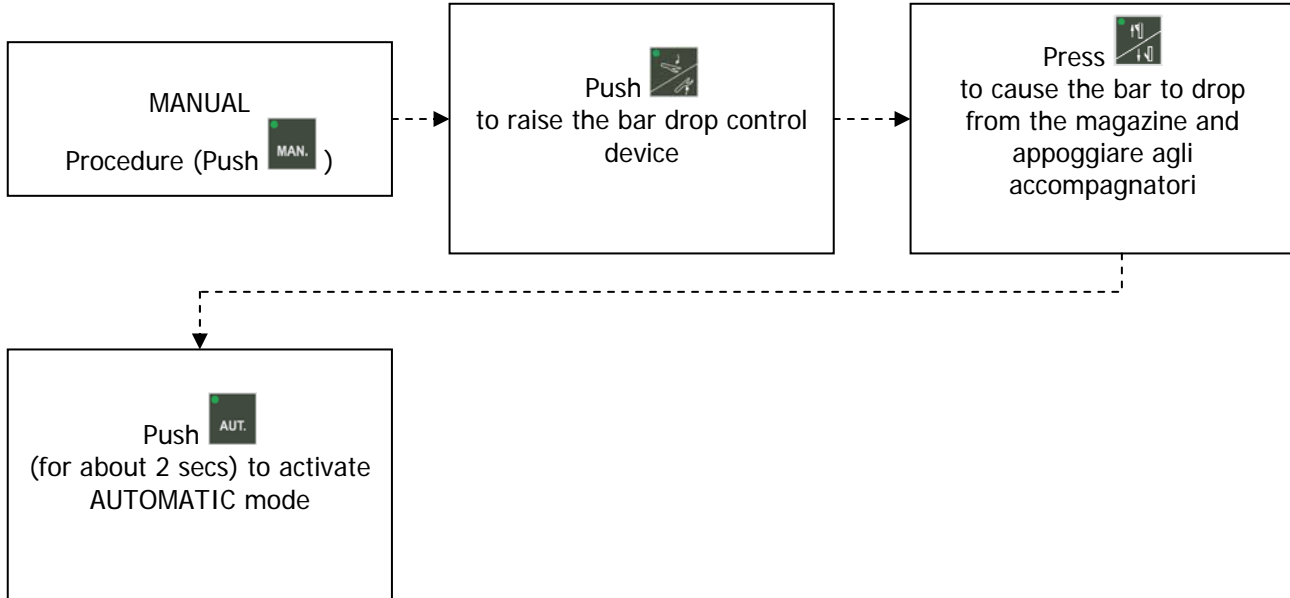






**INFORMATION:**

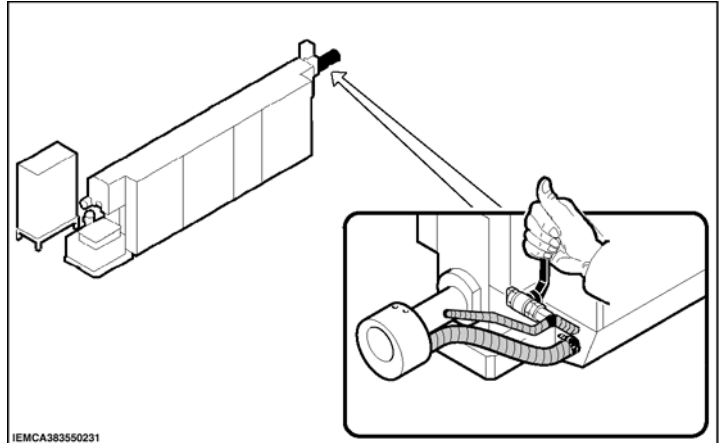
*the bar drop control devices will not go up if, during the "GUIDE CHANNEL FULL OPENING" phase there is a bar in the guide channels that has prevented the short feed gate resetting.*



## 6.10 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.



## 6.11 BAR FEEDER STOP

### BAR FEEDER EMERGENCY STOP



#### **WARNING - CAUTION:**

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

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

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

### BAR FEEDER STOP AT THE WORKING CYCLE END




#### **WARNING - CAUTION:**

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

- Complete the operations in your working schedule.



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

## 6.12 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;
- etc.

### Procedure



- press  to start the bar feeder;
- make sure that the remnant drop device is closed, otherwise, press  and  to close it;
- press  and  to select the "semiautomatic function";
- press  and the bar feeder performs the first step;
- press  and the bar feeder performs the second step, and so on.

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## 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*

### 7.2.1 Lubricating oil - Level check

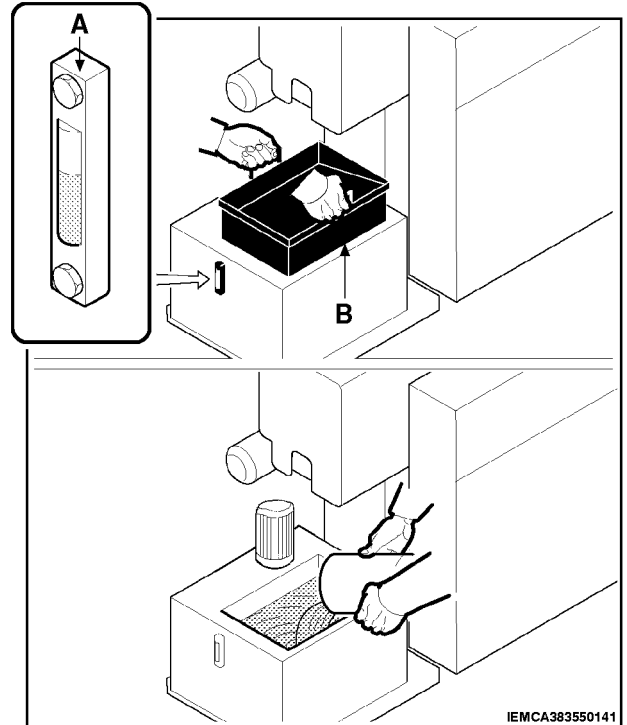


**WARNING - CAUTION:**

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

- Wait until the bar feeder has been off for at least 6 hours.
- Check the level by means of the indicator (A).
- Remove cover (B) and pour the oil directly in the tank to fill up, if necessary.

Oil features: Class (C) - CKB 150.





### 7.2.2 Lubricating oil - Change



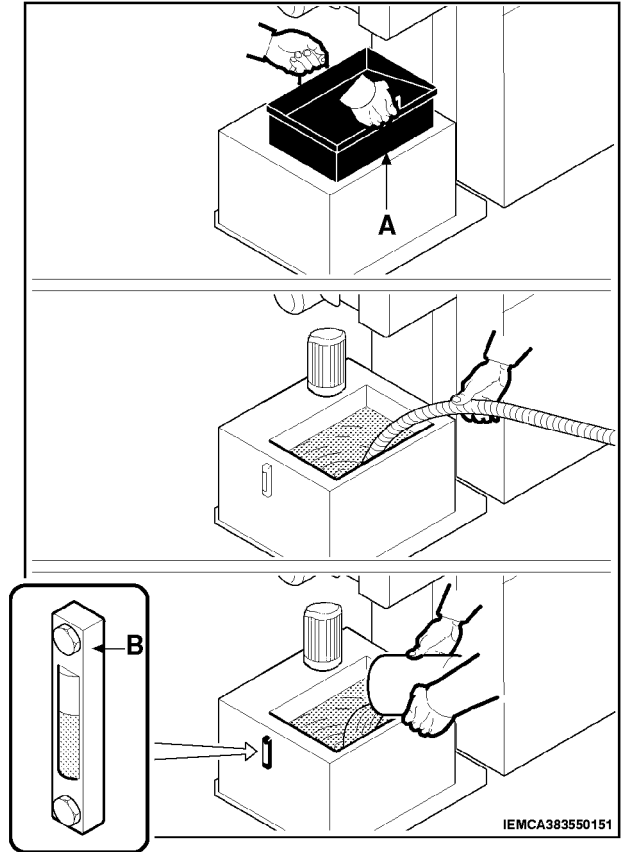
**WARNING - CAUTION:**  
wear personal protections according to the regulations in force.



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

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

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



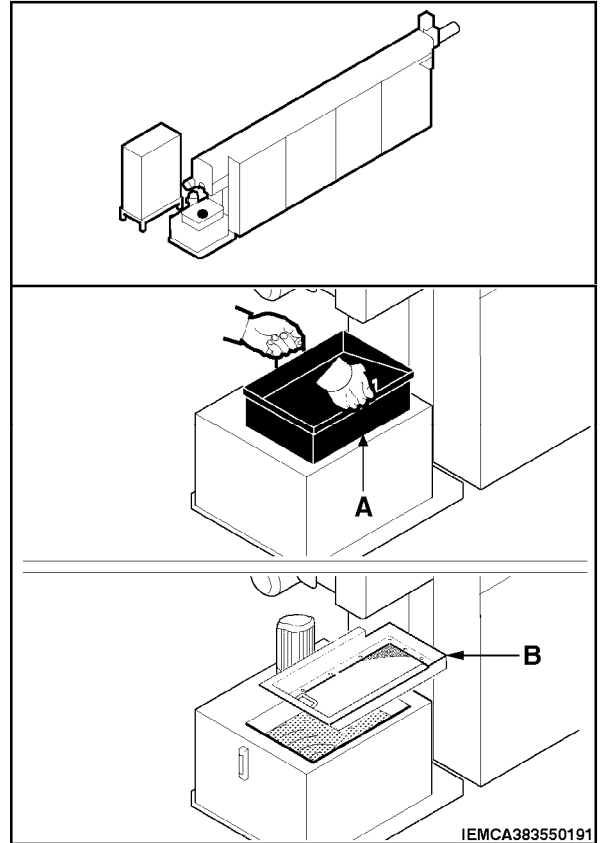
### 7.2.3 Oil filter - Cleaning



**WARNING - CAUTION:**

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

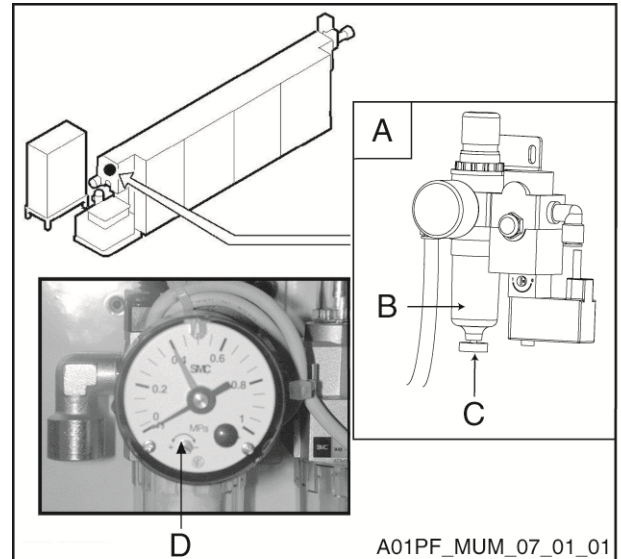
- Wait until the bar feeder has been off for at least 6 hours.
- Remove cover A.
- Remove filter B and clean the filtering mesh.
- Replace the filter and cover in their respective locations.



### 7.2.4 Air filter unit - Check

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

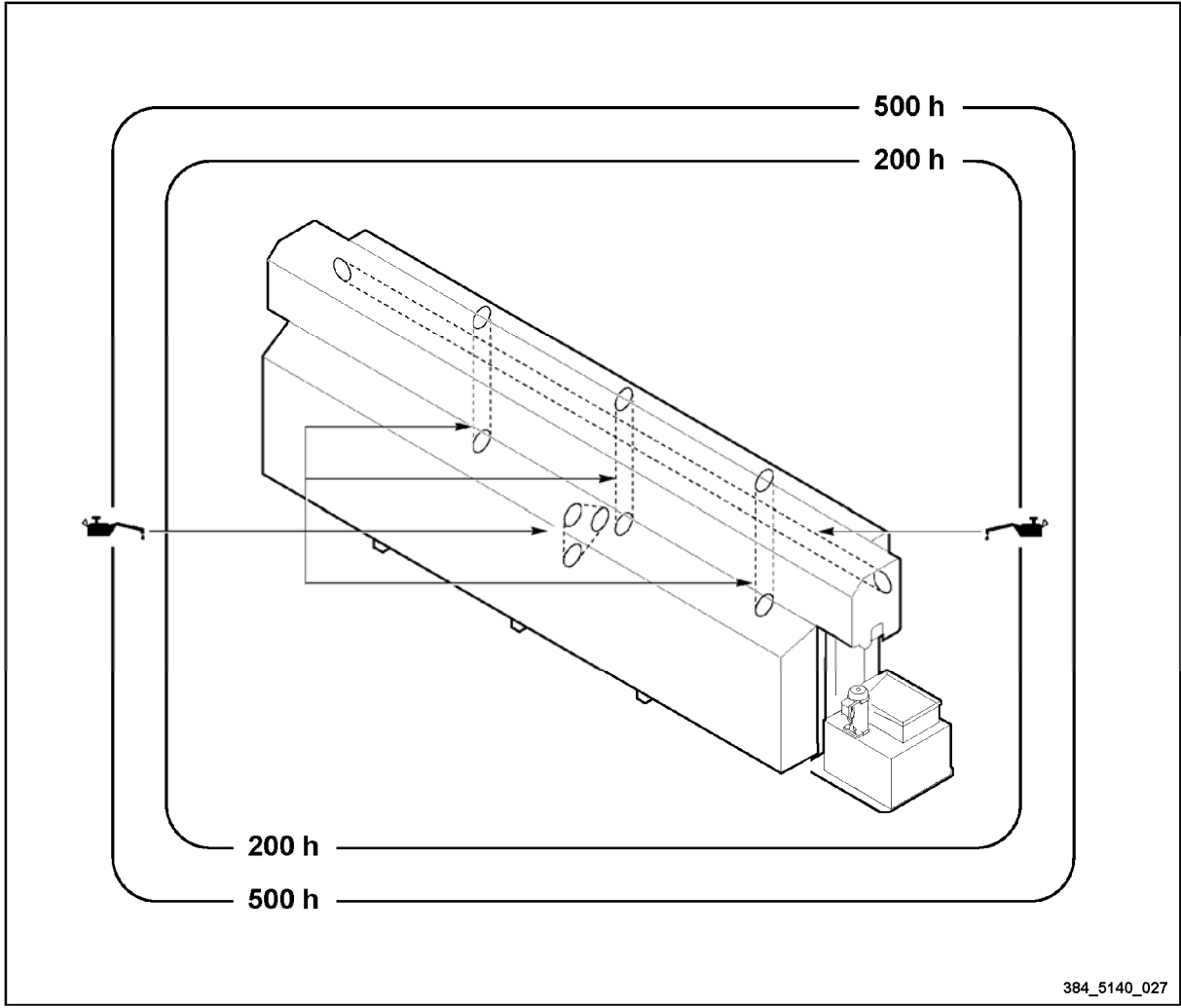
- Make sure that cup (B) is not full of condensate. Drain the condensate by means of valve (C), if necessary.
- The filter is equipped with a control pressure switch, set to a pressure of 4.5 bar.
- To adjust the pressure switch proceed as follows:
  - remove the pressure gauge glass protection;
  -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

7.3 LUBRICATION POINT DIAGRAM 



 Oil

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**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 ELEVATOR CARRIAGES - FAILURES**

TROUBLES	CAUSES	SOLUTIONS
<b>Elevator carriages in their highest position are lowering because of the bar weight</b>	The safety joint of the elevator carriage drive is not correctly adjusted	Adjust the joint

### 8.3 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

### 8.4 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

### 8.5 REMNANT MOVEMENT - FAILURES

TROUBLES	CAUSES	SOLUTIONS
<b>Remnant cannot be ejected</b>	Remnant conveyor belt is not adjusted at optimal tension and therefore drive the shaft slides, not being able to transmit the motion.	Verify and correct belt tensioning.
	Remnant passage door spring is too pre-loaded.	Reduce spring pre-load.



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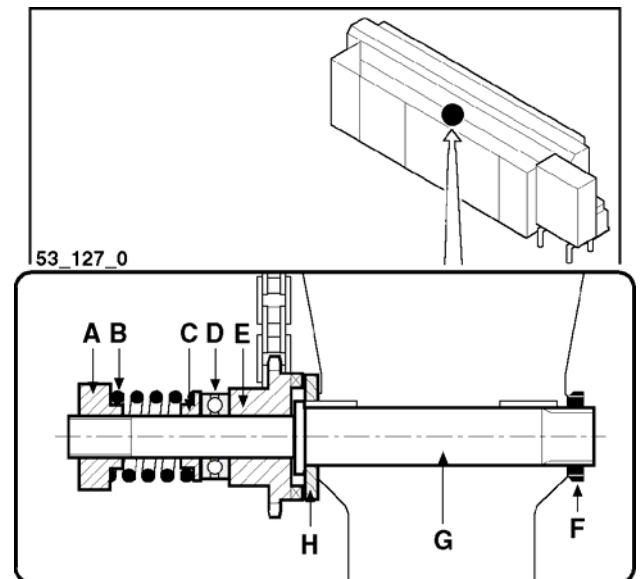
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## 9.1 FEEDING CHAIN – REPLACEMENT

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

## 9.2 ELEVATOR CARRIAGE DRIVE SAFETY JOINT - REPLACEMENT

- Slacken the drive chain:
- Remove ring nut (A) and extract in order: spring (B), washer (C), bearing (D), pinion (E).
- Remove ring nut (F) and extract in order: shaft (G), flange (H).
- Reassemble all components in the inverted order, replacing the worn flange (H) and pinion (E) with the new ones.
- Tension the chain.



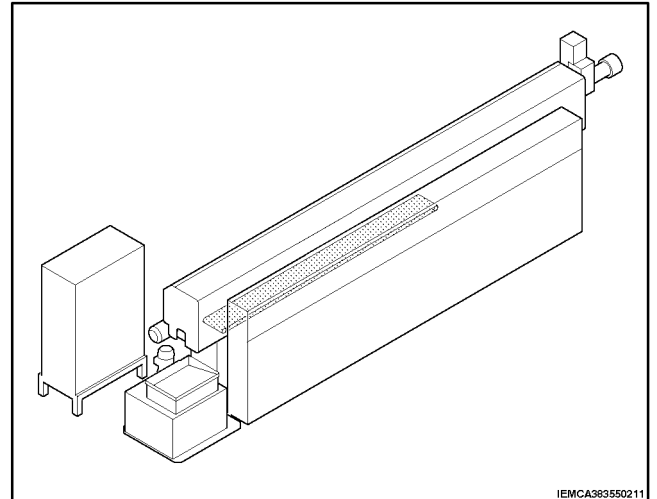
### 9.3 REMNANT CONVEYOR BELT - REPLACEMENT

- Slacken the belt.
- Lift the belt.

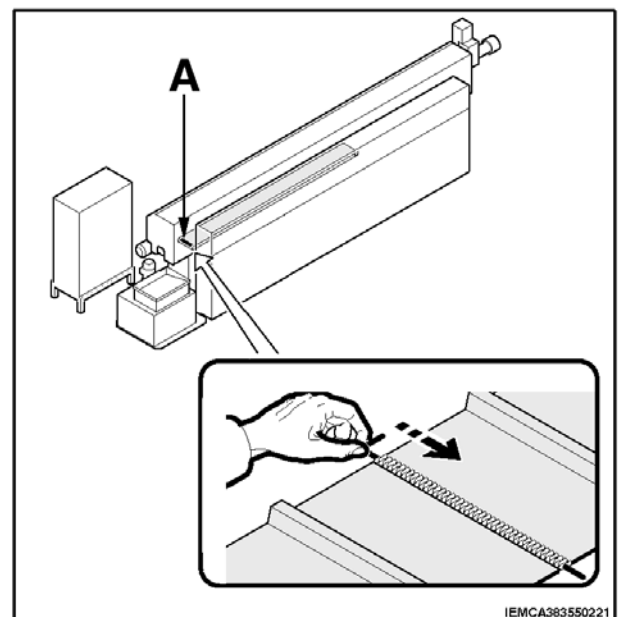


**WARNING - CAUTION:**

*During this manoeuvre be careful not to damage the remnant passage door.*



- Cut the worn belt so that it can be removed from its seat.
- Splice one end of the worn belt with one end of the new belt. Slide out the worn belt so that the new one can be simultaneously inserted along the entire path.
- Separate the worn belt from the new one.
- Splice the ends of the new belt using lacing A.
- Tension the belt according to the instructions given in § "Remnant conveyor belt", section 5
- Restore the bar feeder initial operating conditions.



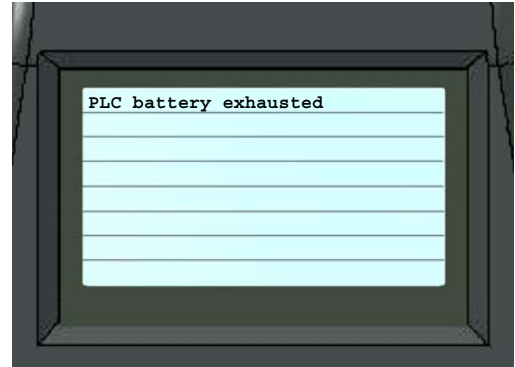
## 9.4 PLC BATTERY – REPLACEMENT

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

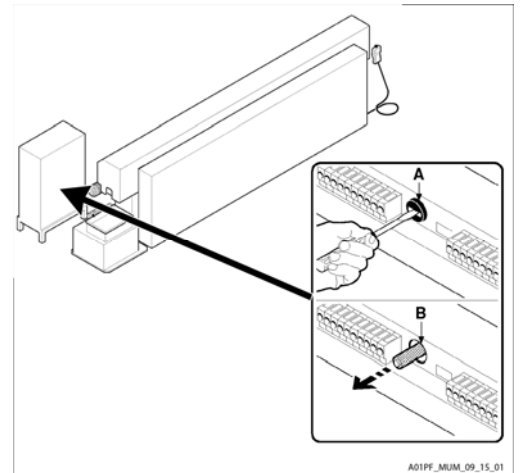


### **INFORMATION:**

*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 (3.6 volts lithium AA battery) and make sure that it is introduced correctly, then tighten the plug (A).



### 9.5 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 UP HyperFlex	24220108	Feeding chain	1/2"x5/16"	Vers.33	1
	24220109	Feeding chain	1/2"x5/16"	Vers.38	1
	24220121	Feeding chain	1/2"x5/16"	Vers.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.*

### 9.6 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.*

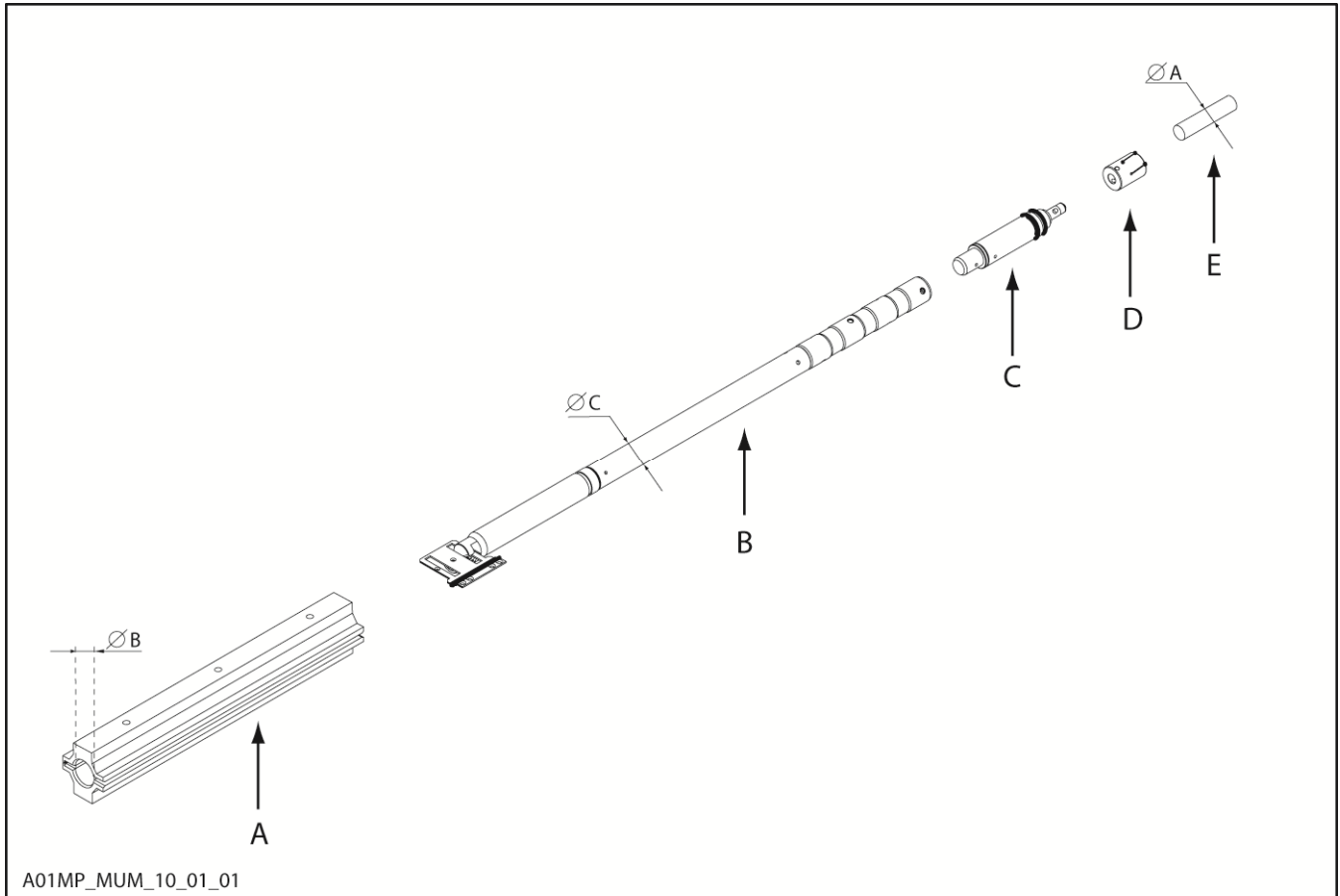


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## 10.1 GUIDE CHANNELS AND BAR PUSHER

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



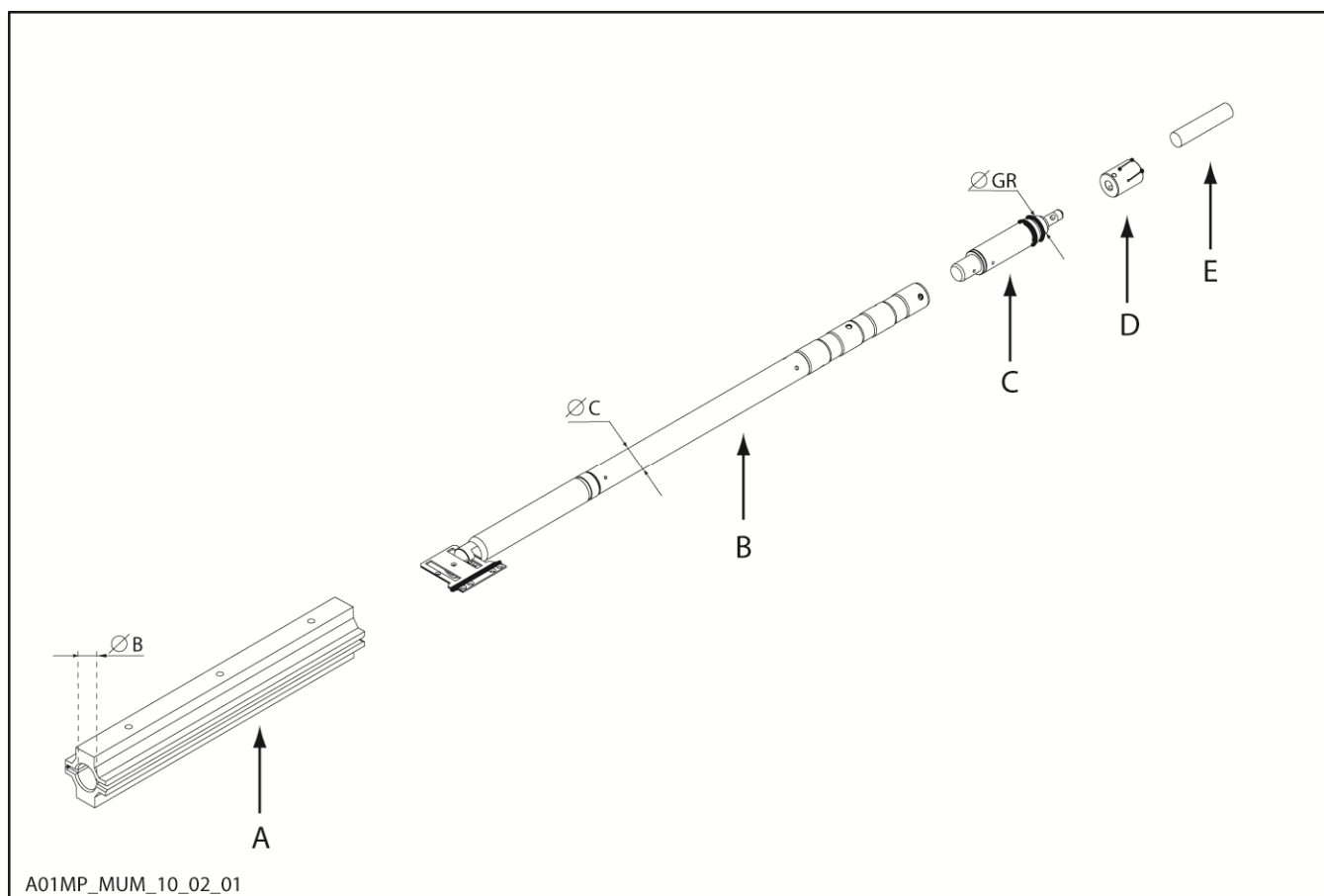
**INFORMATION:**

*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

<b>EN</b>	<b>10 - GUIDE CHANNELS-BAR PUSHER-REVOLVING TIPS Master 80 UP HyperFlexible</b>
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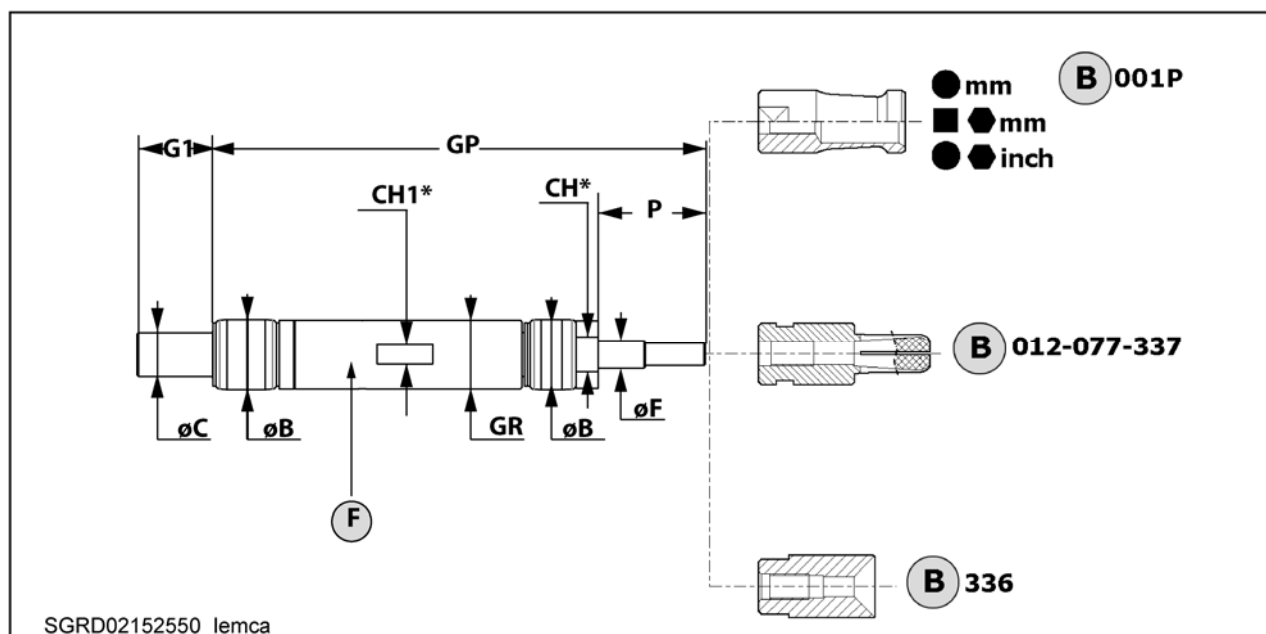
øB (mm) Guide channel diameter	øC (mm) Bar pusher diameter	Collet version– D (type of coupling)	øGR (mm) Revolving tip diameter	Revolving tip code
21	20	Threaded (IEMCA)	20	D02152050
		With quick coupling pin		D02152051
26	25	Threaded (IEMCA)	25	D02152550
		With quick coupling pin		D02152551
33	32	Threaded (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

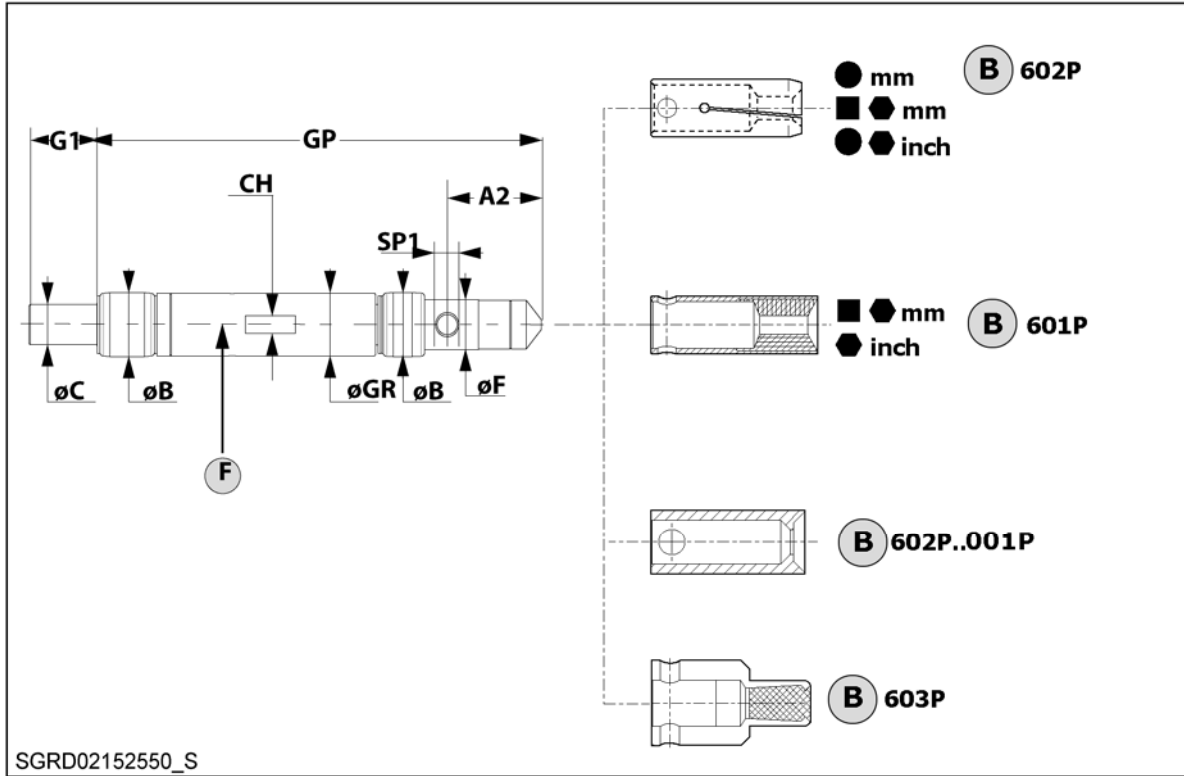
B See conversion table therefore collet table

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"

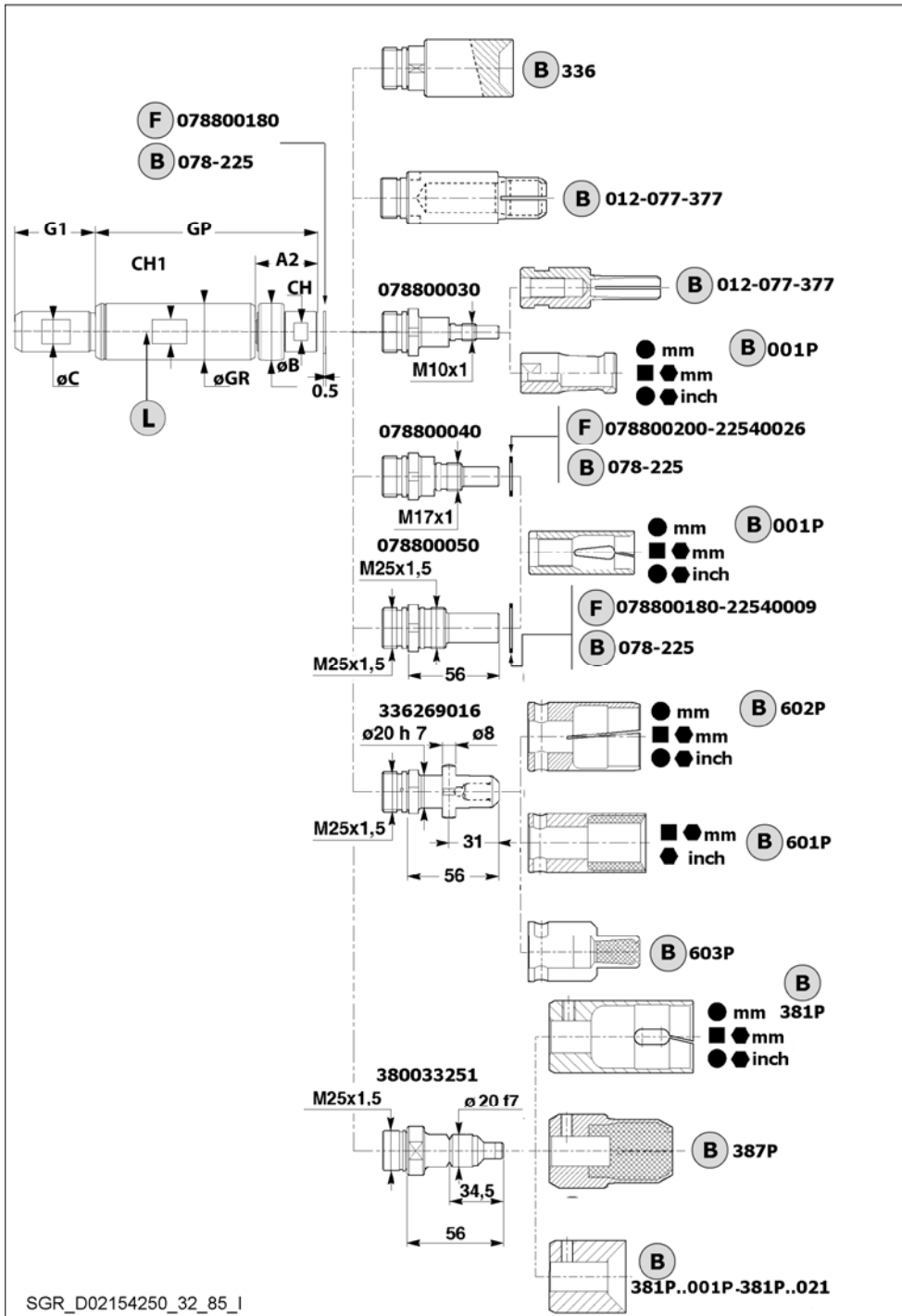


CH\*: double-ended fork wrench DIN3110  
 B See conversion table therefore collet table  
 F Revolving tip

$\varnothing$ GR (mm)	Revolving tip code	A2	$\varnothing$ F	$\varnothing$ B (mm)	GP (mm)	G1 (mm)	$\varnothing$ C (mm)	CH (mm)
20	D02152051	37,5	Ø14	20.5	172.7	29	M12	19
25	D02152551	37,5	Ø20	25.5	172.5	29,8	M16	21

### 10.5 Revolving tips $\varnothing$ GR 32÷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

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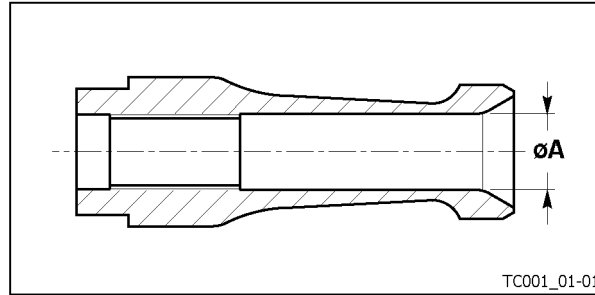
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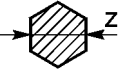

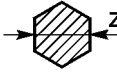

11.27	PIPE COLLETS 386P .....	38
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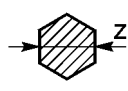
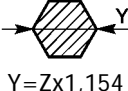


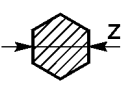
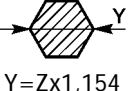
**11.1 CONVERSION TABLES 001**
**11.2 HEXAGONAL BARS (unit of measurement "millimetres") - Table**

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



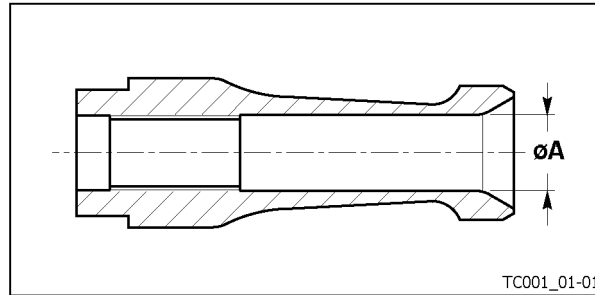
	 $Y = Z \times 1,154$	$\varnothing A$		 $Y = Z \times 1,154$	$\varnothing A$
mm	mm	mm	mm	mm	mm
1.5	1.73	1.7	28	32.33	32
2	2.31	2.2	29	33.48	33.2
2.5	2.89	2.8	30	34.64	34.5
3	3.48	3.25	31	35.79	35.5
3.5	4.04	3.8	32	36.95	36.8
4	4.61	4.5	33	38.10	37.8
4.5	5.19	5	34	39.25	39
5	5.77	5.5	35	40.41	40.2
5.5	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

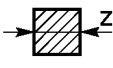

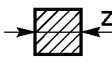
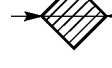
	 Y=Zx1,154	<b>ØA</b>
mm	mm	mm
23	26.55	26.2
24	27.71	27.5
25	28.86	28.5
26	30.02	29.8
27	31.17	31

	 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**

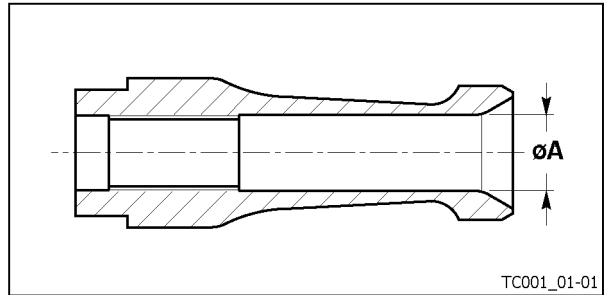
Before selecting the steel collet, define the internal diameter  $\varnothing A$  by referring to the table below.

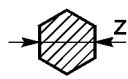


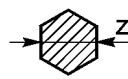
	 $Y=Z \times 1,414$	$\varnothing A$		 $Y=Z \times 1,414$	$\varnothing A$
mm	mm	mm	mm	mm	mm
1	1.41	1.3	20	28.28	27.5
1.5	2.12	2	22	31.10	30.5
2	2.82	2.7	23	32.52	32
2.5	3.53	3.4	24	33.93	33
3	4.24	4	25	35.35	34.5
4	5.65	5.5	26	36.76	36
4.5	6.36	6.2	27	38.17	37.5
5	7.07	6.8	28	39.59	38.5
5.5	7.77	7.5	30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

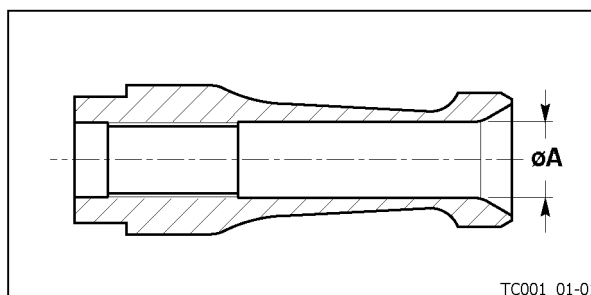


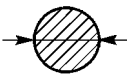
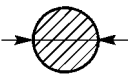
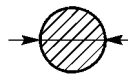
	$\varnothing A$	
	mm	inches
inches		
1/8	3.5	9/64
3/16	5.25	13/64
1/4	7	9/32
5/16	8.75	11/32
3/8	10.75	27/64
7/16	12.5	31/64
1/2	14.25	9/16
9/16	16.25	41/64
5/8	18	45/64
11/16	19.75	25/32
3/4	21.75	55/64
13/16	23.5	59/64
7/8	25.25	63/64
15/16	27.25	1"5/64
1"	29	1"9/64
1"1/16	30.75	1"13/64
1"1/8	32.5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

	$\varnothing A$	
	mm	inches
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 001P BARS

### 11.8 COLLET FOR BARS - Table



**WARNING - CAUTION:**

*The bar minimum diameter that allows its machining is in any case the one indicated in the table "Guide channel, bar pusher, bar and pipe diameters" in section 2.6.*



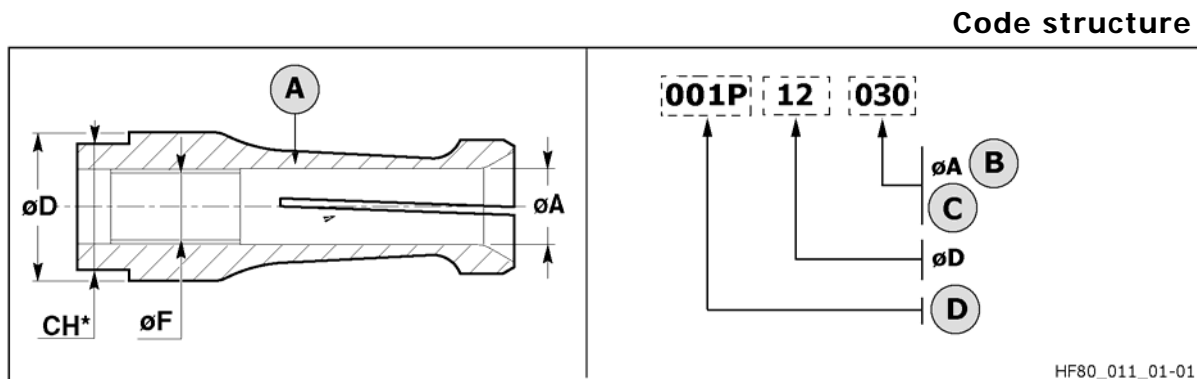
**WARNING - CAUTION:**

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



**INFORMATION:**

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



CH\*: double-ended fork wrench DIN3110

- A Collet
- B Bar diameter
- 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 bar minimum diameter that allows its machining is in any case the one indicated in the table "Guide channel, bar pusher, bar and pipe diameters" in section 2.6.*

**WARNING - CAUTION:**

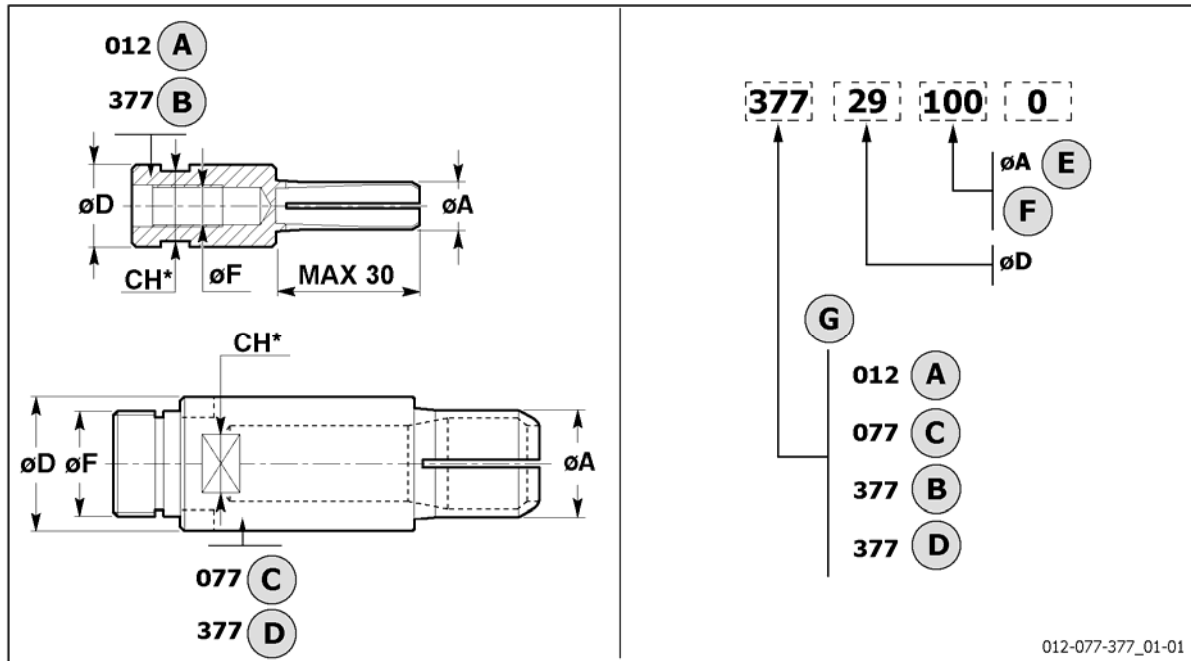
*the collet external diameter should be at least 0.5 mm smaller than the bar pusher external diameter.*

**INFORMATION:**

*the 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 greater diameter as  $\varnothing 30$  and with nipples 078800030, it is necessary to lengthen the bar pusher carriage first feeding value of 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)  $\varnothing F$  M7x0.75 - M8x1
- B Collets for pipe (type BOSS)  $\varnothing F$  M10x1
- C Collets for pipe (type T560)  $\varnothing F$  M17x1 - M25x1
- D Collets for pipe (type T560)  $\varnothing F$  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



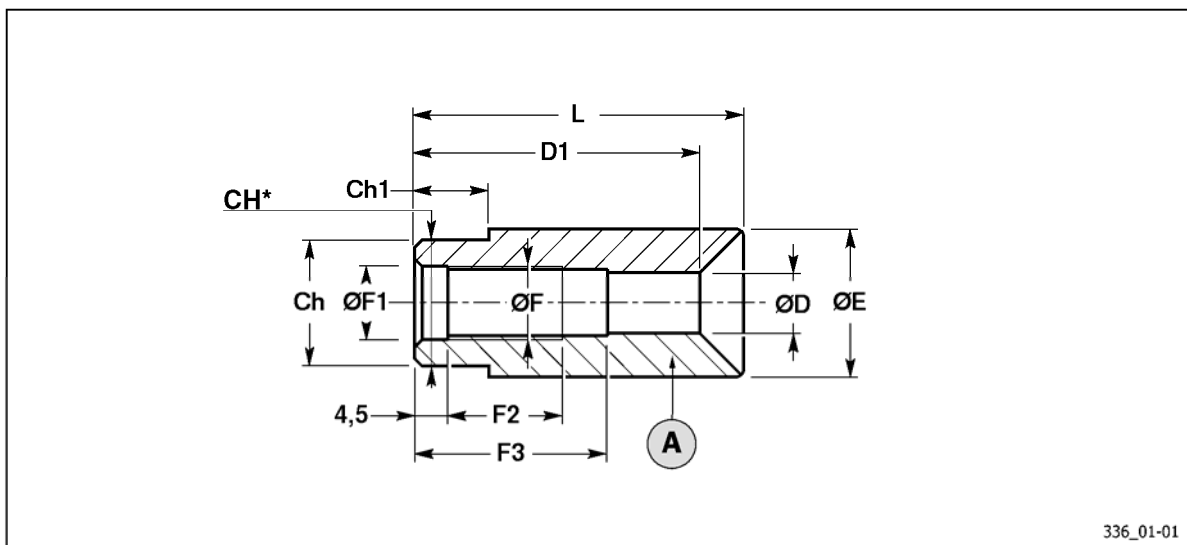
**WARNING - CAUTION:**

*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.*



CH\*: double-ended fork wrench DIN3110

A Ejector

<b>øF</b>	<b>F1 (mm)</b>	<b>F2 (mm)</b>	<b>F3 (mm)</b>	<b>øE (mm)</b>	<b>L (mm)</b>	<b>øD (mm)</b>	<b>D1 (mm)</b>	<b>Ch (mm)</b>	<b>Ch1 (mm)</b>	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



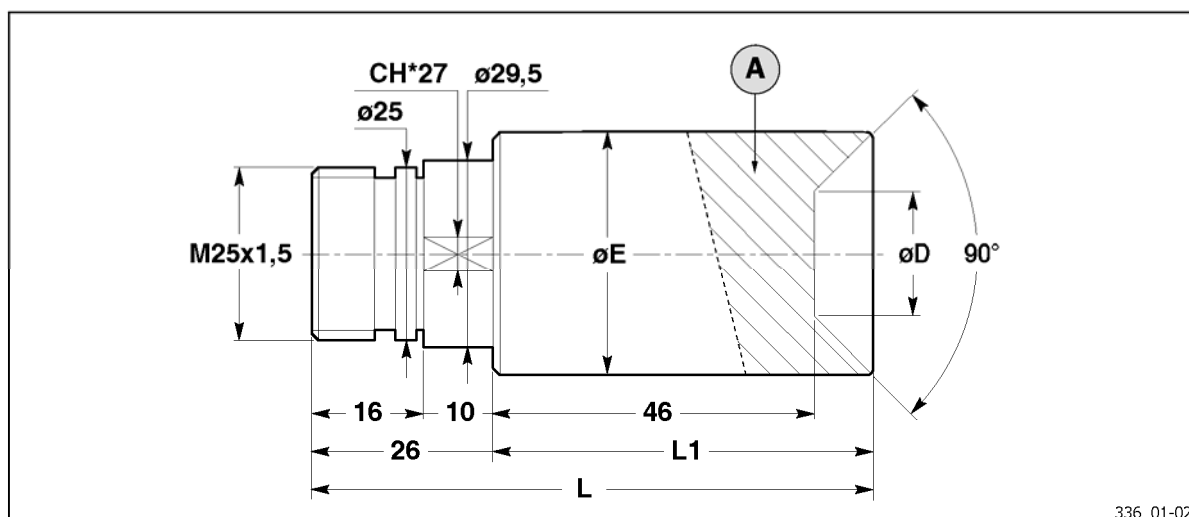
11.13 EJECTOR – Guide channels  $\varnothing > 32$  - Table

**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:**

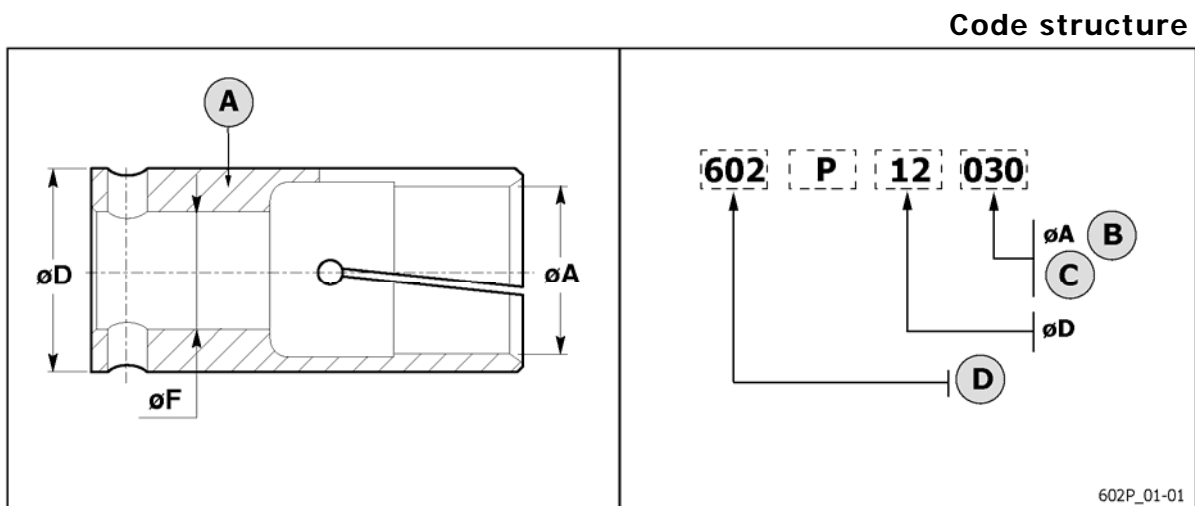
The bar minimum diameter that allows its machining is in any case the one indicated in the table "Guide channel, bar pusher, bar and pipe diameters" in section 2.6.


**WARNING - CAUTION:**

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


**INFORMATION:**

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



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

External diameter(mm) <b>øD</b>	Diameter(mm) <b>øF</b>	Internal diameter(mm) <b>øA</b>	
		MIN	MAX
10	Ø7 G6	3	8
12	Ø8 G6	3	10
15	Ø11 G6	4	13
16	Ø11 G6	11	14
18	Ø11 G6	8	16
20	Ø14 G6	6	18
21	Ø14 G6	16,5	19
23	Ø14 G6	14	21
25	Ø20 G6	4,3	23
27	Ø20 G6	21	25,5
29	Ø20 G6	22,75	27
32	Ø20 G6	6	30
35	Ø20 G6	27	32
36	Ø20 G6	26	34
39	Ø20 G6	32	37
42	Ø20 G6	31	40
45	Ø20 G6	33	42
51	Ø20 G6	39,75	47
52	Ø20 G6	44	49
56	Ø20 G6	47	52

11.16 BORING COLLETS FOR BARS 601P

11.17 BORING COLLETS FOR SQUARE AND HEXAGONAL BARS - Table



**WARNING - CAUTION:**

The bar minimum diameter that allows its machining is in any case the one indicated in the table "Guide channel, bar pusher, bar and pipe diameters" in section 2.6.



**INFORMATION:**

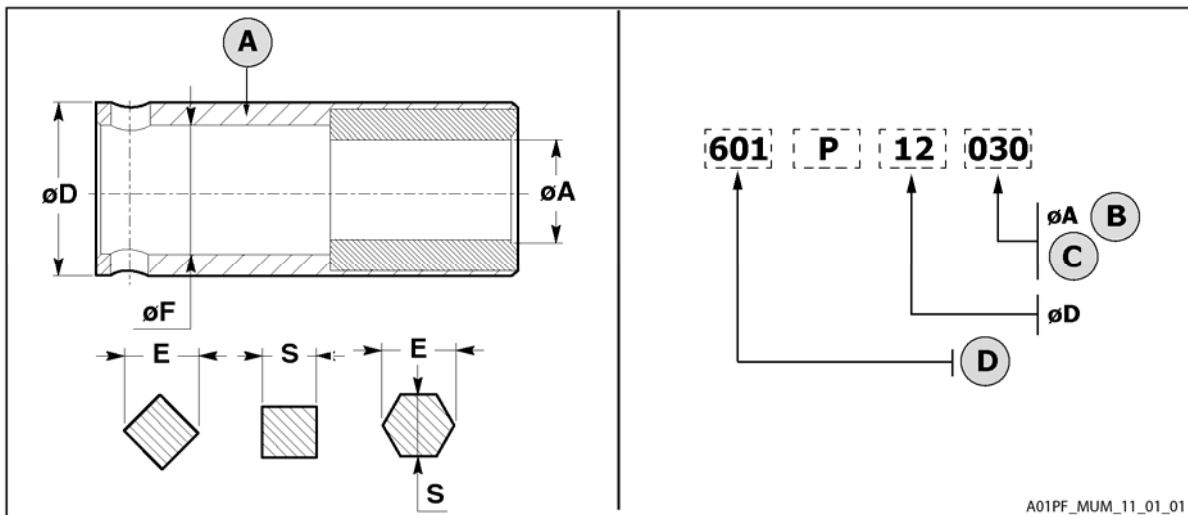
to determine the internal diameter  $\varnothing A$ , do not refer to file "001 - Conversion Tables", but refer directly to the table below.



**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



<b>S square bars (S=E/1,414)</b>		<b>S hexagonal bars (S=E/1,154)</b>		<b>External diameter(mm) øD</b>	<b>Diameter(mm) øF</b>
<b>MIN</b>	<b>MAX</b>	<b>MIN</b>	<b>MAX</b>		
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



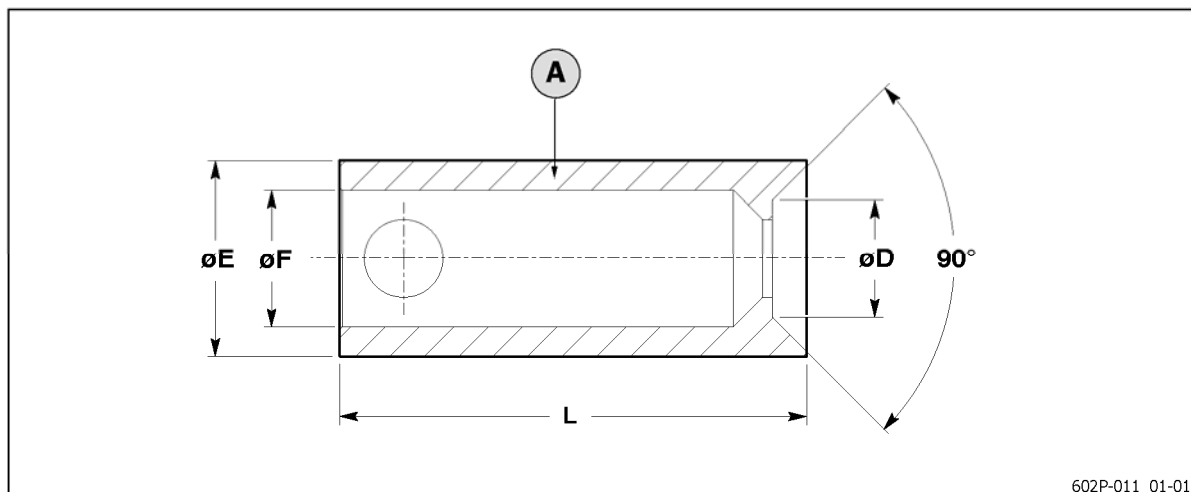
**WARNING:** Values indicated with \* are expressed in inches.

**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.*

**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 bar minimum diameter that allows its machining is in any case the one indicated in the table "Guide channel, bar pusher, bar and pipe diameters" in section 2.6.*

**WARNING - CAUTION:**

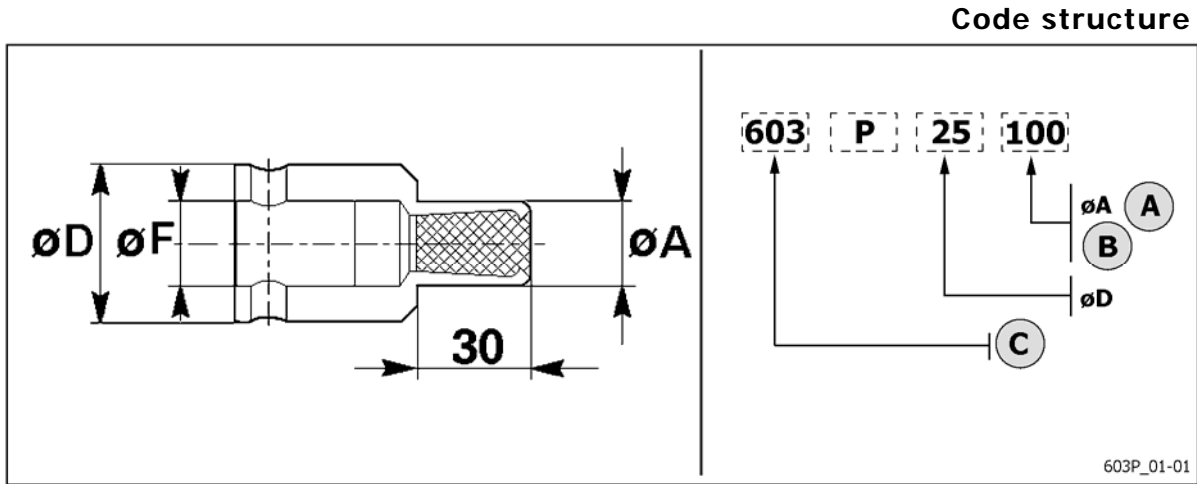
*the collet external diameter should be at least 0.5 mm smaller than the bar pusher external diameter.*

**INFORMATION:**

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

**INFORMATION:**

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



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

External diameter(mm) <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 bar minimum diameter that allows its machining is in any case the one indicated in the table "Guide channel, bar pusher, bar and pipe diameters" in section 2.6.



**WARNING - CAUTION:**

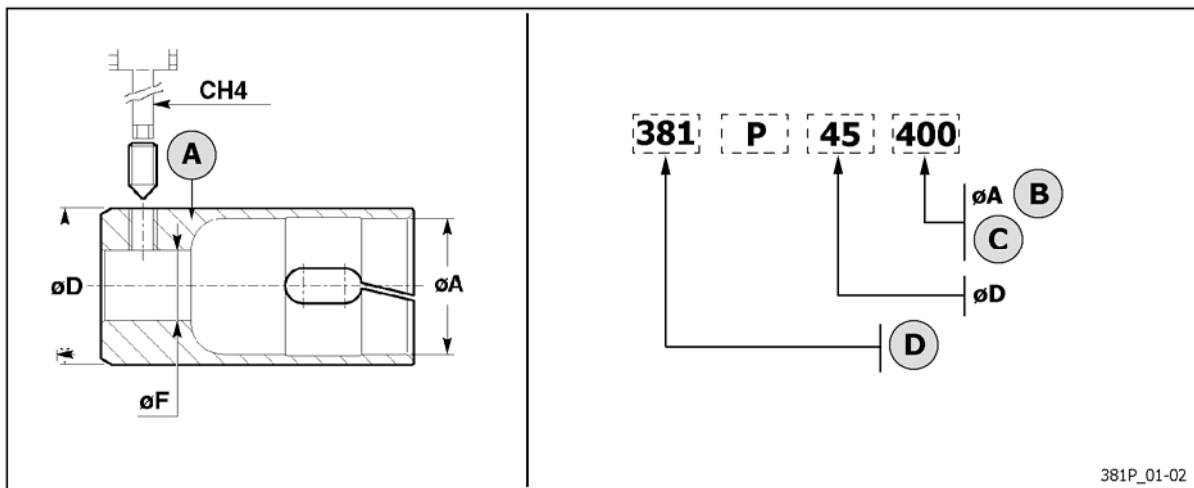
the collet external diameter should be at least 0.5 mm smaller than the bar pusher external diameter.



**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



381P\_01-02

- 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

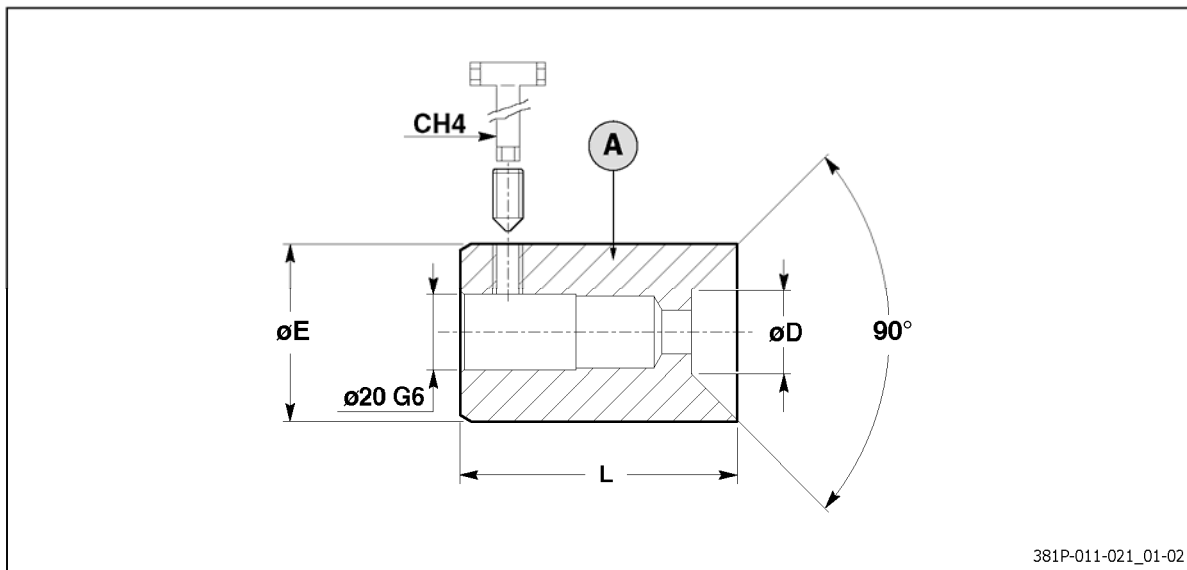
External diameter(mm) <b>øD</b>	Diameter(mm) <b>øF</b>	Internal diameter(mm) <b>øA</b>	
		MIN	MAX
60	Ø20 G6	54	56
62	Ø20 G6	56	56,75
64	Ø20 G6	57	60
65	Ø20 G6	59	61
66	Ø20 G6	60	62
68	Ø20 G6	61,25	63,75
70	Ø20 G6	64	65,75
72	Ø20 G6	65,25	67
74-75	Ø20 G6	67,25	70
76	Ø20 G6	69	70
78	Ø20 G6	70,25	72
80	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  $\varnothing 33 \pm 46$  - 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.*



CH4: T Allen wrench - DIN 911

A Ejector



<b>øE (mm)</b>	<b>øD (mm)</b>	<b>L (mm)</b>	<b>Code no.</b>
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  $\varnothing 52 \pm 86$  - Table



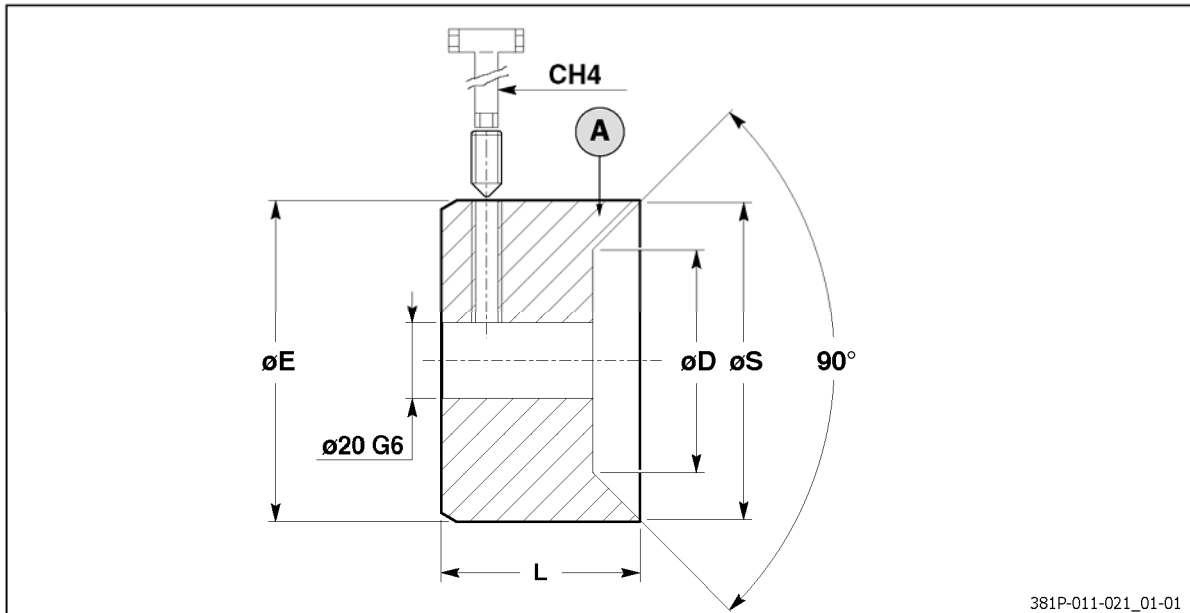
**WARNING - CAUTION:**

*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 bar minimum diameter that allows its machining is in any case the one indicated in the table "Guide channel, bar pusher, bar and pipe diameters" in section 2.6.*



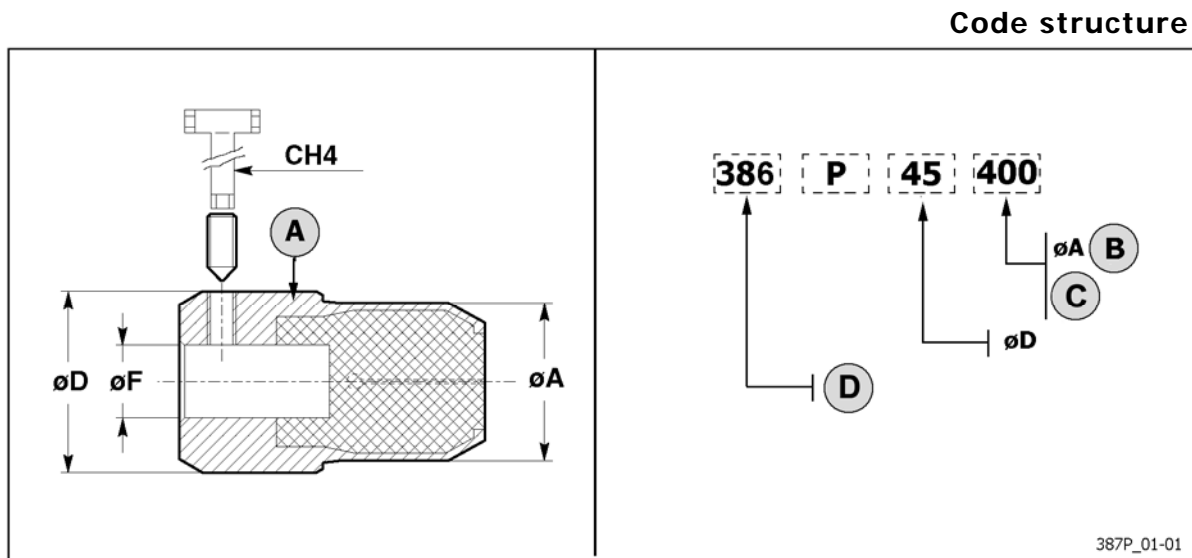
**WARNING - CAUTION:**

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



**INFORMATION:**

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

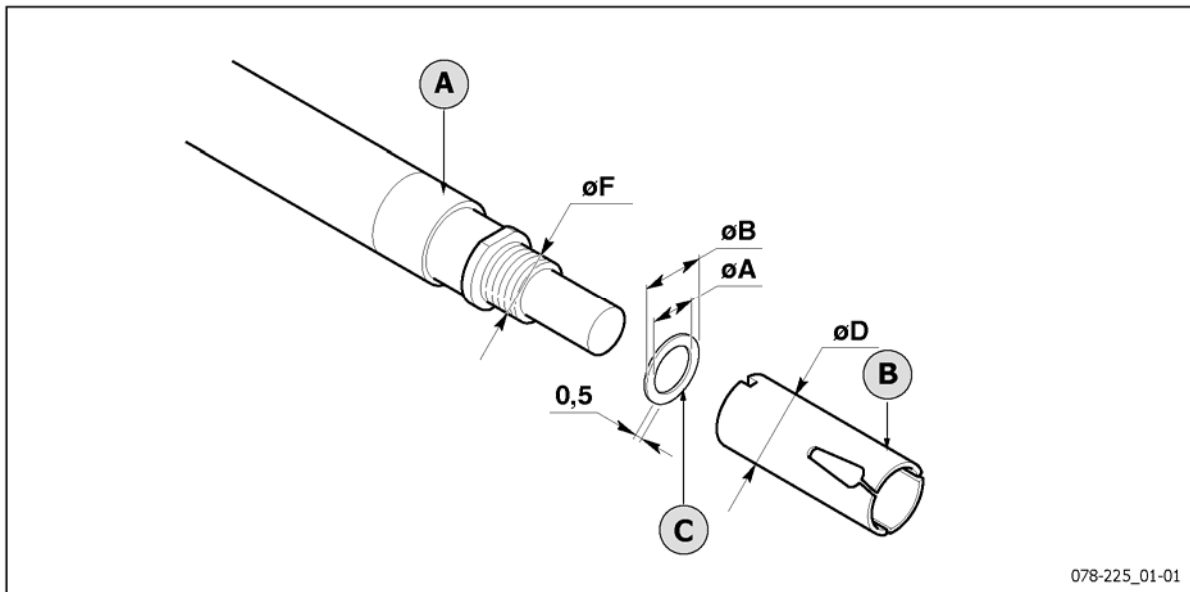


- A Collet
- B Bar diameter
- C Example:  
40 mm = 400  
39.75 mm = 397
- D Category
- CH4: T Allen wrench - DIN911

External diameter(mm) <b>øD</b>	Diameter(mm) <b>øF</b>	External diameter(mm) <b>øA</b>	
		MIN	MAX
40	Ø20 G6	23	34,75
41	Ø20 G6	35	37
44	Ø20 G6	36	40
45	Ø20 G6	40,25	42
49	Ø20 G6	42	45,5
50	Ø20 G6	43	47
54	Ø20 G6	46	50
56	Ø20 G6	49	52,25
59	Ø20 G6	52,5	54,75
60	Ø20 G6	54	56,75
64	Ø20 G6	57	58,75
65	Ø20 G6	59	60,75
68	Ø20 G6	61	63,75
70	Ø20 G6	64	65,75
71	Ø20 G6	66	66,75
75	Ø20 G6	67	70
80	Ø20 G6	70	77,5
85	Ø20 G6	74,25	76

### 11.29 RINGS FOR COLLETS 078-225

### 11.30 RINGS FOR COLLETS - Table



- A Revolving tip
- B Collet
- C Ring

$\phi A$ (mm)	$\phi B$ (mm)	$\phi D$ (mm)	$\phi F$	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)