AUTOMATIC BAR FEEDER

ELENCO ALLEGATI
MANUAL FOR USE AND MAINTENANCE
KEYBOARD INSTRUCTION MANUAL
SPARE PARTS BOOK
SCHEMATICS
EC CONFORMITY DECLARATION FOR MACHINE

SIR52 MS52 P/F

EN **MANUAL FOR USE AND MAINTENANCE**

Rel. 1 **Date** 20/05/2006 **Cod.** 610575420

S/N

SOFTWARE RELEASE **OP:** **PLC:**

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TIPO DI DOCUMENTO:	**MANUAL FOR USE AND MAINTENANCE**
PRODOTTO:	**AUTOMATIC BAR FEEDER**
MODELLO:	**SIR52 MS52 P/F**

INDEX

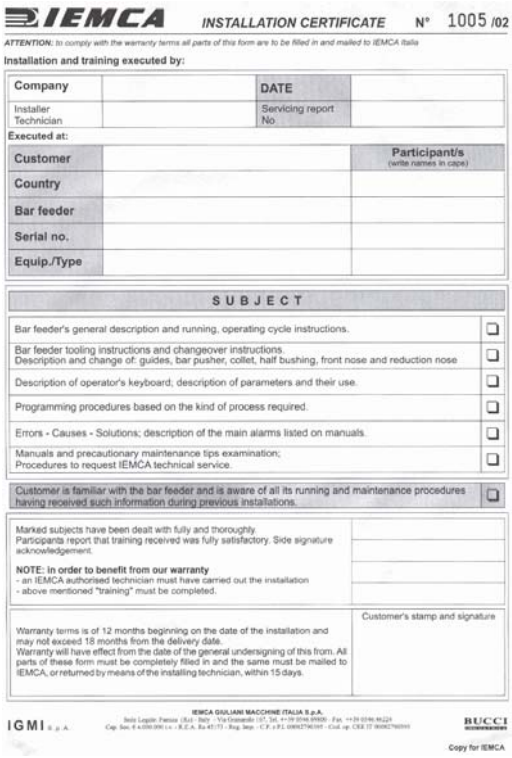
Operations described in paragraphs showing this symbol, must be performed by qualified and skilled personnel only.
Any other operation can be performed either by qualified personnel or by professional bar feeder operators.

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

1.1 TERMS OF WARRANTY

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

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



IEMCA INSTALLATION CERTIFICATE N° 1005 /02

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

Installation and training executed by:

Company		DATE	
Installer Technician		Servicing report No	

Executed at:

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

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

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

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

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

Customer's stamp and signature

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

Copy for IEMCA

1.2 MANUAL PURPOSE

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

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

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

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

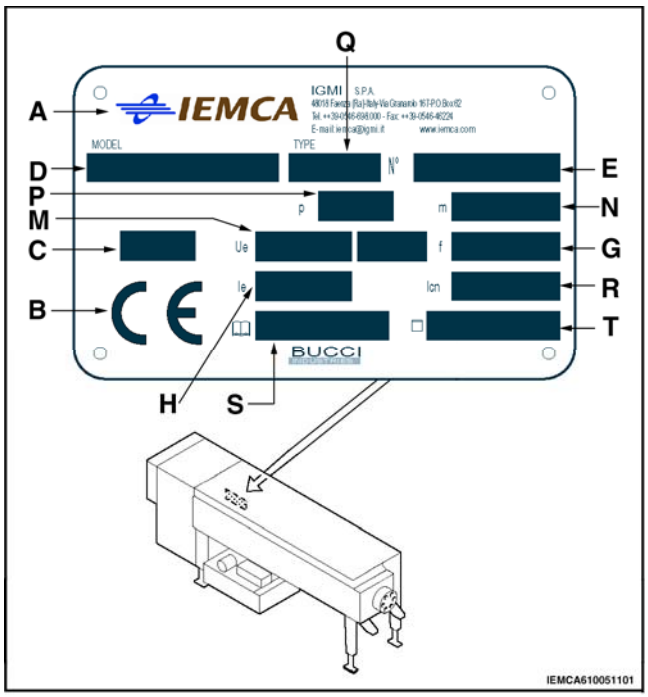
CAUTION - PRECAUTION
indicates measures to be adopted to avoid accidents or damages to property.

INFORMATION
technical instructions of particular importance.

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

1.3 MANUFACTURER AND BAR FEEDER IDENTIFICATION

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



INFORMATION:

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

1.4 TECHNICAL ASSISTANCE

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

INFORMATION

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

1.5 ANNEXES ENCLOSED

- Electric diagram
- Pneumatic diagram
- Hydraulic diagram
- Lubrication system diagram
- Technical assistance departments list.
- List of after-sales centre

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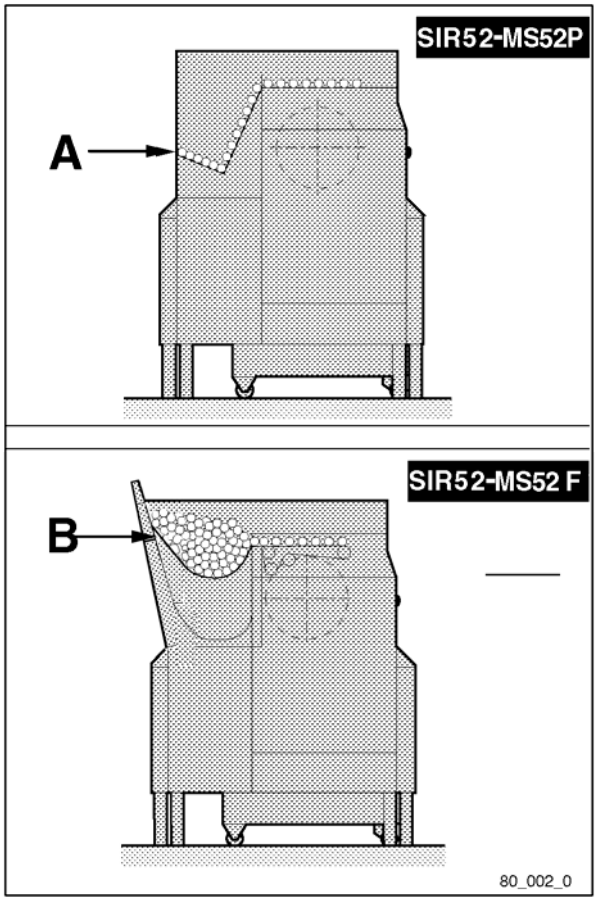
2.1 DESCRIPTION OF MODELS

The bar feeder is available in two models:
- SIR MS32 P for bars up to 32 mm with rack magazine A;
- SIR MS32 F for bars up to 32 mm with bar bundle magazine type B;



MANUFACTURING FEATURES
- Maximum and minimum bar length.

Table 1.Maximum and minimum bar length.

Models	Version	Max. length (mm)	Min. length (mm) (*)
SIR 52-MS52 P SIR 52-MS52 F	33	3300	2500
	38	3800	3000
	43	4300	3000

INFORMATION

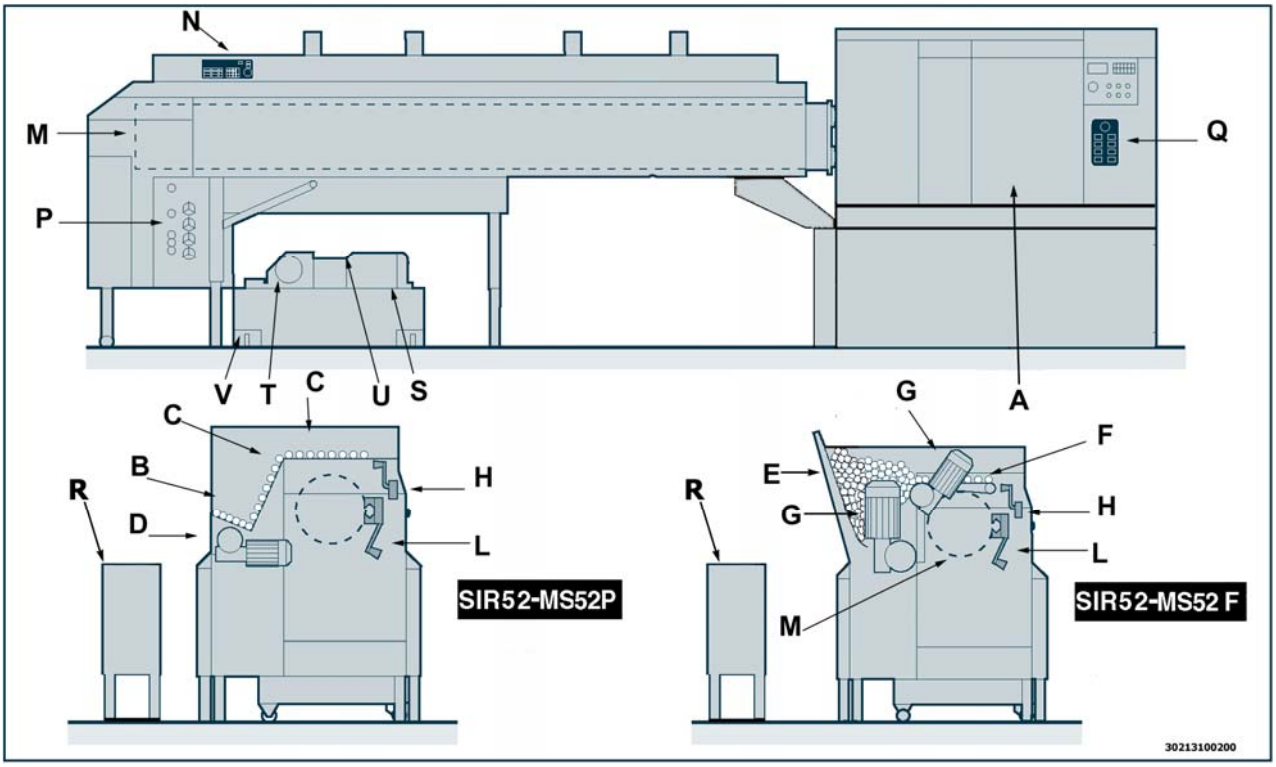
Bars are to be loaded in the middle of the bundle magazine.

(*)To load short bars in the magazine bundle, please refer to IEMCA sales and customer services in order to verify the possibility of installing a short bar loading kit.

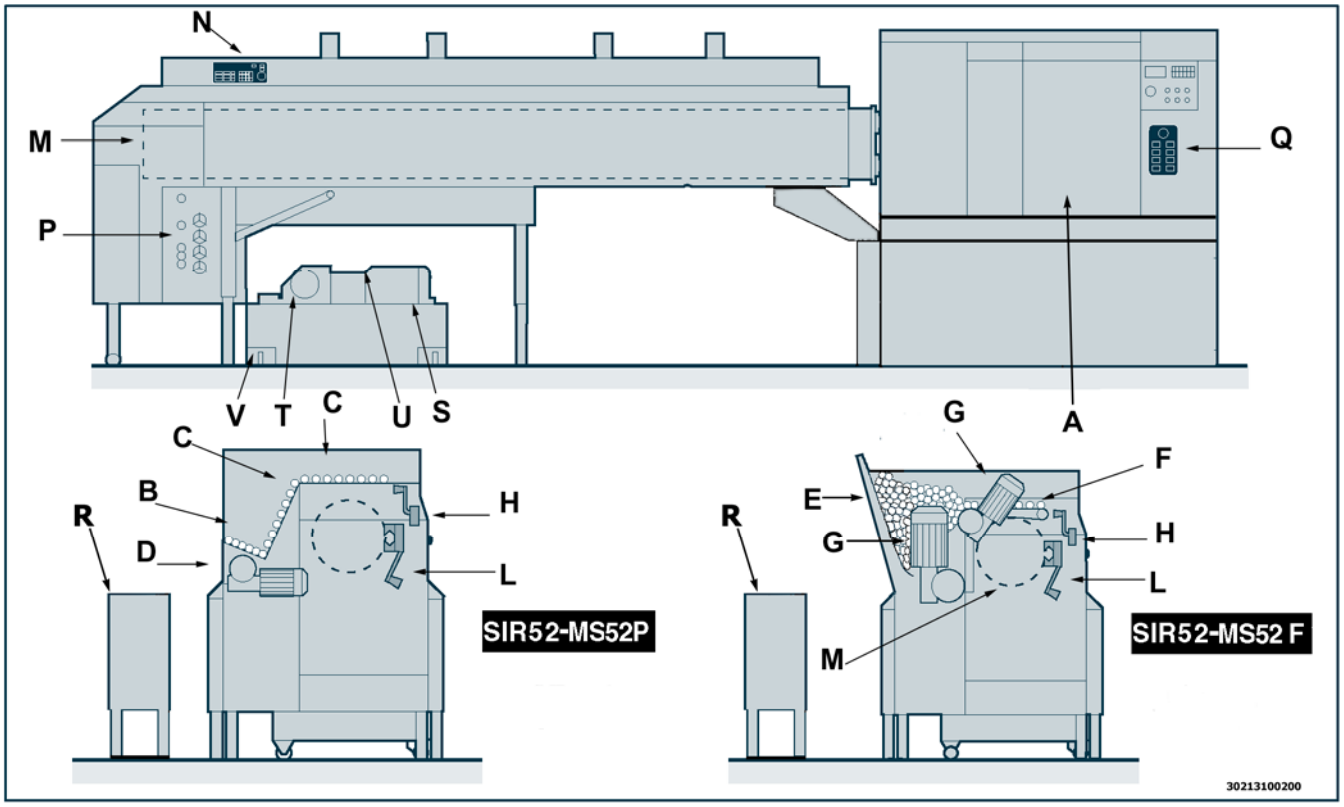
Bar feeling is performed in different stations: it can be carried out in two or more loading stations in every possible combinations.

2.2 GENERAL BAR FEEDER DESCRIPTION

The automatic bar feeder SIR52 MS32 P o SIR52 MS32 F, hereinafter referred to as the bar feeder, works in the field of the machine tools, more specifically to feed a multi-spindle lathe automatically.
The bar feeder has been designed to be installed instead of the lathe stock tube, thus replacing the bar guiding and feeding systems. It allows round, hexagonal and square bars to be loaded.
The working cycle is controlled by a PLC fitted in the electric switchboard, able to dialogue with the lathe control.



A LATHE
machines the bars loaded by the bar feeder.
B RACK MAGAZINE
stores the bars.
C CONVEYING DEVICE
takes single bars, moving them from the rack magazine to the inserting device.
D DRIVE
drives the bar traverse device from the rack to the inserting device.
E BUNDLE MAGAZINE
stores bars.
F BAR SELECTING DEVICE
selects bars.
G DRIVE
drives the bar selecting device.



H BAR INSERTING DEVICE
takes the bars and arranges them into the guide channels.

L CLAMP AND BAR PUSHER UNIT
inserts into and removes the bar from the collet.
Furthermore, it inserts into and removes the bar pusher from guide channels.

M FEEDING DRUM
inserts bars into lathe.

N CONTROL PUSH-BUTTON PANEL
controls all bar feeder functions.

P HYDRAULIC CONTROLS
adjust hydraulic oil flow.

Q RACEWAY
houses the lathe cables.

R CUBICLE
fits the electric switchboard.

S REMNANT RECOVERY TANK
collects bar remnants.

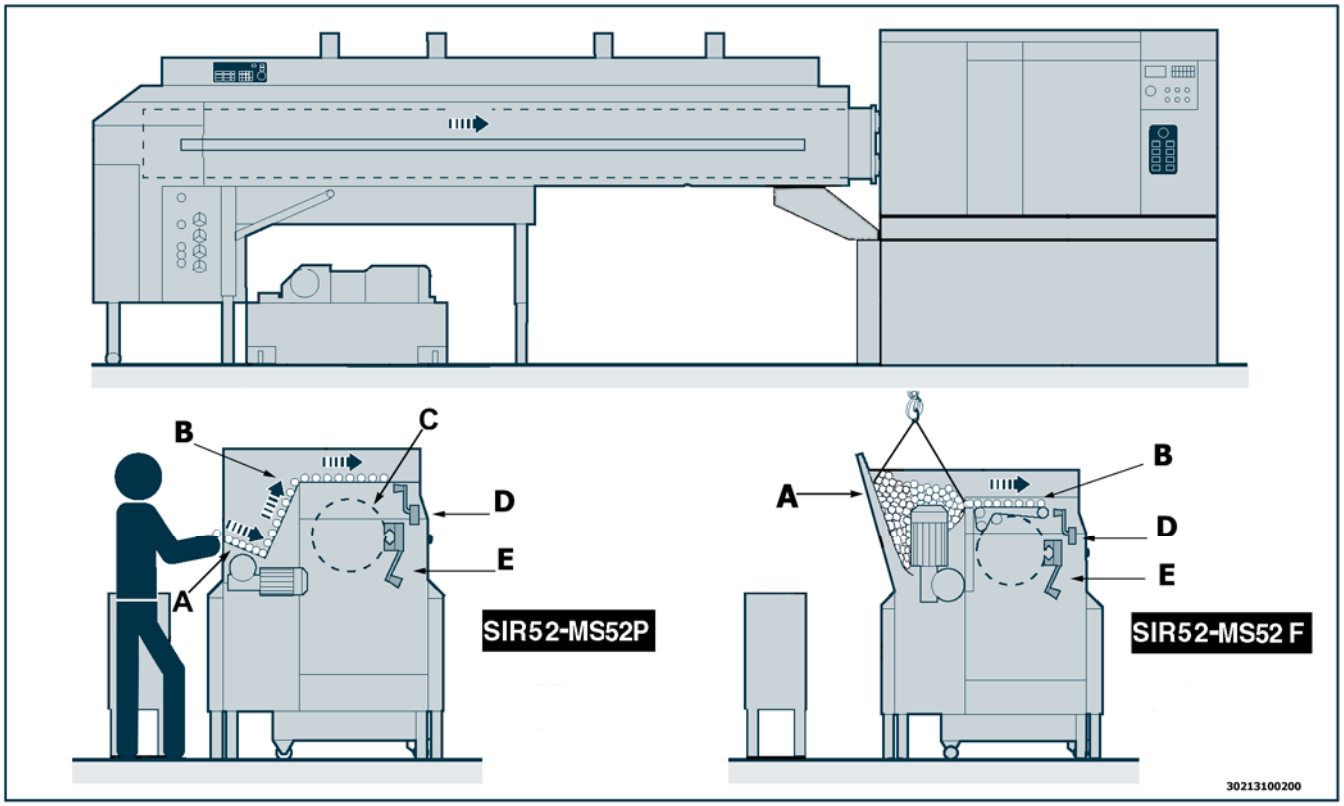
T HYDRAULIC OIL PUMP
produces pressure for the hydraulic functions of the bar feeder.

U LUBRICATING OIL PUMP
produces pressure to lubricate guide channels.

V HYDRAULIC OIL TANK
contains the hydraulic system oil.

Z LUBRICATING OIL TANK
contains the oil for the lubricating system.

2.3 WORKING CYCLE - GENERAL DESCRIPTION



SIR MS32 P

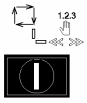
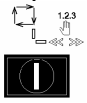
- Bars, loaded into magazine (A) manually, are taken by chain traverse device (B).
- Bar inserting device (D) introduces them into drum (C).
- Clamp device (E) inserts the bar into the bar pusher collet.
- Then, bars are fed into the lathe.

SIR MS32F

- Bars, previously loaded into magazine (A) through a lifting device, are selected by bar selecting device (B).
- Bar inserting device (D) introduces them into drum (C).
- Clamp device (E)inserts the bar into the bar pusher collet.
- Then, bars are fed into the lathe.

2.4 SAFETY DEVICES

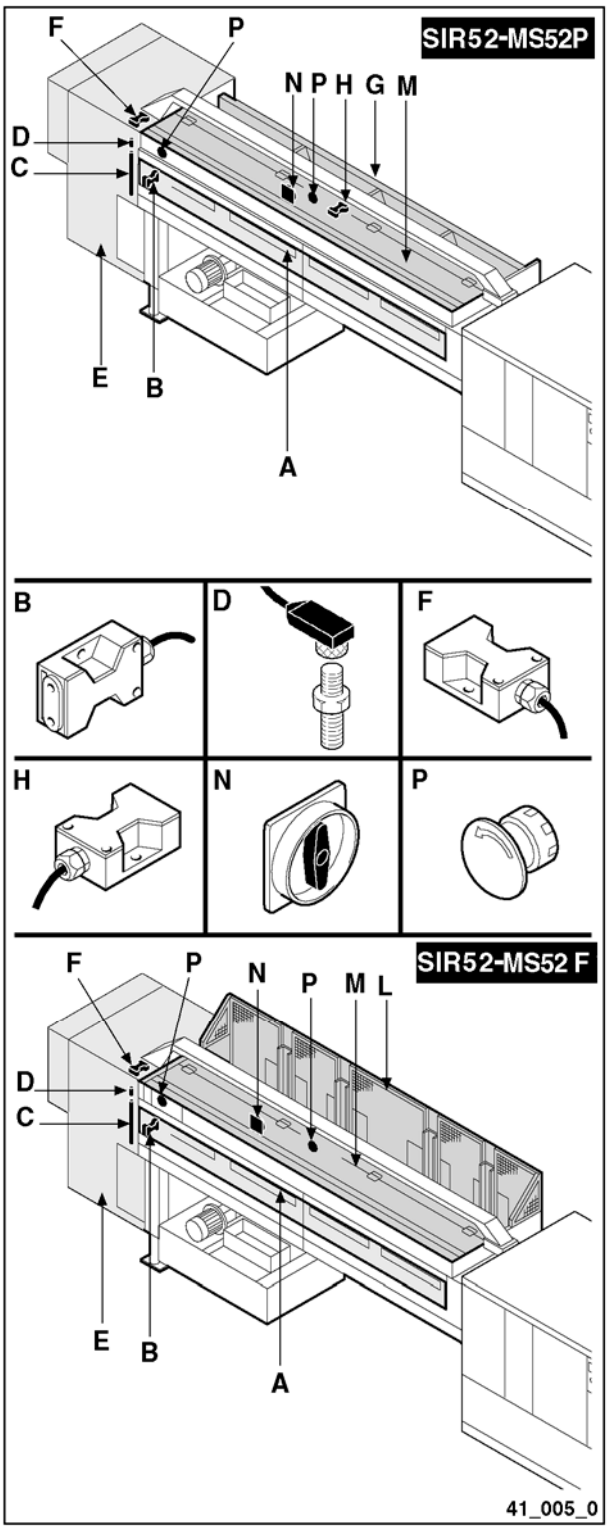
A INTERLOCKED MOBILE GUARD.It is associated to microswitch (B):

- when selector  is turned to  , the bar feeder stops by opening the guard;
- when selector  is turned to  , the bar feeder does not stop by opening the guard, but there are few controls enabled, i.e. those necessary for setting up or change the machining procedures; they are:      .

C AXIAL DISPLACEMENT LOCKING.
It is associated to sensor (D).
By releasing the lever, all lathe and bar feeder functions are disabled.

E INTERLOCKED MOBILE GUARD.
Associated to microswitch (F).
By opening the guard, all lathe and bar feeder functions are disabled.

G INTERLOCKED MOBILE GUARD.
Associated to microswitch (H).
By opening the guard, all bar magazine functions are disabled. The bar feeder keeps feeding the lathe until the feeding drum runs out of bars.

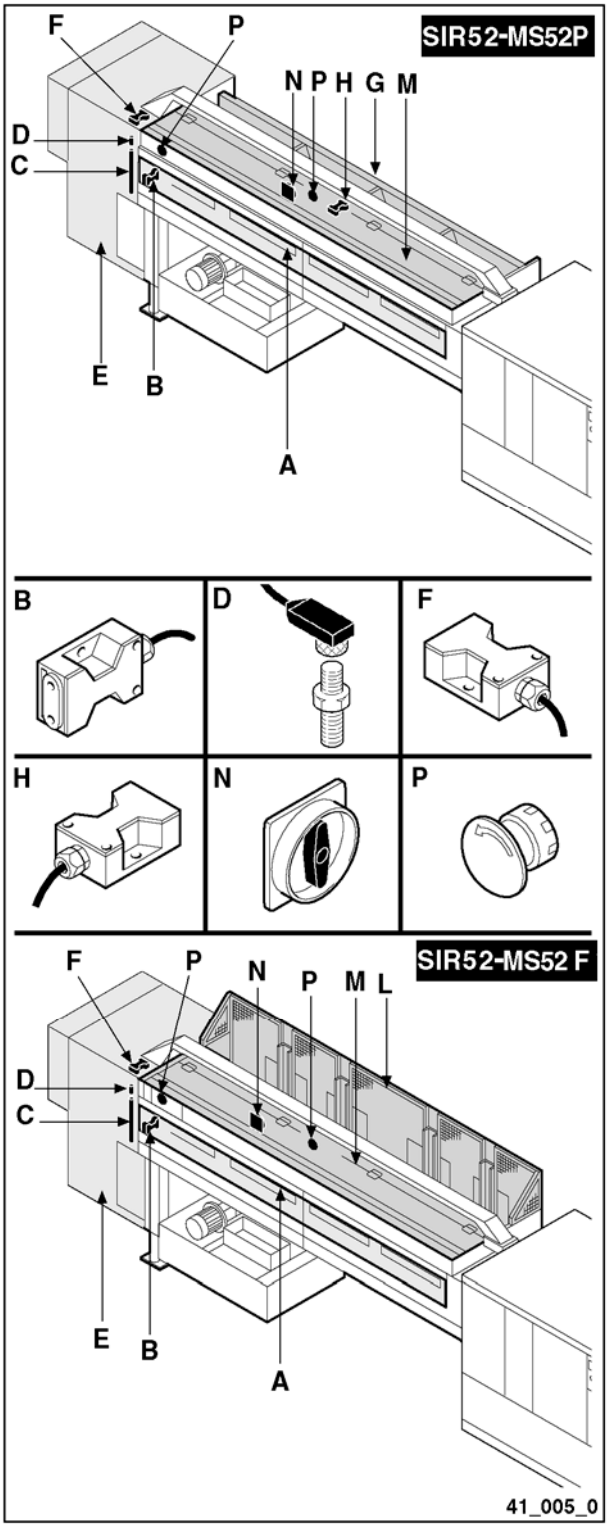


L FIXED GUARD
Prevents the accidental access to bundle magazine.

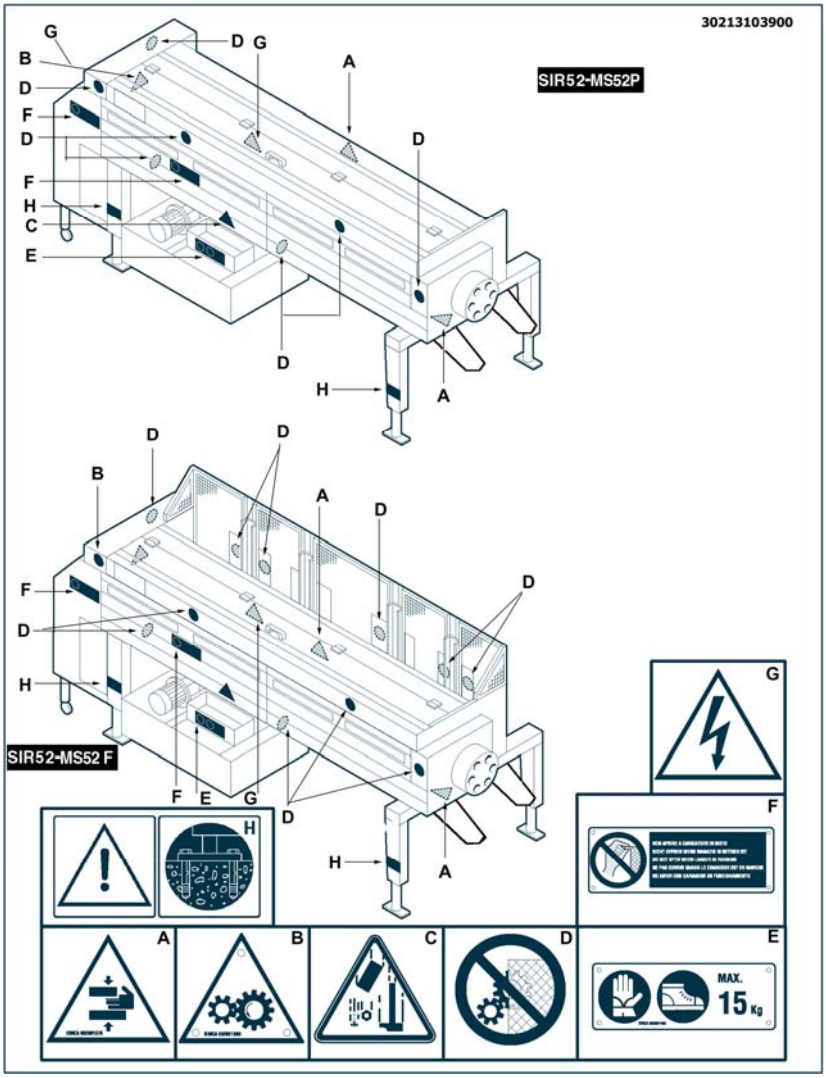
M MOBILE GUARD
Prevents the accidental access to the bar selecting station.

N MAIN SWITCH
Disconnects the electric supply when servicing the electric switchboard.

P EMERGENCY PUSH-BUTTON
By pressing it, all lathe and bar feeder functions are disabled.



2.5 SAFETY PLATES - LOCATION AND DESCRIPTION



DANGER - WARNING:
Keep safety plates clean.

A Danger of arm crushing.
B Give the greatest attention to running parts.
C Danger of material falling.
D Do not remove safety guards.
E Wear safety work gloves and shoes.
Do not lift any load exceeding 15 kg manually.
F Do not open the bar feeder while it is running.
G Caution: danger of electric shock.
H The bar feeder must be fixed to the ground.

2.5.1 Noise levels

The bar feeder does not cause acoustic noise.
Noise occurs when lathe, to which the bar feeder is connected, is running and the bar turns into the bar feeder guide channels.
In such a situation, the noise level emitted depends on the following conditions:

- perfect alignment and levelling of the lathe-bar feeder unit;
- correct fastening of the lathe and bar feeder to the ground;
- perfect working order of the lathe bar gripping device;
- use of guide channels and bar pushers whose dimensions are suitable to the diameter of the bar to be machined;
- use of a front guiding bush of suitable diameter (if supplied);
- use of bars whose straightness is within the prescribed limits (max. deflection in mm equal to 0.5 per thousand of the bar length);
- use of a spindle liner with a diameter equal to the bar feeder guide channel diameter;
- spindle rotation speed suitable to the material to be machined;
- as far as the bar feeder is concerned, use of suitable oil, according to the diameter of the bar to be machined;
- all bar feeder guards must be closed.

If the above mentioned conditions are complied with, the noise level emitted during the bar rotation into the guide channel and measured according to the international standards, does not exceed the following limits:

- brass and steel round bars ..... within 80* dbA
- steel hex. bars ..... within 83 dbA
- brass hex. bars ..... within 85 dbA

The noise level is affected by the actual conditions of the lathe to which the bar loader is applied as well as by the type of bars.
The operator should check if wearing personal protection equipment is required based on regulations in force in the country of use applicable to work environments.

*) Measurements taken with Ø 35 mm round bar, Ø 36 mm channel < 5% straightness at 3750 rpm with lathe Index MS52 Serial number .....

2.6 TECHNICAL INFORMATION

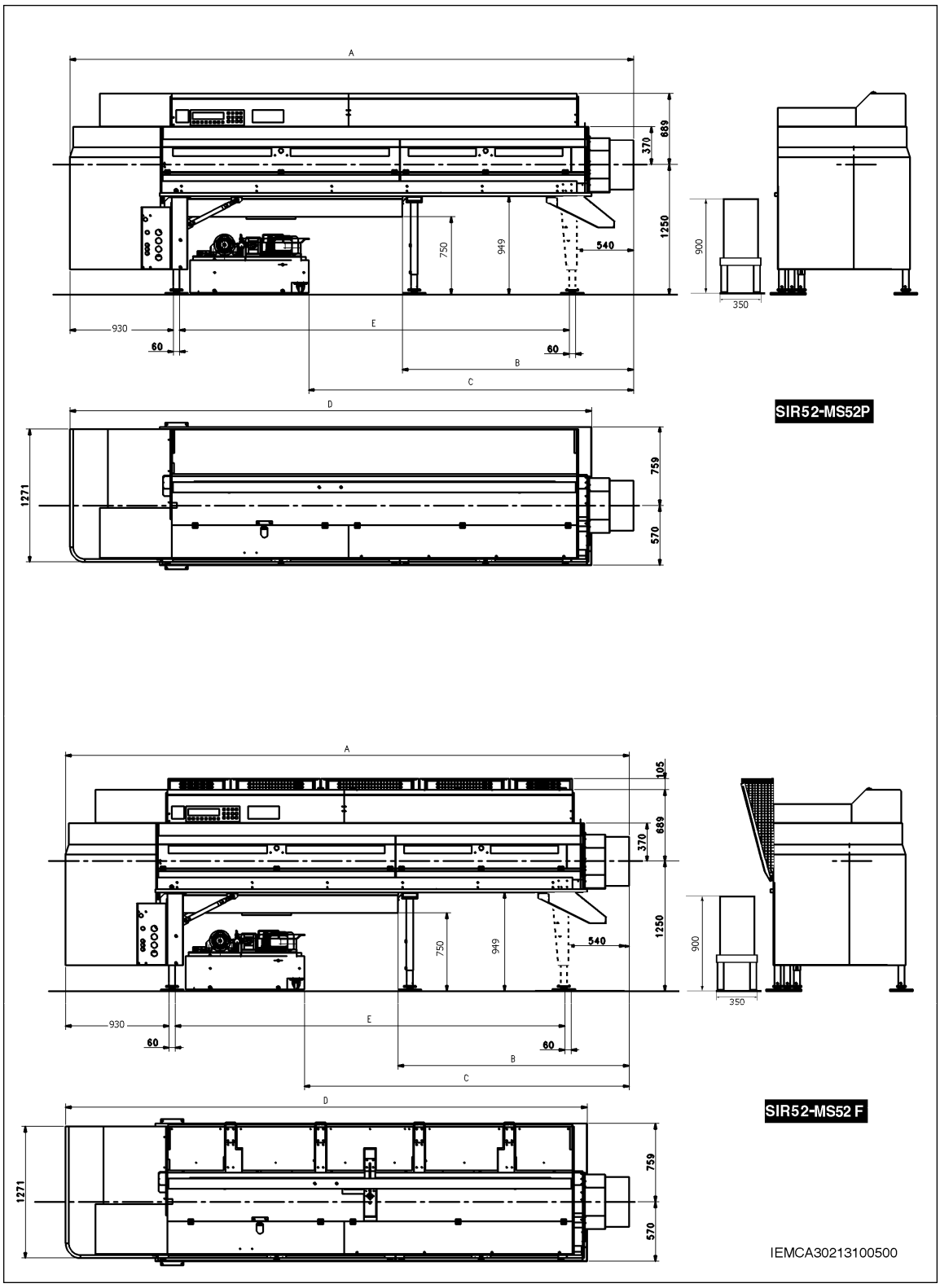


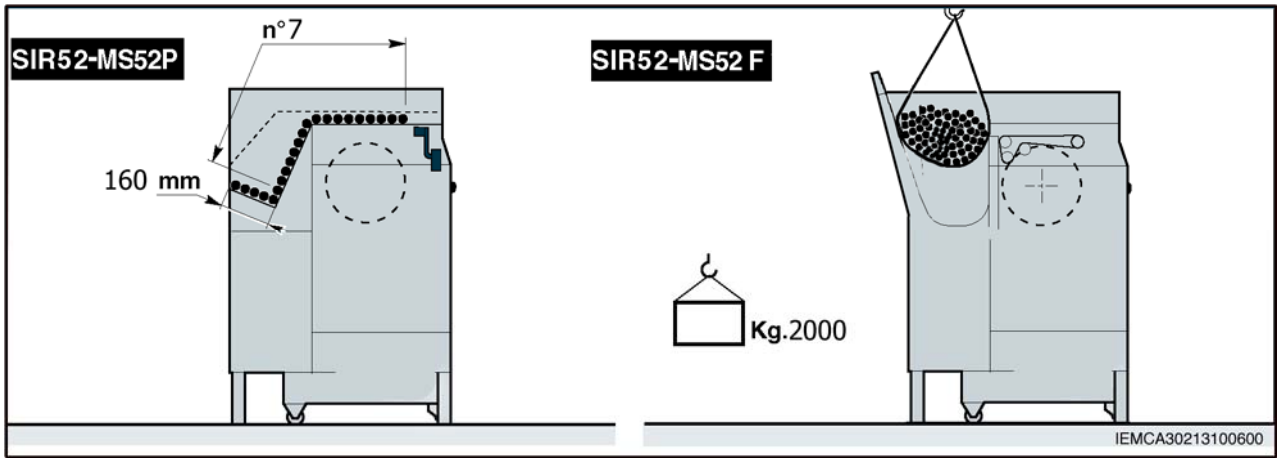
Table 1.Technical specifications

	Version		
Value	**33**	**38**	**43**
A	4900	5400	5900
B	1720	2220	2720
C	2620	3120	3620
D	4520	5020	5520
E	3250	3750	4250

Table 3.Technical specifications

	SIR 52-MS52 P	SIR 52-MS52 F	
Min round bar diameter	15 mm (25/64") *	15 mm (25/64") (version 33,38) *	15 mm (1/2") (version 43) *
Max round bar diameter	52 mm (2")		
Bar straightness	0,5 mm/m		
Max. bar length	3300 mm (version 33) - 3800 mm (version 38) - 4300 mm (version 43)		
Max. magazine capacity	n. 15 bars più 200 mm on the rack	2000 kg	
Supply voltage	380 three-phase / 50 Hz (other voltages upon request)		
Supply voltage	24 Volt D.C.		
Installed power	4,5 kW		
Feeding speed	up to 0.8 m/sec.		
Return speed	up tp 0.8 m/sec.		
Bar change-over time	45 sec.		
Hydraulic system oil (not supplied)	Type C) HG32; quantity 80 l		
Guide channel oil (not supplied)	Type (C) CKB 100; quantity 170 l		
Compressed air	Least 6 bar (10 bar max) Recommended 7 bar		
Bar feeder weight	2800 kg (version 33)	3050 kg (version 33)	
	2900 kg (version 38)	3150 kg (version 38)	
	3000 kg (version 43)	3250 kg (version 43)	
Control unit weight (dry weight)	220 kg. Dry weight, 400 Kg with lubricating and hydraulic oil		

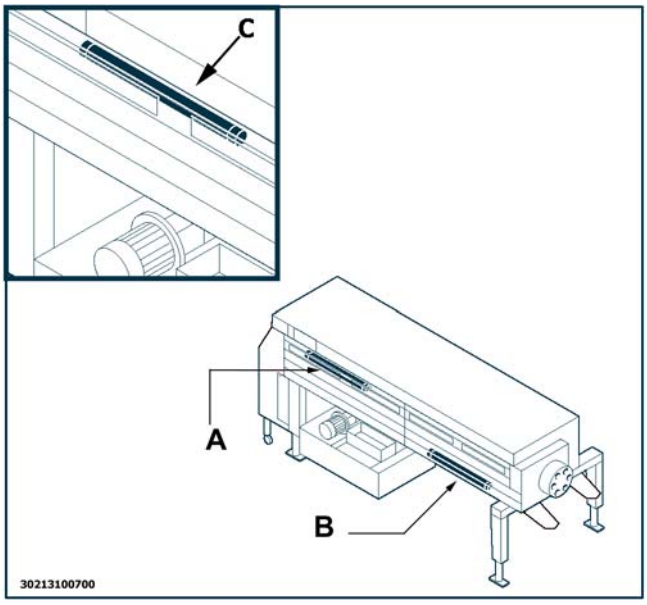
(*) Please contact IEMCA Sales or Service Departments before loading thinner bars.
In pursuing a policy of continuous updating of the product, the manufacturer might introduce changes without any prior notice.



2.7 FITTINGS - DESCRIPTION

2.7.1 Additional inner lighting lamp

Lamp A and B allow the rear drum area to be lighted, to make operator's checking easier.
Lamp C may be fitted upon customer's request.



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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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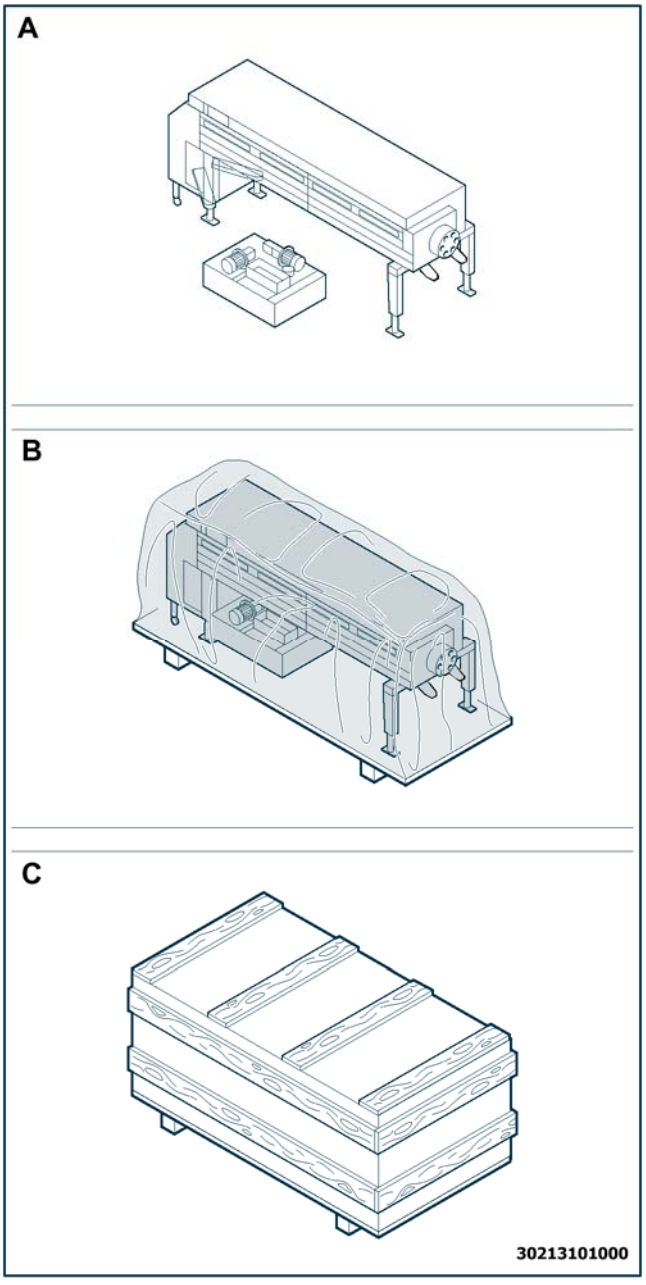
4.1 PACKING

There are three possible bar feeder packagings:

A WITHOUT PACKING: the bar feeder is divided from the hydraulic control unit.

B PALLET: the bar feeder is placed on a pallet and covered by a protective sheeting.

C BOX: the bar feeder is contained in a box and covered by a protective sheeting.



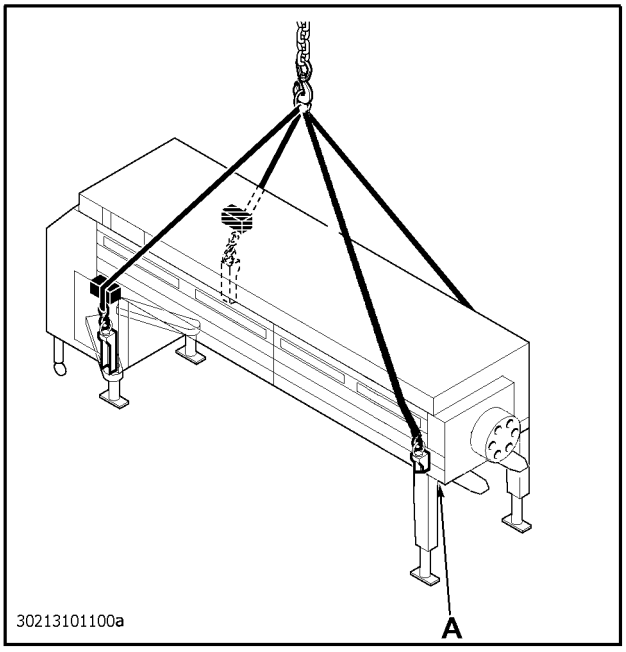
4.2 LIFTING - PREAMBLE

DANGER - WARNING:

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

4.2.1 Lifting without packing

Before lifting the bar feeder, be sure the supports of the rear door have been installed; they should be fixed to the rear legs of the bar feeder and must be mounted as close as possible to the lower surface of the rear door.

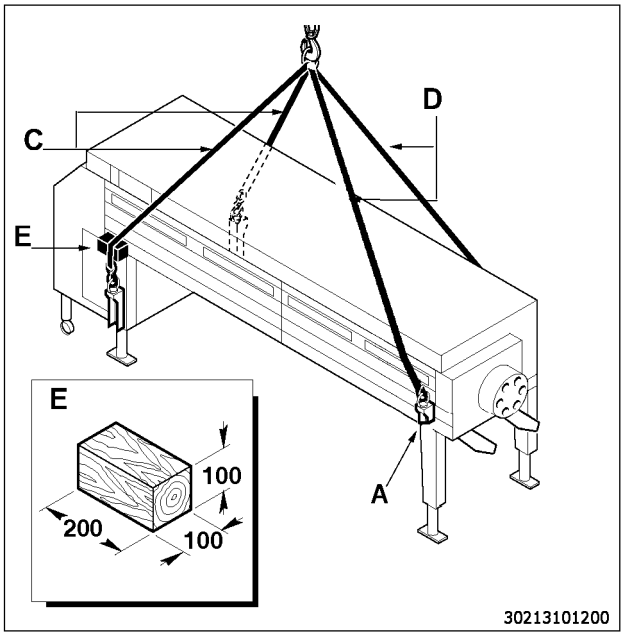


LIFTING WITH TUBE

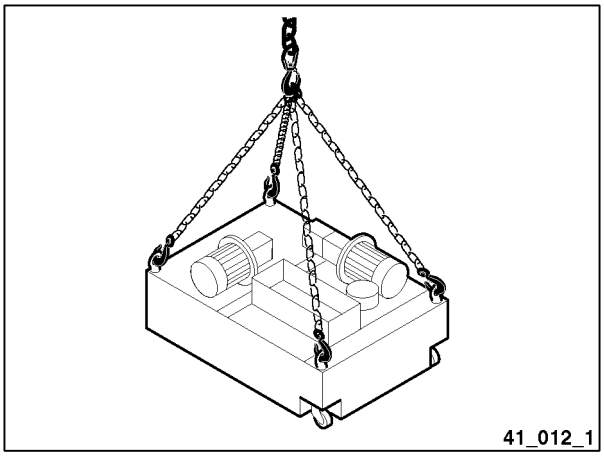
Table 1.Belt length

Model	Version	Belt C (mm)	Belt D (mm)
SIR 52-MS 52 P SIR 52-MS 52 F	33	3000	3000
	38	2500	3000
	43	2500	3000

To lift the bar feeder it is necessary to fix the eye-bolts (A) to the supports.
Check the length of the belts(C) and (D) and apply wooden pads (E).
Use a bridge crane or a self-propelled crane.



To uplift the hydraulic drive unit, use belts or chains together with a bridge crane or a self-moving crane having an appropriate loading capacity.

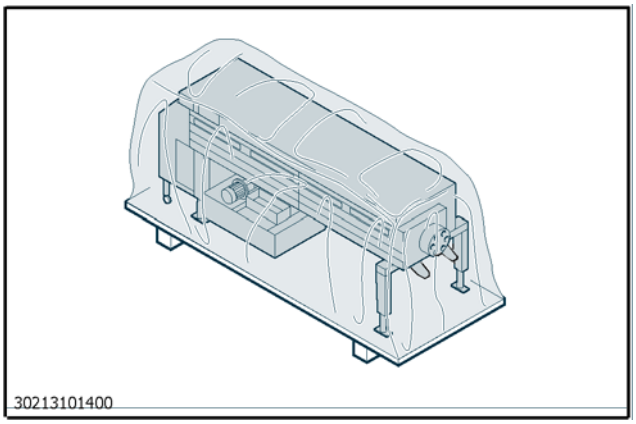


INFORMATION:

Before lifting and moving the bar feeder, make sure that the eye-bolts are properly and firmly fixed against the support surface, that the front nose has been correctly positioned and that the rings are rigidly fixed.

Do not let weights swing or bounce during transport.

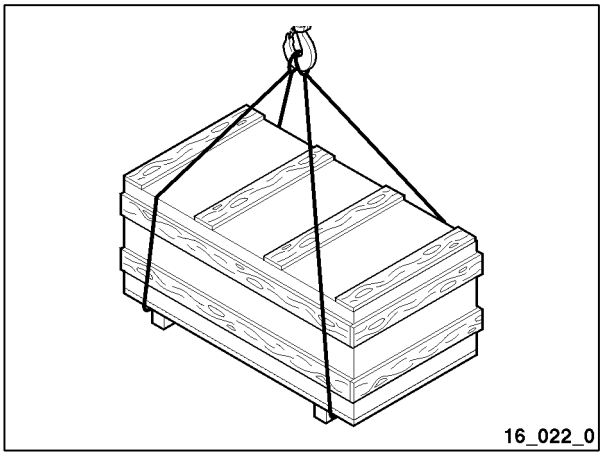
4.2.2 Lifting with a pallet



Use two belts of 8 m in length and a bridge crane or a self-propelled crane having adequate capacity load.

By means of a bridge crane and of belts having adequate capacity and with reference to the belt lengths indicated in table1 (paragraph 4.2.1.) it is possible to move a bar feeder on pallet following the same instructions as for a bar feeder with no packaging (paragraph 4.2.1).
In this case, the length of the belts and of the lifting system must be set according to the weight of the bar feeder, of the pallet (400kg) and of the devices that have been fixed on it (see table 3, paragraph 2.6).
Before lifting and moving a bar feeder on pallet, remove the protective film and make sure the additional equipment has been fixed to the pallet; make sure that all screws and bolts have been properly tightened.
Do not let weights swing or bounce during transport.

4.2.3 Lifting with a box



Use two belts of 8 m in length and a bridge crane or a self-propelled crane having adequate capacity load.
The case weight is 1000 kg.

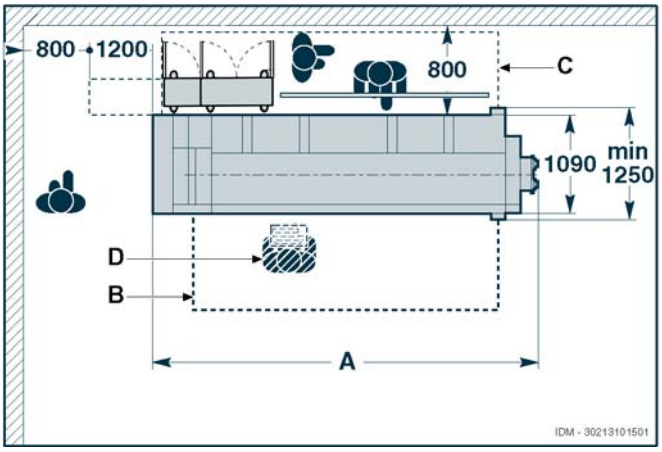
4.3 INSTALLATION AREA - FEATURES

- The floor should be stable and levelled to guarantee good fastening to the ground.
- Provide an area of suitable dimensions according to the type of feeder use.

Table 2. Dimension of the installation area.

Models	Version	A (mm)
SIR 52 P SIR 52 F	33	4950
	38	5450
	43	5950

- 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 chosen area has to be lit and must have a distribution socket for pneumatic energy.
- During operation, the feeder will release small amount of oil vapors. Make sure that the premises where the feeder is installed are suitably ventilated.



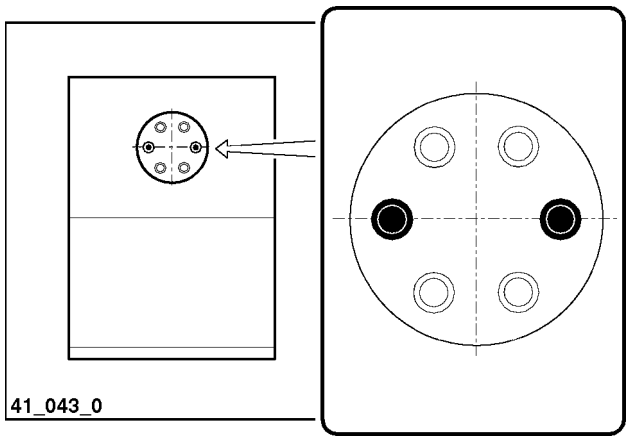
4.4 INSTALLATION

The most important phase of installation is the alignment between the bar feeder and lathe, hence said operation shall be carried out by skilled personnel with the maximum precision.

WARNING-CAUTION:

A wrong alignment may be the main cause of bar feeder malfunctioning and may cause damages to the machine.

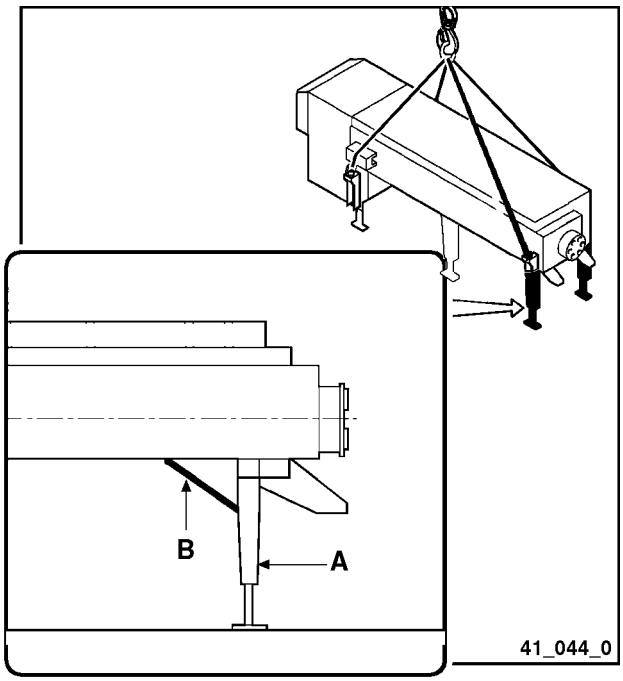
4.4.1 Preliminary operations



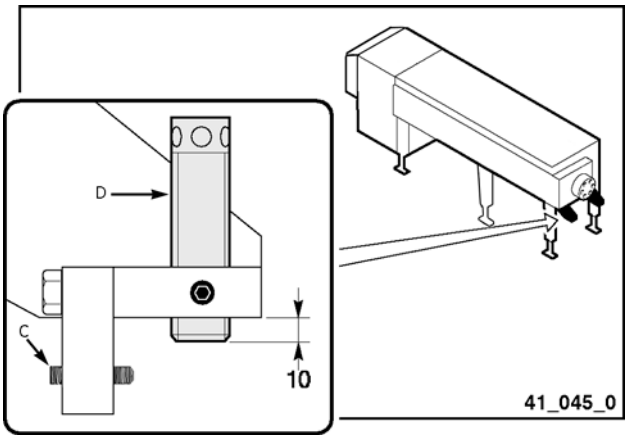
- Check lathe spindles (A) levelling; adjust lathe levelling, if necessary.

4.4.2 Positioning

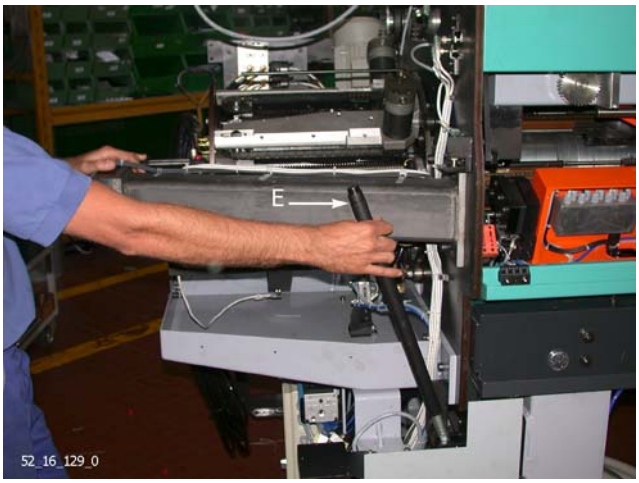
- Position the bar feeder near the lathe.
  Lift the bar feeder and remove feet (A)d tie rods (B) if they interfere with the bowls and the ejectors of the lathe.



- Loosen grub screws (C) and adjust the height of screws (D) of the value.

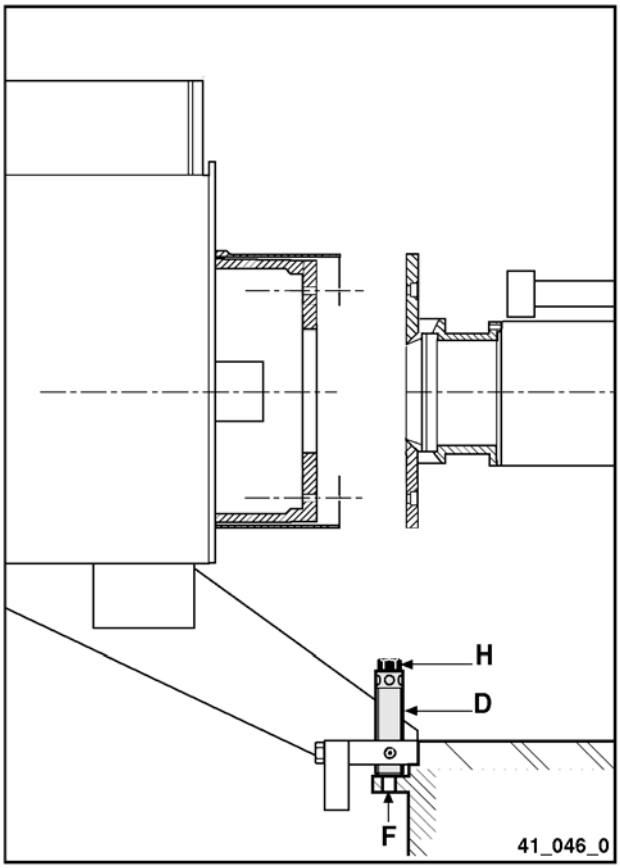


- Lower lever (E) and move the feeding drum backwards.

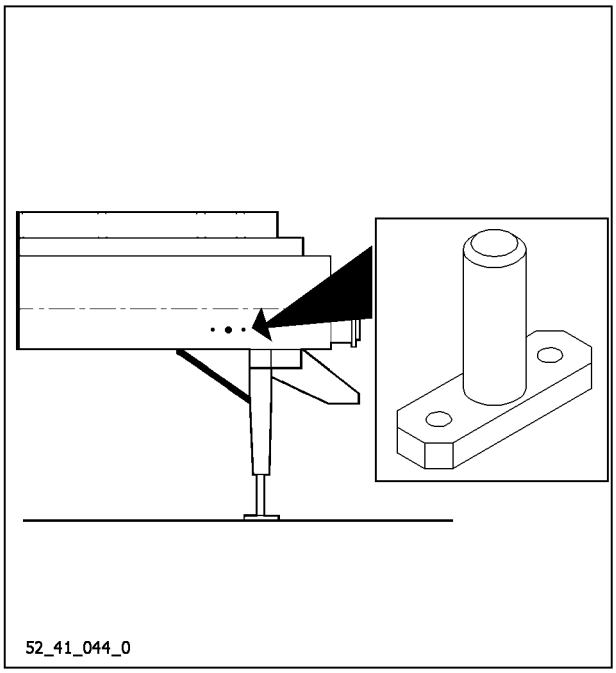


INFORMATION

In order to help the drum displacement, the barfeeder need to be on a flat surface and levelled.

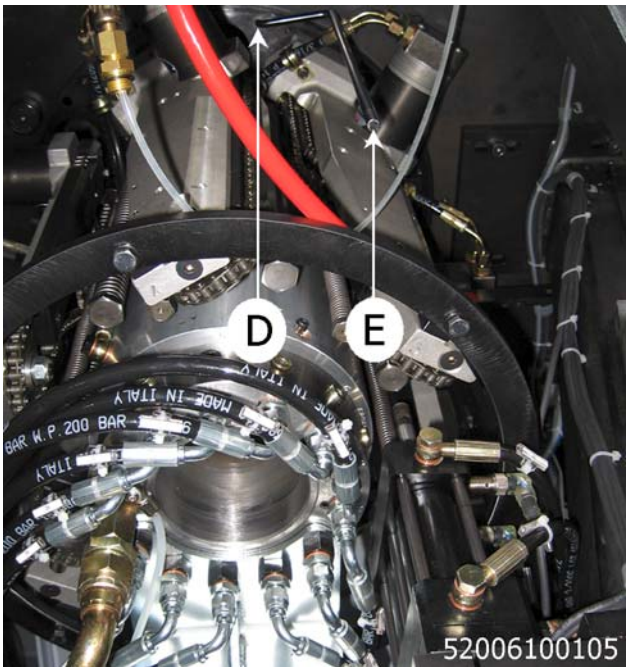


Please use the special security block and adjust the back door during the facing in right way.



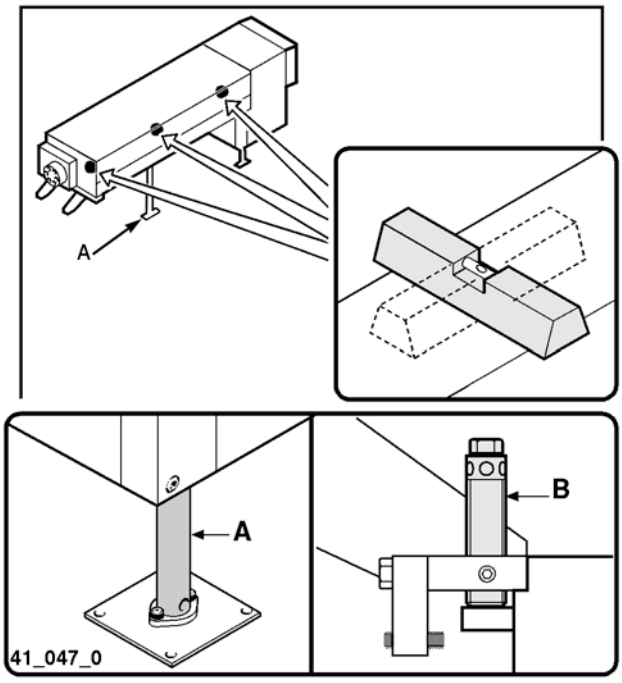
- Position the bar feeder behind the lathe. Screws (D) have to be at the same height as holes(F); respect value (G) mentioned.
- Introduce screws (H) complete with washer and screw without tightening.
- Put the bar feeder down and remove feet (A) and tie rods (B)if they had not been removed when positioning.

- Open the rear guard and replace screw (D) (red) with pin (E) supplied.



4.4.3 Levelling

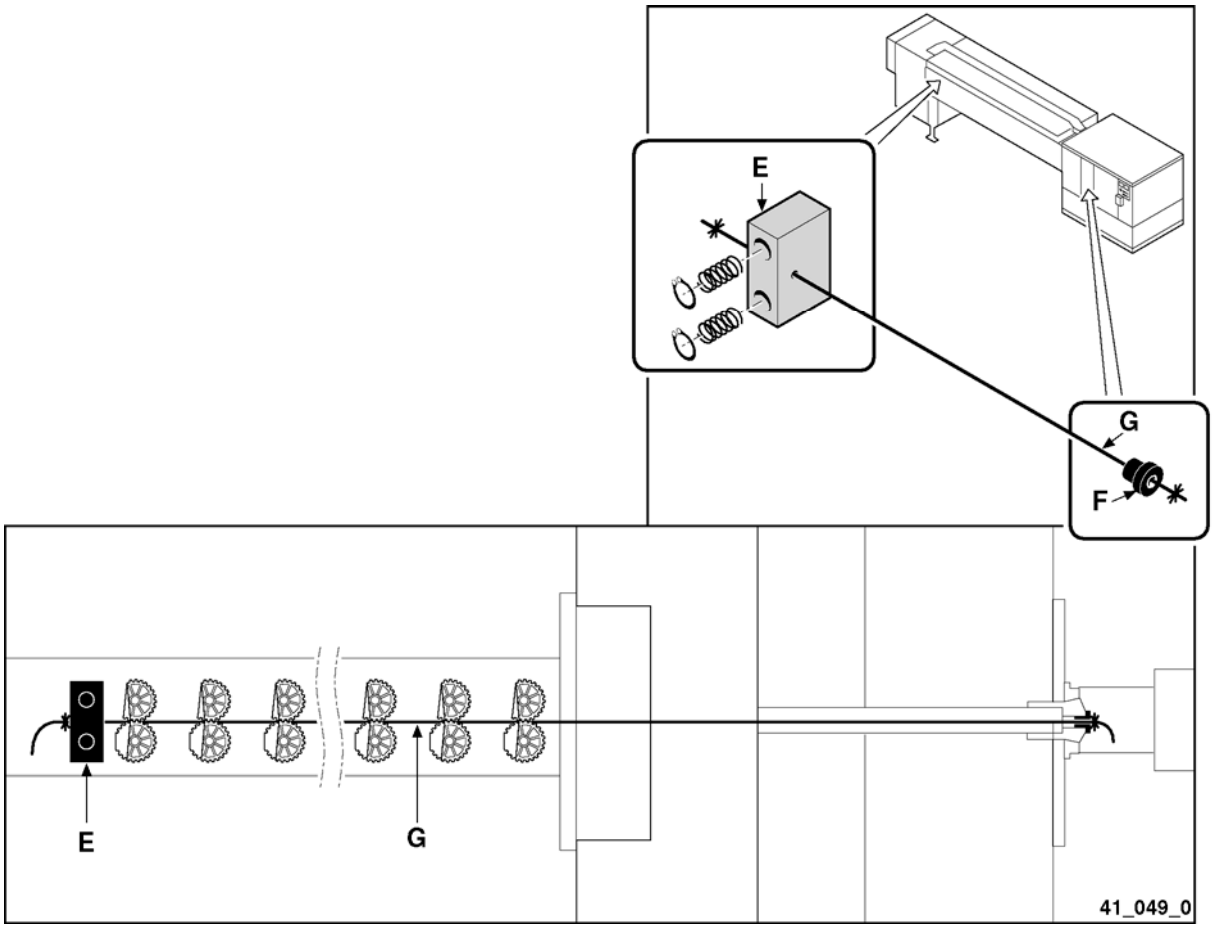
- Check the cross and longitudinal alignment by means of the proper tables of reference. For any adjustment, act on rear feet (A) and on screws (B).



4.4.4 Alignment

INFORMATIONS

Operation to be carried out by IEMCA skilled personnel only.

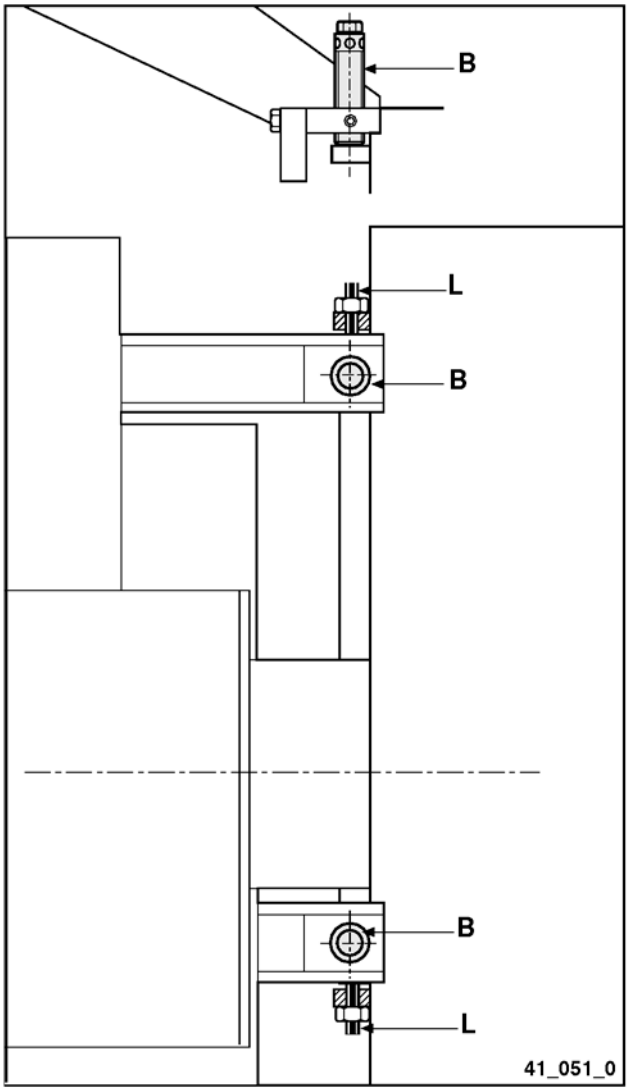


- Stretch a nylon yarn (ø 1 mm) between the bar feeder and the lathe collet as mentioned below:
  - assemble yarn-holder block (E) instead of the last pair of reels;
  - position a cap (F) with hole ø 1,5 mm.(to be manufacted by the client) in the lathe collet;
  - ove the feeding drum slightly forwards in relation to the back limit stop and stretch yarn (G); move the drum backwards and lock sliding to keep the yarn stretched.

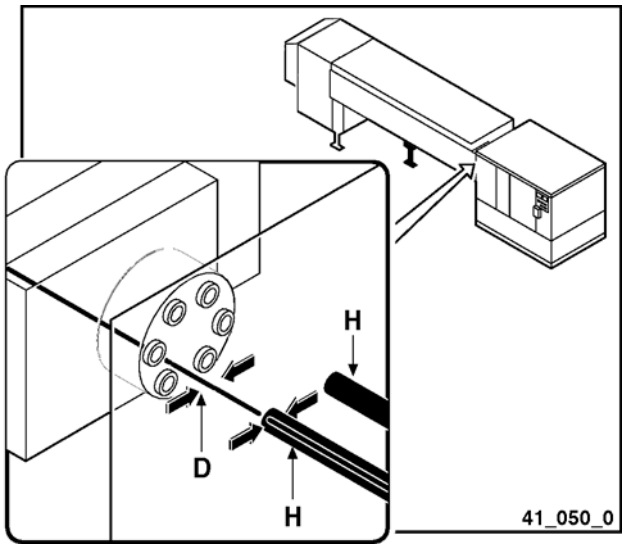
INFORMATION:

The alignment of at least two guide channels must be performed.

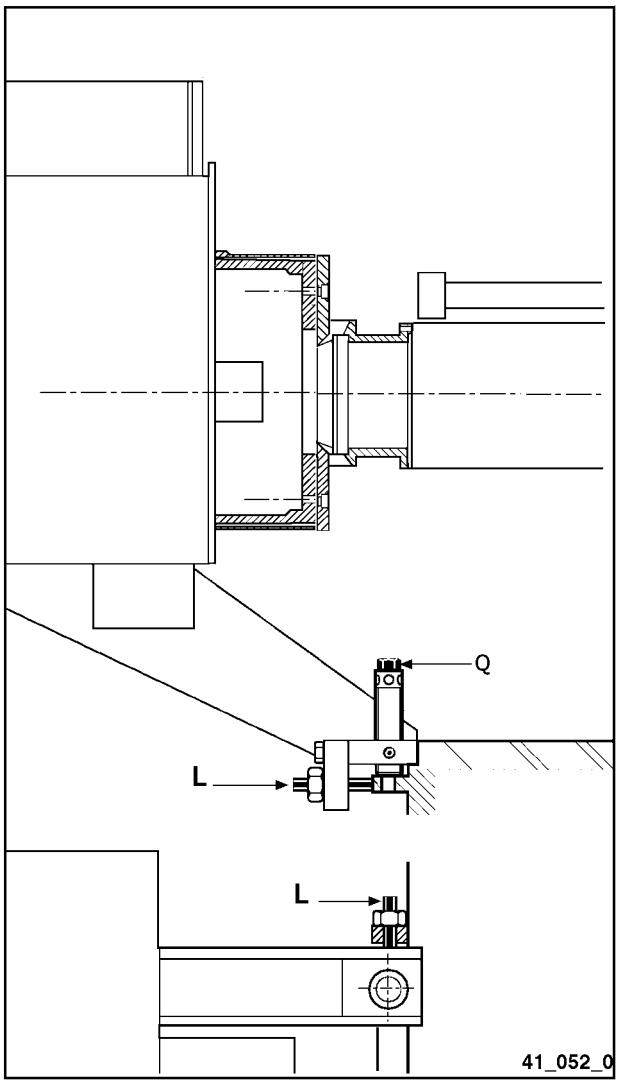
- For the rear cross adjustments, land two calibrated blows in the feet plates side with a mallet.
  For the front cross adjustments and the front adjustments in height, act on screws (L) and (B).
  During this phase, the adjustments done while levelling must be respected; in most cases, it is therefore necessary to find the right adjustment of the bar feeder position.



- With a vernier caliper, check the cross alignment of those positions pointed out by the arrows; adopt a ± 0.15 mm tolerance.
  To check the height and the front centering, introduce centering pins in the rear driving plate moving the feeding drum forwards and backwards.



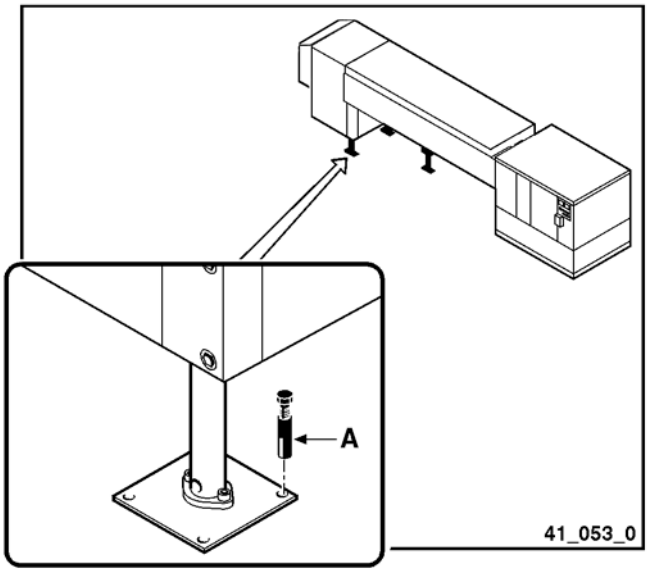
- When alignment is over, bring the drum to the front limit stop position .
- Tighten in sequence:
  - screws (Q);
  - grub screws (L) and their nuts;
  - the screws of the rear feet.



4.4.5 Fastening the bar feeder

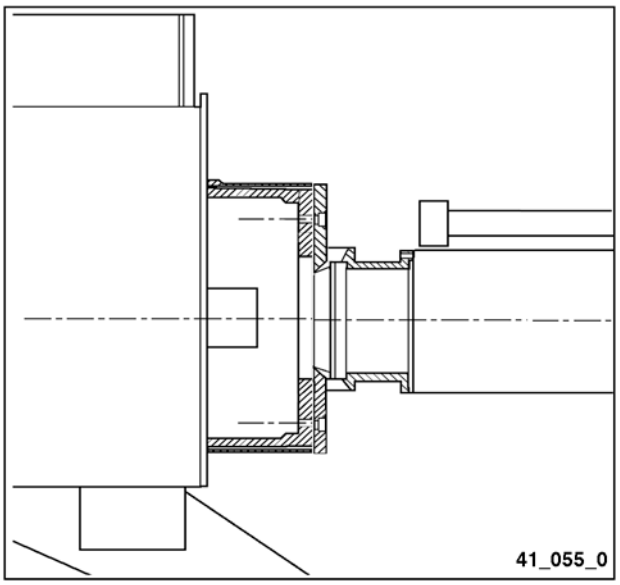
FASTENING TO THE GROUND

- Fix the bar feeder to the ground with expansion plugs (A).



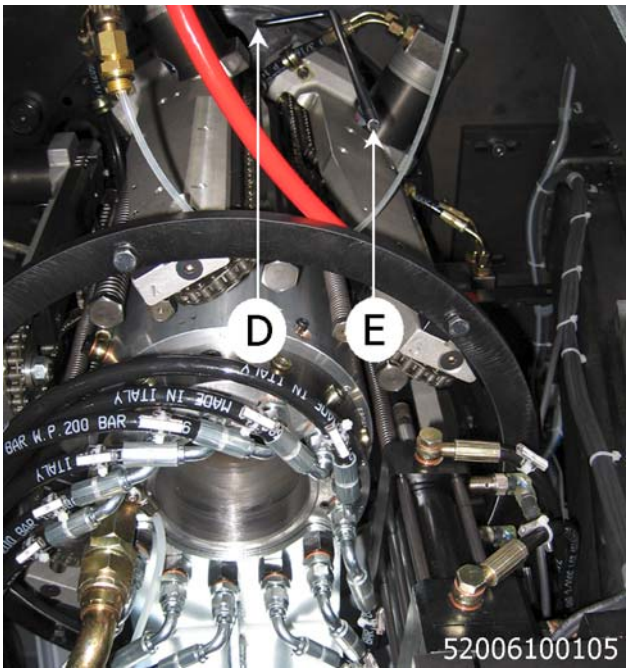
4.4.6 Final operations

- Bring the drum to the back limit stop position.
- Check the bar feeder leveling and alignment again.
- Remove the nylon yard and the pierced cap of the spindle.
- Remove the yarn-holder block and reassemble the two reels.
- Remove the centering sleeves, reassemble the bushes and assemble the special reducers (paragraph 5.9.).
- Bring the drum to the front limit stop position.



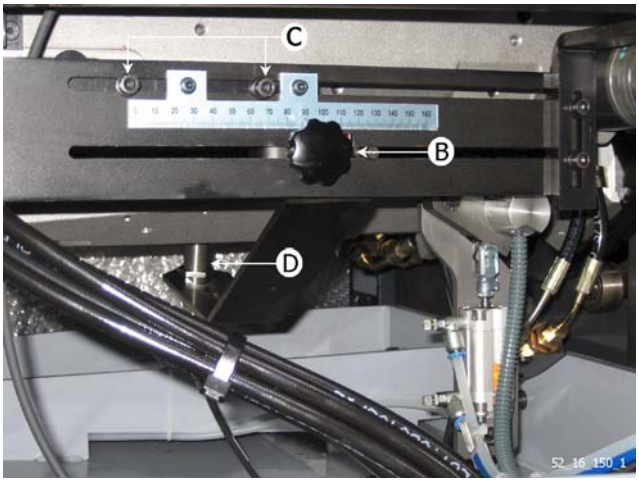
CAUTION:
remove pin (E) before starting the bar feeder.

- Remove the whole equipment used to lift the bar feeder.

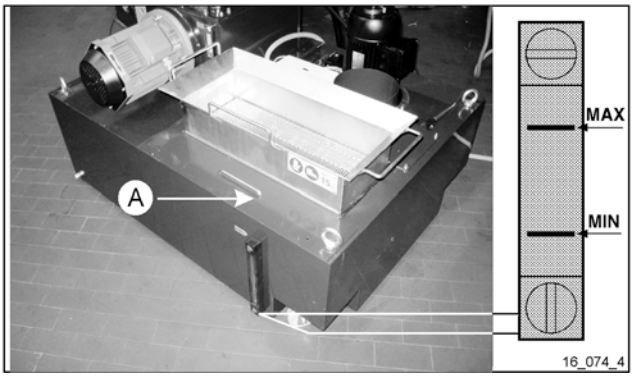


4.4.7 ADJUSTMENT OF BAR END DEVICE ZERO POSITION

- Press button >> F12 to move the bar pusher forward until it reaches the lathe collet.
- Loosen the bar end sensor (D) adjustment knob (B).
- Loosen the screws (C)securing the "ZERO" backing plate.
- Move the bar end sensor (D) towards the chain sprocket until it reaches the chain outer position.
- Tighten the knob (B) to maintain the position of the sensor.
- Move the "ZERO" backing plate as close as possible to the sensor bracket.
- Tighten the screw (C) securing the "ZERO" backing plate.



4.5 HYDRAULIC CONTROL UNIT - OIL LOADING



LUBRICATING OIL

- Remove cover (A).
- Loading should be carried out using lubricating oil of the following class: C CKB 100. Quantity: 250 l.
  Fill the oil tank to the fill level.

INFORMATION

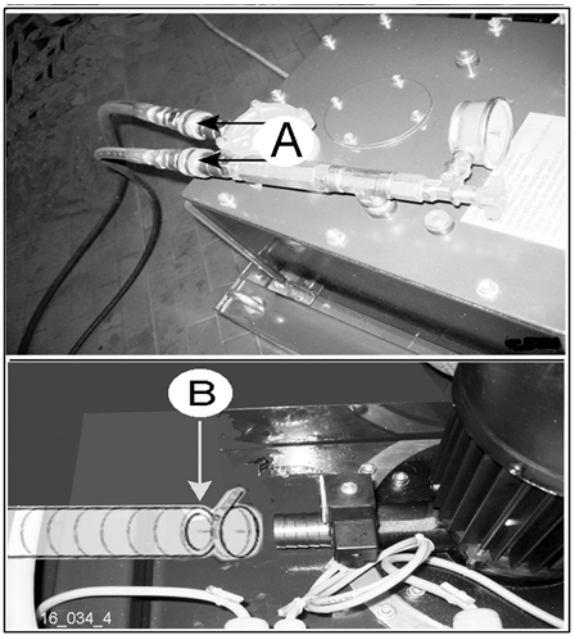
Perform this operation after some hours have passed since the bar feeder stop. In that way the oil may flow back towards the control unit.

HYDRAULIC OIL

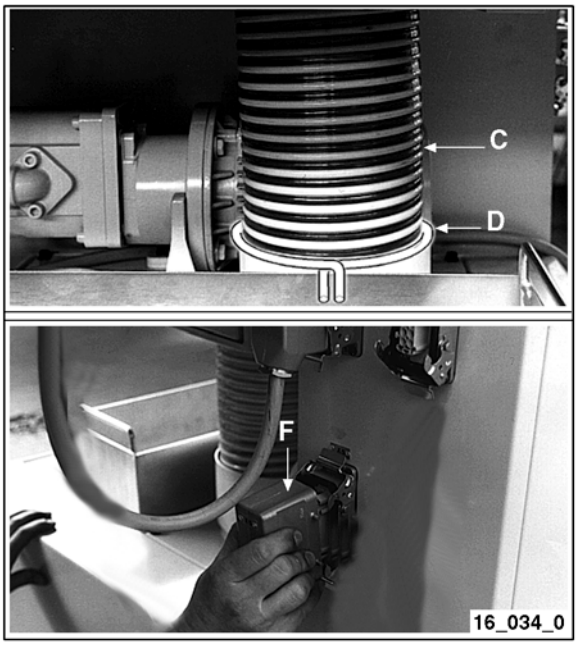
- See enclosed documentation: "Hydraulic System".

4.5.1 Hydraulic control unit - Connection

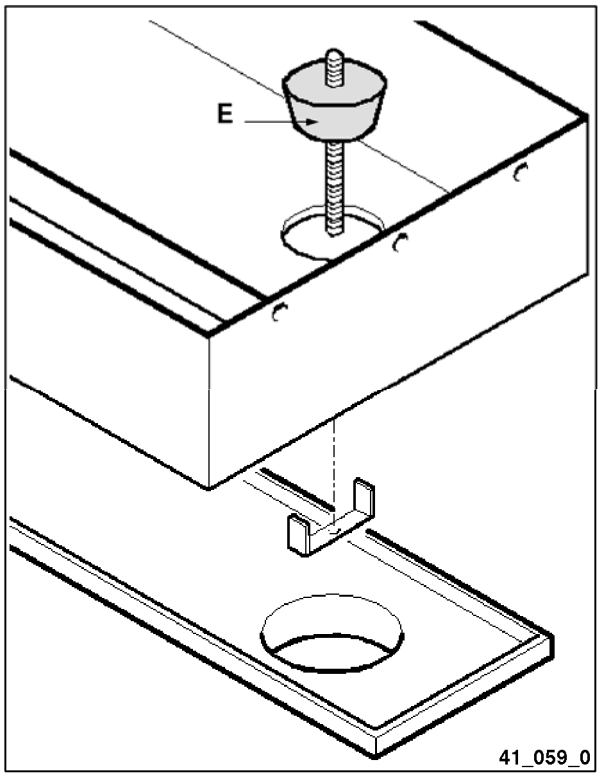
- Fit the control unit under the bar feeder.
- Connect pipes (A) of the hydraulic oil system.
- Connect the lubricating oil delivery pipe (B).



- Adjust the lubricating oil return pipe (C), operating the relevant ring (D).
- Connect the electric socket (X5) (F).



In case of transport, displacements or further installations of the bar feeder, a plug (E) is supplied, to be introduced into the oil collecting tank to prevent the lubricating oil from leaking while handling.



FIRST STARTING-UP OF THE HYDRAULIC OIL PUMP

An appropriate start of the pump is of the utmost importance, since the correct lubrication of the internal parts of the pump depends on this phase.

- Start the pulse-operated electric motor in order to allow for the priming and the lubrication of the pump parts.
- Check that the direction of rotation is correct with respect to the indication shown on the motor grid and on the coupling flange of the pump.
- The priming of the pump is not only shown on the pressure gauge mounted on the delivery pipe, but also by the change in the noise of the pump, as it becomes more silent when it has been successfully primed.

4.6 ELECTRIC CONNECTION

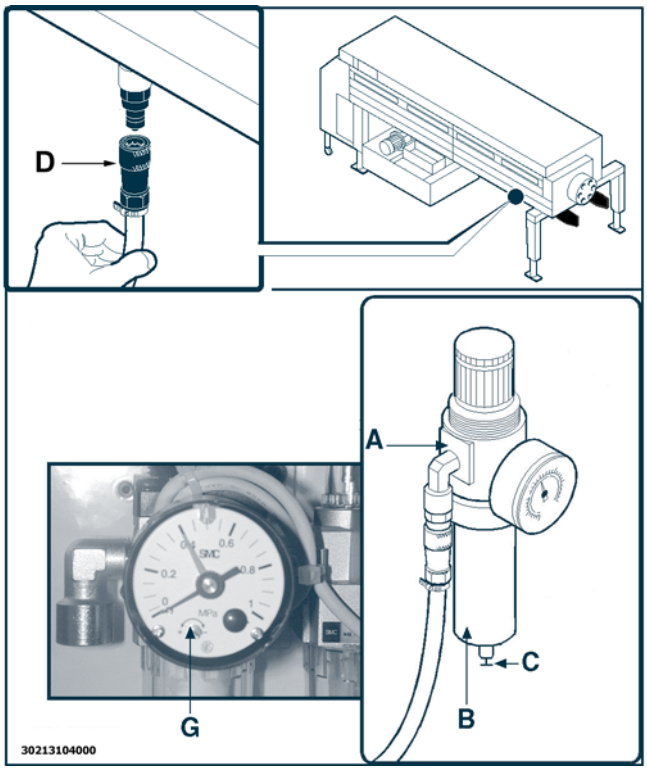
DANGER - WARNING:

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 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 pipe (D) of the pneumatic system to the quick coupling (G).



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).

PRESSURE SWITCH

- The lubrication system is equipped with a control pressure switch, set to a pressure of 4.5 bar.
- Proceed as follows to adjust the pressure switch:

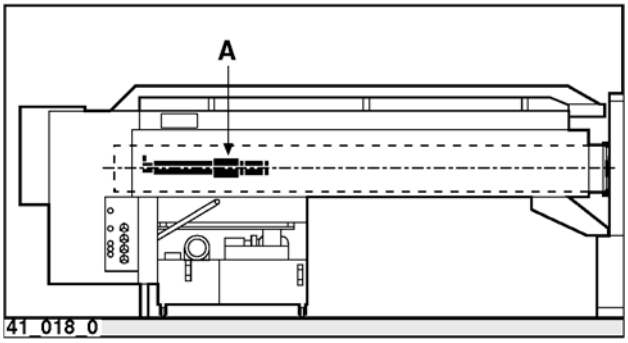
- remove the pressure gauge protecting glass;
- turn the adjusting screw (G) anticlockwise (+) to increase pressure or clockwise (-) to lower it;
- after this operation, replace the pressure gauge protecting glass.

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.

4.8 ALIGNMENT - FINAL CHECK

When the installation is over, make sure clamp device (A) axis is aligned with the guide channel axis.
Keep to the following procedure: move the clamp device to the "bar insertion into collet" position and close the sprockets by pressing key F3. Sprockets must close without interfering with the bar pusher inserted into the clamp device.
In case of misalignment, please apply to IEMCA technical assistance department.

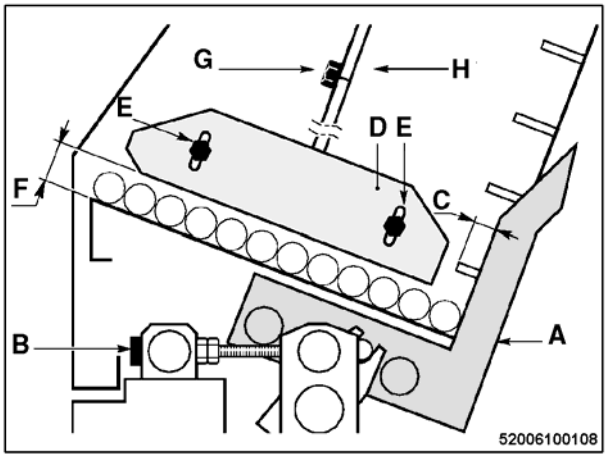


INDEX

5.1 SIR 52-MS 52 P RACK MAGAZINE - ADJUSTMENT

5.1.1 Bar selection - Adjustment

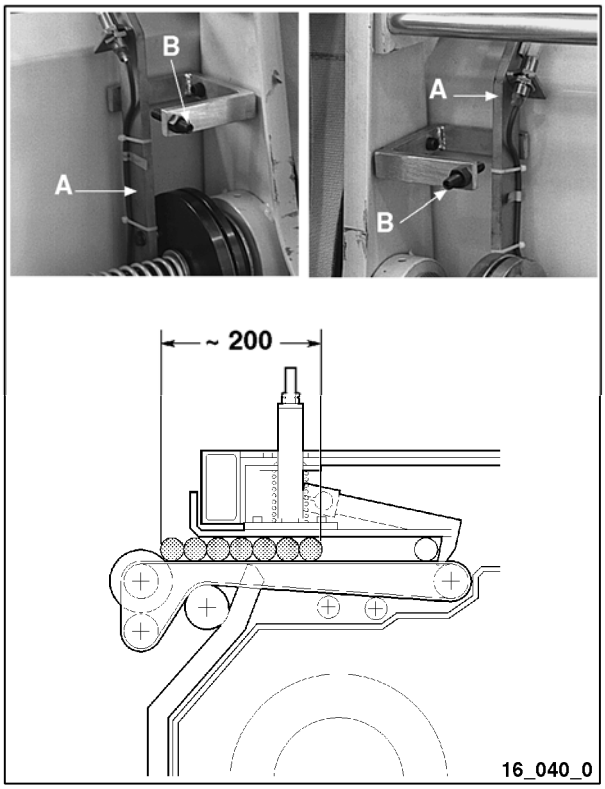
Turn the adjustment screw (B)to adjust the position of the limit stop (A) according to the bar diameter.
The adjustment value (C) should be about 1 mm less than the diameter of the bar.
For bar diameters 15 to 25 mm, install guide channel(D) and fix it with the screws (E); value (F) corresponds to the bar diameter plus 1 mm.
For bar diameters 11 to 15 mm, it is recommended to install guide channel (D) though not strictly necessary.
For bar diameters over 15 mm, loosen screw (G) and remove guide channel (D).
Both guide channel (D) and support (H) are supplied with the bar feeder.



5.2 SIR 52-MS 52 F BUNDLE MAGAZINE - ADJUSTMENT

5.2.1 Bars drop - Quantity adjustment

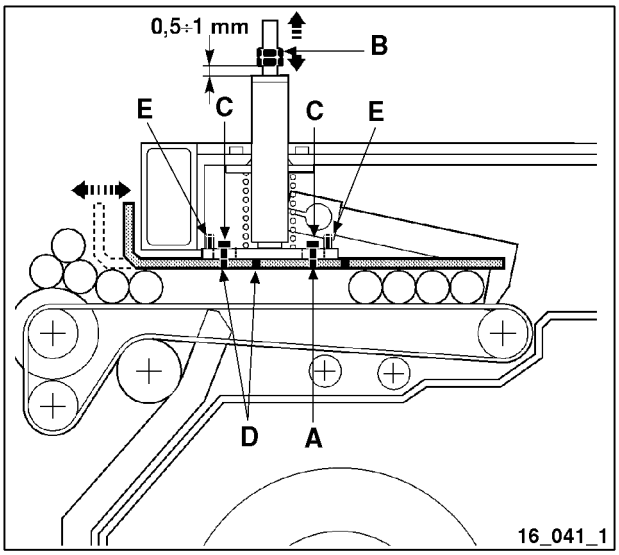
Adjust levers stop point (A) by operating screws (B). The bars quantity shall be checked during the first selection cycles, keeping into account that bars must be arranged along a part of the belts plane of approx. 200 mm.



5.2.2 Pressure foot - Adjustment

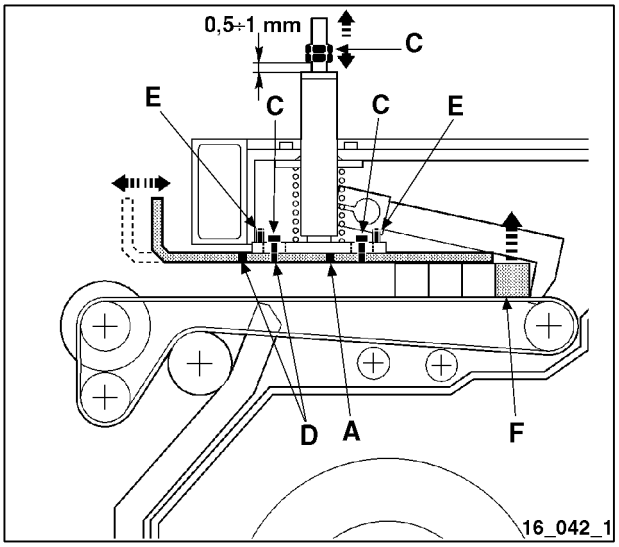
Hexagonal and round bars

Regulate the pressure foot (A) height so that the nut (B) stays at a distance of 0,5÷1 mm from the limit stop when there are some bars under the foot.
Adjustment is carried out operating nuts (B)
Horizontally adjust the pressure foot position, in order to cover completely the bars in the selection area, thus allowing a certain number of bars to dwell whenever the stock tube lifts and unloads bars.
Use screws (C) holes and/or the double holing (D) to carry out the adjustment.
Should it be necessary, operate screws (E) so that the pressure foot plane is parallel to the belt plane.

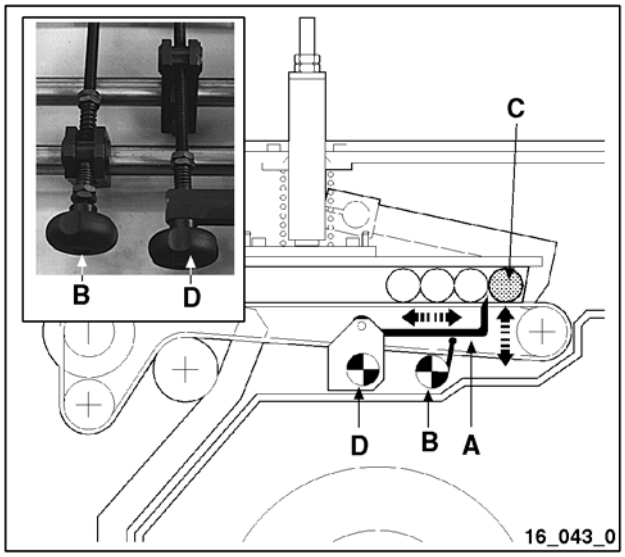


Square bars

Regulate the pressure foot (A) height so that the nut (B) stays at a distance of 0,5÷1 mm from the limit stop when there are some bars under the foot.
Carry out the adjustment operating nuts (B).
The foot position must allow the first bar (E) to lift; as far as adjustment is concerned, use screws (C) holes and/or the double holing (D).
Whenever necessary, operate screws (E) so that the pressure foot surface is parallel to the belts surface.



5.2.3 Separation push-rods - Adjustment



Round and hexagonal bars

HEIGHT ADJUSTMENT

Adjust the push-rod (A) height by operating the knob (B) so that the first bar (C) remains in its position once the belts return.

DEPTH ADJUSTMENT

Adjust the push-rod (A) depth by operating knob (D) so that it is positioned between the first bar (C) and the following bar.Check the adjustments by pressing key F18.

Square bars

HEIGHT ADJUSTMENT

Adjust the push-rod (A) height by operating the knob (B) so that the first bar (C) is lifted just as much to be held when belts reverse the direction.

DEPTH ADJUSTMENT

Adjust the push-rod (A) depth by operating knob (D) so that it is positioned in the centre of the bar section.

Check the adjustments by pressing key F18 .

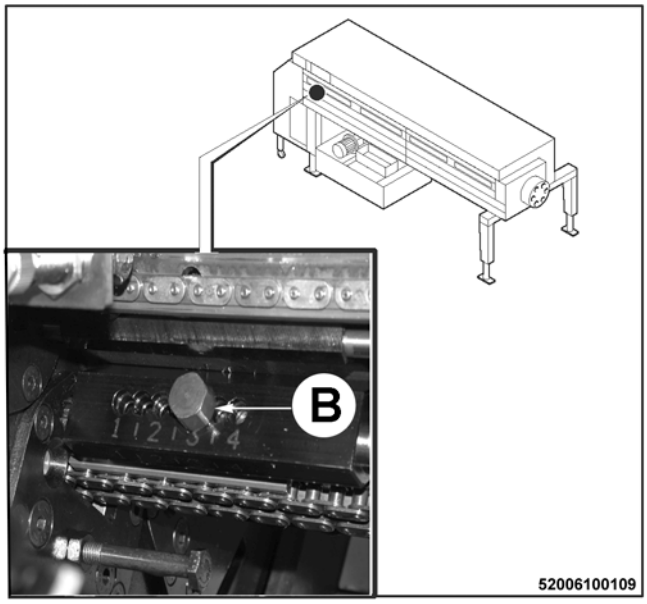
5.3 GUIDE CHANNELS - ADJUSTMENT

DANGER - WARNING:

the following procedures must be carried out or authorized by a responsible and expert operator, who owns the selector key to carry out this procedure.

5.3.1 Standard Working Mode

- Turn selector switch to 1.2.3 position and open the guard.
- Open the sprockets by pressing the F3 key .
- Adjust the diameter of the guide channel selecting one of the four settings as follows (fig. 10):
  - loosen pin (B);
  - screw pin (B)down into one of the positioning holes, 1,2,3 or 4;
  - make sure the pin secured correctly.
- Close sprockets by pressing F3 key.



INFORMATION

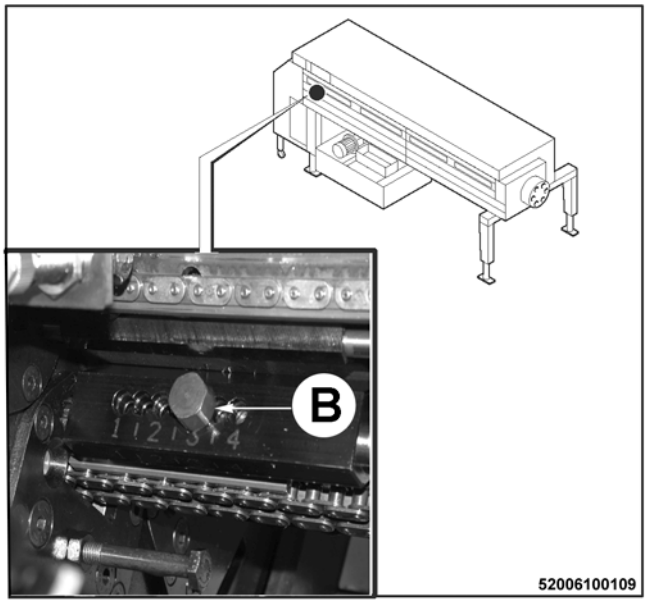
Diameters not included in the table "RECOMMENDED ROUND BAR Ø" may cause vibrations and failures to the bar feeder.

It may therefore be necessary to reduce bar rotation speed.

For further information regarding work diameter, contact IEMCA Customer Service.

5.3.2 Working mode with staggered sprockets

If round bars are used, in order to improve bar guiding, all sprockets can be made to have the same outside diameter as the barstock.
This working mode should only be used when strictly necessary, as it will cause an early wear of the guide channels.

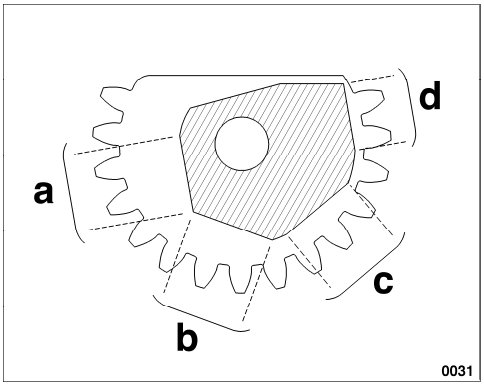


DANGER - WARNING:
failure to comply with the procedure described below may cause serious damage to the bar feeder.

INFORMATION
This work mode is not used only when position 4 is selected.

- Turn the selector switch to position and open the guard.
- Open the sprockets by pressing the button .
- Regulate the diameter of the guide channel selecting one of the following three working positions in the following way (fig. 12):
  - loosen pin (B);
  - screw pin (B)down into one of the positioning holes, 1,2,3 or 4 or into a midposition;
  - make sure the pin secured correctly.

Set the guide channel adjustment position to a diameter immediately inferior to the diameter that would normally be selected when working in "STANDARD WORKING MODE".

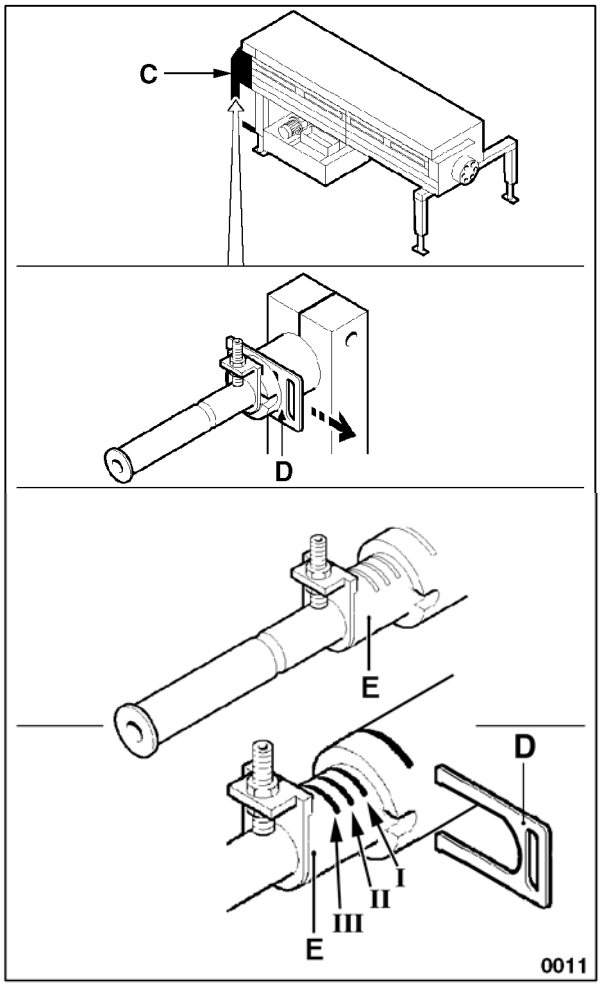


EXAMPLE (with SPROCKET Ø 19 (d) - Ø 33 (c) - Ø 43 (b) - Ø 53 (a)), to load ø22 bars with a ø32 bar-pusher:

- If working in "Standard working mode" the sprocket guide must be set to position "c" (or in the ø33 guide channel, see fig. 0031), setting pin (B) in position 2 (see fig. 52006100109).
- In "Staggered Sprockets Working Mode" the guide channel must be set to position "d" (or in the ø19 guide channel, see fig. 0031), setting pin (B) in position 1 (see fig. 52006100109).

OPERATIONS REQUIRED TO SET UP "STAGGERED SPROCKETS WORKING MODE"

- Set parameter 18 "Guide working mode (0-1)" to mode 1; see the "Keyboard Instruction Manual".
- Set the guide channel opening cylinder stroke as follows:
  - open rear guard (C);
  - remove fork (D) and move nose (E) axially;
  - insert the fork in the slot corresponding to the required mode according to the scheme shown in the table;



Guide channel Configuration *		Position of pin B	Slot for Fork D	Setting for staggered channel
57	53	4	--	a
46	43	3	IV	b
33	33	2	III	c
19	19	1	II	d

- Close the sprockets by pressing the F3 button.

(*)The configuration of the guide channel must be carried out according to the bar feeder tooling and to the lathe type.

INFORMATION:

If shaped bars (i.e. hexagonal or square bars) are loaded, revolving speed should be reduced in order to prevent premature wear and tear of the sprockets.

INFORMATION:

Please contact IEMCA Sales or Service Department if you need a special configuration of guide channel - bar pusher and bar.

INFORMATION

If shaped bars (hexagonal, square bars etc.) are to be machined, make sure that the guide diameter is larger than the diameter circumscribed on the profile, in order to prevent bar scraping against the sprocket edges.

INFORMATION:

In standard working mode parameter 18 "Guide working mode (0-1)" (see the "Keyboard Instruction Manual") must be set to mode 0; fork D can be positioned in any of the slots.

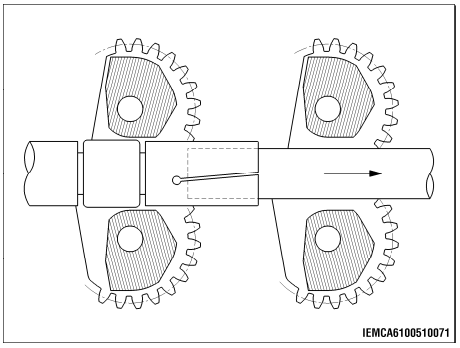
INFORMATION:

When working in "staggered channel" mode, only 3 settings shown in the table are selectable notwithstanding the 4 available guide channels for the smallest channel "d" cannot be staggered to a smaller channel.

5.3.3 Working mode with standard and staggered sprockets

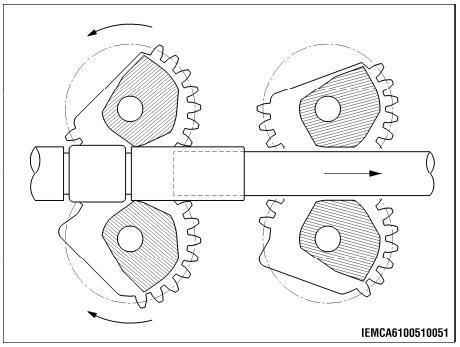
Standard working mode

The two pairs of sprockets have the same rotation and do not move while the bar pusher is moving.



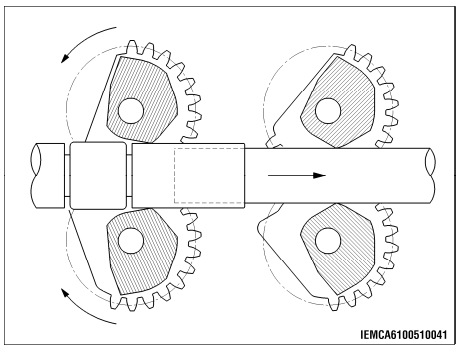
Ideal staggered channels mode

The selected channel is immediately inferior to the diameter of the bar pusher ; the bar pusher opens the passage while moving forward by causing the sprockets to rotate and be set to the next guide channel the diameter of which is larger than the selected channel.
The bar diameter larger (Picture 051) or even slightly larger (Fig.041) than the diameter of the selected channel. .



EXAMPLE (SPROCKET Ø19(d) - Ø33 (c) - Ø43 (b) - Ø53 (a)), to machine ø36 bars using a ø42 bar-pusher:

- In "Staggered Sprockets Working Mode" the guide channel must be set to an intermediate position between "c" and "d" (that is to say that the sprocket edges create a channel of approximately Ø36, see fig.0031), setting pin (B) to position 1• (see fig.52006100109).



CAUTION:

In staggered sprockets mode, do not use collets with slots that could cause accelerated wear of the sprockets IEMCA 600P. type collets.

Table 1. Standard working mode

COMPARATIVE TABLE OF MACHINING DIAMETERS (mm) FOR STANDARD OPERATION MODE									
MODEL	PIN POSITION	C Max Ø	Ø C	Ø B	Ø F	Ø A		POSITION OF THE FORK	PARAMETER 18 GUIDE CHANNEL OPERATION MODE
			Guide channel Ø	Bar pusher Ø	Engagement Ø on Rotating Tip Collet	Round bar Ø (*) RECOMMENDED			
						MIN	MAX		
SIR 52 MS52 P/F	1	53	19	18	11 G6	10	16(18)	/	0
	2		33	32	20 G6	16	29(32)	/	0
	3		43	42	20 G6	29	39(42)	/	0
	4		53	52	20 G6	39	49(52)	/	0

(*) Values of the diameter circumscribing the bar, which may be attained with IEMCA steel collets and SCHLENKER-type coupling (Table 1 summarising IEMCA collets for round bars). For shaped bars, the values must be checked according to the selected collet (Tables 2-3 summarising the collet type UNILOCK).

A Bar diameter
B Bar-pusher diameter or rotating tip
C Guide channel
F Collet engagement on rotating tip

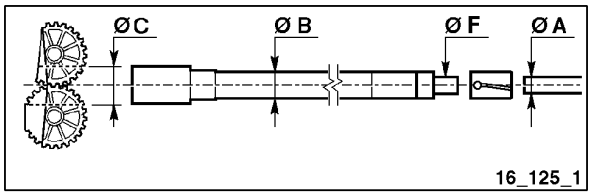


Table 2. Working mode with staggered sprockets

COMPARATIVE TABLE OF MACHINING DIAMETERS (mm) FOR STANDARD OPERATION MODE (GUIDE 19-33-43-53)									
MODEL	PIN POSITION	C Max Ø	Ø C	Ø B	Ø F	Ø A		POSITION OF THE FORK	PARAMETER 18 GUIDE CHANNEL OPERATION MODE
			Guide channel Ø	Bar pusher Ø	Engagement Ø on Rotating Tip Collet	Round bar Ø (*) RECOMMENDED			
						MIN	MAX		
SIR52 MS52 P/F	1 Tra 1 e 2	52	19 19-33	18	15 G6	15	18 22	II	1
	2 Tra 2 e 3		33 33-43	32	20 G6	16	32 36	III	1
	3 Tra 3 e 4		43 43-53	42	20 G6	30	42 48	IV	1
	4		53	52	20 G6	35	52	-	0

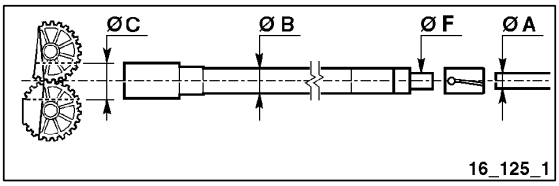
(*) For shaped bars, values must be checked according to the selected collet (Tables 2-3 summarising the IEMCA 600P collet type).

Use of the drilling unit:

- Bar min. Ø20 mm: use drill Ø10 mm.
- Bar Ø21 mm to Ø28 mm: use drill Ø15mm.
- Bar Ø29 mm to Ø52 mm: use drill Ø20mm.

INFORMATION:

For special applications, please contact IEMCA After Sales Department.



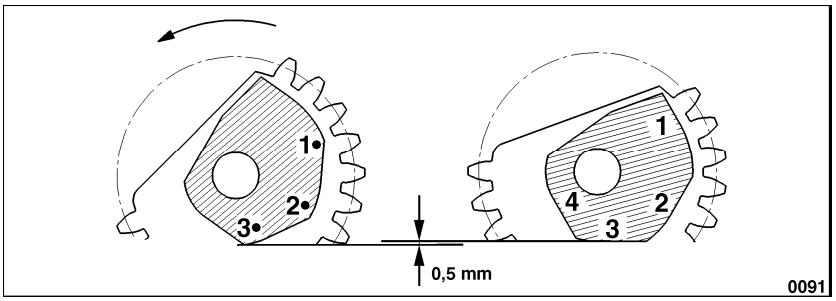
A Bar diameter
B Bar-pusher diameter or rotating tip
C Guide channel
F Collet engagement on rotating tip

Values shown in the table are based on two conditions:

1. According to the instructions of the collet manufacturer, the outer side of the collet must be at least 1 mm thick.
2. Sprockets are on their intermediate position (edges in contact with the bar) forming thus a channel the diameter of which is approximately 1 mm smaller than the guide channel diameter resulting from sprocket standard rotation.

1• = 19/33
2• = 33/43(46)
3• = 43/53(57)

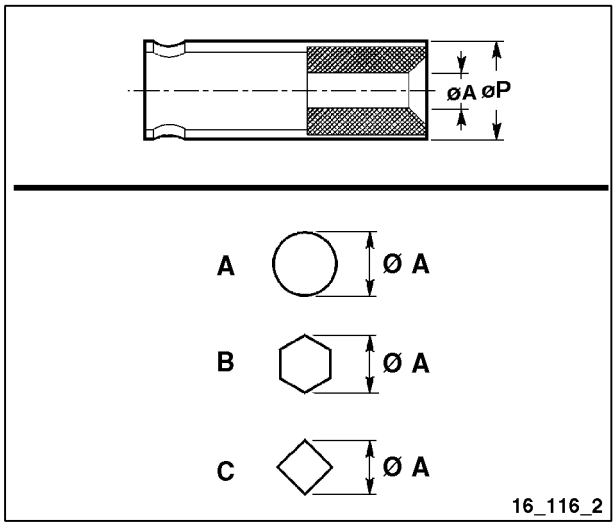
1 = 19
2 = 33
3 = 43(46)
4 = 53(57)



5.4 BAR-PUSHER - PRELIMINARY OPERATIONS AND FITTING

5.4.1 Collets - Selection and Preliminary operations

A Round bars: see enclosed tables.
B Hexagonal bars: use a drill with a diameter 1 mm approx. less than the sharp edges diameter (see enclosed tables).
C Square bars: use a drill with a diameter 1.5 mm approx. less than the sharp edges diameter (see enclosed tables).



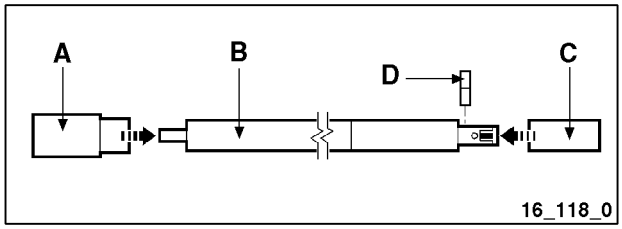
Check the introduction force into collet by using a bar remnant. The force value must be 40÷60 kg; in case of exceeding value, shorten the rear polyurethane length of 5 mm at a time.

CAUTION

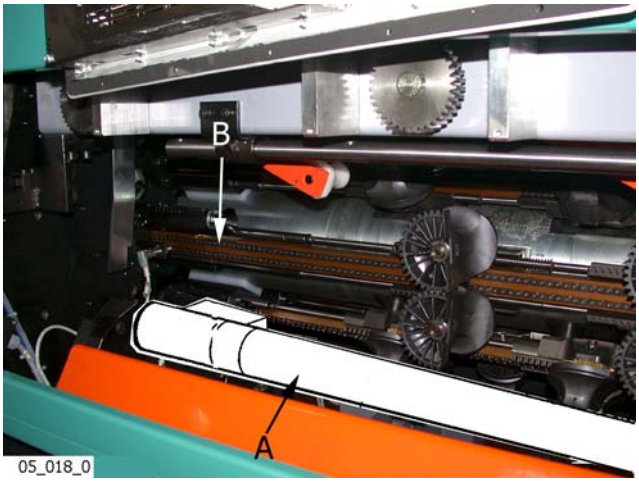
Collet outside diameter must be at least 0.5 mm smaller than the bar pusher outside diameter.

5.4.2 Bar-pusher - Assembly

- Introduce slightly clutch unit (A) into rod (B) seat, turn up to obtain a small yielding and complete the insertion.
- Insert collet (C) into rod (B) seat, insert pin (D) until the clutch is engaged.



5.4.3 Bar-pusher- Guide tube fitting



DANGER - WARNING:

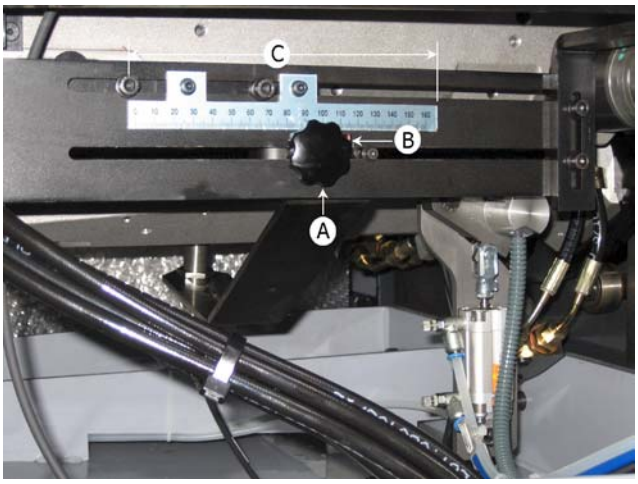
the following procedure has to be carried out by the responsible skilled technician, who also owns the key of the selector switch allowing this operation to be done.

- Bring selector switch to position 1.2.3 and open the guard.
- Open sprockets by pressing key F1.
- Fit the bar-pusher (A) of suitable diameter into seat (B) of the feeding carriage.
- Close sprockets by pressing key F1.
- Carry out said operation in the other guide tubes.

5.5 BARSTOCK LENGTH - ADJUSTMENT

To determine the remnant length, adjust the end-of-bar device in the following way.

-Loosen the knob (A)on the sensor mounting.
-Use the position indicator (B) to shift the sensor position up to the value corresponding to the length of the workpiece plus the width of the cutting tool.
-Tighten the knob (A).



CAUTION:

To avoid damages to the structures, check block (B) position whenever changing the lathe collet or the bar pusher diameter.

INFORMATION:

The max. length allowed for workpiece + width of the cutting tool is 160 mm, corresponding to position "C". Please contact IEMCA Sales or Service Department in case a longer length is required.

5.6 WORKING PRESSURES - ADJUSTMENTS

Table 2.Working pressures (bar) table

Bar diameter (mm)	A Dynaminc thrust	B Clamps grip	C Static thrust	D Introduction force
20	40	55	5	27
30	50	60	5	29
40	60	65	5	31
52	70	70	5	33

INFORMATION

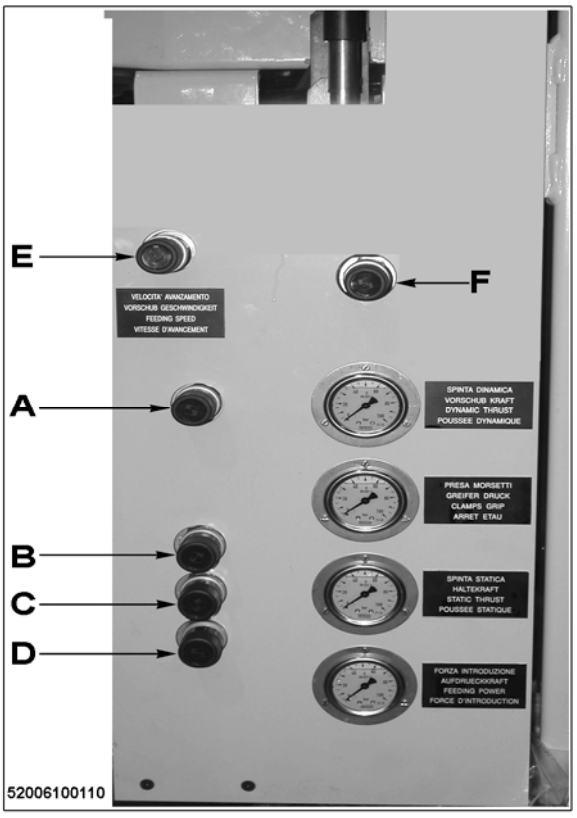
Values in the table are indicative only and they apply to round steel bars. Values may change according to the material machined, to the bar profile and to lather specifications (collet opening time, barstock length, etc.).

5.6.1 Dynamic thrust (A)

Table 3.Dynamic thrust (A)

Dynamic thrust pressure (bar)	Theoretical Thrust of the Bar pusher (N)
80	1250
70	1210
60	1140
50	1000
45	900
40	810
35	750
30	700

The dynamic thrust is the force through which the bar-pusher carriage feeds the bar.
It works on the feeding station.
To adjust it, operate knot (A).



5.6.2 Clamps grip (B)

The clamps grip is the force through which clamps hold the bar during the introduction phase into collet.
To carry out adjustment, operate knot (B).

5.6.3 Clamps introduction force (D)

The force of introduction is the force through which the bar is introduced into the bar-pusher collet and the bar remnant is extracted.
To carry out adjustment, operate knob (D).

5.6.4 Feeding speed (E)

The feeding speed is the speed at which the bar feeds at each lathe opening.

CAUTION:

A too high feeding speed may cause damage to lathe equipment.

A too low feeding speed may cause the collet to close before the complete feed of bar.

To carry out adjustment, operate knob (E).

5.6.5 Best working pressure

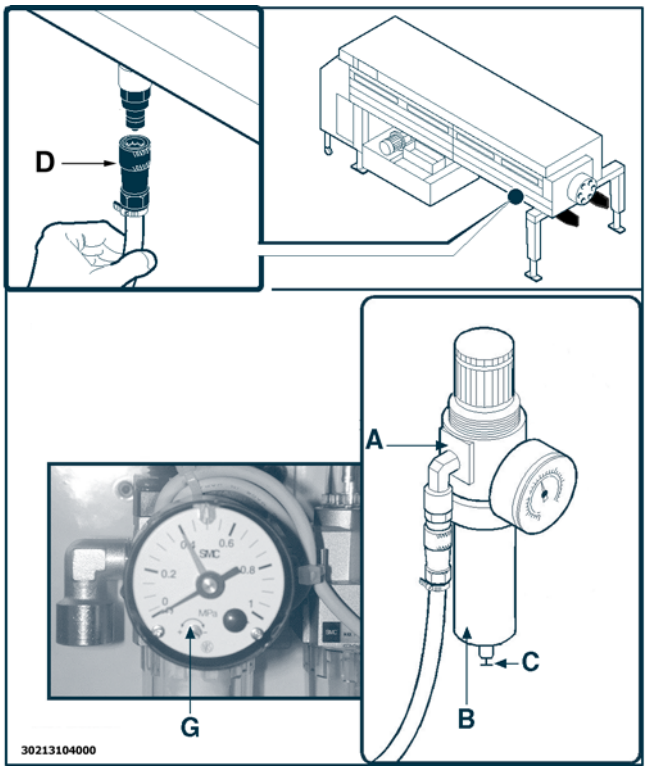
The value of the optimal operating pressure of the pumps must be adjusted at 80 bars.
To adjust it, see enclosed documentation:
"Hydraulic System"

5.7 AIR FILTER - ADJUSTMENTS

PRESSURE SWITCH

- The air filter-regulator is equipped with a control pressure switch, set to a pressure of 4.5 bar.
- To adjust the pressure switch proceed as follows:

- remove the pressure gauge 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.

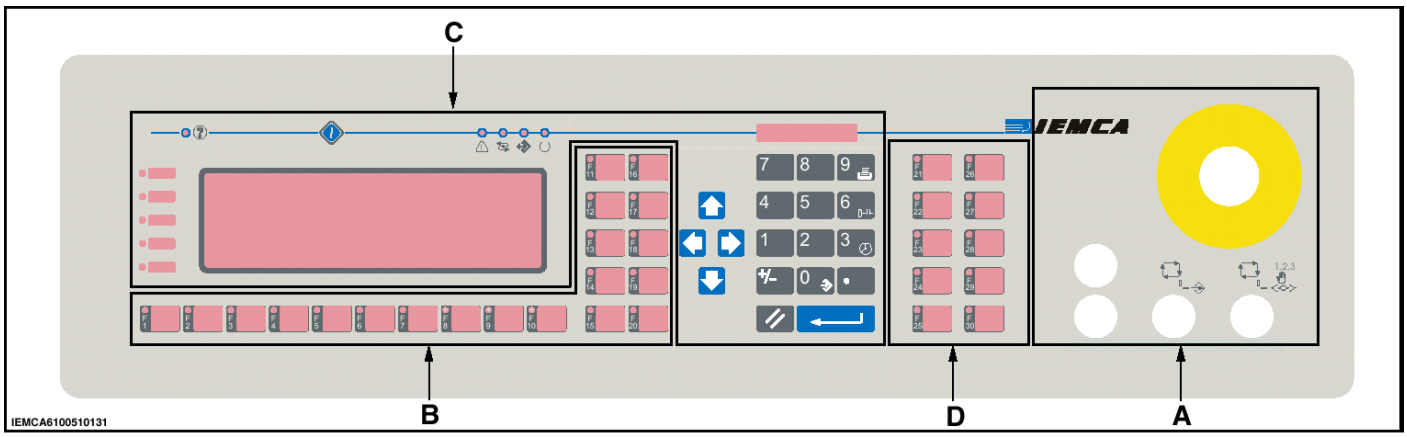


CAUTION:

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.

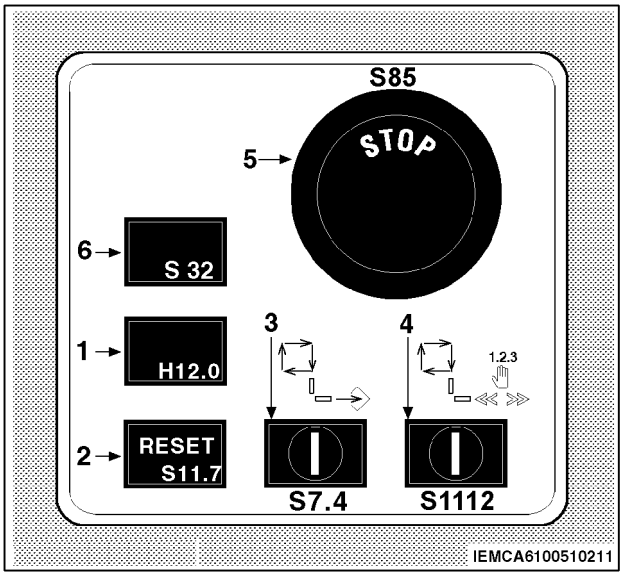
INDEX

6.1 PUSH BUTTON PANEL - CONTROL DESCRIPTION



A Main controls.
B Controls for manual operation.
C Display controls and LEDs.
D Controls for manual operation of drilling machine.

MAIN CONTROLS



1 Pilot light, voltage on.

2 Reset push-button, alarm.

3 Key-operated two-position selector (S7.4)

- Position ⟲: the push-button panel is enabled for the "message display" mode.
- Position →: push-button panel enabled to data entering mode.

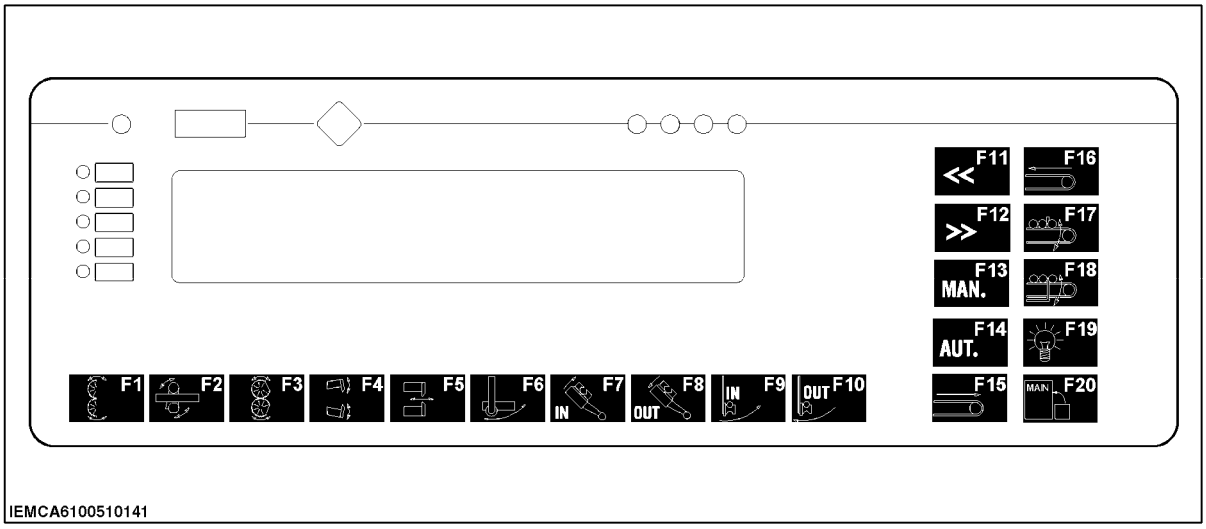
4 Key-operated two-position selector (S1112)

- Position ⟲: bar feeder enabled to automatic or manual operation.
- Position 1.2.3 ☝ ≪ ≫: only controls F1 F2 F3 F11 F12 enabled, with open guards as well.

5 Emergency push-button panel to stop bar feeder; the latter can be restarted only after having manually released the push-button (S85).

6 Reset button of drilling machine safety control unit.

PROGRAMMING AND MANUAL FUNCTIONS CONTROLS



F1 Key to open / close guide channels only in the area of bar pusher completely backwards.
Press it to control operation, press it again to control return.

F2 Key to open / close bar pusher locking.
Press it to control operation, press it again to control return.

F3 Key to open / close guide channels.
Press it to control operation, press it again to control return.

F4 Key to open / close clamps.
Press it to control operation, press it again to control return.

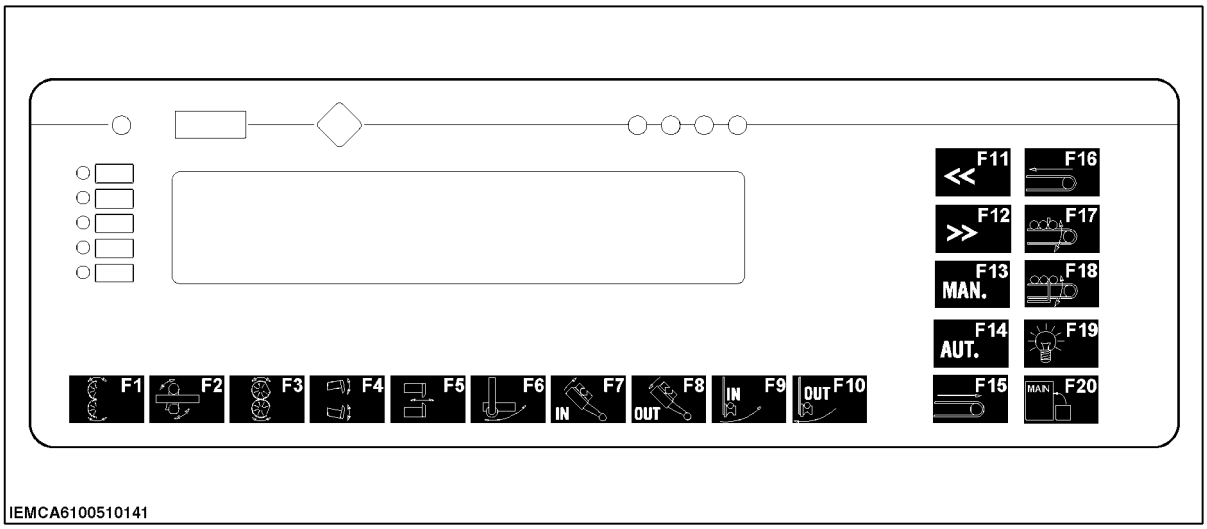
F5 Key for bar insertion / extraction.
Press it to control operation, press it again to control return.

F6 Key for bar holder lever rotation upwards / downwards.
Press it to control operation, press it again to control return.

F7 Key for clamp arm rotation towards drum.
It controls the device in only one direction. Press push-button till position is reached. If push-button is released in advance, the device comes back to starting position.

F8 Key for clamp arm rotation outside drum.
It controls the device in only one direction.

F9 Key for lever arm rotation towards drum.
It controls the device in only one direction. Press push-button till position is reached. If push-button is released in advance, the device comes back to starting position.



F10 Key for lever arm rotation outside drum.
It controls the device in only one direction.

F11 Key for manual bar pusher movement backwards at low speed.

F12 Key for manual bar pusher movement forwards at average speed.

F13 Key to select bar feeder manual operation.

F14 Key to select bar feeder automatic operation.

F15 Key for bar feeding on selection belts.
SIR 52-MS 52 F only.

F16 Key for bar return on selection belts.
SIR 52-MS 52 F only.

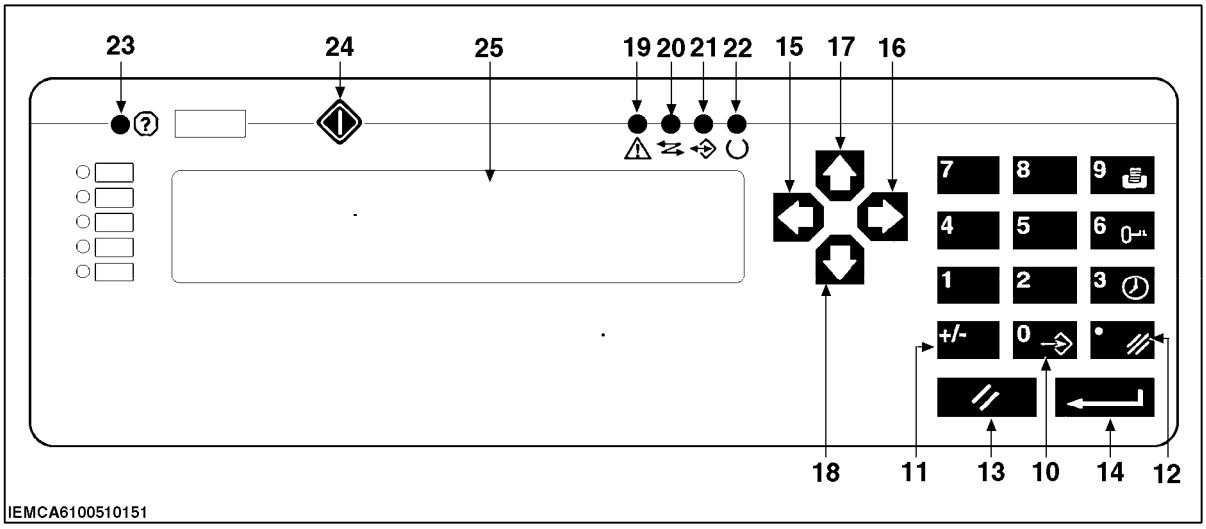
F17 Key for lever movement upwards / downwards.
Press it to control operation, press it again to control return.
SIR 52-MS 52 F only.

F18 Key for selection push-rod movement upwards / downwards.
Press it to control operation, press it again to control return.
SIR 52-MS 52 F only.

F19 Key to switch on / off inner lighting lamp.
Push it to control switching on, push it again to control switching off.

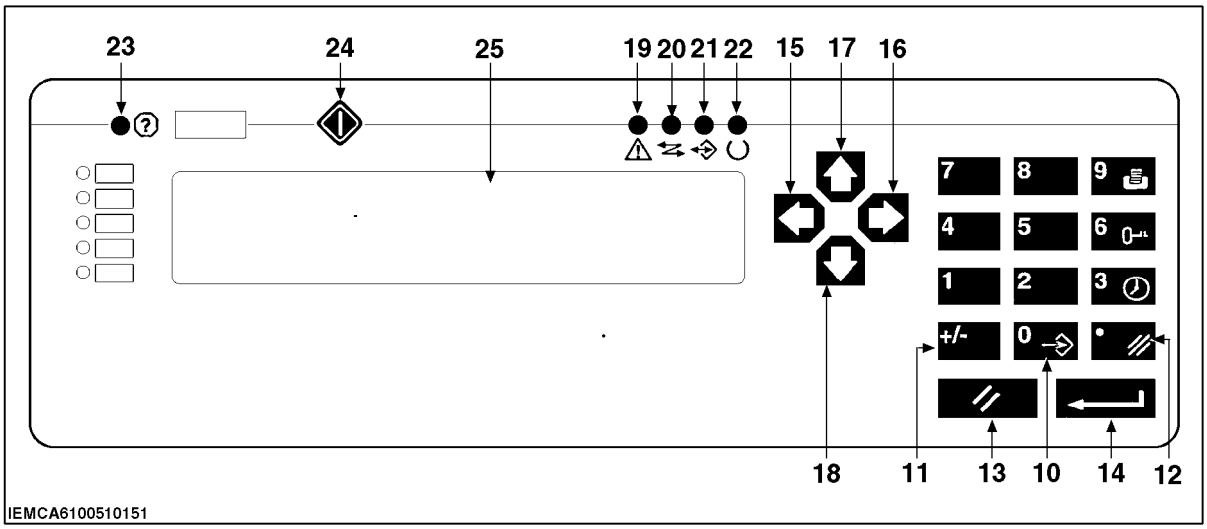
F20 Key to recall "MAIN MENU".

DISPLAY CONTROLS AND LEDS



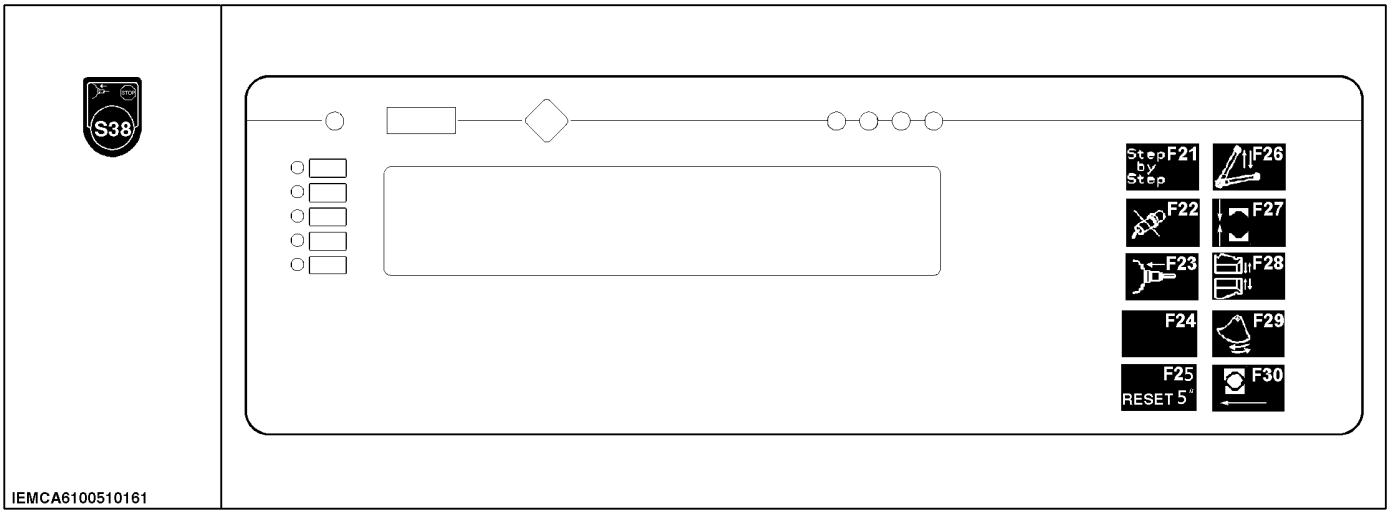
1 Key for numerical value 1.
2 Key for numerical value 2.
3 Key for numerical value 3 and to access the date and hour programming mode
4 Key for numerical value 4.
5 Key for numerical value 5.
6 Key for numerical value 6 and to enter the password entry mode for protected parameters.
7 Key for numerical value 7.
8 Key for numerical value 8.
9 Key for numerical value 9.
10 Key for numerical value 0 or to recall selection cursor.
11 Key for "minus" or "plus" sign.
12 Key for "comma" sign.
13 Key for "CLEAR" function:
- to stop selection function,
- to return to the value which had been displayed before the non-confirmed modification,
- to return to the page shown after setting date and time.

14 Key for "ENTER" function to confirm entered data.
15 Key to recall previous page or to move selection cursor to the left.
16 Key to recall following page or to move selection cursor to the right.
17 Key to scroll page upwards or to move selection cursor upwards or to increase by one the value in the date and hour programming mode.
18 Key to scroll page downwards or to move selection cursor downwards or to decrease by one the value in the date and hour programming mode.
19 Red LED:
OFF mode - indicates that there is no signal on the display;
ON mode - indicates that there is a signal on the display.
20 Green LED:
BLINK mode - signals that the display does not interact with the PLC correctly;
ON mode - signals that the display interacts with the PLC correctly.



21 LED not enabled.
22 Green LED:
OFF mode - signals that the display is not active;
ON mode - signals that the display is active.
23 Green LED:
OFF mode - signals that no key is pressed;
ON mode - signals that any key is pressed.
Red LED:
status BLINK - indicates that the keyboard battery needs to be replaced (refer to Chapter 9 for instructions on how to replace it);
ON state - indicates serious problems in the keyboard.
24 Key not enabled.
25 Display.

CONTROLS FOR MANUAL OPERATION OF DRILLING MACHINE.



F21 Button STEP BY STEP OPERATION
Press F21 to activate Step by Step operation.
After pressing the button, the button led will light up. Press F21 many times to restore drilling machine working cycle. In case F22 Led lights up because of signal failure of microswitch sensors, press both F21 and F22 at the same time to restore drilling machine working cycle.

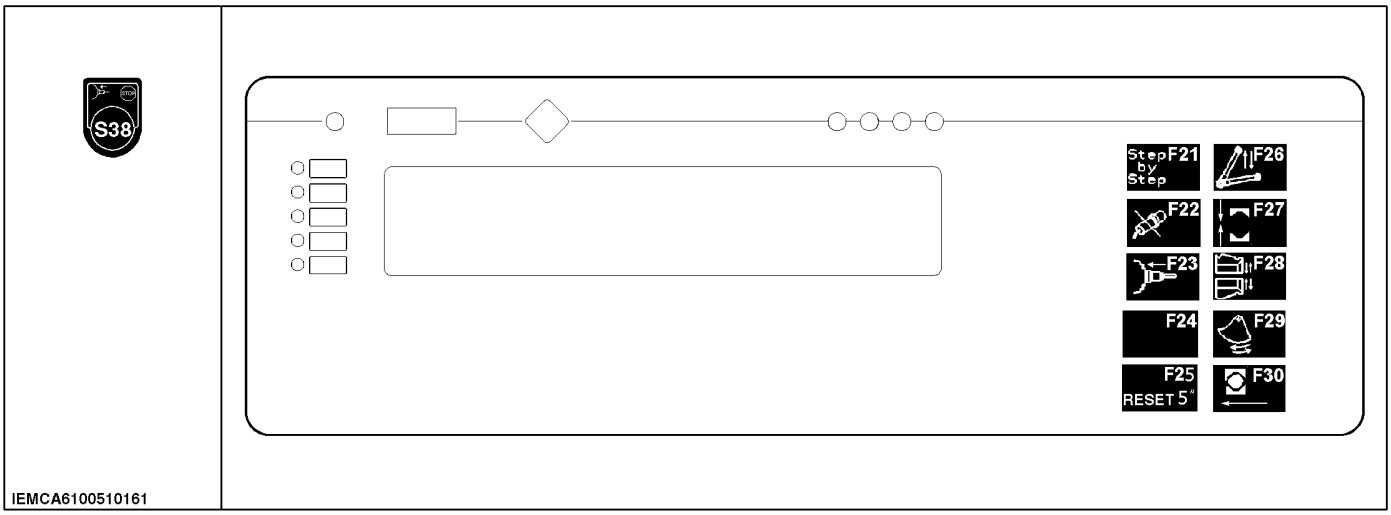
F22 SENSOR DISABLING BUTTON
When the button led lights up, the drilling machine sensors can be deactivated by pressing this button. (For example, if no bar is present, it is possible to press this button for step-by-step operation).

F23 SPINDLE RETURN BUTTON
By clicking this button when the spindle has not completely left the bar being machined, the spindle returns to the rest position. To carry out the above mentioned operation, the drilling machine working cycle must be over and the machine must be in wait position.

F24 NOT ENABLED BUTTON

F25 RESET 5" Button
To enable the reset button, manual operation mode must be selected.
Press this button during the Step-by-Step operation to stop the process.
Press this button to release buttons F26-F29, in case the corresponding LEDs are on.

F26 LEVER UP/DOWN BUTTON
Press this button to start movement, press again for lever return.

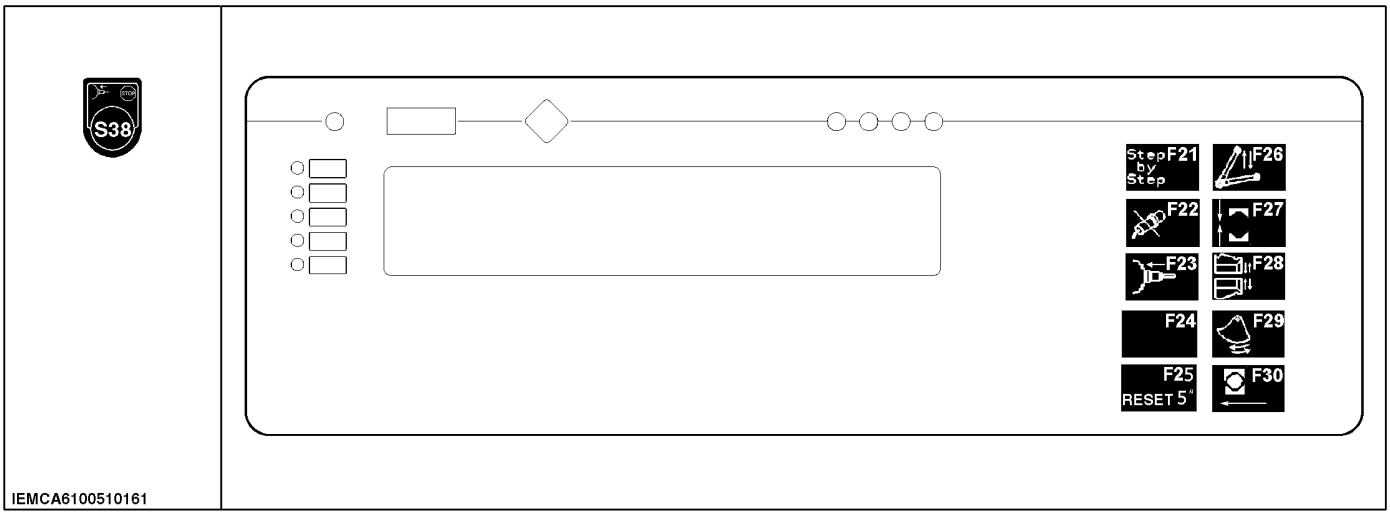


F27 Button CLAMPS OPEN/CLOSE
Press this button to start movement, press again for clamps return.

F28 Button BAR CLAMPING VICE OPEN/CLOSE
Press this button to start movement, press again for vice return.

F29 Button BAR STOP DISAPPEARS
Press this button to start movement, press again for bar stop return.

F30 Button CLAMPS MOVING FORWARD
Press this button to move the bar towards the drilling unit. Release the button and press it again for the return of the drilling unit.



Reset the drilling machine following these instructions:

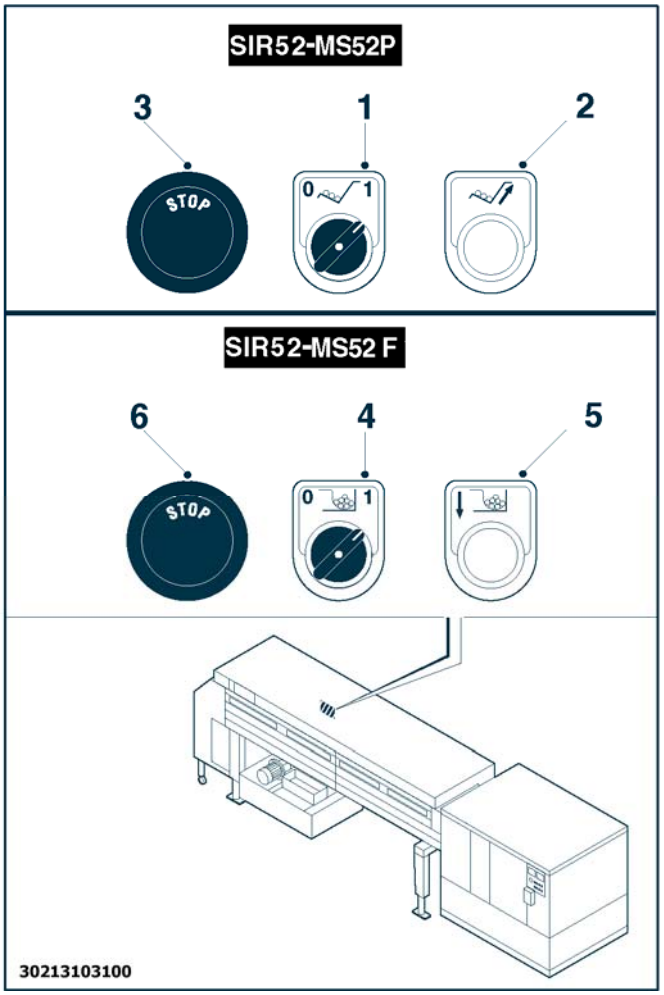
1) The motor must be in wait position, otherwise press the RESET button to move it to wait position.
2) Keep pressing button F25 for 5 seconds: all the devices on the drilling machine will be released.
3) If a bar is clamped in the vice, the feeding unit will not open and the levers will not come down.
4) The motors will stop.
5) Press button F30 to move the bar backward after the motor has been driven backward and the bar sensing photocell has been released.
6) Press button F25 again to open the rollers and to bring the lever down to rest position.

S38 Button Drilling machine stop/Spindle return

- Press this button to stop drilling machine operation (alarm nr. 60 " Drilling machine cover" will be displayed). Keep pressing the button to let the spindle return to the rest position.
- This position allows spindle or tool maintenance. After maintenance has been completed, press button S32 to reset alarm nr. 60 and restore drilling machine to normal operation.
- If button S32 is pressed as soon as alarm nr. 60 " Drilling machine cover" is displayed the drilling machine is restored immediately to normal operation.

Press this button to stop drilling machine operation without stopping either bar feeder or lathe working cycles.
Press button S38 and then button F25 to restore the position of the devices of the drilling machine and restore operation.

6.2 MAGAZINE PUSH-BUTTON PANEL - CONTROL DESCRIPTION



SIR 52-MS 52 P

1 MAGAZINE CONTROL SELECTOR (2 positions)
POSITION 0: the magazine is pre-set for the manual bars loading;
POSITION 1:the magazine is pre-set for the bar feeder automatic function.

2 LUMINOUS PILOT LIGHT (orange)
When it blinks means that the magazine is carrying out the loading cycle.

3 EMERGENCY PUSH-BUTTON; it stops the feeder. The feeder can be restarted only after the push-button has been manually released.

SIR 52-MS 52 F

4 MAGAZINE COMMAND SWITCH (2-position)
POSITION 0: the magazine is pre-set for the manual lowering of belts in order to carry out the loading;
POSITION 1: the magazine is pre-set for the bar feeder automatic function.

5 MANUAL LOWERING OF THE MAGAZINE BELTS PUSH-BUTTON
BY PRESSING IT: the belts lower. By keeping the push-button pressed, the belts completely unwind until they disappear into their seats.
BY RELEASING IT: the belts stop.

6 EMERGENCY PUSH-BUTTON; it stops the feeder. The feeder can be restarted only after the push-button has been manually released.

6.3 LUMINOUS INDICATOR - SIGNAL DESCRIPTION

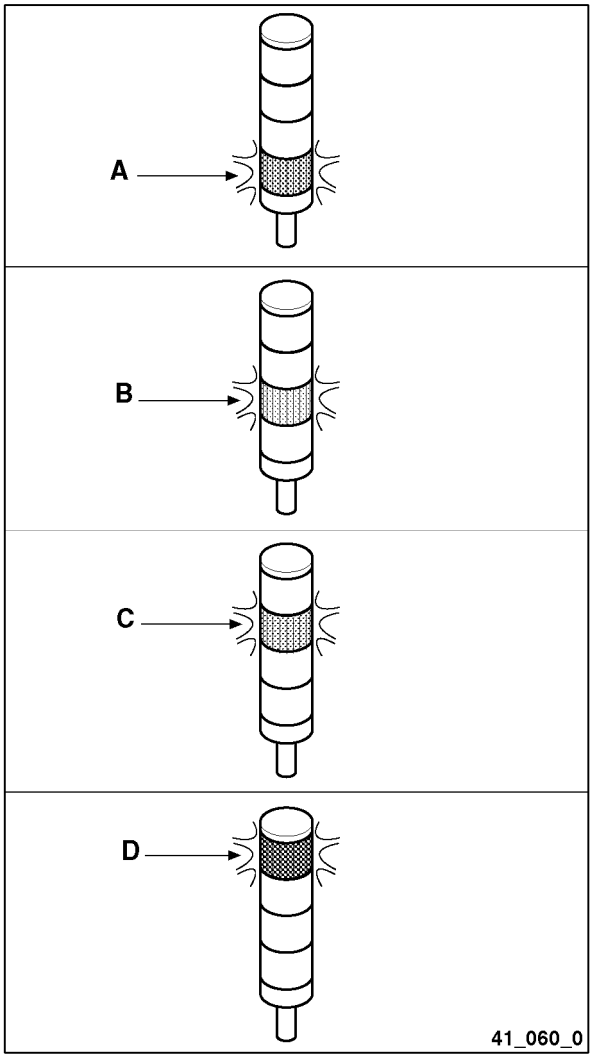
A RED LIGHT;
Steady light; the bar feeder is in manual mode.

B GREEN LIGHT;
Steady light; the bar feeder is in automatic mode.
Intermittent light; when manual mode is selected, the light indicates that the valve EV317 is closed to allow quick oil warm up (see paragraph 6.5.1).

C BLUE LIGHT;
Intermittent light; indicates bar change.

D ORANGE LIGHT;
Intermittent light; the oil filter is dirty and should be cleaned or replaced (see Warning 14 on the display).

D ORANGE LIGHT;
1) Intermittent light; the oil filter is dirty and should be cleaned or replaced (see Warning 14 on the display).
2) If the drilling machine is working, the light indicates that the spindle tool is subject to wear and should be soon replaced (see Warning 65 on the display).
3) If the magazine is empty, the intermittent light is on and the alarm 11 "NO BAR AVAILABLE" is displayed (see Warning 17).



INFORMATION:

To turn off the light, even when the alarm is active, press RESET (S11.7)RESET S11.7.

6.4 STARTING THE BAR FEEDER

There are different procedures to start the bar feeder, depending on the hydraulic oil temperature:
- cold start (paragraph 6.5.1);
- hot start (paragraph 6.5.2).

6.4.1 Cold start

Cold start occurs according to two different procedures.

ADVANCED AUTOMATIC START
Program the advanced automatic start following the procedures described in the "Push-button panel operation and instruction manual", paragraph "Operator's parameters - description and entering".

MANUAL START
- Make sure that all guards are closed and the emergency push-buttons are not pressed.
- Turn the main electric switch to "I".
- Start the lathe.
- Press push-button  to start the bar feeder, keeping it pressed for 15 seconds, until the green light of the luminous indicator temporarily switches on.
  This procedure allows valve (EV317) to close; it will remain closed for 45 minutes, thus allowing a faster hydraulic oil heating.

6.4.2 Hot start

- Make sure that all guards are closed and the emergency push-buttons are not pressed.
- Turn the main electric switch to "I".
- Start the lathe.
- Press push-button  to start the bar feeder.

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

Models	Version	Max. length (mm)	Min. length (mm) (*)
SIR 52-MS52 P SIR 52-MS52 F	33	3300	2500
	38	3800	3000
	43	4300	3000

INFORMATION:

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

(*)To load short bars in the magazine bundle, please refer to IEMCA sales and customer services in order to verify the possibility of installing a short bar loading kit.

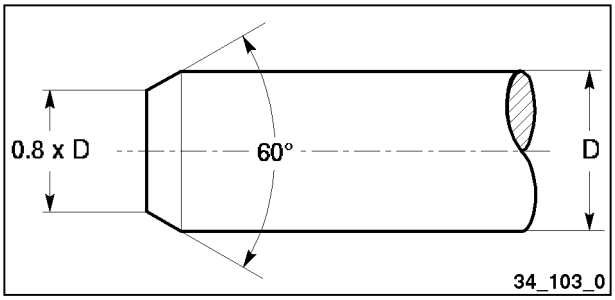
INFORMATION:

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

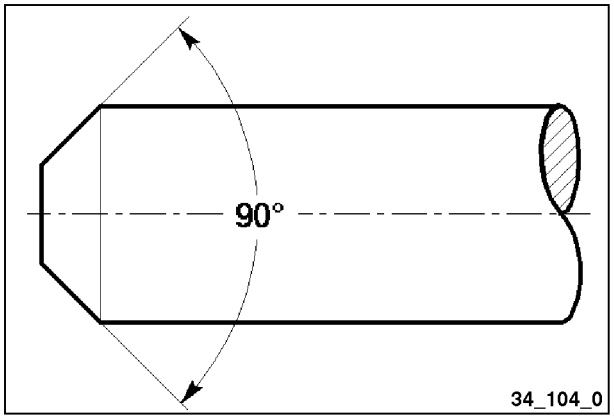
Please find herewith some advice to optimise the bar feeder performances.
Usually barstocks do not need any preliminary operations to be carried out on ends, nevertheless to obtain the best results when loading them, it is advisable to chamfer them.

SOLID BARS

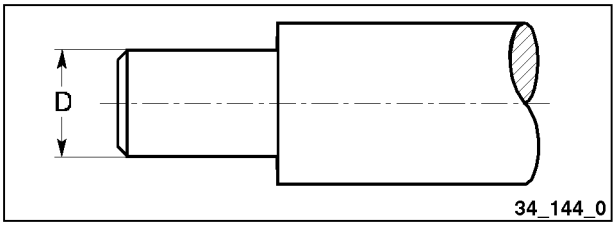
Check that there is not too much rag on bar head, which might hinder insertion in the lathe collet. Check that there is not too much rag on bar rear end, which might hinder insertion in the bar-pusher collet. In any case, to improve operation during this phase, we advise to chamfer the bar as shown in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

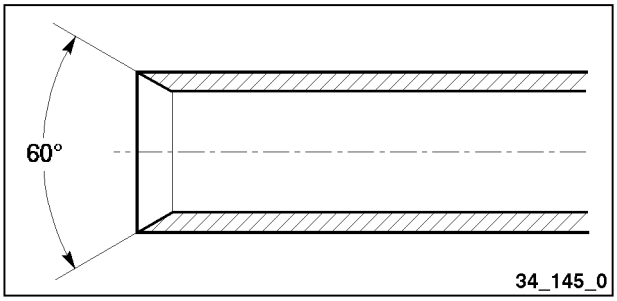


If bars have to be machined having a diameter equal to or only slightly smaller than the bar-pusher diameter, bar rear ends should be machine-turned; diameter "D" should be suitable for the collet size installed in the bar-pusher.



PIPES

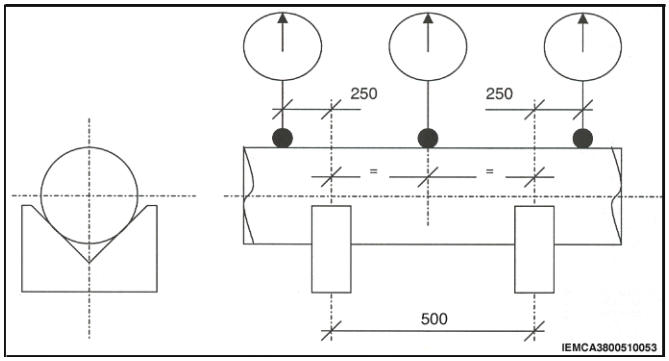
If pipes have to be machined, their rear ends should be chamfered as shown in the figure.



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.

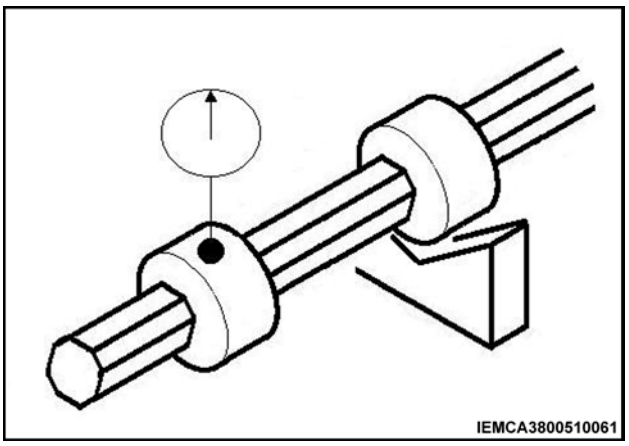
INFORMATION:

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.

INFORMATION:

The use of polygonal bars (hexagonal bars, square bars, etc.)is allowed but you should keep in mind that this will lead to:

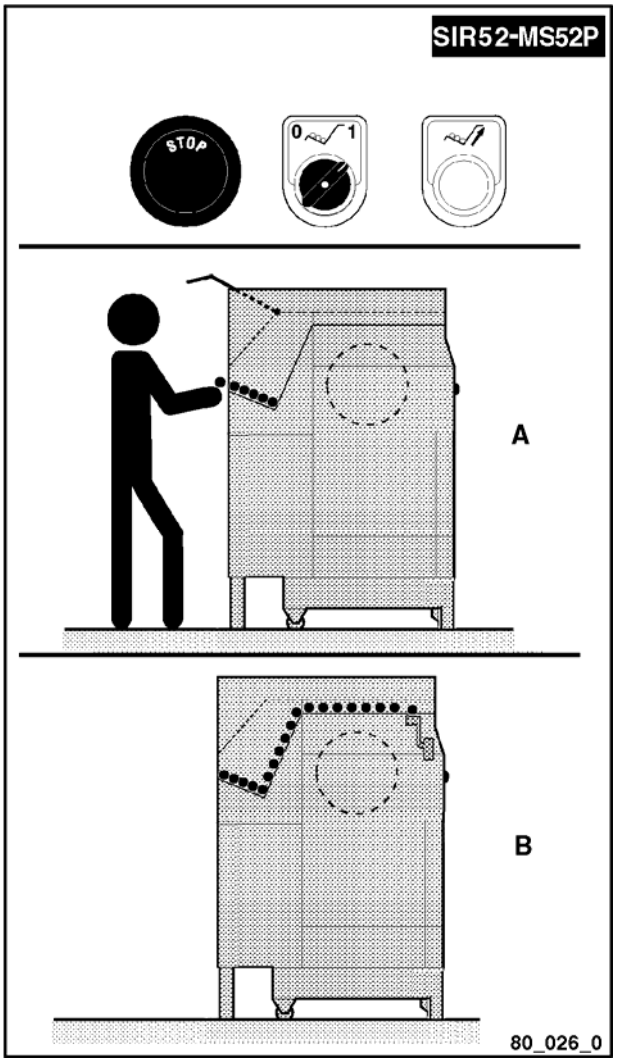
-excessive wear and tear on the guide channel (wear and tear due to the use of round bars is reasonable).

-bar rotation speed reduction (in comparison with round bars).

Excessive wear and tear on the guide channel is due to the shape of bars as well as to material straightness and stiffness.

6.6 BARSTOCKS - LOADING

In accordance with the two different models, loading occurs as follows.



SIR 52- MS 52 P

1 Start the bar feeder

2 The selector  must be positioned on 0. The luminous pilot light  emits a persistent light, wait until it becomes flickering.

3 Open the case and manually load the magazine plane with bars up to its filling (A).

DANGER - WARNING:
Do not manually lift loads exceeding 15 kg.

4 Close the case.

5 Bars are drawn from the feed chain.

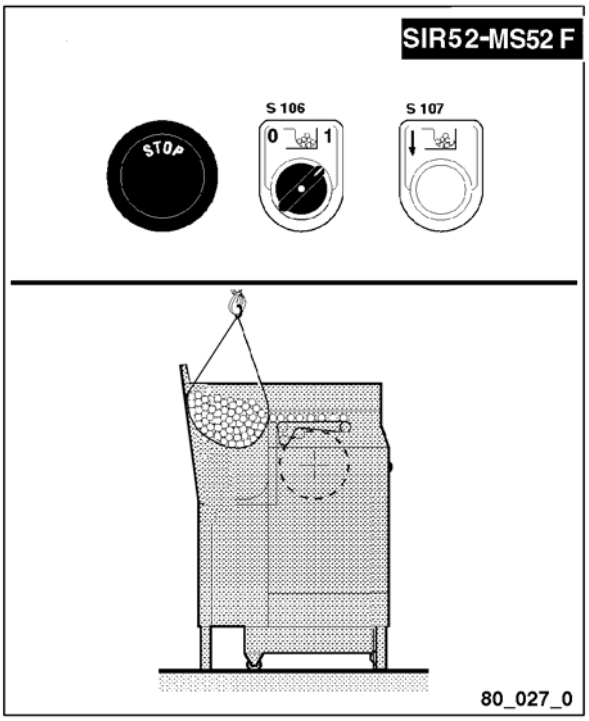
6 When the luminous pilot light emits a flickering light again, operations 3,4 and 5 have to be repeated.

7 Carry out the above mentioned operations up to the complete filling both of the magazine and feed chain (B).

8 When the selector  is positioned on 1, the luminous pilot light is off; hence, the magazine is ready to feed the drum.

During the setting up operations of drum or other device, the selector must be  ***positioned on 0; should the feeding chain be unloaded, it stops after approx. 35 sec.***

SIR 52- MS 52 F



1 Start the bar feeder.

2 Position the selector  on 0 .

3 Press the  push-button to lower belts completely.

4 Feed the bars using a bridge crane or a lifting carriage.

INFORMATION

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

CAUTION:

Do not load bars having sizes different from those suggested by the manufacturer.

DANGER - WARNING:

Make sure the lifting device has a suitable capacity.

5 Position the  selector on 1; the magazine is ready to feed the drum.

6.7 PROGRAMMING - PARAMETERS ENTRY

The entering of parameters is necessary to program the automatic cycle of the bar feeder, according to the working requirements and to the machine type.
For more detailed instructions, see the "Push-button panel operation and instruction manual".

6.8 WORKING DIAMETER CHANGE - OPERATIONS SEQUENCE

The operations for the machining diameter change have to be done on the basis of the previous machining and in relation to the following machining.
See "COMPARATIVE TABLE OF THE WORKING DIAMETERS" (paragraph 5.3.).
If the stock guide tube diameter has to be replaced, you need to follow the procedure explained in paragraph 6.8.1; otherwise, follow the procedure explained in paragraph 6.8.2.
The operations for the machining diameter change can also be done following quick procedures explained in paragraphs 6.8.3 and 6.8.4.

6.8.1 Changing the machining diameter without the stock guide tube diameter change

1 When all bars in the drum are over, stop the lathe with its collet open (zero point).
2 Press key MAN. F13 and press key << F11 to make the bar pusher move backwards up to backward limit stop (S 1011 active).
3 Disable the automatic mode of the truck feed.
4 Give the lathe the order to make one spindle station rotate and repeat the operations until all spindles are released from residual bars and until all bar pushers are brought to the backward limit stop.
5 Stop the bar feeder.
6 Open the rear door.
7 Remove the coupling screws between the bell of the lathe and the bell of the bar feeder. Release the drum locking lever pressing it downwards and manually pull the drum up to the limit stop.
8 Extract sleeves (paragraph 5.9.).
9 Disassemble the spindle collets and reassemble the new collets adequate to the new bar profile.
10 Assemble the sleeves with the possible reducers of the diameter adequate to the guide stock tube.
11 Bring the drum to the working position again, pushing carefully and checking that no obstacle occurs.
12 Lock the drum with the proper lever and close the rear door. Reassemble the coupling screws between the bell of the lathe and the bell of the bar feeder.
13 Bring magazine control selector switch S 106 to position "0".
14 Start the bar feeder and press key MAN. F13.
15 Press key >> F12 to make the bar feeder move foreword of 200/300 mm.
16 Press key IN F7 to make the clamp arm turn towards the drum.
17 Press key << F11 to bring the bar pusher to the limit stop.
18 Press key F2 to close the truck-bar pusher locking device.
19 Press key F3 to open the guides.
20 Press key OUT F8 to make the clamp arm rotate outside the drum.
21 Press key F4 to close clamps.
22 Press key F5 to extract the remnant.
23 Press key F4 to open the clamps; the remnant falls down.
24 Press key F2 to open the truck-bar pusher locking device.
25 Manually open the side guard in the clamp area.
26 Remove the bar pusher.
27 Adjust the guide stock tube with the desired diameter (paragraph 5.3.).
28 Prepare the bar pusher adequate to the guide stock tube and equipped with the bar remnant.
29 Position the bar pusher in the clamp arm housing.
30 Close the side guard.

31 Press key 

to close the truck-bar pusher locking device; LED of sensor S4 has to be on. Otherwise, open locking device again, longitudinally move the bar pusher of some millimetres and close locking device again.

32 Press key 

to open the guides.

33 Press key 

to rotate the clamp arm towards the drum.

34 Press key 

to close the guides.

35 Press key 

to open the truck-bar pusher locking device.

36 Press key 

to bring the remnant into the lathe collet.

37 Press key 

to make the clamp arm rotate outside the drum.

38 Give the lathe the order to make one spindle station rotate and stop it at zero point. Press key 

and repeat from step 15 to step 37.

39 Repeat step 38 until all bar pushers are replaced.

40 Remove all bars left from the magazine.

41 Prepare the new bars (paragraph 6.5.).

42 Load bars (paragraph 6.6.).

43 Adjust magazine (paragraph 5.1. and 5.2.).

44 Bring magazine control selector switch S 106 to position "1".

45 Press key 

.

6.8.2 Change of the working diameter without changing the guide tube diameter

1 When all bars in the drum are over, stop the lathe with its collet open (zero point).
2 Disable the truck feed in automatic mode.
3 Press key 

and press key 

to make the bar pusher move backwards up to the backward limit stop (S 1011 active).
4 Bring magazine control selector switch S 106 to position "0".
5 Press key 

to make the bar feeder move foreword of 200/300 mm.
6 Press key 

to make the clamp arm turn towards the drum.
7 Press key 

to bring the bar pusher to the limit stop.
8 Press key 

to close the truck-bar pusher locking device.
9 Press key 

to open the guides.
10 Press key 

to make the clamp arm rotate outside the drum.
11 Press key 

to close the clamps.
12 Press key 

to extract the remnant.
13 Press key 

to open the clamps; the remnant falls down.
14 Press key 

to open the truck-bar pusher locking device.
15 Manually open the side guard in the clamp area.
16 Remove the bar pusher.
17 Disassemble the collet and assemble the new collet equipped with the bar remnant.
18 Position the bar pusher in the clamp arm housing.
19 Close the side guard.
20 Press key 

to close the truck-bar pusher locking device; LED of sensor S4 has to be on. Otherwise, open locking device again, longitudinally move the bar pusher of some millimetres and close locking device again.
21 Press key 

to open the guides.
22 Press key 

to rotate the clamp arm towards the drum.
23 Press key 

to close the guides.
24 Press key 

to open the truck-bar pusher locking device.
25 Press key 

to bring the remnant into the lathe collet.
26 Press key 

to make the clamp arm rotate outside the drum.
27 Give the lathe the order to make one spindle station rotate and stop it at zero point. Press key 

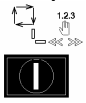
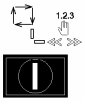
and repeat from step 5 to step 26.

28 Repeat step 27 until all bar pushers are replaced.
29 Remove all bars left from the magazine.
30 Prepare the new bars (paragraph 6.5.).
31 Load bars (paragraph 6.6.).
32 Adjust magazine (paragraph 5.1. and 5.2.).
33 Bring magazine control selector switch S 106 to position "1".
34 Press key F14 AUT..

6.8.3 Changing the machining diameter without the stock guide tube diameter change - Quick procedure

DANGER - WARNING:

the following procedure has to be carried out by the responsible skilled technician, who also owns the key of the selector switch allowing this operation to be done.

1 When all bars in the drum are over, stop the lathe with its collet open (zero point).
2 Disable the truck feed in automatic mode.
3 Press key F13 MAN. and press key F11 << to make the bar pusher move backwards up to the backward limit stop (S 1011 active).
4 Give the lathe the order to make one spindle station rotate and repeat the operations until all spindles are released from residual bars and until all bar pushers are brought to the backward limit stop.
5 Stop the bar feeder.
6 Open the rear door.
7 Remove the coupling screws between the bell of the lathe and the bell of the bar feeder. Release the drum locking lever pressing it downwards and manually pull the drum up to the limit stop.
8 Extract sleeves (paragraph 5.9.).
9 Disassemble the spindle collets and reassemble the new collets adequate to the new bar profile.
10 Assemble the sleeves with the possible reducers having the diameter adequate to the guide stock tube.
11 Bring the drum to the working position again, pushing carefully and checking that no obstacle occurs.
12 Lock the drum with the proper lever and close the rear door. Reassemble the coupling screws between the bell of the lathe and the bell of the bar feeder.
13 Bring magazine control selector switch S 106 to position "0".
14 Start the bar feeder and press key F13 MAN..
15 Bring selector switch  to position 1.2.3 << >> and open the guard.
16 Hold the bar pusher with your hand, press key F3 and remove the bar pusher.
17 Adjust the guide stock tube with the desired diameter (paragraph 5.3.).
18 Prepare the bar pusher adequate to the stock guide tube and equipped with the bar remnant.
19 Position the bar pusher in the stock guide tube taking care to introduce the flag into the feeding truck and press key F3.
20 Press key F12 >> to bring the remnant into the lathe collet.
21 Close guard and bring selector switch  to position .

22 Give the lathe the order to make one spindle station rotate and stop it at zero point. Press key F13 MAN. and repeat from step 15 to step 21.
23 Repeat step 22 until all bar pushers are replaced.
24 Remove all bars left from the magazine.
25 Prepare the new bars (paragraph 6.5.).
26 Load bars (paragraph 6.6.).
27 Adjust magazine (paragraph 5.1. and 5.2.).
28 Bring magazine control selector switch S 106 to position "1".
29 Press key F14 AUT..

6.8.4 Changing the machining diameter without the stock guide tube diameter change

DANGER - WARNING:

the following procedure has to be carried out by the responsible skilled technician, who also owns the key of the selector switch allowing this operation to be done.

1 When all bars in the drum are over, stop the lathe with its collet open (zero point).
2 Disable the truck feed in automatic mode.
3 Press key F13 MAN. and press key F11 << to make the bar pusher move backwards up to the backward limit stop (S 1011 active).
4 Bring magazine control selector switch S 106 to position "0"
5 Bring selector switch to position 1.2.3 and open the guard.
6 Hold the bar pusher with your hand, press key F3 and remove the bar pusher.
7 Disassemble the collet and assemble the new collet equipped with the bar remnant.
8 Position the bar pusher in the stock guide tube taking care to introduce the flag into the feeding truck and press key F3.
9 Press key F12 >> to bring the remnant into the lathe collet.
10 Close guard and bring selector switch to position .
11 Give the lathe the order to make one spindle station rotate and stop it at zero point. Press key F13 MAN. and repeat from step 5 to step 10.
12 Repeat step 11 until all bar pushers are replaced.
13 Remove all bars left from the magazine.
14 Prepare the new bars (paragraph 6.5.)
15 Load bars (paragraph 6.6.).
16 Adjust magazine (paragraph 5.1. and 5.2.).
17 Bring magazine control selector switch S 106 to position "1".
18 Press key F14 AUT..

6.9 BAR FEEDER STOP

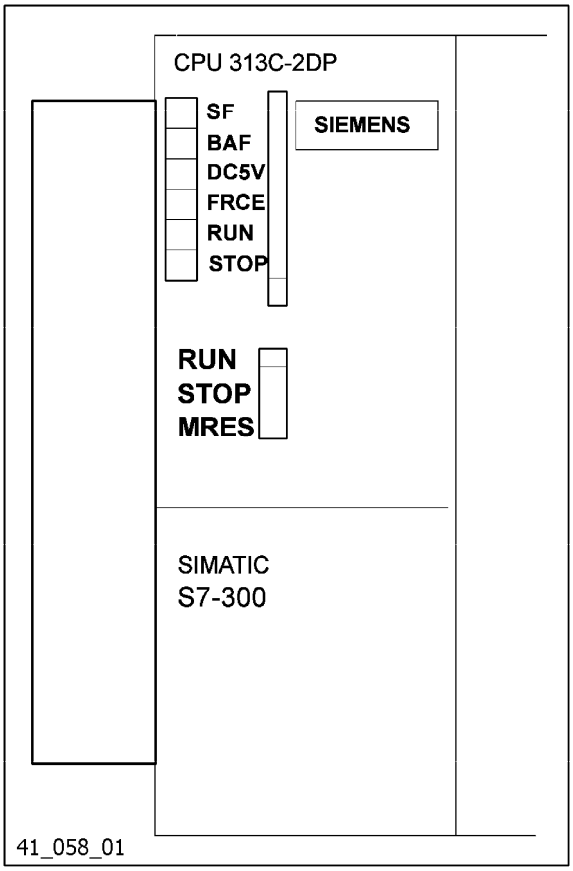
CAUTION:

Do not stop the bar feeder through the emergency push-button unless necessary.

- Finish the operations provided for by the working program.
- Stop bar feeder from the lathe.
- Stop the lathe.
- Position the main switch on "0".

6.10 EPROM LOADING PROCEDURE

In case of programme deletion or eeprom replacement, the programme needs to be loaded again by adopting the following procedure.



1) CPU selector must be set to RUN.
2) Turn the voltage to the PLC off and set the selector to STOP.
3) Remove the EPROM.
4) Turn the voltage on and wait until the LEDs are on (some may be off, but no LED must be blinking).
5) Turn the selector to MRES, wait until the LED STOP slowly blinks twice.
6) Turn the selector to STOP, turn it immediately (within 3 secs.)to MRES and release it at once.
7) The STOP LED is now blinking faster (2 Hz = MEMORY RESET).
8) Wait until the STOP LED light is steady.
9) Turn the voltage to the PLC off.
10) Insert a new EPROM.
11) Turn the voltage on.
12) Turn the selector to RUN when the lights are steady (some may be off by no light must be blinking).
13) Now turn voltage to INDEX LATHES(voltage to the bar feeder will be automatically turned off) and turn it on after 10 secs. (This step should allow lathe-bar feeder software alignment).

INDEX

7.1 MAINTENANCE - GENERAL INSTRUCTIONS

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 other detergents which might spoil painting, transparent parts, cable sheaths, etc.
To protect the bar feeder when you expect not to use it for long periods of time, disconnect it from mains voltage and from compressed air supply and cover it with a suitable protective sheet.

DANGER - WARNING:
Oxidation may cause damages either to the metallic parts or to electric equipment.

Any protective cover must not be completely sealed at the base and must be provided with air inlet holes, to prevent the humidity inside the cover from condensing due to an air circulation deficiency.
Said condensation might oxidise the metallic parts and damage the electric equipment.

7.2 MAINTENANCE - SCHEDULED MAINTENANCE TABLE

Table 1. Maintenance - scheduled maintenance.

			HOURS FREQUENCY			
BAR FEEDER MODEL	**BAR FEEDER SECTION**	**OPERATIONS TO BE CARRIED OUT**	**50**	**200**	**1250**	**2500**
SIR52-MS52 F	Bundle	Check the lifting belts wear		•		
		Adjust the bar stop clutch.			•	
	Bars translation	Tighten the translation belts.			•	
		Check the translation belts wear.				• (*)
		Lubricate pins bushings.			•	
SIR52-MS52 P	Bars lifting and translation	Check and adjust the torque limiter whenever necessary.				•
		Check and tighten the bar lifting chain whenever necessary.		•		
		Check and tighten the bar translation chain whenever necessary.			•	
		Check and tighten the motor chain whenever necessary.			•	
SIR52-MS52 P SIR52-MS52 F	Bar loading	Check and whenever necessary replace the bar loading levers rollers.				•
	Carriage feeding	Tighten the belt.		•		
	Guides	Check and replace sprockets whenever necessary.			•	
		Verificare la scorrevolezza tra i rocchetti e le cremagliere		•		
	Clamps device	Check and sharpen clamps whenever necessary.			•	
	Lubricating system	Check the oil level.	•			
		Clean the oil filter.			•	
		Check the delivery pipes.				•
		Change the hydraulic oil.	once a year			
	Hydraulic system	Check the oil level.		•		
		Clean the oil filter.			•	
		Check the oil pipes.				•
		Change the hydraulic oil.	once a year			
	Keyboard	Replace the battery	once a year			
	PLC	Replace the battery	once a year			

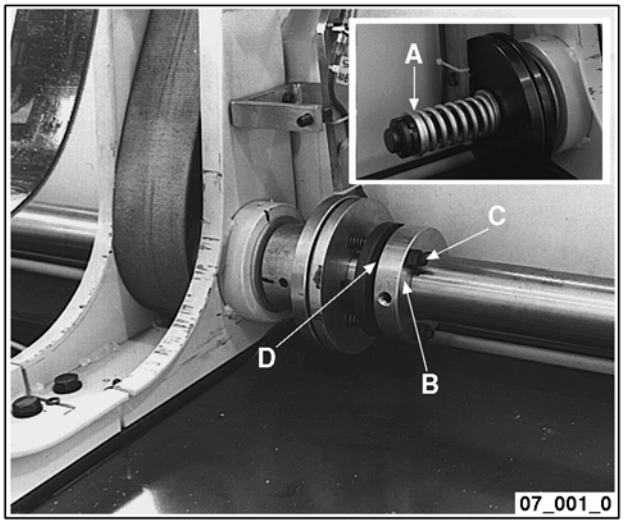
(*) Should the standard belts wear excessively due to oil, chipping or sharp bars, it is advisable to assemble polyurethane belts supplied upon request.

7.2.1 SIR52-MS52 F Bar stop clutch - Adjustment

Should the bar stop clutch fail to work properly, adjust it as follows.

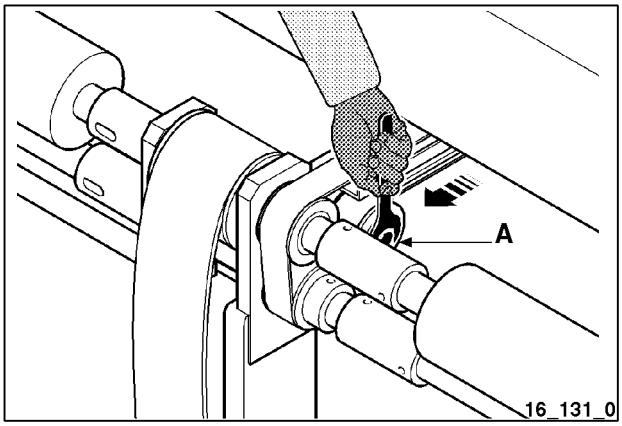
Left clutch — Tighten ring nut (A) tightening it by means of the counternut .

Right clutch — Loosen the three nuts (B). Equally tighten the three screws (C) so that disk (D) may progress in parallel with the counter disk. Tighten the three nuts (B).



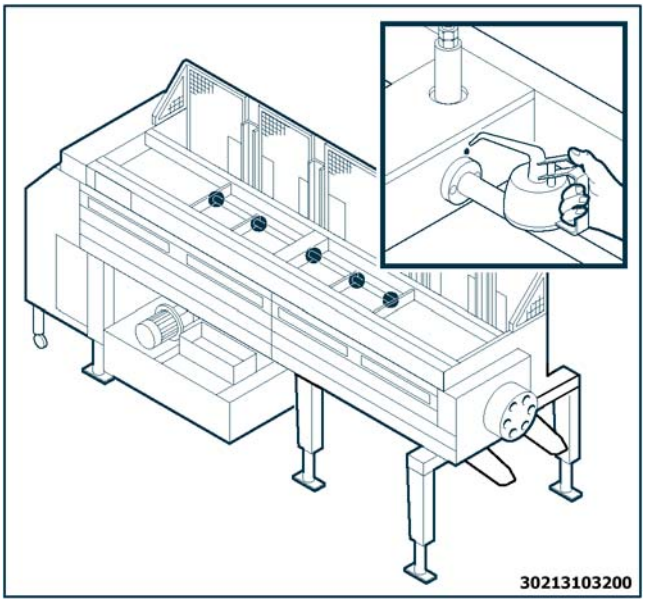
7.2.2 SIR52-MS52 F translation belts - Tightening

- Loosen screw (A).
- Tighten the belt by manually pressing the pulley.
- Tighten screw (A).
- Repeat the operation to tighten the other belts whenever necessary.



7.2.3 SIR52-MS52 F Pins bushings - Lubrication

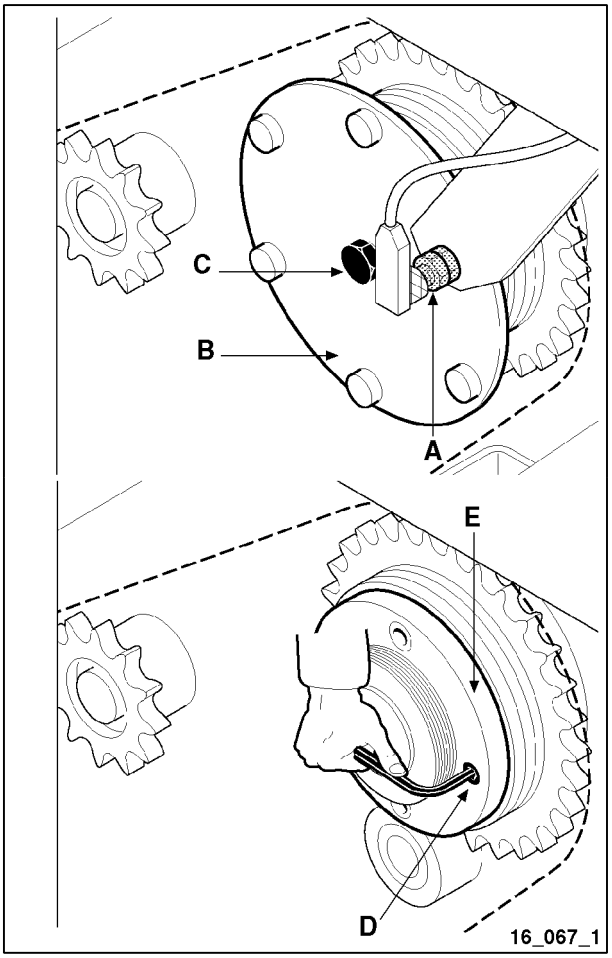
Lubricate the pins bushings (see areas displayed in bold type).



7.2.4 SIR52-MS52 P torque limiter - Adjustment

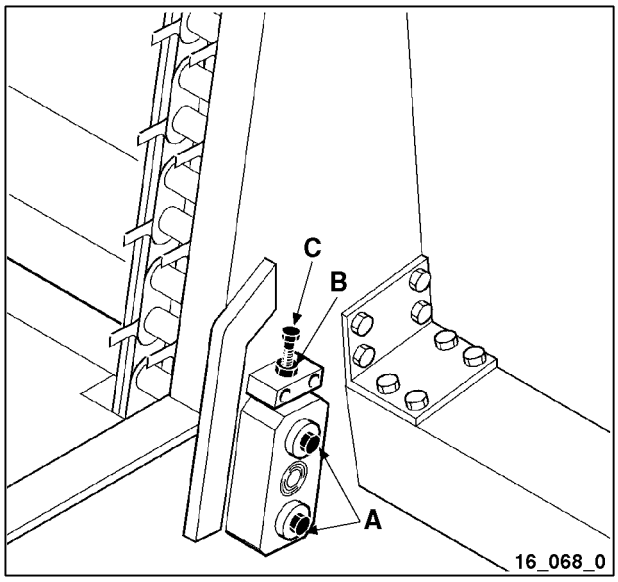
The bar lifting device is equipped with a torque limiter which actuates should the device fail to work properly.
To adjust it:

- The magazine must be completely loaded (§. 6.7.) with barstock of the max. diameter.
- Loosen the nuts of sensor (A) in order to remove it from disk (B).
- Disassemble the disk by loosening screw(C).
- Loosen screw (D).
- Completely loosen ring nut (E). When the bar feeder is started, the torque limiter slides.
- Stop the bar feeder and tighten ring nut (E) step by step, making attempts up to the bar lifting device is restored.
- Tighten screw (D).
- Reassemble the disk and the sensor.



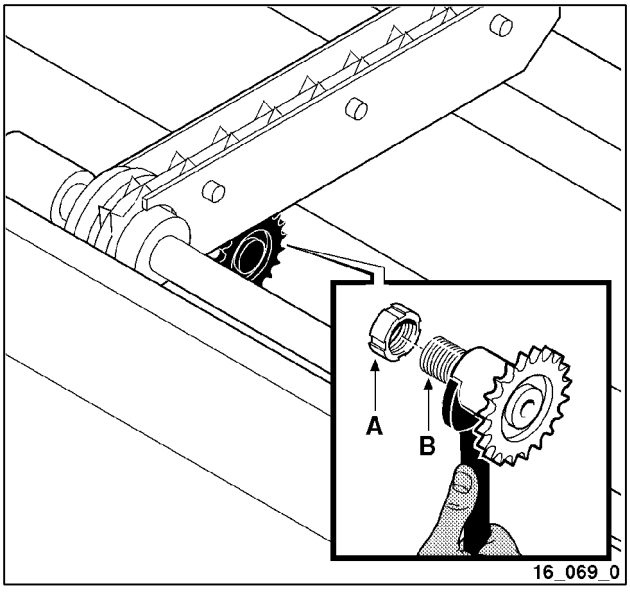
7.2.5 SIR52-MS52 P bar lifting chain - Tightening

- Loosen screws (A) and nut (B).
- Tighten screw (C).
- Tighten screws (A) and nut (B).
- Whenever necessary, repeat the operation to tighten the other chains.



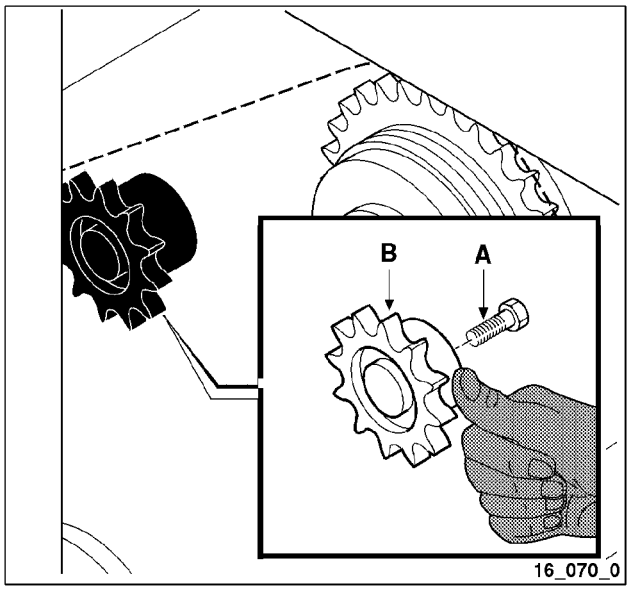
7.2.6 SIR52-MS52 P bar translation chain - Tightening

- Loosen ring nut (A).
- Turn the pinion eccentric pin (B).
- Tighten ring nut (A).
- Whenever necessary, repeat the operation in order to tighten all other chains.



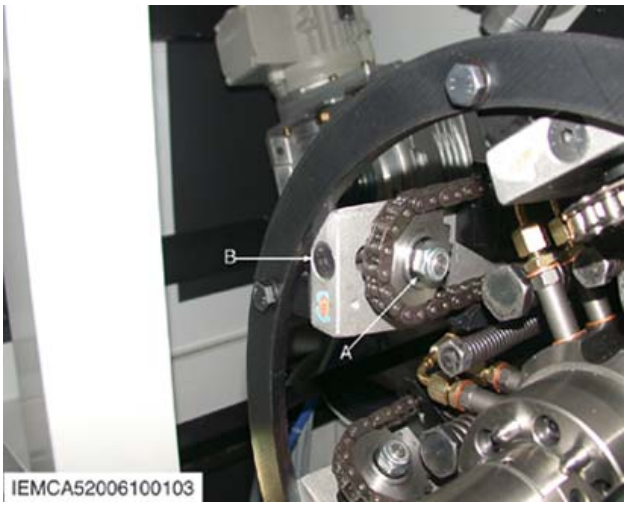
7.2.7 SIR52-MS52 P motor chain - Tightening

- Loosen screw (A).
- Tighten the chain by pressing manually pinion (B).
- Tighten screw (A).



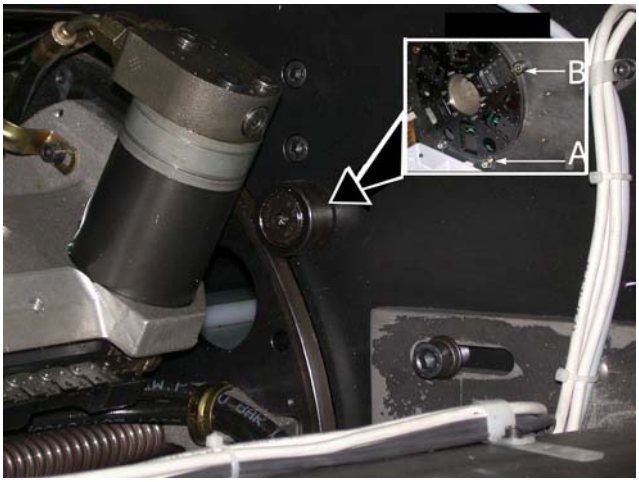
7.2.8 Chain feeding belt - Tightening

- Loosen the nut (A).
- Screw the screw (B) to tighten the chain using a torque wrench; tighten to C= 5 N/m (about 0,5 Kg/m).
- Tighten nut (A.)
- Whenever necessary, repeat the operation to tighten the other chains.



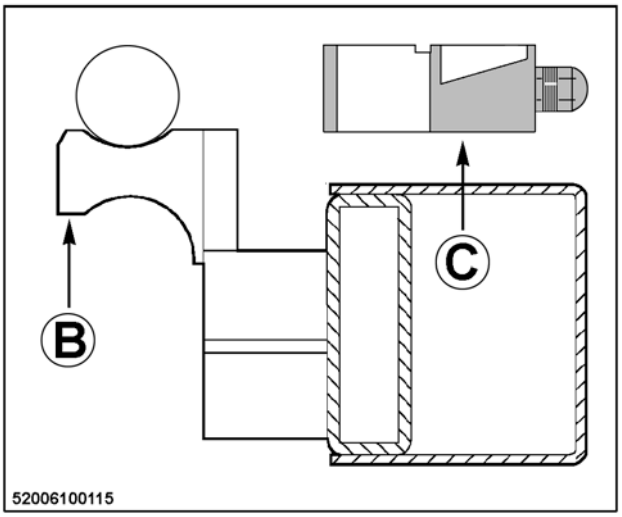
7.2.9 Feeding drum - Bearings end play adjustment

The feeding drum rotates on bearings (A) and (B) (fig. 9) placed both in the front and rear area of the bar feeder.
Adjust the end play operating bearings (B), which are supplied with eccentric pin.
End play must be of 0.15÷0.25 mm.
Bearings (A) are not equipped with eccentric pin.



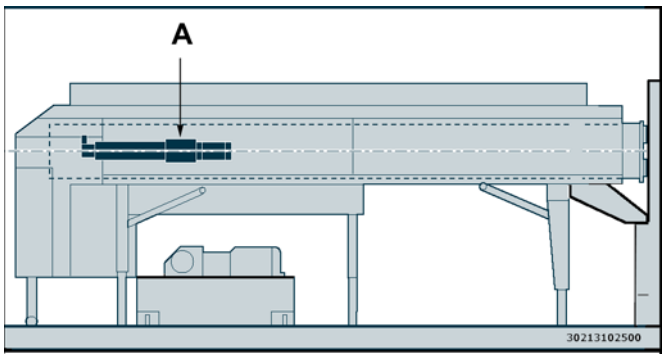
7.2.10 Loading levers - Adjustment

BAR FEEDER LEVERS IN PICK-UP POSITION:
Adjust the levers (B) as shown in picture "52006100115" and make sure the capacitive sensor LED lights up.



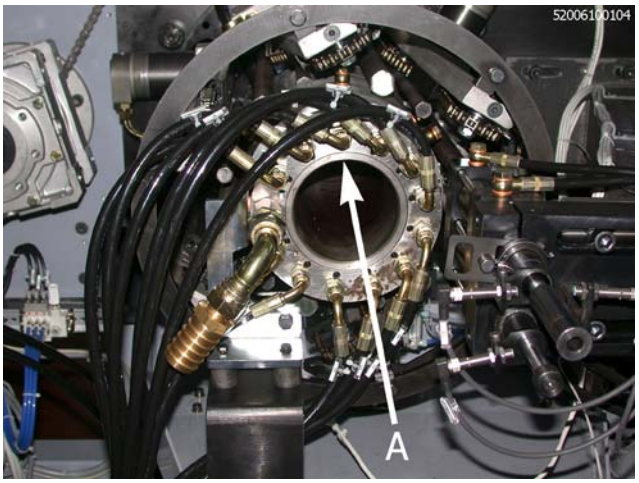
7.2.11 Clamps device and bar-pusher locking - Alignment check

Check the clamps device (A) axis is aligned with the guide tube axis.
Keep to the following procedure: move the clamp device to the "bar insertion into collet" position and close the sprockets by pressing key F3.
Sprockets must close without interfering with the bar pusher inserted into the clamp device.
In case of misalignment, please apply to IEMCA technical assistance department.



7.2.12 Hydraulic joint - Check

In case of troubles to the rotating joint (A) (fig. 12) apply to IEMCA technical assistance department.



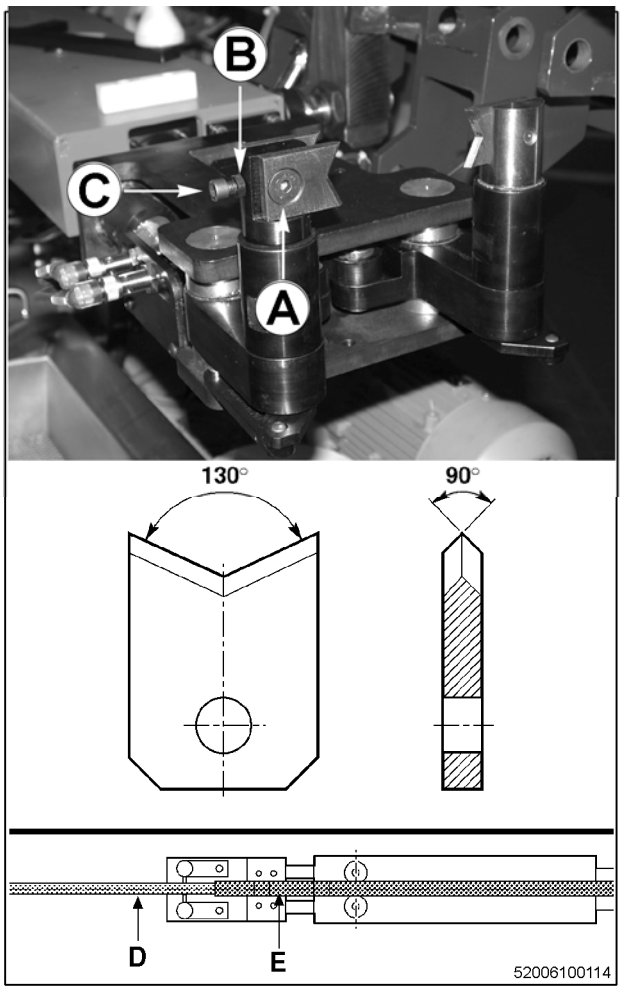
7.2.13 Clamps - Sharpening and adjustment

Sharpening

- Untighten screws (A).
- Remove and sharpen clamps according to the sharp edges.
- Reassemble clamps.
- Tighten screws (A).

INFORMATION

If only a single clamp is sharpened, check and centre the other clamps whenever necessary.



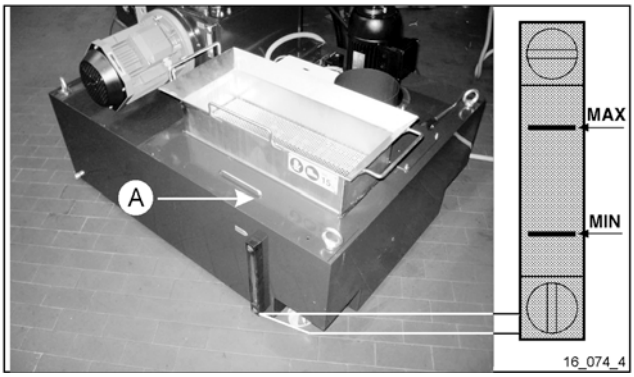
Centring adjustment

Adjust the lower clamp position so that, once the clamps are closed, the bar (D) axis is aligned with the bar-pusher axis (E).
To adjust it:

- Loosen screw (A).
- Loosen nut (B).
- Tighten or untighten screw (C).
- Tighten nut (B).
- Tighten screw (A).

7.2.14 Lubricating oil - Level check

- The oil level must be between the minimum level MIN. and maximum level MAX.
- To top up oil, remove cover (A) and fill with lubricating oil type:
  class (C) CKB 100.

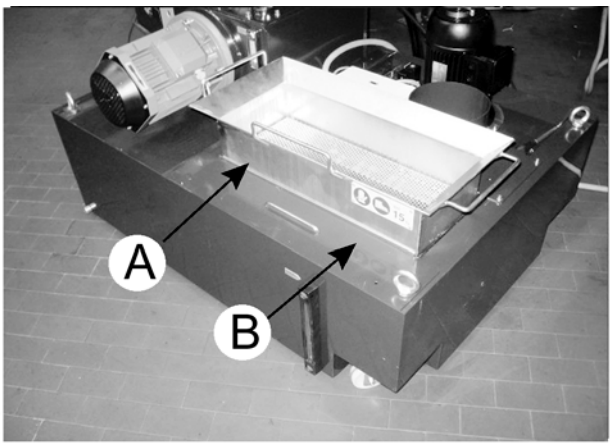


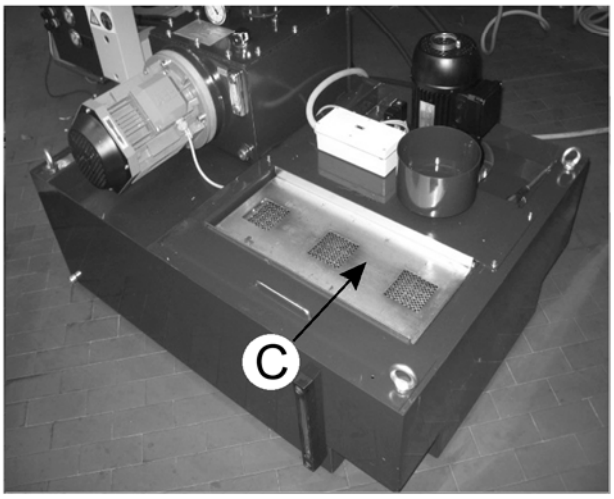
7.2.15 Lubricating oil - Filters cleaning

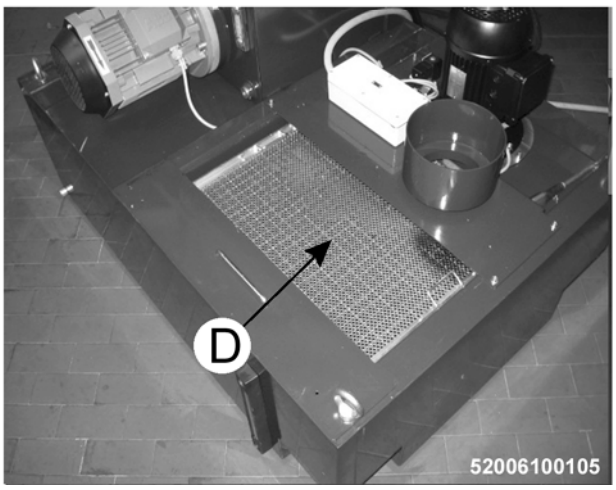
Filter under the box

- Remove box (A) and cover (B).
- Remove frame (C).
- Remove filter (D) and clean it by means of compressed air.

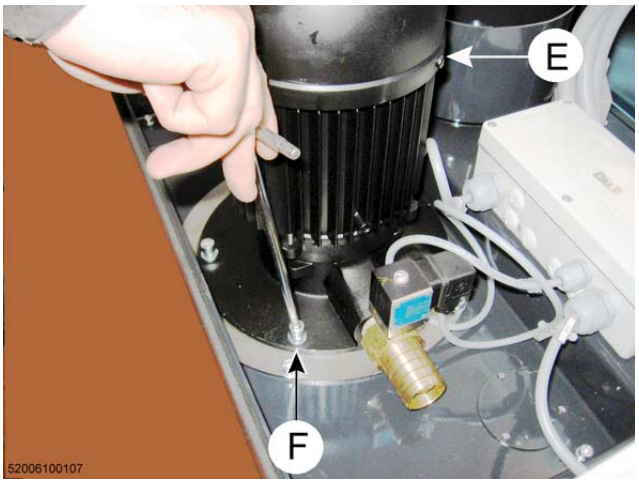
Suction filter



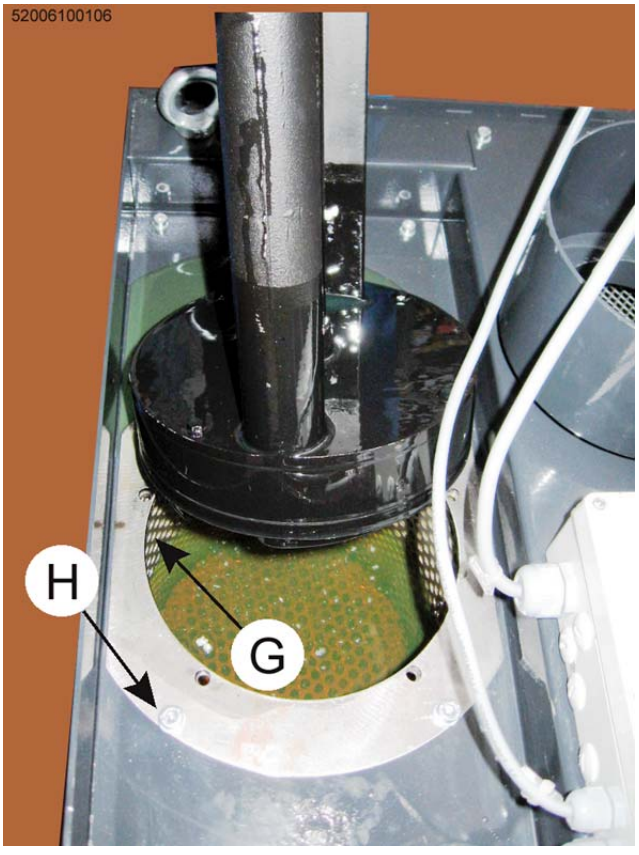




- Remove the electrical pump (E) with the screws (F).



- Remove the filter (G) with the screws (H).
- Clean the filter (G) with the compressed air.



7.2.16 Lubricating oil - Change

Replacement can be carried out by using an auxiliary pump or by means of the drain plug.

Replacement with an auxiliary pump

- Remove box (A) and cover (B).
- Remove frame (C).
- Remove filter (D).
- Empty the tank by using an auxiliary pump.
- Clean the tank bottom.
- Fill it up with lubricating oil: type class (C) CKB 100. Quantity: 250 l.

Replacement by means of the drain plug

- Disconnect the control unit, see paragraph 4.5.1.
- Uplift the control unit (see paragraph 4.2.) and place it on two stands.
- Unscrew the drain plug and let the oil be drained.
- Remove box (A) and cover (B) (see paragraph 7.2.15).
- Remove frame (C).
- Remove filter (D).
- Clean the tank bottom.
- Fill it up with lubricating oil: type class (C) CKB 100. Quantity: 250 l.

7.2.17 Hydraulic oil - Level check

- See enclosed documentation: "Hydraulic System".

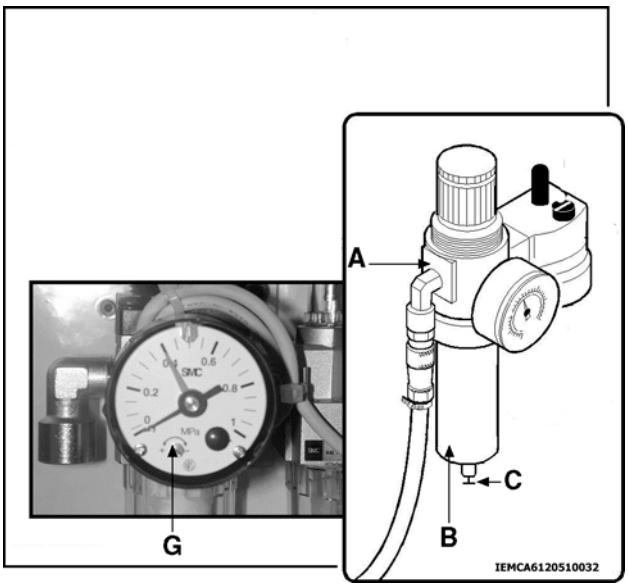
7.2.18 Hydraulic oil - Filter maintenance

- See enclosed documentation: "Hydraulic System".

7.2.19 Hydraulic oil - Change

- See enclosed documentation: "Hydraulic System".

7.2.20 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).

PRESSURE SWITCH

- The lubricator is equipped with a control pressure switch, set to a pressure of 4.5 bars.
- To adjust the pressure switch, proceed as follows:

- 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 LUBRICATING/HYDRAULIC OIL - COMPARATIVE TABLE

Table 2.Lubricating oil

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

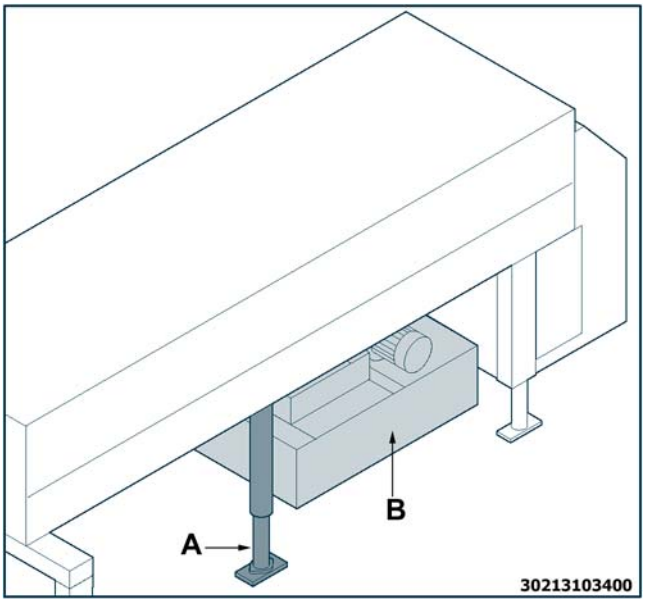
Table 3.Hydraulic oil

ISO/UNI DESIGNATION	BRAND	DENOMINATION
CLASS C HG 32	Agip	Exidia 32
	Api	Api Cis EP-32
	BP	Energol GHL 32
	Castrol	Magna GC 32
	Chevron	HWS 280 32 cSt
	Elf	Hygliss 32
	Esso	Febis K 32
	Fina	Hydran 32
	IP	Bantia HG 32
	Klüber	Lamora 32
	Mobil	Mobil Vacuoline 1405
	Olio FIAT	Daphne Husoli 32 HG/I
	Roloil	LI-EP 32
	Shell	Tonna TX 32
	Tamoil	Tamway oil 32
	Total	Drosera MS 32
	Texaco	Way lubricant 32

7.4 PREPARING THE BAR FEEDER FOR MAINTENANCE TO THE LATHE

For easy maintenance of the lathe, it is possible to remove some parts of the bar feeder and to use the device to slide the feeding drum.

Removing the middle leg (A) - SIR 52 F (fig. 23);
See paragraph 4.4.5.



CAUTION:
The central foot removal and following installation must be done when the magazine is empty.

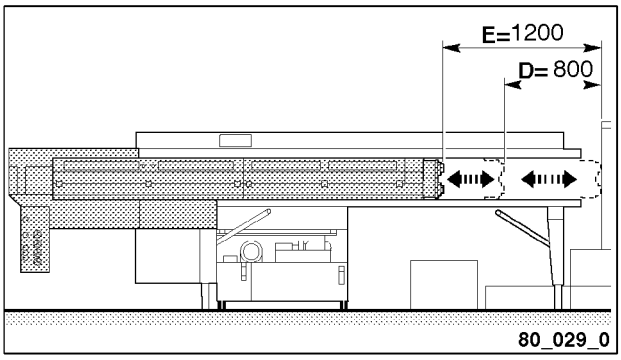
Removing the hydraulic drive unit (B) (fig. 23); see paragraph 4.5.

How to use the Sliding Feeding Drum

CAUTION:
Function to be undertaken with great care, making sure that the bar feeder is stable.

Open the rear guard, lower lever (C) (fig. 24) and move the feeding drum backwards.

The (D) stroke is standard, stroke (E) is oversized and must be used in those installations which require a larger working area (fig. 25).



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8.1 GENERAL PROBLEMS

INCONVENIENTS	CAUSE	REMEDY
BAR FEEDER DOES NOT START	Open cases.	Close the cases
	The feeding drum is out of position.	Bring the feeding drum to position and reassemble coupling screws between the bell of the lathe and the bell of the bar feeder.
	Air missing.	Check the air system.
	Emergency devices activated.	Disable the emergency devices.
	Motors thermal switches blown.	Reset the overload relay by means of the relevant push-buttons.
THE BAR FEEDER DOES NOT WORK IN THE AUTOMATIC MODE	Levers are in a loading phase.	Read for any possible defects on the DISPLAY and provide the required conditions for the bar feeder to be started automatically.
	Clamp arm on the guides.	
	Clamps are closed.	
	Guides are open.	

8.2 BAR MAGAZINE - FAILURES

INCONVENIENTS	CAUSE	REMEDY
SIR52-MS52P **THE BARS ARE NOT UPLIFTED BY THE CHAINS**	The torque limiter slides.	Calibrate the torque limiter.
SIR52-MS52F **BAR LIFTING IS OUT OF BALANCE**	One of the belts is loosened or torn.	Replace the belt.
BARS ARE NOT SELECTED	The control cylinders do not work.	Check both the cylinders operation and the pneumatic system.
	The bar detection sensors are not excited.	Make sure that the bar detection signalling levers are exciting the sensors.
	Failure of the selector lifted cam.	Replace the cam.

INCONVENIENTES	CAUSAS	SOLUÇÕES
SIR52-MS52P **As barras não são levantadas pelas correntes**	O limitador de torque desliza	Ajuste o limitador de torque
SIR52-MS52F **A elevação acontece de forma desequilibrada**	Uma correia está frouxa ou rasgada	Substitua a correia
As barras não são selecionadas	Os cilindros de comando não funcionam	Verifique a funcionalidade dos cilindros e do sistema pneumático
	Os sensores de presença da barra não são acionados	Certifique-se de que as alavancas de sinalização de presença da barra acionem o sensor
	Ruptura do excêntrico de elevação do selecionador	Substitua o excêntrico

8.3 DEVICE INTRODUCING BARS INTO GUIDES - PROBLEMS

ERROR	CAUSE	CURE
BAR DROPS OUTSIDE THE LOWERING ROLLERS	Levers stop in a lower position because they are misaligned	Adjust the loading levers
	Torn rollers	Replace the control levers rollers
ARMS DO NOT LOWER	The cylinder does not work	Check the operation of the levers control cylinder.
	Levers are jammed in a high position.	Check there are no crosswise bars or folded levers
ARMS DO NOT INTRODUCE BARS	The lateral cylinders do not work.	Check the operation of the bar introducing cylinder.
	Levers are misaligned and interfere with the guiding sprockets.	Position the levers in the loading cycle.
CLOSED SPROCKETS PREVENTING THE BAR FEEDING	Jammed sprockets	Clean and check sprockets, making s

8.4 CLAMPS DEVICE - PROBLEMS

INCONVENIENTS	CAUSE	REMEDY
CLAMPS DO NOT TIGHTEN THE BAR	The cylinder does not work.	Check the hydraulic system operation.
	Failure of a tightening clamp.	Replace the broken clamp.
	Low pressure	Adjust pressure, see paragraph 5.7.2.
THE BAR-PUSHER IS NOT HELD	The holding pneumatic cylinder is jammed.	Release the cylinder as well as the holding levers.
	Failure of the holding rollers.	Replace the broken roller.
BAR-PUSHER AND CARRIAGE DO NOT ENTER THE GUIDE	The clamps unit is misaligned as to the guide axis.	Align the unit (apply to IEMCA technical assistance department).

8.5 GUIDES - PROBLEMS

ERROR	CAUSE	CURE
Sprockets jam	Racks and sprocket supports are dirty.	Clean the concerned parts.
Sprockets close in the wrong guide	Chips or dirtiness in the spring and in the sprockets control rack.	Clean the concerned parts.
Sprocket open during the bar rotation	Failure of the locking spring.	Replace the spring. Make sure the sprockets closing phase occurs correctly.
Bar vibrates excessively thus causing side skids	Sprockets are out of phase Sprockets are not closed.	Clean the sprockets closing unit and make sure the closing phase occurs correctly.

8.6 HYDRAULIC SYSTEM - PROBLEMS

ERROR	CAUSE	CURE
NOISY PUMPS	Insufficient or non-existent pump suction.	Clean the suction filter; make sure no throttling or damage occured in the suction line.
	Pump sucks air from the suction line.	Tighten the suction line unions.
	Pump sucks air because the tank oil level is too low.	Top up the oil
	The working pressure is too high.	Decrease the working pressure
	Wrong type of oil.	Change it with a recommended oil
	The pump is worn out.	Repair or replace the pump
SYSTEM PRESSURE MISSING	Oil level is too low	Top up oil
	Insufficient or non-existent pump suction.	Clean the suction filter; make sure no throttling or damage occured in the suction line.
	Pump sucks air from the suction line	Tighten the suction line unions
	Wrong type of oil	Change it with a recommended oil
	Failure of the pump.	Repair the pump
AIR IN THE SYSTEM AND/OR FOAM IN THE OIL	Oil level is too low	Top up oil.
	Leakage in the suction line.	Tighten the unions.
	Excessive resistance in the suction line.	Clean the filter
	Wrong type of oil.	Change it with a recommended oil

8.7 OPERATOR PANEL PARAMETER LIST

Message Nr.	Message description	Message type
1	AUTOMATIC CYCLE	SIGNAL
2	2 BAR FEEDER NOT RUNNING	SIGNAL
3	MANUAL CYCLE	SIGNAL
4	4 BAR LOAD DOOR OPEN	ERROR
5	5 AXIAL DISPLACEMENT NOT BLOCKED	ERROR
6	6 AIR NOT PRESENT	ERROR
7	7 BAR PUSHER POSITION WRONG	SIGNAL
8	8 CLAMP ARM	SIGNAL
9	9 BAR PUSHER BLOCKED	SIGNAL
10	10 BAR LOADING LEVER NOT IN POSITION	SIGNAL
11	11 NOT SYNCHRONIZED CLAMPS	SIGNAL
12	12 CLAMPS CLOSED	SIGNAL
13	13 GUIDE CHANNELS OPEN	SIGNAL
14	14 CHANGE DIRTY OIL FILTER	WARNING
15	15 CHANGE CLOGGED OIL FILTER	ERROR
16	16 GUIDE CHANNEL ADJ. POSITION SENSOR	SIGNAL
17	17 NO BAR LEFT	WARNING
18	18 ENCODER ERROR	FATAL ERROR
19	19 SENSOR FOR PART. OPEN GUIDE CHANNEL	ERROR
20	20 SENSOR FOR OPEN GUIDE CHANNEL	ERROR
21	21 NO REMNANT	FATAL ERROR
22	22 NO REMNANT EJECTION	FATAL ERROR
23	23 BAR PUSHER BLOCKED	ERORR
24	24 REMNANT …	SIGNAL
25	25 MAGAZINE FAILURE	ERORR
26	26 BAR INTR. INTO THE COLLET WRONG	FATAL ERROR
27	27 ENCODER POSITION	ERROR

28	28 AUT. IMPULSE PHASE	SIGNAL
29	29 FLAG NOT SYNCHRNIZED	FATAL ERROR
30	30…	SIGNAL
31	31…	SIGNAL
32	32 CHECK MAGAZINE OVERLOAD SWITCHES	ERROR
33	33 CHECK BAR FEEDER OVERLOAD SWITCHES	ERROR
34	34 EMERGENCY BUTTON PRESSED	FATAL ERROR
35	35 CLOSED GUIDE CHANNELS	SIGNAL
36	36 BLOCK BAR PUSHER	SIGNAL
37	37 GO TO ZERO POSITION	SIGNAL
38	38 MOVE BAR PUSHER FORWARD	SIGNAL
39	39 OPEN GUIDE CHANNEL OR FEED BAR P.	SIGNAL
40	40 CLOSE COVER	FATAL ERROR
41	41 LATHE DOORS SAFETY ACTIVATED	SIGNAL
42	42 MANUAL MODE BLOCKED - NO COLLET OPEN	SIGNAL
43	43 SAFETY DISAB. SWITCH ACTIVATED	SIGNAL
44	44 NO GUIDE CHANNEL LUBRICATION	ERROR
45	45 FAILURE DURING BAR CHANGE	FATAL ERROR
46	46…	WARNING
47	47…	WARNING
48	48 LOBSTER LIFTING FAILED	FATAL ERROR
49	49 BAR PUSHER SENSOR BACK	FATAL ERROR
50	50 CHECK SENSORS S4.7-S5.0-S5.1-S5.2	FATAL ERROR
51	51 SENSOR FOR CLOSED GUIDE CHANNELS	FATAL ERROR
52	52 TIME-OUT ERROR - STOP FROM LATHE FAILED	FATAL ERROR
53	53 BAR PUSHER ENGAGEMENT FAILED	FATAL ERROR
54	54 …	
55	55 DRILLING UNIT OUT OF POSITION	SIGNAL

56	56 NO MACHINING PROCESS	SIGNAL
57	57 HEADSTOCK MOT. INVERTER PROTECTED	ERROR
58	58 SPINDLE MOTOR INVERTER PROTECTED	ERROR
59	59 PULL BAR BACKWARDS	SIGNAL
60	60 DRILLING UNIT COVER	SIGNAL
61	61 READ FAILURE S1.6	ERROR
62	62 READ FAILURE S1.1	SIGNAL
63	63 BAR SHIFT	ERROR
64	64 LUBRICATING ERROR	ERROR
65	65 WORN-OUT TOOL	WARNING
66	66 REPLACE TOOL	ERROR
67	67 READ FAILURE S0.6	ERROR
68	68 READ FAILURE S0.7/1.1/0.6	ERROR
69	69 READ FAILURE S1.0	ERROR
70	70 READ FAILURE S1.1	ERROR
71	71 READ FAILURE S1.2	ERROR
72	72 READ FAILURE S1.3 (BAR STOP)	ERROR
73	73 READ FAILURE S1.4	ERROR
74	74 READ FAILURE S1.5	ERROR

Explanation of messages:

Warning rank	Meaning
SIGNAL	A signal is deactivated as soon as the cause is removed.
WARNING	A warning is still active after the cause has been removed. Press RESET to deactivate it.
ERROR	When an error occurs, the bar feeder is stopped as soon as it receives a STOP signal from the lathe. To deactivate the error, the bar feeder must receive a RESET signal.
FATAL ERROR	When a fatal error occurs, the bar feeder is stopped. A RESET signal is necessary to deactivate the error. If the drilling machine is working, its working cycle must be completed before the bar feeder is stopped.

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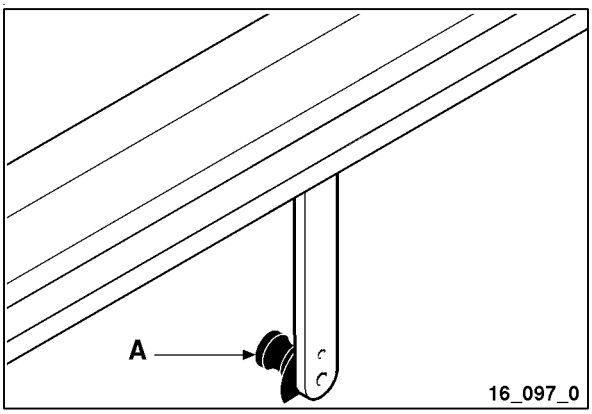
9.1 GUIDING SPROCKETS - REPLACEMENT

-
- Set the guide channel to its smallest diameter.
- Remove washers and retaining rings.
- Remove the sprockets.
- Install the new sprockets: be sure the pins corresponding to the smallest diameter are aligned to the pins on the bracket.
- Insert washers and retaining rings.

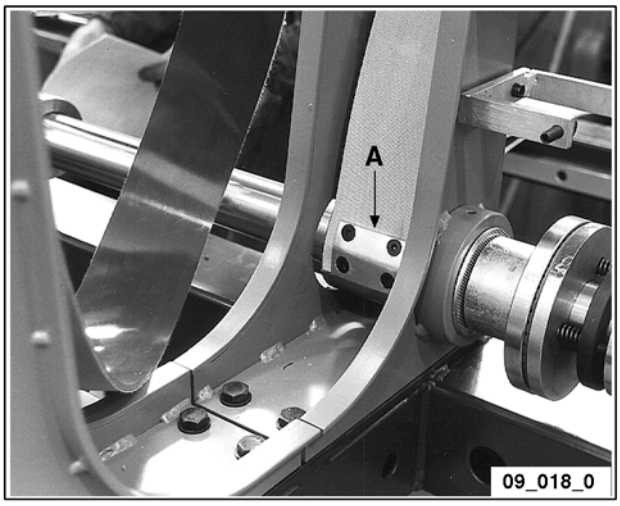
9.2 LOADING LEVERS ROLLERS - REPLACEMENT

- Cut roller (A) and remove it.
- Assemble a new roller.
- Repeat the operation to replace the other rollers whenever necessary.



9.3 SIR MS32 F LIFTING BELTS - REPLACEMENT

- Empty the bar magazine.
- By turning the relevant shaft, uncover plate (A) and disassemble it.
- Disassemble the broken belt and assemble a new belt.
- Repeat the above mentioned operations to replace other belts whenever necessary.



Belt stop signal check

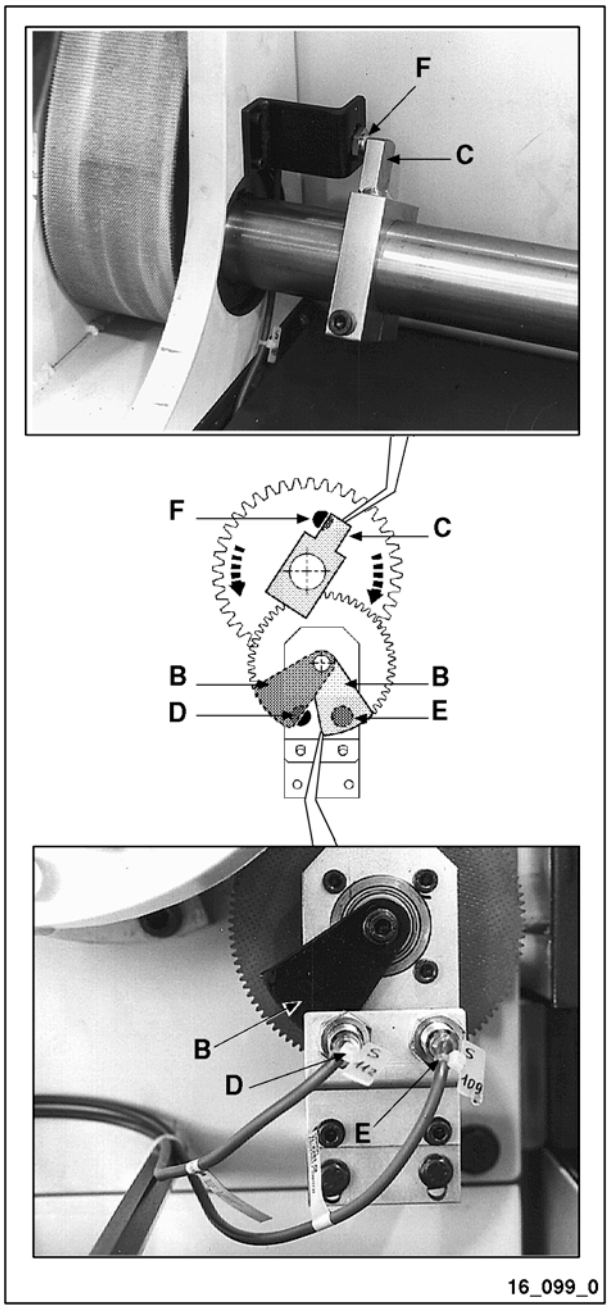
Once one or more belts have been replaced, check and if necessary adjust the position of the cams controlling the belts lowering and lifting.

- Lower belts completely.
- Cam (B)shall be at the low limit switch.
- Bring belts in the upper position.
- The cam (C) must be up in its end of stroke position.
- The cam (B) must cover sensor (E).

CAUTION:

Should upper belts be too tight, the relevant supports may bend.

Otherwise, a loosening of upper belts prevents some bars from reaching the selection device.

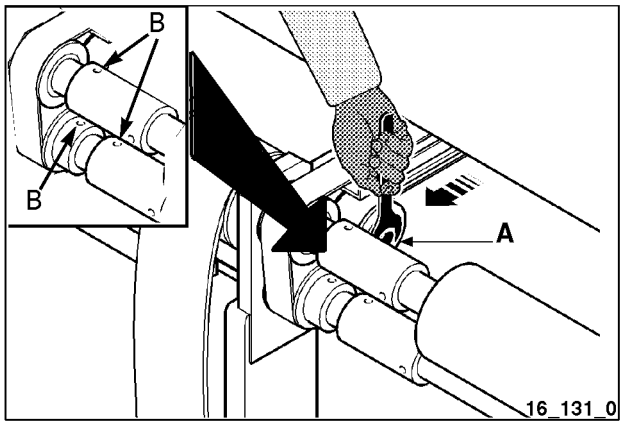


Legend

A Belt locking plate (see figure in previous page).
B Cam
C Cam
D Lower end-of-travel transducer
E Upper end-of-travel transducer
F Upper end-of-travel transducer

9.4 SIR MS32 F TRANSLATION BELTS - REPLACEMENT

- Loosen screw (A).
- Remove the spring pins from joints (B) and shift them along the shaft, so that the belt may be removed.
- Assemble a new belt.
- Replace joints and introduce the spring pins.
- Tighten the belt (see paragraph 7.2.2).
- Repeat the above mentioned operations to replace the other belts whenever necessary.

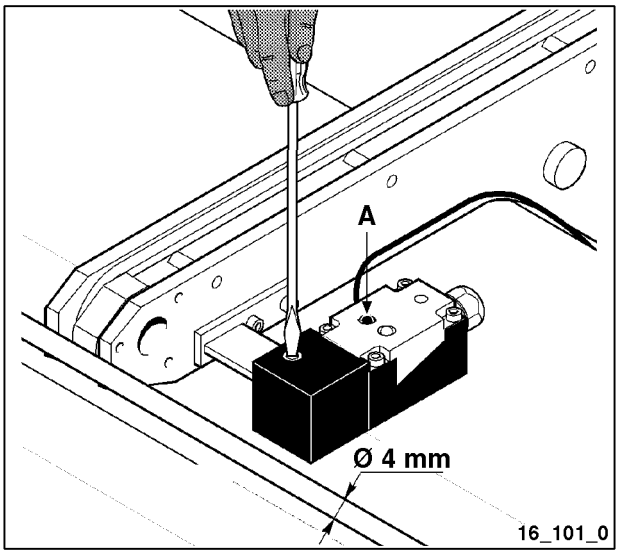


INFORMATION:

Upon request, a special polyurethane belt particularly resistant to oil, chipping and cutting bars, may be supplied (see the spare parts catalogue 9.15.).

9.5 CAPACITIVE SENSOR - REPLACEMENT

- Replace the capacitive sensor.
- Position a 4 mm ø bar on the lifted loading levers.
- Adjust the sensitivity of the sensor by setting it at the minimum value.
- Gradually increase the sensibility until the luminous led (A) switches on.
- Said led must switch off when the bar is removed.



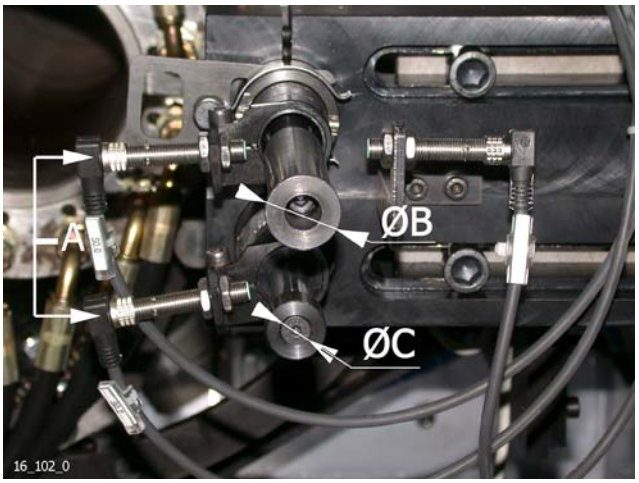
9.6 GUIDE CONTROL SENSORS - REPLACEMENT

Guide closing sensors

- Replace the sensors (A).
- Adjust their position on the diameter Ø (B) of the rod, not on diameter Ø (C).

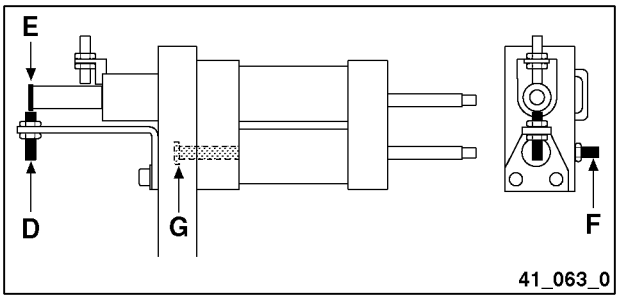
CAUTION:

If the position of the sensors were adjusted on diameter ø (C), they would be cut during rod extension.



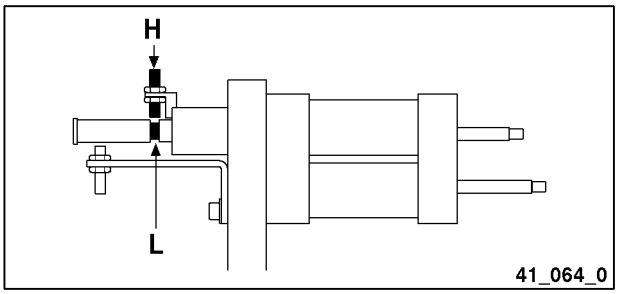
Guide opening sensors

- Replace the sensor (D). Adjust its position so that it may detect the presence of collar (E).
- Replace sensor (F). Adjust its position so that it may detect the presence of washer (G).



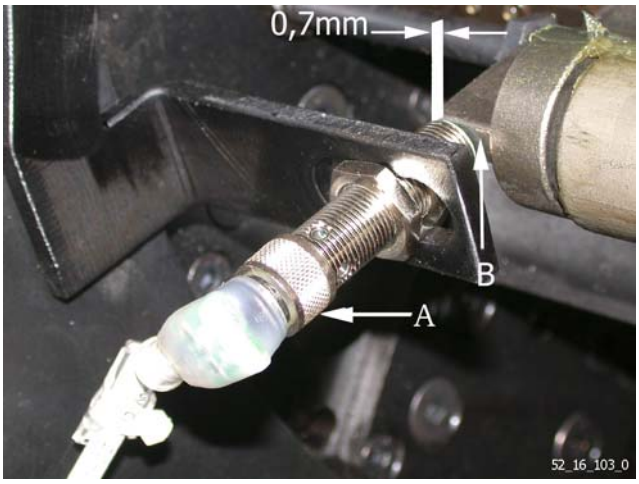
Guide pre-opening sensor

- This sensor is operated when the equipment is working in the "Staggered Sprockets Operation Mode".
- Replace sensor (H). Adjust its position so that it may detect the presence of groove (L).



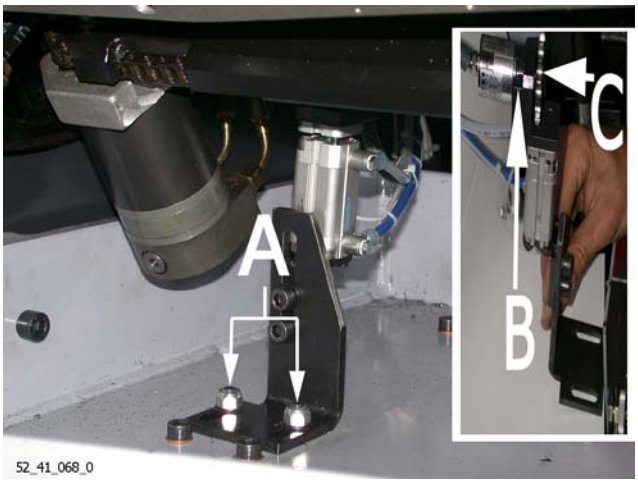
9.7 BAR PUSHER BACKWARD LIMIT STOP - REPLACEMENT

- Replace sensor (A).
- Adjust its position, which must be at 0.7 mm from the end of the truck (B).



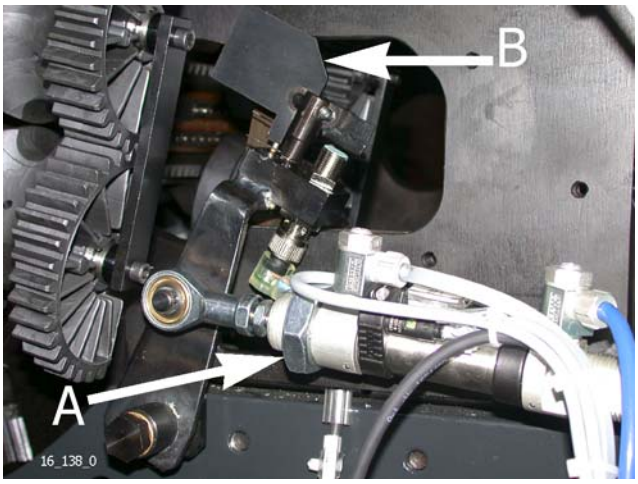
9.8 ENCODER - REPLACEMENT

- Disassemble the encoder unit from the bar feeder by unscrewing screws (A).
- Loosen headless screw (B).
- Disassemble the encoder by loosening screws (C) and rotating it clockwise by a few degrees.
- Assemble the new encoder by performing the same operations the other way round.



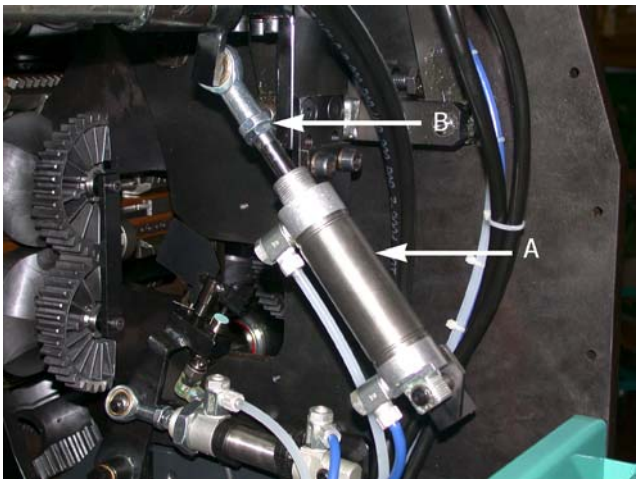
9.9 SHORT FEED POSITIONING CYLINDER - REPLACEMENT

- Replace cylinder (A).
- The centre of the short feed positioning stop (B) must be on the feeding axis.



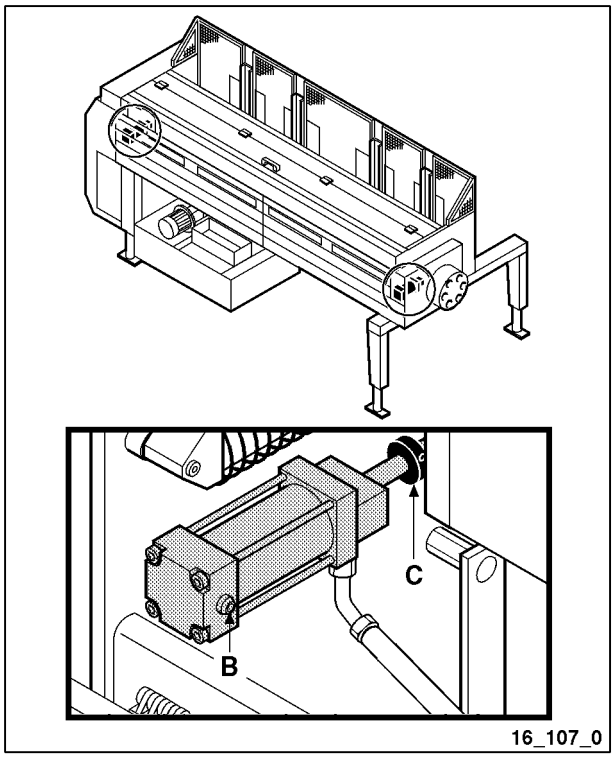
9.10 DRUM HATCH CYLINDER - REPLACEMENT

- Replace cylinder (A).
- When the cylinder is at its limit switch (internal rod), the hatch shall be in a vertical position parallel to the loading levers. As far as adjustment is concerned, screw or unscrew the articulated head (B).
- The sensor located on the cylinder should mark the closure of the door even if the cylinder is not in the end of stroke position.

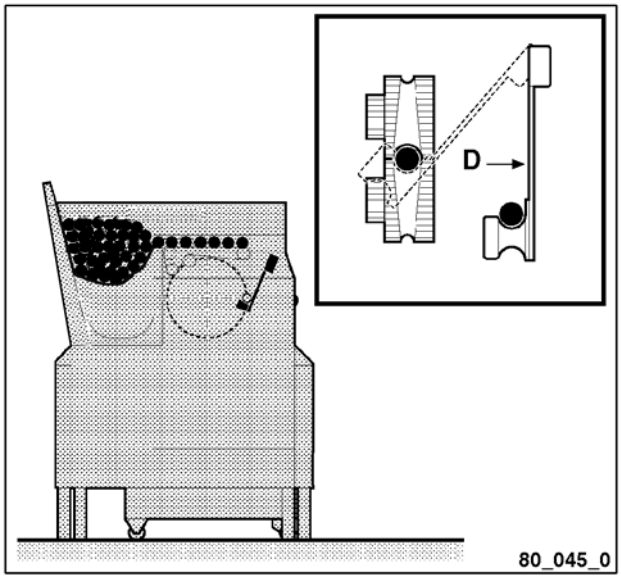


9.11 BAR FEEDING DEVICE CYLINDERS - REPLACEMENT

- Replace cylinders (B).

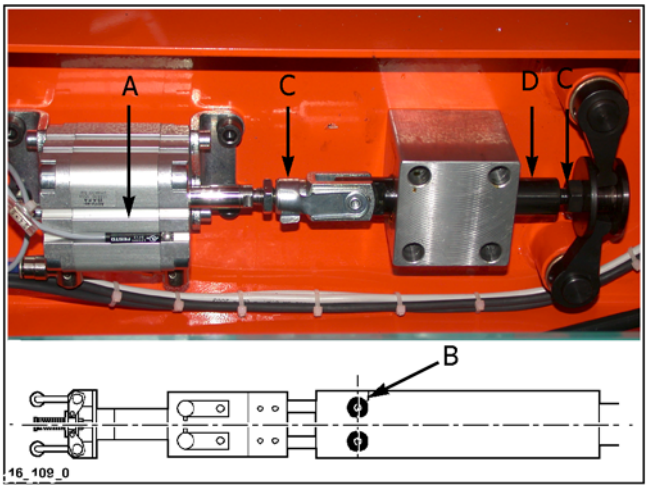


- The cylinders stroke must be adjusted so that the bar feeding occurs on the feeding axis.
- Adjust through ring nut (C).
- Further adjustments should be performed on slots (D) located on the lever.



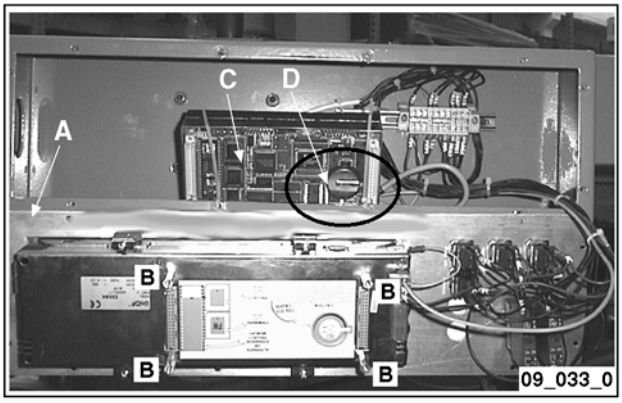
9.12 BAR-PUSHER GRIP CYLINDER - REPLACEMENT

- Remove the clamps device case.
- Replace cylinder (A).
- The cylinder stroke must be adjusted so that rollers (B), when at standstill, are upright with the feeding axis.
- To carry out adjustment, untighten nuts (C), screw or unscrew threaded spacer (D). Tighten nuts (C).
- The sensor located on the cylinder should send the signal when the rollers are in the rest configuration.



9.13 KEYBOARD BATTERY - REPLACEMENT

The battery should be replaced every year or, in any case, when the battery warning light 23[sir_tasto 23] sends a red flashing signal.



INFORMATION

If the battery is not replaced, the date and time will disappear from the display.

- Cut off the bar feeder supply.
- Unscrew the key-board's panel (A).
- With a screwdriver, unscrew (but not completely) the 4 angle screws (B) of the double back box (C). Remove the double back box by keeping it parallel to the surface to which it was fastened.
- Remove the battery (D) from its compartment.Insert the new battery (type: lithium 3-volt CR 2430)

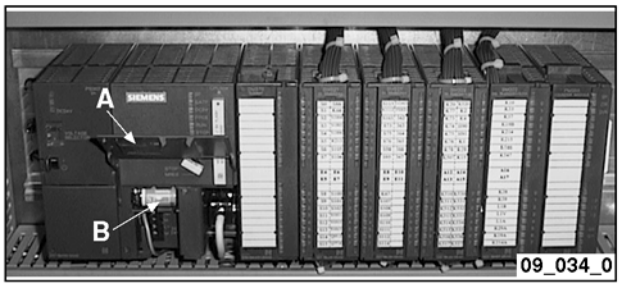
DANGER - WARNING:

Battery explosion danger if inserted with reversed polarity.

- Fix the double housing (C) to the panel again and tighten the 4 screws (B).
- Connect the bar feeder and check that the battery charge is signalled.

9.14 PLC BATTERY - REPLACEMENT

Replace the battery every year.



INFORMATION

If the battery is not replaced, the "PLC/CNC software" data will be deleted.

INFORMATION

When replacing the battery, make sure that the bar feeder is live. Warning: if the battery is replaced with the bar feeder off, I.E. with PLC not live, the bar feeder parameters will be cleared from the PLC memory and will have to be immediately restored.

- Open the cubicle.
- Uplift the small door (A) and remove battery (B) from its housing by disconnecting the socket.
- Fit the new battery (type: lithium 3.6-volt 1/2 AA): be careful to fit the connector correctly.
- Close door (A).

9.15 RECOMMENDED SPARE-PARTS - LIST

Table 1.Recommended spare-parts.

Ref.No.	Description	Features	Pcs.
31240017	Encoder		1
680310720	Upper guide ch. 19-33-43-53		48
680310730	Lower guide ch. 19-33-43-53		48
680310090	Washer		96
680380220	Bar Puhser Truck		1
680380490	Chain MS52 L=33		1
680380150	Chain MS52 L=38		1
680390010	Rack		10
680389026	Bar Pusher Quick Coupling		6
680380390	Upper Chain Guide		6
680380400	Lower Chain Guide		6
680380350	Chain deviator		6
680380500	Motor Pinion		1
680320720	Loading Roller		8
41311062	UFI Cartridge		1
41311025	Fam Filter		1
41311026	Fam Filter		1
612071731	Pressure Switch P=1 bar		1
612071751	Pressure Switch P=1,2 bar		1
612071741	Pressure Switch P=0.7 bar		1
072009282	Bundle Lifting Belt		4
24371543	Bundle Shifting Belt		4
001033100	Bar Stroke Limiter Clutch Plate		2
32210004	SIEMENS Capacitive Sensor		1
680130060	Rack Shifting Chain		1
685030990	Rack Lifting Chain***		1
41142008	Coil EDH		1

(*) On demand we can supply a special polyurethane belt (DESMOPAN 385) offering high resistance to oils, scratches and sharp bars.

To be continued...

Ref. No.	Description	Features	Pcs.
41142016	Coil MD		2
41142002	Valve PPRC		1
41142018	Valve VR		1
41142007	Ev EDH		1
41142005	Ev EDH		1
41142004	Ev EDH		1
41142003	Ev EDH		1
41142023	Valve PPRC		1
41142019	Valve RPC		1
612061691	Plug		1
34320013	Connector		1
32210012	Finec Bero M12 Inductive Sensor		1
32210401	Finec Bero M8 Inductive Sensor		1
31210051	Limit Switch IFM NA		1
31210052	Limit Switch IFM NC		1
32215004	Sensor IFM		1
680350250	Clamp		3
D60151801	Revolving Tip SIR D=18	DELIVERED WITH EVERY BAR FEEDER	6
D67101841	Bar Pusher SIR 18 - XL		6
D60153201	Revolving Tip Sir D=32		6
D67103241	Bar Pusher SIR 32 - XL		6
D60154201	Revolving Tip SIR D=42		6
D67104241	Bar Pusher SIR 42 - XL		6
D60155101	Revolving Tip SIR D=52		6
D67105241	Bar Pusher SIR 52 - XL		6
D60154501	Revolving Tip SIR D=45		6
D67104541	Bar Pusher SIR 45 - XL		6
D60155601	Revolving Tip SIR D=56		6
D67105641	Bar Pusher SIR 56 - XL		6
23320004	Linear Slide guide		2
685011250	Oil Tank Gasket	TO BE REPLACED PERIODICALLY (every six months)	2
31210105	Schunk Sensor		1
685011100	Camping Unit		3
685011320	Spacer		6
31214540	Balluff Sensor		1
685010080	Bushing		1

INDEX

10.1 AIM OF THE PRODUCT

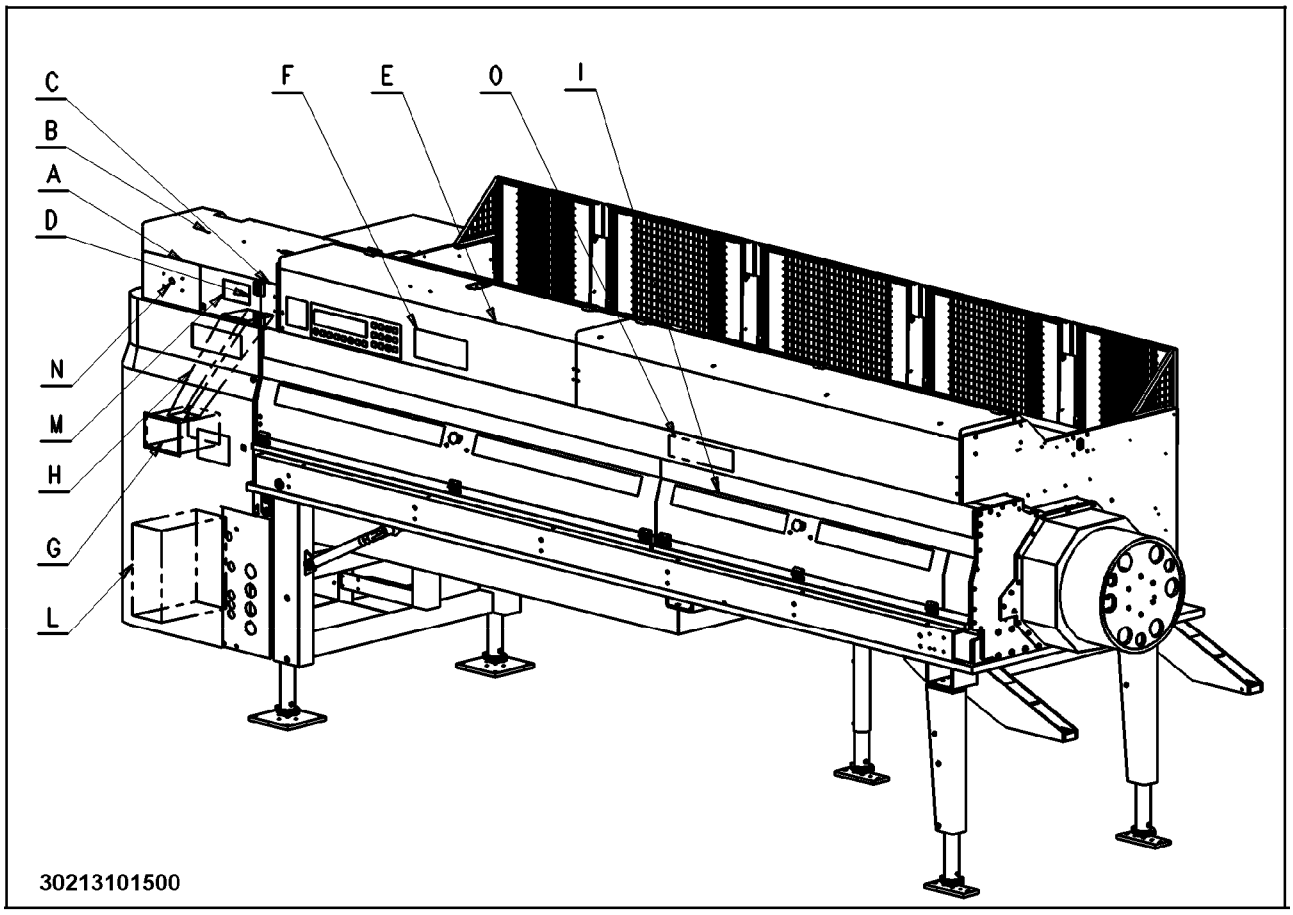
Thanks to the use of a drilling machine it is possible to drill the end of a bar automatically before it is loaded in the bar feeder drum.
The end of the bar being drilled, it is possibile to hold the bar by means of a pipe gripper and to use a bar pusher the diameter of which is as large as the bar diameter, or even smaller; in case the diameter of the bar pusher is smaller than the diameter of the bar, the spindle reduction tubes should fit the diameter of the bar and not the diameter of the bar pusher.
The bar can be thus precisely fed; oscillations and vibrations caused by rotating bars, which could cause damages during workpiece machining, can be dampened.

10.2 GENERAL DESCRIPTION OF DRILLING MACHINE

10.2.1 MAIN ELEMENTS

The drilling machine consists of four main elements:
- The drilling unit, located on the upper rear side of the bar feeder (visible through the door M): this unit performs facing operations an grips the bar while drilling it.
- The feeding unit, located on the upper middle part of the bar feeder (visible through the upper inspection window on the operator side and accessible from the upper rear magazine door): this unit feeds the bar forward for drilling and facing operations and draws it back to be loaded in the bar feeder drum.
- The chip removal unit, located in the rear side of the bar feeder, to convey chips shaved away as bar are machined.
- The lubrication unit, integrated on the rear door of the bar feeder.

The drilling machine is also provided with an hydraulic drive unit, which is located on the rear side of the bar feeder, as well as with a wiring panel enclosed in the bar feeder wiring box.



(A) SPINDLE: motor drive moving the drilling unit (main machining movement).

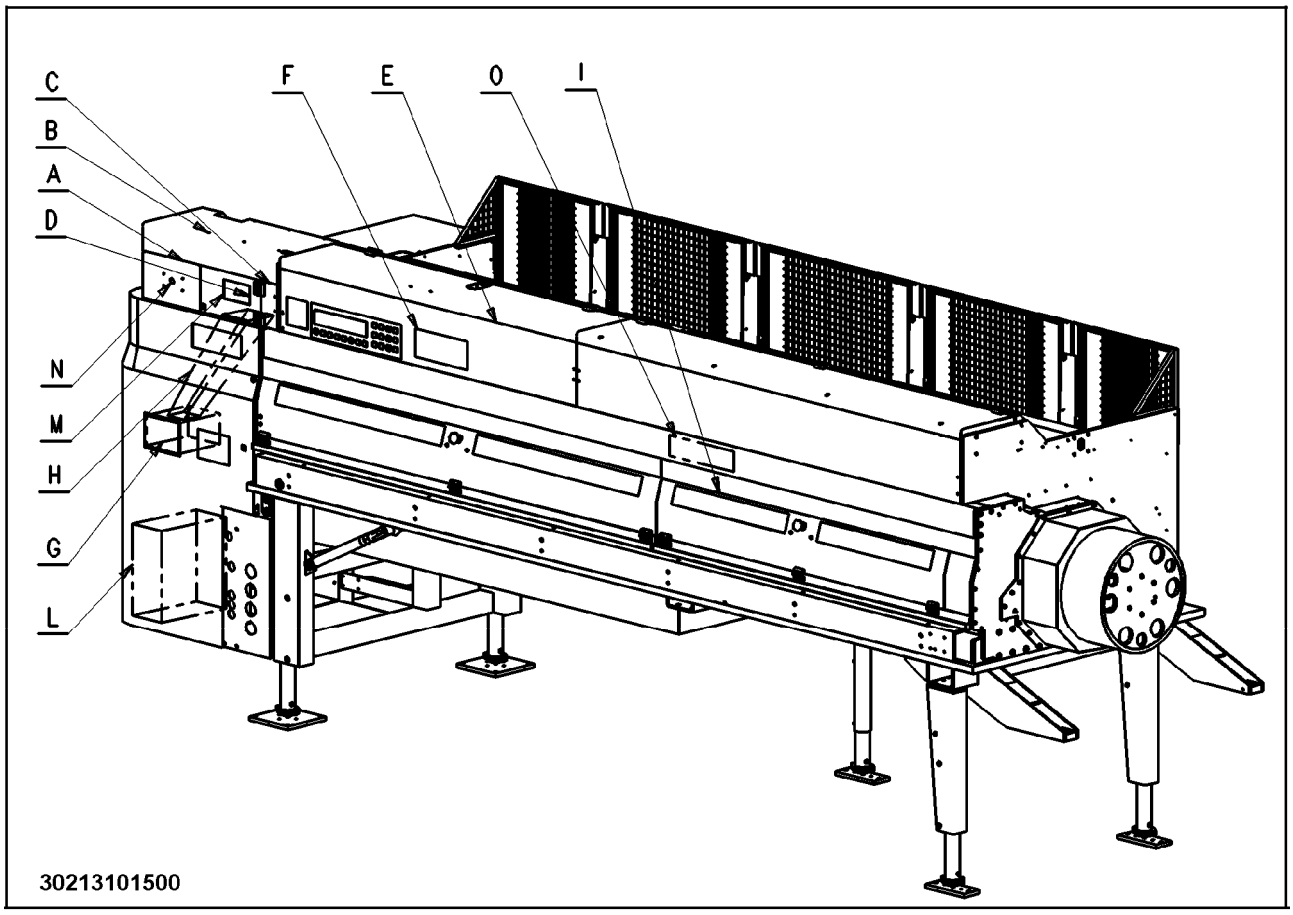
(B) FEEDING MOTOR: spindle motor drive performing the secondary machining movement.

(C) GRIPPER: element holding the bar during facing operation.

(D) FLAG: element detecting the correct position of a bar in the gripper.

(E) CHUCKS: gripping system drawing the bar during its axial displacement towards the drilling unit and during its backward stroke.

(F) ENCODER: detection system for bar forward and backward strokes determining bar displacement during facing operation.



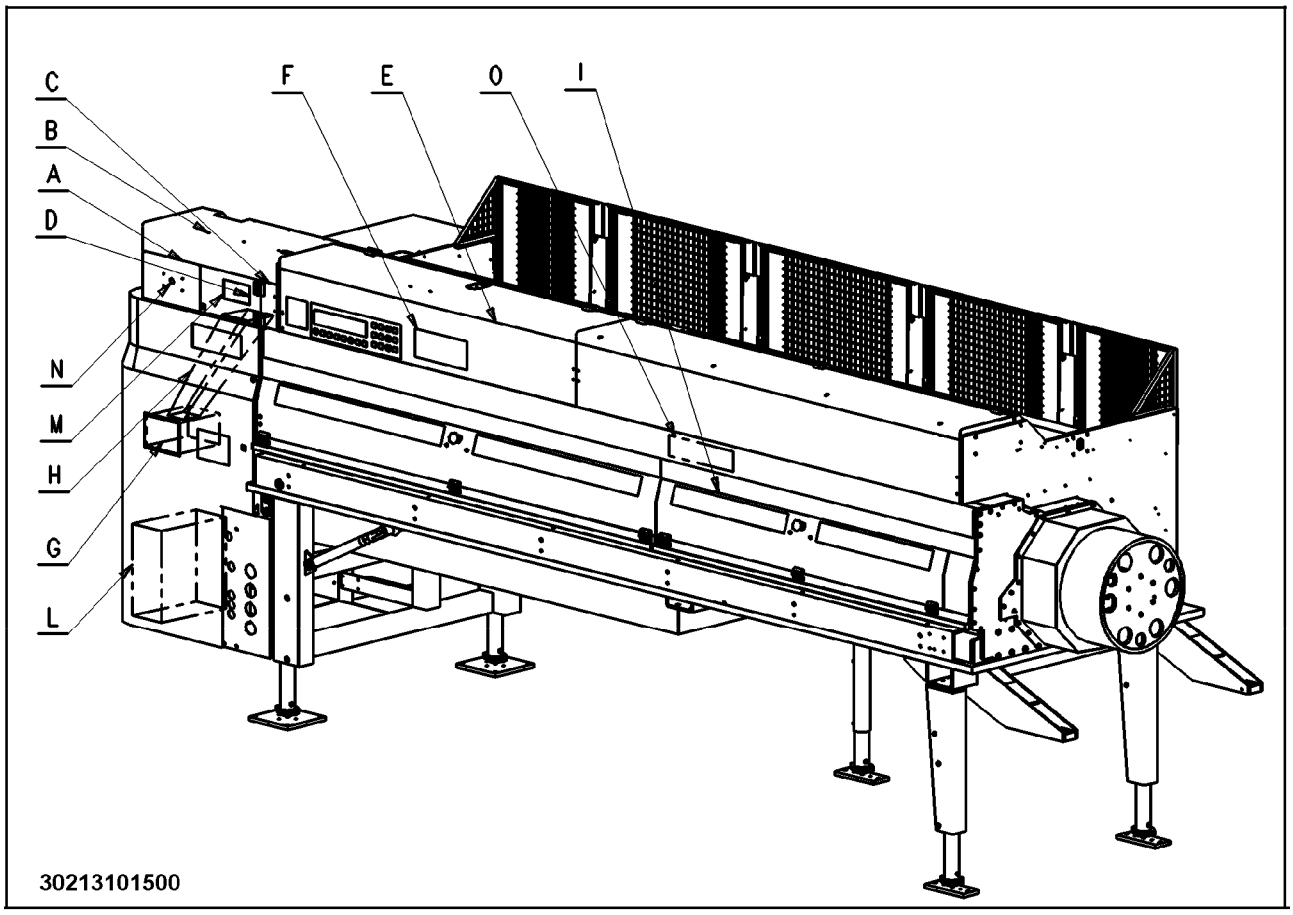
(G) CHIP BOX: box containing metal chips.

(H) CONVEYOR PLATE: element conveying the metal chips to the chip box.

(I) LEVER ADJUSTMENT UNIT: lever adjustment system for the regulation of the levers lifting the bar until it is aligned to the drilling unit.

(L) LUBRICATION: cooling and lubricating system for spindle tool.

(M) ACCESS DOOR: access door to reach the spindle tool, provided with an inspection window for bar machining control and with a scale for workpiece displacement control.



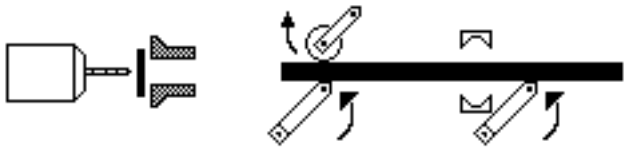
(N) DRILLING MACHINE EMERGENCY BUTTON: emergency button to stop drilling machine operation.

(O) INSPECTION WINDOW FOR LEVER ADJUSTMENT: window for the control of lever displacement adjustment.

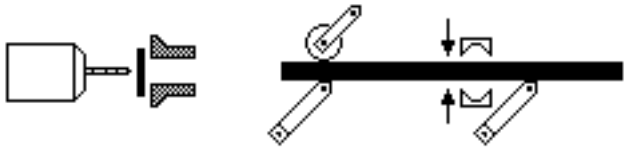
10.2.2 WORKING CYCLE - GENERAL DESCRIPTION

A new undrilled bar is placed on the loading levers. Sensor S 5.3 is active and S 5.4 is off.

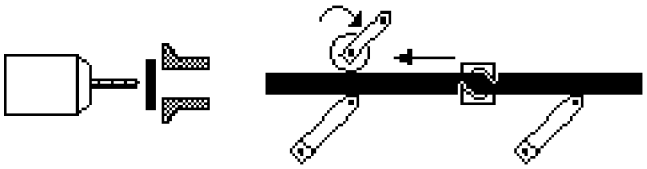
The bar is lifted until it is aligned to the drilling unit. The solenoid valve Y124.2 is energized until activation of S1.0 sensor.



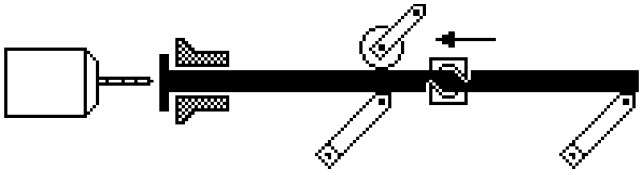
The feeding unit locks the bar. The solenoid valve Y124.3 is energized until sensor S1.1 is shut off.



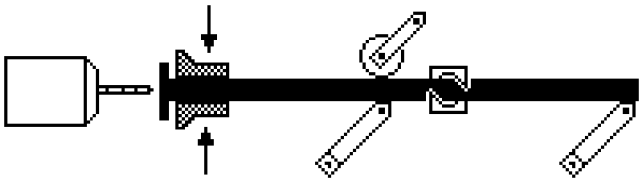
The feeding unit moves the bar to the locking gripper. The solenoid valve Y124.4 is energized.



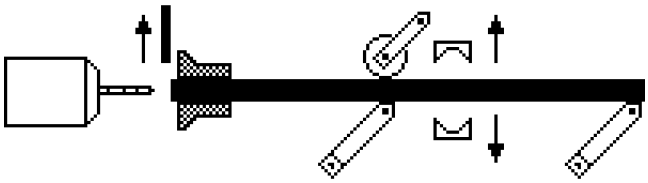
The bar reaches the drilling position indicated by the flag. The solenoid valve Y124.4 is disabled upon disabling of S1.3 sensor.



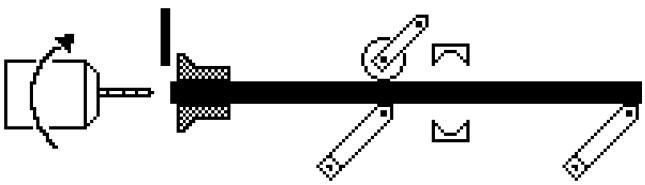
The collet closes and holds the bar. The solenoid valve Y124.6 is energized.



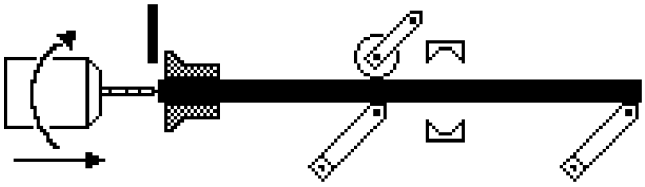
The feeding unit jaws open and release the bar. The solenoid valve Y124.3 is disabled upon activation of sensor S 1.1, the flag disappears, the solenoid valve Y124.7 is activated until activation of sensor S1.4 and disabling of S1.3.



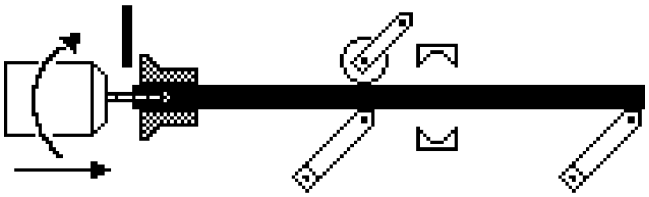
The spindle will now start rotating.
PLC A125.4 and A125.5.outputs are enabled.
A125.0 activates hole lubrication.



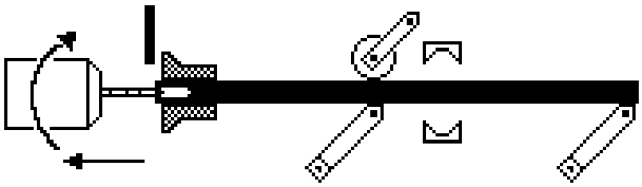
The spindle will now approach the bar.
A125.1. output is enabled.



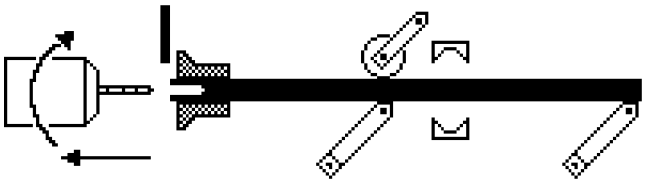
The drilling unit moves forwards to perform drilling operation until sensor S1.5 is activated.
Hole lubrication is stopped, A125.0 is disabled.



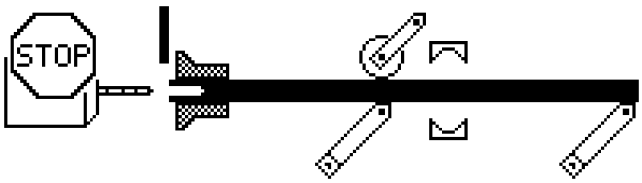
When drilling is complete, the drilling unit goes back. A125.1, A125.2 , A125.4 and A125.5 outputs are enabled.



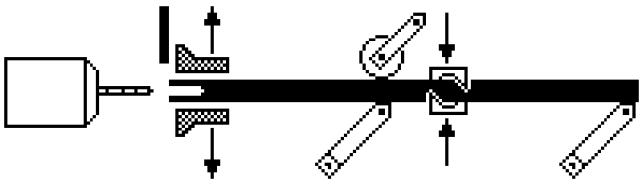
As soon as it reaches position zero, the drilling unit stops.



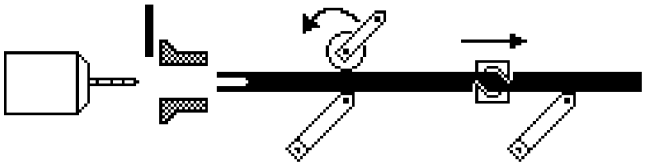
The spindle stops on position zero. Sensor S1.6 is enabled.



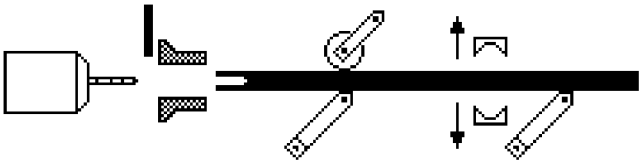
The feeding unit grips the bar again.
The solenoid valve Y124.3 is energized until S1.1 sensor is disabled.
The collet opens and disables solenoid valve Y124.6.



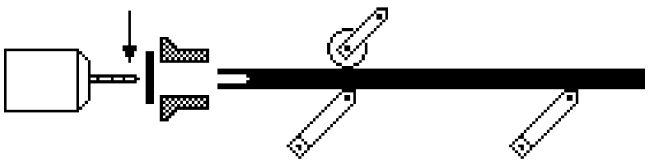
The feeding system performs the backstroke. The bar is pulled out of the gripper as the feeling unit is drawn back while the encoder is controlling the unit backstroke. The solenoid valve Y124.4 is disabled and sensor S06 is activated.



The feeding system releases the bar. The solenoid valve Y124.3 is deenergized upon activation of S1.1 sensor.



The flag returns to rest position. The electrovalve Y124.7 is disabled as soon as the sensor S1.3 is enabled and sensor S1.4 is off.

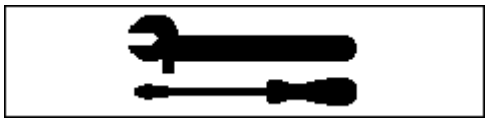


The lifting levers return to wait position before loading the bar into the bar feeder drum (Sensor S1.0 is disabled).

If the photocell S1.2 is off the electrovalve Y125.7 is energized.

Adjustment...

This message is displayed when the drilling machine is moving in manual mode.



10.2.3 APPLICATIONS OF DRILLING MACHINE

A drilling machine can drill bars from Ø 20mm (using a Ø 15drilling tool) up to Ø52 (using a Ø15 or a Ø20 drilling tool). By means of a suitable drilling tool and of accurately set drilling parameters, if is possible to drill metal bars the hardness of which can reach 250 HB.
The hole diameter should in no way be smaller than 10 mm so as to allow the tube gripper to hold the bar correctly, and should not be larger than 20 mm otherwise the spindle nominal power would be exceeded during machine operation 3000 rpm..

DANGER-WARNING

The drilling device is not suitable for the preparation of inflammable material bars.

CAUTION

The customer will need to install a suction system with continuous suction and a minimum capacity of 36 m^3 /h.

Air must be filtered for oil separation before being reintroduced in the environment.

ATTENTION!

For a correct use of the lubrication system, the drilling tool and the tool holder should be provided with an axial opening for the nebulized lubricant. Should the operation area not be properly lubricated, the tool lifetime as well as the lubrication system seals cannot be ensured and the hole could not be properly carried out.

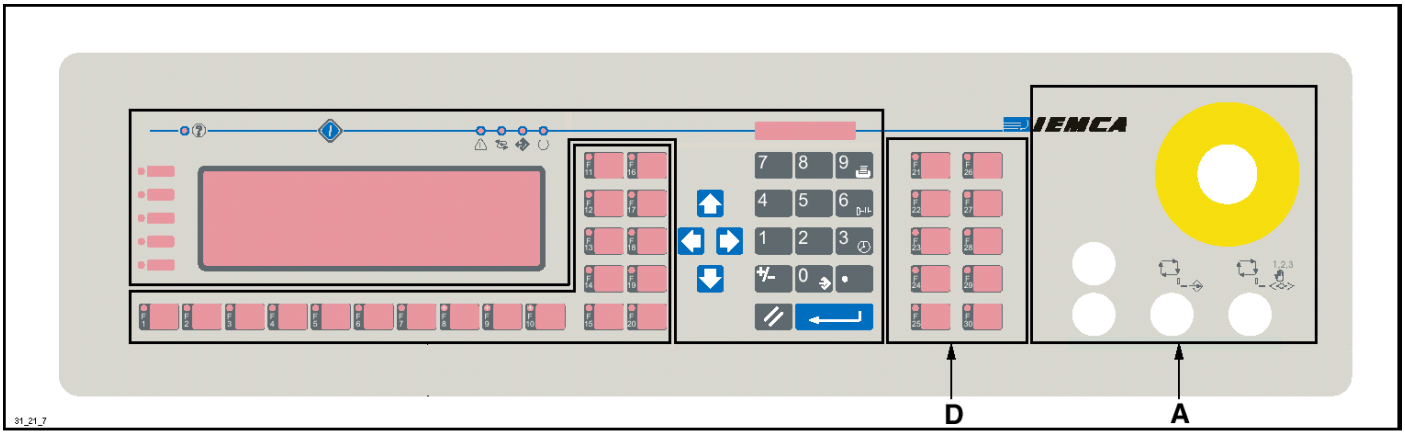
For a correct operation, make sure the hole is coaxial to the bar.
It is necessary that the bar end is a little chamfered (the bar end surface should be larger than the hole to be drilled) and perpendicular to the bar axis. The bar drilling unit has been built so as to prepare symmetrical bars, in case of bars with a not-circular section (hexagonal or sqare types), contact the IEMCA service centre to set correctly the device. For what not included here, refer to the limits indicated in the bar feeder instructions.

DANGER-WARNING

It is also important to check at regular intervals that the spindle guide system has no backlash which would not ensure a correct drilling position.

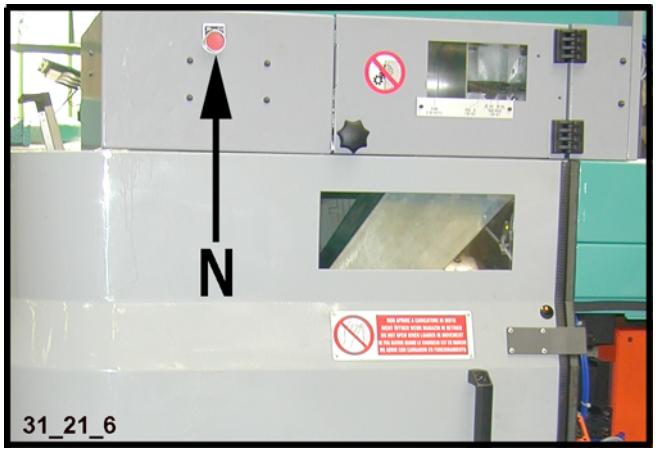
10.3 INSTRUCTIONS FOR THE USER

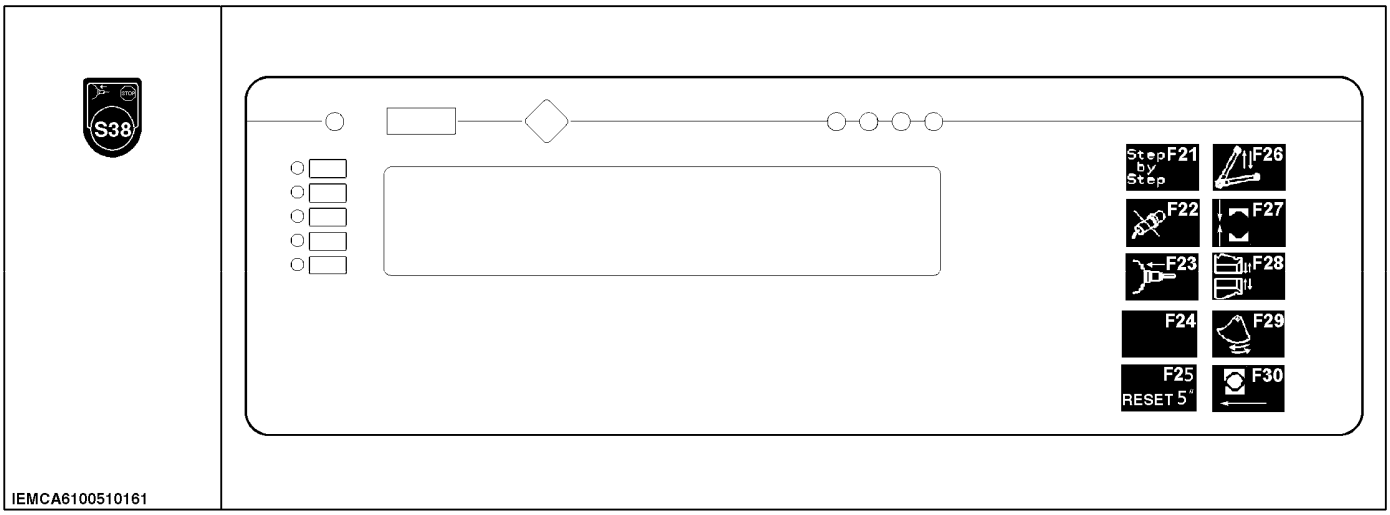
10.3.1 DESCRIPTION OF CONTROL DEVICES



The drilling machine control devices are on the right side of the operator's panel.

The bar feeder emergency buttons (located on the operator's panel and inside the wiring box) may stop the operation of the bar feeder as well as of the lathe and of the drilling machine; pressing emergency button N on the contrary, which is located next to the drilling unit, it is possible to stop the drilling machine operation and the loading levers only, allowing the drilling machine to be drawn back.

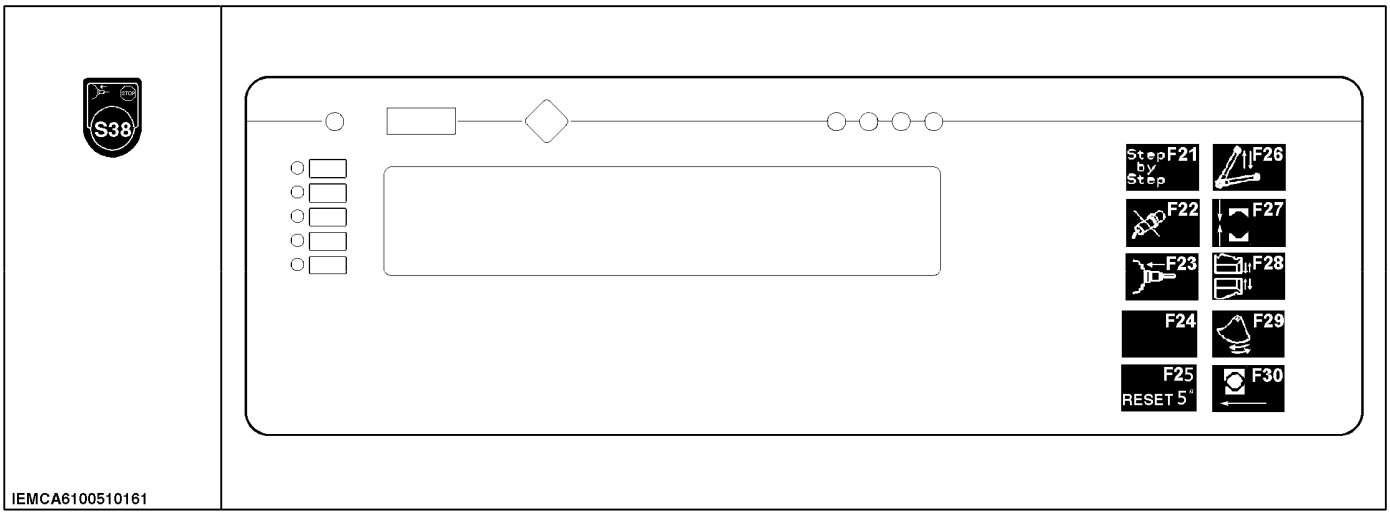




F21 Button STEP BY STEP OPERATION
Press F21 to activate Step by Step operation.
After pressing the button, the button led will light up. Press F21 to restore drilling machine working cycle. In case F22 lights up because of signal failure of microswitch sensors, press both F21 and F22 at the same time to restore drilling machine working cycle.

F22 Button SENSOR DEACTIVATION
When the button led lights up, the drilling machine sensors can be deactivated by pressing this button (For example, if no bar is present, it is possible to press this button for step by step operation).

F23 Button SPINDLE RETURN
By clicking this button when the spindle has not completely left the bar being machined, the spindle returns to the rest position.
To carry out the above mentioned operation, the drilling machine working cycle must be over, could also be displayed or keep button F25 pressed.
Keeping button F23 pressed, it is possible to reach the retracted position to replace the spindle tip, the inserts and the gripper.



F24 Button NOT ACTIVATED

F25 RESET 5" Button
To activate the RESET button, manual operation mode must be selected.
Press this button during Step by Step operation to stop the process.
Press this button to release buttons F26÷F29 in case the LEDs are activated.

F26 Button LEVER UP/DOWN
Press this button to start movement, press again for lever return.

F27 Button CLAMPS OPEN/CLOSE
Press this button to start movement, press again for clamps return.

F28 Button BAR CLAMPING VICE OPEN/CLOSE
Press this button to start movement, press again for vice return.

F29 Button BAR STOP DISAPPEARS
Press this button to start movement, press again for bar stop return.

F30 Button CLAMPS MOVING FORWARD
Press this button to move the bar towards the drilling unit. Release the button and press it again for the return of the drilling unit.

Reset the drilling machine following these instructions:

1) The drilling unit must be in wait position, otherwise press the RESET button to move it to wait position.

2) Keep pressing button F25 for 5 seconds: all the devices on the drilling machine will be released.

3) If a bar is closed in the clamp, the levers will not come down.

4) The motors of the drilling unit will stop.

5) Press button F27 and then F30 to move the bar backward, after the motor has been driven backward and the bar detecting photocell has been released.

6) Press button F25 again to open the chucks of the feeding unit and to move down the loading levers to the rest position.

S38 Button Drilling machine stop/Spindle return

- Press this button to restore the drilling machine to normal operation (alarm nr. 60 " Drilling machine cover" will be displayed). Keep pressing the button to let the spindle return to the rest position "0 position". Pressing button F23 it is possible to reach the retracted position.
- This position allows spindle or tool maintenance. After maintenance has been completed, press button S32 to reset alarm nr. 60 and restore drilling machine to normal operation.
- If button S32 is pressed as soon as alarm nr. 60 " Drilling machine cover" is displayed the drilling machine is restored immediately to normal operation.
  Press this button to stop drilling machine operation without stopping either bar feeder or lathe working cycles.

Press button S38 and then button F30 to restore the position of the devices of the drilling machine and restore operation.

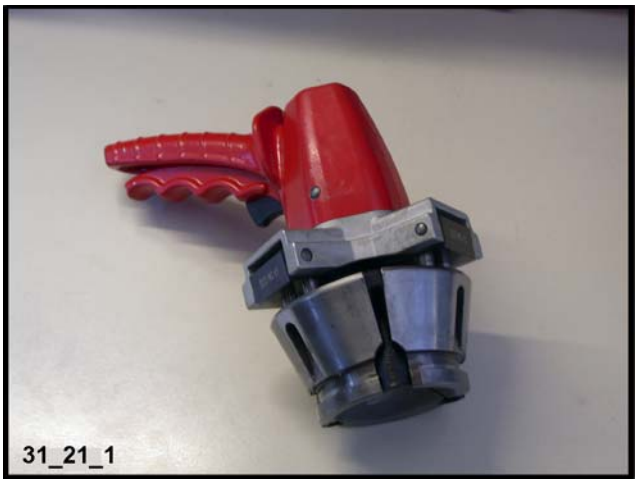
10.3.2 USE AND ADJUSTMENT

The automatic operation mode of the drilling machine is activated when parameter 16 is set to 1 from the operator's panel.
If parameter 16 is set to 0, no bar facing cycle will be performed on the bar feeder.

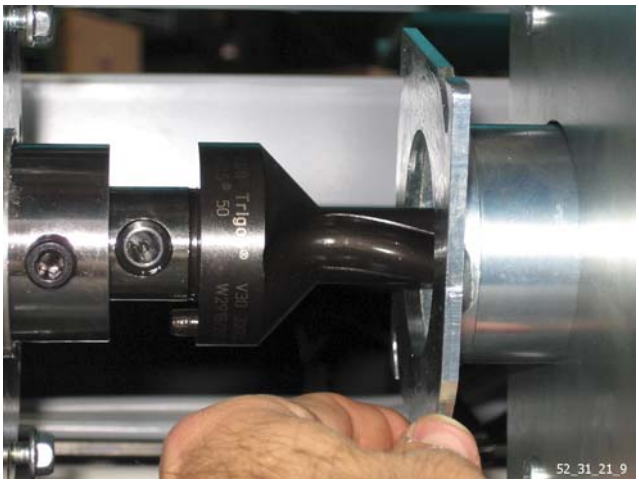
INFORMATION

Before starting the bar facing cycle on the bar feeder, the following adjustment should be carried out when bar feeder and lathe are not working and the drilling unit is in retracted position ("home position" or zero point).

1) By means of a hand-puller or a pneumatic puller, ass a Hainbuch gripper (bar clamping system) to the drilling unit; the size of the gripper should be 65 and should fit the bar diameter (gripper code is Hainbuch SK65BZ##, where ## indicate the bar diameter in mm).

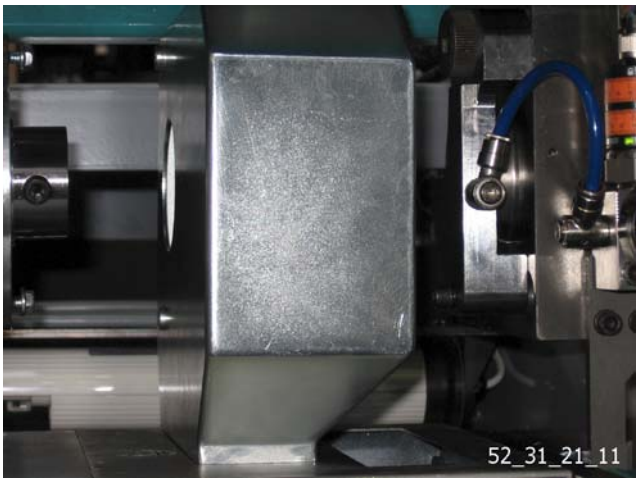


2) Locate the tool protection cover against the machine cover to remove it.



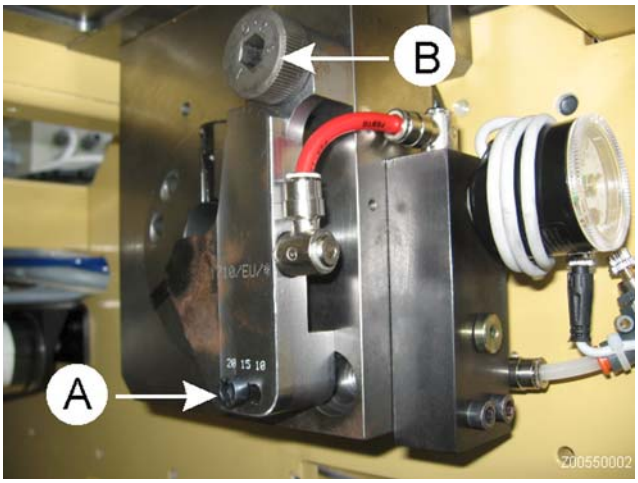
3) Remove the drilling tool (if available).

4) Loosen the screws on the drilling machine cover, remove the cover and the tool protection cover.

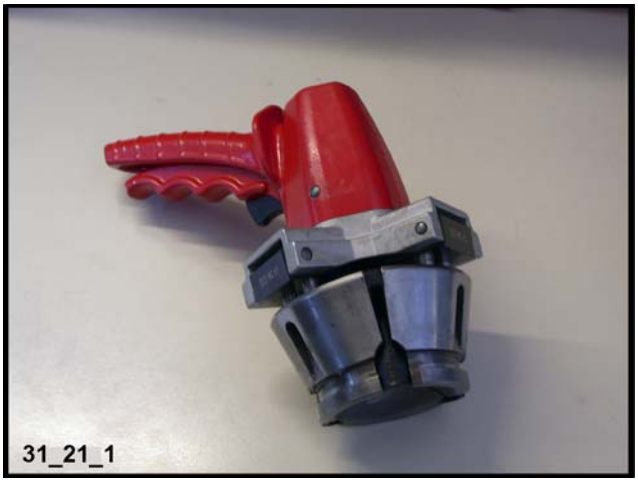


5) Remove the screw (A) referred to the barstop block.

6) Turn the barstop (B).



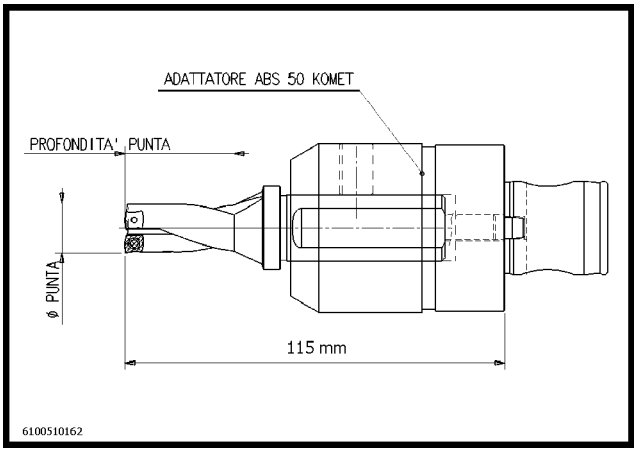
7) Use the special puller to remove or replace the Hainbuch gripper.



8) Add a spindle tip on the spindle, making sure it is suitable to the material to be drilled. The diameter of the spindle tip should be at least 5mm smaller than the bar diameter.

Install the spindle tip on one ABS 50 KOMET holder.

The spindle tip on the holder should be protruding 115mm from the spindle shaft end (see picture).



Please use the following sequence to drill:

a)Hole D=20 mm: insert drill Komet Trigon V30-92000 ABS50

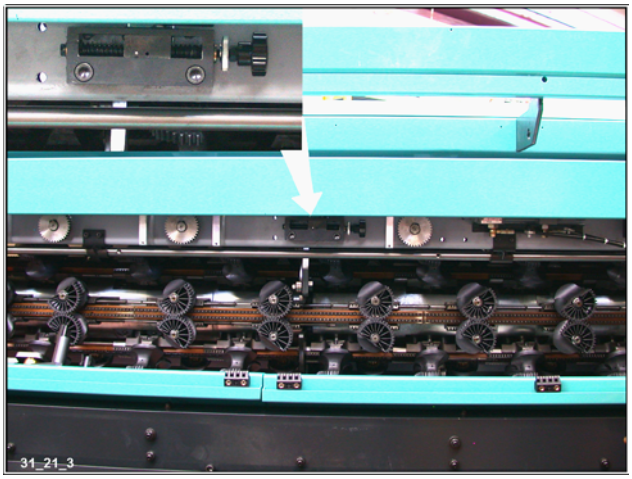
For difficult drilling works we recommend: Extension KOMET ABS 50-V50 A20 00550 + insert drill KOMET KUB TRIGON V30-31500 or KOMET KUB QUATTRON U10-71501.

INFORMATION:

b)to perform the above mentioned step it is necessary to adjust sensors S1.5, S1.6 and S125.7 (to be done under IEMCA approval only).

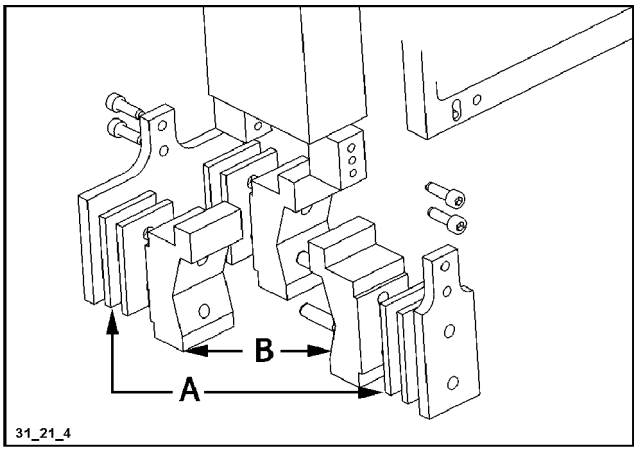
b)Hole D=15 mm: Extension KOMET ABS 50-V50 A20 + insert drill KOMET KUB TRIGON V30-31500 or KOMET KUB QUATTRON U10-71501.

9) Adjust the upward movement of the loading levers according to the bar diameter to be loaded, by means of the hand grip on the lever rod, which can be reached through the front door of the bar feeder drum and is visible through the main inspection window.

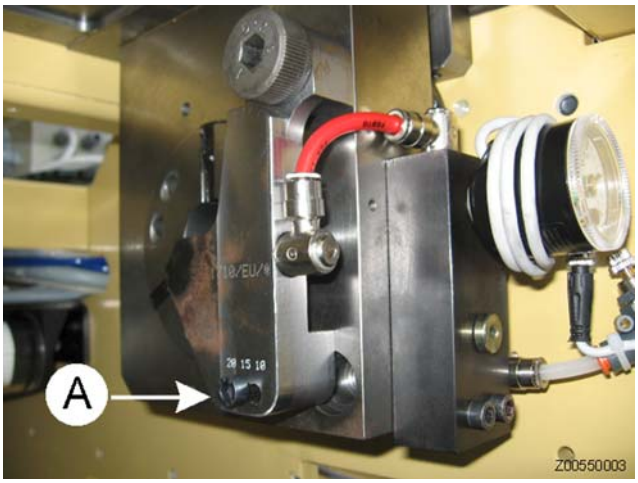


10) Shims should be added under the feeding unit rubber chucks, according to the diameter of the bar to be loaded hereunder indicated:

- for bars from Ø20 mm up to Ø32 mm add two shims under each chuck,
- for bars from Ø32 mm up to Ø42 mm add only one shim under each chuck and replace the others into their housing,
- for bars from Ø42 mm up to Ø52 mm, no shim is needed (replace them into their housing).



11) Install the screw (A) in the hole corresponding to the diameter of the point used to bore (Ø-20mm; Ø-15mm;Ø-10mm).



INFORMATION:

Manufacturing calibration of the pressure switch referred to the barstop:

- Empty Air pressure from 1,8 to 2,2 bar;

- Change over Pressure 3 bar.

For possible pressure switch control or calibration

To control the pressure switch, please contact Iemca Service.

12) Bar pushers should be provided with pipe grippers suitable for the holes to be drilled.

13) On the operator's panel, set correct cutting speed and feeding parameters according to the diameter of the hole and to the type of material or choose one of the parameter lists that are available on the system, only in case the required conditions (i.e. Spindle tip diameter, bar material) correspond to the conditions on one of the available parameter lists. For any further information concerning how to enter an available parameter list or how to set new operation parameters, please see chapter ... or the keyboard instruction manual...

ATTENTION!

Any work must be carried out by qualified technicians and/or persons who will follow all safety guidelines in respect of the existing norms.

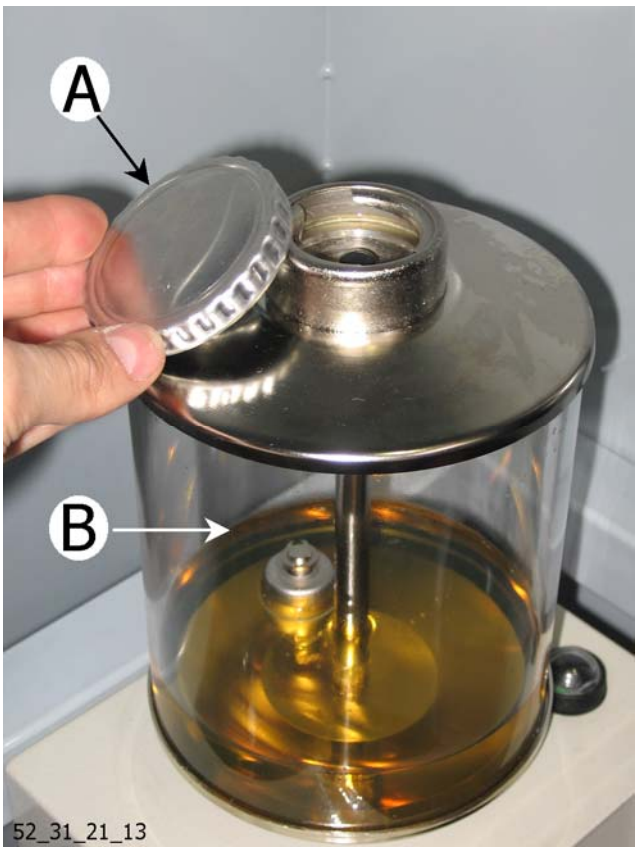
Before starting drilling machine operation, check the oil level inside the oil tank.
Lubrication oils must have the following features:
Oil viscosity at 40°C = 47mm^2/sec
Oil density at 20°C = 0,922 g/mm^3
Flammable point over 265°C

CAUTION - PRECAUTION:

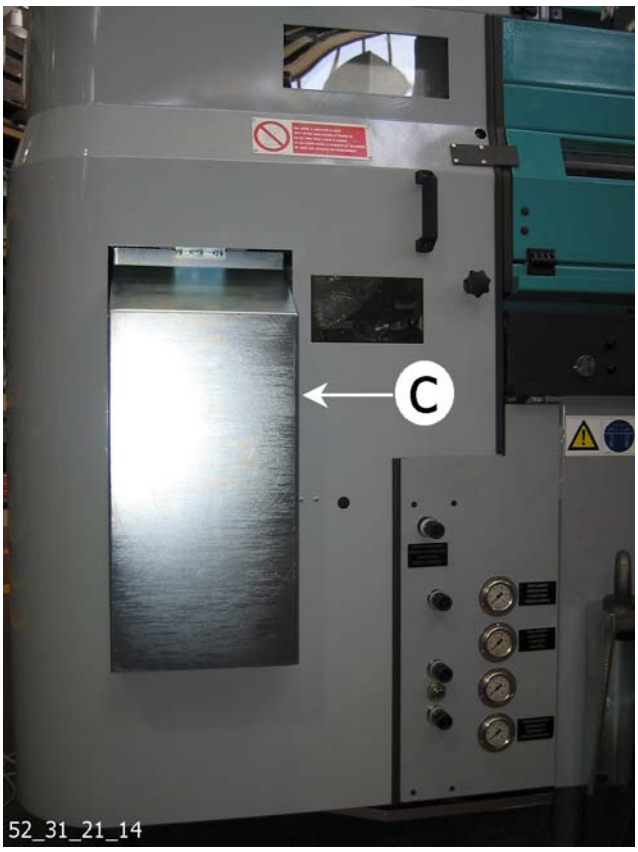
We recommend the following lubrication oil: SETOL ST-SH.

For any further information, please see the lubrication system manual that has been delivered with your bar feeder.

Oil topping up:
remove the plug (A) and fill the oil tank to the top.

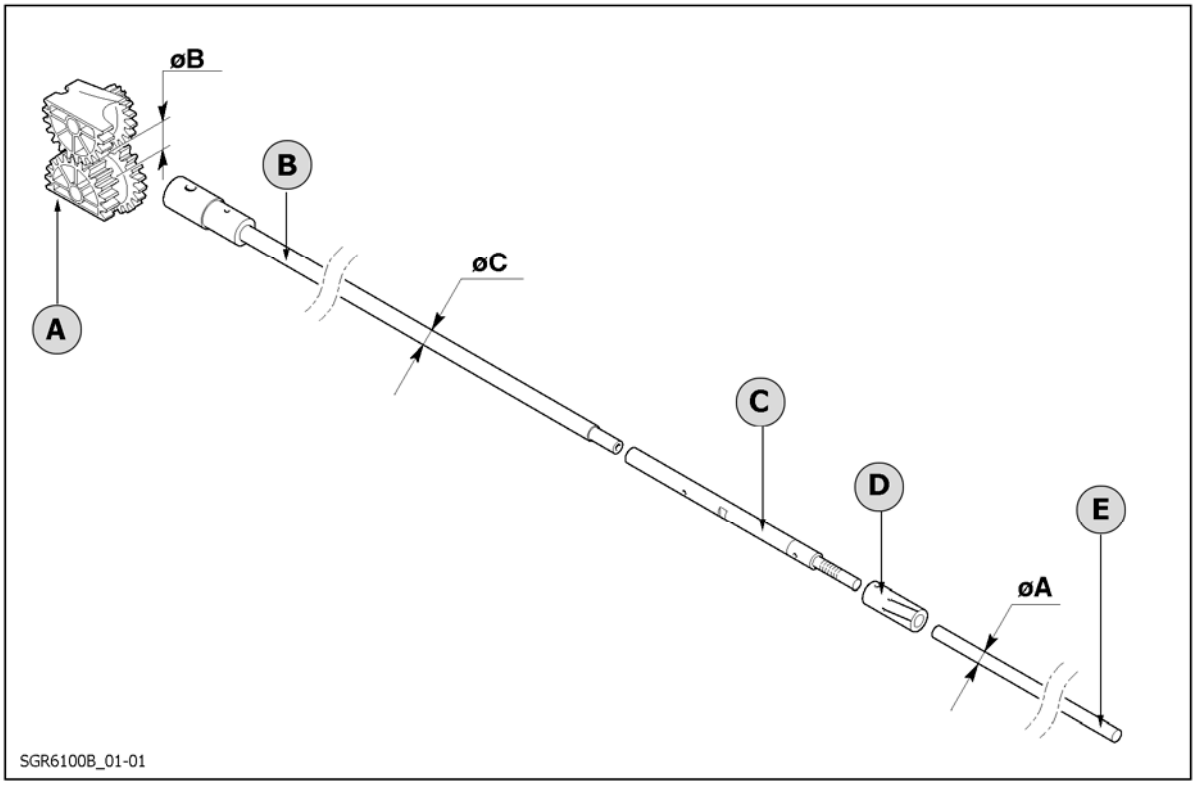


Place the chip collector under the chip conveyor system "C".



11.1 GUIDE CHANNELS AND BAR PUSHER - TABLE

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



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

CAUTION:

the field of application of collets for machining specific bar diameters in the different guide channels are indicated in the table. When this diameter is lower than the diameter of the guidechannel, there can be vibrations or working problems in the barloader. It is useful to consider the possibility to reduce the speed rotation of the bar or to change the diameter of the guide channel to optimize the application. Therefore, in order to optimise operation, the bar rotation speed should be reduced or the guide channel diameter should be changed.

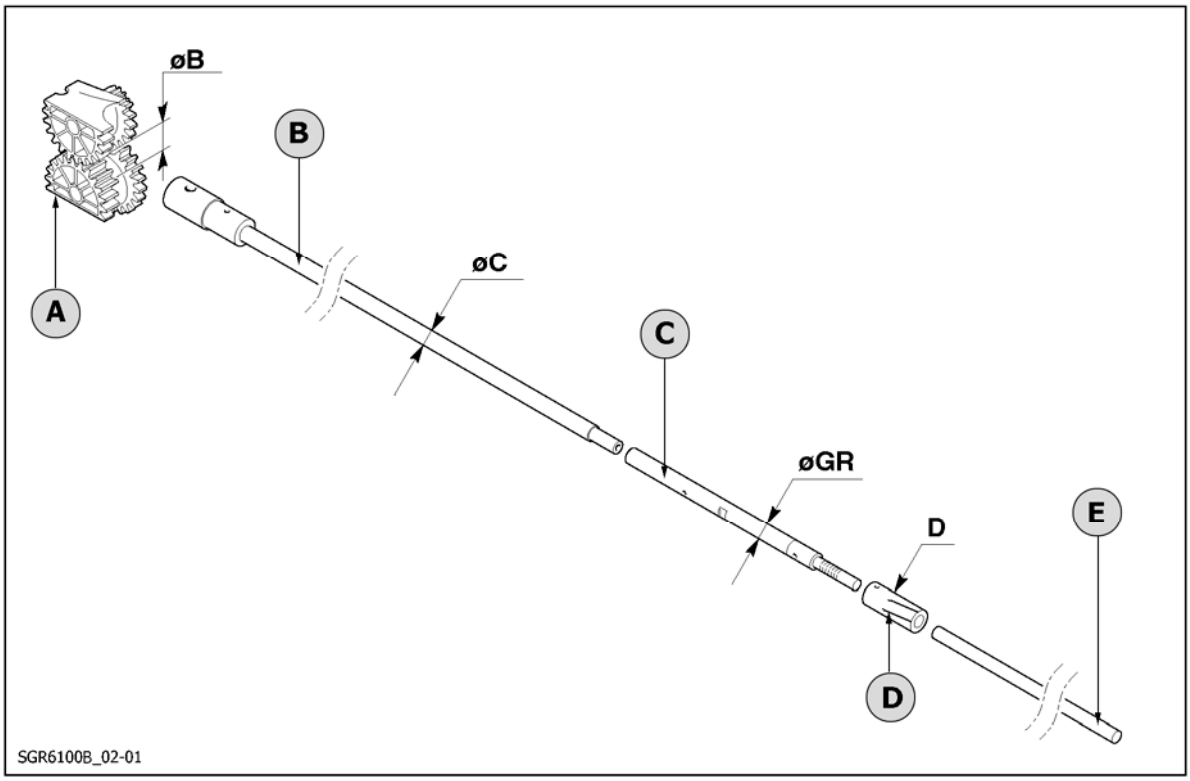
Diameters Comparative table during the standard working mode.

Bar diameter – **øA** (mm)		Maximum tube diameter (*)– **øA** (mm)	Guide channel diameter – **øB** (mm)	Bar pusher diameter– **øC** (mm)
Min	Max			
10	15	18	**19**	18
15	28	32	**33**	32
25	38	42	**43**	42
25	40	45	**46**	45
35	48	52	**53**	52
35	50	55	**57**	56

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

11.2 REVOLVING TIP - TABLE

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

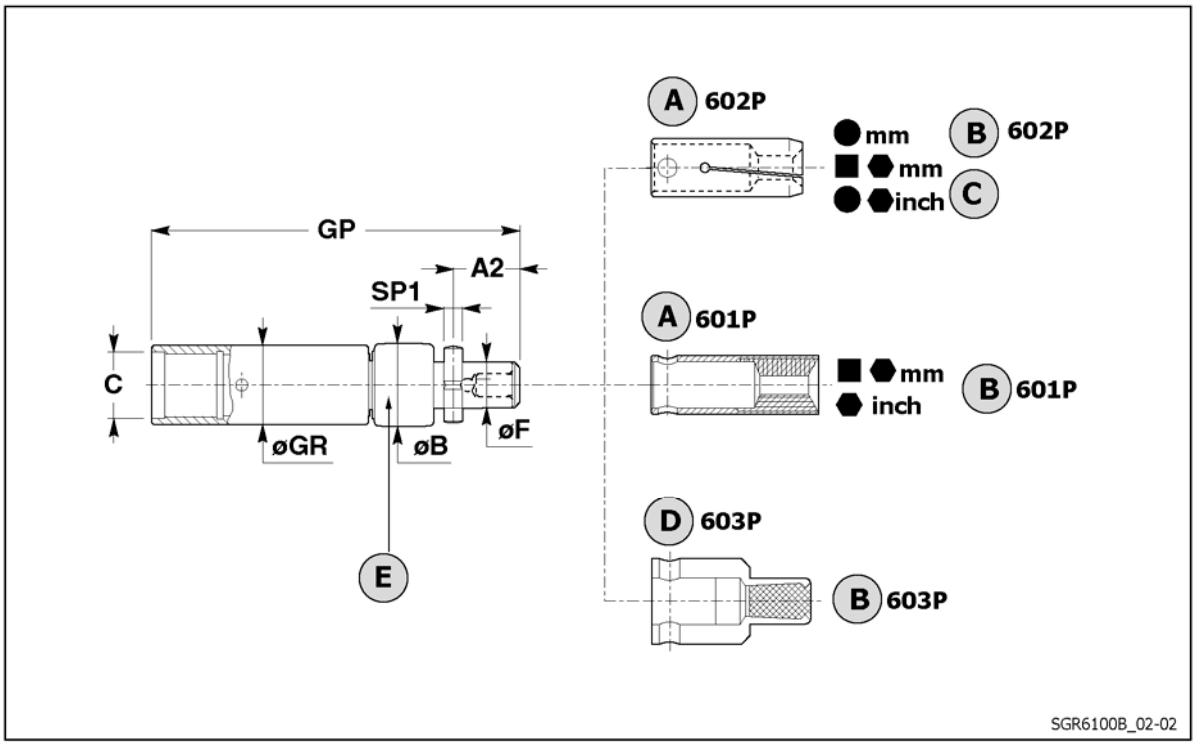


A Guide channel
B Bar pusher
C Revolving tip
D Collet
E Bar

Guide channel diameter **øB** (mm)	Bar pusher diameter **øC** (mm)	Collet version – **D** (type of coupling)	Revolving tip diameter **øGR** (mm)	Revolving tip code	See section
19	18	With pin (SCHL)	18	D60151801	
33	32	With pin (SCHL)	32	D60153201	
43	42	With pin (SCHL)	42	D60154201	
46	45	With pin (SCHL)	45	D60154501	
53	52	With pin (SCHL)	52	D60155201	
57	56	With pin (SCHL)	56	D60155601	

11.3 Revolving Tips øGR 18÷56 - Table

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



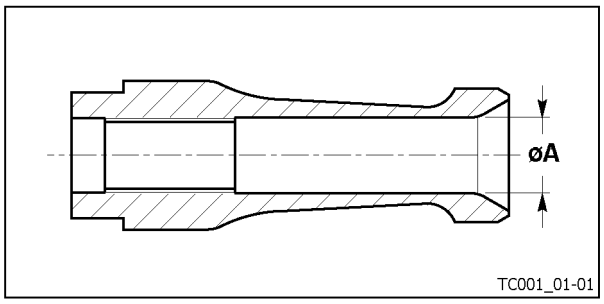
A Collet
B See section
C See section 001 than 602P
D Collet for tube
E Revolving tip

øGR (mm)	Revolving tip code	**øF** (mm)	**øB** (mm)	**GP** (mm)	**C** (mm)	**A2** (mm)	**SP1** (mm)
18	D60151801	11	18.5	127	M15x1 sx	18.5	6
32	D60153201	20	32.5	169.5	M28x1 sx	37.5	8
42	D60154201	20	42.5	169.5	M30x1 sx	37.5	8
45	D60154501	20	45.5	169.5	M30x1 sx	37.5	8
52	D60155201	20	52.5	215.5	M45x1 sx	31	8
56	D60155601	20	56.5	215.5	M50x1.5 sx	31	8

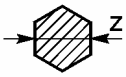
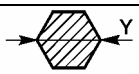
12.1 CONVERSION TABLES 001

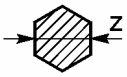
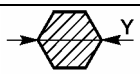
HEXAGONAL BARS (unit of measurement “millimetres”) - Table

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



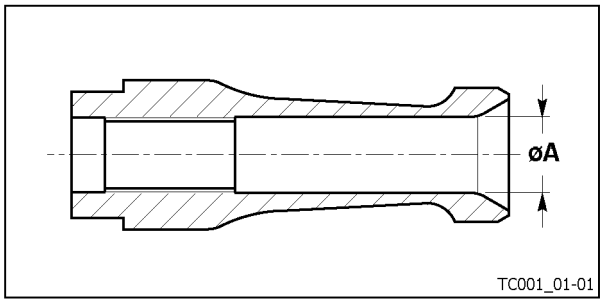
Z mm	Y=Zx1,154 mm	ØA mm	Z mm	Y=Zx1,154 mm	ØA mm
1.5	1.73	1.7	28	32.33	32
2	2.31	2.2	29	33.48	33.2
2.5	2.89	2.8	30	34.64	34.5
3	3.48	3.25	31	35.79	35.5
3.5	4.04	3.8	32	36.95	36.8
4	4.61	4.5	33	38.10	37.8
4.5	5.19	5	34	39.25	39
5	5.77	5.5	35	40.41	40.2
5.5	6.35	6.2	36	41.56	41.3
6	6.92	6.8	38	43.87	43.5
6.5	7.50	7.3	39	45.03	44.8
7	8.08	7.8	40	46.18	46
7.5	8.66	8.5	41	47.34	47
8	9.23	9	42	48.49	48.2
9	10.39	10.2	43	49.65	49.5
10	11.54	11.3	44	50.80	50.5
11	12.70	12.5	45	51.96	51.8
12	13.85	13.5	46	53.11	52.8
13	15.02	14.8	48	55.42	55
14	16.16	16	50	57.73	57.5
15	17.32	17.2	52	60.04	59.5
16	18.47	18.3	55	63.50	63
17	19.62	19.5	57	65.78	65.25
18	20.78	20.6	60	69.24	68.75
19	21.93	21.8	62	71.55	71
20	23.09	22.8	65	75	74.5
21	24.24	24	67	77.3	76.75
22	25.40	25.2	70	80.78	80.25

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

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

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

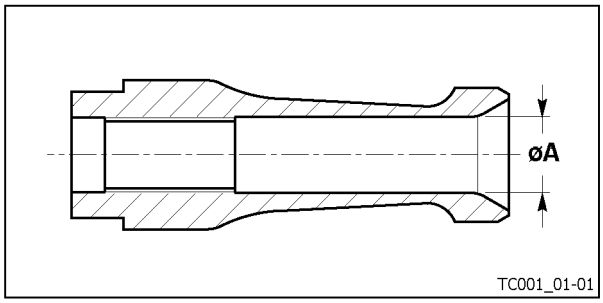
Before selecting the steel collet, define the internal diameter øA by consulting the table below.



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

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

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

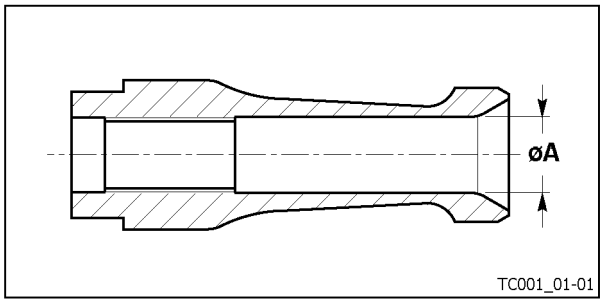


	ØA	
inches	mm	inches
1/8	3.5	9/64
3/16	5.25	13/64
1/4	7	9/32
5/16	8.75	11/32
3/8	10.75	27/64
7/16	12.5	31/64
1/2	14.25	9/16
9/16	16.25	41/64
5/8	18	45/64
11/16	19.75	25/32
3/4	21.75	55/64
13/16	23.5	59/64
7/8	25.25	63/64
15/16	27.25	1”5/64
1”	29	1”9/64
1”1/16	30.75	1”13/64
1”1/8	32.5	1”9/32
1”3/16	34.25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

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

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

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



inches	ØA mm	inches	ØA mm	inches	ØA 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		

CONVERSION TABLE Inches/Millimetres

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

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

12.2 COLLETS FOR BARS 602P

COLLETS FOR BARS - Table

CAUTION:

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

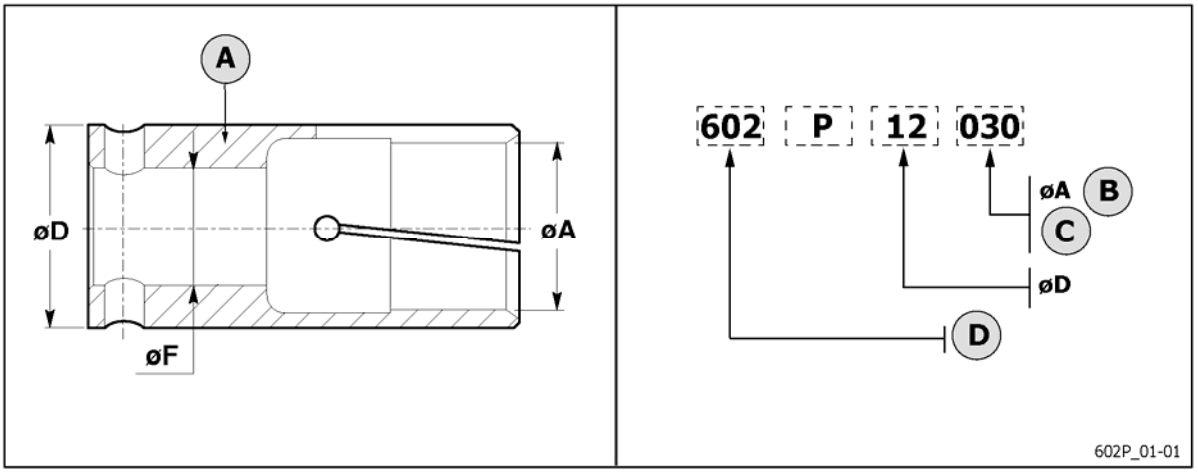
Note for consultation

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

Note for ordering

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

Code structure



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

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

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

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

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

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

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

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

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

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

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

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

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

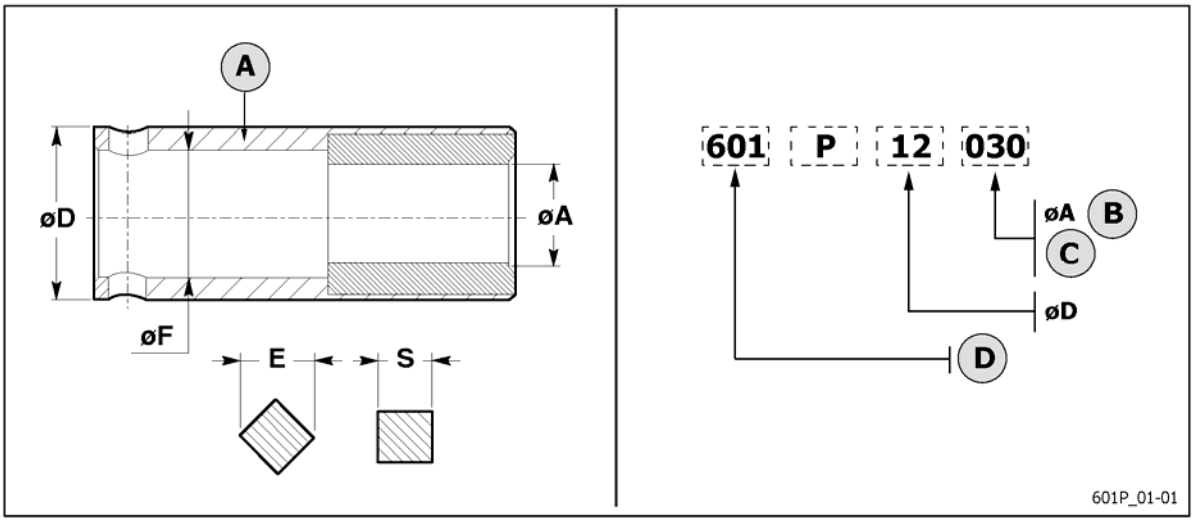
12.3 “UNILOCK” COLLETS FOR BARS 601P

“UNILOCK” COLLETS FOR SQUARE BARS - Table

INFORMATION:

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

Code structure



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

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

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

"UNILOCK" COLLETS FOR HEXAGONAL BARS - Table

INFORMATION:

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

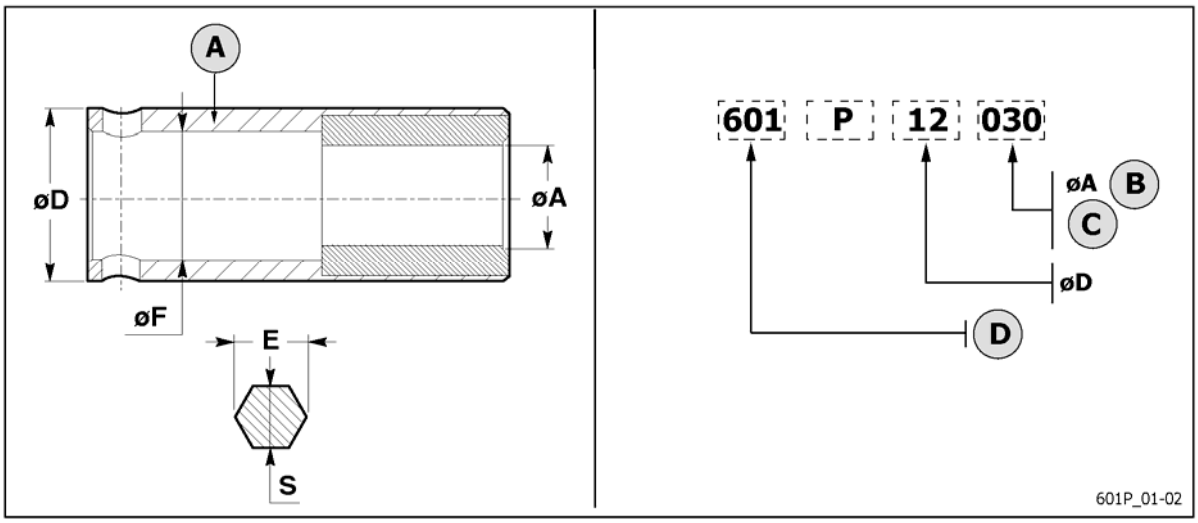
Note for consultation

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

Note for ordering

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

Code structure



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

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

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

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

12.4 COLLETS FOR TUBES 603P

COLLETS FOR TUBES - Table

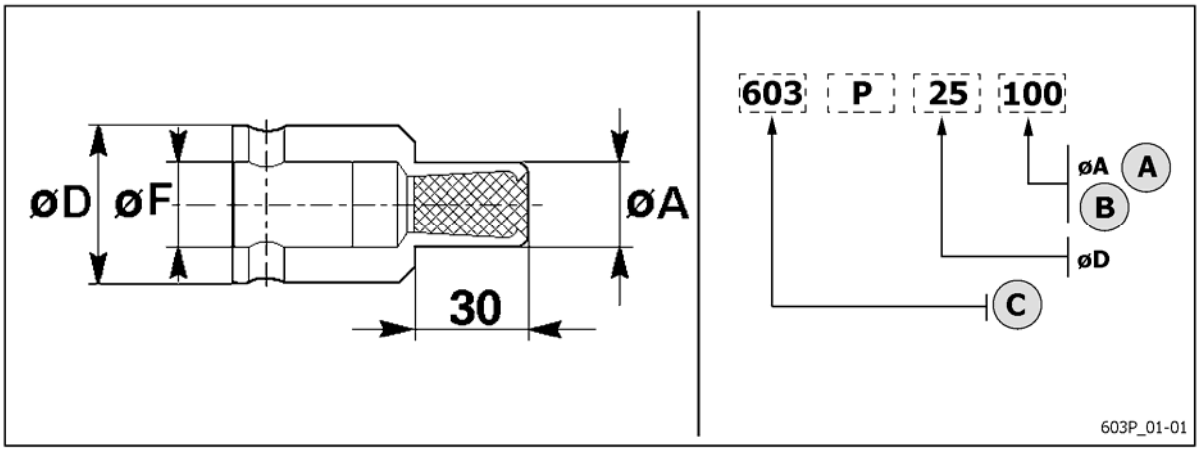
CAUTION:

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

INFORMATION:

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

Code structure



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

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

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

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

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

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13.1 LIST OF AFTER-SALES CENTERS

AUSTRALIA - NEW ZEALAND

GIMCO – Giuliani Iemca Machinery Co. Ltd.	301-1, Dongsing Rd., Dali City, Taichung County, 412, Taiwan	Phone +886-4-2406-6970 Telefax + 886-4-2406-6943 E-mail: gimco@gimco.com.tw Website: www.gimco.com.tw

BRAZIL

IGM DO BRASIL LTDA.	rua Melo Palheta 165 CEP 05002030 Sao Paulo - Brasil	Phone +55 11 3801 3763 Telefax +55 11 3801 3563 Email: igmdobrasil@uol.com.br

CHINA (PRC)

Bi-tech (Suzhou) Co. Ltd.	Wu Fang Road, Wu Jiang City, JiangSu Province - PRC	Phone +86 512 8155 6988 Telefax +86 512 8155 6986 E-mail: bi-tech@vip.163.com

CZECH REPUBLIC - SLOVAK REPUBLIC

ALBA PRECISION	Skorkovského 79 636 00 Brno	Phone +420 548 226 400 Telefax +420 548 532 689 E-mail: albabrno@sky.cz Website: www.albaprecision.cz

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GERMANY *(East)*

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SPAIN		
SISTECO Máquinas-Herramienta, S.L.	Pagatza Parke Industriala, 7A Saila 20690 Elgeta (Gipuzkoa)	Phone 943-788058 Fax 943-768100 E-mail:empresa@sisteco.net
SWITZERLAND ***(Canton Ticino)***		
IEMCA S.p.A.	Via Granarolo, 167 I-48018 Faenza (RA)	Phone 0546 / 698208 Telefax 0546 / 698290 Email : iemca@igmi.it Website: www.iemca.com
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USA – CANADA - MEXICO		
Bucci Industries USA Inc.	9332 Forsyth Park Drive Charlotte NC 28273 - USA	Phone ++1 704 583 8341 Telefax ++1 704 583 8486 E-mail: info@bucci-industries.us