OPERATING INSTRUCTIONS
Options for the Machine

INDEX

Bar Loading Magazine INDEX LM

INDEX LM 3200
INDEX LM 4200

ABC

Control INDEX C200-sl

DIZ004EN - 2018-09-12
///7/Kr (Stangenlademagazin INDEX LM) - 20056354

*better.parts.**faster.***

Note on applicability

Illustrations in this publication may deviate from the product supplied. Errors and omissions due to technical progress expected.

A word on copyright

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Transport, Installation and Commissioning

The loading magazine is transported on a wooden pallet.
When lifting it off the pallet with a fork lift, two square wooden beams (nailed together with wood strips) have to be placed between both base supports under the tub (Fig. 1).
The longitudinal center of balance is approx. the middle between the base supports.

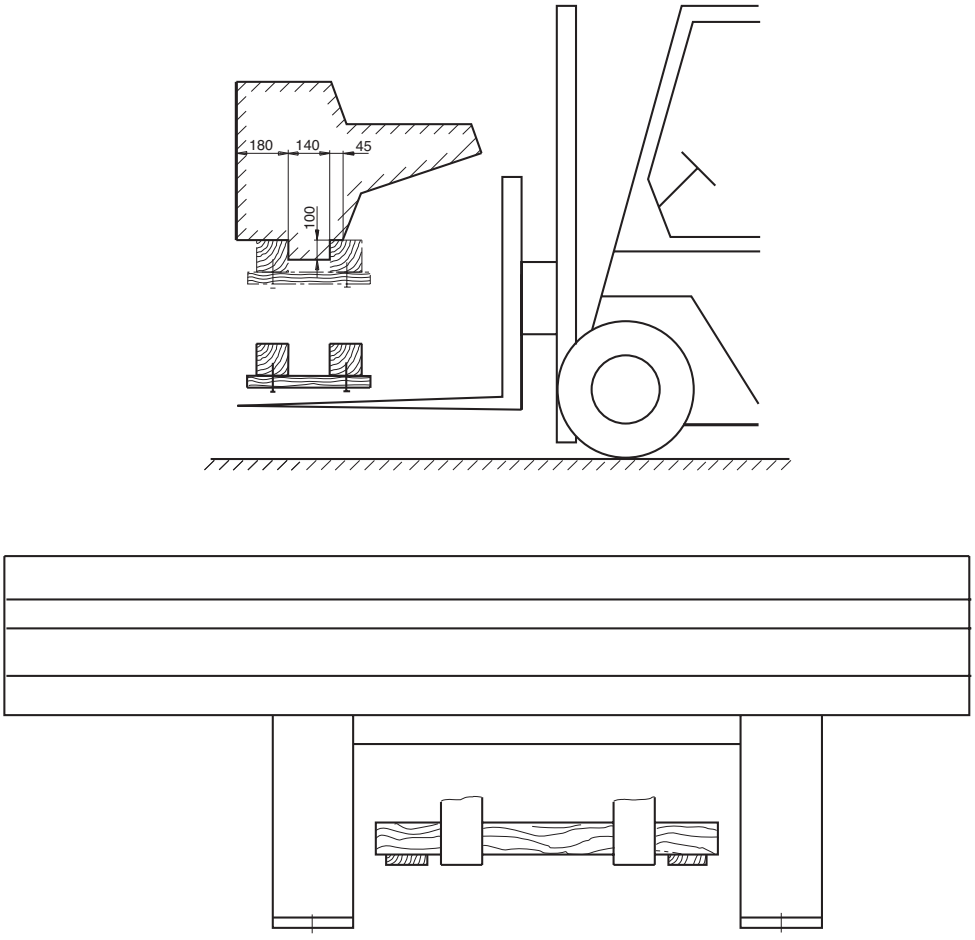

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Fig. 1

Installation

Remove left machine cover
The distance 'L' (figure 2) is measured between left machine frame bar and right load magazine front side.

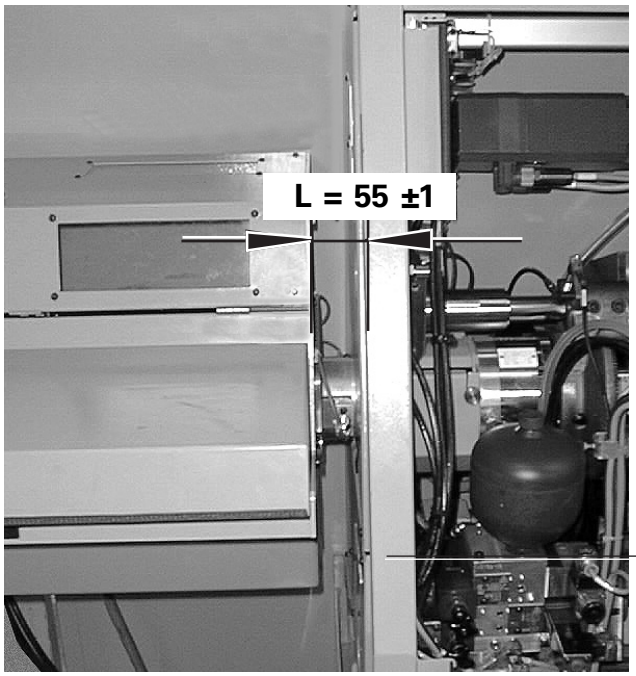


Fig. 2

The two hydraulic hoses of the loading magazine must be connected to the couplings (P and T) at the left face of the machine.

The electrical power supply must be connected to the marked plug located at the electrical cabinet of the machine.

Before plugging in or unplugging the electric supply the main isolating switch must be absolutely OFF.

The transport securing device at guide channel has to be removed.
Last the central lubrication oil has to be added. (Oil level indicators on left face of machine.)

Securing to the floor

The bar loading magazine and the machine must be anchored securely to the floor (see machine installation plan resp. figure 2 - dimension **L=55 mm**).

After alignment the bar loading magazine can be secured to the floor with bolts by drilling through the separate base plates. The length of the fastening bolts depends on the floor condition. These bolts have to be adjusted by the installer.

Alignment - bar loading magazine

The alignment must be done with extreme care keeping in mind that the spindle speeds, noise level and the quality of the workpiece depend on the alignment. An "alignment aid" suitable for all INDEX ABC machines and all loading magazine lengths is available - Sel. No. 39 189.

A very tightly pulled nylon line, 2 mm DIA., is used for the alignment. This nylon line is fastened exactly in the center at the left end of the guide channel and the main spindle collet adapter (Fig. 3). Close guide channel, advance so channel is locked, then drive approx. 400 mm to the left again.

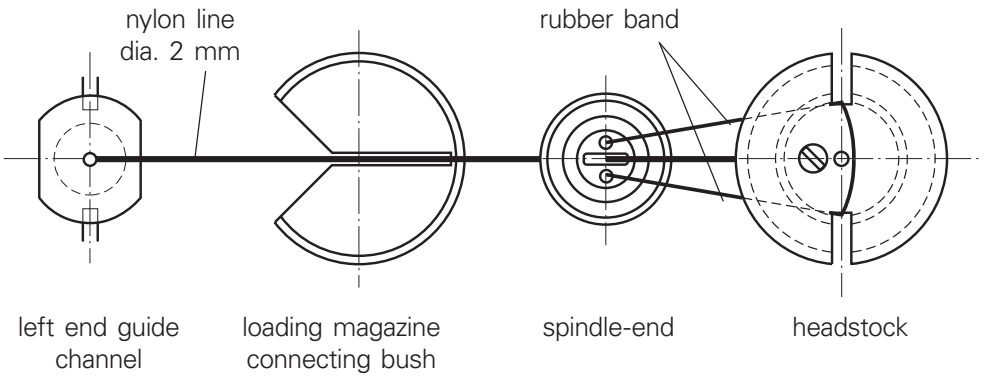


Fig. 3

Slotted diaphragms are attached at the spindle-end and the connecting bush of the bar loading magazine and - if loading magazine is correctly aligned - it will guide the nylon line directly through the center slots.

By turning the slotted diaphragms 90 degrees the horizontal and vertical alignment can be checked.

The following steps are recommended:

1. Pass nylon line through slotted diaphragm at spindle-end and pull it tight.

2. Turn both slotted diaphragms until the line passes freely through the slots. At this point alignment error can be roughly evaluated and corrected.

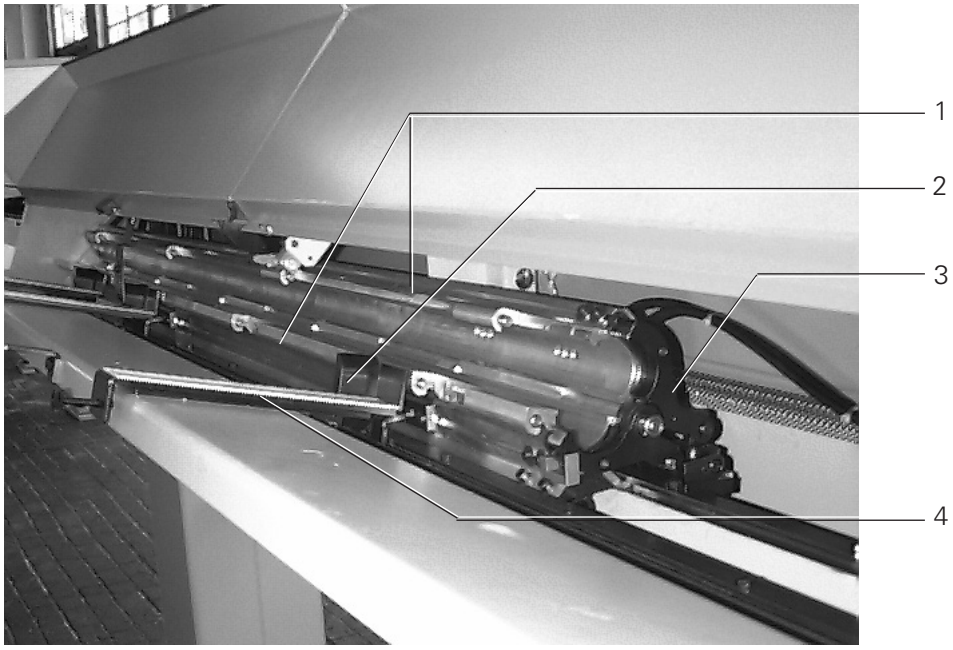
3. Remove slotted diaphragm from loading magazine and proceed with fine adjustment until the nylon line runs in horizontal and vertical direction straight through the center of the slotted diaphragm at the spindle-end.

4. Re-attach slotted diaphragm on loading magazine and here too correct alignment in both directions.

Both loading magazine base supports have to be adjusted to different degrees but in the same direction in order to maintain alignment in accordance with point 3.

Set-up and Functions

Pictures showing the construction of the bar loading magazine



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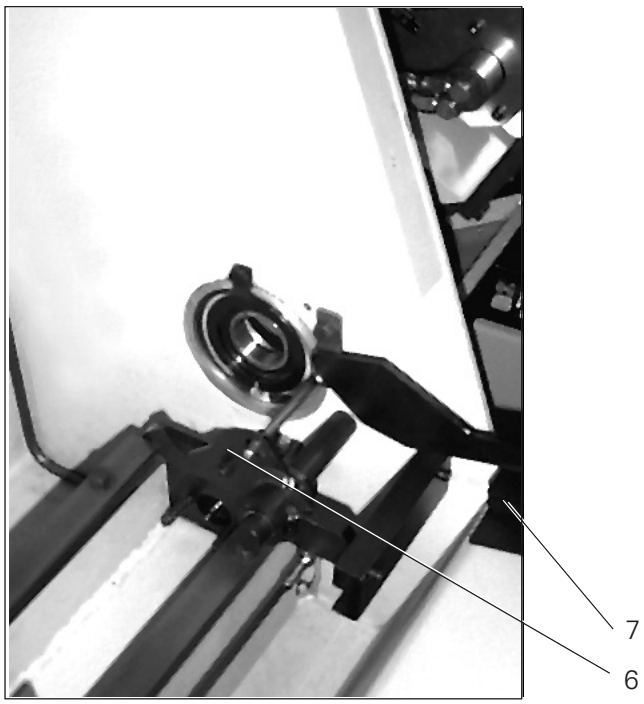
1 Guide channel (open)
2 Bar separator
3 Clamping jaws
4 Supply area
5 Light barrier
6 Support dovetail
7 Stopping strip



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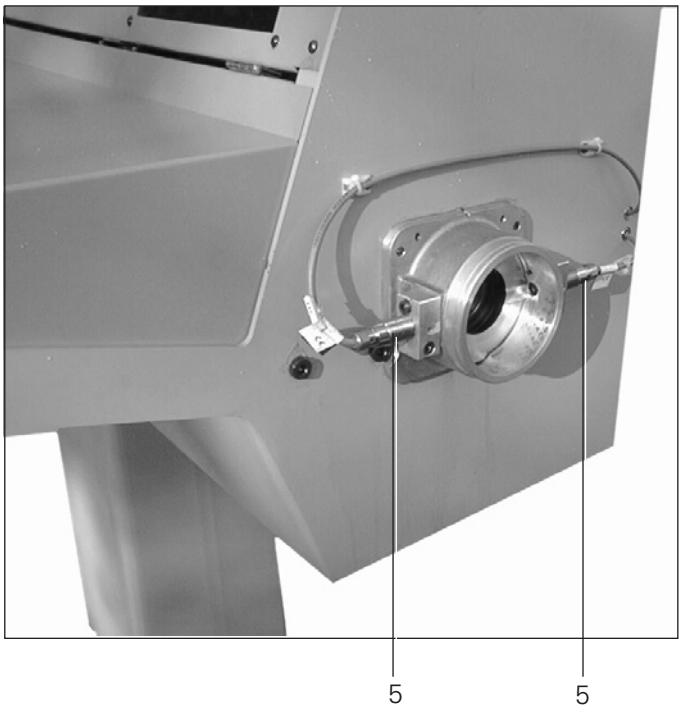

5 Light barriers

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The bar loading magazine is a standard feature of the INDEX ABC turning machine, the electrics and hydraulics making it one unit.

As long as a stock bar is being machined the bar loading magazine functions only as an oil filled stock tube (split guide channel) because stock feed in the main spindle is done with feed fingers. The oil which generates minimal oil pressure in the guide channel is transported out of the loading magazine tub by a booster pump (the magazine tub also serving as an oil reservoir).

The bar change has been divided into 2 sections:

Section 1: A new bar is loaded (Fig.4, 5):
- When the bar end has passed the light barrier.
- When half the number of the strokes set in the bar feed counter is obtained.

Section 2: When the part of the bar inside the main spindle is totally used up then the new bar is inserted through the main spindle all the way to the cutoff tool, at which time the bar remnant is ejected into the work area.

Figure 7 , section "Set-up bar loading magazine" - schematic sectional view of the loading magazine.

Reset guide channel and load new bar

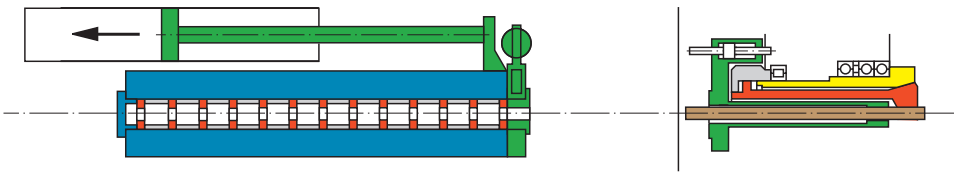

Fig. 4

Advance guide channel to working position

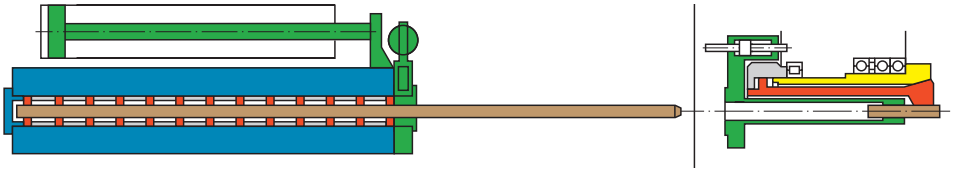

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Fig. 5

Bar change - Section 1

A photo electric beam at the right end of the guide channel emits a signal when the bar has left the loading magazine.This signal activates the bar feed counter (refer to section „Setting of the bar feed counter"). The bar change is initiated after half the number of the set strokes has been performed. The machine continues to run due to one bar remaining in the main spindle (bar approx. 0.5 m in length).
The loading magazine leaves its **work/start position** (see Fig.4) for the bar loading cycle and the following steps are to be observed:

1. The circulating lube pump providing the guide channel with oil shuts off.

2. A hydraulic cylinder slides the guide channel approx. 1 m to the left unlocking the two channel parts. Also the next bar will be separated from the supply area by lifting with swivel levers.

3. A hydraulic cylinder opens up the hinged top part of the guide channel. Then the previously separated stock bar is brought up completely and rolls into the split bushings of the lower guide channel, dampened by brake rings. A support dovetail on the right hand side catches the bar-end.
   The stock bars at the right hand of the supply area are stored against a support gib so that the start-of-bar program has a defined location in the guide channel. This arrangement is supported by the swivel levers which upon lifting the bars are pushing these to the right against the gib.

4. If squared-off material is used, its surfaces must now be rotated with the alignment device (OPTION) into a certain position. A hydraulic cylinder moves a spring-loaded alignment fork against the bar and swings it about the material axis (only if workpiece parameter "Aligning polygon" is active).

5. The guide channel is locked. Stock is clamped by two jaws, matched to the stock profile, at the right end of the guide channel. Hex or square stock is clamped in aligned position to the stock surface (see Fig.5).

The 1st section of the bar change has been completed and the loading magazine is in **Waiting position**.

Push forward new bar and eject remainder

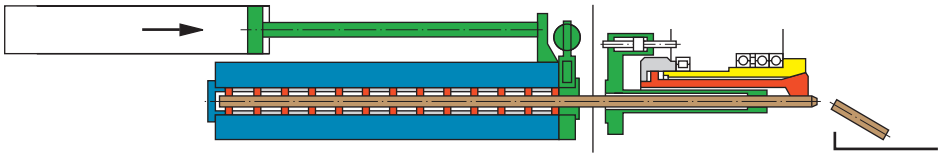


Fig. 6

Bar change - Section 2

When the machine signals "bar-end" the start-of bar program starts (feed finger has retracted from stock-end). The following steps are observed (see Fig.6):

6. Cut-off last workpiece.
7. Stop spindle with hex or square stock in defined angular position.
8. Drive remnant tray in front of spindle.
9. Open collet and advance feed finger.
10. Start central lube pump for loading magazine.
11. On moving guide channel into start position, bar is pushed into the feed finger and advanced to the cut-off tool. The bar remnant is ejected into the remnant tray (see Fig.6).
    The distance between start-of-bar and collet can be changed (depending on the position of the cut-off tool) by adjusting the stopping strip of the bar supply.
    When advancing guide channel, both channel parts lock together, the bar separating levers retract and the bar supply is pushed forward. A brake cylinder allows round bars to drop slowly below.
12. Close collet and open clamping jaws.
13. Retract remnant tray.

Start-of bar program is now ready - it consists of the following steps:

14. Set main spindle speed.
15. Clean up bar face with cut-off tool.
16. Execute stock feed and clamping.
17. Start of next normal work cycle.

When bar supply is used up the guide channel advances empty and the light barrier registering "NO BAR" shuts off the machine.

Workpiece parameters

Workpiece-specific settings for INDEX tool monitoring are defined in this area. The values entered here are saved in the INDEX.INI file.

Turn OPERATING MODE SELECTOR SWITCH to I SETUP position.

Press key MENU SELECT.

Press softkey **Parameter**.

Press softkey **Applic Adjust**.

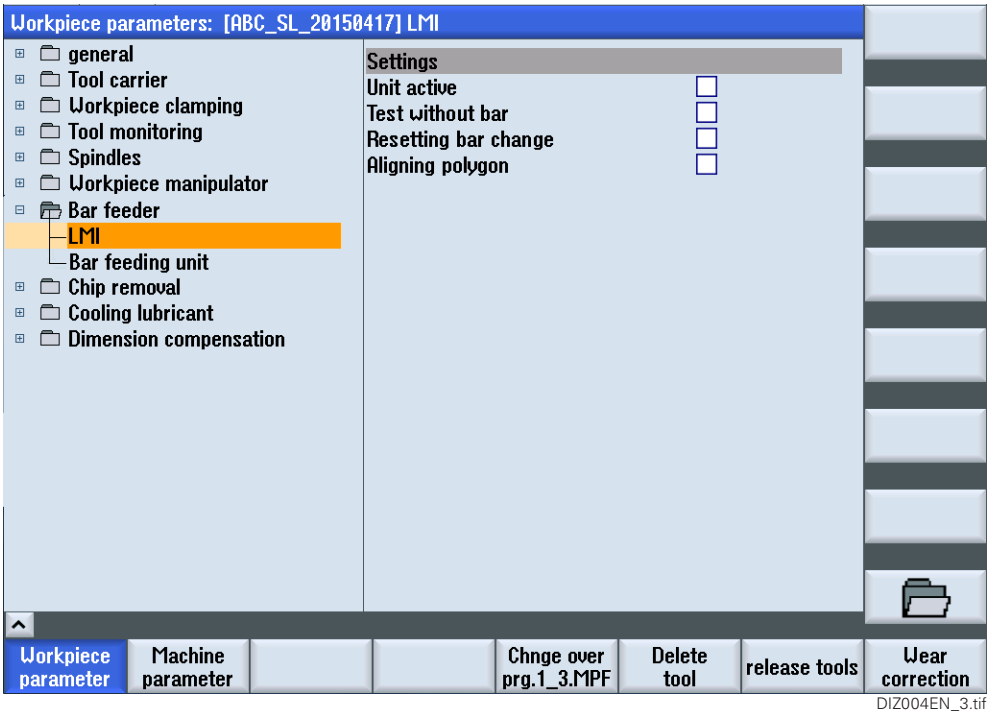
Press softkey **Workpiece parameter**.

Place cursor on **Bar feeder** + expand selection.

Bar loading magazine

The following settings are required for operating the bar loading magazine.

Position the cursor on **LMI**.



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Settings

The check boxes are selected/deselected with the SELECT key.

Explanation of settings

Unit active

☑ Bar loading magazine is active.

☐ Bar loading magazine is **not** active. No M commands are allowed.

Test without bar

This function is used for initial start-up purposes only!

Resetting bar change

Machine response after pressing the softkey **Set-up** (in section "operate units").

☑ At the end of material, the machine stops at command M787 (from L185) in the start-of-bar program.

☐ At the end of material, the machine stops at M30 (end-of-program). Start-of-bar program is preset.

Aligning polygon

☑ The squared-off material bar is aligned at the bar change. The proper spindle position must then be programmed in L185.

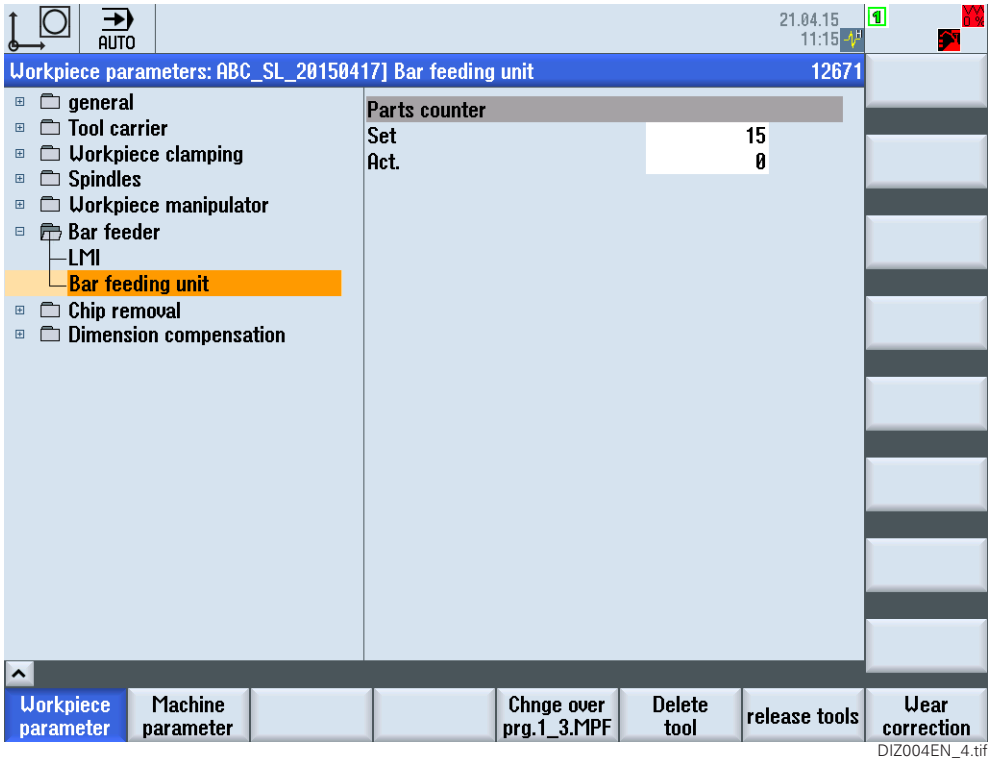
Bar feeding unit

This screen is used to enter the determined target bar feeds of the bar feeding unit.

MENU SELECT –> Parameter –> Applic Adjust –> Workpiece parameter

Place cursor on **Bar feeder** + expand selection.

Place cursor on **Bar feeding unit**.



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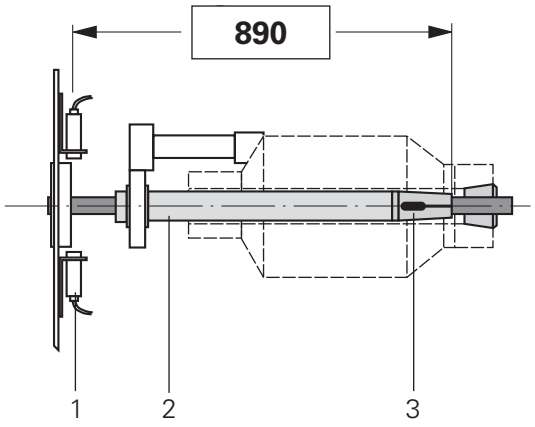
Note on bar feed and workpiece count

If the "run without material" or "axis blocking" functions are active, neither the bar feed nor the workpiece count are activated.

Determining the number of material feeds

For reason of operational safety the end-of-material message is evaluated only after the "SPECIFIED number of bar feeds" has been performed.

The end-of-bar message is emitted when the feed finger slips off the bar remnant.



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1 Light barrier
2 Feed tube (must be in foremost position)
3 Feed finger

The specified number of bar feeds is established as follows:

$$\frac{\textbf{Useable bar length = 890 mm}}{\textbf{Workpiece length + cut-off width}} \textbf{ – 4}$$

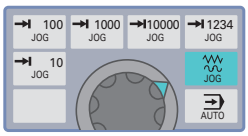
The value you determined can either be entered here in section "Workpiece parameter" or by using the conversion program.

- The workpiece length always is the overall length of the workpiece.
- If several material feeds are necessary for the production of the workpiece, the workpiece counter will only count one workpiece anyway.
- The useable bar length represents the distance between the light barrier and the front face of the feed finger (approx. 890 mm).

operate units

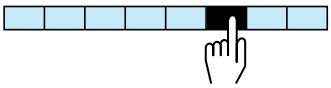
For manual operation, there are special screens available on the control unit.

Turn OPERATING MODE SELECTOR SWITCH to I SETUP position.



Select **JOG** or **INCREMENT** mode.

Press key MACHINE.



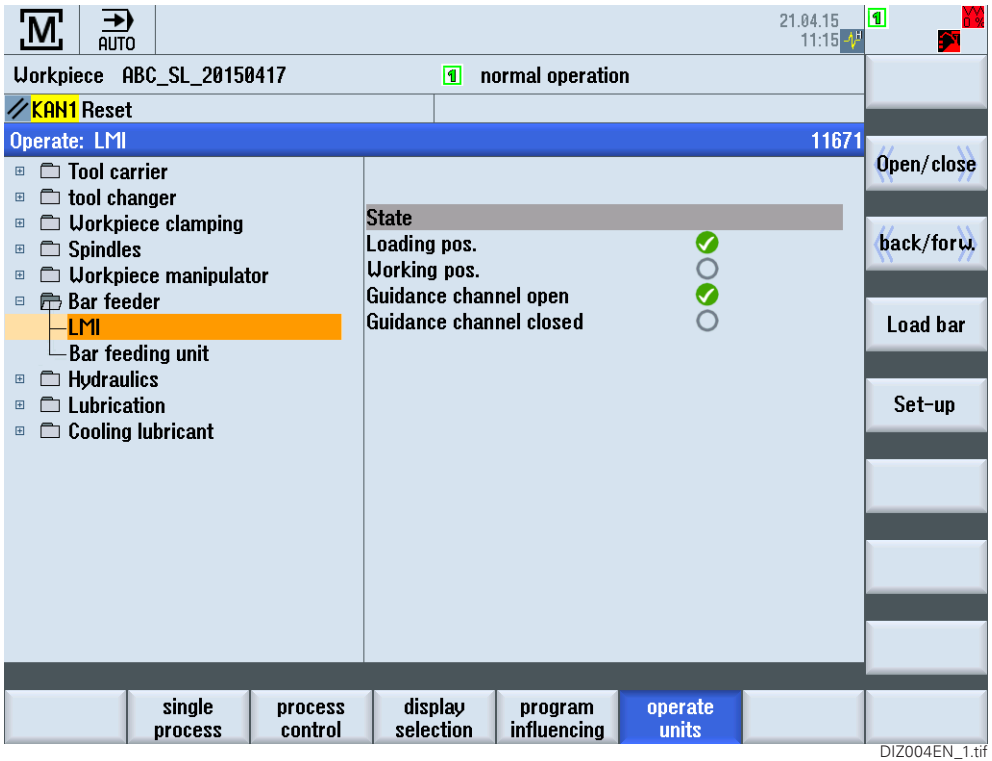
Press key **operate units**.

Place cursor on **Bar feeder** + expand selection.

Bar loading magazine

This screen is used for operating the bar loading magazine and to display some status information.

Position the cursor on **LMI**.



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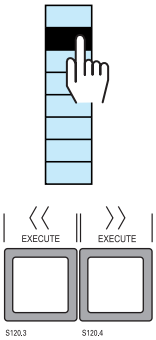
Softkey functions



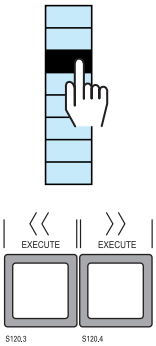
Guide channel and clamping jaws open/close

Softkey **open/close <<....>>**.

Then use the keys EXECUTE FUNCTION to execute the desired function.

[<<] open	Close [>>]

Only possible if guide channel is in the rear position.



Guide channel backward/forward

Softkey **back/forw. <<...>>**.

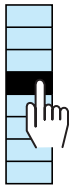
Then use the keys EXECUTE FUNCTION to execute the desired function.

[<<] Backward	forward [>>]

Guide channel and jaws are always closed for this (workpiece clamping of main spindle must be open).

When the guide channel is at the front, the guide channel halves are locked and the jaws open automatically.

When moving backward, the circulating lubrication pump is turned off and on again at the front back if the light barrier signals “Bar present”.

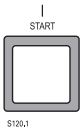


Loading of a new bar

Softkey **Load bar.**

Vorgehensweise

– Deposit the bar onto the storage surface
– Close guide channel and advance
– Press softkey **Load bar**.
– Activate bar end programme - if this has not already happened by "change-over".



Press CYCLE START, if the loading magazine is in "rear" waiting position. By this, the second phase of the bar change is started via L185.

- Movements can only be executed when the loading magazine cover is closed.
- If opened, the cover safety switch immediately interrupts all dangerous movements of the loading magazine, for example when bars are inserted automatically at this time.
- However the machine continues to operate when cover is open for re-loading of new stock bars.
- Also heed the PLC-errors - error numbers 79104, 79105, 79106, 79232 and 79233.

The right end position of the guide channel is the **work/start position** for bar loading.

The loading magazine leaves this position in four cases:

1. When the stock bar is used up and has left the guide channel, the bar loading cycle starts automatically. The guide channel, free of material, retracts and the new bar is loaded.

   Here, the following must be taken into account:

   - if the NOMINAL number of pieces is **smaller than or equal 6,** a new bar will only be loaded in the bar end programme (via M787).
   - if the NOMINAL number of pieces is **greater than 6,** bar change will be started as soon as the ACTUAL number of pieces = half the NOMINAL number of pieces.

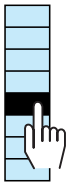
2. When replenishing bar supply has been neglected machine remains stopped until bars are reloaded. The guide channel is reloaded on retraction and advances immediately. The same condition exists when the loading magazine has been reset and the machine is started (unless a new bar has been loaded with the softkeyy **Load bar**).

3. On change over of the loading magazine the guide channel, free of material, retracts immediately when the last bar has left the channel.
   The "change over" command must be programmed into the machine within ample time (bar quantity to be loaded or setting-up ON when "Number of bars" = 0).

4. When in manual operation, if for example a partly used bar in the guide channel has to be retracted from the main spindle it is necessary that the workspindle is in idle position with collet open; by hex or square stock in defined angular position.

Stock supply should be removed beforehand or a previously separated stock bar must be taken out prior to opening the guide channel.

Bar loading magazine setup



Softkey **Set-up.**

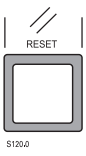
This function enables changing-over the bar loading magazine after the bar has left the bar loading magazine.
This means that changing-over can be started already while the part of the bar in the feed tube is being machined, i.e. used up.

Process after "Set-up"
(Selection happens via softkey or by reaching the last bar)

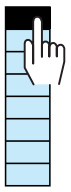
- Guide channel retracts.
- The number of bars is counted by 1 downwards and a new bar is loaded.
- When the number of bars is "0", the channel stops opened in rear position –> display: "**change over loader**".

When change-over is desired prematurely, it is possible to overwrite the bar counter manually.The bar loader will stop in spite of bar stock being present.

- When the bar in the feed tube is used up, the bar end programme will be activated automatically, but not started, yet.
- The machine will stop at end of the program –> display**"machine changing over"**.



By pressing the RESET key all displays are reset.



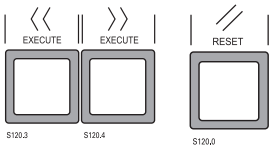
Alignment device (OPTION) forward/backward

Softkey **Positioning of bar.**

(OPTION) Only when machining hex or square stock
Advance and retract locating equipment for squared-off stock (this is only possible when the guide channel is open).

Forward motion of the attachment (after pressing the **Positioning of bar** softkey)

Press the softkey **back/forw. <<...>>**.



Backward motion of the attachment (after pressing the **Positioning of bar** softkey)

Key EXECUTE FUNCTION or RESET

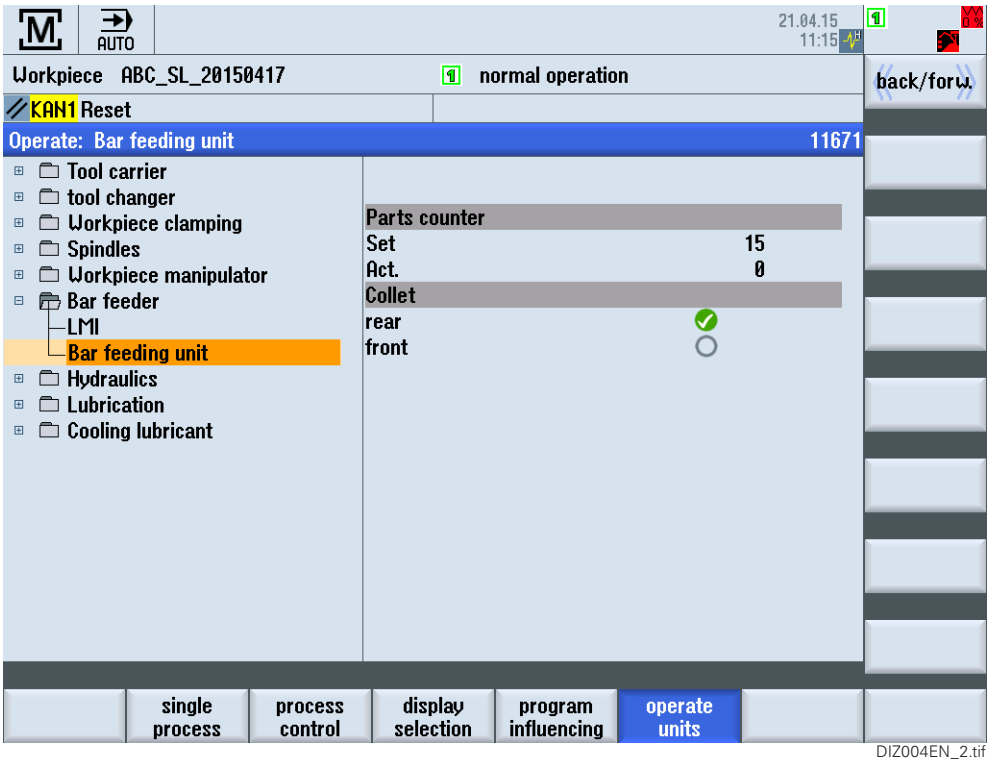
The current state of the alignment device is displayed on the screen.

Bar feeding unit

This screen is used for operating the bar feeding unit and to display the work count and some status information.

MACHINE –> operate units –> Bar feeder

Place cursor on **Bar feeding unit**.



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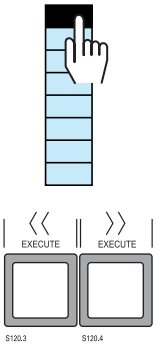
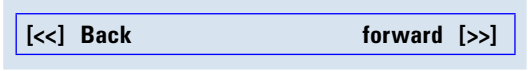
Softkey function



Bar feeding unit forward/backward

Softkey **back/forw. <<...>>**.

Anschließend wird mit den Tasten EXECUTE FUNCTION die gewünschte Funktion ausgeführt.



Programming

M commands of the bar feeding unit

M87	Move bar feeding unit forward and close clamping device (but still M1=68 must be programmed in the workpiece program)
M1487	Move bar feeding unit backward
M1587	Check that bar feeding unit has reached its rear position
M187	Count only (e.g., when pulling the bar stock forward using the synchronous spindle)

Programming examples

Machining program

```
%MPF10xx
...
...
N0025 T1 D101                ;Stock stop
N0030 G0 X0 Z0.5
/N0035 M1=69 M87             ;Open bar clamping, advance feed finger
N0040 G4 F0.3
N0045 M1=68                  ;Close bar clamping
...
...
N0070 M1487                  ;Retract feed finger
...
```

Bar change

Branching into the bar start program will be automatic after the message „End of bar". In this the cycle L185 will be called. With this cycle a new bar will be loaded into the main spindle. When feeding profile stock the spindle can be positioned in an appropriate angle.

L185 (TYP, POS)

TYP = **0** without spindle positioning
2 with spindle positioning

POS = Position of main spindle (only if TYP=2)

The cycle L185 comprises the following process:

- Main spindle STOP at TYP=0 or positioning the Main spindle at TYP=2
- Advance remnant tray
- Open bar clamping
- Advance feed finger - without closing the material chuck
- Eject remnant to the front
- Close bar clamping
- Retract remnant tray

```
L185 ( 2, 15 )
```

Start-of-bar program

Tool carrier 1

```
%_N_1_7_MPF
N0005 L100
N0010 GXZ73
N0025 G59 X=XMW_1 Z=ZMW_1
N0030 T2 D102 1)
N0035 L185 (0) 2)
N0040 G0 X0 Z5 S4=1500 M4=3
N0045 Z-48 M1=8
N0050 G1 G95 Z-63.5 F0.22
N0055 G0 Z-40
N0060 GXZ73

N1010 WAITM (10,1,2)

N1020 WAITM (20,1,2)

N9999 M30
```

Tool carrier 2

```
%_N_2_7_MPF
N0005 L100
N0010 GXZ73
N0015 G59 X=XMW_1 Z=ZMW_1
N0025 T6 D206 3)
N0030 G0 Z-54

N2010 WAITM (10,1,2)

N0040 G0 X34 M4=3 S4=2500
N0045 G1 G95 X16 F0.07
N0050 G0 X65
N0055 GXZ73 M1=9
N0060 M1487 4)

N2020 WAITM (20,1,2)

N9999 M30
```

1) Spot drill Ø 18.5.
2) Bar change with remnant ejection
3) Cut-off
4) Retract feed finger

Feeding - feeding - machining

Tool carrier 1

```
%_N_1_0_MPF
N5 L100
N10 GXZ73
N15 START:_
N20 G59 X=XMW_1 Z=ZMW_1
N25 T1 D101                ;stop
N30 G0 X0 Z-50             ;1st stop length
N35 M1=69
N40 M87                    ;feed 1st material bar
N45 M1=68
N55 M1487                  ;feeder collet backwards
                           ;infeed 2nd stop length
N60 G0 Z0.5 M1587          ;wait until feeder collet in rear position

N1010 WAITM (10,1,2)
N65 M10=198 H111053982     ;inquiry material end YES/NO
                           ;(result will be stored in R50
N70 STOPRE
N75 I_R900=R50             ;load value R50 in I_R900
N1020 WAITM (20,1,2)
N80 IF I_R900==1 GOTOF END_
;with material end skip to M30 - otherwise continue program
N85 M1=69
N90 M87                    ;feed 2nd material bar
N95 M1=68
N100 M1487                 ;feeder collet backwards

N1025 WAITM (25,1,2)
...
...
(Bearbeitung)
...
...
N105 GXZ73
N110 I_M392
N115 IF I_START GOTOB START_
END_:
N9999 M30
```

Tool carrier 2

```
%_N_2_0_MPF
N5 L100
N10 GXZ73
N15 START:_
N20 G59  X=XMW_1 Z=ZMW_1  ;zero point offset

N2010 WAITM (10,1,2)

N2020 WAITM (20,1,2)
N25 STOPRE
N30 IF I_R900==1 GOTOF END_

N2025 WAITM (25,1,2)
...
...
(machining process)
...
...
N35 GXZ73
N35 I_M392
N40 IF I_START GOTOB START_
END_:
N9999 M30
```

Feeding - machining - feeding - machining

Tool carrier 1

```
%_N_1_0_MPF
N5 L100
N10 GXZ73
N15 START_:
N20 G59 X=XMW_1 Z=ZMW_1          ;1st zero point offset
N25 T1 D101                      ;stop
N30 G0 X0 Z0
N35 M1=69
N40 M87                          ;feed 1st material bar
N45 M1=68
N50 G0 Z50 M4=3 S4=2800
N55 M1487                        ;feeder collet backwards
N1010 WAITM (10,1,2)
...
;1.Bearbeitung
...
...
N1015 WAITM (15,1,2)
N60 G59 X=XMW_1 Z=ZMW_2          ;2nd zero point offset
N65 T1 D101
N70 G0 X0 Z0
N1020 WAITM (20,1,2)
N75 M10=198 H111053982           ;inquiry material end YES/NO
                                 ;result will be stored in R50
N80 STOPRE
N85 I_R900=R50
N1030 WAITM (30,1,2)
N90 IF I_R900==1 GOTOF END_
                                 ;with material end skip to M30
                                 ;otherwise continue program
N95 M4=5
N100 M1=69
N105 M87                         ;feed 2nd material bar
N110 M1=68
N1035 WAITM (35,1,2)
...
...
;2nd machining process
...
...
N115 M1487                       ;feeder collet backwards
N120 M4=5
N125 GXZ73
N130 I_M392
N135 IF I_START GOTOB START_
N9999 M30
```

Tool carrier 2

```
%_N_2_0_MPF
N5 L100
N10 GXZ73
N15 START_:
N20 G59 X=XMW_1 Z=ZMW_1          ;1st zero point offset


N1010 WAITM (10,1,2)
...
;1st machining process
...
...
N2015 WAITM (15,1,2)
N20 G59 X=XMW_1 Z=ZMW_2          ;2nd zero point offset


N2020 WAITM (20,1,2)


N2030 WAITM (30,1,2)
N25 STOPRE
N30 IF I_R900==1 GOTOF END_


N1035 WAITM (35,1,2)
...
...
;2nd machining process
...
...


N35 I_M392
N40 IF I_START GOTOB START_
N9999 M30
```

Set-up Bar Loading Magazine

The change over of the bar loading magazine can start as soon as the last stock bar has left the magazine and machining of the remaining bar length inside the main spindle is completed.
For set-up/change over the guide channel is positioned on the left hand side and is open.

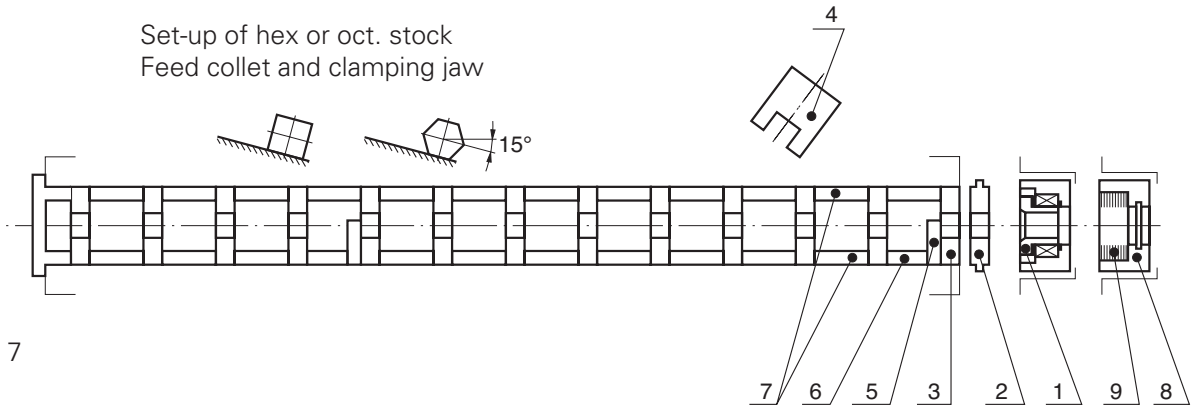


Fig. 7

L1601.10081/4

Required accessories

Pos.	Description	Part-No.	Number of pieces	
			LM 3200	LM 4200
1	Guide sleeve pre-machined	8 904 908.0001		
	Guide sleeve stock dependent to DIA. 30	L6 8081.- - - -	1	1
2	Clamping jaws pre-worked 2 pcs = 1 set	8 L6 8051		
	Clamping jaws stock dependent round	L6 8051.- - - -	1 set	1 set
	Clamping jaws stock dependent square	L6 8071.- - - -	1 set	1 set
	Clamping jaws stock dependent hex	L6 8061.- - - -	1 set	1 set
	Clamping jaws stock dependent octagon.	L6 8091.- - - -	1 set	1 set
3	Half-shell stock dependent DIA. 6 - 18[1)]	L6 8001.- - - -	26	38
	Half-shell stock dependent DIA. 18 - 30[1)]	L6 8011.- - - -	26	38
	Half-shell stock dependent DIA. 30 - 42[1)]	L6 8021.- - - -	26	38
	Half-shell stock dependent DIA. 42 - 54[1)]	L6 8031.- - - -	26	38
4	Locating fork for hex and square stock			
	- pre-machined	8 L6 8041		
	- stock dependent	L6 8041.- - - -	1	1
5	Brake ring DIA-range 8 - 14	L6 8001.60	2	3
	Brake ring DIA-range 14 - 25	L6 8001.70	2	3
	Brake ring DIA-range 25 - 40	L6 8001.80	2	3
	(starting at DIA. 40 no brake ring)			
6	Spacer short (in connection with brake ring)	L6 8001.50	2	3
7	Spacer	L6 8001.40	24	36
8	Bush starting with Ø 30	L6 7083.20	1	1
9	Round brush Ø42	490 910.0021	1	1
9	Round brush Ø52	490 910.0011	1	1

Print and measuring-item 1 through 4 - see brochure "Bar dependent accessories for the bar loading magazine LM..., literature N° LL1699.1010x".
Parts-item 5 through 7 are standard equipment; separate order is not necessary.

1) The range diameters are in relation to the bore which has to be larger than the bar diameter.

The following steps are recommended for mounting the various components (Fig. 7):

1. Alternate split bushings (half-shells) and spacer into both guide channels. Mount two brake rings in the lower part of the guide channel by LM 3200 (three brake rings by LM 4200) separated by a short spacer. The left brake ring at the end of the shortest stock bar, the right brake ring just before the last split bushing is inserted. (The brake rings only required to DIA. 40.)

2. The two clamping jaws to be screwed into the clamping collet. (Clamping jaws are stopping the split bushings from sliding out.)

3. Locating fork and gib (by hex and square stock) have to be pushed into the locating attachment from the top aided by a tension spring.

4. Adjust distance between swivel levers and baffles of the supply areas according to the stock diameter, the width across flats respectively, using the data provided in Fig. 8.

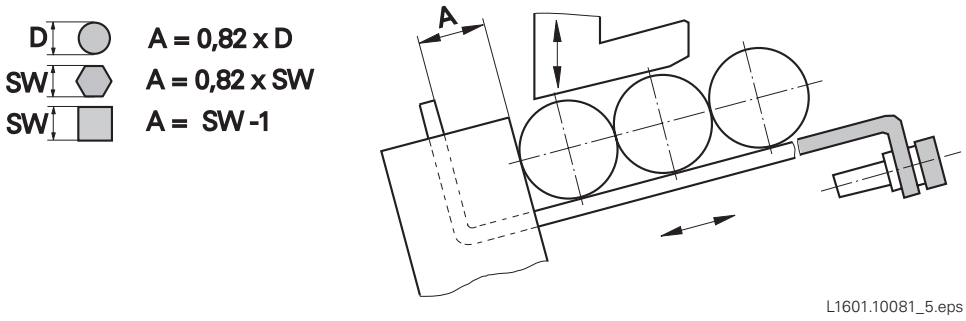


Fig. 8

5. Push brake unit down and block, by bars with a diameter smaller than 20 mm or by hex or square stock.

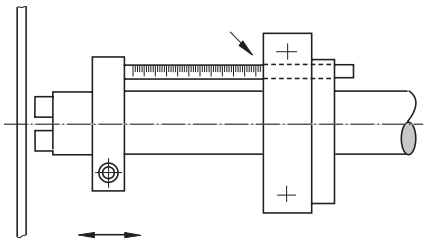
6. Set-up stock bars on supply area surface supported against the gib at the right.

7. Adjust holding down device according to Fig. 8

The main spindle will be stopped immediately and an error message is displayed (Danger!!) when the photo electric beam is interrupted at running workspindle.

When machine work cycle is completed the bar loading set-up continues.

8. Insert collet.
9. Adjust **feed slide stroke*** at the feed slide scale (feed slide has to be at right end position) - (Fig. 9.



The **feed slide stroke** consists of:

Workpiece length	e.g. 20,0 mm
Cut-off width	e.g. 4,0 mm
Allowance	2,0 mm
Stroke to be set	26,0 mm

Fig 9

10. Insert feed tube with screwed in feed finger, with intermediate guide pipe and stock guide ring from the loading magazine into the spindle and clamp the ball bearings into the supply slide (supply slide must be in left end position).

- For effortless stock bar feed the feed fingers must have a ground and polished diagonal line at a max. 30 degree angle By hex or square stock the feed finger profile has to align with the collet.
- (The availability of an additional feed tube could shorten the set-up time.)

11. Slide ball bearing assembly with guide sleeve into connecting bushing and secure with locking lug.

The guide sleeve is needed only up to bar diameter 30.
Starting with Ø30 a round brush is being installed instead of the guide sleeve to wipe off oil from the material bar.

12. Adjust vee rest (Fig. 10) and push unto both slide bars. Connect drive bar to the first swivelling lever.
Vee rest height is adjusted so that the front end of the bar does not sag and glides easily through the guide bush. The vee rest is required only up to DIA. 25 mm.

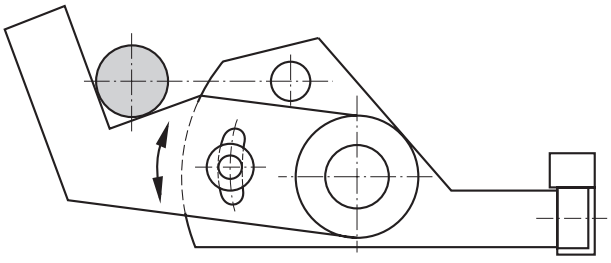


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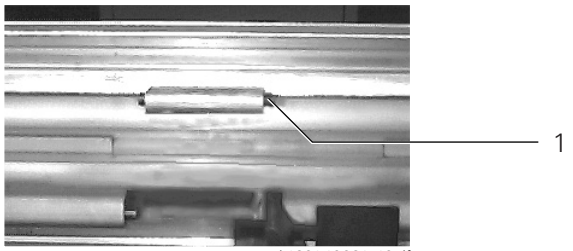
Fig. 10

Last the loading magazine is manually advanced to the ready position (guide channel without material in ready position at the right), then "Bar loading" in manual mode. Automatic operation can start now.

The alternating locking bars in both guide channels must not collide upon closing of guide channel, therefore, should not be shifted out of position, i.e. must be moved into their correct position again.



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1 Locking bar

The stock dependent parts required for set-up are described in the work instructions. All references relating to the optimum measurements are valid only if the following stock bar requirements have been met:

Stock bar requirements

Only cold drawn bars can be machined. Directly dependent on the straightness of the stock bar are achievable speeds, vibrations, noise level as well as the surface condition and tolerance of the workpiece. To achieve the highest values it is permitted only to machine bars which deviate not more than 0.5 mm/m from the straight line. Bar-ends must also be free of buckling or short kinks.
Bars which do not meet these requirements have to be adjusted respectively.
The front bar end has to be chamfered at less than 30 degrees, the same goes for hex and square stock. Bar-end must be free of burrs and bars must be clean!

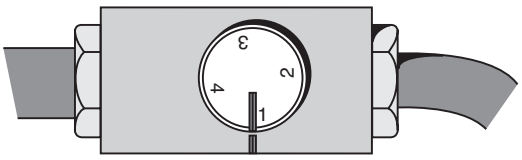
When machining tubing the ends must be closed tightly using some type of plug or any similar device.

Adjustment of the oil filling in the guide channel

The oil cushioning of the bar is regulated in relation to the guide channel inserts Ø with the oil flow regulating valve. Four positions can be set (90 degr. grid).

Excessive oil flow from the front of the empty guide channel must be avoided.

Position oil flow regulating valve	guide channel inserts
1	ca. Ø 6 to 18
2	ca. Ø 18 to 30
3	ca. Ø 30 to 42
4	ca. Ø 42 to 54



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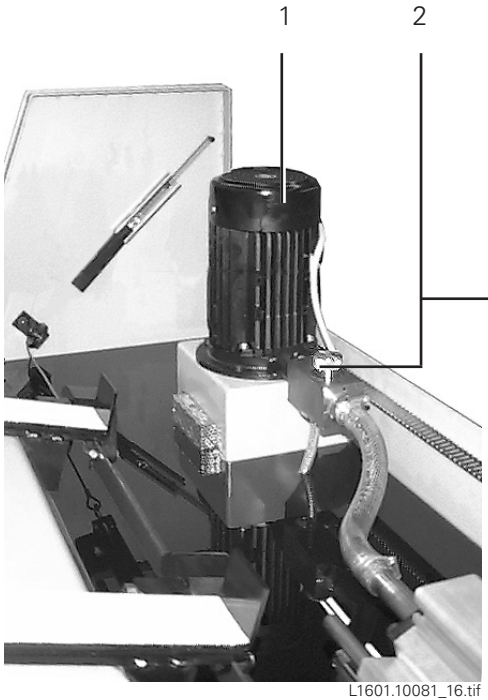

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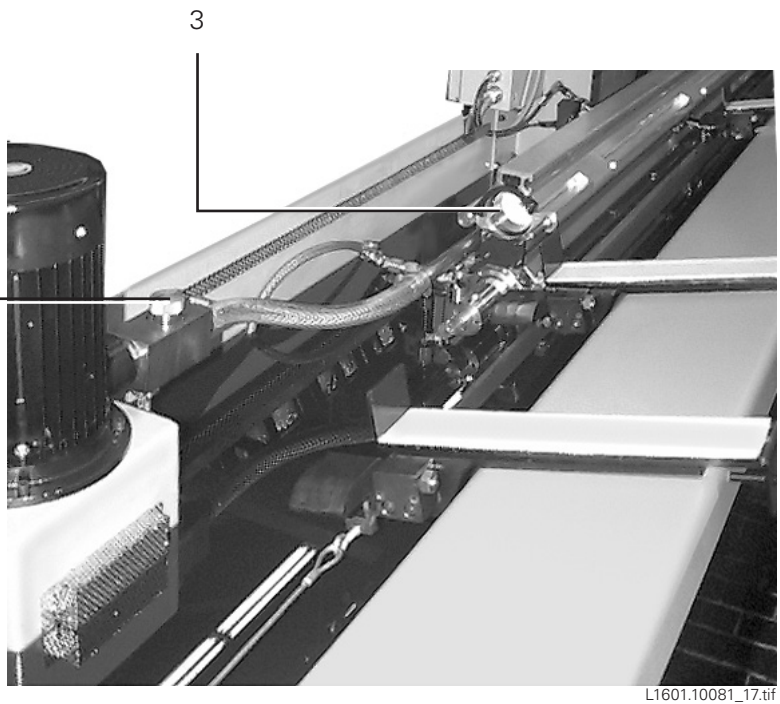

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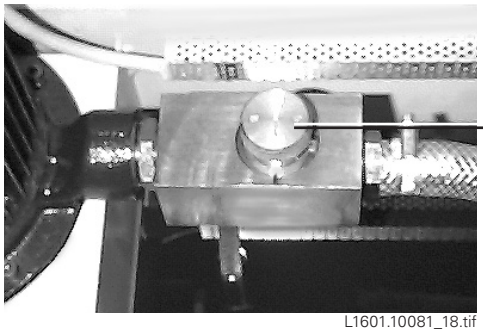

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1 Hydraulic pump
2 Oil flow regulating valve
3 Guide channel with inserts

Maintenance

Required maintenance works

- **Cleaning the intake filter of the circulating lube pump**
  The filter (2) below the circulating lube pump can be removed for cleaning.

- **Topping up the oil**
  Observe the oil level display (1) on the left side. The level must always be between the minimum and the maximum marks.

- **Oil change**
  The oil must be sucked out for the oil change. (A draining screw has been omitted for safety reasons.) The accumulated dirt at the bottom can then be removed.

- **Cleaning the light barrier**

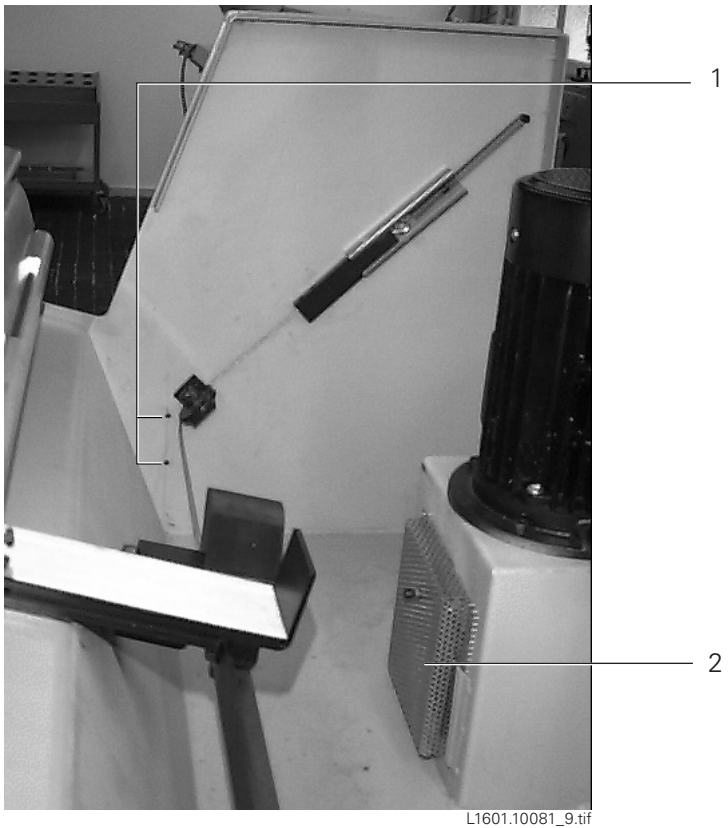

Fig.: Oil level display and filter

Technical Data

Stock bar diameter

Spindle capacity		52
round	mm	8-52
square [1,2)]	mm	6-20
hexagon[1)]	mm	7-41
octagon[1)]	mm	7-40
(suitable for draw bars)		

Bar length

LM 3200	max.	mm	3200
over bar diameter 25	min.	mm	2500
up to bar diameter 25	min.	mm	1500
LM 4200	max.	mm	4200
over bar diameter 25	min.	mm	2500
up to bar diameter 25	min.	mm	1500

Bar support

Width of the support	mm	approx. 300 = 6 bars DIA. 52
New bar insert time	s	approx. 5

Oil (ISO VG 68)

LM 3200		l	approx. 150
LM 4200		l	approx. 200
Output circulating pump	kW	0,75	

Weight (without oil)

LM 3200	kg	700
LM 4200	kg	875

1) Hex or squared off stock requires separate order of alignment equipment.
2) only in relation with guidesleeve 904908. (see ´required accessories´ pos.1).

INDEX

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