AUTOMATIC BAR FEEDER

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

SMART 316

EN **MANUAL FOR USE AND MAINTENANCE**

Rel. 2 **Date** 21/07/05 **Cod.** 401005400

S/N

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	TLX 550879
TYPE OF DOCUMENT:	**MANUAL FOR USE AND MAINTENANCE**
PRODUCT:	**AUTOMATIC BAR FEEDER**
MODEL:	**SMART 316**

IEMCA S.p.A.
Via Granarolo, 167
Tel. 0546/698000 - Fax. 0546/46224
TLX 550879

INDEX

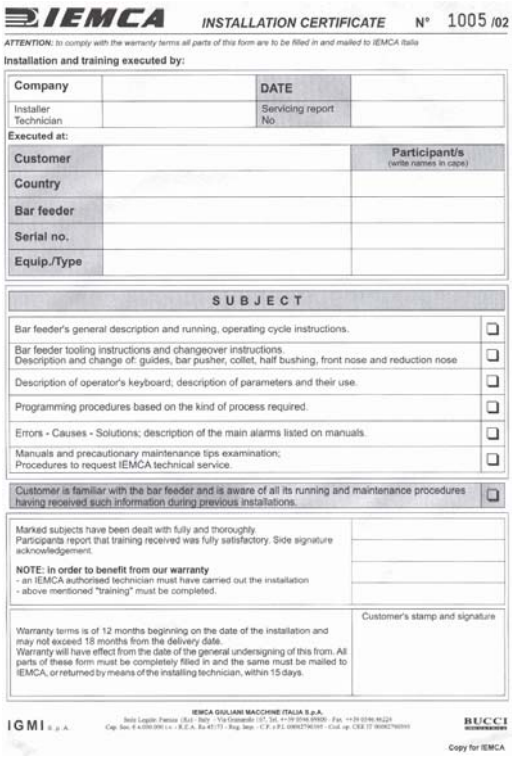
Operations described in paragraphs showing this symbol, must be performed by qualified and skilled personnel only.
Any other operation can be performed either by qualified personnel or by professional bar feeder operators.

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

1.1 TERMS OF WARRANTY

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

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



IEMCA INSTALLATION CERTIFICATE N° 1005 /02

ATTENTION: to comply with the warranty terms all parts of this form are to be filled in and mailed to IEMCA Italia

Installation and training executed by:

Company		DATE	
Installer Technician		Servicing report No.	

Executed at:

Customer		Participant/s (write names in caps)
Country		
Bar feeder		
Serial no.		
Equip./Type		

SUBJECT	
Bar feeder's general description and running, operating cycle instructions.	☐
Bar feeder tooling instructions and changeover instructions. Description and change of: guides, bar pusher, collet, half bushing, front nose and reduction nose	☐
Description of operator's keyboard; description of parameters and their use.	☐
Programming procedures based on the kind of process required.	☐
Errors - Causes - Solutions; description of the main alarms listed on manuals.	☐
Manuals and precautionary maintenance tips examination; Procedures to request IEMCA technical service.	☐
Customer is familiar with the bar feeder and is aware of all its running and maintenance procedures having received such information during previous installations.	☐

Marked subjects have been dealt with fully and thoroughly.
Participants report that training received was fully satisfactory. Side signature acknowledgement.

NOTE: in order to benefit from our warranty
- an IEMCA authorised technician must have carried out the installation
- above mentioned "training" must be completed.

Warranty terms is of 12 months beginning on the date of the installation and may not exceed 18 months from the delivery date.
Warranty will have effect from the date of the general undersigning of this from. All parts of these form must be completely filled in and the same must be mailed to IEMCA, or returned by means of the installing technician, within 15 days.

Customer's stamp and signature

IGMI S.p.A. — IEMCA GIULIANI MACCHINE ITALIA S.p.A. — BUCCI

Copy for IEMCA

1.2 MANUAL PURPOSE

This manual has been written and supplied by the manufacturer, the information herewith contained has been written in Italian (manufacturer's language) to be translated to other languages, in order to comply with legal and/or commercial requirements. This manual is integral part of the bar feeder and of its equipment.

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

In order to allow a quick search of contents, consult the descriptive index.
Particularly important parts of this manual have been highlighted in bold type and preceded by the following symbols:

DANGER - WARNING:
shows impending danger which might cause serious injuries, exert the maximum caution.

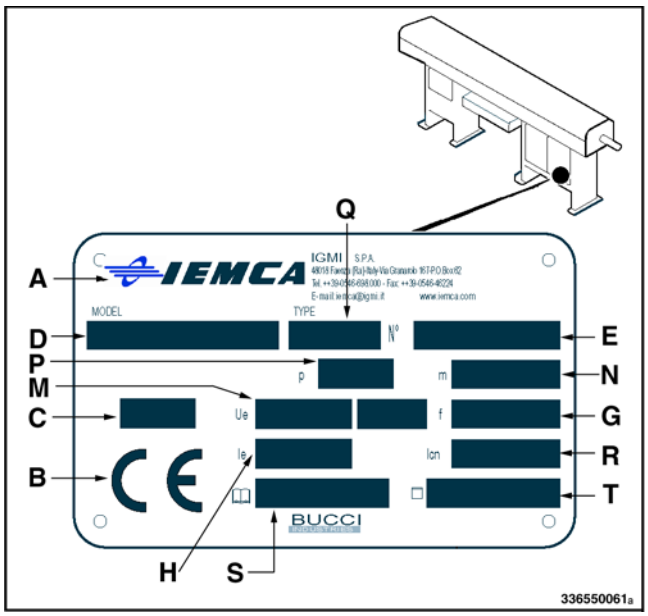
CAUTION - PRECAUTION
indicates measures to be adopted to avoid accidents or damages to property.

INFORMATION
technical instructions of particular importance.

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

1.3 MANUFACTURER AND BAR FEEDER IDENTIFICATION

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



INFORMATION:

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

1.4 TECHNICAL ASSISTANCE

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

INFORMATION

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

1.5 ANNEXES ENCLOSED

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

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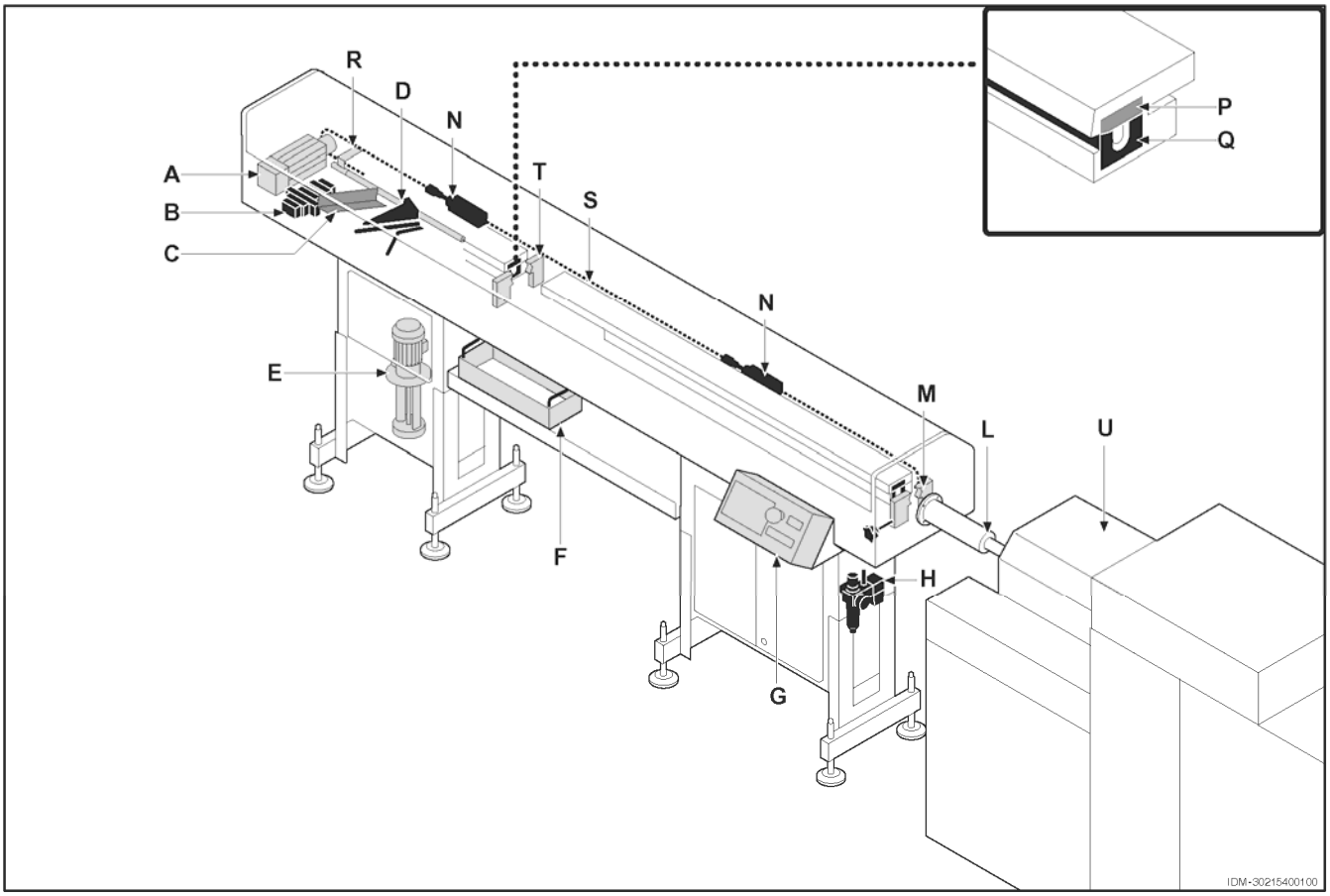
2.1 GENERAL BAR FEEDER DESCRIPTION

The SMART automatic bar feeder is used in the machine-tool industry and in particular, for automatic lathe feeding. It is particularly suitable for feeding fixed or sliding headstock lathes, numerical control or cam lathes.
The working cycle is controlled by a control panel with built-in PLC, which is able to dialogue with the lathe control.
The digital hand-held keyboard makes programming easier and allows the bar-feeder functions to be controlled without leaving the lathe.
The bar feeder can be used to feed bars, pipes and metallic as well as polymeric materials of different sections. Avoid flammable materials.
The guide channel is fully closed during machining; a pump is provided to maintain a continuous oil flow inside the channel, creating a hydrodynamic support effect; these characteristics allow the bar to rotate at a high r.p.m. number, with no vibrations and no surface damaging.
Thanks to the use of a "BRUSHLESS" and electronically controlled motor, the bar speed, thrust value and feeding position may be determined at any time during the working cycle.
Bar remnant ejection can be caused by bar-pusher feeding or next bar feeding.
Bar feeder series BOSS are produced in the following models:
SMART 316 (standard version)
SMART 316 (reversed version)
The texts, tables and illustrations contained in this manual concern, unless otherwise stated, the standard version (SMART 316) with the lathe on the operator's right.

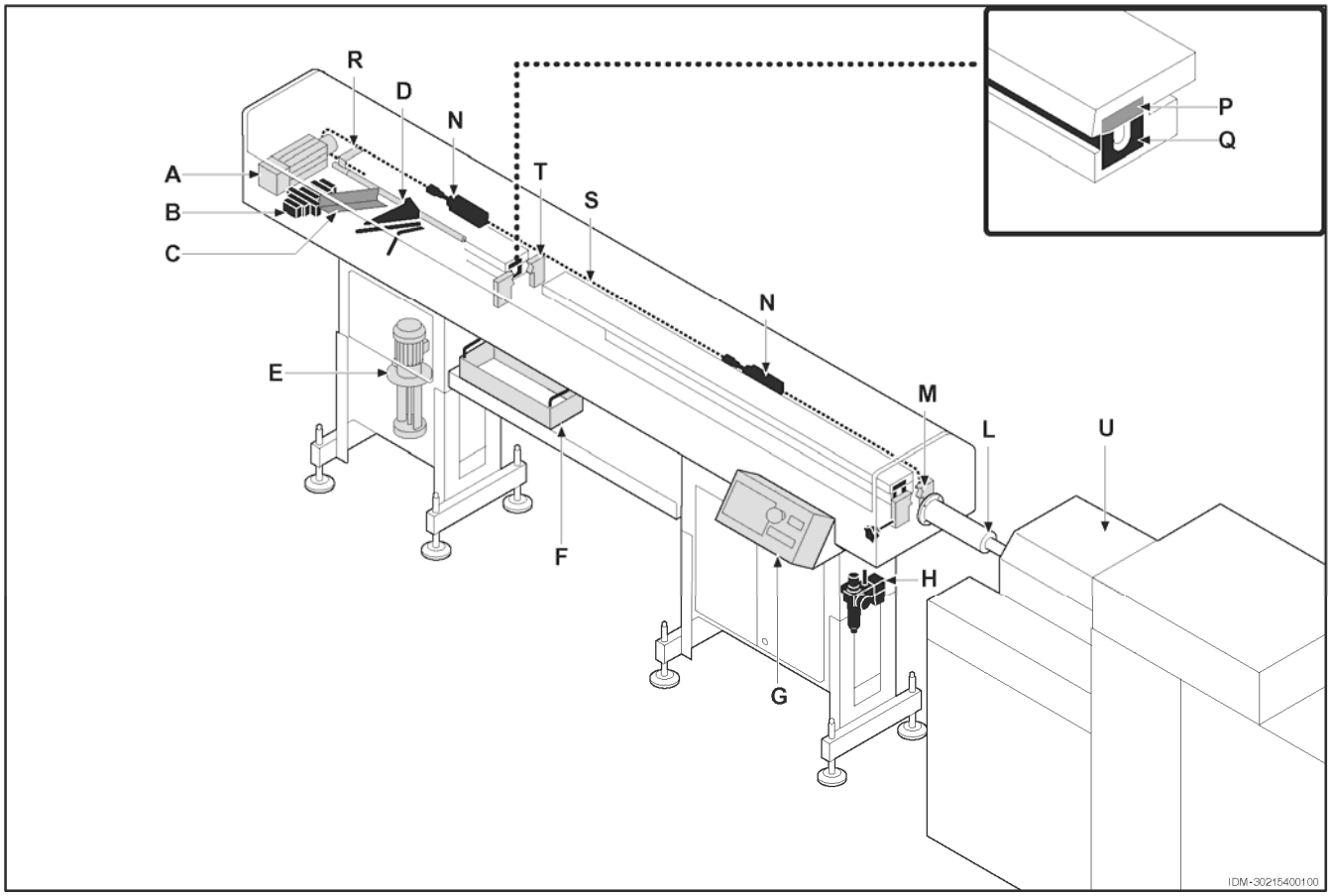


- **MAIN PARTS**

A DRIVE SYSTEM; it drives the bar-pusher.
B ELECTROVALVE UNIT; to send signals to pneumatic devices.
C BAR POSITIONING DEVICE; to select bar loading position on the magazine rack.
D MAGAZINE; where bars are stored.
E OIL PUMP; it delivers oil to the guides.
F REMNANT COLLECTION BOX; bar remnants are dropped into this box after extraction from the bar-pusher collet.
G KEYBOARD; it allows bar feeder programming and function actuation.
H PRESSURE REGULATOR; to adjust the pressure of the pneumatic devices.
L TELESCOPIC NOSE; to allow bar guidance between the bar feeder and the headstock.
M BUSHINGS; to allow bar centering.
N PNEUMATIC CYLINDER FOR GUIDE CHANNEL OPENING/CLOSING; to provide motion to the pneumatic devices to allow guide channel opening/closing.
P UPPER GUIDE CHANNEL; to allow bar guidance during machining cycle.

%T082926ITA----------Italiano
Q GUIDE INFERIORI; guidano la barra durante la lavorazione.
R SPINGIBARRA; spinge la barra durante la lavorazione.
S CATENA DI AVANZAMENTO; trasmette il moto dalla motorizzazione allo spingibarra.

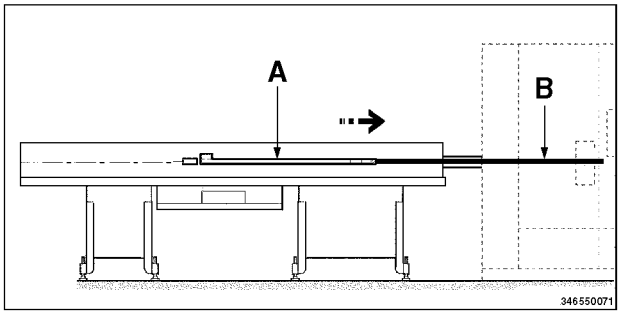
T MORSETTI; trattengono la barra durante la sua introduzione ed estrazione dalla pinza dello spingibarra.
U TORNIO.



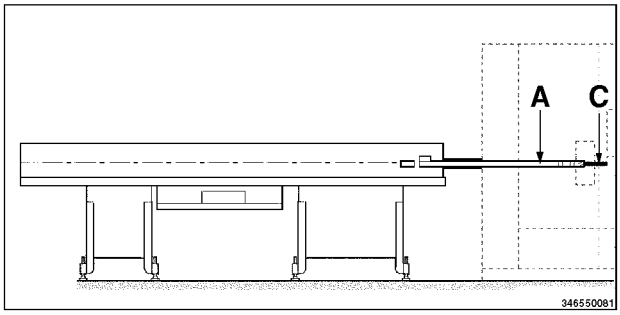
Q LOWER GUIDE CHANNEL; to allow bar guidance during machining cycle.
R BAR PUSHER; to push the bar during machining cycle.
S FEEDING CHAIN; to transfer motion from the drive system to the bar pusher.
T CLAMPS; to hold the bar during bar introduction/ejection into/from the bar pusher collet.
U LATHE.

2.2 OPERATING CYCLE

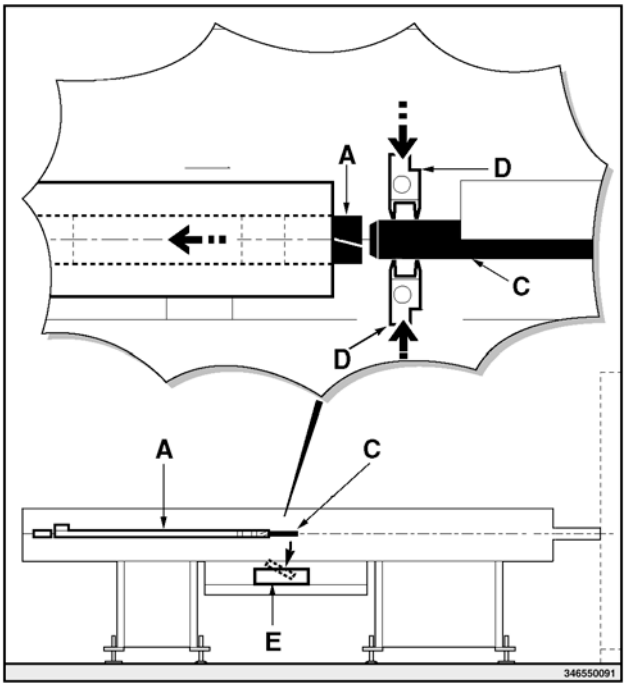
In the automatic operation mode, bar feeder movements are controlled in the sequence described below:
The bar-pusher "A" feeds bar "B" in the lathe by following lathe impulses until bar end.



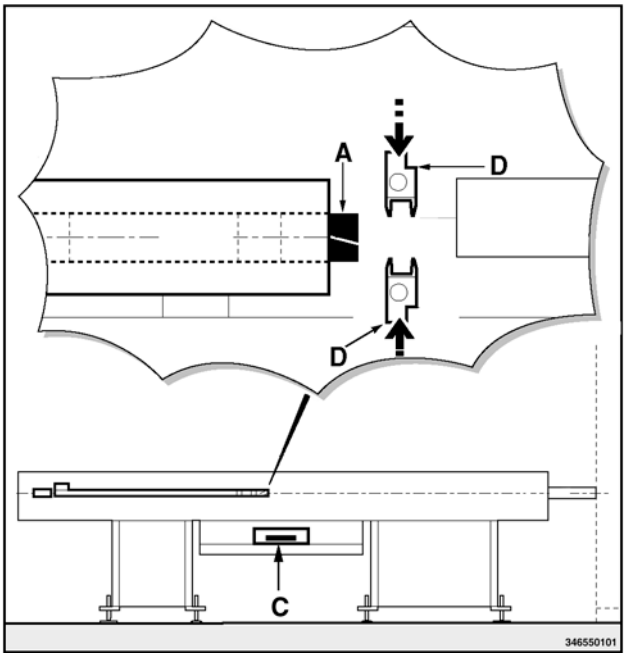
The bar-pusher A and remnant C are in their forwards limit stop position.



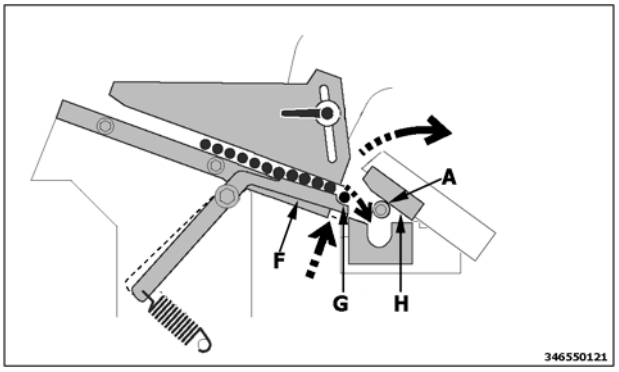
The bar-pusher A and remnant C reach their backwards limit stop position.
The clamps D close and the bar-pusher moves back; the remnant is extracted from the collet. The clamps open and the remnant is dropped into the box E.



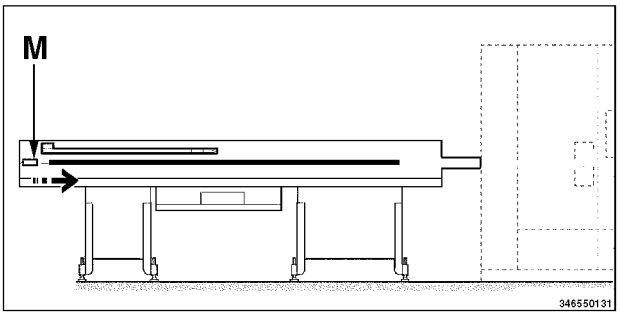
Clamps "D" close again to perform remnant "C" extraction check.
If the remnant is still inserted in the bar-pusher collet, the feeder stops; otherwise, it continues its cycle.



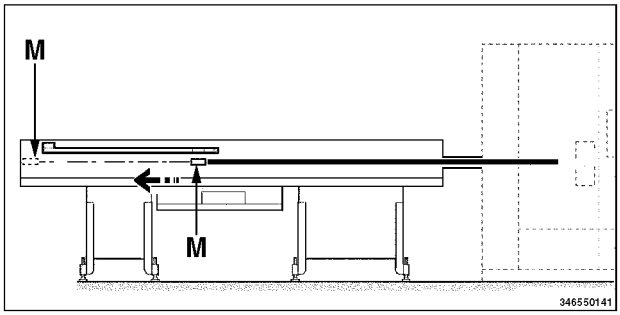
Upper guides "H" open together with bar pusher "A"; the bar selection device "F" moves upwards thereby raising the second bar and withholding the remaining bars. Bar "G" drops into the guide channel.
Bar selection device "F" is lowered.



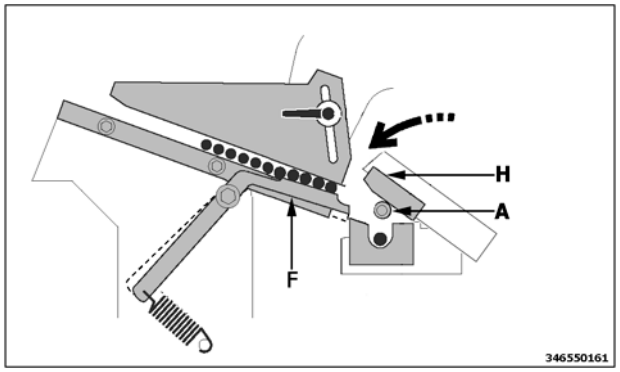
The small pusher truck "M" starts its stroke.



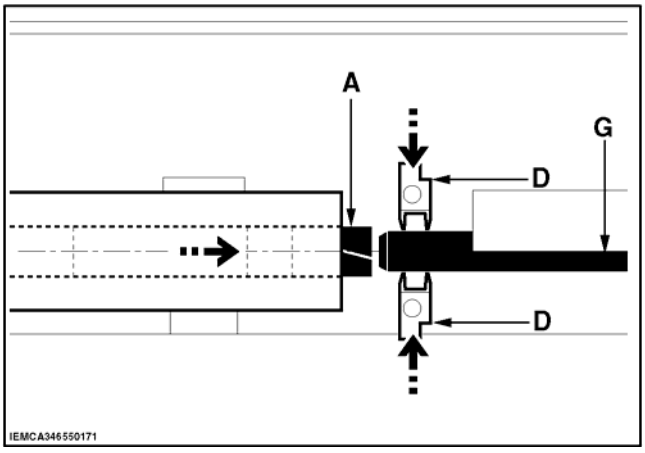
When the small pusher truck "M" completes its stroke, the required space has been created for bar-pusher insertion.
The small pusher truck executes its return stroke.



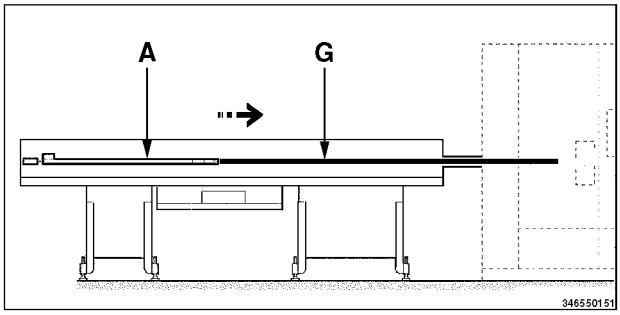
The upper guides H are closed; the bar-pusher A is positioned along the spindle axis. The bar selection device "F" is lowered, so that the bars can slide toward the upper guide channel holder.



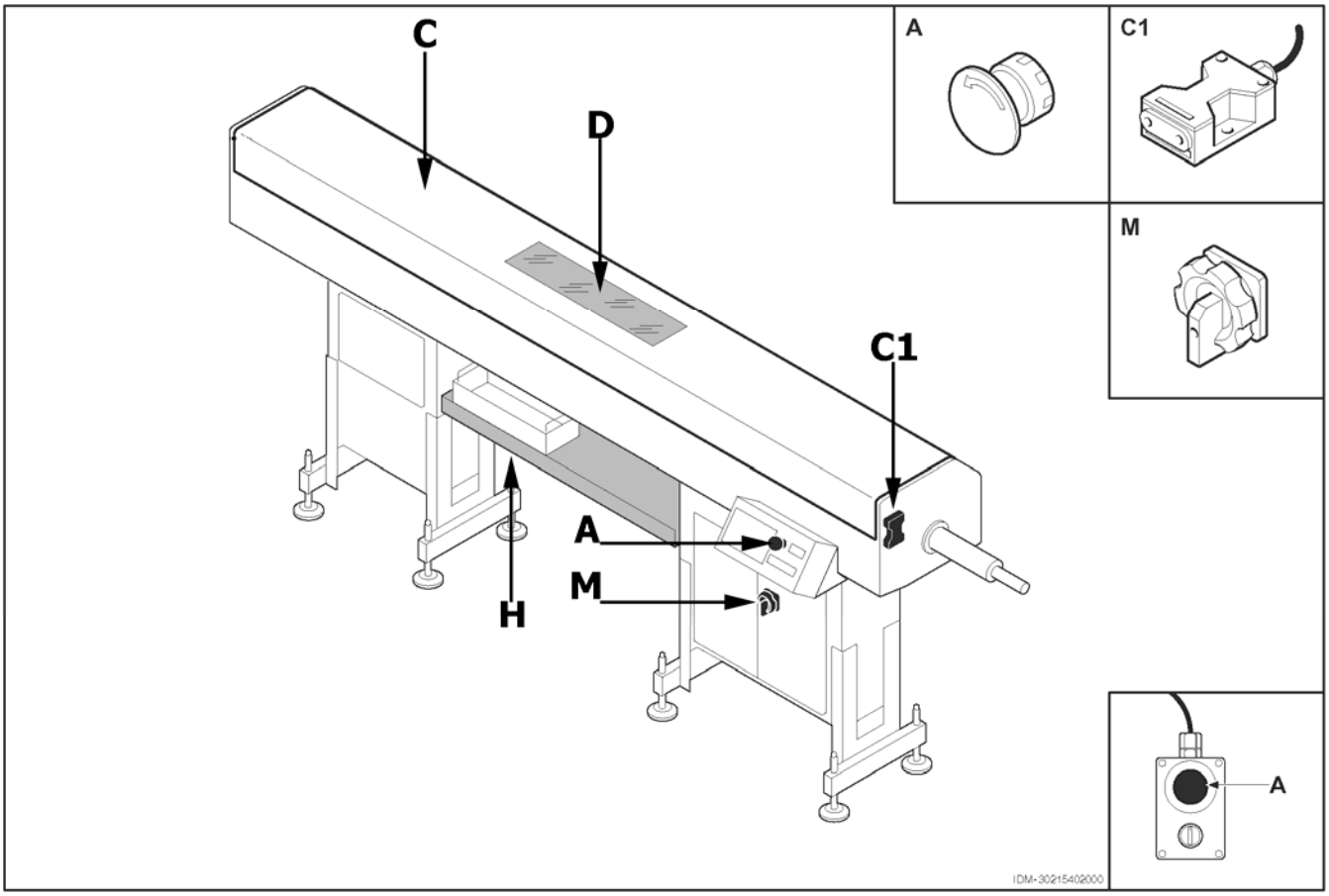
The clamps "D" close, the bar-pusher "A" moves forwards; the bar "G" is inserted into the bar-pusher collet.



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



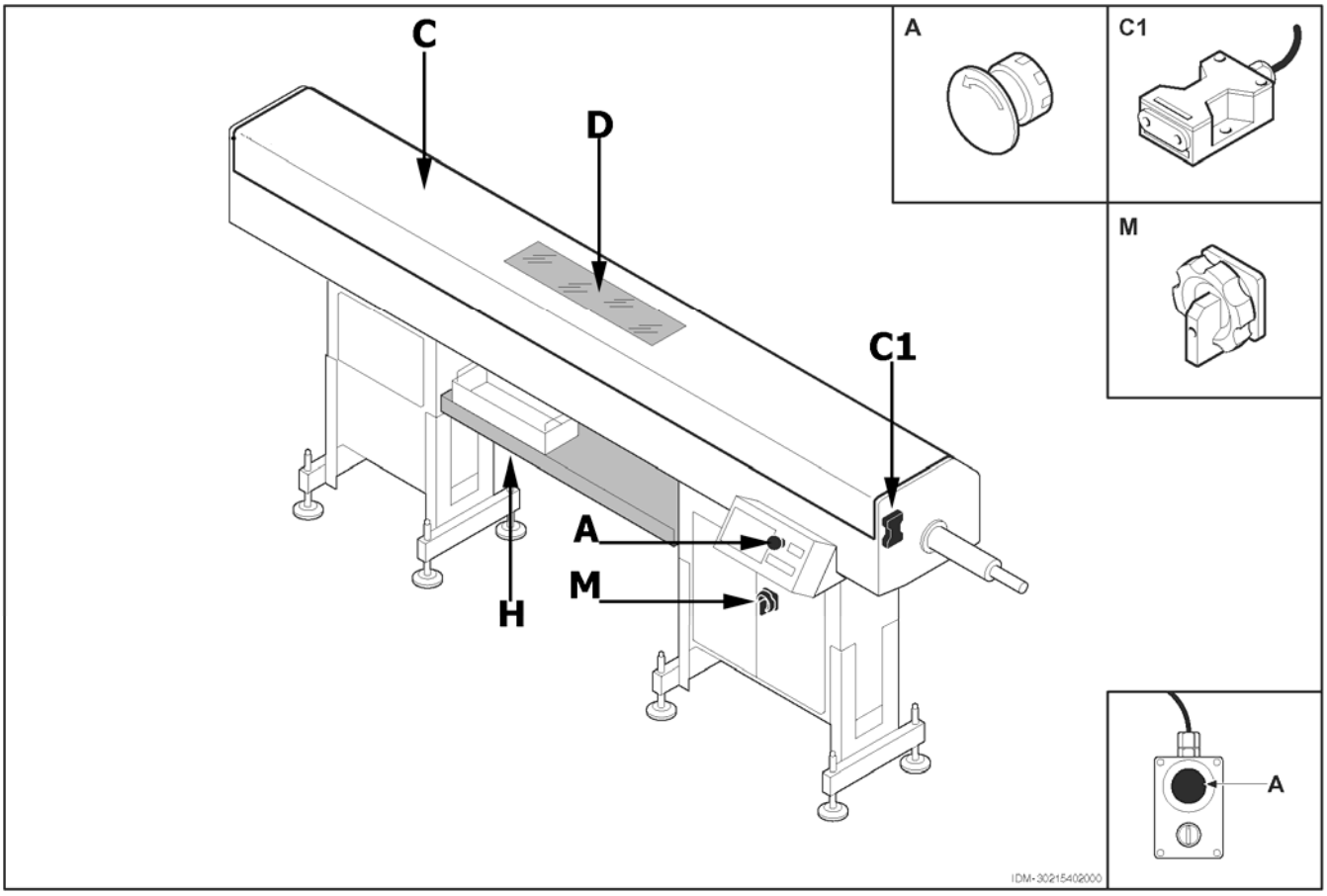
2.3 SAFETY DEVICES



A EMERGENCY BUTTON; pushing this button, all feeder and lathe functions are stopped in an emergency situation.

C INTERLOCKED MOBILE GUARD: associated with microswitch C1.
According to the cycle setting, its functions are:
manual cycle;
- when the guard is opened the feeder will be stopped if the guides are not closed.
- when the guard is opened, if the guide channels are closed the feeder functions are not disabled because no operator risks are present.

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

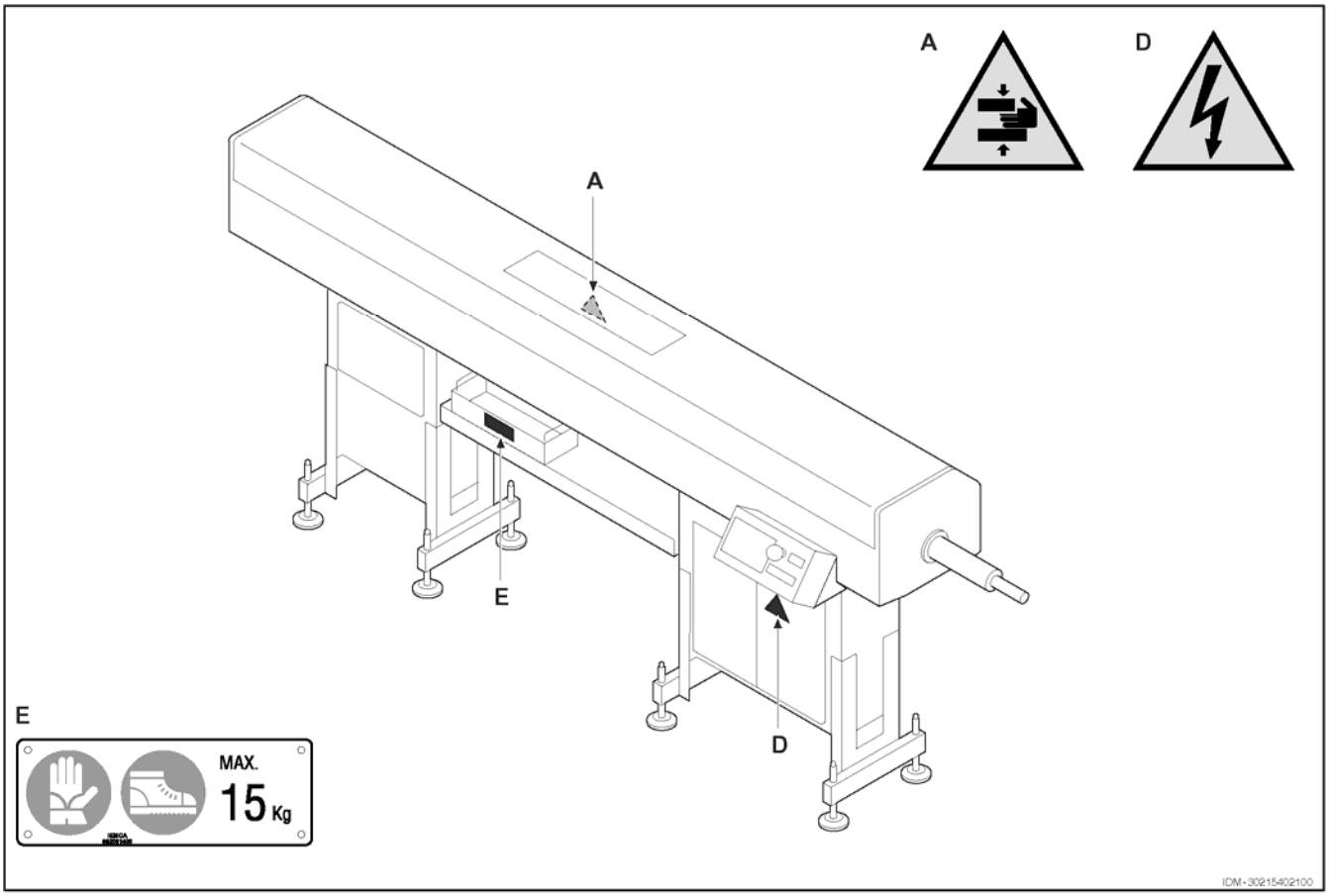


D FIXED GUARD: it is made of transparent material to allow visual inspection inside the bar magazine.

H REMNANT COLLECTION TANK: it also acts as a fixed guard to prevent accidental access to moving parts.

M MAIN SWITCH: cuts out the electric energy source during interventions in the electric switchboard and during the bar feeder periods of inactivity.

2.4 SAFETY PLATES - LOCATION AND DESCRIPTION



A Risk of crushing injury to upper limbs.
D Caution! Risk of electric shock.
E Wear safety gloves and shoes.

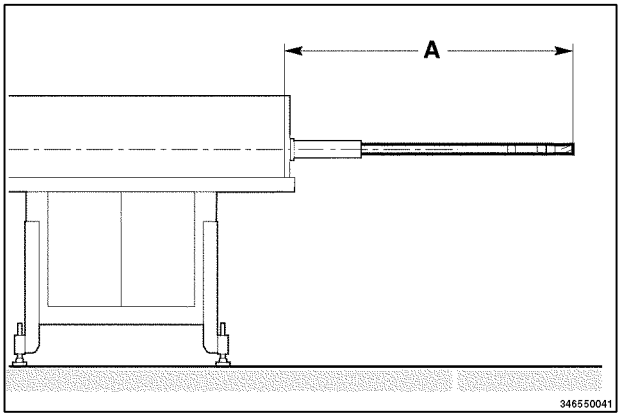
2.5 VERSION DESCRIPTION

Table 1. Maximum bar length

Model	Version	Max. length mm (ft)
SMART 316	32	3260 (10,7)
	40	4060 (13,3)

Table 2. Max. bar-pusher extension

Model	Version	A – Max extension (mm)
SMART 316	L	1000
	LL	1400



2.6 TECHNICAL SPECIFICATIONS

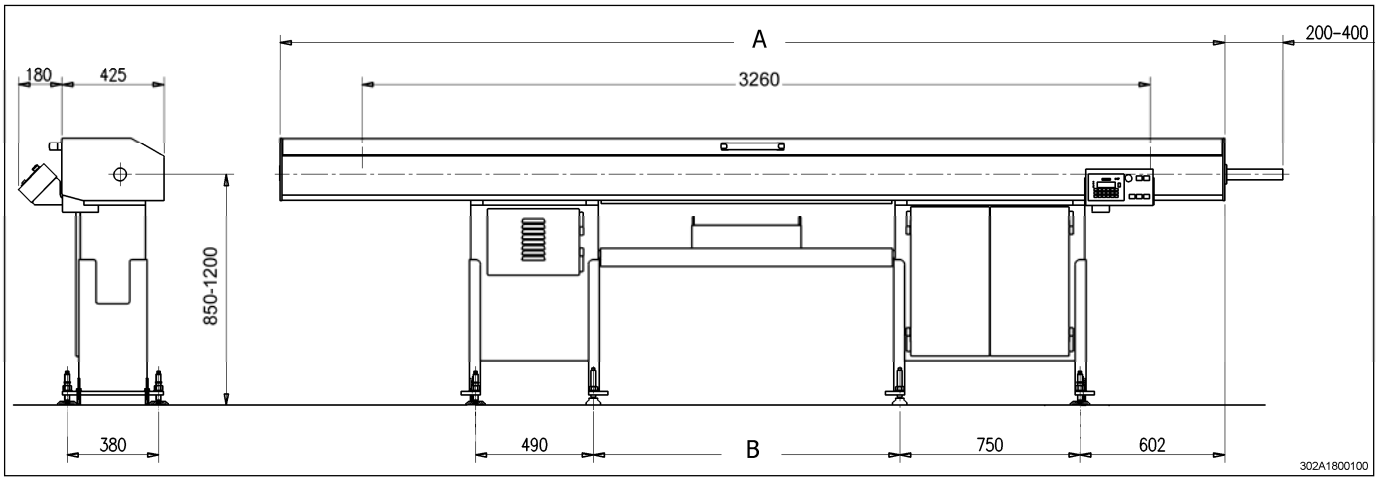


Table 3. Overall dimensions

Model	Version	A (mm)	B (mm)
SMART 316	32	3960	1275
	40	4760	1795

Table 4. General technical specifications

	SMART 316	
Size of round bars	Ø min 3 mm (1/8")	Ø max 16 mm (5/8")
Size of hexagonal bars (size of wrench)	Min 3 mm (1/8")	Max 14 mm (1" 9/16)
Min. bar length	1500 mm	
Max. bar length	Mod. 32-3260 Mod. 40-4060	
Magazine capacity (width)	nr.18 bars Ø 10 mm (3/8")	
Max. bar weight	Mod. 32 - 9 Kg Mod.40 - 11 Kg	
Feeling speed (adjustable)	1000 mm/sec.	
Return speed (adjustable)	1500 mm/sec.	
Remnant length (standard version)	400 mm	
Bar change time (with a 3000 mm bar) Version 32	35 secs.	
Voltage	230/400 Volt	
Net frequency	50 Hz/ 60 Hz	
Control voltage	24 Volt D.C.	
Installed power	1.6 kW	
Oil quantity	40 l	
Max. air feed pressure	8 bar	
Min. air feed pressure	6 bar	
Average use of pneumatic energy (**)	3 NL/min	
Dry weight	Mod.32 – 480 Kg. Mod.40 – 560 Kg.	

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

Table 5. Working axis height

Model	Upper screws position	X (mm) Working axis height	Y (mm) Max. loading height Y
SMART 316	**1**	835÷875	980
	2	870÷910	1020
	3	905÷945	1060
	4	940÷980	1100
	5	975÷1015	1140
	6	1010÷1050	1180
	7	1045÷1085	1220
	8	1080÷1120	1260
	9	1115÷1155	1300
	10	1150÷1190	1340

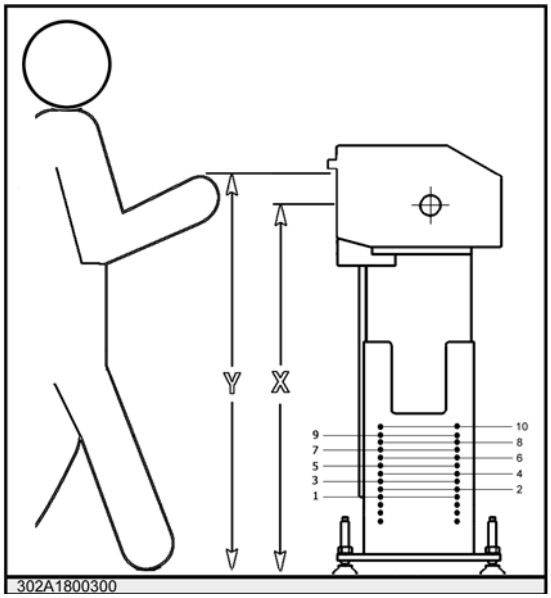


Table 9. SMART 316 guides lubricating oils

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

Oil quantity: 40 l.

2.6.1 Noise levels

Bar feeder does not cause acoustic noise.
Noise occurs when lathe, connected to the bar feeder, is working and the bar is rotating into bar feeder guides.
In such a case, noise level emitted depends on the following conditions:

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

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

- brass and steel round bars within 80 *) dB(A);
- hexagonal steel bars within 83 dB(A);
- brass hexagonal bars within 85 dB(A);

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

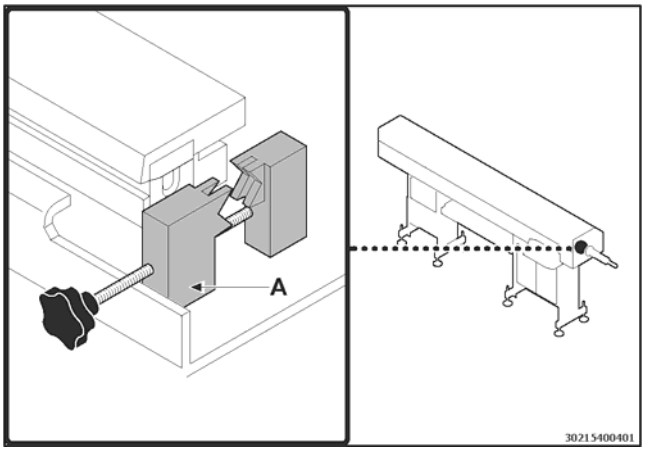
- *) Measurements taken on round bar Ø35mm, guide channel Ø36mm , bar straightness < 5%, 3750 Rpm, on a Biglia B501 lathe, serial number.

2.7 FITTINGS - FOREWORD

To improve the feeder performance and increase its versatility, the following optional device is available:

2.7.1 Anti-vibration device - Description

2.7.1 Anti-vibration device - Description



It is attached to the front part of the bar feeder. Its function its to reduce bar vibrations to a minimum, by keeping the bar centered during rotation through two half bushes A.
In many cases, this device can be used (by simply adjusting the diameter of the half bushes) to greatly extend the range of diameters which can be machined without having to replace the guide channel.

Operation

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

2.8 DEVICE FOR SLIDING HEADSTOCK LATHES - FOREWORD

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

2.8.1 Telescopic nose - Description

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

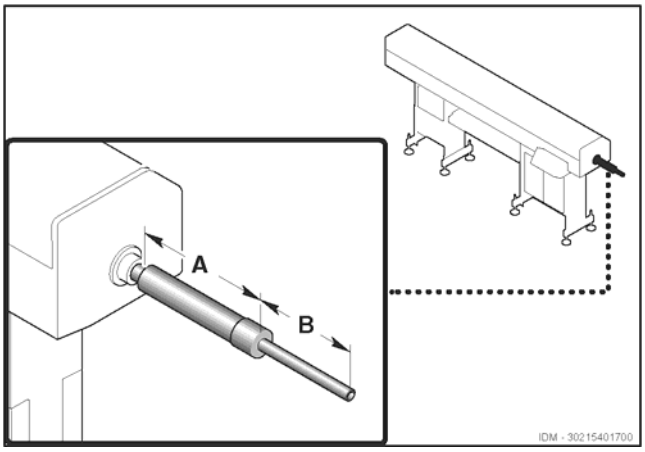


Table 13. Max stroke and overall dimensions

Model	Max stroke A (mm)	Overall dimensions B (mm)
SMART 316	120	230
	160	320
	170	200
	220	260
	320	310

2.9 DEVICES FOR CAM LATHES - FOREWORD

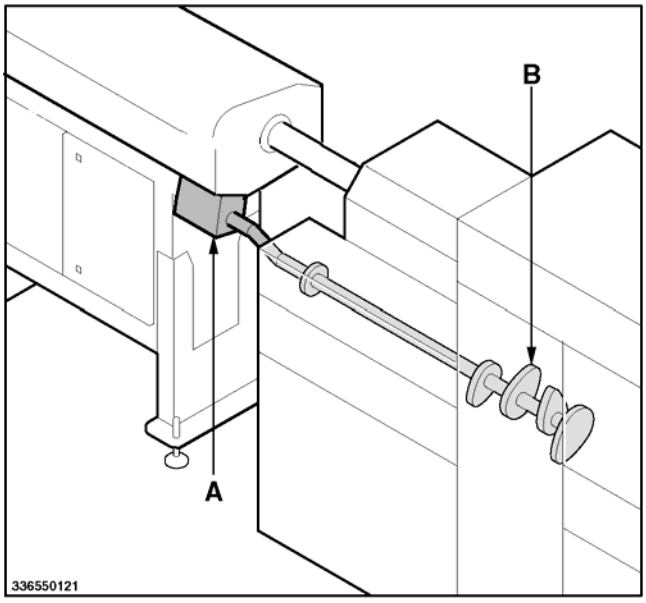
This feeder has been designed and manufactured to be coupled to cam lathes too.
To do this, special devices are available which are listed and then described below:

2.9.1 Cam box - Description

2.9.2 Camshaft release device - Description

2.9.1 Cam box - Description

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

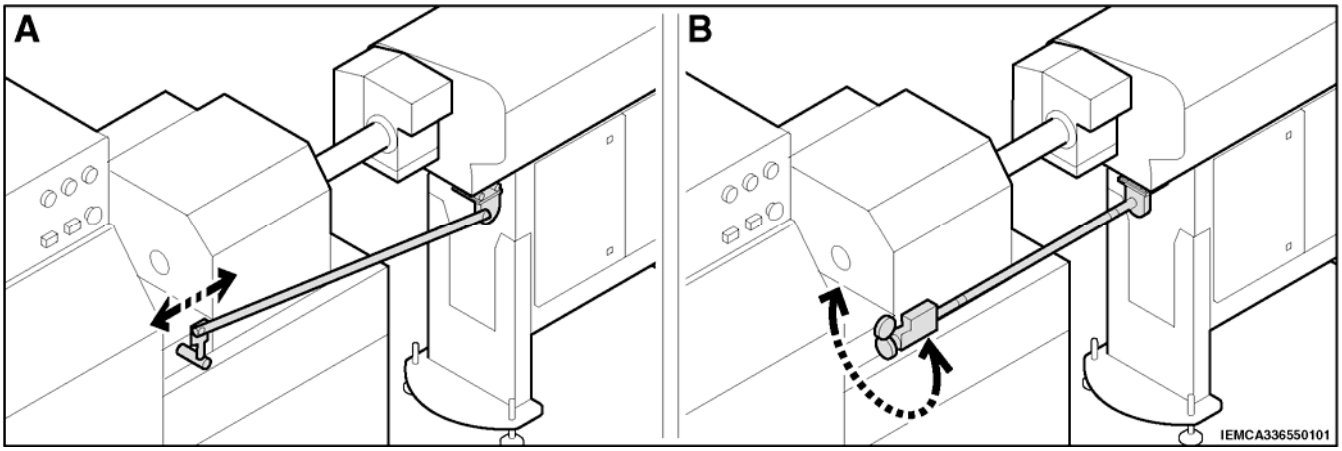


2.9.2 Camshaft release device - Description

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

A Axial version

B Radial version



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3.1 GENERAL SAFETY PRESCRIPTIONS

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

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

3.2 HANDLING AND INSTALLATION - Safety

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

3.3 ADJUSTMENTS AND SETTING UP - Safety

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

3.4 USE AND OPERATION - Safety

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

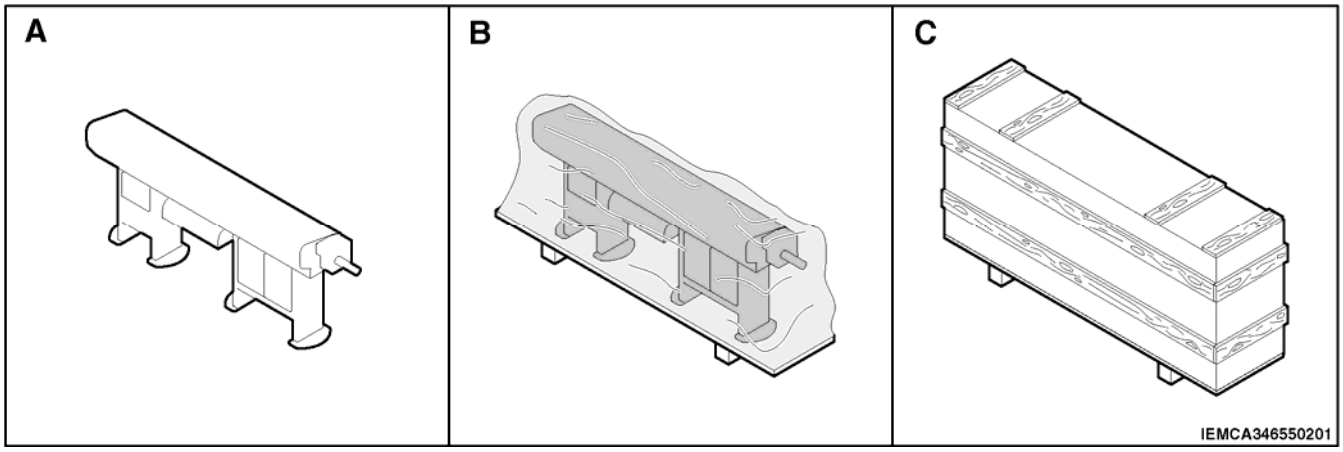
3.5 BAR FEEDER MAINTENANCE - Safety

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

INDEX

4.1 PACKAGING

There are three possible bar feeder packagings:
A WITH NO PACKAGING
B WITH PALLET: the feeder is placed on a pallet and wrapped in protective film.
C WITH CRATE: the feeder is placed in a crate wrapped in protective film.

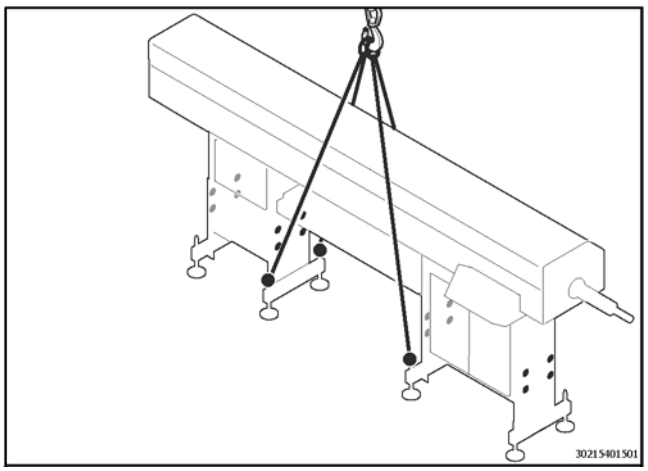


4.2 LIFTING

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

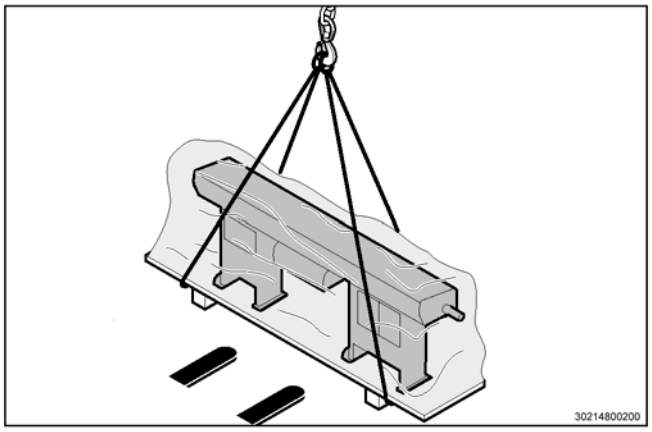
According to the packaging choice, lifting is carried out as shown in the next page.

LIFTING WITH NO PACKAGING
- Insert the four eyebolts into the plates inside the bar feeder foot, as shown in the picture.
- Use a hook type lifting device of suitable capacity.



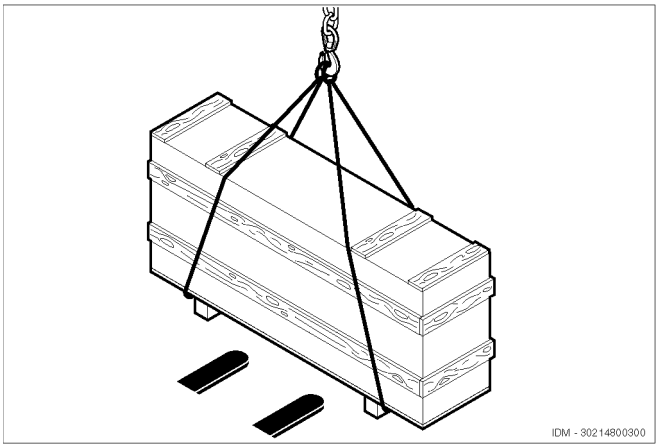
LIFTING WITH PALLET

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



LIFTING WITH CRATE

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

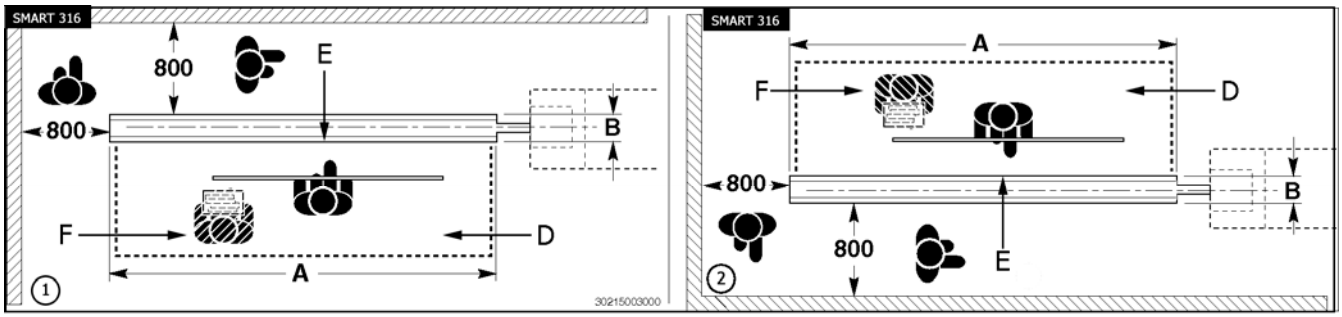


ATTENTION:

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

4.3 INSTALLATION AREA - CHARACTERISTICS

The floor should be stable and levelled to guarantee good fastening to the ground.
Provide an area of suitable dimensions according to the type of feeder use.
The areas: "D" (work area), "E" (bar feeding area) and "F" (remnant discharge area) should be properly delimited to prevent collisions between the operator and any handling equipment or transport vehicles travelling near the bar feeder.
The selected bar feeder setting should be suitably lit and provided with an electric power and air outlets.
During operation, the feeder will release small amount of oil vapors. Make sure that the premises where the feeder is installed are suitably ventilated.
The feeder has not been designed and built for use in an explosive atmosphere.



1 Standard version
2 Reversed version.

Table 1. Overall dimensions

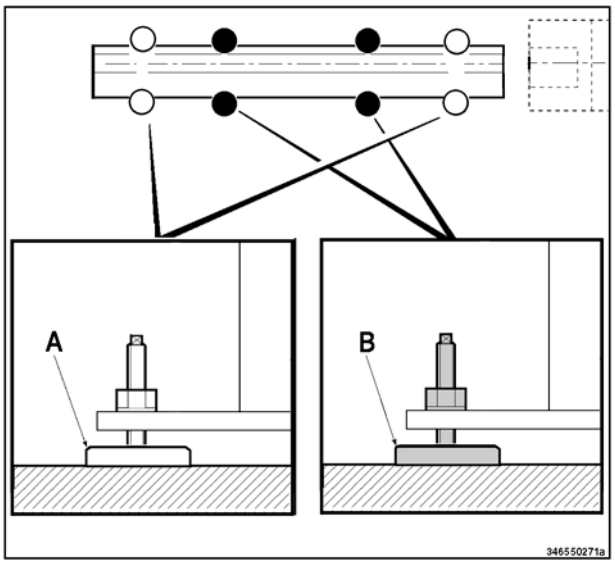
Model	Version	A (mm)	B (mm)
SMART 316	32	4000	605
	40	4800	

4.4 FEEDER - INSTALLATION

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

4.4.1 Support plates and feet - Installation

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



4.4.2 Height - Adjustment

The feeder is normally factory-preset to have a working axis height adjusted to lathe height. However, if feeder height needs adjustment, proceed as follows:

- remove the 8 screws "A" from the plates "B" on the outer side of bar feeder feet.
- Fix the plates with the screws "A" on the suitable position to reach value "X", as shown on the table.
- repeat these steps in order to fix the plates "C" inside the bar feeder feet.

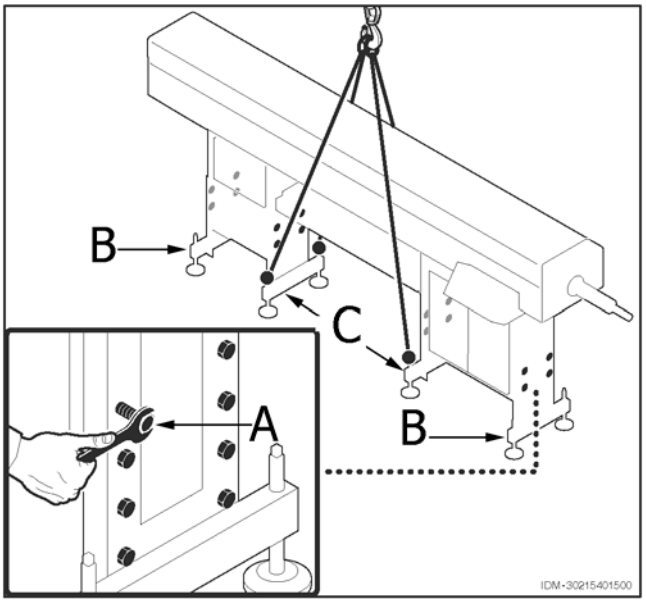
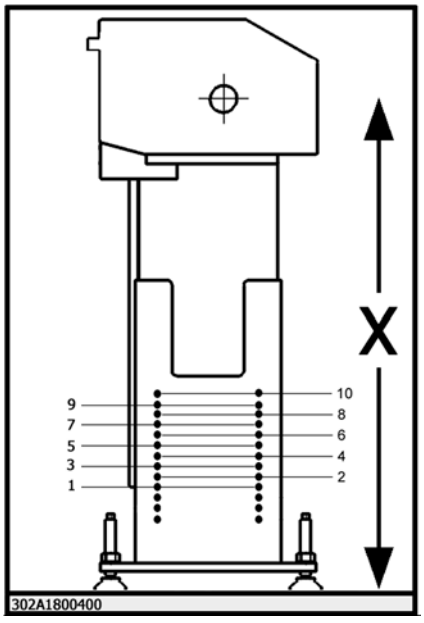


Table 2. Working axis height

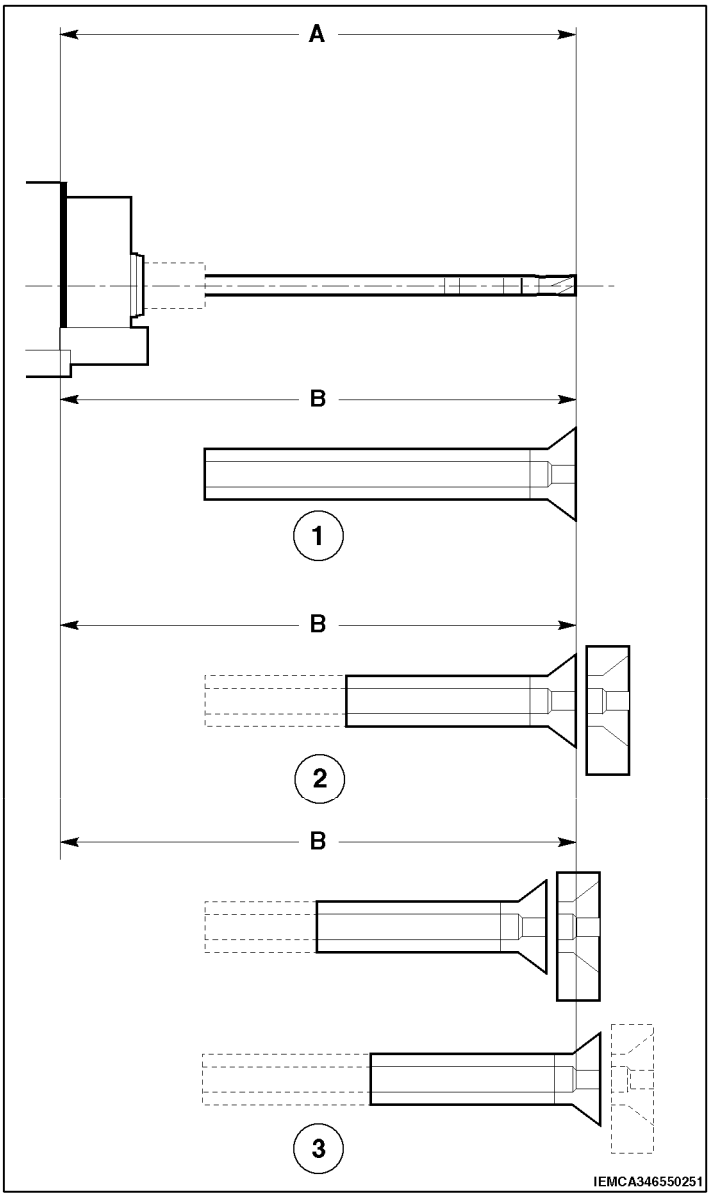
Model	Upper screws position	X (mm) Working axis height
SMART 316	**1**	835÷875
	2	870÷910
	3	905÷945
	4	940÷980
	5	975÷1015
	6	1010÷1050
	7	1045÷1085
	8	1080÷1120
	9	1115÷1155
	10	1150÷1190



4.4.3 Preliminary positioning

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

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



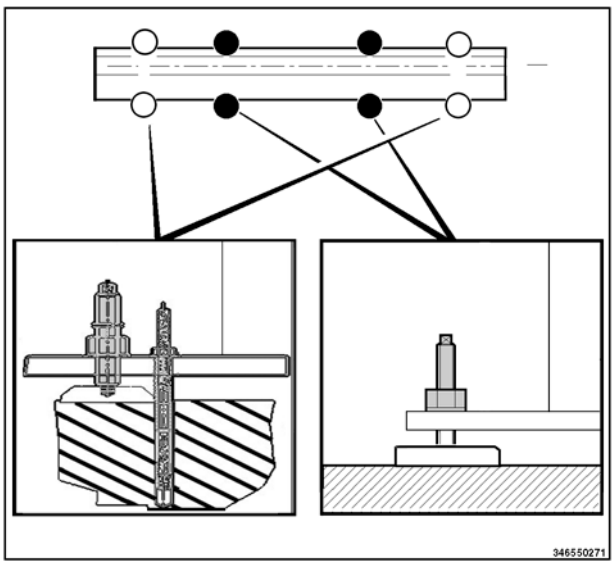
INFORMATION:

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

Table 3. Max. bar-pusher extension

Model	Version	A – Max extension (mm)
SMART 316	L	1000
	LL	1400

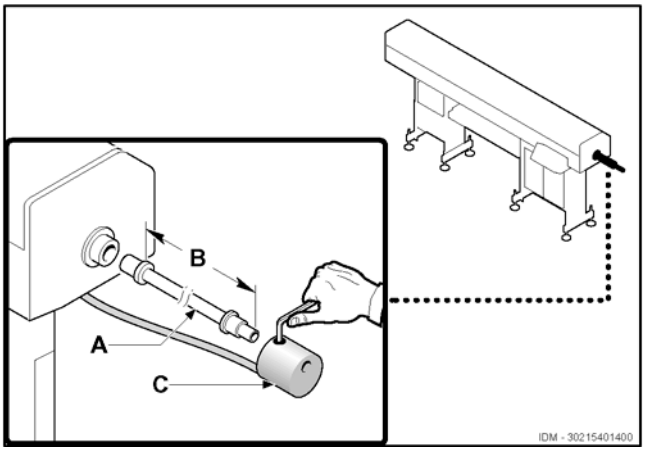
- Roughly adjust the working axis height to obtain alignment with the lathe by turning the feet screws.



4.4.4 Sleeve - Installation

SMART 316

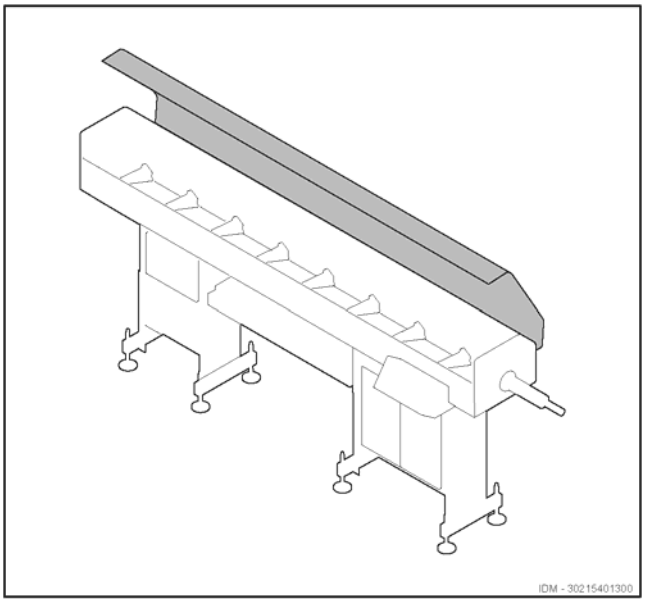
- Install the sleeve "A" on the front plate.
- Install the oil recovery device "B".
- Connect the drain pipe to the tank.



4.4.5 Levelling and alignment

FOREWORD

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

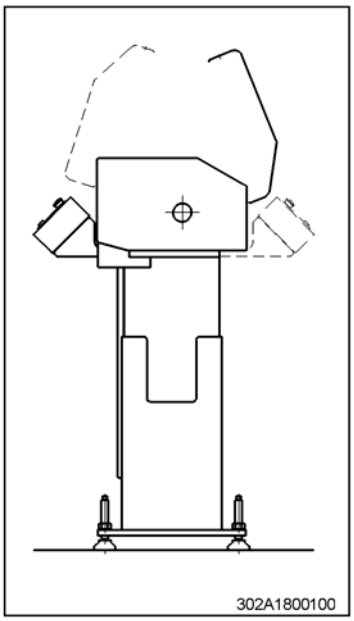


CAUTION:

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

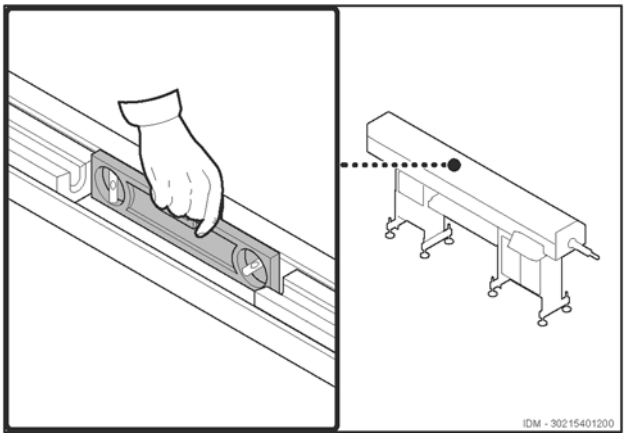
PRELIMINARY PROCEDURE

- Open the upper guard.

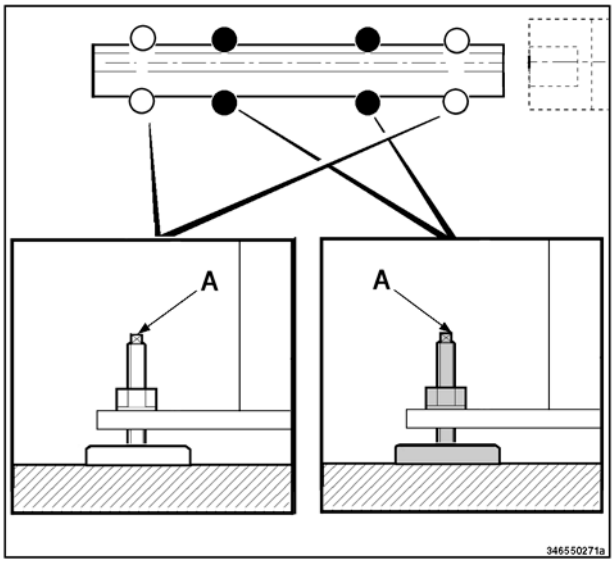


LEVELLING

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

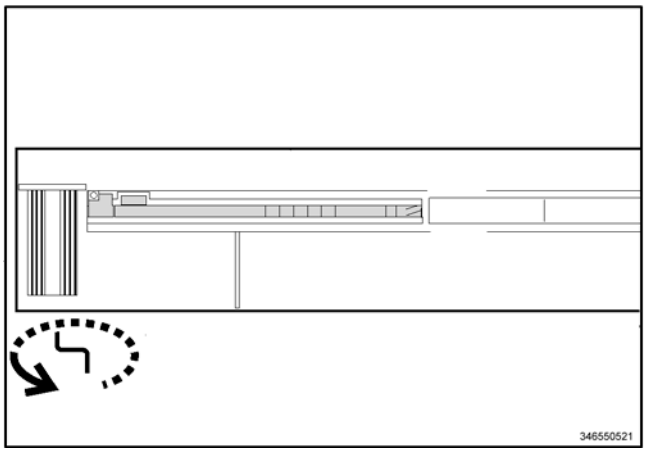


- Carry out the required modifications by turning the screws (A) on the bar feeder feet.

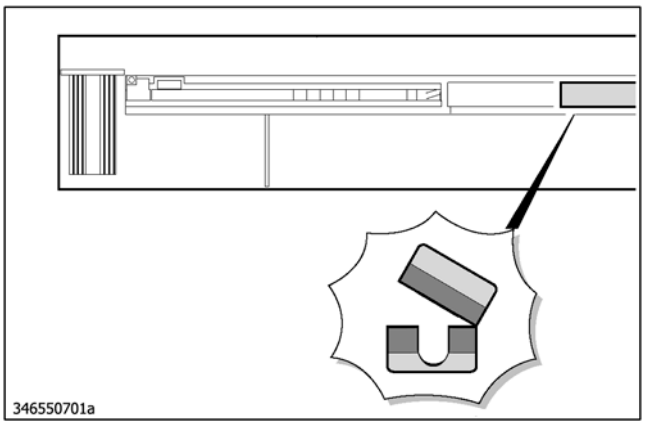


ALIGNMENT

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

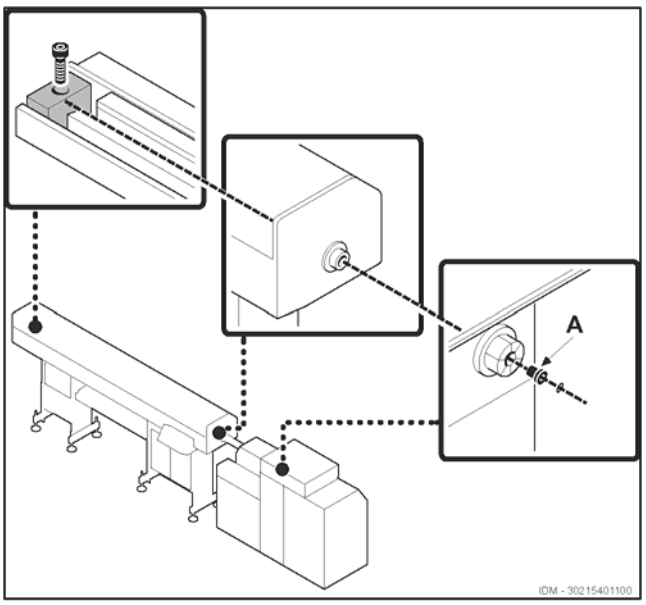


- Connect the pneumatic system to the power supply.
- Open the upper guide channel by pressing the 'manual' key on the electrovalve for guide channel opening/closing or, in case the bar feeder is connected to the power supply, press the key on the keyboard for guide channel opening/closing.



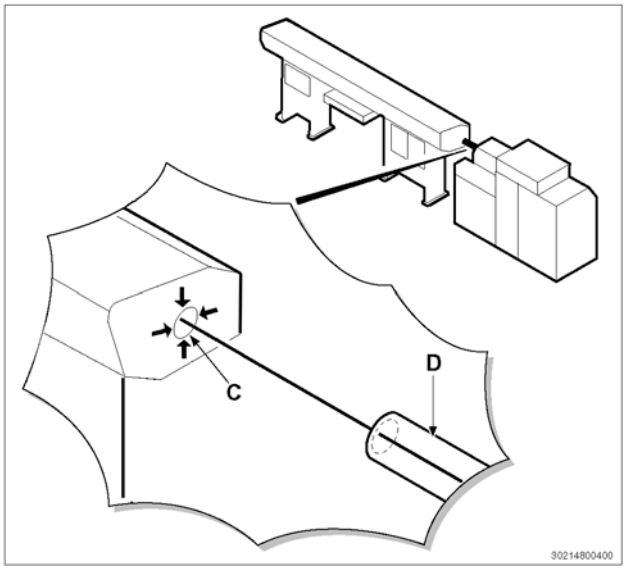
To obtain alignment lead a (ø 1 mm) nylon thread between the lathe collet and the tool which is placed before the upper and lower guide channel, proceeding as follows:

- place a drilled bush "A" in the lathe collet;
- stretch out the wire to the hole in the tool which is placed on the lower guide channel.



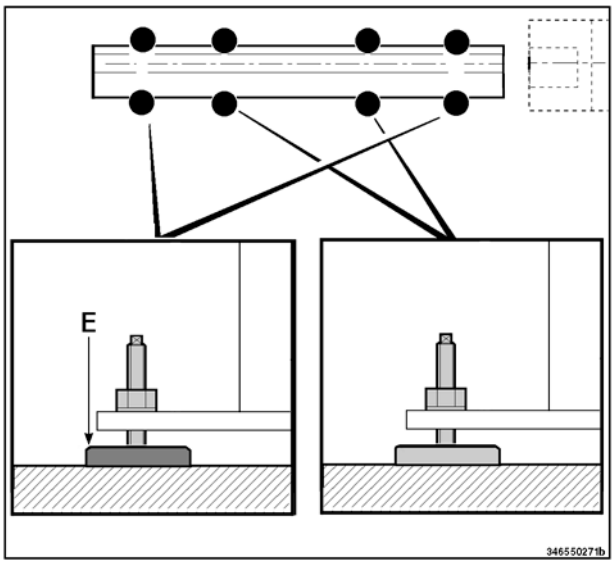
- use a sliding caliper to check alignment near the sleeve "C" and the spindle "D"; hold a tolerance of 0.15 mm in all four directions.

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



POSITIONING ADJUSTMENTS

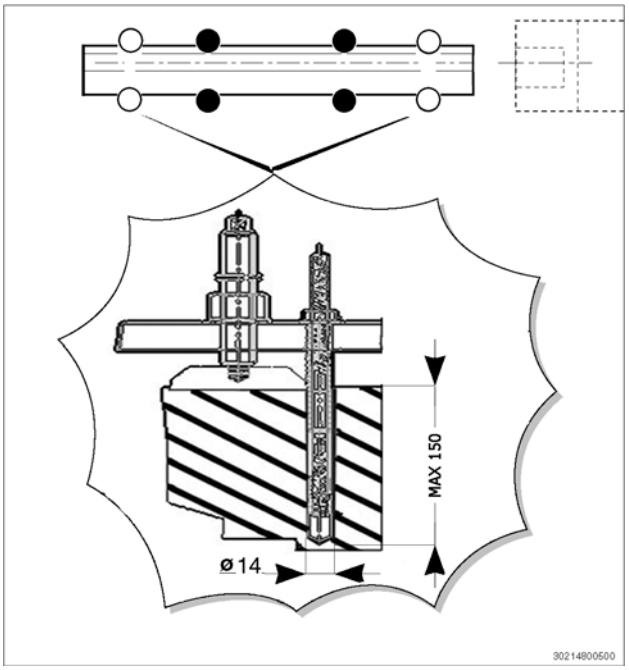
After checking alignment of the feeder with either the thread or the bar, any required corrections should be carried out.
Adjust height by turning the screws in the support feet; carry out lateral adjustment with calibrated mallet blows on the sides of plates "E".
During this phase, any adjustment carried out during levelling should be preserved; therefore, in most cases, feeder positioning will be the result of a good adjustment compromise.



4.4.6 Feeder fastening

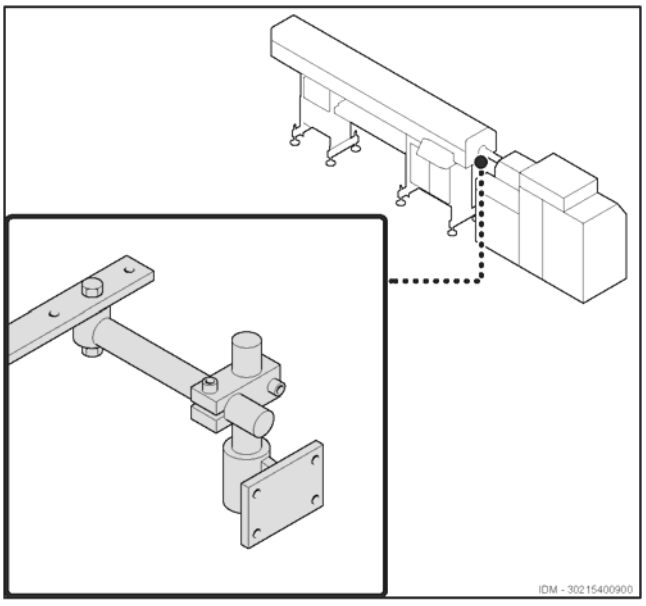
GROUND FASTENING

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



FASTENING TO THE LATHE

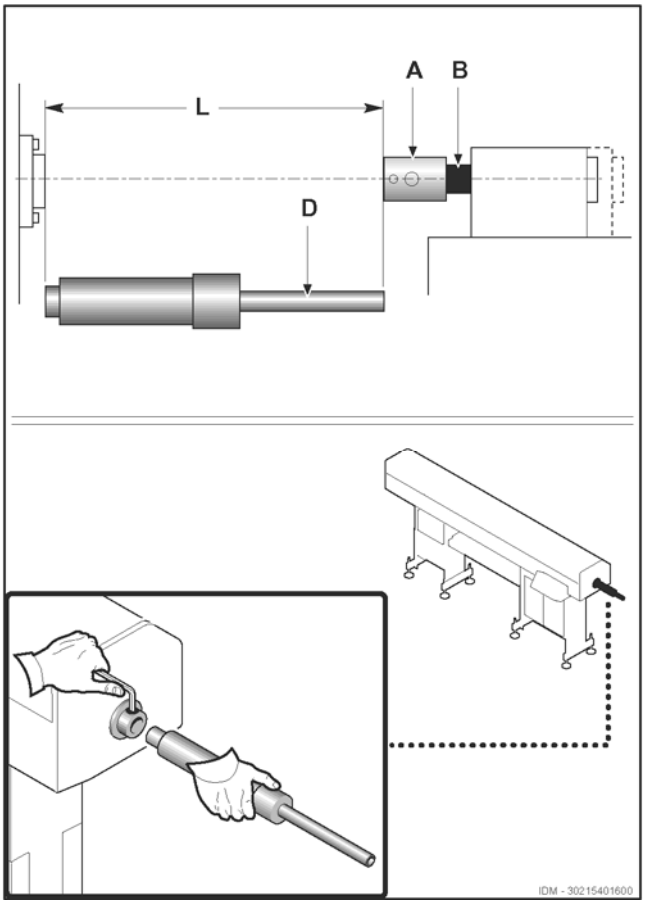
Wherever possible, the feeder should be fastened to the lathe through the suitable coupling unit according to lathe make and type. The figure shows a general example of fastening; contact IEMCA service department for more information.



4.4.7 Installation If the feeder

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

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



INFORMATION:

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

- Move the headstock to its "all the way back" position and measure the dimension "L". Compress the telescopic nose to its limit stop minus 5 mm and cut the pipe "D" to the measured dimension.
- Move the headstock to its "all the way forwards" position. Install the sleeve in the flange "F".
- Check smooth sliding of the telescopic nose by moving the headstock forwards and backwards.

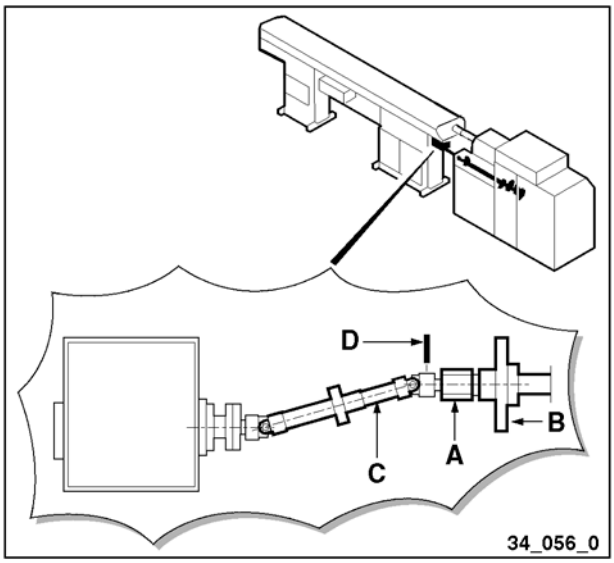
4.5 DEVICES FOR CAM LATHES - INSTALLATION

4.5.1 Cam box

INFORMATION:

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

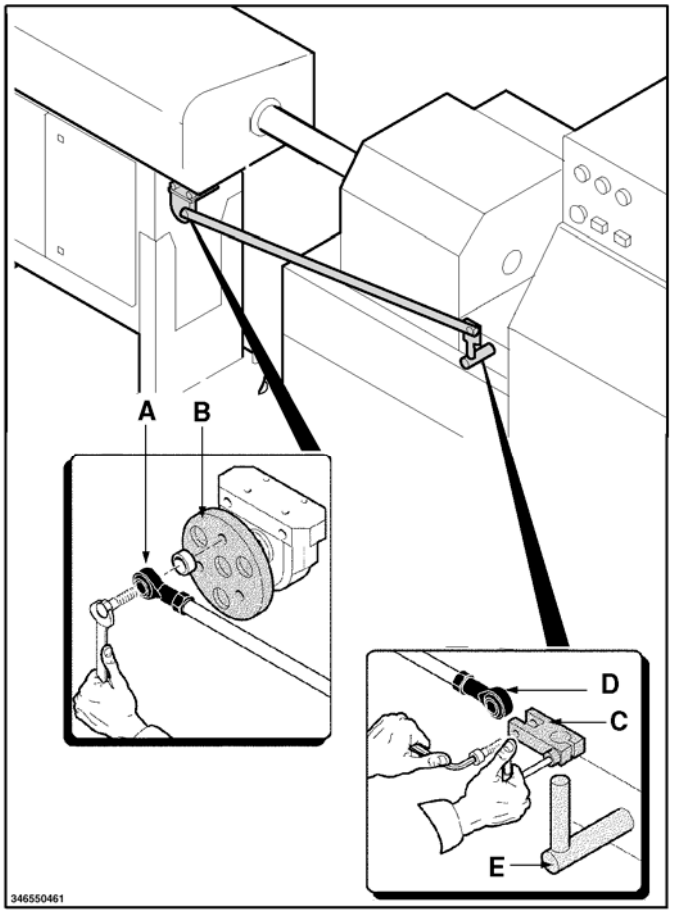
- Install the sleeve "A" on the lathe camshaft "B".
- Connect the shaft "C" to the sleeve through the pin "D".



4.5.2 Camshaft release device

INFORMATION:

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

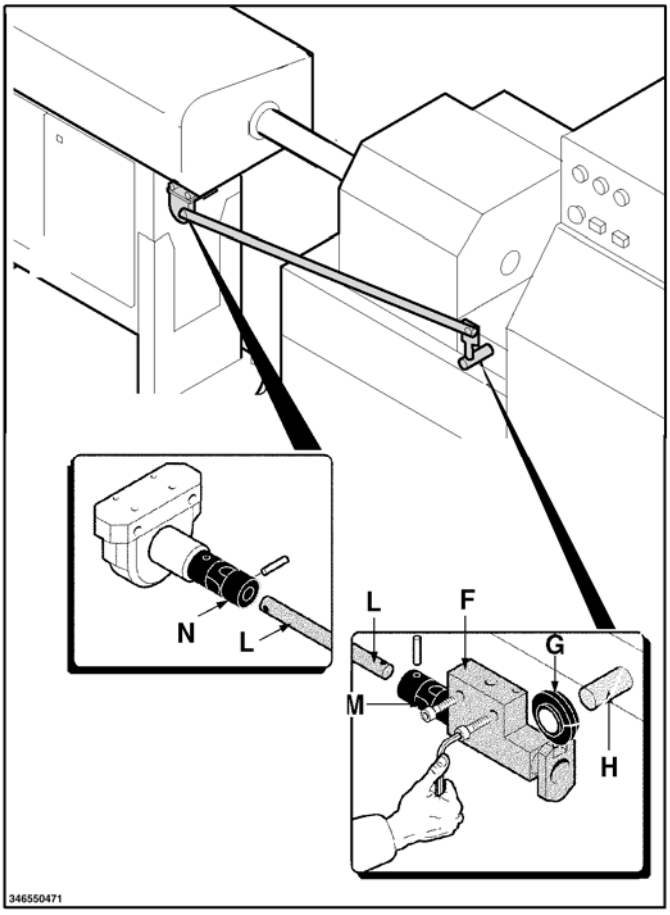


Radial version

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

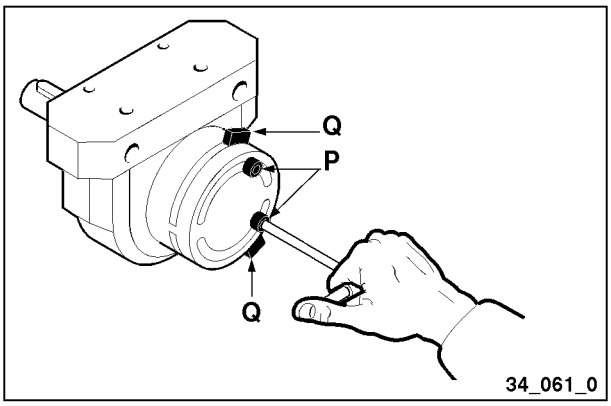
Axial version

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



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

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



4.6 LUBRICATING OIL - FILLING

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

- Open the rear base door and pour oil into the machine.
- Check the level by means of the "A" indicator.

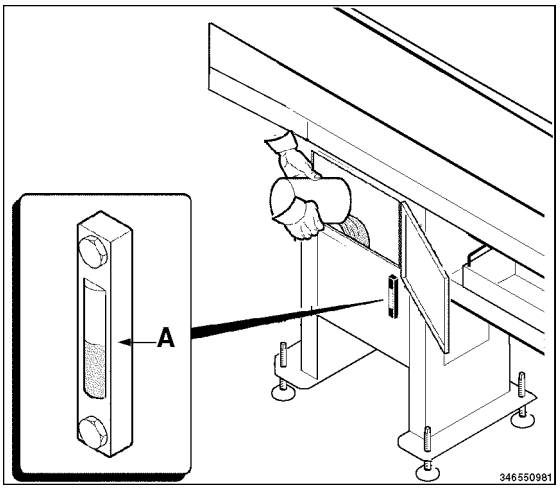


Table 4. Guide lubricating oil characteristics

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

See paragraph 2.6. for the comparative table.

4.7 ELECTRIC CONNECTION

DANGER - WARNING:

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

DANGER - WARNING:

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

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

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

4.7.1 THREE-PHASE POWER SUPPLY

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

4.7.2 SAFETY SIGNALS

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

INFORMATION:

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

4.7.2.1 EMERGENCY STOP

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

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

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

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

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

4.7.2.2 COVER SAFETY STOP (WHEN PROVIDED)

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

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

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

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

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

ATTENTION-DANGER !!!

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

4.7.3 FUNCTION SIGNALS

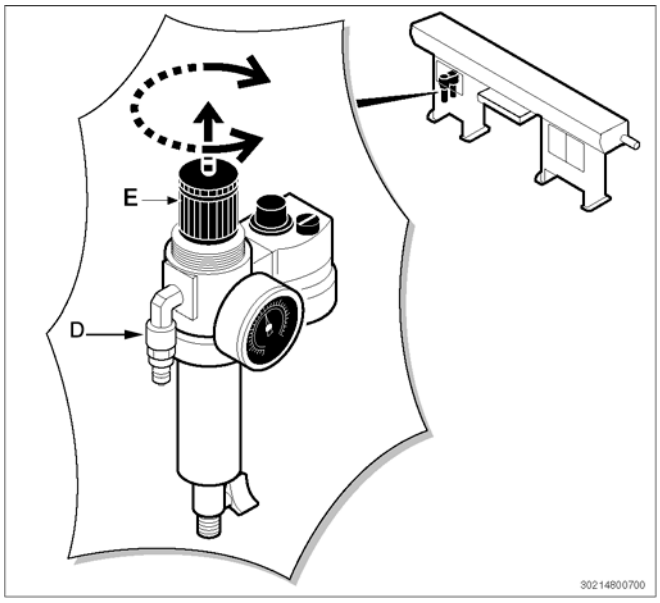
The bar feeder can send and receive all the signals which are necessary to its correct operation. These signals are driven by a PLC, and can be grouped into: inputs (signals from lathe to bar feeder) and outputs (signals from bar feeder to lathe).
The signals that have been implemented are the result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

IMPORTANT:

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

4.8 PNEUMATIC CONNECTION

- Connect pipe "D" (1/4"Gas)to the compressed air ductwork system as shown in the figure, after connecting a three-way valve to adjust and release pressure. With knob "E", adjust the pressure at 6 bar.



IMPORTANT:
Air must be filtered.

4.9 SOFTWARE PARAMETRING

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

INDEX

5.1 ADJUSTMENT AND SETTING-UP - FOREWORD

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

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

5.2. General adjustments - Foreword
5.3. Set-up according to the bar to be machined
5.4. Cam box - Timing

5.2 GENERAL ADJUSTMENTS - FOREWORD

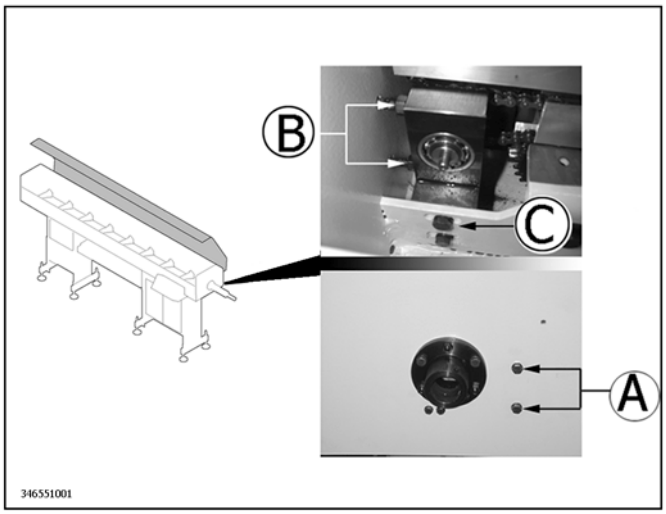
Including all the necessary adjustments for good feeder operation. They may become necessary after maintenance, trouble fixing or component replacement.

5.2.1 Feeding chain - Adjustment
5.2.2 Pressure switch - Adjustment

5.2.1 Feeding chain - Adjustment

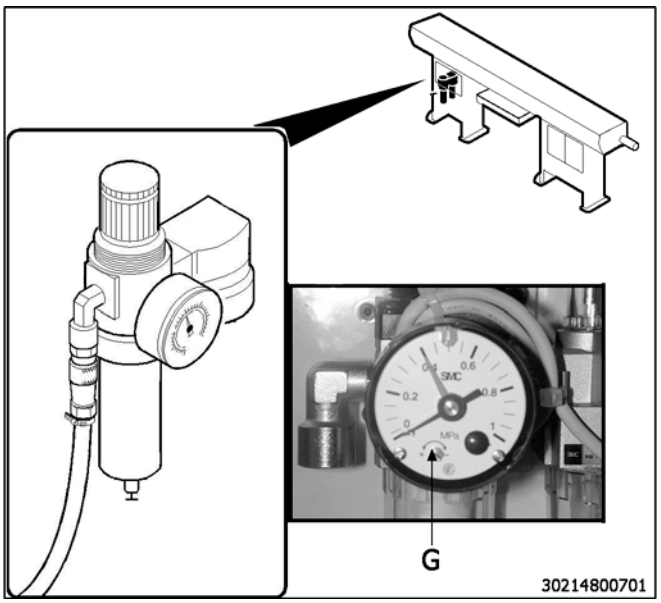
Turn the screw A on the back plate of bar feeder to adjust the tension of the chain driving the bar pusher. Check chain tension after some hours of operation of bar feeder, proceeding as follows:

- Loosen both nuts (B)and both screws (C) then turn the screw(A) to adjust chain tension.
- Restore bar feeder initial operating conditions.



5.2.2 Setting the pressure switch

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



CAUTION:

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

5.3 SET-UP ACCORDING TO THE BAR TO BE MACHINED

According to the "new" bar diameter, a few or several operations must be carried out based on the diameter of the previously machined bar.
Table 1. shows the max. and min. suitable diameters for bushing correct operation, table 2. shows the available guide channel diameters with the corresponding range of bar pushers to be mounted and the range of diameters of the bars to be machined.

Bushing adjustment according to the bar to be machined.

_Table1. Diameters of V-shaped bushings for SMART 316

MODEL	BAR DIAMETER		TYPE OF BUSHINGS
SMART 316	MIN	MAX	
	3	16	V
	8	16	V

_To machine shaped bars (i.e. squared or hexagonal bars), please ask IEMCA for half-rounded bushings of the suitable diameter.

Table 2. SMART 316 guide, bar pusher, bar and tube diameters

Model	Guide diameter (mm)	Bar-pusher diameter (mm)	Bar diameter (mm)		Largest tube diameter (mm) (*)
			Min.	Max.	
SMART 316	8	7	3 (1/8”)	5,5 (7/32”)	7 (9/32”)
	11	7	4 (11/64”)	6,5 (17/32”)	8 (5/16”)
		10	4 (11/64”)	8 (5/16”)	10 (13/32”)
	13	10	4 (11/64”)	8 (5/16”)	10 (13/32”)
		12	4 (11/64”)	10 (13/32”)	12 (15/32”)
	17	15	5 (13/64”)	13 (33/64”)	15 (19/32”)
		16	5 (13/64”)	14 (9/16”)	16 (41/64”)
	21	18	6(1/4”)	16(41/64”)	18(23/32”)
		18	6(1/4”)	16(41/64”)	19(3/4”)
		20	6(1/4”)	16(41/64”)	19(3/4”)

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

CAUTION:

Barstock diameters for any guide channel are only given as an example. A barstock diameter approximately 8 mm smaller than the guide channel diameter may cause vibration and failure to the bar feeder. Therefore, it may be necessary to slow down the bar rotation speed or to change the guide channel diameter in order to obtain the best performance for a specific application.

CAUTION:

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

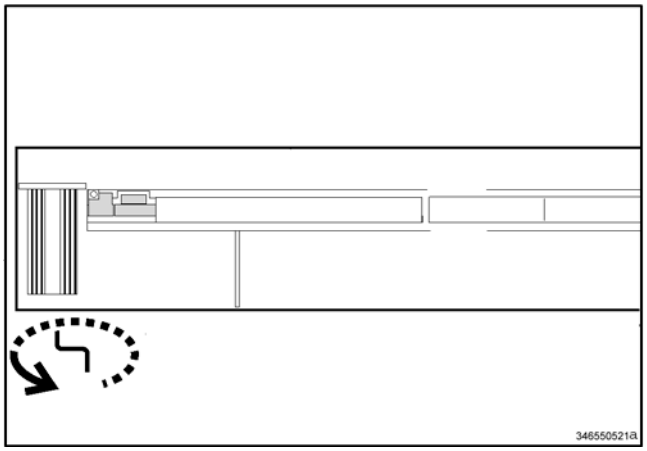
INFORMATION:

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

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

- When the magazine is empty (no bars) set the bar feeder to manual mode by pressing 

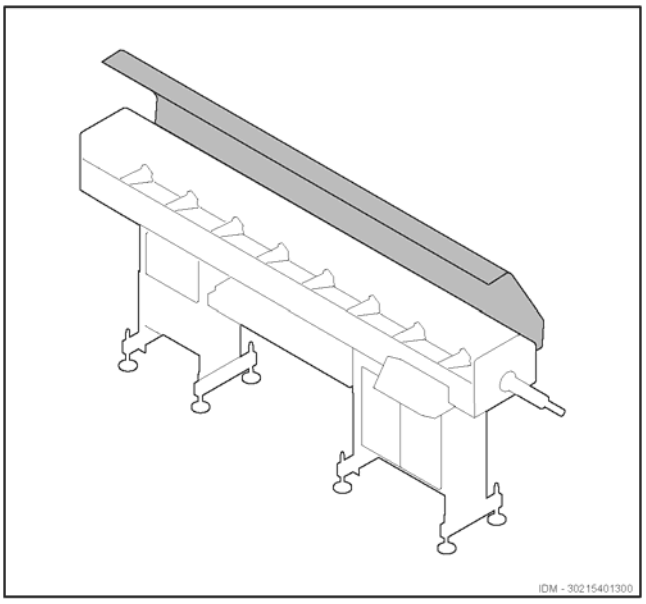
.



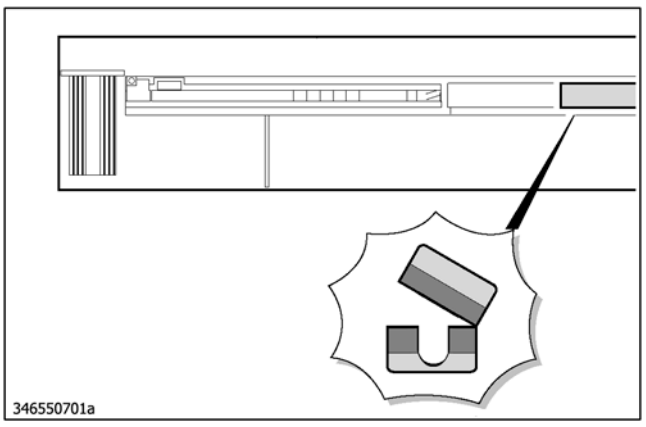
- Press 

on the keyboard or use the crank to bring the bar pusher backwards to its limit stop and then remove it from its seat.

- Open the upper guard.

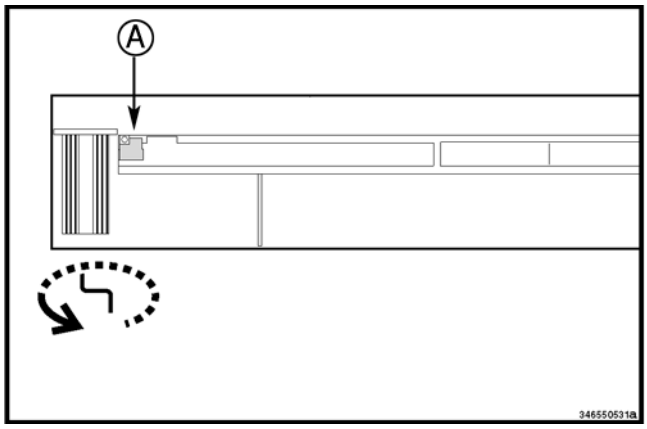


- Press the 'manual' key on the electrovalve to open the upper guide channel.
- Remove and replace the bar pusher.

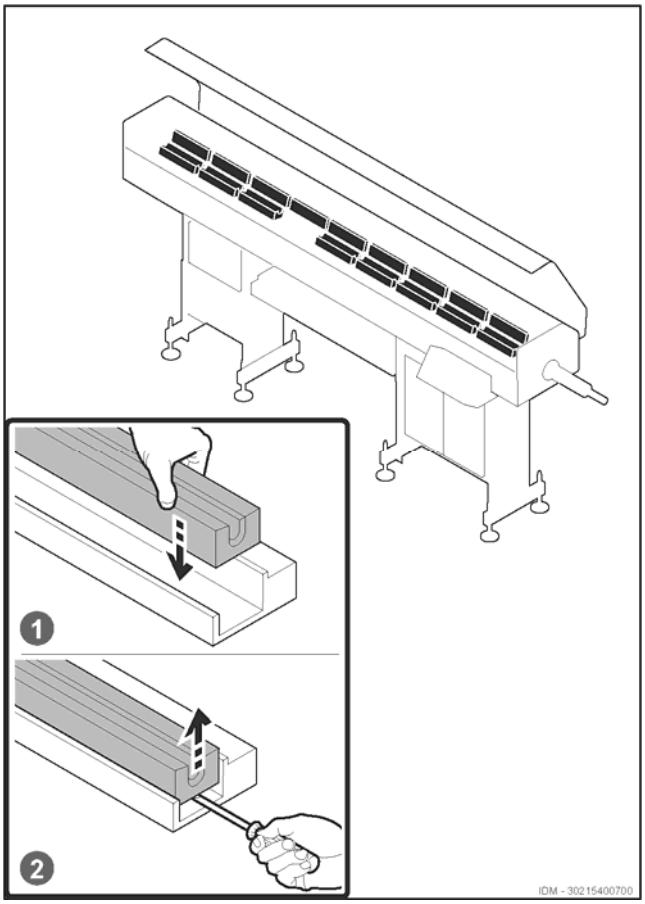


Two types of first feeding flag are available: one for diameters 8 to 13mm and one for diameters 17 to 24mm.
Replacement must be carried out as follows:

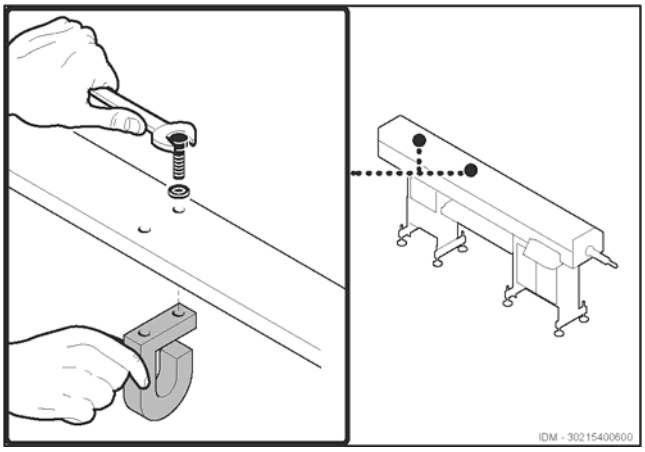
- bring the first feeding flag backwards to its limit stop and loosen both fixing screws (A).



- Now remove and replace the lower guide channels.
- Do not replace or adjust the upper guide channels although the bar pusher diameter is different.



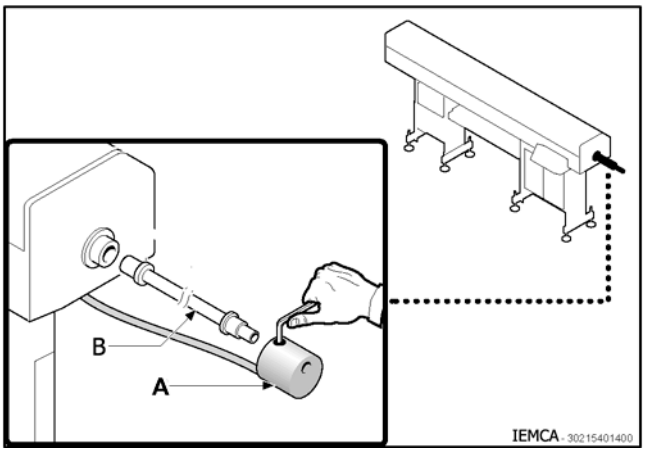
- Replace the bar pusher supports.



Remove the nose as follows:

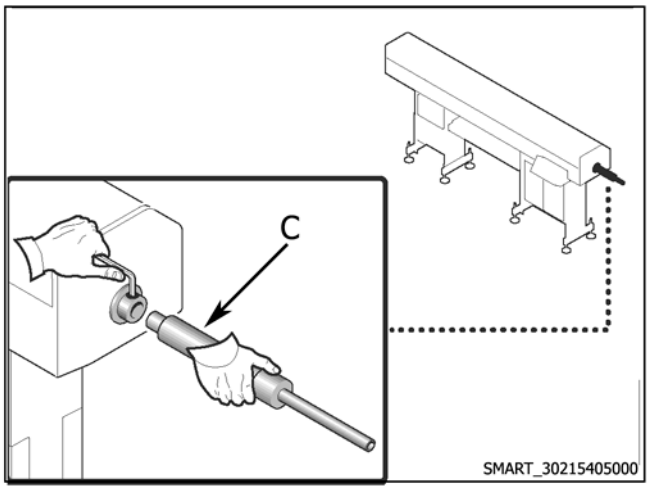
Fixed nose

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



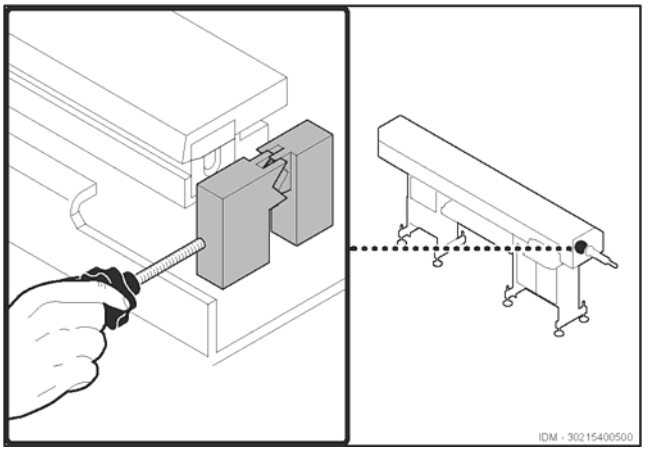
Telescopic nose

- Remove the nose "C".

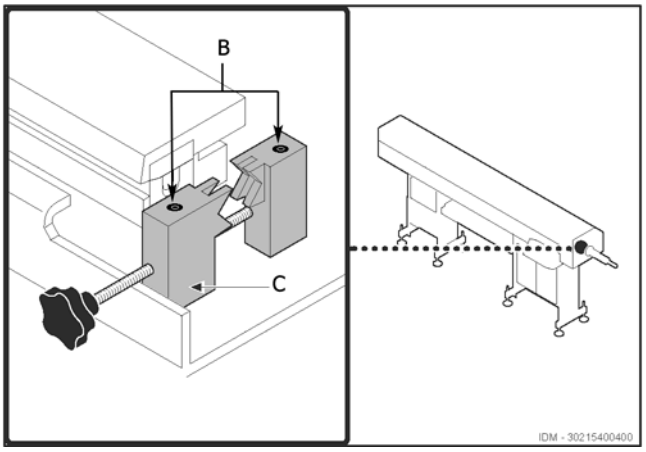


Adjust the front half-bushes as follows:

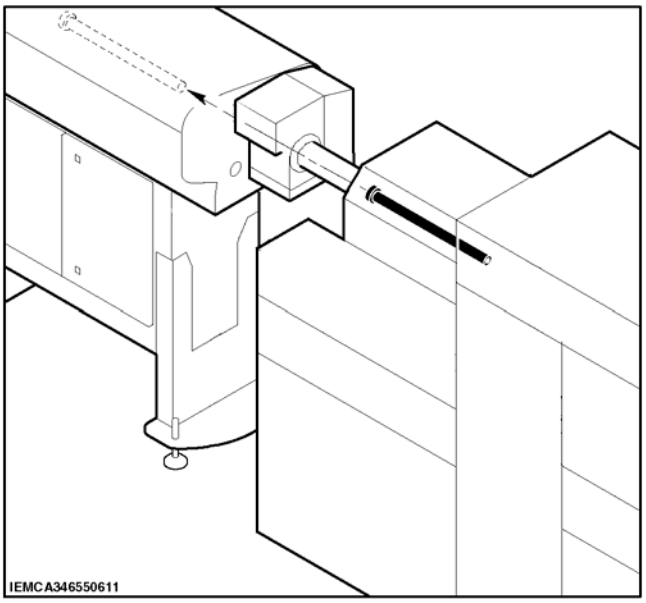
- Press the 'manual' key on the electrovalve for bushing opening/closing to close the half-bushes.
- Now turn the knob either way to reach the diameter of the bar: be sure the bar can slide freely.



- Replace the half-bushes in case of wear or before changing machining range: loosen the screws (B) and replace the bushes (C).



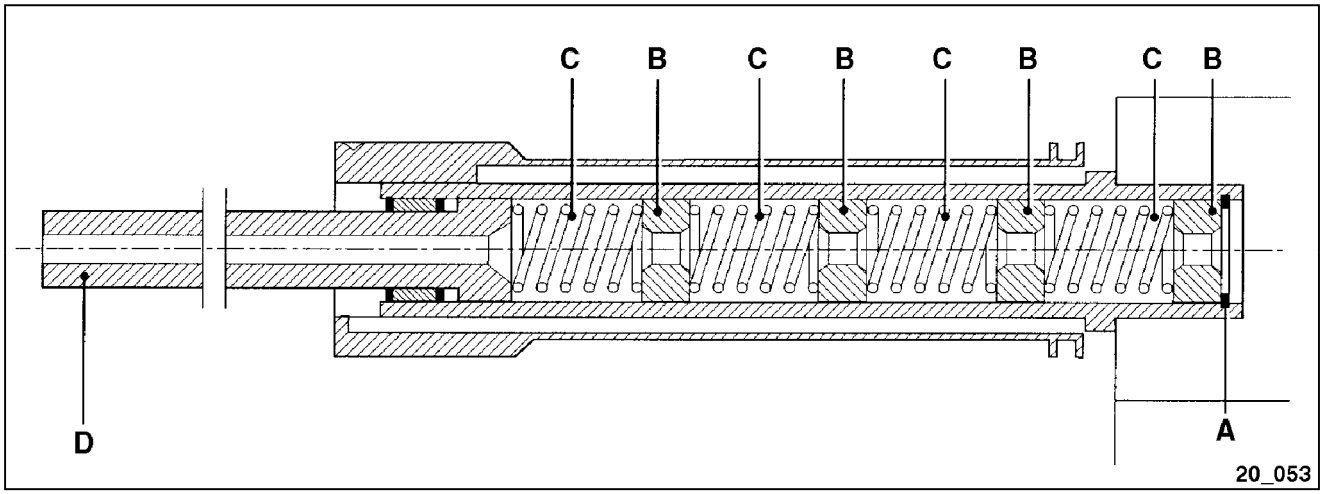
- Remove the internal sleeve.
- If necessary, remove the lathe spindle liner and install another one suitable for the diameter of the guide channel.



TELESCOPIC NOSE (STROKE 120/160)

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

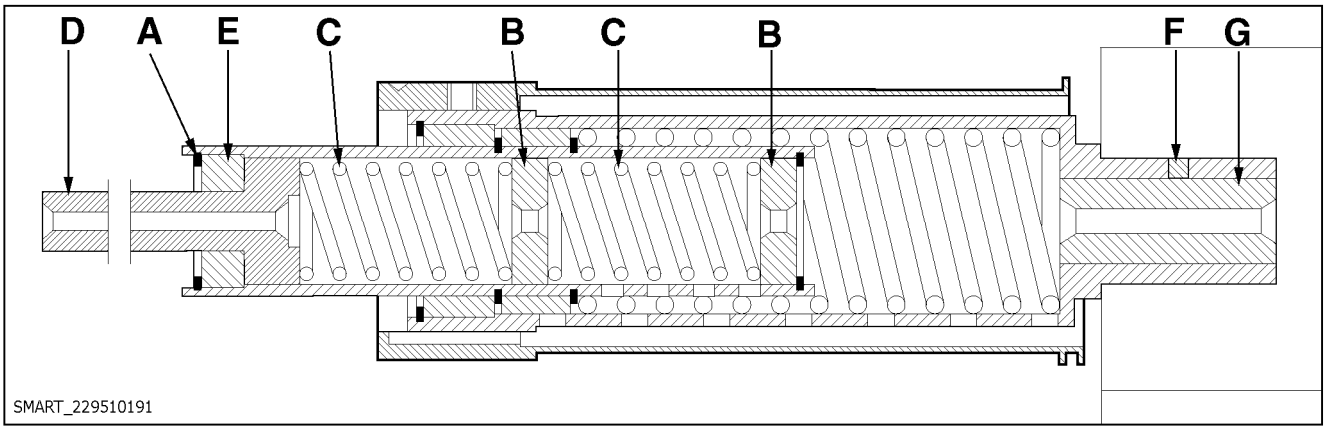
- Remove the sleeve from its housing.
- Remove ring (A).
- Remove bushes (B), springs (C) and sleeve (D).
- Reassemble sleeve (D), bushes (B) and springs (C). The sleeve and bushings must be suitable for the bar.



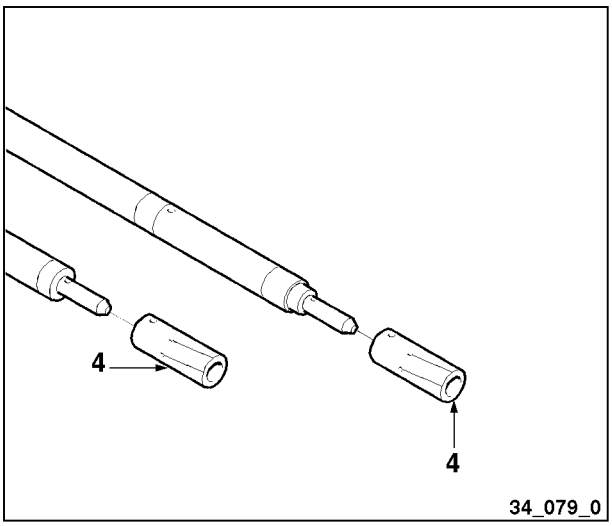
TELESCOPIC NOSE (STROKE 170/220/320)

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

- Remove the sleeve from its housing.
- Remove ring (A).
- Remove bush (E), sleeve (D), springs (C) and bushes (B).
- Put back in place the bushings (B), the springs (C) and the sleeve (D); the bushings and the sleeve must be suitable for the bar.
  Reassemble ring (A).
- Loosen the screw (F) and remove the ring (G), replace it with another ring suitable for the bar. As far as max. diameter guides (Ø 22 mm) are concerned, do not fit ring (G).



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



INFORMATION:

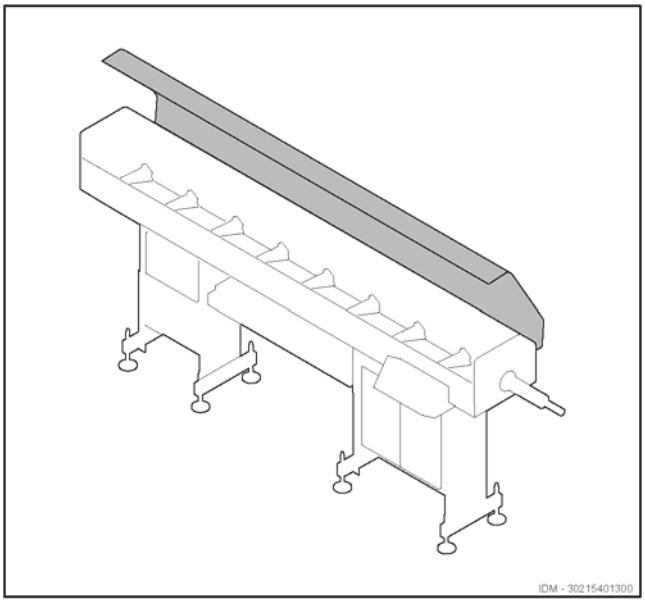
contact IEMCA After-Sales service for more information.

Description:
4 "SCHLENKER" collet for bars

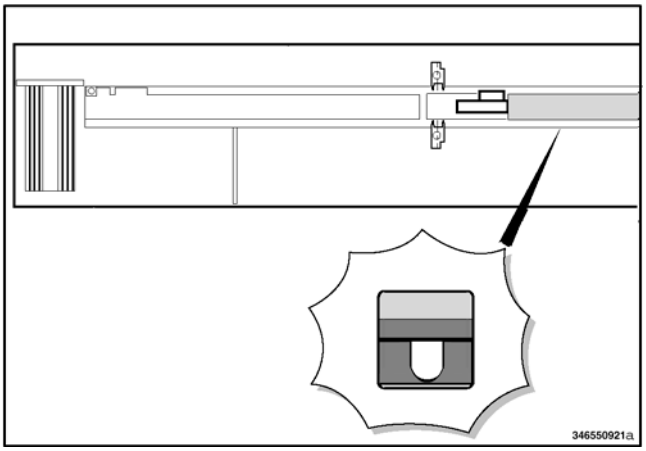
5.3.2 Bar guide plates - Adjustment

Preliminary procedure

- Open the upper guard.

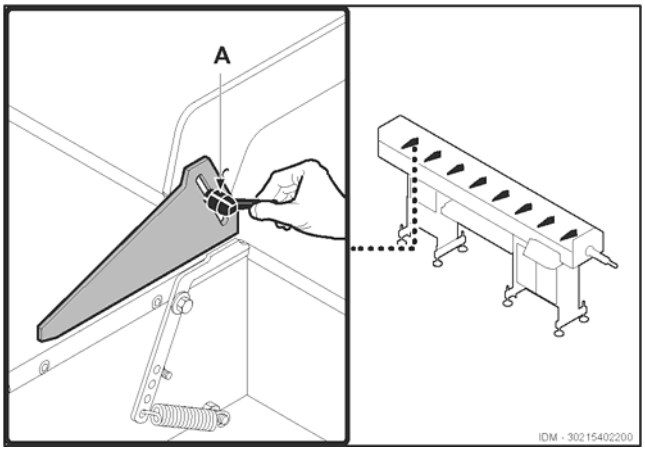


- Close the upper guide channel by pressing  on the keyboard (before the bar feeder cover is opened) or the key on the electrovalve for guide channel opening/closing.

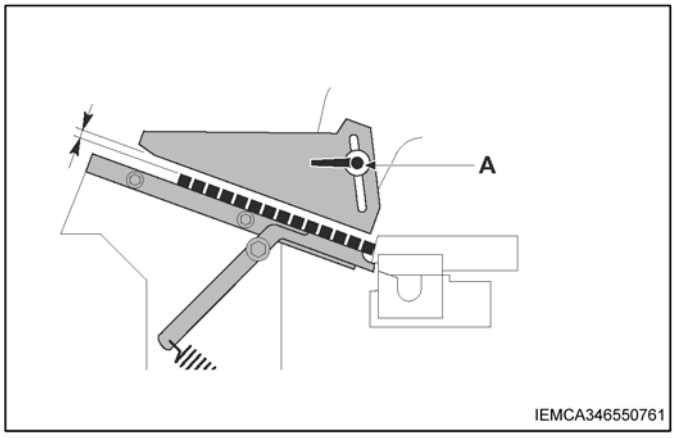


Adjustment of the bar guide plates

- Loosen the handle "A", lift the plate and tighten the handle "A"; repeat this operation on all the plates.
- Prepare two bars of at least 1200 mm length.
- Feed two bars to the magazine, loosen the handle "A" and drop the plates which will stop against the bars.



- Make sure that a little clearance is left between the plate and the bars. • Tighten the screws "A" on all plates.



5.4 CAM BOX - TIMING

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

MICROSWITCH FUNCTION

S90 - Bar feed enabling
It controls the bar feeding motor start/stop. It must be operated at each collet opening. In addition, it also controls operation of the bar/headstock synchronizing device.

S91 - Bar change-over enabling
It signals lathe collet opening/closing to the feeder.
It determines the camshaft stop position at bar end.

S92 - Feed stop enabling
Only used in sliding headstock lathes. It disables the feeding thrust during any operations requiring headstock return with a closed collet.

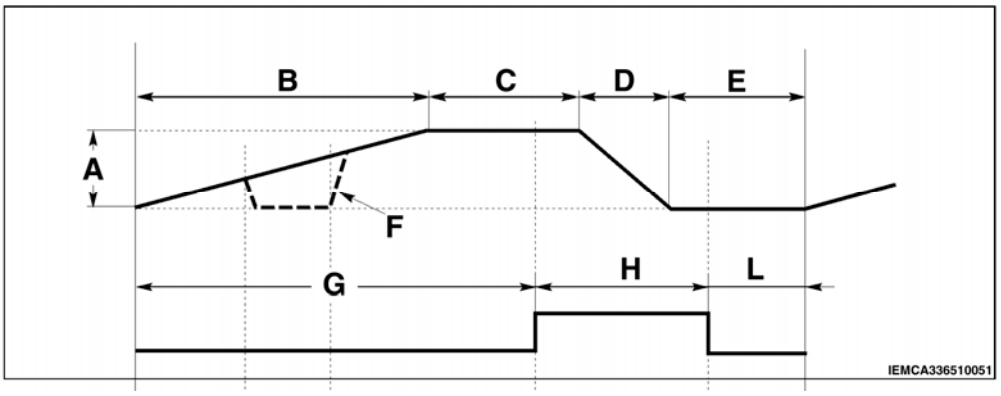
S99 - Camshaft stop
It determines the camshaft stop position when there is no thread (connected in series with a microswitch or relay located on the lathe).

CAM SETTING

LATHE CAM COMPLETE CYCLE

PHASE HEADSTOCK

PHASE COLLET LATHE

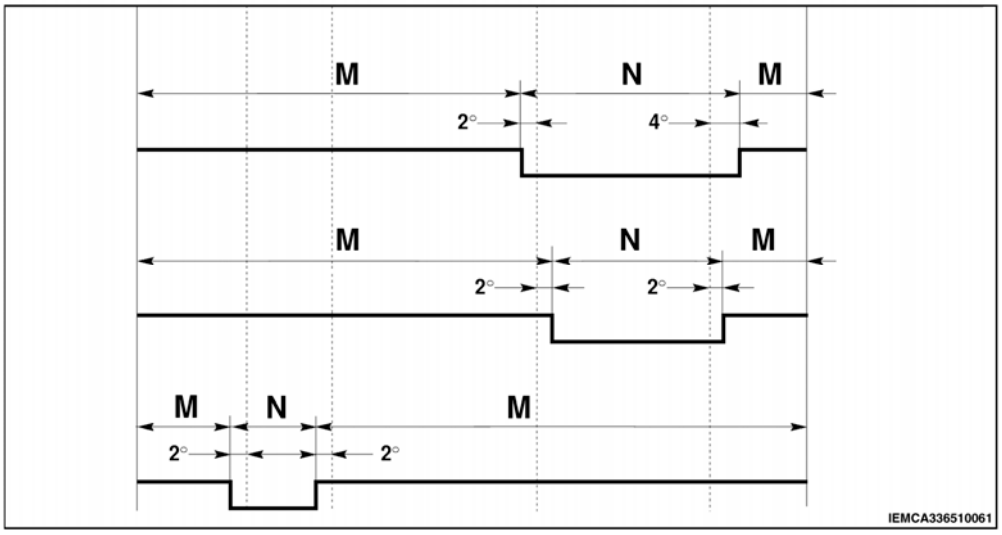


FEEDER CAM COMPLETE CYCLE

PHASE MICROSWITCH S90

PHASE MICROSWITCH S91

PHASE MICROSWITCH S92



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

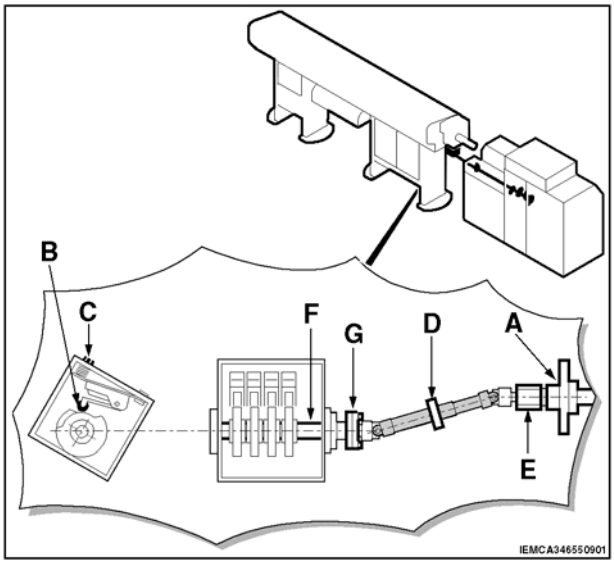
F HEADSTOCK RETURN WITH CLOSED COLLET IF REQUIRED FOR SPECIAL OPERATIONS

Microswitches S90 and S91

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

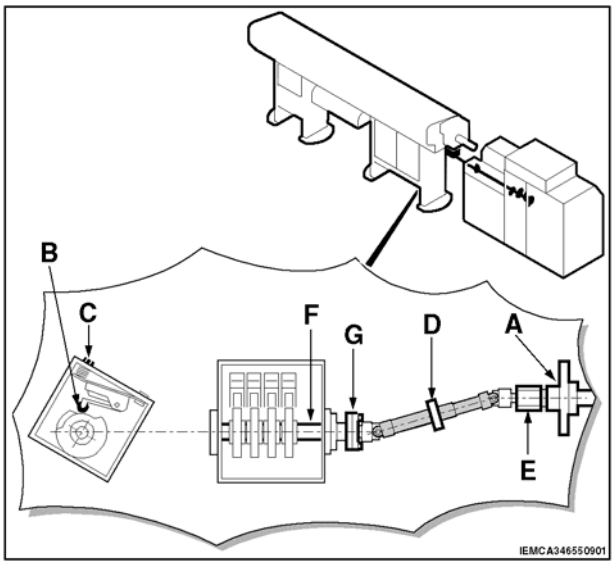
INFORMATION:

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



Microswitch S92

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



Microswitch S99

When the threading tool starts its return stroke, lower "S99" microswitch wheel and lift it before the stroke is over.
Should microswitch "S99" be fitted on lathe, setting adjustments are to be performed on lathe cam.

GENERAL REMARKS

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

INDEX

6.1 DESCRIPTION OF THE CONTROLS

INFORMATION:

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

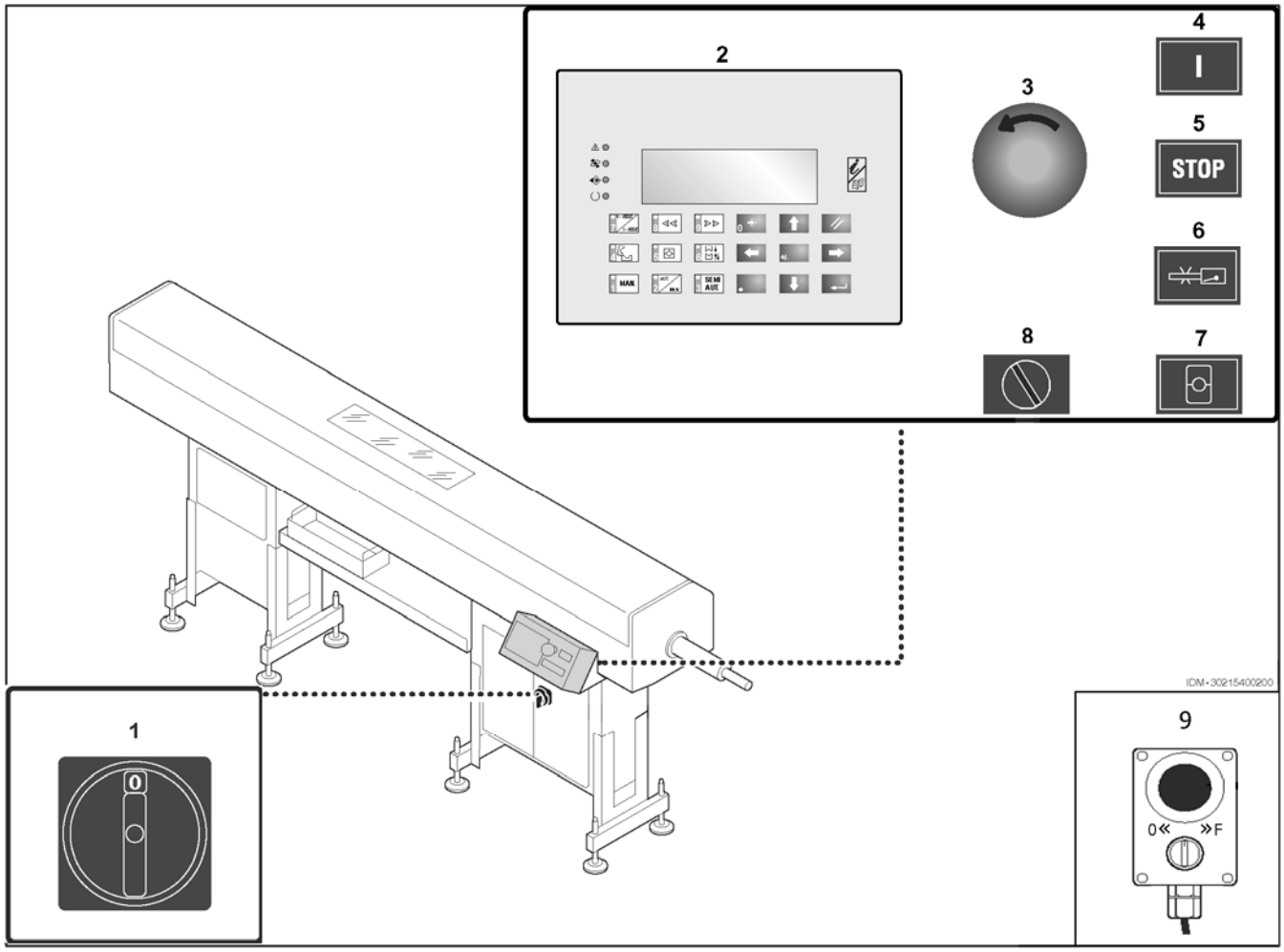
INFORMATION:

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

INFORMATION:

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

The illustration shows the positions of the electrical controls the keyboard controls.



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

2 KEYBOARD:display and main controls.

3 EMERGENCY STOP BUTTON: press this button to stop the bar feeder in an emergency situation. To restart, first you must manually unlock the button

4 BAR FEEDER START BUTTON (green light): to start the bar feeder, press this button and hold until the button itself lights up.

5 BAR FEEDER STOP BUTTON (red): press this button to stop the bar feeder and to reset the "Errors".

6 BAR / REMNANT DETECTION DISABLING BUTTON (green)
Press the button to disable the detection of remnant and new bar in automatic mode.

7 HALF-BUSHING OPENING AND CLOSING BUTTON (white light)
- During the "Manual" mode, when the bar feeder is in the required position, the half-bushings will close when this button is pushed. If pushed again, the half-bushing will open.

- During the "Automatic" mode, if pushed, the half-bushings will open and close, according to the selected sequence. If pressed again, the half-bushings will remain open during the entire operating cycle.

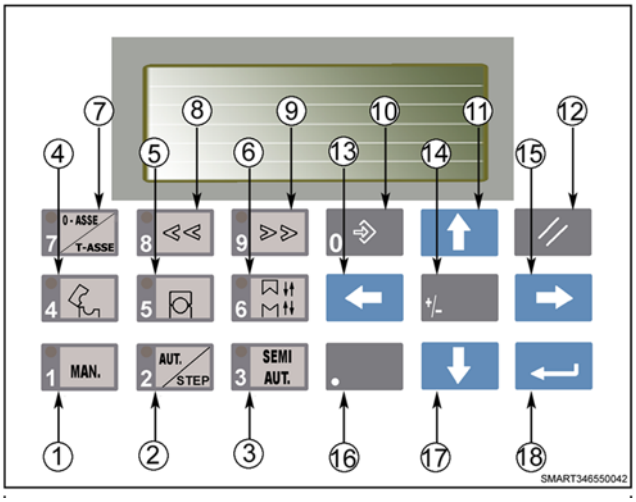
8 SELECT DISPLAY MODE FROM THE KEYBOARD:

- this position  to select "message display" mode.
- this position  to select "Main menu display" mode.

9 ADDITIONAL PUSH-BUTTON PANEL:

- Emergency push-button(see description no. 3).
- Feed return manual controls.

6.2 DESCRIPTION OF KEYBOARD CONTROLS



1 Multifunction
- To select manual mode.
- To set the numerical value.

2 Multifuntion
- To select automatic mode.
- To activate one "step by step" operating cycle mode: whenever the button is pressed one step is performed.
- To set the numerical value.

3 Multifunction
To select the semi-automatic mode.
- Press the button to select the mode and press again to delesect it.
- To set the numerical value.

4 Multifunction
- To open the guide channel in manual.
- To set the numerical value.

5 Multifunction
- To close the guide channels in manual.
- To set the numerical value.

6 Multifunction
- To open and close the clamps in manual. Press to close and press again to open.
- To set the numerical value.

7 Multifunction
- To reset the "BAR FEEDER ZERO SETTING" of the carriage.
- To set the carriage movement motor.
- Axis setting description (see Paragraph 2.1.1).
- To set the numerical value.

8 Multifunction
- To move the bar pusher at rapid speed in manual.
- To set the numerical value.

9 Multifunction
- To move the bar pusher at rapid speed in manual.
- To set the numerical value.

10 Multifunction
- To set the numerical value.
- To recall the selection cursor.

11 Multifunction
- To page up.
- To move the selection cursor upwards.

12 Multifunction
- To stop the selection function.
- To restore the value before the non confirmed modification.

13 Multifunction
- To select previous parameter
- To move the selection cursor leftwards.

14 Multifunction
- To set the sign of a number in the numeric field.
- To display the program identification data.

15 Multifunction
- To select previous parameter
- To move the selection cursor rightwards.

16 To set the comma.

17 Multifunction
- Allows the downwards scrolling of the page.
- To move the selection cursor downwards.

18 To confirm the entered data.

6.3 BARS TO BE MACHINED - CHARACTERISTICS AND PREPARATION

CAUTION:

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

Table 1. Maximum bar length

Model	Version	Max. length mm (ft)
SMART 316	32	3260 (10,7)
	40	4060 (13,3)

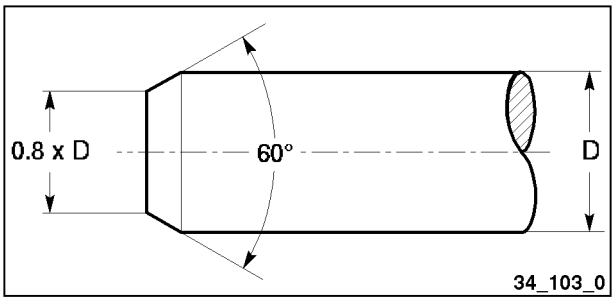
INFORMATION:

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

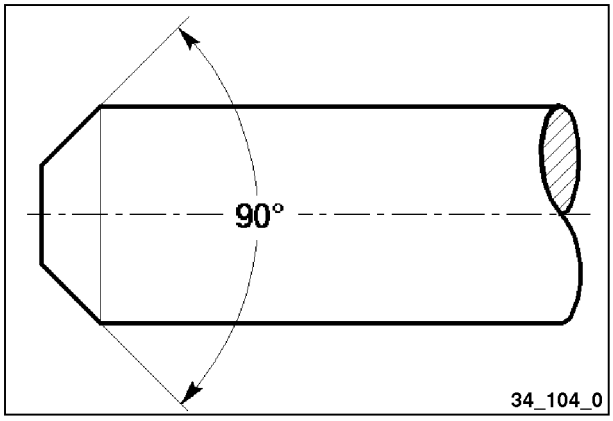
Please find herewith some advice to optimise the bar feeder performances.
Usually barstocks do not need any preliminary operations to be carried out on ends, nevertheless to obtain the best results when loading them, it is advisable to chamfer them.

SOLID BARS

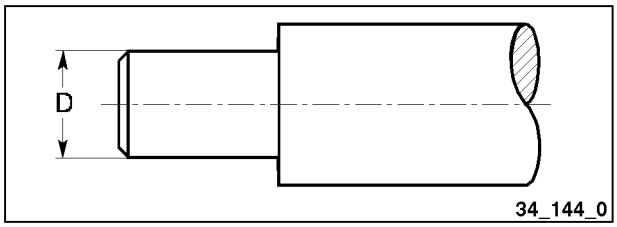
Check that there is not too much rag on bar head, which might hinder insertion in the lathe collet.
Check that there is not too much rag on bar rear end, which might hinder insertion in the bar-pusher collet. In any case, to improve operation during this phase, we advise to chamfer the bar as shown in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



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

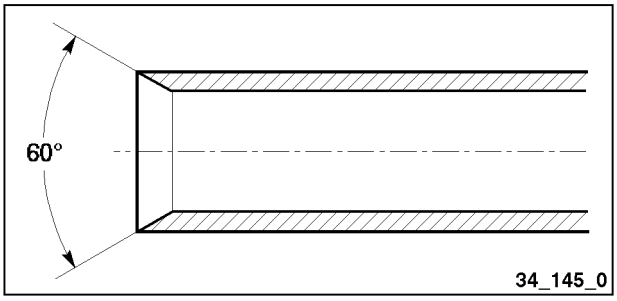


If bars have to be machined having a diameter equal to or only slightly smaller than the bar-pusher diameter, bar rear ends should be machine-turned; diameter "D" should be suitable for the collet size installed in the bar-pusher.



PIPES

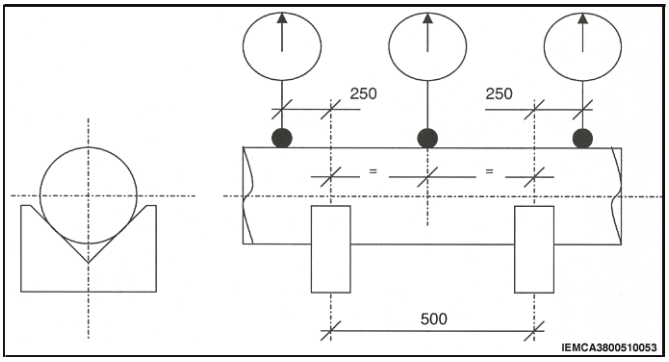
If pipes have to be machined, their rear ends should be chamfered as shown in the figure.



6.3.1 BAR STRAIGTHNESS - Measuration

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

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



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

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

INFORMATION:

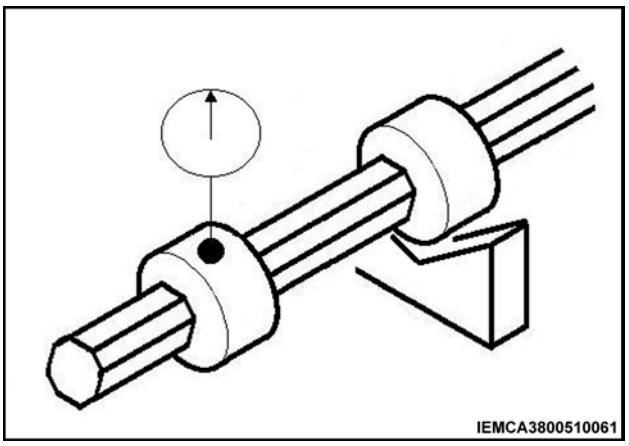
Obviously, bar straightness is proportional to the rigidity of the material and to the number of revolutions (RPM) the lathe is operated at. highly The lack of bar straightness highly influences the maximum number of revolutions reachable: the bigger the diameter the greater the influence. The data concerning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

INFORMATION:

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

Hexagonal, square and section bars

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



6.4 FEEDER SET-UP AND AUTOMATIC CYCLE START

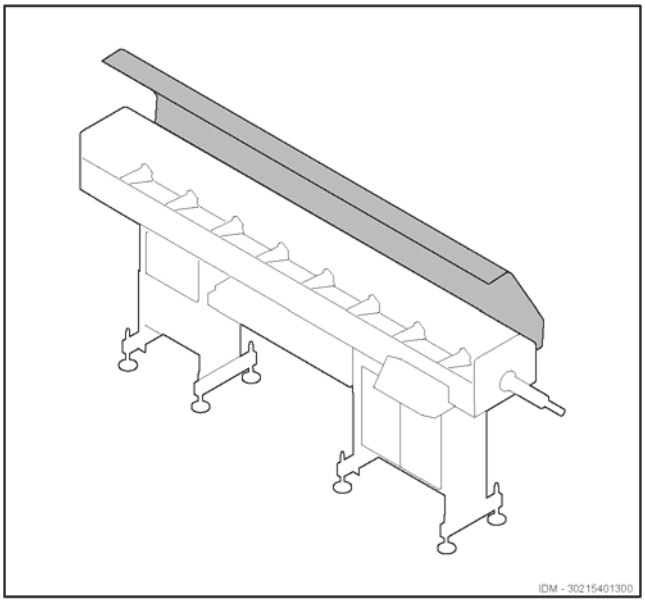
The following list is a sequence of feeder set-up and automatic cycle start operations required if the feeder has to be started up for the first time.

- Perform the software parametering (refer to the "Push-button panel instruction manual")
- Carry out feeder set-up according to the bar to be machined (paragraph 5.3.)
- Prepare the bars to be machined (paragraph 6.3).
- Feed bars to the magazine (paragraph 6.4.1).
- Adjust lube oil flow (paragraph 6.4.2).
- Start the automatic cycle (paragraph 6.4.3).

6.4.1 Bar magazine - Filling

CAUTION:

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



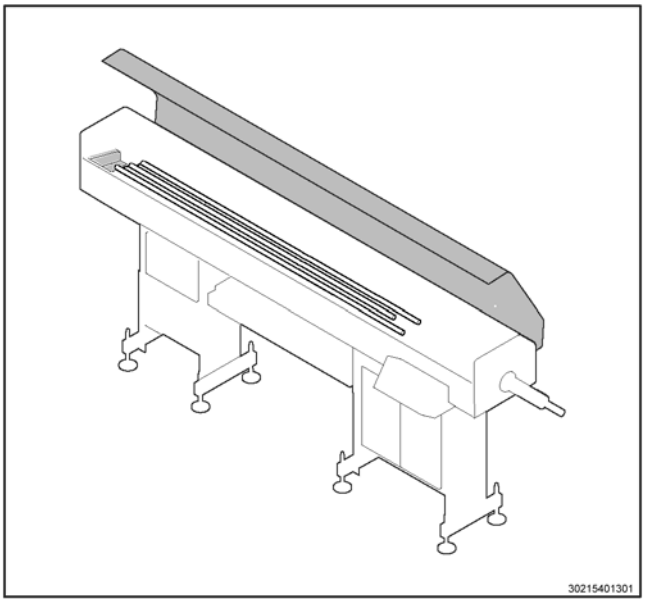
CAUTION:

wear personal protections according to the regulations in force.

Follow these instructions to load bars:

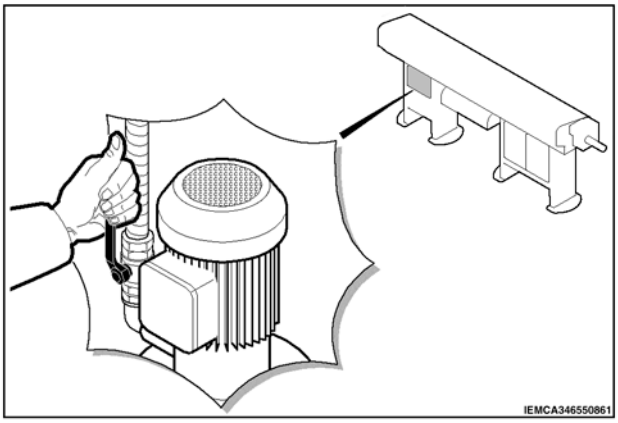
- Make sure the guide channel is closed;
- open the upper cover;

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

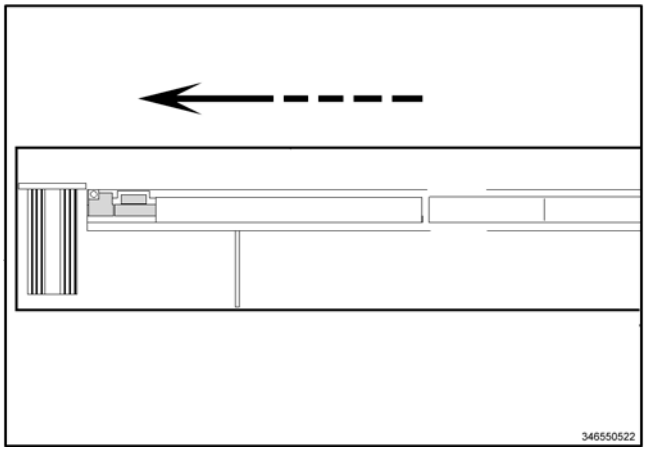


6.4.2 Lubrication oil - Flow adjustment

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



6.4.3 Automatic cycle start



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

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

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

- Enter the parameter values (refer to the "Keyboard instruction manual").
- Press the manual feed key to move the bar fore end close to the cutting tool.

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

- Empty the remnant collection box during machining. Lift the remnant box over the tank to remove it.

CAUTION:

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

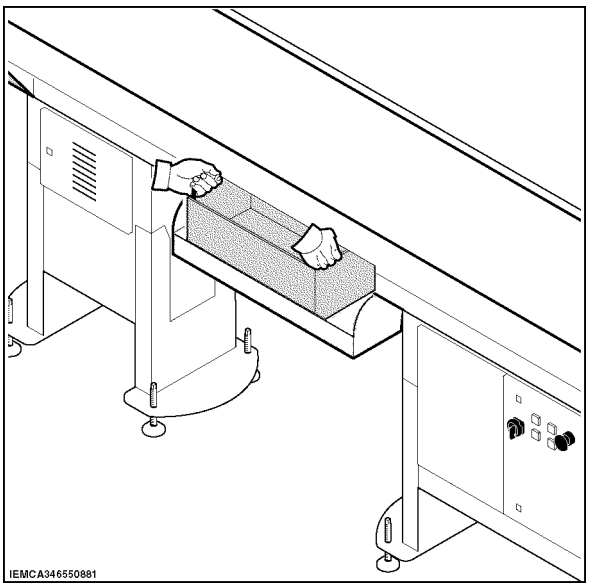
ATTENTION:

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

CAUTION:

wear personal protections according to the regulations in force.

Place the box back under the remnant outlet.

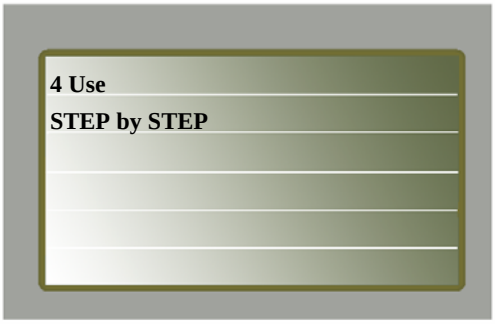


6.4.4 Guide channel opening/closing procedure

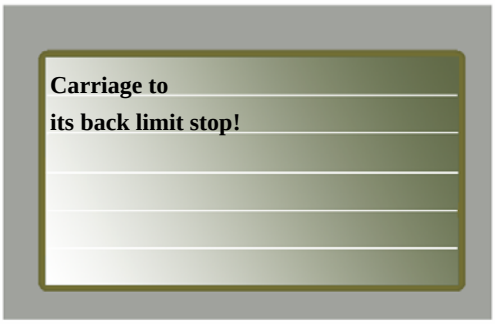
The following instructions concern guide channel opening and closing in the manual function.

OPENING PROCEDURE

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



To open the guide channels follow the instructions at paragraph 6.4.5: step by step cycle performing operations.
If the guide channels are in an intermediate position (upper guide channels not close nor open), press the key  to open completely.



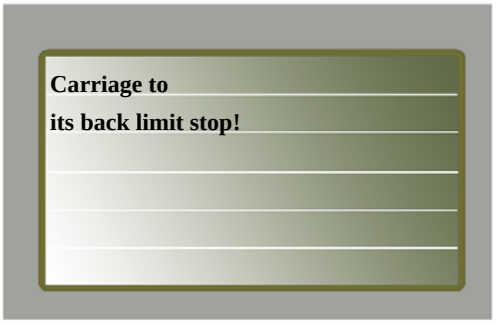
%%FINE_TAB
CLOSING PROCEDURE

If the upper guide channels are open and the 1st feeding carriage is shifted from its “ZERO AXIS” position by pressing  , it will appear the following:

move the carriage to “ZERO AXIS” position, by pressing the manual return key.

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

Close the guide channels, by pressing  .



6.4.5 Cycle actuation mode in the STEP BY STEP function

Introduction

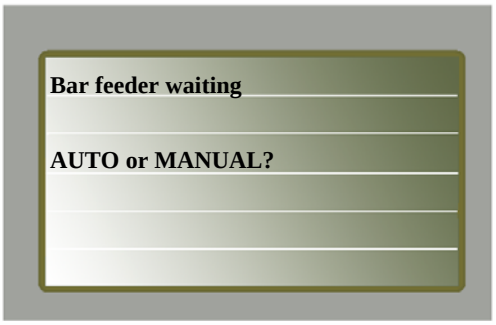
This mode can be used for many reasons, as for instance:

- To open the guide channels;
- to check a complete bar change cycle;
- to check the bar feeder mechanics;
- to load a single bar with the intent of checking the facing;
- et cetera.

Procedure

1 Press  to start the bar feeder.

- check that the guide channels of the bar feeder are closed. If not, close the guide channels in manual.



2 Press  and  to select the semiautomatic mode;

3 press  : the first step will be executed (bar pusher return);

3 press  : the second step will be executed, and so on.

6.5 FEEDER STOP

FEEDER EMERGENCY STOP

CAUTION:

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

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

FEEDER STOP AT WORK END

CAUTION:

do not use emergency buttons for normal machine stop.

- Complete the operations in your work schedule.

- Stop the feeder by pressing the button [boss_stop].
- Stop the lathe.
- Turn the main power switch to the position O (OFF).

6.6 AXIS SETTING PERFORMING OPERATIONS

Foreword:

This procedure is aimed to optimize the displacements of the bar feeder axis. This procedure must not be performed daily but rather occasionally (recommended time: once a month) to compensate any wear of mechanical feed members that could alter the AXIS control operations.

Procedure:

Move the feeding carriage from its back limit stop position in manual mode, then press for at least 2 seconds 

together with 

simultaneously, until the message Offset is displayed. Now the operator can release the keys.

In this phase, the key led will light up 

to indicate that the procedure is being carried out.

6.7 MACHINING CHANGE - QUICK GUIDE

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

6.9.1 Machining type change with guide change-over
6.9.2 Machining type change without guide change-over

6.7.1 Machining type change with guide change-over

- Choose a guide diameter suitable for the bar diameter to be machined (paragraph 5.3.).
- Replace the guides, the half bushes, the bar-pusher and the collet (paragraph 5.3.1);

  - remove the bar pusher and the small pusher truck ;
  - remove the lower guide channel;
  - remove the bar pusher support;
  - remove the front nose;
  - adjust or, if necessary, remove the half bushes;
  - if necessary, remove the lathe spindle liner;
  - install a new set of parts by reversing the order of the above operations;
  - mount a collet suitable for the "new" bar in the bar pusher;
  - insert the bar pusher in the guide channel;

- Change the clamps if necessary (paragraph 5.3.1).
- Adjust the bar guide plates (paragraph 5.3.2).
- Check all the working parameters on the keyboard.
- Prepare the lathe for a new machining cycle.
- Start the automatic cycle (paragraph 6.4.3).

6.7.2 Machining type change without guide change-over

- Replace the collet (paragraph 5.3.1)
  - adjust the half-bushings;
- Replace the clamps if necessary (paragraph 5.3.1).
- Adjust the bar guide plates (paragraph 5.3.2).
- Check all the working parameters on the keyboard.
- Prepare the lathe for a new machining cycle.
- Start the automatic cycle (paragraph 6.4.3).

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7.1 MAINTENANCE - GENERAL RULES

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

Regular cleaning and maintenance are critical to ensure smooth operation and longer machine service life.
It is recommended to regularly and effectively clean the machine, its accessories and work area, which also increases operator's safety.
Do not use petrol or solvents which would damage the painted and transparent parts, the cable sheaths etc.

INFORMATION:
oxidation can damage metal parts and electric equipment.

To protect the bar feeder when you expect not to use it for long periods of time, disconnect it from mains voltage and from compressed air supply and cover it with a suitable protective sheet.
Any protection used should not be fully closed or sealed at the base; it should have ventilation holes to make sure that air within the envelope cannot condense due to lack of circulation.

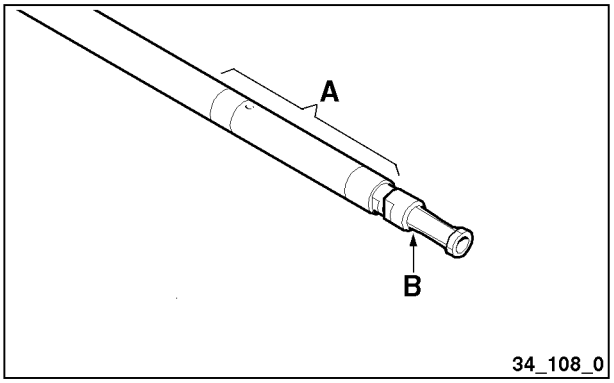
7.2 SCHEDULED MAINTENANCE

Table 1. Scheduled maintenance

Bar feeder part	Operation to carry out	Frequency					
		Hours			Regularly	Every year	Cycles
		200	1250	2500			
Revolving tip and collet	Wear check	•					
Half-bushing	Wear check	•					
Lubrication system	Oil level check	•					
	Oil change			•			
Guides	Repair and cleanness check		•				
Drive belt	Wear control	•					
	Tension check	•					
Air filter	Check				•		
PLC battery	Replacement					•	
Safety devices	Check operatio (see “safety devices”)	•					

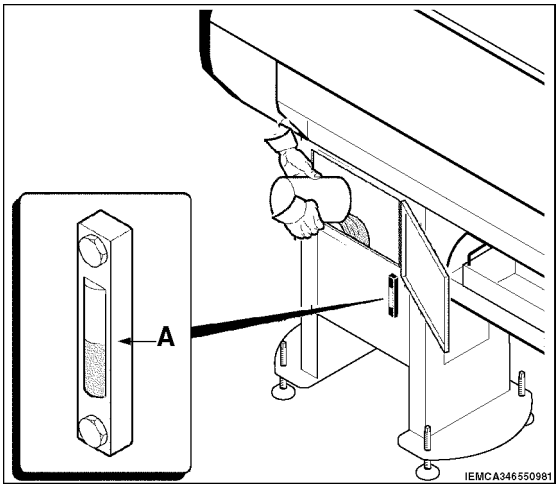
7.2.1 Revolving tip and collet - Check

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



7.2.2 Lubricating oil - Level check

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



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

Table 2. Guide lubricating oil characteristics

Model	Oil type
SMART 316	Klasse C – CKB 100

See paragraph 2.6. for the comparative table.

7.2.3 Lubricating oil - Change

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

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

- Drain the tank using an auxiliary pump. Clean the tank bottom and pump suction system.
- For loading, pour the oil directly into the tank and check its level by means of the "A" indicator.

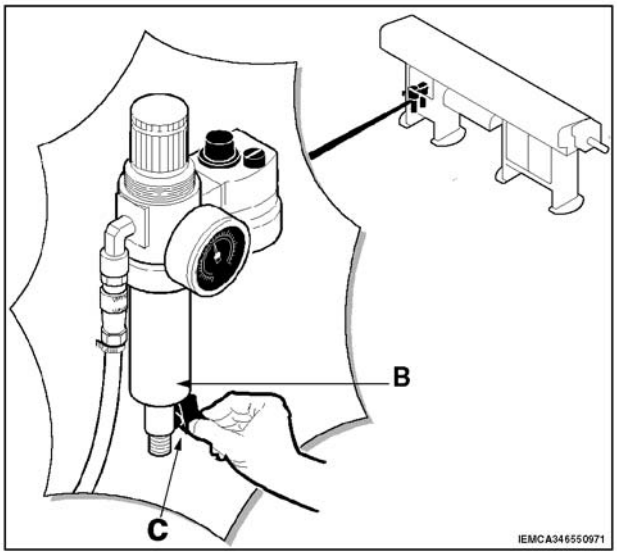
Table 3. Guide lubricating oil characteristics

Model	Oil type	Quantity (l)
SMART 316	Klasse C – CKB 100	40

See paragraph 2.6. for the comparative table.

7.2.4 Air filter unit - Check

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



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8.1 GENERAL FAULTS

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

8.2 BAR MAGAZINE - Faults

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

8.3 INSERTION IN THE COLLET - Faults

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

8.4 BAR FEEDING - Faults

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

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9.1 FEED CHAIN - REPLACEMENT

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

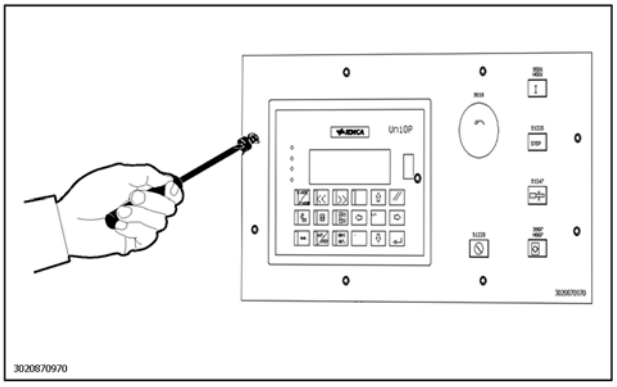
9.2 KEYBOARD BATTERY - REPLACEMENT

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

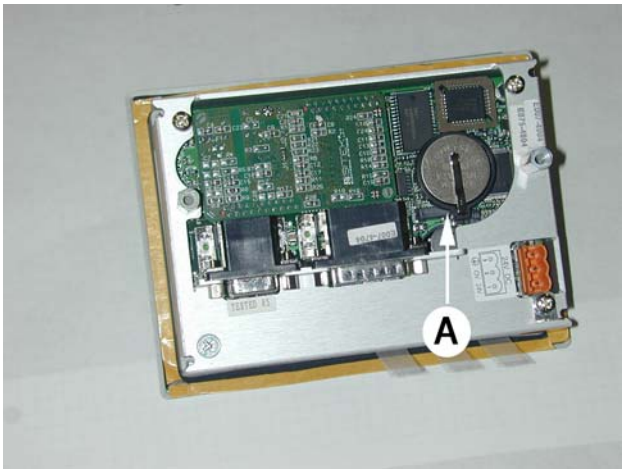
INFORMATION:

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

- Disconnect power.
- Loosen the screws and remove the keyboard.



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



DANGER - WARNING:

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

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

INFORMATION:

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

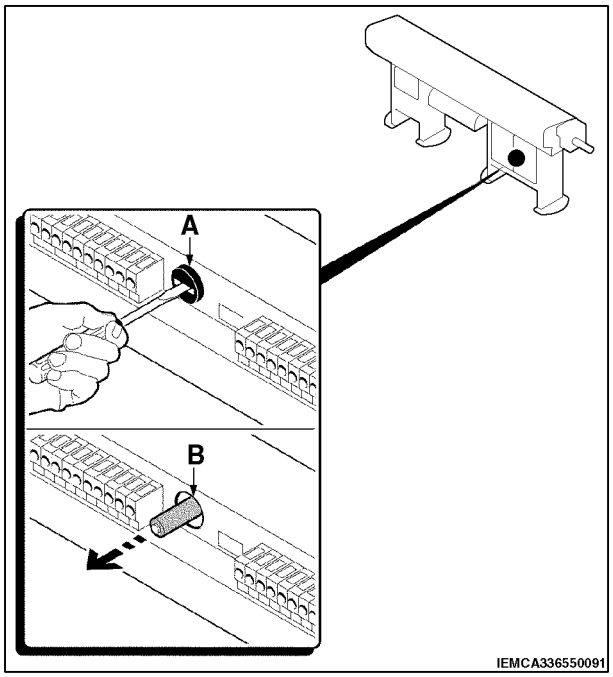
9.3 PLC BATTERY - REPLACEMENT

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

INFORMATION:

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

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



9.4 RECOMMENDED SPARE PARTS

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

Table 1. For spare parts please contact our Customer Service.

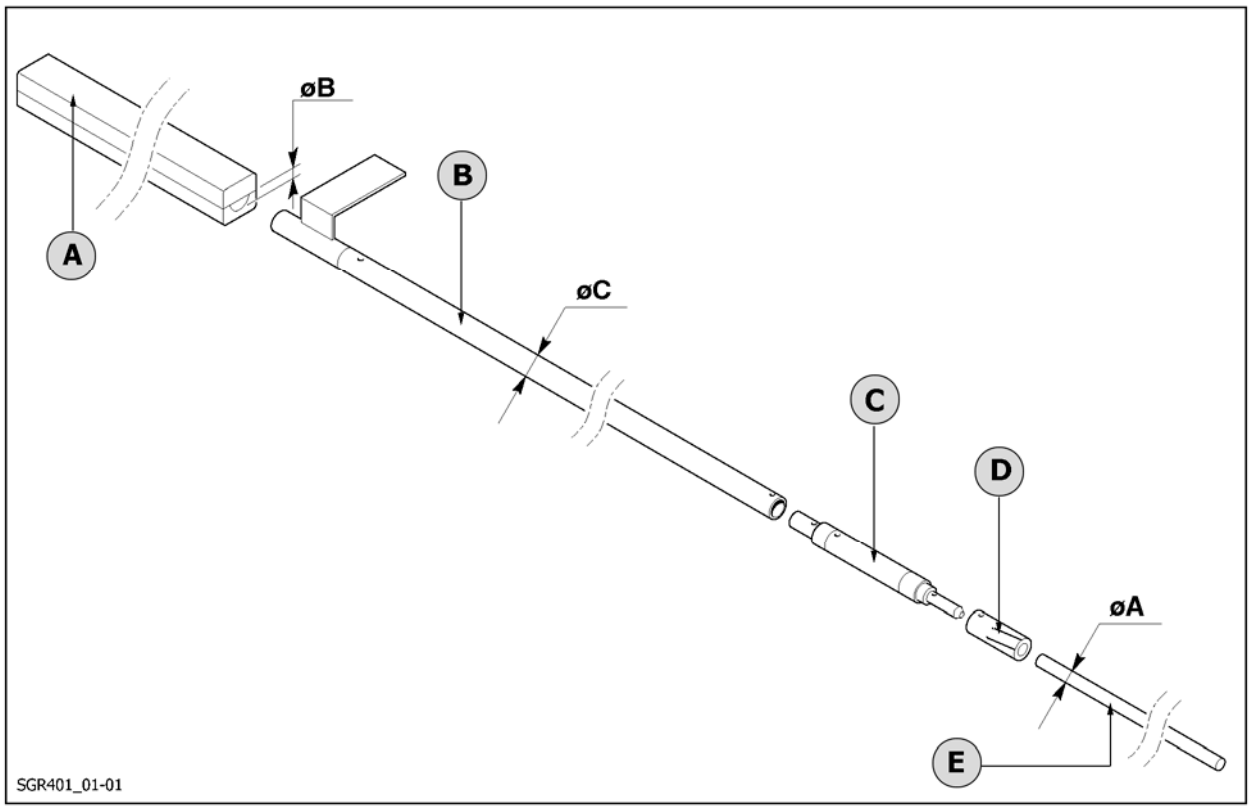
Model	Name	Characteristics	Notes	Qty
SMART 316	Feed chain			1
	Connection link			1
	Limit switch	BERO 3RG4012-0AG33 SIEMENS		1
	Limit switch	BERO 3RG4012-0AG07 SIEMENS		3
	Bar-pusher		Specify diameter and length	1
	Revolving tip		Specify diameter	1
	Collet		Specify inside and outside diameter	1
	Battery	Battery 3 Volt VARTA CR2032	Hand held and fixed kieyboards	1
	Battery	Battery 3,6 Volt	Plc Arteco	1

9.5 Machine Dismantling [qualification]

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

10.1 GUIDE CHANNELS AND BAR PUSHER - TABLE

The choice of guide channels and bar pusher must be made according to the diameter of the barstock. The bar feeder is usually supplied with a bar pusher whose diameter is equal to the maximum bar passage of the lathe. In certain cases, to be able to work in the best possible conditions, it may also be necessary to use a bar pusher with smaller diameter.



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

CAUTION:

the field of application of collets for machining specific bar diameters in the different guide channels are indicated in the table. If the bar diameter is smaller by about 5 mm with respect to the guide channel diameter, vibrations and failures could arise in the bar feeder. Therefore, in order to optimise operation, the bar rotation speed should be reduced or the guide channel diameter should be changed.

INFORMATION:

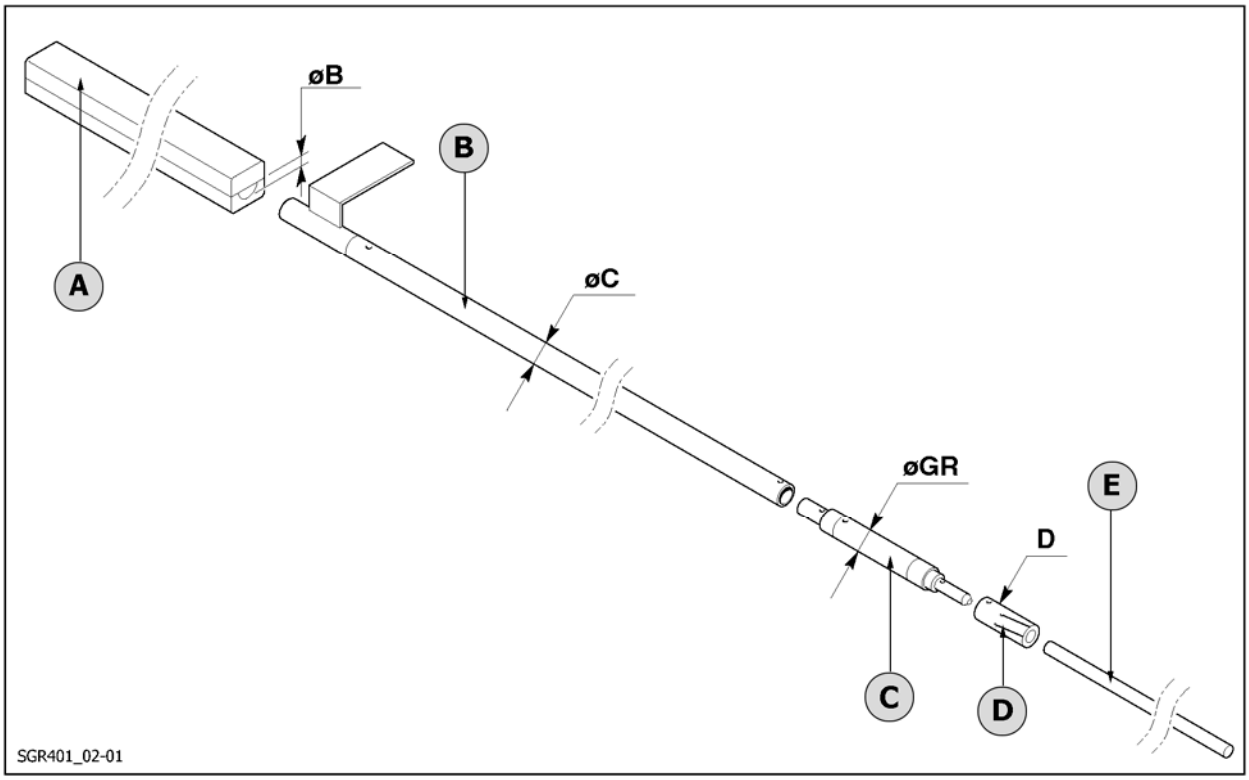
upon request also non standard collets with reduced thickness (which are not mentioned in the a.m. table) are available. Their durability is however below the durability of standard collets.

Bar diameter – **øA** (mm)		Maximum tube diameter (*)– **øA** (mm)	Guide channel diameter– **øB** (mm)	Bar pusher diameter – **øC** (mm)
Min	Max			
3	5.5	7	**8**	7.5
4	6.5	8	**11**	8.5
4	8	10	**11**	10
4	8	10	**13**	10
4	10	12	**13**	12
5	13	15	**17**	15
5	14	16	**17**	16

(*) Also valid for prepared bars and normal barstock with front ejection of bar remnant.

10.2 REVOLVING TIP - TABLE

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

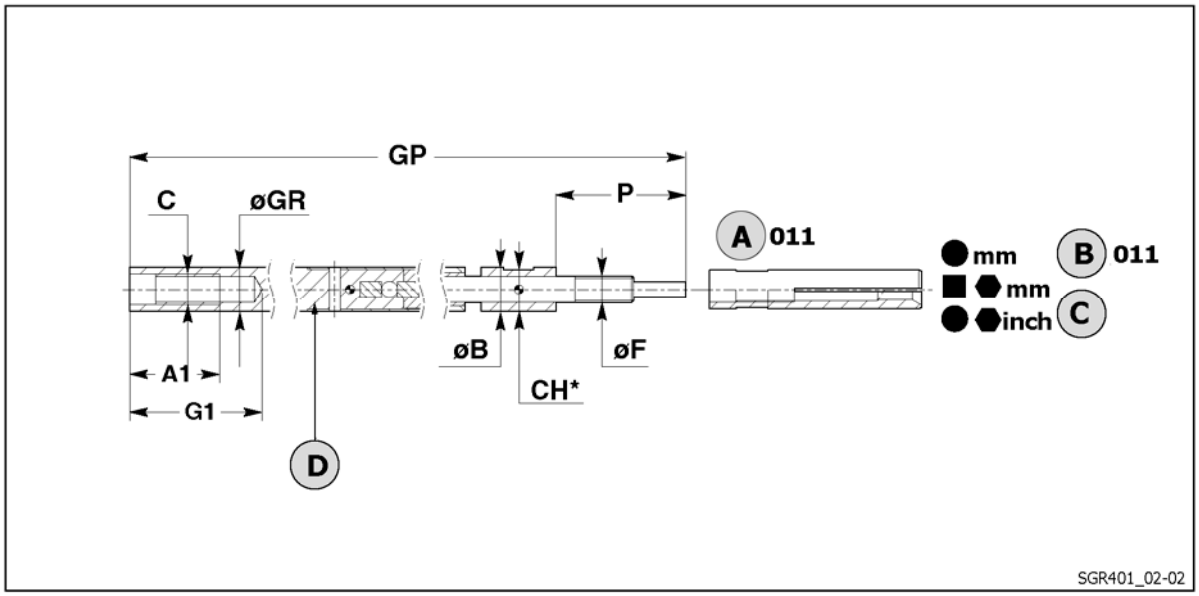


A Guide channels
B Bar pusher
C Revolving tip
D Collet
E Bar

Guide channel diameter **øB** (mm)	Bar pusher diameter **øC** (mm)	Collet version – **D** (type of coupling)	Revolving tip diameter **øGR** (mm)	Revolving tip code	See section
8	7.5	Threaded (IEMCA)	7.5	D73150705	453
11	10/7	With pin (SCHL)	8.5	D73150805	453
	10	With pin (SCHL)	10	D71151011	454
13	12/10	With pin (SCHL)	10	D71151011	454
	12		12	D711511211	
17	16/15	With pin (SCHL)	15	D71151511	454
	16		16	D71151611	

10.3 Revolving Tips øGR 7,5÷8,5 - Table

- **For collet with threaded coupling (IEMCA)**



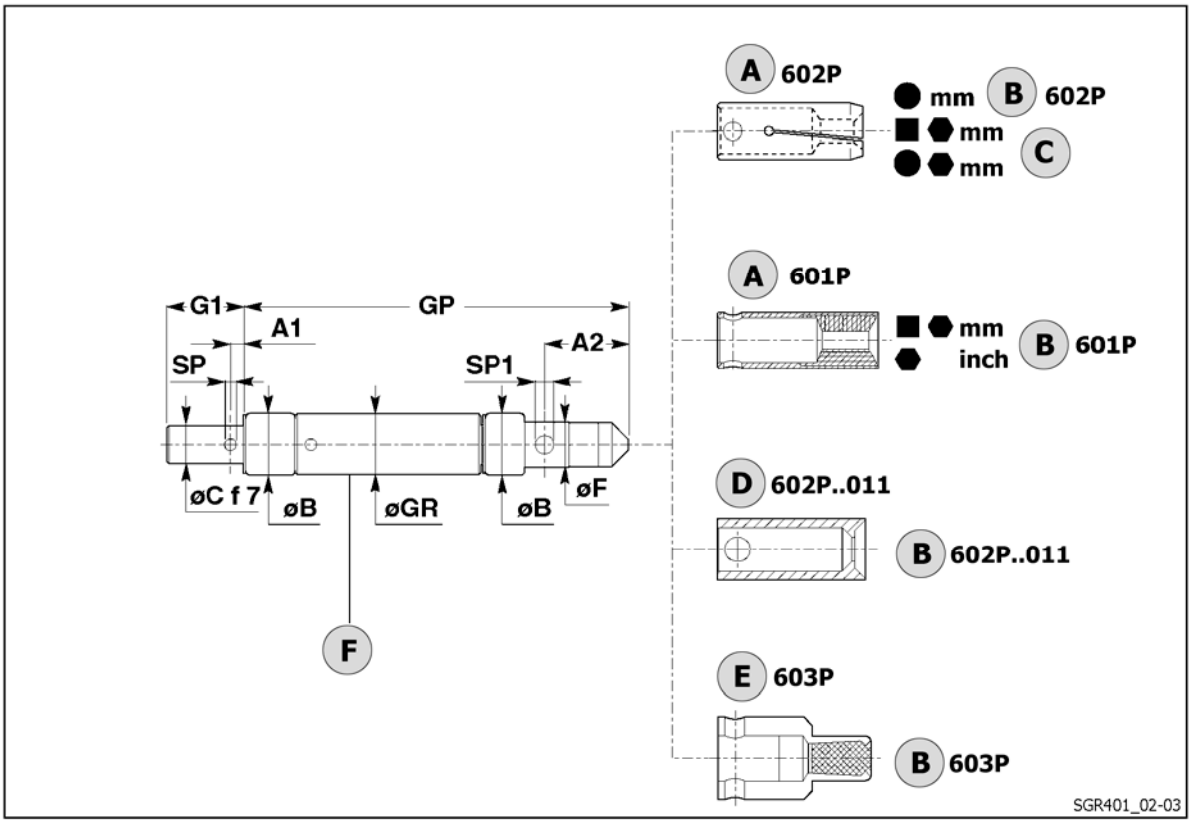
A Collet
B See section
C See section 001
than 011
D Revolving tip

CH* : Double-ended fork wrench DIN3110

øGR (mm)	Revolving tip code	**øF** (mm)	**øB** (mm)	**GP** (mm)	**G1** (mm)	**C** (mm)	**A1** (mm)	**P** (mm)	**CH** (mm)
7.5	D73150705	M5x0.5	7.5	151	25	M6x0.75	17	24.5	7
8.5	D73150805	M5x0.5	8.5	151	25	M6x0.75	17	24.5	7

10.4 Revolving Tips øGR 12÷16 - Table

- **For collet with pin coupling (SCHL)**



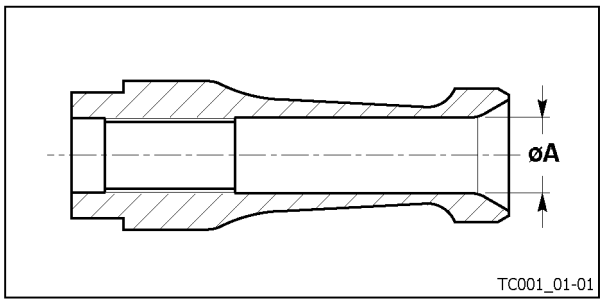
A Collet
B See section
C See section 001
then 602P
D Ejector
E Collet for tube
F Revolving tip

øGR (mm)	Revolving tip code	øF (mm)	øB (mm)	GP (mm)	G1 (mm)	C (mm)	A1 (mm)]	øSP (mm)	A2 (mm)	øSP1 (mm)
10	D71151011	7	10.5	143	30	8	6	3	18	4
12	D71151211	8	12.5	143	30	8	6	3	18	4
15	D71151511	11	15.5	160	35	12	6	3	18.5	6
16	D71151611	11	16.5	160	35	12	6	3	18.5	6

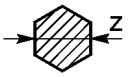
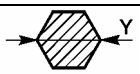
11.1 CONVERSION TABLES 001

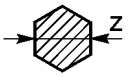
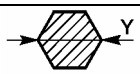
HEXAGONAL BARS (unit of measurement “millimetres”) - Table

Before selecting the steel collet, define the internal diameter øA by consulting the table below.



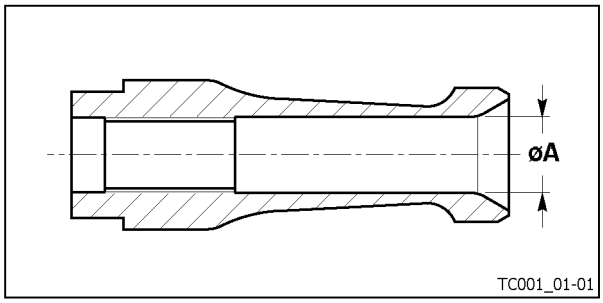
Z	Y	ØA	Z	Y	ØA
mm	Y=Zx1,154 mm	mm	mm	Y=Zx1,154 mm	mm
1.5	1.73	1.7	28	32.33	32
2	2.31	2.2	29	33.48	33.2
2.5	2.89	2.8	30	34.64	34.5
3	3.48	3.25	31	35.79	35.5
3.5	4.04	3.8	32	36.95	36.8
4	4.61	4.5	33	38.10	37.8
4.5	5.19	5	34	39.25	39
5	5.77	5.5	35	40.41	40.2
5.5	6.35	6.2	36	41.56	41.3
6	6.92	6.8	38	43.87	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	ØA
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	ØA
mm	mm	mm
72	83.08	82.5
75	86.55	86
80	92.32	91.75
85	98.1	97.5

SQUARE BARS (unit of measurement “millimetres”) - Table

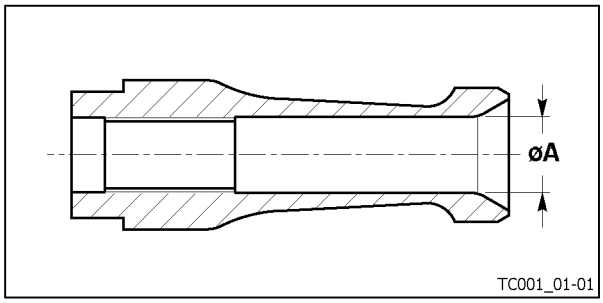
Before selecting the steel collet, define the internal diameter øA by consulting the table below.



Z	Y	ØA	Z	Y	ØA
	Y=Zx1,414			Y=Zx1,414	
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

HEXAGONAL BARS (unit of measurement “inches”) - Table

Before selecting the steel collet, define the internal diameter øA by consulting the table below.

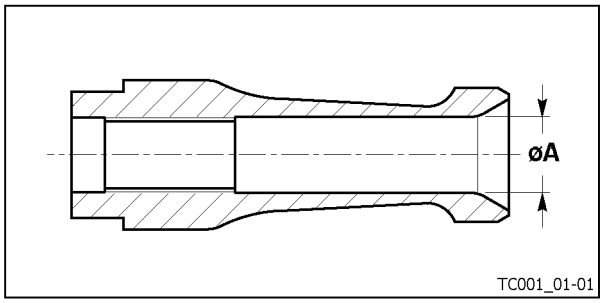


	ØA	
inches	mm	inches
1/8	3.5	9/64
3/16	5.25	13/64
1/4	7	9/32
5/16	8.75	11/32
3/8	10.75	27/64
7/16	12.5	31/64
1/2	14.25	9/16
9/16	16.25	41/64
5/8	18	45/64
11/16	19.75	25/32
3/4	21.75	55/64
13/16	23.5	59/64
7/8	25.25	63/64
15/16	27.25	1”5/64
1”	29	1”9/64
1”1/16	30.75	1”13/64
1”1/8	32.5	1”9/32
1”3/16	34.25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

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

ROUND BARS (unit of measurement “inches”) - Table

Before selecting the steel collet, define the internal diameter øA by consulting the table below.



inches	ØA mm
1/32	0.8
3/64	1.2
1/16	1.6
5/64	2
3/32	2.4
7/64	2.8
1/8	3.2
9/64	3.6
5/32	4
11/64	4.4
3/16	4.8
13/64	5.2
7/32	5.6
15/64	6
1/4	6.4
17/64	6.8
9/32	7.2
19/64	7.6
5/16	8
21/64	8.4
11/32	8.8
23/64	9.1
3/8	9.6
25/64	10
13/32	10.4
27/64	10.8
7/16	11.25
29/64	11.5
15/32	12
31/64	12.5
1/2	12.75
33/64	13.25

inches	ØA mm
17/32	13.5
35/64	14
9/16	14.25
37/64	14.75
19/32	15
39/64	15.5
5/8	16
41/64	16.25
21/32	16.75
43/64	17
11/16	17.5
45/64	18
23/32	18.25
47/64	18.75
3/4	19
49/64	19.5
25/32	19.75
51/64	20.25
13/16	20.75
53/64	21
27/32	21.5
55/64	21.75
7/8	22.25
57/64	22.75
29/32	23
59/64	23.5
15/16	24
61/64	24.25
31/32	24.75
63/64	25
1	25.5
1”1/16	27

inches	ØA mm
1”1/8	28.5
1”3/16	30.25
1”1/4	31.75
1”5/16	33.25
1”3/8	35
1”7/16	36.25
1”1/2	38
1”9/16	39.75
1”5/8	41.25
1”11/16	43
1”3/4	44.5
1”13/16	46
1”7/8	47.75
1”15/16	49.25
2”	50.75
2”1/16	52.5
2”1/8	54
2”3/16	55.5
2”1/4	57.25
2”5/16	58.75
2”3/8	60.5
2”7/16	62
2”1/2	63.5
2”9/16	65
2”5/8	66.75
2”11/16	68.25
2”3/4	70
2”13/16	71.5
2”7/8	73
2”15/16	74.75
3”	76.25

CONVERSION TABLE Inches/Millimetres

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

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

11.2 COLLETS FOR BARS 011

COLLETS FOR BARS - Table

CAUTION:

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

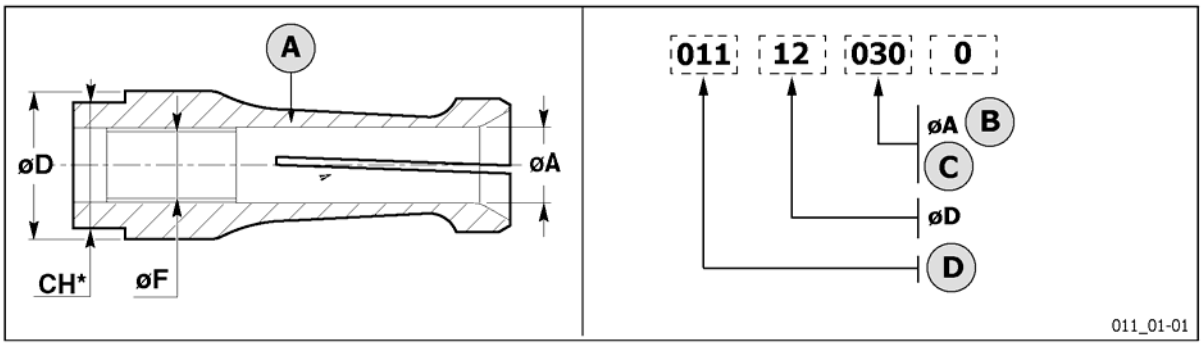
Note for consultation

The codes on the grey ground are indicating the "EMPLOYED SECTOR" to prefer.

Note for ordering

- Collets with codes in bold characters are available from stock.
- Please contact IEMCA service to use the collets with codes in Italics. The delivery times for this kind of collets are longer.

Code structure



CH* : Double-ended fork wrench DIN3110

A Collet
B Bar diameter
C Example:
0.8 mm = 008
3 mm = 030
12.25 mm = 122
12.5 mm = 125
D Family to which it belongs

øA		**øF** M5x0.5 **CH6**	**øF** M6x0.75 **CH8**	**øF** M7x0.75 **CH10**			
mm	*inches*	**øD 7.5**	**øD 10**	**øD 12**			
0.8	1/32”	*011070080*					
0.9		*011070090*					
1		**011070100**	*011100100*	*011120100*			
1.1		**011070110**	*011100110*	*011120110*			
1.2	3/64”	**011070120**	*011100120*	*011120120*			
1.3		**011070130**	*011100130*	*011120130*			
1.4		**011070140**	*011100140*	*011120140*			
1.5		**011070150**	*011100150*	*011120150*			
1.6	1/16”	**011070160**	*011100160*	*011120160*			
1.7		**011070170**	*011100170*	*011120170*			
1.8		**011070180**	*011100180*	*011120180*			
1.9		**011070190**	*011100190*	*011120190*			

ØA		ØF M5x0.5 CH6	ØF M6x0.75 CH8	ØF M7x0.75 CH10	ØF M8x1 CH13	øF M8x1 CH13	ØF M10x1 CH17
mm	*inches*	ØD 7.5	ØD 10	ØD 12	ØD 15	ØD 16	ØD 20
2	5/64”	**011070200**	**011100200**	*011120200*	*011150200*		
2.1		**011070210**	**011100210**	*011120210*			
2.2		**011070220**	**011100220**	*011120220*			
2.3		**011070230**	**011100230**	*011120230*			
2.4	3/32”	**011070240**	**011100240**	*011120240*			
2.5		**011070250**	**011100250**	*011120250*	*011150250*		
2.6		**011070260**	**011100260**	*011120260*			
2.7		**011070270**	**011100270**	*011120270*			
2.8	7/64”	**011070280**	**011100280**	*011120280*			
2.9		**011070290**	**011100290**	*011120290*			
3		**011070300**	**011100300**	**011120300**	*011150300*	**011160300**	*011200300*
3.1		**011070310**	**011100310**	**011120310**	*011150310*		
3.2	1/8”	**011070320**	**011100320**	**011120320**	*011150320*		*011200320*
3.3		**011070330**	**011100330**	**011120330**	*011150330*		
3.4		**011070340**	**011100340**	**011120340**	*011150340*		
3.5		**011070350**	**011100350**	**011120350**	*011150350*		*011200350*
3.6	9/64”	**011070360**	**011100360**	**011120360**	*011150360*		
3.7		**011070370**	**011100370**	**011120370**	*011150370*		
3.8		**011070380**	**011100380**	**011120380**			
3.9		**011070390**	**011100390**	**011120390**	*011150390*		
4	5/32”	**011070400**	**011100400**	**011120400**	**011150400**	**011160400**	**011200400**
4.1		**011070410**	**011100410**	**011120410**	**011150410**		**011200410**
4.2		**011070420**	**011100420**	**011120420**	**011150420**		**011200420**
4.3		**011070430**	**011100430**	**011120430**	**011150430**		**011200430**
4.4	11/64”	**011070440**	**011100440**	**011120440**	**011150440**		**011200440**
4.5		**011070450**	**011100450**	**011120450**	**011150450**		**011200450**
4.6		**011070460**	**011100460**	**011120460**	**011150460**		**011200460**
4.7		**011070470**	**011100470**	**011120470**	**011150470**		**011200470**
4.8	3/16”	**011070480**	**011100480**	**011120480**	**011150480**		**011200480**
4.9		**011070490**	**011100490**	**011120490**	**011150490**		**011200490**
5		**011070500**	**011100500**	**011120500**	**011150500**		**011200500**
5.1		**011070510**	**011100510**	**011120510**	**011150510**		**011200510**
5.2	13/64”	**011070520**	**011100520**	**011120520**	**011150520**		**011200520**
5.3		**011070530**	**011100530**	**011120530**	**011150530**		**011200530**
5.4		**011070540**	**011100540**	**011120540**	**011150540**		**011200540**
5.5		**011070550**	**011100550**	**011120550**	**011150550**		**011200550**
5.6	7/32”	**011070560**	**011100560**	**011120560**	**011150560**		**011200560**
5.7		**011070570**	**011100570**	**011120570**	**011150570**		**011200570**
5.8		**011070580**	**011100580**	**011120580**	**011150580**		**011200580**
5.9		**011070590**	**011100590**	**011120590**	**011150590**		**011200590**

øA		øF M5x0.5 CH6	øF M6x0.75 CH8	øF M7x0.75 CH10	øF M8x1 CH13	øF M10x1 CH17	øF M10x1 CH19
mm	*inches*	**øD 7.5**	**øD 10**	**øD 12**	**øD 15**	**øD 20**	**øD 23**
6	15/64”	**011070600**	**011100600**	**011120600**	**011150600**	**011200600**	
6.1		**011070610**	**011100610**	**011120610**	**011150610**	**011200610**	
6.2		**011070620**	**011100620**	**011120620**	**011150620**	**011200620**	
6.3		**011070630**	**011100630**	**011120630**	**011150630**	**011200630**	
6.4	1/4"	**011070640**	**011100640**	**011120640**	**011150640**	**011200640**	
6.5		**011070650**	**011100650**	**011120650**	**011150650**	**011200650**	
6.6		*011070660*	**011100660**	**011120660**	**011150660**	**011200660**	
6.7		*011070670*	**011100670**	**011120670**	**011150670**		
6.8	17/64”		**011100680**	**011120680**	**011150680**	**011200680**	
6.9			**011100690**	**011120690**	**011150690**	**011200690**	
7			**011100700**	**011120700**	**011150700**	**011200700**	
7.1			**011100710**	**011120710**	**011150710**	**011200710**	
7.2	9/32”		**011100720**	**011120720**	**011150720**	**011200720**	
7.3			**011100730**	**011120730**	**011150730**	**011200730**	
7.4			**011100740**	**011120740**	**011150740**	**011200740**	
7.5			**011100750**	**011120750**	**011150750**	**011200750**	
7.6	19/64”		**011100760**	**011120760**	**011150760**	**011200760**	
7.7			**011100770**	**011120770**	**011150770**		
7.8			**011100780**	**011120780**	**011150780**	**011200780**	
7.9			**011100790**	**011120790**	**011150790**	**011200790**	
8	5/16”		**011100800**	**011120800**	**011150800**	**011200800**	
8.1			*011100810*	**011120810**	**011150810**	**011200810**	
8.2			*011100820*	**011120820**	**011150820**	**011200820**	
8.3			*011100830*	**011120830**	**011150830**	**011200830**	
8.4	21/64”		*011100840*	**011120840**	**011150840**	**011200840**	
8.5			*011100850*	**011120850**	**011150850**	**011200850**	
8.6			*011100860*	**011120860**	**011150860**	**011200860**	
8.7			*011100870*	**011120870**	**011150870**	**011200870**	
8.8	11/32”		*011100880*	**011120880**	**011150880**	**011200880**	
8.9			*011100890*	**011120890**	**011150890**	**011200890**	
9			*011100900*	**011120900**	**011150900**	**011200900**	
9.1	23/64”			**011120910**	**011150910**	**011200910**	
9.2				**011120920**	**011150920**	**011200920**	
9.3				**011120930**	**011150930**	**011200930**	
9.4				**011120940**	**011150940**	**011200940**	

øA		øF M7x0.75 CH10	øF M8x1 CH13	øF M8x1 CH13	øF M8x1 CH13	øF M8x1 CH16	øF M10x1 CH17
mm	*inches*	**øD 12**	**øD 15**	**øD 16**	**øD 17**	**øD 18**	**øD 20**
9.5		**011120950**	**011150950**				**011200950**
9.6	3/8”	**011120960**	**011150960**				**011200960**
9.7		**011120970**	**011150970**				**011200970**
9.8		**011120980**	**011150980**				**011200980**
9.9		**011120990**	**011150990**				**011200990**
10	25/64”	**011121000**	**011151000**				**011201000**
10.1		*011121010*	**011151010**				**011201010**
10.2		*011121020*	**011151020**				**011201020**
10.3		*011121030*	**011151030**				**011201030**
10.4	13/32”	*011121040*	**011151040**				**011201040**
10.5		*011121050*	**011151050**				**011201050**
10.6		*011121060*	**011151060**				**011201060**
10.7		*011121070*	**011151070**				**011201070**
10.8	27/64”	*011121080*	**011151080**				**011201080**
10.9		*011121090*	**011151090**				**011201090**
11		*011121100*	**011151100**				**011201100**
11.25	7/16”		**011151120**	**011161120**			**011201120**
11.5			**011151150**	**011161150**			**011201150**
11.75	13/64”		**011151170**	**011161170**			**011201170**
11.9				*011161190*			
12			**011151200**	**011161200**			**011201200**
12.25			**011151220**	**011161220**			**011201220**
12.5	31/64”		**011151250**	**011161250**		**011181250**	**011201250**
12.75	1/2"		**011151270**	**011161270**		**011181270**	**011201270**
12.9						**011181290**	
13			**011151300**	**011161300**		**011181300**	**011201300**
13.25			*011151320*	**011161320**		**011181320**	**011201320**
13.5			*011151350*	**011161350**		**011181350**	**011201350**
13.75			*011151370*	**011161370**		**011181370**	**011201370**
14			*011151400*	**011161400**	*011171400*	**011181400**	**011201400**
14.1				*011161410*			
14.25	9/16”			*011161420*	*011171420*	**011181420**	**011201420**
14.5				*011161450*	*011171450*	**011181450**	**011201450**
14.75				*011161470*	*011171470*	**011181470**	**011201470**
15				*011161500*	*011171500*	**011181500**	**011201500**
15.25					*011171520*	**011181520**	**011201520**
15.5					*011171550*	**011181550**	**011201550**

øA		**øF** M7x0.75 **CH10**	**øF** M8x1 **CH13**	**øF** M8x1 **CH13**	**øF** M8x1 **CH13**	**øF** M8x1 **CH16**	**øF** M10x1 **CH17**
mm	*inches*	**øD 12**	**øD 15**	**øD 16**	**øD 17**	**øD 18**	**øD 20**
15.75					*011171570*	**011181570**	**011201570**
15.8							*011201580*
16	5/8”				*011171600*	**011181600**	**011201600**
16.25						**011181620**	**011201620**
16.4							*011201640*
16.5						**011181650**	**011201650**
16.75						*011181670*	

øA		øF M10x1 CH19	øF M10x1 CH22	øF M10x1 CH24
mm	*inches*	**øD 23**	**øD 25**	**øD 27**
9.5				
9.6	3/8”			
9.7				
9.8				
9.9				
10	25/64”			
10.1				
10.2				
10.3				
10.4	13/32”			
10.5				
10.6				
10.7				
10.8	27/64”			
10.9				
11				**011271100**
11.25	7/16”			
11.5				
11.75	13/64”			
11.8				
12				
12.25				
12.3				
12.5	31/64”			
12.75	1/2"			
12.8				
13		*011231300*		
13.25				
13.3				
13.5		*011231350*	**011251350**	
13.75				
13.8				
14		**011231400**		
14.25	9/16”	**011231420**		
14.4				
14.5		**011231450**		
14.6				
14.75		**011231470**		
14.8				
15		**011231500**		

øA		**øF** M10x1 **CH19**	**øF** M10x1 **CH22**	**øF** M10x1 **CH24**
mm	*inches*	**øD 23**	**øD 25**	**øD 27**
15.25		**011231520**		
15.5		**011231550**	**011251550**	
15.75		**011231570**		
16	5/8”	**011231600**		
16.25		**011231620**		
16.3			*011251630*	
16.5		**011231650**		
16.75		**011231670**		

øA		øF M8x1 CH16	øF M10x1 CH17	øF M10x1 CH19	øF M10x1 CH22	øF M10x1 CH24	øF M10x1 CH28	ØF M10x1 CH30
mm	*inches*	**øD 19**	**øD 20**	**øD 23**	**øD 25**	**øD 27**	**øD 30**	**øD 32**
14			**011201400**	**011231400**				
14.25			**011201420**	**011231420**				
14.4								
14.5			**011201450**	**011231450**				
14.6								
14.75			**011201470**	**011231470**				
14.8								
15			**011201500**	**011231500**				
15.25			**011201520**	**011231520**				
15.5			**011201550**	**011231550**	**011251550**			
15.75			**011201570**	**011231570**				
15.8			*011201580*					
16	5/8"	*011191600*	**011201600**	**011231600**				
16.25	41/64"	*011191620*	**011201620**	**011231620**				
16.3					*011251630*			
16.4			*011201640*					
16.5		*011191650*	**011201650**	**011231650**	**011251650**			
16.75		*011191670*	**011201670**	**011231670**				
17		*011191700*	**011201700**	**011231700**	**011251700**			
17.25		*011191720*	**011201720**	**011231720**	**011251720**			
17.5	11/16"	*011191750*	**011201750**	**011231750**	**011251750**			
17.75		*011191770*	**011201770**	**011231770**	**011251770**			
17.8					**011251780**			
18	45/64"	*011191800*	**011201800**	**011231800**	**011251800**			
18.25			*011201820*	**011231820**	**011251820**			
18.3				*011231830*				
18.5			*011201850*	**011231850**	**011251850**			
18.75			*011201870*	**011231870**	**011251870**			
19	3/4"		*011201900*	**011231900**	**011251900**	**011271900**		
19.25				**011231920**	**011251920**	**011271920**		
19.5				**011231950**	**011251950**	**011271950**		
19.6					*011251960*			
19.75	25/32"			**011231970**	**011251970**	**011271970**		
20				**011232000**	**011252000**	**011272000**		
20.25				**011232020**	**011252020**	**011272020**		
20.3					*011252030*			
20.5				**011232050**	**011252050**	**011272050**		
20.6					*011252060*			
20.75	13/16"			**011232070**	**011252070**	**011272070**		
21				**011232100**	**011252100**	**011272100**		

øA		øF M8x1 CH16	øF M10x1 CH17	øF M10x1 CH19	øF M10x1 CH22	øF M10x1 CH24	øF M10x1 CH28	ØF M10x1 CH30
mm	*inches*	**øD 19**	**øD 20**	**øD 23**	**øD 25**	**øD 27**	**øD 30**	**øD 32**
21.25					**011252120**	**011272120**		
21.5				*011232150*	**011252150**	**011272150**		
21.75	56/64”				**011252170**	**011272170**		
22				*011232200*	**011252200**	**011272200**		
22.25	7/8”				**011252220**	**011272220**		
22.5					**011252250**	**011272250**		
22.75					**011252270**	**011272270**		
22.8					*011252280*			
23					**011252300**	**011272300**	**011302300**	
23.25						**011272320**	**011302320**	
23.3						**011272330**		
23.5	59/64”				*011252350*	**011272350**	**011302350**	

øA		øF M10x1 CH24	øF M10x1 CH24	øF M10x1 CH28	ØF M10x1 CH30		
mm	*inches*	**øD 27**	**øD 29**	**øD 30**	**øD 32**		
23.75		**011272370**		**011302370**			
23.8		**011272380**					
24	15/16”	**011272400**	*011292400*	**011302400**	**011322400**		
24.25		**011272420**	*011292420*	**011302420**			
24.5		**011272450**	*011292450*	**011302450**			
24.75		**011272470**	*011292470*	**011302470**			
25	63/64”	**011272500**	*011292500*	**011302500**			
25.25		*011272520*	*011292520*	**011302520**			
25.5	1”	*011272550*	*011292550*	**011302550**			
25.75		*011272570*	*011292570*	**011302570**			
26			*011292600*	**011302600**	**011322600**		
26.25				**011302620**	**011322620**		
26.5				**011302650**	**011322650**		
26.75	1” 1/16			**011302670**	**011322670**		
27	1” 5/64			**011302700**	**011322700**		
27.25				**011302720**	**011322720**		
27.5				**011302750**	**011322750**		
27.75				**011302770**	**011322770**		
28				**011302800**	**011322800**		
28.25	1” 1/8				**011322820**		
28.5				*011302850*	**011322850**		
28.75					**011322870**		
29					**011322900**		
29.25					**011322920**		
29.5					**011322950**		
29.75					**011322970**		
30					**011323000**		
30.25					*011323020*		
30.5					*011323050*		

11.3 COLLETS FOR BARS 602P

COLLETS FOR BARS - Table

CAUTION:

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

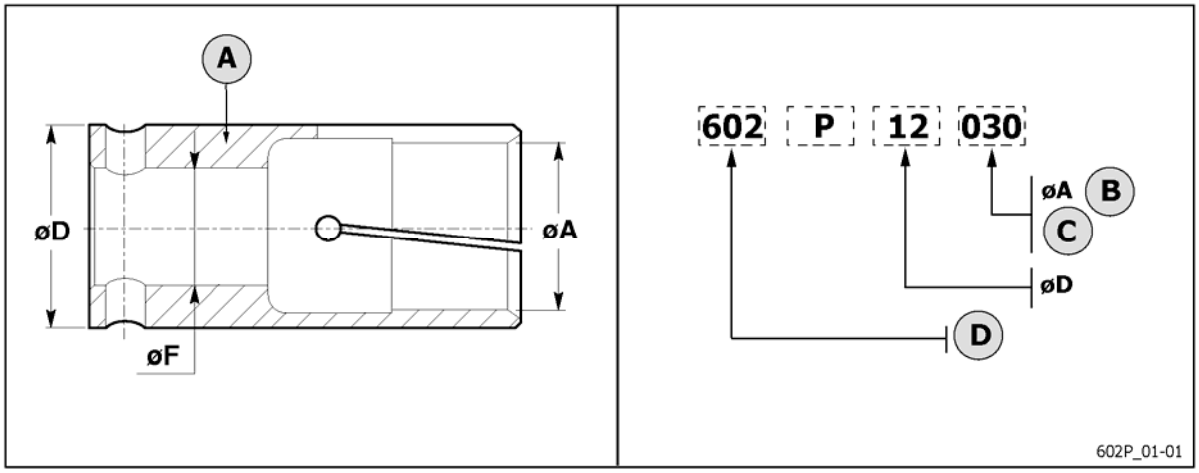
Note for consultation

The codes on the grey ground are indicating the "EMPLOYED SECTOR" to prefer.

Note for ordering

- Collets with codes in bold characters are available from stock.
- Please contact IEMCA service to use the collets with codes in Italics. The delivery times for this kind of collets are longer.

Code structure



A Collet
B Bar diameter
C Example:
3 mm = 030
3.5 mm = 035
12.5 mm = 125
12.75 mm = 127
D Family to which it belongs

øA		øF Ø7 G6	øF Ø8 G6	øF Ø11 G6	øF Ø20 G6	
mm	*inches*	**øD 10**	**øD 12**	**øD 15**	**øD 25**	
3		**602P10030**	**602P12030**			
3.1		**602P10031**	**602P12031**			
3.2	1/8”	**602P10032**	**602P12032**			
3.3		**602P10033**	**602P12033**			
3.4		**602P10034**	**602P12034**			
3.5		**602P10035**	**602P12035**			
3.6	9/64”	**602P10036**	**602P12036**			
3.7		**602P10037**	**602P12037**			
3.8		**602P10038**	**602P12038**			
3.9		**602P10039**	**602P12039**			
4	5/32”	**602P10040**	**602P12040**	*602P15040*		
4.1		**602P10041**	**602P12041**	*602P15041*		
4.2		**602P10042**	**602P12042**	*602P15042*		
4.3		**602P10043**	**602P12043**	*602P15043*	*602P25043*	
4.4	11/64”	**602P10044**	**602P12044**	*602P15044*		
4.5		**602P10045**	**602P12045**	*602P15045*		
4.6		**602P10046**	**602P12046**	*602P15046*		
4.7		**602P10047**	**602P12047**	*602P15047*		
4.8	3/16”	**602P10048**	**602P12048**	*602P15048*		
4.9		**602P10049**	**602P12049**	*602P15049*		
5		**602P10050**	**602P12050**	**602P15050**	*602P25050*	
5.1		**602P10051**	**602P12051**	**602P15051**		
5.2	13/64”	**602P10052**	**602P12052**	**602P15052**		

øA		øF Ø7 G6	øF Ø8 G6	øF Ø11 G6	øF Ø11 G6
mm	*inches*	**øD 10**	**øD 12**	**øD 15**	**øD 18**
5.3		**602P10053**	**602P12053**	**602P15053**	
5.4		**602P10054**	**602P12054**	**602P15054**	
5.5		**602P10055**	**602P12055**	**602P15055**	
5.6	7/32”	**602P10056**	**602P12056**	**602P15056**	
5.7		**602P10057**	**602P12057**	**602P15057**	
5.8		**602P10058**	**602P12058**	**602P15058**	
5.9		**602P10059**	**602P12059**	**602P15059**	
6	15/64”	**602P10060**	**602P12060**	**602P15060**	
6.1		**602P10061**	**602P12061**	**602P15061**	
6.2		**602P10062**	**602P12062**	**602P15062**	
6.3		**602P10063**	**602P12063**	**602P15063**	
6.4	1/4"	**602P10064**	**602P12064**	**602P15064**	
6.5		**602P10065**	**602P12065**	**602P15065**	
6.6		**602P10066**	**602P12066**	**602P15066**	
6.7		**602P10067**	**602P12067**	**602P15067**	
6.8	17/64”	**602P10068**	**602P12068**	**602P15068**	
6.9		**602P10069**	**602P12069**	**602P15069**	
7		**602P10070**	**602P12070**	**602P15070**	
7.1		**602P10071**	**602P12071**	**602P15071**	
7.2	9/32”	**602P10072**	**602P12072**	**602P15072**	
7.3		**602P10073**	**602P12073**	**602P15073**	
7.4		**602P10074**	**602P12074**	**602P15074**	
7.5		**602P10075**	**602P12075**	**602P15075**	
7.6	19/64”	**602P10076**	**602P12076**	**602P15076**	
7.7		**602P10077**	**602P12077**	**602P15077**	
7.8		**602P10078**	**602P12078**	**602P15078**	
7.9		**602P10079**	**602P12079**	**602P15079**	
8	5/16”	**602P10080**	**602P12080**	**602P15080**	**602P18080**
8.1			**602P12081**	**602P15081**	
8.2			**602P12082**	**602P15082**	
8.3			**602P12083**	**602P15083**	
8.4	21/64”		**602P12084**	**602P15084**	
8.5			**602P12085**	**602P15085**	
8.6			**602P12086**	**602P15086**	
8.7			**602P12087**	**602P15087**	
8.8	11/32”		**602P12088**	**602P15088**	
8.9			**602P12089**	**602P15089**	
9			**602P12090**	**602P15090**	**602P18090**
9.1	23/64”		**602P12091**	**602P15091**	**602P18091**
9.2			**602P12092**	**602P15092**	**602P18092**

øA		øF Ø14 G6	øF Ø20 G6	øF Ø20 G6
mm	*inches*	**øD 20**	**øD 25**	**øD 32**
5.3				
5.4				
5.5				
5.6	7/32”			
5.7				
5.8				
5.9				
6	15/64”	*602P20060*	*602P25060*	**602P32060**
6.1		*602P20061*	*602P25061*	
6.2		*602P20062*	*602P25062*	
6.3		*602P20063*	*602P25063*	
6.4	1/4"	*602P20064*	*602P25064*	
6.5		*602P20065*	*602P25065*	**602P32065**
6.6		*602P20066*	*602P25066*	
6.7		*602P20067*	*602P25067*	
6.8	17/64”	*602P20068*	*602P25068*	
6.9		*602P20069*	*602P25069*	
7		*602P20070*	*602P25070*	**602P32070**
7.1		*602P20071*	*602P25071*	
7.2	9/32”	*602P20072*	*602P25072*	
7.3		*602P20073*	*602P25073*	
7.4		*602P20074*	*602P25074*	
7.5		*602P20075*	*602P25075*	**602P32075**
7.6	19/64”	*602P20076*	*602P25076*	
7.7		*602P20077*	*602P25077*	
7.8		*602P20078*	*602P25078*	
7.9		*602P20079*	*602P25079*	
8	5/16”	**602P20080**	**602P25080**	**602P32080**
8.1		**602P20081**	**602P25081**	
8.2		**602P20082**	**602P25082**	
8.3		**602P20083**	**602P25083**	
8.4	21/64”	**602P20084**	**602P25084**	
8.5		**602P20085**	**602P25085**	**602P32085**
8.6		**602P20086**	**602P25086**	
8.7		**602P20087**	**602P25087**	
8.8	11/32”	**602P20088**	**602P25088**	
8.9		**602P20089**	**602P25089**	
9		**602P20090**	**602P25090**	**602P32090**
9.1	23/64”	**602P20091**	**602P25091**	
9.2		**602P20092**	**602P25092**	

øA		øF Ø8 G6	øF Ø11 G6	øF Ø11 G6	øF Ø11 G6
mm	*inches*	**øD 12**	**øD 15**	**øD 16**	**øD 18**
9.3		**602P12093**	**602P15093**		**602P18093**
9.4		**602P12094**	**602P15094**		**602P18094**
9.5		**602P12095**	**602P15095**		**602P18095**
9.6	3/8”	**602P12096**	**602P15096**		**602P18096**
9.7		**602P12097**	**602P15097**		**602P18097**
9.8		**602P12098**	**602P15098**		**602P18098**
9.9		**602P12099**	**602P15099**		**602P18099**
10	25/64”	**602P12100**	**602P15100**		**602P18100**
10.1			**602P15101**		**602P18101**
10.2			**602P15102**		**602P18102**
10.3			**602P15103**		**602P18103**
10.4	13/32”		**602P15104**		**602P18104**
10.5			**602P15105**		**602P18105**
10.6			**602P15106**		**602P18106**
10.7			**602P15107**		**602P18107**
10.8	27/64”		**602P15108**		**602P18108**
10.9			**602P15109**		**602P18109**
11			*602P15110*	**602P16110**	**602P18110**
11.1					**602P18111**
11.2					**602P18112**
11.25	7/16”		*602P15112*	**602P16112**	
11.3					**602P18113**
11.4					**602P18114**
11.5	29/64”		*602P15115*	**602P16115**	**602P18115**
11.6					**602P18116**
11.7					**602P18117**
11.75			*602P15117*	**602P16117**	
11.8					**602P18118**
11.9					**602P18119**
12	15/32”		*602P15120*	**602P16120**	
12.25			*602P15122*	**602P16122**	
12.5	31/64”		*602P15125*	**602P16125**	*602P18125*
12.75	1/2"		*602P15127*	**602P16127**	*602P18127*
13			*602P15130*	*602P16130*	**602P18130**
13.25	33/64”			*602P16132*	**602P18132**
13.5	17/32”			*602P16135*	**602P18135**
13.75				*602P16137*	**602P18137**

øA		øF Ø8 G6	øF Ø11 G6	øF Ø11 G6	øF Ø11 G6
mm	*inches*	**øD 12**	**øD 15**	**øD 16**	**øD 18**
14	35/64”			*602P16140*	**602P18140**
14.25	9/16”				**602P18142**
14.5					**602P18145**
14.75	37/64”				**602P18147**
15	19/32”				**602P18150**
15.25					**602P18152**
15.5	39/64”				**602P18155**
15.75					**602P18157**

øA		øF Ø14 G6	øF Ø14 G6	øF Ø20 G6	øF Ø20 G6
mm	*inches*	**øD 20**	**øD 23**	**øD 25**	**øD 32**
9.3		**602P20093**		**602P25093**	
9.4		**602P20094**		**602P25094**	
9.5		**602P20095**		**602P25095**	**602P32095**
9.6	3/8”	**602P20096**		**602P25096**	
9.7		**602P20097**		**602P25097**	
9.8		**602P20098**		**602P25098**	
9.9		**602P20099**		**602P25099**	
10	25/64”	**602P20100**		**602P25100**	**602P32100**
10.1		**602P20101**		**602P25101**	
10.2		**602P20102**		**602P25102**	
10.3		**602P20103**		**602P25103**	
10.4	13/32”	**602P20104**		**602P25104**	
10.5		**602P20105**		**602P25105**	**602P32105**
10.6		**602P20106**		**602P25106**	
10.7		**602P20107**		**602P25107**	
10.8	27/64”	**602P20108**		**602P25108**	
10.9		**602P20109**		**602P25109**	
11		**602P20110**		**602P25110**	**602P32110**
11.1					
11.2					
11.25	7/16”	**602P20112**		**602P25112**	
11.3					
11.4					
11.5	29/64”	**602P20115**		**602P25115**	**602P32115**
11.6					
11.7					
11.75		**602P20117**		**602P25117**	
11.8					
11.9					
12	15/32”	**602P20120**		**602P25120**	**602P32120**
12.25		**602P20122**		**602P25122**	
12.5	31/64”	**602P20125**		**602P25125**	**602P32125**
12.75	1/2"	**602P20127**		**602P25127**	
13		**602P20130**		**602P25130**	**602P32130**
13.25	33/64”	**602P20132**		**602P25132**	
13.5	17/32”	**602P20135**		**602P25135**	**602P32135**
13.75		**602P20137**		**602P25137**	

øA		øF Ø14 G6	øF Ø14 G6	øF Ø20 G6	øF Ø20 G6
mm	*inches*	**øD 20**	**øD 23**	**øD 25**	**øD 32**
14	35/64”	**602P20140**	*602P23140*	**602P25140**	**602P32140**
14.25	9/16”	**602P20142**	*602P23142*	**602P25142**	
14.5		**602P20145**	*602P23145*	**602P25145**	**602P32145**
14.75	37/64”	**602P20147**	*602P23147*	**602P25147**	
15	19/32”	**602P20150**	*602P23150*	**602P25150**	**602P32150**
15.25		**602P20152**	*602P23152*	**602P25152**	
15.5	39/64”	**602P20155**	*602P23155*	**602P25155**	**602P32155**
15.75		**602P20157**	*602P23157*	**602P25157**	

øA		øF Ø11 G6	øF Ø14 G6	øF Ø14 G6	øF Ø14 G6	øF Ø20 G6	øF Ø20 G6	øF Ø20 G6
mm	*inches*	**øD 18**	**øD 20**	**øD 21**	**øD 23**	**øD 25**	**øD 27**	**øD 32**
16	5/8”	**602P18160**	**602P20160**		*602P23160*	**602P25160**		**602P32160**
16.25	41/64”		**602P20162**		*602P23162*	**602P25162**		
16.5			*602P20165*	**602P21165**	**602P23165**	**602P25165**		**602P32165**
16.75	21/32”		*602P20167*	**602P21167**	**602P23167**	**602P25167**		
17	43/64”		*602P20170*	**602P21170**	**602P23170**	**602P25170**		**602P32170**
17.25			*602P20172*	**602P21172**	**602P23172**	**602P25172**		
17.5	11/16”		*602P20175*	**602P21175**	**602P23175**	**602P25175**		**602P32175**
17.75			*602P20177*	**602P21177**	**602P23177**	**602P25177**		
18	45/64”		*602P20180*	**602P21180**	**602P23180**	**602P25180**		**602P32180**
18.25	23/32”			**602P21182**	**602P23182**	**602P25182**		
18.5				**602P21185**	**602P23185**	**602P25185**		**602P32185**
18.75	47/64”			**602P21187**	**602P23187**	**602P25187**		
19	3/4"			**602P21190**	**602P23190**	**602P25190**		**602P32190**
19.25					**602P23192**	**602P25192**		
19.5	49/64”				**602P23195**	**602P25195**		**602P32195**
19.75	25/32”				**602P23197**	**602P25197**		
20					**602P23200**	**602P25200**		**602P32200**
20.25	51/64”				**602P23202**	**602P25202**		
20.5					**602P23205**	**602P25205**		**602P32205**
20.75	13/16”				**602P23207**	**602P25207**		
21	53/64”				**602P23210**	*602P25210*	**602P27210**	**602P32210**
21.25						*602P25212*	**602P27212**	
21.5	27/32”					*602P25215*	**602P27215**	**602P32215**
21.75	55/64”					*602P25217*	**602P27217**	

øA		øF Ø20 G6	øF Ø20 G6	øF Ø20 G6	øF Ø20 G6	øF Ø20 G6	øF Ø20 G6
mm	*inches*	**øD 25**	**øD 27**	**øD 29**	**øD 32**	**øD 35**	**øD 36**
22		*602P25220*	**602P27220**		**602P32220**		
22.25	7/8”	*602P25222*	**602P27222**				
22.5		*602P25225*	**602P27225**		**602P32225**		
22.75	57/64”	*602P25227*	**602P27227**	*602P29227*			
23	29/32”	*602P25230*	**602P27230**	*602P29230*	**602P32230**		
23.25			**602P27232**	*602P29232*			
23.5	59/64”		**602P27235**	*602P29235*	**602P32235**		
23.75			**602P27237**	*602P29237*			
24	15/16”		*602P27240*	**602P29240**	**602P32240**		
24.25	61/64”		*602P27242*	**602P29242**			
24.5			*602P27245*	**602P29245**			
24.75	31/32”		*602P27247*	**602P29247**			
25	63/64”		*602P27250*	**602P29250**	*602P32250*		
25.25			*602P27252*	**602P29252**	*602P32252*		
25.4			*602P27254*				
25.5	1”		*602P27255*	**602P29255**	*602P32255*		
25.75				**602P29257**	*602P32257*		
26				*602P29260*	**602P32260**		*602P36260*
26.25				*602P29262*	**602P32262**		*602P36262*
26.5				*602P29265*	**602P32265**		*602P36265*
26.75				*602P29267*	**602P32267**		*602P36267*
27	1” 1/16			*602P29270*	**602P32270**	*602P35270*	*602P36270*
27.25					**602P32272**	*602P35272*	*602P36272*
27.5					**602P32275**	*602P35275*	*602P36275*
27.75					**602P32277**	*602P35277*	*602P36277*
28					*602P32280*	**602P35280**	*602P36280*
28.25					*602P32282*	**602P35282**	*602P36282*
28.5	1” 1/8				*602P32285*	**602P35285**	*602P36285*
28.75					*602P32287*	**602P35287**	*602P36287*

øA		øF Ø20 G6	øF Ø20 G6	øF Ø20 G6	øF Ø20 G6	øF Ø20 G6	øF Ø20 G6	øF Ø20 G6
mm	*inches*	**øD 32**	**øD 34**	**øD 35**	**øD 36**	**øD 39**	**øD 42**	**øD 45**
29		*602P32290*		**602P35290**	*602P36290*			
29.25		*602P32292*		**602P35292**	*602P36292*			
29.5		*602P32295*		**602P35295**	*602P36295*			
29.75		*602P32297*		**602P35297**	*602P36297*			
30		*602P32300*		*602P35300*	**602P36300**			
30.25	1” 3/16			*602P35302*	**602P36302**			
30.5				*602P35305*	**602P36305**			
30.75				*602P35307*	**602P36307**			
31				*602P35310*	*602P36310*		**602P42310**	
31.25				*602P35312*	*602P36312*		**602P42312**	
31.5			*602P34315*	*602P35315*	*602P36315*		**602P42315**	
31.75	1” 1/4			*602P35317*	*602P36317*		**602P42317**	
32				*602P35320*	*602P36320*	**602P39320**	**602P42320**	
32.25					*602P36322*		**602P42322**	
32.5					*602P36325*		**602P42325**	
32.75					*602P36327*		**602P42327**	
33					*602P36330*		**602P42330**	*602P45330*
33.25	1” 5/16				*602P36332*		**602P42332**	*602P45332*
33.5					*602P36335*		**602P42335**	*602P45335*
33.75					*602P36337*		**602P42337**	*602P45337*
34					*602P36340*		**602P42340**	602P45340
34.25							**602P42342**	602P45342
34.5							**602P42345**	602P45345
34.75						**602P39350**	**602P42347**	602P45347
35	1” 3/8						**602P42350**	602P45350
35.25							**602P42352**	602P45352
35.5							**602P42355**	602P45355
35.75							**602P42357**	602P45375
36						**602P39360**	**602P42360**	602P45360
36.25	1” 7/16						**602P42362**	602P45362
36.5							**602P42365**	602P45365
36.75							**602P42367**	602P45367
37						**602P39370**	*602P42370*	**602P45370**
37.25							*602P42372*	**602P45372**
37.5							*602P42375*	**602P45375**
37.75							*602P42377*	**602P45377**

øA		øF Ø20 G6	øF Ø20 G6	øF Ø20 G6	SIR 52		
					øF Ø20 G6	øF Ø20 G6	
mm	*inches*	**øD 42**	**øD 45**	**øD 51**	**øD 52**	**øD 56**	
38		*602P42380*	**602P45380**				
38.25		*602P42382*	**602P45382**				
38.5		*602P42385*	**602P45385**				
38.75		*602P42387*	**602P45387**				
39		*602P42390*	**602P45390**				
39.25		*602P42392*	**602P45392**				
39.5		*602P42395*	**602P45395**				
39.75		*602P42397*	*602P45397*	**602P51397**			
40		*602P42400*	*602P45400*	**602P51400**			
40.25			*602P45402*	**602P51402**			
40.5			*602P45405*	**602P51405**			
40.75			*602P45407*	**602P51407**			
41			*602P45410*	**602P51410**			
41.25			*602P45412*	**602P51412**			
41.5			*602P45415*	**602P51415**			
41.75			*602P45417*	**602P51417**			
42			*602P45420*	**602P51420**			
42.25				**602P51422**			
42.5				**602P51425**			
42.75				**602P51427**			
43	1” 11/16			**602P51430**			
43.25				**602P51432**			
43.5				**602P51435**			
43.75				**602P51437**			
44				**602P51440**	**602P52440**		
44.25				**602P51442**			
44.5				**602P51445**	**602P52445**		
44.75				**602P51447**			
45				**602P51450**			
45.25				*602P51452*			
45.5				*602P51455*			
45.75				*602P51457*			
46				*602P51460*	**602P52460**		
46.25				*602P51462*			
46.5				*602P51465*			
46.75				*602P51467*			
47				*602P51470*	**602P52470**	**602P56470**	

øA		øF Ø20 G6	øF Ø20 G6	øF Ø20 G6	SIR 52		
					øF Ø20 G6	øF Ø20 G6	
mm	*inches*	**øD 42**	**øD 45**	**øD 51**	**øD 52**	**øD 56**	
48					**602P52480**	**602P56480**	
49					**602P52490**	**602P56490**	
50						**602P56500**	
51						**602P56510**	
52						**602P56520**	

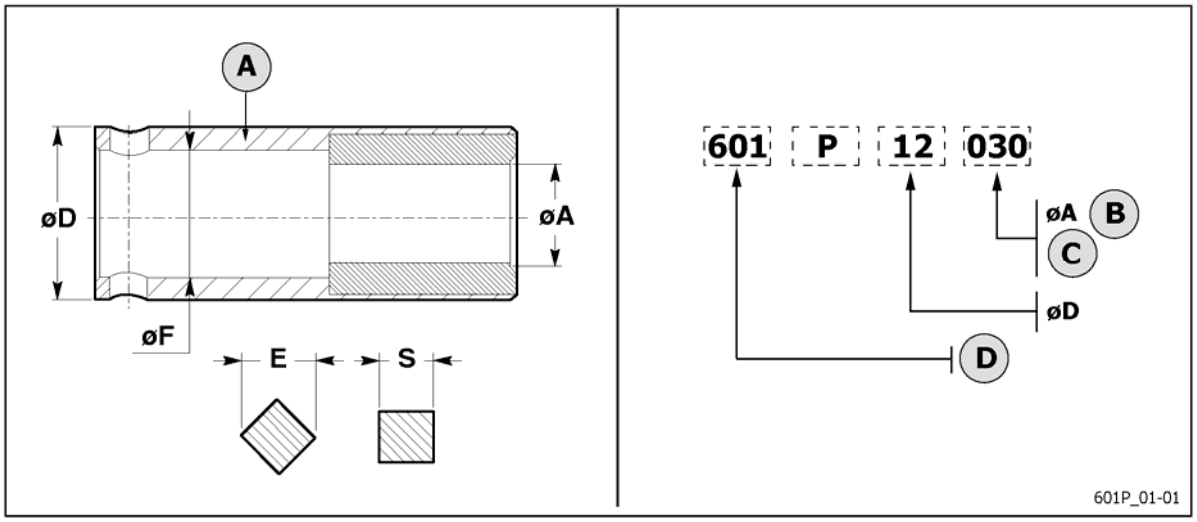
11.4 “UNILOCK” COLLETS FOR BARS 601P

“UNILOCK” COLLETS FOR SQUARE BARS - Table

INFORMATION:

for defining the internal diameter øA do not consult “001 - Conversion Tables” document, but directly consult the table below.

Code structure



A Collet
B Bar diameter
C Example:
3 mm = 030
3.5 mm = 035
12.5 mm = 125
12.75 mm = 127
D Family to which it belongs

S	E E=Sx1.414	øA +0.1 0	øF M5x0.5	øF Ø8 G6	øF Ø11 G6	øF Ø14 G6	øF Ø20 G6
mm	*mm*	*mm*	**øD 7.5**	**øD 12**	**øD 18**	**øD 21**	**øD 25**
3	4.24	3.8	**601P08038**				
4	5.65	5.1		**601P12051**			
5	7.07	6.6		**601P12066**			
6	8.48	8		**601P12080**	**601P18080**		
7	9.90	9.2			**601P18092**	**601P21092**	
8	11.31	10.3			**601P18103**	**601P21103**	
9	12.73	11.7			**601P18117**	**601P21117**	
10	14.14	13.1			**601P18131**	**601P21131**	**601P25131**
11	15.55	14.5				**601P21145**	**601P25145**
12	16.97	15				**601P21150**	**601P25150**

S	**E** **E=Sx1.414**	**øA** +0.1 0	**øF** M5x0.5	**øF** Ø8 G6	**øF** Ø11 G6	**øF** Ø14 G6
mm	*mm*	*mm*	**øD 25**	**øD 29**	**øD 32**	**øD 36**
13	18.38	17.4	**601P25174**			
14	19.80	18.8	**601P25188**			
15	21.21	20.2	**601P25202**			
16	22.62	21.6		**601P29216**		
17	24.04	23		**601P29230**		
18	25.45	24.5			**601P32245**	
19	26.87	25.9			**601P32259**	
20	28.28	27.3			**601P32273**	
21	29.69	28.7				**601P36287**
22	31.11	30.1				**601P36301**
23	32.52	31.5				**601P36315**

"UNILOCK" COLLETS FOR HEXAGONAL BARS - Table

INFORMATION:

for defining the internal diameter øA do not consult "001 - Conversion Tables" document, but directly consult the table below.

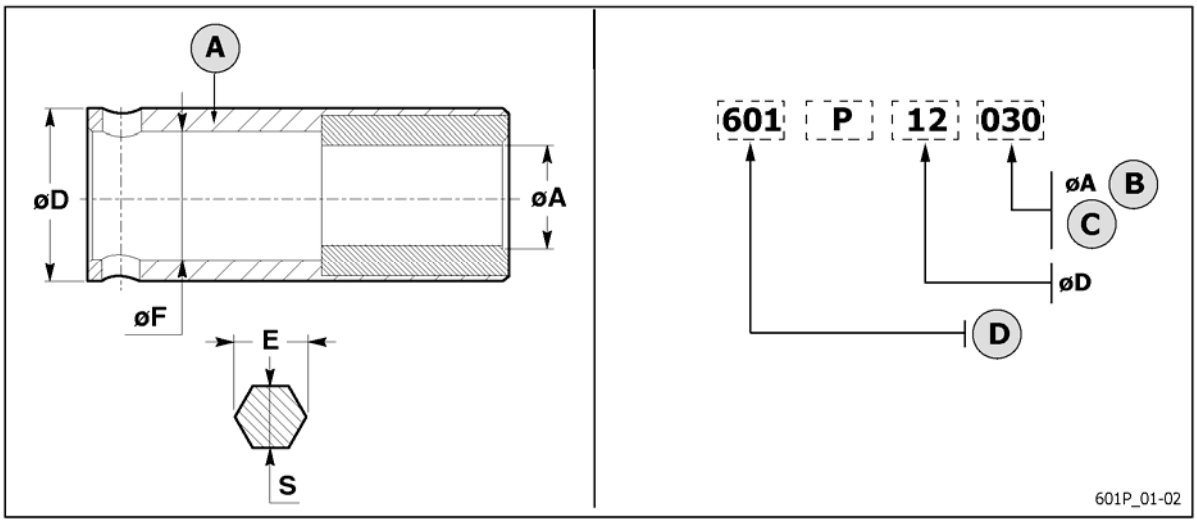
Note for consultation

The codes on the grey ground are indicating the "EMPLOYED SECTOR" to prefer.

Note for ordering

- Collets with codes in bold characters are available from stock.
- Please contact IEMCA service to use the collets with codes in Italics. The delivery times for this kind of collets are longer.

Code structure



A Collet
B Bar diameter
C Example:
3 mm = 030
3.5 mm = 035
12.5 mm = 125
12.75 mm = 127
D Family to which it belongs

S		E E=Sx1.154	øA +0.1 0	øF M5x0.5	øF Ø8 G6	øF Ø11 G6	øF Ø14 G6	øF Ø20 G6
mm	*inches*	*mm*	*mm*	**øD 7.5**	**øD 12**	**øD 18**	**øD 21**	**øD 25**
3		3.46	3.1	**601P08031**				
	1/8”	3.66	3.3	**601P08033**				
4		4.62	4.1	**601P08041**				
	3/16”	5.5	5		**601P12050**			
5		5.77	5.2		**601P12052**			
6		6.92	6.2		**601P12062**	***601P18062***		
	1/4"	7.33	6.6		**601P12066**	*601P18066*		
7		8.08	7.3		*601P12073*	**601P18073**		
	5/16”	9.16	8.3			**601P18083**	**601P21083**	
8		9.23	8.4			**601P18084**	**601P21084**	
8.5		9.82	9					**601P25090**
9		10.39	9.5			**601P18095**	**601P21095**	
	3/8”	10.99	10			**601P18100**	**601P21100**	
10		11.54	10.6			**601P18106**	**601P21106**	
10.5		12.13	11.1			**601P18111**		
11		12.7	11.7			**601P18117**	**601P21117**	
	7/16”	12.82	11.8			**601P18118**	**601P21118**	
12		13.85	12.8			**601P18128**	**601P21128**	**601P25128**
	1/2"	14.65	13.7			**601P18137**		
13		15.01	13.9			**601P18139**		

S		E E=Sx1.154	øA +0.1 0	øF 14 G6	øF 20 G6	øF 20 G6
mm	*inches*	*mm*	*mm*	**øD 21**	**øD 25**	**øD 29**
	1/2"	14.65	13.7	**601P21137**	**601P25137**	
13		15	14	**601P21140**	**601P25140**	
14		16.16	15.2	**601P21152**	**601P25152**	
	9/16"	16.49	15.5	**601P21155**	**601P25155**	
15		17.31	16.3	**601P21163**	**601P25163**	
	5/8"	18.32	17.3		**601P25173**	
16		18.46	17.5		**601P25175**	
17		19.62	18.6		**601P25186**	*601P29186*
	11/16"	20.15	19.2		**601P25192**	*601P29192*
18		20.77	19.8		**601P25198**	*601P29198*
19	3/4"	21.93	21		**601P25210**	**601P29210**
20		23.08	22.1			**601P29221**
	13/16"	23.81	22.8			**601P29228**
21		24.24	23.2			**601P29232**
22		25.39	24.4			**601P29244**
	7/8"	25.65	24.7			**601P29247**
23		26.54	25.5			
	15/16"	27.48	26.5			
24		27.7	26.7			
	31/32"	28.41	27.3			
25		28.85	27.9			
	1"	29.31	28.3			
26		30	29			
	1" 1/16	31.14	30.2			
28		32.31	31.3			
	1" 1/8	33	32			

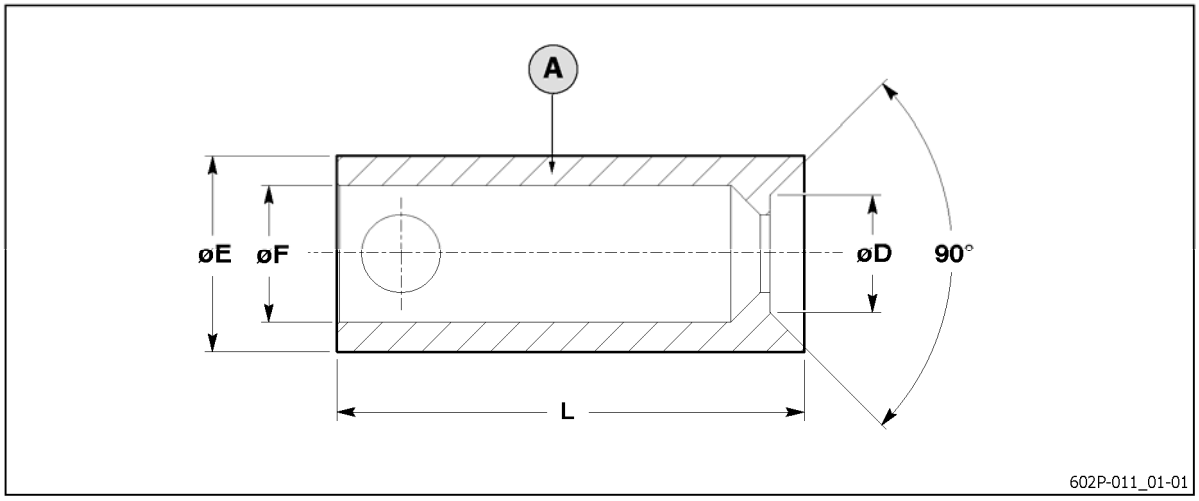
S		E E=Sx1.154	øA +0.1 0	øF 20 G6	øF 20 G6	øF 20 G6
mm	*inches*	*mm*	*mm*	**øD 32**	**øD 36**	**øD 40**
	1/2"	14.65	13.7			
13		15	14			
14		16.16	15.2			
	9/16”	16.49	15.5			
15		17.31	16.3			
	5/8”	18.32	17.3			
16		18.46	17.5			
17		19.62	18.6			
	11/16”	20.15	19.2			
18		20.77	19.8			
19	3/4”	21.93	21			
20		23.08	22.1	*601P32221*		
	13/16”	23.81	22.8			
21		24.24	23.2	*601P32232*	*601P36232*	
22		25.39	24.4	**601P32244**	*601P36244*	
	7/8”	25.65	24.7	**601P32247**		
23		26.54	25.5	**601P32255**		
	15/16”	27.48	26.5	**601P32265**	*601P36265*	
24		27.7	26.7	**601P32267**	*601P36267*	
	31/32”	28.41	27.3	**601P32273**		
25		28.85	27.9	**601P32279**	**601P36279**	
	1”	29.31	28.3		**601P36283**	
26		30	29		**601P36290**	
	1” 1/16	31.14	30.2		**601P36302**	**601P40302**
28		32.31	31.3		**601P36313**	
	1” 1//8	33	32		**601P36320**	

11.5 EJECTOR 602P..011

EJECTOR -Guides ø13÷28 - Table

CAUTION:

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



A Ejector

øE (mm)	**øF** (mm)	**øD** (mm)	**L** (mm)	N. code
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

11.6 COLLETS FOR TUBES 603P

COLLETS FOR TUBES - Table

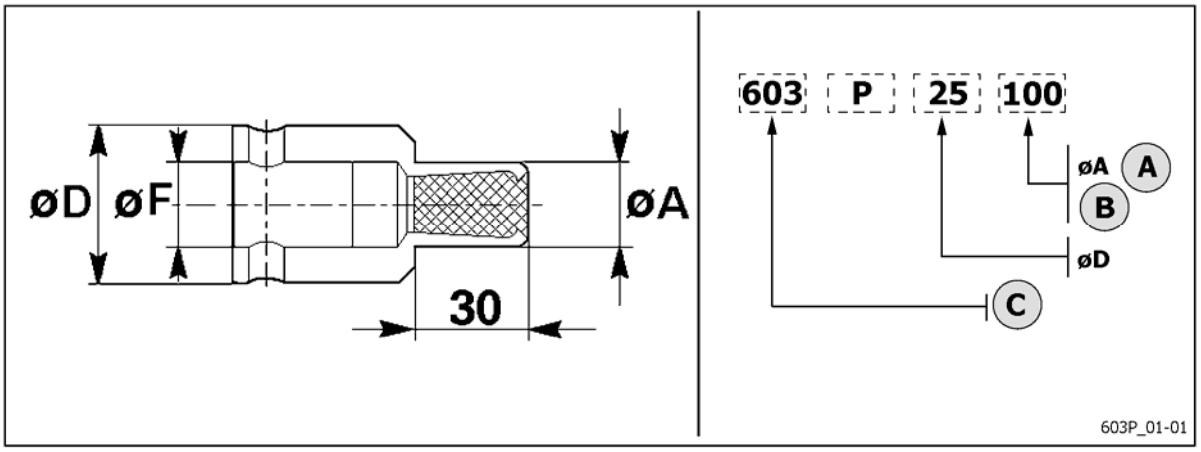
CAUTION:

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

INFORMATION:

The 603P collets..... fitted with a Schlenker coupling, allowing the assembly on the rotating unit, are designed with an oversized length. Therefore, the 1st feeding value of the bar pusher carriage shall be increased of 7,5 mm. with respect to the standard value.

Code structure



A Bar diameter
B Example:
5 mm = 060
10 mm = 100
12.5 mm = 125
C Family to which it belongs

øA		**øF** ø8 G6	**øF** ø11 G6	**øF** ø11 G6	**øF** ø14 G6	**øF** ø20 G6	**øF** ø20 G6	
mm	*inches*	**øD 12**	**øD 15**	**øD 18**	**øD 20**	**øD 25**	**øD 27**	
5		**603P12050**	**603P15050**					
5.5		**603P12055**	**603P15055**					
6	15/64”	**603P12060**	**603P15060**		**603P20060**			
6.5		**603P12065**	**603P15065**		**603P20065**			
7		**603P12070**	**603P15070**		**603P20070**			
7.5		**603P12075**	**603P15075**		**603P20075**			
8	5/16”	**603P12080**	**603P15080**		**603P20080**			
8.5		**603P12085**	**603P15085**		**603P20085**			
9		**603P12090**	**603P15090**		**603P20090**			
9.5		**603P12095**	**603P15095**		**603P20095**			
10	25/64”		**603P15100**	**603P18100**	**603P20100**	**603P25100**		
10.5			**603P15105**		**603P20105**	**603P25105**		
11			**603P15110**		**603P20110**	**603P25110**		

øA		øF ø8 G6	øF ø11 G6	øF ø14 G6	øF ø20 G6	øF ø20 G6	øF ø20 G6	øF ø20 G6
mm	*inches*	**øD 12**	**øD 15-16**	**øD 20**	**øD 25**	**øD 27**	**øD 32**	**øD 35**
11.5			**603P15115**	**603P20115**	**603P25115**			
12			**603P15120**	**603P20120**	**603P25120**			
12.5	31/64”		**603P15125**	**603P20125**	**603P25125**			
13			**603P15130**	**603P20130**	**603P25130**			
13.5			**603P16135**	**603P20135**	**603P25135**			
14			**603P16140**	**603P20140**	**603P25140**			
14.5				**603P20145**	**603P25145**			
15				**603P20150**	**603P25150**		**603P32150**	
15.5				**603P20155**	**603P25155**			
16	5/8”			**603P20160**	**603P25160**		**603P32160**	
16.5				**603P20165**	**603P25165**		**603P32165**	
17				**603P20170**	**603P25170**		**603P32170**	
17.5	11/16”			**603P20175**	**603P25175**		**603P32175**	
18	45/64”			**603P20180**	**603P25180**		**603P32180**	
18.5					**603P25185**		**603P32185**	
19	3/4”				**603P25190**		**603P32190**	
19.5					**603P25195**		**603P32195**	
20					**603P25200**		**603P32200**	
20.5					**603P25205**		**603P32205**	
21					**603P25210**		**603P32210**	
21.5					*603P25215*	**603P27215**	**603P32215**	
22					*603P25220*	**603P27220**	**603P32220**	
22.5					*603P25225*	**603P27225**	**603P32225**	

øA		øF ø20 G6	øF ø20 G6	øF ø20 G6	øF ø20 G6	øF ø20 G6	øF ø20 G6	øF ø20 G6
mm	*inches*	**øD 25**	**øD 27**	**øD 29**	**øD 32**	**øD 35**	**øD 42**	**øD 49**
23		*603P25230*	**603P27230**		**603P32230**	**603P35230**	**603P42230**	
23.5			**603P27235**		**603P32235**			
24			**603P27240**		**603P32240**	**603P35240**	**603P42240**	
24.5			**603P27245**		**603P32245**		**603P42245**	
25			**603P27250**		**603P32250**		**603P42250**	
25.5	1”			**603P29255**	**603P32255**			
26				**603P29260**	**603P32260**		**603P42260**	
26.5				**603P29265**	**603P32265**			
27				**603P29270**	**603P32270**		**603P42270**	
27.5					**603P32275**			
28					**603P32280**		**603P42280**	
28.5	1”1/8				**603P32285**			
29					*603P32290*	**603P35290**	**403P42290**	
29.5					*603P32295*			
30					*603P32300*	**603P35300**	**603P42300**	**603P49300**
30.5								**603P49305**
31						**603P35310**	**603P42310**	**603P49310**
31.5								**603P49315**
32						**603P35320**	**603P42320**	**603P49320**
32.5								**603P49325**
33						**603P35330**	**603P42330**	**603P49330**
33.5								**603P49335**

øA		øF ø20 G6	øF ø20 G6	øF ø20 G6	øF ø20 G6		
mm	*inches*	**øD 40**	**øD 42**	**øD 44-45**	**øD 49**		
34		**603P40340**	**603P42340**		**603P49340**		
34.5					**603P49345**		
35	1”3/8	**603P40350**	**603P42350**		**603P49350**		
35.5					**603P49355**		
36		**603P40360**	**603P42360**		**603P49360**		
36.5					**603P49365**		
37		**603P40370**	**603P42370**		**603P49370**		
37.5					**603P49375**		
38	1”1/2		**603P42380**		**603P49380**		
38.5					**603P49385**		
39			**603P42390**		**603P49390**		
39.5				**603P44395**	**603P49395**		
40			*603P42400*	**603P44400**	**603P49400**		
40.5				**603P44405**	**603P49405**		
41				**603P44410**	**603P49410**		
41.5				**603P44415**	**603P49415**		
42				**603P45420**	**603P49420**		
42.5				**603P45425**	**603P49425**		
43	1”11/16				**603P49430**		
43.5					**603P49435**		
44					**603P49440**		
44.5	1”3/4				**603P49445**		
45					**603P49450**		

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12.1 LIST OF AFTER-SALES CENTERS

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Bucci Industries USA Inc.	9332 Forsyth Park Drive Charlotte NC 28273 - USA	Phone ++1 704 583 8341 Telefax ++1 704 583 8486 E-mail: info@bucci-industries.us