AUTOMATIC BAR FEEDER WITH HYDRAULIC SUSPENSION

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

MASTER 880-E P/F
MASTER 880r-E P/F

GB **MANUAL FOR USE AND MAINTENANCE**

Rel. 1 **Date** 30/03/2004 **Cod.** 380005430

S/N

COMPILER: Andrea Bosi

ON APPROVAL: Andrea Drei

MANUFACTURER:	**IEMCA division of IGMI S.p.A.**
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TYPE OF DOCUMENT:	**MANUAL FOR USE AND MAINTENANCE**
PRODUCT:	**AUTOMATIC BAR FEEDER WITH HYDRAULIC SUSPENSION**
MODEL:	**MASTER 880-E P/F**
	MASTER 880r-E P/F

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

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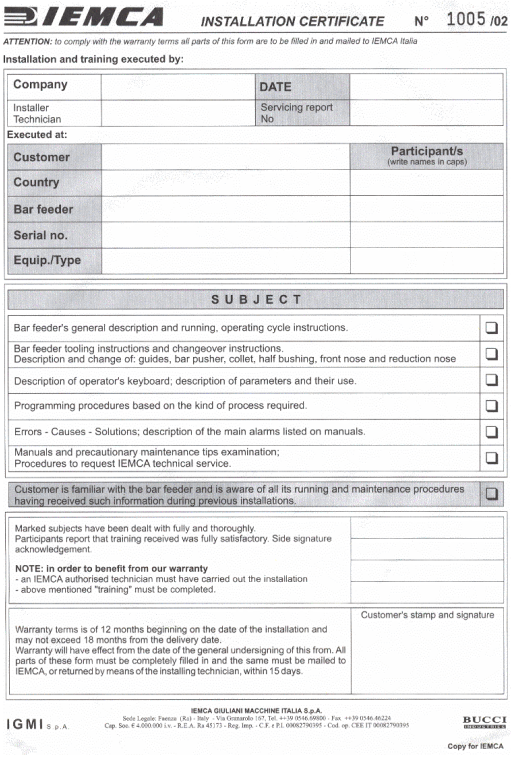
Operations described in paragraphs showing this symbol, must be performed by qualified and skilled personnel only.
Any other operation can be performed either by qualified personnel or by professional bar feeder operators.

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

1.1 TERMS OF WARRANTY

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

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



IEMCA INSTALLATION CERTIFICATE N° 1005 /02

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

Installation and training executed by:

Company		DATE	
Installer Technician		Servicing report No	

Executed at:

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

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

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

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

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

Customer's stamp and signature

IGMI S. p. A.

IEMCA GIULIANI MACCHINE ITALIA S.p.A.
Sede Legale: Faenza (Ra) - Italy - Via Granarolo 167, Tel. ++39 0546 68600 - Fax ++39 0546 46224
Cap. Soc. € 4.000.000 i.v. - R.E.A. Ra 45173 - Reg. Imp. - C.F. e P.I. 00082790395 - Cod. op. CEE IT 00082790395

BUCCI

Copy for IEMCA

1.2 MANUAL PURPOSE

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

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

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

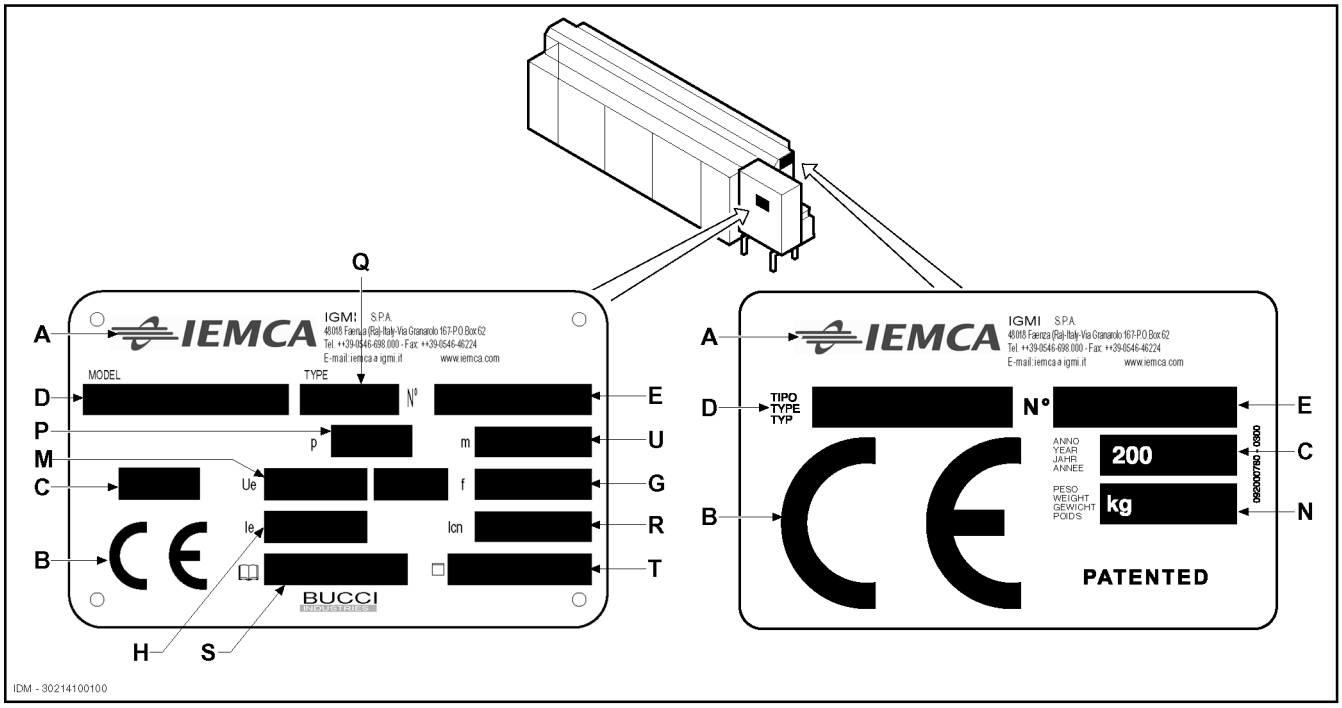
DANGER - WARNING:
shows impending danger which might cause serious injuries, exert the maximum caution.

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

INFORMATION
technical instructions of particular importance.

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

1.3 MANUFACTURER AND BAR FEEDER IDENTIFICATION



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

INFORMATION:

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

1.4 TECHNICAL ASSISTANCE

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

INFORMATION

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

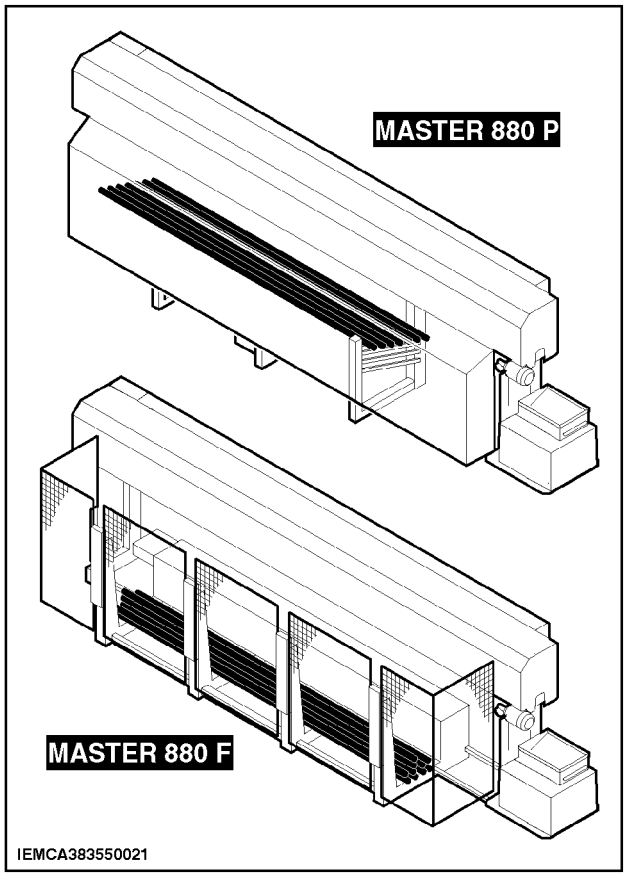
1.5 ANNEXES ENCLOSED

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

INDEX

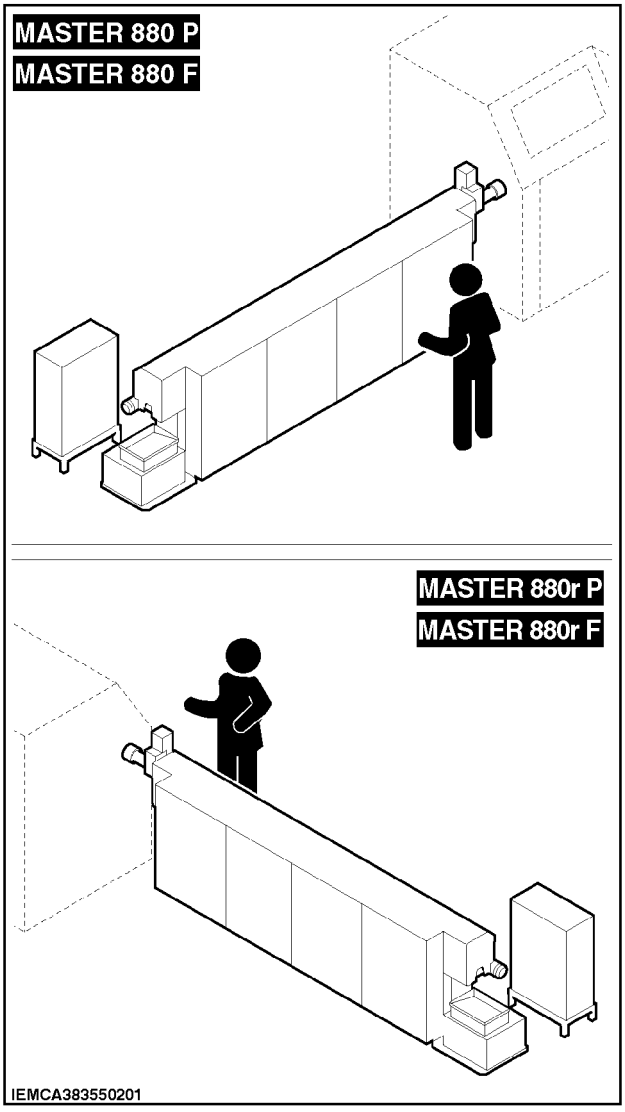
2.1 GENERAL DESCRIPTION OF THE BAR FEEDER

The MASTER 880 E-volution automatic bar feeder is used in the machine-tool industry and in particular, for automatic lathe feeding. It is particularly suitable for feeding fixed or sliding headstock lathes, numerical control or cam lathes.
The working cycle is controlled by a control panel with built-in PLC, which is able to dialogue with the lathe control.
It is equipped with a hand-held control that enables the operator to interact with all the controls without forcing him to leave his work station.
It may load bars, tubes and various sections that are kept in the rack magazine (MASTER 880P) or in the bar bundle magazine (MASTER 880F).
The guide channel is fully closed during machining; a pump is provided to maintain a continuous oil flow inside the channel, creating a hydrodynamic support effect; these characteristics allow the bar to rotate at a high r.p.m. number, with no vibrations and no surface damaging.
Thanks to the use of a "BRUSHLESS" and electronically controlled motoreductor, the bar speed, thrust value and feeding position may be determined at any time during the working cycle.

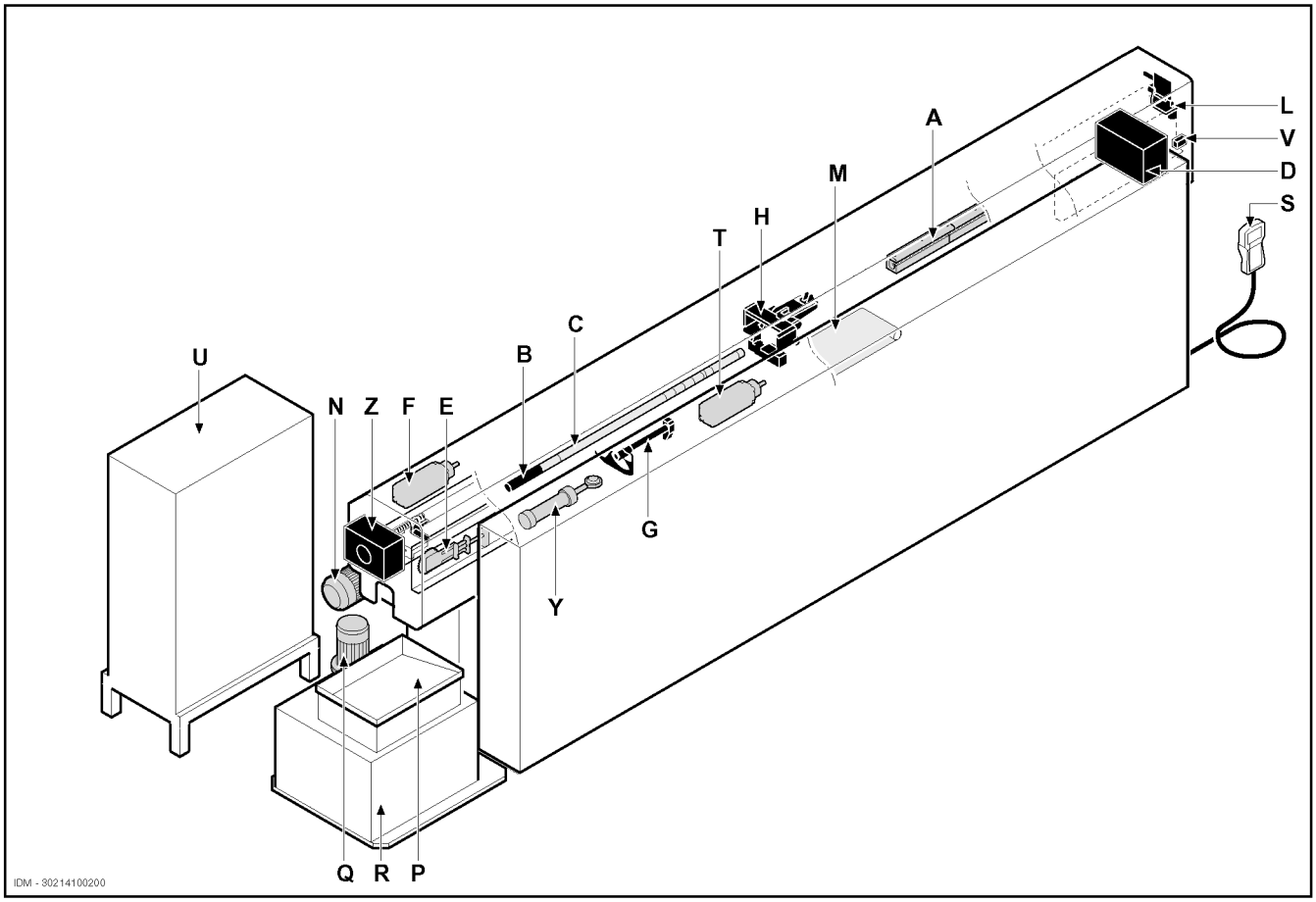


The MASTER 880 E-volution bar feeders are available in the following models:
MASTER 880P (standard version) rack-type magazine.
MASTER 880rP (reversed version) rack-type magazine .
MASTER 880F (standard version) bundle-type magazine.
MASTER 880rF (reversed version) bundle-type magazine .

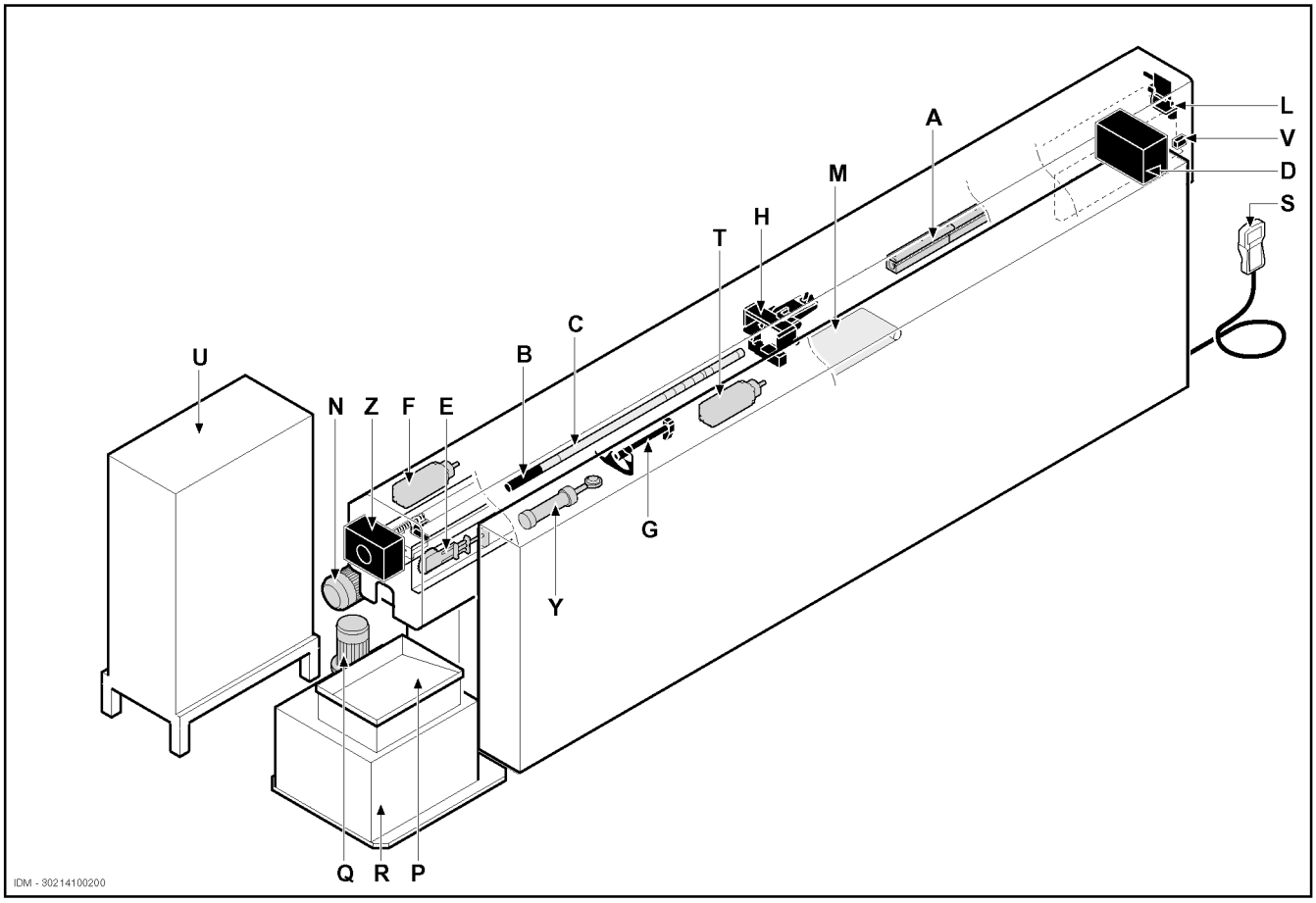
When not otherwise specified, the texts, tables and pictures of this manual regard the standard version. As far as the reverse version is concerned, it should be borne in mind that the magazine and the electric cabinet are mounted on the opposite side.



2.1.1 Bar feeder - Main components

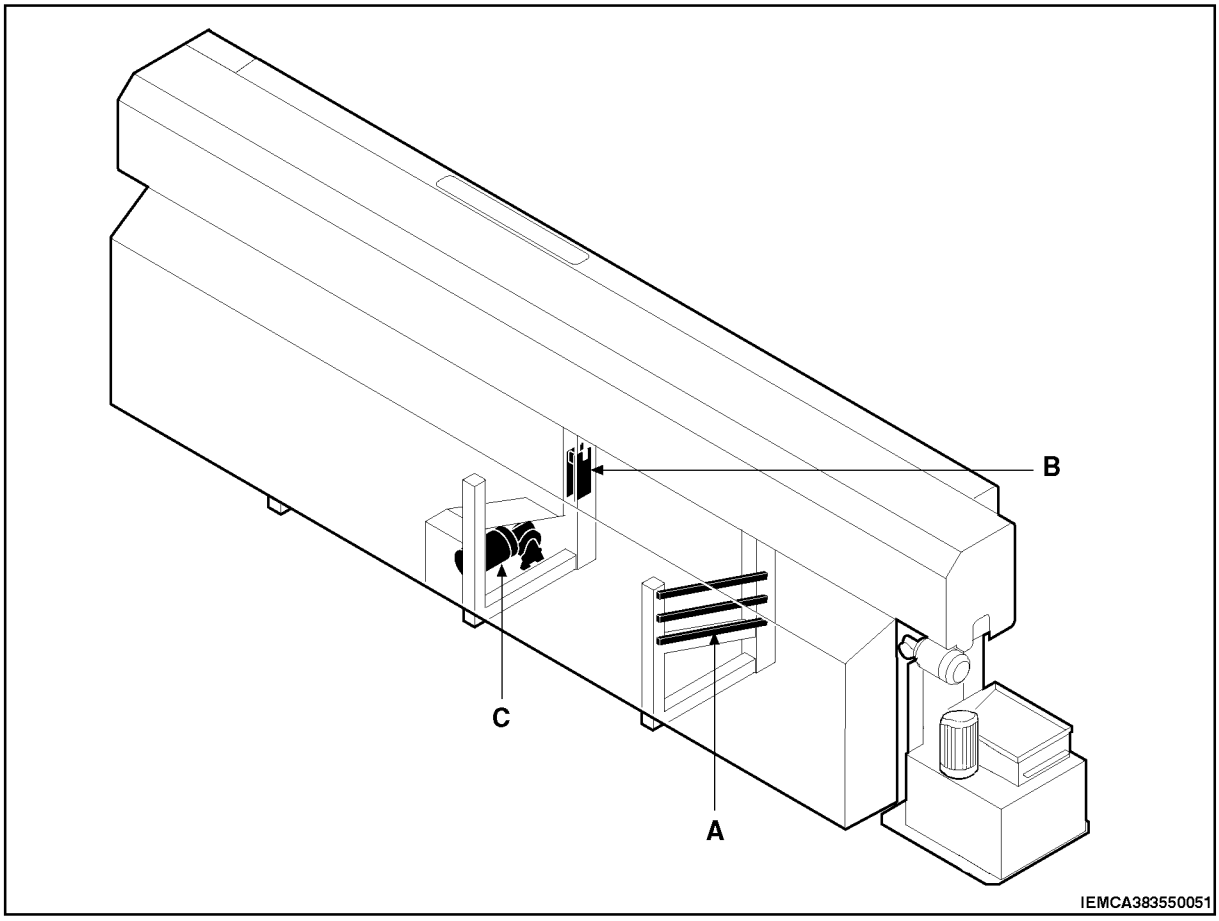


A Guide channels; they drive the bar during the machining.
B First feeding carriage; it pushes the bar forward until the necessary space for the bar pusher connection has been created.
C Bar pusher; it pushes the bar during the machining. The collet is fixed on its front end.
D Bar pusher drive; it drives the bar pusher.
E Feed chain; it transmits the motion from the drive to the bar pusher.
F Opening and closing guide channels cylinder.
G Pneumatic bar drop control devices; they control the bar during the drop into the guide channels.
H Pneumatic clamps; they hold the bar during its loading and removal from the bar pusher collet.
L Facing device; it sends a signal during the bar passage.
M Remnant conveyor; it carries the bar remnant from the removal area to the collection box.
N Remnant conveyor drive; it drives the remnant conveyor.
P Remnant collection box; it collects the bar remnant.



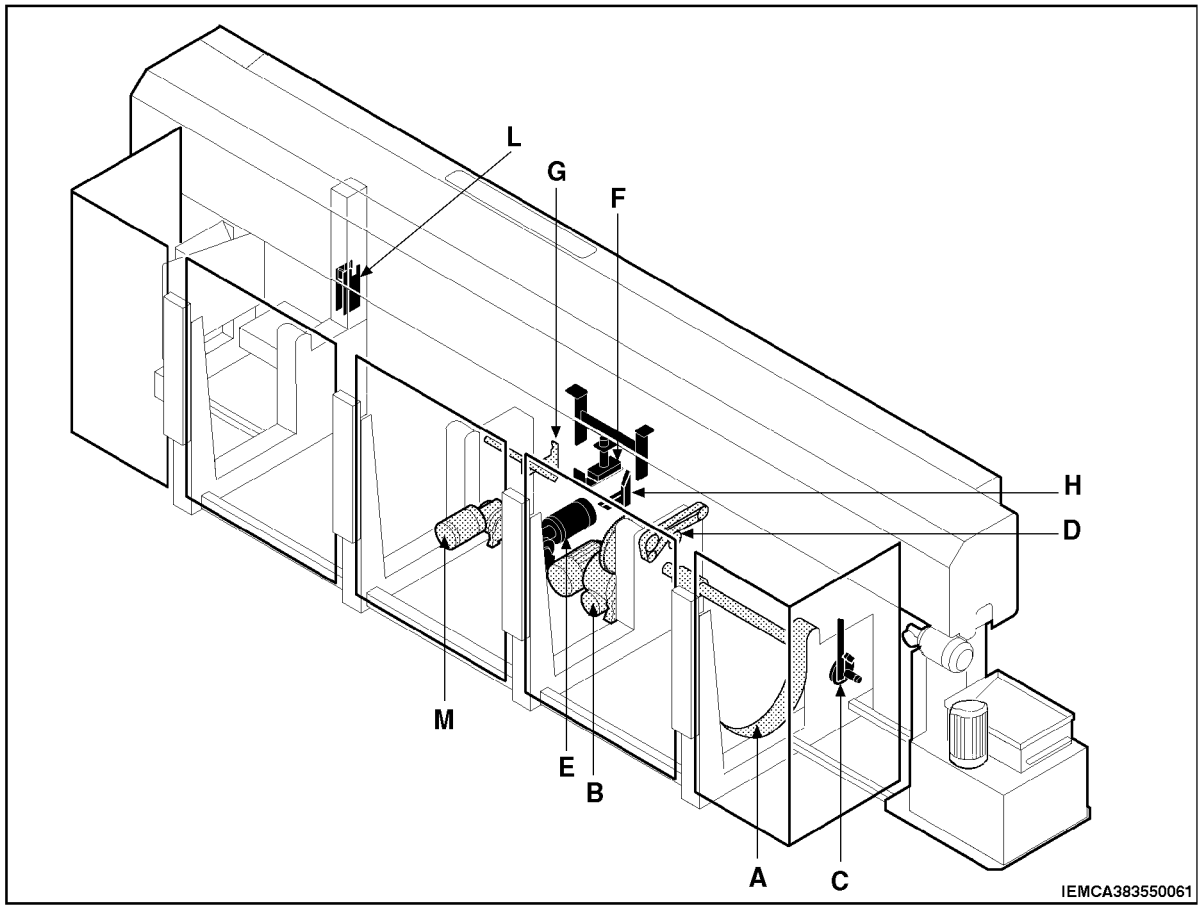
Q Lubrication pump; it delivers the lubricating oil to the guide channels.
R Oil tank; contains the lubricating oil.
S HAND-HELD KEYBOARD; it allows bar feeder programming and function actuation.
T Pneumatic bar drop controls cylinder
U Electric cabinet; houses the electric switchboard.
V Axial displacement; it helps to remove the bar feeder body from the lathe.
Z Pneumatic clamps cylinder

2.1.2 Rack magazine MASTER 880 P - Main components



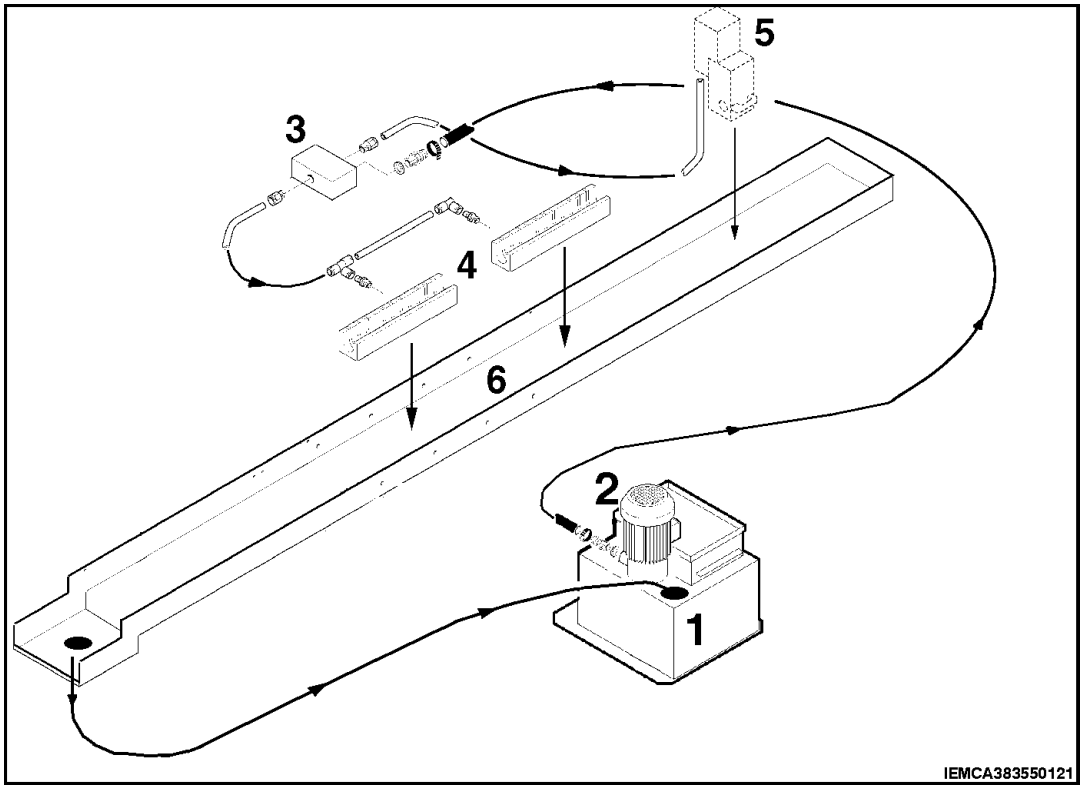
A BAR SUPPORTING ARMS; support bars. Thanks to their inclination, bars lean against the lift truck uprights.
B LIFT TRUCKS; move bars from the magazine to the bar feeder guides.
C LIFT TRUCK MOTORISATION; actuates the upstroke and downstroke of the lifting trucks.

2.1.3 Bar bundle magazine MASTER 880F - Main components



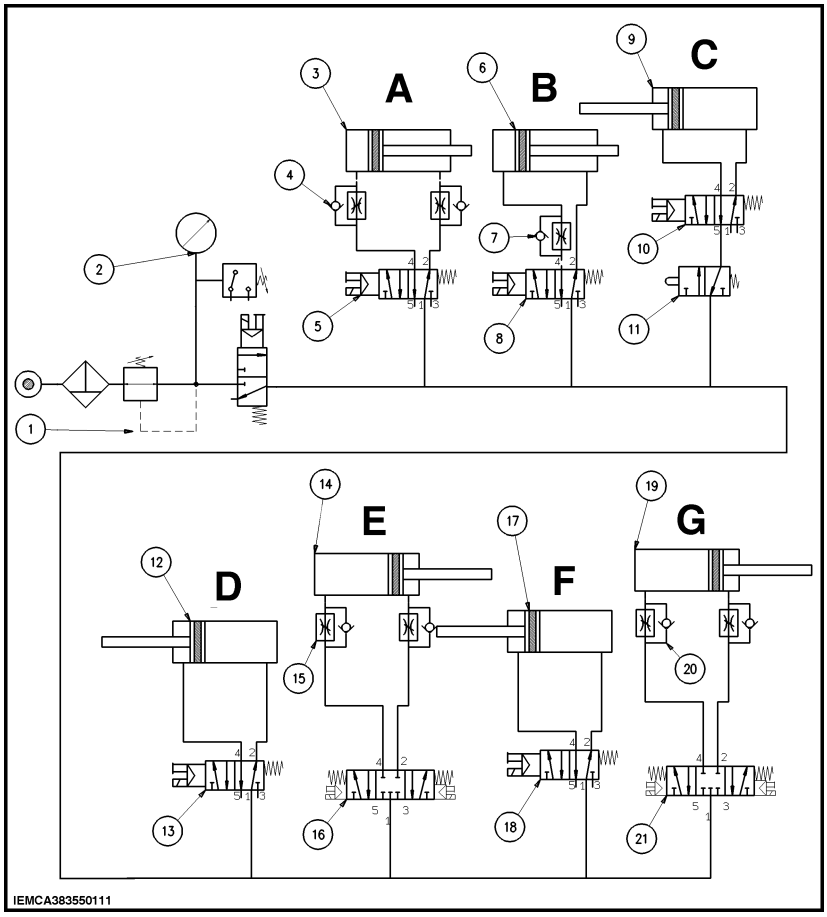
A Lifting belts; lift the bundle of bars so that some of them fall onto the selection table.
B Lifting belts driving; actuates the upstroke and downstroke of the lifting belts.
C Bar stopping levers; allow the bar controlled fall onto the selection table.
D Conveying belt; their forward-backward motion allows the bars to be selected and displaced.
E Conveying belt motorisation; actuates the conveying belts.
F Pressure foot; keeps the bars pressed against the.
G Feelers; detect the first bar coming from the conveying belts.
H Lower push-rods; hold the first bar coming from the conveying belts.
L Lift trucks; move bars from the magazine to the bar feeder guides.
M Lift truck motorisation; actuates the upstroke and the downstroke of the lifting trucks.

2.1.4 Hydraulic system - Main components



Lubrication oil cycle: forced by pump (2) installed in tank (1), the oil flows to guides (4) and bushing holder (5) to lubricate the bars in production.
From these two devices the oil enters recovery tray (6) from where it is returned to the tank via a filter for use in the next lubrication cycle.

2.1.5 Pneumatic system - Main components



A - PNEUMATIC BAR DROP CONTROLS UNIT
B - FACING CYLINDER
C - BUSHING DRIVE UNIT
D - PNEUMATIC CLAMPS UNIT
E - REMNANT DROP UNIT
F - PNEUMATIC GUIDES LOCKING UNIT
G - GUIDES OPENING UNIT

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

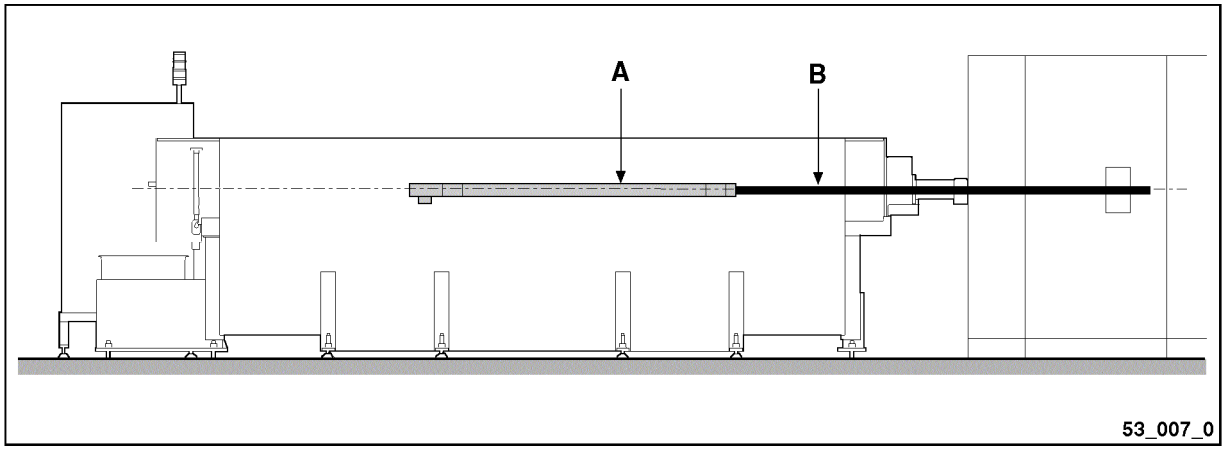
POS.	DENOMINATION
12	CYLINDER
13	ELETCTROVALVE
14	CYLINDER
15	REGULATOR
16	ELETCTROVALVE
17	CYLINDER
18	ELETCTROVALVE
19	CYLINDER
20	REGULATOR
21	ELETCTROVALVE

2.2 OPERATING CYCLE - GENERAL DESCRIPTION

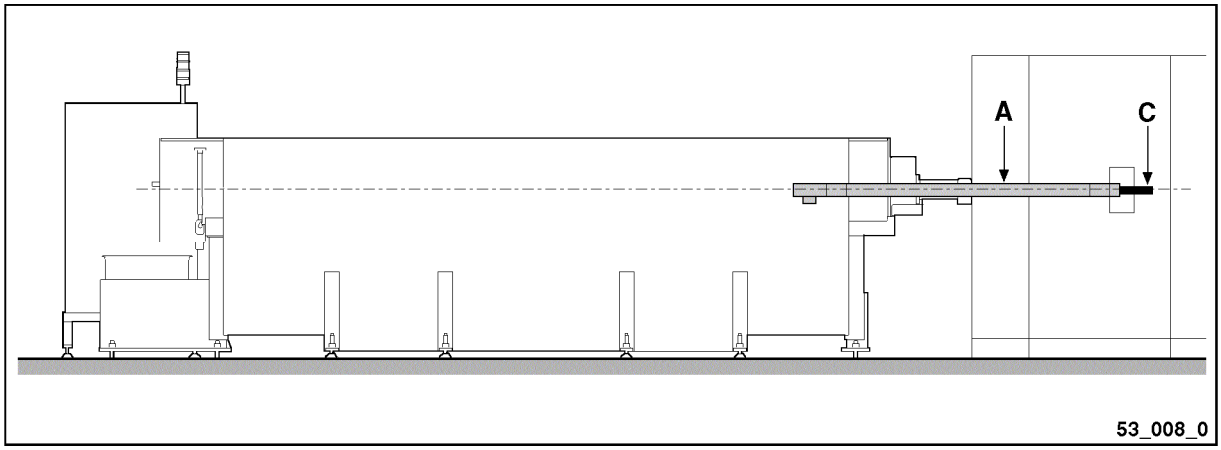
The description of the operating cycle is the subject of the following paragraphs:
2.2.1 Bar feeder - Operating cycle
2.2.2 Rack magazine MASTER 880P - Operating cycle
2.2.3 Bar bundle magazine MASTER 880F - Operating cycle

2.2.1 OPERATING CYCLE

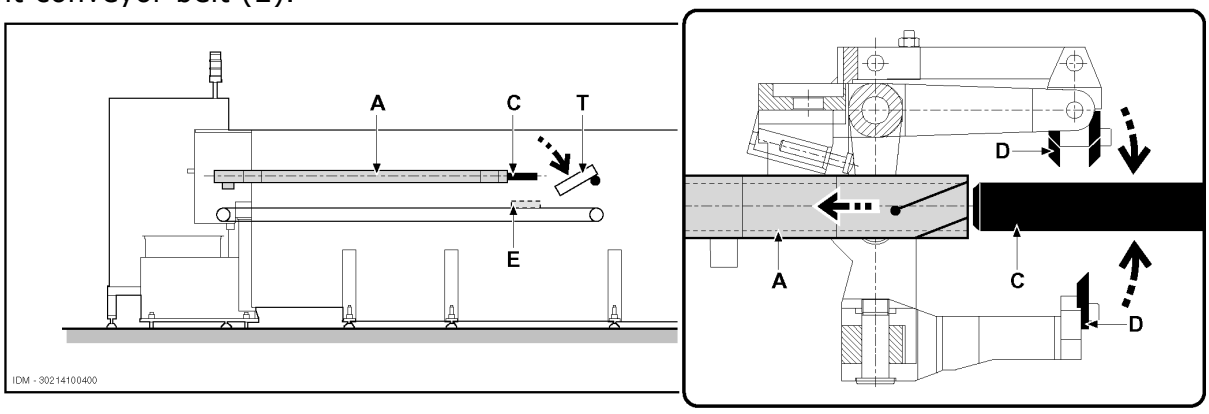
The automatic functioning controls the motions of the bar feeder according to the sequence described below.
The bar pusher (A) makes bar (B) move forward in the lathe until the bar runout.



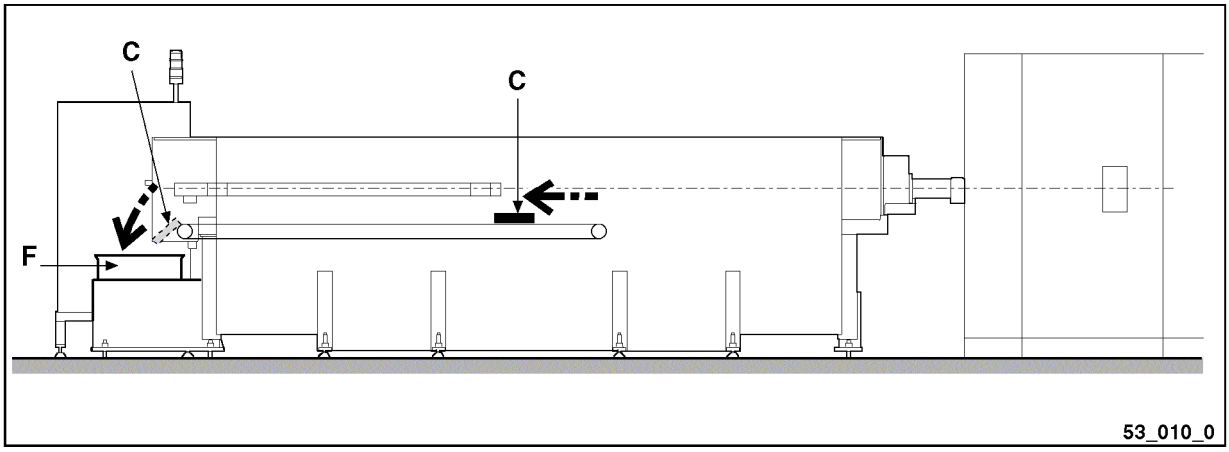
The bar-pusher (A) and remnant (C) are in their forwards limit stop position.



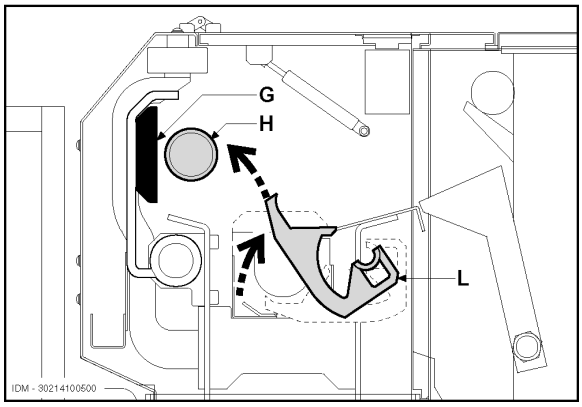
Bar pusher (A) and remnant (C) reach their backwards limit stop position.
The clamps (D) close and the bar pusher moves backwards; the remnant is removed from the collet. The clamps open, the bar pusher (A)is fed and the remnant is placed on to the remnant drop guide(T), the bar pusher runs back, the clamps (D) close and open again for the remnant drop control, then the remnant drop guide (T) is lowered and the remnant drops on to the remnant conveyor belt (E).



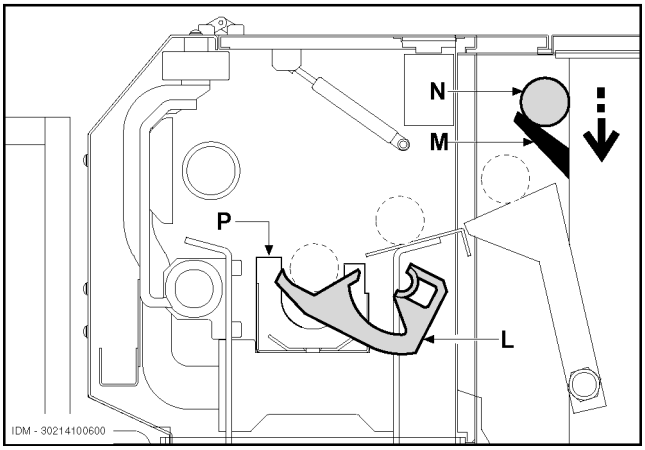
Remnant (C) is driven to the rear side and dropped onto box (F). A sensor detects the presence of the remnant during the path; if the remnant is still in the collet of the bar pusher the bar feeder stops, otherwise the cycle goes on.



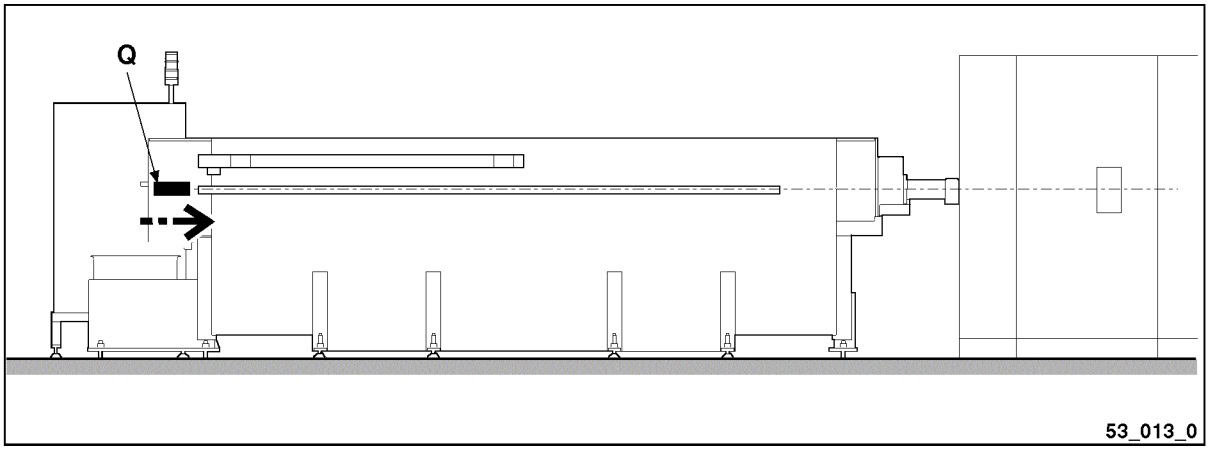
The top guides (G) are lifted together with the bar pusher (H), and also the bar control devices are lifted.



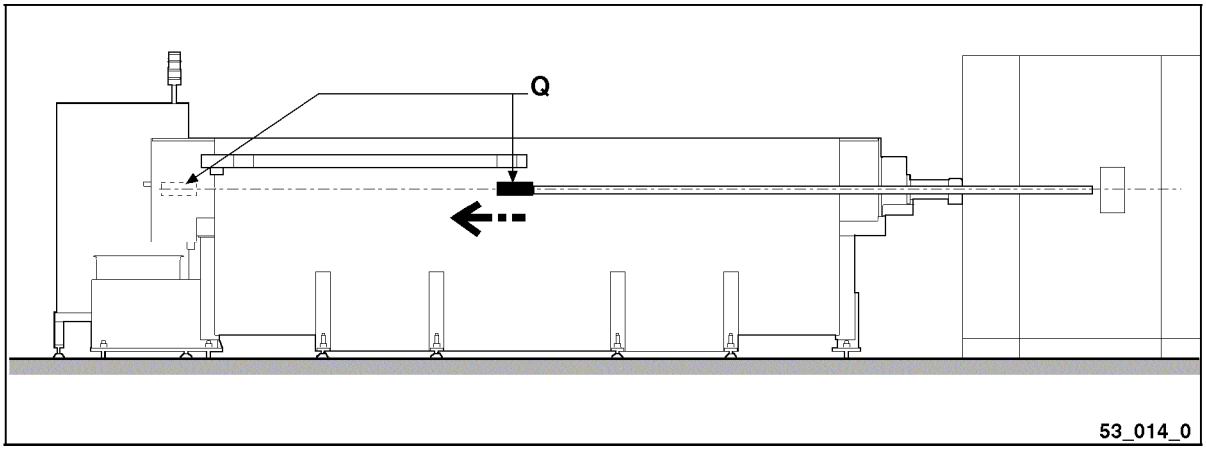
The lifting devices (M) lower, bar (N) drops onto the lower guide channels (P) together with levers (L).



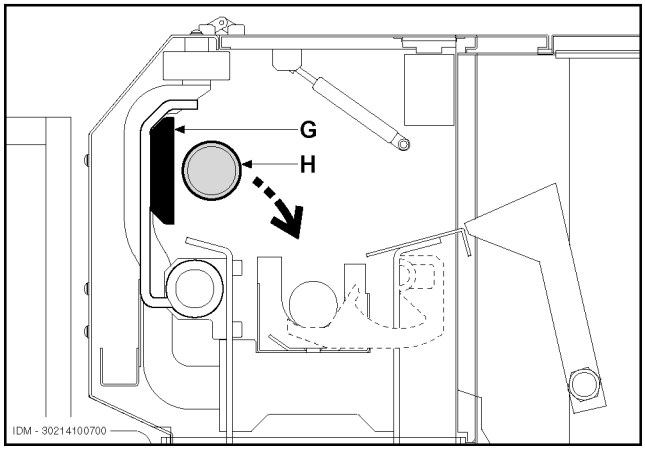
The 1st feeding carriage (Q) stroke begins.



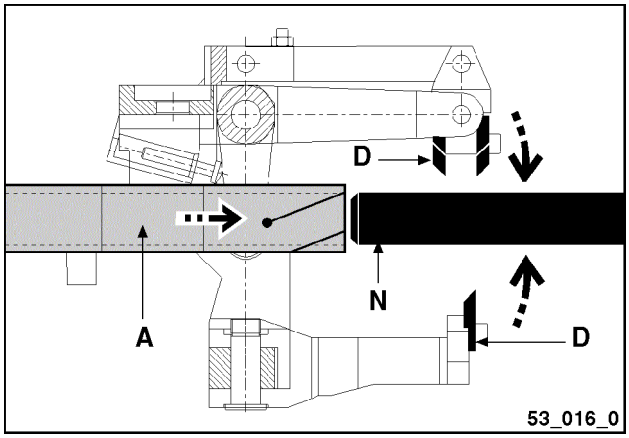
When the small pusher truck (Q) completes its stroke, the required space has been created for bar-pusher insertion.
The small pusher truck executes its return stroke.



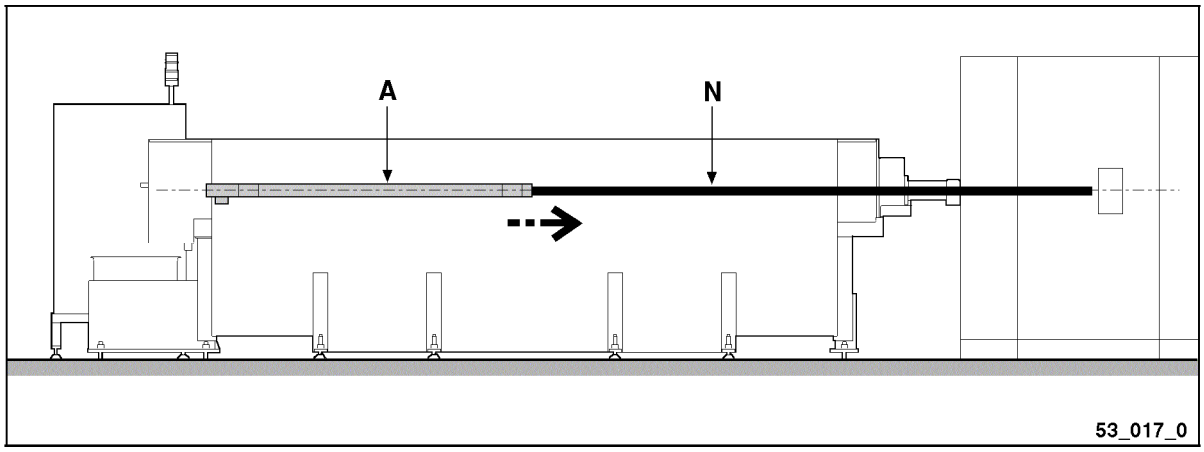
The upper guides (G) are closed; the bar-pusher (H) is positioned along the spindle axis.



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

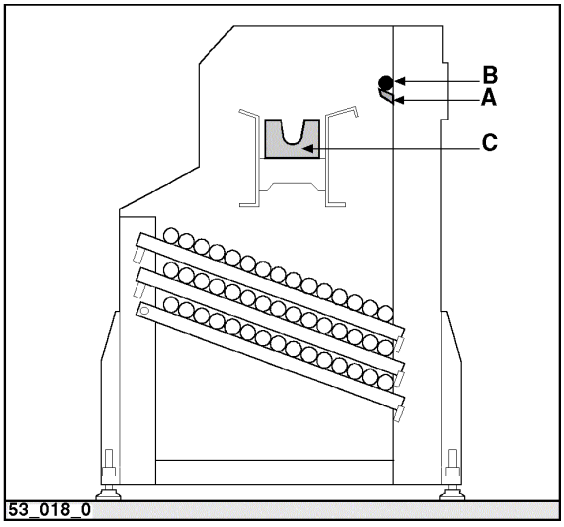


The bar-pusher (A) and bar (N) execute their facing stroke. A new automatic work cycle is started.

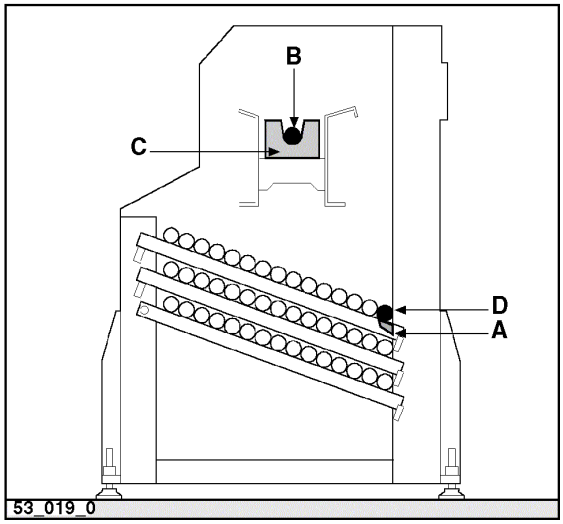


2.2.2 Rack magazine MASTER 880 P - Operating cycle

Automatic operation controls the magazine motions in the following sequence.
Lifting trucks (A) are in the highest position and support bar (B), which is ready to be unloaded into guides (C).
Lifting trucks (A) lower and let bar (B) fall into guides (C).

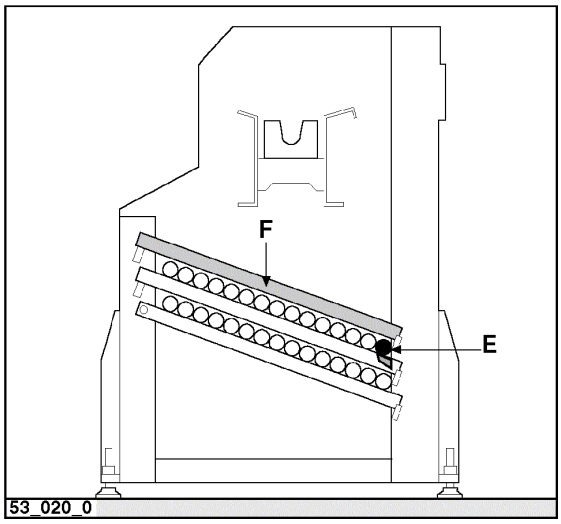


Lifting trucks go on lowering until they take bar (D) and bring it in the highest position.



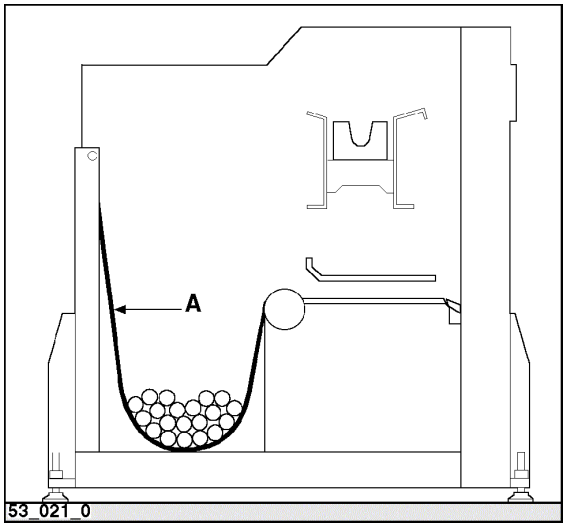
When bars on the first rack are over, first bar (E) on the second rack is risen, opening arms (F) of the first rack.

The cycle goes on until bars are over.

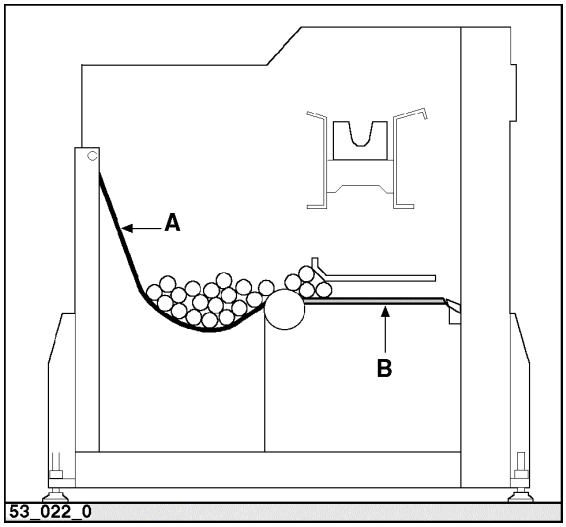


2.2.3 Bundle magazine MASTER 880 F - Operating cycle

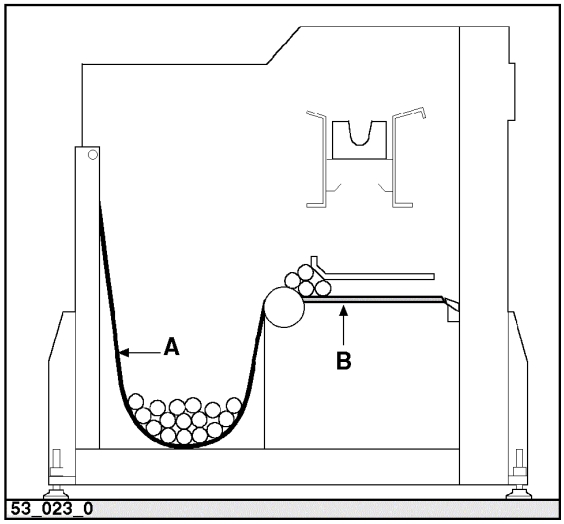
Automatic operation controls the magazine motions in the following sequence.
Bars are held in lifting belts (A)



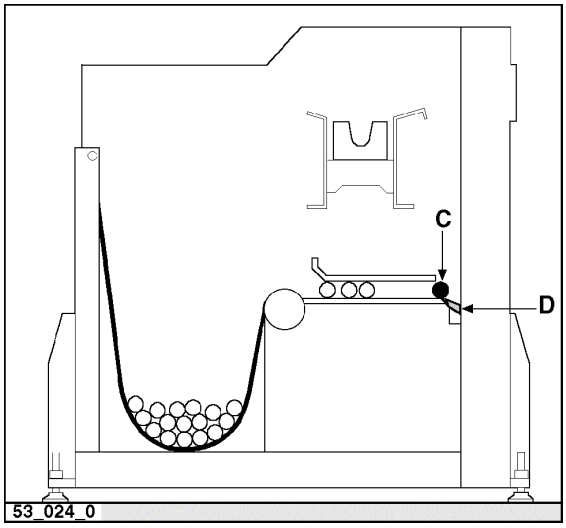
Lifting belts (A) rise until they make some bars fall onto magazine rack (B).



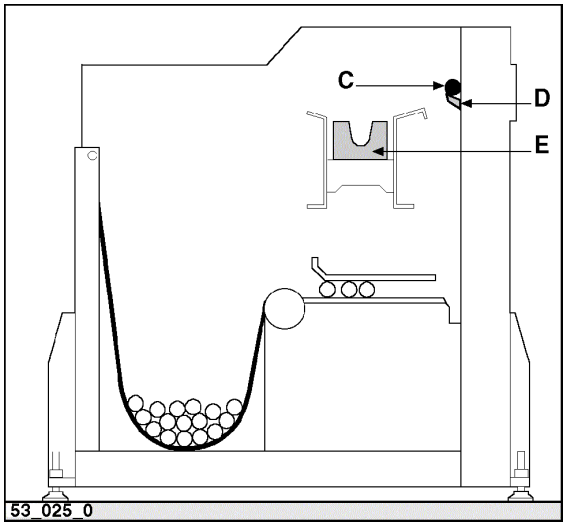
Lifting belts (A) lower; bar selection on magazine rack (B) starts.



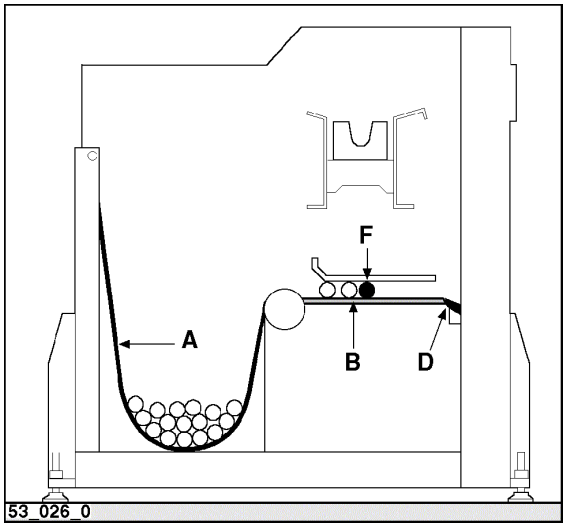
When selection is over, first bar (C) is separated from the others and unloaded onto lifting trucks (D).



Lifting trucks (D) reach the high position; the cycle stops.
When the bar feeder has achieved the bar machining, or when it carries out the bar pusher return strokes - if it is the first cycle - an impulse is transmitted, making lifting trucks (D) lower and making bar (C) fall into guides (E).



Lifting trucks (D) lower; another cycle begins, which is over when bar (F) is in the high position.
Cycles repeat until bars on magazine rack (B) are over; then, lifting belts (A) rise to unload other bars.
The cycle goes on until bundle bars are over.

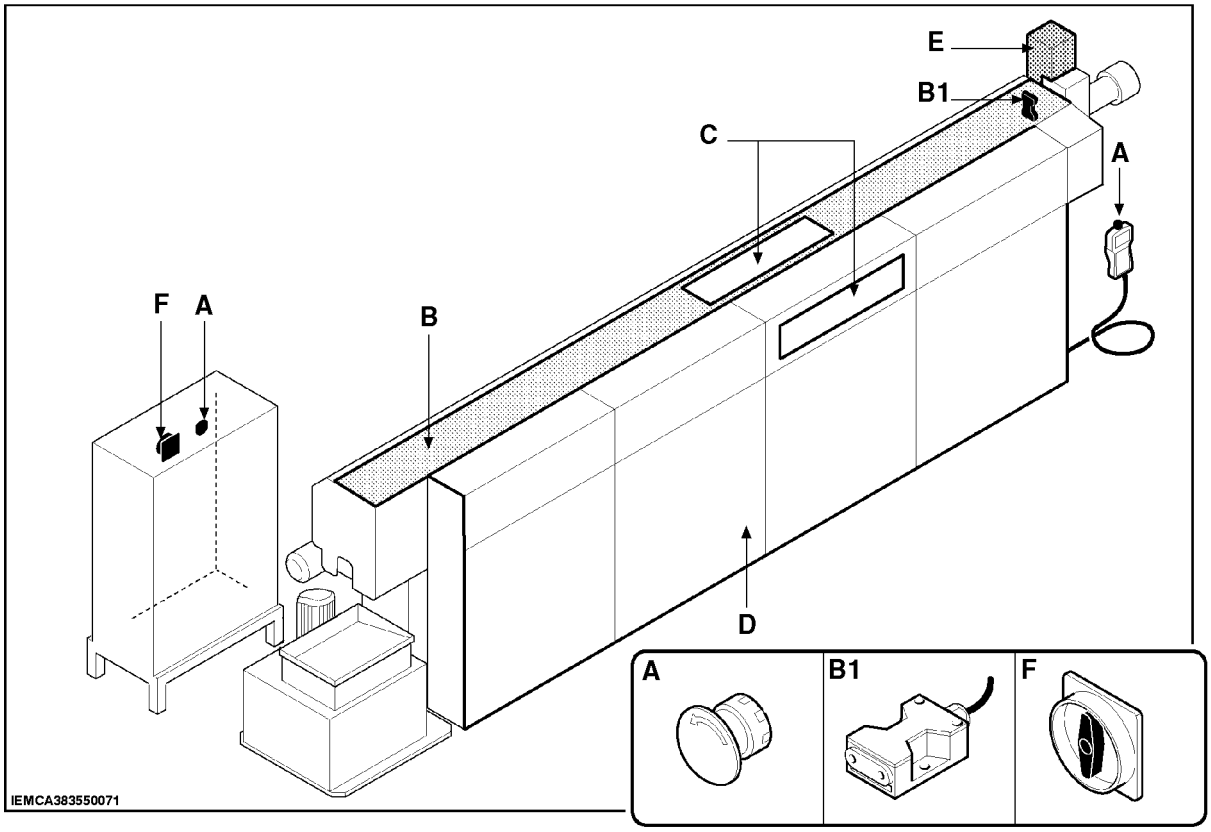


2.3 SAFETY DEVICES - POSITION AND DESCRIPTION

The signalling of the position and the description of the safety devices are the subjects of the paragraphs listed below:

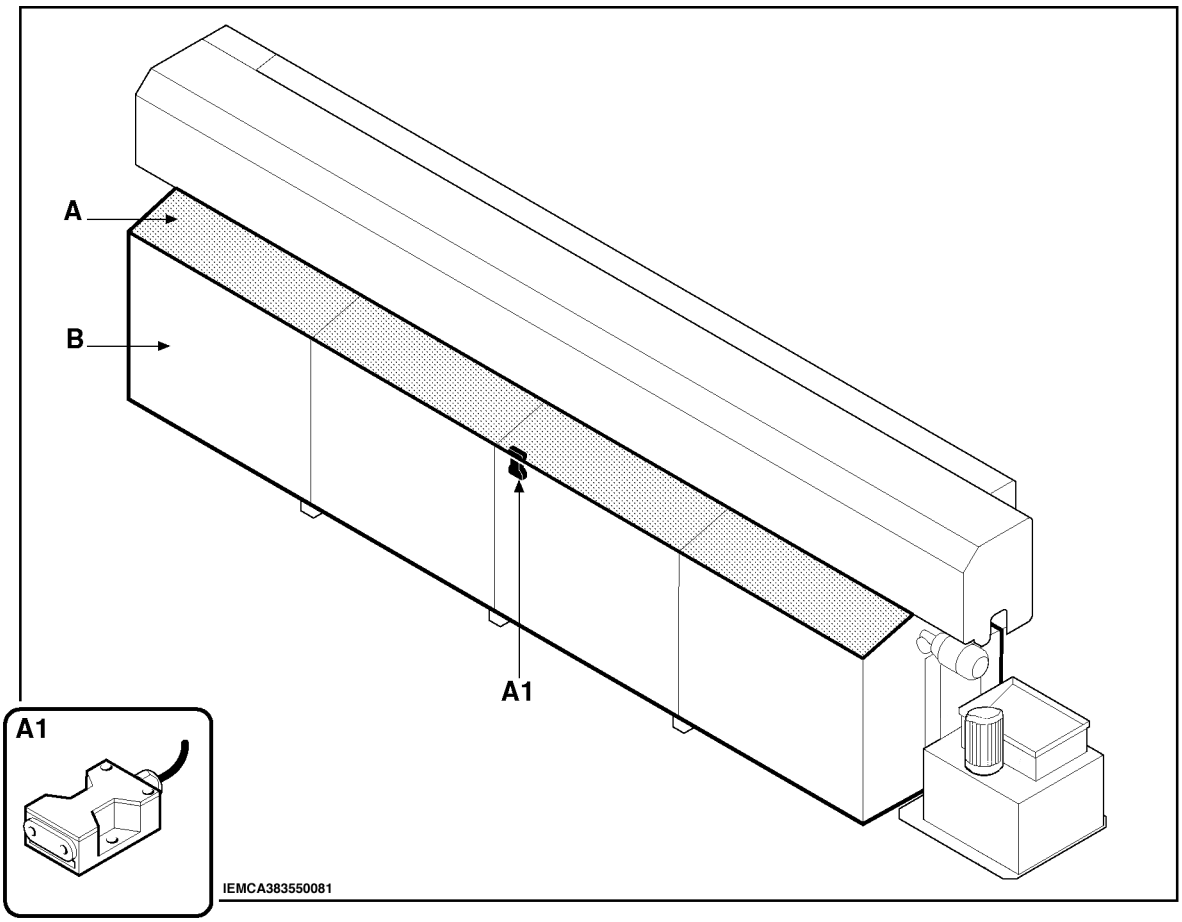
2.3.1 Bar feeder - Safety devices
2.3.2 Rack magazine MASTER 880P - Safety devices
2.3.3 Bar bundle magazine MASTER 880F - Safety devices

2.3.1 Bar feeder - Safety devices



A EMERGENCY PUSH-BUTTON; when pressed, all the bar feeder and lathe functions stop in emergency condition.
B IINTERLOCKED MOBILE GUARD; linked to microswitch B1. When the guard opens, the bar feeder and lathe functions are suspended. The guard closing allows the user to start the cycle again.
C FIXED GUARD: it is made up by transparent material and allows the detection of the area of the bar drop onto the guide channels.
D FIXED GUARD: hinders an accidental access to the operating components.
E FIXED GUARD: it prevents accidental access to the bar selection area.
F MAIN SWITCH: cuts out the electric energy source during interventions in the electric switchboard and during the bar feeder periods of inactivity.

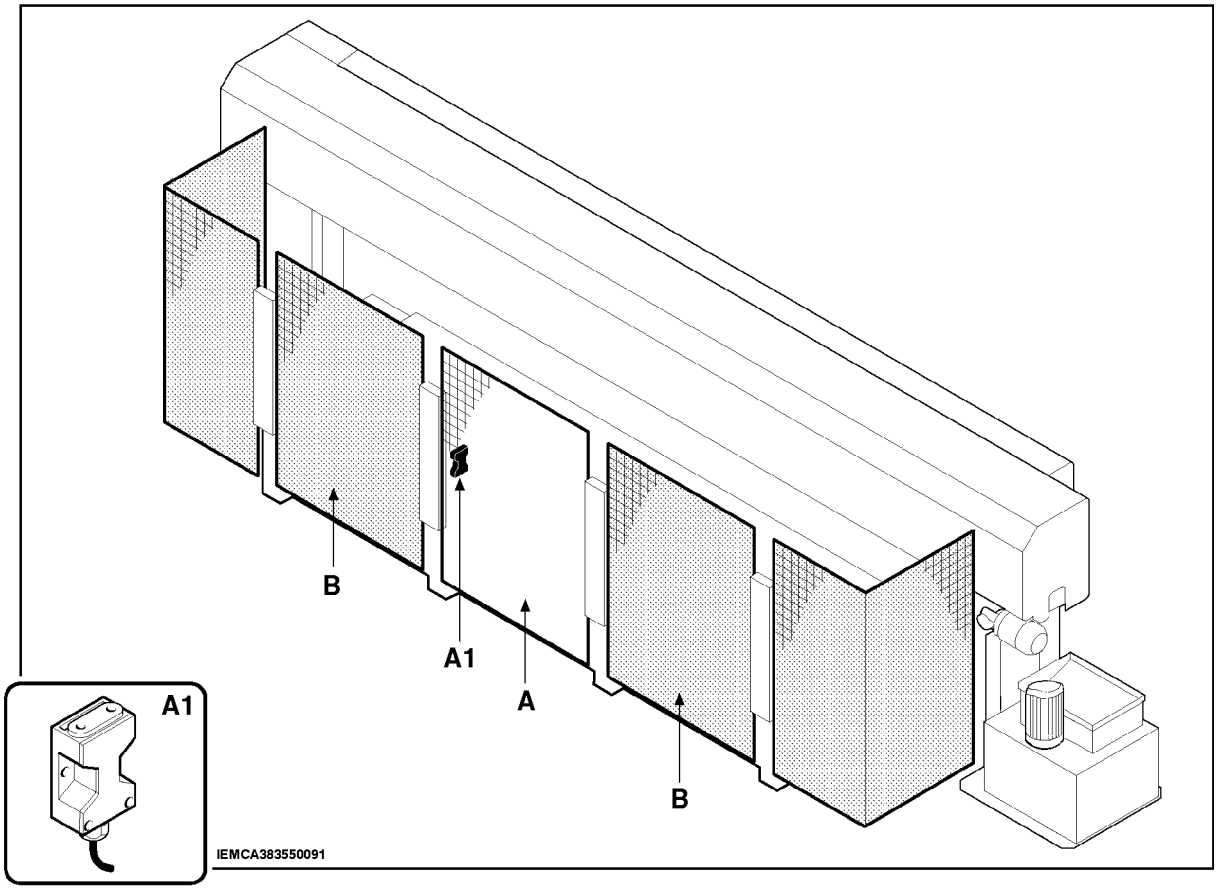
2.3.2 Rack magazine MASTER 880 P - Safety devices



A INTERLOCKED SLIDING GUARD; it is connected to the microswitch A1. During this guard opening cycle, the bar feeder and lathe will stop. Only if this guard opening takes place during the feeding phases will the bar feeder and lathe continue to work, without causing any risks for the operator.

B FIXED GUARD; avoids to unintentionally reach the bar magazine area.

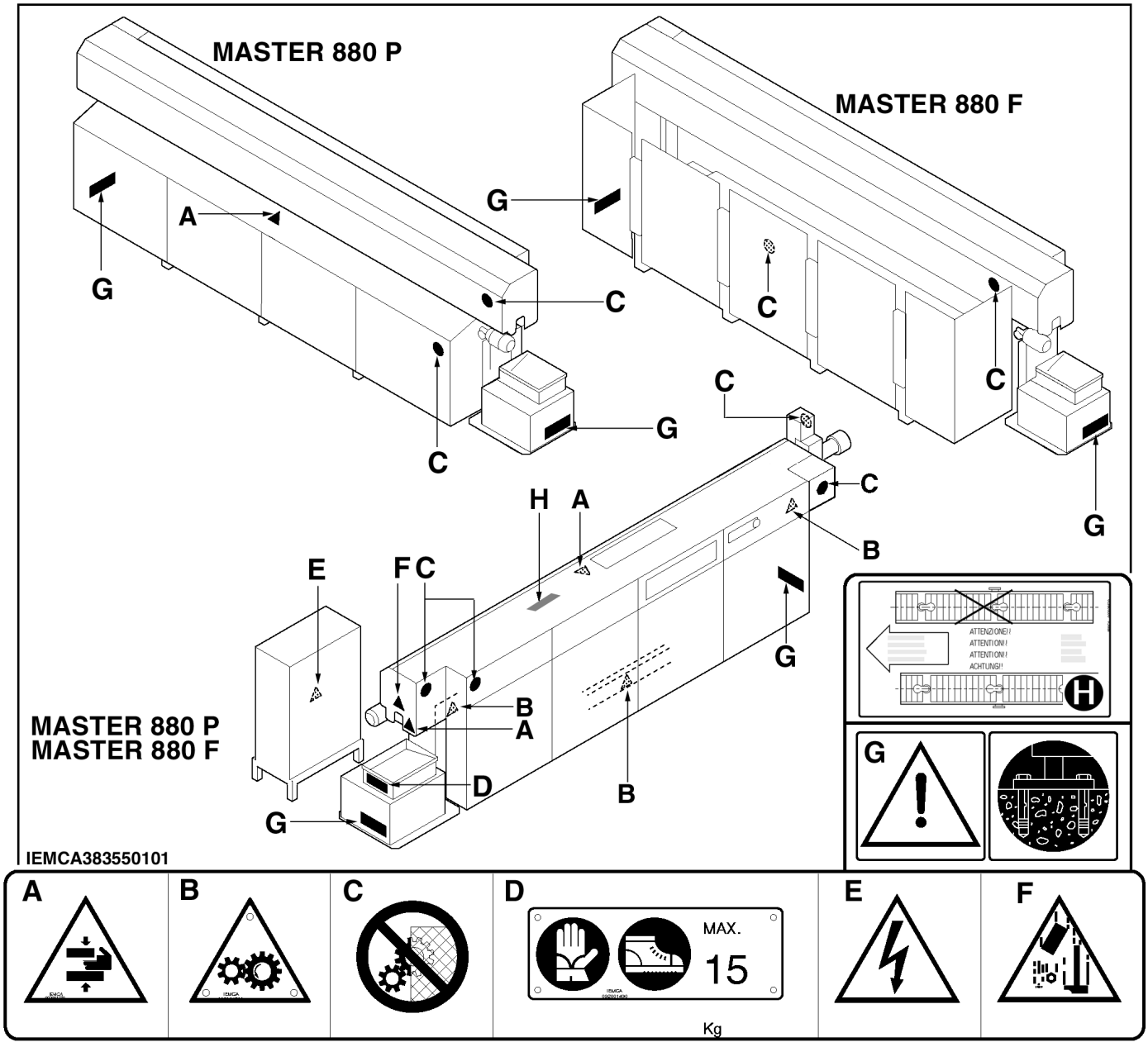
2.3.3 Bundle magazine MASTER 880 F - Safety devices



A MOVABLE LOCKED GUARD; it is connected to microswitch A1.Once the guard has been removed, the functions of the bar feeder and of the lathe are blocked. If the guard is positioned again, the user can start the cycle once again.

B FIXED GUARDS; Avoid to unintentionally reach the bar magazine area.

2.4 SAFETY PLATES - POSITION AND DESCRIPTION



A Danger of upper limb crushing.
B Caution! Moving parts.
C Do not remove the safety barriers.
D Wear safety gloves and shoes.
Do not lift loads exceeding 15 kg manually.
E Caution! Danger of electric contact.
F Warning; danger of falling material.
G Warning: fix the bar feeder to the ground.
H Warning; respect the correct guide channel assembly direction.

2.5 DESCRIPTION OF THE VERSIONS

Table 1. Bar length

Model	Version	MAX Length mm (ft) - A	MIN Length mm (ft) - B
MASTER 880 P	33	3300 (10,8)	2000 (6,5)
	38	3800 (12,4)	2500 (8,2)
	43	4300 (14,1)	3000 (9,8)
MASTER 880 F (*)	33	3300 (10,8)	2500 (8,2)
	38	3800 (12,4)	3000 (9,8)
	43	4300 (14,1)	3500 (11,5)

(*)Bars are to be loaded in the middle of the bundle magazine.

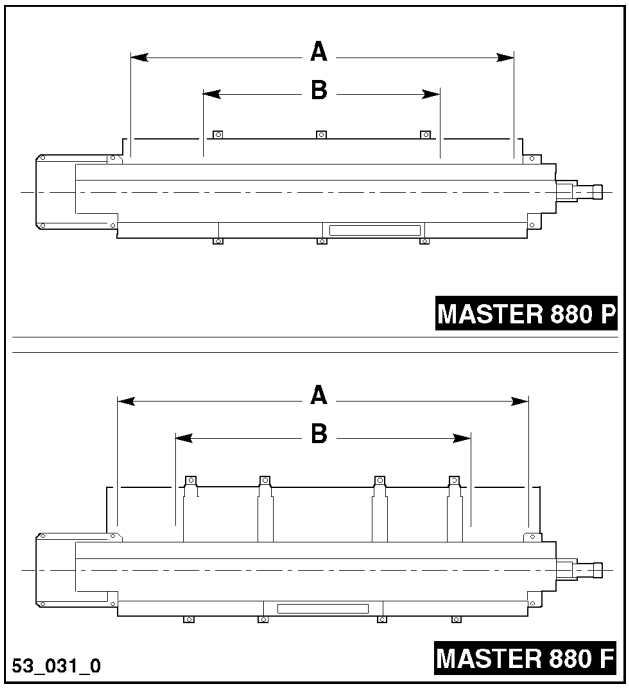
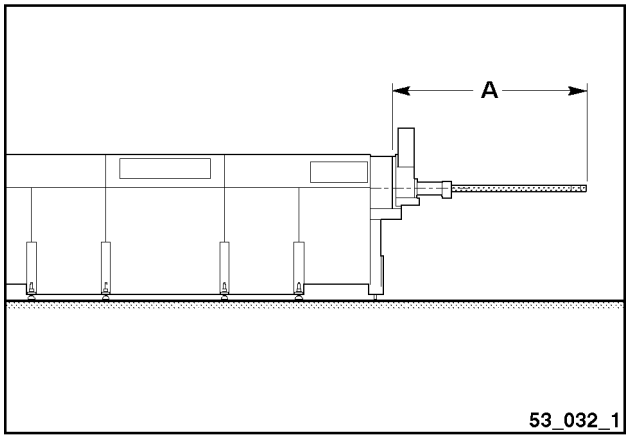


Table 2. Bar pusher max. extension

Model	Version	Version	A - Max. extension (mm)
MASTER 880 P MASTER 880 F	33-38-43	N	1100
		L	1350
		LL	1600
	38-43	XLL	1850
		XLL (*)	2100

(*) Version available on request



2.6 TECHNICAL DATA

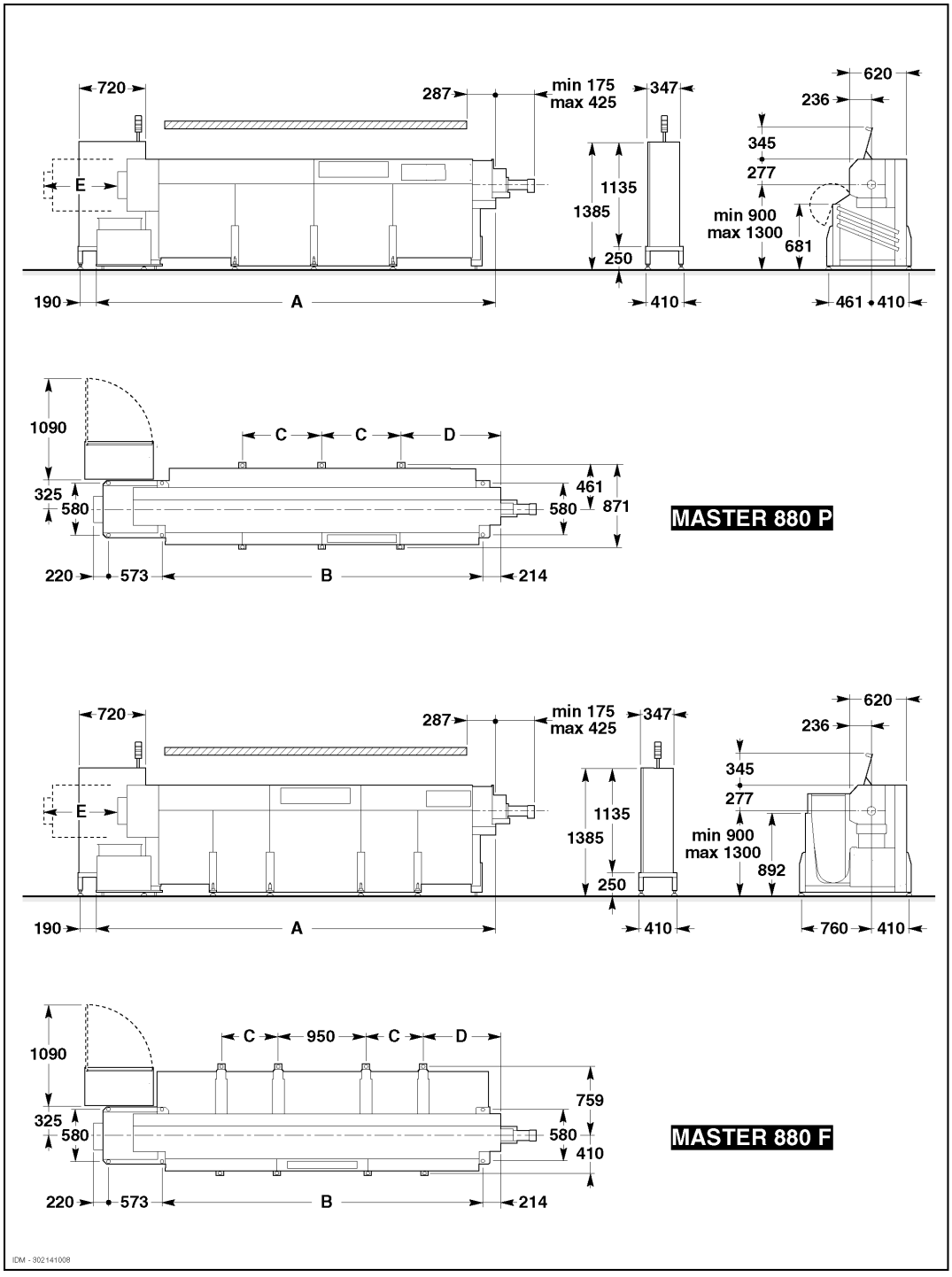


Table 3. Overall dimensions

Model	Version	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)
MASTER 880 P	33	4330	3470	860	1093	800
	38	4830	3970	1110		800
	43	5330	4470	1360		800
MASTER 880 F	33	4330	3470	617	860	600
	38	4830	3970		1110	800
	43	5330	4470	867		800

Table 4. General technical specifications

	MASTER 880 P		MASTER 880 F	
Round bar diameter	Ø min 8 mm (5/16")	Ø max 80 mm (3")	Ø min 8 mm (5/16")	Ø max 80 mm (3")
Hexagonal bar height (key socket)	min 7 mm (5/16")	max 65 mm (2" 1/4)	min 7 mm (5/16")	Ø max 65 mm (2" 1/4)
Square bar side	min 7 mm (5/16")	max 50 mm (2")	min 7 mm (5/16")	max 50 mm (2")
Max bar length	Ver. 33 – 3300 mm (10,8 ft) Ver. 38 – 3800 mm (12,4 ft) Ver. 43 – 4300 mm (14,1 ft)		Ver. 33 – 3300 mm (10,8 ft) Ver. 38 – 3800 mm (12,4 ft) Ver. 43 – 4300 mm (14,1 ft)	
Magazine capacity	Ø8÷45 mm = 1800 mm working width (ex: 180 bars of ø 10 mm) --- Ø46-80 mm = 1200 mm working width (ex: 14 bars of ø 80 mm)		~ 2500 Kg	
Max bar weight	120 kg		120 kg	
Remnant max. length (regolabile)	150 mm/sec		100 mm/sec	
Bar change-over time (regolabile)	950 mm/sec		950 mm/sec	
Remnant max. length	ø 8÷65 mm = 400 mm ø 66÷80 mm = 250 mm		ø 8÷65 mm = 400 mm ø 66÷80 mm = 250 mm	
Bar change-over time (with 3000 mm bar)	40 sec (varying according to the bar diameter)		40 sec (varying according to the bar diameter)	
Input voltage	380 Volt		380 Volt	
Mains frequency	50 Hz		50 Hz	
Control voltage	24 Volt A.C. - 24 Volt D.C.		24 Volt A.C. - 24 Volt D.C. – 220 Volt A.C.	
Installed power	3 kW		4 kW	
Oil quantity	80 l		80 l	
Air pressure	6 bar		6 bar	
Bar feeder weight	ver. 33 - 1500 kg ver. 38 - 1600 kg ver. 43 - 1700 kg		ver. 33 - 2000 kg ver. 38 - 2200 kg ver. 43 - 2400 kg	

Cubicle weight	140 kg	140 kg

Model	Screws position	X (mm) High bedframe	X (mm) Low bedframe
MASTER 880 P MASTER 880 F	**2**	1235÷1269	920÷954
	3	1270÷1304	955÷989
	4	1305÷1339	990÷1024
	5	1340÷1374	1025÷1059
	6	1375÷1409	1060÷1094
	7	1410÷1444	1095÷1129
	8	1445÷1479	1130÷1164
	9	1480÷1514	1165÷1199
	10	1515÷1548	1200÷1234

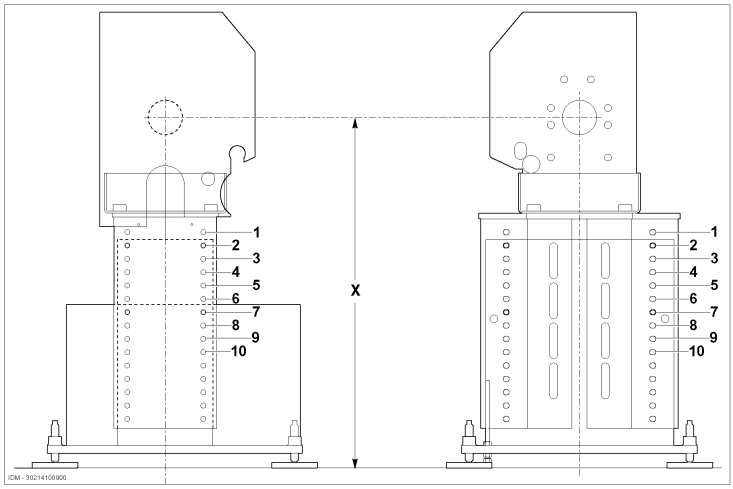


Table 6. Guide channel, bar pusher, bar and tube diameters

Model	Guide channel diameter (mm)	Bar pusher diameter (mm)	Bar diameter		Tube diameter (mm) (*)
			Minimum	Maximum	
MASTER 880 P MASTER 880 F	21	20	8	18	20
	26	25	8	23	25
	33 (**)	32	10	29	31
	36	35	10	32	35
	38	37	11	35	37
	43	42	12	39	42
	46	45	15	42	45
	52	51	18	47	51
	57	56	22	52	56
	61 (**)	60	30	56	60
	66	65	38	61	65
	69	68	48	63	68
	71	70	48	65	70
	73	72	50	67	72
	76	75	50	70	75
	81	80	52	75	80
	86 (**)	85	55	80	80

(*) Valid also for prepared bars or normal bars machined with front remnant ejection.
(**) Recommended guide according to max lathe bar passage.
Example: ø85 max bar passage - GUIDES 86-61-33.
Example: ø80 max bar passage - GUIDES 81-61-33.
Example: ø75 max bar passage - GUIDES 76-61-33.

Table 7. Guides lubricating oils.

Model ISO and UNI	Make	Name
CLASSE C CKB 150	Agip	Acer 150
	Api	Api Cis 150
	BP	Energol CS 150
	Castrol	Magna 150
	Chevron	Circulating Oil 150
	Elf	Movixa 150
	Esso	Nuto 150
	Fina	Solna 150
	IP	IP Hermea 150
	Klüber	Crucolan 150
	Olio FIAT	Daphne LPN 150
	Roloil	Arm V 150
	Shell	Vitrea 150 Tellus C 150
	Tamoil	Industrial Oil 150
	Texaco	Omnis 150
	Total	Cortis 150 Azolla ZS 150
	Aral	Aral Degol Tu 150

Oil quantity: 80 l.

2.6.1 Noise levels

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

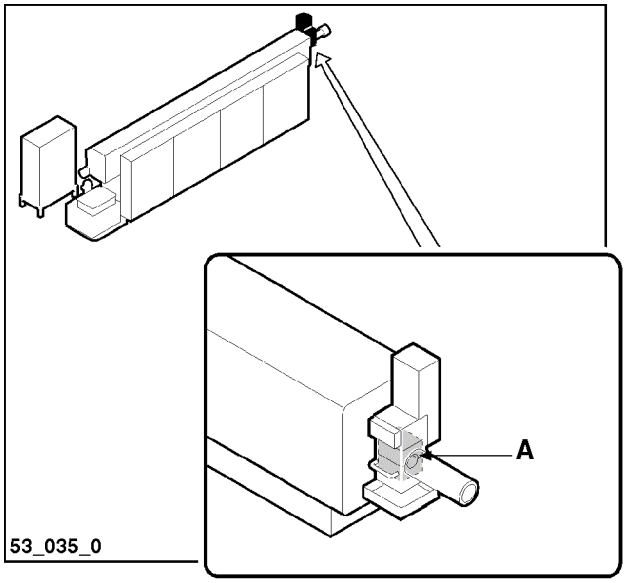
- perfect alignment and levelling of the lathe-bar feeder unit;
- proper fastening to the floor both of lathe and bar feeder;
- suitable bar gripping device fitted on lathe;
- dimensions of guide channel and bar-pusher suited to the bar stock;
- front guide bush of suitable diameter (if supplied);
- bar with a straightness within prescribed limits (max. arrows equal to 0.5 ‰m of the bar length);
- spindle liner having the same diameter as the bar feeder guide channel diameter;
- spindle rotation speed suitable for the material to be machined;
- as to the bar feeder, use of oil having features suitable for the diameter of the bar to be machined;
- all bar feeder panels must be closed.
  Should the above mentioned conditions be met, the noise level emitted during bar rotation into the guide channel, measured in compliance with the international standards, will be within the following limits:
- brass and steel round bars within 80 dbA
- hexagonal steel bars within 83 dbA
- brass hexagonal bars within 85 dbA

2.7 FITTINGS - FOREWORD

The bar feeder may be provided with the fitting that is described below to increase its performance and versatility.

2.7.1 Bush-holder device - Description

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



OPERATION

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

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3.1 GENERAL SAFETY PRESCRIPTIONS

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

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

3.2 HANDLING AND INSTALLATION - Safety

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

3.3 ADJUSTMENTS AND SETTING UP - Safety

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

3.4 USE AND OPERATION - Safety

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

3.5 BAR FEEDER MAINTENANCE - Safety

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

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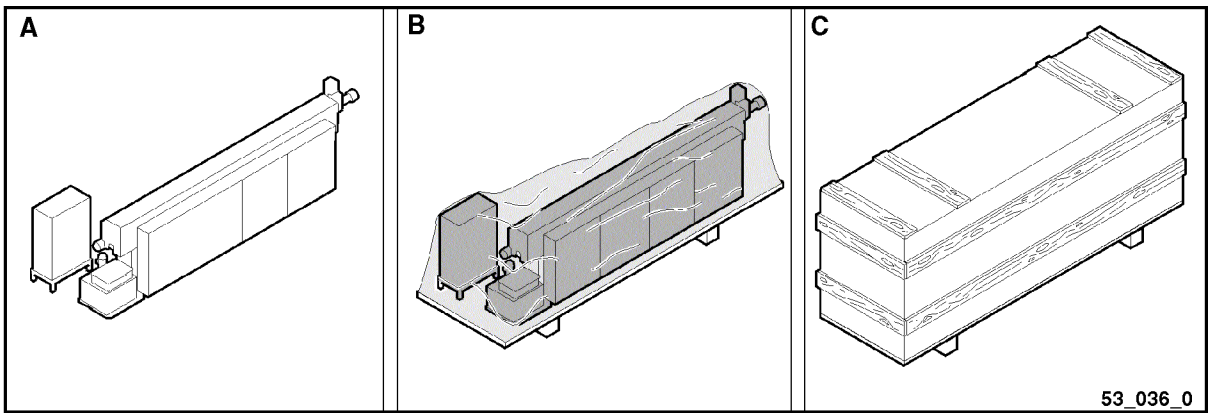
4.1 PACKAGING



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

4.2 LIFTING

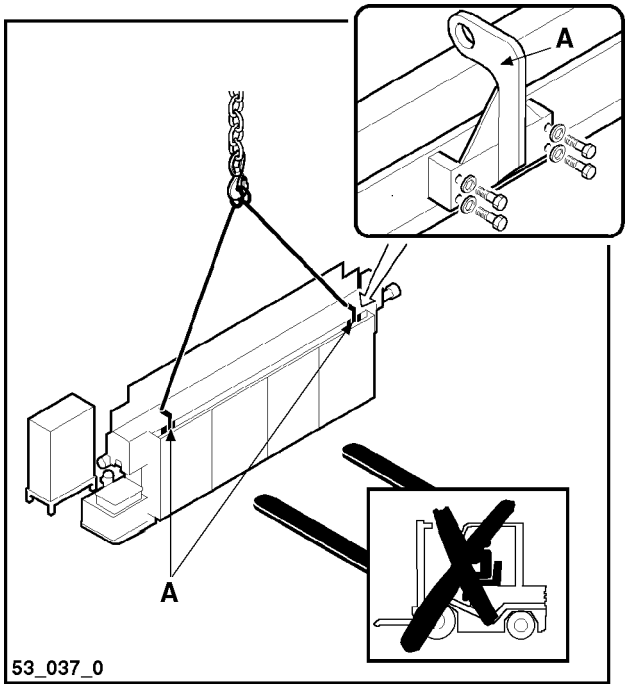
DANGER - WARNING:
e lifting and handling are to be donwith proper means (see weight table, paragraph 2.6.) and by skilled staff, trained for this kind of manoeuvres.

4.2.1 Bar feeder without packaging - Lifting
4.2.2 Bar feeder with pallet - Lifting
4.2.3 Bar feeder with case - Lifting

4.2.1 Bar feeder without packaging - Lifting

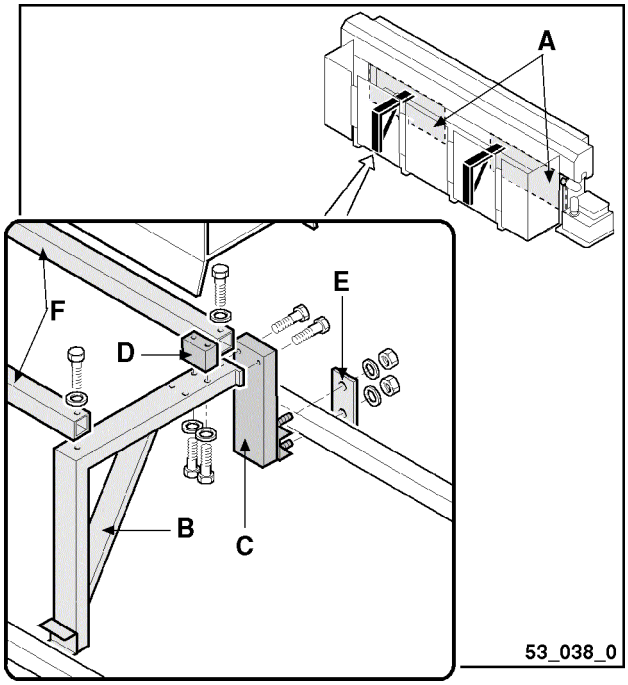
MASTER 880 P

- Fit the two lifting brackets (A).
- Use a hooked lifting device of adequate capacity.

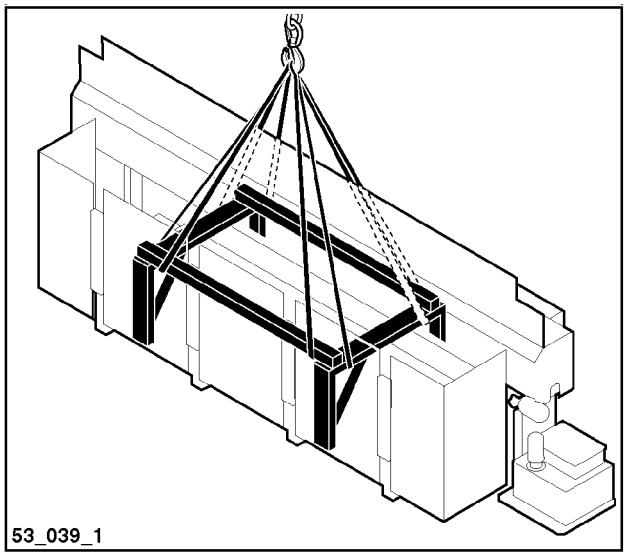


MASTER 880 F

- Remove two rear guards (A).
- Fit both semisupports (B) and (C) through spacer (D), plate (E) and the connecting tubes (F).
- Reassemble the guards previously removed.

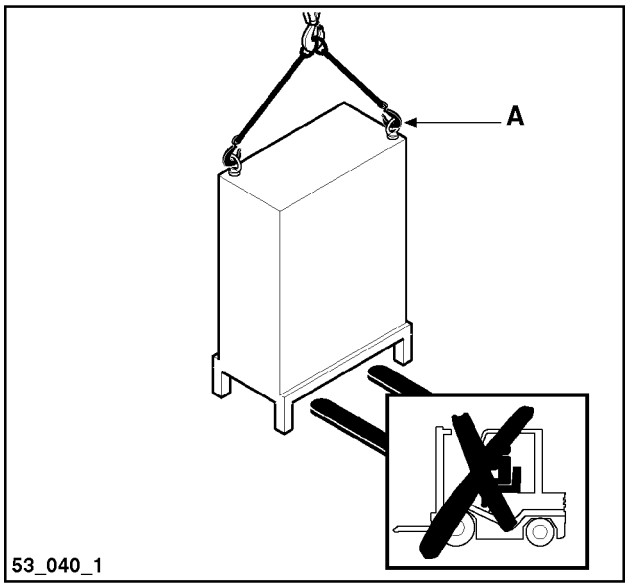


- Use a hook lifting device of adequate capacity load.



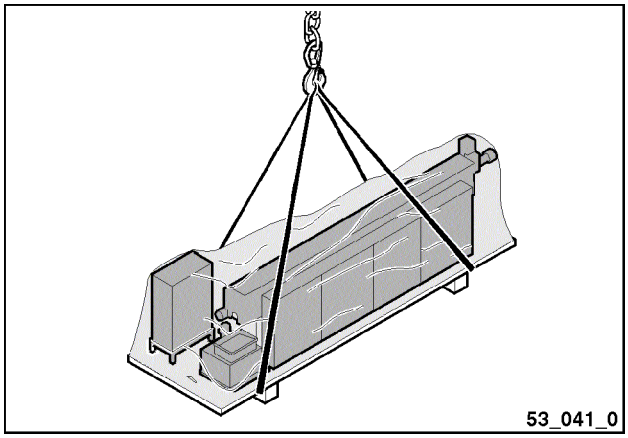
ELECTRIC CABINET

- Install two (A) eyebolt with threaded stem (1 UNI - ISO3266 M10 Type).
- Use a hooked lifting device of adequate capacity.



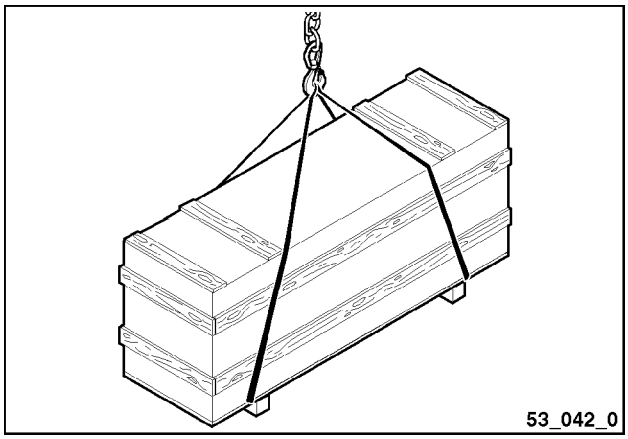
4.2.2 Bar feeder with pallet - Lifting

Use a hook lifting device of adequate capacity load.

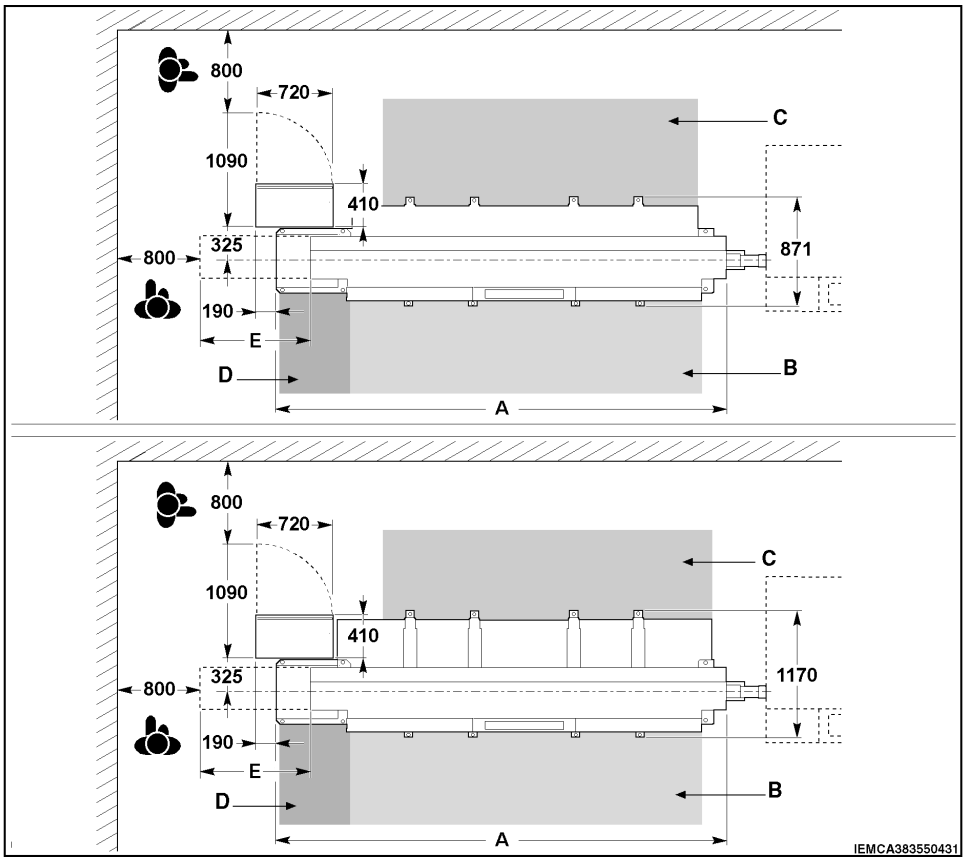


4.2.3 Bar feeder with case - Lifting

Use a hook lifting device of adequate capacity load.



4.3 INSTALLATION AREA - CHARACTERISTICS



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

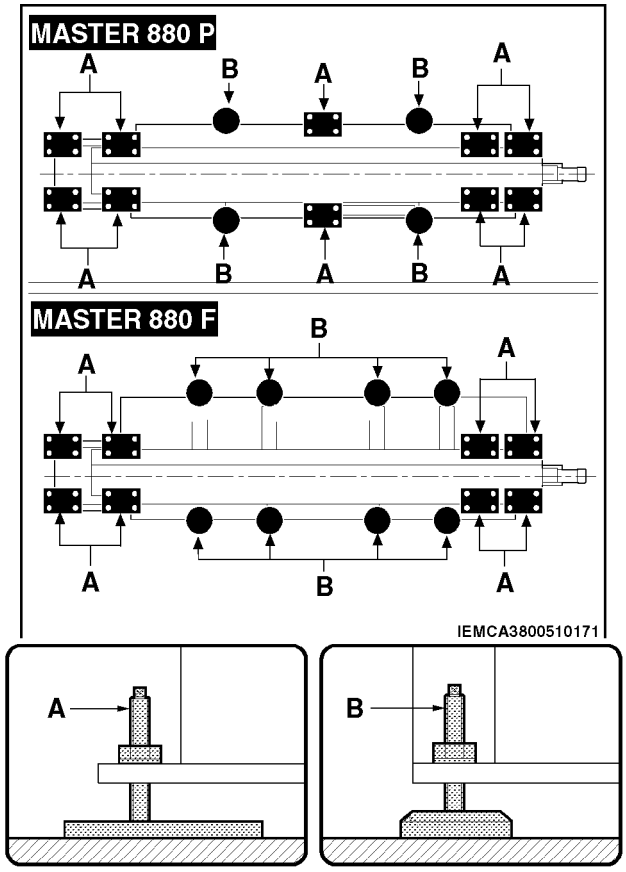
Model	Version	A (mm)	E (mm)
MASTER 880 P	33	4330	800
	38	4830	800
	43	5330	800
MASTER 880 F	33	4330	600
	38	4830	800
	43	5330	800

4.4 INSTALLATION OF THE BAR FEEDER - INTRODUCTION

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

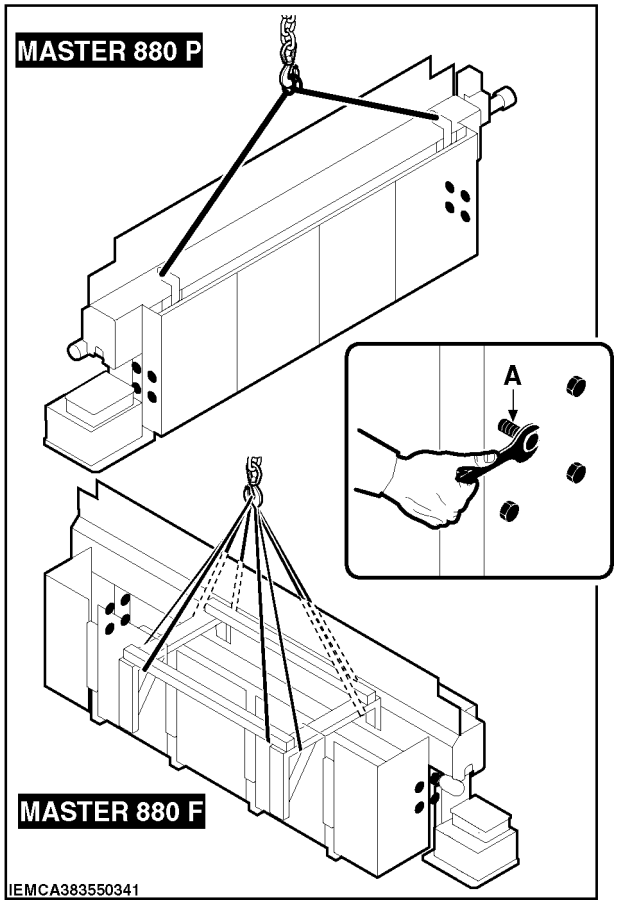
4.4.1 Support plates and feet - Installation

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

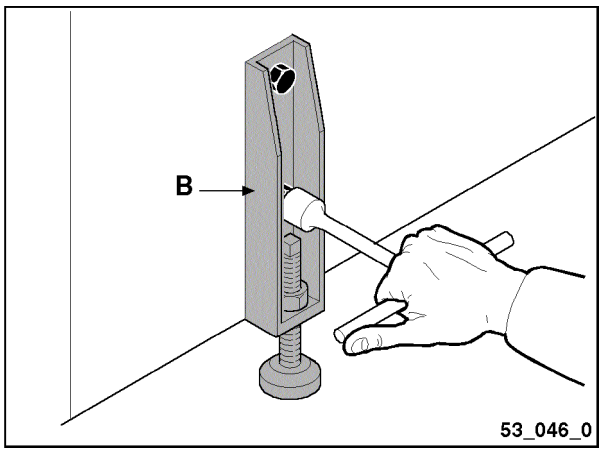


4.4.2 Height - Adjustment

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

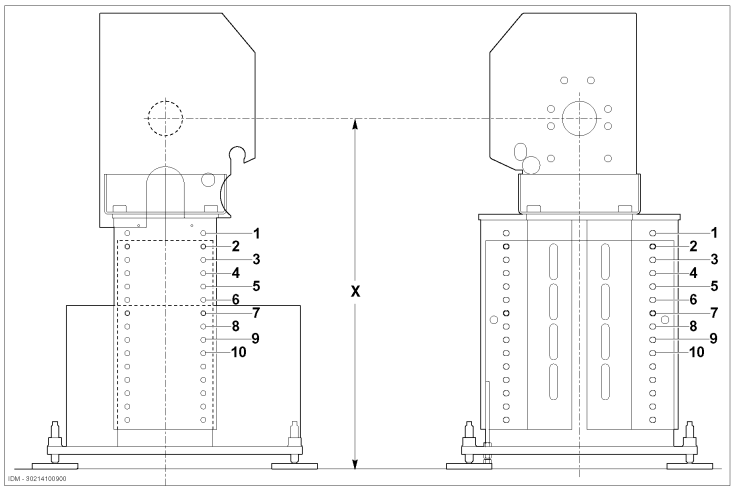


- stretch the lifting chains and remove screws (A) in the front and rear bases;
- remove all the brackets (B) of the magazine feet.

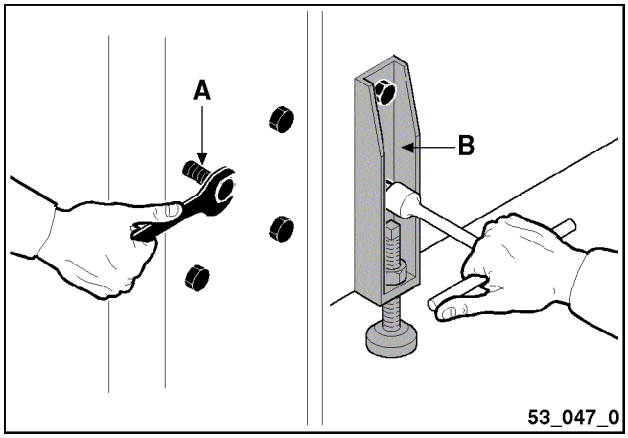


- lift or lower the bar feeder according to necessary value X, see table.

Model	Screws position	X (mm) High bedframe	X (mm) Low bedframe
MASTER 880 P MASTER 880 F	**2**	1235÷1269	920÷954
	3	1270÷1304	955÷989
	4	1305÷1339	990÷1024
	5	1340÷1374	1025÷1059
	6	1375÷1409	1060÷1094
	7	1410÷1444	1095÷1129
	8	1445÷1479	1130÷1164
	9	1480÷1514	1165÷1199
	10	1515÷1548	1200÷1234



- screw in the screws (A) and fit brackets (B) again.



4.4.3 Preliminary positioning

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

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

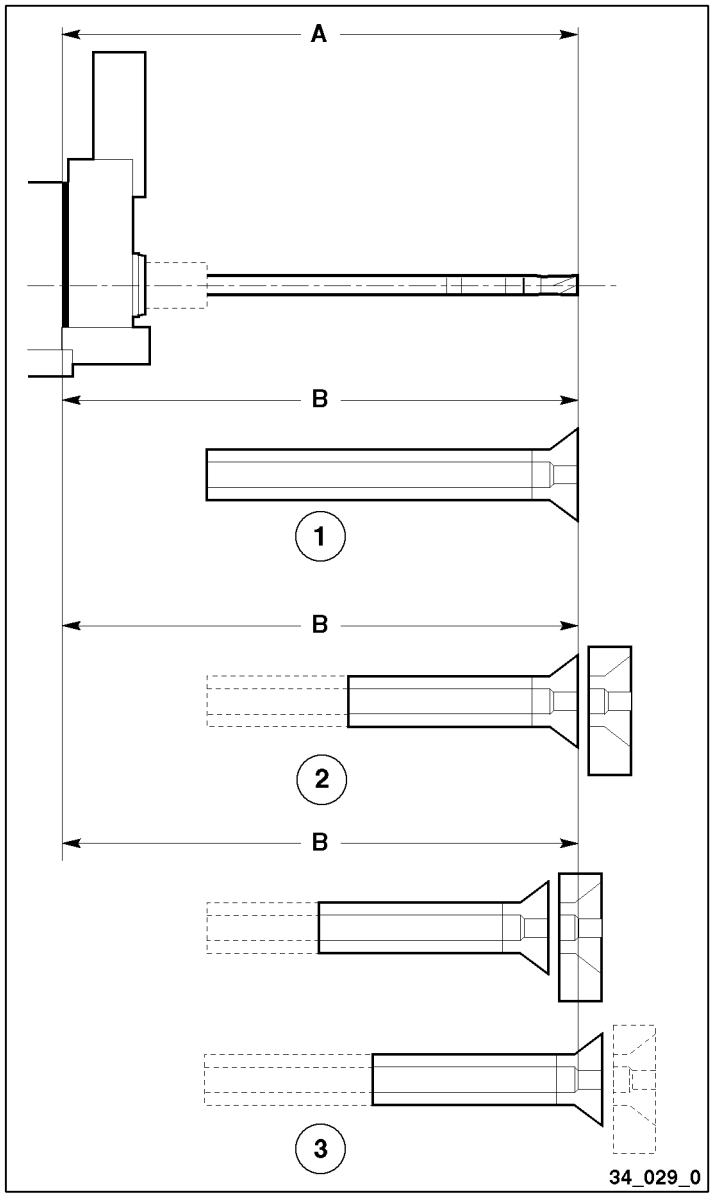
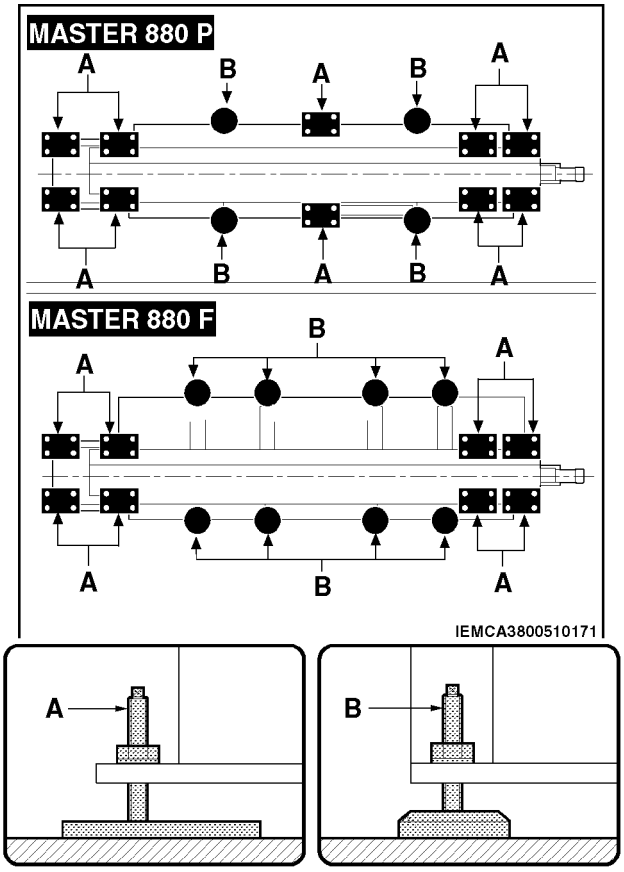


Table 3. Max. bar-pusher extension

Model	Version	Version	A - Max. extension (mm)
MASTER 880 P MASTER 880 F	33-38-43	N	1100
		L	1350
		LL	1600
	38-43	XLL	1850
		XLL (*)	2100

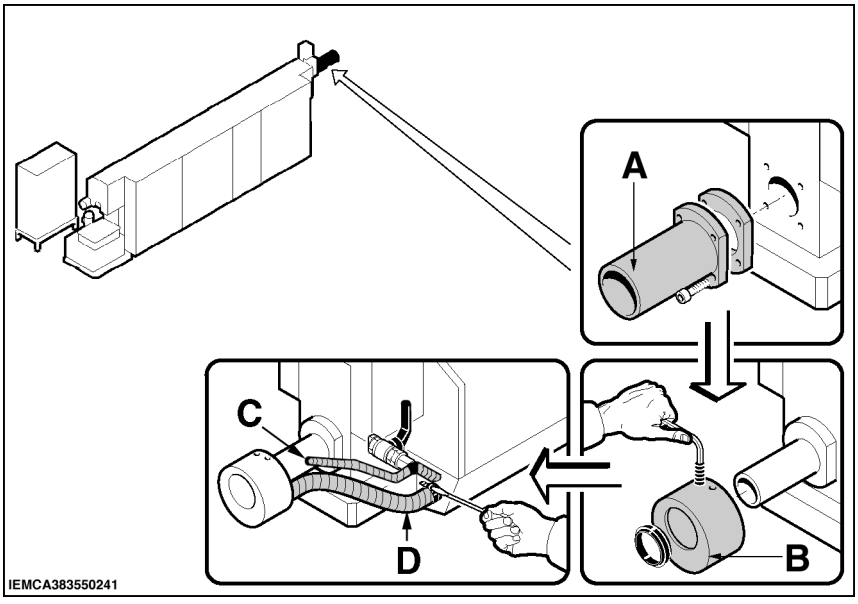
(*)Version available on request

- Roughly adjust the working axis height to obtain alignment with the lathe by turning the feet (A) and (B) screws.



4.4.4 Sleeve - Installation

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



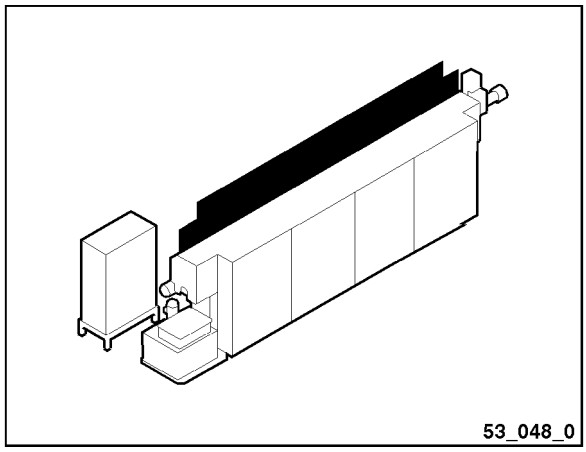
4.4.5 Levelling and alignment

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

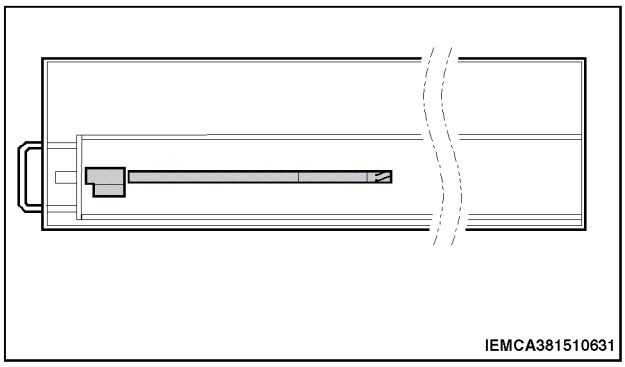
CAUTION:
bad alignment can be the main cause of feeder malfunction and resulting damage.

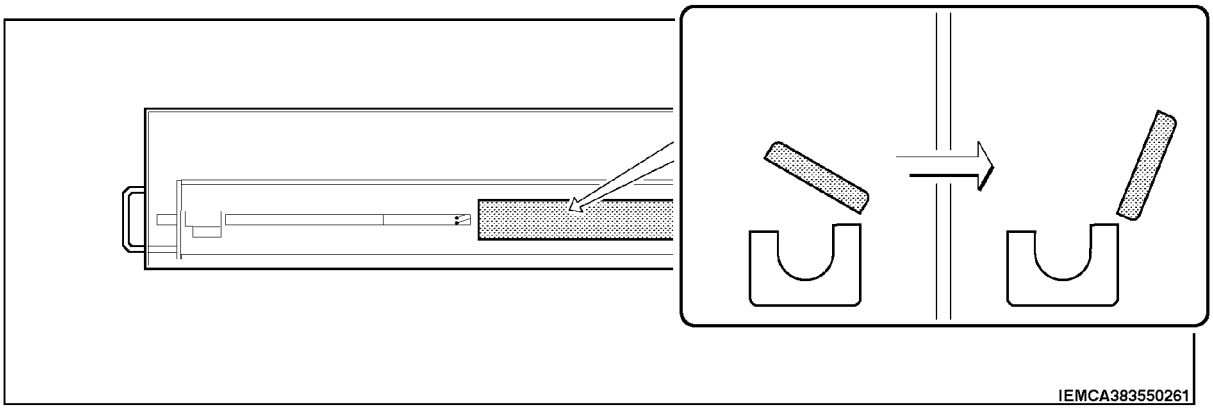
PRELIMINARY PROCEDURE

- Open the upper guard.



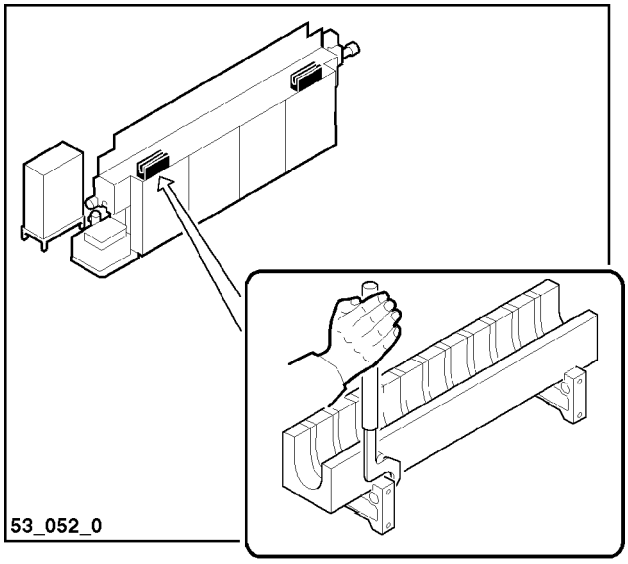
- To bring the bar pusher to its fully retracted position, select manual mode and press key << or <<< on the keypad.





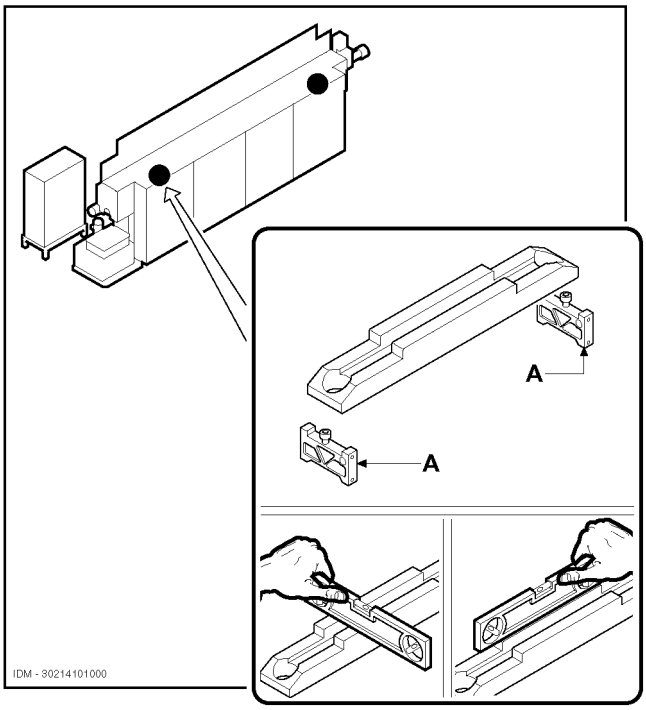
- Press both keys SEMI AUT. and AUT. to select semi-automatic operating function. Press repeatedly STEP by STEP until the guide channels are open and the message "GUIDE CHANNELS COMPLETELY OPEN" is displayed.

- Remove the first and last lower guide channel by using the special wrench provided for the purpose.

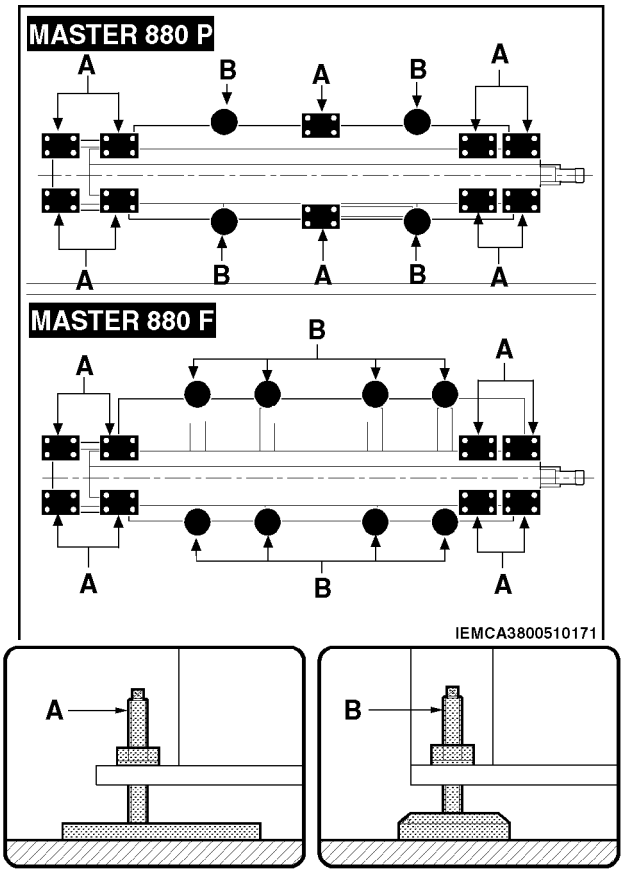


LEVELLING

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



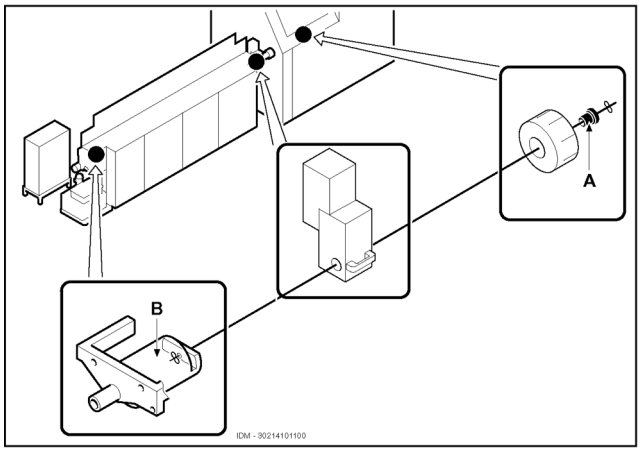
- Carry out the required connections by turning the feet (A) and (B) screws.



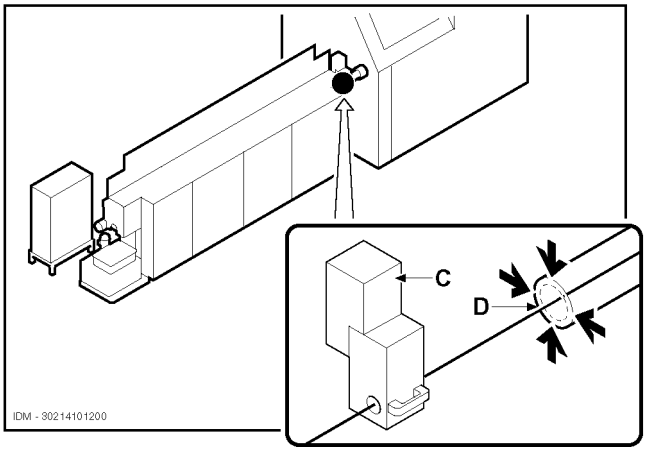
ALIGNMENT

Alignment is obtained by interposing a nylon yarn (ø 1 mm) between the lathe collet and the first feeding carriage, by proceeding as follows:

- place a pierced bushing (A) in the lathe collet;
- stretch the yarn between the bushing and the hole in the 1st feeding carriage (B).

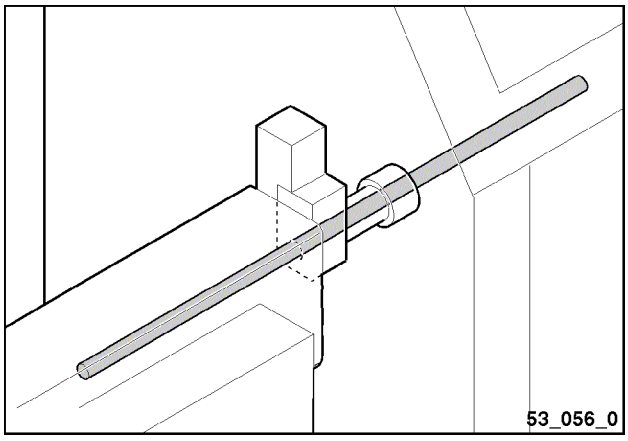


- use a sliding calliper to check alignment near the busching (C) and the spindle (D); adopt a tolerance of 0.15 mm in all four directions.



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

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

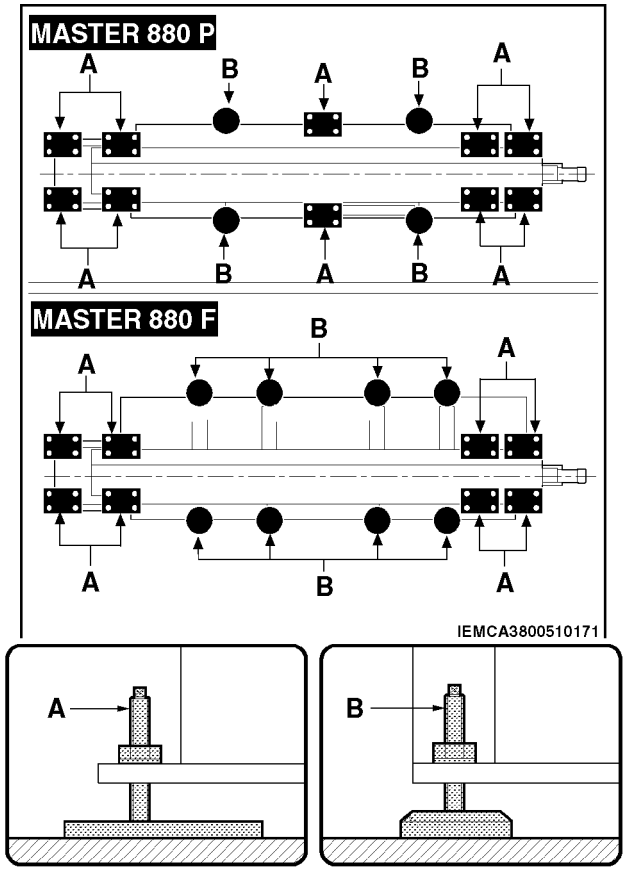


POSITIONING ADJUSTMENTS

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

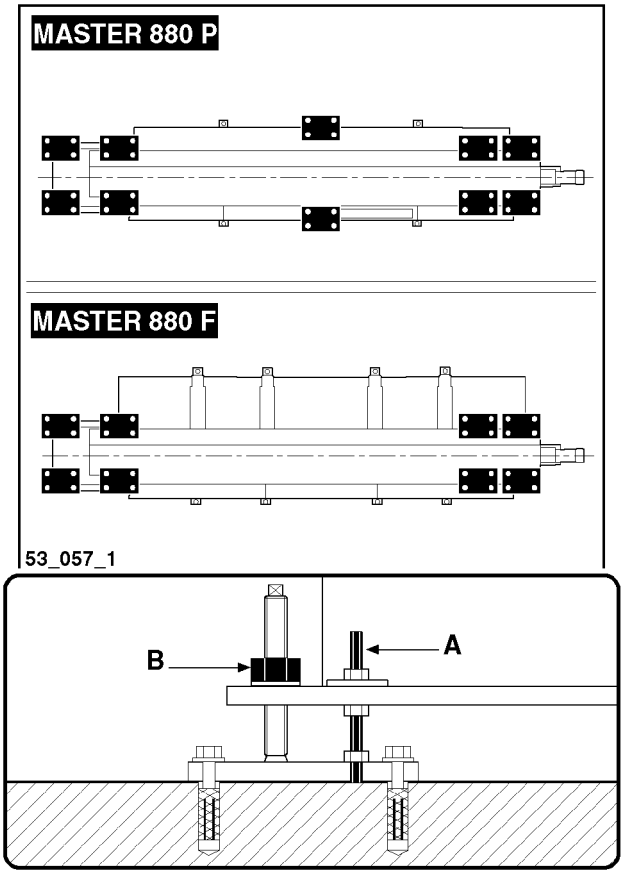
Adjust height by turning the (A) and (B) screws in the support feet; carry out lateral adjustment with calibrated mallet blows on the sides of plates (C).

During this phase, any adjustment carried out during levelling should be preserved; therefore, in most cases, feeder positioning will be the result of a good adjustment compromise.



4.4.6 Feeder fastening

- Drill the floor and fix the backing plates with expansion plugs. Drill the floor and fix the backing plates with the expansion plugs. Use the highest possible number of plugs in order to guarantee good fixing.
- Fix the feeder to the plates through the tie-rods A and lock with nuts B.
- Perform another levelling and alignment check.
- Remove all the equipment used for levelling and alignment and restore initial feeder conditions.

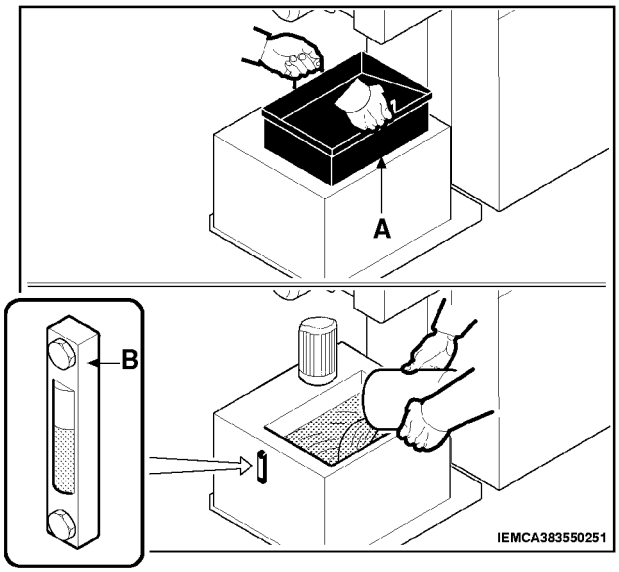


4.5 LUBRICATING OIL - FILLING

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

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

Oil characteristics: Class C - CKB 150, amount 80 l.
See paragraph 2.6. for the comparative table.



4.6 ELECTRIC CONNECTION

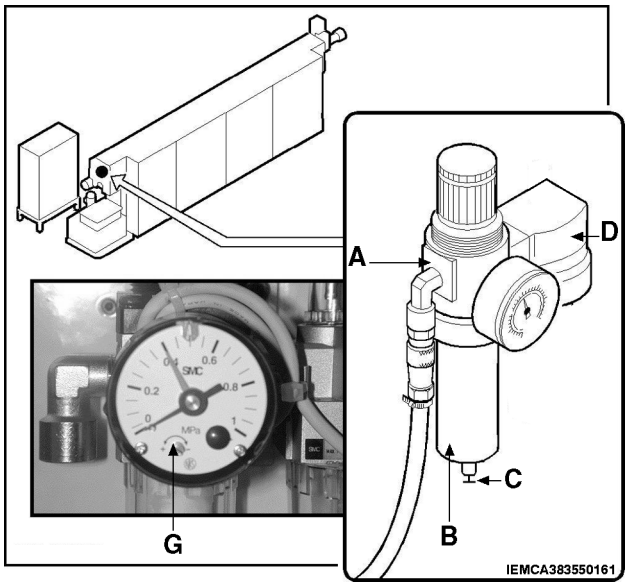
DANGER - WARNING:
this type of operation should only be entrusted to skilled technical staff to comply with the applicable standards and statutory regulations in force.

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

The feeder is normally provided with a multiple plug to plug into the special lathe outlet; refer to the "Wiring diagram" if necessary.

4.7 PNEUMATIC CONNECTION

- Connect the H pneumatic system pipe as shown in the picture. Adjust pressure to 6 bar by turning the adjustment screw.



4.8 SOFTWARE PARAMETRING

There should be an adequate parametring of the bar feeder software according to the working needs and to the type of lathe.
For information on this operation, refer to the "Keyboardf panel instruction manual".

INDEX

5.1 INTRODUCTION TO ADJUSTEMENTS AND SET-UP - FOREWORD

DANGER - WARNING:
do not adjust while the bar feeder is running, unless it is explicitly stated in the manual.

This bar feeder also requires - besides the ordinary adjustments necessary during its life - setting ups depending on the bar dimensions and the type of bar magazine.
Such interventions are listed and explained as follows.

5.2. General adjustments
5.3. Bar feeder setting up
5.4. Rack magazine setting up - MASTER 880 P
5.5. Bundle magazine setting up - MASTER 880 F

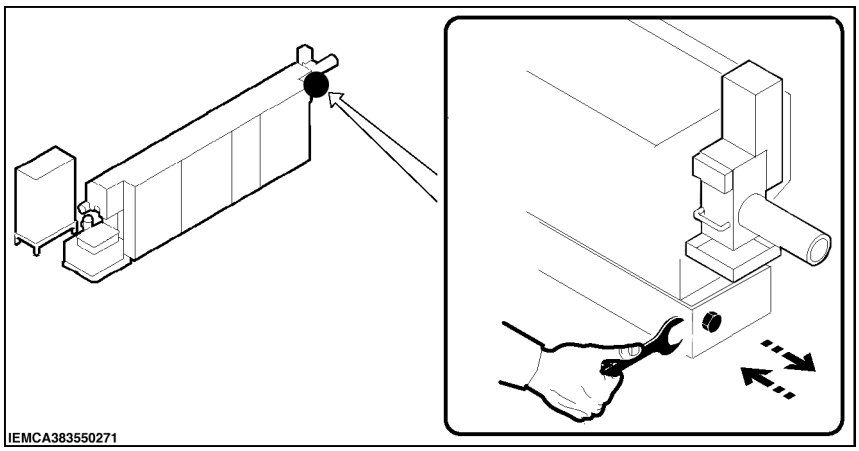
5.2 GENERAL ADJUSTMENTS - FOREWORD

All adjustments necessary for the bar feeder good operation are meant. They can be necessary for maintenance and as a cure to a trouble, or they can be required after a component replacement.

5.2.1 Feed chain - Adjustment
5.2.2 Remnant conveyor - Adjustment
5.2.3 Lift truck chains - Adjustment
5.2.4 Conveying belts MASTER 880 F - Adjustment
5.2.5 Conveying belt motorisation chain MASTER 880 F - Adjustment
5.2.6 Lift truck motorisation chain MASTER 880 F - Adjustment
5.2.7 Control cams of lifting belts MASTER 880 F - Adjustment

5.2.1 Feeding chain - Adjustment

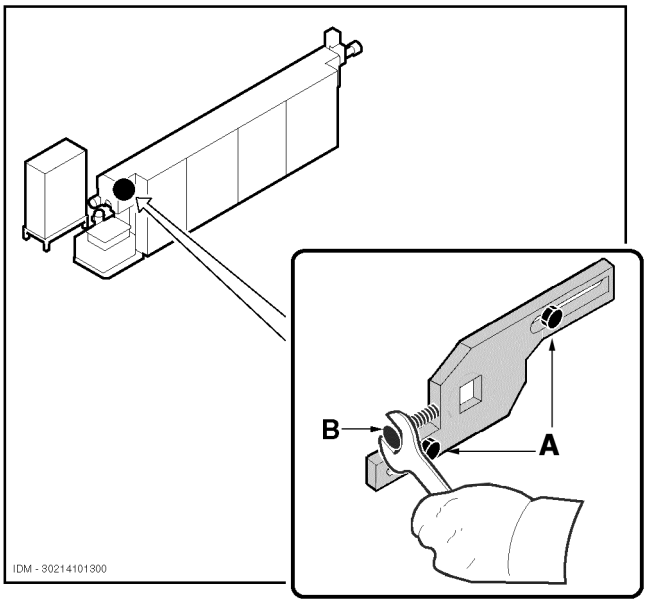
- Turn the screw counter-clockwise to move the feeder body backwards.



CAUTION:

open the top cover before starting this operation.

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



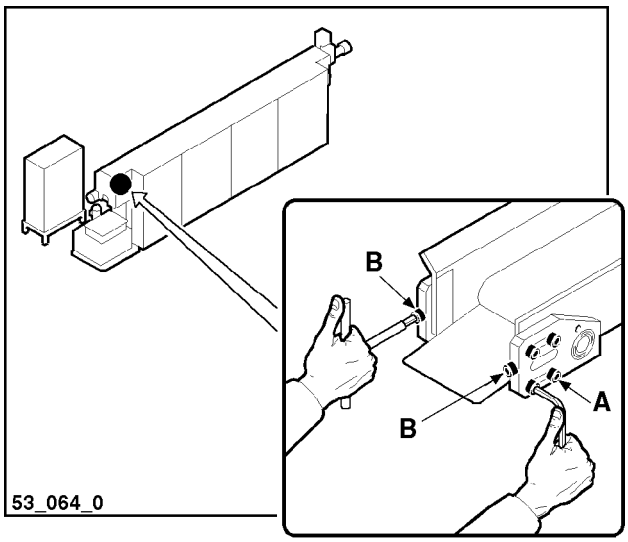
WARNING

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

5.2.2 Remnant conveyor - Adjustment

INFORMATION:

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



- Control the bar feeder body backward displacement, see paragraph 5.2.1.
- Loosen the eight screws (A).
- Adjust the conveyor tension through screws (B).

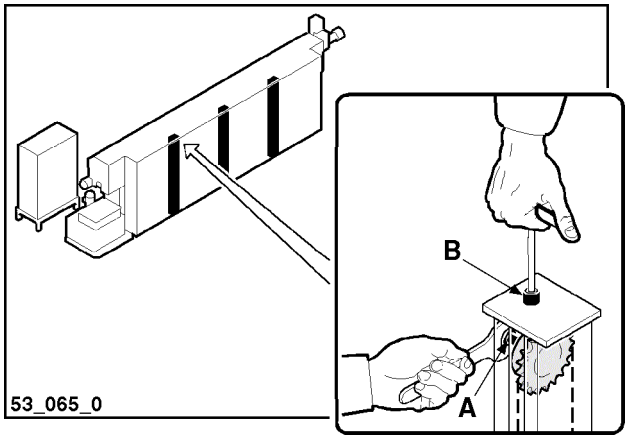
INFORMATION:

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

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

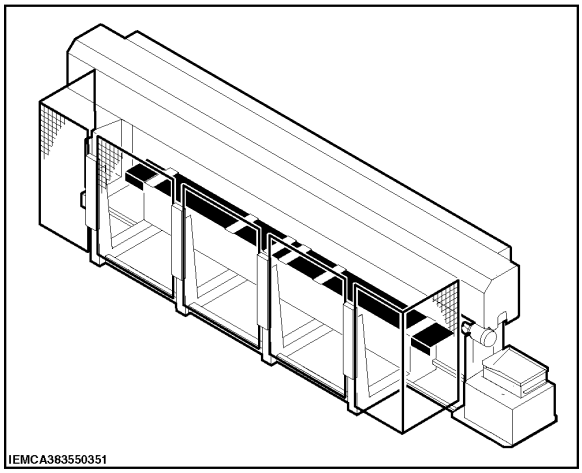
5.2.3 Lift truck chains - Adjustment

- Loosen screw (A).
- Act on screw (B) to adjust the chain tension.
- Tighten screw (A9.
- Repeat in all lift trucks, if needed.

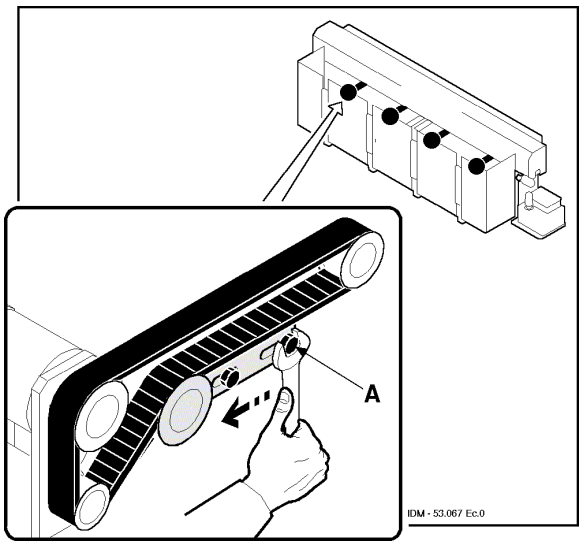


5.2.4 Conveying belts MASTER 880 F - Adjustment

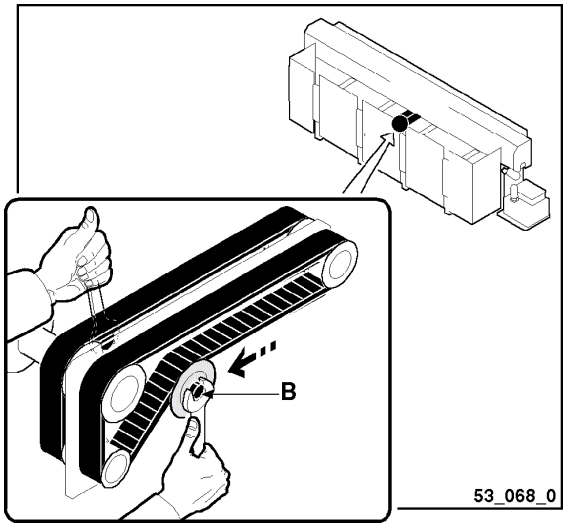
- Remove the magazine racks.



For side belts:
- loosen screws (A);
- move pulleys in the direction of the arrow and tighten screws (A).

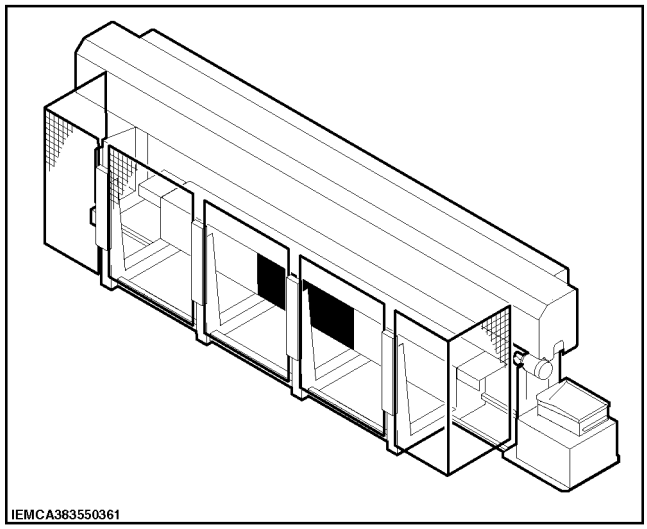


For central belts:
- loosen nut (B);
- move pulleys in the direction of the arrow and tighten screws (B).
- Reassemble the racks previously removed.

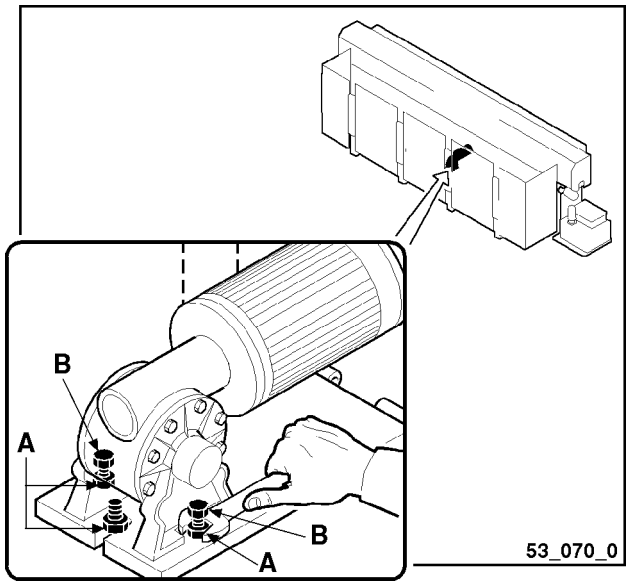


5.2.5 Conveying belt motorisation chain MASTER 880 F - Adjustment

- Remove front guard.

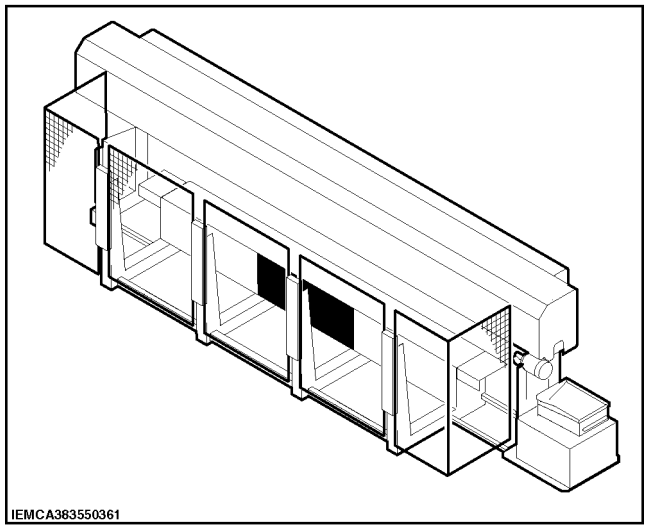


- Loosen nuts (A).
- Unscrew screws (B) in the same way as nuts (A) have been loosened; tighten the latter.
- Reassemble the guard previously removed.

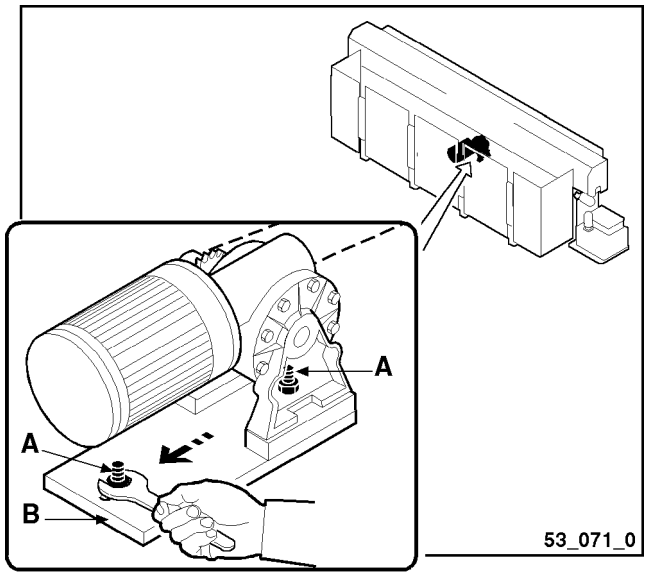


5.2.6 Lift truck motorisation chain MASTER 880 F - Adjustment

- Remove front guard.



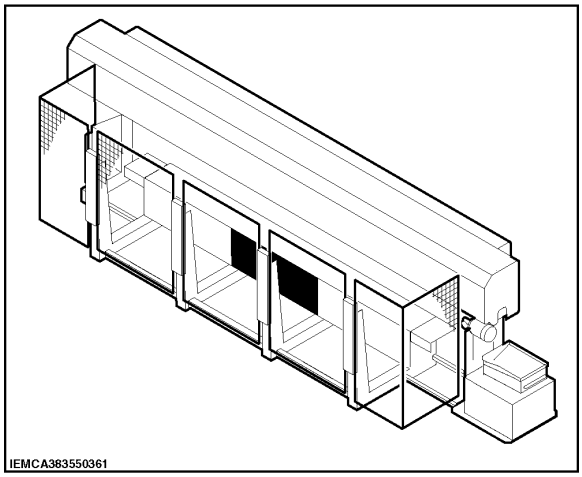
- Loosen nuts (A).
- Move plate (B) in the direction of the arrow and tighten nuts (A).
- Reassemble the guard previously removed.



5.2.7 Control cams of lifting belts MASTER 880 F - Adjustment

At the bar end, lifting belts have to be completely stretched to allow all bars to be unloaded. While using, belts can slacken; it is therefore necessary to adjust the cams controlling the stop microswitches.
Adjust as follows:

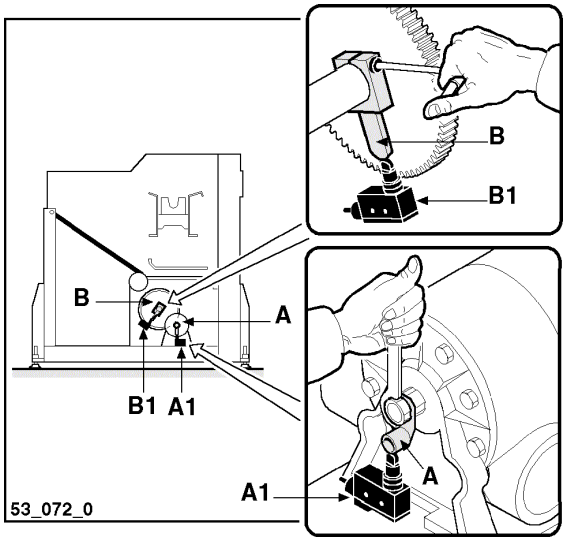
- remove the front guard.



- adjust cams (A) and (B) position so that microswitches A1 and B1 are simultaneously actuated when belts are unwound.

CAUTION:

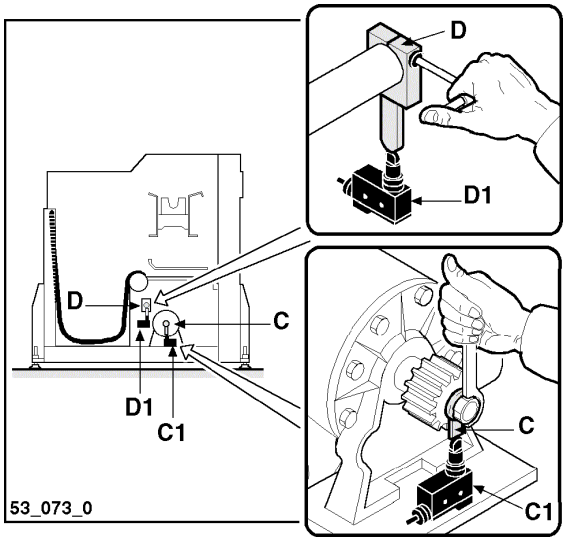
if high belts are too stretched, their supports can bend. If high belts are not stretched enough, not all bars are unloaded.



- Adjust the position of the cams (C) and (D) to make sure that the microswitches C1 and D1 are operated simultaneously when the belts are unwound.

CAUTION:

if the lower belts are excessively unwound, the cycle time of each loading cycle is longer than necessary. If the lower belts are not sufficiently unwound, the bars, instead of resting on the supports, will continue to be supported by the belts, thus submitting them to unnecessary stress.



- Reassemble the guard previously removed.

5.3 BAR FEEDER SETTING UP

Some interventions are necessary, depending on the bar diameter of the previous machining in relation to the diameter of the "new" bar. The table reports the diameters of available guides as well as the range of the bar pushers that can be assembled, and the diameters of the bar to be machined.

Table 1. Guide channel, bar pusher, bar and tube diameters

Model	Guide channel diameter (mm)	Bar pusher diameter (mm)	Bar diameter		Tube diameter (mm) (*)
			Minimum	Maximum	
MASTER 880 P MASTER 880 F	21	20	8	18	20
	26	25	8	23	25
	33 (**)	32	10	29	31
	36	35	10	32	35
	38	37	11	35	37
	43	42	12	39	42
	46	45	15	42	45
	52	51	18	47	51
	57	56	22	52	56
	61 (**)	60	30	56	60
	66	65	38	61	65
	69	68	48	63	68
	71	70	48	65	70
	73	72	50	67	72
	76	75	50	70	75
	81	80	52	75	80
	86 (**)	85	55	80	80

(*) Valid also for prepared bars or normal bars machined with front remnant ejection.
(**) Recommended guide according to max lathe bar passage.
Example: ø85 max bar passage - GUIDES 86-61-33.
Example: ø80 max bar passage - GUIDES 81-61-33.
Example: ø75 max bar passage - GUIDES 76-61-33.

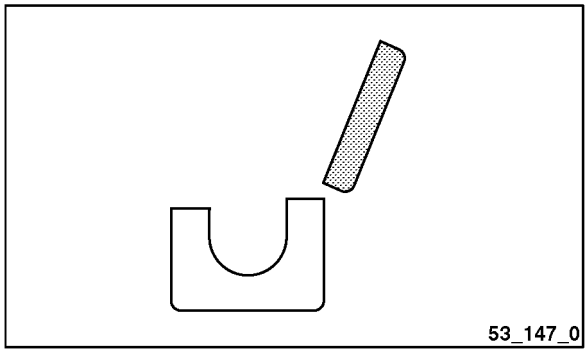
The bar feeder setting ups are listed and explained as follows.

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

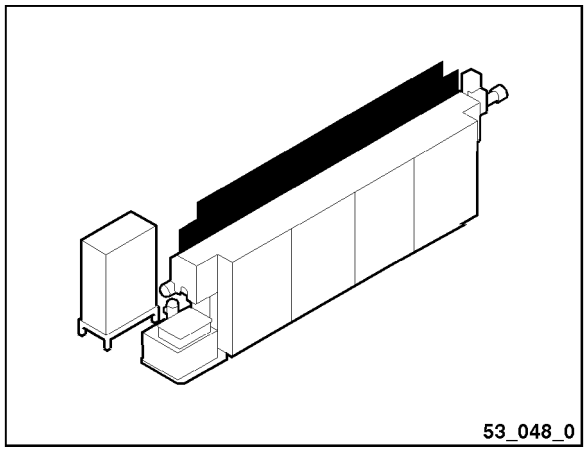
5.3.2 Remnant passage door spring - Adjustment

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

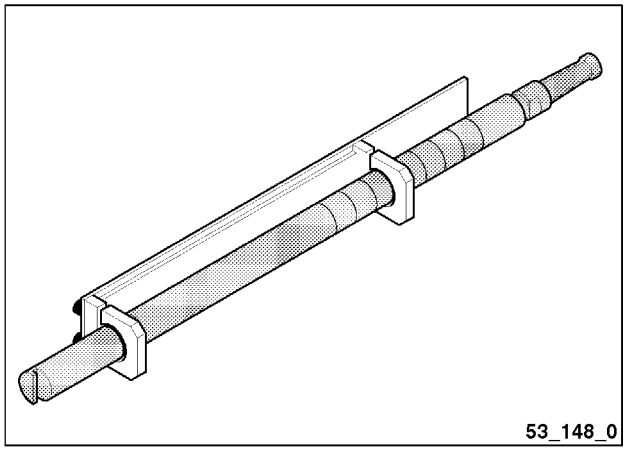
- Push to start the bar feeder.
- Push SEMI AUT. plus AUT. to select the semiautomatic function.
- Press STEP by STEP several times until top guide opening is obtained; the displayed message must be "GUIDE FULL OPENING" .



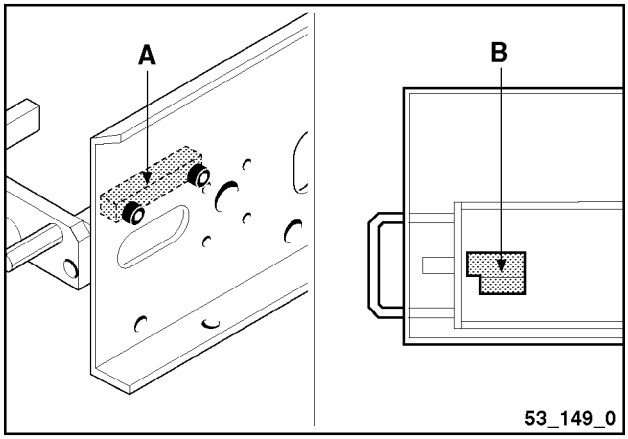
- Press STOP to open the top cover.



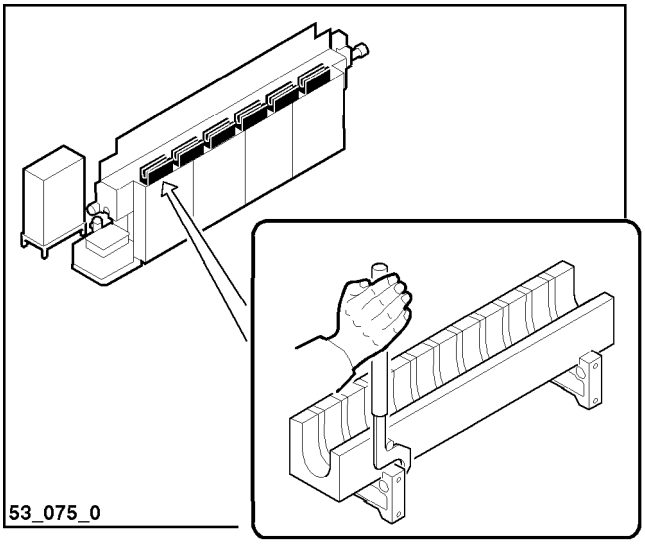
- Remove the bar pusher from the two supports.



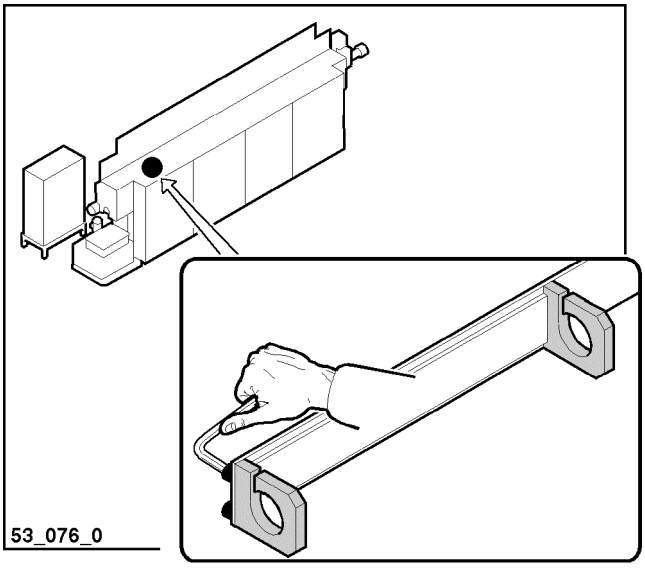
- Remove the block (A) and then, the first feeding carriage (B).



- Remove the lower guide channels by using the special wrench provided for the purpose.

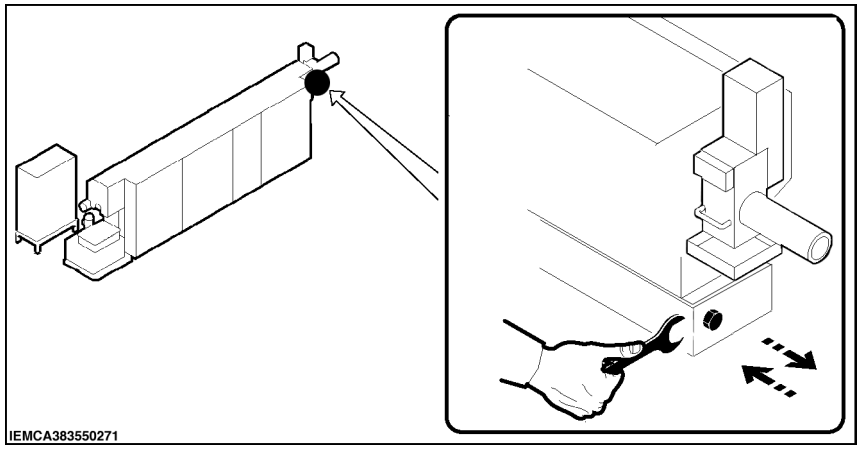


- Replace the bar pusher supports with those of the "new" diameter.

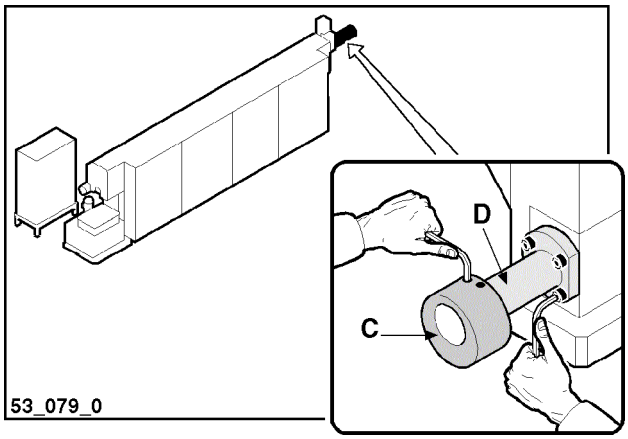


- Turn the screw counter-clockwise to move the feeder body backwards.

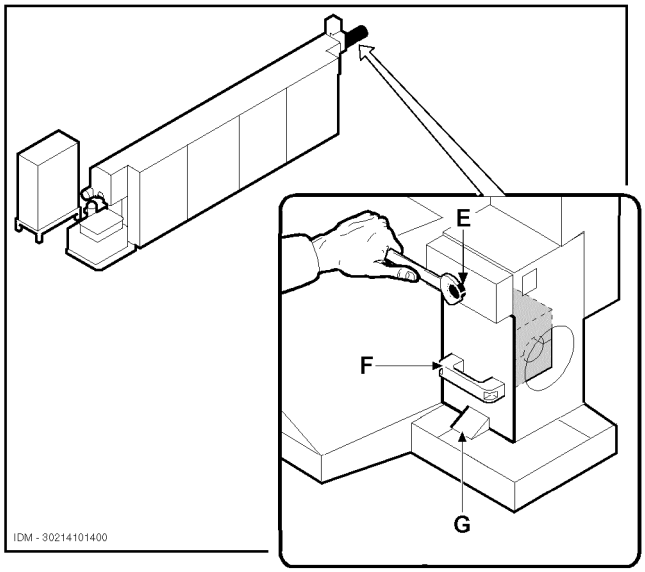
CAUTION:
open the top cover before starting this operation.



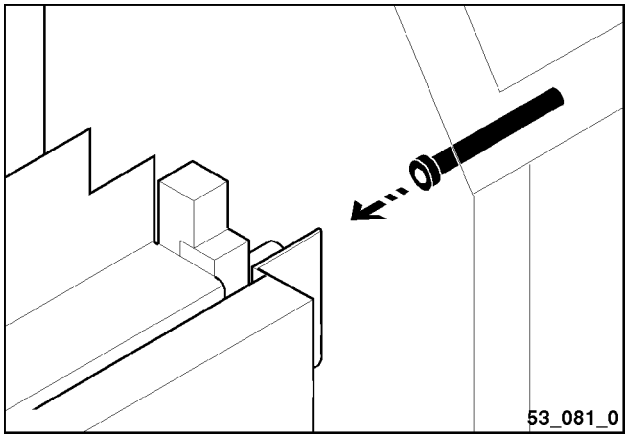
- Remove the oil recovery device (C) and nose (D).



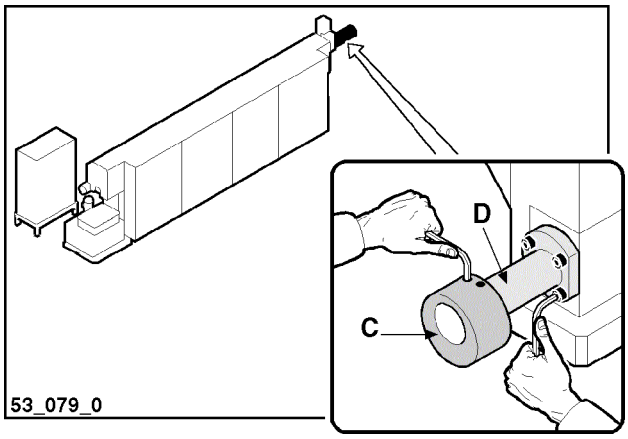
- Lower the (G) spring and remove the (F) cover, open the two half-bushings fully by turning the (E) shaft manually and remove the lower half-bushing.
- Close the upper half-bushing by turning the shaft again then replace it.
- Turn the shaft and fit the lower half-bushing.
- Fully close the half bushes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



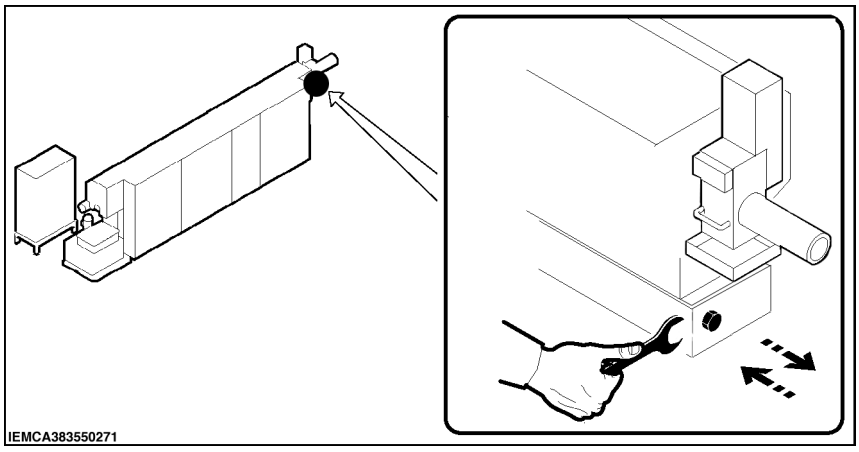
- Remove the lathe spindle liner if required and install a suitable liner for the "new" diameter.



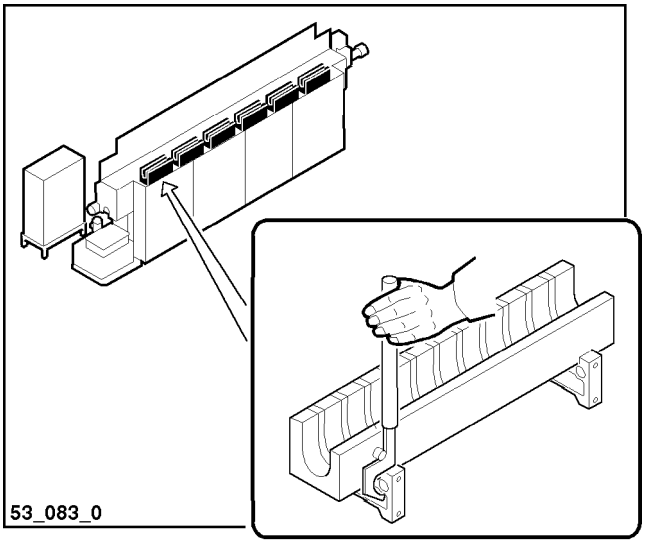
- Assemble sleeve (D) of the "new" diameter and the oil recovery (C).



- Turn the screw clockwise to move the feeder body forwards.

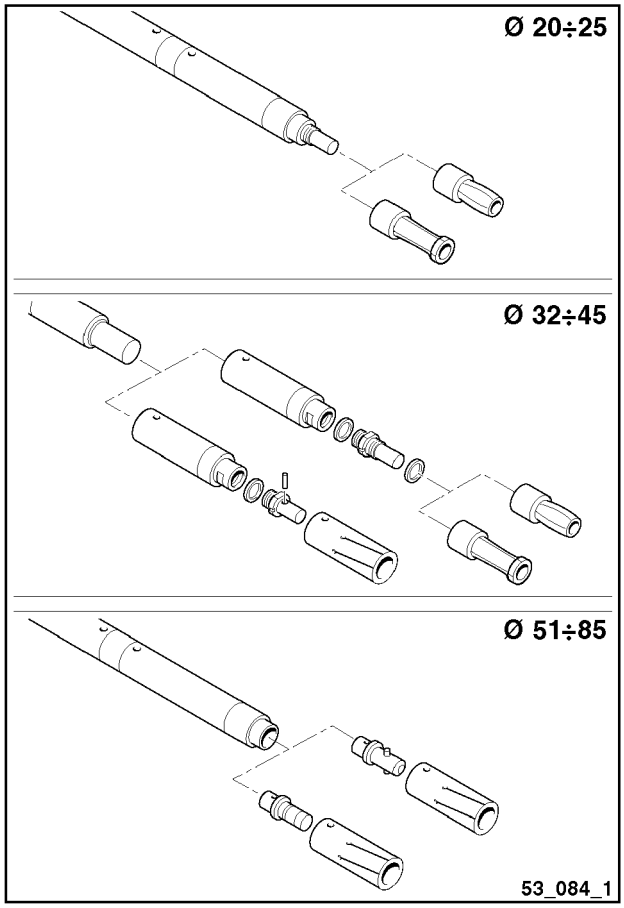


- Assemble the lower guide channels of the "new" diameter.



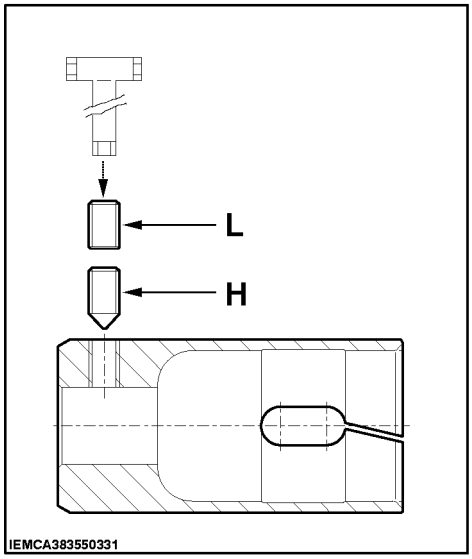
- Choose collet fit to bar diameter and profile; see "BAR PUSHER - GUIDES-COLLET - ROTARY GROUPS - Manual for the choice".

INFORMATION:
contact IEMCA After-Sales service for more information.



CAUTION-PRECAUTION :

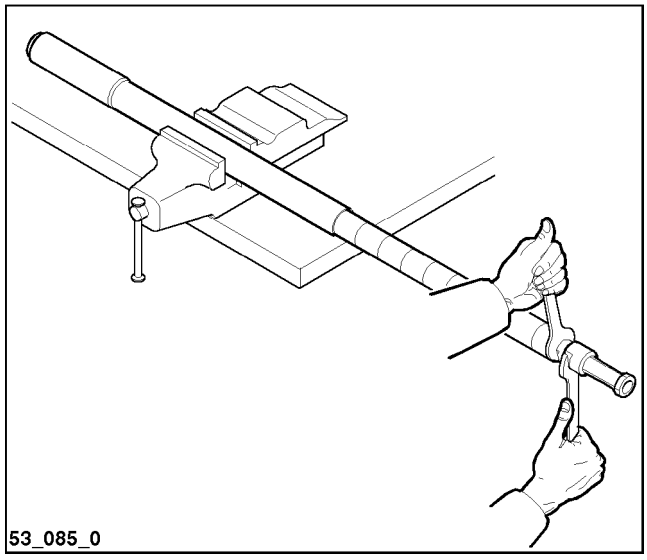
At every collet change (modell 381p, 381p..011, 381p..021 e 386p) it is necessary to install the grub screw H and the counter screw L.



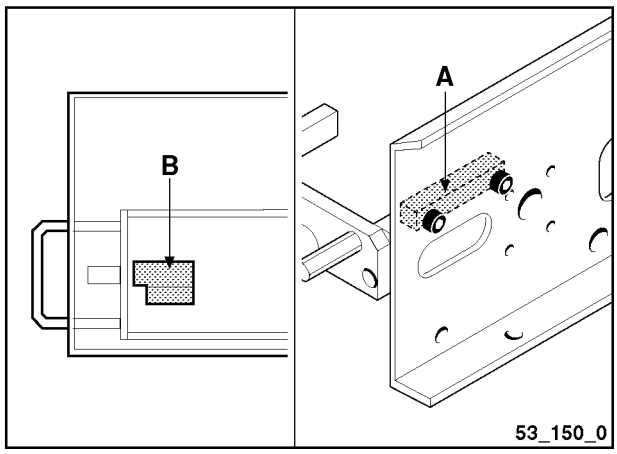
CAUTION:

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

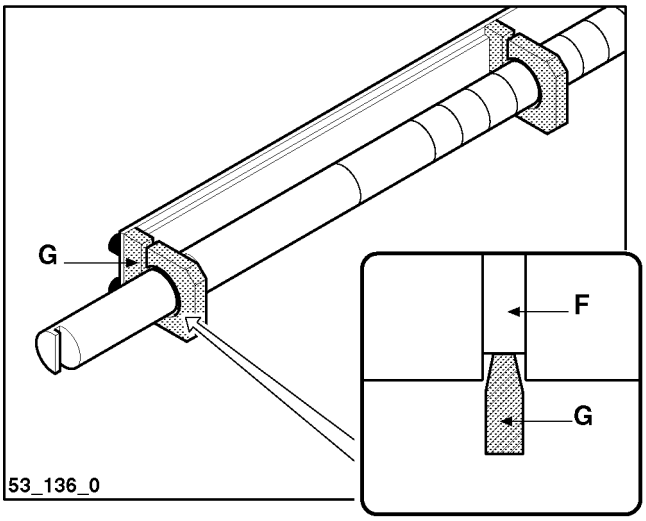
- Install the collet in the bar-pusher and make sure that the rings are riveted in their special recesses to prevent accidental collet unscrewing from its connection.



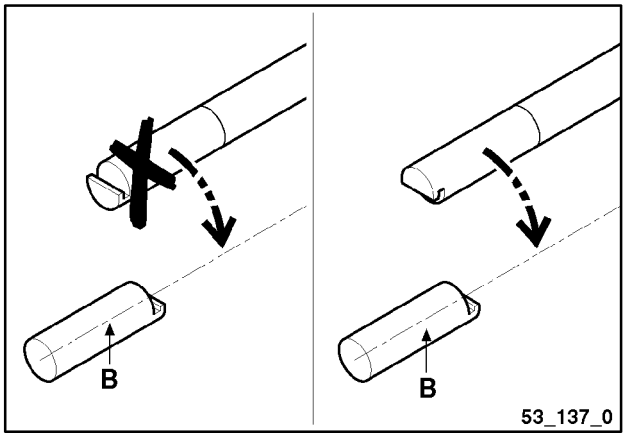
- Install a suitable 1st feeding carriage (B) for the new diameter, followed by the block (A).



- Insert bar pushers into two supports. Properly position bar pusher axially, so that (F) groove matches (G) support.



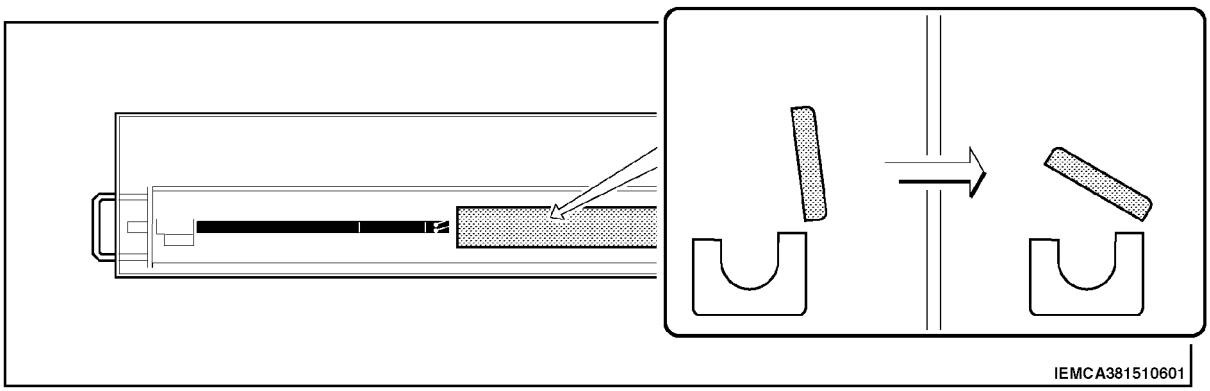
- Properly position bar pusher radially so that in next phase of upper guides locking, matching between bar pusher and (B) 1st feeding carriage occurs correctly.



CAUTION:

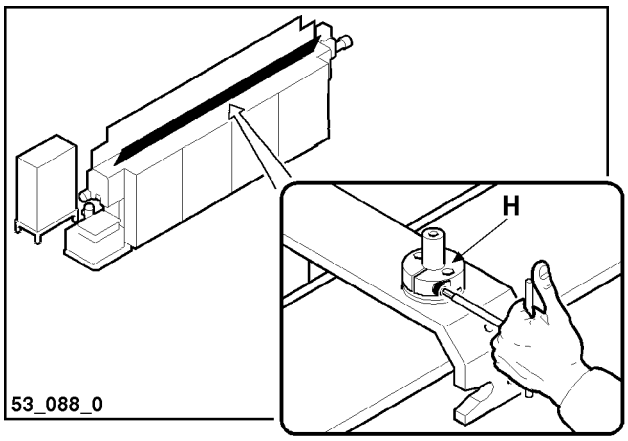
The above mentioned positioning has to be assured. Therefore during set-ups or maintenance operations, if bar pusher is struck involuntarily, it has to be correctly repositioned.

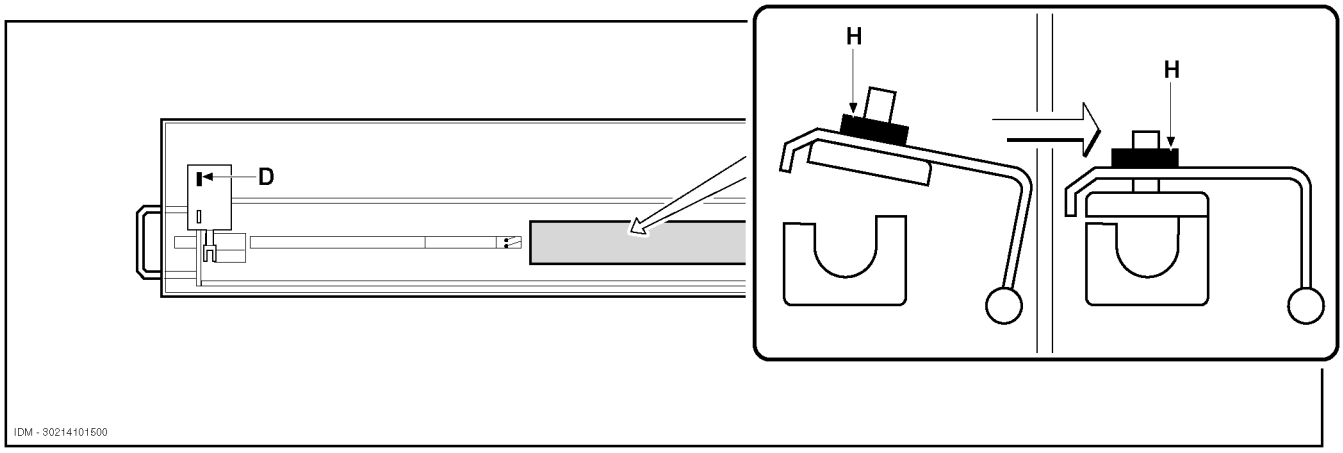
- Press at the same time both bar feeder operation keys and the 3 key to partially open the upper guide channels.



- Loosen all the elastic clamps H (Socket screw key CH6 supplied).

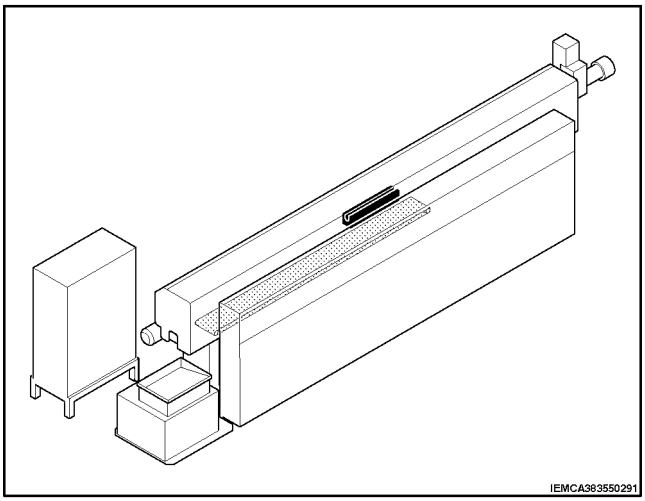
- Close the upper guide channels () until the sensor (D) activates. By executing this operation, you will cause the upper guide channels to rest against the lower guide channels. Tighten all the clamps (H).





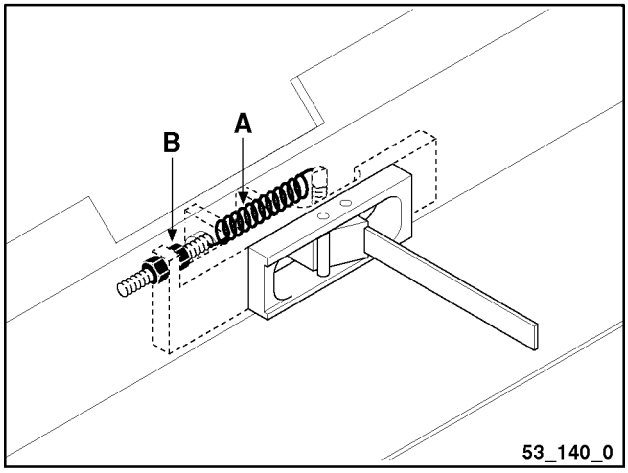
5.3.2 Remnant passage door spring - Adjustment

Remnant passage door is kept closed by a spring. Remnant passage has to win such a spring resistance, so that the door will intercept detection sensor.
Normally bar feeder comes from factory with its spring adjusted for large diameter bars; with small diameter bars it could be necessary to reduce the spring pre-load proceeding the following way.



- Remove lower guide corresponding to the door, see paragraph 5.3.1.

- Adjust (A) spring pre-load acting on (B) nuts.
- Retrieve bar feeder initial conditions.



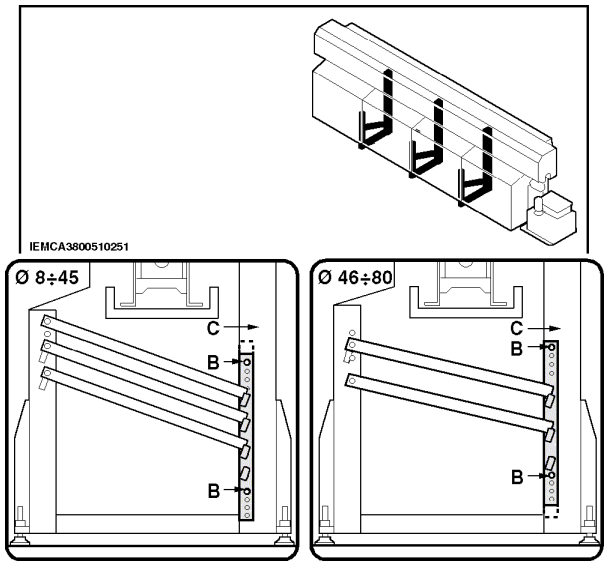
5.4 RACK MAGAZINE SETTING UP - MASTER 880 P

Rack magazine setting up steps are listed and explained as follows.

5.4.1 Bar supporting arms - Setting up
5.4.2 Lift truck motorisation - Adjustment
5.4.3 Lift trucks - Setting up

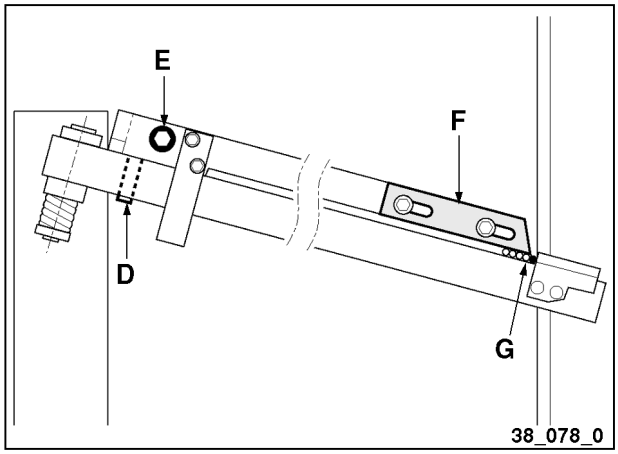
5.4.1 Bar supporting arms - Setting up

- Adjust inclination of the bar supporting arms by varying bar (A) position acting on screws (B). Inclination has to allow the bars to lean against upright (C).



BAR HOLDING ARM

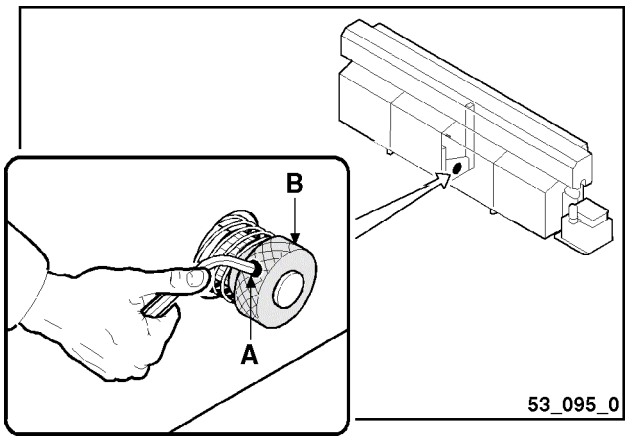
This device has the function to keep aligned bars having less than 12 mm diameter, thus avoiding them to overlap (cap.5.4.3).
It can also be used to keep in position shaped bars with special sections.
Adjust as follows:



- install bar holding arm inserting pin (D) in the special hole;
- oosen screw (E) and lift the arm;
- under the arm, position two spacers slightly thicker (0.5 mm approx.) than the diameters of the bars to be machined;
- keep the arm pressed against the spacers and tighten screw (E);
- adjust push-rod (F) position so that only the space necessary to the passage of first bar (G) is left;
- repeat the previous operations in all bar holding arms.

5.4.2 Lift truck motorisation - Adjustment

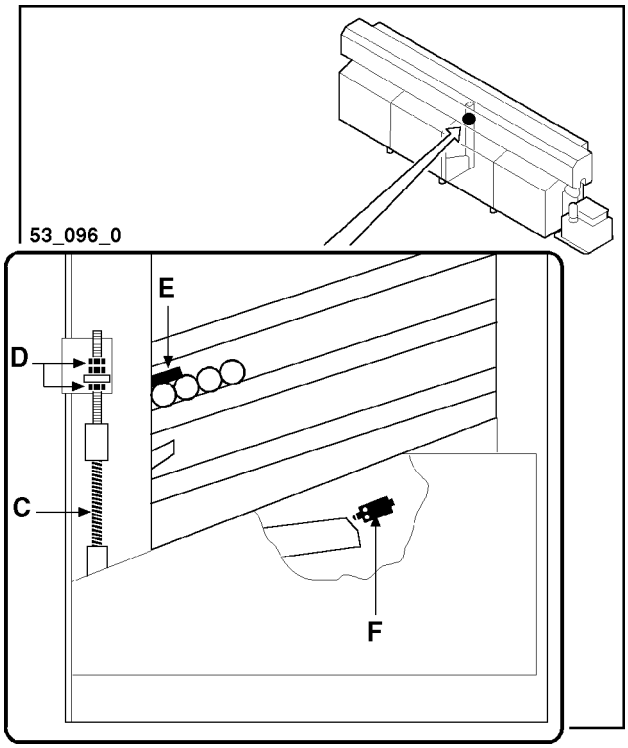
The safety joint has to be adjusted to ensure the bar lifting and, at the same time, it has to disactivate the motor transmission when the bar cannot be lifted for whatever reason.
Adjust as follows:



l• oosen screw (A);
- screw or loosen ring nut (B);
- tighten screw (A).

CAUTION:
do not screw ring nut too much; the joint could get jammed.

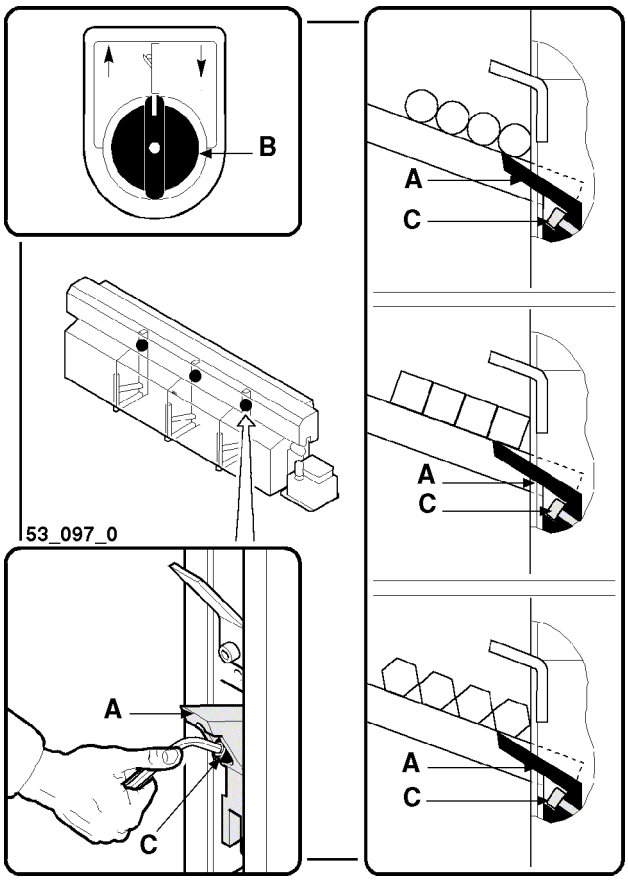
- Adjust spring (C) tension by nuts (D). Tension has to be adjusted to avoid microswitch (F) to activate during the lift truck lowering; when feeler (E) leans against the bars, the spring has to yield to allow microswitch (F) to control the motorisation stop.



5.4.3 Lift trucks - Setting up

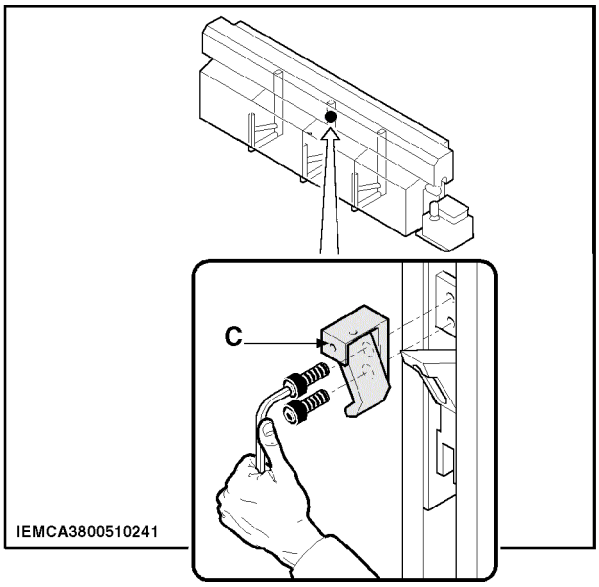
Adjust bar taking lever (A) position in relation to the bar diameter and section.
Adjust as follows:

- bring the lifting devices at about half-stroke through the selector (B) to make the operation easier;
- loosen or tighten screw (C).



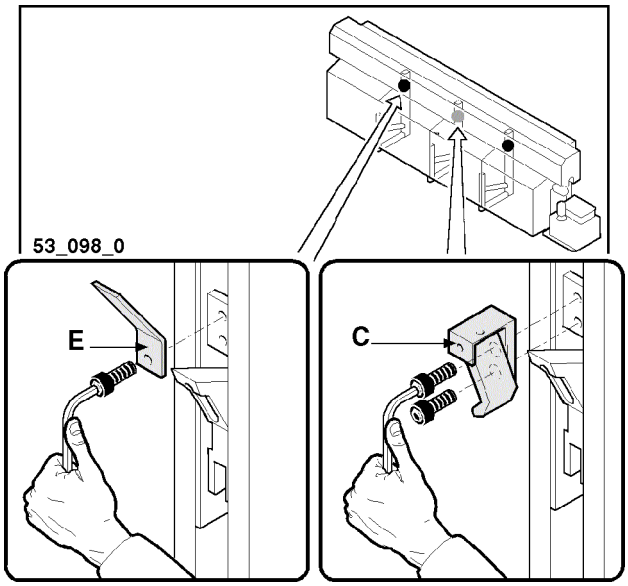
8 TO 12 MM BARS

An additional feeler (C) shall be installed on the central lifting device.
(No. 2 feelers are supplied with the 'Bar containment bracket' unit; sec. 5.4.1).



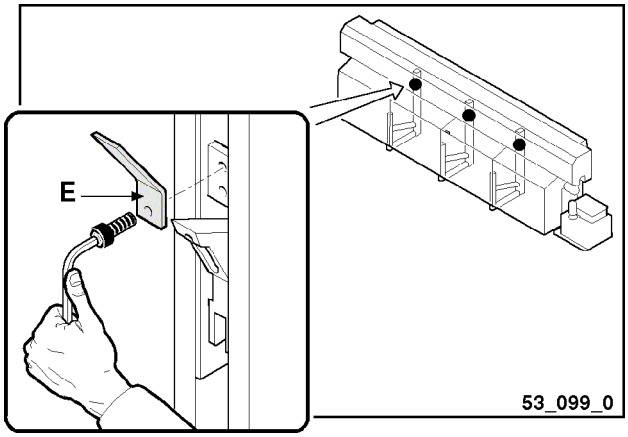
13 TO 25 MM BARS

Additional feeler (C) has to be installed in the central lift truck, whereas feeler (E) has to be installed in the side lift trucks.



26 TO 80 MM BARS

Feeler (E) has to be installed in each lift truck.



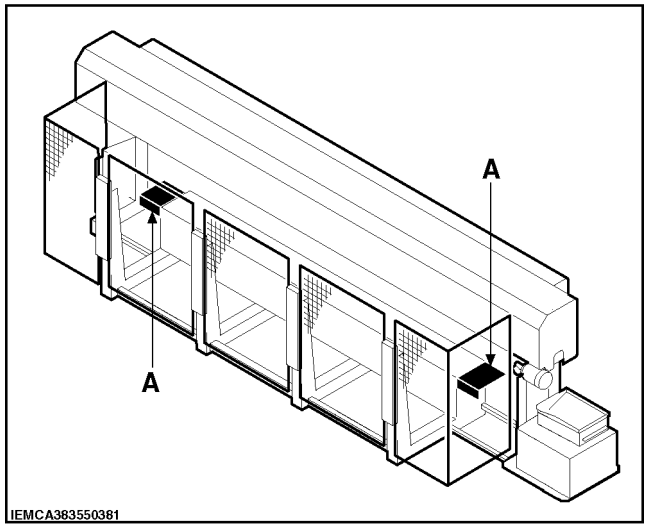
5.5 BUNDLE MAGAZINE SETTING UP - MASTER 880 F

The bundle magazine setting up steps are listed and explained as follows.

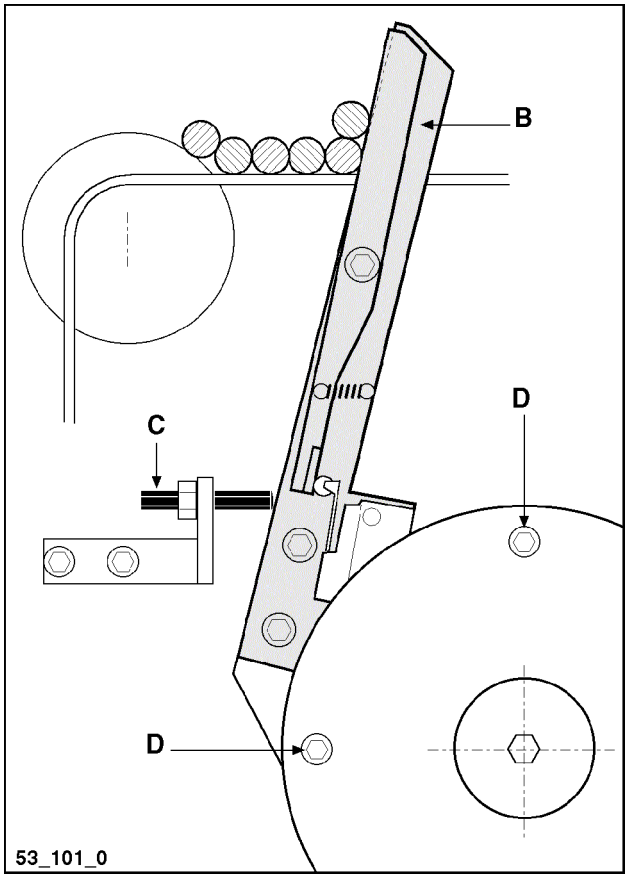
5.5.1 Bar stop levers. Adjustment
5.5.2 Pressure foot. Adjustment
5.5.3 Separation push-rods. Adjustment
5.5.4 Bar selection. Setting up
5.5.5 Lift truck motorisation. Adjustment

5.5.1 Bar stop levers - Adjustment

- Remove guards (A).



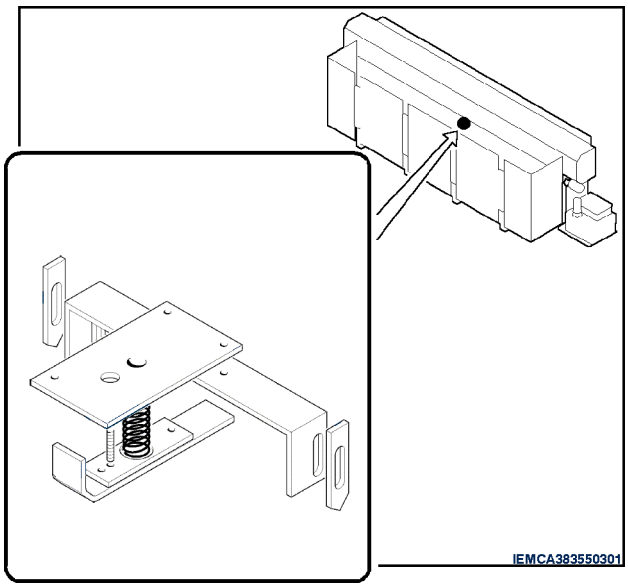
- Adjust levers (B) stop point acting on screws (C), in order to stop a certain number of bars when they are unloaded from the lifted belts. The bar amount has to be checked during the first working cycles. If during the unloading the levers (B) give and slip backwards due to the bar thrust, it will be necessary to adjust the stop clutch using the screws (D).
- Reassemble the guards previously removed.



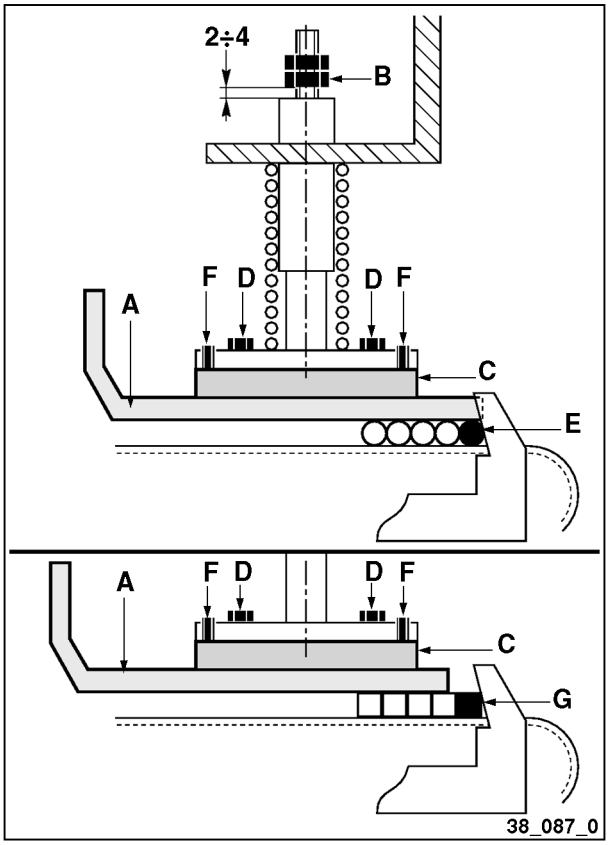
5.5.2 Pressure foot - Adjustment

BARS FROM 8 TO 20 MM

- Fit the pressure foot of the kind indicated in the figure.



- Adjust height of pressure foot (A), in order to allow nut (B) - when some bars are under the foot - to stay at 2÷4 mm from the stop; adjustment is to be done by acting on nuts (B). If large diameter bars are to be machined, distance plate (C) must be removed.



Round And Hexagonal Bars

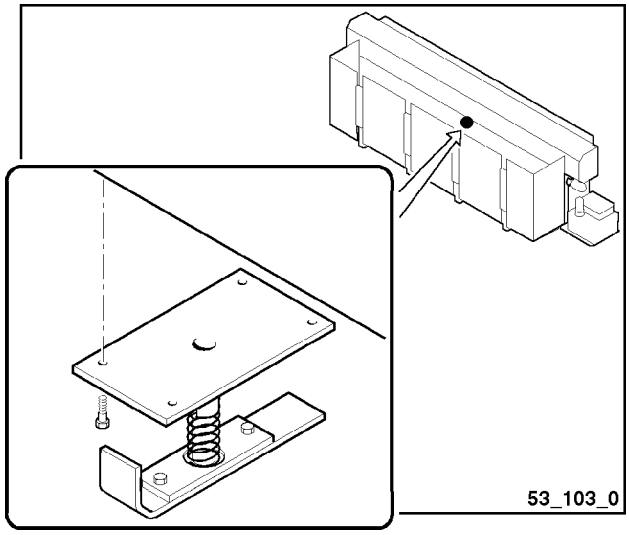
- By screws (D), adjust the foot traverse position to make it press all bars, first bar (E) included. If needed, act on screws (F) to bring the foot plan parallel to the magazine plan.

Square bars

- By screws (D), adjust the foot traverse position to make it press all bars, first bar (G) excluded. If needed, act on screws (F) to bring the foot plan parallel to the magazine rack.

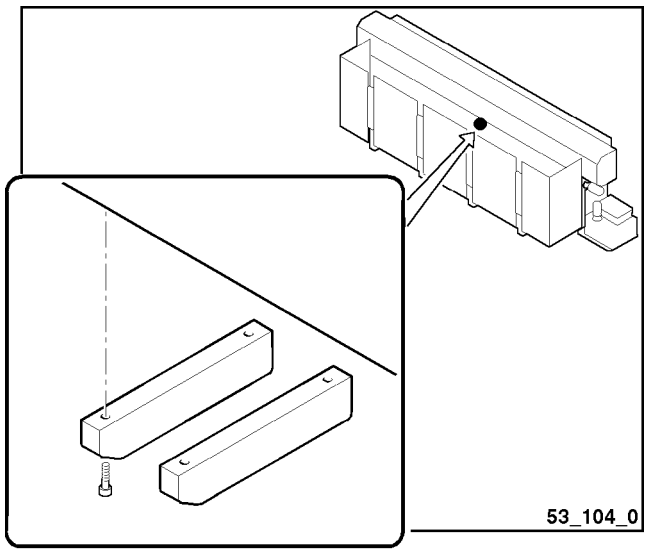
BARS FROM 20 TO 40 MM

- Fit the pressure foot of the kind indicated in the figure.



BARS FROM 40 TO 80 MM

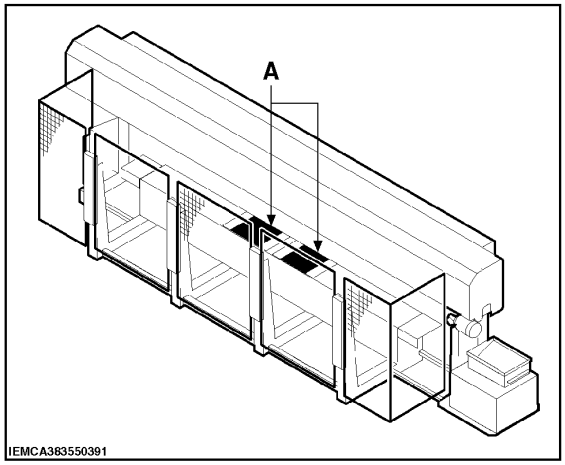
- Fit two holding blocks.



5.5.3 Separation push-rod - Adjustment

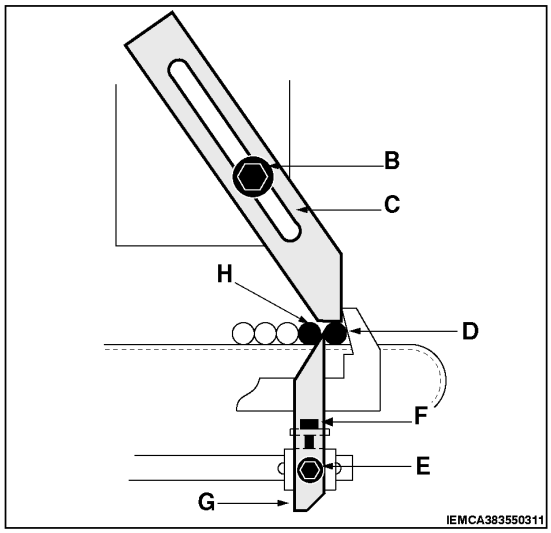
ONLY FOR 8 TO 20 MM BARS

- Remove guards (A).



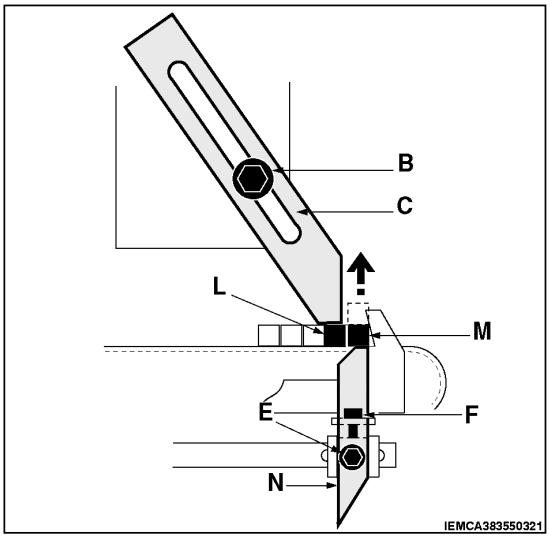
ROUND AND HEXAGONAL BARS

- By screw (B), adjust upper push-rod (C) position so that it skims first bar (D).
- By screws (E) and (F), adjust lower push-rod (G) position so that it places itself between first bar (D) and second bar (H).



SQUARE BARS

- By screw (B) adjust upper push-rod (C) position so that it skims second bar (L), keeping first bar M clear.
- By screws (E) and (F), adjust the position of lower push-rod N (special for square bars) so that it lifts first bar M skimming second bar (L).
- Reassemble the guards previously removed.

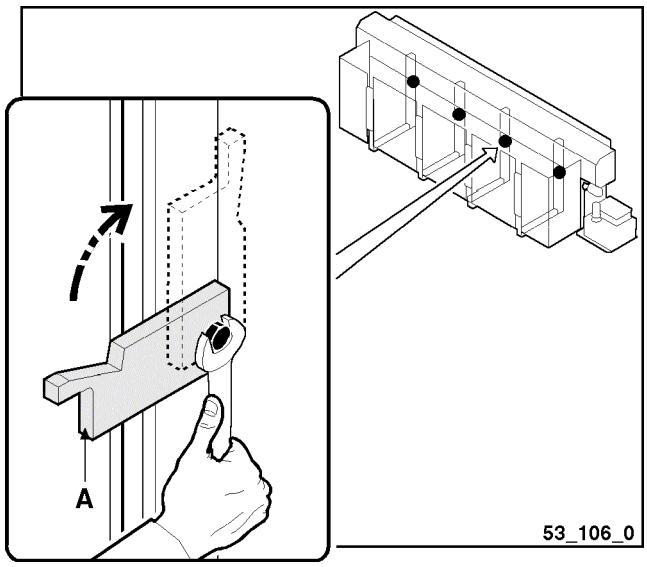


5.5.4 Bar selection - Setting up

8 TO 20 MM BARS

Bars not over 20 mm do not easily align onto the magazine rack; it is therefore necessary to use the selection program by acting as follows:

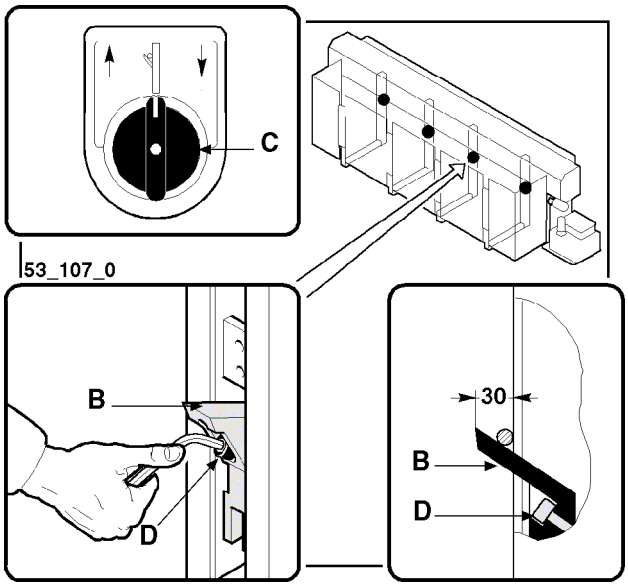
- lift plates (A) in each upright;



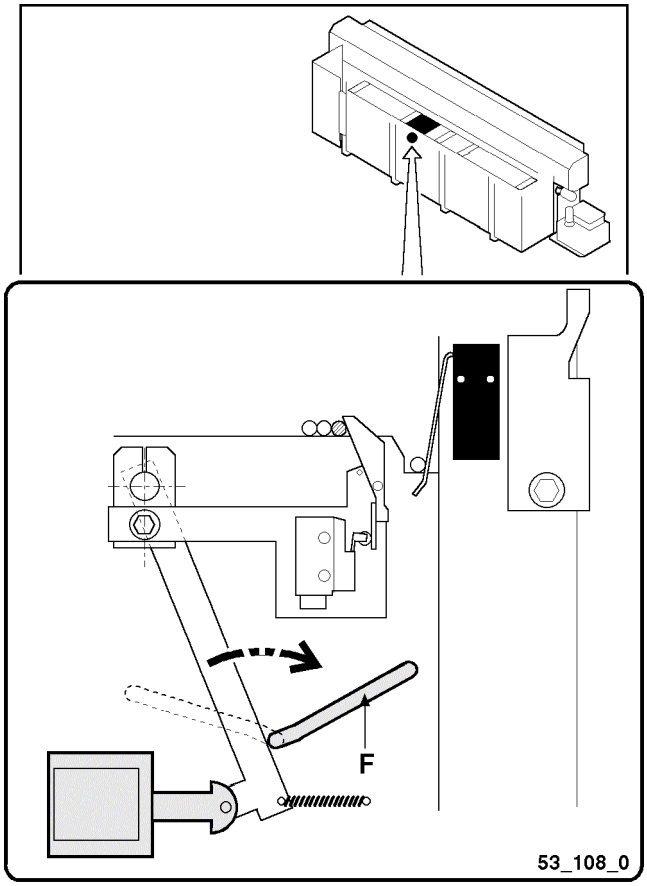
- adjust bar taking levers (B) position so that they exceed 30 mm.

Adjust as follows:

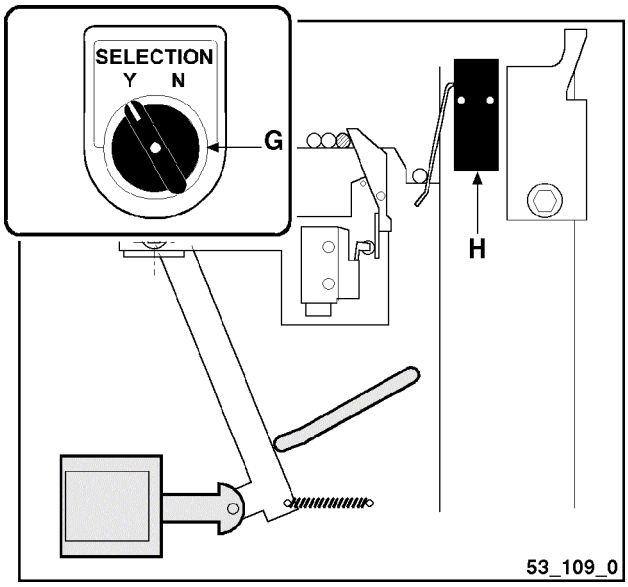
- bring the lifting devices at about half-stroke through the selector (C) to make the operation easier;
- tighten or loosen screw (D);



- remove guard (E) and turn lever (F) in the direction of the arrow. Reassemble guard (E);



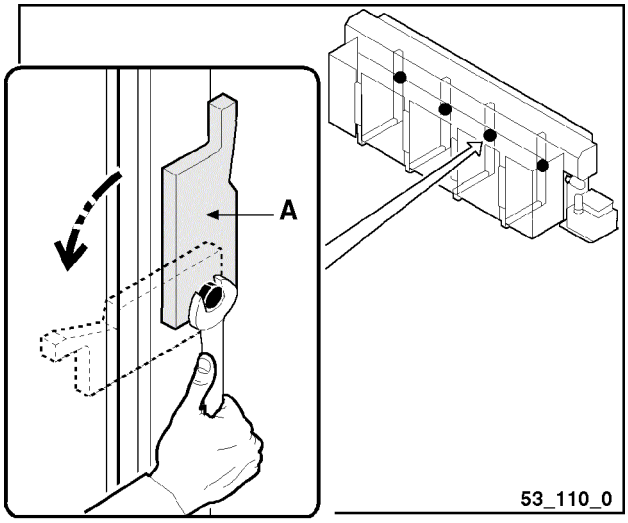
- Enable the selection cycle with selector (G);
- during the working cycle, check if microswitch H is actuated by the bar.



21 TO 80 MM BARS

Bars with diameter over 20 mm are quite aligned on the magazine rack and can be taken directly by the lift trucks; it is therefore possible to disable the selection program acting as follows.

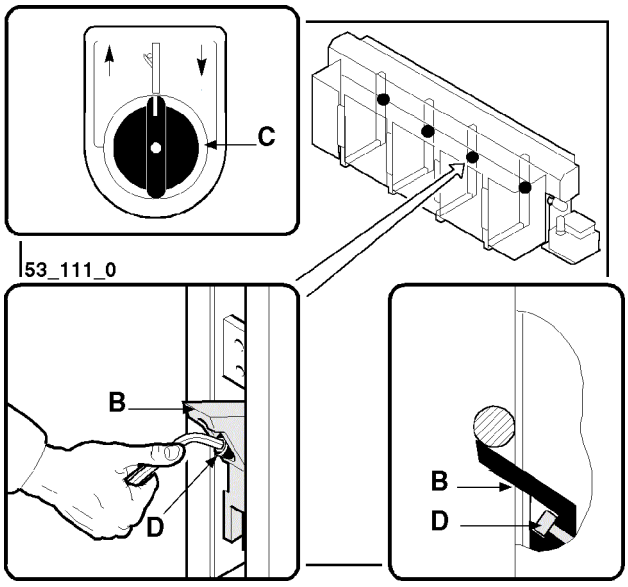
- lower plates (A) in each upright;



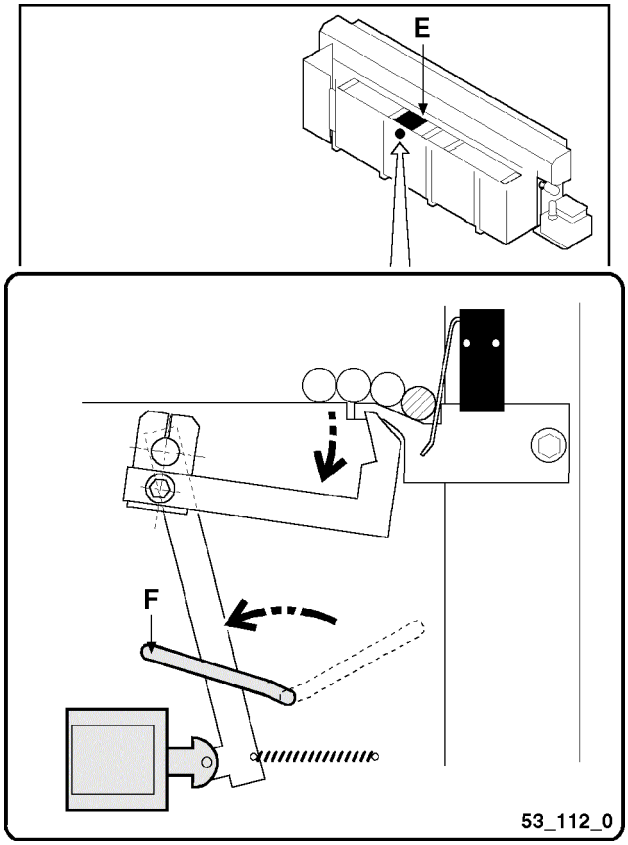
- adjust bar taking lever (B) in relation to the bar diameter.

Adjust as follows:

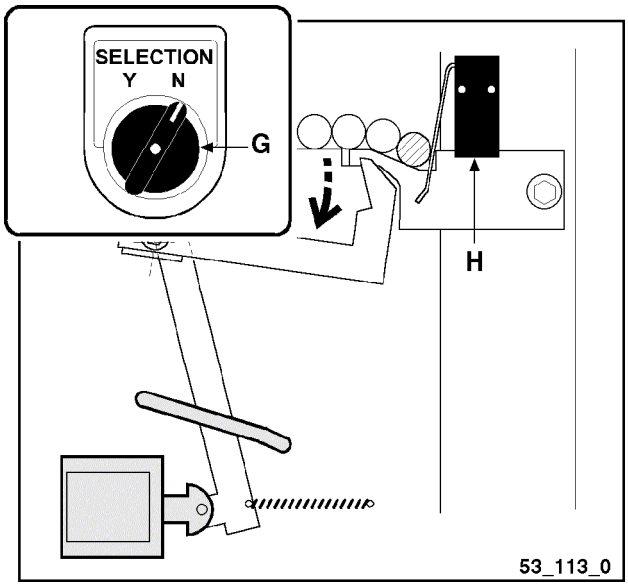
- bring the lifting devices at about half-stroke through the selector (C) to make the operation easier;
- tighten or loosen screw (D);



- remove guard (E) and turn lever (F) in the direction of the arrow. Reassemble guard (E);



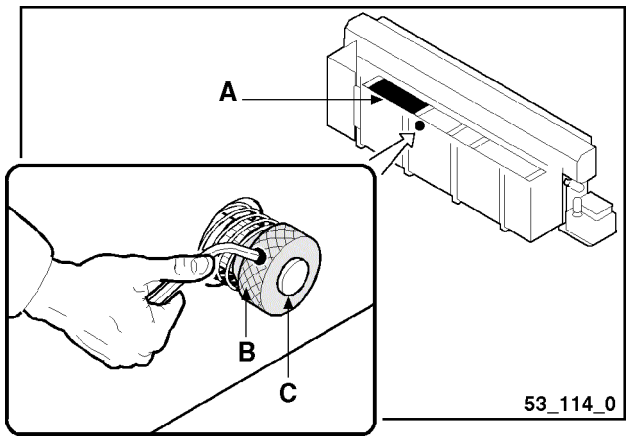
- disable the selection cycle through the selector (G);
- during the working cycle, check if microswitch (H) is activated by the bar.



5.5.5 Lift truck motorisation - Adjustment

The safety joint has to be adjusted to ensure the bar lifting and, at the same time, it has to disactivate the motor transmission when the bar cannot be lifted for whatever reason.
Adjust as follows:

- remove guard (A);
- loosen screw (B);
- screw or loosen ring nut (C);
- tighten screw (B);
- reassemble the guard previously removed.



CAUTION:
do not screw ring nut too much; the joint could get jammed.

INDEX

6.1 DESCRIPTION OF THE CONTROLS

INFORMATION:

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

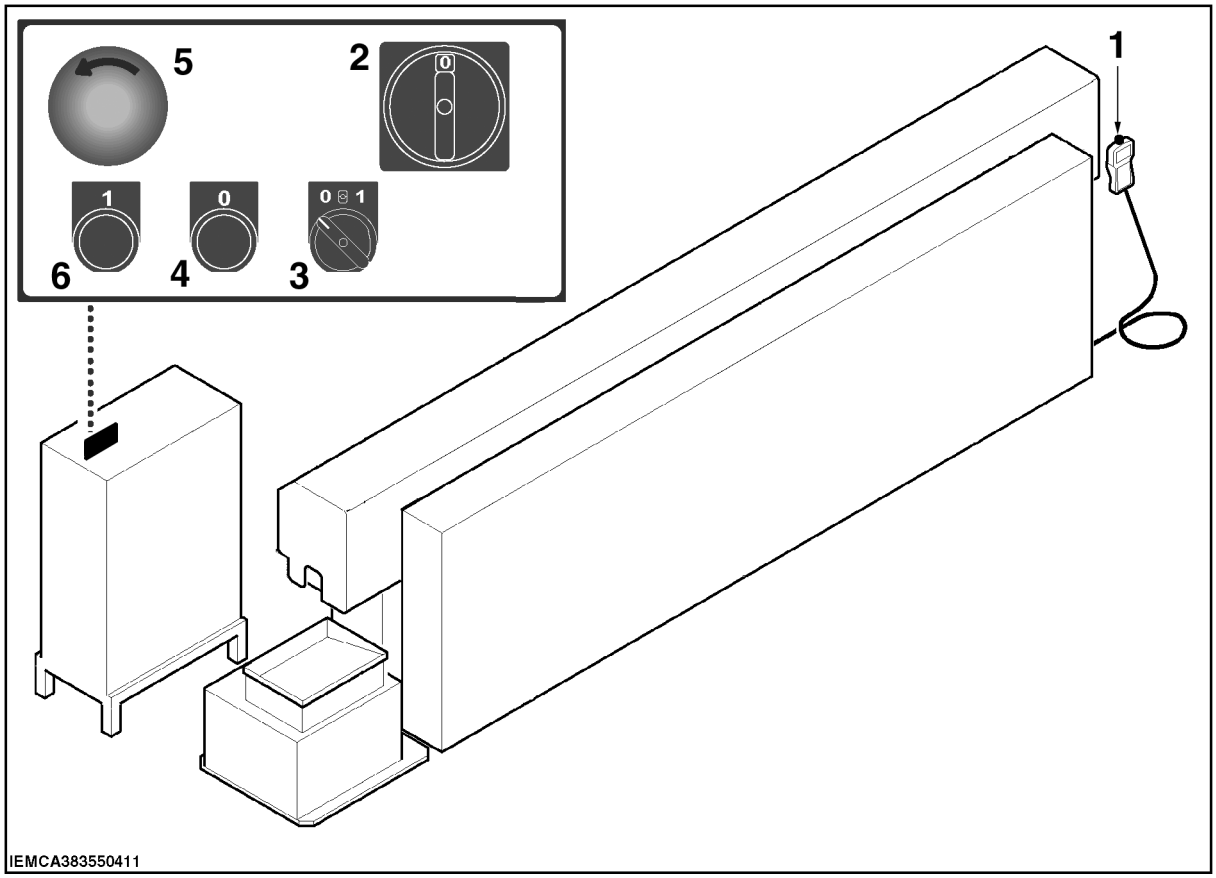
INFORMATION:

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

INFORMATION:

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

The illustration shows the positions of both the electrical controls and hand-held keyboard "1".



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

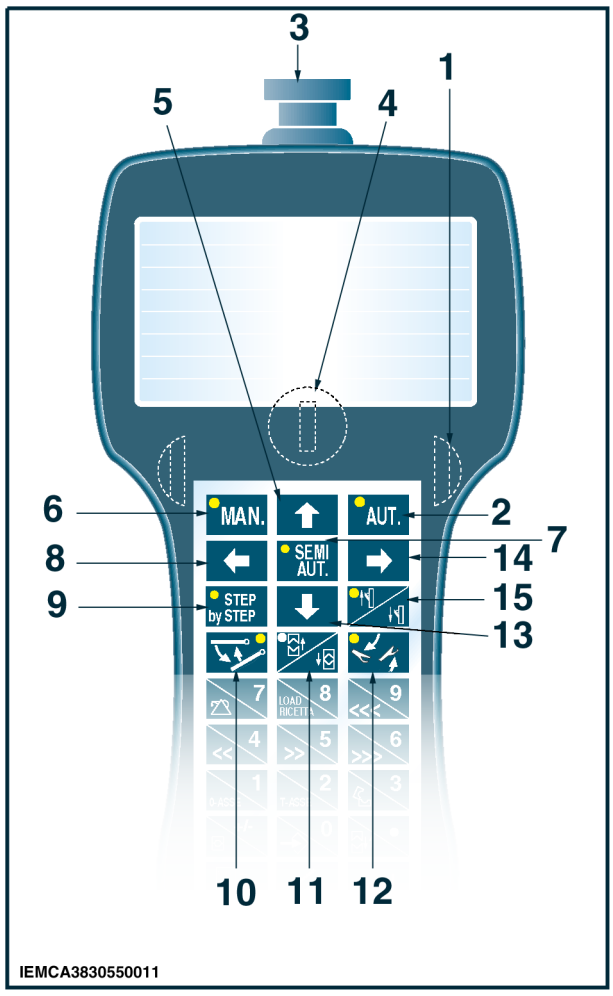
3 HALF-BUSHING OPENING AND CLOSING TOGGLE SWITCH (green light)
- In 'Manual' mode; if the bar feeder is turned to position 1 and is in suitable operating conditions, the half-bushings close. While, if the bar feeder is turned to position 0, the half-bushings open.
- In 'Automatic' mode; if the bar feeder is turned to position 1, the half-bushings close and open, according to the set sequence. If the bar feeder is turned to position 0, the half-bushings are kept open during the whole operating cycle.

4 BAR FEEDER STOP BUTTON : to stop the bar feeder and to reset "Errors".

5 EMERGENCY STOP BUTTON: this button stops the bar feeder in an emergency situation. To restart, first you must manually unlock the button

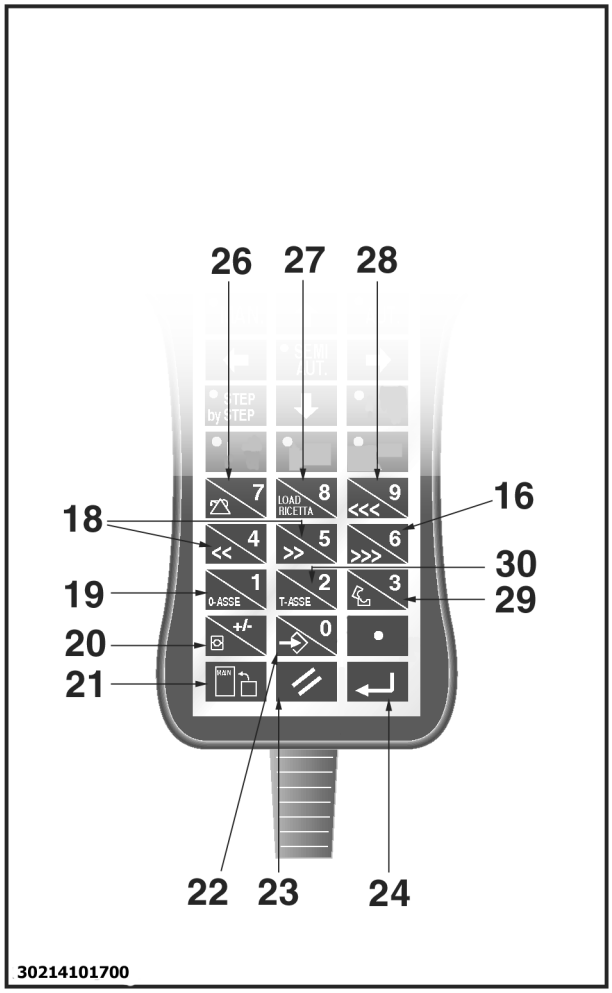
6 BAR FEEDER START BUTTON AND DISABLING THE BAR REMNANT DETECTION (green light) : to start the bar feeder, hold down the button until the button itself lights up.
Holding down the pushbutton, disable the remnant and new bar controls during the bar changeover procedure.

6.2 DESCRIPTION OF KEYBOARD CONTROLS



1 Start buttons: opposite buttons that when pushed together will start some procedures. Press the two buttons, and at the same time, the key corresponding to the required function.
2 Selects the automatic mode.
3 Stops the bar feeder: to restart you must manually un-lock the button.
4 Selects the keyboard modes:
   - in the position; the "messages display" mode is selected.
   - in the position the "parameters display" mode is selected.
5 Multifunction
   - Allows you to scroll the page upwards.
   - Moves the cursor upwards.
   - Increases the preset data programming of date and time, by one unit.
6 Selects the manual mode.
7 Selects the semi-automatic mode.
Push to select, press again to unselect.
8 Multifunction
   - Selects the previous parameter.
   - Moves the cursor towards the left.
9 Starts "step-by-step" movement of an operation cycle: each press of the key causes execution of a step in the cycle.
10 Raises/lowers the remnant dropping chute (LED illuminated with chute in Up position).
11 Opens/Closes the clamps (LED illuminated with clamps open).
12 Lift and lower the pneumatic bar drop controls device (led on when this device is low).

13 Multifunction
   - Allows downwards scrolling of the page.
   - Moves the cursor downwards.
   - Decreases the date and time value set in programming mode by one unit
14 Multifunction
   - Selects the next parameter
   - Moves the cursor towards the right.
15 Bar lifting devices Up/Down (LED illuminated when lifting devices are in their Up position).



16 Multifunction
- Number setting.
- Moves the bar pusher to a high speed.
- Press the two running push-buttons and then the key.

18 Multifunction
- Number setting.
- Moves the bar pusher to a low speed.

19 Multifunction
- Number setting.
- Resets the "BAR FEEDER ZERO SETTING" of the carriage.
  Hold down the two start buttons and then the * key; release the two buttons and the key when the carriage starts moving towards the "BAR FEEDER ZERO SETTING".

20 Multifunction
- Number setting.
- Closes the guide channels.
  Push the two start buttons and then the * key 18; release the two buttons and the key only when the movement has terminated.

21 Goes to the MAIN MENU.

22 Multifunction
- Number setting. -Recalls the cursor.

23 Multifunction
- Interrupts the selection mode.
- Resets the values held before the modifications, which were not confirmed.

24 Confirms the data entered.

26 Multifunction
- Number setting.
- Starts and turns off the oil pump (push to start and push again to turn off).

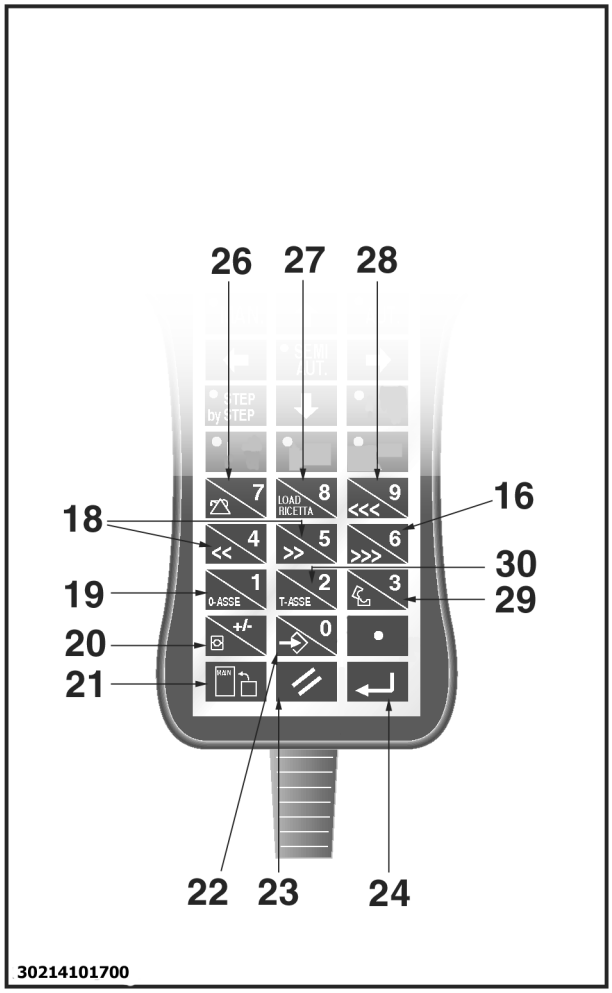
27 Multifunction
- Number setting.
- Loads the programme from the PLC (entering default settings in the parameters).

28 Multifunction key
- Sets the numerical value. -Shifts the bar pusher at a high speed.
- Removes the bar from the bar-pusher collet.
- Press the two running push-buttons and then the key.

29 Multifunction
- Number setting.
- Opens the guide channels from the "partly open" to the "completely open" position.

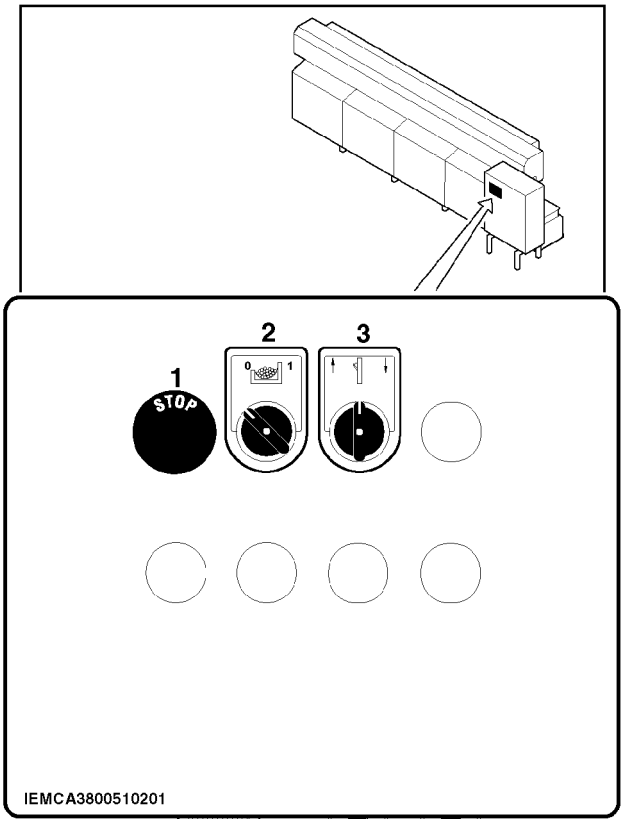
  Press  and then the key ;release the two keys only when the movement is completed.

30 Multifunction
- Number setting.
- Sets the carriage movement motor.
  During the daily use of the bar feeder this function must never be used.



6.3 MAGAZINE PUSH-BUTTON PANEL - CONTROL DESCRIPTION

MASTER 880 P

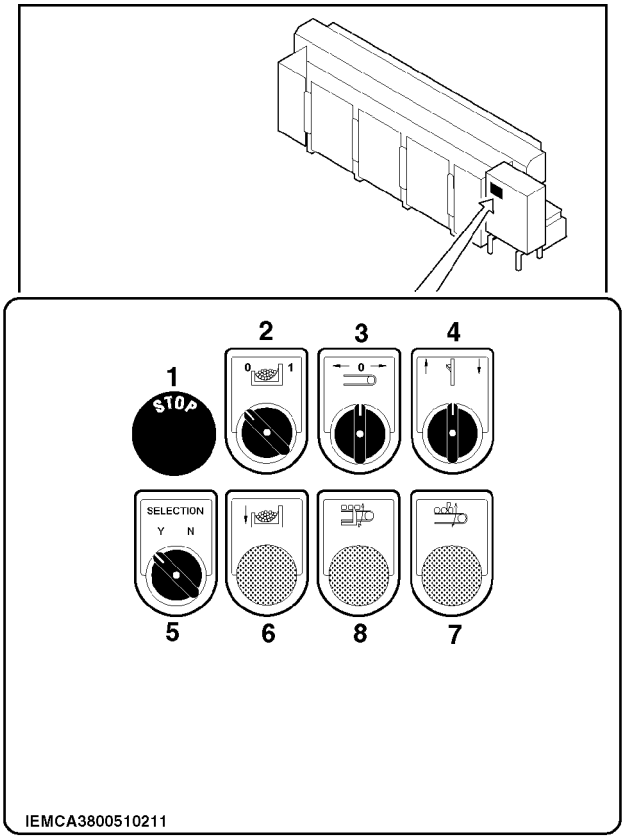


1 Emergency push button for stopping the bar feeder; it will be possible to start it up again only after the push button has been released manually.

2 Selector for getting the magazine ready for the manual or automatic function.
position 0: magazine is preset for manual function;
position 1: the magazine is set for the automatic function.

3 Selector for the control of the lifting and lowering of the lifting devices.
position ↑: lifting;
position ↓: lowering.

MASTER 880 F



1 Emergency push button for stopping the bar feeder; it will be possible to start it up again only after the push button has been released manually.
2 Selector for getting the magazine ready for the manual or automatic function.
position 0: the magazine is set for the manual lowering of the lifting belts;
position 1: the magazine is set for the automatic function.
3 Selector for the control of the feeding and the return of the bar on the selection belts.
position →: bar feeding;
position ←: bar return.
4 Selector for the control of the lifting and lowering of the lifting devices.
position ↕: lifting;
position ↕: lowering.
5 Selector to enable or disable the selection cycle in the bar magazine.
position Y: cycle on;
position N: cycle off.
6 Push button for controlling the manual lowering of the magazine belts.
push: belts lower;
release: belts stop.
7 Push button for controlling the high/low motion of the feeler levers.
8 Push button for controlling the high/low motion of the separation push rods.

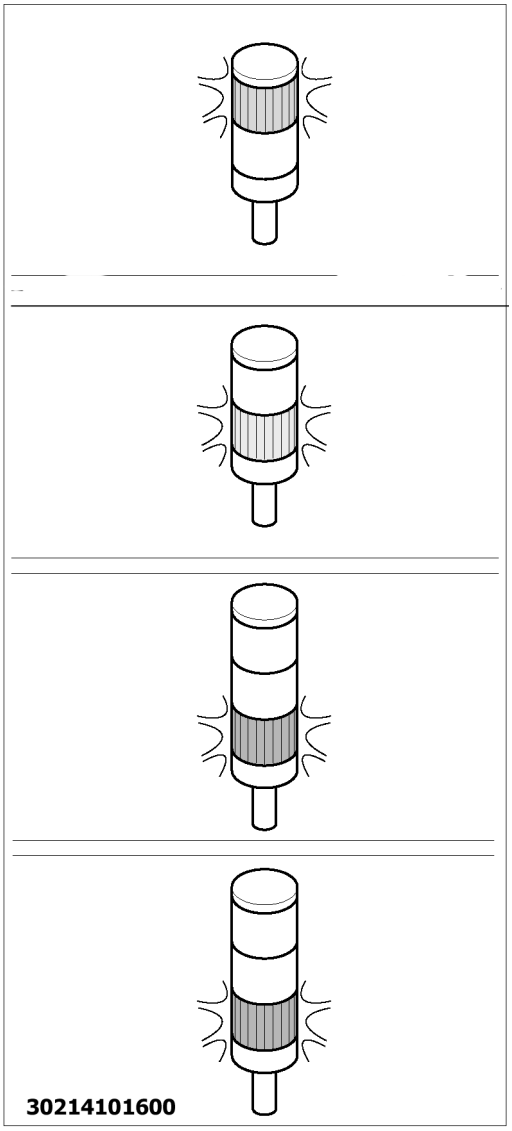
6.4 LUMINOUS INDICATOR - SIGNAL DESCRIPTION

BLINKIGN ORANGE LIGHT; the bar feeder magazine cover is open.

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

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

BLINKING BLUE LIGHT; signals that the bar feeder is carrying out the bar change.
FIXED BLUE LIGHT; signals that the PLC battery is exhausted. (OPTIONAL)



6.5 BARS TO BE MACHINED - CHARACTERISTICS AND PREPARATION

CAUTION:

do not feed bars having different sizes than the manufacturer's prescribed sizes.

Table 1. Maximum bar length

Model	Version	MAX Length mm (ft) - A	MIN Length mm (ft) - B
MASTER 880 P	33	3300 (10,8)	2000 (6,5)
	38	3800 (12,4)	2500 (8,2)
	43	4300 (14,1)	3000 (9,8)
MASTER 880 F (*)	33	3300 (10,8)	2500 (8,2)
	38	3800 (12,4)	3000 (9,8)
	43	4300 (14,1)	3500 (11,5)

INFORMATION:

(*) bars are to be loaded in the middle of the bundle magazine.

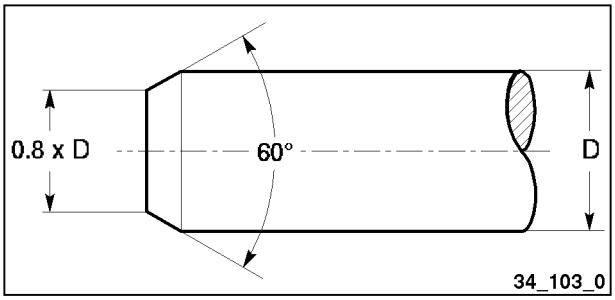
INFORMATION:

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

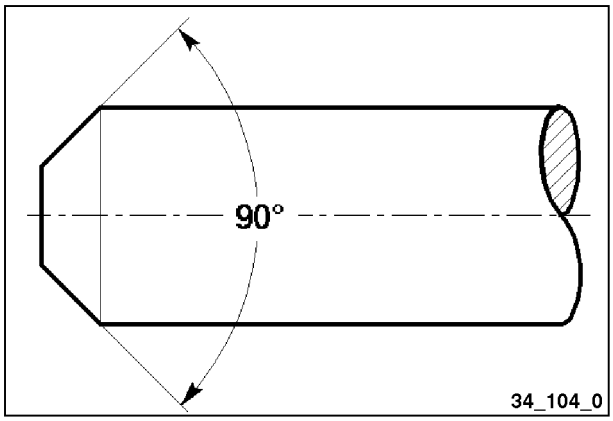
Please find herewith some advice to optimise the bar feeder performances.
Usually barstocks do not need any preliminary operations to be carried out on ends, nevertheless to obtain the best results when loading them, it is advisable to chamfer them.

SOLID BARS

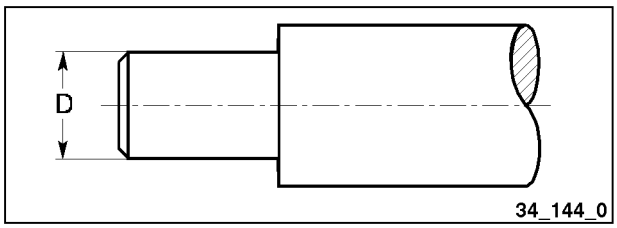
Check that there is not too much rag on bar head, which might hinder insertion in the lathe collet. Check that there is not too much rag on bar rear end, which might hinder insertion in the bar-pusher collet. In any case, to improve operation during this phase, we advise to chamfer the bar as shown in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



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

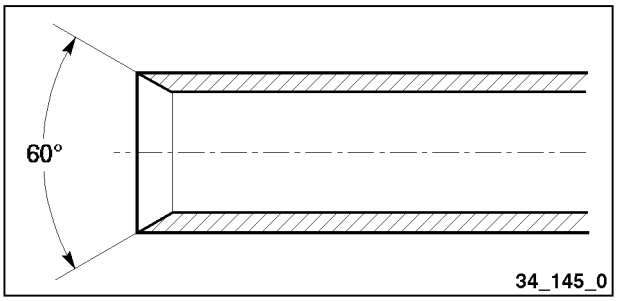


If bars have to be machined having a diameter equal to or only slightly smaller than the bar-pusher diameter, bar rear ends should be machine-turned; diameter "D" should be suitable for the collet size installed in the bar-pusher.



PIPES

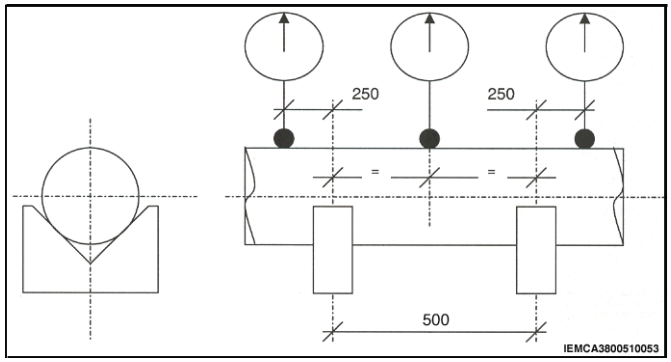
If pipes have to be machined, their rear ends should be chamfered as shown in the figure.



6.5.1 BAR STRAIGTHNESS - Measuration

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

Round bars



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

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

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

INFORMATION:

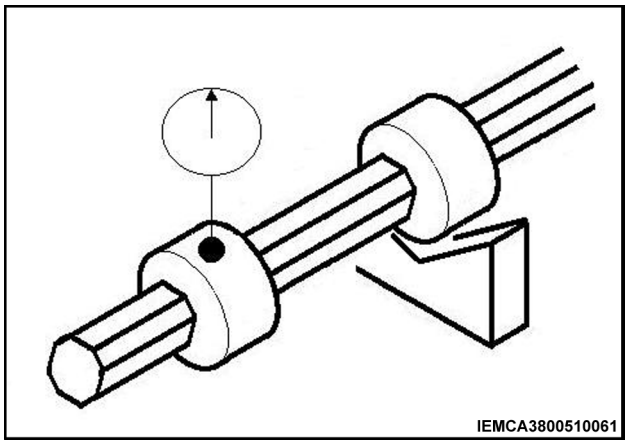
Obviously, bar straightness is proportional to the rigidity of the material and to the number of revolutions (RPM) the lathe is operated at. highly The lack of bar straightness highly influences the maximum number of revolutions reachable: the bigger the diameter the greater the influence. The data concerning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

INFORMATION:

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

Hexagonal, square and section bars

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



6.6 BAR FEEDER SETUP

This is a list of all the stages of the bar feeder setup, assuming that one wants to start it for the first time.

- Carry out feeder set-up according to the bar to be machined (paragraph 5.3.)
- Carry out magazine set-up according to the bar to be machined (paragraph 5.4. o 5.5.)
- Load the bar magazine (paragraph 6.7.).
- Load one bar into the lathe (paragraph 6.9.).
- Adjust the lubricating oil flow (paragraph 6.10.).

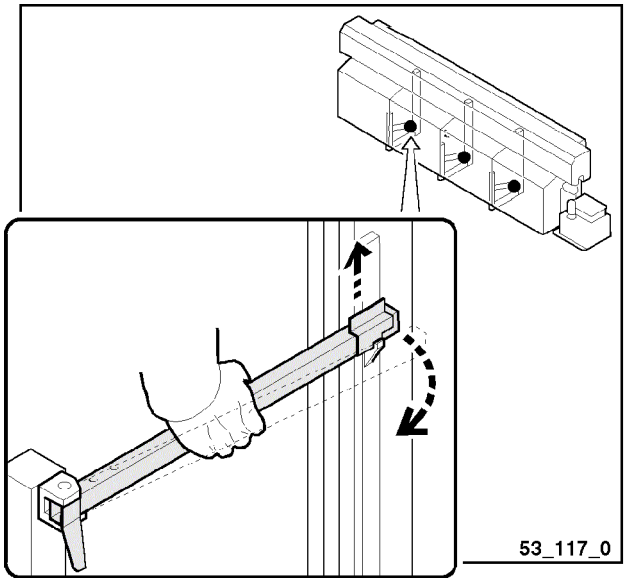
6.7 BAR MAGAZINE - LOADING

CAUTION:

do not manually lift loads heavier than those mentioned by the regulations in force; ask for an assistant's help, if needed.

CAUTION:

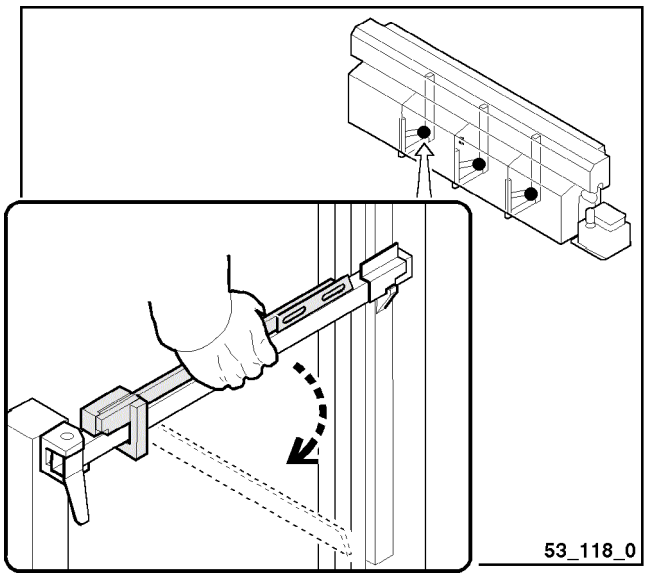
make use of the personal protections recommended by the regulations in force.



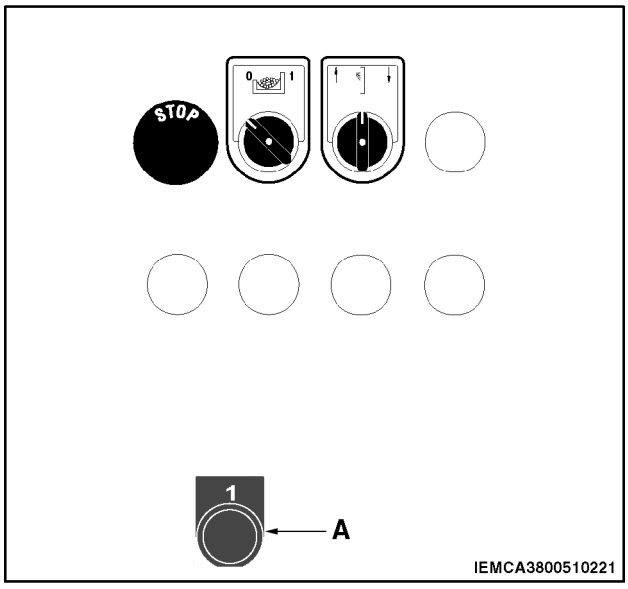
RACK MAGAZINE - MASTER 880 P

- Open storage magazine covers; orange light, of the indicator light, starts flashing.
- Open all bar supporting arms.

- If bar holding arms are installed, remove them from their housing ad make them turn of 90°.
- Place the bars on the first rack, then on all other racks.
- Close magazine covers; orange light continues to flash.

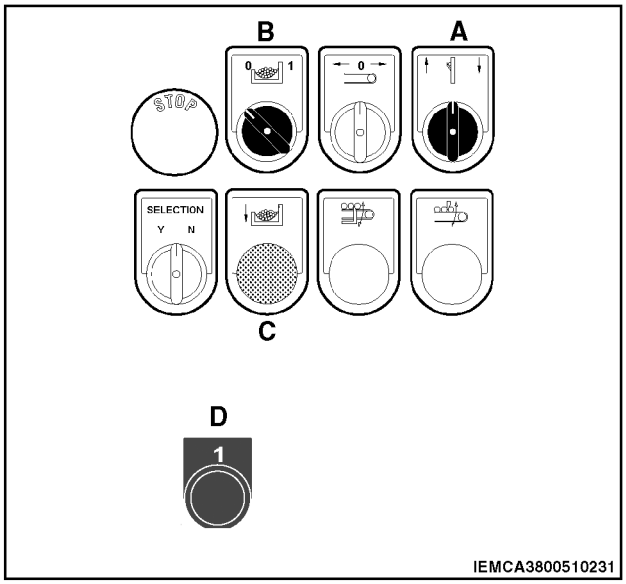


- Reset pushing (A) button; orange light stops flashing.

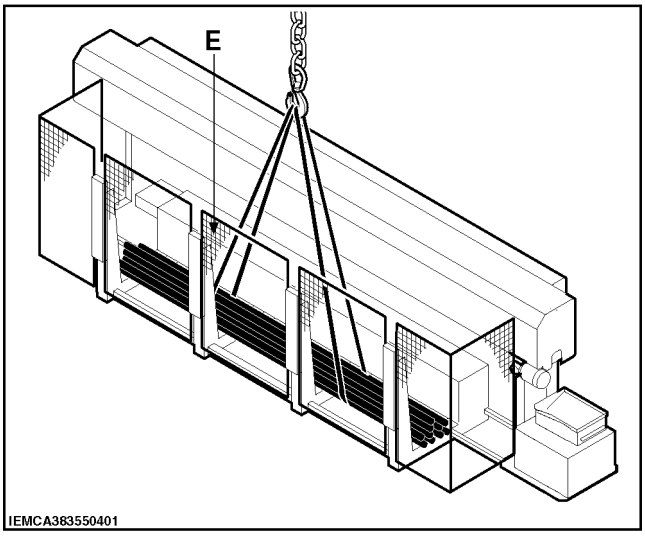


BAR BUNDLE MAGAZINE - MASTER 880 F

- Bring the lifting devices to the bottom limit stop by using the selector (A).
- Turn selector B to position 0 and lower the lifting belts through selector (C).



- Remove (E) guard; orange light, of the indicator light, starts flashing.
- Place bars in the belts.



CAUTION:

do not load global weight bars over 2500 kg.

- Repositioning the guard; orange light continues to flash.
- Reset pushing (D) button; orange light stops flashing.
- Select the magazine automatic cycle bringing selector (B) to position 1.

6.8 AUTOMATIC CYCLE START

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

to start the bar feeder.
- Press 

to select the manual mode.
- Carry out a "BAR FEEDER ZERO SETTING" in the following way:

  -press the start buttons plus 

;

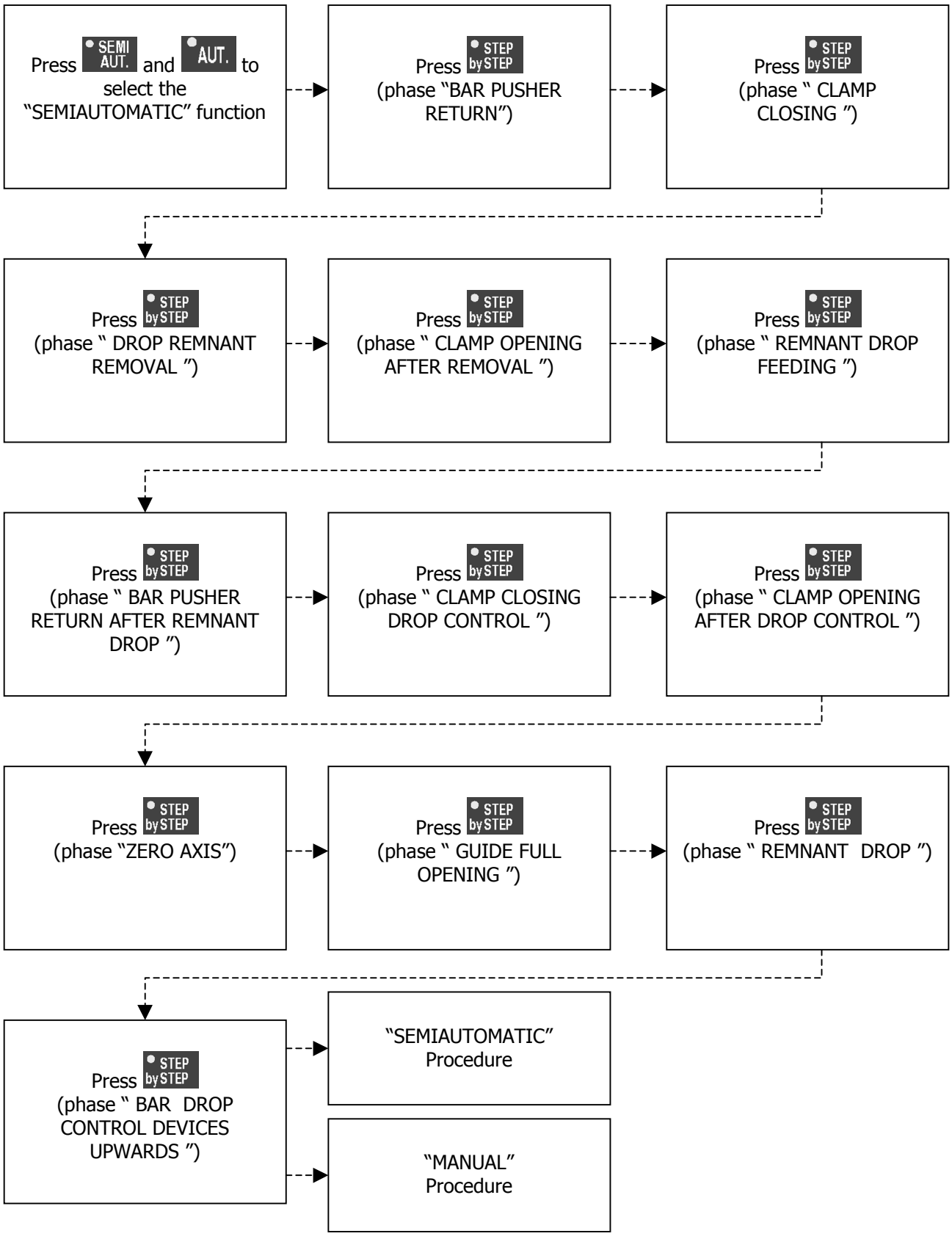
INFORMATION:

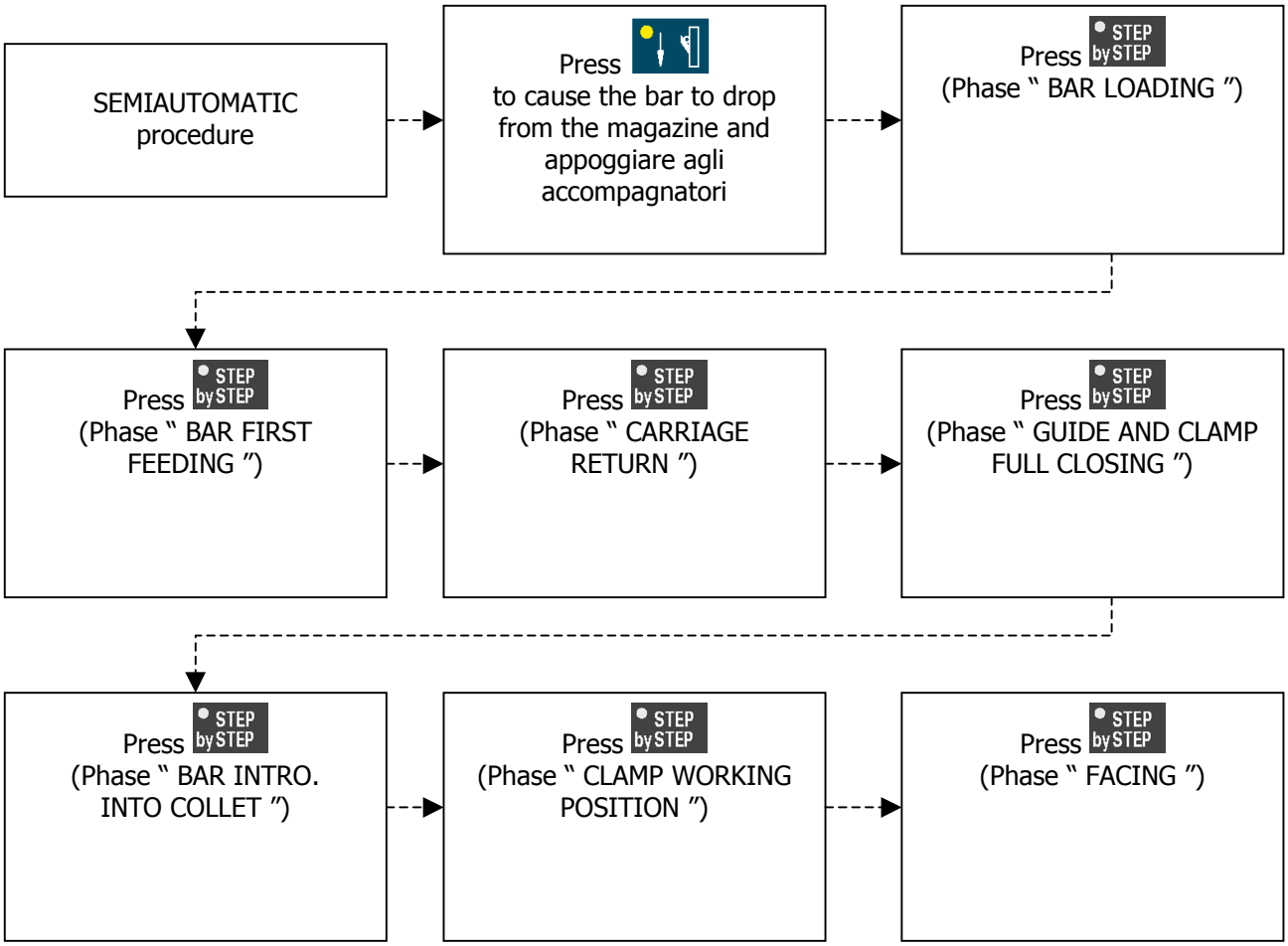
Axes zero setting can be performed with the guides open or closed.

Before setting to zero, make sure the bar pusher position is not "to back limit stop".

- Load one bar in the guides and start the automatic cycle.

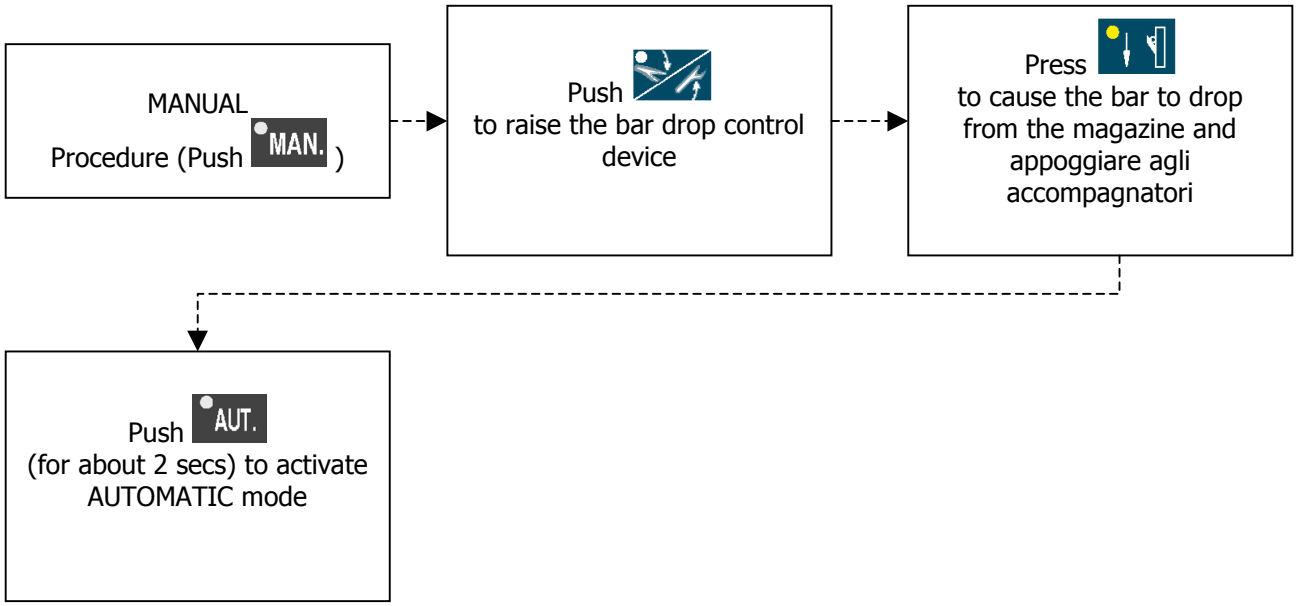
6.9 BAR LOADING - PROCEDURE





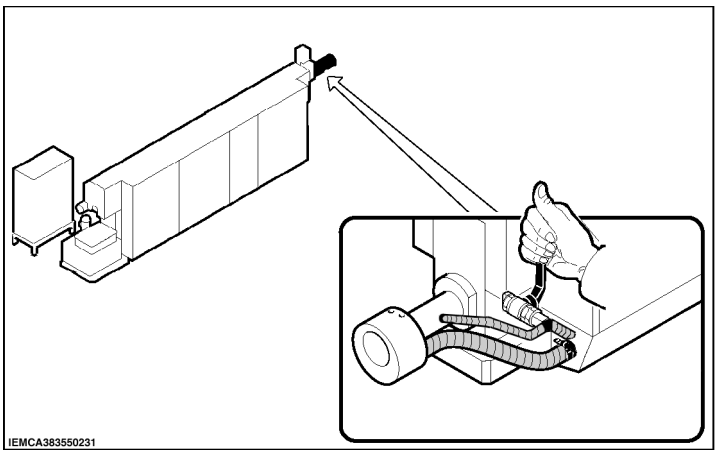
INFORMATION:

the bar drop controls will not ascend if, during the "TOTAL GUIDES OPENING" phase there was a bar in the guide channels that has prevented the short feed door from resetting.


MANUAL
Procedure (Push MAN.)
Push
to raise the bar drop control device
Press
to cause the bar to drop from the magazine and appoggiare agli accompagnatori
Push AUT.
(for about 2 secs) to activate AUTOMATIC mode

6.10 LUBRICATION OIL - FLOW ADJUSTMENT

Oil flow in the guides and bush-holder device is automatically controlled during the feeder automatic cycle. The pump is started after the feeder has completed bar change-over; it is stopped when the bar-pusher approaches the bush-holder device. It is necessary to adjust the oil flow in the bushing-holding device according to the bar diameter and profile.



6.11 BAR FEEDER STOP

BAR FEEDER EMERGENCY STOP

CAUTION:

if the emergency stop is enabled during the lathe machining, before starting the working cycle again, make sure that no dangerous condition due to the sudden stop has occurred. Example: if the tool was removing chip, take the piece far from the lathe before starting the lathe again.

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

BAR FEEDER STOP AT MACHINING END

CAUTION:

do not use the emergency push-buttons for the ordinary bar feeder stop.

- Achieve the operations of the working program.
- Stop the bar feeder pressing push-button  .
- Stop the lathe.
- Turn the main electric switch onto position OFF.

6.12 CYCLE EXECUTION MODE IN THE "STEP-BY-STEP" FUNCTION

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

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

Procedure

- Press 

to start the bar feeder;
- make sure that the remnant drop device is closed, should it be not so, press 

and  to control remnant drop device closure;
- Press 

and 

to select the "semiautomatic" function;
- Press, 

the bar feeder performs the first step;
- Press, 

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

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7.1 MAINTENANCE - GENERAL RULES

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

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

INFORMATION:
oxidation can damage metal parts and electric equipment.

To protect the bar feeder during long periods of inactivity, disconnect it from the mains, let the compressed air out and cover with a piece of adequate cloth.
Any protection used should not be fully closed or sealed at the base; it should have ventilation holes to make sure that air within the envelope cannot condense due to lack of circulation.

7.2 SCHEDULED MAINTENANCE

Table 1. Scheduled maintenance

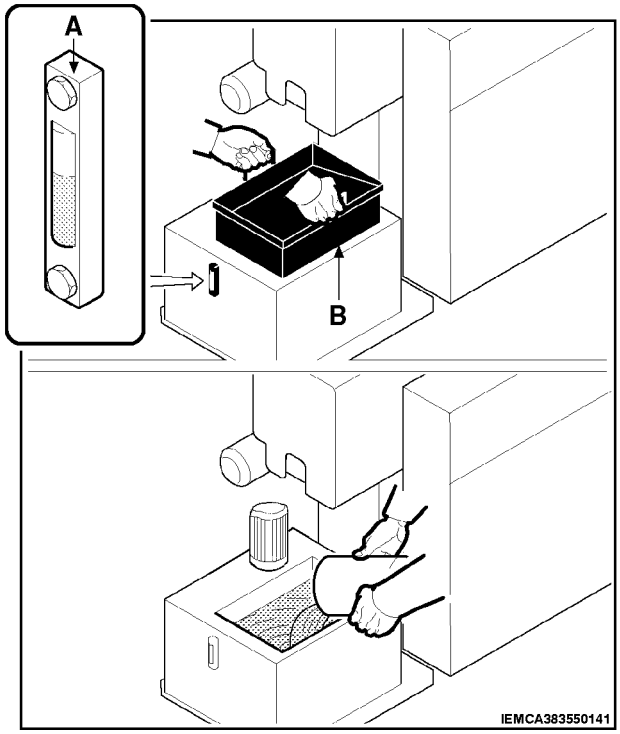
Model	Bar feeder part	Operation to carry out	Frequency					
			Hours				Every year	Periodically
			200	500	1250	2500		
MASTER 880 P MASTER 880 F	Revolving tip and collet	Wear check	•					
	Half-bushing	Wear check	•					
	Lubrication system	Oil level check	•					
		Oil change				•		
		Oil filter cleaning						•
	Guides	Repair and cleanness check			•			
	Feed chain	Lubrication	•					
		Tension check			•			
	Air filter	Check						•
	Elevator chains	Lubrication		•				
		Tension check		•				
	Remnant conveyor belt	Tension and cleanness check						•
	Keyboard battery	Replacement					•	
	PLC Battery	Replacement				•	•	
MASTER 880 P	Lift truck motorisation chain	Lubrication		•				
MASTER 880 F	Lifting belts	Wear check		•				
	Conveying belts	Tension check			•			
		Wear check				•		
	Conveying belt motorisation chain	Lubrication		•				
		Tension check				•		
	Lift truck motorisation chain Lubrication	Lubrication		•				
		Tension check				•		

7.2.1 Lubricating oil - Level check

CAUTION:
wear the personal protections prescribed by the applicable standards in force.

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

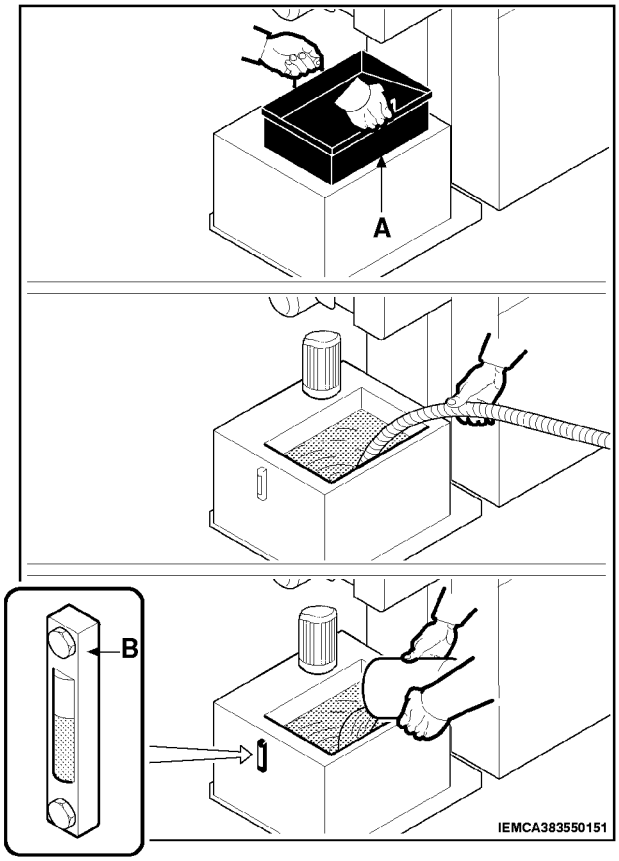
  Oil characteristics: C CLASS - CKB 150.
  See paragraph 2.6. for the comparative table.



7.2.2 Lubricating oil - Change

CAUTION:
wear the personal protections prescribed by the applicable standards in force.

NFORMATION:
store spent oil in special containers to be delivered to companies specialized in pollutant disposal and storage.



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

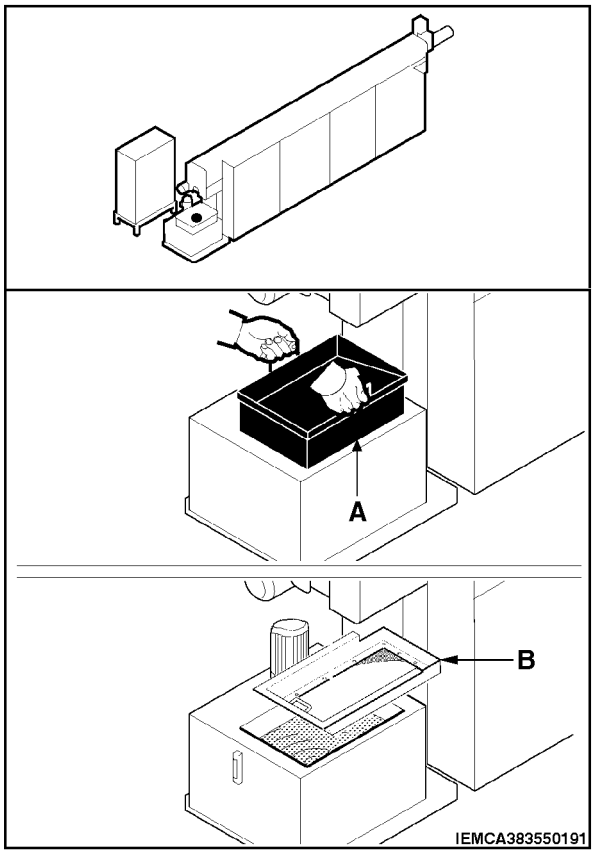
  Oil characteristics: C CLASS - CKB 150, amount 80 l.

See paragraph 2.6. for the comparative table.

7.2.3 Oil filter - Cleaning

CAUTION:
wear the personal protections prescribed by the applicable standards in force.

- Wait until the feeder has been powered off for at least 6 hours.
- Remove box A.
- Extract filter B and clean the filtration mesh.
- Refit filter and box in their respective locations.



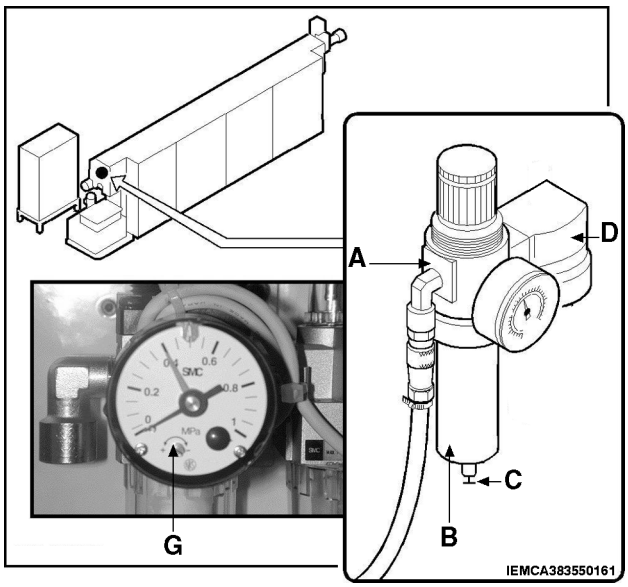
7.2.4 Air filter unit - Check

FILTER (A)

- Make sure that cup (B) is not full of condensate. If need be, bleed the condensate by valve (C).Make sure that cup (B) is not full of condensate. If need be, bleed the condensate by valve (C).

- The filter is equipped with a control pressure switch, set to a pressure of 4.5 bar.

  - remove the pressure gauge protecting glass;
  - turn the adjusting screw (G) anticlockwise (+) to increase pressure or clockwise (-) to lower it;
  - after this operation, replace the pressure gauge protecting glass.

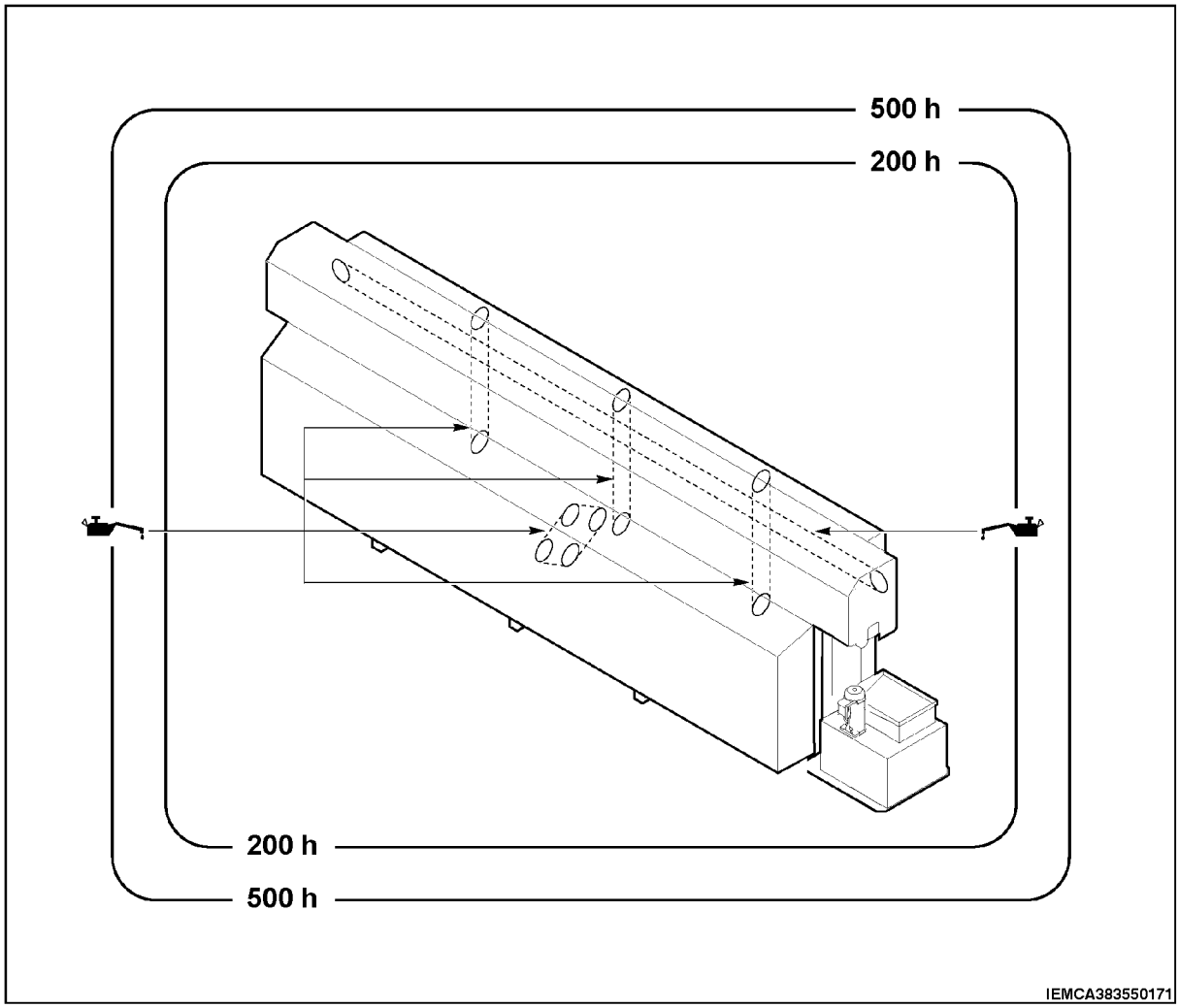


CAUTION:

should the pressure switch needle point a Pressure=0 , do not absolutely turn the adjusting screw (H) clockwise (-) , for this will cause pressure switch breakage.

7.3 SCHEME OF THE LUBRICATION POINTS

MASTER 880 P



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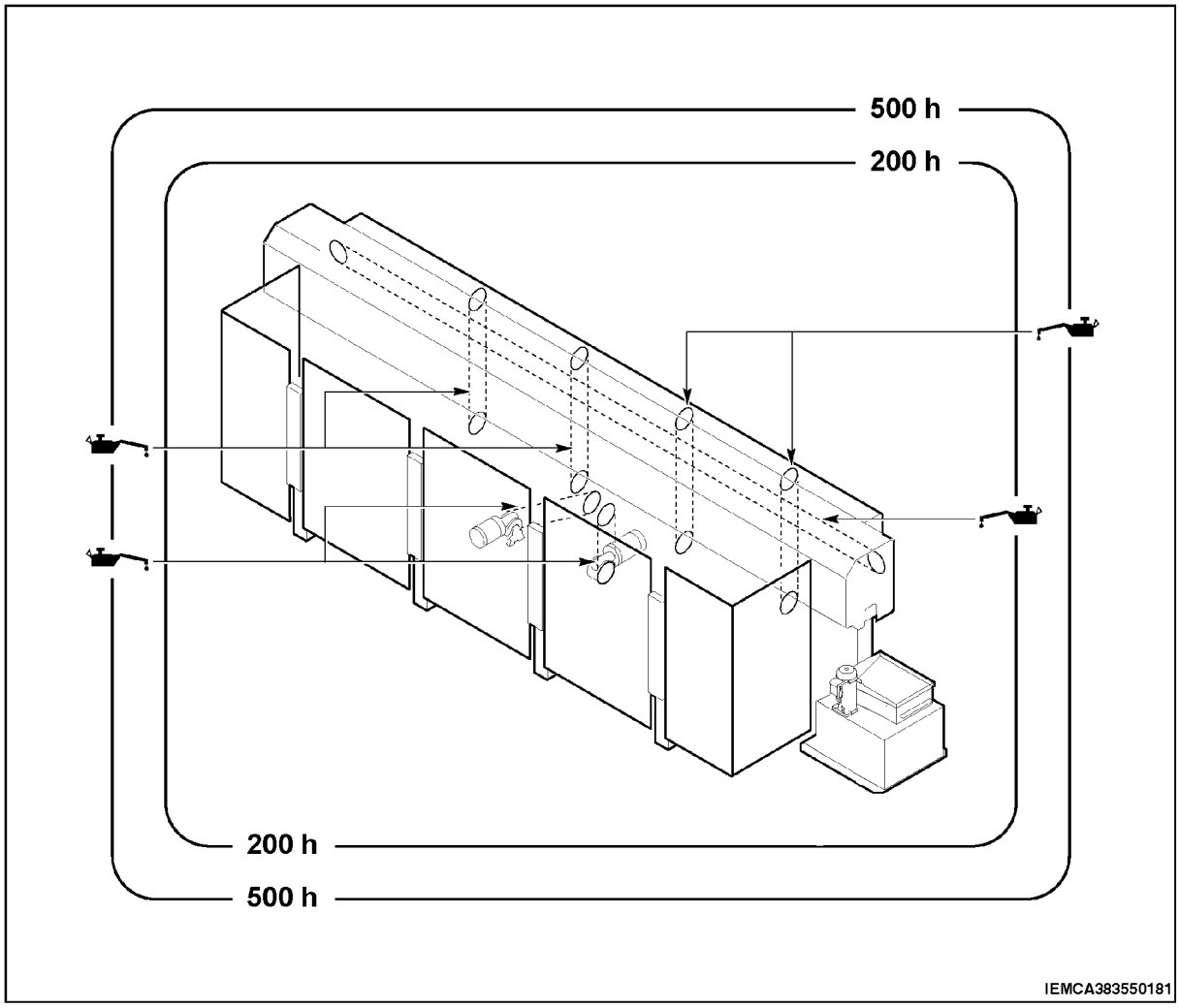
MASTER 880 F



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8.1 GENERAL FAULTS

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

8.2 LIFT TRUCKS - FAULTS

TROUBLES	CAUSES	CURES
Lift trucks in the highest position lower because of the bar weight	The safety joint of the lift truck motorisation is not adjusted correctly	**Adjust the joint**
Only for MASTER 880 P		
The lifting devices have bent the bar taken from the racks	The safety joint of the elevator drive is not adjusted properly.	Adjust the joint

8.3 INSERTION IN THE COLLET - Faults

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

8.4 BAR FEEDING - Faults

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

8.5 REMNANT TRANSPORTATION - ANOMALIES

TROUBLES	CAUSES	CURES
Remnant cannot be ejected	Remnant conveyor is not regulated by optimal tension and therefore drive shaft slides, not being able to transmit the motion.	Verify and correct belt tensioning.
	Remnant passage door spring is too pre-loaded.	Reduce spring pre-load.

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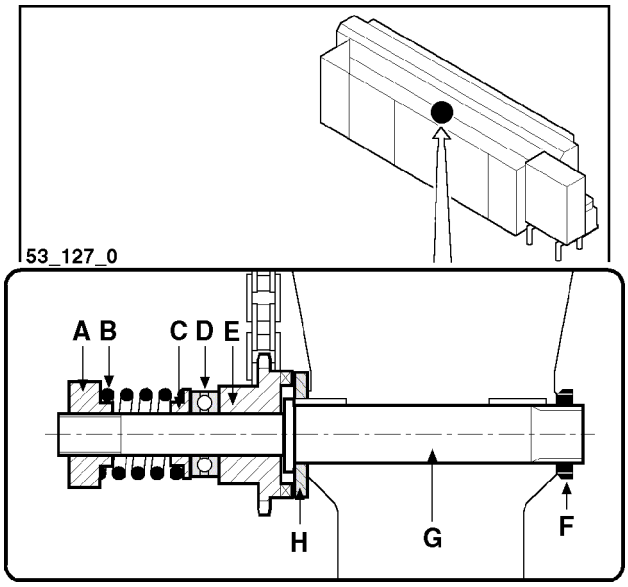
9.1 FEED CHAIN - REPLACEMENT

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

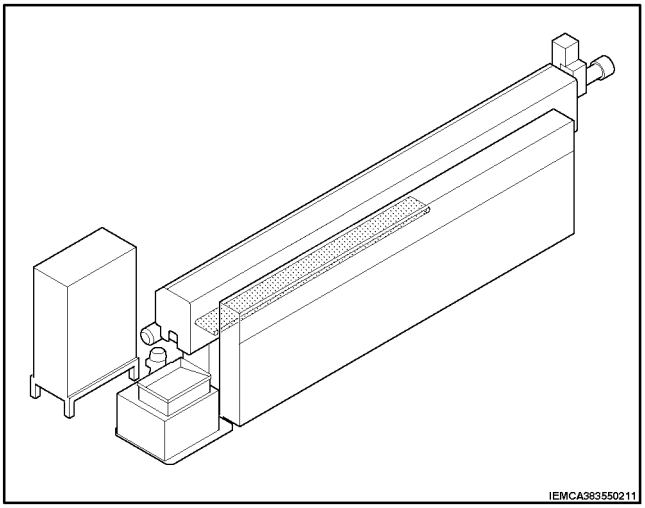
9.2 LIFT TRUCK MOTORISATION SAFETY

- Slacken motorisation chain:
  for MASTER 880 P: remove the two springs responsible for the chain tension;
  for MASTER 880 F: see paragraph 5.2.6.
- Remove ring nut (A) and extract in sequence: spring (B), washer (C), bearing (D), pinion (E).
- Remove ring nut (F) and extract in sequence: shaft (G), flange (H).
- Reassemble all components in the inverted order, replacing worn flange (H) and pinion (E) with the new ones.
- Stretch chain.



9.3 REMNANT CONVEYOR - REPLACEMENT

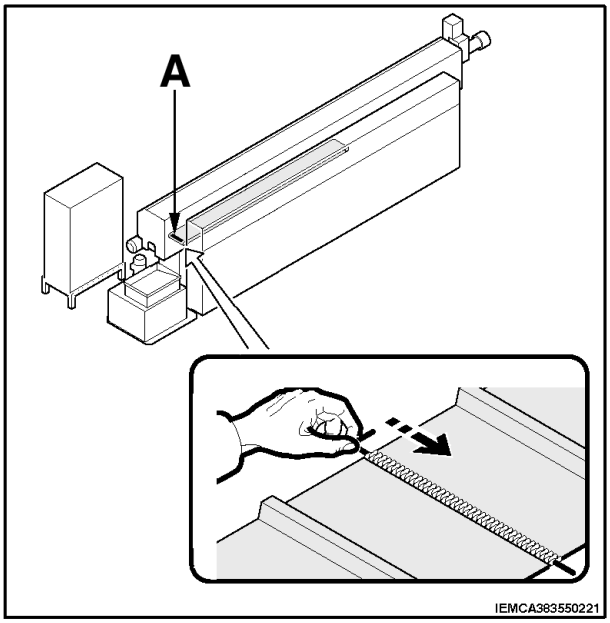
- Loosen the belt, see paragraph 5.2.2.
- Lift the belt.



CAUTION:

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

- Cut the worn belt so that it can be removed from its seat.
- Splice one end of the worn belt with one end of the new belt. Slide out the worn belt so that the new one can be simultaneously inserted along the entire path.
- Separate the splice between the original and new belts.
- Splice the ends of the new belt using joining rod A.
- Tension the belt, see heading 5.2.2.
- Restore bar feeder initial conditions.



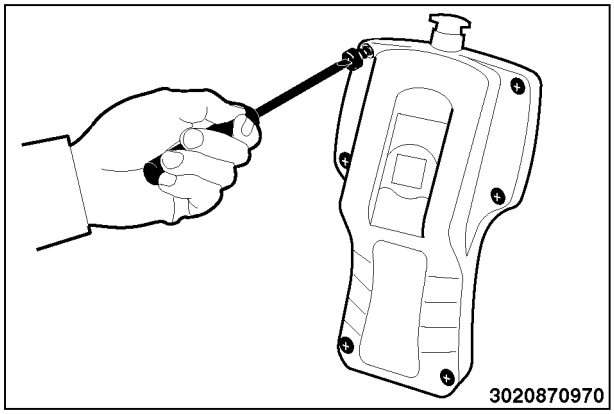
9.4 KEYBOARD BATTERY - REPLACEMENT

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

INFORMATION:

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

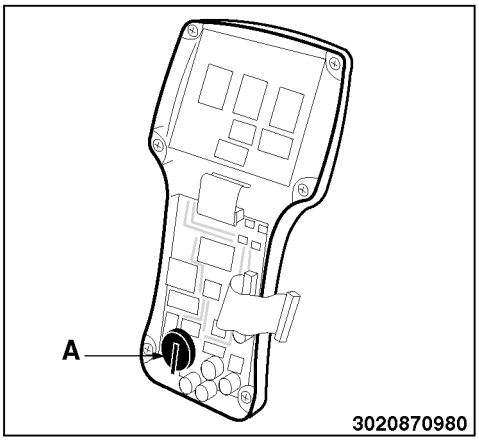
- Disconnect power.
- Screw out the six screws and remove the two half-shells.



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

DANGER - WARNING:

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



- Put the two half-shells back in place and screw down the six screws.
- Connect electric power again.

INFORMATION:

Discard spent batteries by depositing them at authorised collection points. Help protect the environment.

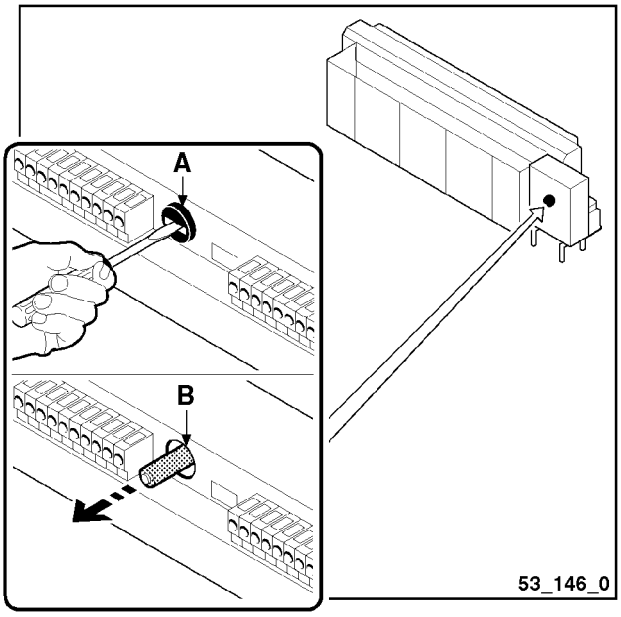
9.5 PLC BATTERY - REPLACEMENT

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

INFORMATION:

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

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



9.6 RECOMMENDED SPARE PARTS

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

Model	Code	Designation	Characteristics	Notes	Qty.
MASTER 880 P MASTER 880 F	24220108	Feed chain	1/2"x5/16"	For model 33	1
	24220109	Feed chain	1/2"x5/16"	For model 38	1
	24220121	Feed chain	1/2"x5/16"	For model 43	1
	24290606	Connecting link	1/2"x5/16"		1
	32210004	Sensor	3RG4012-0AG07		1
	32210013	Sensor	3RG4012-0AG33		1
	32210017	Sensor	3RG4012-0AG00		1
	32210019	Sensor	3RG4012-0AG33-Z		1
		Bar pusher		Specify diameter and length	1
		Rotary unit		Specify diameter	1
		Collet		Specify inside and outside diameters	1

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10.1 LIST OF AFTER-SALES CENTERS

UK :	Kitagawa Europe Ltd.	7 Dolphin Industrial Estate, Southampton Road SP12NB Salisbury	Phone ++44 1722 439721 Fax ++44 1722 421071 www.kitagawaeurope.com
FRANCE:	IEMCA France	Z.I. Des Grands Pres 145, rue Louis Armand 74300 Cluses	Tel +33 450 896960 Telefax +33 450 896135 Email: iemca@iemca.fr
GERMANY: *(West - Nord-Deutschl.)*	Hoßfeld GmbH	Königsberger Straße 10 D-58511 Lüdenscheid	Tel. ++49 02351 / 80521 Fax ++49 02351 / 860442 Email: HossfeldgmbH@t-online.de
GERMANY: *(Neue Länder)*	Heyde Maschinen Service	Albin-Trommler-Str. 3 D-08297 Zwönitz	Tel. ++49 037754 / 5090 Telefax ++49 037754 / 50920 - Email Heyde-maschinen-service@t-online.de Heyde-zwoenitz@t-online.de
GERMANY: *(Süd-Deutschl)*	Reimo Lobers	Elektro-Mechanischer Betrieb Rebgartenweg 5/1 D-79576 Weil am Rhein	Tel. ++49 07621 / 69551 Fax ++49 07621 / 69491 Email: Mail@lobers.de
ITALY:	IEMCA S.p.A.	Via Granarolo, 167 I-48018 Faenza (RA)	Tel. 0546 / 698208 Fax 0546 / 698290 Email: iemca@igmi.it
SWITZERLAND: *(Canton Ticino)*	IEMCA S.p.A.	Via Granarolo, 167 I-48018 Faenza (RA)	Tel. 0546 / 698208 Telefax 0546 / 698290 Email: iemca@igmi.it
SWEDEN	Kenson Component AB	Box,114 44139 Alingsaes	Phone ++46 322 637890 Fax ++46 322 633367 E-mail: info@kenson.se - www.kenson.se
SWITZERLAND: *(Suisse Française)*	BARSPEED	Zone industrielle CH- 2607 Cortébert	Tel. ++41 032 / 4892726 Telefax ++41 032 / 4892729
TAIWAN (ROC):	GIMCO	No9, 19th Road Taichung Industrial Park - Taichung - Taiwan R.O.C	Tel. ++886-4-23596980 Telefax ++886-4-23586838 Email: gimcoint.@ms19.hinet.net
JAPAN:	IGM Nippon K.K.	Tokio-To,Edogawa-Ku, Nakakasai 7-31-15 Shimisu Bld 1th floor. Zip code 134-0083	Tel ++81 356058016 Telefax ++81 356058066 E-mail: h.murakami@igmnippon.co.jp
BRASIL:	IGM DO BRASIL LTDA.	rua Melo Palheta 165 CEP 05002030 Sao Paulo Brasil	Phone +55 11 3801 3763 Fax +55 11 3801 3563 E-mail: igmdobrasil@uol.com.br
U.S.A. **CANADA :**	HYDROMAT INC.	11600 Adie Road St. Louis, MO 63043	Tel. ++314 6928388 Telefax ++314 6925179 Email: iemcaservice@hydromat.com

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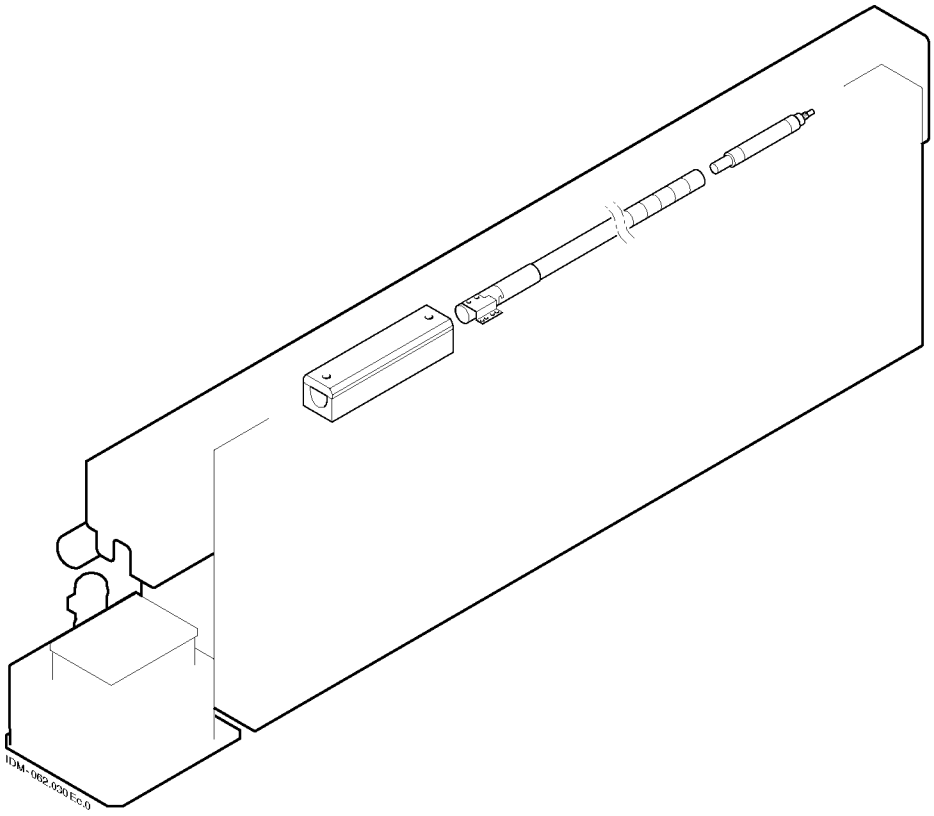
Fax 0086 21 64877987
E-mail: richardsha@163.net

IEMCA

GUIDE CHANNELS
GUIDE-BARRES
BAR PUSHER
POUSSETTE
REVOLVING TIPS
EMBOUTS TOURNANTS

MASTER 880 P/F



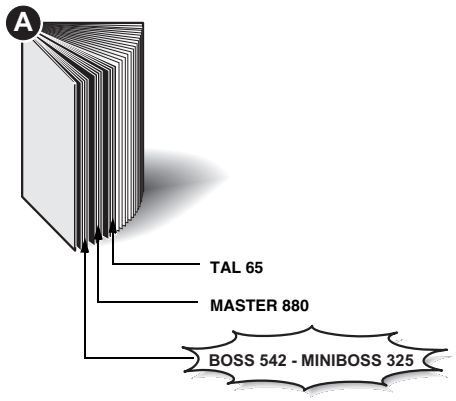
REL. 4 DATA 30/10/02

Read this introductory section carefully; it will help you easily trace the data you require. This manual is divided into a number of parts which are in turn divided into a number of sections (see contents page). These contain detailed information relative to the equipping of the bar feeders depending on the cross-section of the barstock, its diameter, the type of collet to be used, etc.
An example of the method of consultation described below refers to equipping of a BOSS 542 model bar feeder; the procedure described may vary for other bar feeder models.

Nous recommandons de lire attentivement cette partie introductive ; vous pourrez ainsi retrouver plus facilement les données qui vous intéressent. Ce manuel est composé de plusieurs fascicules subdivisés en différentes sections (voir index). Il contient une série d'informations articulées, relatives au montage des chargeurs en fonction de la barre à usiner, de son diamètre, du type de pinces à utiliser,etc.
L'exemple de consultation ci-dessous concerne le montage du chargeur modèle BOSS 542; la procédure qui y est décrite peut subir des variations selon les modèles de chargeurs.

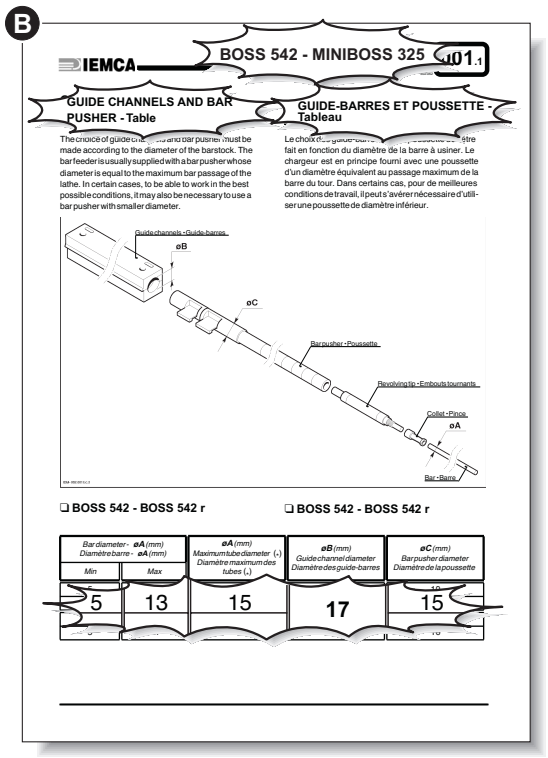
A Select and consult the specific section concerning the bar feeder you are interested in.

A Sélectionner et consulter le fascicule correspondant au modèle du chargeur qui vous intéresse.



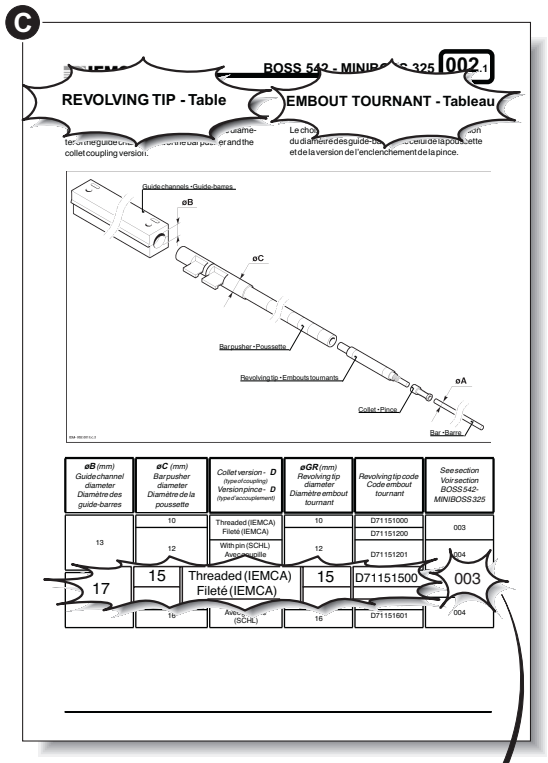
B Consult the **"GUIDE CHANNELS AND BAR PUSHER - Table"** section of the selected section, select the guide channels and bar pushers suitable for the diameter of the barstock. While ordering these, specify the code, which is to be found in the "Spare parts catalogue".

B Consulter la section **"GUIDE-BARRES ET POUSSETTE - Tableau"** du fascicule sélectionné, choisir les guide-barres et la poussette en fonction du diamètre de la barre à usiner. Pour toute commande, spécifier le code, indiqué dans le "Catalogue des pièces détachées".



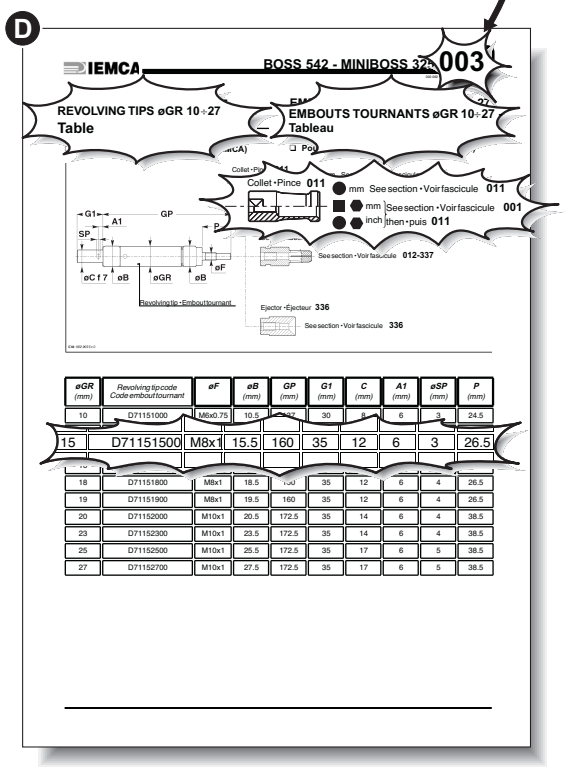
C Consult the **"REVOLVING TIP - Table"** section to select the revolving tip according to the diameter of the guide channel and that of the bar pusher, and the collet model to be used(1).

C Consulter la section **"EMBOUT TOURNANT - Tableau"** pour choisir l'embout tournant en fonction du diamètre des guide-barres, de celui de la poussette et de la version pince à utiliser(1).



D Consult the **"REVOLVING TIP øGR 10÷27 - Table"** section to select the type of collet(2).
This section contains the dimensions of the revolving tip and a series of drawings of collets, with reference to the corresponding sections in which you will find the code number of the collet to be used.

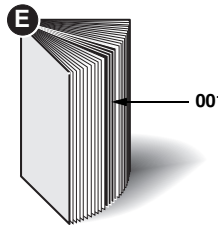
D Consulter la section **"EMBOUTS TOURNANTS øGR 10÷27 - Tableau"** pour choisir le type de pince(2).
Cette section présente un tableau des dimensions de l'embout tournant et une série d'illustrations des pinces accompagnée des références aux différents fascicules dans lesquels retrouver le code de la pince à utiliser.

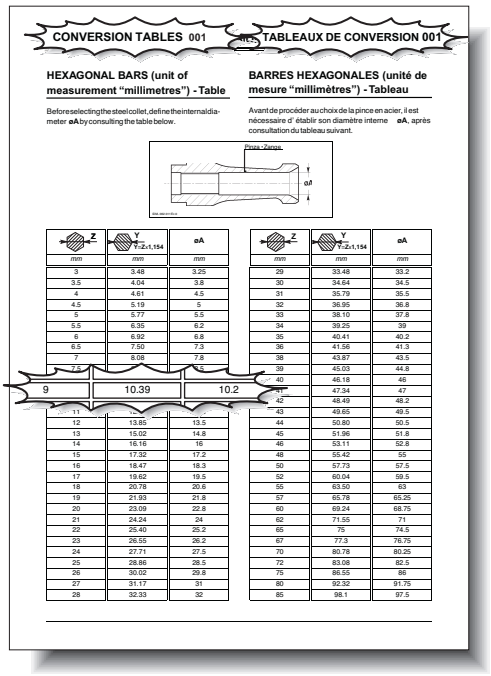


(1) Collet model; identifies the type of collet-revolving tip coupling (e.g. threaded coupling, pin coupling, etc.).
Version pince; indique le type d'accouplement (par ex. accouplement fileté, avec goupille, etc.).
(2) Type of collet; identifies the cross-section of the barstock and the type of machining.
Type de pince; indique la section de la barre à usiner et le type d'usinage à adopter.

Ⓔ Consult the **"001 - Conversion Tables"** section which contains the conversion tables for defining the internal diameter of the collet depending on the:
- profile and cross-section of the barstock
- the unit of measurement of the section dimensions (in millimetres for square and hexagonal sections, and in inches for round and hexagonal sections).

Ⓔ Consulter le fascicule **"001 - Tableaux de conversion"** contenant les tableaux de conversion pour établir le diamètre interne de la pince en fonction:
- du profil et de la section de la barre à usiner
- de l'unité de mesure de la dimension de la section (en millimètres pour les sections carrées et hexagonales et en pouces pour les sections rondes et hexagonales).





CONVERSION TABLES 001 — TABLEAUX DE CONVERSION 001

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

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

BARRES HEXAGONALES (unité de mesure "millimètres") - Tableau

Avant de procéder au choix de la pince en acier, il est nécessaire d' établir son diamètre interne **øA**, après consultation du tableau suivant.

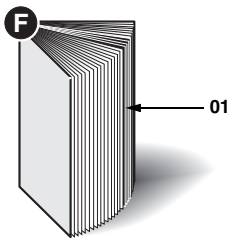
Pince - Zange

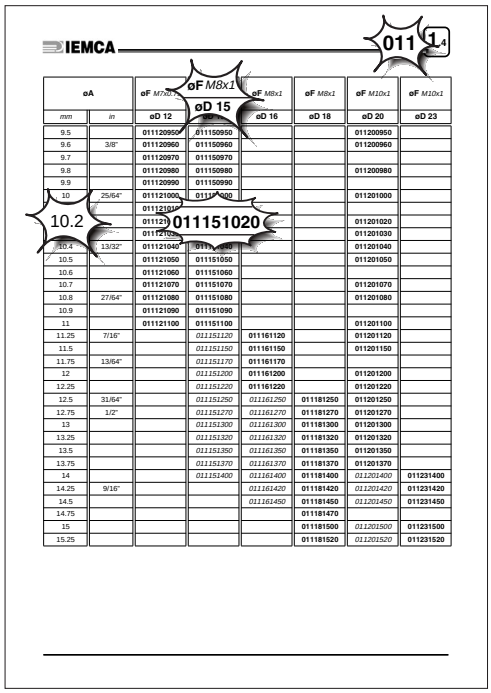
Z mm	Y T=Z:1,154 mm	øA mm
3	3.48	3.25
3.5	4.04	3.8
4	4.61	4.5
4.5	5.19	5
5	5.77	5.5
5.5	6.35	6.2
6	6.92	6.8
6.5	7.50	7.3
7	8.08	7.8
7.5		8.5
9	10.39	10.2
11		
12	13.85	13.5
13	15.02	14.8
14	16.16	16
15	17.32	17.2
16	18.47	18.3
17	19.62	19.5
18	20.78	20.6
19	21.93	21.8
20	23.09	22.8
21	24.24	24
22	25.40	25.2
23	26.55	26.2
24	27.71	27.5
25	28.86	28.5
26	30.02	29.8
27	31.17	31
28	32.33	32

Z mm	Y T=Z:1,154 mm	øA mm
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
72	83.08	82.5
75	86.55	86
80	92.32	91.75
85	98.1	97.5

Ⓕ Consult the **"011 - Bar collets"** section to identify the code number of the collet selected.
For identifying this code, use the data obtained from previous consultations.
For example:
- coupling diameter with revolving tip
- internal diameter of collet corresponding to diameter of the round section bar (in millimetres); for profiles of bars which do not have these characteristics, consult the references found in the **"001 - Conversion Tables"** section**.**

Ⓕ Consulter le fascicule **"011 - Pinces barres"** pour identifier le code de la pince sélectionnée.
Pour l'identification de ce code, utiliser les données déjà obtenues au cours des consultations précédentes.
Par exemple :
- diamètre d'accouplement avec l'embout tournant
- diamètre interne de la pince correspondant au diamètre de la barre avec section ronde (en millimètres); pour les profils de barres ne présentant pas les mêmes caractéristiques, consulter les références indiquées précédemment dans le fascicule **"001 - Tableaux de conversion"**.





IEMCA — 011 1.4

øA mm	øA in	øF M7x1 øD 12	øF M8x1 øD 15	øF M8x1 øD 16	øF M8x1 øD 18	øF M10x1 øD 20	øF M10x1 øD 23
9.5		011120950	011150950			011200950	
9.6	3/8"	011120960	011150960			011200960	
9.7		011120970	011150970				
9.8		011120980	011150980			011200980	
9.9		011120990	011150990				
10	25/64"	011121000	011151000			011201000	
10.2		011121020	011151020			011201020	
10.3		011121030				011201030	
10.4	13/32"	011121040				011201040	
10.5		011121050	011151050			011201050	
10.6		011121060	011151060				
10.7		011121070	011151070			011201070	
10.8	27/64"	011121080	011151080			011201080	
10.9		011121090	011151090				
11		011121100	011151100			011201100	
11.25	7/16"		011151120	011161120		011201120	
11.5			011151150	011161150		011201150	
11.75	13/64"		011151170	011161170			
12			011151200	011161200		011201200	
12.25			011151220	011161220		011201220	
12.5	31/64"		011151250	011161250	011181250	011201250	
12.75	1/2"		011151270	011161270	011181270	011201270	
13			011151300	011161300	011181300	011201300	
13.25			011151320	011161320	011181320	011201320	
13.5			011151350	011161350	011181350	011201350	
13.75			011151370	011161370	011181370	011201370	
14			011151400	011161400	011181400	011201400	011231400
14.25	9/16"			011161420	011181420	011201420	011231420
14.5				011161450	011181450	011201450	011231450
14.75					011181470		
15					011181500	011201500	011231500
15.25					011181520	011201520	011231520

❑ Symbols

Parts of the text which are of considerable importance are highlighted in bold and are preceded by the following symbols:

CAUTION: indicates that it is necessary to adopt suitable measures for preventing accidents and damage to objects.

INFORMATION: these are technical instructions of considerable importance.

The symbols used in the tables and figures are as follows:
● bars with round section
■ bars with square section
⬣ bars with hexagonal section
○ bars with tubular section

❑ Abbreviations

CH key socket
GR revolving tip
SP hole for pin

The abbreviations in the drawings, which are easy to interpret, are not included in this list.

❑ Symboles

Les parties les plus importantes du texte sont mises en relief en caractères gras et sont précédées des symboles :

PRECAUTION: indique qu'il s'avère nécessaire d'adopter les comportements adéquats afin d'éviter accidents et dommages.

AVERTISSEMENT: il s'agit d'indications techniques particulièrement importantes.

Dans les tableaux et figures, les symboles suivants peuvent apparaître:
● barre à section ronde
■ barre à section carrée
⬣ barre à section hexagonale
○ barre à section tubulaire

❑ Abréviations

CH prise de clé
GR embout tournant
SP orifice pour goupille

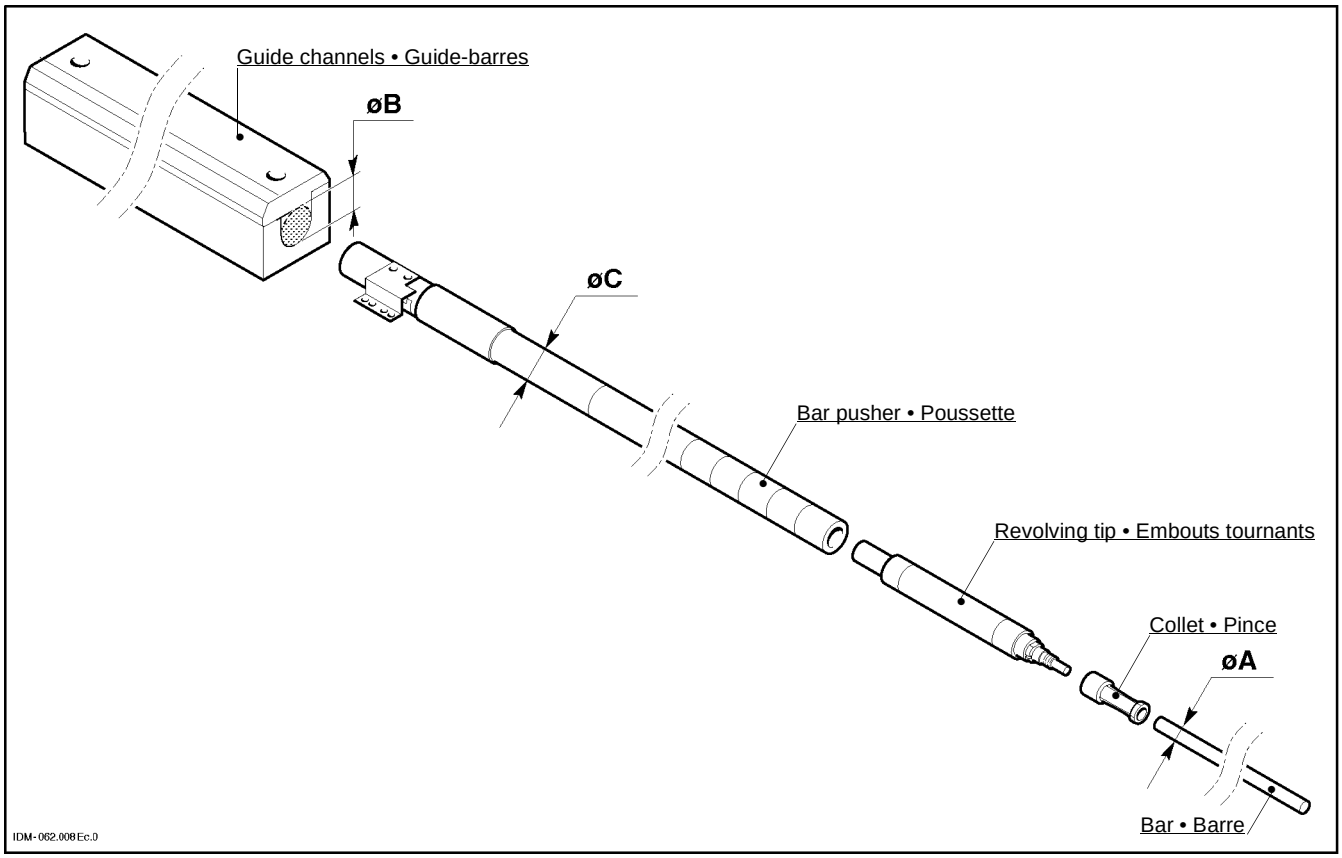
Les abréviations faciles à interprétées reportées dans les illustrations, ne font pas partie de cette liste.

GUIDE CHANNELS AND BAR PUSHER - Table

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

GUIDE-BARRES ET POUSSETTE – Tableau

Le choix des guide-barres et de la poussette doit être fait en fonction du diamètre de la barre à usiner. Le chargeur est en principe fourni avec une poussette d'un diamètre équivalent au passage maximum de la barre du tour. Dans certains cas, pour de meilleures conditions de travail, il peut s'avérer nécessaire d'utiliser une poussette de diamètre inférieur.



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

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

PRECAUTION: le champ d'application des pinces pour les diamètres des barres usinables dans chaque guide-barre est celui qui est indiqué sur le tableau. Lorsque ce diamètre est plus petit de 10 mm que le diamètre du guide-barre, peuvent se créer des vibrations et des défaillances sur le chargeur. Il faut donc considérer la possibilité de réduire la vitesse de rotation de la barre ou bien de changer le diamètre du guide-barre pour optimiser l'application.

AVERTISSEMENT: sur demandes spécifiques des clients, nous pouvons fournir des pinces pas standard (pas indiquées sur le tableau), avec des épaisseurs plus minces, qui évidemment ne garantissent pas la même durée que celles de dotation.

*Bar diameter - **øA** (mm)* *Diamètre barre - **øA** (mm)*		***øA** (mm)* *Maximum tube diameter (*)* *Diamètre maximum des tubes (*)*	***øB** (mm)* *Guide channel diameter* *Diamètre des guide-barres*	***øC** (mm)* *Bar pusher diameter* *Diamètre de la poussette*
Min	*Max*			
8	18	20	**21**	20
8	23	25	**26**	25
10	29	31	**33(**)**	32
10	32	35	**36**	35
12	39	42	**43**	42
15	42	45	**46**	45
18	47	51	**52**	51
22	52	56	**57**	56
30	56	60	**61(**)**	60
38	61	65	**66**	65
48	63	68	**69**	68
48	65	70	**71**	70
50	67	72	**73**	72
50	70	75	**76**	75
52	75	80	**81**	80
55	80	80	**86(**)**	85

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

(**) *Recommended guide channels on the basis of the minimum bar passage of the lathe.*
Example: maximum bar passage ø85 - GUIDE CHANNELS 86-61-33
Example: maximum bar passage ø80 - GUIDE CHANNELS 81-61-33
Example: maximum bar passage ø75 - GUIDE CHANNELS 76-61-33

(*) *Valable également pour les barres préparées ou les barres normales à usinage avec éjection antérieure de la chute.*

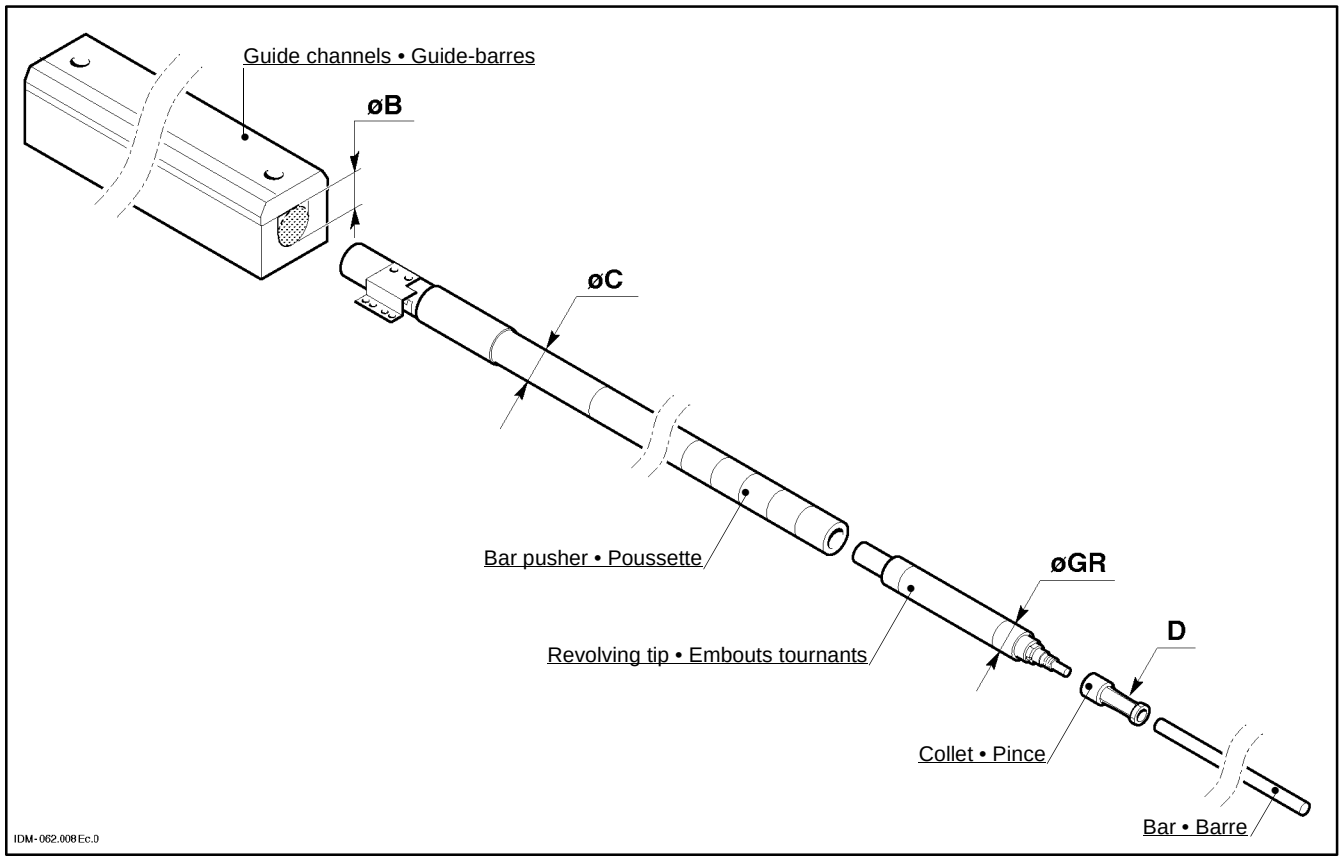
(**) *Guide-barres conseillés en fonction du passage maximum de la barre du tour.*
Exemple: passage maximum de la barre ø85 – GUIDE-BARRES 86-61-33
Exemple: passage maximum de la barre ø80 – GUIDE-BARRES 81-61-33
Exemple: passage maximum de la barre ø75 – GUIDE-BARRES 76-61-33

REVOLVING TIPS - Table

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

EMBOUT TOURNANT - Tableau

Le choix de l'embout tournant doit être fait en fonction du diamètre des guide-barres, de celui de la poussette et de la version de l'enclenchement de la pince.



øB *(mm) Guide channel diameter Diamètre des guide-barres*	***øC*** *(mm) Bar pusher diameter Diamètre de la poussette*	*Collet version -* ***D*** *(type of coupling) Version pince -* ***D*** *(type d'accouplement)*	***øGR*** *(mm) Revolving tip diameter Diamètre embout tournant*	*Revolving tip code Code embout tournant*	*See section Voir section MASTER 880*
21	20	Threaded (IEMCA) Fileté (IEMCA)	20	D71152000	103
		With pin (SCHL) Avec goupille (SCHL)		D71152001	
26	25	Threaded (IEMCA) Fileté (IEMCA)	25	D71152500	
		With pin (SCHL) Avec goupille (SCHL)		D71152501	
33	32	Threaded (IEMCA) Fileté (IEMCA)	32	D70153200	105
		With pin (SCHL) Avec goupille (SCHL)		D70153200	105

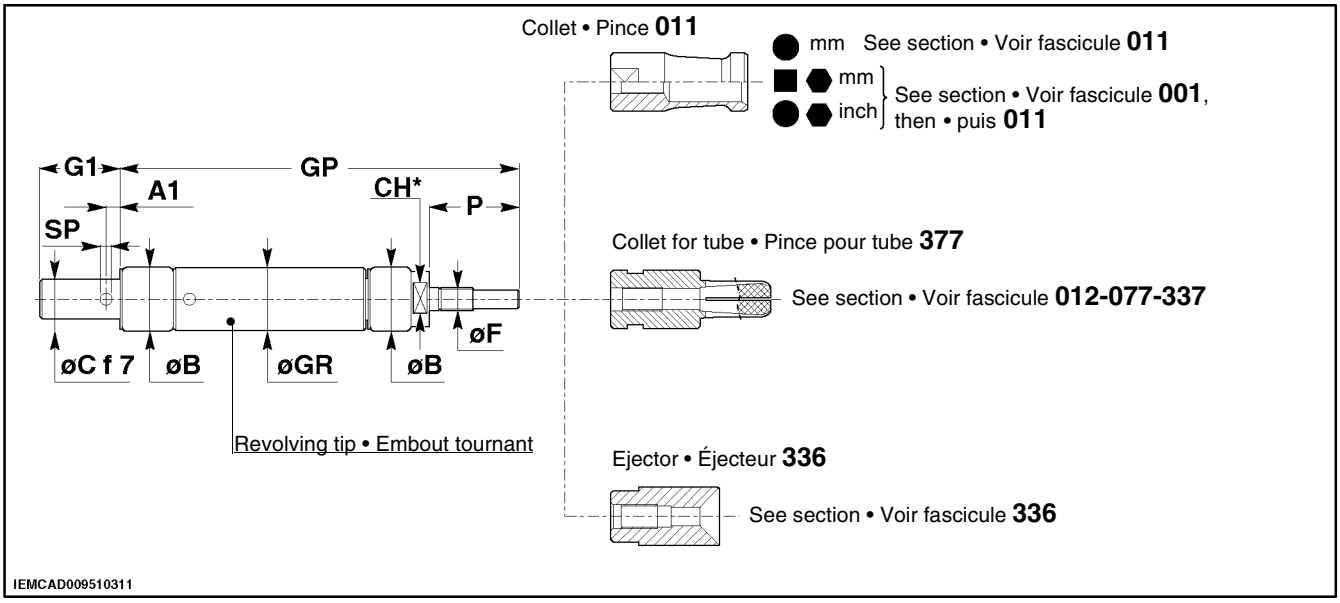
øB *(mm) Guide channel diameter Diamètre des guide-barres*	***øC*** *(mm) Bar pusher diameter Diamètre de la poussette*	*Collet version -* ***D*** *(type of coupling) Version pince -* ***D*** *(type d'accouplement)*	***øGR*** *(mm) Revolving tip diameter Diamètre embout tournant*	*Revolving tip code Code embout tournant*	*See section Voir section MASTER 880*
36	35	Threaded (IEMCA) Fileté (IEMCA)	35	D70153500	105
		With pin (SCHL) Avec goupille (SCHL)		D70153500	105
38	37	Threaded (IEMCA) Fileté (IEMCA)	37	D70153700	105
		With pin (SCHL) Avec goupille (SCHL)		D70153700	105
43	42	Threaded (IEMCA) Fileté (IEMCA)	42	D70154200	105
		With pin (SCHL) Avec goupille (SCHL)		D70154200	105
46	45	Threaded (IEMCA) Fileté (IEMCA)	45	D70154500	105
		With pin (SCHL) Avec goupille (SCHL)		D70154500	105
52	51	With pin (IEMCA), With screw (IEMCA) Threaded (IEMCA) "OPTIONAL" Avec goupille (SCHL) Avec vis (SCHL) Fileté (IEMCA) "OPTIONAL"	51	D77155100	106
57	56		56	D77155600	
61	60		60	D77156000	
66	65		65	D77156500	
69	68		68	D77156800	
71	70		70	D77157000	
73	72		72	D77157200	
76	75		75	D77157500	
81	80		80	D77158000	
86	85		85	D77158500	

REVOLVING TIPS øGR 20÷25 - Table

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

EMBOUTS TOURNANTS øGR 20÷25 - Tableau

❑ **Pour pinces à accouplement fileté (IEMCA)**



(*) CH: Double-ended fork wrench DIN 3110 *(*) CH: Clé à fourche double DIN 3110*

øGR (mm)	*Revolving tip code Code embout tournant*	*øF*	*øB (mm)*	*GP (mm)*	*G1 (mm)*	*C (mm)*	*A1 (mm)*	*øSP (mm)*	*CH (mm)*
20	D71152000	M10x1	20.5	172.5	35	14	6	4	38.5
25	D71152500	M10x1	25.5	172.5	35	17	6	5	38.5

INFORMATION: Starting from May the 1st 2001 it will be possible to order revolving tips without axial backlash which are perfectly interchangeable with those listed in the relevant table. This version was designed for operating the bar feeder with "fine feed". The order code can be derived from the a.m. table as follows: Revolving tip with fine feed type IEMCA, the last two digits are 10 (Example: D71152000 standard revolving tip Ø 20 , D71152010 revolving tip Ø 20 with fine feed).

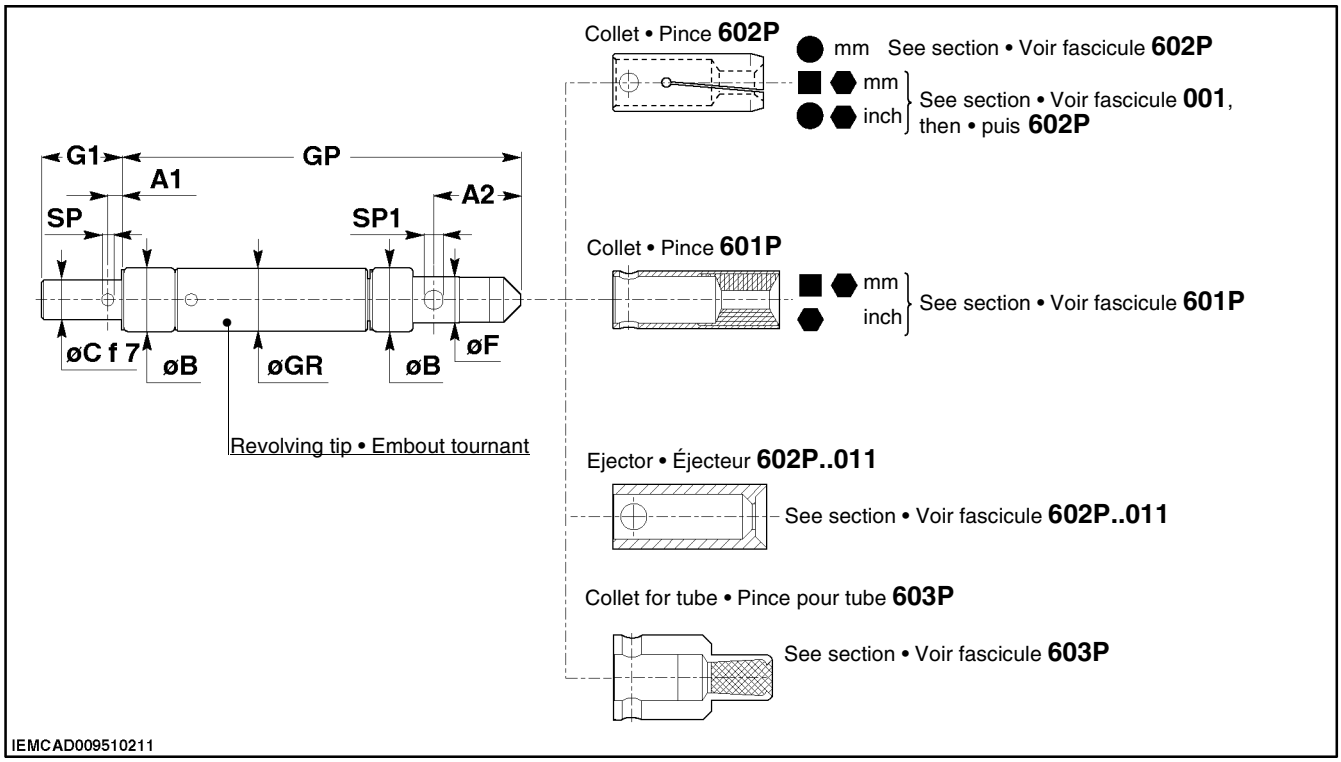
AVERTISSEMENT: À partir du 01/05/2001 il sera possible de commander des Embouts tournants sans jeux axiaux et parfaitement interchangeables avec ceux qui sont indiqués sur le tableau. Cette variante a été perfectionnée pour le fonctionnement du chargeur avec "avance précise". Les codes pour la commande peuvent être tirés de ceux qui sont indiqués sur le tableau selon les modalités qui suivent : Embout tournant avec avance précise type IEMCA, les deux chiffres finaux sont 10 (exemple : D71152000 embout tournant Ø 20 standard , D71152010 embout tournant Ø 20 avec avance précise).

REVOLVING TIPS øGR 20÷25 - Table

❑ **For collets with pin coupling (SCHL) "OPTIONAL"**

EMBOUTS TOURNANTS øGR 20÷25 - Tableau

❑ **Pour pinces à accouplement avec goupille (SCHL) "OPTIONAL"**



øGR (mm)	*Revolving tip code Code embout tournant*	*øF (mm)*	*øB (mm)*	*GP (mm)*	*G1 (mm)*	*C (mm)*	*A1 (mm)*	*øSP (mm)*	*A2 (mm)*	*øSP1 (mm)*
20	D71152001	14	20.5	172.5	35	14	6	4	37.5	8
25	D71152501	20	25.5	172.5	35	17	6	5	37.5	8

INFORMATION: Starting from May the 1st 2001 it will be possible to order revolving tips without axial backlash which are perfectly interchangeable with those listed in the relevant table. This version was designed for operating the bar feeder with "fine feed". The order code can be derived from the a.m. table as follows: Revolving tip with fine feed type SCHL, the last two digits are 11 (Example:D71152001 standard revolving tip Ø 30 , D71152011 revolving tip Ø 30 with fine feed).

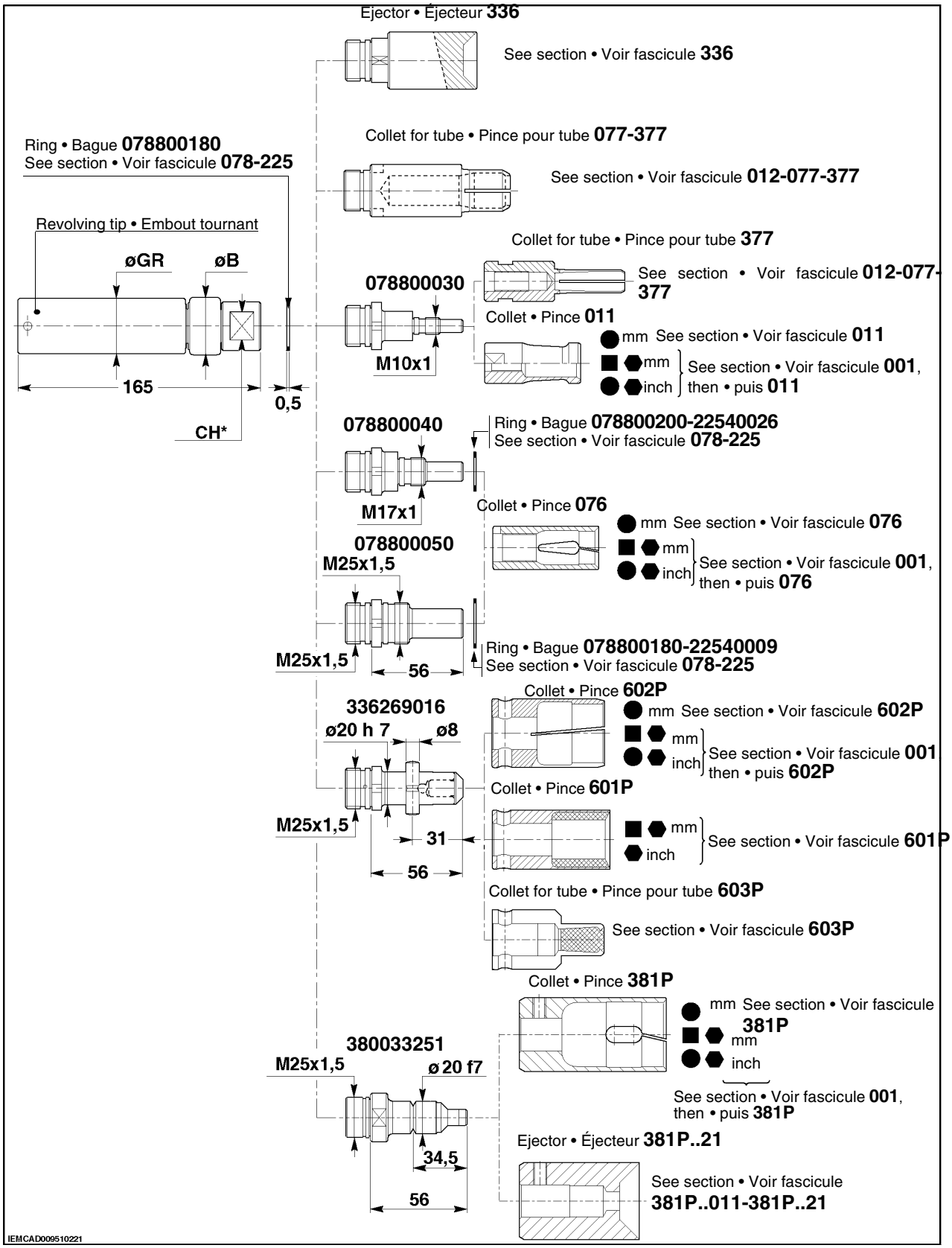
INFORMATION: À partir du 01/05/2001 il sera possible de commander des Embouts tournants sans jeux axiaux et parfaitement interchangeables avec ceux qui sont indiqués sur le tableau. Cette variante a été perfectionnée pour le fonctionnement du chargeur avec "avance précise". Les codes pour la commande peuvent être tirés de ceux qui sont indiqués sur le tableau selon les modalités qui suivent : Embout tournant avec avance précise type SCHL, les deux chiffres finaux sont 11 (exemple : D71152001 embout tournant Ø 30 standard , D71152011 embout tournant Ø 30 avec avance précise).

REVOLVING TIPS øGR 32÷45 - Table

EMBOUTS TOURNANTS øGR 32÷45 - Tableau

❑ **For collet with threaded coupling (IEMCA) or with pin coupling (SCHL)**

❑ **Pour pinces à accouplement fileté (IEMCA) ou avec goupille (SCHL)**



øGR (mm)	*Revolving tip code* *Code embout tournant*	*øB (mm)*	*CH (mm)*
32	D70153200	32.5	27
35	D70153500	35.5	27
37	D70153700	37.5	27
42	D70154200	42.5	32
45	D70154500	45.5	32

INFORMATION: Starting from May the 1st 2001 it will be possible to order revolving tips without axial backlash which are perfectly interchangeable with those listed in the relevant table.This version was designed for operating the bar feeder with "fine feed". The order code can be derived from the a.m. table as follows: 1. Revolving tip with fine feed type IEMCA, the last two digits are 10 (Example:D71153200 standard revolving tip Ø 20 , D71153210 revolving tip Ø 20 with fine feed). 2. Revolving tip with fine feed type SCHL, the last two digits are 11 (Example: D71153201 standard revolving tip Ø 30 , D71153211 revolving tip Ø 30 with fine feed).

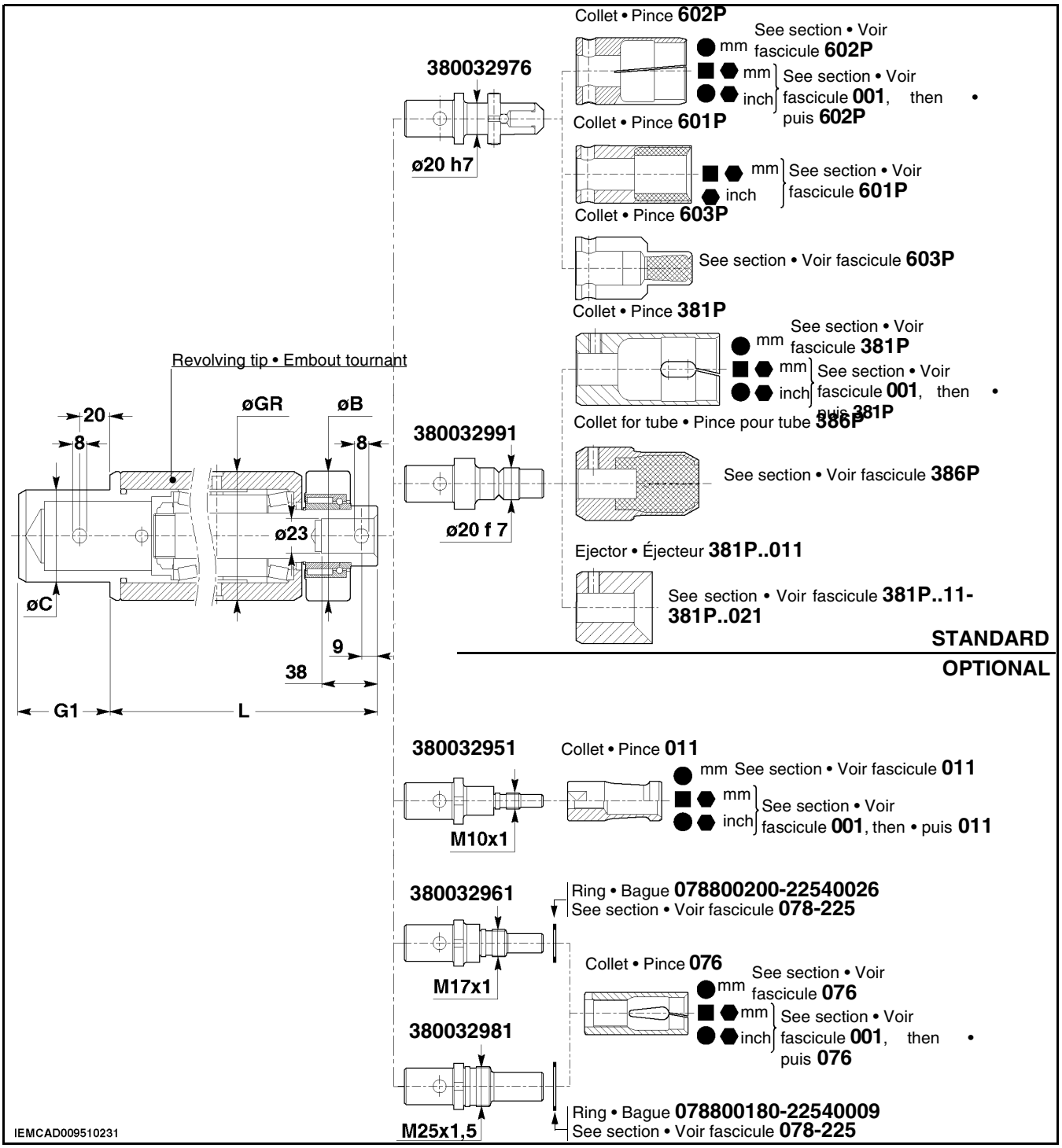
INFORMATION: À partir du 01/05/2001 il sera possible de commander des Embouts tournants sans jeux axiaux et parfaitement interchangeables avec ceux qui sont indiqués sur le tableau. Cette variante a été perfectionnée pour le fonctionnement du chargeur avec "avance précise". Les codes pour la commande peuvent être tirés de ceux qui sont indiqués sur le tableau selon les modalités qui suivent : 1. Embout tournant avec avance précise type IEMCA, les deux chiffres finaux sont 10 (exemple : D71153200 embout tournant Ø 20 standard , D71153210 embout tournant Ø 20 avec avance précise). 2. Embout tournant avec avance précise type SCHL, les deux chiffres finaux sont 11 (exemple : D71153201 embout tournant Ø 30 standard , D71153211 embout tournant Ø 30 avec avance précise).

REVOLVING TIPS øGR 51÷85 - Table

- **For collets with pin coupling(IEMCA), screw coupling (IEMCA) or threaded coupling (IEMCA) "OPTIONAL"**

EMBOUTS TOURNANTS øGR 51÷85 - Tableau

- **Pour pinces à accouplement avec goupille (IEMCA), avec vis (IEMCA) ou fileté (IEMCA) "EN OPTION"**



øGR (mm)	*Revolving tip code* *Code embout tournant*	*øB (mm)*	*G1 (mm)*	*C (mm)*	*L (mm)*
51	D77155100	51.5	50	37	181
56	D77155600	56.5	50	40	181
60	D77156000	60.5	50	40	202

øGR *(mm)*	*Revolving tip code* *Code embout tournant*	***øB*** *(mm)*	***G1*** *(mm)*	***C*** *(mm)*	***L*** *(mm)*
65	D77156500	65.5	60	46	202
68	D77156800	68.5	60	51	202
70	D77157000	70.5	60	51	202
72	D77157200	72.5	60	51	202
75	D77157500	75.5	70	60	202
80	D77158000	80.5	70	61	202
85	D77158500	85.5	70	61	202

001

CONVERSION TABLES
TABLEAUX DE CONVERSION

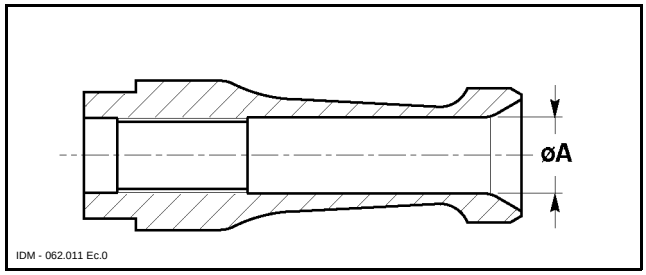
REL. 2.1 **DATA** 01/06/01

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

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

BARRES HEXAGONALES (unité de mesure “millimètres”) - Tableau

Avant de procéder au choix de la pince en acier, il est nécessaire d’ établir son diamètre interne **øA**, après consultation du tableau suivant.



Z	Y 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
23	26.55	26.2
24	27.71	27.5
25	28.86	28.5
26	30.02	29.8
27	31.17	31

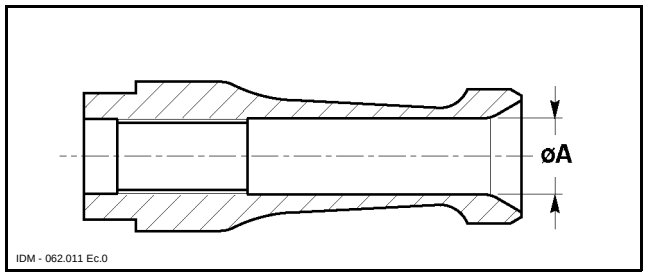
Z	Y Y=ZX1,154	øA
mm	*mm*	*mm*
28	32.33	32
29	33.48	33.2
30	34.64	34.5
31	35.79	35.5
32	36.95	36.8
33	38.10	37.8
34	39.25	39
35	40.41	40.2
36	41.56	41.3
38	43.87	43.5
39	45.03	44.8
40	46.18	46
41	47.34	47
42	48.49	48.2
43	49.65	49.5
44	50.80	50.5
45	51.96	51.8
46	53.11	52.8
48	55.42	55
50	57.73	57.5
52	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
72	83.08	82.5
75	86.55	86
80	92.32	91.75
85	98.1	97.5

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

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

BARRES CARRÉES (unité de mesure “millimètres”) - Tableau

Avant de procéder au choix de la pince en acier, il est nécessaire d’ établir son diamètre interne **øA**, après consultation du tableau suivant.



Z	Y Y=Zx1,414	øA
mm	*mm*	*mm*
1	1.41	1.3
1.5	2.12	2
2	2.82	2.7
2.5	3.53	3.4
3	4.24	4
4	5.65	5.5
4.5	6.36	6.2
5	7.07	6.8
5.5	7.77	7.5
6	8.48	8.3
6.5	9.19	9
7	9.89	9.7
8	11.31	11
8.5	12.01	11.8
9	12.72	12.5
10	14.14	13.8
10.5	14.84	14.5
11	15.55	15
12	16.97	16.5
12.5	17.67	17
13	18.38	18
14	19.79	19.5
15	21.21	20.8
16	22.62	22
17	24.04	23.5
18	25.52	25
19	26.86	26

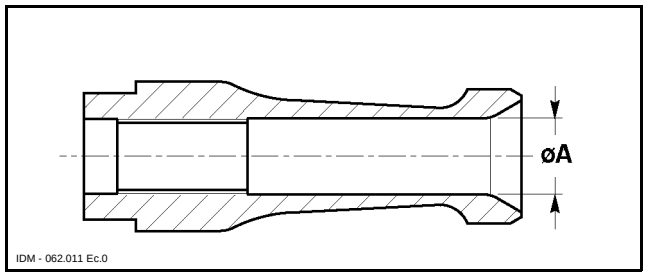
Z	Y Y=Zx1,414	øA
mm	*mm*	*mm*
20	28.28	27.5
22	31.10	30.5
23	32.52	32
24	33.93	33
25	35.35	34.5
26	36.76	36
27	38.17	37.5
28	39.59	38.5
30	42.42	41.5
32	45.24	44.5
34	48.07	47
35	49.49	48.5
36	50.90	50
37	52.31	51.5
38	53.73	52.5
39	55.15	54.5
40	56.56	55.5
41	57.97	57
42	59.38	58.5
43	60.08	59
44	62.21	61
45	63.63	62.5
46	65.04	64
50	70.7	69.5
55	77.77	76.75
60	84.84	83.75
65	91.91	91

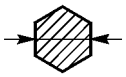
HEXAGONAL BARS (unit of measurement “inches”) - Table

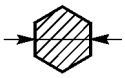
Before selecting the steel collet, define the internal diameter **øA** by consulting the table below.

BARRES HEXAGONALES (unité de mesure “pouces”) - Tableau

Avant de procéder au choix de la pince en acier, il est nécessaire d’établir son diamètre interne **øA**, après consultation du tableau suivant.



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

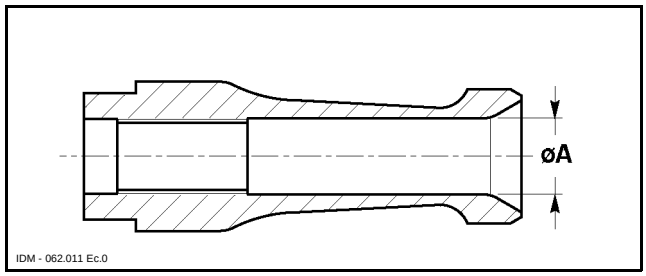
	øA	
inch	*mm*	*inch*
1”3/8	39.75	1”9/16
1”7/16	41.75	1”41/64
1”1/2	43.5	1”23/32
1”9/16	46.5	1”53/64
1”5/8	47.25	1”55/64
1”11/16	49	1”15/16
1”3/4	50.75	2”
1”13/16	52.75	2”5/64
1”7/8	54.5	2”9/64
1”15/16	56.25	2”7/32
2”	58	2”9/32
2”1/16	59.75	2”11/32
2”1/8	61.5	2”27/64
2”3/16	63.5	2”1/2
2”1/4	65.25	2”37/64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

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

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

BARRES RONDES (unité de mesure “pouces”) - Tableau

Avant de procéder au choix de la pince en acier, il est nécessaire d’ établir son diamètre interne **øA**, après consultation du tableau suivant.



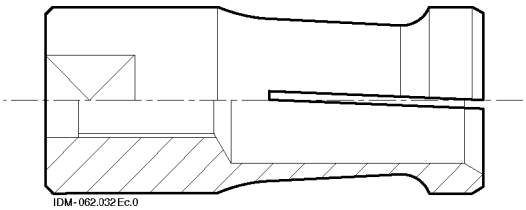
	øA		øA		øA
inch	*mm*	*inch*	*mm*	*inch*	*mm*
1/32	0.8	17/32	13.5	1”1/8	28.5
3/64	1.2	35/64	14	1”3/16	30.25
1/16	1.6	9/16	14.25	1”1/4	31.75
5/64	2	37/64	14.75	1”5/16	33.25
3/32	2.4	19/32	15	1”3/8	35
7/64	2.8	39/64	15.5	1”7/16	36.25
1/8	3.2	5/8	16	1”1/2	38
9/64	3.6	41/64	16.25	1”9/16	39.75
5/32	4	21/32	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		

INCH/MM CONVERSION TABLE
TABLE DE CONVERSION POUCES / MILLIMÈTRES

Inch fraction Fraction de pouce		Inch/pouces			
		0	1	2	*3*
		MM/millimètres			
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
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

011

COLLETS FOR BARS
PINCES POUR BARRES



REL. 3 DATA 30/10/02

011 COLLETS FOR BARS - Table

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

Note for consultation

Codes on a grey background refer to the "USE RANGE" for completing a set of collets while working with the larger channel, and coupling **øF** on the revolving tip is the same.

Note for ordering

- *Collets with codes in bold characters are available from stock.*
- *Collets with codes in italics have longer delivery times.*

011 PINCES POUR BARRES - Tableau

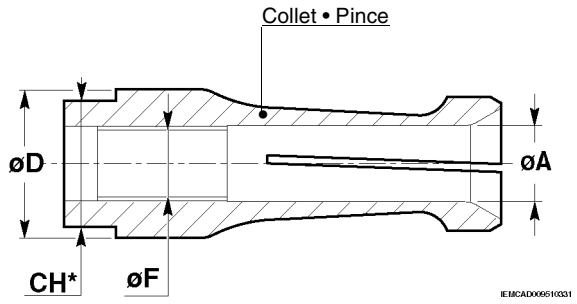
PRECAUTION: le diamètre externe de la pince doit être inférieur d'au moins 0,5 mm au diamètre externe de la poussette.

Note pour la consultation

Les codes sur fond gris indiquent le "GROUPE D'UTILISATION" pour compléter un jeu de pinces quand l'usinage a lieu sur le guide-barre le plus important, et que l'enclenchement **øF** sur l'embout tournant est le même .

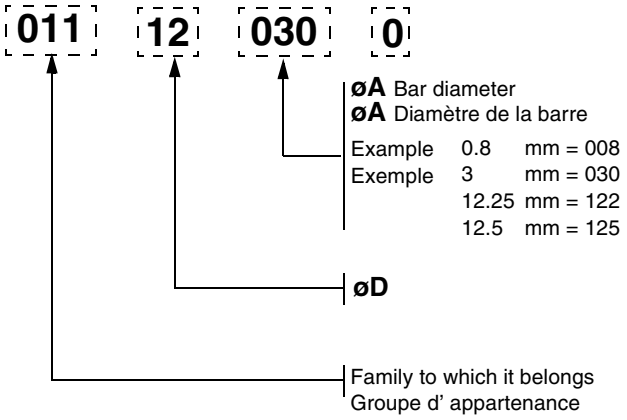
Remarque pour la commande

- *Les pinces qui ont les codes en gras sont disponibles dans le magasin.*
- *Les pinces qui ont les codes en italique ont un délai de livraison plus long.*



(*)CH: Double-ended fork wrench DIN3110
(*)CH: Clé à fourche double DIN3110

Code structure
Structure du code



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

øA		øF *M5x0.5* CH6	øF *M6x0.75* CH8	øF *M7x0.75* CH10	øF *M8x1* CH13	øF *M10x1* CH17	
mm	*in*	øD 7.5	øD 10	øD 12	øD 15	øD 20	
2	5/64”	011070200	011100200	*011120200*			
2.1		011070210	011100210	*011120210*			
2.2		011070220	011100220	*011120220*			
2.3		011070230	011100230	*011120230*			
2.4	3/32”	011070240	011100240	*011120240*			
2.5		011070250	011100250	*011120250*			
2.6		011070260	011100260	*011120260*			
2.7		011070270	011100270	*011120270*			
2.8	7/64”	011070280	011100280	*011120280*			
2.9		011070290	011100290	*011120290*			
3		011070300	011100300	011120300	*011150300*		
3.1		011070310	011100310	011120310	*011150310*		
3.2	1/8”	011070320	011100320	011120320	*011150320*		
3.3		011070330	011100330	011120330	*011150330*		
3.4		011070340	011100340	011120340	*011150340*		
3.5		011070350	011100350	011120350	*011150350*		
3.6	9/64”	011070360	011100360	011120360	*011150360*		
3.7		011070370	011100370	011120370	*011150370*		
3.8		011070380	011100380	011120380	*011150380*		
3.9		011070390	011100390	011120390	*011150390*		
4	5/32”	011070400	01110040	011120400	011150400	011200400	
4.1		011070410	011100410	011120410	011150410	011200410	
4.2		011070420	011100420	011120420	011150420	011200420	
4.3		011070430	011100430	011120430	011150430	011200430	
4.4	11/64”	011070440	011100440	011120440	011150440	011200440	
4.5		011070450	011100450	011120450	011150450	011200450	
4.6		011070460	011100460	011120460	011150460	011200460	
4.7		011070470	011100470	011120470	011150470	011200470	
4.8	3/16	011070480	011100480	011120480	011150480	011200480	
4.9		011070490	011100490	011120490	011150490	011200490	
5		011070500	011100500	011120500	011150500	011200500	
5.1		011070510	011100510	011120510	011150510	011200510	
5.2	13/64”	011070520	011100520	011120520	011150520	011200520	
5.3		011070530	011100530	011120530	011150530	011200530	
5.4		011070540	011100540	011120540	011150540	011200540	
5.5		011070550	011100550	011120550	011150550	011200550	
5.6	7/32”	011070560	011100560	011120560	011150560	011200560	
5.7		011070570	011100570	011120570	011150570	011200570	
5.8		011070580	011100580	011120580	011150580	011200580	

øA		øF *M5x0.5* CH6	øF *M6x0.75* CH8	øF *M7x0.75* CH10	øF *M8x1* CH13	øF *M10x1* CH17	
mm	*in*	øD 7.5	øD 10	øD 12	øD 15	øD 20	
5.9		**011070590**	**011100590**	**011120590**	**011150590**	**011200590**	
6	15/64”	**011070600**	**011100600**	**011120600**	**011150600**	**011200600**	
6.1		**011070610**	**011100610**	**011120610**	**011150610**	**011200610**	
6.2		**011070620**	**011100620**	**011120620**	**011150620**	**011200620**	
6.3		**011070630**	**011100630**	**011120630**	**011150630**	**011200630**	
6.4	1/4”	**011070640**	**011100640**	**011120640**	**011150640**	**011200640**	
6.5		**011070650**	**011100650**	**011120650**	**011150650**	**011200650**	
6.6		*011070660*	**011100660**	**011120660**	**011150660**	**011200660**	
6.7		*011070670*	**011100670**	**011120670**	**011150670**	**011200670**	
6.8	17/64”		**011100680**	**011120680**	**011150680**	**011200680**	
6.9			**011100690**	**011120690**	**011150690**	**011200690**	
7			**011100700**	**011120700**	**011150700**	**011200700**	
7.1			**011100710**	**011120710**	**011150710**	**011200710**	
7.2	9/32”		**011100720**	**011120720**	**011150720**	**011200720**	
7.3			**011100730**	**011120730**	**011150730**	**011200730**	
7.4			**011100740**	**011120740**	**011150740**	**011200740**	
7.5			**011100750**	**011120750**	**011150750**	**011200750**	
7.6	19/64”		**011100760**	**011120760**	**011150760**	**011200760**	
7.7			**011100770**	**011120770**	**011150770**	**011200770**	
7.8			**011100780**	**011120780**	**011150780**	**011200780**	
7.9			**011100790**	**011120790**	**011150790**	**011200790**	
8	5/16”		**011100800**	**011120800**	**011150800**	**011200800**	
8.1			*011100810*	**011120810**	**011150810**	**011200810**	
8.2			*011100820*	**011120820**	**011150820**	**011200820**	
8.3			*011100830*	**011120830**	**011150830**	**011200830**	
8.4	21/64”		*011100840*	**011120840**	**011150840**	**011200840**	
8.5			*011100850*	**011120850**	**011150850**	**011200850**	
8.6			*011100860*	**011120860**	**011150860**	**011200860**	
8.7			*011100870*	**011120870**	**011150870**	**011200870**	
8.8	11/32”		*011100880*	**011120880**	**011150880**	**011200880**	
8.9			*011100890*	**011120890**	**011150890**	**011200890**	
9			*011100900*	**011120900**	**011150900**	**011200900**	
9.1	23/64”			**011120910**	**011150910**	**011200910**	
9.2				**011120920**	**011150920**	**011200920**	
9.3				**011120930**	**011150930**	**011200930**	
9.4				**011120940**	**011150940**	**011200940**	

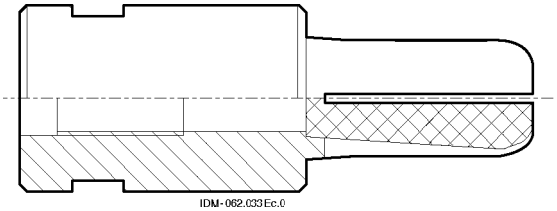
øA		øF *M7x0.75* CH10	øF *M8x1* CH13	øF *M8x1* CH13	øF *M8x1* CH13	øF *M8x1* CH16	øF *M10x1* CH17
mm	*in*	øD 12	øD 15	øD 16	øD 17	øD 18	øD 20
9.5		**011120950**	**011150950**				**011200950**
9.6	3/8”	**011120960**	**011150960**				**011200960**
9.7		**011120970**	**011150970**				**011200970**
9.8		**011120980**	**011150980**				**011200980**
9.9		**011120990**	**011150990**				**011200990**
10	25/64”	**011121000**	**011151000**				**011201000**
10.1		**011121010**	**011151010**				**011201010**
10.2		**011121020**	**011151020**				**011201020**
10.3		**011121030**	**011151030**				**011201030**
10.4	13/32”	**011121040**	**011151040**				**011201040**
10.5		**011121050**	**011151050**				**011201050**
10.6		**011121060**	**011151060**				**011201060**
10.7		**011121070**	**011151070**				**011201070**
10.8	27/64”	**011121080**	**011151080**				**011201080**
10.9		**011121090**	**011151090**				**011201090**
11		**011121100**	**011151100**				**011201100**
11.25	7/16”		**011151120**	**011161120**			**011201120**
11.5			**011151150**	**011161150**			**011201150**
11.75	13/64”		**011151170**	**011161170**			**011201170**
12			**011151200**	**011161200**			**011201200**
12.25			**011151220**	**011161220**			**011201220**
12.5	31/64”		**011151250**	**011161250**		**011181250**	**011201250**
12.75	1/2”		**011151270**	**011161270**		**011181270**	**011201270**
13			**011151300**	**011161300**		**011181300**	**011201300**
13.25			*011151320*	**011161320**		**011181320**	**011201320**
13.5			*011151350*	**011161350**		**011181350**	**011201350**
13.75			*011151370*	**011161370**		**011181370**	**011201370**
14			*011151400*	**011161400**	*011171400*	**011181400**	**011201400**
14.25	9/16”			*011161420*	*011171420*	**011181420**	**011201420**
14.5				*011161450*	*011171450*	**011181450**	**011201450**
14.75				*011161470*	*011171470*	**011181470**	**011201470**
15				*011161500*	*011171500*	**011181500**	**011201500**
15.25					*011171520*	**011181520**	**011201520**
15.5					*011171550*	**011181550**	**011201550**
15.75					*011171570*	**011181570**	**011201570**
16	5/8”				*011171600*	**011181600**	**011201600**
16.25						*011181620*	**011201620**
16.5						*011181650*	**011201650**

øA		øF *M8x1* CH16	øF *M10x1* CH17	øF *M10x1* CH19	øF *M10x1* CH22	øF *M10x1* CH24	øF *M10x1* CH28
mm	*in*	øD 19	øD 20	øD 23	øD 25	øD 27	øD 30
14			011201400	011231400			
14.25			011201420	011231420			
14.5			011201450	011231450			
14.75			011201470	011231470			
15			011201500	011231500			
15.25			011201520	011231520			
15.5			011201550	011231550			
15.75			011201570	011231570			
16	5/8”		011201600	011231600			
16.25	41/64”	*011191620*	011201620	011231620			
16.5		*011191650*	011201650	011231650			
16.75		*011191670*	011201670	011231670			
17		*011191700*	011201700	011231700	011251700		
17.25		*011191720*	011201720	011231720	011251720		
17.5	11/16”	*011191750*	011201750	011231750	011251750		
17.75		*011191770*	011201770	011231770	011251770		
18	45/64”	*011191800*	011201800	011231800	011251800		
18.25				011231820	011251820		
18.5				011231850	011251850		
18.75				011231870	011251870		
19	3/4”			011231900	011251900	011271900	
19.25				011231920	011251920	011271920	
19.5				011231950	011251950	011271950	
19.75	25/32”			011231970	011251970	011271970	
20				011232000	011252000	011272000	
20.25				011232020	011252020	011272020	
20.5				011232050	011252050	011272050	
20.75	13/16”			011232070	011252070	011272070	
21				011232100	011252100	011272100	
21.25					011252120	011272120	
21.5					011252150	011272150	
21.75	56/64”				011252170	011272170	
22					011252200	011272200	
22.25	7/8”				011252220	011272220	
22.5					011252250	011272250	
22.75					011252270	011272270	
23					011252300	011272300	011302300
23.25						011272320	011302320
23.5	59/64”					011272350	011302350

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

012 - 077 - 377

COLLETS FOR TUBES
PINCES POUR TUBES



REL. 3 DATA 30/10/02

012-077-377 COLLETS FOR TUBES - Table

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

INFORMATION: Collets 377… with øF M10x1 are designed for being mounted on revolving tips under ø28. When mounted on revolving tips < ø30 and nipples 078800030, the 1st feeding value shall be increased by 7.5 mm.

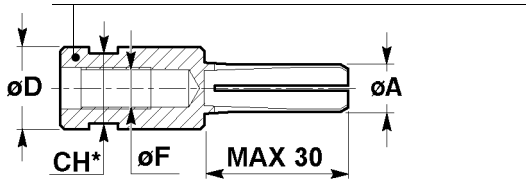
012-077-377 PINCES POUR TUBES - Tableau

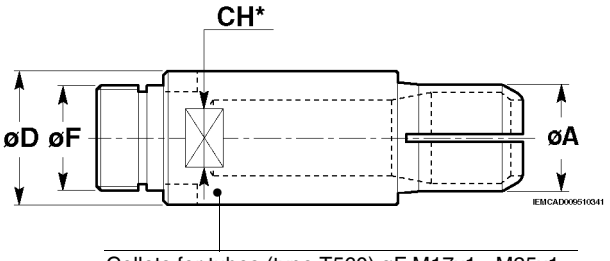
PRECAUTION: le diamètre externe de la pince doit être inférieur d'au moins 0,5 mm au diamètre externe de la poussette.

AVERTISSEMENT: Les pinces 377 avec øF M10x1 ont été projetées pour être installées sur des embouts tournants inférieurs à ø 28. En cas que celles-ci soient installées sur des embouts tournants < ø 30 et avec des nipples type 078800030 , il faudra étendre la cote de préavancement de 7,5 mm.

012 Collets for tubes (type AS) øF M7x0.75 - M8x1
Pinces pour tubes (type AS) øF M7x0.75 - M8x1

377 Collets for tubes (type BOSS) øF M10x1
Pinces pour tubes (type BOSS) øF M10x1





077 Collets for tubes (type T560) øF M17x1 - M25x1
Pinces pour tubes (type T560) øF M17x1 - M25x1

377 Collets for tubes (type T560) øF M25x1.5
Pinces pour tubes (type T560) øF M25x1.5

Code structure
Structure du code

377 **29** **100** **0**

øA Bar diameter
øA Diamètre de la barre
Example: *5 mm = 060*
Exemple: *10 mm = 100*
12.5 mm = 125

øD

Family to which it belongs • Groupe d' appartenance

012 Collets for tubes (type AS) øF M7x0.75 - M8x1
Pinces pour tubes (type AS) øF M7x0.75 - M8x1

077 Collets for tubes (type T560) øF M17x1 - M25x1
Pinces pour tubes (type T560) øF M17x1 - M25x1

377 Collets for tubes (type BOSS) øF M10x1
Pinces pour tubes (type BOSS) øF M10x1

377 Collets for tubes (type T560) øF M25x1.5
Pinces pour tubes (type T560) øF M25x1.5

(*)CH: Double-ended fork wrench DIN3110 *(*)CH: Clé à collier de serrage DIN3110*

øA		**øF** *M7x0.75* **CH10**	**øF** *M8x1* **CH13**	**øF** *M10x1* **CH17**	**øF** *M17x1* **CH22**	**øF** *M10x1* **CH22**	**øF** *M10x1* **CH24**	**øF** *M25x1.5* **CH27**
mm	*in*	**øD 12**	**øD 15**	**øD 20**	**øD 24**	**øD 25**	**øD 27**	**øD 29**
5		**012120500**	**012150500**					
5.5		**012120550**	**012150550**					
6	15/64"	**012120600**	**012150600**	**377200600**	**077240600**			
6.5		**012120650**	**012150650**	**377200650**	**077240650**			
7		**012120700**	**012150700**	**377200700**	**077240700**			
7.5		**012120750**	**012150750**	**377200750**	**077240750**			
8	5/16"	**012120800**	**012150800**	**377200800**	**077240800**			
8.5		**012120850**	**012150850**	**377200850**	**077240850**			
9		**012120900**	**012150900**	**377200900**	**077240900**			
9.5		**012120950**	**012150950**	**377200950**	**077240950**			
10	25/64"		**012151000**	**377201000**	**077241000**			**377291000**
10.5			**012151050**	**377201050**	**077241050**			**377291050**

øA		øF *M7x0.75* CH10	øF *M8x1* CH13	øF *M10x1* CH17	øF *M17x1* CH22	øF *M10x1* CH22	øF *M10x1* CH24	øF *M25x1.5* CH27
mm	*in*	øD 12	øD 15-16	øD 20	øD 24	øD 25	øD 27	øD 29
11			012151100	377201100	077241100			377291100
11.5			012151150	377201150	077241150			377291150
12			012151200	377201200	077241200			377291200
12.5	31/64"		012151250	377201250	077241250			377291250
13			012151300	377201300	077241300			377291300
13.5			012161350	377201350	077241350			377291350
14			012161400	377201400	077241400			377291400
14.5				377201450	077241450			377291450
15				377201500	077241500			377291500
15.5				377201550	077241550			377291550
16	5/8"			377201600	077241600			377291600
16.5				377201650	077241650			377291650
17				377201700	077241700	377251700		377291700
17.5	11/16"			377201750	077241750	377251750		377291750
18	45/64"			377201800	077241800	377251800		377291800
18.5					077241850	377251850		377291850
19	3/4”				077241900	377251900		377291900
19.5					077241950	377251950		377291950
20					077242000	377252000		377292000
20.5					077242050	377252050		377292050
21					077242100	377252100		377292100
21.5					077242150	377252150		377292150
22					077242200	377252200		377292200
22.5					077242250	377252250		377292250
23					077242300	377252300		377292300
23.5					077242350			377292350
24								377292400
24.5								377292450

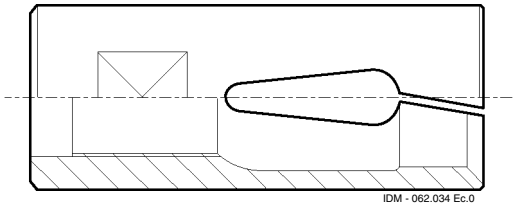
øA		øF *M17x1* CH24	øF *M17x1* CH24	øF *M17x1* CH27	øF *M25x1.5* CH27	øF *M25x1.5* CH27	øF *M25x1.5* CH29
mm	*in*	øD 27	øD 25-27	øD 29	øD 30	øD 32	øD 35
23			**077252300**				
23.5	59/64"	**377272350**	**077272350**				
24	15/16"	**377272400**	**077272400**				
24.5		**377272450**	**077272450**				
25		**377272500**	**077272500**		**377302500**		
25.5	1"	**377272550**	**077272550**		**377302550**		
26				**077292600**	**377302600**		
26.5				**077292650**	**377302650**		
27				**077292700**	*377302500*	**377322700**	
27.5						**377322750**	
28						**377322800**	
28.5	1"1/8					**377322850**	
29						*377322900*	**377352900**
30						*377323000*	**377353000**
31							**377353100**
32							**377353200**
33							**377353300**

øA		øF *M25x1.5* CH36	øF *M25x1.5* CH38	øF *M25x1.5* CH41	øF *M25x1.5* CH46	øF *M25x1.5* CH50		
mm	*in*	øD 40	øD 42	øD 44-45	øD 49	øD 54-55		
34		**377403400**						
35	1"3/8	**377403500**						
36		**377403600**						
37		**377403700**						
38	1”1/2		**377423800**					
39			**377423900**					
40			*377424000*	**377444000**				
40.5				**377444050**				
41				**377444100**				
41.5				**377444150**				
42				**377454200**				
42.5				**377454250**				
43	1"11/16				**377494300**			
43.5					**377494350**			
44					**377494400**			
44.5	1"3/4				**377494450**			
45					**377494500**			
45.5					**377494550**			
46					**377494600**			
46.5						**377544650**		
47						**377544700**		
47.5						**377544750**		
48						**377544800**		
48.5						**377544850**		
49						**377544900**		
49.5						**377544950**		
50						**377545000**		
50.5						**377545050**		
51						**377545100**		
51.5						**377545150**		
52						**377555200**		

øA		øF *M25x1.5* CH55	øF *M25x1.5* CH60	øF *M25x1.5* CH60
mm	*in*	øD 59	øD 64	øD 68
52.5		377595250		
53		377595300		
53.5		377595350		
54	2”1/8	377595400		
54.5		377595450		
55		377595500		
55.5		377595600		
56		377595600		
56.5			377645650	
57			377645700	
57.5			377645750	
58			377645800	
58.5			377645850	
59			377645900	
59.5			377646000	
60			377646000	
60.5			377646050	
61			377646100	
61.5				377686150
62				377686200
62.5				377686250
63				377686300
63.5				377686350
64				377686400
64.5				377686450
65				377686500
65.5				377686550
66				377686600

076

COLLETS FOR TUBES
PINCES POUR TUBES



REL. 5 DATA 30/10/02

076 COLLETS FOR BARS - Table

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

Note for consultation

The Codes on a grey background refer to the "USE RANGE" to for complete a set of collets while working with the larger channel, and coupling **øF** on the revolving tip is the same.

Note for ordering

- *Collets with codes in bold characters are available from stock.*
- *Collets with codes in italics have longer delivery times.*

076 PINCES POUR BARRES - Tableau

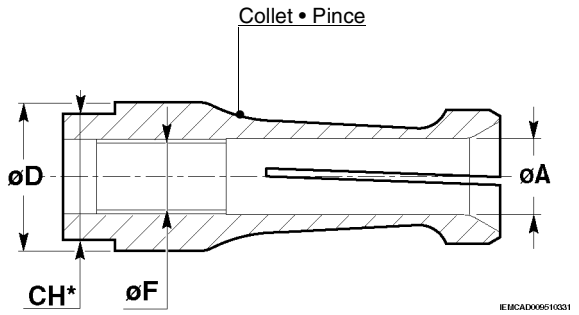
PRECAUTION: le diamètre externe de la pince doit être inférieur d'au moins 0,5 mm au diamètre externe de la poussette.

Note pour la consultation

Les codes sur fond gris indiquent le "GROUPE D'UTILISATION" pour compléter un jeu de pinces quand l'usinage a lieu sur le guide-barre le plus important, et que l'enclenchement **øF** sur l'embout tournant est le même .

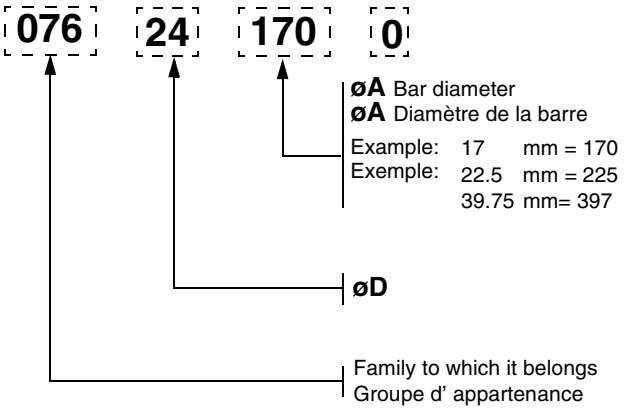
Remarque pour la commande

- *Les pinces qui ont les codes en gras sont disponibles dans le magasin.*
- *Les pinces qui ont les codes en italique ont un délai de livraison plus long.*



(*) CH: Double-ended fork wrench DIN3110
(*) CH: Clé à fourche double DIN3110

Code structure
Structure du code



øA		øF *M17x1* CH22	øF *M17x1* CH22
mm	*in*	**øD 24**	**øD 25**
15	19/32"		
15.25			
15.5	39/64"		
15.75			
16	5/8"		
16.25	41/64"		
16.5		**076241650**	
16.75	21/32"	**076241670**	
17	43/64"	**076241700**	
17.25		**076241720**	

øA		øF *M17x1* CH22	øF *M17x1* CH22
mm	*in*	**øD 24**	**øD 25**
17.5	11/16"	**076241750**	
17.75		**076241770**	
18	45/64"		**076251800**
18.25	23/32"		**076251820**
18.5			**076251850**
18.75	47/64"		**076251870**
19	3/4"		**076251900**
19.25			**076251920**
19.5	49/64"		**076251950**

øA		øF *M17x1* CH22	øF *M17x1* CH24	øF *M17x1* CH27	øF *M17x1* CH27	øF *M25x1,5* CH29
mm	*in*	**øD 25**	**øD 27**	**øD 29**	**øD 30**	**øD 32**
19.75	25/32”	**076251970**				
20		*076252000*	**076272000**			
20.25	51/64”	*076252020*	**076272020**			
20.5		*076252050*	**076272050**			
20.75	13/16”	*076252070*	**076272070**			
21	53/64”		**076272100**			
21.25			**076272120**			
21.5	27/32”		**076272150**			
21.75	55/64”		**076272170**			
22			*076272200*	**076292200**		
22.25	7/8”		*076272220*	**076292220**		
22.5			*076272250*	**076292250**		
22.75	57/64”		*076272270*	**076292270**		
23	29/32”		*076272300*	**076292300**		
23.25			*076272320*	**076292320**		
23.5	59/64”		*076272350*	**076292350**		
23.75			*076272370*	**076292370**		
24	15/16”		*076272400*		**076302400**	
24.25	61/64”		*076272420*		**076302420**	
24.5			*076272450*		**076302450**	
24.75	31/32”		*076272470*		**076302470**	
25	63/64”		*076272500*		**076302500**	**076322500**
25.25					**076302520**	**076322520**
25.5	1”				**076302550**	**076322550**
25.75					**076302570**	**076322570**
26					**076302600**	**076322600**
26.25					**076302620**	**076322620**
26.5					**076302650**	**076322650**
26.75					**076302670**	**076322670**
27					**076302700**	*076322700*

øA		**øF** *M 25x1,5* **CH29**	**øF** *M 25x1,5* **CH32**	**øF** *M 25x1,5* **CH32**	**øF** *M 25x1,5* **CH32**	**øF** *M 25x1,5* **CH36**	**øF** *M 25x1,5* **CH36**
mm	*in*	**øD 32**	**øD 34**	**øD 35**	**øD 36-37**	**øD 38**	**øD 40**
27	1”1/16	*076322700*	**076342700**				
27.25		*076322720*	**076342720**				
27.5		*076322750*	**076342750**				
27.75		*076322770*	**076342770**				
28		*076322800*	**076342800**				
28.25		*076322820*	**076342820**				
28.5	1”1/8	*076322850*	**076342850**				
28.75		*076322870*	**076342870**				
29		*076322900*		**076352900**			
29.25				**076352920**			
29.5				**076352950**			
29.75				**076352970**			
30				**076353000**			
30.25	1”3/16			*076353020*	**076363020**		
30.5				*076353050*	**076363050**		
30.75				*076353070*	**076363070**		
31				*076353100*	*076373100*	**076383100**	
31.25				*076353120*	*076373120*	**076383120**	
31.5				*076353150*	*076373150*	**076383150**	
31.75	1”1/4			*076353170*	*076373170*	**076383170**	
32				*076353200*	*076373200*	**076383200**	
32.25					*076373220*	**076383220**	
32.5					*076373250*	**076383250**	
32.75					*076373270*	**076383270**	
33					*076373330*		**076403300**
33.25	1”5/16				*076373320*		**076403320**
33.5					*076373350*		**076403350**
33.75					*076373370*		**076403370**
34					*076373400*		**076403400**
34.25					*076373420*		**076403420**
34.5					*076373450*		**076403450**
34.75					*076373470*		**076403470**
35	1”3/8				*076373500*		*076403500*

øA		øF *M25x1,5* CH38	øF *M 25x1,5* CH41	øF *M 25x1,5* CH41	øF *M 25x1,5* CH41	øF *M 25x1,5* CH45	øF *M 25x1,5* CH45
mm	*in*	øD 42	øD 44	øD 45	øD 46	øD 48	øD 49
35	1”3/8	**076423500**					
35.25		**076423520**					
35.5		**076423550**					
35.75		**076423570**					
36		**076423600**					
36.25	1”7/16	**076423620**					
36.5		**076423650**					
36.75		**076423670**					
37		**076423700**					
37.25		**076423720**					
37.5		**076423750**					
37.75		**076423770**					
38	1”1/2	*076423800*	**076443800**				
38.25			**076443820**				
38.5			**076443850**				
38.75			**076443870**				
39				**076453900**			
39.25				**076453920**			
39.5				**076453950**			
39.75	1”9/16			**076453970**			
40				*076454000*	**076464000**		
40.25				*076454020*	**076464020**	*076484020*	
40.5				*076454050*	**076464050**	*076484050*	
40.75				*076454070*	**076464070**	*076484070*	
41				*076454100*		**076484100**	
41.25	1”5/8			*076454120*		**076484120**	
41.5				*076454150*		**076484150**	
41.75				*076454170*		**076484170**	
42				*076454200*		**076484200**	
42.25						**076484220**	
42.5						**076484250**	
42.75						**076484270**	
43	1”11/16						**076494300**
43.25							**076494320**
43.5							**076494350**
43.75							**076494370**

øA		øF *M25x1,5* CH45	øF *M 25x1,5* CH45	øF *M 25x1,5* CH48	øF *M 25x1,5* CH52	øF *M 25x1,5* CH52
mm	*in*	**øD 50**	**øD 52**	**øD 54-55**	**øD 56**	**øD 57-58**
44		**076504400**				
44.25		**076504420**				
44.5	1”3/4	**076504450**				
44.75		**076504470**				
45		*076504500*	**076524500**			
45.25		*076504520*	**076524520**			
45.5		*076504550*	**076524550**			
45.75		*076504570*	**076524570**			
46	1”13/16	*076504600*	**076524600**			
46.25			**076524620**			
46.5			**076524650**			
46.75			**076524670**			
47			**076524700**			
47.25			**076524720**			
47.5			**076524750**			
47.75	1”7/8		**076524770**			
48			*076524800*	**076544800**		
48.25				**076544820**		
48.5				**076544850**		
48.75				**076544870**		
49				**076544900**		
49.25	1”15/16			**076544920**		
49.5				**076544950**		
49.75				**076544970**		
50				*076555000*	**076565000**	
50.25					**076565020**	
50.5					**076565050**	
50.75	2”				**076565070**	
51					*076565100*	**076575100**
51.25					*076565120*	**076575120**
51.5					*076565150*	**076575150**
51.75					*076565170*	**076585170**
52						**076585200**

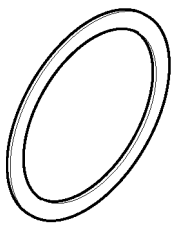
øA		ø F *M 25x1,5* CH52	ø F *M 25x1,5* CH55	ø F *M 25x1,5* CH55	ø F *M 25x1,5* CH55	ø F *M 25x1,5* CH60	ø F *M 25x1,5* CH60
mm	*in*	ø D 58	ø D 59	ø D 60	ø D 62	ø D 64	ø D 65
52		**076585200**					
52.25		**076585220**					
52.5	2”1/16	**076585250**					
52.75		**076585270**					
53			**076595300**				
53.25			**076595320**				
53.5			**076595350**				
53.75			**076595370**				
54	2”1/8			**076605400**			
54.25				**076605420**			
54.5				**076605450**			
54.75				**076605470**			
55				**076605500**			
55.25				**076605520**			
55.5	2”3/16			**076605550**			
55.75				**076605570**			
56				*076605600*	**076625600**		
56.25					**076625620**		
56.5					**076625650**		
56.75					**076625670**		
57					*076625700*	**076645700**	
57.25	2”1/4					**076645720**	
57.5						**076645750**	
57.75						**076645770**	
58						**076645800**	
58.25						**076645820**	
58.5						**076645850**	
58.75	2”5/16					**076645870**	
59							**076655900**

øA		**ø F** *M 25x1,5* **CH60**	**ø F** *M 25x1,5* **CH60**	**ø F** *M 25x1,5* **CH65**	**ø F** *M 25x1,5* **CH65**	**ø F** *M 25x1,5* **CH65**	**ø F** *M 25x1,5* **CH65**
mm	*in*	**ø D 65**	**ø D 66**	**ø D 68**	**ø D 69**	**ø D 70**	**ø D 72**
59.25		**076655920**					
59.5		**076655950**					
59.75		**076655970**					
60		*076656000*	**076666000**				
60.25		*076656020*	**076666020**				
60.5	2”3/8	*076656050*	**076666050**				
60.75		*076656070*	**076666070**				
61		*076656100*	**076666100**				
61.25				**076686120**			
61.5				**076686150**			
61.75				**076686170**			
62	2”7/16			**076686200**			
62.25				**076686220**			
62.5				**076686250**			
62.75				**076686270**			
63				**076686300**			
63.25					**076696320**		
63.5	2”1/2				**076696350**		
63.75					**076696370**		
64						**076706400**	
64.25						**076706420**	
64.5						**076706450**	
64.75						**076706470**	
65	2”9/16					**076706500**	
65.25						**076706520**	
65.5						**076706550**	
65.75						**076706570**	
66						*076706600*	**076726600**
66.25							**076726620**
66.5							**076726650**
66.75	2”5/8						**076726670**
67							**076726700**

øA		ø F *M 25x1,5* CH70	ø F *M 25x1,5* CH70			
mm	*in*	ø D 74	ø D 76			
67.25		**076746720**				
67.5		**076746750**				
67.75		**076746770**				
68		**076746800**				
68.25	2”11/16	**076746820**				
68.5		**076746850**				
68.75		**076746870**				
69		**076746900**				
69.25			**076766920**			
69.5			**076766950**			
69.75			**076766970**			
70	2”3/4		**076767000**			

078 - 225

RINGS FOR COLLETS
BAGUES POUR PINCES

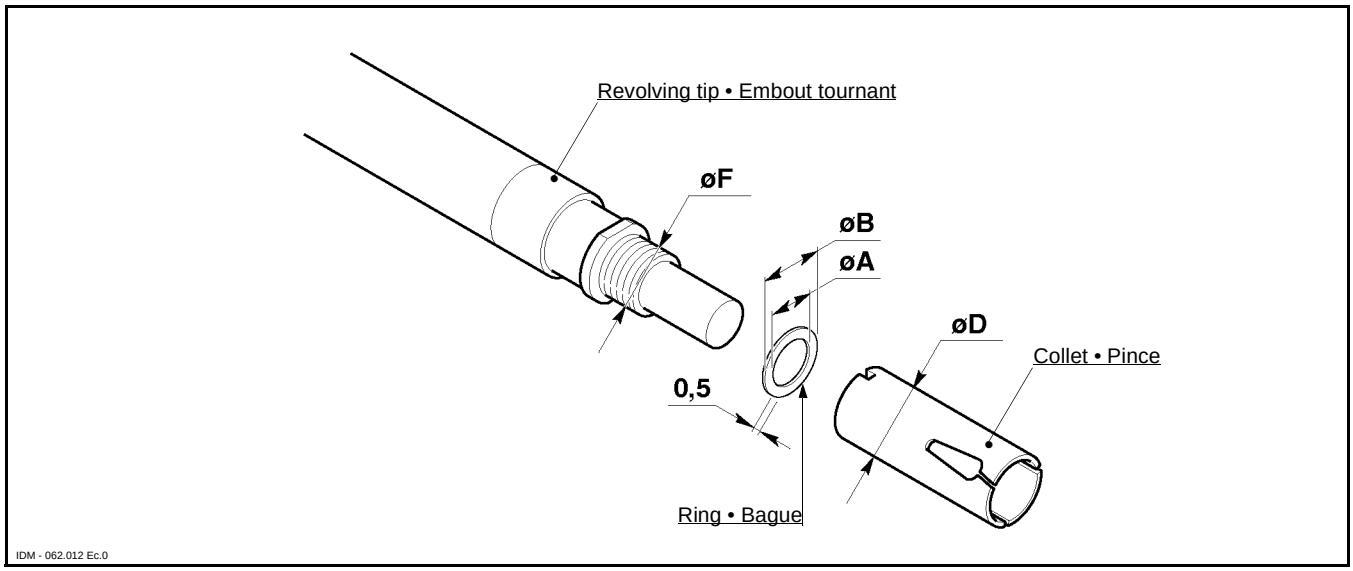


IDM-062.035 Ec.0

REL. 1 DATA 01/06/99

078-225 RINGS FOR COLLETS - Table

078-225 BAGUES POUR PINCES - Tableau



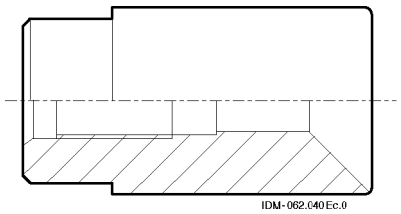
øA *(mm)*	***øB*** *(mm)*	***øD*** *(mm)*	***øF***	*Code ring Code bague*
8	14	16		22540008(*)
12	18	20		22540004(*)
12	25	25		078800220(*)
17	24	30	M17x1	22540026
17	30	35		078800200
25	30	30	M25x1.5	078800180
25	35	40		22540009
25	45	51		078800230

(*) *Only for 316 collet(TAL)*

(*) *Uniquement pour pinces 316 (TAL)*

336

EJECTOR
ÉJECTEUR



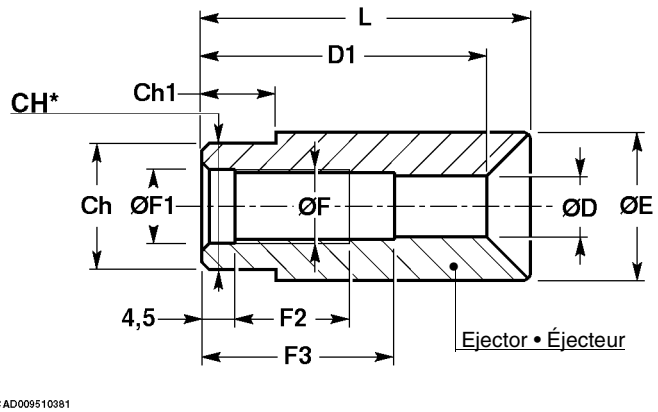
REL. 3 DATA 30/10/02

336 EJECTORS - GUIDES Ø<30 - TABLE

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

336 ÉJECTEURS - GUIDES Ø<30 - TABLEAU

PRECAUTION: le diamètre externe de l'éjecteur doit être inférieur d'au moins 0,5 mm au diamètre externe de la poussette.



(*) CH: Double-ended fork wrench DIN 3110 *(*)CH: Clé à fourche double DIN 3110*

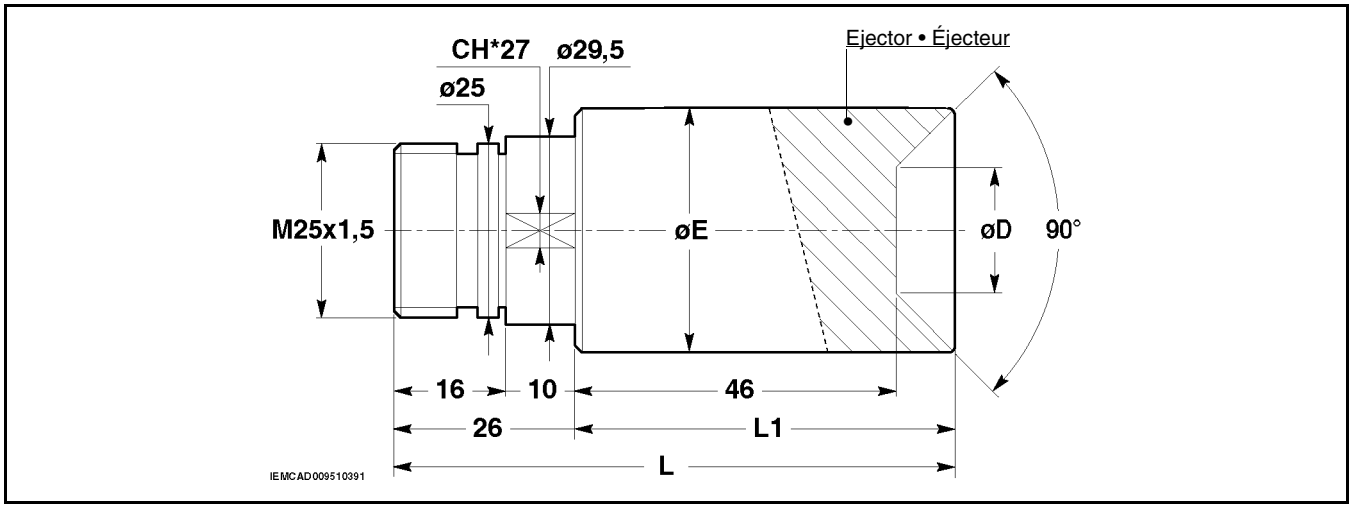
øF	F1 *(mm)*	F2 *(mm)*	F3 *(mm)*	øE *(mm)*	L *(mm)*	øD *(mm)*	D1 *(mm)*	Ch *(mm)*	Ch1 *(mm)*	*N. code Numero code*
M7x0.75	7	12	18	12	29.75	5.5	26.5	10	6	336803120
M8x1	8	12	18	15	30.75	6.5	26.5	13	10	336803150
M8x1	8	12	18	18	32	6.5	26.5	15	10	336803180
M10x1	10	15.5	26	20	44.4	8.2	38.5	17	10	336803200
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

336 EJECTORS - GUIDES Ø>32 - TABLE

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

336 ÉJECTEURS - GUIDES Ø>32 - TABLEAU

PRECAUTION: le diamètre externe de l'éjecteur doit être inférieur d'au moins 0,5 mm au diamètre externe de la poussette.

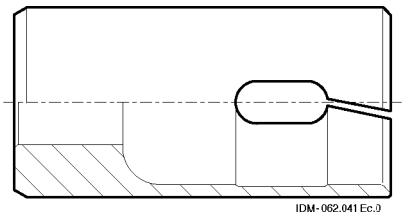


(*) CH: Double-ended fork wrench DIN 3110 *(*)CH: Clé à fourche double DIN 3110*

øE *(mm)*	**øD** *(mm)*	**L** *(mm)*	**L1** *(mm)*	*N. code Numero code*
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
45	21	84	58	336803450
50	23	84	58	336803500

381P

COLLETS FOR BARS
PINCES POUR BARRES



REL. 4 DATA 30/10/02

381P COLLETS FOR BARS - Table

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

Note for consultation

The Codes on a grey background refer to the “USE RANGE” to for complete a set of collets while working with the larger channel, and coupling **øF** on the revolving tip is the same.

Note for ordering

- *Collets with codes in bold characters are available from stock.*
- *Collets with codes in italics have longer delivery times.*

381P PINCES POUR BARRES - Tableau

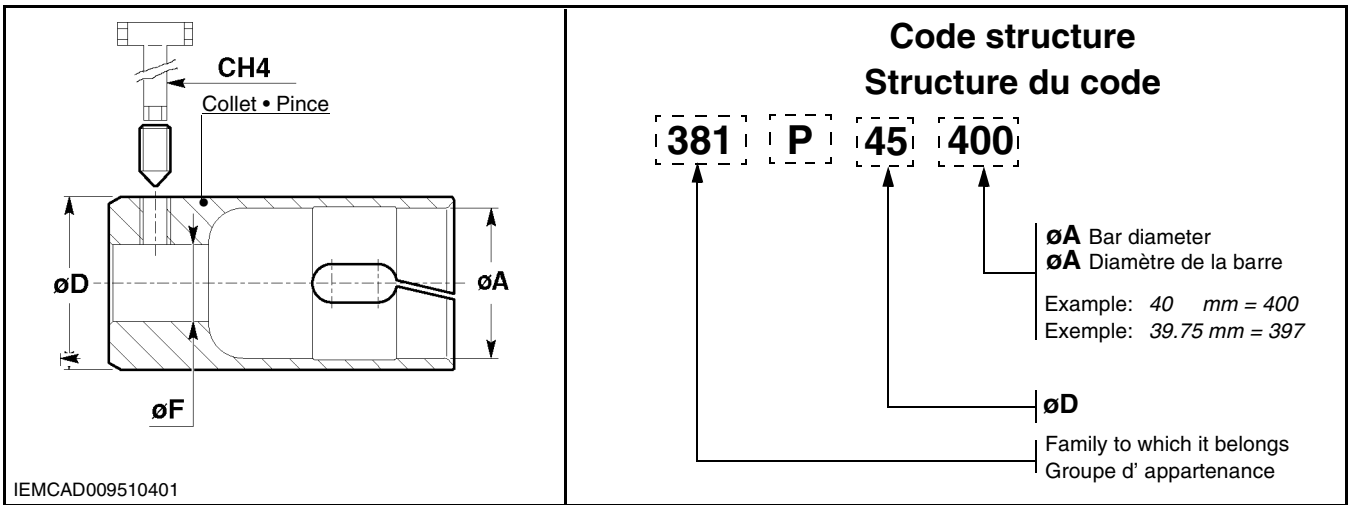
PRECAUTION: le diamètre externe de la pince doit être inférieur d’au moins 0,5 mm au diamètre externe de la poussette.

Note pour la consultation

Les codes sur fond gris indiquent le “GROUPE D'UTILISATION” pour compléter un jeu de pinces quand l’usinage a lieu sur le guide-barre le plus important, et que l’enclenchement **øF** sur l’embout tournant est le même .

Remarque pour la commande

- *Les pinces qui ont les codes en gras sont disponibles dans le magasin.*
- *Les pinces qui ont les codes en italique ont un délai de livraison plus long.*



(*) CH4: Hexagonal T male wrench DIN911
(*) CH4: Clé mâle hexagonale à T DIN911

øA		øF ø20 G6					
mm	in	øD 32					
10	25/64”	381P32100					
10.25		381P32102					
10.5		381P32105					
10.75		381P32107					
11		381P32110					
11.25	7/16”	381P32112					
11.5	29/64”	381P32115					
11.75		381P32117					
12	15/32”	381P32120					
12.25		381P32122					
12.5	31/64”	381P32125					
12.75	1/2”	381P32127					
13		381P32130					
13.25	33/64”	381P32132					
13.5	17/32”	381P32135					
13.75		381P32137					
14	35/64”	381P32140					
14.25	9/16”	381P32142					
14.5		381P32145					
14.75	37/64”	381P32147					
15	19/32”	381P32150					
15.25		381P32152					
15.5	39/64	381P32155					
15.75		381P32157					
16	5/8”	381P32160					
16.25	41/64”	381P32162					
16.5		381P32165					
16.75	21/32”	381P32167					
17	43/64”	381P32170					
17.25		381P32172					
17.5	11/16”	381P32175					
17.75		381P32177					
18	45/64”	381P32180					
18.25	23/32”	381P32182					
18.5		381P32185					

øA		**øF** *ø20 G6*	**øF** *ø20 G6*				
mm	in	**øD 32**	**øD 35**				
18.75	47/64”	**381P32187**					
19	3/4”	**381P32190**					
19.25		**381P32192**					
19.5	19/64”	**381P32195**					
19.75	25/32”	**381P32197**					
20		**381P32200**					
20.25	51/64”	**381P32202**					
20.5		**381P32205**					
20.75	13/16”	**381P32207**					
21	53/64”	**381P32210**					
21.25		**381P32212**					
21.5	27/32”	**381P32215**					
21.75	55/64”	**381P32217**					
22		**381P32220**					
22.25	7/8”	**381P32222**					
22.5		**381P32225**					
22.75	57/64”	**381P32227**					
23	29/32”	**381P32230**					
23.25		**381P32232**					
23.5	59/64”	**381P32235**					
23.75		**381P32237**					
24	15/16”	**381P32240**					
24.25	61/64”	**381P32242**					
24.5		**381P32245**					
24.75	31/32”	**381P32247**					
25	63/64”	**381P32250**					
25.25		**381P32252**					
25.5	1”	**381P32255**					
25.75		**381P32257**					
26		**381P32260**					
26.25		**381P32262**					
26.5		**381P32265**					
26.75		**381P32267**					
27	1”1/16	*381P32270*	**381P35270**				
27.25		*381P32272*	**381P35272**				

øA		**øF** *ø20 G6*	**øF** *ø20 G6*	**øF** *ø20 G6*	**øF** *ø20 G6*	**øF** *ø20 G6*	
mm	in	**øD 32**	**øD 35**	**øD 37**	**øD 40**	**øD 42**	
27.5		*381P32275*	**381P35275**				
27.75		*381P32277*	**381P35277**				
28		*381P32280*	**381P35280**				
28.25		*381P32282*	**381P35282**				
28.5	1”1/8	*381P32285*	**381P35285**				
28.75		*381P32287*	**381P35287**				
29		*381P32290*	*381P35290*	**381P37290**			
29.25			*381P35292*	**381P37292**			
29.5			*381P35295*	**381P37295**			
29.75			*381P35297*	**381P37297**			
30			*381P35300*	*381P37300*	**381P40300**		
30.25	1”3/16		*381P35302*	*381P37302*	**381P40302**		
30.5			*381P35305*	*381P37305*	**381P40305**		
30.75			*381P35307*	*381P37307*	**381P40307**		
31			*381P35310*	*381P37310*	**381P40310**		
31.25			*381P35312*	*381P37312*	**381P40312**		
31.5			*381P35315*	*381P37315*	**381P40315**		
31.75	1”1/4		*381P35317*	*381P37317*	**381P40317**		
32			*381P35320*	*381P37320*	**381P40320**		
32.25				*381P37322*	**381P40322**		
32.5				*381P37325*	**381P40325**		
32.75				*381P37327*	**381P40327**		
33				*381P37330*	**381P40330**		
33.25	1”5/16			*381P37332*		**381P42332**	
33.5				*381P37335*		**381P42335**	
33.75				*381P37337*		**381P42337**	
34				*381P37340*		**381P42340**	

øA			øF ø20 G6	øF ø20 G6	øF ø20 G6		
mm	in		øD 42	øD 44	øD 45		
34.25			381P42342				
34.5			381P42345				
34.75			381P42347				
35	1”3/8		381P42350				
35.25			381P42352				
35.5			381P42355				
35.75			381P42357				
36			381P42360				
36.25	1”7/16		381P42362				
36.5			381P42365				
36.75			381P42367				
37			381P42370				
37.25			381P42372				
37.5			381P42375				
37.75			381P42377				
38	1”1/2		*381P42380*	381P44380			
38.25			*381P42382*	381P44382			
38.5			*381P42385*	381P44385			
38.75			*381P42387*	381P44387			
39			*381P42390*		381P45390		
39.25					381P45392		
39.5					381P45395		
39.75	1”9/16				381P45397		
40					*381P45400*		
40.25					*381P45402*		
40.5					*381P45405*		
40.75					*381P45407*		
41					*381P45410*		
41.25					*381P45412*		
41.5					*381P45415*		
41.75					*381P45417*		
42					*381P45420*		

øA		**øF** *ø20 G6*	**øF** *ø20 G6*	**øF** *ø20 G6*	**øF** *ø20 G6*	**øF** *ø20 G6*	
mm	*in*	**øD 48**	**øD 49**	**øD 50-51**	**øD 52**	**øD 54**	
40		**381P48400**					
40.25		**381P48402**					
40.5		**381P48405**					
40.75		**381P48407**					
41		**381P48410**					
41.25	1”5/8	**381P48412**					
41.5		**381P48415**					
41.75		**381P48417**					
42		**381P48420**					
42.25		**381P48422**					
42.5		**381P48425**					
42.75		**381P48427**					
43	1”11/16		**381P49430**				
43.25			**381P49432**				
43.5			**381P49435**				
43.75			**381P49437**				
44				**381P50440**			
44.25				**381P50442**			
44.5	1”3/4			**381P50445**			
44.75				**381P50447**			
45				*381P51450*	**381P52450**		
45.25				*381P51452*	**381P52452**		
45.5				*381P51455*	**381P52455**		
45.75				*381P51457*	**381P52457**		
46	1”13/16			*381P51460*	**381P52460**		
46.25				*381P51462*	**381P52462**		
46.5				*381P51465*	**381P52465**		
46.75				*381P51467*	**381P52467**		
47				*381P51470*	**381P52470**		
47.25					**381P52472**		
47.5					**381P52475**		
47.75	1”7/8				**381P52477**		
48						**381P54480**	

øA		øF ø20 G6	øF ø20 G6	øF ø20 G6	øF ø20 G6	øF ø20 G6	
mm	in	øD 54	øD 56	øD 58	øD 59	øD 60	
48.25		381P54482					
48.5		381P54485					
48.75		381P54487					
49		381P54490					
49.25	1”15/16	381P54492					
49.5		381P54495					
49.75		381P54497					
50			381P56500				
50.25			381P56502				
50.5			381P56505				
50.75	2”		381P56507				
51			*381P56510*	381P58510			
51.25			*381P56512*	381P58512			
51.5			*381P56515*	381P58515			
51.75			*381P56517*	381P58517			
52			*381P56520*	381P58520			
52.25				381P58522			
52.5	2”1/16			381P58525			
52.75				381P58527			
53					381P59530		
53.25					381P59532		
53.5					381P59535		
53.75					381P59537		
54	2”1/8					381P60540	
54.25						381P60542	
54.5						381P60545	
54.75						381P60547	
55						381P60550	
55.25						381P60552	
55.5	2”3/16					381P60555	
55.75						381P60557	

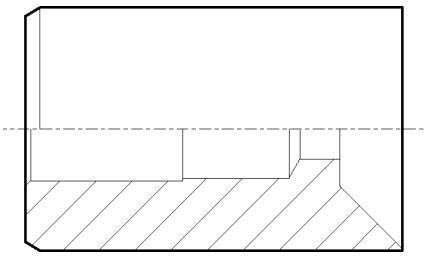
øA		**øF** *ø20 G6*	**øF** *ø20 G6*	**øF** *ø20 G6*	**øF** *ø20 G6*	**øF** *ø20 G6*	**øF** *ø20 G6*
mm	*in*	**øD 60**	**øD 62**	**øD 64**	**øD 65**	**øD 66**	**øD 68**
56		*381P60560*	**381P62560**				
56.25			**381P62562**				
56.5			**381P62565**				
56.75			**381P62567**				
57				**381P64570**			
57.25	2”1/4			**381P64572**			
57.5				**381P64575**			
57.75				**381P64577**			
58				**381P64580**			
58.25				**381P64582**			
58.5				**381P64585**			
58.75	2”5/16			**381P64587**			
59					**381P65590**		
59.25					**381P65592**		
59.5					**381P65595**		
59.75					**381P65597**		
60					*381P65600*	**381P66600**	
60.25					*381P65602*	**381P66602**	
60.5	2”3/8				*381P65605*	**381P66605**	
60.75					*381P65607*	**381P66607**	
61					*381P65610*	**381P66610**	
61.25							**381P68612**
61.5							**381P68615**
61.75							**381P68617**
62	2”7/16						**381P68620**
62.25							**381P68622**
62.5							**381P68625**
62.75							**381P68627**
63							**381P68630**
63.25							**381P68632**
63.5	2”1/2						**381P68635**
63.75							**381P68637**

øA		**øF** *ø20 G6*	**øF** *ø20 G6*	**øF** *ø20 G6*	**øF** *ø20 G6*	**øF** *ø20 G6*	**øF** *ø20 G6*
mm	*in*	**øD 70**	**øD 72**	**øD 74-75**	**øD 76**	**øD 78**	**øD 80**
64		**381P70640**					
64.25		**381P70642**					
64.5		**381P70645**					
64.75		**381P70647**					
65	2”9/16	**381P70650**					
65.25		*381P70652*	**381P72652**				
65.5		*381P70655*	**381P72655**				
65.75		*381P70657*	**381P72657**				
66			**381P72660**				
66.25			**381P72662**				
66.5			**381P72665**				
66.75	2”5/8		**381P72667**				
67			**381P72670**				
67.25				**381P74672**			
67.5				**381P74675**			
67.75				**381P74677**			
68				**381P74680**			
68.25	2”11/16			**381P74682**			
68.5				**381P74685**			
68.75				**381P74687**			
69				*381P74690*	**381P76690**		
69.25				*381P74692*	**381P76692**		
69.5				*381P75695*	**381P76695**		
69.75				*381P74697*	**381P76697**		
70	2”3/4			*381P75700*	**381P76700**		
70.25						**381P78702**	
70.5						**381P78705**	
70.75						**381P78707**	
71						**381P78710**	
71.25						**381P78712**	
71.5	2”13/16					**381P78715**	
71.75						**381P78717**	
72						*381P78720*	**381P80720**

øA		**øF** *ø20 G6*	**øF** *ø20 G6*				
mm	*in*	**øD 80**	**øD 85**				
72.25		**381P80722**					
72.5		**381P80725**					
72.75		**381P80727**					
73	2”7/8	**381P80730**					
73.25		**381P80725**					
73.5		**381P80735**					
73.75		**381P80737**					
74		*381P80740*	**381P85740**				
74.25			**381P85742**				
74.5	2”15/16	*381P80745*	**381P85745**				
74.75			**381P85747**				
75		*381P80750*	**381P85750**				
75.25			**381P85752**				
75.5			**381P85755**				
75.75			**381P85757**				
76			**381P85760**				
76.25	3”		**381P85762**				
76.5			**381P85765**				
76.75			**381P85767**				
77			**381P85770**				
77.25			**381P85772**				
77.5			**381P85775**				
77.75			**381P85777**				
78			**381P85780**				
78.25			**381P85782**				
78.5			**381P85785**				
78.75			**381P85787**				
79			**381P85790**				
79.25			**381P85792**				
79.5			**381P85795**				
79.75			**381P85797**				
80			**381P85800**				

381P..011
381P..021

EJECTOR
ÉJECTEUR



IDM - 062.073 Ec.0

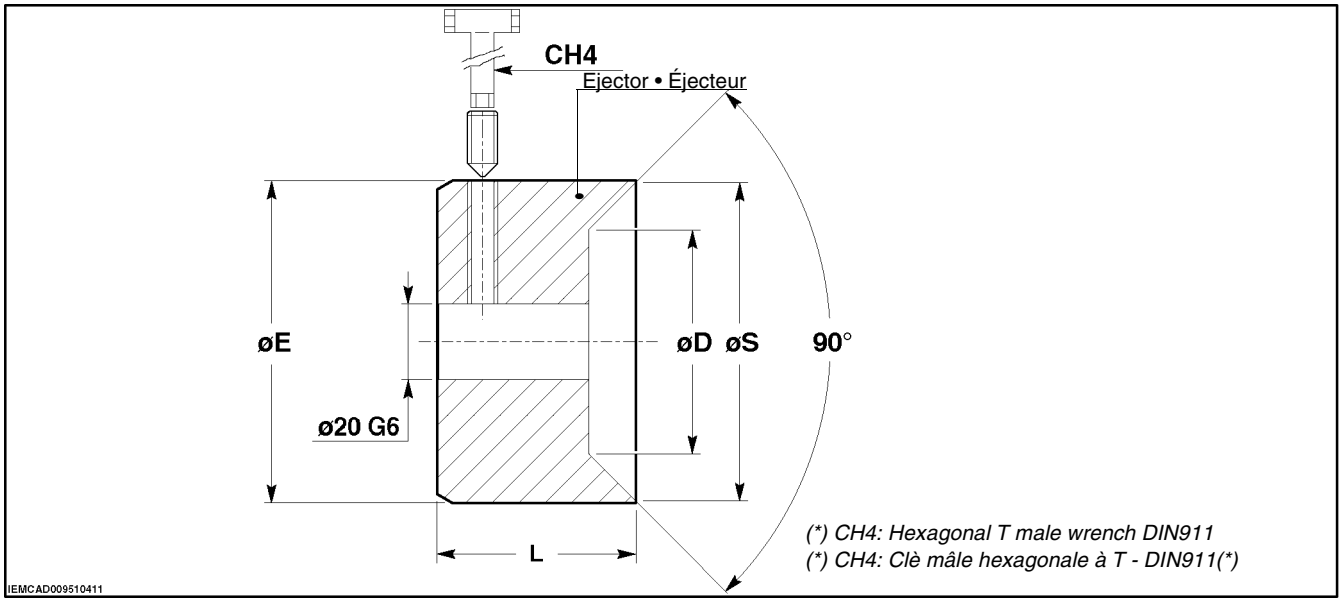
REL. 2 DATA 30/10/02

381P..011 EJECTORS - GUIDES Ø52÷86 - TABLE

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

381P..011 ÉJECTEURS - GUIDES Ø52÷86 - TABLEAU

PRECAUTION: le diamètre externe de l'éjecteur doit être inférieur d'au moins 0,5 mm au diamètre externe de la poussette.



(*) CH4: Hexagonal T male wrench DIN911
(*) CH4: Clè mâle hexagonale à T - DIN911(*)

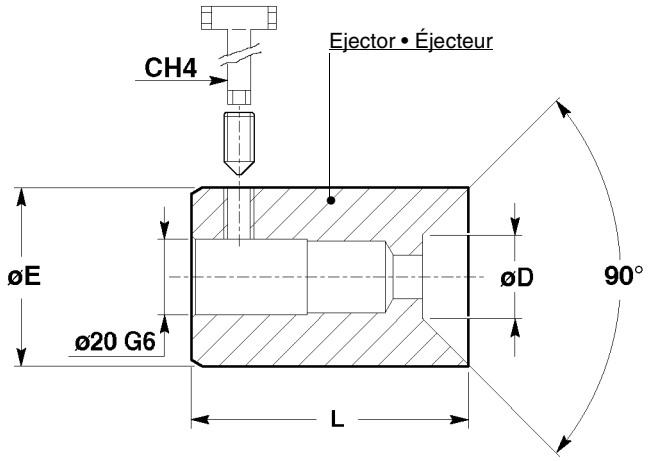
øE *(mm)*	**L** *(mm)*	**øS** *(mm)*	**øD** *(mm)*	*N. code Numero code*
51	52.5	50	25	381P51011
56	52.5	55	30	381P56011
60	52.5	59	34	381P60011
65	52.5	64	39	381P65011
68	52.5	67	42	381P68011
70	52.5	69	44	381P70011
72	52.5	71	46	381P72011
75	52.5	74	50	381P75011
80	52.5	79	55	381P80011
85	52.5	84	60	381P85011

381P..021 EJECTORS - GUIDES Ø33÷52 - TABLE

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

381P..021 ÉJECTEURS - GUIDES Ø33÷52 - TABLEAU

PRECAUTION: le diamètre externe de l'éjecteur doit être inférieur d'au moins 0,5 mm au diamètre externe de la poussette.



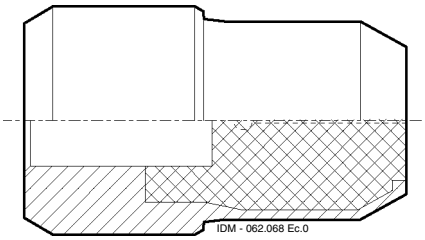
(*) CH4: Hexagonal T male wrench DIN911
(*) CH4: Clè mâle hexagonale à T - DIN911(*)

IEMCAD009510421

øE *(mm)*	**øD** *(mm)*	**L** *(mm)*	*N. code Numero code*
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
51	25	73.5	381P51021

386P

COLLETS FOR TUBES
PINCES POUR TUBES



REL. 4 DATA 30/10/02

386P COLLETS FOR TUBES - Table

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

Note for consultation

The Codes on a grey background refer to the "USE RANGE" to for complete a set of collets while working with the larger channel, and coupling **øF** on the revolving tip is the same.

Note for ordering

- *Collets with codes in bold characters are available from stock.*
- *Collets with codes in italics have longer delivery times.*

386P PINCES POUR TUBES - Tableau

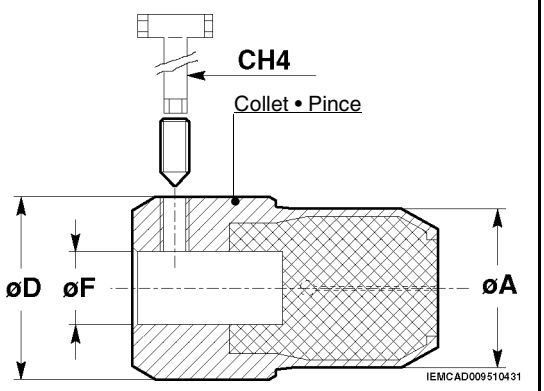
PRECAUTION: le diamètre externe de la pince doit être inférieur d'au moins 0,5 mm au diamètre externe de la poussette.

Note pour la consultation

Les codes sur fond gris indiquent le "GROUPE D'UTILISATION" pour compléter un jeu de pinces quand l'usinage a lieu sur le guide-barre le plus important, et que l'enclenchement **øF** sur l'embout tournant est le même .

Remarque pour la commande

- *Les pinces qui ont les codes en gras sont disponibles dans le magasin.*
- *Les pinces qui ont les codes en italique ont un délai de livraison plus long.*



Code structure
Structure du code

386 **P** **45** **400**

øA Bar diameter
øA Diamètre de la barre

Example: *40 mm = 400*
Exemple: *39.75 mm = 397*

øD

Family to which it belongs
Groupe d' appartenance

(*) CH4: Hexagonal T male wrench DIN911 *(*)CH4: Clé mâle hexagonaleà T - DIN911*

øA		**øF** *20G6*	**øA**		**øF** *20G6*	**øA**		**øF** *20G6*
mm	*in*	**øD 40**	*mm*	*in*	**øD 40**	*mm*	*in*	**øD 40**
25		**386P40250**	28.5		*386P40285*	32		**386P40320**
25.25		*386P40252*	28.75		*386P40287*	32.25		*386P40322*
25.5		*386P40255*	29		**386P40290**	32.5		*386P40325*
25.75		*386P40257*	29.25		*386P40292*	32.75		*386P40327*
26		**386P40260**	29.5		*386P40295*	33		**386P40330**
26.25		*386P40262*	29.75		*386P40297*	33.25		*386P40332*
26.5		*386P40265*	30		**386P40300**	33.5		*386P40335*
26.75		*386P40267*	30.25		*386P40302*	33.75		*386P40337*
27		**386P40270**	30.5		*386P40305*	34		**386P40340**
27.25		*386P40272*	30.75		*386P40307*	34.25		*386P40342*
27.5		*386P40275*	31		**386P40310**	34.5		*386P40345*
27.75		*386P40277*	31.25		*386P40312*	34.75		*386P40347*
28		**386P40280**	31.5		*386P40315*			
28.25		*386P40282*	31.75		*386P40317*			

øA		øF *20G6*	øF *20G6*	øF *20G6*	øF *20G6*	øF *20G6*	
mm	*in*	**øD 41**	**øD 44**	**øD 45**	**øD 49**	**øD 50**	
35		**386P41350**					
35.25		*386P41352*					
35.5		*386P41355*					
35.75		*386P41357*					
36		**386P41360**					
36.25		*386P41362*					
36.5		*386P41365*					
36.75		*386P41367*					
37		**386P41370**					
37.25			*386P44372*				
37.5			*386P44375*				
37.75			*386P44377*				
38			**386P44380**				
38.25			*386P44382*				
38.5			*386P44385*				
38.75			*386P44387*				
39			**386P44390**				
39.25			*386P44392*				
39.5			*386P44395*				
39.75			*386P44397*				
40			**386P44400**				
40.25				*386P45402*			
40.5				*386P45405*			
40.75				*386P45407*			
41				**386P45410**			
41.25				*386P45412*			
41.5				*386P45415*			
41.75				*386P45417*			
42				**386P45420**			
42.25					*386P49422*		
42.5					*386P49425*		
42.75					*386P49427*		
43					**386P49430**		
43.25					*386P49432*		
43.5					*386P49435*		
43.75					*386P49437*		
44					**386P49440**		
44.25					*386P49442*		
44.5					*386P49445*		
44.75					*386P49447*		
45					**386P49450**		
45.25						*386P50452*	
45.5						*386P50455*	
45.75						*386P50457*	
46						**386P50460**	
46.25						*386P50462*	
46.5						*386P50465*	
46.75						*386P50467*	

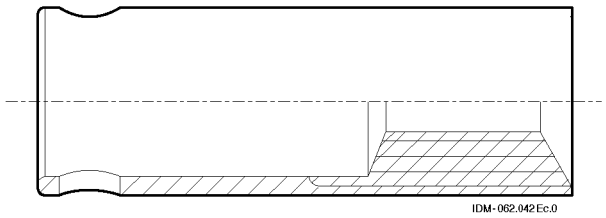
øA		øF *20G6*	øF *20G6*	øF *20G6*	øF *20G6*	øF *20G6*	
mm	*in*	**øD 54**	**øD 56**	**øD 59**	**øD 60**	**øD 64**	
47		**386P54470**					
47.25		*386P54472*					
47.5		*386P54475*					
47.75		*386P54477*					
48		**386P54480**					
48.25		*386P54482*					
48.5		*386P54485*					
48.75		*386P54487*					
49			**386P56490**				
49.25			*386P56492*				
49.5			*386P56495*				
49.75			*386P56497*				
50			**386P56500**				
50.25			*386P56502*				
50.5			*386P56505*				
50.75			*386P56507*				
51			**386P56510**				
51.25			*386P56512*				
51.5			*386P56515*				
51.75			*386P56517*				
52			**386P56520**				
52.25			*386P56522*				
52.5				*386P59525*			
52.75				*386P59527*			
53				**386P59530**			
53.25				*386P59532*			
53.5				*386P59535*			
53.75				*386P59537*			
54				**386P59540**			
54.25				*386P59542*			
54.5				*386P59545*			
54.75				*386P59547*			
55					**386P60550**		
55.25					*386P60552*		
55.5					*386P60555*		
55.75					*386P60557*		
56					**386P60560**		
56.25					*386P60562*		
56.5					*386P60565*		
56.75					*386P60567*		
57						**386P64570**	
57.25						*386P64572*	
57.5						*386P64575*	
57.75						*386P64577*	
58						**386P64580**	
58.25						*386P64582*	
58.5						*386P64585*	
58.75						*386P64587*	

øA		øF 20G6	øF 20G6	øF 20G6	øF 20G6	øF 20G6	
mm	in	øD 65	øD 68	øD 70	øD 71	øD 75	
59		**386P65590**					
59.25		*386P65592*					
59.5		*386P65595*					
59.75		*386P65597*					
60		**386P65600**					
60.25		*386P65602*					
60.5		*386P65605*					
60.75		*386P65607*					
61			**386P68610**				
61.25			*386P68612*				
61.5			*386P68615*				
61.75			*386P68617*				
62			**386P68620**				
62.25			*386P68622*				
62.5			*386P68625*				
62.75			*386P68627*				
63			**386P68630**				
63.25			*386P68632*				
63.5			*386P68635*				
63.75			*386P68637*				
64				**386P70640**			
64.25				*386P70642*			
64.5				*386P70645*			
64.75				*386P70647*			
65				**386P70650**			
65.25				*386P70652*			
65.5				*386P70655*			
65.75				*386P70657*			
66					**386P71660**		
66.25					*386P71662*		
66.5					*386P71665*		
66.75					*386P71667*		
67						**386P75670**	
67.25						*386P75672*	
67.5						*386P75675*	
67.75						*386P75677*	
68						**386P75680**	
68.25						*386P75682*	
68.5						*386P75685*	
68.75						*386P75687*	
69						**386P75690**	
69.25						*386P75692*	
69.5						*386P75695*	
69.75						*386P75697*	

øA		øF *20G6*	øF *20G6*
mm	*in*	**øD 80**	**øD 85**
70		**386P80700**	
70.25		*386P80702*	
70.5		*386P80705*	
70.75		*386P80707*	
71		**386P80710**	
71.25		*386P80712*	
71.5		*386P80715*	
71.75		*386P80717*	
72		**386P80720**	
72.25		*386P80722*	
72.5		*386P80725*	
72.75		*386P80727*	
73		**386P80730**	
73.25		*386P80732*	
73.5		*386P80735*	
73.75		*386P80737*	
74		**386P80740**	
74.25			*386P85742*
74.5			*386P85745*
74.75			*386P85747*
75			**386P85750**
75.25			*386P85752*
75.5			*386P85755*
75.75			*386P85757*
76			**386P85760**
76.25			
76.5			
76.75			
77			
77.25			
77.5			
77.75			
78			
78.25			
78.5			
78.75			
79			
79.25			
79.5			
79.75			
80			

601P

“UNILOCK” COLLETS FOR BARS
PINCES “UNILOCK” POUR CARRÉES



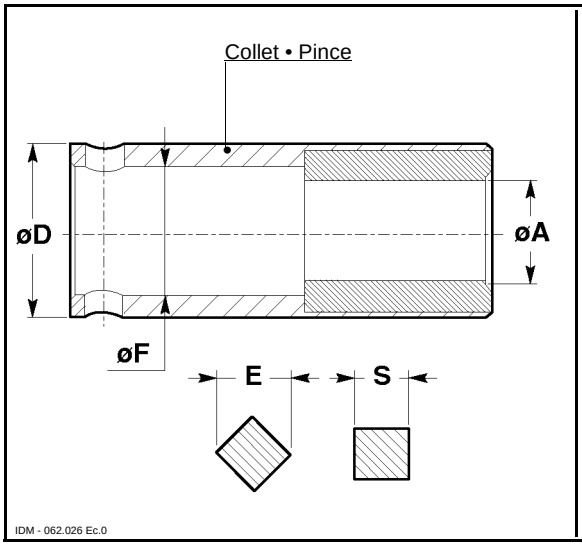
REL. 1.1 DATA 01/06/01

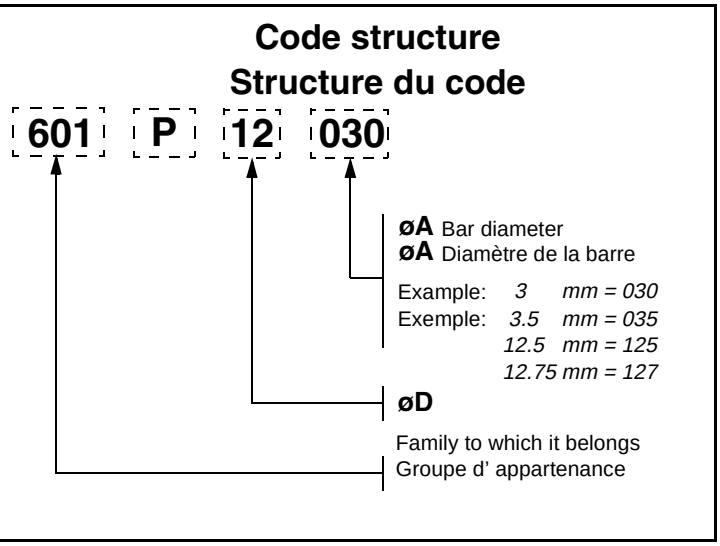
601P "UNILOCK" COLLETS FOR SQUARE BARS - Table

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

601P PINCES "UNILOCK" POUR BARRES CARRÉES - Tableau

AVERTISSEMENT: pour définir le diamètre interne øA ne pas consulter le fascicule "001 - Tableaux de conversion", mais consulter directement le tableau suivant.





S	E E=Sx1.414	øA +0.1 0	øF *M5x0.5*	øF *ø8 G6*	øF *ø11 G6*	øF *ø14 G6*	øF *ø20 G6*
mm	*mm*	*mm*	**øD 7.5**	**øD 12**	**øD 18**	**øD 21**	**øD 25**
3	4.24	3.8	**601P08038**				
4	5.65	5.1		**601P12051**			
5	7.07	6.6		**601P12066**			
6	8.48	8		**601P12080**	**601P18080**		
7	9.90	9.2			**601P18092**	**601P21092**	
8	11.31	10.3			**601P18103**	**601P21103**	
9	12.73	11.7			**601P18117**	**601P21117**	
10	14.14	13.1			**601P18131**	**601P21131**	**601P25131**
11	15.55	14.5				**601P21145**	**601P25145**
12	16.97	15				**601P21150**	**601P25150**

S	**E** **E=Sx1.414**	**øA** $^{+0.1}_{0}$	**øF** *M5x0.5*	**øF** *ø8 G6*	**øF** *ø11 G6*	**øF** *ø14 G6*
mm	*mm*	*mm*	**øD 25**	**øD 29**	**øD 32**	**øD 36**
13	18.38	17.4	**601P25174**			
14	19.80	18.8	**601P25188**			
15	21.21	20.2	**601P25202**			
16	22.62	21.6		**601P29216**		
17	24.04	23		**601P29230**		
18	25.45	24.5			**601P32245**	
19	26.87	25.9			**601P32259**	
20	28.28	27.3			**601P32273**	
21	29.69	28.7				**601P36287**
22	31.11	30.1				**601P36301**
23	32.52	31.5				**601P36315**

601P "UNILOCK" COLLETS FOR HEXAGONAL BARS - Table

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

Note for consultation

The Codes on a grey background refer to the "USE RANGE" to for complete a set of collets while working with the larger channel, and coupling **øF** on the revolving tip is the same.

Note for ordering

- *Collets with codes in bold characters are available from stock.*
- *Collets with codes in italics have longer delivery times.*

601P PINCES "UNILOCK" POUR BARRES HEXAGONALES - Tableau

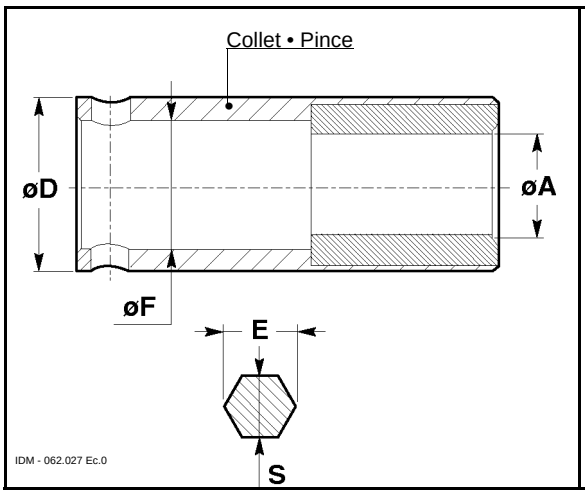
AVERTISSEMENT: pour définir le diamètre interne øA ne pas consulter le fascicule "001 - Tableaux de conversion", mais consulter directement le tableau suivant.

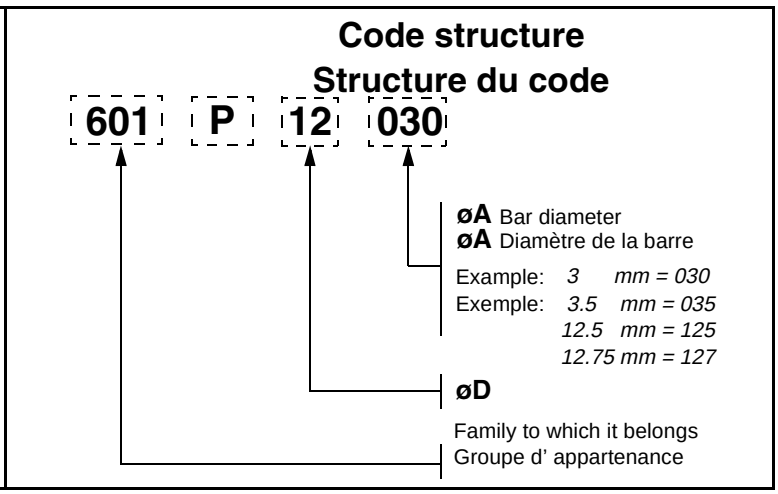
Note pour la consultation

Les codes sur fond gris indiquent le "GROUPE D'UTILISATION" pour compléter un jeu de pinces quand l'usinage a lieu sur le guide-barre le plus important, et que l'enclenchement **øF** sur l'embout tournant est le même .

Remarque pour la commande

- *Les pinces qui ont les codes en gras sont disponibles dans le magasin.*
- *Les pinces qui ont les codes en italique ont un délai de livraison plus long.*



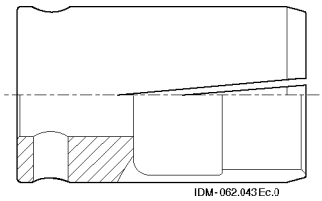


S		E E=SX1.154	øA +0.1 0	øF *M5 x0.5*	øF *ø8 G6*	øF *ø11 G6*	øF *ø14 G6*	øF *ø20 G6*
mm	*in*	*mm*	*mm*	**øD 7.5**	**øD 12**	**øD 18**	**øD 21**	**øD 25**
3		3.46	3.1	**601P08031**				
	1/8"	3.66	3.3	**601P08033**				
4		4.62	4.1	**601P08041**				
	3/16"	5.5	5		**601P12050**			
5		5.77	5.2		**601P12052**			
6		6.92	6.2		**601P12062**			
	1/4"	7.33	6.6		**601P12066**	*601P18066*		
7		8.08	7.3		*601P12073*	**601P18073**		
	5/16"	9.16	8.3			**601P18083**	**601P21083**	
8		9.23	8.4			**601P18084**	**601P21084**	
9		10.39	9.5			**601P18095**	**601P21095**	
	3/8"	10.99	10			**601P18100**	**601P21100**	
10		11.54	10.6			**601P18106**	**601P21106**	
11		12.7	11.7			**601P18117**	**601P21117**	
	7/16"	12.82	11.8			**601P18118**	**601P21118**	
12		13.85	12.8			**601P18128**	**601P21128**	**601P25128**

S		E E=SX1.154	øA +0.1 0	øF *14 G6*	øF *20 G6*	øF *20 G6*	øF *20 G6*	øF *20 G6*
mm	*in*	*mm*	*mm*	**øD 21**	**øD 25**	**øD 29**	**øD 32**	**øD 36**
	1/2”	14.65	13.7	**601P21137**	**601P25137**			
13		15	14	**601P2140**	**601P25140**			
14		16.16	15.2	**601P21152**	**601P25152**			
	9/16”	16.49	15.5	**601P21155**	**601P25155**			
15		17.31	16.3	**601P21163**	**601P25163**			
	5/8”	18.32	17.3		**601P25173**			
16		18.46	17.5		**601P25175**			
17		19.62	18.6		**601P25186**			
	11/16”	20.15	19.2		**601P25192**	*601P29192*		
18		20.77	19.8		**601P25198**	*601P29198*		
19	3/4”	21.93	21			**601P29210**		
20		23.08	22.1			**601P29221**		
	13/16”	23.81	22.8			**601P29228**		
21		24.24	23.2			**601P29232**	*601P32232*	
22		25.39	24.4				**601P32244**	
	7/8”	25.65	24.7				**601P32247**	
23		26.54	25.5				**601P32255**	
	15/16”	27.48	26.5				**601P32265**	
24		27.7	26.7				**601P32267**	*601P36267*
25		28.85	27.9					**601P36279**
	1”	29.31	28.3					**601P36283**
26		30	29					**601P36290**
	1-1/16”	31.14	30.2					**601P36302**
28		32.31	31.3					**601P36313**

602P

COLLETS FOR BARS
PINCES POUR BARRES



REL. 3 DATA 01/12/01

602P COLLETS FOR BARS - Table

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

Note for consultation

The Codes on a grey background refer to the "USE RANGE" to for complete a set of collets while working with the larger channel, and coupling **øF** on the revolving tip is the same.

Note for ordering

- *Collets with codes in bold characters are available from stock.*
- *Collets with codes in italics have longer delivery times.*

602P PINCES POUR BARRES - Tableau

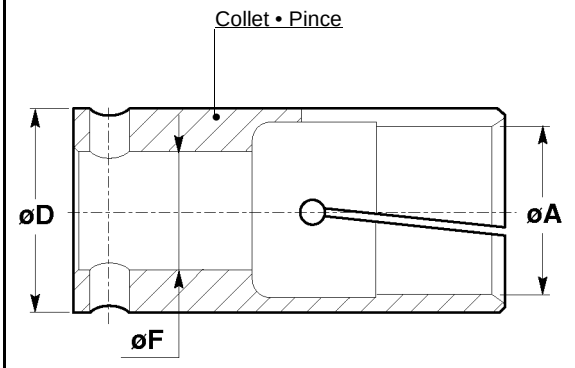
PRECAUTION: le diamètre externe de la pince doit être inférieur d'au moins 0,5 mm au diamètre externe de la poussette.

Note pour la consultation

Les codes sur fond gris indiquent le "GROUPE D'UTILISATION" pour compléter un jeu de pinces quand l'usinage a lieu sur le guide-barre le plus important, et que l'enclenchement **øF** sur l'embout tournant est le même .

Remarque pour la commande

- *Les pinces qui ont les codes en gras sont disponibles dans le magasin.*
- *Les pinces qui ont les codes en italique ont un délai de livraison plus long.*



DM - 062.028 Ec.0

Code structure
Structure du code

602 P 12 030

øA Bar diameter
øA Diamètre de la barre
Example: *3 mm = 030*
Exemple: *3.5 mm = 035*
12.5 mm = 125
12.75 mm = 127

øD

Family to which it belongs
Groupe d' appartenance

øA		**øF** *ø8 G6*	**øF** *ø11 G6*			
mm	*in*	**øD 12**	**øD 15**			
3		**602P12030**				
3.1		**602P12031**				
3.2	1/8"	**602P12032**				
3.3		**602P12033**				
3.4		**602P12034**				
3.5		**602P12035**				
3.6	9/64"	**602P12036**				
3.7		**602P12037**				
3.8		**602P12038**				
3.9		**602P12039**				
4	5/32"	**602P12040**	*602P15040*			
4.1		**602P12041**	*602P15041*			
4.2		**602P12042**	*602P15042*			
4.3		**602P12043**	*602P15043*			
4.4	11/64"	**602P12044**	*602P15044*			
4.5		**602P12045**	*602P15045*			
4.6		**602P12046**	*602P15046*			
4.7		**602P12047**	*602P15047*			
4.8	3/16"	**602P12048**	*602P15048*			
4.9		**602P12049**	*602P15049*			
5		**602P12050**	**602P15050**			
5.1		**602P12051**	**602P15051**			

øA		øF *ø8 G6*	øF *ø11 G6*	øF *ø14 G6*	øF *ø20 G6*		
mm	*in*	**øD 12**	**øD 15**	**øD 20**	**øD 25**		
5.2	13/64”	**602P12052**	**602P15052**				
5.3		**602P12053**	**602P15053**				
5.4		**602P12054**	**602P15054**				
5.5		**602P12055**	**602P15055**				
5.6	7/32”	**602P12056**	**602P15056**				
5.7		**602P12057**	**602P15057**				
5.8		**602P12058**	**602P15058**				
5.9		**602P12059**	**602P15059**				
6	15/64”	**602P12060**	**602P15060**				
6.1		**602P12061**	**602P15061**				
6.2		**602P12062**	**602P15062**				
6.3		**602P12063**	**602P15063**				
6.4	1/4”	**602P12064**	**602P15064**				
6.5		**602P12065**	**602P15065**				
6.6		**602P12066**	**602P15066**				
6.7		**602P12067**	**602P15067**				
6.8	17/64”	**602P12068**	**602P15068**				
6.9		**602P12069**	**602P15069**				
7		**602P12070**	**602P15070**				
7.1		**602P12071**	**602P15071**				
7.2	9/32”	**602P12072**	**602P15072**				
7.3		**602P12073**	**602P15073**				
7.4		**602P12074**	**602P15074**				
7.5		**602P12075**	**602P15075**				
7.6	19/64”	**602P12076**	**602P15076**				
7.7		**602P12077**	**602P15077**				
7.8		**602P12078**	**602P15078**				
7.9		**602P12079**	**602P15079**				
8	5/16”	**602P12080**	**602P15080**	**602P20080**	**602P25080**		
8.1		**602P12081**	**602P15081**	**602P20081**	**602P25081**		
8.2		**602P12082**	**602P15082**	**602P20082**	**602P25082**		
8.3		**602P12083**	**602P15083**	**602P20083**	**602P25083**		
8.4	21/64”	**602P12084**	**602P15084**	**602P20084**	**602P25084**		
8.5		**602P12085**	**602P15085**	**602P20085**	**602P25085**		
8.6		**602P12086**	**602P15086**	**602P20086**	**602P25086**		
8.7		**602P12087**	**602P15087**	**602P20087**	**602P25087**		
8.8	11/32”	**602P12088**	**602P15088**	**602P20088**	**602P25088**		
8.9		**602P12089**	**602P15089**	**602P20089**	**602P25089**		
9		**602P12090**	**602P15090**	**602P20090**	**602P25090**		
9.1	23/64”	**602P12091**	**602P15091**	**602P20091**	**602P25091**		
9.2		**602P12092**	**602P15092**	**602P20092**	**602P25092**		

øA		øF ø8 G6	øF ø11 G6	øF ø11 G6	øF ø11 G6	øF ø14 G6	øF ø20 G6
mm	in	øD 12	øD 15	øD 16	øD 18	øD 20	øD 25
9.3		602P12093	602P15093			602P20093	602P25093
9.4		602P12094	602P15094			602P20094	602P25094
9.5		602P12095	602P15095			602P20095	602P25095
9.6	3/8”	602P12096	602P15096			602P20096	602P25096
9.7		602P12097	602P15097			602P20097	602P25097
9.8		602P12098	602P15098			602P20098	602P25098
9.9		602P12099	602P15099			602P20099	602P25099
10	25/64”	602P12100	602P15100			602P20100	602P25100
10.1			602P15101			602P20101	602P25101
10.2			602P15102			602P20102	602P25102
10.3			602P15103			602P20103	602P25103
10.4	13/32”		602P15104			602P20104	602P25104
10.5			602P15105			602P20105	602P25105
10.6			602P15106			602P20106	602P25106
10.7			602P15107			602P20107	602P25107
10.8	27/64”		602P15108			602P20108	602P25108
10.9			602P15109			602P20109	602P25109
11			*602P15110*	602P16110		602P20110	602P25110
11.25	7/16”		*602P15112*	602P16112		602P20112	602P25112
11.5	29/64”		*602P15115*	602P16115		602P20115	602P25115
11.75			*602P15117*	602P16117		602P20117	602P25117
12	15/32”		*602P15120*	602P16120		602P20120	602P25120
12.25			*602P15122*	602P16122		602P20122	602P25122
12.5	31/64”		*602P15125*	602P16125	*602P18125*	602P20125	602P25125
12.75	1/2”		*602P15127*	602P16127	*602P18127*	602P20127	602P25127
13			*602P15130*	*602P16130*	602P18130	602P20130	602P25130
13.25	33/64”			*602P16132*	602P18132	602P20132	602P25132
13.5	17/32”			*602P16135*	602P18135	602P20135	602P25135
13.75				*602P16137*	602P18137	602P20137	602P25137
14	35/64”			*602P16140*	602P18140	602P20140	602P25140
14.25	9/16”				602P18142	602P20142	602P25142
14.5					602P18145	602P20145	602P25145
14.75	37/64”				602P18147	602P20147	602P25147
15	19/32”				602P18150	602P20150	602P25150
15.25					602P18152	602P20152	602P25152
15.5	39/64”				602P18155	602P20155	602P25155
15.75					602P18157	602P20157	602P25157

øA		**øF** *ø11 G6*	**øF** *ø14 G6*	**øF** *ø14 G6*	**øF** *ø14 G6*	**øF** *ø20 G6*	**øF** *ø20 G6*
mm	*in*	**øD 18**	**øD 20**	**øD 21**	**øD 23**	**øD 25**	**øD 27**
16	5/8”	**602P18160**	**602P20160**		*602P23160*	**602P25160**	
16.25	41/64”		**602P20162**		*602P23162*	**602P25162**	
16.5			*602P20165*	**602P21165**	**602P23165**	**602P25165**	
16.75	21/32”		*602P20167*	**602P21167**	**602P23167**	**602P25167**	
17	43/64”		*602P20170*	**602P21170**	**602P23170**	**602P25170**	
17.25			*602P20172*	**602P21172**	**602P23172**	**602P25172**	
17.5	11/16”		*602P20175*	**602P21175**	**602P23175**	**602P25175**	
17.75			*602P20177*	**602P21177**	**602P23177**	**602P25177**	
18	45/64”		*602P20180*	**602P21180**	**602P23180**	**602P25180**	
18.25	23/32”			**602P21182**	**602P23182**	**602P25182**	
18.5				**602P21185**	**602P23185**	**602P25185**	
18.75	47/64”			**602P21187**	**602P23187**	**602P25187**	
19	3/4”			**602P21190**	**602P23190**	**602P25190**	
19.25					**602P23192**	**602P25192**	
19.5	49/64”				**602P23195**	**602P25195**	
19.75	25/32”				**602P23197**	**602P25197**	
20					**602P23200**	**602P25200**	
20.25	51/64”				**602P23202**	**602P25202**	
20.5					**602P23205**	**602P25205**	
20.75	13/16”				**602P23207**	**602P25207**	
21	53/64”				**602P23210**	*602P25210*	**602P27210**
21.25						*602P25212*	**602P27212**
21.5	27/32”					*602P25215*	**602P27215**
21.75	55/64”					*602P25217*	**602P27217**

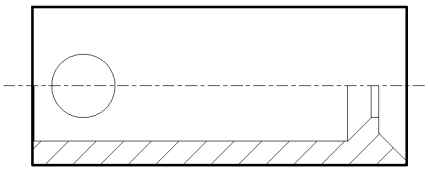
øA		**øF** *ø20 G6*	**øF** *ø20 G6*	**øF** *ø20 G6*	**øF** *ø20 G6*	**øF** *ø20 G6*	**øF** *ø20 G6*
mm	*in*	**øD 25**	**øD 27**	**øD 29**	**øD 32**	**øD 35**	**øD 36**
22		*602P25222*	**602P27222**				
22.25	7/8"	*602P25225*	**602P27225**				
22.5		*602P25220*	**602P27220**				
22.75	57/64"	*602P25227*	**602P27227**	*602P29227*			
23	29/32"	*602P25230*	**602P27230**	*602P29230*			
23.25			**602P27232**	*602P29232*			
23.5	59/64"		**602P27235**	*602P29235*			
23.75			**602P27237**	*602P29237*			
24	15/16"		*602P27240*	**602P29240**			
24.25	61/64"		*602P27242*	**602P29242**			
24.5			*602P27245*	**602P29245**			
24.75	31/32"		*602P27247*	**602P29247**			
25	63/64"		*602P27250*	**602P29250**	*602P32250*		
25.25				**602P29252**	*602P32252*		
25.5	1"			**602P29255**	*602P32255*		
25.75				**602P29257**	*602P32257*		
26				*602P29260*	**602P32260**		
26.25				*602P29262*	**602P32262**		
26.5				*602P29265*	**602P32265**		
26.75				*602P29267*	**602P32267**		
27	1"1/16			*602P29270*	**602P32270**	*602P35270*	
27.25					**602P32272**	*602P35272*	
27.5					**602P32275**	*602P35275*	
27.75					**602P32277**	*602P35277*	
28					*602P32280*	**602P35280**	*602P36280*
28.25					*602P32282*	**602P35282**	*602P36282*
28.5	1"1/8				*602P32285*	**602P35285**	*602P36285*
28.75					*602P32287*	**602P35287**	*602P36287*

øA		øF *ø20 G6*	øF *ø20 G6*	øF *ø20 G6*	øF *ø20 G6*	øF *ø20 G6*	
mm	*in*	**øD 32**	**øD 35**	**øD 36**	**øD 42**	**øD 45**	
29		*602P32290*	**602P35290**	*602P36290*			
29.25		*602P32292*	**602P35292**	*602P36292*			
29.5		*602P32295*	**602P35295**	*602P36295*			
29.75		*602P32297*	**602P35297**	*602P36297*			
30		*602P32300*	*602P35300*	**602P36300**			
30.25	1"3/16		*602P35302*	**602P36302**			
30.5			*602P35305*	**602P36305**			
30.75			*602P35307*	**602P36307**			
31			*602P35310*	*602P36310*	**602P42310**		
31.25			*602P35312*	*602P36312*	**602P42312**		
31.5			*602P35315*	*602P36315*	**602P42315**		
31.75	1"1/4		*602P35317*	*602P36317*	**602P42317**		
32			*602P35320*	*602P36320*	**602P42320**		
32.25				*602P36322*	**602P42322**		
32.5				*602P36325*	**602P42325**		
32.75				*602P36327*	**602P42327**		
33				*602P36330*	**602P42330**		
33.25	1”5/16			*602P36332*	**602P42332**		
33.5				*602P36335*	**602P42335**		
33.75				*602P36337*	**602P42337**		
34				*602P36340*	**602P42340**		
34.25					**602P42342**		
34.5					**602P42345**		
34.75					**602P42347**		
35	1”3/8				**602P42350**		
35.25					**602P42352**		
35.5					**602P42355**		
35.75					**602P42357**		
36					**602P42360**		
36.25	1”7/16				**602P42362**		
36.5					**602P42365**		
36.75					**602P42367**		
37					*602P42370*	**602P45370**	
37.25					*602P42372*	**602P45372**	
37.5					*602P42375*	**602P45375**	
37.75					*602P42377*	**602P45377**	

øA		øF *ø20 G6*	øF *ø20 G6*	øF *ø20 G6*			
mm	*in*	**øD 42**	**øD 45**	**øD 51**			
38		*602P42380*	**602P45380**				
38.25		*602P42382*	**602P45382**				
38.5		*602P42385*	**602P45385**				
38.75		*602P42387*	**602P45387**				
39		*602P42390*	**602P45390**				
39.25		*602P42392*	**602P45392**				
39.5		*602P42395*	**602P45395**				
39.75		*602P42397*	*602P45397*	**602P51397**			
40		*602P42400*	*602P45400*	**602P51400**			
40.25			*602P45402*	**602P51402**			
40.5			*602P45405*	**602P51405**			
40.75			*602P45407*	**602P51407**			
41			*602P45410*	**602P51410**			
41.25			*602P45412*	**602P51412**			
41.5			*602P45415*	**602P51415**			
41.75			*602P45417*	**602P51417**			
42			*602P45420*	**602P51420**			
42.25				**602P51422**			
42.5				**602P51425**			
42.75				**602P51427**			
43	1”11/16			**602P51430**			
43.25				**602P51432**			
43.5				**602P51435**			
43.75				**602P51437**			
44				**602P51440**			
44.25				**602P51442**			
44.5				**602P51445**			
44.75				**602P51447**			
45				**602P51450**			
45.25				*602P51452*			
45.5				*602P51455*			
45.75				*602P51457*			
46				*602P51460*			
46.25				*602P51462*			
46.5				*602P51465*			
46.75				*602P51467*			
47				*602P51470*			

602P..011

EJECTOR
ÉJECTEUR



IDM - 062.076 Ec.0

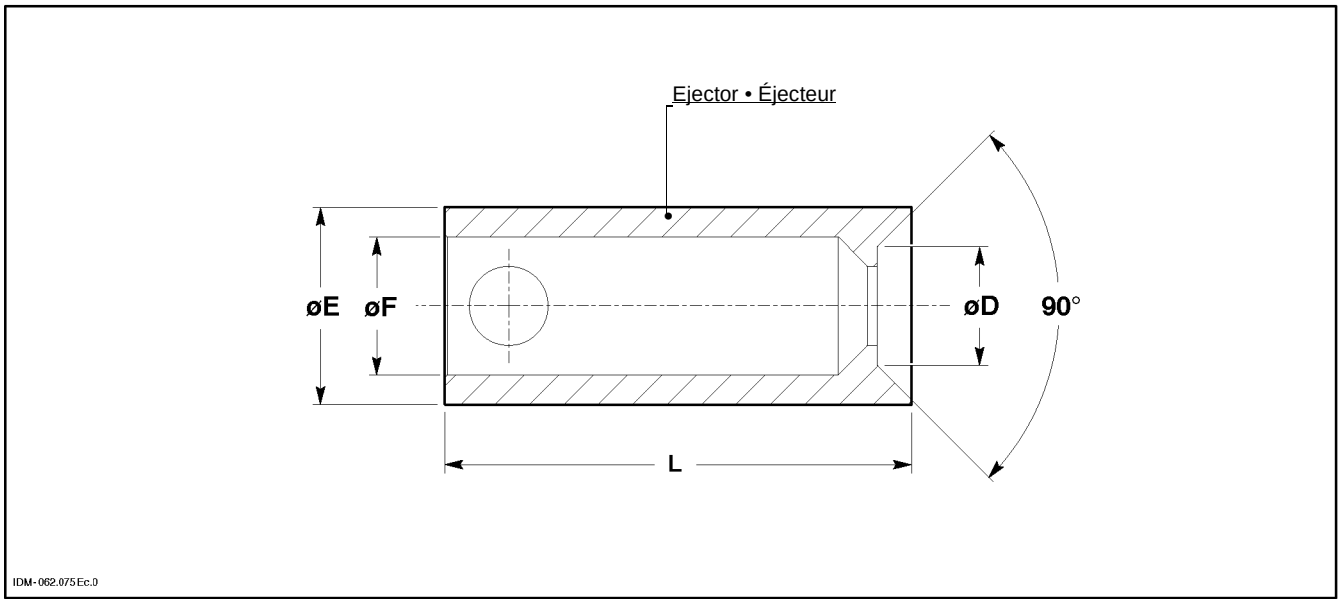
REL. 1 **DATA** 01/06/00

602P..011 EJECTORS - GUIDES Ø13÷28 - TABLE

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

602P..011 ÉJECTEURS - GUIDES Ø13÷28 - TABLEAU

PRECAUTION: le diamètre externe de l'éjecteur doit être inférieur d'au moins 0,5 mm au diamètre externe de la poussette.



øE *(mm)*	**øF** *(mm)*	**øD** *(mm)*	**øL** *(mm)*	*N. code Numero code*
12	8	8	24	602P12011
15	11	11	26	602P15011
16	11	12	26	602P16011
18	11	12	27.5	602P18011
19	11	12	28	602P19011
20	14	12	47.5	602P20011
23	14	12	49	602P23011
25	20	12	50.5	602P25011
27	20	12	51.5	602P27011