AUTOMATIC BAR FEEDER

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

BOSS 332-545 E - 552 HD

BOSS 332r-545r E - 552r HD

EN **MANUAL FOR USE AND MAINTENANCE**

Rel. 2 **Date** 30/01/2010 **Cod.** 346005410

S/N

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TYPE OF DOCUMENT:	**MANUAL FOR USE AND MAINTENANCE**
PRODUCT:	**AUTOMATIC BAR FEEDER**
MODEL:	**BOSS 332-545 E - 552 HD**
	BOSS 332r-545r E - 552r HD

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

General Description of Supply

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

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

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

Any additional parts can be supplied upon request.

Applicable Safety Regulation

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

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

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

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

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

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

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

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

DECLARES

on his own responsibility that the machine:

AUTOMATIC BAR FEEDER

BOSS	
(type/model)	(registration number)

- is in compliance with the requirements of 2006/42/ EC regulation and with the national implementing regulations,

- is in compliance with the following European regulations:

    - 2006/95/ EC regulation (low tension);
    - 2004/108/ EC regulation (electromagnetic compatibility).

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

TOMASO TAROZZI – Managing Director CEO

FAENZA, 01/01/2010

…….
(delegate signature)

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

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

1.1 WARRANTY CONDITIONS

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

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

IEMCA CERTIFICATO DI INSTALLAZIONE N° 0517 /02

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

Installazione e training eseguito da:

Ditta		Data	
Tecnico Installatore		N° Rapporto di Intervento	

Presso:

Cliente		Partecipante/i (Scrivere stampatello i nomi)
Nazione		
Caricatore		
Matricola		
Macc./Tipo		

ARGOMENTO	
Descrizione generale del caricatore e del suo funzionamento, spiegazione del ciclo di lavoro.	☐
Istruzioni per attrezzare il caricatore e come eseguire il cambio di lavorazione. Descrizione e cambio di: guide, spingibarra, pinze, semiboccole, cannotto anteriore e di riduzione.	☐
Spiegazione tastiera operatore; Spiegazione dei parametri e loro utilizzo.	☐
Procedure di programmazione in base al tipo di lavorazione da eseguire.	☐
Errori - Cause - Rimedi; spiegazione dei principali allarmi riportati sui manuali.	☐
Presa visione della manualistica e delle indicazioni di manutenzione preventiva; Modalità per contattare l'assistenza tecnica autorizzata IEMCA.	☐

Presa visione della manualistica e delle indicazioni di manutenzione preventiva; Modalità per contattare l'assistenza tecnica autorizzata IEMCA. ☐

Gli argomenti contrassegnati sono stati trattati in modo completo ed esaustivo. I partecipantile si dichiarano completamenti soddisfatti del Training effettuato. Firma a lato per accettazione.

NOTA - l'erogazione del periodo di garanzia è subordinata a:
- installazione eseguita da un tecnico autorizzato IEMCA
- svolgimento del sopraciato "training"

Timbro e firma del cliente

La decorrenza della garanzia si intende valida per 12 mesi dalla data di installazione e comunque, non oltre i 18 mesi dalla data di consegna. La validità della garanzia entra in vigore dalla data di sottoscrizione incondizionata del presente modulo che dovrà essere restituito alla IEMCA, completo di ogni sua parte via posta entro 15 giorni, o tramite il tecnico installatore.

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

Copia per IEMCA

1.2 PURPOSE OF THE MANUAL

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

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

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

DANGER - WARNING:

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

WARNING – CAUTION:

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

INFORMATION:

these are technical instructions of particular importance.

For a quick search of the topics, see the table of contents.
This manual, which contains all the instructions for the bar feeder operation and maintenance, is supplied with: the "Keyboard instruction manual".
The "Keyboard instruction manual" contains all the instructions on how to use the installed software.

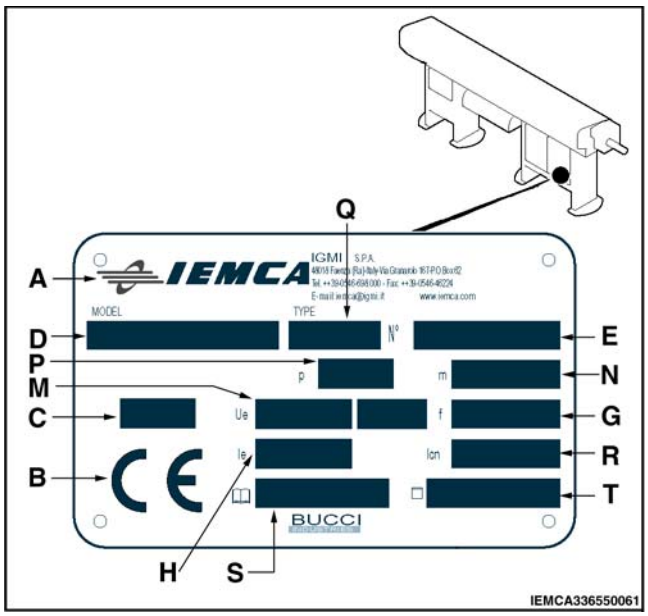
INFORMATION:

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

IEMCA may apply changes to the model described in this publication at any time for any technical or business reason. Contact IEMCA service department for further information.

1.3 MANUFACTURER AND BAR FEEDER IDENTIFICATION

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



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

1.4 ASSISTANCE REQUEST

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

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

1.5 ATTACHMENT LIST

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

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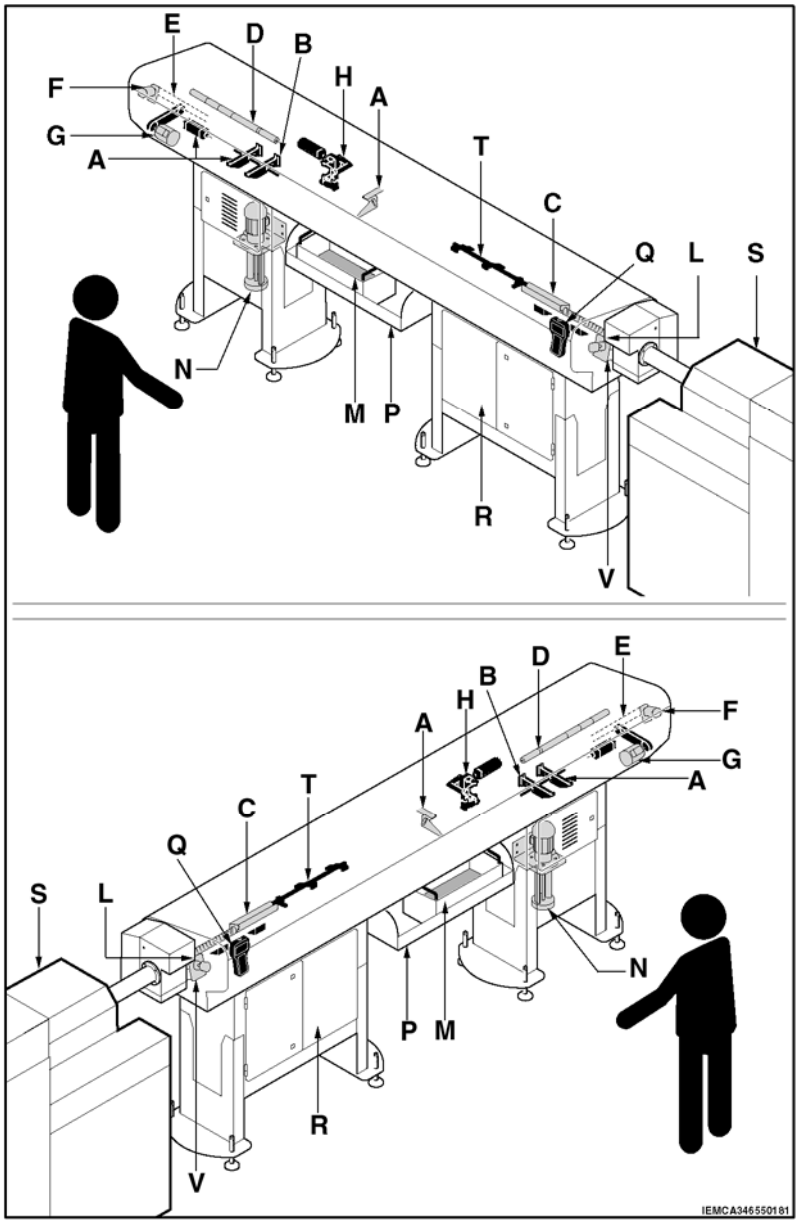
2.1 BAR FEEDER GENERAL DESCRIPTION

The BOSS automatic bar feeder is used in the machine-tool industry and in particular, for automatic lathe feeding. It is particularly suitable for feeding fixed or sliding headstock lathes, numerical control or cam lathes.
The operating cycle is controlled by a PLC, integrated in the electrical control panel, which is able to communicate with the lathe control system.
The digital handheld keyboard makes programming easier and allows the bar feeder functions to be controlled without leaving the lathe.
The bar feeder can be used to feed bars, pipes, various sections and metallic as well as polymeric materials. Do not use flammable materials.
The guide channel is completely closed during machining; a pump is provided to maintain a continuous oil flow inside the guide channel, creating a hydrodynamic support effect; these features allow the bar to rotate at high r.p.m., with no vibrations and no surface damaging.
Thanks to the use of a "BRUSHLESS" and electronically controlled motor, the bar speed, torque value and bar feeding position may be determined at any time during the working cycle.

The bar pusher returns with the remnant, which is removed and then falls into the remnant recovery box through a slot of the following size: L=400 mm, for Standard Remnant Drop (CSS) or L=700 mm for Oversize Remnant Drop (CSM). Please refer to the "VERSION DESCRIPTION" section in ch. 2 for technical specifications.
The bar remnant ejection can be performed by the bar pusher feeding or next bar feeding.
The BOSS bar feeders are available in the following models:
BOSS 332 (standard version, magazine length: 21, 32, 37, 44, 64)
BOSS 332r (reversed version, magazine length: 32, 37, 44)
BOSS 545 (standard version, magazine length: 21, 32, 37, 44)
BOSS 545r (reversed version, magazine length: 32, 37, 44)
BOSS 552 HD (standard version, magazine length: 21, 32, 37, 44)
BOSS 552r HD (reversed version, magazine length: 32, 37, 44)
Unless otherwise stated, the texts, tables and illustrations contained in this manual refer to the standard version (BOSS 332, BOSS 545 and BOSS 552 HD) with the lathe on the operator's right.

As for the reversed versions (BOSS 332r, BOSS 545r and BOSS 552r HD), with the lathe on the operator's left, please note that the main parts are located on the opposite side, as mentioned below.

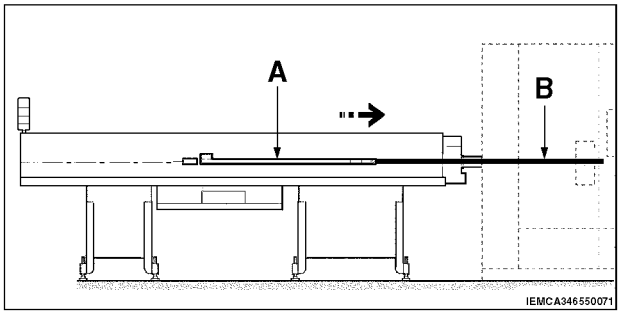
- **MAIN PARTS**



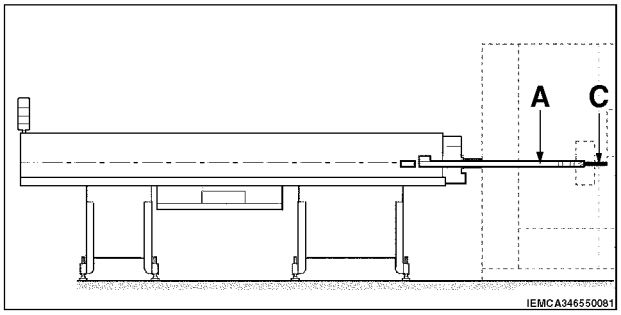
A MAGAZINE; it stores the bars.
B BAR SELECTION DEVICE; it enables the first bar to be lowered into the guide channels and holds the remaining bars in the magazine.
C GUIDE CHANNELS; they guide the bars during machining.
D BAR PUSHER; it pushes the bar during machining.
E FEED CHAIN; transmits the motion from the motor drive to the bar pusher.
F DRIVE SYSTEM; it moves the bar pusher.
G FEEDING- REMOVAL DRIVE; it drives the bar feeder parts that control bar feeding into the collet and subsequent bar remnant removal. It also drives the bar feeder parts that control guide channel opening/closing and bar selection.
H CLAMPS; they hold the bar during loading and removal from the collet of the bar pusher.
L FACING DEVICE; it sends a signal when the bar passes.
M REMNANT RECOVERY BOX; bar remnants are dropped into this box after removal from the bar pusher collet.
N LUBRICATION PUMP; it delivers oil to the guide channels.
P OIL RECOVERY DEVICE; it collects oil flowing out of the guide channels.
Q HANDHELD KEYBOARD; it allows bar feeder programming and function activation.
R ELECTRIC CABINET; it houses the electrical control panel.
S LATHE
T GUIDE CHANNEL OPENING SHAFT
V ENCODER

2.2 OPERATING CYCLE

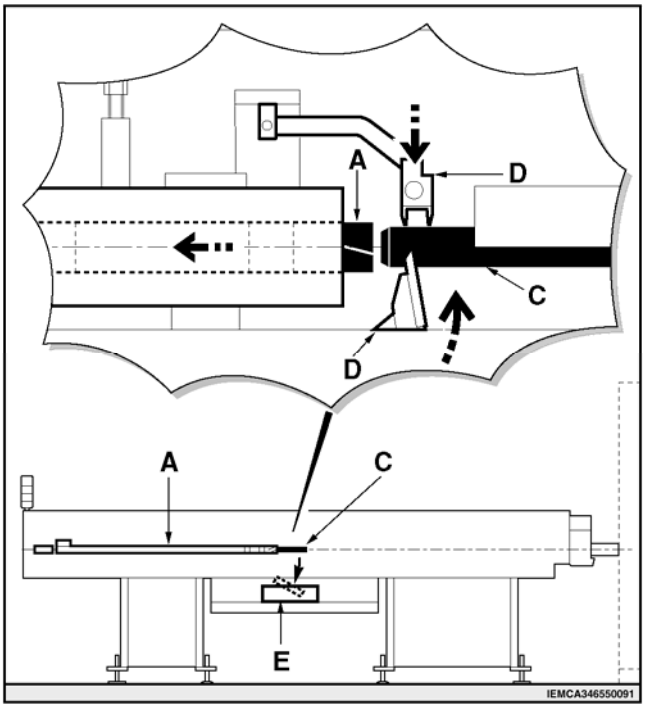
In the automatic operation mode, bar feeder movements are controlled in the sequence described below.
The bar pusher "A" feeds bar "B" in the lathe, by following lathe pulses, until bar end.



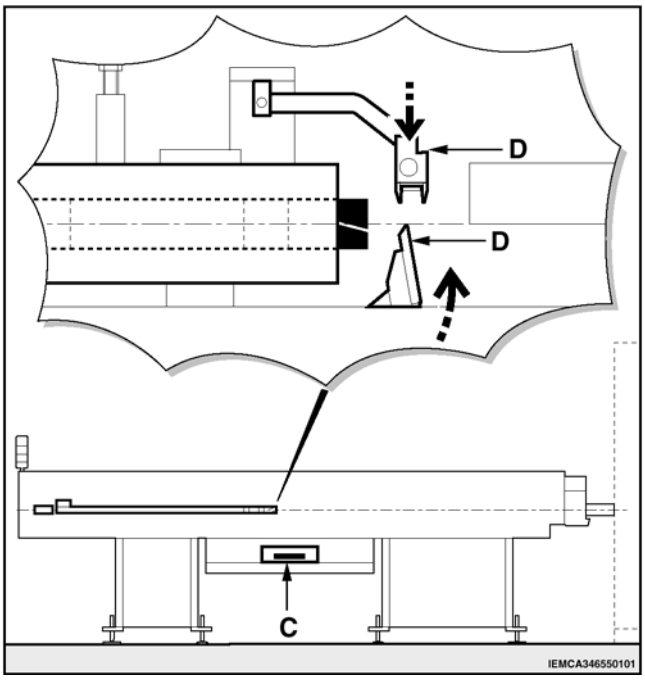
The bar pusher A and remnant C are in their forwards limit stop position.



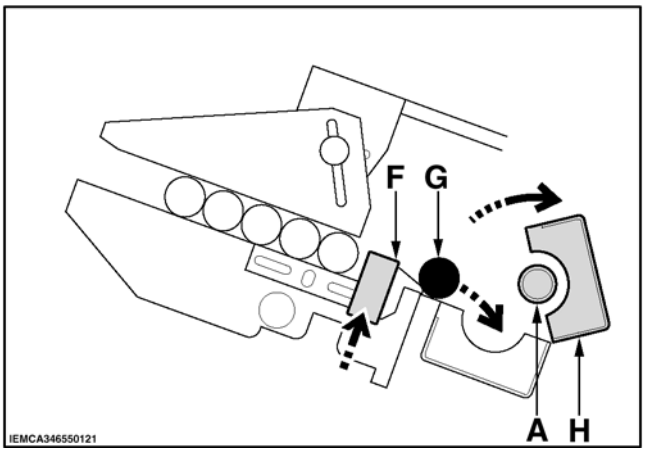
The bar pusher A and remnant C reach their backwards limit stop position.
The clamps D close and the bar pusher moves back; the remnant is removed from the collet. The clamps open and the remnant is dropped into the box E.



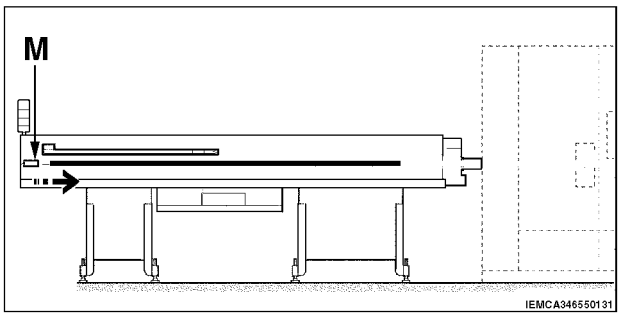
Clamps "D" close again to check remnant "C" removal.
If the remnant is still inserted in the bar pusher collet, the bar feeder stops; otherwise, it continues its cycle.



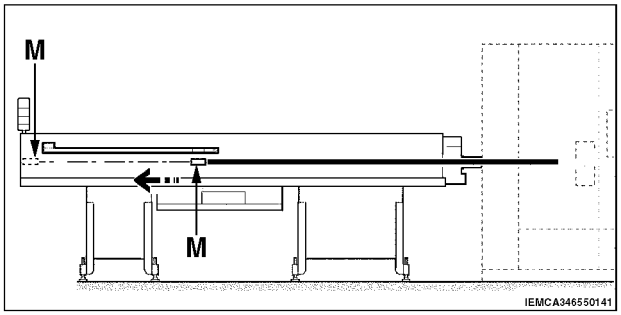
Upper guide channels "H" open together with bar pusher "A"; bar selector "F" moves upwards thereby lifting the first bar and withholding the remaining bars; bar "G" drops into the guide channel.
Bar selector "F" is lowered.



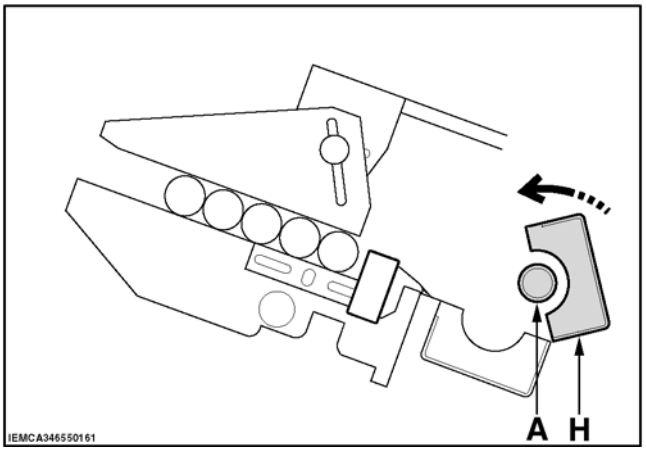
The first feeding carriage "M" starts its stroke.



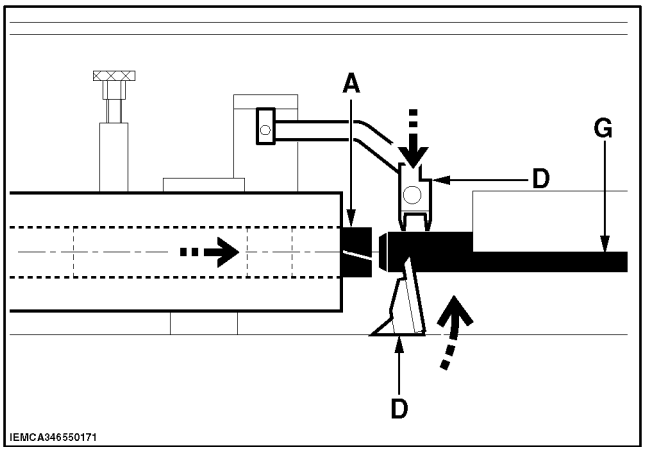
When the first feeding carriage "M" completes its stroke, the required space has been created for bar pusher insertion.
The first feeding carriage performs the return stroke.



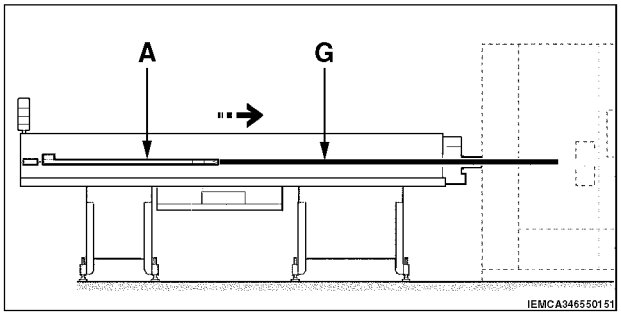
Upper guide channels "H" are closed; bar pusher "A" is placed along the spindle axis.



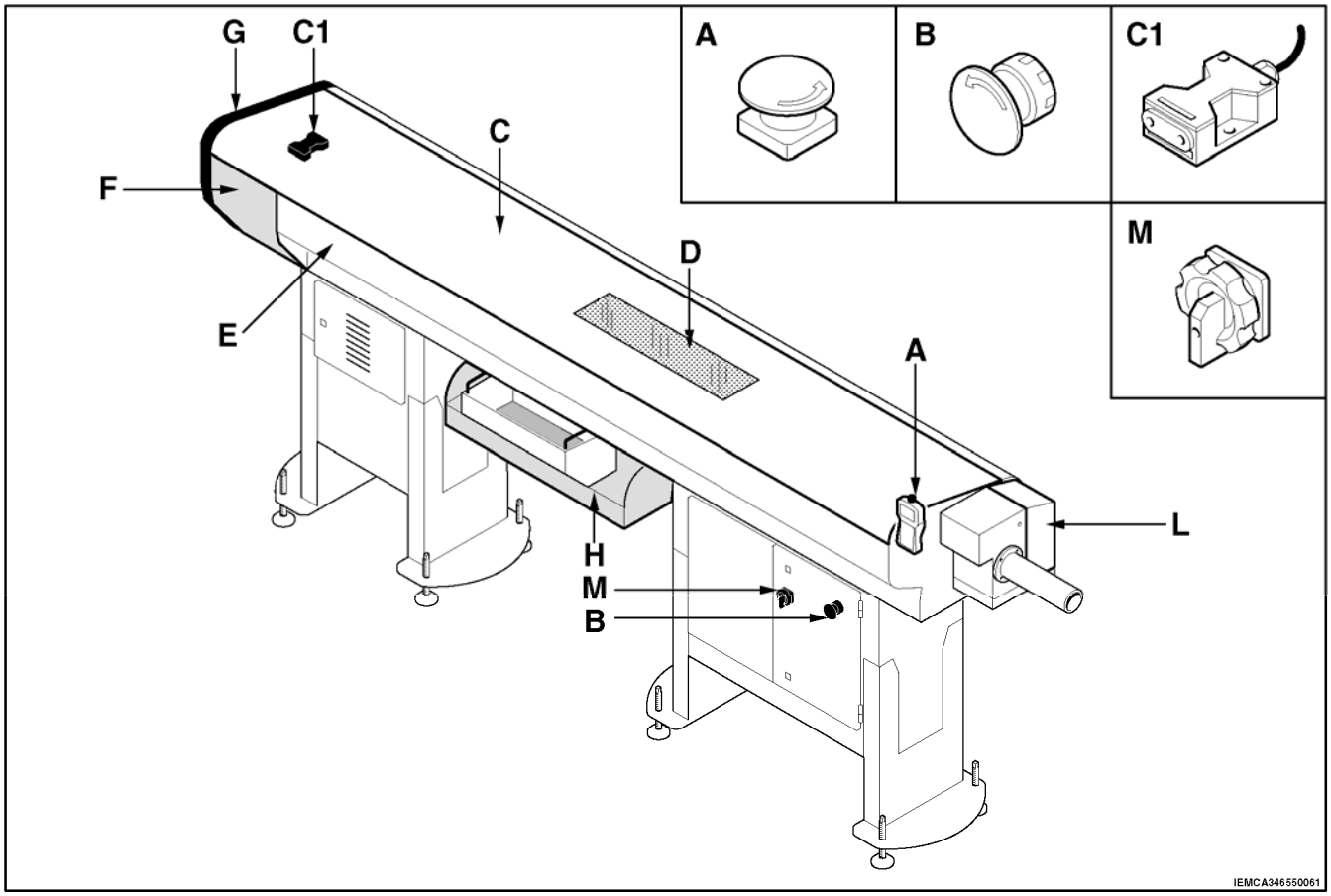
The clamps "D" close, the bar pusher "A" moves forwards; the bar "G" is inserted into the bar pusher collet.



Bar pusher "A" and bar "G" perform their facing stroke. A new automatic working cycle is started.



2.3 SAFETY DEVICES

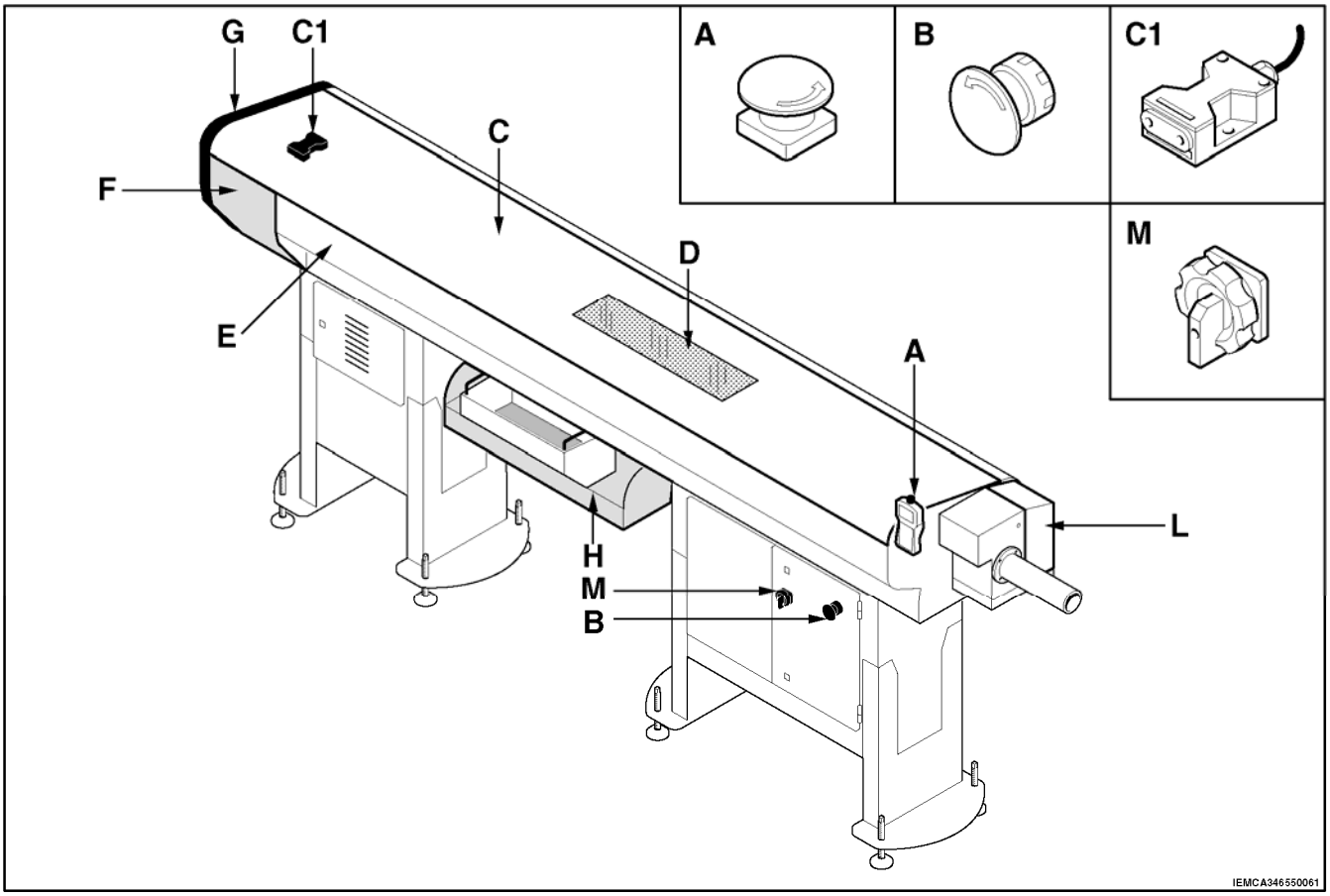


A EMERGENCY BUTTON; when pressed, all bar feeder and lathe functions are stopped in an emergency condition.

B EMERGENCY BUTTON; when pressed, all bar feeder and lathe functions are stopped in an emergency condition.

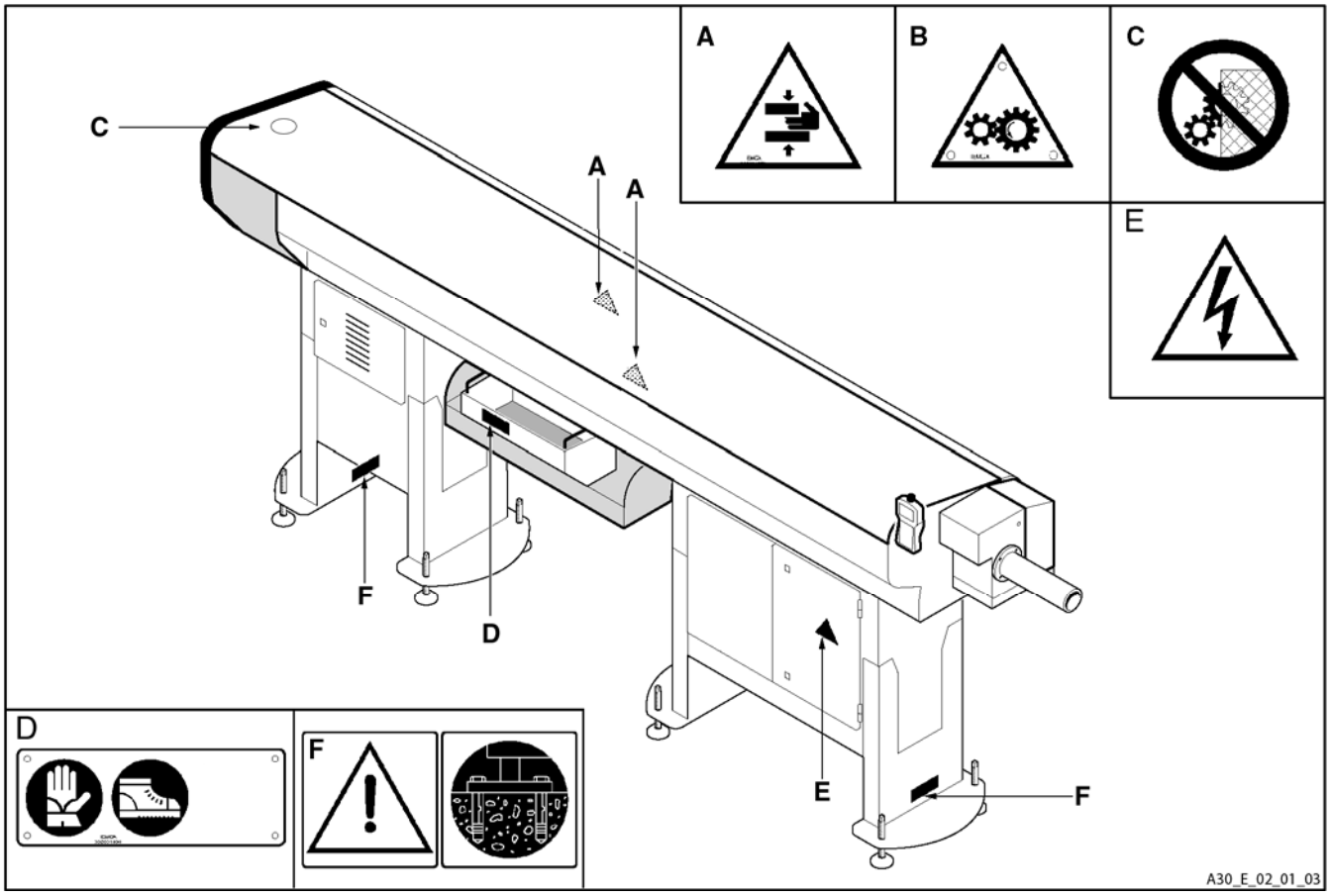
C INTERLOCKED SLIDING GUARD: linked to microswitch C1.
according to the cycle setting, its functions are:
manual cycle;
- during guard opening, the feeder will be stopped if the guide channels are not closed.
- during guard opening, if the guide channels are closed, the bar feeder functions are not disabled because no risks for the operator are present.

automatic cycle;
- during the bar feeding phase, the guard opening may be necessary for the purpose of filling the magazine. Even if the feeder functions are not stopped, there are no hazards for the operator inside the area.
- during the bar change procedure, the bar feeder will stop when the guard is opened. To start the bar feeder again the operator should close the guard.



D FIXED GUARD: it is made of transparent material to allow visual inspection of the bar magazine area.
E FIXED GUARD: it prevents accidental access to the bar selection area.
F FIXED GUARD: it prevents unintentional access to the drive area.
G FIXED GUARD: it prevents accidental access to the drive belt area.
H REMNANT RECOVERY BOX: it also acts as a fixed guard to prevent accidental access to moving parts.
L FIXED GUARD: it prevents accidental access to the bush holder device area.
M MAIN SWITCH: disconnects the electric power supply during the operations in the electrical control panel and during the bar feeder inactivity periods.

2.4 SAFETY PLATES - LOCATION AND DESCRIPTION



A Crushing danger of the upper limbs.
B Pay attention to the moving parts.
C Prohibition of removing the safety enclosures.
D Wear safety gloves and shoes.
E Warning; danger of electric contact.
F Warning; fix the bar feeder to the ground.

2.5 VERSION DESCRIPTION

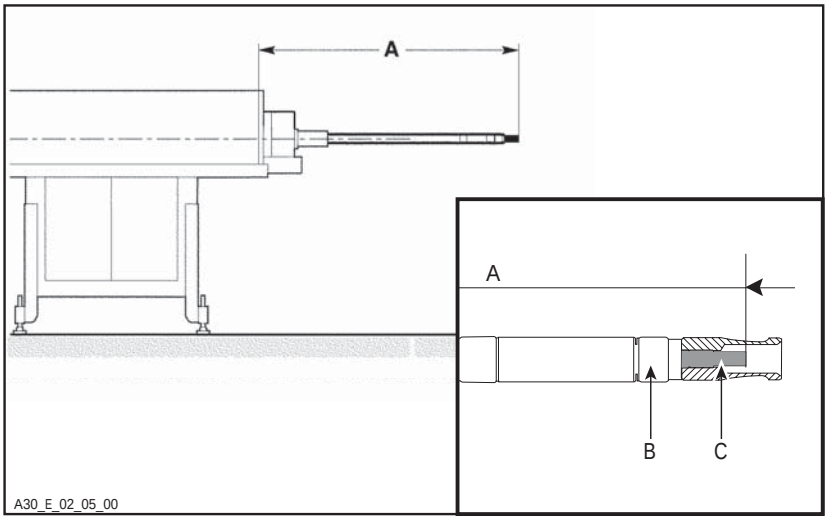
Maximum bar length

Model	Version	Maximum length mm (ft)	Minimum length (CSS) mm (ft)	Minimum length (CSM) mm (ft)
BOSS 332 BOSS 545 BOSS 552HD	21	2080 (6,8)	1000	/
	32	3200 (10,5)		2000
	37	3740 (12,2)		
	44	4400 (14,4)		
BOSS 332	64	6380 (20,8)	2000	

The remnant is removed and then falls into the remnant recovery box through a slot of the following size: L=400 mm, for Standard Remnant Drop (CSS) or L=700 mm for Oversize Remnant Drop (CSM).

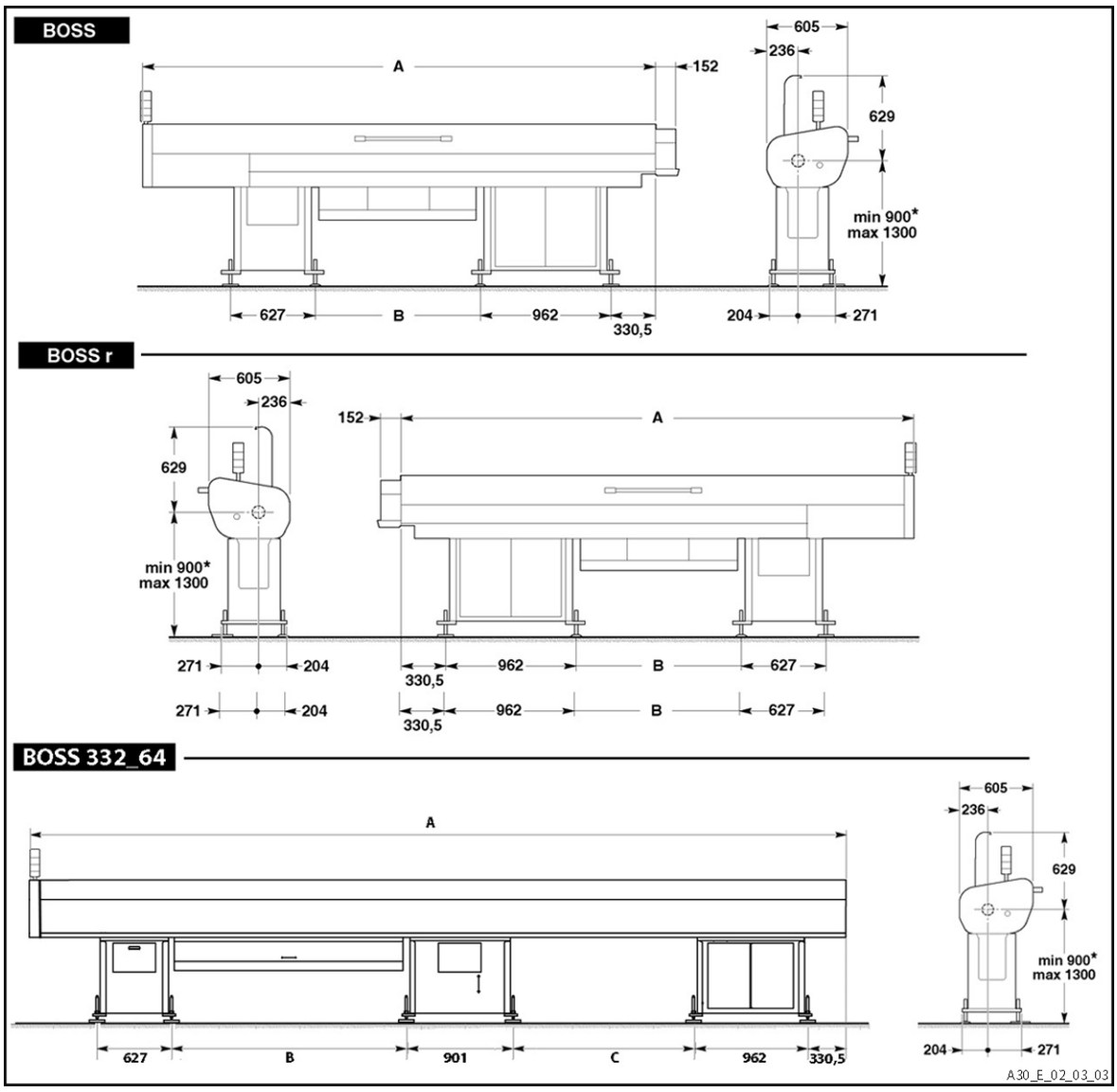
Max. bar pusher extension

Model	Version	Version	A – Max. extension (mm)
BOSS 332 BOSS 545 BOSS 552 - HD	N	21 - 32 – 37 – 44 - 64	910
	L		1240
	LL		1570
	LL + 660	37 – 44 - 64	2230



B - Revolving tip
C - Nipple

2.6 TECHNICAL DATA



(*) Without axial displacement device, the minimum value can be decreased to 850 mm.

Overall dimensions

Model	Version	A (mm)	B (mm)	C (mm)
BOSS 332 – BOSS 332r BOSS 545 - BOSS 545r BOSS 552 - BOSS 552r	21	2603	/	/
	32	3802	1220	/
	37	4342	1760	/
	44	5002	2420	/
	64	6382	1979	1520

General technical data

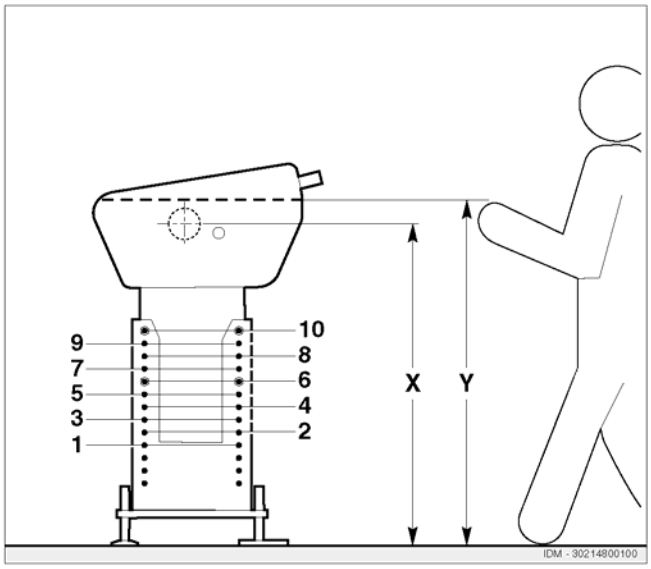
	BOSS 332		BOSS 545/552-HD	
Round bar size	Ø Min 4 mm (5/32")	Ø Max 32 mm (1" 1/4)	Ø Min 5 mm (3/16")	Max 545 45 mm (1" ¾) Max 552 52 mm (2")(***)
Hexagonal bar size (key socket)	Ø Min 4 mm (5/32")	Max 27 mm (1" 1/16)	Ø Min 5 mm (3/16")	Max 545 36 mm (1" 7/16) Max 552 41 mm (1" 39/64)
Square bar side	Ø Min 4 mm (5/32")	Max 22 mm (55/64")	Ø Min 5 mm (3/16")	Max 545 30 mm (1" 11/64) Max 552 35 mm (1" 3/8)
Minimum bar length	Ver. CSS 21, 32, 37, 44 1000 mm (3,3 ft) Ver. CSS 64, CSM 32, 37, 44, 64 2000 mm (6,6 ft)		Ver. CSS 21, 32, 37, 44 1000 mm (3,3 ft) Ver. CSM 32, 37, 44 2000 mm (6,6 ft)	
Maximum bar length	Ver. 21 – 2080 mm (6,9 ft) Ver. 32 – 3200 mm (10,5 ft) Ver. 37 – 3740 mm (12,2 ft) Ver. 44 – 4400 mm (14,4 ft) Ver. 64 – 6380 mm (20,8 ft)		Ver. 21 – 2080 mm (6,9 ft) Ver. 32 – 3200 mm (10,5 ft) Ver. 37 – 3740 mm (12,2 ft) Ver. 44 – 4400 mm (14,4 ft)	
Magazine capacity (working width)	n.28 barsØ 10 mm (3/8")		n.28 barsØ 10 mm (3/8")	
Maximum bar weight	120 kg		120 kg	
(Adjustable) feeding speed	1000 mm/sec		750 mm/sec	
(Adjustable) return speed	1800 mm/sec		1200 mm/sec	
Maximum remnant length (*)	295 mm (Ver. 21) 400 mm (CSS) 700 mm (CSM)		295 mm (Ver. 21) 400 mm (CSS) 700 mm (CSM)	
Minimum remnant length	70 mm		70 mm	
Bar change time (with 3,000 mm bar)	30 sec		30 sec	

	BOSS 332	BOSS 545/552-HD
Power supply voltage	230/400 Volt	230/400 Volt
Mains frequency	50/60 Hz	50/60 Hz
Control voltage	24 Volt D.C.	24 Volt D.C.
Installed power	2 kW	2 kW
Oil quantity	57 l	57 l
Air pressure	8 bar	8 bar
Air consumption (**)	20 Nl/min	20 Nl/min
Bar feeder weight	Ver. 21 - 620 kg Ver. 32 - 835 kg Ver. 37 - 900 kg Ver. 44 - 980 kg Ver. 64 - 1450 kg	Ver. 21 - 620 kg Ver. 32 - 835 kg Ver. 37 - 900 kg Ver. 44 - 980 kg

(*) The CSM version cannot be assembled onto the 32 LL and 21 models
(**) Approximate value depending on the number of activation cycles
(***) Valid also for prepared bars or normal bars machined with front remnant ejection.

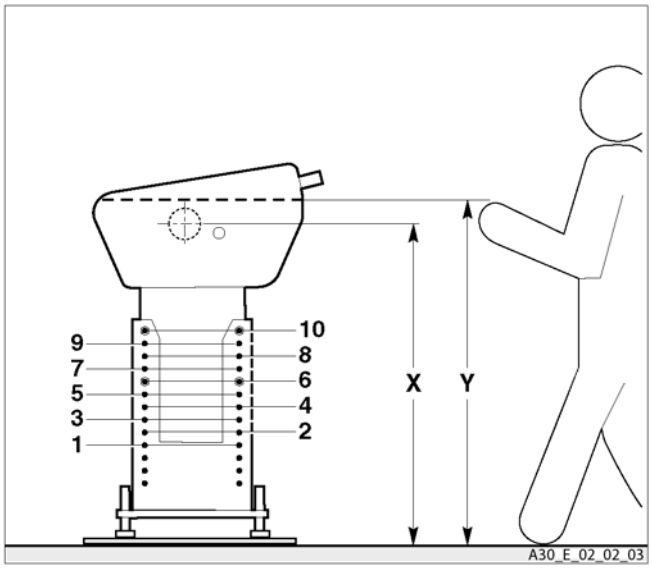
Working axis height

Model	Upper screws position	X (mm) Working axis height	Y (mm) Max. loading height
BOSS 332 BOSS 545 BOSS 552 - HD	**1**	865÷905	1055
	2	900÷940	1090
	3	935÷975	1125
	4	970÷1010	1160
	5	1005÷1045	1195
	6	1040÷1080	1230
	7	1070÷1115	1265
	8	1110÷1150	1300
	9	1145÷1185	1335
	10	1180÷1220	1370



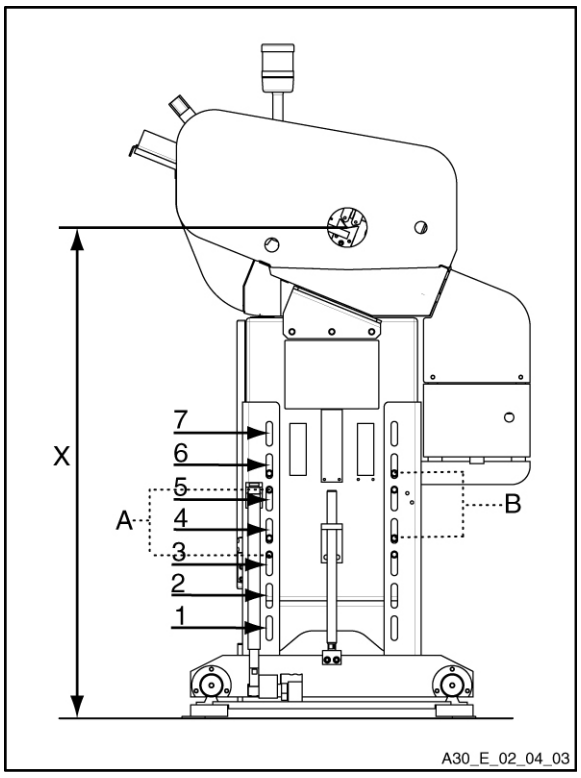
Working axis height with axial displacement

Model	Upper screws position	X (mm) Working axis height	Y (mm) Max. loading height
BOSS 332 BOSS 545 BOSS 552 - HD	**1**	905÷950	1100
	2	945÷995	1135
	3	980÷1020	1160
	4	1015÷1055	1205
	5	1050÷1090	1240
	6	1095÷1125	1275
	7	1115÷1160	1310
	8	1155÷1195	1345
	9	1190÷1230	1380
	10	1225÷1265	1415



Working axis height with axial displacement Vers. 21.

Model	X (mm) – Loading axis height	Screw position (threaded holes on the base)	Screws
BOSS 332 BOSS 545 BOSS 552 - HD	900 ÷ 920	1 - 3	A
	921 ÷ 955	2 - 4	B
	956 ÷ 990	2 - 4	A
	991 ÷ 1025	3 - 5	B
	1026 ÷ 1060	3 - 5	A
	1061 ÷ 1095	4 – 6	B
	1096 ÷ 1130	4 – 6	A
	1131 ÷ 1165	5 - 7	B
	1166 ÷ 1200	5 - 7	A



BOSS 332 guide channel, bar pusher, bar and pipe diameters.

Model	Guide channel diameter (mm)	Bar pusher diameter (mm)	Bar diameter (mm)		Pipe diameter (mm) (*)
			Minimum	Maximum	
BOSS 332	13	10	3	8	10
		12	4	10	12
	17	15	5	13	15
		16	5	14	16
	21	18	5	16	18
		19	5	17	19
		20	5	18	20
	24	23	6	20	23
	26	23	8	21	23
		25	8	23	25
	28	25	8	23	25
		27	8	25	27
	33	30	8	27	30
		31	8	28	31
		32	8	29	32
	36	32	8	29	32
		35	8	32	32

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

WARNING – CAUTION:

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

WARNING – CAUTION:

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

INFORMATION:

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

BOSS 545 guide channel, bar pusher, bar and pipe diameters.

Model	Guide channel diameter (mm)	Bar pusher diameter (mm)	Bar diameter (mm)		Pipe diameter (mm) (*)
			Minimum	Maximum	
BOSS 545	13	10	3	8	10
		12	4	10	12
	17	15	5	13	15
		16	5	14	16
	21	18	5	16	18
		19	5	17	19
		20	5	18	20
	24	23	6	20	23
	26	23	8	21	23
		25	8	23	25
	28	25	8	23	25
		27	8	25	27
	33	30	8	27	30
		31	8	28	31
		32	8	29	32
	36	32	8	29	32
		35	8	32	32
	38	37	8	32	35
	39	38	8	35	38
	43	40	42	37	40
		42	10	39	42
	46	42	10	39	42
		45	10	42	45
	52	51	12	45	51

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

WARNING – CAUTION:

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

WARNING – CAUTION:

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

INFORMATION:

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

BOSS 552 HD guide channel, bar pusher, bar and pipe diameters.

Model	Guide channel diameter (mm)	Bar pusher diameter (mm)	Bar diameter (mm)		Pipe diameter (mm) (*)
			Minimum	Maximum	
BOSS 552-HD	13	10	3	8	10
		12	4	10	12
	17	15	5	13	15
		16	5	14	16
	21	18	5	16	18
		19	5	17	19
		20	5	18	20
	24	23	6	20	23
	26	23	8	21	23
		25	8	23	25
	28	25	8	23	25
		27	8	25	27
	33	30	8	27	30
		31	8	28	31
		32	8	29	32
	36	32	8	29	32
		35	8	32	32
	38	37	8	32	35
	39	38	8	35	38
	43	40	42	37	40
		42	10	39	42
	46	42	10	39	42
		45	10	42	45
	52	51	12	45	51

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

WARNING – CAUTION:

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

WARNING – CAUTION:

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

INFORMATION:

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

BOSS 332 guide channel lubricating oils

ISO/UNI rating	Brand	Name
CLASSE C CKB 100	Agip	Acer 100
	Api	Api Cis 100
	BP	Energol CS 100
	Castrol	Magna 100
	Chevron	Circulating Oil 100
	Elf	Movixa 100
	Esso	Nuto 100
	Fina	Solina 100
	IP	IP Hermea 100
	Klüber	Crucolan 100
	Mobil	Vectra Oil Heavy
	Olio FIAT	Daphne LPN 100
	Roloil	Arm V 100
	Shell	Vitrea 100 Tellus C 100
	Tamoil	Industrial Oil 100
	Texaco	Omnis 100
	Total	Cortis 100 Azolla ZS 100
	Q8	Verdi 100

BOSS 545/552HD guide channel lubricating oils

ISO/UNI rating	Brand	Name
CLASSE C CKB 150	Agip	Acer 150
	Api	Api Cis 150
	Aral	Aral Degol TU 150
	BP	Energol CS 150
	Castrol	Magna 150
	Chevron	Circulating Oil 150
	Elf	Movixa 150
	Esso	Nuto 150
	Fina	Solina 150
	IP	IP Hermea 150
	Klüber	Crucolan 150
	Mobil	Vectra Oil Extra Heavy
	Olio FIAT	Daphne Hidrobak 150
	Roloil	Arm V 150
	Shell	Vitrea 150 Tellus C 150
	Tamoil	Hydraylic Oil 150
	Texaco	Rando oil HD 150
	Total	Cortis 150

Oil quantity: 57 litres.

Air lubricator oils

ISO/UNI rating	Brand	Name
ISO 3448	BP	Energal HLP32
	CASTROL	Hyspin AWS32
	CENTURY	PWLA
	ELF	Elfoina 32
	ESSO	Nuto H32
	GULF	Harmony 32
	MOBIL	SHC 524
	MOBIL	DTE 24
	MOBIL	DTE Oil Light
	SHELL	Tellus 32
	TEXACO	Rondo 32

2.6.1 Noise levels

The bar feeder does not cause acoustic noise.
The noise occurs when the lathe, to which the bar feeder is connected, is working and the bar is rotating into the bar feeder guide channels.
In this case, the noise level depends on the following conditions:

- perfect alignment and levelling of the lathe-bar feeder assembly;
- proper fixing to the floor both of the lathe and bar feeder;
- suitable bar gripping device fitted on lathe;
- use of a guide channel and a bar pusher with suitable dimensions as regards to the bar diameter;
- use of a front guide bush of suitable diameter (if supplied);
- use of bars with a straightness within the set limits (maximum deflection in mm equal to 0.5 of the bar length);
- use of a spindle liner having the same diameter as the bar feeder guide channel diameter;
- spindle rotation speed suitable for the material to be machined;
- as to the bar feeder, use of oil having features suitable for the diameter of the bar to be machined;
- all bar feeder guards must be closed.

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

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

The noise level depends on the working conditions of the lathe to which the bar feeder is applied as well as on the bar type.
Whenever necessary, operators must wear PPE (personal protective equipment) in accordance with the regulations in force in the country in which the machine is installed.

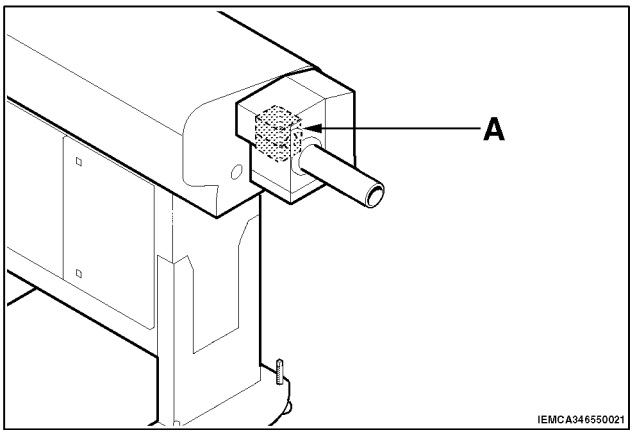
- *) Measurements taken on round bar Ø35 mm, guide channel Ø36 mm, bar straightness < 5% at 3,750 rpm, on a Biglia B501 lathe, serial number.

2.7 ACCESSORIES - FOREWORD

To improve the bar feeder performance and increase its versatility, the following optional devices are available:

2.7.1 Bush holder device - Description

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

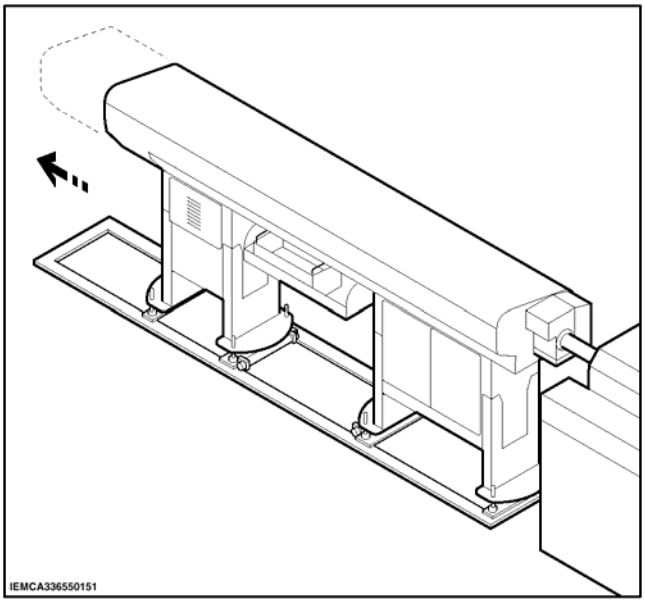


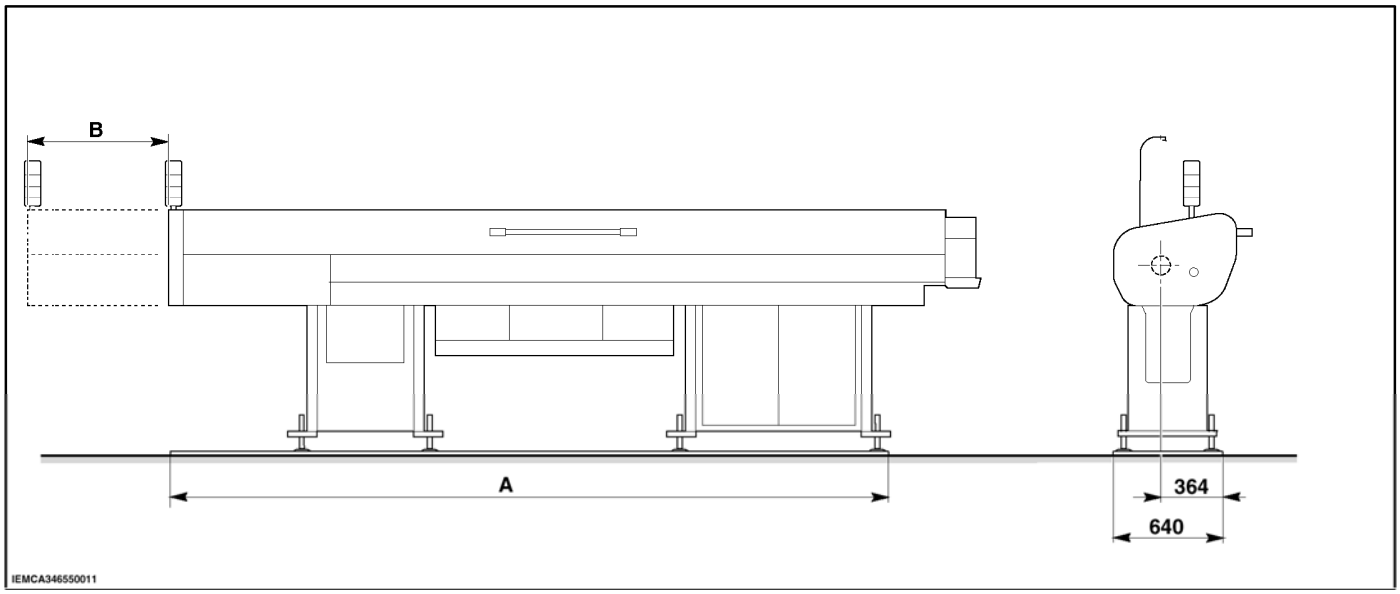
Operation

- When the bar is dropped into the guide channel, the two half-bushes are open.
- The closing phase is controlled by a pneumatic cylinder when the bar feeder has completed the bar loading cycle. The oil flow for the machined bar lubrication and support starts together with the closing phase.
- When the bar pusher approaches the device, the half-bushes open up to allow its passage; the oil flow stops.

2.7.2 Axial displacement device - Description

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





Overall dimensions

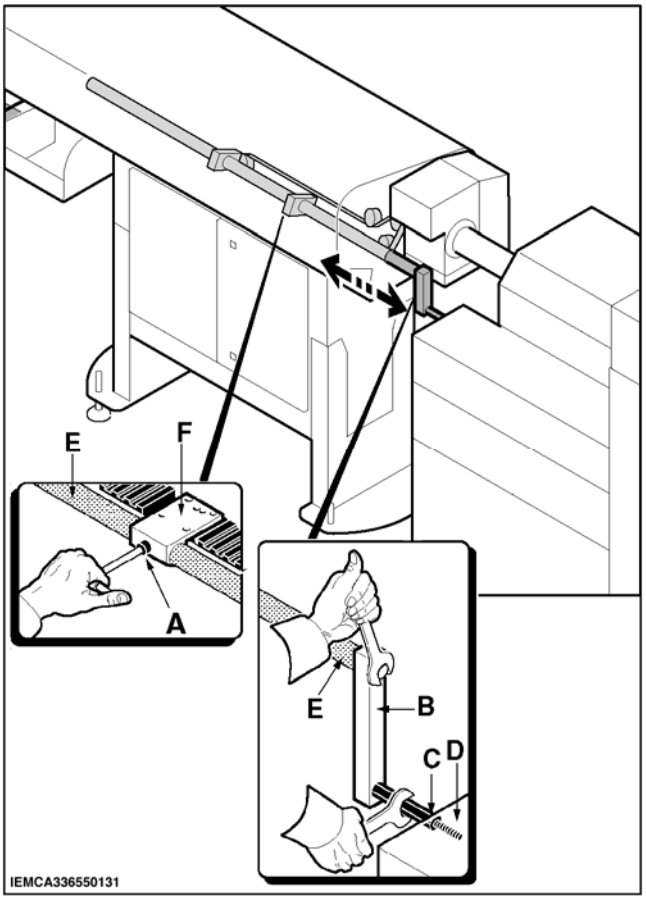
Model	Version	A (mm)	B (mm)
BOSS 332 – BOSS 332r BOSS 545 - BOSS 545r BOSS 552 HD- BOSS 552r-HD	21	1880	600
	32	3170	900
	37	3770	900
	44	4370	900

2.8 DEVICE FOR SLIDING HEADSTOCK LATHES - FOREWORD

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

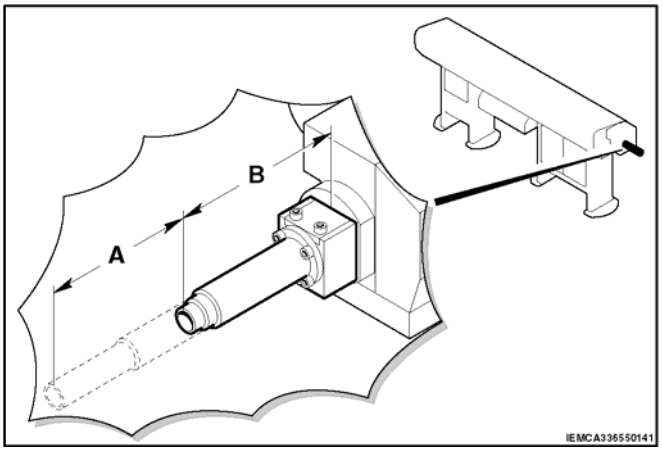
2.8.1 Bar/headstock synchronizing device - Description

It is used to connect the bar-pusher (and consequently, the bar) to the lathe headstock, to obtain their synchronized forwards/backwards movement.



2.8.2 Telescopic front nose - Description

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



Maximum stroke and overall dimension

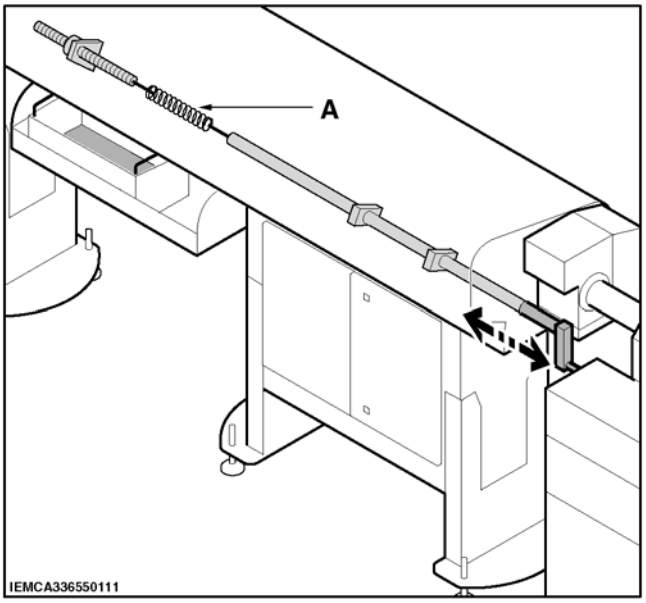
Model	Maximum stroke A (mm)	Overall dimensions B (mm)
BOSS 332 BOSS 545 BOSS 552-HD	200	270
	210	270
	230	300
	280	430
	330	480

2.9 DEVICES FOR CAM LATHES - FOREWORD

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

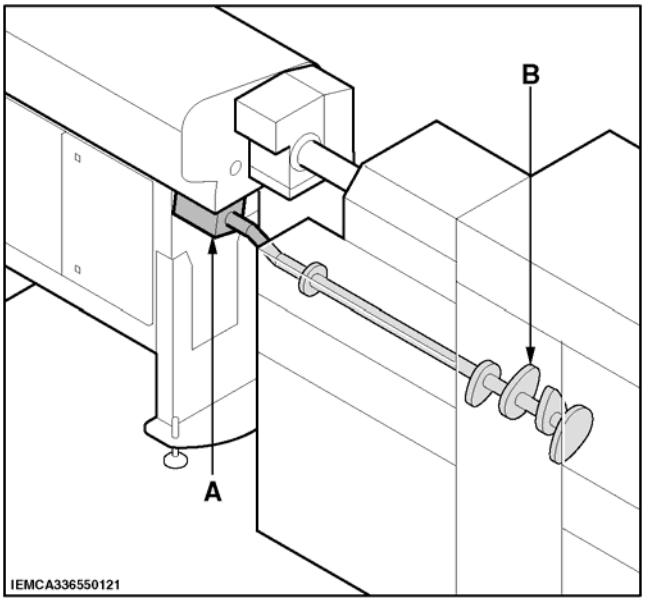
2.9.1 Headstock return device - Description

It is needed when the lathe headstock return spring size hinders bar feeder installation.
The original lathe spring "A" is then installed inside the bar feeder.



2.9.2 Cam box - Description

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

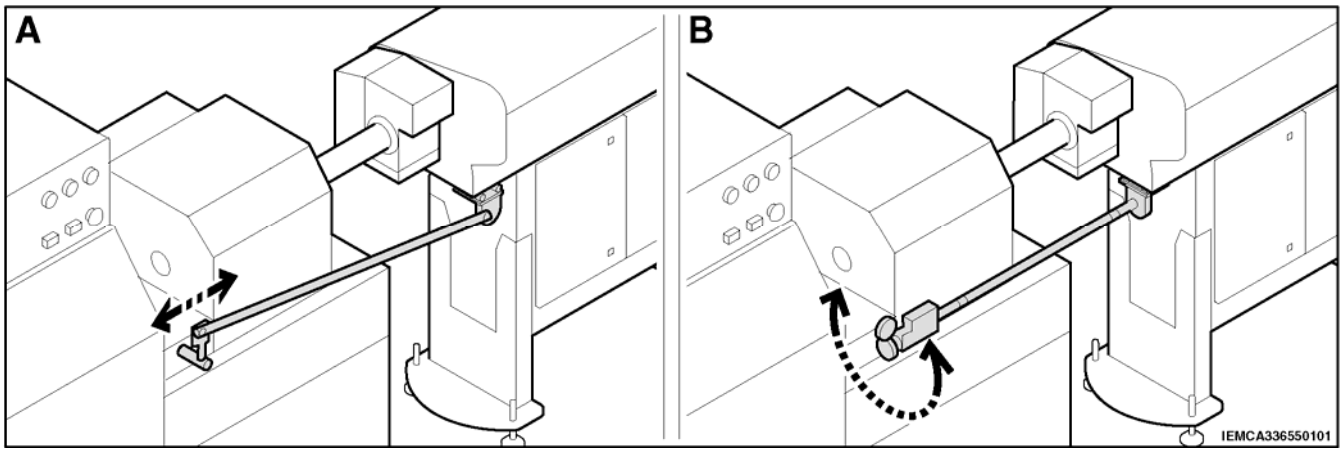


2.9.3 Camshaft release device - Description

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

A Radial version

B Axial version



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3.1 GENERAL SAFETY REGULATIONS

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

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

3.2 HANDLING AND INSTALLATION - Safety

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

3.3 ADJUSTMENTS AND SETUP - Safety

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

3.4 USE AND OPERATION - Safety

- The work area around the bar feeder must always be kept clean and free of clutter and its surface must be slip resistant in order to allow immediate access to emergency devices and bar loading to be performed without creating obstructions or danger.
- Perform the starting sequence of the operating cycle as recommended.
- Do not put hands or anything else near or inside the moving parts or parts in tension.
- Do not wear bracelets, watches, rings and ties.
- If necessary, use strong work gloves with five fingers, which do not reduce the grip sensitivity or power.
- Wear work shoes as well as personal protection equipment as provided for by the safety regulations in force in all countries.
- Inform the maintenance personnel of any operating anomalies.
- Before starting the bar feeder, make sure that there is no personnel engaged in servicing or cleaning the machine.

3.5 BAR FEEDER MAINTENANCE - Safety

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

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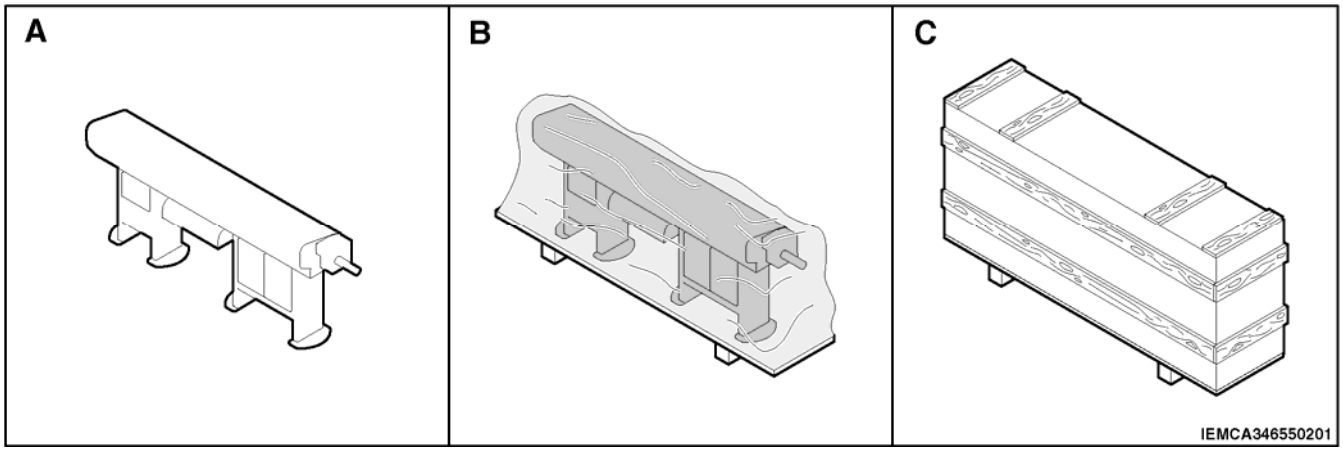
4.1 PACKAGING

There are three possible bar feeder packaging:
A WITHOUT PACKAGING.
B WITH PALLET: the bar feeder is placed on a pallet and wrapped with protective film.
C WITH CRATE: the bar feeder is contained in a crate and wrapped with protective film.



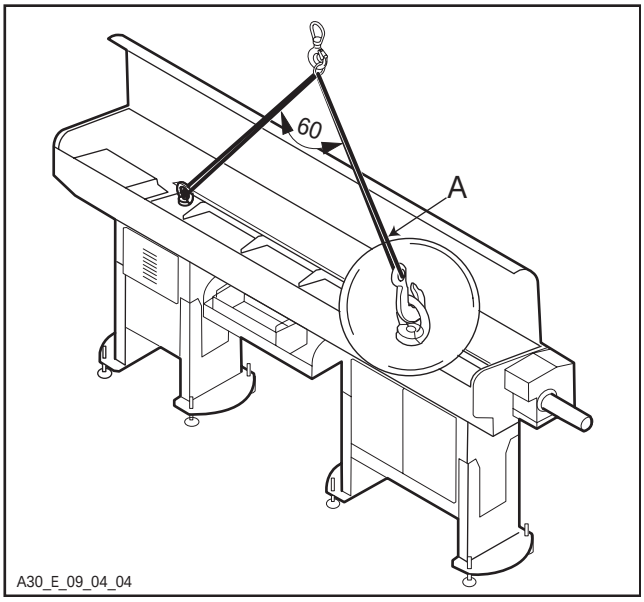
4.2 LIFTING

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

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

LIFTING WITH NO PACKAGING

- Install two round-eye eyebolts "A" with threaded stem (1 UNI - ISO3266 M20).
- Use a hook type lifting device of suitable capacity.



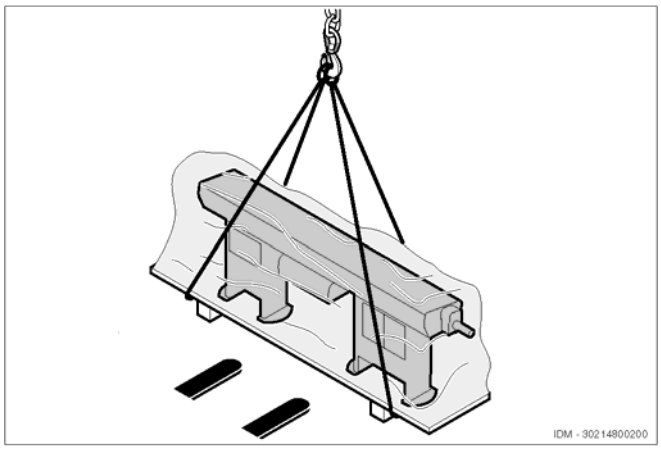
DANGER - WARNING:

During lifting operations without packaging, do not use belts or chains which length is shorter to that specified in the table.

Model	Version	A (mm)
Boss	32	1550
	37	2090
	44	2750

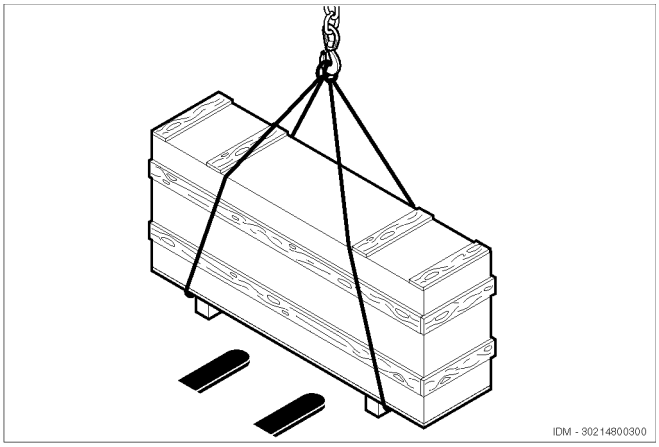
LIFTING WITH PALLET

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



LIFTING WITH CRATE

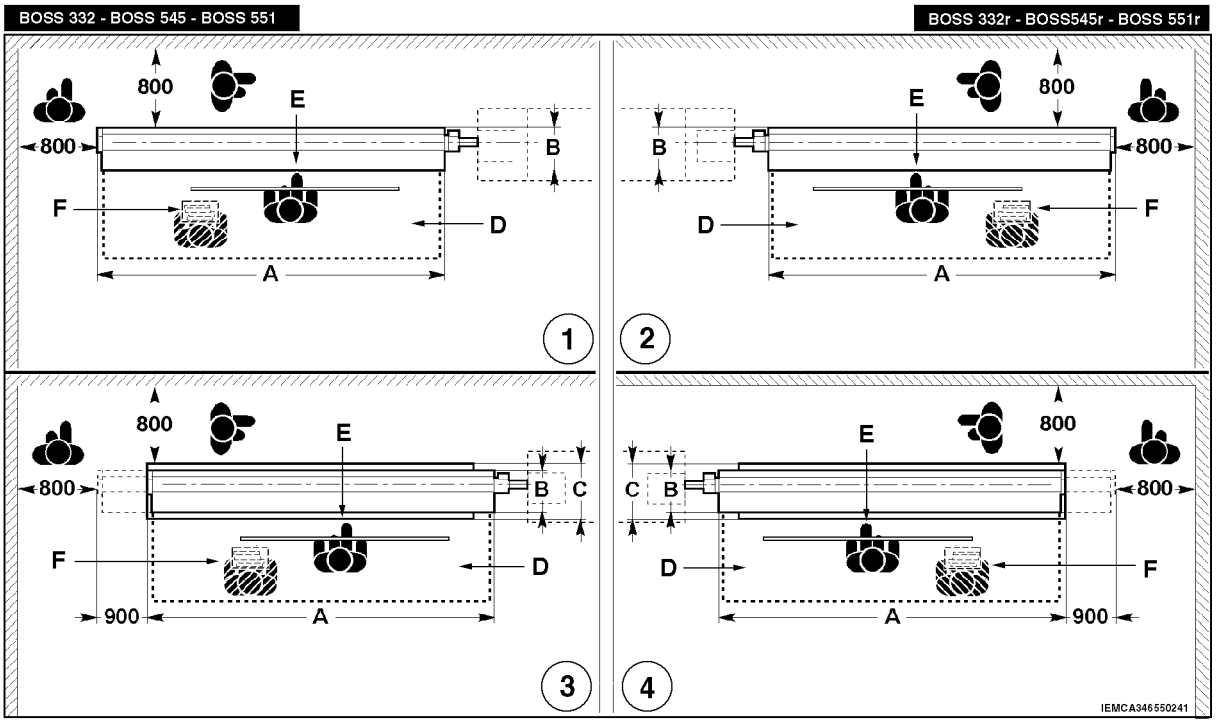
- Use a hook (or fork) type lifting device of suitable capacity (see information on packaging).



DANGER - WARNING:
never use any lifting systems or devices different from the ones above.

4.3 INSTALLATION AREA - FEATURES

The floor should be stable and levelled to guarantee good fastening to the ground.
Provide an area of suitable dimensions according to the type of bar feeder used.
The areas: "D" (work area), "E" (bar feeding area) and "F" (remnant ejection area) should be properly delimited to prevent collisions between the operator and any handling equipment or transport vehicles travelling near the bar feeder.
The selected area should be illuminated and provided with an electric and pneumatic power supply socket.
During operation, the bar feeder will release small amounts of oil mist. Install the bar feeder in a suitably ventilated area.
The bar feeder has not been designed for use in an explosive atmosphere.



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

Overall dimensions

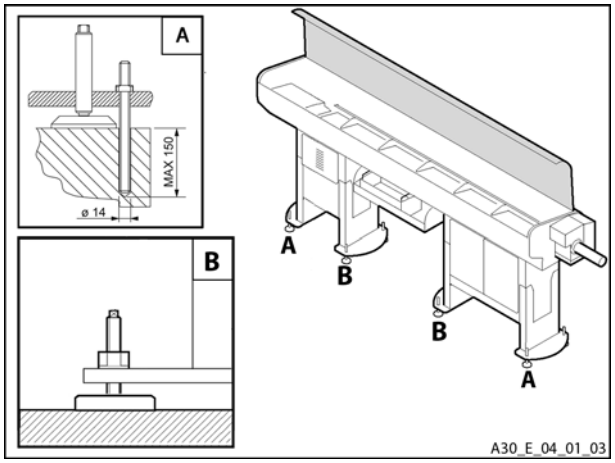
Model	Version	A (mm)	B (mm)	C (mm)
BOSS 332 - BOSS 332r BOSS 545 - BOSS 545r BOSS552 HD-BOSS552r HD	21	2603	605	640
	32	3802		
	37	4342		
	44	5002		
	64	6382		/

4.4 BAR FEEDER WITHOUT AXIAL DISPLACEMENT DEVICE - INSTALLATION

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

4.4.1 Backing plates and support feet - Installation

- Position the bar feeder next to the lathe.
- Keep it lifted and fit the steel plugs "A" and Marbet plastic plugs "B" as shown in the figure.

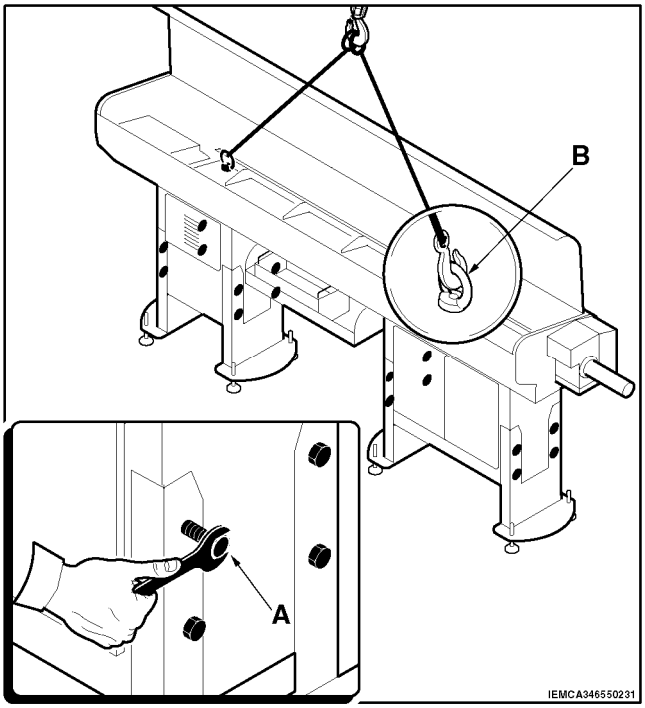


4.4.2 Height - Adjustment

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

- Refer to “Working axis height” table, in the "Technical data" section (Ch. 6) for the correct holes for each screw.
- tighten the lifting chains and remove the 16 screws "A".
- lift the bar feeder according to the required value "X".

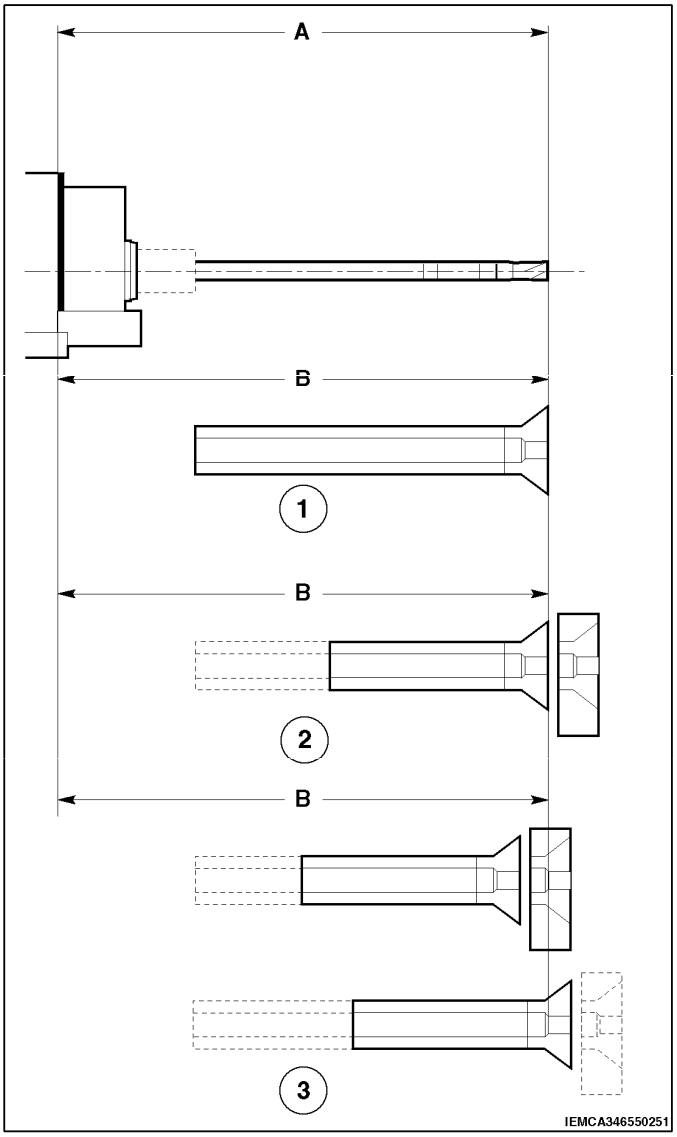
- tighten the "A" screws and remove the "B" eyebolts.



4.4.3 Preliminary positioning

- Place the bar feeder behind the lathe, considering the fixed and moving dimensions of both machines. Coupling distance "B" should not exceed bar pusher max. extension "A".

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



INFORMATION:

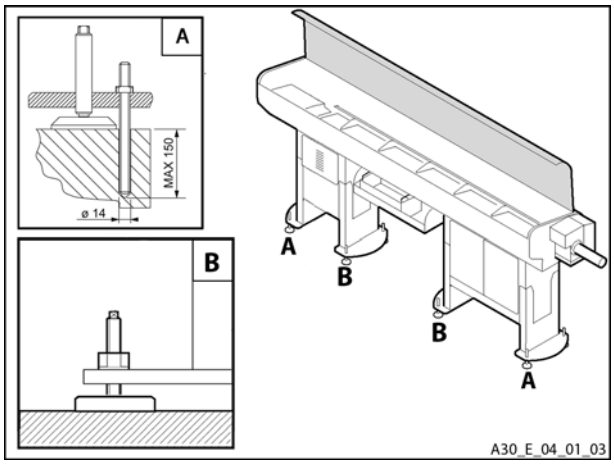
it is not always necessary to drive the bar pusher all the way out. In fixed headstock lathes, its stroke can be reduced to 100 mm to allow the bar feeder to be brought as close as possible to the lathe; contact IEMCA After-sales Service for more information.

DANGER - WARNING: Perform bar pusher extension manually. Please, note that, without the front nose, the bar feeder might be DANGEROUS to the operator and/or installation technician.

Max. bar pusher extension

Model	Version	Version	A – Max. extension (mm)
BOSS 332 BOSS 545 BOSS 552 HD	N	21 - 32 – 37 – 44 - 64	937
	L		1267
	LL		1597
	LL + 660	37 – 44 - 64	2257

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

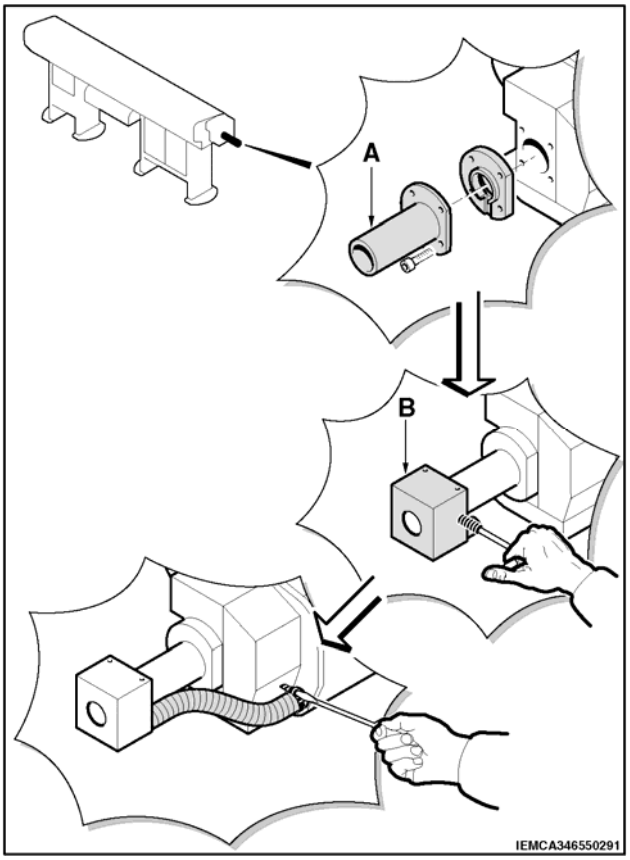


4.4.4 Sleeve - Installation

BOSS 332

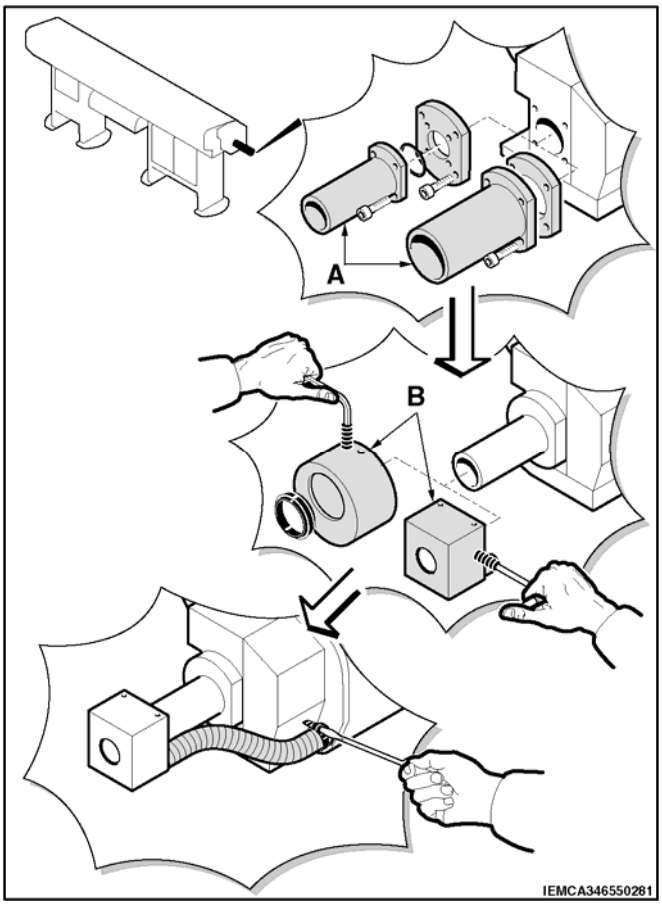
- Install the sleeve "A" in the bush holder device.
- Install the oil recovery tank "B".
- Connect the drain pipe to the tank.

DANGER - WARNING: Please, note that, by removing the telescopic front nose, the bar feeder might be DANGEROUS to the operator and/or installation technician due to bar pusher extension.



BOSS 545 - BOSS 552 - HD

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

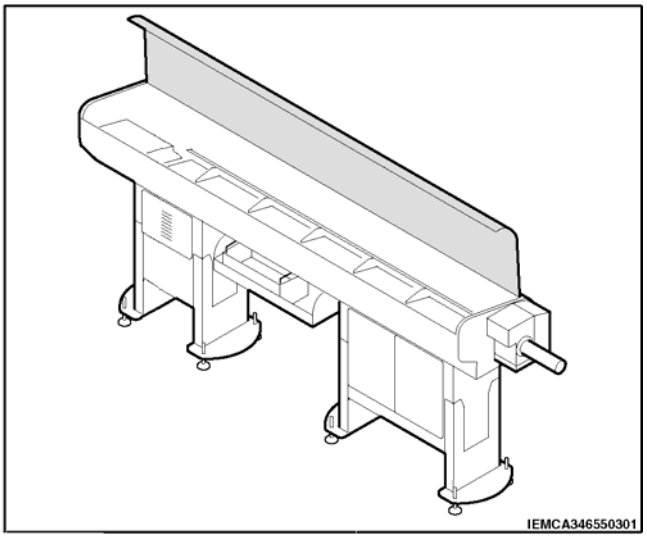


DANGER - WARNING: Please, note that, by removing the telescopic front nose, the bar feeder might be DANGEROUS to the operator and/or installation technician due to bar pusher extension.

4.4.5 Levelling and alignment

FOREWORD

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



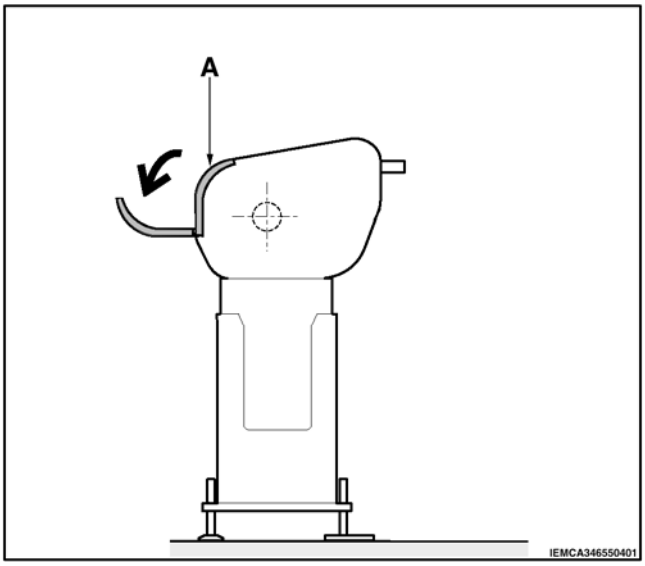
WARNING – CAUTION:

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

PRELIMINARY PROCEDURE

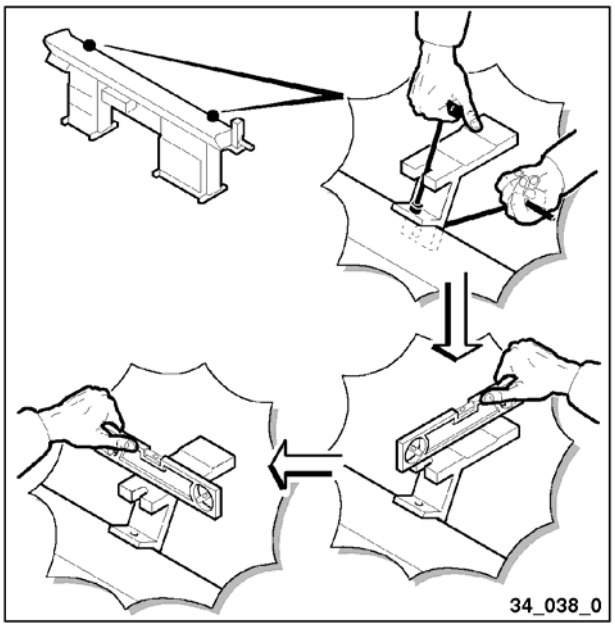
- Open the upper guard.

- Open rear guard "A".

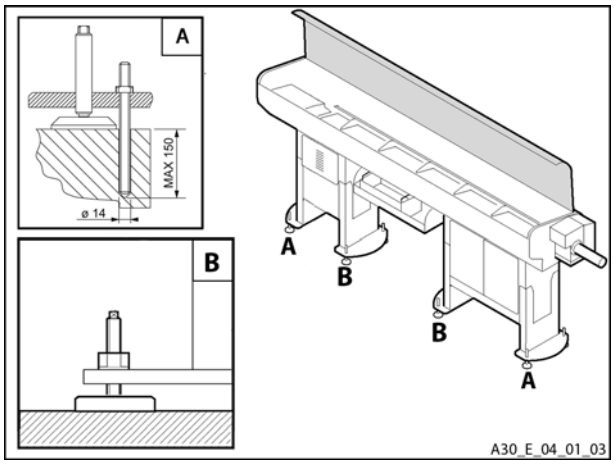


LEVELLING

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

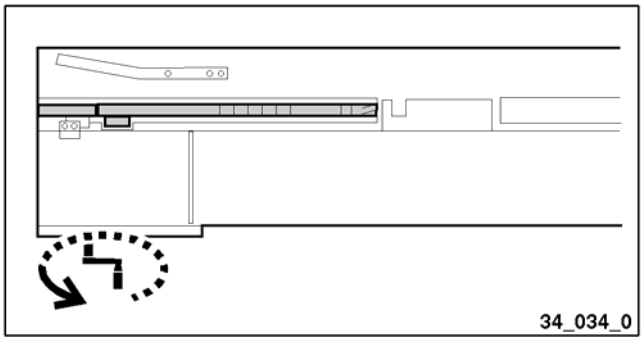


- Carry out the required corrections by turning the support feet screws.

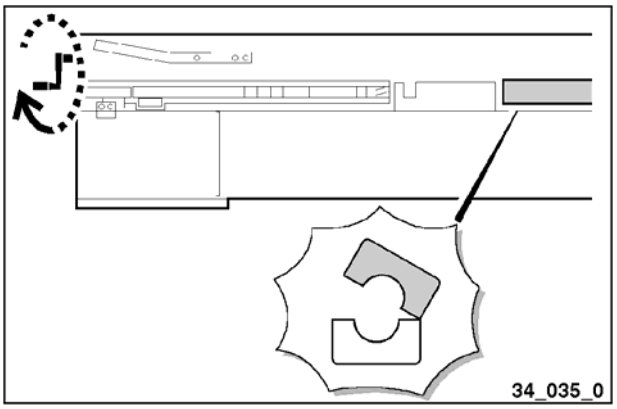


ALIGNMENT

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

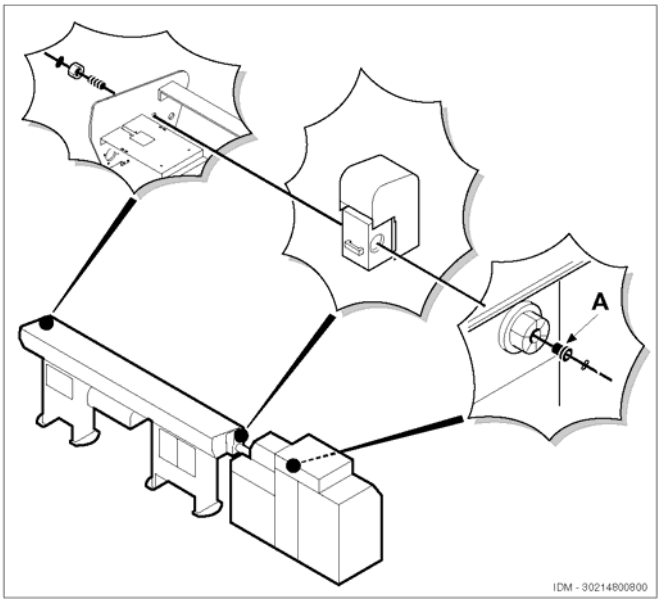


- Move the crank to the guide channel opening screw shaft and open the upper guides.



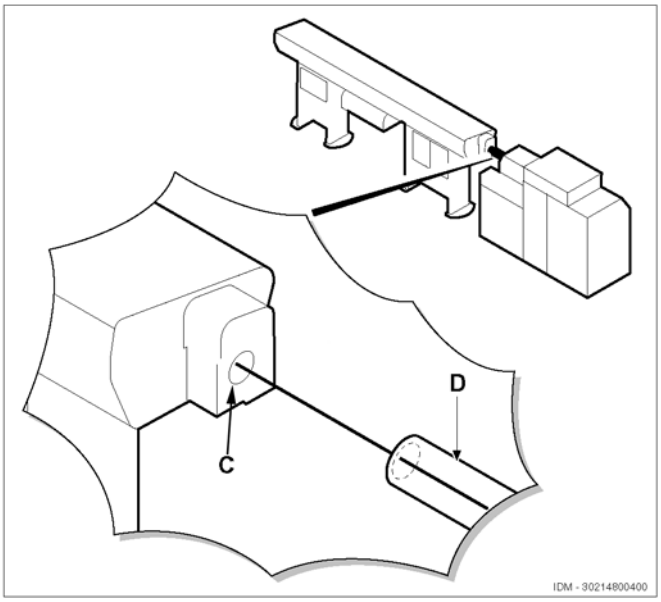
To obtain alignment lead a (ø 1 mm) nylon thread between the lathe collet and the bar feeder rear plate, then proceed as follows:

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



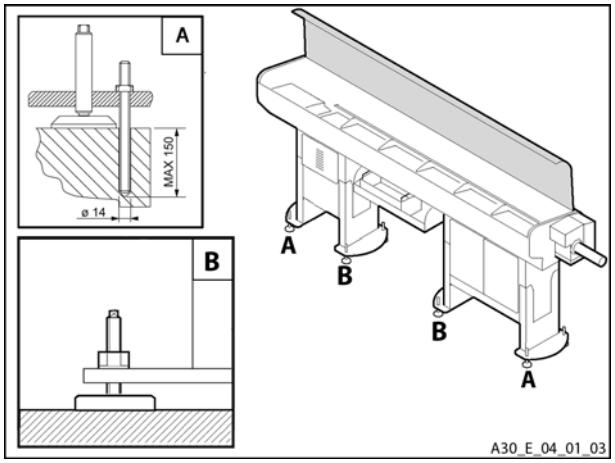
- use a sliding caliper to check alignment near the sleeve "C" and the spindle "D"; adopt a tolerance of 0.15 mm in all four directions.

- prepare a perfectly straight ground bar, with an external diameter equal to the maximum spindle bar passage and with a length equal to the double coupling distance (see "B" in section 4.4.3);
- place the bar in the guide channel and make it slide forwards and backwards in the spindle, until almost reaching the lathe collet area.



POSITIONING ADJUSTMENTS

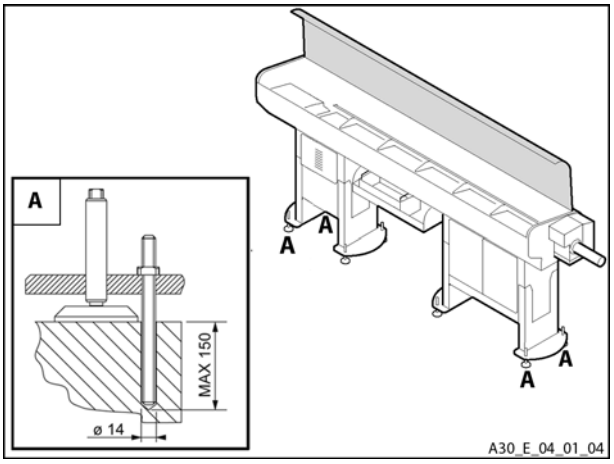
After checking the alignment of the bar feeder with either the thread or the bar, any required corrections should be carried out.
Adjust the height by turning the screws of the feet; carry out the lateral adjustments with calibrated mallet blows on the bar feeder foot.
During this phase, any adjustment carried out during the levelling phase should be preserved; therefore, in most cases, it is necessary to find the correct adjustment of the bar feeder position.



4.4.6 Bar feeder fastening

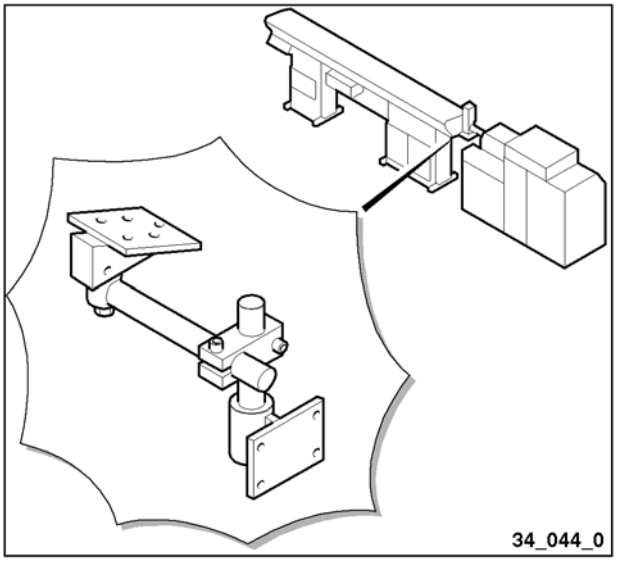
GROUND FASTENING

- Drill the floor and fix the backing plates with expansion plugs.
- Fix the bar feeder to the plates through the tie rods "A" and lock with nuts "B".
- Check the levelling and alignment once more.
- Remove all the equipment used for the levelling and alignment phases and restore the initial bar feeder conditions.



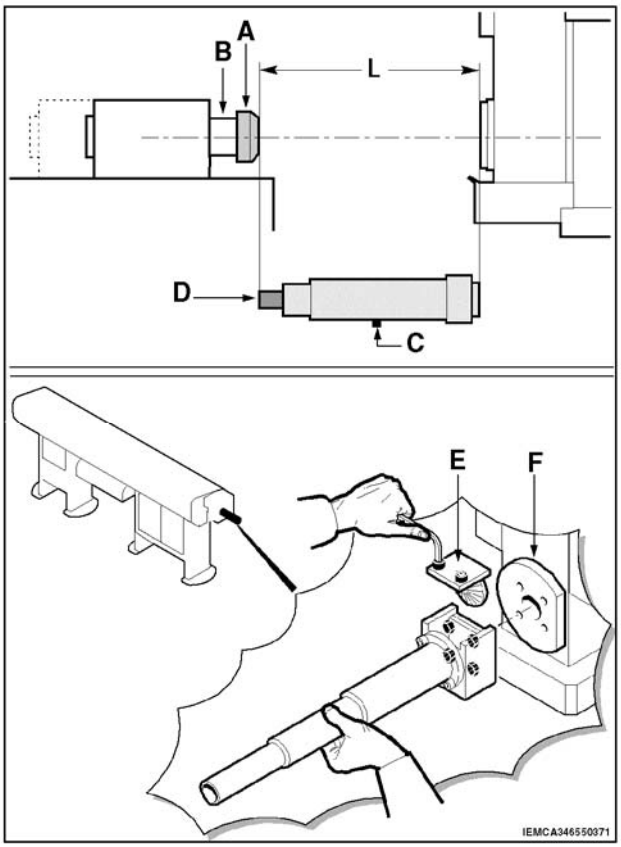
FASTENING TO THE LATHE

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



4.4.7 Telescopic front nose - Installation

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



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

INFORMATION:

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

- Move the headstock to its "completely backwards" position and measure the value "L". Take out the grub screw "C", press the telescopic front nose to its limit stop minus 5 mm and cut the pipe "D" to the measured value.
- Move the headstock to its "completely forwards" position. Remove the cover "E", install the front nose in the flange "F" and place back the cover "E".
- Check smooth sliding of the telescopic front nose by moving the headstock forwards and backwards.

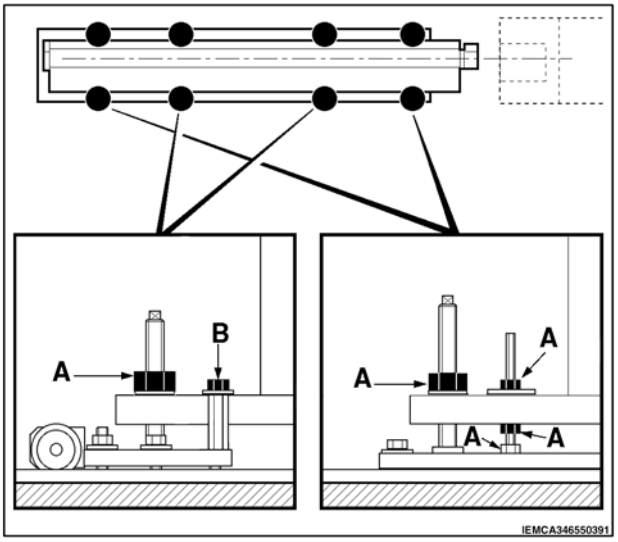
DANGER - WARNING: Please, note that, by removing the telescopic front nose, the bar feeder might be DANGEROUS to the operator and/or installation technician due to bar pusher extension.

4.5 BAR FEEDER WITH AXIAL DISPLACEMENT DEVICE - INSTALLATION

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

4.5.1 Preliminary operations

- Roughly position the bar feeder behind the lathe.
- Loosen nuts "A" and screws "B".

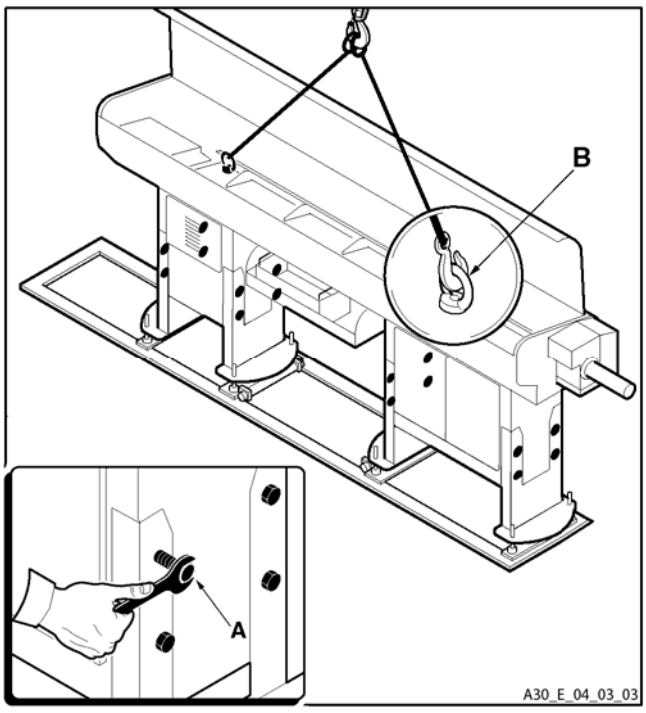


4.5.2 Height - Adjustment

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

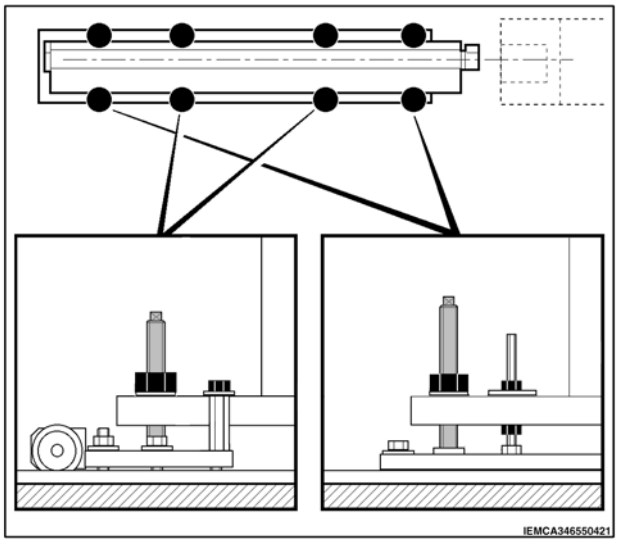
- Refer to “Working axis height” table, in the "Technical data" section (Ch. 6) for the correct holes for each screw.
- tighten the lifting chains and remove the 16 screws "A".
- lift the bar feeder according to the required value "X".

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

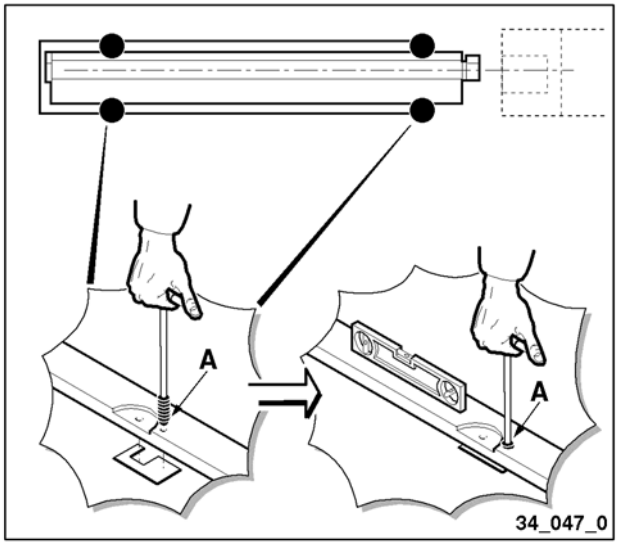


4.5.3 Preliminary positioning

- Position the bar feeder behind the lathe, by taking into account the fixed dimensions and side plays of both machines and the coupling distance (see "B" in the "PRELIMINARY POSITIONING" section, Ch. 4)
- Roughly adjust the working axis height to obtain alignment with the lathe by turning the feet screws.



- Place four plates under the axial displacement sliding frame in the positions shown in the figure, and screw down the cone end grub screws "A".
- Check frame levelling crosswise and lengthwise; adjust if required by acting on screws "A".
- Roughly restore working axis height and alignment with the lathe if required.



4.5.4 Sleeve - Installation

See the "SLEEVE - INSTALLATION" section, CH. 4.

4.5.5 Levelling and alignment

FOREWORD

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

WARNING – CAUTION:

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

Preliminary procedure

See the "LEVELLING AND ALIGNMENT" section, CH. 4.

Levelling

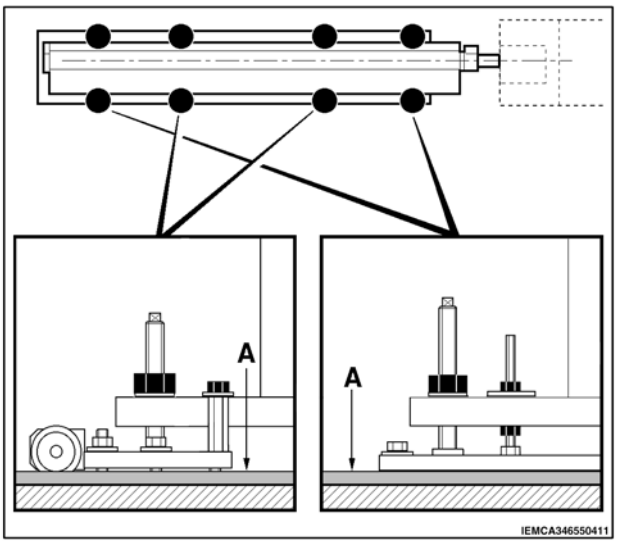
See the "LEVELLING AND ALIGNMENT" section, CH. 4.

Alignment

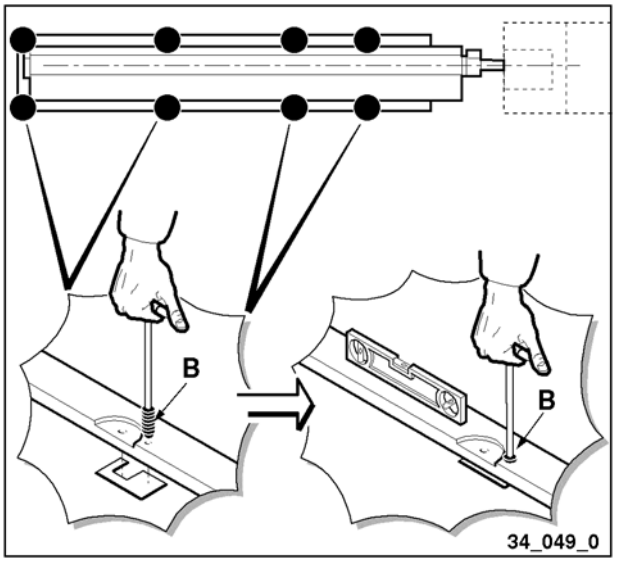
See the "LEVELLING AND ALIGNMENT" section, CH. 4.

Positioning adjustments

After checking alignment of the bar feeder with the thread, carry out any required adjustments.
Adjust height by turning the screws in the support feet; carry out lateral adjustment with calibrated mallet blows on the sides of frame "A".
During this phase, any adjustment carried out during the levelling phase should be preserved; therefore, in most cases, it is necessary to find the correct adjustment of the bar feeder position.



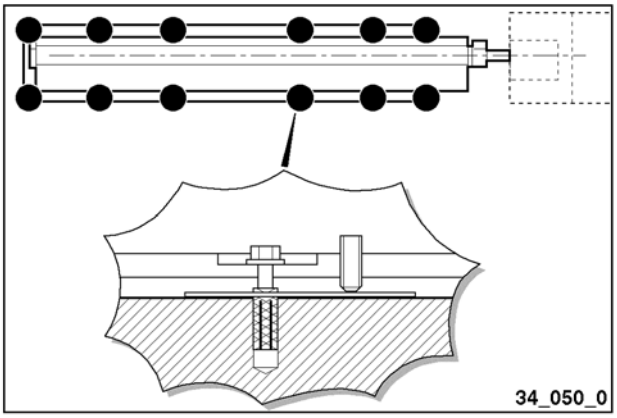
- Position the remaining eight plates under the axial displacement sliding frame in the positions indicated in the figure, then tighten the cone end grub screws "B".



4.5.6 Bar feeder fastening

Ground fastening

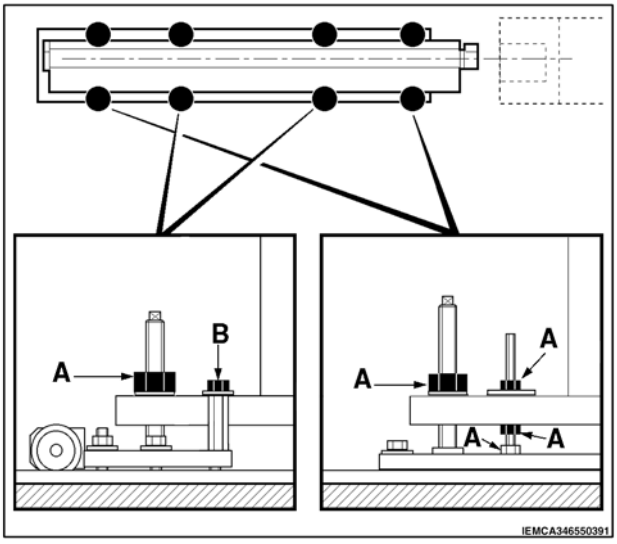
- Drill the floor and fix the (axial displacement) frame with expansion plugs.
- Check the levelling and alignment.



- Tighten nuts "A" and screws "B".
- Check the levelling and alignment once more.
- Remove all the equipment used for the levelling and alignment phases and restore the initial bar feeder conditions.

Fastening to the lathe

See the "BAR FEEDER FASTENING" section, CH. 4.



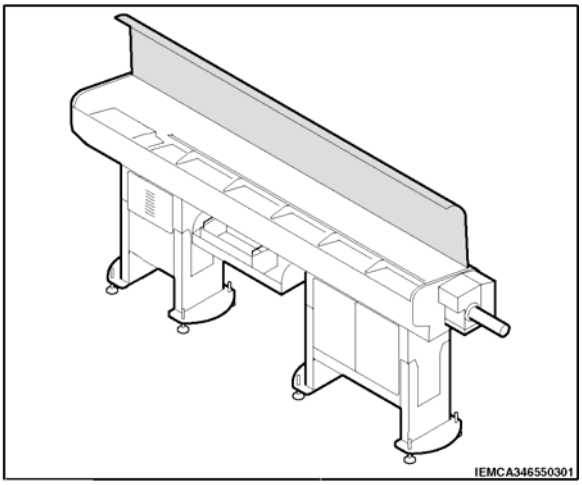
4.5.7 Telescopic front nose - Installation

See the "TELESCOPIC FRONT NOSE - INSTALLATION" section, CH. 4.

4.6 DEVICE FOR SLIDING HEADSTOCK LATHES - INSTALLATION

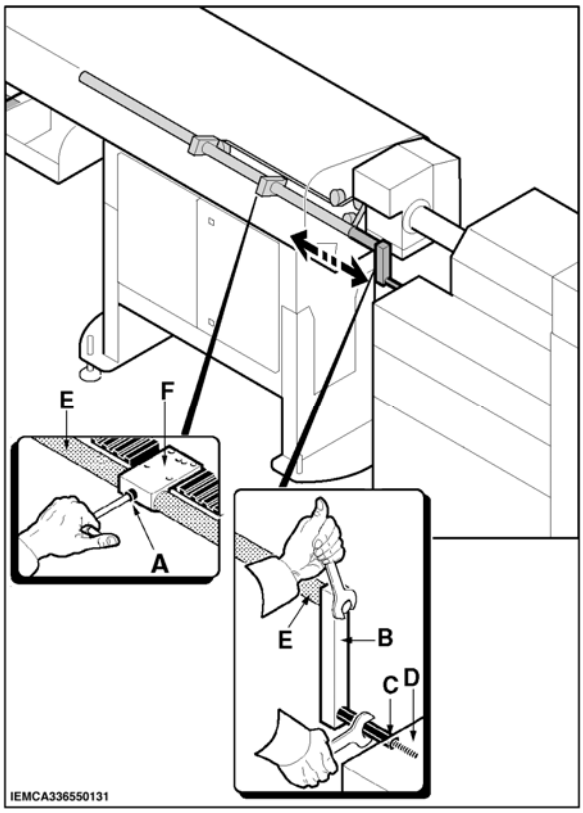
4.6.1 Bar-headstock synchronization device

- Open the upper guard.



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

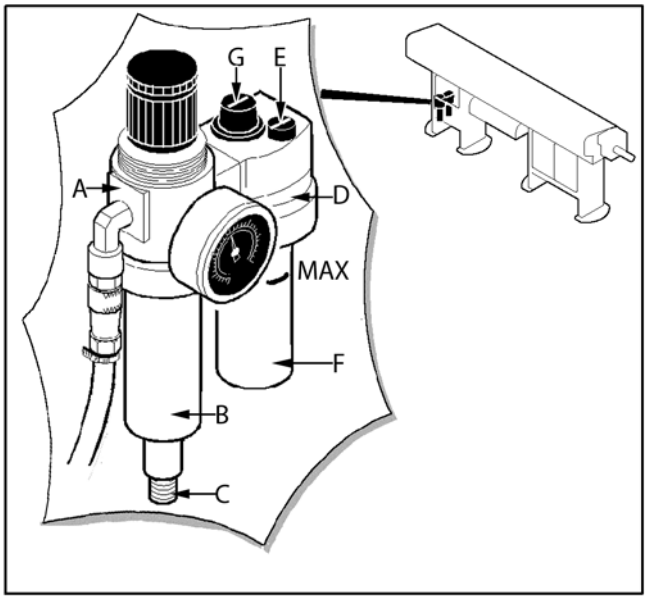
- Loosen the screw "A".
- Install the bar "B" and the tie rod "C", and make sure that the headstock "D" can run freely throughout its stroke together with shaft "E".
- Place the support "F" so that it does not hinder the headstock stroke and tighten the screw "A".



4.6.2 Air adjusting unit

FILTER A

- Make sure that cup "B" is not full of condensation. If needed, drain the condensate by acting on valve "C".
- Check pressure switch adjustment, see section 5.2.3



LUBRICATOR D

- Check that the oil level is not under the suction level.
- If needed, top up as follows:
  - disconnect the compressed air supply;
  - fill the tank by removing plug "E" or cup "F"; the oil level must reach the MAX. reference mark.
    For the oil comparison table, see section 2.6.

- Restore the compressed air supply. Check air lubrication (1-12 drops every 1,000 l. of air), adjust by turning the screw "G".

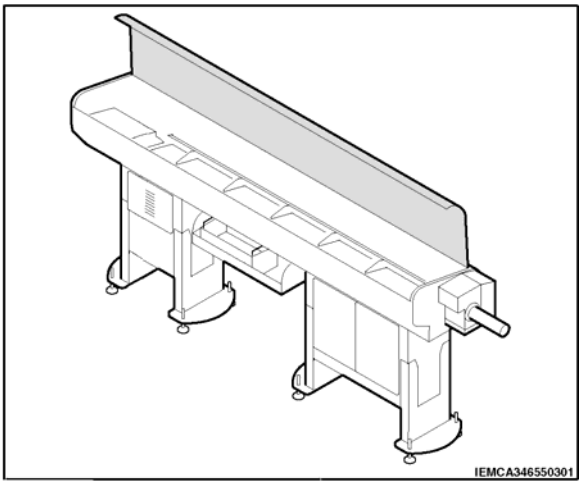
INFORMATION:

Lubricator D is fitted only when the headstock synchronization device is assembled.

4.7 DEVICES FOR CAM LATHES - INSTALLATION

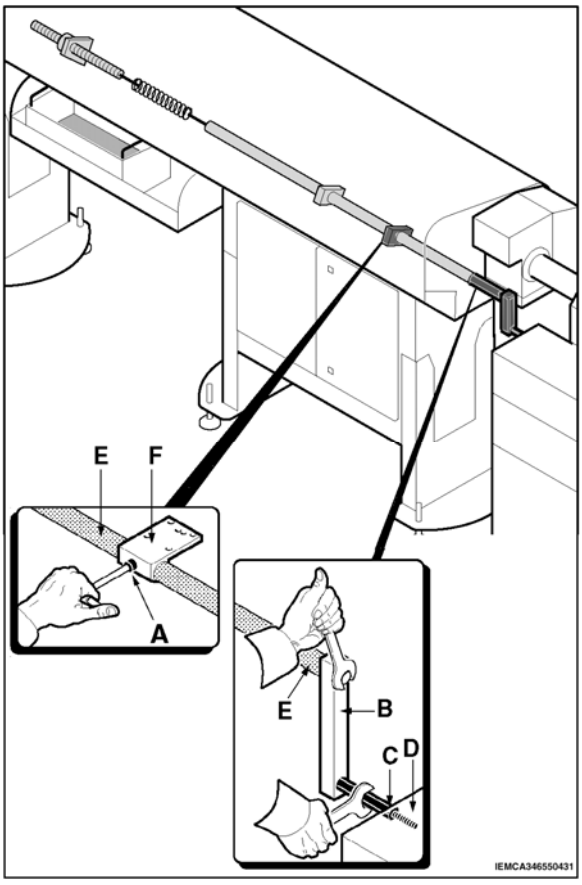
4.7.1 Headstock return device

- Open the upper guard.

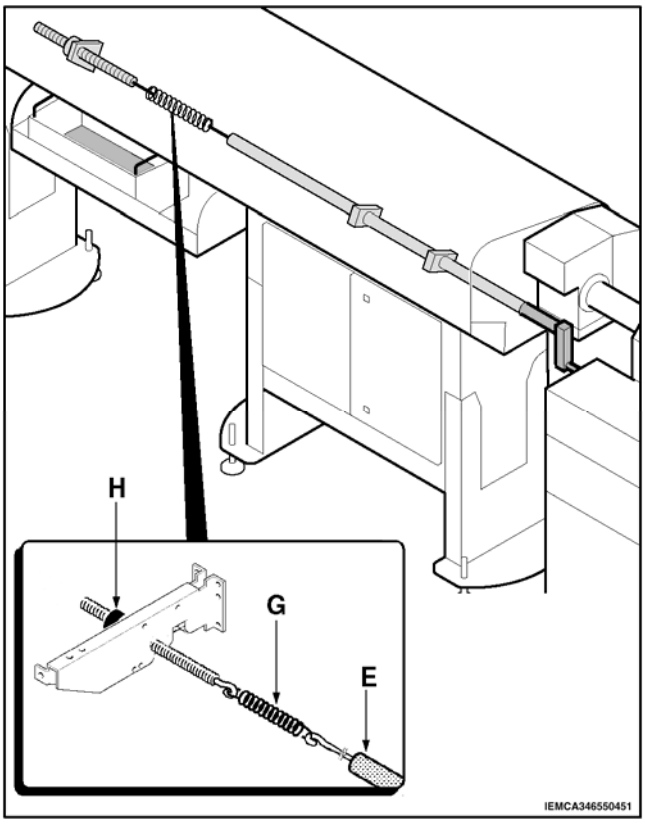


INFORMATION:
the figure shows a general example of installation; contact IEMCA service department for more information.

- Remove the original headstock return unit from the lathe.
- Loosen the screw "A".
- Install the bar "B" and the tie rod "C", and make sure that the headstock "D" can run freely throughout its stroke together with shaft "E".
- Place the support "F" so that it does not hinder the headstock stroke and tighten the screw "A".



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



WARNING:

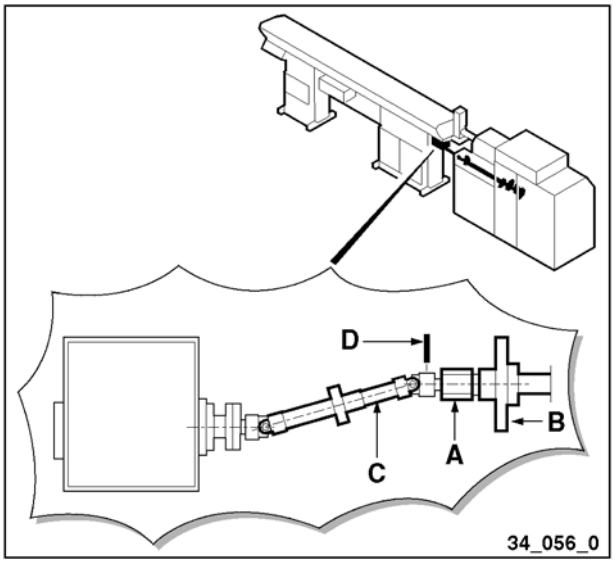
A double cylinder piston is fitted on lathes with very fast headstock stroke acceleration.

4.7.2 Cam box

INFORMATION:

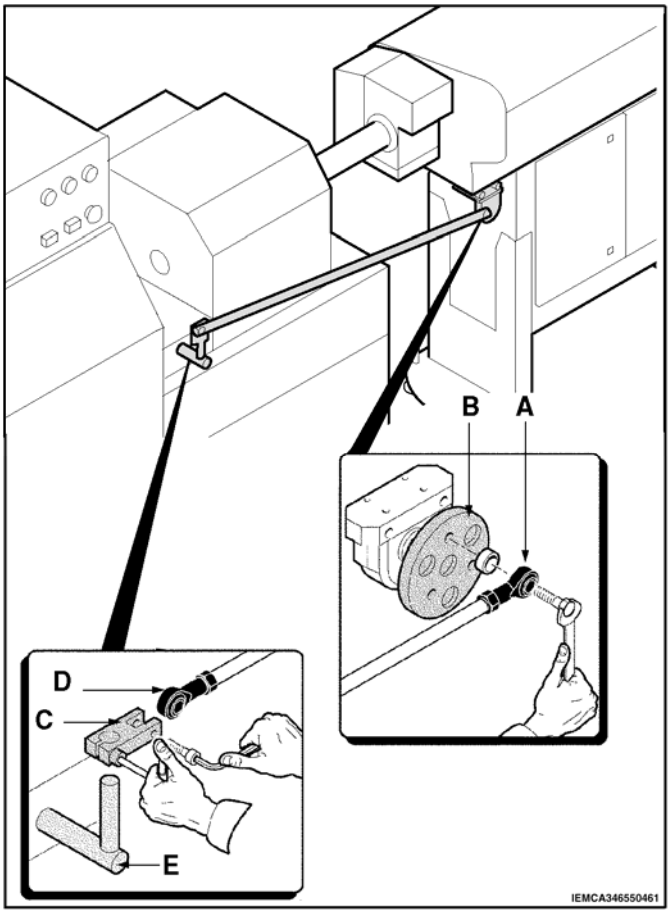
the figure shows a general example of installation; contact IEMCA service department for more information.

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



4.7.3 Camshaft release device

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

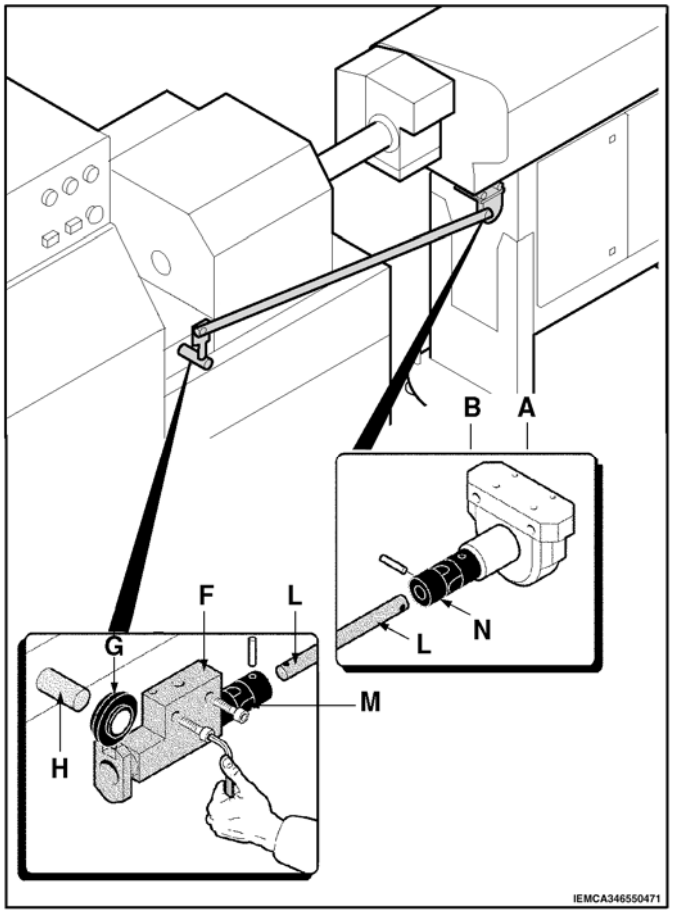


Radial version

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

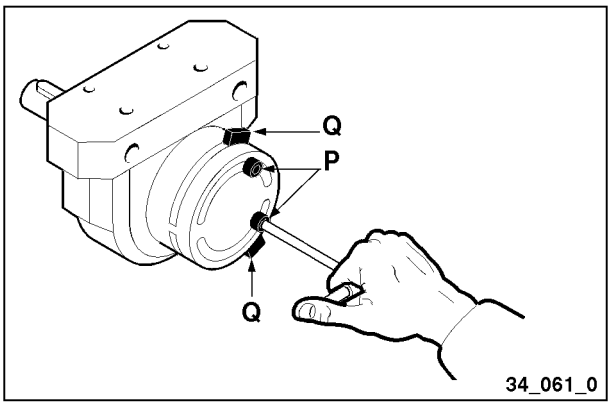
Axial version

- Drill and thread the lathe housing to fix the transmission unit "F" and assemble the disk "G" in the control "H".
- Insert the shaft "L" in the joint "M" and lock it with a pin; insert the other end of shaft "L" in joint "N" and lock it 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 slides "Q" and tighten screws "P".



4.8 LUBRICATION OIL - FILLING

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

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

Guide channel lubricating oil features

Model	Oil type	Quantity (l)
BOSS 332	class C – CKB 100	57
BOSS 545/552	class C – CKB 150	57

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

4.9 ELECTRICAL CONNECTION

DANGER - WARNING:

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

DANGER - WARNING:

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

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

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

4.9.1 THREE-PHASE POWER SUPPLY

The bar feeder should 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 magneto-thermal switch (check the installed power on the plate of the electrical control panel door).

4.9.2 SAFETY SIGNALS

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

INFORMATION:

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

4.9.2.1 EMERGENCY STOP

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

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

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

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

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

4.9.2.2 GUARD SAFETY STOP (IF PROVIDED)

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

- **Guard safety signal from the bar feeder to the lathe (2 channels, open contacts=open guards).**

Whenever the above mentioned channels are closed, the bar feeder informs the lathe that the guards are closed: all lathe operations, displacement included, are now allowed.
Whenever one of the bar feeder guards is open, these signals are stopped: in this case, the lathe immediately stops (safety class 3) all the movements that may harm the operator (i.e. in the multispindle, the spindle drum displacement).
As soon as the contacts are closed, the lathe will start operation again.

- **Guard safety signal from lathe to bar feeder (2 channels, contacts off = open guards).**

Whenever the above mentioned signals are closed, the lathe informs the bar feeder that the guards are closed: the bar feeder can move the bar pusher forwards.
As soon as one of the guards on the lathe is open, the bar feeder is stopped immediately, in agreement with safety class 3, to avoid injury to the operator.
Some jumpers may be fitted on the safety signals for bar feeder testing purpose only.
Therefore, they should be removed in order to restore the safeties.

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

4.9.3 FUNCTION SIGNALS

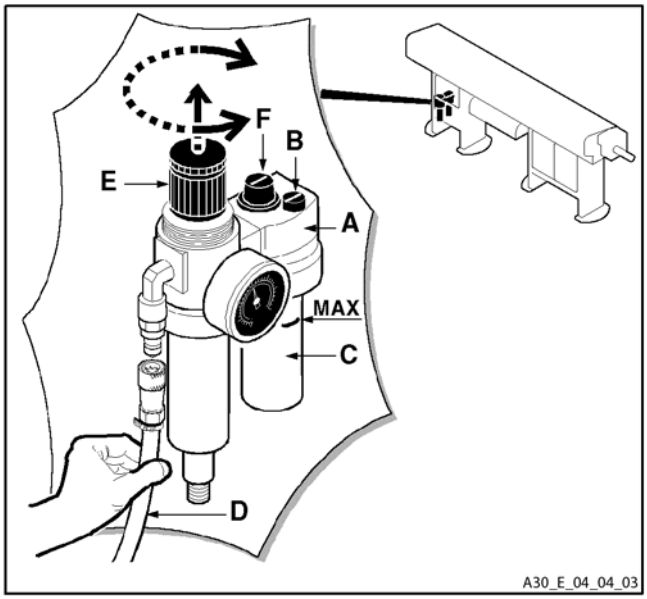
The bar feeder can send and receive all the signals which are necessary to its correct operation. These signals are driven by a PLC, and can be grouped into: inputs (signals from lathe to bar feeder) and outputs (signals from bar feeder to lathe).
The signals that have been implemented are the result of our long experience and allow the connection with every type of lathe: it is therefore possible that only some of them are used.

IMPORTANT:

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

4.10 PNEUMATIC CONNECTION

- Fill the tank of lubricator "A" removing plug "B" or cup "C"; the oil level must reach the MAX. reference.
  See the "Technical Data" section, Ch. 6, for the oil comparative table.
- Connect the pipe of the pneumatic network to the coupling D (1/4"Gas). Install a 3-way cock at the beginning of this connection so as to perform the sectioning and the pressure release. By means of the knob "E", adjust the pressure to 6 bar.
- Check air lubrication (1-12 drops per 1,000 l of air); adjust by turning the screw "F".



IMPORTANT:
the supply air must be filtered.

4.11 SOFTWARE PARAMETERIZATION

The bar feeder software should be correctly parameterized according to the working needs and the lathe type.
For further information on how to carry out this operation, check the "Keyboard instruction manual".

INDEX

5.1 ADJUSTMENT AND SETUP - FOREWORD

DANGER - WARNING:

do not perform any adjustment when the bar feeder is running unless expressly requested in the manual.

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

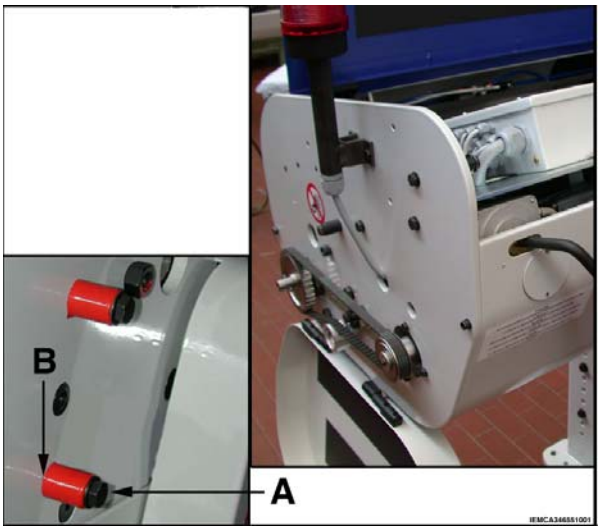
5.2 GENERAL ADJUSTMENTS - FOREWORD

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

5.2.1 Feeding chain - Adjustment

For the movement chain of the bar pusher, tension screws A on the rear plate of bar feeder is provided. After some bar feeder operating hours, the chain tension has to be checked.

- If bush B of chain tension is still fastened to the rear plate, then no chain extension took place.
- On the contrary, if bush B moved away by1- 2 mm from rear plate, then a chain extension took place, which is dangerous for correct operation of bar feeder. Screw A must then be tightened until bush B is fastened to the rear plate.



5.2.2 Air adjusting unit - Adjustment

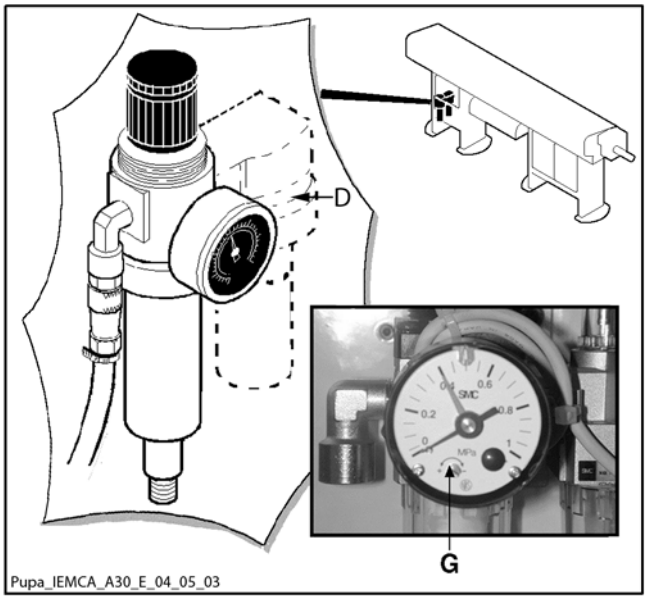
After unscrewing the glass protection, the pressure switch can be properly adjusted by turning the relevant adjusting screw (G). Proper setting is 4.5 bars (0.45 MPa).

WARNING – CAUTION:

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

INFORMATION:

Lubricator D is fitted only when the headstock synchronization device is assembled.



5.3 SETUP ACCORDING TO THE BAR TO BE MACHINED

According to the diameter of the "new" bar to be machined, a few or several operations must be carried out based on the diameter of the previously machined bar.
The table reports the diameters of available guide channels as well as the range of the bar pushers that can be assembled, and the diameters of the bar to be machined.

BOSS 332 guide channel, bar pusher, bar and pipe diameters.

Model	Guide channel diameter (mm)	Bar pusher diameter (mm)	Bar diameter (mm)		Max. pipe diameter (mm) (*)
			Minimum	Maximum	
BOSS 332	13	10	3	8	10
		12	4	10	12
	17	15	5	13	15
		16	5	14	16
	21	18	5	16	18
		19	5	17	19
		20	5	18	20
	24	23	6	20	23
	26	23	8	21	23
		25	8	23	25
	28	25	8	23	25
		27	8	25	27
	33	30	8	27	30
		31	8	28	31
		32	8	29	32
	36	32	8	29	32
		35	8	32	32

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

WARNING – CAUTION:

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

WARNING – CAUTION:

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

INFORMATION:

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

BOSS 545 guide channel, bar pusher, bar and pipe diameters.

Model	Guide channel diameter (mm)	Bar pusher diameter (mm)	Bar diameter (mm)		Pipe diameter (mm) (*)
			Minimum	Maximum	
BOSS 545	13	10	3	8	10
		12	4	10	12
	17	15	5	13	15
		16	5	14	16
	21	18	5	16	18
		19	5	17	19
		20	5	18	20
	24	23	6	20	23
	26	23	8	21	23
		25	8	23	25
	28	25	8	23	25
		27	8	25	27
	33	30	8	27	30
		31	8	28	31
		32	8	29	32
	36	32	8	29	32
		35	8	32	32
	38	37	8	32	35
	39	38	8	35	38
	43	40	42	37	40
		42	10	39	42
	46	42	10	39	42
		45	10	42	45
	52	51	12	45	51

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

WARNING – CAUTION:

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

WARNING – CAUTION:

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

INFORMATION:

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

BOSS 552 - HD guide channel, bar pusher, bar and pipe diameters.

Model	Guide channel diameter (mm)	Bar pusher diameter (mm)	Bar diameter (mm)		Pipe diameter (mm) (*)
			Minimum	Maximum	
BOSS 552 - HD	13	10	3	8	10
		12	4	10	12
	17	15	5	13	15
		16	5	14	16
	21	18	5	16	18
		19	5	17	19
		20	5	18	20
	24	23	6	20	23
	26	23	8	21	23
		25	8	23	25
	28	25	8	23	25
		27	8	25	27
	33	30	8	27	30
		31	8	28	31
		32	8	29	32
	36	32	8	29	32
		35	8	32	32
	38	37	8	32	35
	39	38	8	35	38
	43	40	42	37	40
		42	10	39	42
	46	42	10	39	42
		45	10	42	45
	52	51	12	45	51

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

WARNING – CAUTION:

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

WARNING – CAUTION:

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

INFORMATION:

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

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

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

The new machining cycle requires feeding of 10 mm bars.
In this case, the half bushes and bar pusher collet must be replaced and the magazine must be adjusted.

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

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

The new machining cycle requires feeding of 14 mm bars.
In this case, the half bushes, bar pusher and bar pusher collet must be replaced and the magazine and clamps must be adjusted.

Example 3
The previous machining cycle had been carried out under these conditions:

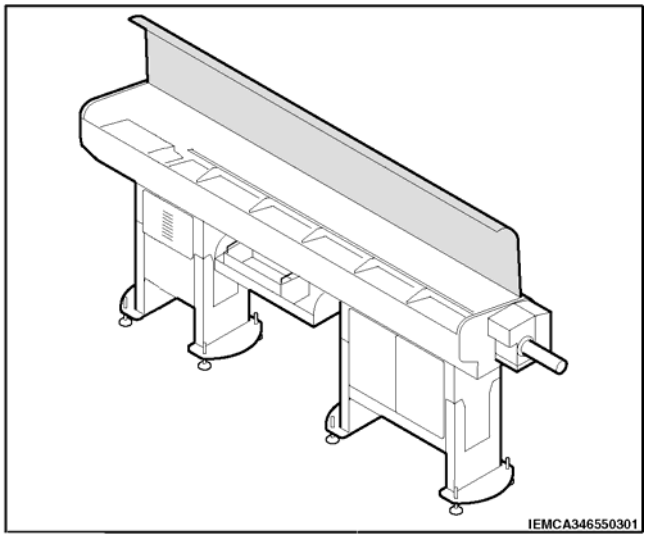
Guide channel diameter (mm)	Bar pusher diameter (mm)	Bar diameter (mm)
17	15	8

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

The information contained in this section refers to Example 3, i.e. to the cases where it is necessary to carry out all adjustment operations and bar feeder setup.

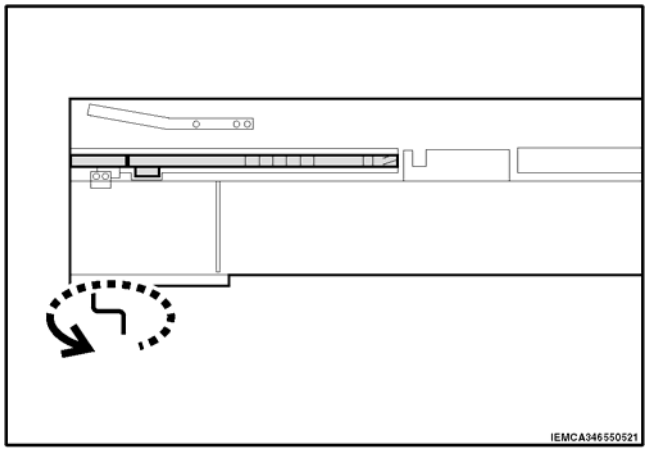
5.3.1 Guide channels, half bushes, bar pusher and collet - Replacement

- When the magazine is empty (no bars), set the bar feeder to manual mode.
- Open the upper guard.
- Use the keyboard to move the bar pusher forwards beyond the area of the bar removal/loading clamp unit.
- (The bar pusher can be moved in manual mode via the keyboard with the guard open and the guide channels closed).

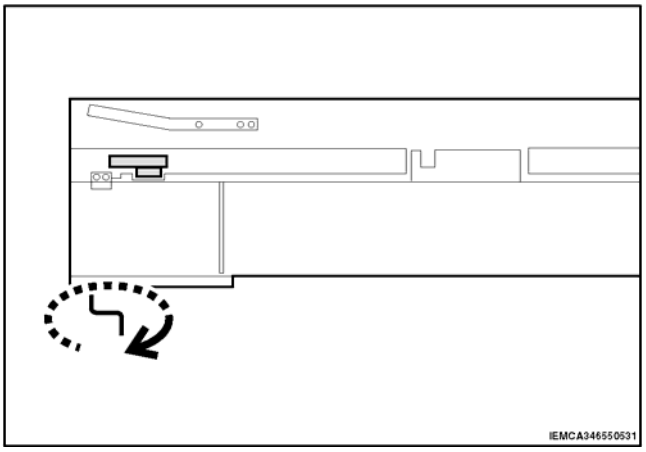


- Close the upper guard.
- On the keyboard, press the blue buttons and the guide channel opening button simultaneously to open the bar feeder guide channels.
- Open the upper guard.
- Remove the feeding brushless motor protection to fit the crank.

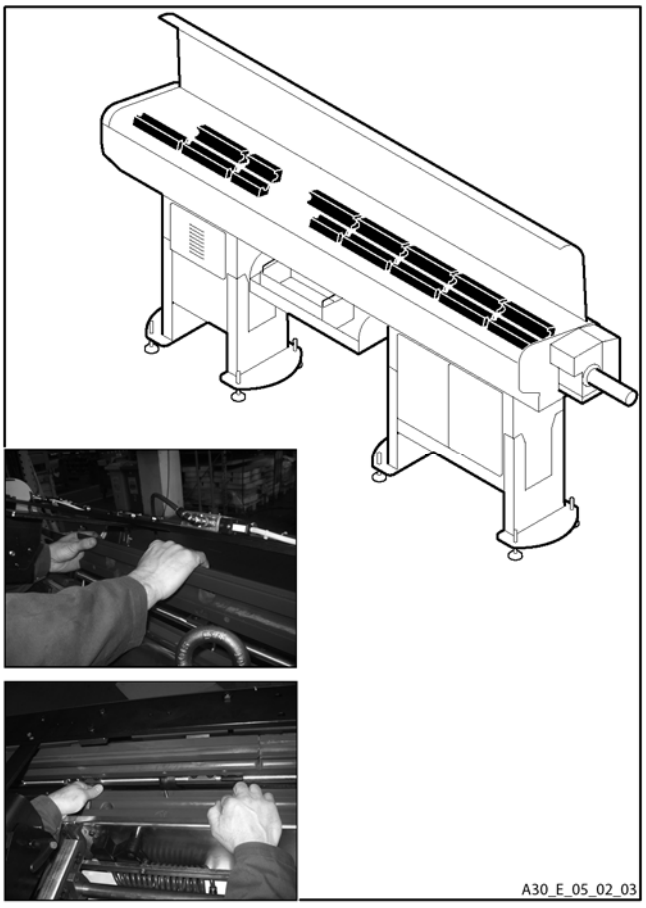
- Use the crank to bring the bar pusher to its backwards limit stop and then remove it from its seat. Bar pushers in the Ø=42÷51 range must be removed from the bar magazine.



- Move the first feeding carriage forwards until the flag reaches the opening, then remove it from its seat.



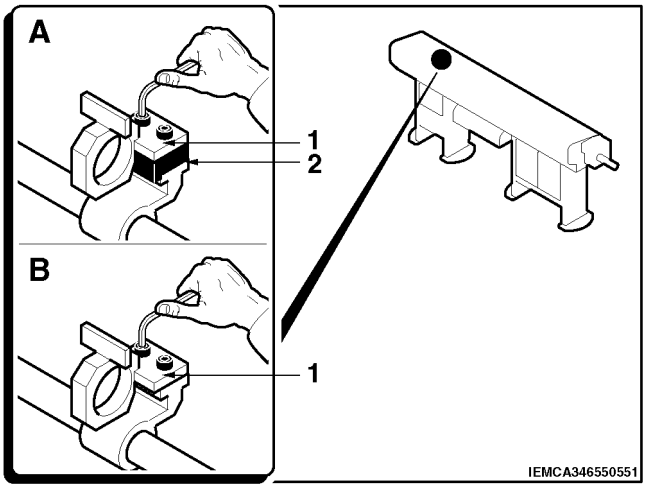
- Disassemble the lower guide channels.
- Disassemble the upper guide channels.



- Remove the bar pusher support.

A Guide channels Ø=13÷46
B Guide channels Ø=52

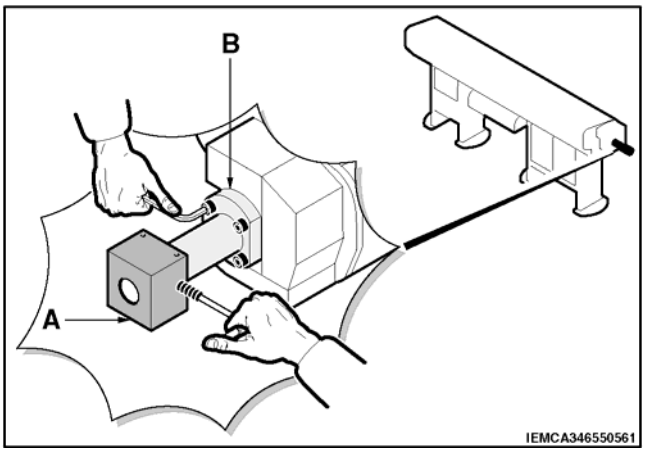
1 Support
2 Spacer



Remove the sleeve in the following way:

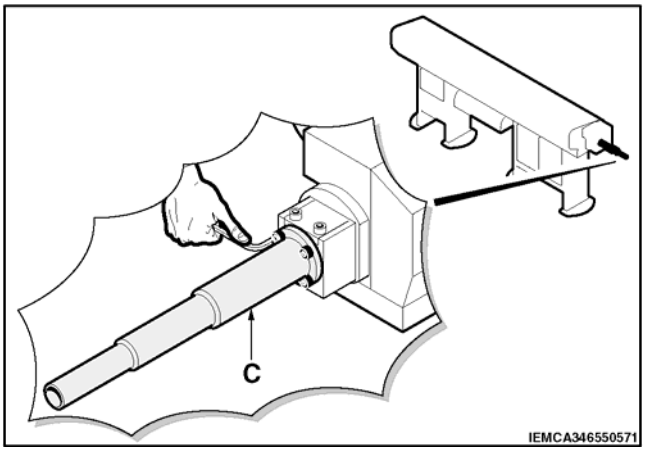
Fixed sleeve

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



Telescopic front nose

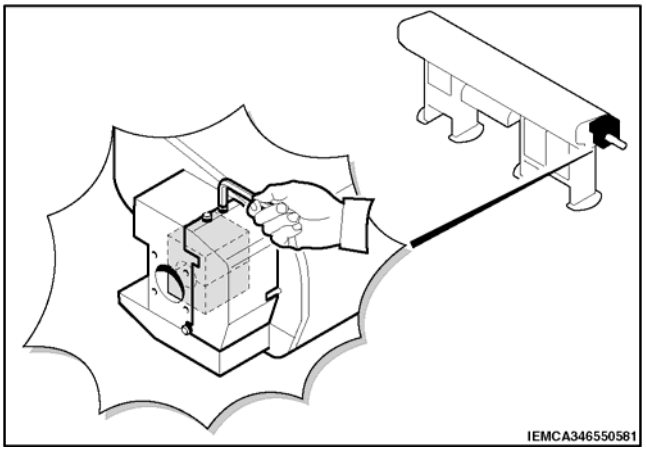
- Remove the sleeve "C".



Remove the front half bushes in the following way:

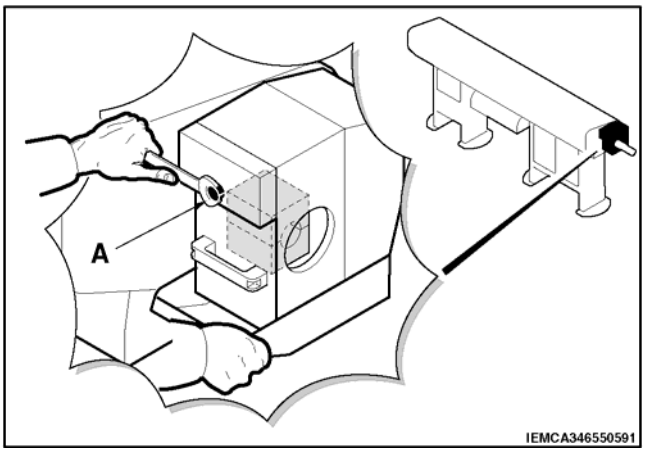
BOSS 332

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



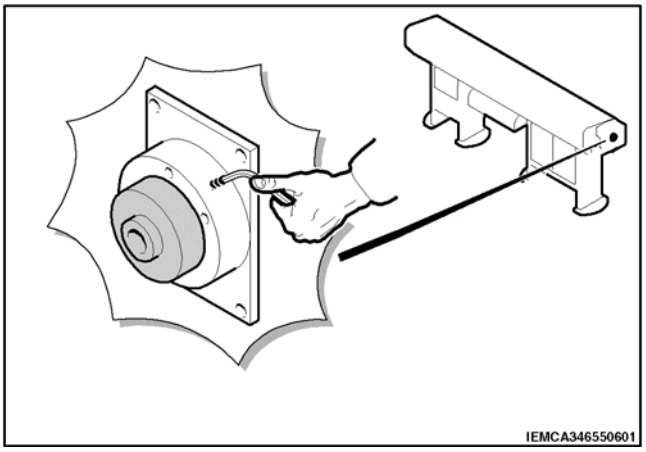
BOSS 545/552-HD

- Remove the cover, fully open the two half bushes by manually turning the shaft "A" and extract the lower bush
- Close the remaining half bush by acting on the shaft "A", and extract it.

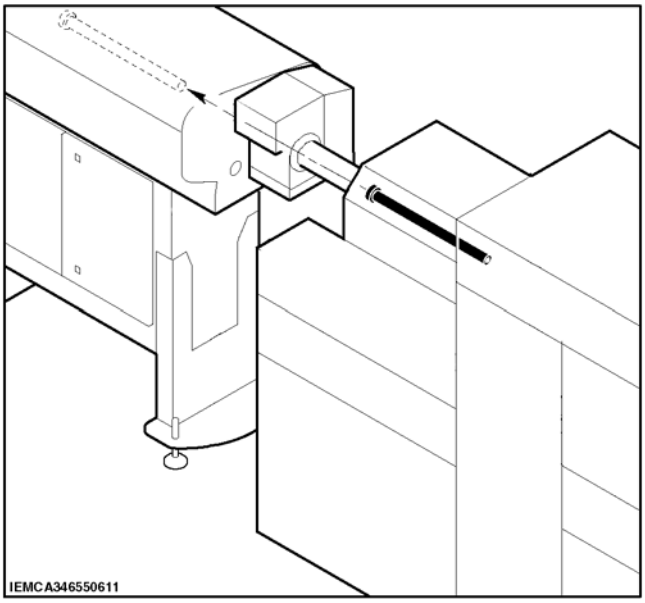


Only for BOSS 332

- Remove the internal sleeve.



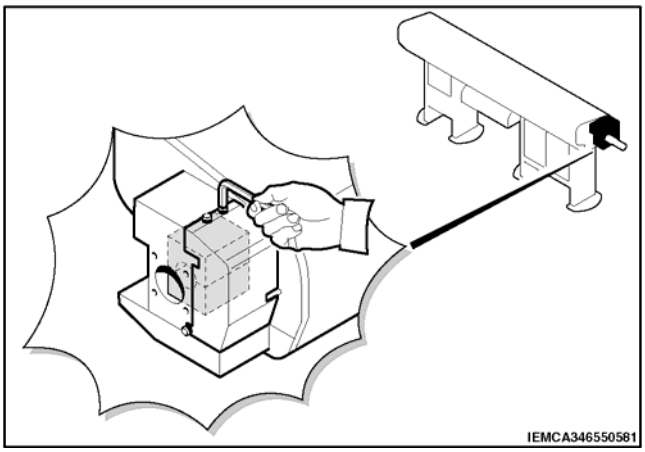
- If necessary, remove the lathe spindle liner and install another one suitable for the diameter of the guide channels.



Install front half bushes suitable for the bar in the following way:

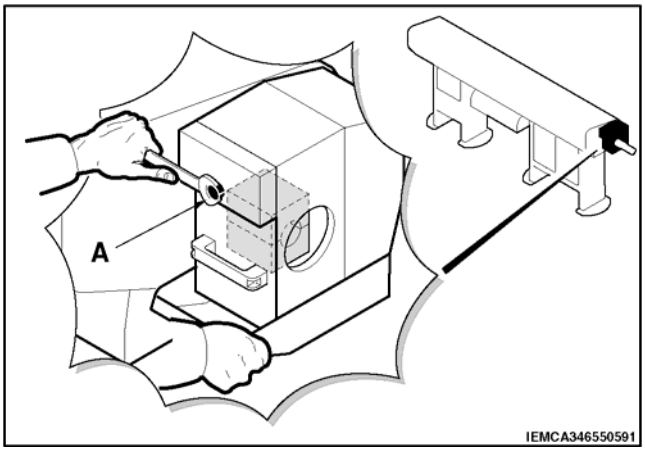
BOSS 332

- Insert the two half bushes and place the cover.



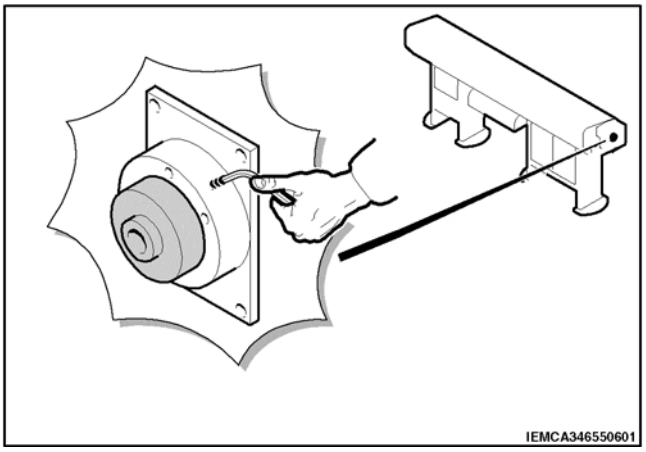
BOSS 545/552-HD

- Insert the upper half bush, turn the shaft "A" and insert the lower half bush.
- Close the half bushes completely and place the cover.



Only for BOSS 332

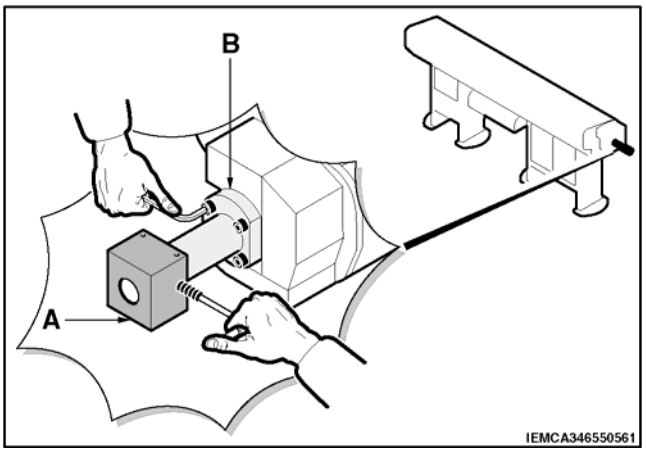
- Install an internal sleeve suitable for the guide channel.



Reassemble the sleeve as follows:

Fixed sleeve

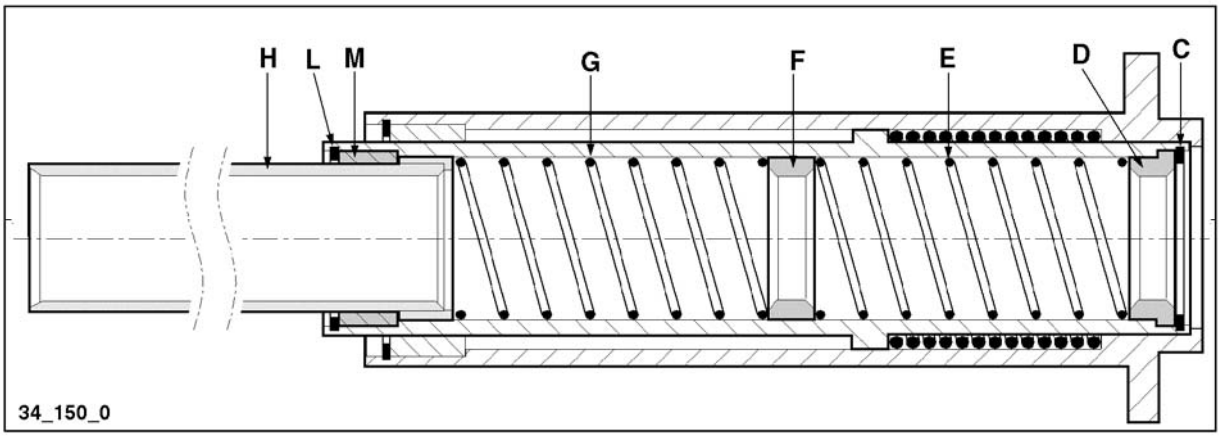
- Install the sleeve "B" suitable for diameter of the guide channels and the oil recovery device "A".



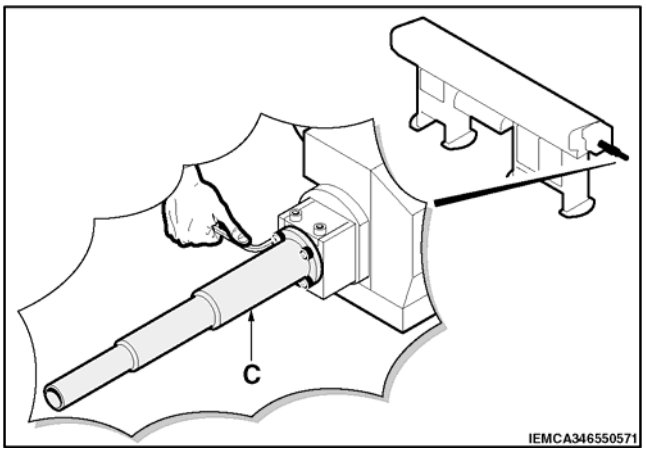
Telescopic front nose

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

- Press the intermediate stage to the end of its stroke and remove the ring "C".
- Extract the bush "D", the spring "E", the bush "F", the spring "G" and the sleeve "H".
- Remove the ring "L", replace the bush M with another one suitable for the bar and reassemble the ring "L".
- Replace the sleeve "H", the spring "G", the bush "F", the spring "E" and the bush "D". The sleeve "H" and bushes "F" and "D" must be suitable for the bar.
- Reassemble the ring "C".



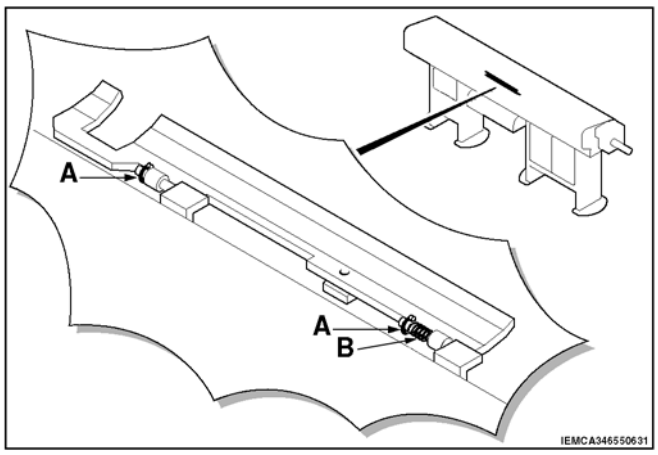
- Place the sleeve back into its seat.



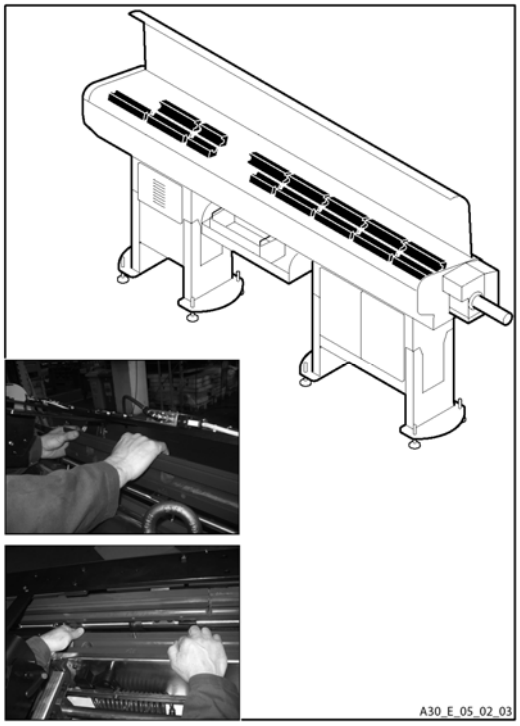
Only for BOSS 332

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

- Remove the two rings "A", the spring "B" and the gate
- Assemble the 13 mm guide channel gate, and then reassemble the spring and two rings.



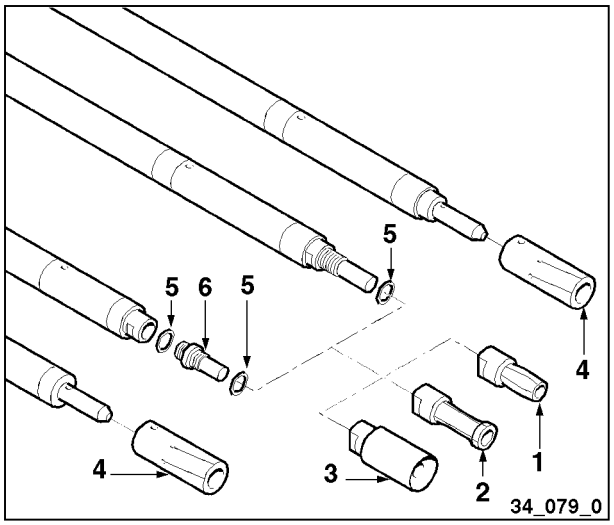
- Assemble the top guide channels first, and then the lower guide channels suitable for the bar.



INFORMATION:

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

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



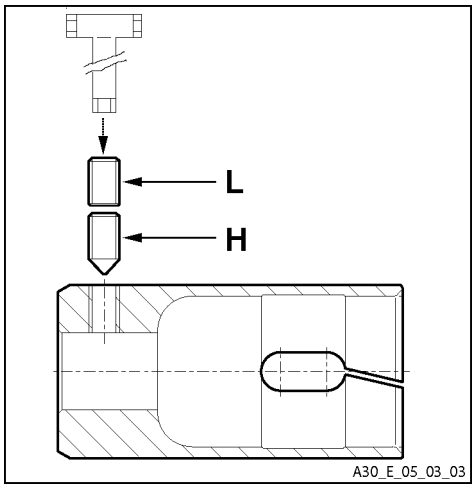
INFORMATION:

contact IEMCA service department for further information.

Legend:
1 "IEMCA" pipe collet
2 "IEMCA" bar collet
3 "IEMCA" collet for bars machined with front remnant ejection
4 Quick coupling collet for bars
5 Ring
6 Collet connection

WARNING – CAUTION:

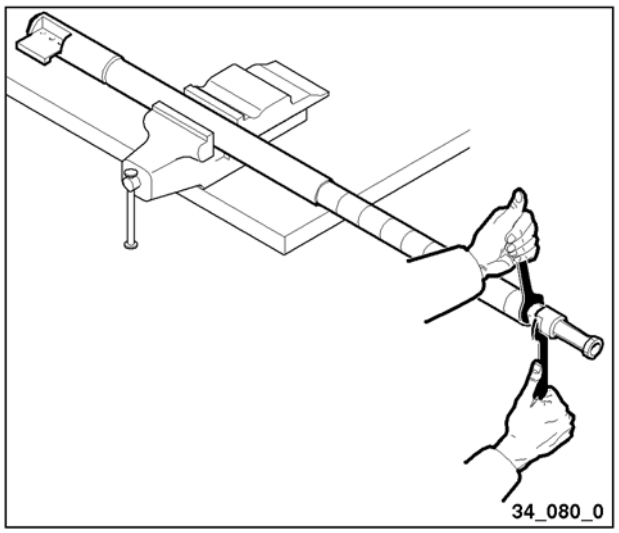
At every collet change (model 381p, 381p..011, 381p..021 e 386p) it is necessary to install the grub screw H and the counter screw L.



WARNING – CAUTION:

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

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



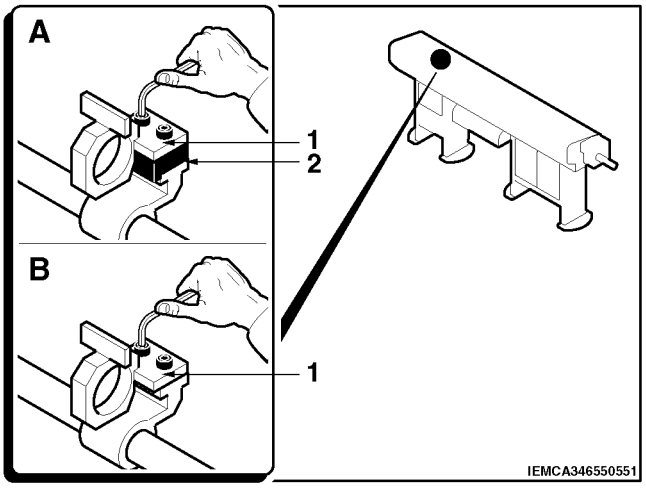
INFORMATION:

the figure shows a generic example of collet assembly.

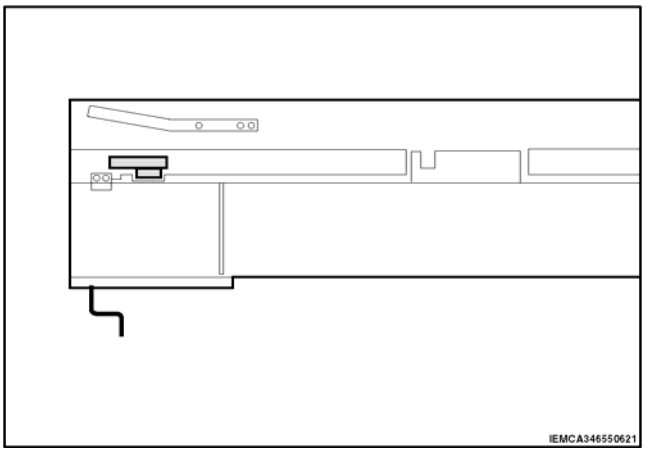
- Install a suitable bar pusher support suitable to the diameter of the bar pusher.

  A Guide channels Ø=13÷46
  B Guide channels Ø=52

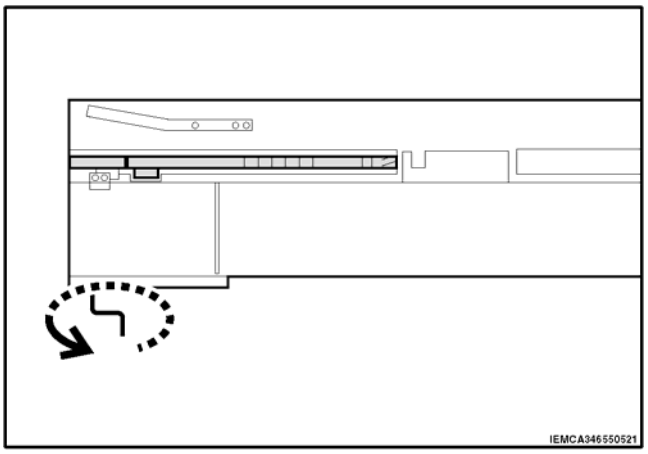
  1 Support
  2 Spacer



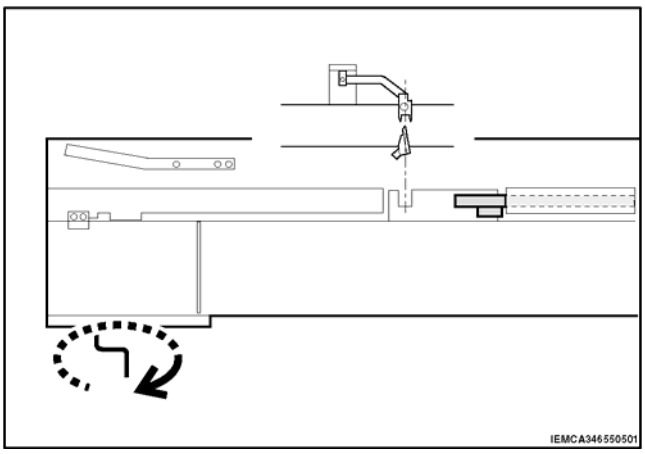
- Install the first feeding carriage into its seat.



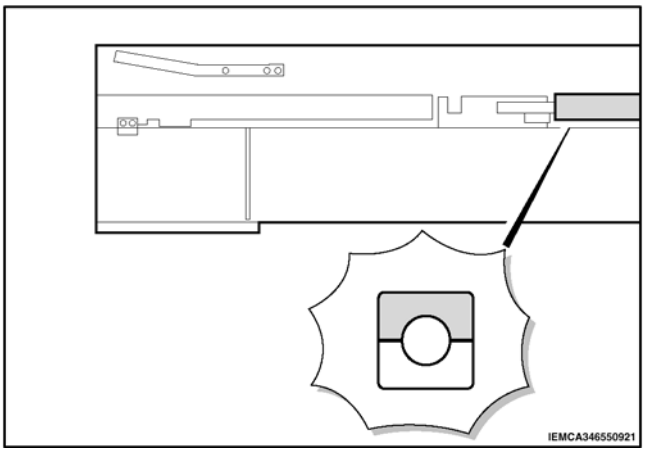
- Bring the first feeding carriage to its backward stroke limit and insert the bar pusher.



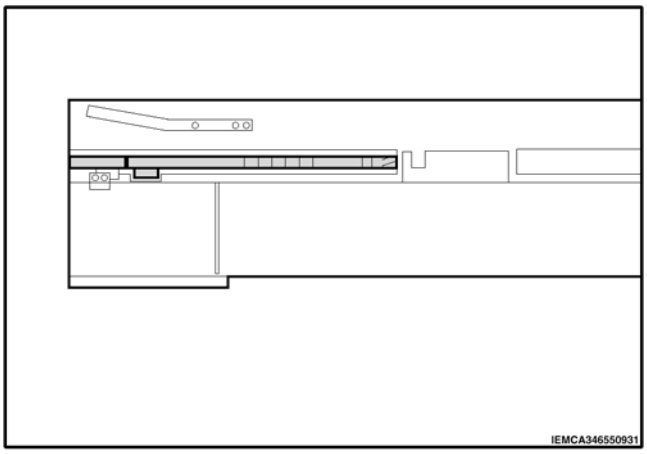
- Move the bar pusher forwards past the clamps area.



- Close the guard.
- On the keyboard, press the two blue buttons and the guide channel closing button simultaneously to close the guide channels.

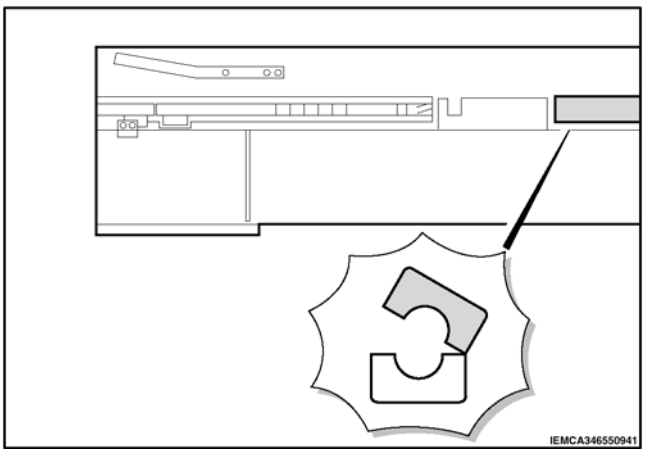


- Bring the bar pusher to its backward limit stop by means of the keyboard.



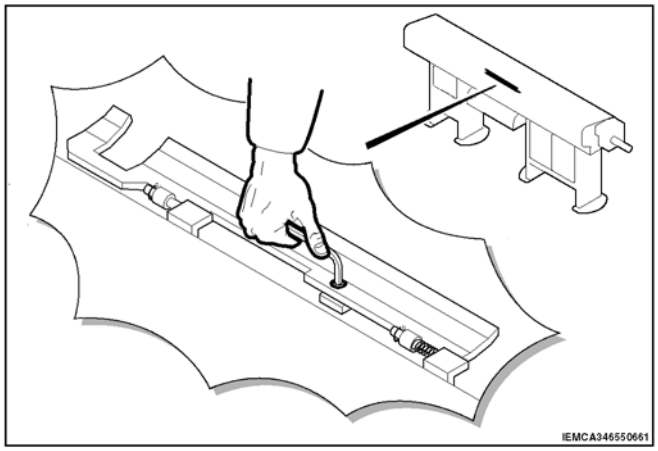
The upper surface of the intermediate flag must be aligned with the lower guide channels; proceed as follows to adjust:

- Open the guide channels by means of the keyboard by pressing the two blue buttons and the guide channel opening button simultaneously.

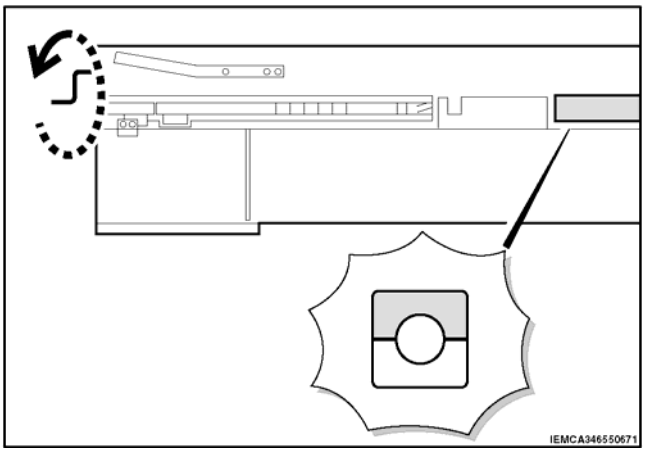


Open the guard and proceed as follows:

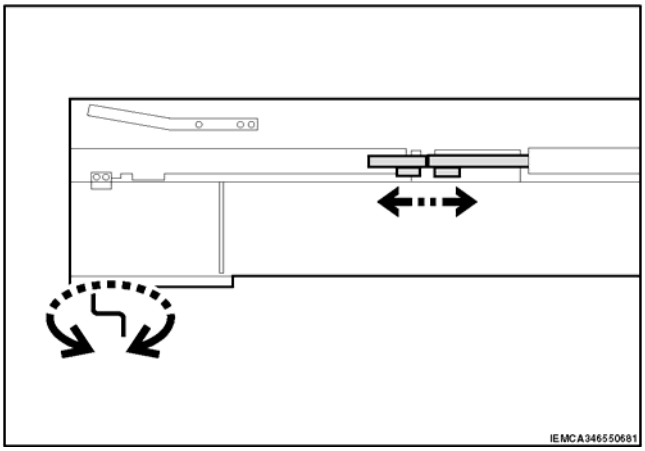
- Loose the screw, adjust the flag position and tighten the screw.



- Close the upper guide channels.



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



5.3.2 BAR PUSHER REPLACEMENT PROCEDURE

WARNING - CAUTION

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

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

- set the bar feeder to manual mode 

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

INFORMATION

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

NEW BAR PUSHER INTRODUCTION

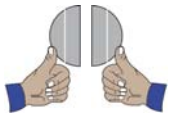
WARNING – CAUTION:

Introduce the bar pusher correctly into the first feeding carriage housing.

- Close the bar feeder guard, reset the start button  , enter in manual mode 

and press 

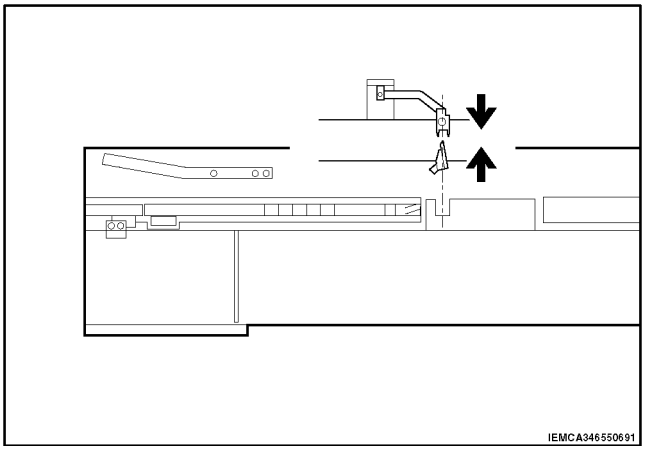
to move the bar pusher forwards until the clamp position is exceeded of at least 200 mm.

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

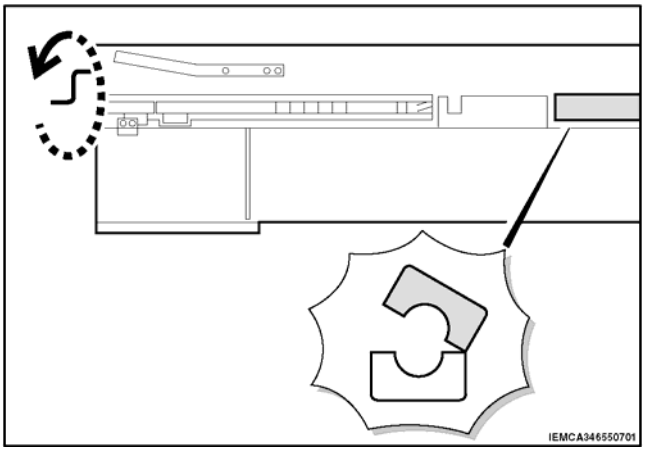
5.3.3 Clamps - Replacement

Clamp replacement becomes necessary when the new bars to be machined have a different profile from the previously machined bars (e.g. when changing over from round bars to square or hexagonal bars). Contact IEMCA after-sales service for more information.
Proceed as follows to replace the clamps:

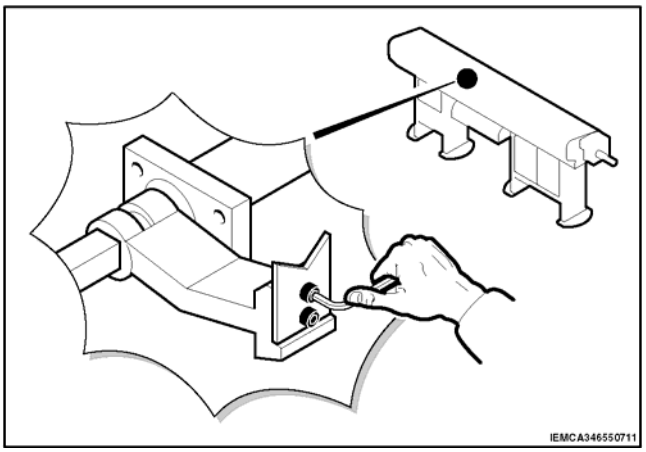
- With the bar feeder powered off and the compressed air supply disconnected, close the clamps manually.



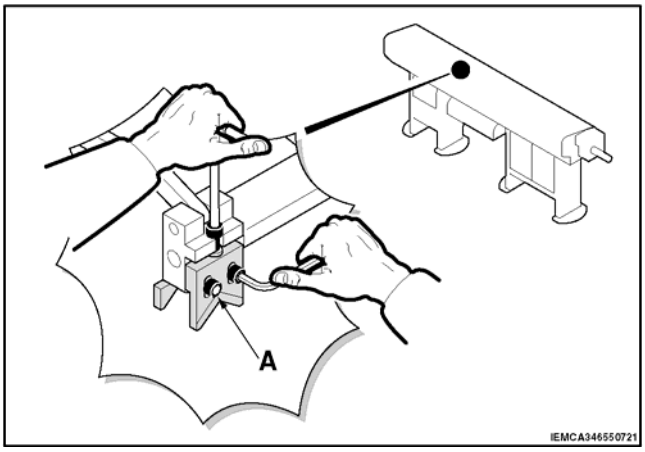
- Open the upper guide channels.



- Manually lift the lower lever and replace the clamp. Remove the intermediate gate if necessary (see "GUIDE CHANNELS, HALF BUSHES, BAR PUSHER AND COLLET - REPLACEMENT", CH. 5).



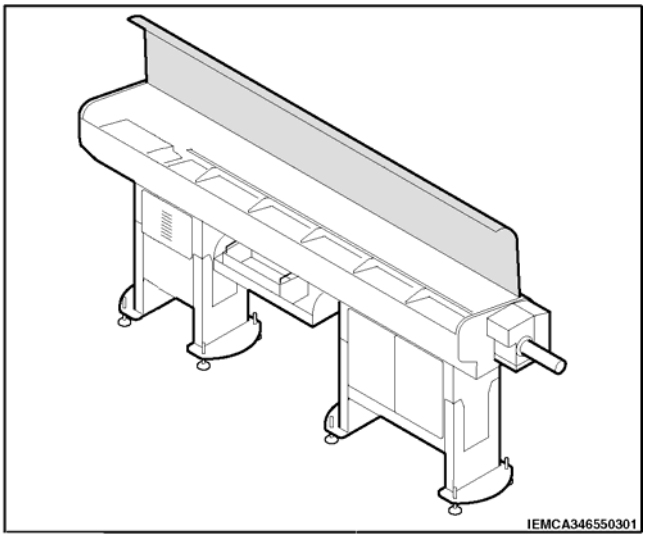
- Loosen screws "A" and replace the clamp.
- Restore the bar feeder initial operating conditions.



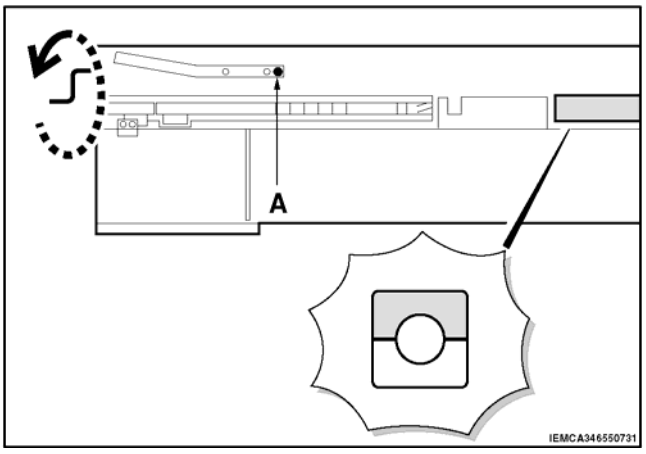
5.3.4 Bar guide plates and bar selectors - Adjustment

Preliminary procedure

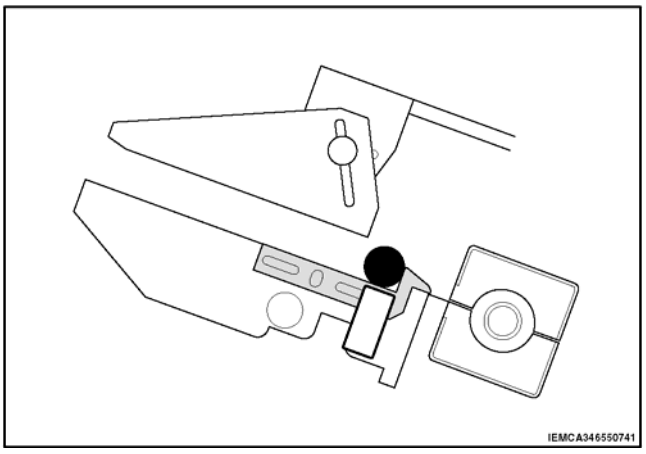
- Open the upper guard.



- Close the upper guide channels (sensor "A" must be energized).

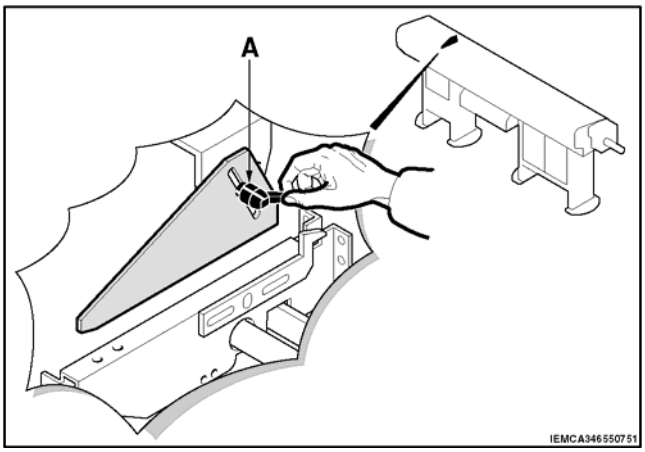


- Make sure that the bar selectors are lower than the magazine rack.
- Prepare two bar remnants at least 1,200 mm long.



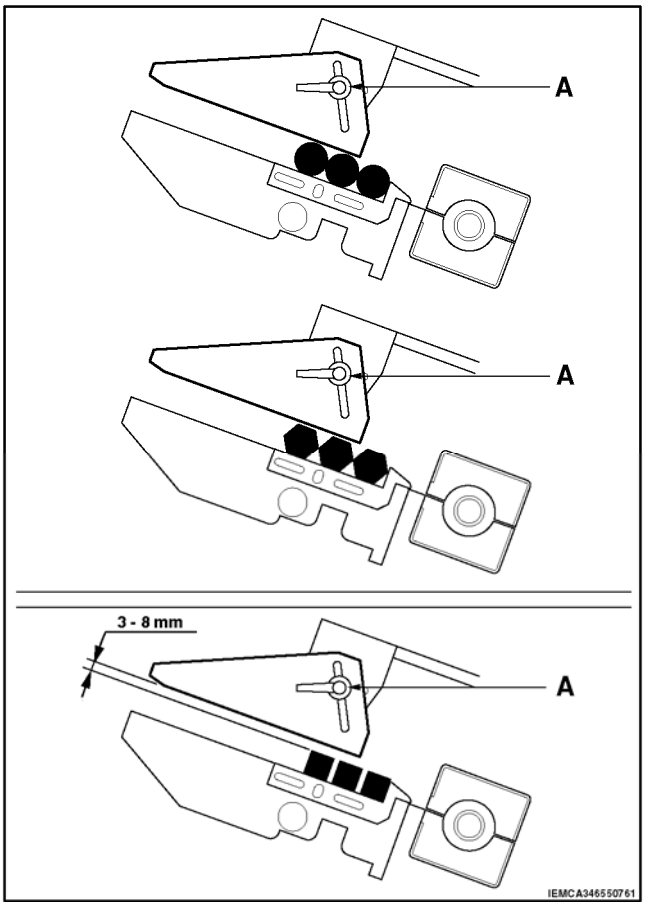
Bar guide plate adjustment

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



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

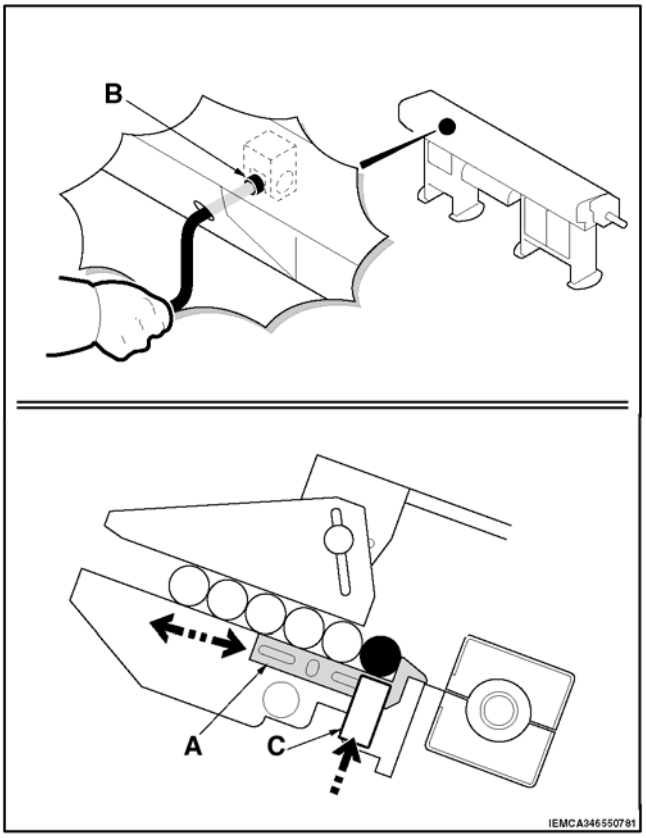
INFORMATION: Remove plates before machining bars with a diameter greater than ø36.



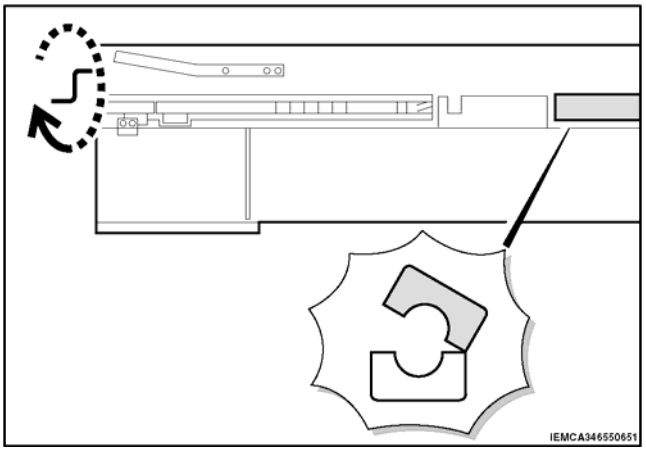
Bar selector adjustment

Make the adjustment as follows.

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



- Open the upper guide channels; the first bar must be dropped into the guide channels, while the second bar should be held in the magazine until the next guide channel closure.



5.4 CAM BOX - TIMING

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

MICROSWITCH FUNCTION

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

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

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

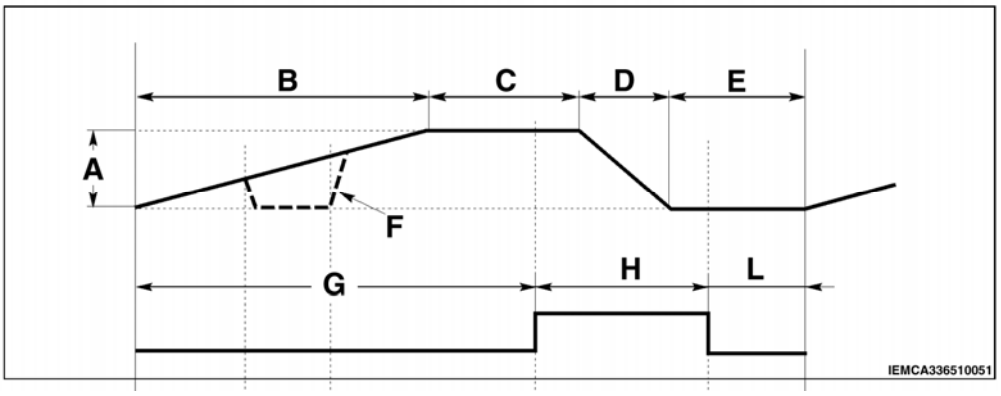
S99 - Camshaft stop
It determines the camshaft stop position when there is no thread (connected in series with a microswitch or relay located on the lathe).

CAM TIMING

LATHE CAM COMPLETE CYCLE

PHASE HEADSTOCK

PHASE COLLET LATHE

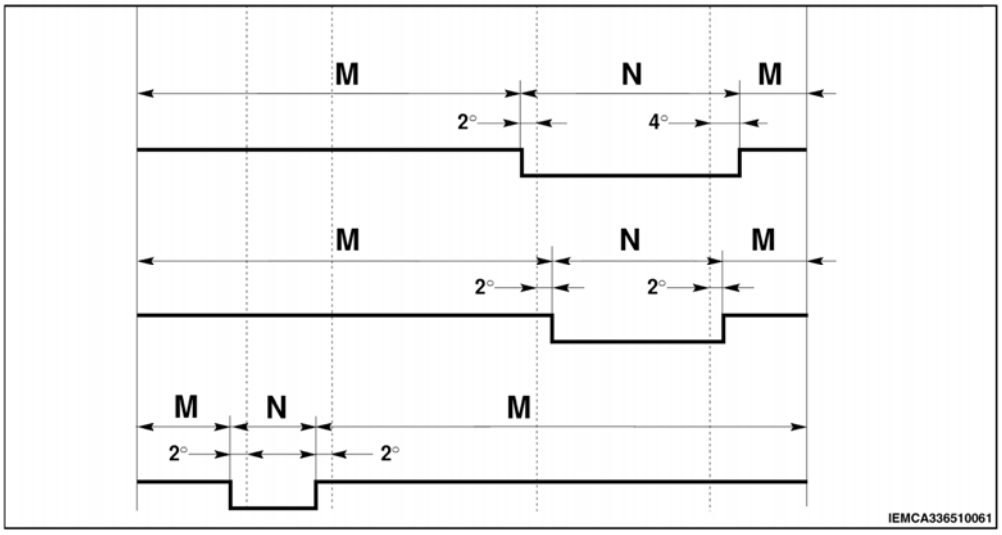


BAR FEEDER CAM COMPLETE CYCLE

PHASE MICROSWITCH S90

PHASE MICROSWITCH S91

PHASE MICROSWITCH S92



A STROKE
B FEEDING
C FORWARD STOP
D RETURN
E BACKWARD STOP
F Possible headstock return with closed collet for special operations

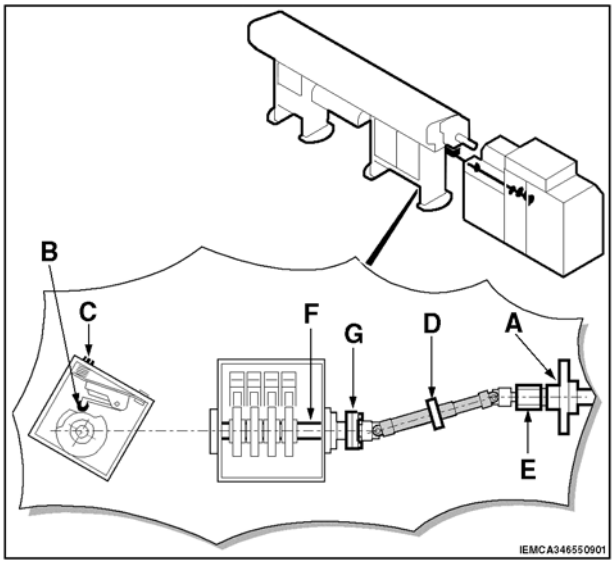
G CLOSED
H OPEN
L CLOSED
M DISABLED
N DISABLED

Microswitches S90 and S91

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

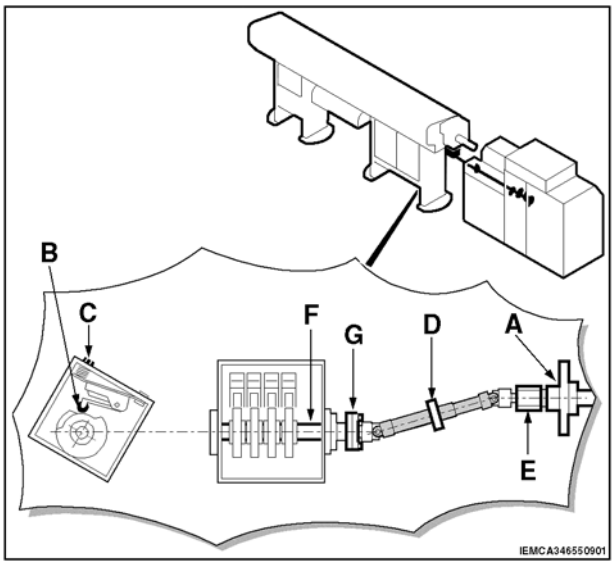
INFORMATION:

"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

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



Microswitch S99

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

GENERAL REMARKS

- Microswitch activation can be either delayed or advanced through screw "C".
- Whenever servicing the camshaft, disconnect the lathe 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 the screws of sleeve "G", rotate it correctly and tighten the screws.

INDEX

6.1 CONTROL DESCRIPTION

INFORMATION:

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

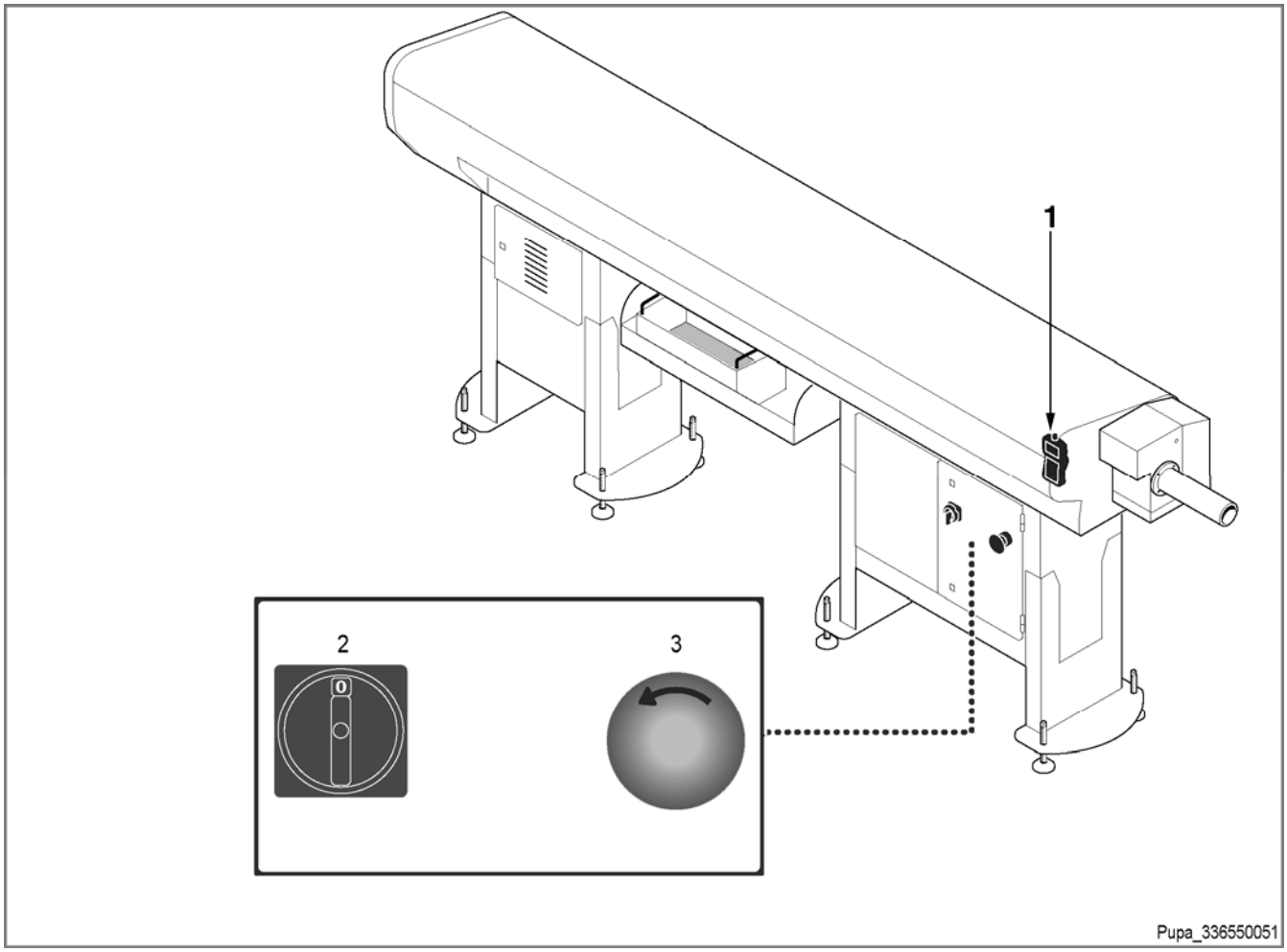
INFORMATION:

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

INFORMATION:

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

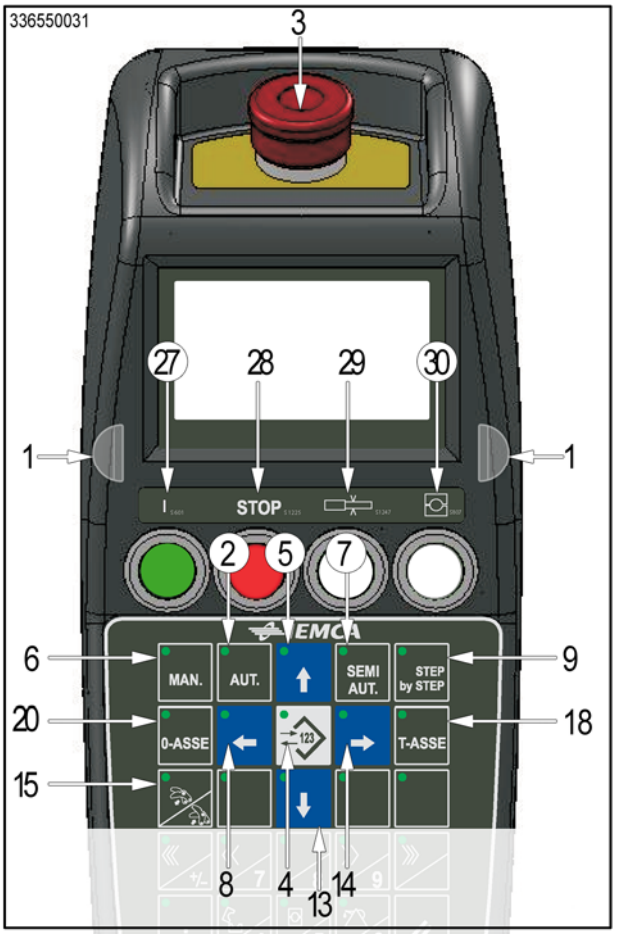
The figure indicates the positions of both the electrical and handheld keyboard "1" controls.



2 MAIN SWITCH: turns the power supply on and off.
- Position 0 (OFF) the machine is not powered.
- Position I (ON) the machine is powered.

3 EMERGENCY STOP PUSH-BUTTON: stops the bar feeder in case of emergency. For restart release the push-button manually.

6.2 KEYBOARD CONTROL DESCRIPTION



1 Start buttons: opposite buttons enabling the keys for some functions. Press both buttons and simultaneously the button corresponding to the desired function.
2 Selects the automatic function.
3 It stops the bar feeder: for restart, manually release the push-button.
4 Selects the keyboard modes:
- with LED off  ; selects the "message display" mode.
- with LED on  ; selects the "parameter display" mode.

5 Multifunction
- Allows scrolling the page upwards.
- Moves the selection cursor upwards.
- Increases by one the value set in the date and time programming mode.

6 Selects the manual mode.
7 Selects the semiautomatic function.
Press to select, press again to unselect.
8 Multifunction
- Selects the previous parameter.
- Moves the selection cursor leftwards.

9 Activates the "step by step" operating cycle: every time the button is pressed one step is performed.
10 Multifunction
- Sets the font.
- Turns on/off the oil pump.
Press to turn on the pump and press again to turn it off.

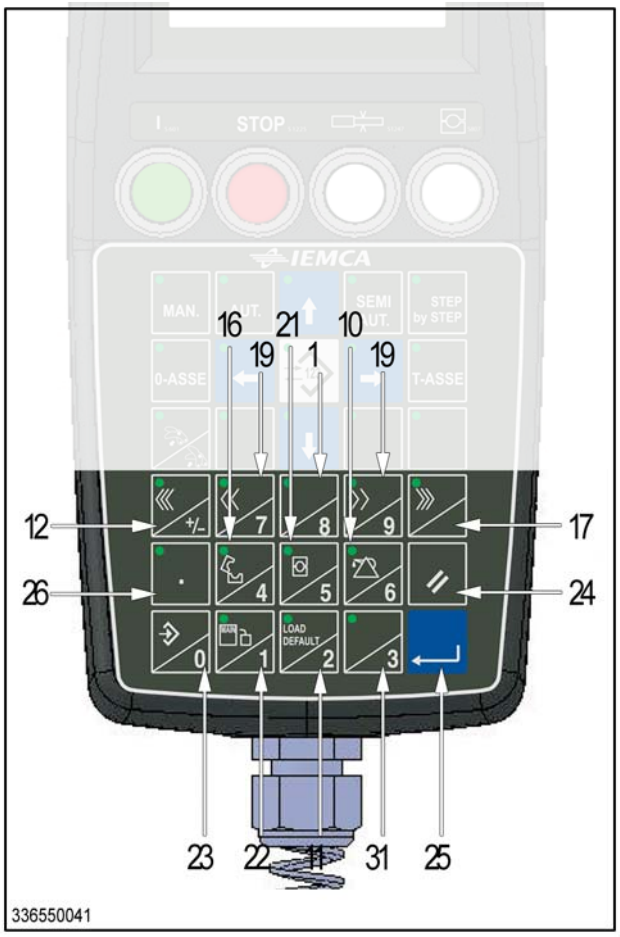
11 Multifunction
- Sets the numerical value.
- Loads the program from the PLC (entering default values in the parameters).

12 Multifunction
- Sets the font.
- Moves the bar pusher at a high speed.

13 Multifunction
- Allows scrolling the page downwards.
- Moves the selection cursor downwards.
- Decreases by one the value set in the date and time programming mode.

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

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



16 Multifunction
- Sets the numerical value.
- Opens the guide channels.
- Push both start buttons and then the key; release both buttons and the key only when the movement is finished.

17 Moves the bar pusher at high speed.

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

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

20 Resets the "BAR FEEDER ZERO SETTING" of the carriage.
Hold down both start buttons and then the key; release both buttons and the key when the carriage starts moving towards the "BAR FEEDER ZERO SETTING" position.

21 Multifunction
- Sets the numerical value.
- Closes the guide channels.
Push both start buttons and then the key; release both buttons and the key only when the movement is finished.

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

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

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

25 Confirms the entered data.

26 Sets the comma.

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

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

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

30 Half-bush opening and closing button (white light)
- In "Manual" mode, when the bar feeder is in the required position, the half-bushes will close when this button is pressed. If pushed again, the half-bushes will open.

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

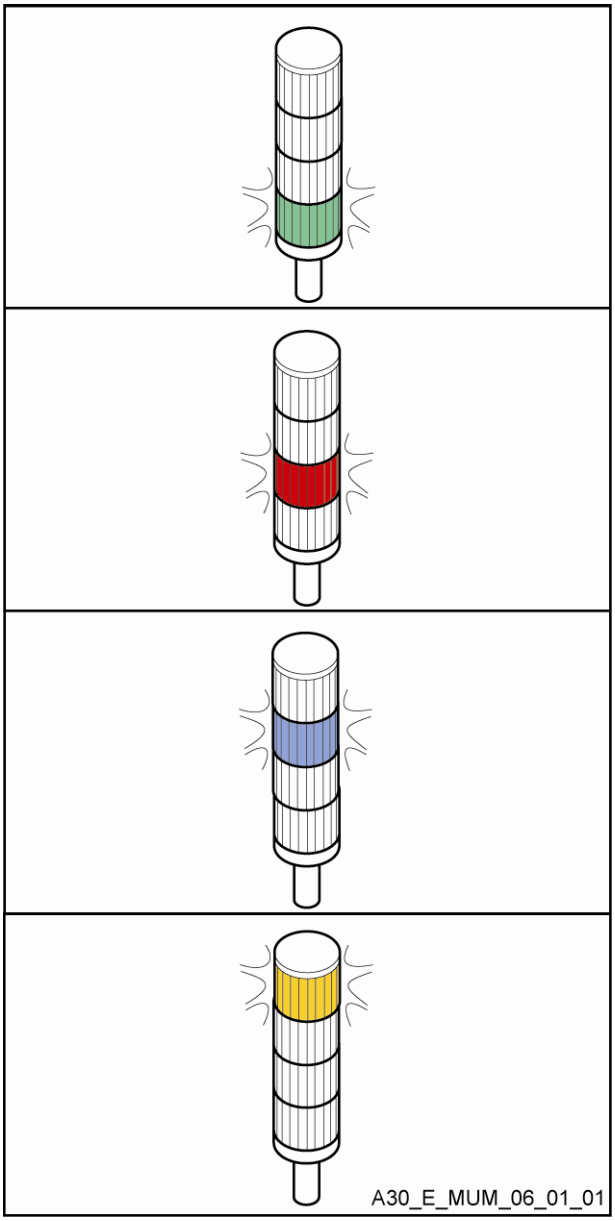
6.3 LIGHT INDICATOR - SIGNAL DESCRIPTION

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

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

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

BLINKING ORANGE LIGHT; the bar magazine guard of the bar feeder is empty. (OPTIONAL)



6.4 BARS TO BE MACHINED - FEATURES AND PREPARATION

WARNING – CAUTION:

do not insert bars having different sizes than the ones set by the manufacturer.
clean the bar surface before loading bars.

Maximum bar length

Model	Version	Maximum length mm (ft)	Minimum length (CSS) mm (ft)	Minimum length (CSM) mm (ft)
BOSS 332 BOSS 545 BOSS 552HD	21	2080 (6,8)	1000	/
	32	3200 (10,5)		2000
	37	3740 (12,2)		
	44	4400 (14,4)		
BOSS 332	64	6380 (20,8)	2000	

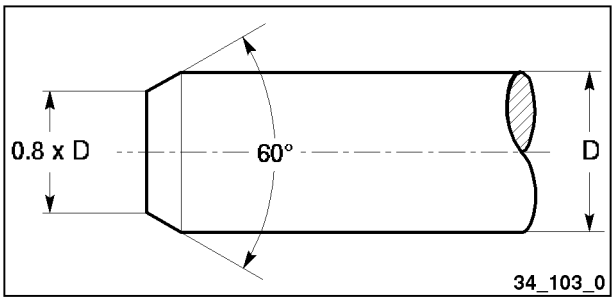
INFORMATION:

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

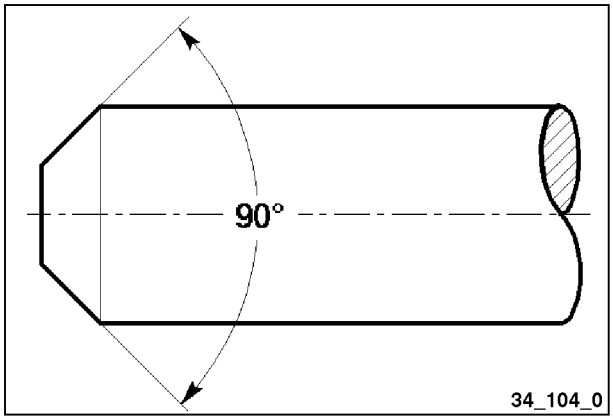
Please find hereafter some advices to optimise the bar feeder performances.
Usually it is not necessary to perform preliminary operations on the bar ends, but to obtain optimum results during loading, it is advisable to chamfer them.

SOLID BARS

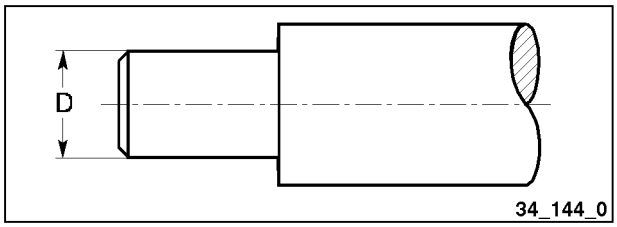
Make sure that there is not too much rag on the front end, which might hinder from entering the lathe collet.
Check that there is not too much rag on bar rear end, which might hinder insertion in the bar pusher collet. In any case, to improve operation during this phase, we advise to chamfer the bar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



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

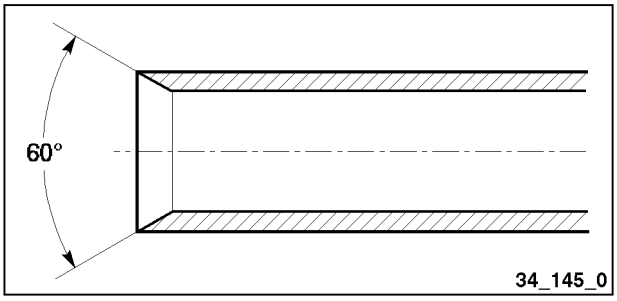


When machining bars having a diameter equal to or only slightly smaller than the bar pusher diameter, it is necessary to turn the bar rear ends; diameter "D" should be suitable for the collet installed in the bar pusher.



PIPES

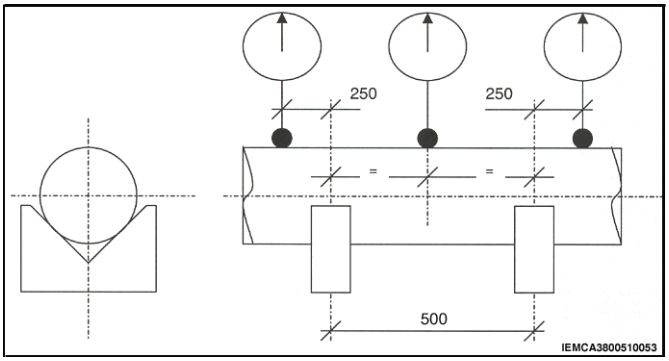
If pipes have to be machined, their rear ends should be chamfered as shown in the figure.



6.4.1 BAR STRAIGHTNESS - Measurement

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

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



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

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

INFORMATION:

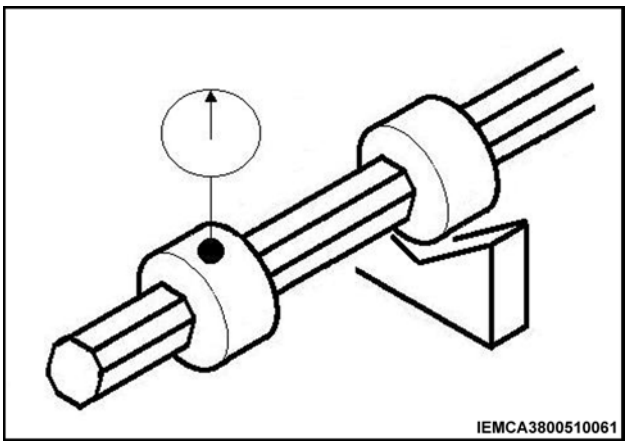
The bar straightness is obviously proportional to the rigidity of the material and to the number of revolutions (RPM) to which the lathe must operate. The lack of bar straightness highly influences the maximum number of revolutions that may be reached: the bigger the diameter the greater the influence.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

INFORMATION:

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

Hexagonal, square and section bars

With shaped bars, insert some bushes on the bar to be controlled.
Position 2 bushes on both V-supports.
In that case, the measurement can be carried out as shown in the figure.
Rotate the bar on itself and carry out the measurement on a bush external to both V-supports.



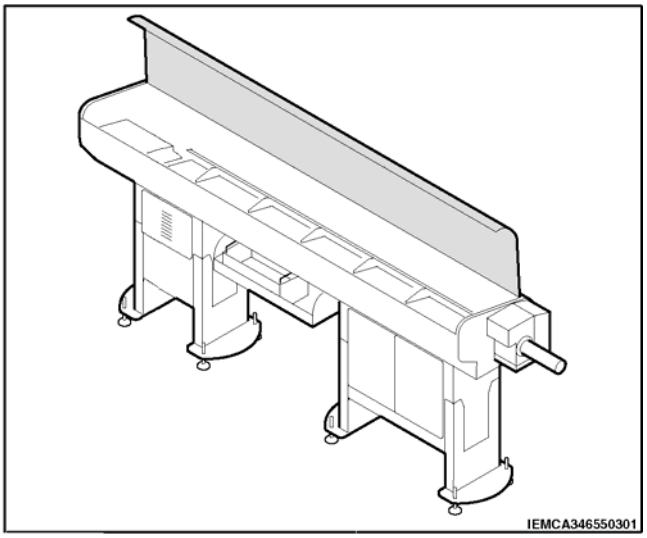
6.5 BAR FEEDER SET-UP AND AUTOMATIC CYCLE START

The following list is a sequence of bar feeder setup and automatic cycle feeding operations required if the bar feeder has to be started for the first time.

- Perform the software parameterization (refer to the "Keyboard Instruction Manual")
- Perform setup according to the bar to be machined (section "SETUP ACCORDING TO THE BAR TO BE MACHINED" CH. 5)
- Prepare the bars to be machined (section "BARS TO BE MACHINED – FEATURES AND PREPARATION", CH. 6).
- Load the bar magazine (section "BAR MAGAZINE - LOADING, CH. 6).
- Adjust the lubricating oil flow (section "LUBRICATING OIL - FLOW ADJUSTMENT", CH. 6).
- Start the automatic cycle (section "AUTOMATIC CYCLE START", CH. 6).

6.5.1 Bar magazine - Filling

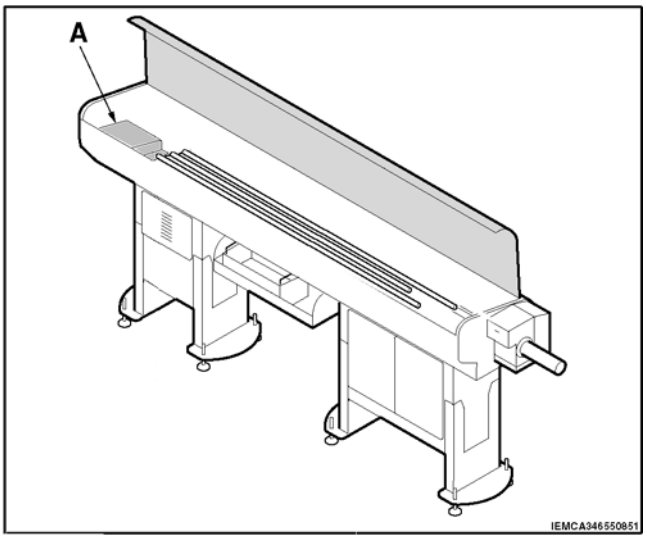
WARNING – CAUTION:
do not manually lift loads with weights exceeding those foreseen by the applicable regulations in force; if necessary use a suitable lifting device.



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

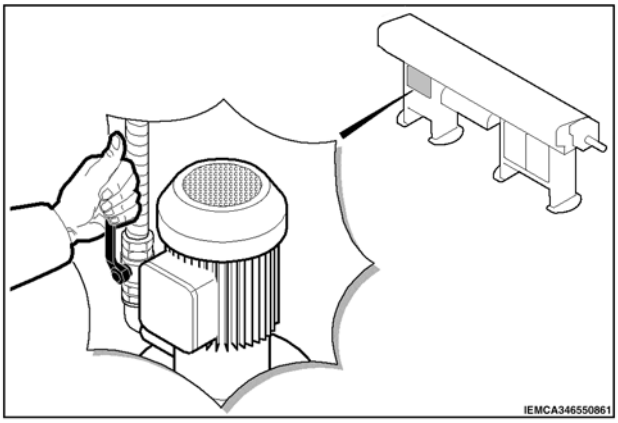
Follow these instructions to load bars:
- open the upper guard;

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

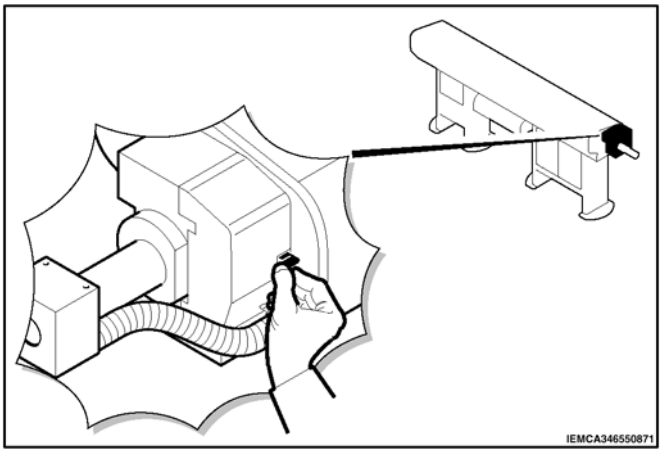


6.5.2 Lubrication oil - Flow adjustment

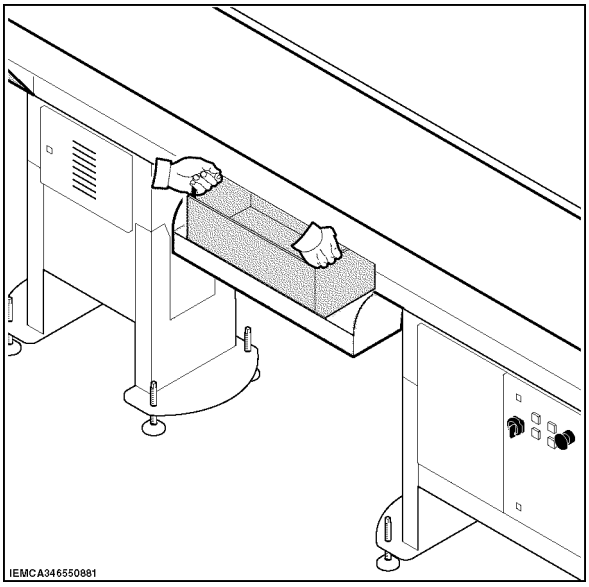
The oil flow in the guide channels and bush holder device is automatically controlled during the bar feeder automatic cycle.
The pump is started when the bar feeder has completed the bar change and stops when the bar pusher approaches the bush holder device.
Oil flow should be adjusted according to bar diameter and profile through the valve placed upstream.



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



6.5.3 Automatic cycle start



- Power the lathe on.
- Turn the main switch to position I (ON).
- Press [pupa_boss_barra] to start the bar feeder.
- Press MAN. to select the manual mode.
- Carry out a "bar feeder zero setting" in the following way:

  press the start buttons and 0-ASSE if the upper guide channels are not closed, the bar feeder will not perform the "BAR FEEDER ZERO SETTING"; messages will be displayed about the operations to carry out to bring the upper guide channels to the required position.
  After carrying out the required operations, press the start buttons and 0-ASSE.
- Enter the parameter values (refer to the "Keyboard Instruction Manual").
- Press 9 to bring the bar fore end near the cutting tool.

  To start machining, press AUT., when the lathe collet is closed. From now on, you will obtain automatic bar feeding until bars are ended or according to the set program.
- During machining, empty the remnant recovery box. Remove the box after lifting it over the tank edge.

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

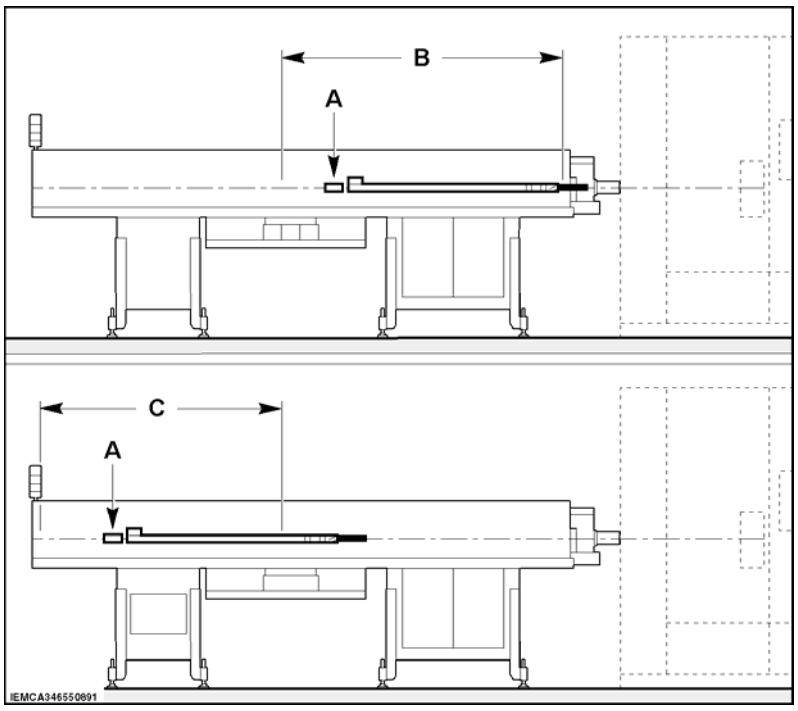
WARNING – CAUTION:
keep hands out of remnant drop area after the remnant box has been pulled off.

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

Place the box back under the remnant outlet.

6.5.4 Guide channel opening/closing procedure

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



OPENING PROCEDURE

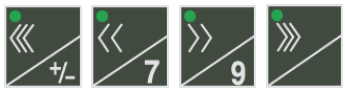
Open the guide channels by pressing the start buttons and 

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

CLOSING PROCEDURE

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

.

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

.

As soon as the carriage reaches this position, the following message will be displayed: "Carriage at baklimit stop"

Close the guide channels by pressing the start buttons and 

.

6.5.5 Mode of performing a cycle in the STEP BY STEP function

Foreword

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

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

Procedure

- press  to start the bar feeder;
- Check that the bar feeder is in the closed guide channel condition.
- press 

and 

to select the semiautomatic function;
- press 

and the bar feeder performs the first step;
- press 

and the bar feeder performs the second step, and so on.

6.6 BAR FEEDER STOP

BAR FEEDER EMERGENCY STOP

WARNING – CAUTION:

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

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

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

BAR FEEDER STOP AT THE WORKING CYCLE END

WARNING – CAUTION:

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

- Complete the operations in your working schedule.

- Stop the bar feeder by pressing  .
- Stop the lathe.
- Turn the main power switch to O (OFF).

6.7 AUTOMATIC CYCLE START AFTER MANUAL CYCLE OPERATIONS

- If the bar pusher has been moved while power supply was disconnected, the "BAR FEEDER ZERO SETTING" should be performed as follows:

  press the start buttons and 

 if the upper guide channels are not closed, the bar feeder will not perform the "BAR FEEDER ZERO SETTING"; messages will be displayed about the operations to carry out to bring the upper guide channels to the required position.

After carrying out the required operations:

- Press the start buttons and 

.
- Check that the bar is in the required position in the lathe collet and that the collet is closed.
- Press 

 to select the automatic function; the bar feeder will wait for an "OPEN COLLET" signal from the lathe.

6.8 AUTOMATIC CYCLE START - RESUMING WORK AFTER POWER-OFF

IF THE BAR PUSHER HAS BEEN MOVED WHILE POWER WAS DISCONNECTED

- Power the lathe on.
- Turn the main switch to position I (ON).
- Press  to start the bar feeder.
- Press 

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

 to perform the "BAR FEEDER ZERO SETTING".
- Move the bar in the lathe collet to the required position and make sure that the collet is closed.
- Press 

.

IF THE BAR PUSHER HAS NOT BEEN MOVED WHILE POWER WAS DISCONNECTED

- Power the lathe on.
- Turn the main switch to position I (ON).
- Press  to start the bar feeder
- Make sure that the lathe collet is closed.

- Press 

.

6.9 MACHINING CHANGE - QUICK GUIDE

The purpose of this section is to provide the operator with a quick guide to the operations required for machining type change (either with or without guide channel change-over). The relevant information is contained in the sections below.

6.9.1 Machining type change with guide channel change

- Select the diameter of the guide channels according to the bar to be machined (section "SETUP ACCORDING TO THE BAR T BE MACHINED", CH. 5).
- Replace the guide channels, the half bushes, the bar pusher and the collet (section "GUIDE CHANNELS, HALF BUSHES, BAR PUSHER AND COLLET - REPLACEMENT", CH. 5).

  - remove the bar pusher and the first feeding carriage;
  - remove the lower guide channels first and then the upper guide channels;
  - remove the bar pusher support;
  - remove the front nose;
  - 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 channels;
  - adjust the intermediate gate position;

- Replace clamps if necessary (section "CLAMPS - REPLACEMENT", CH. 5).
- Adjust the bar guide plates and bar selectors (section "BAR GUIDE PLATES AND BAR SELECTORS - ADJUSTMENT", CH. 5).
- Introduce the bar in the guide channels and adjust the clamps.
- Check all the machining parameters on the keyboard.
- Prepare the lathe for a new machining cycle.
- Start the automatic working cycle (section "AUTOMATIC CYCLE START", CH. 6).

6.9.2 Machining type change without guide channel change

- Replace the half bushes and the collet (section "GUIDE CHANNELS, HALF BUSHES, BAR PUSHER AND COLLET - REPLACEMENT", CH. 5).
  - remove the bar pusher;
  - remove the half bushes;
  - assemble the new half bushes;
  - assemble a collet suitable for the "new" bar in the bar pusher;
  - insert the bar pusher in the guide channels.

- Replace clamps if necessary (section "CLAMPS - REPLACEMENT", CH. 5).
- Adjust the bar guide plates and bar selectors (section "BAR GUIDE PLATES AND BAR SELECTORS - ADJUSTMENT", CH. 5).
- Introduce the bar in the guide channels and adjust the clamps.
- Check all the machining parameters on the keyboard.
- Prepare the lathe for a new machining cycle.
- Start the automatic working cycle (section "AUTOMATIC CYCLE START", CH. 6).

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7.1 MAINTENANCE – GENERAL RULES

DANGER - WARNING:
carry out the cleaning and maintenance operations when the bar feeder is off.

Regular cleaning and maintenance are essential to ensure a correct operation and a long bar feeder service life.
A regular and effective cleaning of the bar feeder, its accessories and working area, is recommended as it increases the operator safety as well.
Do not use petrol or solvents which would damage the painted and transparent parts, the cable sheaths etc.

INFORMATION:
oxidation can damage metal parts and electric equipment.

To protect the bar feeder during long inactivity periods, disconnect it from the mains voltage, remove the compressed air and cover it with a cloth of suitable material.
Any protection should not be completely closed or sealed at the base; it should be equipped with ventilation holes so as to ensure that humidity may not condense due to lack of circulation.

7.2 SCHEDULED MAINTENANCE

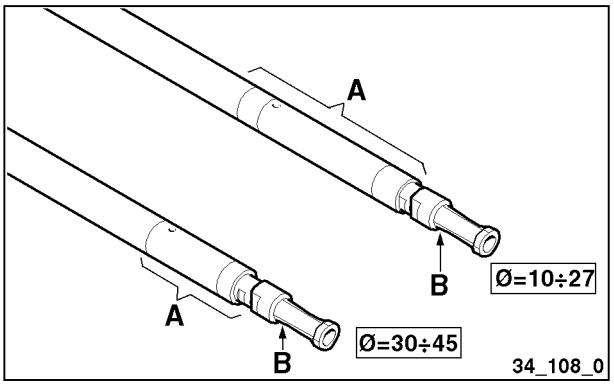
Scheduled maintenance

Machine section	Operation to be carried out	Frequency					
		Hours			Regularly	Every year	Cycles
		200	1250	2500			
Revolving tip and collet	Wear check	•					
Half bushes	Wear check	•					
Lubrication system	Oil level check	•					
	Oil change			•			
Guide channels	Integrity and cleanness check		•				
Guide channel opening screw	Greasing		•				
Oil recovery device brush	Wear check		•				
Feeding chain	Lubrication	•					
	Tensioning check	•					
Guide channel opening belt	Wear check			•			
Bar - headstock synchronization device belt (*)	Wear check						5000
Air filter	Check				•		
PLC battery	Replacement					•	
Safety devices	Check the efficiency (see “Safety devices”)	•					

(*) Only if installed.

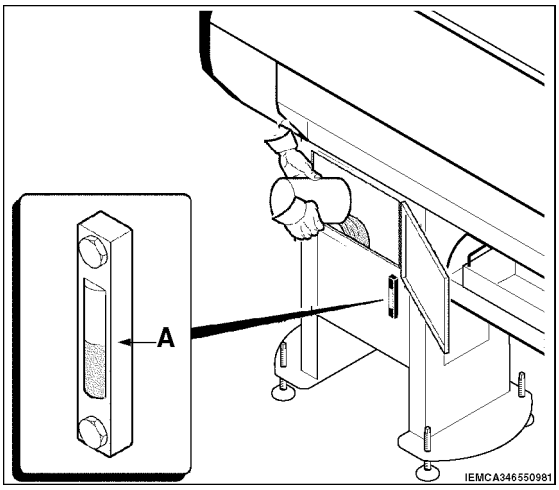
7.2.1 Revolving tip and collet - Check

- Remove the bar pusher, as described in section "GUIDE CHANNELS, HALF BUSHES, BAR PUSHER AND COLLET - REPLACEMENT", CH. 5.
- Check that the revolving tip "A" can turn freely without excessive backlash.
  Also check the good state of repair of collet "B".



7.2.2 Lubricating oil - Level check

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



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

Guide channel lubricating oil features

Model	Oil type
BOSS 332	class C – CKB 100
BOSS545/ 552 HD	class C – CKB 150

See the "TECHNICAL DATA" section, Ch. 2, for the comparative table.

7.2.3 Lubricating oil - Change

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

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

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

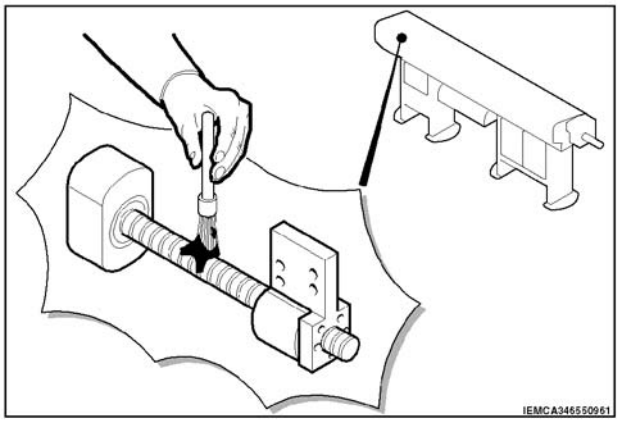
Guide channel lubricating oil features

Model	Oil type	Quantity (l)
BOSS 332	class C – CKB 100	57
BOSS 545/552	class C – CKB 150	57

See the "TECHNICAL DATA" section, Ch. 2, for the comparative table.

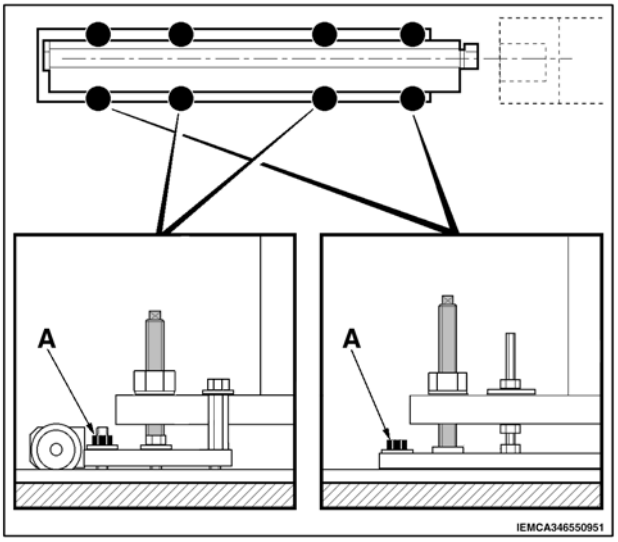
7.2.4 Guide channel opening screw - Greasing

- Open the upper guard and grease

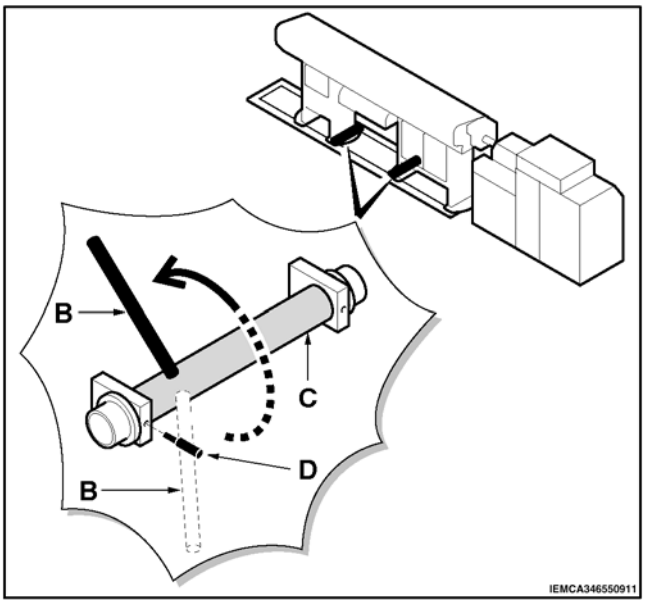


7.3 AXIAL DISPLACEMENT DEVICE - USE

- If the bar feeder is fixed to the lathe, release it. Disconnect any installed devices (e.g. the bar - headstock synchronization device, the cam box, the camshaft release device, etc.).
- Remove the eight screws "A".



- Insert the (supplied) rod "B" in its hole, turn the shaft "C" and insert the (supplied) pin "D".
- Make the bar feeder slide backwards. Be careful not to damage any connection wires (e.g. the lathe interface power lead, the camshaft disengagement device cable, the handheld keyboard cable, the pneumatic connection cable, etc).
- Carry out all lathe maintenance operations.
- Make the bar feeder slide forwards and restore its initial conditions.



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8.1 GENERAL FAILURES

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

8.2 BAR MAGAZINE – Failures

TROUBLES	CAUSES	SOLUTIONS
During the loading operation the bar cannot be inserted into the magazine	The bar alignment plates are too low	Adjust the position of the plates
The first bar in the magazine fails to drop into the guide channels	The bar alignment plates are not properly adjusted.	Adjust the bar alignment plates

8.3 FEEDING INTO COLLET – Failures

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

8.4 BAR FEEDING - Failures

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

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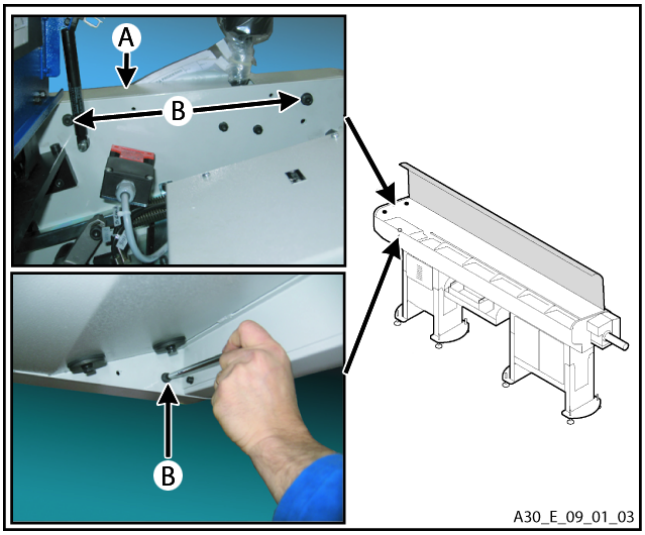
9.1 FEEDING CHAIN – REPLACEMENT

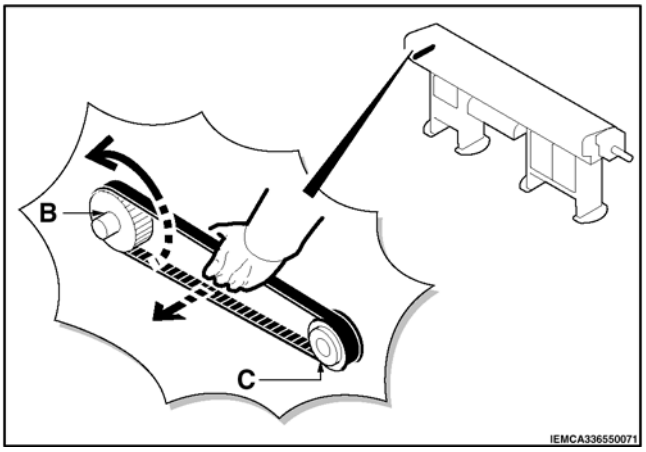
The replacement of the feeding chain is a very complex operation; contact IEMCA service department.

9.2 GUIDE CHANNEL OPENING BELT - REPLACEMENT

- Open the guard (A) by unscrewing the fastening screws (B).



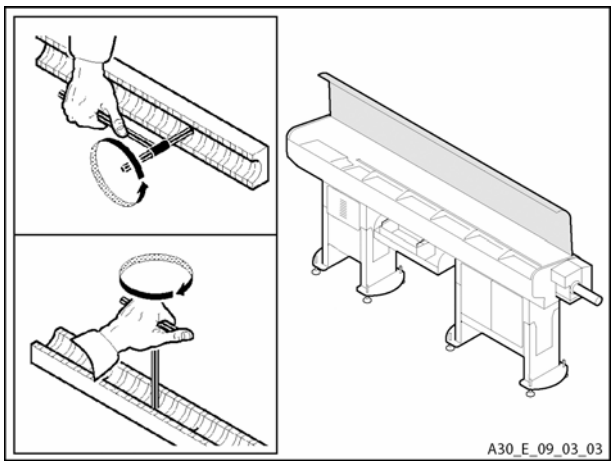
- Manually turn the pulley "B" and simultaneously pull the belt outwards until totally removed.
- Place a new belt in the pulley "C", lead it into the pulley "B" and turn the belt until it is fully inserted.
- Re-close the previously opened guard.



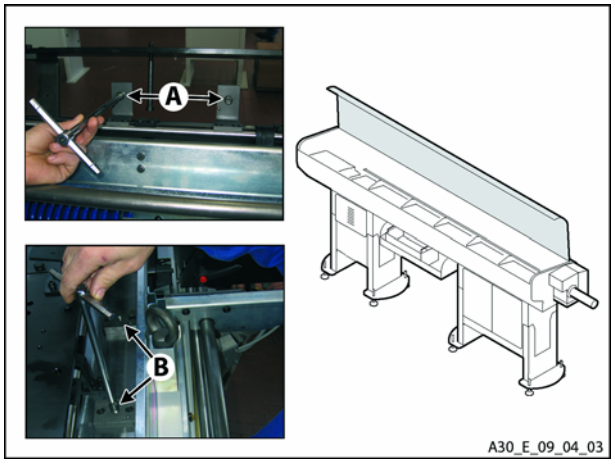
9.3 REPLACEMENT OF THE GUIDE CHANNELS WITH INSERTS WITH POLYURETHANE GUIDE CHANNELS

- Remove the upper and lower fastening screws of the guide channels with inserts.

- Remove the guide channels with inserts.



- Assemble the "snap in" pins.



• Assemble the polyurethane guide channels as shown in the figure.

IMPORTANT:

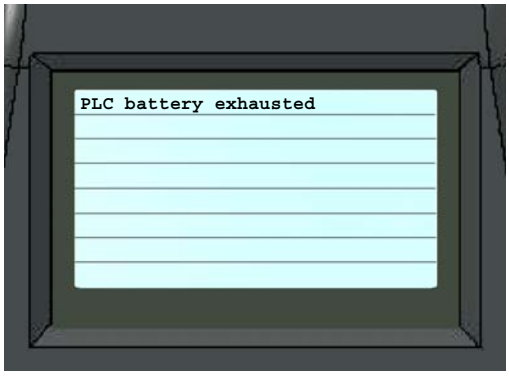
Do not re-use the fastening screws of the guide channels with inserts.

WARNING:

The polyurethane guide channels can be fastened also by using screws: in this case, use the dedicated screw set supplied by IEMCA.

9.4 PLC BATTERY – REPLACEMENT

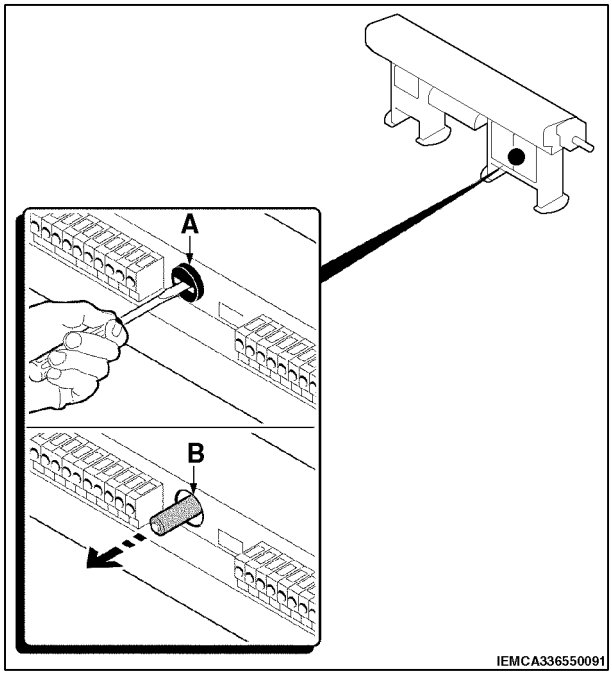
Replace the battery every year, or when the following message appears on the display: "PLC battery exhausted"



INFORMATION:

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

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



9.5 RECOMMENDED SPARE PARTS

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

Recommended spare parts

Model	Code	Name	Features	Notes	Qty
BOSS 332 BOSS 545 BOSS 552HD	Table06 n.13 Spare Parts Catalogue	Feeding chain			1
	Table06 n.12 Spare Parts Catalogue	Connecting link			1
	32210401	Limit switch	BERO 3RG4012-0AG33 SIEMENS		1
	32210004	Limit switch	BERO 3RG4012-0AG07 SIEMENS		3
	Table101-201 Spare Parts Catalogue	Bar pusher		Specify diameter and length	1
	Table100-200 Spare Parts Catalogue	Revolving tip		Specify diameter	1
		Collet		Specify internal and external diameter	1
	38130001	Battery	Stack 3 Volt VARTA CR2032	handheld and fixed keyboard	1
	38130009	Battery	Stack 3,6 Volt	PLC by Arteco	1

9.6 Machine dismantling

This operation is to be carried out by expert operators, according to the safety at work regulations in force.
Do not dispose of non-biodegradable products, lubricating oils and non-ferrous components (rubber, PVC, resins, etc.) in the environment.
Dispose of the same according to the regulations in force.

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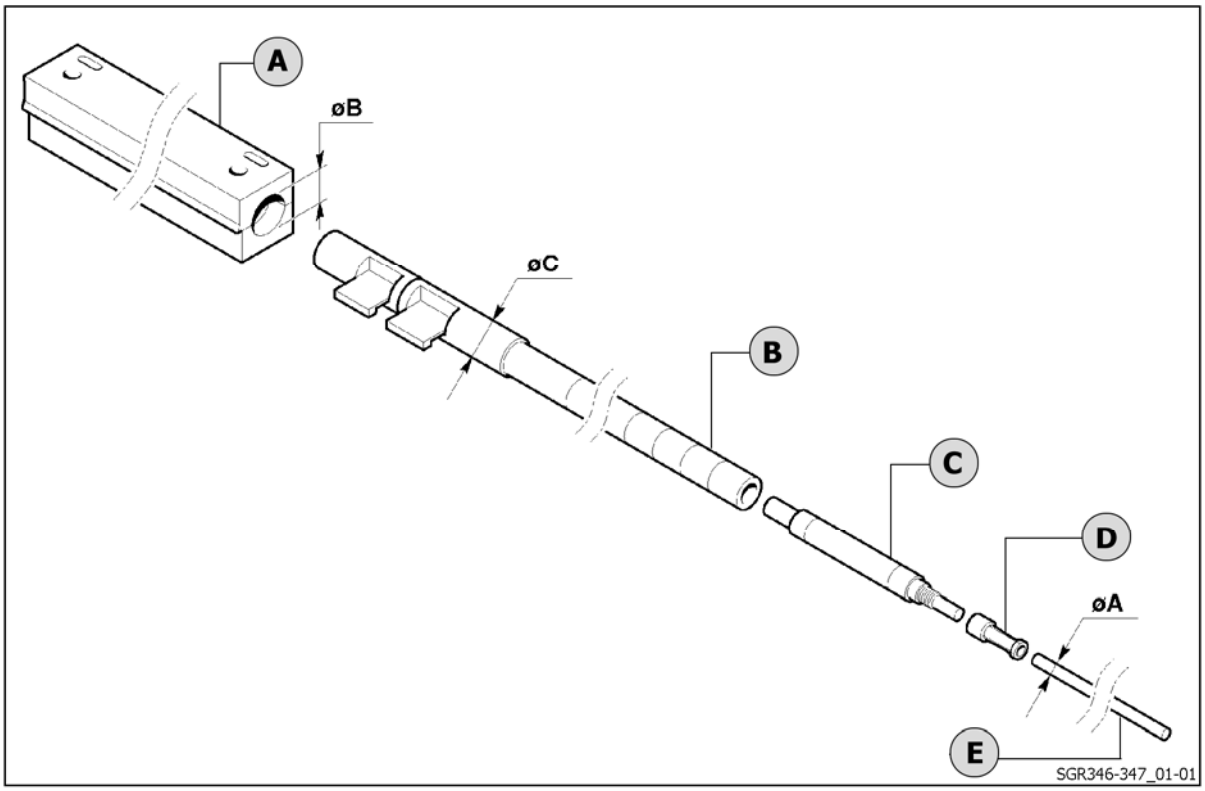
10.1 TABLE

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



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

WARNING – CAUTION:

the application field of the collets for machining specific barstock diameters in the guide channels are indicated in the table. If the bar diameter is smaller by about 10 mm with respect to the guide channel diameter, vibrations and failures may arise in the bar feeder. Therefore, in order to optimise the operation, the bar rotation speed should be reduced or the guide channel diameter should be changed.

INFORMATION:

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

Bar diameter **øA** (mm)		Max tube diameter (*) **øA** (mm)	Guide channel diameter **øB** (mm)	Revolving tip diameter **øC** (mm)
Min	Max			
5	8	10	**13**	10
5	10	12		12
5	13	15	**17**	15
5	14	16		16
5	16	18	**21**	18
5	17	19		19
5	18	20		20
8	21	23	**26**	23
8	23	25		25
8	23	25	**28**	25
8	25	27		27
8	27	30	**33**	30
8	28	31		31
8	29	32		32
8	29	32	**36**	32
8	32	35		35
8	34	37	**38**	37
10	37	40	**43**	40
10	39	42		42
10	39	42	**46**	42
10	42	45		45
18	47	51(**)	**52**	51

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

WARNING – CAUTION:

the application field of the collets for machining specific barstock diameters in the guide channels are indicated in the table. If the bar diameter is smaller by about 10 mm with respect to the guide channel diameter, vibrations and failures may arise in the bar feeder. Therefore, in order to optimise the operation, the bar rotation speed should be reduced or the guide channel diameter should be changed.

INFORMATION:

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

Bar diameter **øA** (mm)		Max tube diameter (*) **øA** (mm)	Guide channel diameter **øB** (mm)	Revolving tip diameter **øC** (mm)
Min	Max			
5	8	10	**13**	10
5	10	12		12
5	13	15	**17**	15
5	14	16		16
5	16	18	**21**	18
5	17	19		19
5	18	20		20
8	21	23	**26**	23
8	23	25		25
8	23	25	**28**	25
8	25	27		27
8	27	30	**33**	30
8	28	31		31
8	29	32		32
8	29	32	**36**	32
8	32	35		35
8	34	37	**38**	37
10	37	40	**43**	40
10	39	42		42
10	39	42	**46**	42
10	42	45		45
18	47	45	**52**	51

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

WARNING – CAUTION:

the application field of the collets for machining specific barstock diameters in the guide channels are indicated in the table. If the bar diameter is smaller by about 10 mm with respect to the guide channel diameter, vibrations and failures may arise in the bar feeder. Therefore, in order to optimise the operation, the bar rotation speed should be reduced or the guide channel diameter should be changed.

INFORMATION:

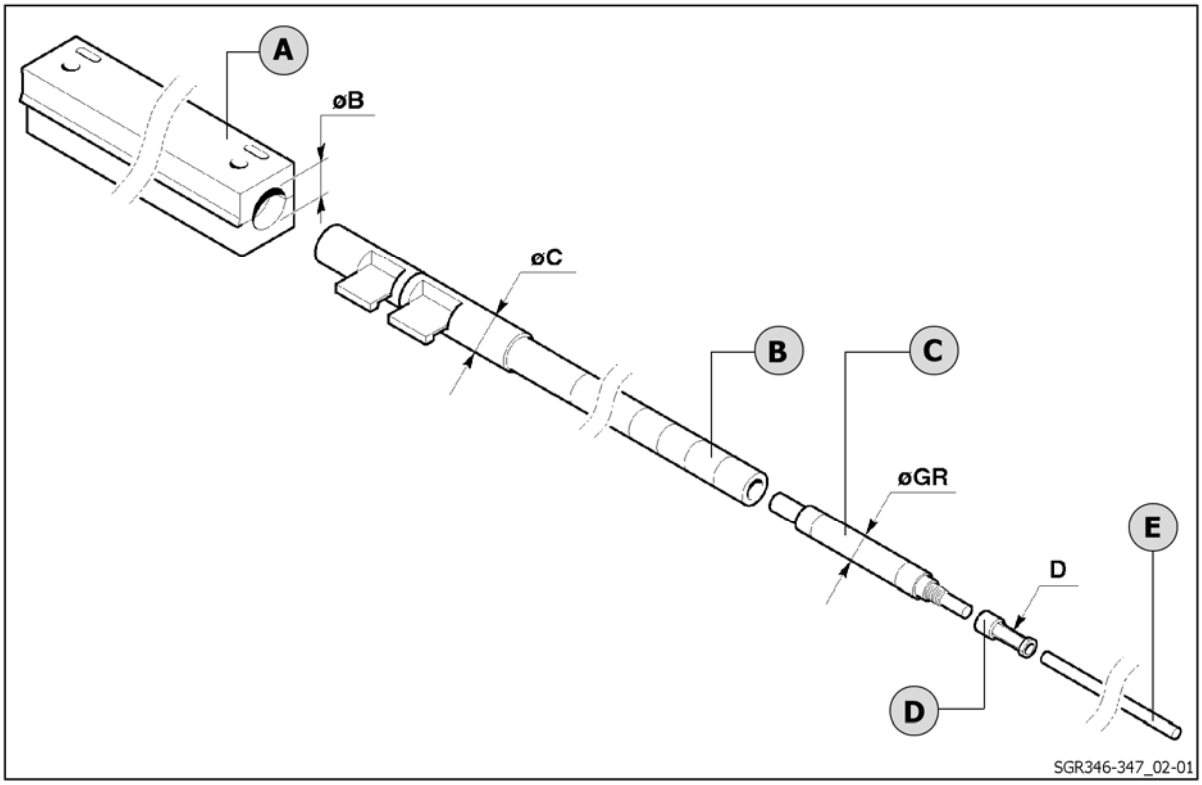
upon specific request, non standard collets with reduced thickness (which are not mentioned in this table) may be supplied as well. Their durability is however below the durability of standard collets.

Bar diameter **øA** (mm)		Max tube diameter (*) **øA** (mm)	Guide channel diameter **øB** (mm)	Revolving tip diameter **øC** (mm)
Min	Max			
3	8	10	**13**	10
3	10	12		12
5	13	15	**17**	15
5	14	16		16
5	16	18	**21**	18
5	17	19		19
5	18	20		20
8	21	23	**26**	23
8	23	25		25
8	23	25	**28**	25
8	25	27		27
8	27	30	**33**	30
8	28	31		31
8	29	32		32
8	29	32	**36**	32
8	32	35		35

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

10.2 TABLE

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



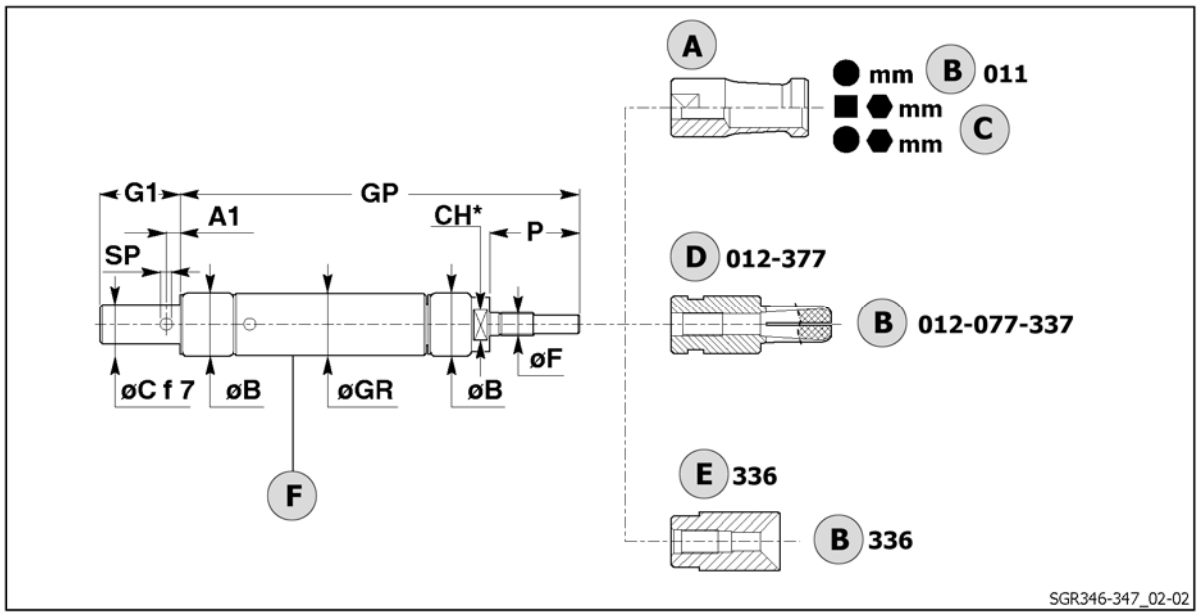
A Guide channels
B Bar pusher
C Revolving tip
D Collet
E Bar

øB (mm) Guide channel diameter	**øC** (mm) Bar pusher diameter	Collet version – **D** (type of coupling)	**øGR** (mm) Revolving tip diameter	Revolving tip code
13	10	Threaded (IEMCA)	10	D71151010
	12		12	D71151210
	10	With quick coupling pin	10	D71151011
	12		12	D71151211
17	15	Threaded (IEMCA)	15	D71151510
			16	D71151610
	15	With quick coupling pin	15	D71151511
			16	D71151611
21	18	Threaded (IEMCA)	18	D71151810
	19		19	D71151910
	20	With quick coupling screw	20	D71152010
	18		18	D71151811
	19	With quick coupling pin	19	D71151911
	20		20	D71152011
26	23	Threaded (IEMCA)	23	D71152310
	25		25	D71152510
	23	With quick coupling pin	23	D71152311
	25		25	D71152511
28	25	Threaded (IEMCA)	25	D71152510
	27		27	D71152710
	23	With quick coupling pin	23	D71152311
	25		25	D71152511
	27		27	D71152711
33	30	Threaded (IEMCA)	30	D70153010
	31		31	D70153110
	32		32	D70153210
	30	With quick coupling screw	30	D70153011
	31		31	D70153111
	32		32	D70153211
	30	With quick coupling pin	30	D70153010
	31		31	D70153110
	32		32	D70153210
36	32	Threaded (IEMCA)	32	D70153210
	35		35	D70153510
	32	With quick coupling screw	32	D70153211
	35		35	D70153511
	32	With quick coupling pin	32	D70153210
	35		35	D70153510

øB (mm) Guide channel diameter	**øC** (mm) Bar pusher diameter	Collet version – **D** (type of coupling)	**øGR** (mm) Revolving tip diameter	Revolving tip code
38	37	Threaded (IEMCA)	37	D70153710
		With quick coupling screw		D70153711
		With quick coupling pin		D70153710
43	40	Threaded (IEMCA)	40	D70154010
	42		42	D70154210
		With quick coupling screw		D70154211
		With quick coupling pin		D70154210
46	42	Threaded (IEMCA)	42	D70154210
	45		45	D70154510
	42	With quick coupling screw	42	D70154211
	45		45	D70154511
	42	With quick coupling pin	42	D70154210
	45		45	D70154510
52	51	Threaded (IEMCA)	51	D70155110
		With quick coupling screw		D70155111
		With quick coupling pin		D70155110

10.3 Revolving tips ØGR 10÷27 - Table

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



A Collet
B See file
C See file - 001
then - 011

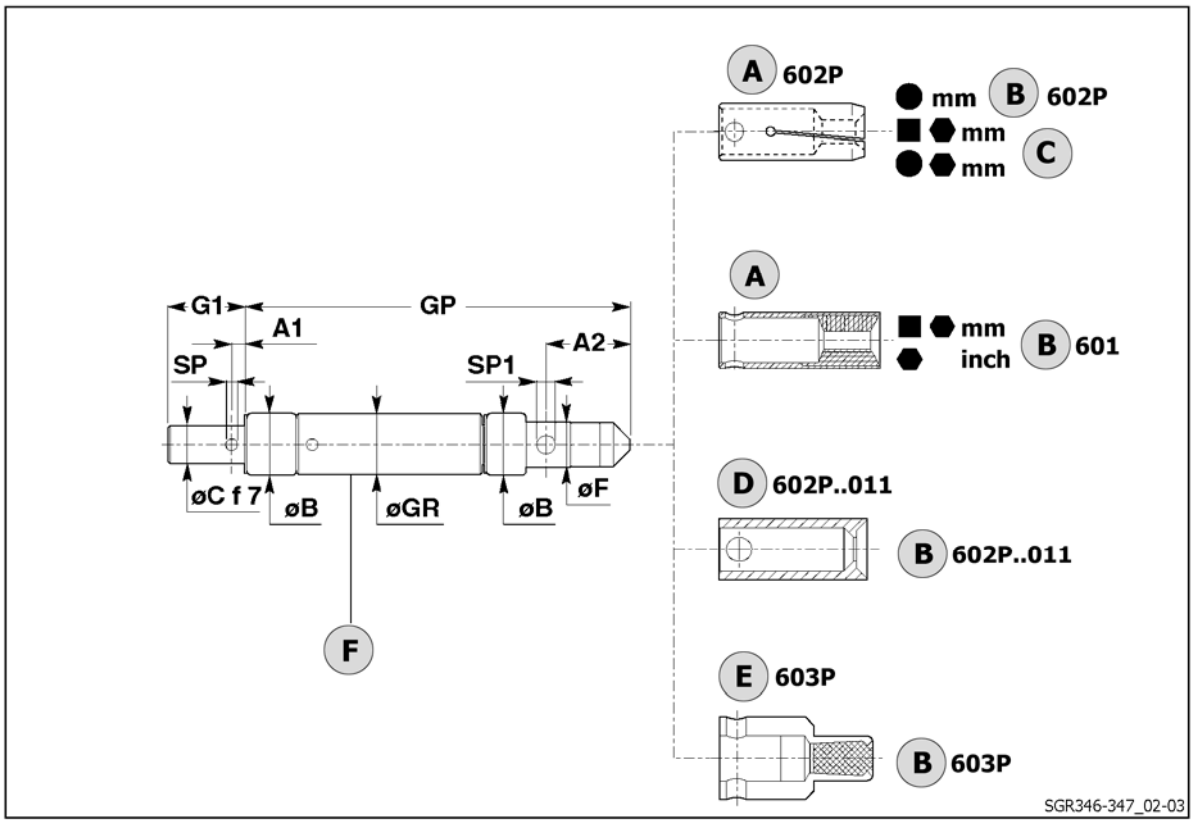
D Pipe collet
E Ejector
F Revolving tip

CH*: double-ended fork wrench DIN3110

øGR (mm)	Revolving tip code	**øF**	**øB** (mm)	**GP** (mm)	**G1** (mm)	**C** (mm)	**A1** (mm)	**øSP** (mm)	**P** (mm)	**CH** (mm)
10	D71151010	M6x0.75	10.5	137	30	8	6	3	24.5	8
12	D71151210	M7x0.75	12.5	143	30	8	6	3	26.5	10
15	D71151510	M8x1	15.5	160	35	12	6	3	26.5	13
16	D71151610	M8x1	16.5	160	35	12	6	3	26.5	13
18	D71151810	M8x1	18.5	160	35	12	6	4	26.5	13
19	D71151910	M8x1	19.5	160	35	12	6	4	26.5	13
20	D71152010	M10x1	20.5	172.5	35	14	6	4	38.5	15
21	D71152110	M10x1	21.5	172.5	35	14	6	4	38.5	15
23	D71152310	M10x1	23.5	172.5	35	14	6	4	38.5	15
25	D71152510	M10x1	25.5	172.5	35	17	6	5	38.5	21
27	D71152710	M10x1	27.5	172.5	35	17	6	5	38.5	21
29	D71152910	M10x1	29.5	172.5	35	17	6	5	38.5	21

10.4 Revolving tips ØGR 12÷27 - Table

- **For collets with quick coupling pin**

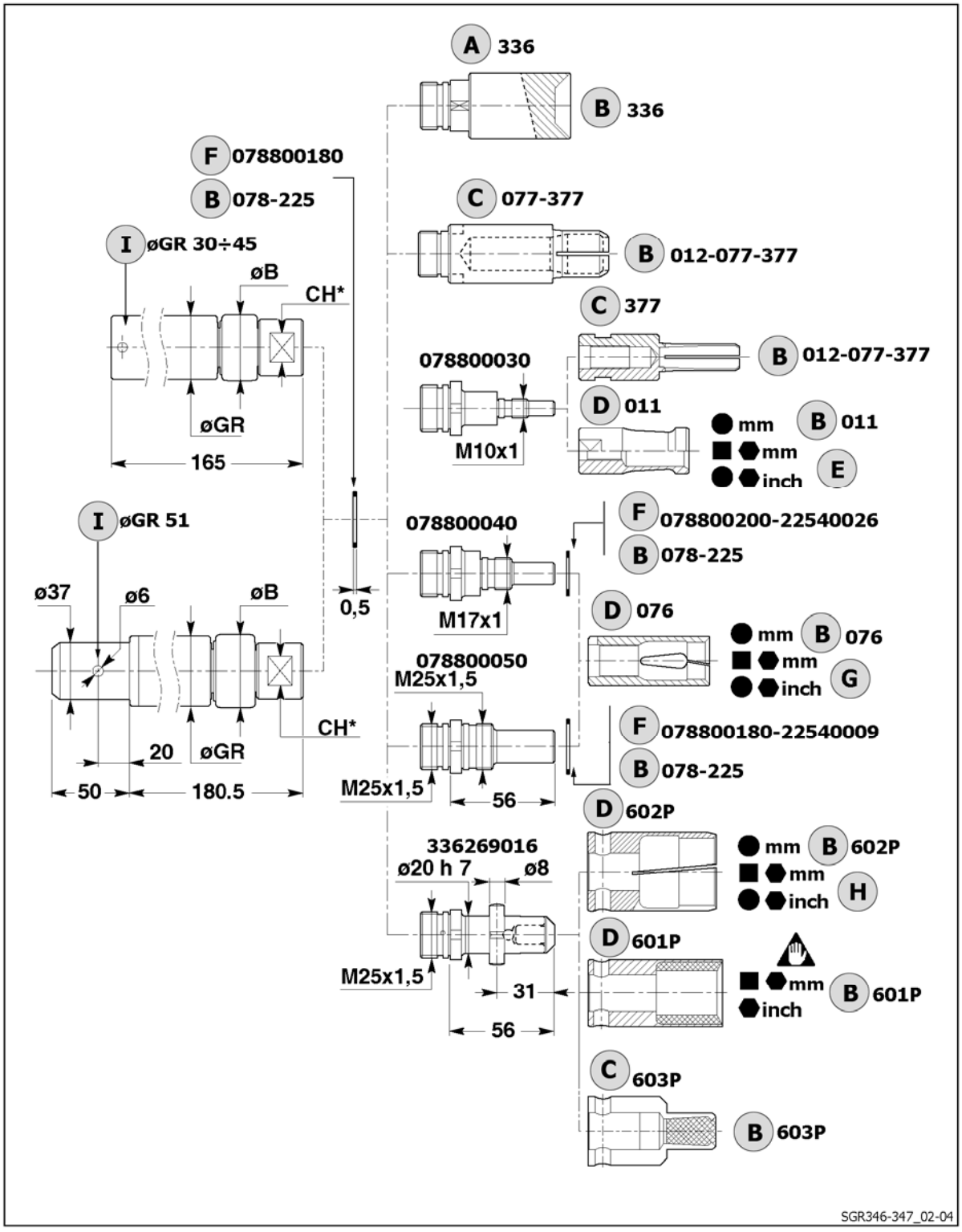


A Collet
B See file
C See file - 001
then - 602P
D Ejector
E Pipe collet
F Revolving tip

øGR (mm)	Revolving tip code	**øF** (mm)	**øB** (mm)	**GP** (mm)	**G1** (mm)	**C** (mm)	**A1** (mm)	**øSP** (mm)	**A2** (mm)	**øSP1** (mm)
10	D71151011	7	10.5	143	30	8	6	3	18	4
12	D71151211	8	12.5	143	30	8	6	3	18	4
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
18	D71151811	11	18.5	160	35	12	6	4	18.5	6
19	D71151911	11	19.5	160	35	12	6	4	18.5	6
20	D71152011	14	20.5	172.5	35	14	6	4	37.5	8
21	D71152111	14	21.5	172.5	35	14	6	4	37.5	8
23	D71152311	14	23.5	172.5	35	14	6	4	37.5	8
25	D71152511	20	25.5	172.5	35	17	6	5	37.5	8
27	D71152711	20	27.5	172.5	35	17	6	5	37.5	8
29	D71152911	20	29.5	172.5	35	17	6	5	37.5	8

10.5 Revolving tips ØGR 30÷51 - Table

- **For collets with threaded coupling (IEMCA) or with quick coupling pin**



A Ejector
B See file

C Pipe collet

D Collet
E See file - 001
then - 011

F Ring
G See file - 001
then - 076
H See file - 001
then - 602P
I Revolving tip

CH*: double-ended fork wrench DIN3110

WARNING – CAUTION:
601P collet can fit external diameters up to 29 mm.

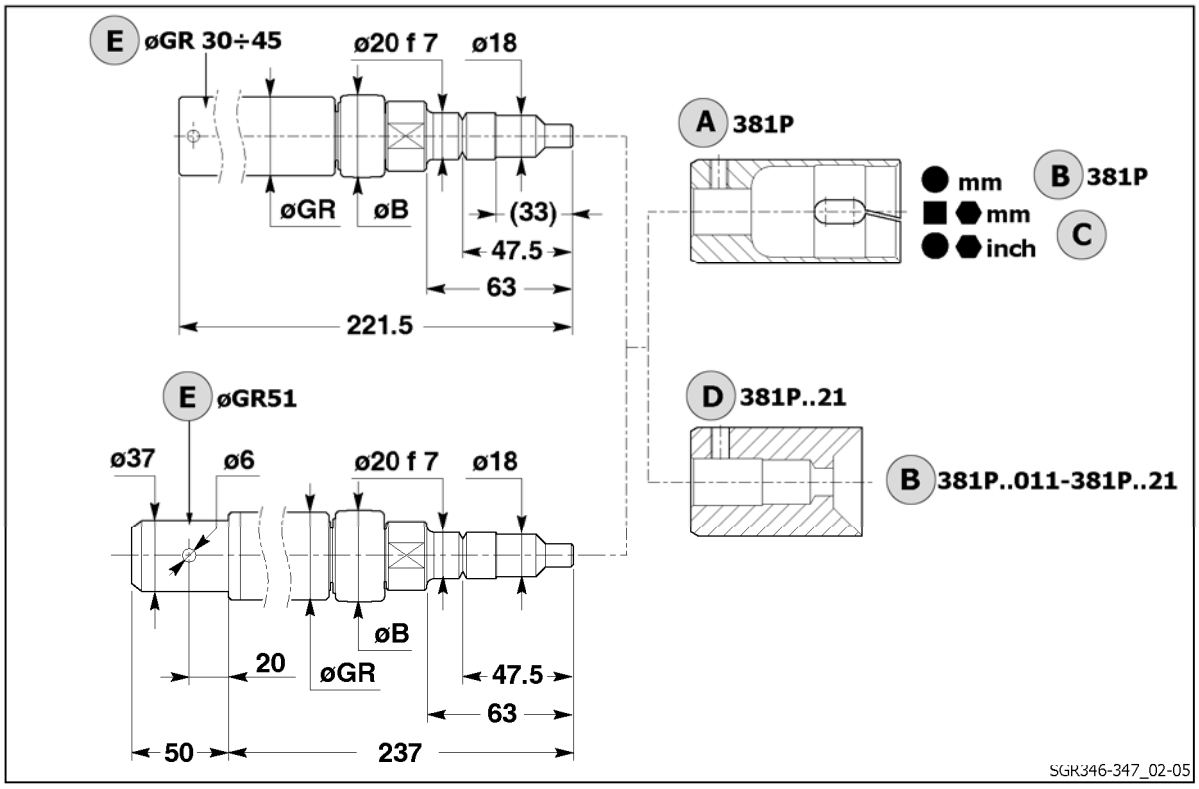
øGR (mm)	Revolving tip code	**øB** (mm)	**CH** (mm)
30	D70153010	30.5	27
31	D70153110	31.5	27
32	D70153210	32.5	27
35	D70153510	35.5	27
37	D70153710	37.5	27
40	D70154010	40.5	32
42	D70154210	42.5	32
45	D70154510	45.5	32
51	D70155110	51.5	32

WARNING – CAUTION:
Collets 377... with ØF M10x1 have been designed to be assembled on lower revolving tips with Ø28. If fitted on revolving tips with diameter < Ø30 and with nipples 078800030, it is necessary to increase the bar pusher carriage first feeding value by 7.5 mm.

WARNING – CAUTION:
The 603P collets.... fitted with a quick coupling allowing them to be assembled on revolving tips, are designed with an oversized length. Therefore, the first feeding value of the bar pusher carriage should be increased by 7.5 mm with respect to the standard value.

10.6 Revolving tips ØGR 30÷51 - Table

- **For collets with quick coupling screw**



A Collet
B See file
C See file - 001
then - 381P
D Ejector
E Revolving tip

CH*: double-ended fork wrench DIN3110

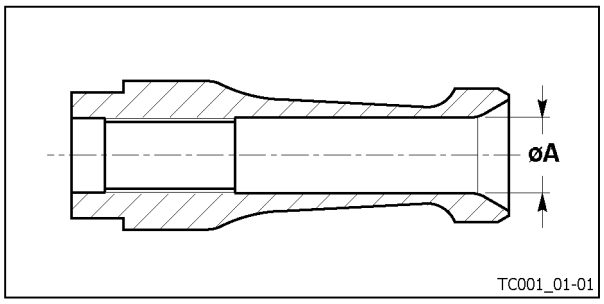
øGR (mm)	Revolving tip code	**øB** (mm)
30	D70153011	30.5
31	D70153111	31.5
32	D70153211	32.5
35	D70153511	35.5
37	D70153711	37.5
40	D70154011	40.5
42	D70154211	42.5
45	D70154511	45.5
51	D70155111	51.5

INDEX

11.1 CONVERSION TABLES 001

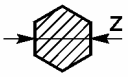
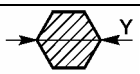
11.2 HEXAGONAL BARS (unit of measurement "millimetres") - Table

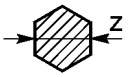
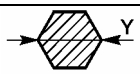
Before selecting the steel collet, define the internal diameter ØA by referring to the table below.



Z	Y=Zx1,154	ØA
mm	mm	mm
1.5	1.73	1.7
2	2.31	2.2
2.5	2.89	2.8
3	3.48	3.25
3.5	4.04	3.8
4	4.61	4.5
4.5	5.19	5
5	5.77	5.5
5.5	6.35	6.2
6	6.92	6.8
6.5	7.50	7.3
7	8.08	7.8
7.5	8.66	8.5
8	9.23	9
9	10.39	10.2
10	11.54	11.3
11	12.70	12.5
12	13.85	13.5
13	15.02	14.8
14	16.16	16
15	17.32	17.2
16	18.47	18.3
17	19.62	19.5
18	20.78	20.6
19	21.93	21.8
20	23.09	22.8
21	24.24	24
22	25.40	25.2

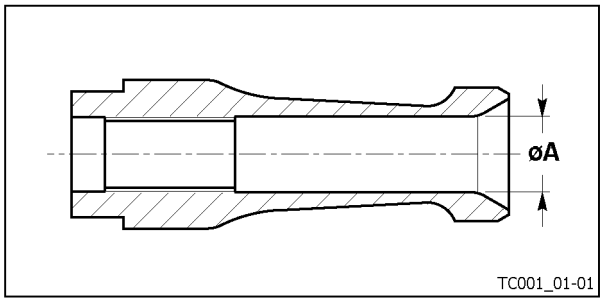
Z	Y=Zx1,154	ØA
mm	mm	mm
28	32.33	32
29	33.48	33.2
30	34.64	34.5
31	35.79	35.5
32	36.95	36.8
33	38.10	37.8
34	39.25	39
35	40.41	40.2
36	41.56	41.3
38	43.87	43.5
39	45.03	44.8
40	46.18	46
41	47.34	47
42	48.49	48.2
43	49.65	49.5
44	50.80	50.5
45	51.96	51.8
46	53.11	52.8
48	55.42	55
50	57.73	57.5
52	60.04	59.5
55	63.50	63
57	65.78	65.25
60	69.24	68.75
62	71.55	71
65	75	74.5
67	77.3	76.75
70	80.78	80.25

		ØA
mm	Y=Zx1,154 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

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

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

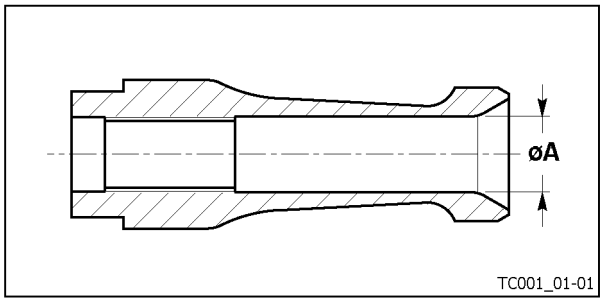
Before selecting the steel collet, define the internal diameter ØA by referring to the table below.



Z mm	Y=Zx1,414 mm	ØA mm	Z mm	Y=Zx1,414 mm	ØA mm
1	1.41	1.3	20	28.28	27.5
1.5	2.12	2	22	31.10	30.5
2	2.82	2.7	23	32.52	32
2.5	3.53	3.4	24	33.93	33
3	4.24	4	25	35.35	34.5
4	5.65	5.5	26	36.76	36
4.5	6.36	6.2	27	38.17	37.5
5	7.07	6.8	28	39.59	38.5
5.5	7.77	7.5	30	42.42	41.5
6	8.48	8.3	32	45.24	44.5
6.5	9.19	9	34	48.07	47
7	9.89	9.7	35	49.49	48.5
8	11.31	11	36	50.90	50
8.5	12.01	11.8	37	52.31	51.5
9	12.72	12.5	38	53.73	52.5
10	14.14	13.8	39	55.15	54.5
10.5	14.84	14.5	40	56.56	55.5
11	15.55	15	41	57.97	57
12	16.97	16.5	42	59.38	58.5
12.5	17.67	17	43	60.08	59
13	18.38	18	44	62.21	61
14	19.79	19.5	45	63.63	62.5
15	21.21	20.8	46	65.04	64
16	22.62	22	50	70.7	69.5
17	24.04	23.5	55	77.77	76.75
18	25.52	25	60	84.84	83.75
19	26.86	26	65	91.91	91

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

Before selecting the steel collet, define the internal diameter ØA by referring to the table below.

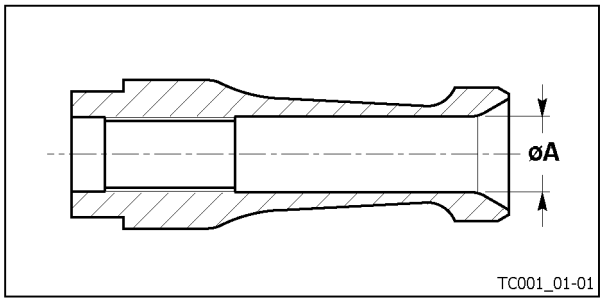


Z	ØA	
inches	mm	inches
1/8	3.5	9/64
3/16	5.25	13/64
1/4	7	9/32
5/16	8.75	11/32
3/8	10.75	27/64
7/16	12.5	31/64
1/2	14.25	9/16
9/16	16.25	41/64
5/8	18	45/64
11/16	19.75	25/32
3/4	21.75	55/64
13/16	23.5	59/64
7/8	25.25	63/64
15/16	27.25	1”5/64
1”	29	1”9/64
1”1/16	30.75	1”13/64
1”1/8	32.5	1”9/32
1”3/16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

Z	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

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

Before selecting the steel collet, define the internal diameter ØA by referring to the table below.



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

11.6 CONVERSION TABLE Inches/Millimetres

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

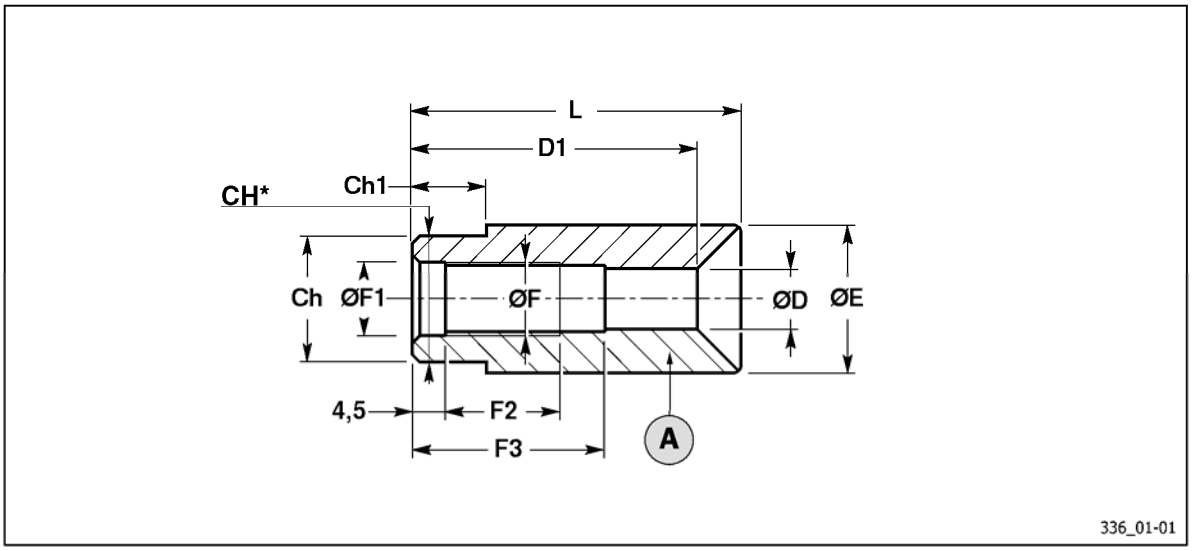
Inch fraction		Inch fraction			
		1	2	3	4
		Millimetres			
11/16	**0,687 5**	17,462 5	42,862 5	68,262 5	93,662 5
45/64	**0,703 125**	17,859 4	43,259 4	68,659 4	94,059 4
23/32	**0,718 75**	18,256 2	43,656 2	69,056 2	94,456 2
47/64	**0,734 375**	18,653 1	44,053 1	69,453 1	94,853 1
3/4	**0,75**	19,050 0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

11.7 EJECTOR 336

11.8 EJECTORS - Guide channels Ø<30 - Table

WARNING – CAUTION:

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



CH*: double-ended fork wrench DIN3110

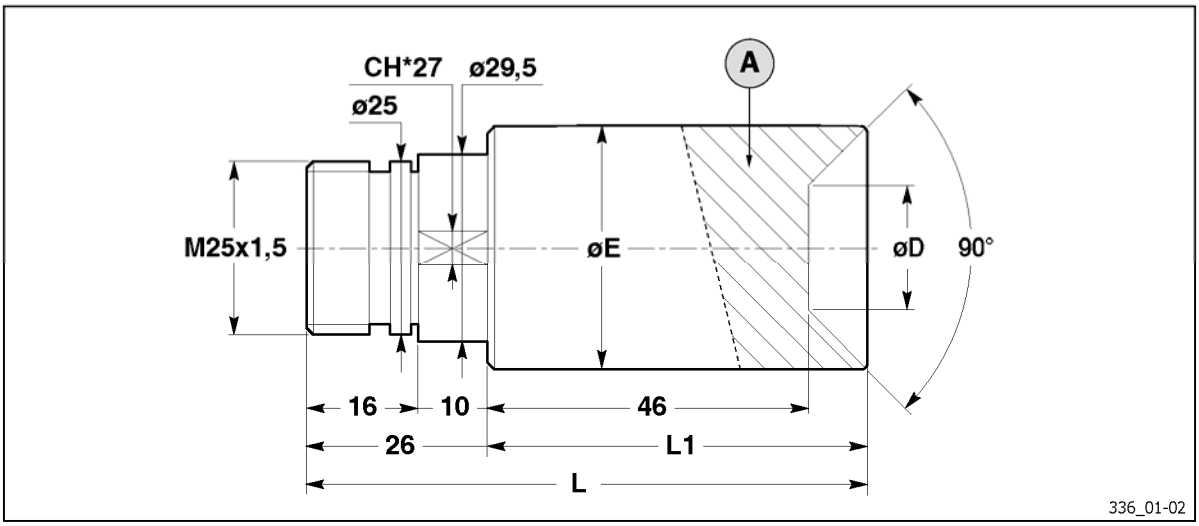
A Ejector

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

11.9 EJECTORS - Guide channels Ø>32 - Table

WARNING – CAUTION:

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



CH*: double-ended fork wrench DIN3110

A Ejector

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

11.10 PIPE COLLETS 012-077-377

11.11 PIPE COLLETS - Table

WARNING – CAUTION:

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

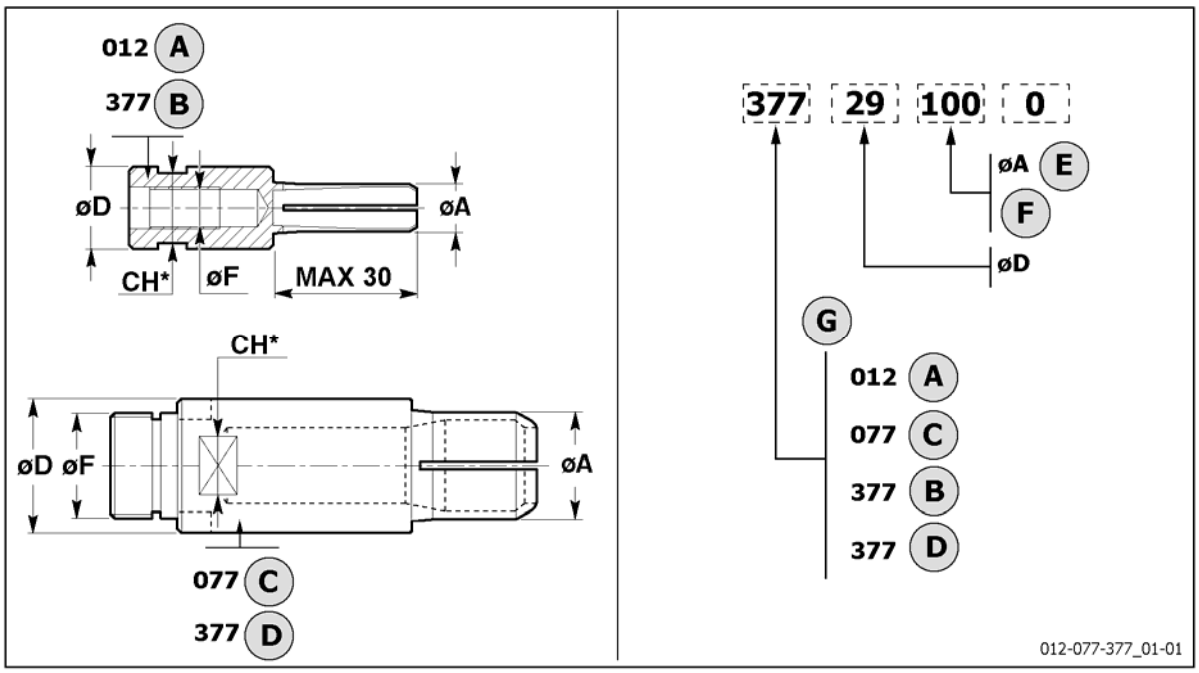
INFORMATION:

collets 377... (bar feeder BOSS) with øF M10x1 have been designed to be assembled on lower revolving tips with ø28; if fitted on the revolving tips with diameter greater than ø30 and with nipple 078800030, it is necessary to increase the bar pusher carriage first feeding value by 7.5 mm.

INFORMATION:

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

Code structure



CH*: double-ended fork wrench DIN3110

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

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

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

11.12 COLLET FOR 011 BARS

11.13 COLLET FOR BARS - Table

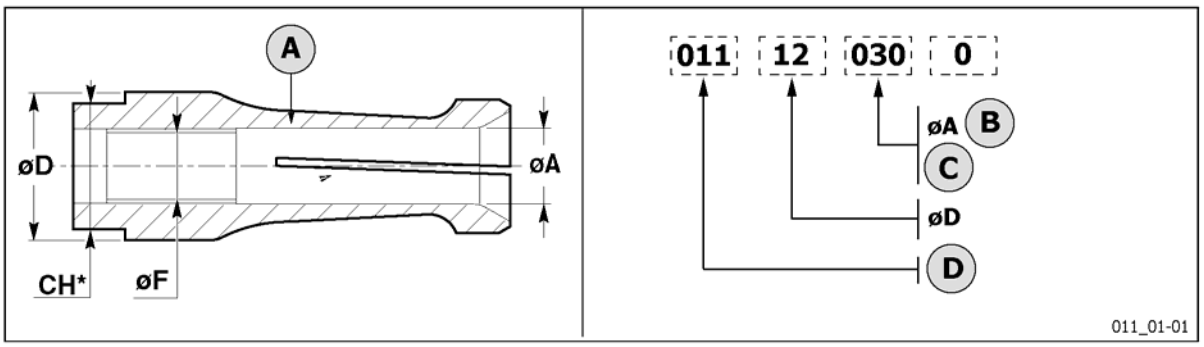
WARNING – CAUTION:

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

INFORMATION:

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

Code structure



CH*: double-ended fork wrench DIN3110

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

External diameter (mm) **øD**	Diameter (mm) **øF**	Internal diameter (mm) **øA**	
		MIN	MAX
7,5	M5x0,5	0,8	6,7
10	M6x0,75	1	9
12	M7x0,75	1	11,4
15	M8x1	2	14
16	M8x1	3	15
17	M8x1	14	16
18	M8x1	5	16,7
19	M8x1	16	18
20	M10x1	3	19
23	M10x1	8	22
25	M10x1	7,3	23,5
27	M10x1	8	26
29	M10x1	24	26
30	M10x1	23	28,5
32	M10x1	20	30,5

11.14 BORING COLLETS FOR BARS 601P

11.15 BORING COLLETS FOR SQUARE AND HEXAGONAL BARS - Table

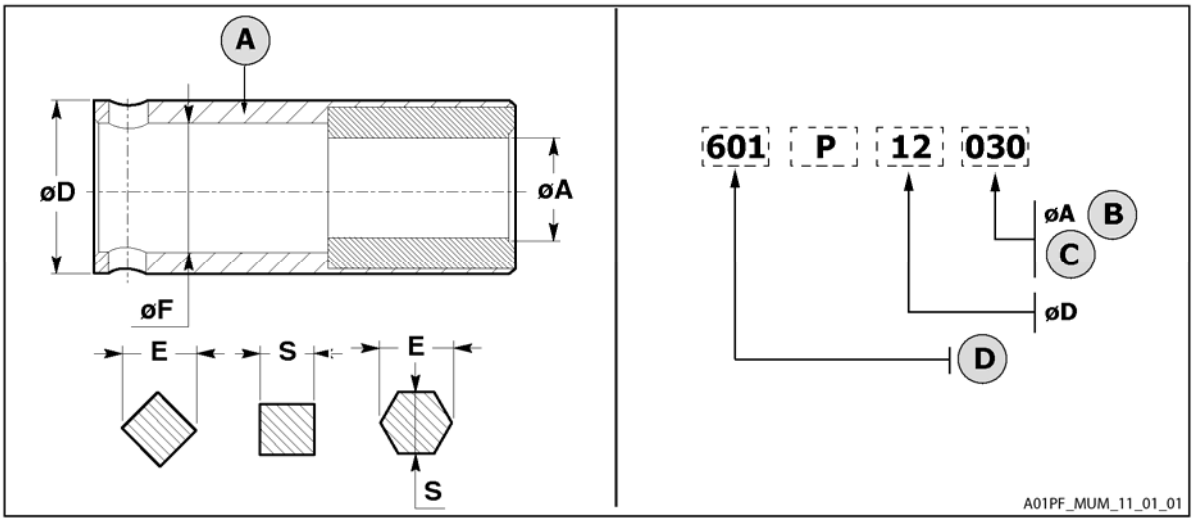
INFORMATION:

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

INFORMATION:

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

Code structure



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

S square bars (S=E/1,414)		**S hexagonal bars** (S=E/1,154)		External diameter (mm) **øD**	Diameter (mm) **øF**
MIN	MAX	MIN	MAX		
3	3	3	4	7,5	M5x0,5
4	6	5	7	12	Ø8 G6
6	10	6	13	18	Ø11 G6
7	12	* 5/16”	15	21	Ø14 G6
10	12	8,5	19	25	Ø20 G6
13	15	/	/	25	M5x0,5
16	17	/	/	29	Ø8 G6
/	/	17	* 7/8”	29	Ø20 G6
18	20	/	/	32	Ø11 G6
/	/	20	25	32	Ø20 G6
		21	* 1” 1/8	36	Ø20 G6
21	23	/	/	36	Ø14 G6
/	/	* 1” 1/16	* 1” 1/16	40	Ø20 G6

WARNING: Values indicated with * are expressed in inches.

11.16 COLLETS FOR BARS 602P

11.17 COLLET FOR BARS - Table

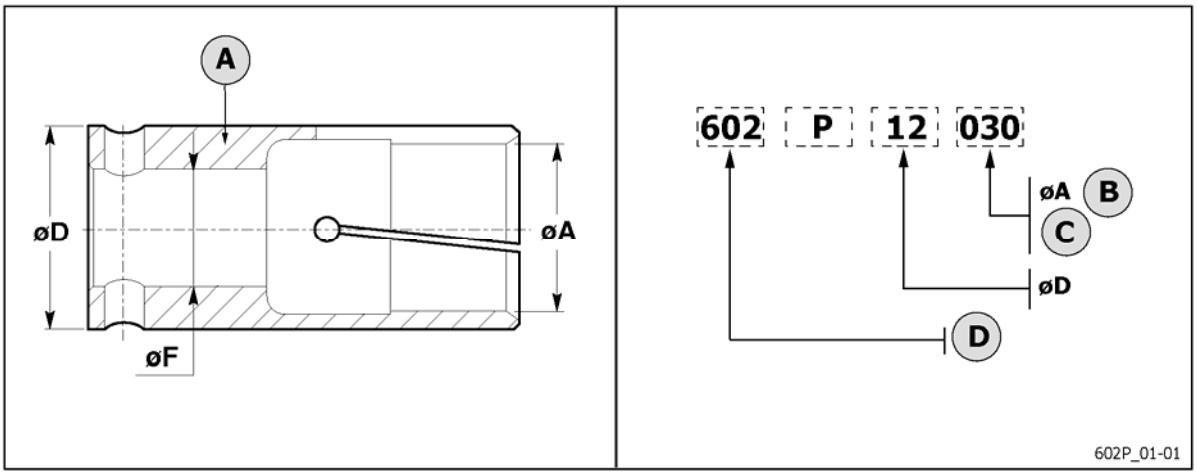
WARNING – CAUTION:

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

INFORMATION:

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

Code structure



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

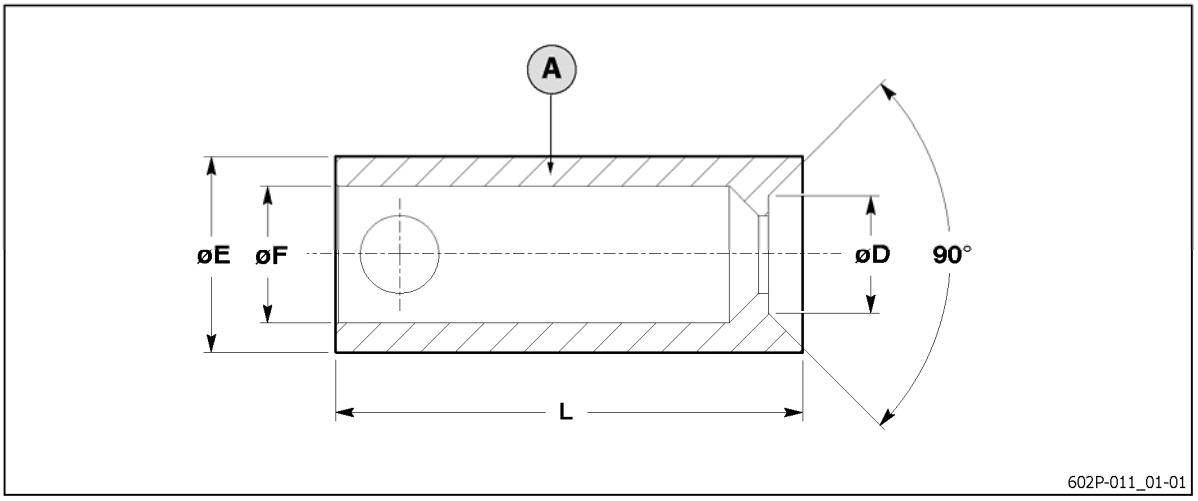
External diameter (mm) **øD**	Diameter (mm) **øF**	Internal diameter (mm) **øA**	
		MIN	MAX
10	Ø7 G6	3	8
12	Ø8 G6	3	10
15	Ø11 G6	4	13
16	Ø11 G6	11	14
18	Ø11 G6	8	16
20	Ø14 G6	6	18
21	Ø14 G6	16,5	19
23	Ø14 G6	14	21
25	Ø20 G6	4,3	23
27	Ø20 G6	21	25,5
29	Ø20 G6	22,75	27
32	Ø20 G6	6	30
35	Ø20 G6	27	32
36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

11.18 EJECTOR 602P..011

11.19 EJECTORS - Guide channels ø13÷28 - Table

WARNING – CAUTION:

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



A Ejector

øE (mm)	**øF** (mm)	**øD** (mm)	**L** (mm)	Code no.
12	8	8	24	602P12011
15	11	11	26	602P15011
16	11	12	26	602P16011
18	11	12	27.5	602P18011
19	11	12	28	602P19011
20	14	12	47.5	602P20011
23	14	12	49	602P23011
25	20	12	50.5	602P25011
27	20	12	51.5	602P27011
29	20	14	51.5	602P29011
30	20	15	51.5	602P30011
35	20	18	51.5	602P35011
40	20	18	55	602P40011
45	20	19	56	602P45011
51	20	25	56	602P51011

11.20 PIPE COLLETS 603P

11.21 PIPE COLLETS - Table

WARNING – CAUTION:

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

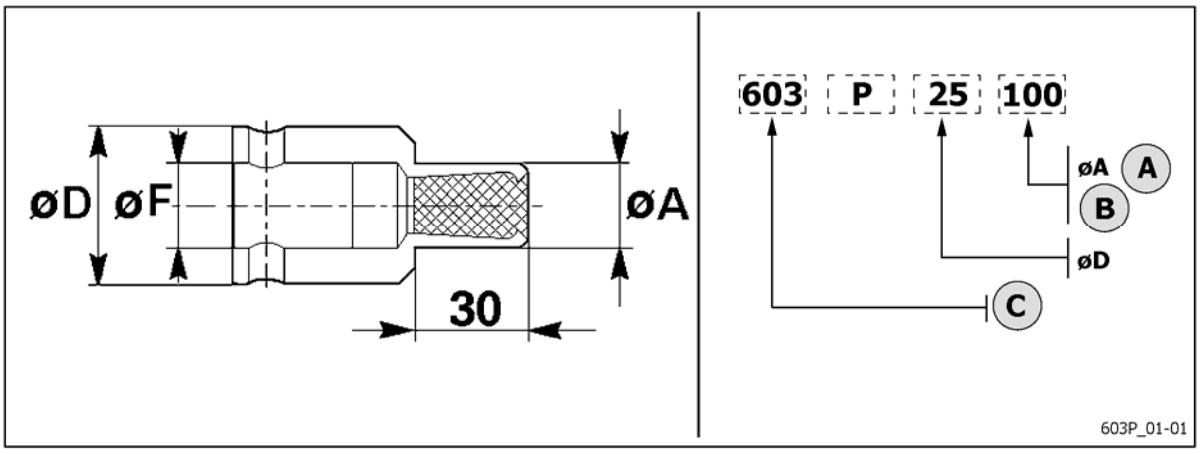
INFORMATION:

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

INFORMATION:

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

Code structure



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

External diameter (mm) **øD**	Diameter (mm) **øF**	External diameter (mm) **øA**	
		MIN	MAX
12	Ø8 G6	5	9,5
15	Ø11 G6	5	11
15-16	Ø11 G6	11,5	14
20	Ø14 G6	6	18
25	Ø20 G6	10	23
27	Ø20 G6	21.5	25
29	Ø20 G6	25,5	27
32	Ø20 G6	15	30
35	Ø20 G6	23	33
40	Ø20 G6	34	37
42	Ø20 G6	23	40
44-45	Ø20 G6	39,5	42,5
49	Ø20 G6	30	45

11.22 COLLETS FOR BARS 076

11.23 COLLET FOR BARS - Table

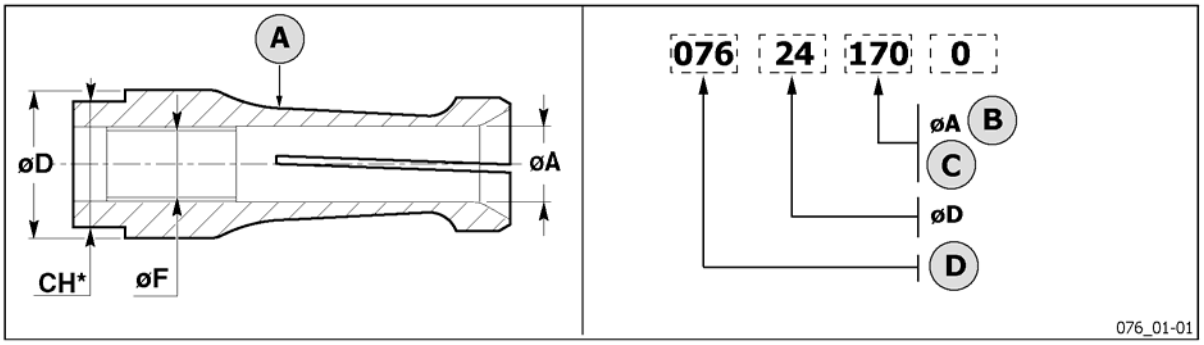
WARNING – CAUTION:

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

INFORMATION:

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

Code structure



CH*: double-ended fork wrench DIN3110

A Collet
B Bar diameter
C Example
17 mm = 170
22.5 mm = 225
39.75 mm= 397
D Category

External diameter (mm) **øD**	Diameter (mm) **øF**	Internal diameter (mm) **øA**	
		MIN	MAX
22	M10x1	15	15,7
23	M10x1	16	16,5
24	M17x1	16,5	17,7
25	M17x1	18	22,8
27	M17x1	19,5	25
28	M17x1	21,5	21,7
29	M17x1	22	27
30	M25x1,5	16,9	28,5
32	M25x1,5	10	30
34	M25x1,5	27	32
35	M25x1,5	28,5	33,5
36	M25x1,5	29	34
37	M25x1,5	30,2	35,51
38	M25x1,5	31	36
40	M25x1,5	24	38
42	M25x1,5	23,7	40
43	M25x1,5	37	38,5
44	M25x1,5	38	42
45	M25x1,5	39	42,2
46	M25x1,5	40	40,5
48	M25x1,5	41	43,5
49	M25x1,5	43	43,5

External diameter (mm) **øD**	Diameter (mm) **øF**	Internal diameter (mm) **øA**	
		MIN	MAX
50	M25x1,5	44	46
52	M25x1,5	45	48
54	M25x1,5	48	50
55	M25x1,5	50	52
56	M25x1,5	50	51,5
57	M25x1,5	51	51,5
58	M25x1,5	47,5	53,5
59	M25x1,5	53	53,5
60	M25x1,5	54	58
62	M25x1,5	56	57,5
64	M25x1,5	57	59,5
65	M25x1,5	59	62
66	M25x1,5	60	61
68	M25x1,5	61,5	63,5
69	M25x1,5	63,5	66
70	M25x1,5	41	68
72	M25x1,5	66	68
74	M25x1,5	67,5	69
76	M25x1,5	69,5	70

11.24 COLLETS FOR BARS 381P

11.25 COLLET FOR BARS - Table

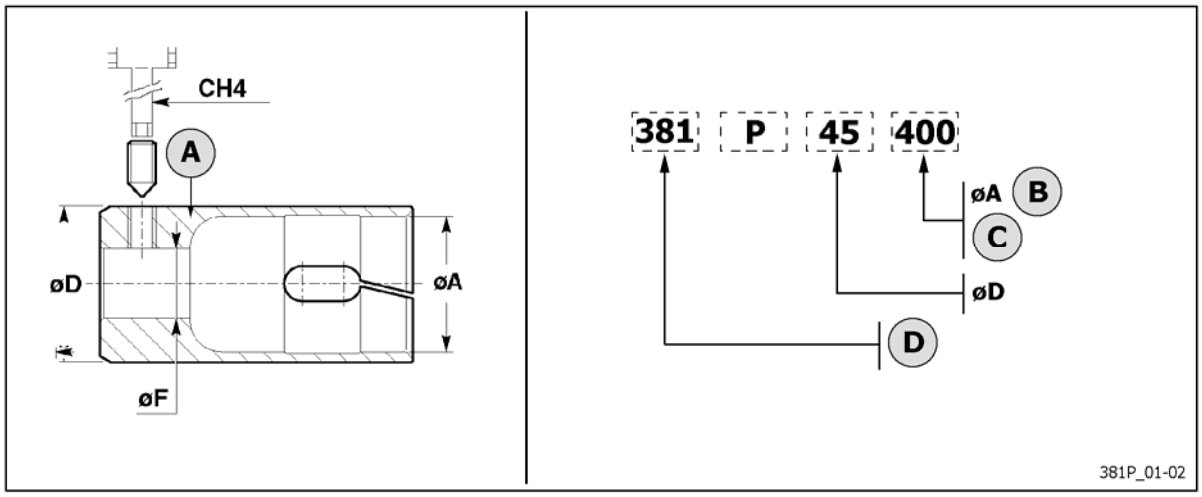
WARNING – CAUTION:

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

INFORMATION:

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

Code structure



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

CH4: T Allen wrench - DIN911

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

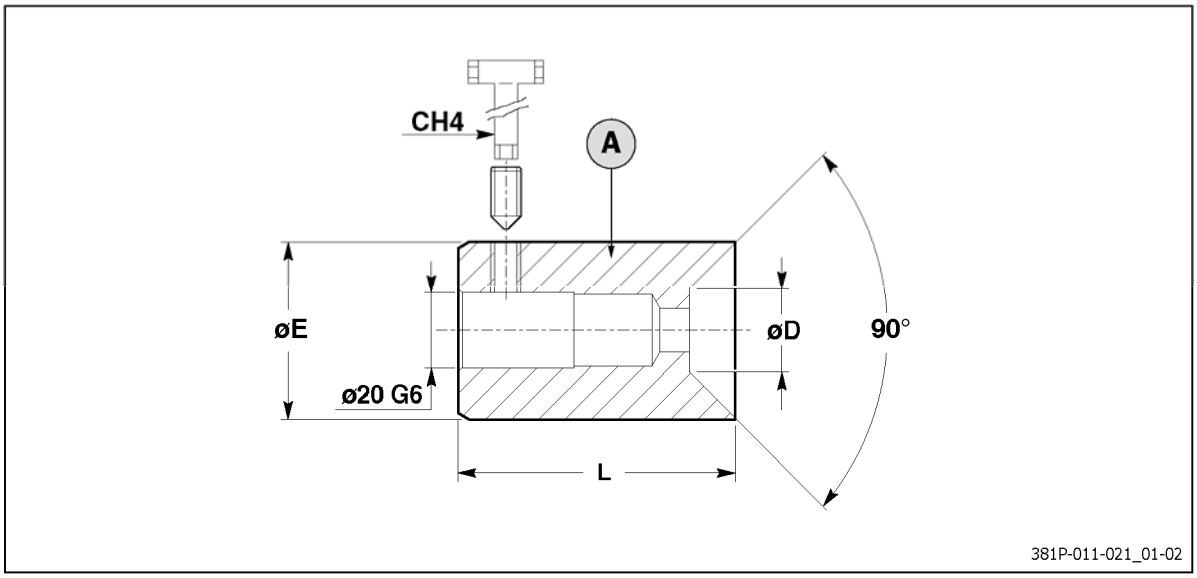
External diameter (mm) **øD**	Diameter (mm) **øF**	Internal diameter (mm) **øA**	
		MIN	MAX
60	Ø20 G6	54	56
62	Ø20 G6	56	56,75
64	Ø20 G6	57	60
65	Ø20 G6	59	61
66	Ø20 G6	60	62
68	Ø20 G6	61,25	63,75
70	Ø20 G6	64	65,75
72	Ø20 G6	65,25	67
74-75	Ø20 G6	67,25	70
76	Ø20 G6	69	70
78	Ø20 G6	70,25	72
80	Ø20 G6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

11.26 EJECTORS 381P..011 - 381P..021

11.27 381P..021 EJECTORS - Guide channels Ø33÷46 - Table

WARNING – CAUTION:

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



CH4: T Allen wrench - DIN 911

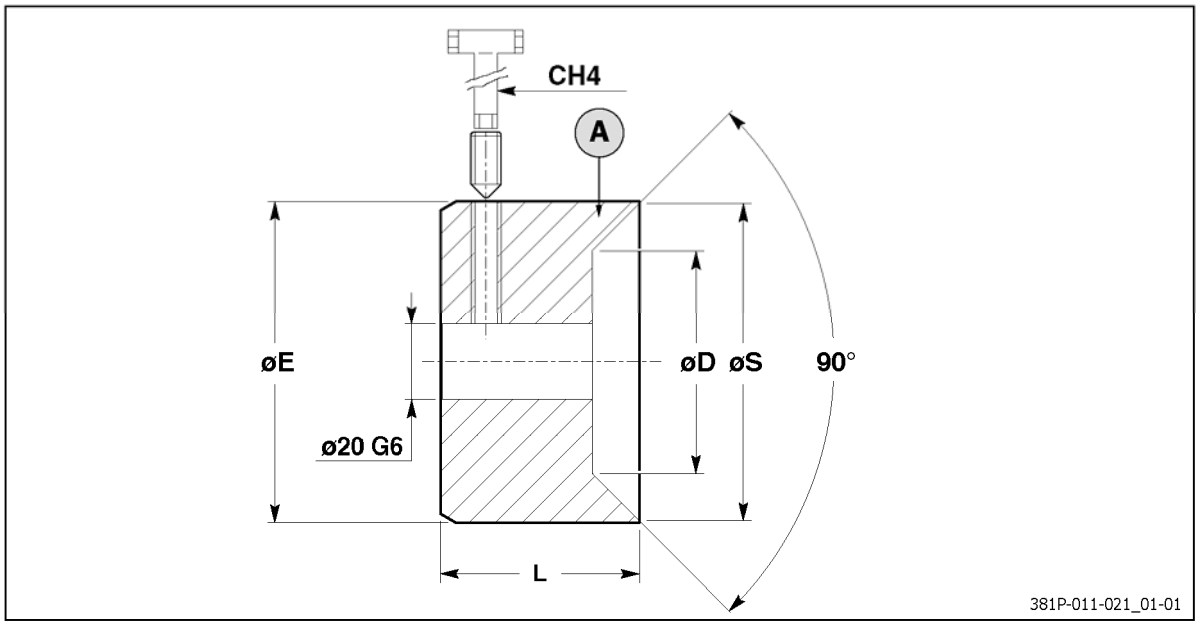
A Ejector

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

11.28 381P..011 EJECTORS - Guide channels Ø52÷86 - Table

WARNING – CAUTION:

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



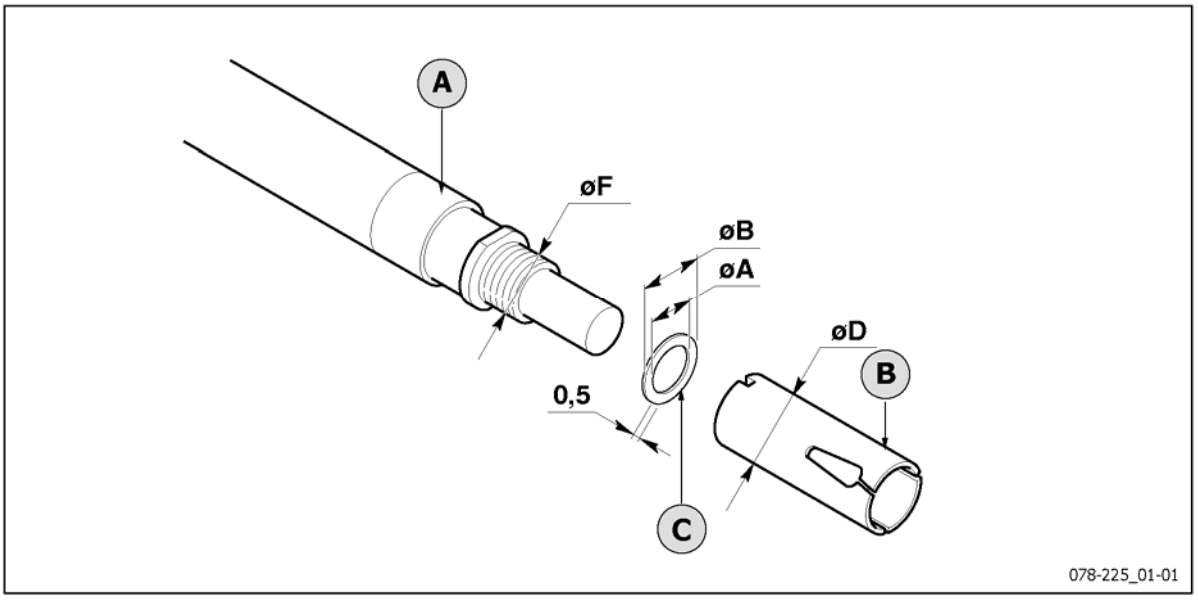
CH4: T Allen wrench - DIN 911

A Ejector

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

11.29 RINGS FOR COLLETS 078-225

11.30 RINGS FOR COLLETS - Table



A Revolving tip
B Collet
C Ring

øA *(mm)*	**øB** *(mm)*	**øD** *(mm)*	**øF**	*Ring p/n.*
8	14	16		22540008(*)
12	18	20		22540004(*)
12	25	25		078800220(*)
17	24	30	M17x1	22540026
17	30	35		078800200
25	30	30	M25x1.5	078800220
25	35	40		22540009
25	45	51		078800230

(*) Only for collets 316 (TAL)