Haas Automation, Inc.

# Servo Bar 300

Operator's Manual Supplement
96-0013
Revision BC
December 2013
English
Original Instructions

**ATTENTION!**
This manual contains important placement instructions.
Refer to the Installation Section, starting on page 43.

To get translated versions of this Manual:
1. Go to ***www.HaasCNC.com***
2. See *Owner Resources* (bottom of page)
3. Select *Manuals and Documentation*

Haas Automation Inc.
2800 Sturgis Road
Oxnard, CA 93030-8933
U.S.A. | HaasCNC.com

# LIMITED WARRANTY CERTIFICATE

Haas Automation, Inc.

Covering Haas Automation, Inc. CNC Equipment

Effective September 1, 2010

Haas Automation Inc. (“Haas” or “Manufacturer”) provides a limited warranty on all new mills, turning centers, and rotary machines (collectively, “CNC Machines”) and their components (except those listed below under Limits and Exclusions of Warranty) (“Components”) that are manufactured by Haas and sold by Haas or its authorized distributors as set forth in this Certificate. The warranty set forth in this Certificate is a limited warranty, it is the only warranty by Manufacturer, and is subject to the terms and conditions of this Certificate.

### Limited Warranty Coverage

Each CNC Machine and its Components (collectively, “Haas Products”) are warranted by Manufacturer against defects in material and workmanship. This warranty is provided only to an end-user of the CNC Machine (a “Customer”). The period of this limited warranty is one (1) year. The warranty period commences on the date the CNC Machine is installed at the Customer’s facility. Customer may purchase an extension of the warranty period from an authorized Haas distributor (a “Warranty Extension”), any time during the first year of ownership.

### Repair or Replacement Only

Manufacturer’s sole liability, and Customer’s exclusive remedy under this warranty, with respect to any and all Haas products, shall be limited to repairing or replacing, at the discretion of the Manufacturer, the defective Haas product.

### Disclaimer of Warranty

This warranty is Manufacturer’s sole and exclusive warranty, and is in lieu of all other warranties of whatever kind or nature, express or implied, written or oral, including, but not limited to, any implied warranty of merchantability, implied warranty of fitness for a particular purpose, or other warranty of quality or performance or noninfringement. All such other warranties of whatever kind are hereby disclaimed by Manufacturer and waived by Customer.

## Limits and Exclusions of Warranty

Components subject to wear during normal use and over time, including, but not limited to, paint, window finish and condition, light bulbs, seals, wipers, gaskets, chip removal system (e.g., augers, chip chutes), belts, filters, door rollers, tool changer fingers, etc., are excluded from this warranty. Manufacturer's specified maintenance procedures must be adhered to and recorded in order to maintain this warranty. This warranty is void if Manufacturer determines that (i) any Haas Product was subjected to mishandling, misuse, abuse, neglect, accident, improper installation, improper maintenance, improper storage, or improper operation or application, (ii) any Haas Product was improperly repaired or serviced by Customer, an unauthorized service technician, or other unauthorized person, (iii) Customer or any person makes or attempts to make any modification to any Haas Product without the prior written authorization of Manufacturer, and/or (iv) any Haas Product was used for any non-commercial use (such as personal or household use). This warranty does not cover damage or defect due to an external influence or matters beyond the reasonable control of Manufacturer, including, but not limited to, theft, vandalism, fire, weather condition (such as rain, flood, wind, lightning, or earthquake), or acts of war or terrorism.

Without limiting the generality of any of the exclusions or limitations described in this Certificate, this warranty does not include any warranty that any Haas Product will meet any person's production specifications or other requirements, or that operation of any Haas Product will be uninterrupted or error-free. Manufacturer assumes no responsibility with respect to the use of any Haas Product by any person, and Manufacturer shall not incur any liability to any person for any failure in design, production, operation, performance, or otherwise of any Haas Product, other than repair or replacement of same as set forth in the warranty above.

## Limitation of Liability and Damages

Manufacturer will not be liable to Customer or any other person for any compensatory, incidental, consequential, punitive, special, or other damage or claim, whether in an action in contract, tort, or other legal or equitable theory, arising out of or related to any Haas product, other products or services provided by Manufacturer or an authorized distributor, service technician, or other authorized representative of Manufacturer (collectively, "authorized representative"), or the failure of parts or products made by using any Haas Product, even if Manufacturer or any authorized representative has been advised of the possibility of such damages, which damage or claim includes, but is not limited to, loss of profits, lost data, lost products, loss of revenue, loss of use, cost of down time, business good will, any damage to equipment, premises, or other property of any person, and any damage that may be caused by a malfunction of any Haas product. All such damages and claims are disclaimed by Manufacturer and waived by Customer. Manufacturer's sole liability, and Customer's exclusive remedy, for damages and claims for any cause whatsoever shall be limited to repair or replacement, at the discretion of Manufacturer, of the defective Haas Product as provided in this warranty.

Customer has accepted the limitations and restrictions set forth in this Certificate, including, but not limited to, the restriction on its right to recover damages, as part of its bargain with Manufacturer or its Authorized Representative. Customer realizes and acknowledges that the price of the Haas Products would be higher if Manufacturer were required to be responsible for damages and claims beyond the scope of this warranty.

**Entire Agreement**

This Certificate supersedes any and all other agreements, promises, representations, or warranties, either oral or in writing, between the parties or by Manufacturer with respect to subject matter of this Certificate, and contains all of the covenants and agreements between the parties or by Manufacturer with respect to such subject matter. Manufacturer hereby expressly rejects any other agreements, promises, representations, or warranties, either oral or in writing, that are in addition to or inconsistent with any term or condition of this Certificate. No term or condition set forth in this Certificate may be modified or amended, unless by a written agreement signed by both Manufacturer and Customer. Notwithstanding the foregoing, Manufacturer will honor a Warranty Extension only to the extent that it extends the applicable warranty period.

**Transferability**

This warranty is transferable from the original Customer to another party if the CNC Machine is sold via private sale before the end of the warranty period, provided that written notice thereof is provided to Manufacturer and this warranty is not void at the time of transfer. The transferee of this warranty will be subject to all terms and conditions of this Certificate.

**Miscellaneous**

This warranty shall be governed by the laws of the State of California without application of rules on conflicts of laws. Any and all disputes arising from this warranty shall be resolved in a court of competent jurisdiction located in Ventura County, Los Angeles County, or Orange County, California. Any term or provision of this Certificate that is invalid or unenforceable in any situation in any jurisdiction shall not affect the validity or enforceability of the remaining terms and provisions hereof, or the validity or enforceability of the offending term or provision in any other situation or in any other jurisdiction.

# Customer Feedback

If you have concerns or questions regarding this Operator's Manual, please contact us on our website, www.HaasCNC.com. Use the "Contact Haas" link and send your comments to the Customer Advocate.

You also can find an electronic copy of this manual and other useful information on our website under the "Owner's Resources" tab. Join Haas owners online and be a part of the greater CNC community at these sites:

**atyourservice.haascnc.com**
At Your Service: The Official Haas Answer and Information Blog

**www.facebook.com/HaasAutomationInc**
Haas Automation on Facebook

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Follow us on Twitter

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Haas Automation on LinkedIn


**www.youtube.com/user/haasautomation**
Product videos and information

**www.flickr.com/photos/haasautomation**
Product photos and information

# Customer Satisfaction Policy

Dear Haas Customer,

Your complete satisfaction and goodwill are of the utmost importance to both Haas Automation, Inc. and the Haas distributor (HFO) where you purchased your equipment. Normally, your HFO will rapidly resolve any concerns you have about your sales transaction or the operation of your equipment.

However, if your concerns are not resolved to your complete satisfaction, and you have discussed your concerns with a member of the HFO's management, the General Manager, or the HFO's owner directly, please do the following:

Contact Haas Automation's Customer Service Advocate at 805-988-6980. So that we may resolve your concerns as quickly as possible, please have the following information available when you call:

- Your company name, address, and phone number
- The machine model and serial number
- The HFO name, and the name of your latest contact at the HFO
- The nature of your concern

If you wish to write Haas Automation, please use this address:

Haas Automation, Inc. U.S.A.
2800 Sturgis Road
Oxnard CA 93030
Att: Customer Satisfaction Manager
email: customerservice@HaasCNC.com

Once you contact the Haas Automation Customer Service Center, we will make every effort to work directly with you and your HFO to quickly resolve your concerns. At Haas Automation, we know that a good Customer-Distributor-Manufacturer relationship will help ensure continued success for all concerned.

International:

Haas Automation, Europe
Mercuriusstraat 28, B-1930
Zaventem, Belgium
email: customerservice@HaasCNC.com

Haas Automation, Asia
No. 96 Yi Wei Road 67,
Waigaoqiao FTZ
Shanghai 200131 P.R.C.
email: customerservice@HaasCNC.com

# Declaration of Incorporation

Product: Servo Bar 300 Magazine Bar Feeder

Model:_____ Serial Number:_____

Manufactured By: Haas Automation, Inc.

2800 Sturgis Road, Oxnard, CA 93030 **805-278-1800**

We declare, in sole responsibility, that the above listed product, to which this declaration refers, cannot function independently and does not change the function of the machine it is attached to. The Servo Bar 300, when incorporated into Haas CNC Lathes (turning centers), complies with the regulations as outlined in the CE directive for turning centers.

- Machinery Directive 2006/42/EC
- Electromagnetic Compatibility Directive 2004/108/EC
- Low Voltage Directive 2006/95/EC
- Additional Standards:
  - EN 60204-1:2006/A1:2009
  - EN 614-1:2006+A1:2009
  - EN 894-1:1997+A1:2008
  - EN 13849-1:2008/AC:2009
  - EN 14121-1:2007

RoHS: COMPLIANT by Exemption per producer documentation. Exempt by:

a) Large scale stationary industrial tool
b) Monitoring and control systems
c) Lead as an alloying element in steel, aluminum, and copper

Person authorized to compile technical file:

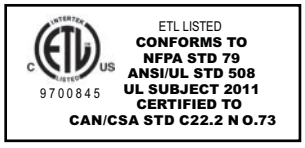
Patrick Goris
Address: Haas Automation Europe
Mercuriusstraat 28, B-1930
Zaventem, Belgium

USA: Haas Automation certifies this machine to be in compliance with the OSHA and ANSI design and manufacturing standards listed below. Operation of this machine will be compliant with the below-listed standards only as long as the owner and operator continue to follow the operation, maintenance, and training requirements of these standards.

- *OSHA 1910.212 - General Requirements for All Machines*
- *ANSI B11.5-1984 (R1994) Lathes*
- *ANSI B11.19-2003 Performance Criteria for Safeguarding*
- *ANSI B11.22-2002 Safety Requirements for Turning Centers and Automatic Numerically Controlled Turning Machines*
- *ANSI B11.TR3-2000 Risk Assessment and Risk Reduction - A Guideline to Estimate, Evaluate, and Reduce Risks Associated with Machine Tools*

CANADA: As the original equipment manufacturer, we declare that the listed products comply with regulations as outlined in the Pre-Start Health and Safety Reviews Section 7 of Regulation 851 of the Occupational Health and Safety Act Regulations for Industrial Establishments for machine guarding provisions and standards.

Further, this document satisfies the notice-in-writing provision for exemption from Pre-Start inspection for the listed machinery as outlined in the Ontario Health and Safety Guidelines, PSR Guidelines dated April 2001. The PSR Guidelines allow that notice in writing from the original equipment manufacturer declaring conformity to applicable standards is acceptable for the exemption from Pre-Start Health and Safety Review.




All Haas CNC machine tools carry the ETL Listed mark, certifying that they conform to the NFPA 79 Electrical Standard for Industrial Machinery and the Canadian equivalent, CAN/CSA C22.2 No. 73. The ETL Listed and cETL Listed marks are awarded to products that have successfully undergone testing by Intertek Testing Services (ITS), an alternative to Underwriters' Laboratories.


The ISO 9001:2008 certification from ISA, Inc. (an ISO registrar) serves as an impartial appraisal of Haas Automation’s quality management system. This achievement affirms Haas Automation’s conformance with the standards set forth by the International Organization for Standardization, and acknowledges the Haas commitment to meeting the needs and requirements of its customers in the global marketplace.

**Original Instructions**

# How to Use This Manual

To get the maximum benefit of your new Haas machine, read this manual thoroughly and refer to it often. The content of this manual is also available on your machine control under the HELP function.

**IMPORTANT:** Before you operate the machine, read and understand the Operator's Manual Safety chapter.

## Declaration of Warnings

Throughout this manual, important statements are set off from the main text with an icon and an associated signal word: "Danger," "Warning," "Caution," or "Note." The icon and signal word indicate the severity of the condition or situation. Be sure to read these statements and take special care to follow the instructions.

| Description | Example |
|---|---|
| **Danger** means that there is a condition or situation that **will cause death or severe injury** if you do not follow the instructions given. |  ***DANGER:*** *No step. Risk of electrocution, bodily injury, or machine damage. Do not climb or stand on this area.* |
| **Warning** means that there is a condition or situation that **will cause moderate injury** if you do not follow the instructions given. |  ***WARNING:*** *Never put your hands between the tool changer and the spindle head.* |
| **Caution** means that **minor injury or machine damage could occur** if you do not follow the instructions given. You may also have to start a procedure over if you do not follow the instructions in a caution statement. |  ***CAUTION:*** *Power down the machine before you do maintenance tasks.* |
| **Note** means that the text gives **additional information, clarification, or helpful hints.** |  ***NOTE:*** *Follow these guidelines if the machine is equipped with the optional extended Z-clearance table.* |

## Text Conventions Used in this Manual

| Description | Text Example |
|---|---|
| **Code Block** text gives program examples. | `G00 G90 G54 X0. Y0.;` |
| A **Control Button Reference** gives the name of a control key or button that you are to press. | Press **[CYCLE START]**. |
| A **File Path** describes a sequence of file system directories. | *Service* > *Documents and Software* >... |
| A **Mode Reference** describes a machine mode. | MDI |
| A **Screen Element** describes an object on the machine's display that you interact with. | Select the **SYSTEM** tab. |
| **System Output** describes text that the machine control displays in response to your actions. | `PROGRAM END` |
| **User Input** describes text that you should enter into the machine control. | `G04 P1.;` |

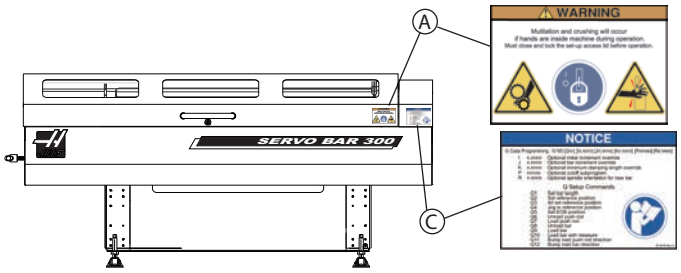
# Contents

# Chapter 1: Safety

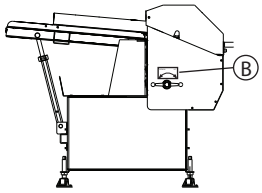
## 1.1 Introduction

Before starting any work on the machine, read this manual and the warning labels on the machine. Ensure that all personnel using this equipment understand the hazards that are present with automatic equipment. Individuals not associated with production or who are unfamiliar with this type of equipment must be kept away.

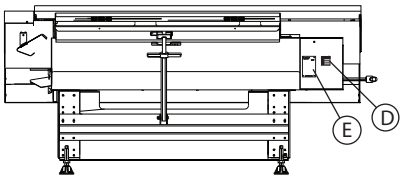
***WARNING:*** *The Bar Feeder is controlled by the lathe and may start at any time.*




Front View




Left Side View




Back View

A – Safety decal
B – Height adjustment
C – Setup commands
D – Parameter documentation
E – Machine data plate

## 1.2 Read Before Operating

Read and follow all safety instructions, warnings, and cautions associated with this machine.

Basic safety:

- Read and follow all machine maintenance, setup, and operation instructions. Read and follow spindle liner installation and use instructions.

Electrical safety:

***DANGER:*** *Lethal voltages may be present; disconnect main power before servicing this machine.*

- Disconnect all sources of power before maintaining, servicing, or altering setup of this machine.

Operation Safety:

- Do not operate or allow others to operate the Bar Feeder until receiving user and safety training.
- Moving parts inside; keep body, limbs, and foreign objects out of the machine during operation.
- Incorrect setup of the Bar Feeder or spindle liner tubes can cause the workpiece or rotating parts to be ejected with lethal force and may destroy the machine(s).
- Follow all setup precautions and verify correct setup before automatic operation.
- The Bar Feeder is automatically controlled and may start at any time.
- Warn persons nearby about an automatic machine in operation.
- Do not operate the lathe or the Bar Feeder with the access doors or the operator doors open.
- Replace worn or broken Bar Feeder components or spindle liners immediately.
- Do not alter or modify the Bar Feeder in any way.
- Do not use the Bar Feeder beyond recommended limits of speed or material capacity.
- Do not use the Bar Feeder without a proper size spindle liner installed.
- Stop the spindle if vibration or noise are present. Find and correct the condition before operating the machine.
- Do not attach dead stops, bar pilot bushings, or anti-vibration collars to the body of the rotating union (chuck closing cylinder) of the lathe. Violent, catastrophic failure of the rotating union can occur at high spindle RPM if the rotating union is damaged by devices attached to the body.
- Do not operate the spindle with bar material unclamped or extending beyond the spindle liner.
- Do not start or continue a machine cycle unless you are certain of the part-off allowance.
- Damage resulting from incorrect or improper use is not covered under the machine(s) warranty.
- No user serviceable parts inside the machine. Contact your dealer for approved service.

# 1.3 Modes of Operation

The Haas Bar Feeder has two modes of operation: setup and run.

## 1.3.1 Setup Mode

Setup Mode allows a trained user to load and adjust the machine to feed bar. Raise the setup lid to view the path of the bars.

***WARNING:*** *Never put your hands in the enclosure of the Bar Feeder unless the* **[EMERGENCY STOP]** *is pressed on the lathe.*

It is at this stage that the operator is most vulnerable to dangers, such as:

- Pinched fingers between bars.
- Pinched fingers/hands from moving mechanism.
- Pinch point between the Bar and lathe.
- pinched fingers/hands between the charging tray and the transfer tray.

## 1.3.2 Run Mode

Before you run a program, close and lock the setup lid. This puts the Bar Feeder in Run Mode and helps to keep personnel safe from harm.

***WARNING:*** *The area between the Bar Feeder and the lathe is hazardous. Hands or fingers can be pinched if placed between the two machines. Always press* **[EMERGENCY STOP]** *before you put anything between the Bar Feeder and the lathe.*

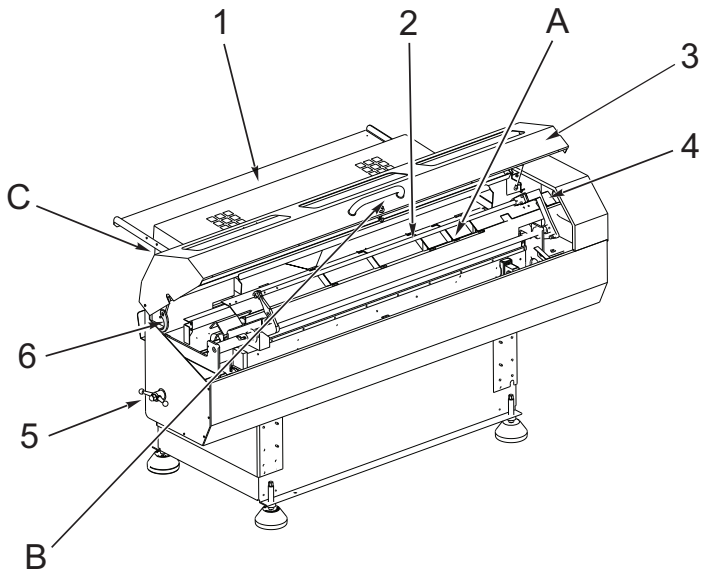
# Chapter 2: Introduction

## 2.1 Servo Bar 300 Overview

The Haas Servo Bar 300 (Bar Feeder) features a heavy-duty yet compact design, with up to 3 1/8" (79 mm) bar capacity and a footprint of only 4.5' x 8' (1.38 m x 2.43 m). Refer to the Haas web site at www.haascnc.com for Bar Feeder dimensions for your lathe.

Designed to boost productivity and streamline turning operations, this servo-driven Bar Feeder is built by Haas exclusively for Haas CNC lathes.

**F2.1:** Bar Feeder Components (front view)

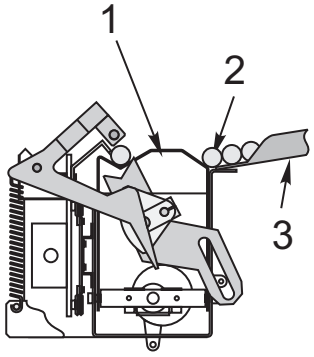



1. Charging Tray
2. Push Rod Assembly
3. Transfer Tray
4. End of Bar Switch
5. Height Adjustment Handle
6. Linear Adapter Spanner Wrench Storage

A. Transfer Tray
B. Set-p Lid Lock
C. Charging Tray Details

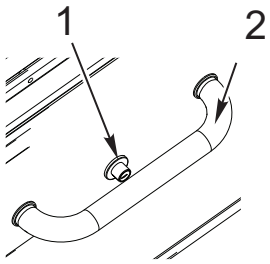
**F2.2:** Bar Feeder Components (front view) Detail A - Transfer Tray

1. Transfer Tray
2. Charging Position
3. Charging Tray

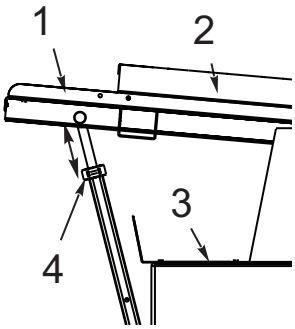



**F2.3:** Bar Feeder Components (front view) Detail B - Set-up Lid Lock

1. Set-up Lid Lock
2. Set-up Lid Lift Handle



**F2.4:** Bar Feeder Components (front view) Detail C - Charging Tray Details



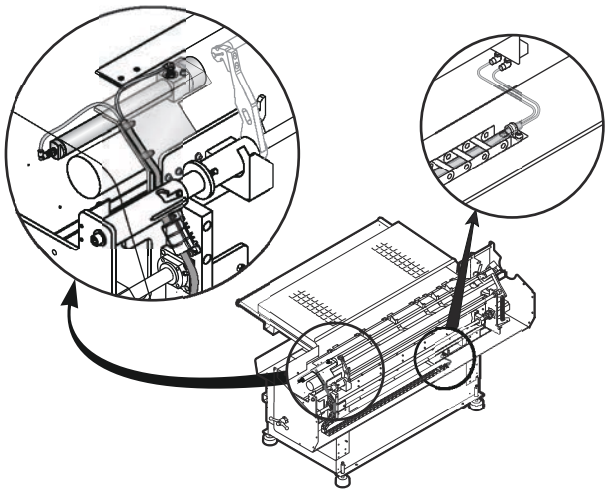

1. Charging Tray
2. Charging Tray Cover
3. Storage Tray
4. Charging Tray Adjustment Screw

## 2.2 Bar Feeder Extended Push Function

The bar feeder extended push kit comes as a standard feature on models BAR3010GBX and BAR3012ST. For the rest of the bar feeder models, this kit is offered as an option when required.

This option adds a pusher rod mounted on the bar feeder trolley. When the hardware is installed, the control causes the pusher to extend each time the trolley clears the track and reaches the right side. The control causes the pusher to retract when the trolley moves back home. The extended push travel is 8 inches.

**F2.5:** Bar Feeder Extended Push Kit



# 2.3 Bar Feeder Compatibility

This section contains compatibility tables that match lathes with the appropriate bar feeder.

## 2.3.1 ST / DS Bar Feeder Compatibility

**T2.1:** ST/DS Lathes and Compatible Bar Feeders

| Haas Lathe | Bar Feeder |
|---|---|
| ST-10 / ST-10Y | BAR1006ST |
| ST-20 / ST-20Y | BAR2008ST |
| ST-20SS / ST-20SSY | BAR2008ST |
| ST-20 / ST-20Y with BB-20 2.5" (64 mm) Bar Capacity Option | BAR2010ST |
| ST-30 / ST-30Y | BAR3010ST |
| ST-30 / ST-30Y with Gearbox Option | BAR3010GBX |
| ST-30SS / ST-30SSY | BAR3010SS |
| ST-30 / ST-30Y with BB 4" (102 mm) Bar Capacity Option | BAR3012ST |
| DS-30 / DS-30Y | BAR3008DS |
| DS-30SS / DS-30SSY | BAR3008DS |
| DS-30 / DS-30Y with DS-3B 3" (76 mm) Bar Capacity Option | BAR3010SS |

There are no available Bar Feeders for the following lathes: OI-1, ST-40, ST-40L and all Toolroom Lathes.

A Bar Feeder interface is included with all new Bar Feeders. If you need an interface kit to install the Bar Feeder to a different lathe, contact your Haas Factory Outlet.

Chuck upgrades do not change Bar Feeder compatibility.

## 2.3.2 GT/SL/ TL (Sub-Spindle) Bar Feeder Compatibility

**T2.2:** Bar Feeder Compatibility with GT/SL/TL (Sub-Spindle)

| Lathe | Replaced Bar Feeder (Obsolete Part Number) | New Bar Feeder and Additional Parts |
|---|---|---|
| GT-10 | BARGT05B | BAR1006S<br>Alignment Plate (25-1026A)<br>LINERGT-10 KIT (1 each)<br>UDK5 LINER DISK KIT (1 each).<br>Casting Level Pad (30-10798) 4 each |
| SL-10 | BAR1006B | BAR1006ST<br>Casting Level Pad (30-10798) 4 each |
| GT-20 | BAR1008B | BAR2008ST<br>Alignment Plate (25-1026A) Casting Level Pad (30-10798) 4 each |
| SL-20 / TL-15 7K RPM Option | BAR2005B | BAR2008ST<br>Alignment Plate (25-6516B)<br>LINER5 KIT (1 each)<br>OPTUDK5 LINER DISK KIT (1 each)<br>Casting Level Pad (30-10798) 4 each |
| SL-20 / TL-15 | BAR2008B | BAR2008ST<br>Alignment Plate (25-6516B)<br>Casting Level Pad (30-10798) 4 each |
| SL-20BB / TL-15BB 2" Bar Capacity | BAR2010B | BAR2010ST<br>Alignment Plate (25-6516B)• Casting Level Pad (30-10798) 4 each |
| SL-30 / TL-25 | BAR3010B | BAR3010ST<br>Alignment Plate (25-6516B) • Casting Level Pad (30-10798) 4 each |
| SL-30GB / TL-25GB | BAR3010GB | BAR3010GBX<br>Alignment Plate (25-6516B) • Casting Level Pad (30-10798) 4 each |

| Lathe | Replaced Bar Feeder (Obsolete Part Number) | New Bar Feeder and Additional Parts |
|---|---|---|
| SL-30BB / TL-25BB 4" Bar Capacity | BAR3015B | BAR3012ST<br>Alignment Plate (25-6516B)• Casting Level Pad (30-10798) 4 each |
| SL-40 | BAR4015B | No Model Available |

## 2.3.3 Compatibility Notes

Some previous Bar Feeder models can be retrofitted to a new lathe model. The Bar Feeders that can be modified include:

**T2.3:** Bar Feeders That Can Be Retrofitted to a New Lathe

| Bar Feeder | Lathe |
|---|---|
| BARGT05B, BAR1006B, BAR1008B, BAR2005B, BAR2008B, BAR2010B, BAR3010B, BAR3015B, and BAR4015B | ST-10, ST-10Y, ST-20,ST-20SS, ST-20Y, ST-20SSY, ST-30, ST-30SS, ST-30Y, ST-30SSY, DS-30, DS-30SS, DS-30Y, and DS-30SSY |

- Chuck upgrades do not change Bar Feeder compatibility.
- Brush Bar Feeders are not supported on machines with Coldfire processors or newer (e.g. MAINCON).
- Bar Feeder interface kits must be ordered through your Haas Factory Outlet. The kit will vary based on machine software and hardware. Requires software version 4.26 or later. The lathe must be built after January 2000.
- The following parts are the typical parts needed for a conversion.
  - Alignment Plate
  - Leveler Pads
  - Bar Feeder Interface

Contact the Parts Department for pricing and availability. Parts availability is not guaranteed.

# Chapter 3: Operation

## 3.1 Introduction

The Bar Feeder can store a single layer of 60" long bars on its adjustable charging tray, located at the rear of the machine. A spindle liner must be installed in the lathe spindle, and the transfer tray must be aligned to it, before the machine is ready for operation.

If you use a collet with the Bar Feeder, use the collet type that pulls the bar stock back against the push rod.

If you change the collet, or if you move the Bar Feeder, you must reset the reference position with these commands:

```
G105 Q4 (Jog To Reference Position) ;
G105 Q2 (Set Reference Position, the Initial Push) ;
```

### 3.1.1 Recommendations

**Operating Recommendations**

- Use safe programming methods to prevent a tool crash in a non part-off condition.
- Spindle liners are oversized and do not grip the outside of bar material. If vibration or poor surface finish occurs, check bar-liner clearance.
- To make sure that bar feeding is successful, keep a smooth bar path. Add a chamfer to the leading end of each bar, and also to the lead-in corners of your collet. If you make custom liners or bar guide discs, use a generous lead-in chamfer. Corners in the bar path can cause feeding problems.
- If a feed problem occurs, check for obstructions in the bar path before you continue operation.
- The liner must be just large enough to allow the bar to pass through freely, and centered in the spindle. The larger the diameter of the bar material, the shorter the bar should be, and the closer the bar liner fit.
- Make sure the bar stock is not too long, has an regular diameter, and is straight and clean. This helps prevent tool damage and poor part consistency.
- The bar stock should not extend past the end of the liner.
- When you use full-length bar stock, reduce your spindle speeds to prevent or reduce out-of-balance vibration.
- Wipe the bar stock before you place it on the charging tray. Dirty bar stock increases liner wear and may become jammed inside the liner. The bar may also fail to feed correctly.
- Do not use the 3/8" push rod to push 3/4" or larger stock.

- Use a drawback collet. The Bar Feeder push rod is held in place while the collet is closed. If the draw tube does not pull the bar stock into the push rod, length variation may occur.
- Cut the end of the bar stock that contacts the push rod at 90° to prevent protrusions or length variations.
- Elevate the charging tray just enough to allow the bar stock to feed. If the charging tray is too high, the bars may roll over each other, and the Bar Feeder may attempt to feed more than one bar.
- All bars loaded from the charging tray should be at least 10" (254 mm) long, or a minimum of 2.25 times the distance from the end of the transfer tray to the start of the liner bore, whichever is longer.
- When you feed large-diameter, heavy material, the bar length should not exceed 36" (914 mm).
- Place short bars on the charging tray close to the lathe.
- Withdraw the 3/8" push rod from the liner before the spindle reaches speed. Set minimum retract to 32" (813 mm).
- Before operation, make sure that your setup tools and spare spindle liners are out of the Bar Feeder.
- Store liners in the rack mounted to the rear of the Bar Feeder.
- Do not use bent or irregular stock. Square, hex or non-round bar material requires special piloting and alignment methods.

### Drawtube Cover Plate

- Remove the cover plate at the far end of the drawtube when using the Bar Feeder.
- Install the cover plate any time bar stock is not being fed automatically.

### Hexagonal Stock

- Hex liners are required when using hex stock.
- When the charging tray and height adjustment are correct, the bar is usually placed in the transfer tray at the same orientation.
- The bar lead end should have flats beveled at a 30° angle.
- Set the spindle orient option (Rn.nnn) to align the collet flats with loaded bar flats.
- The collet inside corner should be beveled.
- Big Bore: When running 5/8" and smaller hex stock in the Haas Universal Liner, the first two spindle liner disks should be hex shaped and oriented with the collet.

## 3.2 Servo Bar 300 Quick Start Guide

To prepare your Bar Feeder for operation:

1. Install a spindle liner for the size of the bar used, and adjust the transfer table to the proper height. The bar must slide from the transfer table into the liner without interference.
2. Load the bar stock onto the storage tray.

***NOTE:*** *The bar length must be a minimum 2.25 multiplied by the gap between the Bar Feeder and the liner, or at least 10" (254 mm) long.*

3. Press **[CURRENT COMMANDS]**.
4. Press **[PAGE DOWN]** until you reach the **`Bar Feeder`** page.
5. Enter the Part Length + Cutoff.
6. Enter the Initial Push Length.
7. Enter the Minimum Clamping Length.
8. Press **[MDI/DNC]**.
9. Type `G105 Q4 ;` (Jog to Reference Position) and press **[ENTER]**.
10. Press **[CYCLE START]**.
    The Bar Feeder loads the bar pushes it through the liner to within 4" (102 mm) of the collet face. The workholding is unclamped.
11. Press **[RESET]** and jog the end of the bar to the reference position. Clamp the workholding.
12. Press **[MDI/DNC]**.
13. Type `G105 Q2 ;` (Set Reference Position) and press **[ENTER]**.
14. The Bar Feeder is ready for operation. Your program should have the `G105` command at the end of the program.

## 3.3 Reference Position Setup

System variables used for Bar Feeder setup include:

- #3100 (Part Length + Cutoff): This is the total workpiece length, plus the amount that will be removed when the workpiece is “faced”.
- #3101 (Initial Push Length): The distance the material is pushed past the chuck jaws or the face of the collet.

- #3102 (Minimum Clamping Length): The minimum amount of stock needed to clamp safely and machine the workpiece.

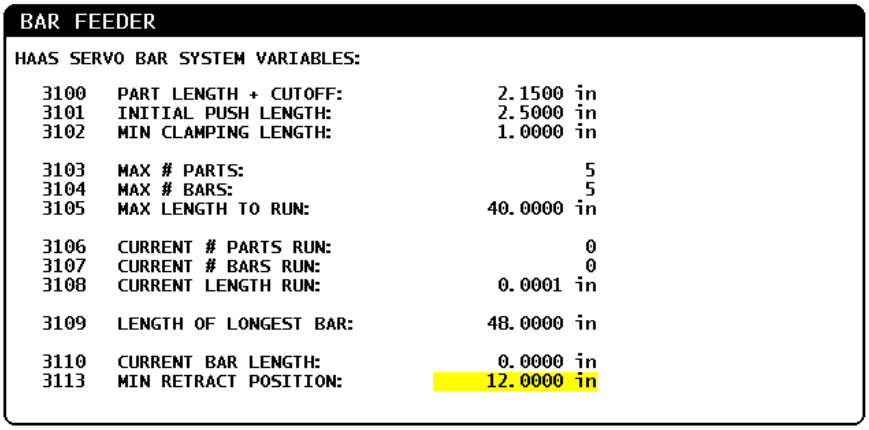
Example:

#3100=2.150 (2.0" long workpiece + .125" cut off width + .025" to face off)

#3101=2.5 (2.5" of stock pushed past face of the collet)

#3102=1.0 (1.0" of material to clamp. During subsequent bar feeds, the machine will not push the bar farther than a safe clamp position.)

**F3.1:** Bar Feeder Current Commands Display




To set up reference positions:

1. Press **[CURRENT COMMANDS]**.
2. Press **[PAGE UP]** or **[PAGE DOWN]** to navigate to the screen labeled **Bar Feeder**.
3. Highlight the **HAAS SERVO BAR SYSTEM VARIABLE** that you want to edit.
4. Type the value and press **[ENTER]**.
5. If there is a workpiece in the lathe, remove it. Command G105 Q4 ; (Jog To Reference Position) to load a bar and push it toward the face of the collet.
6. After the machine stops, push **[RESET]**. The control is now in **Handle Jog** mode for the V Axis.
7. Jog the material until the bar is flush with the face of the collet.
8. Close the workholding.
9. Command G105 Q2 ; (Set Reference Position).

   The machine now pushes the material to the value in Setting #3101 (Initial Push Length).
10. Measure the bar and make sure that the Bar Feeder pushed the stock the correct distance.

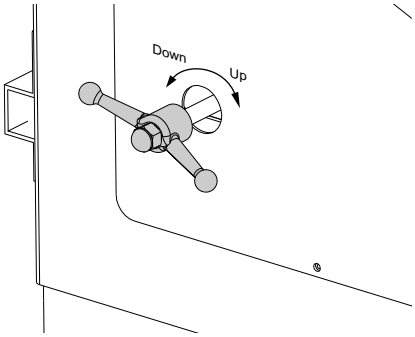
11. To change jobs, remove all material from the Bar Feeder and lathe, and change the spindle liners.
12. Load the new material in the Bar Feeder tray and enter new values for variables `#3100`, `#3101` and `#3102`.

## 3.4 Transfer Tray Adjustment

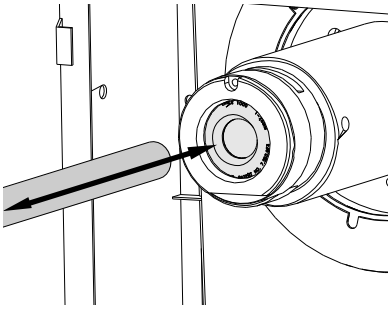
When you change applications to a different diameter bar stock, you must change the spindle liner and adjust the transfer tray.

To adjust the transfer tray to position a loaded bar concentric with the spindle liner:

1. Use the height adjustment handle to lower the transfer tray so that you can insert the correct spindle liner.




2. Place a bar in the transfer tray and raise the tray to align the bar to the spindle liner. Visually check the alignment.



3. Make sure that the collet is set for the diameter of the loaded bar as follows:
   a. With the collet open and the spindle stopped, slide the bar into the spindle liner and collet by hand, and check for misalignment, binding or interference.
   b. Remove the bar and place it in the charging tray.

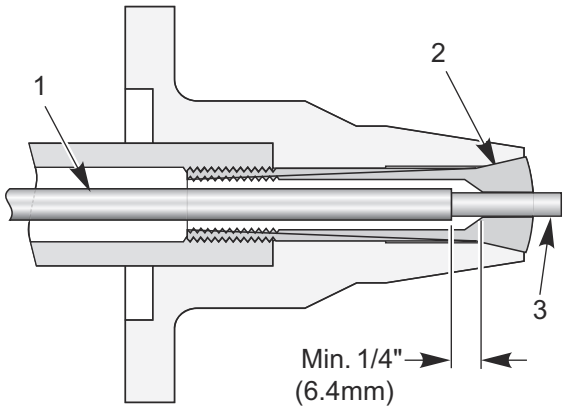
# 3.5 Bar Feeder Push Rod Clearance

***CAUTION:*** *Make sure that the push rod maintains 1/4" (6.4 mm) of clearance between it and the bore taper. This clearance is necessary to make sure that the push rod does not come in contact with collet clamping surfaces.*

To set push rod clearance:

1. Set macro variable #3102 MIN CLAMPING LENGTH to 1/4" (6.4 mm) from the collet clamping surfaces.

**F3.2:** Minimum Clamping Length: [1] Push Rod, [2] Collet, [3] part




:

# 3.6 Charging Tray Height Adjustment

The charging tray holds the supply of bar stock to be loaded onto the transfer tray. Use the adjustment handle under the tray to adjust the tray angle. The angle at which to set the charging tray is determined by the size and number of bars used.

1. Make sure that Macro variable #3102 MIN CLAMPING LENGTH is set to 1/4" (6.4 mm) from the collet clamping surfaces.
2. Turn the adjustment handle under the charging tray to adjust the feed angle. For most round stock, the charging tray angle should be 5° above horizontal.
3. Load the supply of bar stock onto the charging tray.

4. Type this test program and watch the Bar Feeder operation (you do not need to include the comments in parentheses):

```
G105 Q9 (Load Bar Stock) ;
G105 Q8 (Unload Bar Stock) ;
```

5. If necessary, adjust the tray angle.

## 3.7 Machining Small Diameter Bars

The Bar Feeder comes with two push rods: 3/4" and 3/8".

1. For all round stock material smaller than 0.8" (20 mm) in diameter, install the 3/8" push rod. Use the 3/4" push rod for material 0.8" (20 mm) in diameter and larger.
2. Change Parameter 405 when you change push rods. Use `1000` for the 3/8" Push Rod, or `1729` for the 3/4" Push Rod. Refer to page **59** for parameter change instructions.

## 3.8 Bar Feed Recovery

To recover a bar feed to its initial push-out length:

1. Enter **`MDI`** mode.
2. Press **[V]**, and then **[HANDLE JOG]**.
3. Use the jog handle to control the V Axis until the bar is at the reference position.
4. Type `G105 Q1 ;` to set the bar length. Press **[CYCLE START]**.
   This resets the end-of-bar position and pushes the bar to its initial push-out length.

# Chapter 4: Programming

## 4.1 Sample Programs

This section has two sample programs.

- Example 1 is a standard stock program with a procedure on how to set up and cut the parts.
- Example 2 is a program for reference for a double-push on a workpiece.

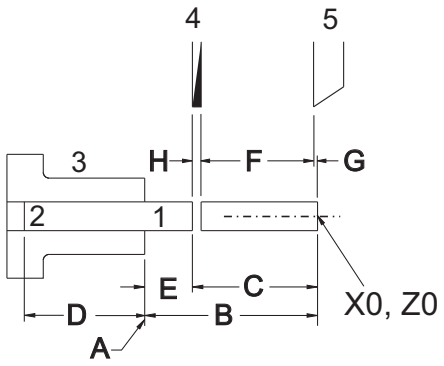
### 4.1.1 Example 1

This example uses 2" (51 mm) diameter solid stock material and the finished part is 1" (25 mm) long. The parts are cut off with a 0.125" wide parting tool. The spindle tool clearance is 0.875".

```
%
O00020 (PART OFF AND BAR FEED) ;
T404 ;
G50 S500 ;
G96 S500 M03 ;
G00 X2.1 Z0.1 M08 ;
Z-1.125 (1" PART LENGTH PLUS THE TOOL WIDTH) ;
G01 X-0.05 F0.005 ;
G00 X2.1 ;
G53 X0 ;
G53 Z0 ;
G105 ;
M30 ;
%
```

***NOTE:*** *Bypass the bar feed command for the first part run after this procedure. Do not use a PXXXX (part off subprogram) on the same line as the G105command. This causes a blank part to be cut off the bar at each bar change.*

**F4.1:** Example 1, Part Off and Bar Feed: [A] Reference Position Macro Variable, [B] Initial Push Length Macro Variable #310,
[C] Part Length + Cutoff Macro Variable #3100,
[D] Min Clamp Length Macro Variable #3102, [E] Spindle Tool Clearance,
[F] Finished Part Length, [G] Face Clean Up Allowance, [H] Parting Tool Width,
[1] Bar, [2} Stub, [3] Collet, [4] Cut-off Tool, [5] Facing Tool




To set up and run the program:

1. Set the reference position with these values. Refer to page **13** for information on setting the reference position.
   - Enter 1.125 for macro variable `#3100` Part Length + Cutoff + face off.
   - Enter 2.0 for macro variable `#3101` Initial Clamping Length.
   - Enter 1.0 for macro variable `#3102` Min Clamping Length.
2. Place a bar on the charging tray.
3. In **`MDI`** mode, command `G105 ;`

   The machine loads the bar and pushes it into the lathe and pushes it out the amount set in variable `#3101` (Initial Push Length) then clamps.
4. Set the tool offsets.
5. Select the `O00020` program from memory.
6. Press **[MEMORY]**, and then **[CYCLE START]**.

## 4.1.2 Example 2

Use this program for a double-push on a workpiece. Note that every time you command a `G105`, a different value is used temporarily in place of the permanent variable values below.

Refer to the descriptions for the following: Variables `#3100`, `#3101`, `#3102`, `I`, `J`, and `K`.

(I=Initial push length, J=part length + cutoff, K=min clamping length) could be added to the G105 line to make program function, regardless of the values stored in the macro variables #3101, #3100, and #3102.

Study both G105 callouts on the program for programmed moves. At the start of the first G105, the part should be flush with the collet face.

```
%
O00021 (DOUBLE PUSH WITH BAR FEEDER) ;
G105 (BAR FEED USING CONTROL VARIABLES) ;
T303 (FACE & TURN) ;
M01 ;
G50 S500 ;
G96 S500 M03 ;
G00 G54 X2.1 Z0 M08 ;
G01 X-0.05 F0.005 ;
G00 X1.5 ;
G01 Z-1. F0.01 ;
X2.1 ;
G53 G00 X0 ;
G53 Z0 ;
G105 J3.125 K2.(BAR FEED WITH OPTIONAL VARIABLES) ;
M01 ;
G00 G55 X2.1 Z0.1 S500 M03 ;
G01 X1.75 F0.01 ;
G01 Z-3. ;
X2.1 ;
G00 X4. Z0 ;
T404 (CUT OFF TOOL) ;
G50 S500 ;
G96 S500 M03 ;
G00 G55 X2.1 Z0.1 M08 ;
Z-3.125 ;
G01 X-0.05 F0.005 ;
G00 X2.1 ;
G53 X0 ;
G53 Z0 ;
M30 ;
%
```

## 4.2 Counter

The Bar Feeder can count either the numbers of bars used, the number of parts made, or the length of material run. A non-zero value set in Max # Parts (#3103), Max # Bars (#3104), or Max Length to Run (#3105) determines the active counting modes. The first non-zero value stops the cycle if more than one is present.

To stop the machine after a chosen number of parts are made, set Current Number of Parts Run (#3106) to zero. Then set Max # Parts (#3103) to the chosen quantity. The counter is incremented at each G105 command. If G105 is at the beginning of the program, the counter is incremented before the part is finished. If G105 is at the end of the program, the counter is incremented after each part is finished.

To stop the machine after a chosen number of bars are machined, set Current Number of Bars Run (#3107) to zero. Then set Max # Bars (#3104) to the chosen quantity. The counter is incremented as each bar is loaded.

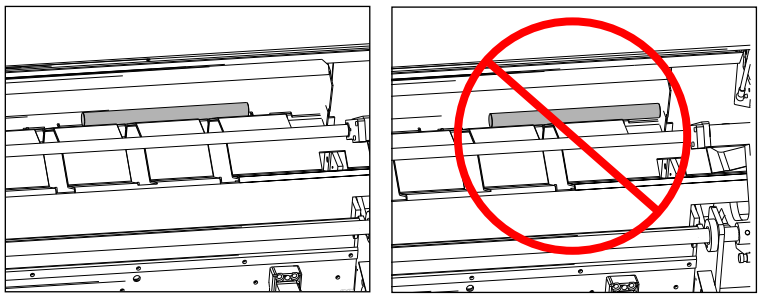
To stop the machine after a chosen length of bar is machined, set Current Length Run (#3108) to zero. Then set Max Length To Run (#3105) to the chosen length.

***NOTE:*** *The counter is incremented by the amount of push out at each G105 command. The amount is either the initial push length (#3101) after a bar is loaded or the part length + cutoff (#3100) at each following bar feed.*

To make the Current Length Run count only the material used to make parts, the reference position (#3112) must be set to the position of the end of the bar, after a finished part is cutoff. Then Initial Push Length (#3101) must be set equal to the Part Length + Cutoff (#3100).

## 4.3 Machining Short Bars

**F4.2:** Short Bars Must Use At Least Two Pick Arms



To machine short bars:

1. When you load short bars on the charging tray, make sure that at least to of the pick arms pick the bar up, or the bar may not load properly.
2. Load bars at least 10" (254 mm) long, or a minimum of 2.25 times the distance from the end of the transfer tray to the start of the liner bore, whichever is longer.
3. You can change the value of macro variable #3109 Length Of Longest Bar to reduce the time required to load a new bar.
4. To operate properly, all of the bars in the charging tray must be pushed against the side closest to the lathe.
5. Add a buffer distance to the length of the longest bar in the tray, and enter that value in macro variable #3109 on the **BAR FEEDER Current Commands** page.

   The bar load finger rapids up to the buffer position before slowing down to measure the bar length.

## 4.4 Bar Feeder as a Hard Stop

This is an example of using the Bar Feeder as a hard stop. This way, all parts start at the same point.

Example Program:

```
%
O00022 (USE BAR FEEDER AS HARD STOP) ;
G105 Q7 (LOAD PUSH ROD) ;
G160 (ALLOW THE USE OF THE “V”AXIS) ;
G00 V-20. (POSITION THE PUSH ROD) ;
M00 (LOAD THE PART) ;
G00 V-19. (BACK OFF THE PUSH ROD SO IT DOES NOT RUB THE
PART) ;
G161 (DISABLE THE “V” AXIS) ;
(RUN PROGRAM HERE) ;
M30 ;
```

To use your Bar Feeder as a hard stop:

1. Run the O00022 program.

***WARNING:*** *Do not load the workpiece until after the initial move of the Bar Feeder.*

2. Once the push rod moves into position, there is a pause in the program to allow you to open the workholding and load the workpiece against the push rod.

# 4.5 Macro Variables

**T4.1:** Bar Feeder Macro Variables

| Variable | Name | Description |
|---|---|---|
| #3100 | PART LENGTH + CUTOFF | Bar feed increment (Length of bar pushed out with each G105 after the bar is loaded). Finished part length + cutoff length + face cleanup allowance. |
| #3101 | INITIAL PUSH LENGTH | Initial bar feed length (Length of bar pushed out past the reference position when loaded). |
| #3102 | MIN CLAMPING LENGTH | Minimum length for clamping (Length of bar required to support the length pushed past the collet face). |
| #3103 | MAX # PARTS | Maximum number of parts. |
| #3104 | MAX # BARS | Maximum number of bars. |
| #3105 | MAX LENGTH TO RUN | Maximum length to run. |
| #3106 | CURRENT # PARTS RUN | Part counter. |
| #3107 | CURRENT # BARS RUN | Bar counter. |
| #3108 | CURRENT LENGTH RUN | Length counter. |
| #3109 | LENGTH OF LONGEST BAR | Length of the longest bar (set to 48, if unknown). Setting the length close to the size of the bar stock allows faster measurement of shorter bars. This length must be longer than the bar stock being used. |

| Variable | Name | Description |
|---|---|---|
| #3113 | MIN RETRACT POSITION | Adjust this to make sure the push rod retracts out of the spindle liner after each G105 push. Jog the V Axis until there is a safe gap between the end of the push rod and the spindle liner (approximately 1 inch/25 mm). Look at your V-Axis position, it will be a negative number (example: -13.0). Enter this number, as a positive value under variable #3113 (example: #3113=13.0). |
| #3110 (Read Only) | CURRENT BAR LENGTH | Current bar length measured by the machine. |
| #3112 (Internal Only) | REFERENCE POSITION | Established using G105 Q4 Jog To Reference Position |

# Chapter 5: G-Codes

## 5.1 G105 Servo Bar Command

This G-code is used with the Bar Feeder. For complete setup and programming, refer to the Bar Feeder Operator's Manual.

```
G105 [In.nnnn] [Jn.nnnn] [Kn.nnnn] [Pnnnnn] [Rn.nnnn]
```

**I** - Optional Initial Push Length (macro variable #3101) Override (variable #3101 if I is not commanded)
**J** - Optional Part Length + Cutoff (macro variable #3100) Override (variable #3100 if J is not commanded)
**K** - Optional Min Clamping Length (macro variable #3102) Override (variable #3102 if K is not commanded)
**P** - Optional subprogram
**R** - Optional spindle orientation for new bar

I, J, K are overrides to macro variable values listed on the Current Commands Page. The control applies the override values only to the command line in which they are located. Values stored in the Current Commands Page are not modified.

Under some conditions, the system may halt at the end of the bar feed and display the message *Check Bar Position*. Verify that the current bar position is correct, and then press **[CYCLE START]** to restart the program.

**T5.1:** Q Mode Descriptions

| Name | Description | Name | Description |
|---|---|---|---|
| Q0 | Normal | Q5 | Set EOB Position |
| Q1 | Set Bar Length | Q6 | Unload Push Rod |
| Q2 | Set Reference Position(Q2 Used in Combination with Q4 Only) | Q7 | Load Push Rod |
| Q3 | Set Alt Reference Position | Q8 | Unload Bar Stock |
| Q4 | Jog To Reference Position | Q9 | Load Bar Stock |

Q modes are used in MDI mode only and must always be preceded by G105.

G105 or G105 Q0 Normal Bar Feed

Used for commanding bar feeds in MDI mode. See G-code description for operation.

G105 Q1 Set Bar Length

Used to reset the bar length stored in control. Press **[V]** on the keyboard, and then **[HANDLE JOG]** on the control. Use the **[HANDLE JOG]** control to push the bar up to the reference position set during bar feed position setup. Run G105 Q1 and the current bar length is recalculated.

***NOTE:*** *The push rod must be in contact with the bar when setting bar length. If the bar is pushed out too far, jog the push rod back, push the bar against it by hand, and then jog the bar up to the reference point.*

G105 Q2 [I] Set Reference Position Then Initial Push

Sets the reference position, and then unclamps the bar and pushes it out the distance specified in macro variable #3101 (or I Value, if on the same line), and in Initial Push Length (#3101) or I Value, if on the same line, then reclamps and runs the subprogram PXXXXX, if specified. This command can only be used after running G105 Q4.

***NOTE:*** *The push rod must be in contact with the bar when setting bar length. If the bar is push out too far, jog the push rod back, push the bar against it by hand, and then jog the bar up to the reference point.*

The reference position only needs to be reset if the collet is changed or the Bar Feeder is moved, relative to the lathe. This position is stored with macro variable #3112; save and restore the macro variables if the control software is updated.

G105 Q3 Set Reference Position From Bar Face

Sets the reference position by subtracting macro variable #3100 Part Length + Cutoff from the current bar face position, and then runs the subprogram PXXXXX, if specified. See G105 Q2 description for other considerations. This command can only be used after running G105 Q4.

***WARNING:*** *The bar will not move when the command is executed. If executed more than once. It will move the reference position farther away from the bar face and possibly out of the clamping area. If the bar is not clamped when the spindle is started, severe damage will occur.*

G105 Q4 [R] Jog To Reference Position

When executed, a new bar is loaded, measured and pushed through the spindle and halted just before the chuck face. Pushing **[RESET]** switches the control to V-Axis Handle Jog mode and the user can jog the bar to the Reference Position.

`G105 Q5` Set EOB Position

Used to set end-of-bar switch position, which is used to determine bar lengths. This value is stored in macro variable `#3111` and only needs to be reset if the macro variable is lost. For reset procedure, see the Establish End of Bar Position section of installation instructions.

`G105 Q6` Unload Push Rod

`G105 Q7` Load Push Rod

`G105 Q8` Unload Bar

Unloads a bar from the transfer tray and places it in the charging tray.

`G105 Q9` Load Bar

Loads a bar from the charging tray and places it in the transfer tray.

`G105 Q10` Load Bar With Measure

Loads a bar from the charging tray and places it in the transfer tray and measures it. Used to check end-of-bar switch position. Place a bar of known length in the storage tray. Execute `G105 Q10`, and then compare the value of macro variable `#3110` on the Bar Feeder Current Commands page to the bar length.

`G105 Q11` Bump Load Push Rod Direction

Bumps the bar transfer mechanism toward the charging tray. Used for assembly access only.

`G105 Q12` Bump Load Bar Direction

Bumps the bar transfer mechanism away from the charging tray. Used for assembly access only.

# Chapter 6: Maintenance

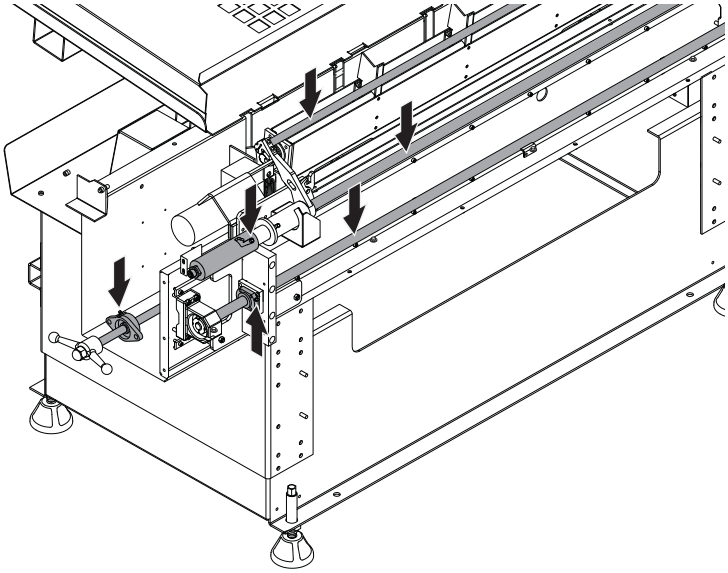
## 6.1 Maintenance

***WARNING:*** *Press* **[POWER OFF]** *before you do maintenance or service tasks.*

To ensure proper operation, the rotation control shaft and push rod require regular lubrication. Lubricate the rotation control shaft approximately once a month (or whenever it is dry), and the push rod during installation (or whenever it is dry).

- Grease the bar feed V-roller tracks, ballscrew, and rotation control shaft. Check all points every 40 hours of use and lubricate as needed.
- Frequently apply grease to the bar feed push rod and bushing to make sure it operates smoothly. Jog the push rod back and forth to spread the grease. In particular, the 3/8" push rod should be lubricated frequently. It bends easily if binding occurs.

**F6.1:** Bar Feeder Lubrication Points

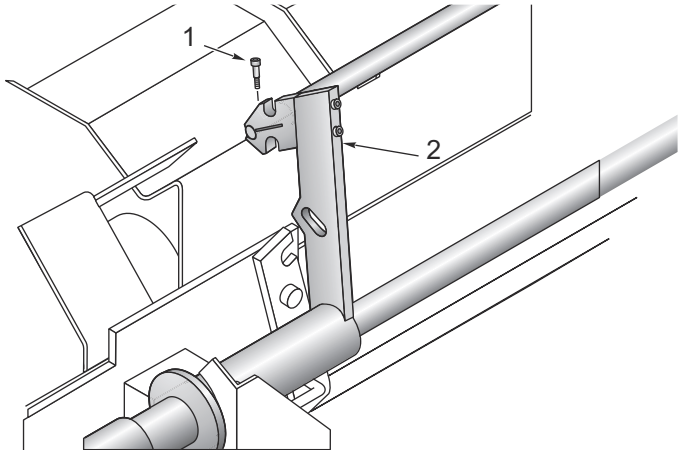


- Clean the transfer tray.
- Clean the lathe coolant collector regularly.
- If a feed problem occurs, check for obstructions in the bar path before you continue operation.

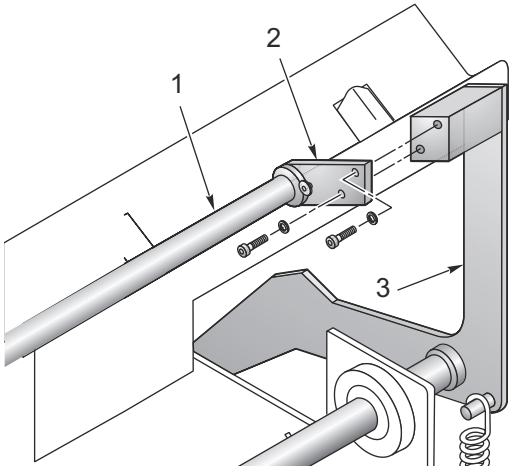
## 6.2 Push Rod Removal

To remove the push rod:

1. Power down the machine.
2. Loosen the socket-head clamp screw [1] on the rotation control arm [2].



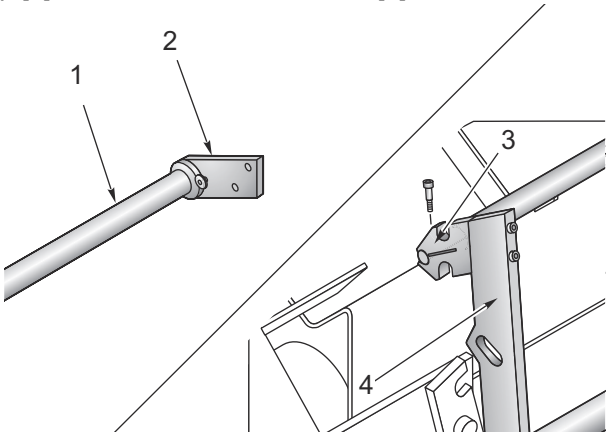

3. Remove the (2) socket-head screws from the push rod control bracket [2] on the control arm positioner [3]. Slide the bracket to the right and the push rod [1] to the left until it comes out of the clamp bracket.



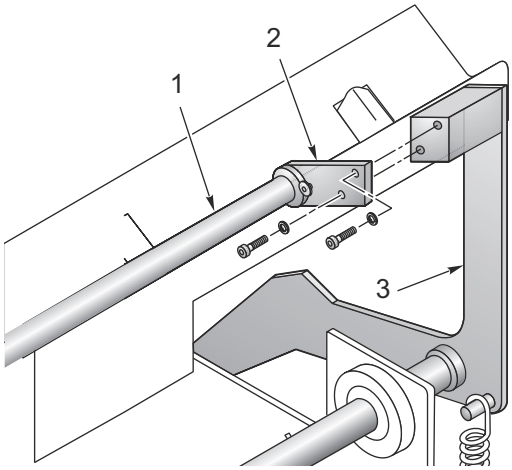
# 6.3 Push Rod Installation

To install the push rod:

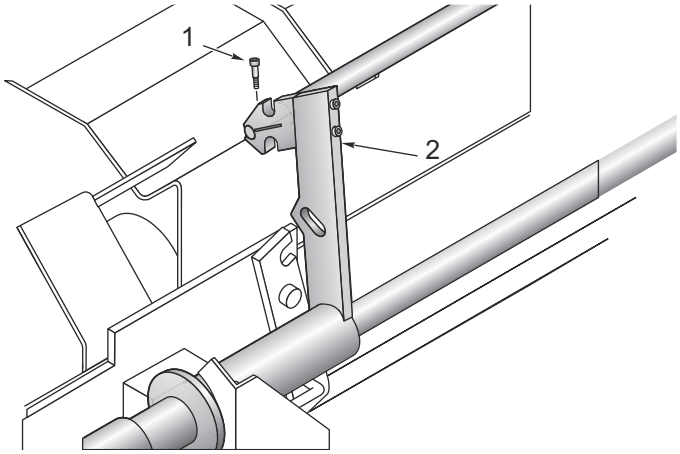
1. Slide the push rod control bracket [2] over the push rod [1], and slide the push rod into the clamp [3] on the rotation control arm [4].



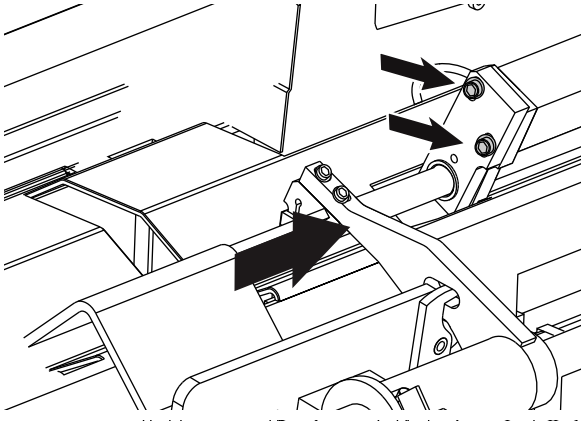

2. Attach the push rod control bracket [2] to the control arm positioner [3] with two socket head screws. Do not tighten the screws yet.



3. Tighten the clamp screw [1] on the rotation control arm [2].




4. Press **[V]** on the keyboard, and then press **[HANDLE JOG]**. Use the jog handle to move the push rod toward the spindle until it is about 2" (51 mm) from the control bracket. Center the push rod to the liner, and then tighten the control bracket screws.



## 6.3.1 Push Rod installation Check

***WARNING:*** *The 3/8" diameter push rod must be retracted from the spindle liner before the spindle is started. Failure to do so damages the push rod and spindle liner.*

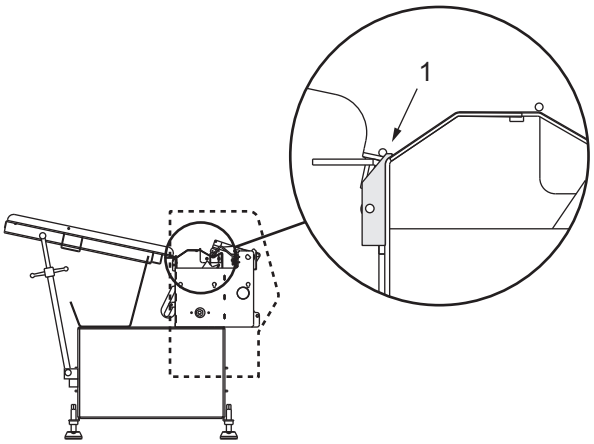
Push Rod functionality should be checked after installation. This check involves programing the lathe to retract the push rod out of the liner after each bar feed by changing the value of macro variable #3113 (Min Retract Position).

To determine the value,

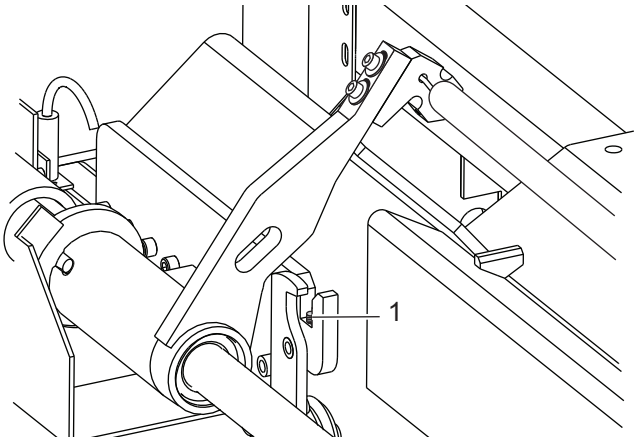
1. Press **[MDI/DNC]**.
2. Key in `G105 Q7 ;` then press **[CYCLE START]** to load the push rod.
3. Measure the distance between the end of the push rod and the spindle liner.
4. Subtract a buffer distance 1/2" (13 mm) and enter the remainder in macro variable `#3113` on the **`Bar Feeder Current Commands`** page.
5. Press **[MDI/DNC]**.
6. Key in `G105 Q6 ;` then press **[CYCLE START]** to unload the push rod.
7. As a final check, press **[MDI/DNC]**.
8. Key in `G105 Q0 ;` then press **[CYCLE START]** to load the first bar.
9. Check that the push rod retracts to the programmed position.

# 6.4 Push Rod Adjustment (3/8" Push Rod)

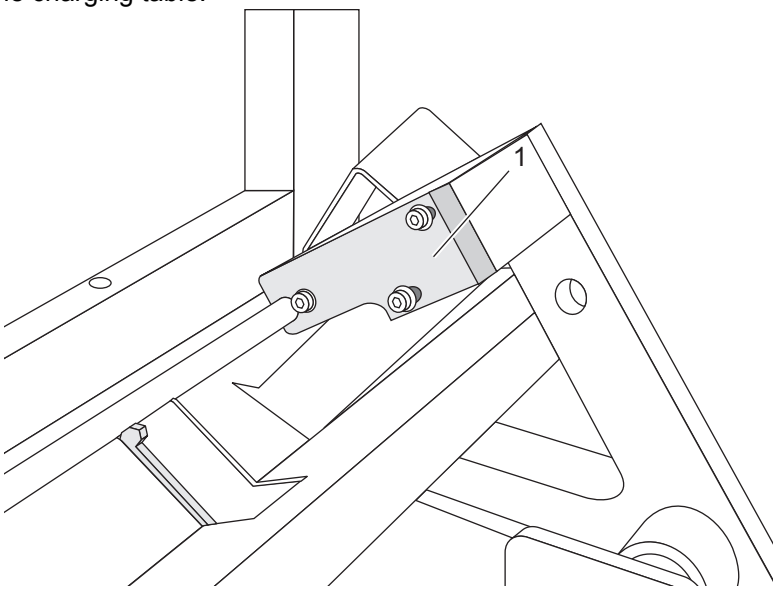
1. Adjust the transfer table to between 10° and 15° of elevation. Place a piece of 3/8" stock approximately 1" (25 mm) from the transfer table stop [1].




2. Lower the push rod arms and install the push rod connector. The push rod connector should be adjusted flush with the bottom of the pusher nose by raising or lowering the set screw [1]in the rod carriage.

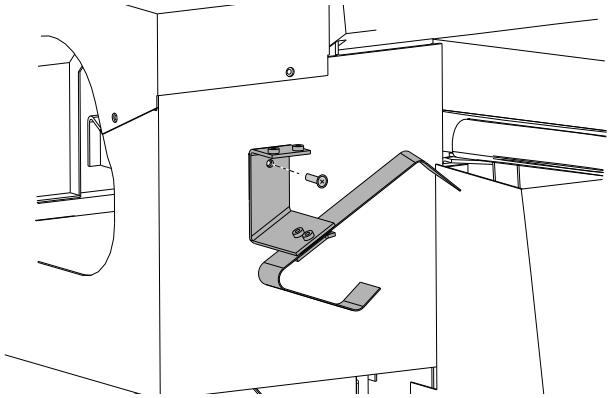


3. Raise or lower the push control bushing assembly [1] to align the push rod parallel with the charging table.

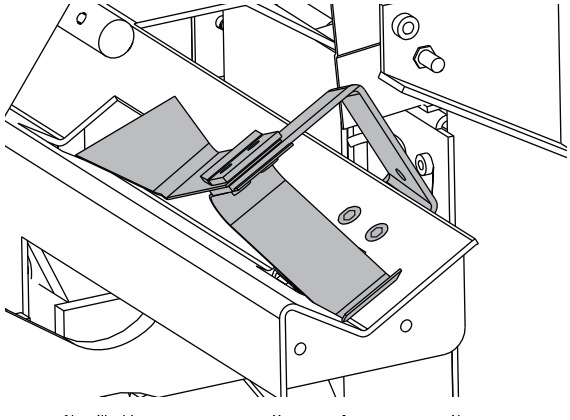



4. Use the hand wheel to jog the push rod up to the back of the spindle, and then realign the Bar Feeder to the spindle.
5. Return the push rod to the home position.

6. Remove the bar hold down bracket from its storage position on the rear of the Bar Feeder.



7. Install the bar hold down bracket.



## 6.5 Push Rod Adjustment (Large Bar)

To run 3/4" and larger bars:

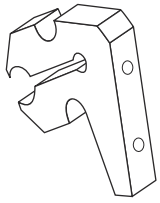
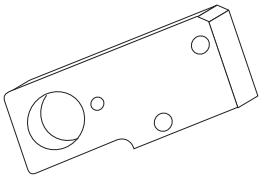
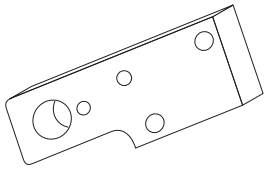
1. Use the 3/4" push rod.
2. Install a push control 3/4" bushing.
3. Adjust the push control 3/4" bushing so that the 3/4" push rod is parallel to the transfer tray.

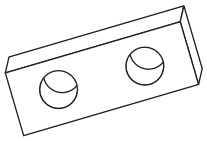
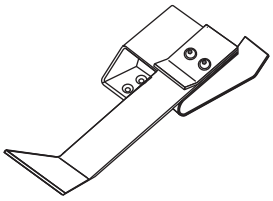
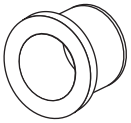
# 6.6 Bar Feeder Detail Parts List

**T6.1:** Bar Feeder Detail Parts

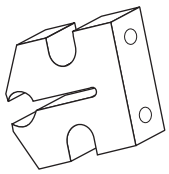
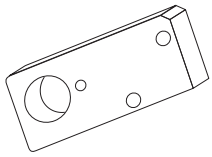
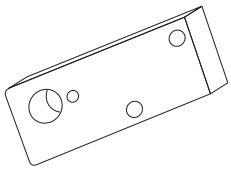
| Part | Part Number |
|---|---|
| 3/8" Push rod | 30-1389 |
| 3/4" Push rod | 30-0804 |

**T6.2:** Bar Feeder Current Parts

| Part | Part Number |
|---|---|
| Push Rod End Clamp  | 20-1033 |
| Push Rod Control Bushing Holder 3/4”  | 20-1034 |
| Push Rod Control Bushing Holder 3/8”  | 20-1035 |

| Part | Part Number |
|---|---|
| Spacer  | 20-1923 |
| Switch Hold Down Assembly  | 30-1336 |
| Nylon Flange Bearing 3/8"  | 51-0055 |
| Push Shaft Bushing 3/4"  | 20-1046 |

**T6.3:** Bar Feeder Previous Parts

| Part | Part Number |
|---|---|
| Push Rod Connector Adapter  | 20-6483 |
| Push Rod Control Bushing Holder 3/4”  | 20-6032 |
| Push Rod Control Bushing Holder 3/8”  | 20-6044 |

# Chapter 7: Installation

## 7.1 Lathe Preparation

### 7.1.1 Spindle Liner

A spindle liner is always required when the diameter of the bar stock is smaller than the lathe's spindle bor. Because the spindle bore of the ST-30 Big Bore is larger than the maximum bar capacity of the Servo Bar 300, a spindle liner is always required. Refer to diy.haascnc.com for spindle liner kit and installation information.

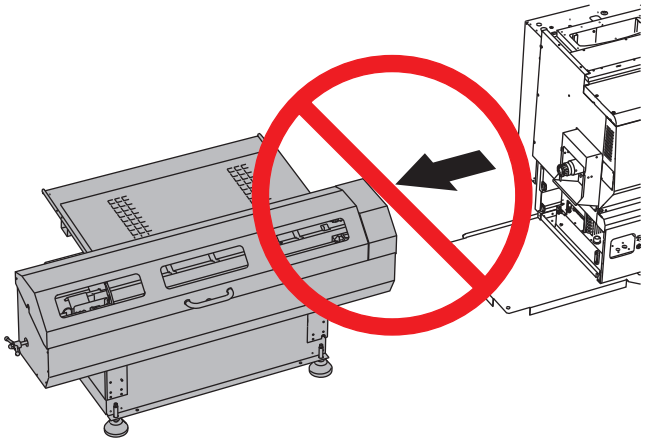
### 7.1.2 ST-10 Bar Feeder Interface Plate

This interface plate helps to prevent coolant inside the lathe's coolant collector. You should install this plate before you install the Bar Feeder for the first time, but you can install and remove this plate at any time while the Bar Feeder is installed.

For clarity, the Bar Feeder is not shown in the illustration for this procedure. If you are installing the interface plate when the Bar Feeder is already installed, you DO NOT need to remove the Bar Feeder to complete this procedure.

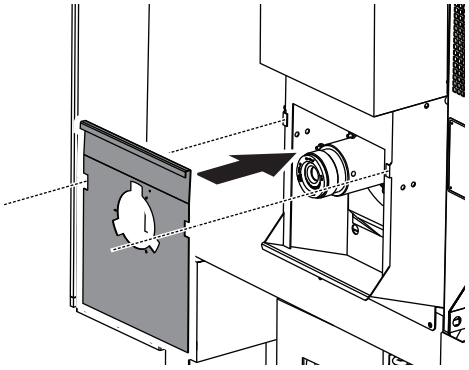
Before You Begin! Remove the bar stock between the Bar Feeder and the lathe spindle.

**F7.1:** No need to remove the Bar Feeder to Install Interface Plate

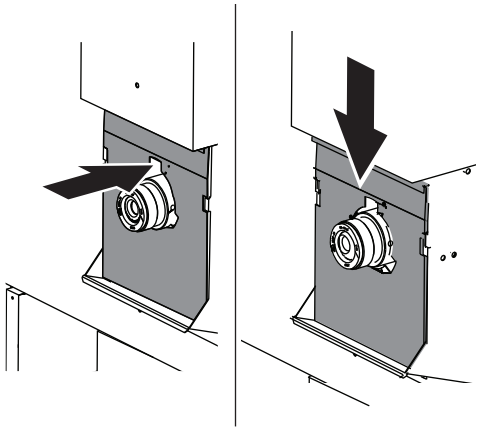


To install and remove the plate:

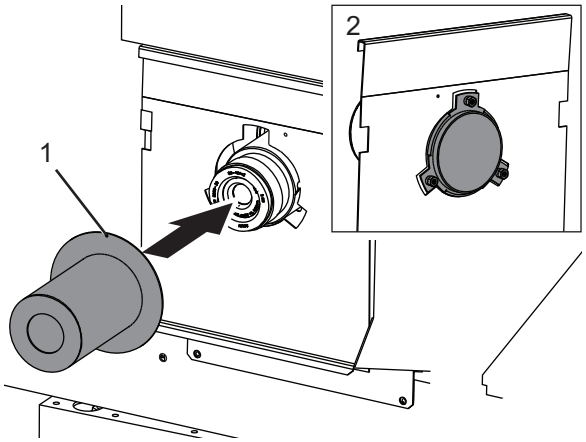
1. Align the interface plate with the liner adapter and the tabs on the coolant collector.



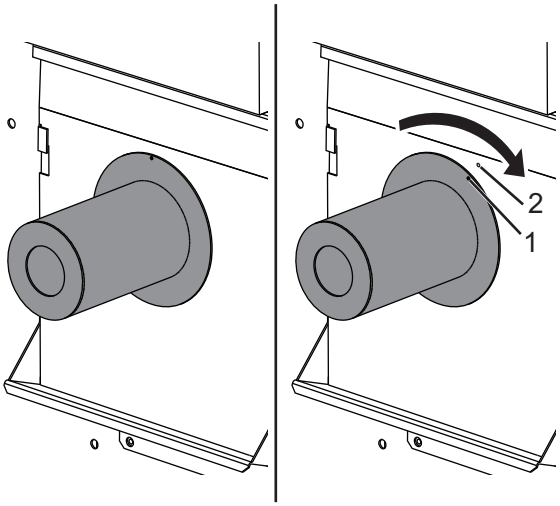
2. Push the interface plate in, then slide it down so the coolant collector tabs lock it in place. If the interface plate does not slide into place, you can gently tap it into place with a dead blow hammer.



3. With the small hole on the flange at the top [1], put the bar tube into the interface plate. The mounting tabs on the tube fit into the slots on the plate. For clarity, inset view [2] illustrates this from the other side of the plate.




4. To remove the interface plate, remove any bar between the lathe and the Bar Feeder, turn the bar tube counter-clockwise to remove the tube, then pull the interface plate up and out of the coolant collector.



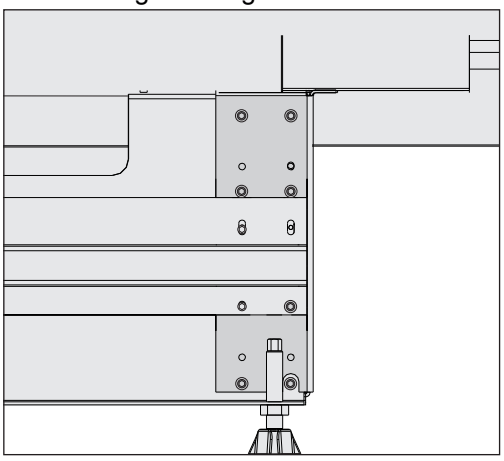

## 7.2 Bar Feeder Installation

Your Bar Feeder is shipped in the correct height configuration to match the lathe model you ordered it for (ST-10/20 or ST-30/DS-30 series).

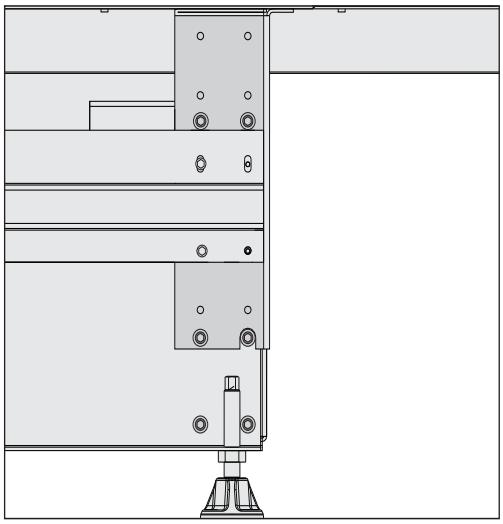
Refer to the Bar Feeder compatibility section, starting on page **8** for other lathe model compatibility and height adjustment procedures.

Install the spindle liner adapter kit before you position the Bar Feeder. Refer to the Haas Customer Service Center (diy.haascnc.com) for information on all spindle liner kits, including installation and part reorder information.

**F7.2:** ST-10/20 Bar Feeder Height Configuration

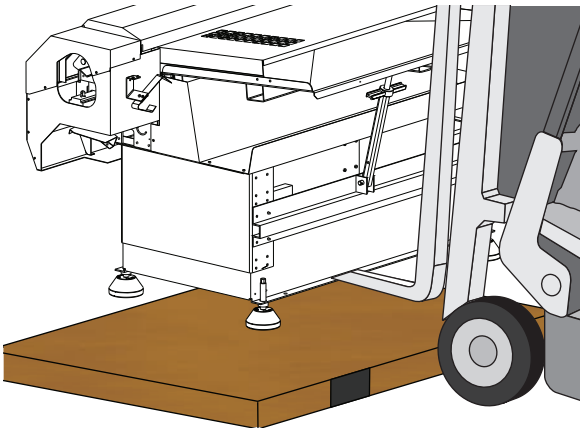


**F7.3:** ST-30/DS-30 series Bar Feeder Height Configuration



## 7.2.1 Uncrating and Assembly

1. Carefully remove the alignment plate from the charging table, and the accessories from the Bar Feeder and pallet.
2. Remove the four lag bolts holding the base to the pallet and lift the machine off of the pallet.



3. Remove the zip ties that hold the push rod in place.

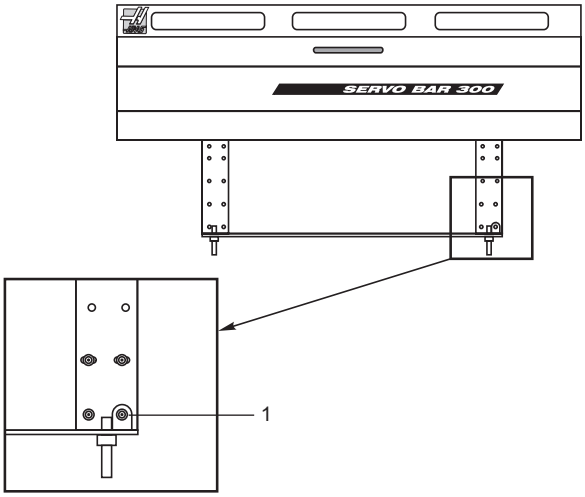
## 7.2.2 Bar Feeder Height Adjustment

***IMPORTANT:*** *Use one of the three following methods to adjust Bar Feeder height. The Bar Feeder weighs 1300 lb (590 kg) and all necessary precautions should be taken into consideration to safely change the height of the Bar Feeder. For example, lifting straps should be able to adequately carry the weight of the Bar Feeder. Forks of the forklift should be long enough to reach under the rear tray of the Bar Feeder.*

Support the weight of the Bar Feeder with the forklift or cables. Remove all of the socket-head cap screws (SHCS) at each corner of the base, except for the lower outside bolts on the front legs. Do not remove the screws that have the outer sheet metal cut out around them.

Raise the Bar Feeder to the desired height, and then install the bolts (refer to the following illustrations).

**F7.4:** Sheet metal is cut out around SHCS. Do not remove this screw [1] or the screw on the left rear corner leg.




***NOTE:*** *The studs on the rear of the Bar Feeder hold together the base and rear support bracket. Do not remove them.*

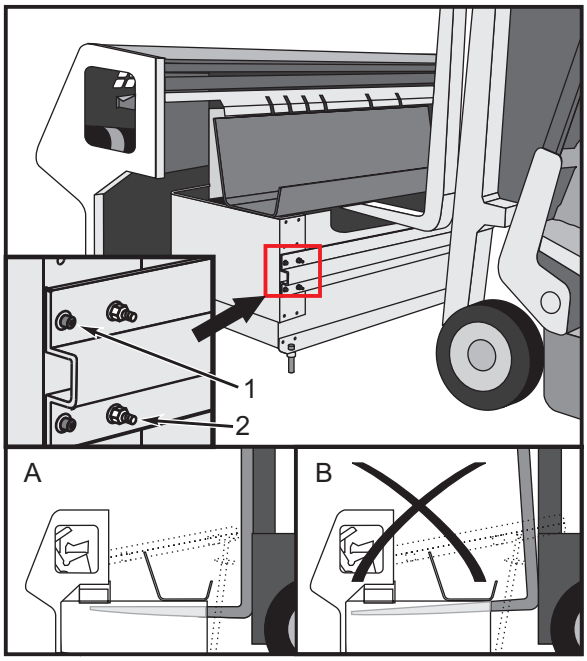
## Method 1: Height Adjustment - Forklift

To adjust the height of the Bar Feeder with a forklift:

1. From the rear of the Bar Feeder, position the forks under the bar feeding mechanism. Be careful not to lift from the storage tray. Look through the end sheet metal to

properly position the forks. Caution: Damage to the front sheet metal will occur if the forks are inserted too far.

**F7.5:** Bar Feeder Height Adjustment with a Forklift. [1] SHCS, [2] Mounting Studs. Lift with the forks level and even under the bar feed mechanism.

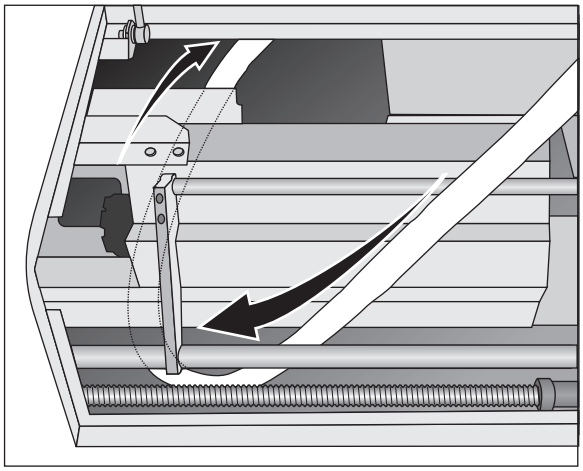


## Method 2: Height Adjustment - Lifting Straps

To adjust the bar feeder height with lifting straps:

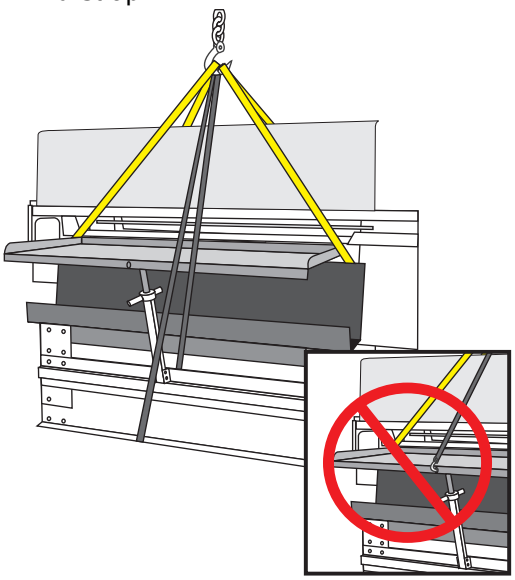
1. Carefully route the lifting straps under the Bar Feeder. Use caution and keep the straps away from the sheet metal edges.

**F7.6:** Lifting Strap Routing Example



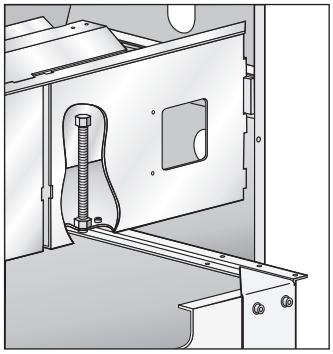
2. If you need a third strap for balance, wrap it around the base assembly. Do not attach the strap to the charging tray.

**F7.7:** Lifting with a Third Strap.



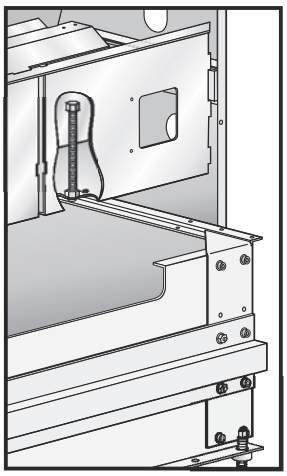
## Method 3: Height Adjustment - Jack Screws

***NOTE:*** *Jack screws are not shipped with the Bar Feeder. You can contact your dealer to purchase the Haas lifting kit, or purchase jack screws at a local industrial supply house. The bolt dimensions are 3/4 - 10 x 10" long, and the spacer is 5" long x 1" diameter.*

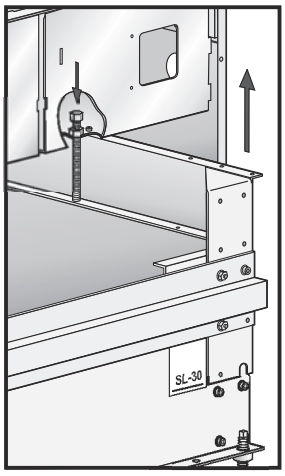


To adjust the bar feeder height using jack screws:

1. Thread the jack screws into the nut. Remove the Bar Feeder height adjustment screws and nuts. Start tightening the jack screws. Because both screws cannot be tightened simultaneously unless two people are working on it, the jack screw may become difficult to turn before you reach the correct height. Move to the other side and tighten the other jack screw.



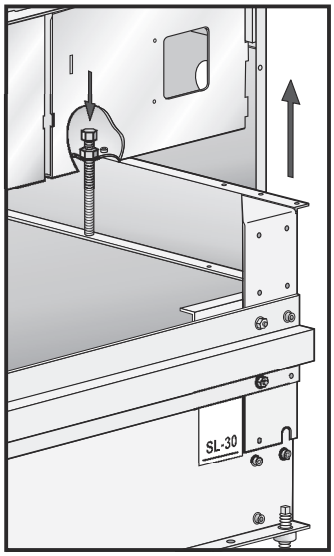
SL-20



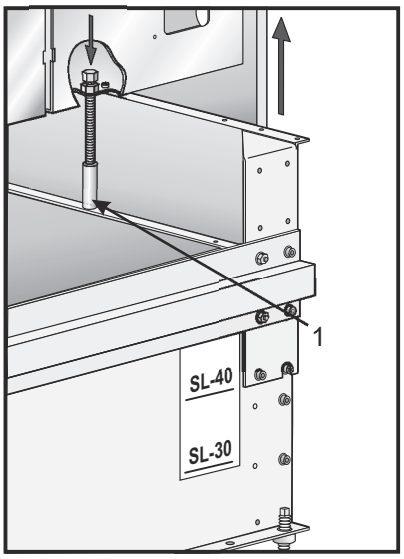

SL-30

***NOTE:*** *The length of the jack screw allows the Bar Feeder to be raised only one position at a time; for example, from the ST/SL-20 to the ST/SL-30 position. In order to raise the Bar Feeder (ST/SL-20) to SL-40 position, you must use an additional spacer.*

2. In order to reach the ST/SL-40 height, the Bar Feeder must be raised to the ST/SL-30 position and secured at this position. Then loosen the jack screw, insert the spacer and tighten to take the weight off of the nuts and bolts. Remove the base screws again and tighten the jack screws to reach the ST/SL-40 height. Secure the Bar Feeder at this height with the nuts and bolts.

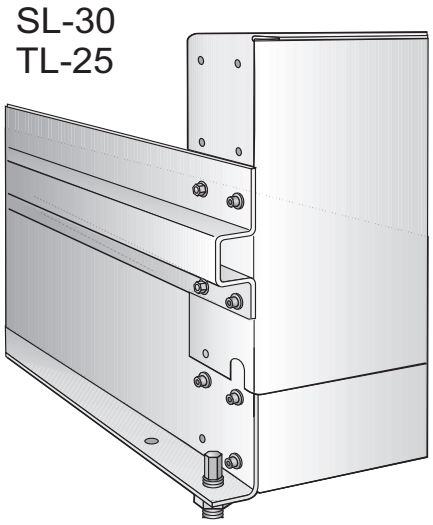



ST/SL-30

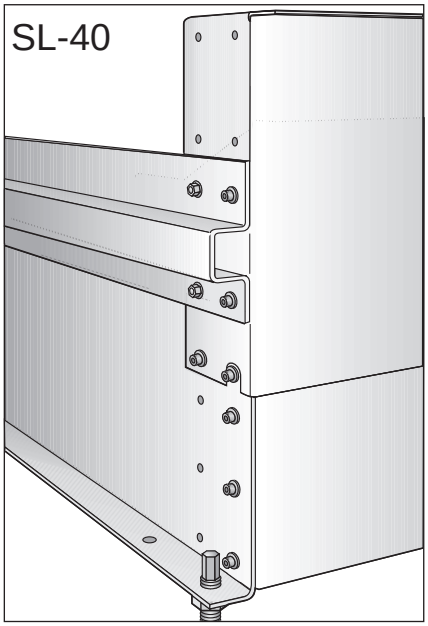



ST/SL-40

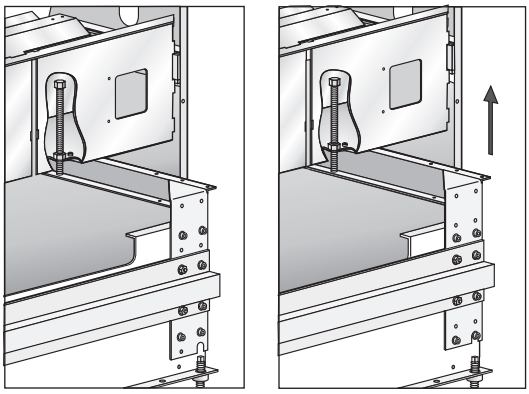
3. Position the height of the Bar Feeder here for SL-30 and TL-25 lathes.



4. Position the Bar Feeder as shown in the illustration for SL-40 lathes.



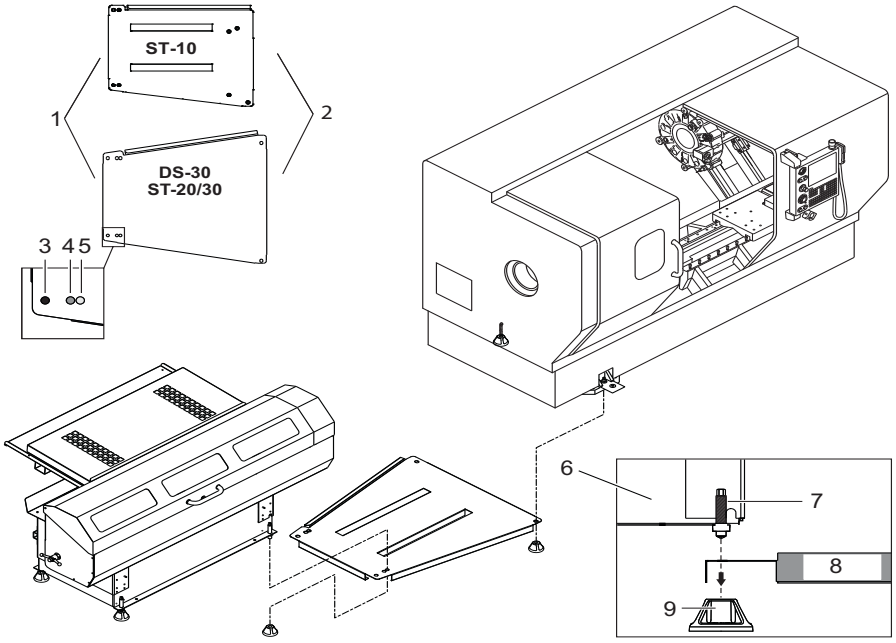

5. Position the Bar Feeder as shown in the illustration for the GT-10 and GT-20 lathes.



GT-10 GT-20

## 7.2.3 Positioning the Bar Feeder to ST/DS Lathes

**F7.8:** ST/DS Lathe Alignment Plate: [1] Bar Feeder side, [2] Lathe Side, [3] Big Bore, Gearbox, Extended Push, [4] Lathes with Coolant Collector Extension, [5] Standard Lathes, [6] Bar Feeder, [7] Leveling Screw, [8] Alignment Plate, [9] Leveling Pad

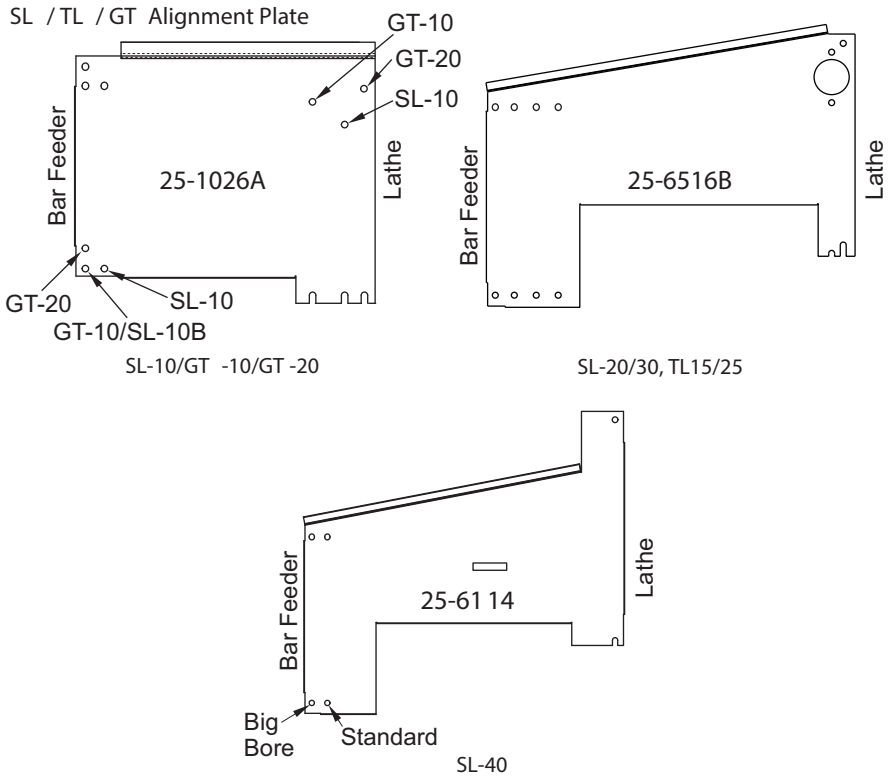



To position the Bar Feeder with the alignment plate:

1. Lift the left side of the lathe off the leveling pads and position the alignment plate under the two leveling screws. Lower the lathe and re-level.
2. Lift the Bar Feeder with a pallet jack or forklift. Align the right side leveling screws to the appropriate holes in the alignment plate. Please make sure to follow the alignment instructions provided in the following illustration.
3. Align the leveling pads with the leveling screws and lower the Bar Feeder onto the pads.

# 7.2.4 Positioning the Bar Feeder to SL Lathes

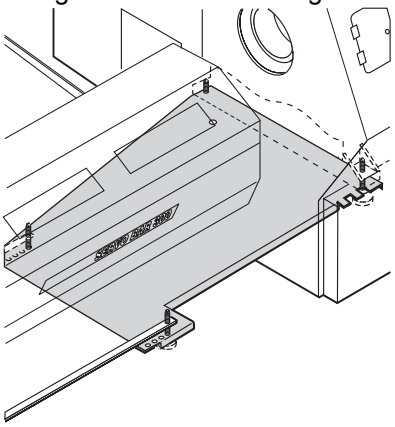
**F7.9:** SL/TL/GT Alignment Plates



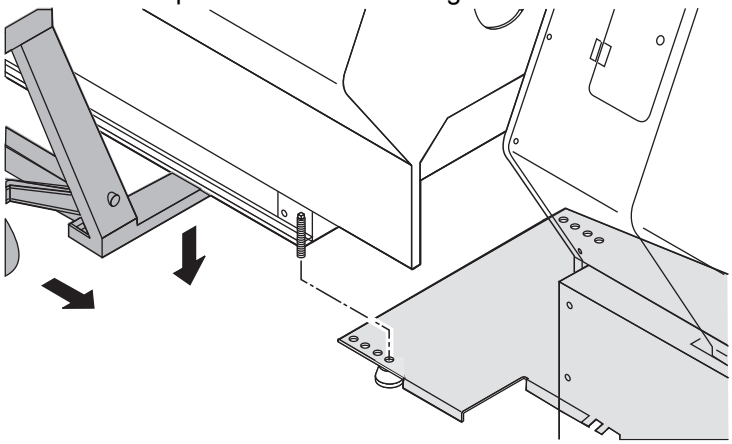

To position the Bar Feeder with the lathe using the alignment plate:

1. Loosen the left rear leveling screw of the lathe until it is 1/2" above the leveling pad.
2. Position the appropriate slot of the alignment plate around the front left leveling screw of the lathe.
3. Rotate the alignment plate around the front left screw until the appropriate rear alignment plate hole is aligned under the left rear leveling screw of the lathe.

4. Tighten the left rear leveling screw of the lathe against its leveling pad.



5. Lift the Bar Feeder with a pallet jack or forklift. Align the right side leveling screws to the appropriate holes in the alignment plate. Please make sure to follow the alignment instructions provided in the following illustration.

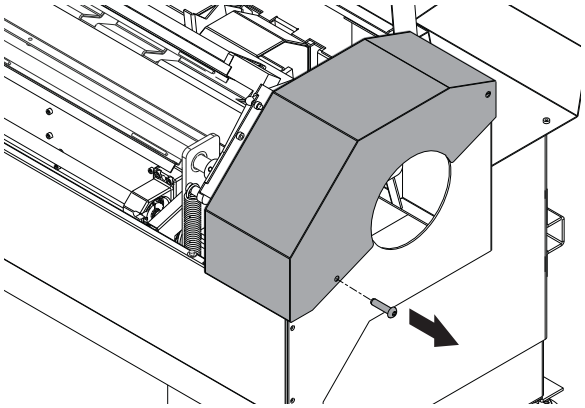


6. Align the leveling pads with the leveling screws and lower the Bar Feeder onto the pads.

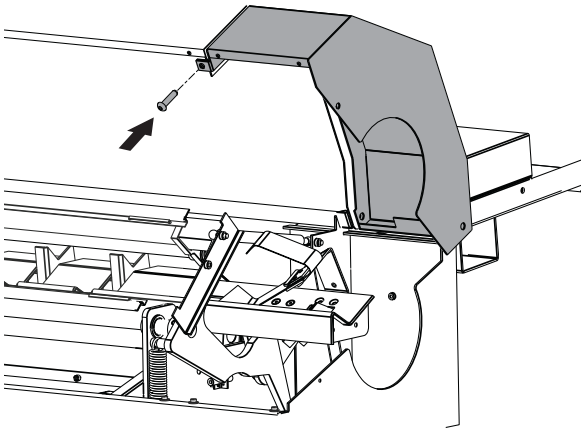
# 7.2.5 End Enclosure Panel

The factory-installed end enclosure panel is a hinged piece attached to the right end hinge panel. You can attach the end enclosure panel to the bar feeder door so that they open together for extra clearance.

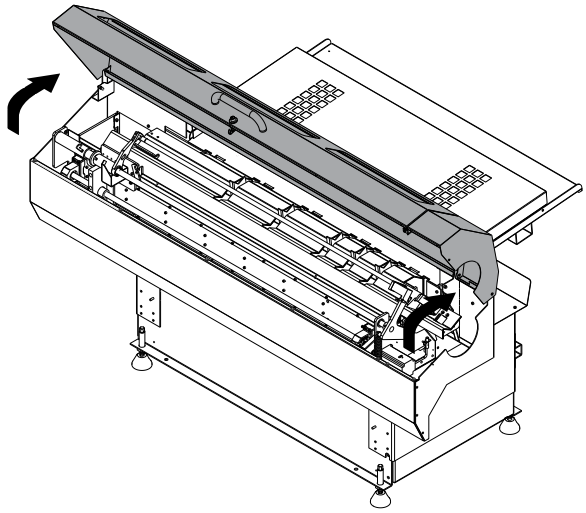
1. Remove the socket head cap screw (SHCS) that secures the end enclosure panel to the right end hinge panel.



2. Secure the end enclosure panel to the bar feeder door with the SHCS you removed in the last step.



3. Make sure the door and the end enclosure panel open freely, without any obstruction.



## 7.2.6 Parameter Change

***WARNING:*** *Parameters define machine operations in very specific ways. Never change a parameter, except under explicit factory instructions. Incorrectly set parameters can cause severe damage to your machine and void the warranty.*

1. Change Setting 7 to **0FF**.
   a. Press **[SETTING/GRAPHIC]** until the Settings menu appears.
   b. Press **[7]**, and then press the **[DOWN]** cursor arrow.
   c. Press the **[RIGHT]** cursor arrow to change the setting to **0FF**.
   d. Press**[ ENTER]** to save the change.
2. Press **[EMERGENCY STOP]**.
3. Press **[PARAMETER/DIAGNOSTIC]**.
4. Type the number of the parameter that you want to change.
5. Press the **[DOWN]** cursor arrow.
6. Record the parameter's current value, in case you need to change it back.
7. Type the new parameter value.
8. Press **[ENTER]** to save the change.

9. Repeat steps 3 through 7 for any other parameters that you need to change.
10. Reset **[EMERGENCY STOP]**.
11. Press **[RESET]**.
12. Change Setting 7 back to **ON**.

## Change Bar Feeder Parameters

To change Bar Feeder specific parameters on the Lathe:

1. Power on the lathe, update these parameters and check for alarms.

**T7.1:** Lathe Parameters for Bar Feeder

| PARAMETER | NAME | VALUE |
|---|---|---|
| 315 bit 7 | Brushless Barfeeder | 1 |
| 316 | Measure Bar Rate | 25000 for inch mode, 1000 for metric |
| 317 | Measure Bar Inc | 1000000 |
| 325 | Standard Bar Len | 120000 |
| 390 bit 3 | Disabled | 0 |
| 390 bit 12 | Low Pass+1X | 0 |
| 390 bit 13 | Low Pass+2X | 1 |
| 390 bit 21 | No Limsw Alm | 1 |
| 397 | V Max Speed | 800000 |
| 399 | V Fuse Level | 1150000 |
| 404 | V In Position Limit | 1000 |
| 405 | V Max Current | 3346 |
| 412 | V Accel Feed Forward | 125,000 |

***NOTE:*** *Parameter 390 bit 3 turns the Bar Feeder ON and OFF (0=on, 1=off).*

2. The following Parameters are written on a decal at the left end of the Bar Feeder. Enter these values into the lathe control at set-up.

**T7.2:** Parameters on Bar Feeder Decal

| PARAMETER | NAME | VALUE |
|---|---|---|
| 395 | V Max Travel | (52267232 to 5332768) |
| 409 | Grid Offset | (+/- 32000) |
| 415 | V Tool Change Offset | (123232 to 188768) |

## 7.2.7 Bar Feeder Leveling

The Bar Feeder needs leveling for proper operation. To level the Bar Feeder:

1. Open the lid of the Bar feeder. Place a magnetic torpedo level on top of the transfer tray and adjust the jacking screws to level the bar feeder.
2. Command `G105 Q7` - Load Push Rod to set the push rod in the down position.
3. Press **[V]**, and then **[HANDLE JOG]** to enable the push rod movement.
4. Use the jog handle to move the push rod toward the spindle until it just enters the spindle liner.
5. Measure the vertical alignment of the push rod centerline to centerline of the spindle liner.
6. Adjust the leveling screws of the Bar Feeder until the push rod is vertically aligned with the spindle.
7. Measure the horizontal alignment of the push rod centerline to centerline of the spindle liner.
8. Adjust the fore/aft positioning of the Bar Feeder until the push rod is horizontally aligned with the spindle by pivoting on the right end of the Bar Feeder.
9. Jog the push rod until it is flush with the spindle face.
10. Manually lift the push rod vertically to spindle center and check for horizontal alignment; adjust the Bar Feeder as required.
11. Once the push rod is aligned at both ends of travel, command `G105 Q6 ;` (Unload Push Rod) to home the push rod.

## 7.2.8 Verify Alignment

To verify bar feeder alignment:

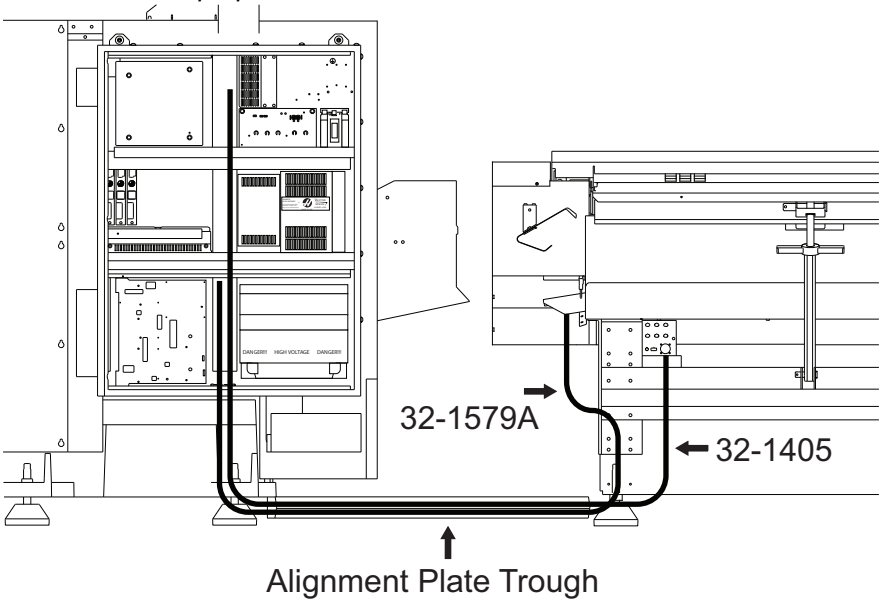
1. Install a 1 inch liner and push by hand at least a 3 ft bar stock to ensure there is no binding through the liner.
2. Hand jog the push rod. Make sure that the push rod does not interfere with the rear of the spindle or liner.
3. The push rod should travel through the entire liner without binding against the inner diameter of the liner.

## 7.2.9 Cable Routing

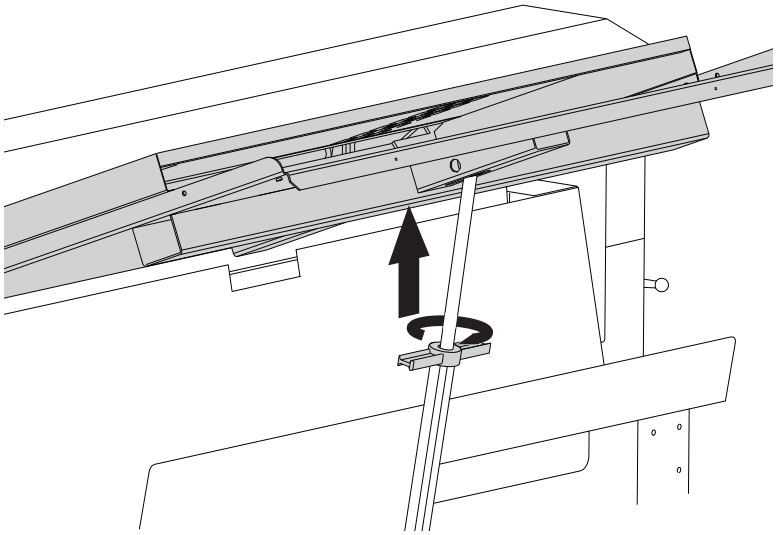
***WARNING:*** *The Bar Feeder cables must be routed correctly to avoid damage.*

On ST-10/20 series lathes, you may need to remove the storage tray to route the cables and access the cable connecting plate.

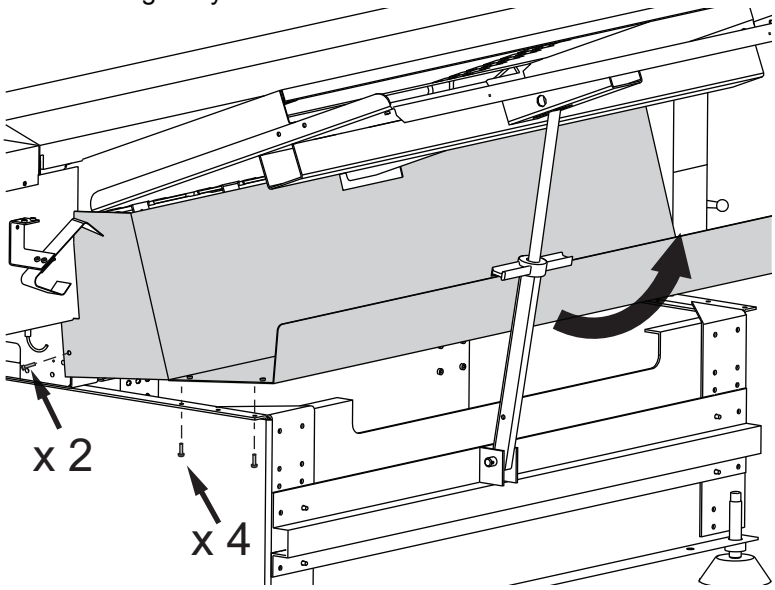
***NOTE:*** *Refer to the labels of the cables to make sure the correct cable ends are in the proper locations.*



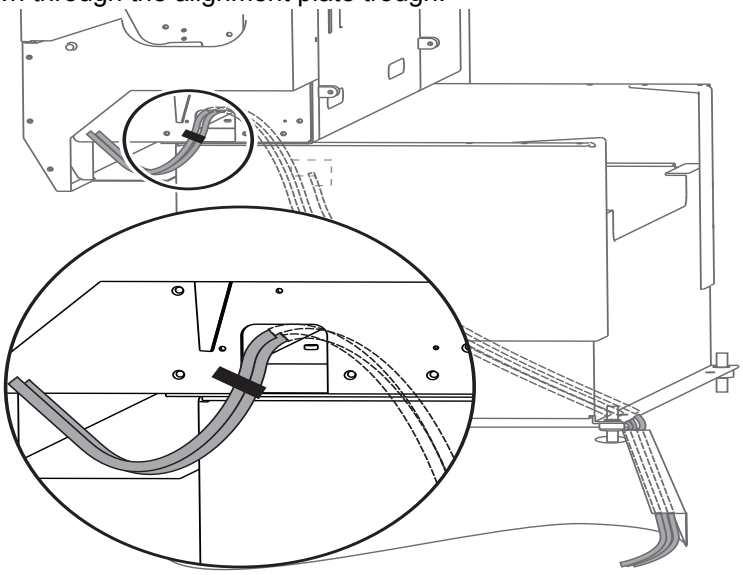
1. Raise the charging tray to its highest position.



2. Remove the storage tray to access the bar feeder bracket and cable routing.



3. Feed cable P/N 32-1579A through the opening in the lathe side of the Bar Feeder and down through the alignment plate trough.



4. Do not route cables over the side of the Bar Feeder. This will result in pinched or broken cables. Route cables under the machine with strain reliefs.

## Cable Connection to the Bar Feeder

To connect the cables to the Bar Feeder:

1. Connect cable P/N 32-1579 to the Bar Feeder. Use cable ties to secure the connectors under the protective plate. Ground the cable using the cable clamp screw.
2. Connect cable P/N 32-1405 to the socket on the Bar Feeder bracket.
3. Install the storage tray.
4. Adjust the charging tray. For most round stock, the angle of the charging tray should be set to 5 degrees above horizontal.

## Cable Connection to the Lathe

To connect cables to the lathe:

1. Route the cables through the alignment plate trough and up through the bottom of control cabinet.
2. Plug the Bar Feeder encoder cable into the Y-Axis port (P7) on the Maincon PCB.

3. For Y-Axis lathes, connect the Bar Feeder signal cable to (P6) on the Maincon board II.
4. Connect the BF MOTOR AMP end of cable P/N 32-1579A to the amp and ground.
5. Plug one end of cable P/N 33-0610 into the amp Servo Drive Current Commands port.
6. Plug the other end of cable P/N 33-0610 into the Current Commands port (P3) on the Maincon board.
7. For Y-Axis lathes: Connect the Bar Feeder signal cable to P2 on the Maincon board II.
8. Remove the I/O PCB cover.
9. Plug the individual connectors into the I/O PCB as specified on the connector labels.
   a. Cable 200 End of Bar to P35 on the I/O PCB.
   b. Cable 240 Bar Feeder to P21 on the I/O PCB.
   c. Cable 430 Extend Push to P51 on the I/O PCB.
   d. Cable 810 Bar Feeder Motor/A Drive to P59 on the I/O PCB.
10. Install the cable channel covers.
11. Install the I/O PCB cover.
12. Remove the Lockout/Tag out device and close the cabinet door.

***NOTE:*** *Use cable ties to raise excess cable off the floor under the Bar Feeder.*

## 7.2.10 Interface Installation

Only qualified Haas service personnel should do this procedure. The electrical panel should be closed and the key and latches on the control cabinet should be secured at all times, except during installation and service. At those times, only qualified Haas service personnel should have access to the panel.

If you want to install a Bar Feeder to a lathe that does not have an interface kit installed, contact your Haas Factory Outlet to order one.

1. Press **[POWER OFF]**. Open the control cabinet door. Turn off and lock out the system power.
2. Ensure that the 320V bus on the vector drive has been completely discharged before beginning work.
3. Remove the Maincon cover.
4. Add the Bar Feeder Amplifier to its assigned slot.

5. Remove the cable channel covers.
6. Attach the jumpers between the High Voltage Power connection of the closest amp and Bar Feeder amp.

## 7.2.11 Establish End-of-Bar Position

To establish the end-of-bar position:

1. Place the 12" gauge bar supplied with the machine in the charging tray. To load the bar properly, make sure the bar is picked up by at least two of the pick arms.

***NOTE:*** *If the 12" gauge bar is unavailable, you may use a substitute bar, but you must set Parameter 325 to the new bar length. To do this, measure the new bar length, multiply it by 10,000 and enter the number as the new parameter value. The default value is 120000.*

2. Command `G105 Q5 ;` in **`MDI`** mode.

   The Bar Feeder loads the bar and pushes it up to activate the end-of-bar switch, then stops. It then updates the value for macro variable `# 3111`.
3. Remove the gauge bar and begin the setup procedures.

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