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Minuteman 320 SE

Version 13.1

Minuteman 320 SE

Minuteman
320 SE

OPERATIONS MANUAL

MINUTEMAN 320
HYDRODYNAMIC AUTOMATIC BAR FEEDER
MM-320

MANUAL FOR USE AND MAINTENANCE

REV. 13.1   **DATE**   **2020/07/08**   **COD：BMM103032**
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1. General information

Please read and understand the Manual before operating the bar loader

1.1   Contents of this Manual

The bar feeder/Unloader manufacturer has provided this manual as an integral part of the machine. Adherence to the instructions of the manual will help prevent injury to the operator and damage to the machine as well as helping to realize the maximum potential of the bar feeder/unloader and machine tool. Particularly important points of information are preceded by the following symbols and text:

 Warning Indicates a potential danger to life or risk of personal injury. Exercise extreme caution.

 Caution Indicates a possible hazardous condition. Take precautions according to the Instructions following these warnings to help prevent injury to personnel or damage to the equipment.

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1.2 Machine Safety

It is the user's responsibility to provide proper safety devices and equipment to safeguard the operator from harm for any particular use, operation or set-up, and to adequately safeguard the machine, or machines, to conform to all Federal, State and Local Government Safety Standards and all industry safety standards. It is suggested that only trained personnel operate the machine and equipment because improper use could damage the machine and cause personal injuries.

1.3 Indemnification

User agrees to indemnify and hold harmless Edge Technologies from any and all claims or liabilities from accidents involving these machines caused by failure of users, his employees, or agents to follow instructions, warnings or recommendations furnished by Edge Technologies, or by failure of user to comply with Federal, State and local laws applicable to such equipment including the occupational Safety and Health Act of 1970.

1.4 Hardware and Software Changes

As Edge Technologies continues to be the premier bar feeder supplier in the industry, ongoing development and changes to software and hardware is normal. All software noted in this manual are current at the print of this manual. For latest developments and changes please visit www.EdgeTechnologies.com for the latest information or contact us.

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1.5 Machine Data Plate

A. Name of Manufacturer

B. Model (Type)

C. Serial Number

D. Manufacture Date

E. Weight of Machine

F. Pneumatic Pressure

G. Rated Voltage

H. Control Voltage

I. Full Load Current

J. Power

K. Short Circuit Rating

L. Wiring Drawing Number
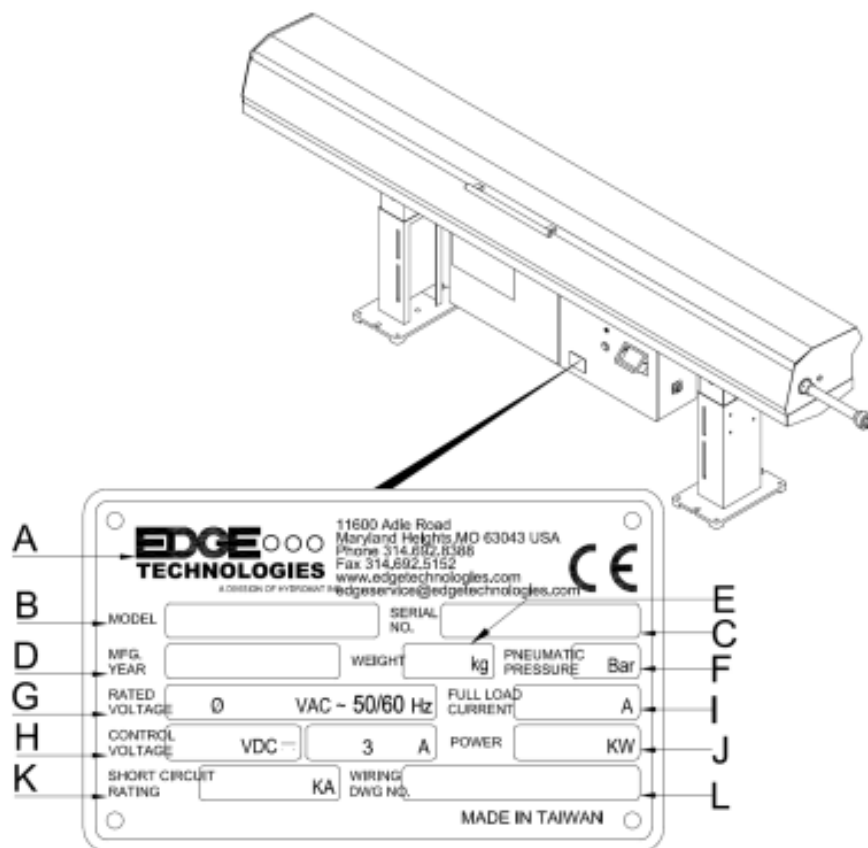
Important information When inquiring about or ordering parts please have the machine model type and serial number on hand. Refer to the machine data plate for this information.

1.6 Technical Support

For technical support please contact the Edge Technologies Service Department by phone at 314-810-3927 or by email edgeservice@edgetechnologies.com

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2. Technical Information

2.1 Description of the Machine

The Minuteman is a PLC controlled automatic bar feeder designed for both Swiss style and fixed headstock lathes. The bar feeder is constructed to handle a wide variety of material profiles from round to hex and square stocks and can be adapted to feed materials with a more unique shape.

The bar feeder uses hydrodynamic design to dampen vibrations caused by bar stock rotation. The bar stock spins within a polyurethane channel which is flooded with a high viscosity circulating oil. This creates turbulence within the channel that serves to steady the material and control vibration. The end of the bar stock is supported by a bearing unit on the end of the bar pusher and the work holding system of the lathe.

An anti-vibration device is located at the front of the bar feeder. Polyurethane bearing supported wheels surround the bar, leaving a few millimeters clearance between the bar and the wheels. For Swiss style sliding headstock lathes a moveable anti-vibration device is mounted on the rear of the lathe headstock to provide even more support and vibration dampening.

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Following Features

- Bar diameter capacity: 3 mm to 27 mm (.118" to 1.062")
- Automatic loading magazine — 10 linear inches of rack capacity
- Double pusher, space saving design
- Hydrodynamic support via high volume oil flow into channels.
- Polyurethane Quick Change guide channel — noise & vibration dampening
- Mitsubishi motion control — dependable and user friendly, allows easy bar feeder parameter changes
- (1) Guide channel set to be chosen by customer. Several sizes to choose from, each handling a specific stock range. See chart.
- (1) Standard front telescopic nose to match guide channel set (Swiss only)
- (1) O.D. bar stock collet (to be chosen by customer, specific collet needed for each stock diameter)
- Automatic remnant retraction, self-centering gripper
- Synchronization device and Swiss lathe adaption kit
- Custom lathe cable and interface plugs
- Inboard Anti Vibration Device with rollers, block set available as option
- Mounted on the telescoping nose, Movable Anti Vibration Device with rollers, block set available as option

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2.2 Machine footprint and Installation Area

🖐 **Caution machine placement is important and proper planning should be observed. A level floor free from cracks is ideal for anchoring of the machine. As the customer is the one that decides on machine installation placement it is their responsibility to be aware of proper floor requirements.**

Placement of the bar feeder is important to gain the use of all the features. It is important to review the lathe layout to be sure proper clearance exists of the assembly. On some lathes accessories may prohibit proper placement such as tool changers and transformers. On certain lathes a "Chucker Mode" option is available. This option requires the physical movement of the bar feeder fore and aft to the lathe headstock Z axis movement plane, while anchored to the floor. Be sure to place the bar feeder close enough to supply the reach for the pusher when the lathe is converted to "Chucker Mode" If placed too far the remnant will be longer than normal. Be advised that too close may allow the bar feeder telescoping nose to collapse into the head stock when the headstock moves to full negative over travel.

The Minuteman models are available in 4 different bar capacity configurations reflected in the chart below.
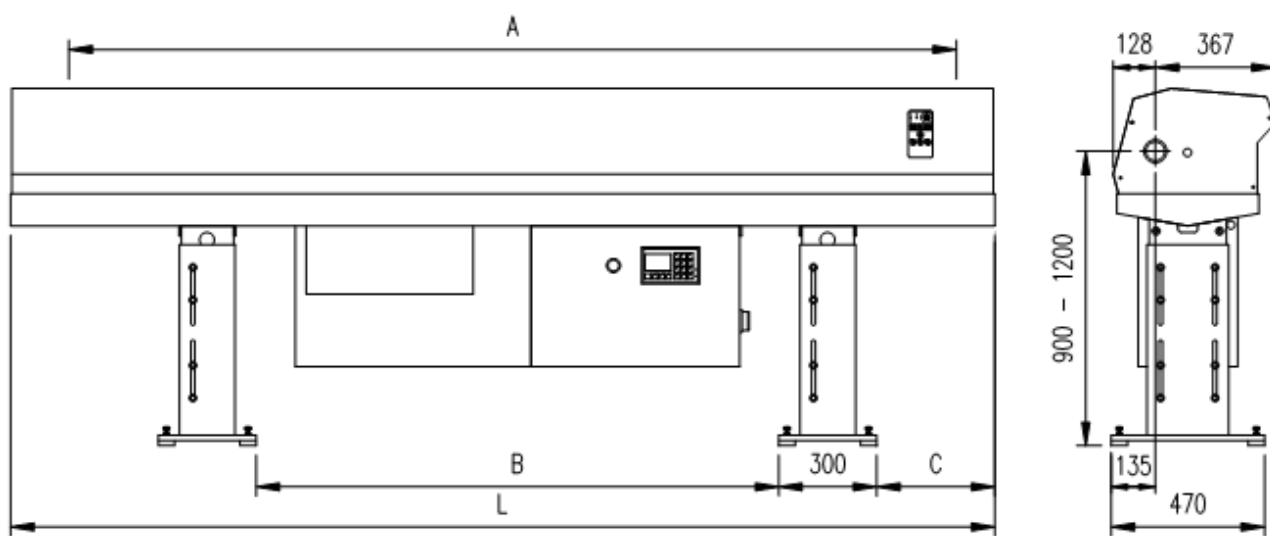
MODEL	22	32	37	44
L	2830mm (111.4")	3870mm (152")	4370mm (172")	4970mm (195.7")
A	2100mm (82.6")	3200mm (126")	3800mm (149.6")	4400mm (173.2")
B	1510mm (59.4")	1810mm (71.3")	2178mm (85.7")	2478mm (97.5")
C	345mm (13.5")	452mm (17.8")	583mm (23")	881mm (34.7")
Weight	380 kg. (837.7lbs.)	520 kg (1052.74 lbs.)	600 kg. (1214.7lbs.)	680 kg. (1376.7lbs.)

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Installation Area

The bar feeder must be bolted to a sound, reasonably level floor using anchor bolts. The area surrounding the machine must provide sufficient clearance the operator access to both sides and the rear of the machine as shown in the diagram below. Other necessities are suitable lighting and a compressed air supply. The bar feeder is not suitable for and cannot be adapted to use in an explosive surrounding.

The image below references ideal spacing for operator movement.
Areas of interest

- D-operator area
- E-supply area
- F-remnant material area

The space must provide adequate working area. All values are in metric.
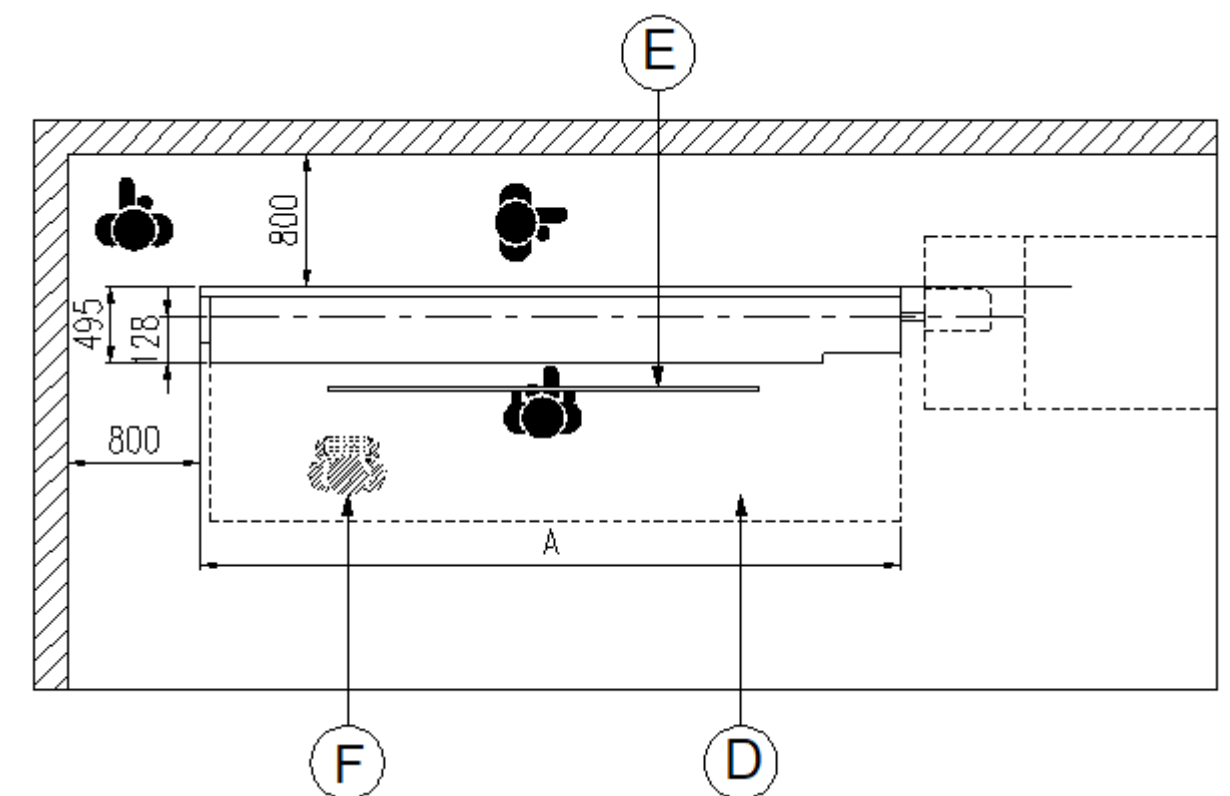
Type	Size	A (mm)
MM-320	22	2830
	32	3870
	37	4370
	44	4970

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2.3 Specifications and Capacities

Technical Specifications	
Bar diameter capacity-no bar preparation:	3 mm to 25.4 mm (.118" to 1.000")
Bar diameter capacity-with bar preparation:	3 mm to 27 mm (.118" to 1.062")
Maximum bar length:	3800 mm (12 feet 5 inches)
Minimum bar length:	1000 mm (39.400")
Maximum remnant length:	420 mm (16.500")
Magazine rack capacity:	10"
Bar loading cycle time:	35 seconds for 12-foot bar
Material straightness specification:	.007" TIR/foot of material (V blocks, 3 points equidistant)
Feed force (pusher torque):	max 450 N, adjustable
Forward feed rate:	1400 inches/minute max, adjustable
Return feed rate:	2360 inches/minute max, adjustable
Power consumption:	1.5 kW - (2 kVA)
Operating voltage:	230V/60Hz 3-phase
Control voltage:	24V DC
Oil capacity:	46 liters (12 gallons)
Oil viscosity:	ISO 100 cST
Compressed air supply:	6 bar (90 psi)
Compressed air consumption:	approx. 8 liters per loading cycle
Machine weight:	1,320 lbs

2.3.2 Bar Feeder Oil Requirements

⚠️ **Caution used oil may contain compounds that could cause skin iratation. Wash skin exposed to used oil.**

Oil is not consumed by the bar feeder. Oil does not break down from operating in the bar feeder. Oil may become contaminated with debri from bar stock, dust from the environment and lathe back wash. Change the oil when contamination becomes unacceptable.

Oil Viscosity	Brand	Description
ISO 100	BP	Energol CS 100
	Castrol	Magna 100
	Chevron	Circulating Oil 100
	Elf	Movixa 100
	Esso	Nuto/Nuray 100
	Mobil	Vectra/DTE Oil Heavy
	Shell	Vitrea 100 / Tellus C 100
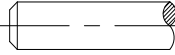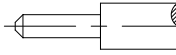
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2.3.3 Guide Channel Specifications

⚠️ **Warning if bar stock and channel set size are not with in the chart below damage to the bar feeder or lathe could occur.**

For a complete list of available guide channels offered review the parts section at the end of this manual or visit Edgetechnologies.com

Type	Diameter of Guide Channel	Diameter of Bar Pusher	Diameter of Bar (MM)		
				Max.	
			Min.		
MM-320	8	7.5	3	6.4	7.5
	14	12	3	10	12
		12.7*			
	18	15*	3	13	15
		16			16
		17*			16
	22	19*	3	16	19
		20		18	20
		21*		18	21
	24	21*	3	18	21
		22*		18	22
		23		20.6	23

* Special pusher O.D.'s for specific spindle I.D.'s (Application based)

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Bar feeder collet must be correct for the size material. Using the wrong collet can cause production issues. Contact Edge Technologies Parts Department for assistance.
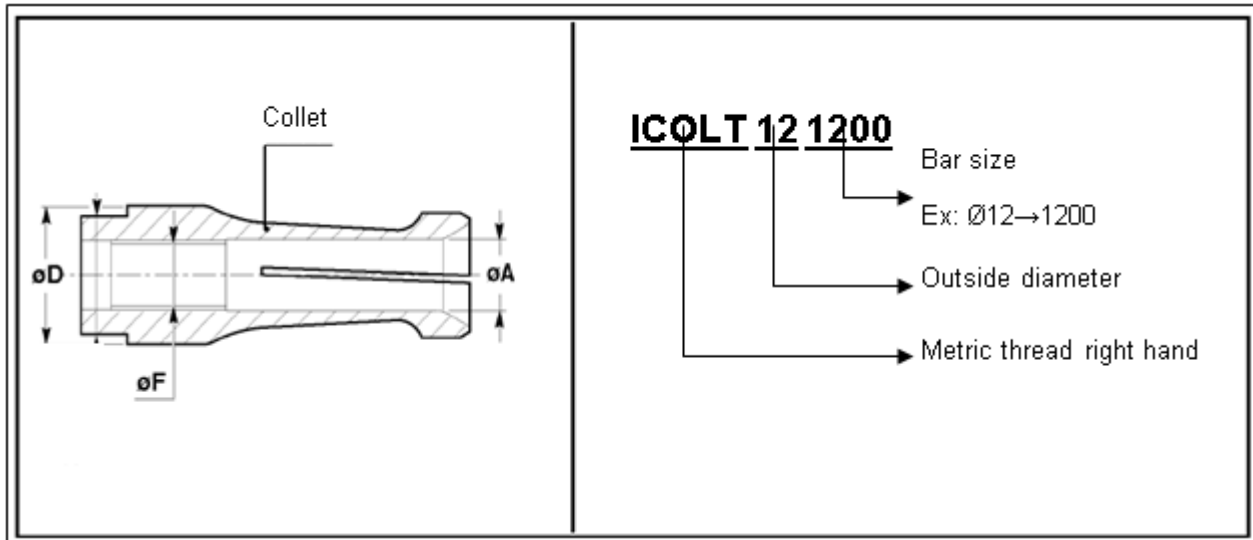
Collet

øD øF øA

ICOLT 12 1200
- Bar size
- Ex: Ø12→1200
- Outside diameter
- Metric thread right hand

ØA		ØF M5x0.5	ØF M7x0.75	ØF M8x1.0	ØF M8x1.0	ØF M8x1.0	ØF M10x1.0	ØF M10x1.0	ØF M10x1.0
mm	in	7.5mm OD	12mm OD	15mm OD	16mm OD	18mm OD	20mm OD	22mm OD	23mm OD
1.6		ICOLT075160	ICOLT120160	ICOLT150160					
2									
2.4	3/32"	ICOLT075240	ICOLT120240	ICOLT150240					
2.5									
2.8	7/64"	ICOLT075280	ICOLT120280	ICOLT150280					
3									
3.2	1/8"	ICOLT075320	ICOLT120320	ICOLT150320			ICOLT200320		
3.5									
3.6	9/64"	ICOLT075360	ICOLT120360	ICOLT150360			ICOLT200360		
3.8									
4	5/32"	ICOLT075400	ICOLT120400	ICOLT150400			ICOLT200400		
4.4	11/64"	ICOLT075440	ICOLT120440	ICOLT150440			ICOLT200440		
4.5									
4.6									
4.8	3/16"	ICOLT075480	ICOLT120480	ICOLT150480			ICOLT200480		
5									
5.2	13/64"	ICOLT075520	ICOLT120520	ICOLT150520			ICOLT200520		
5.5									
5.6	7/32"	ICOLT075560	ICOLT120560	ICOLT150560			ICOLT200560		
5.7									
5.9									

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ØA		ØF M5x0.5	ØF M7x0.75	ØF M8x1.0	ØF M8x1.0	ØF M8x1.0	ØF M10x1.0	ØF M10x1.0	ØF M10x1.0
mm	in	7.5mm OD	12mm OD	15mm OD	16mm OD	18mm OD	20mm OD	22mm OD	23mm OD
6	15/64"	ICOLT075600	ICOLT120600	ICOLT150600			ICOLT200600		
6.2									
6.4	1/4"	ICOLT075640	ICOLT120640	ICOLT150640			ICOLT200640		
6.5									
6.6									
7			ICOLT120700	ICOLT150700			ICOLT200700		
7.1									
7.2	9/32"		ICOLT120720	ICOLT150720			ICOLT200720		
7.5									
7.6	19/64"								
8	5/16"		ICOLT120800	ICOLT150800			ICOLT200800		
8.3									
8.4	21/64"		ICOLT120840	ICOLT150840			ICOLT200840		
8.5									
8.7									
8.8	11/32"		ICOLT120880	ICOLT150880			ICOLT200880		
8.9									
9									
9.1	23/64"		ICOLT120910	ICOLT150910			ICOLT200910		
9.3									
9.5			ICOLT120950	ICOLT150950			ICOLT200950		
9.6	3/8"		ICOLT120960	ICOLT150960			ICOLT200960		
10	25/64"		ICOLT121000	ICOLT151000			ICOLT201000		
10.25									
10.4	13/32"		ICOLT121040	ICOLT151040			ICOLT201040		
10.5									
10.7									
10.8	27/64"		ICOLT121080	ICOLT151080			ICOLT201080		
11									
11.25	7/16"			ICOLT151125			ICOLT201125		
11.5									
11.7	13/64"								
12				ICOLT151200			ICOLT201200		
12.25									

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ØA		ØF M5x0.5	ØF M7x0.75	ØF M8x1.0	ØF M8x1.0	ØF M8x1.0	ØF M10x1.0	ØF M10x1.0	ØF M10x1.0
mm	in	7.5mm OD	12mm OD	15mm OD	16mm OD	18mm OD	20mm OD	22mm OD	23mm OD
12.5	31/64			ICOLT151250			ICOLT201250		
12.7	1/2			ICOLT151270	ICOLT161270	ICOLT181270	ICOLT201270		
13					ICOLT161300	ICOLT181300	ICOLT201300		
13.5				ICOLT151350	ICOLT161350	ICOLT181350	ICOLT201350		
14					ICOLT161400	ICOLT181400	ICOLT201400		
14.2	9/16				ICOLT161420	ICOLT181420	ICOLT201420		
14.5									
14.7						ICOLT181470	ICOLT201470		
15									
15.2									
15.5						ICOLT181550	ICOLT201550		
15.7						ICOLT181570	ICOLT201570		
16	5/8					ICOLT181600	ICOLT201600	ICOLT221600	ICOLT231600
16.2	41/64								
16.5							ICOLT201650		
16.7									
17							ICOLT201700		
17.2							ICOLT201720		
17.5	11/16						ICOLT201750		
17.7									
18	45/64						ICOLT201800	ICOLT221800	ICOLT231800
18.2							ICOLT201820	ICOLT221820	ICOLT231820
18.5									
18.7							ICOLT201870	ICOLT221870	ICOLT231870
19	3/4							ICOLT221900	ICOLT231900
19.25									
19.5									
19.75									
20								ICOLT222000	ICOLT232000
20.25									
20.5									
20.6								ICOLT222060	ICOLT232060
21								ICOLT222100	ICOLT232100

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2.3.4 Compressed Air Supply Including Oil

⚠️ **Warning working with compressed air, proper PPE is required in accordance with federal state and local laws.**

Shop air must be present for machine installation

1. The supply hose for compressed air supply must be larger than 8mm
2. Pressure must be over 5~7kg / cm^2, 71.11 – 99.56 PSI, Consumption about 50L/H。
3. Connect the air supply tube into (A). Pull up and rotate knob counter clockwise (B) and set the pressure at 6kg / cm^2, 71.11 – 99.56 PSI

Air system Lubricant viscosity of 32, temperature 40℃, ISO VG type.

Oil level should be checked monthly. Be sure to use the recommended oil or damage to the pneumatic system will result.

Adjust control air lubrication from cylinder, (C), 1-2 drops／1000 L air if necessary.

Air Unit Lubricating Oil – ISO VG32				
BP	Castrol	Chevron	Mobil	Shell
Energol HLP 32	Hyspin VG32	Regal R&O 32	DTE 24 or Light	Tellus 32

A: Air supply fitting
B: Air regulator knob
C: Oil supply knob
D: Lock ring
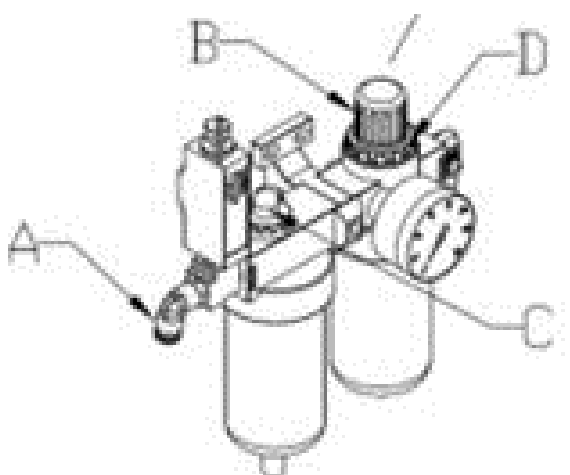
2.4 Safety

⚠ **Warning safety switches should always be in place during bar feeder operation.**

The Minuteman is designed to be safe and reliable to operate. However, the machine can be dangerous if used improperly by untrained personnel. Personnel should be familiar with the operating instructions of the equipment before using and must follow standard safety practices. The machine is equipped with safety devices to prevent accidental damage to the machine and injury to the operator. These devices must not be bypassed or tampered with.

2.4.2 Covers

⚠ **Warning covers should always be in place during bar feeder operation. The Minuteman is supplied with covers to prevent access to moving parts during operation. The hood of the machine is equipped with a safety switch to place the machine in alarm if the hood is not closed. The magazine cover prevents access to the material on the rack and the bar separators.**

2.4.3 Lathe Door Safety

⚠ **Warning lathe door safety if used should not be bypassed**

An input to the Minuteman for monitoring the lathe door is available. If used, this input will prevent movement of the machine when the lathe door is open. This parameter is normally set during machine installation. It is not advisable that this feature is disabled once enabled.

Please review the electrical schematics for the lathe and bar feeder to use the door Safety.

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2.5 Emergency Stop Buttons

⚠️ **Warning Indicates a potential danger to life or risk of personal injury. Exercise extreme caution. These buttons should be tested monthly to verify the proper emergency stoppage of the lathe and Minuteman.**

There are two emergency stop buttons on the bar feeder. Button ES1 is the emergency stop button on the HMI control panel housing. Button ES2 is the emergency stop button on the remote pendant control. Pressing either emergency stop button disconnects the Emergency Stop Relay.

Contacts from the emergency stop buttons are incorporated into the interface with the lathe emergency stop circuit to enable the lathe to be manually placed into emergency stop condition from the machine control panel.

The lathe emergency stop system will place the bar feeder into emergency stop as well.

During installation, on some lathes during emergency stop the output of 220V to the bar feeder is removed. This will not allow the bar feeder to meet the emergency stop reset requirements of the lathe. The lathe will be stuck in emergency stop and the bar feeder will not power up. Please contact Edge Technologies for appropriate instructions. It is the responsibility of the bar feeder and lathe installer to verify emergency stop operation between the lathe and bar feeder is operational. That is when the emergency stop on either machine is depressed automatic operations are stopped immediately. If this does not occur appropriate diagnosis by a trained technician is required. Contact Edge Technologies for additional information.

2.6 Electrical Safety

 WARNING!

ONLY QUALIFIED ELECTRICIAN OR SERVICEMAN SHOULD PERFORM ANY ELECTRICAL TROUBLESHOOTING OR MAINTENANCE TO THIS EQUIPMENT.

DO NOT PERFORM ANY MAINTENANCE, REPAIRS OR ADJUSTMENTS ON THIS EQUIPMENT WITHOUT FIRST LOCKING OUT ALL ELECTRICAL CONTROLS IN ACCOURDANCE WITH ALL FEDERAL, STATE AND LOCAL SAFETY CODES.

PERSONNEL SHOULD BE TRAINED IN OSHA COMPLIANT LOCK-OUT/TAG-OUT AND ELECTRICAL SAFETY PROCEDURES.

MAKE CERTAIN THAT THE POWER SUPPLY IS DISCONNECTED BEFORE ATTEMPTING TO SERVICE OR REMOVE ANY COMPONENTS!

NEVER SHOULD ADJUSTMENTS, MAINTENANCE OR CLEANING BE PREFORMED WITHOUT FOLLOWING PROPER SAFETY PROCEDURES IN ACCORDANCE WITH LOCAL, STATE AND NATIONAL SAFETY CODES.

Before making any electrical connections be certain the voltage for which the bar feeder requires from the lathe is verified with a voltmeter at the power supply connector. Verify this voltage matches the required voltage of the bar feeder, see machine operator manual section *2.3 Specifications and Capacities*. Failure to do so may result in injury or damage to the equipment. Normally a bar feeder is ordered from Edge Technologies to be placed with a specific lathe model. The wiring interface is set in accordance with current information received to Edge Technologies. There are times the lathe manufacture may update and change the main connector pin locations and circuits. It is important this is verified with the schematics of the lathe and bar feeder. In some cases a harness is provided which must be wired into the lathe. All previous safety advises and information must be adhered to. This form of connection allows for quickly unplugged for cleaning or service without having to disconnect "hard wired" connections.

Before starting the bar feeder, check to be sure no tools, packing, or other material have been left in the machine or lathe.

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2.6.2 Electrical Connection

⚠️ **Warning** The power for the bar feeder and the input and output signals between the bar feeder and lathe are supplied through the interface cable. The interface cable is normally pre-wired for the lathe application when shipped from Edge. The installer should verify the connection to the lathe before applying voltage to the system. If the lathe is not equipped with an interface connection for the machine plug and cables will be supplied. This supplied harness must be wired into the lathe electrical cabinet by a qualified technician. The lathe must support a machine type interface for the machines to be connected. Additionally some lathes types power output may be higher than the required 230 voltage. If this is the case an additional transformer will be required to step down the lathe voltage for the bar feeder.

*Note the wiring interface contained in this manual is a generic 1 to 1 pin to wire call out. Each lathe brand is different from one to another. Please contact Edge Technologies for the proper interface schematic if you do not have one.

2.6.3 Glossary of Terms

Common (From Lathe) – This is the 24v DC supply voltage from the lathe for signal sent to the bar feeder control. The voltage cannot be mixed with the bar feeder power supply.

Cycle start (bar change end, program start) – Typically a normally open circuit controlled by the bar feeder Cycle Start/M-Code Finish relay. Voltage is supplied by the lathe. This circuit lets the lathe know bar change is completed and to resume the program.

Automatic mode (Automatic mode ON, Bar feeder ready for work, spindle interlock) – Typically a normally open circuit controlled by the bar feeder. Voltage is supplied by the lathe. This supplies the lathe with the bar feed automatic signal. If bar feed safety circuit is open bar feed will not go into auto mode.

End of bar (bar end, block delete, program stop) – Typically a normally open circuit controlled by the bar feeder end of bar relay. Voltage is supplied by the lathe. This circuit is closed once the bar feeder has determined the current bar is too short to produce anymore parts.

Bar feeder on – Typically a normally open circuit controlled by the bar feeder alarm relay. Voltage is supplied by the lathe.

Lathe Emergency stop (MC ready) – Voltage is supplied by the bar feeder and control is performed by the lathe. When this circuit is opened it will stop bar feeder operation.

Common (From Bar feeder) – This is the 24v DC supply voltage from the bar feeder used for signals sent to the lathe control. The voltage cannot be mixed with the lathe power supply.

Lathe manual/auto – Typically a normally open circuit controlled by the lathe. Voltage is supplied by the bar feed. This circuit can be bypassed if necessary.

Bar change (End of Cycle) – Typically a normally open circuit controlled by the lathe. Voltage is supplied by the bar feed. This circuit is closed once the lathe has received the end of bar signal from the bar feed and lathe is machining the last part from the current bar.

Chuck/collet open – Typically a normally open circuit controlled by the lathe. Voltage is supplied by the bar feed common.

Feed/torque stop- Typically a normally open circuit controlled by the lathe. Voltage is supplied by the bar feed common.

Door safety – Typically a normally open circuit controlled by the lathe. Voltage is supplied by the bar feed common. The signal prevents the bar pusher from feeding in automatic if the door is open. Circuit can be bypassed.

Bar feeder Emergency stop – Voltage is supplied by the bar feeder and control is performed by the lathe relay. When this circuit is opened this will stop bar feeder and lathe operation.

Power supply – The supply voltage to the bar feeder from the lathe usually 3 phase 200v-220v, nominal voltage is 208v. In some applications the supply voltage at the customer may be 440v. In this application a transformer will be required before electrical connection can take place. Catastrophic electrical damage can occur to the bar feed if transformer is required but not present.

2.6.4 Signal Functionality and Explanation
Always refer to the correct wiring prints when troubleshooting

⚠️ **Warning proper training and electrical diagnosis is required.**

Common (From Lathe) - Voltage is sent from the lathe to power relays in the bar feeder.

IF the lathe common is not sent correctly then signals from the bar feeder will not work correctly.

First check to see if the interface is turned ON in the lathe settings. Always check the lathe manual to see if there is correct documentation on what will need to be changed. Second step is to check for continuity in the bar feeder wiring. Check the jumpers that may correspond with the bar feeder common and signals that are missing. Check the wiring from the board back to the lathe plug. If there is continuity from the board to the plug then it may be an issue on the lathe side. Depending on your knowledge and comfortability with troubleshooting, the next step may be trouble shoot the lathe or call the lathe dealer for assistance.

Cycle Start- Cycle start is used to answer a latched M-code from the lathe. Typically, this signal is for acknowledging that material has been loaded during bar change or pushed to position during feeding cycles. This M-code is usually for the bar change cycle or sometimes can be used to answer the feed stop (torque stop).

When the cycle start signal is set incorrectly it can cause issues with the bar change process. If the cycle start is set backwards then the M-code for bar change will not latch but will be satisfied before the bar has changed properly. If this occurs, an alarm may be generated or there can be

a crash between the lathe and bar feeder. If the M-code for bar change or feed is never satisfied, it may be an issue with the cycle start signal being set backwards.

The first way to correct this issue would be to change the status of the jumper or wire that is controlling the cycle start signal. Change the status of the signal and test the machine cycle again. If this does not work then check continuity.

Automatic mode (Automatic mode ON, Bar feeder ready for work, spindle interlock)-
When wired, this signal is to ensure that the lathe does not run without the bar feeder being in automatic mode. There are other ways that the lathe will react when the automatic signal from the bar feeder is not being sent. Some lathes will generate an alarm when the lathe is put into "memory mode", a spindle interlock alarm may show up when attempting to rotate the spindle, or a "bar feeder Torque off" alarm is common.

To test functionality of the signal, the bar feeder should be put into automatic mode first. IF the signal to the lathe is correct the program should run through, spindle should also be able to rotate. IF bar feeder is in manual, an alarm should be present when attempting to run the lathe program or rotating spindle.

To correct the automatic signal on Edge products, a wire may need to be moved in a terminal block. If this does not fix the issue then check continuity.

End of bar (bar end, block delete, program stop)- End of bar signal is sent from the bar feeder to the lathe. The lathe needs to know that the bar feeder has reached the specified limit position of the pusher. This position is set in the bar feeder factory settings. The signal can be sent multiple ways at different durations.

If the end of bar signal is set incorrectly the bar feeder will prematurely tell the lathe that the bar feeder is out of material. When running the lathe in automatic operation, the lathe will constantly acknowledge the end of bar signal and try to change bar.
Ensure that the correct end of bar position is set in the bar feeder parameter settings. If the position is set incorrectly it will send the signal at the incorrect time. This incorrect position can be short and cause long remnants or too long and never send the end of bar signal.

To correct the signal on Edge products, a wire may need to be moved in a terminal block. If this does not fix the issue then check continuity. Also ensure your end of bar position is set correctly in the bar feeder settings.

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Bar feeder on- This signal is typically used as a bar feeder alarm to the lathe. IF the lathe is always receiving the signal that the bar feeder is in alarm it will show a message saying that the bar feeder is in alarm. IF set correctly the alarm state of the bar feeder and the lathe should correspond to each other.

To correct the signal on Edge products, a wire may need to be moved in a wire way.

Lathe Emergency stop (MC ready) - <u>This signal is incredibly important</u>. Signal sends bar feeder voltage out to a relay in the lathe. The voltage should be returned to the bar feeder unless the lathe is in emergency stop state.

IF signal is unwired or wired incorrectly the bar feeder will constantly have lathe emergency stop displayed on the controller. Some lathes and some bar feeder emergency stops can only be cleared if the button has been pressed and reset. Certain lathes will not supply this signal back unless additional buttons are reset on the lathe control.

To check, press the emergency stop button on the lathe. Bar feeder should go into emergency stop. IF the bar feeder does not go into emergency stop then check the wiring or jumpers in the bar feeder cabinet. It may also be necessary to check the wiring in the lathe. There are some lathes that do not supply emergency stop to the bar feeder. If possible, try to find a way to wire the emergency stop using the lathe information.

Bar feeder common- The bar feeder common will be sent to a relay in the lathe. When the lathe relay is fired it will allow the corresponding signal to be seen by the bar feeder. If no signals are coming through from the lathe to the bar feeder, the common may not be being sent back. This could be because of a wiring issue. It could also be that the bar feeder interface is not turned on in the lathe.

First check to see if the interface is turned ON in the lathe settings. Always check the lathe manual to see if there is correct documentation on what will need to be changed. Second step is to check for continuity in the bar feeder wiring. Check the jumpers that may correspond with the bar feeder common and signals that are missing. Check the wiring from the board back to the lathe plug. If there is continuity from the board to the plug then it may be an issue on the lathe side. Depending on your knowledge and comfortability with troubleshooting, the next step may be trouble shoot the lathe or call the lathe dealer for assistance.

Lathe manual/auto- Edge products typically use this to limit feeding. IF the bar feeder does not see the lathe automatic signal it will not feed material when the collet opens. This circuit can be wired a variation of ways.

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IF wired incorrectly this can cause machines to go into automatic mode when the lathe is not in automatic. IF wired incorrectly this signal can also cause the bar feeder to not allow feeding because the automatic signal is not received.

Needs to be check if wired into the machine interface

To check if this signal is working correctly on the Edge product, put the bar feeder into automatic and check the HMI screen. Also, opening the collet should allow the bar feeder to push forward.

Bar change (End of Cycle) - This signal typically corresponds with an M-code from the lathe. Usually the M-code will be used to send a bar change signal to the bar feeder. When this signal is sent, if properly setup, the lathe should latch to this M-code until it receives "cycle start" from the bar feeder.

This signal is used in conjunction with the collet open signal. If the bar feeder is sending end of bar signal, then receives collet open, and receives the bar change signal it should remove remnant and load a bar. Upon loading bar stock, the bar change signal should be answered and turn off.

Typically, if this is not working correctly it is necessary to check the wiring from lathe to bar feeder and location in the bar feeder. If these are correct then ensure that the lathe bar change relay is on when the M-code is latched in the program. Some lathe controls need to have keep relays turned on or off depending on how signals are being used. Make sure the "cycle start" signal is set correctly otherwise it will answer bar change.

Chuck/collet open- The chuck open signal lets the bar feeder know that the main spindle clamp is open or closed. When the bar feeder is in automatic mode and it receives the collet open signal it will feed at a fixed speed and torque (if all restrictions are satisfied (torque stop, lathe automatic, door safety, etc).

If this signal is set incorrectly the bar feeder will not operate properly as it will feed at the incorrect time or not at all.

To correct the signal on Edge products, a wire or jumper may need to be moved to accurately reflect the state of the collet/chuck. Depending on the type of Edge bar feeder that is being worked on there will be multiple ways the bar feeder will react when feeding with collet open. These are a few options. Ensure that the best mode of feeding is selected for the application.

Turret Stop: The bar feeder begins to push when the lathe collet opens and stops pushing after it presses against the stop. The bar feeder will use feed-out lengths 1 through 3 if set.

Position: The bar feeder pushes the length set in the parameter Part Length 1. The bar feeder will use the feed-out lengths 1 through 3 if set.

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Chucker Mode: This setting allows the lathe to run without the bar feeder. When chosen the bar feeder sends an auto mode signal to the lathe while remaining in the manual mode.

Feed stop- This signal is used to stop the bar feeder from pushing when bar feeder in automatic and collet open. Can also be used in the opposite way. The opposite operation would be to not push at all until the bar feeder is in automatic, collet is open, and feed stop is given. In this instance it would be use as an M-code feed. Feed stop was/ is generally used in the bar change process so that the bar feeder does not push before it pulls remnant out of the collet.

If the feed stop is set incorrectly the bar feeder will either not push or push when it should not be. The M-code that is used depends on the lathe that the bar feeder is installed with. Feed stop should be set how the customer would like to use it. Make sure to ask.

If the feed stop is operating backwards on Edge products a jumper can be moved to make the operation opposite.

Door safety- This signal is from the lathe door safety. If the lathe door is open then the bar feeder should not be able to feed forward. This can also be used like a feed stop depending on the lathe and bar feeder.

If the door safety is used but not satisfied some bar feeders will not feed. Other bar feeders will send an alarm for the door safety. If not used then it needs to be jumped in the cabinet.

Edge bar feeders have the capability of changing the door safety in the HMI.

Bar feeder emergency stop- Signal will be sent to the lathe to generate emergency stop on the lathe.
Often this signal is bypassed by a jumper in the lathe electrical cabinet. To test the functionality, simple press the emergency stop buttons or other switches that will cause an emergency stop on the bar feeder. If the bar feeder and lathe are properly set up the lathe should also go into an emergency stop.

Trouble shooting an emergency stop often requires an electrical book for the lathe to prove out wire locations or jumper removal. Some lathes are known to have issues with our bar feeder emergency stops. Relays can be added to change the way the emergency stop is look at.

Power supply- Voltage should always be checked at the lathe plug before the bar feeder is plugged in. The bar feeder plug wiring should also be checked to the wiring print that is supplied with the bar feeder. Check wiring of bar feeder plug, check lathe voltage is on the same pins as

plug, and check that the voltage of the lathe is proper and does not fluctuate beyond safe operating voltage.

IF the voltage is in the wrong pin location then simply move the bar feeder voltage to the correct location in the plug. If the voltage is too high or varies too much on the lathe the customer may need to have an electrician come out. The may also be a need for a transformer between the bar feeder and lathe. IF this is the case, DO NOT ATTACH BAR FEEDER.

Use the lathe manual when they are available. The more information available, the easier and better trouble shooting will become.

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3. Transportation and Handling

⚠️ **Warning The weight of the machine without packaging is approximately 1300 lbs. Only trained operators are to use lifting equipment. Verify the equipment to be used for moving the machine is rated to safely lift the weight of the bar feeder plus the packaging material. Make special note that the machine is top heavy and take proper precautions.**

Model	Machine Weight
MM-320-22	380 KG (837.7 lbs.)
MM-320-32	520 KG (1052.74 lbs.)
MM-320-37	600 KG (1322 lbs.)
MM-320-44	680 KG (1377 lbs.)

3.1 Unpacking The Bar Feeder

Lifting and moving the bar feeder by forklift is the preferred method of handling the machine. The machine should be moved only by personnel qualified in the operation of forklifts. The forks must extend past the machine cabinet, see the drawings below. Lift the machine from the side opposite the magazine maintaining sufficient clearance from the forklift mast to avoid contact. Care should be taken to keep the load balanced. Do not lift the machine any higher than necessary.

A.   B.   C.
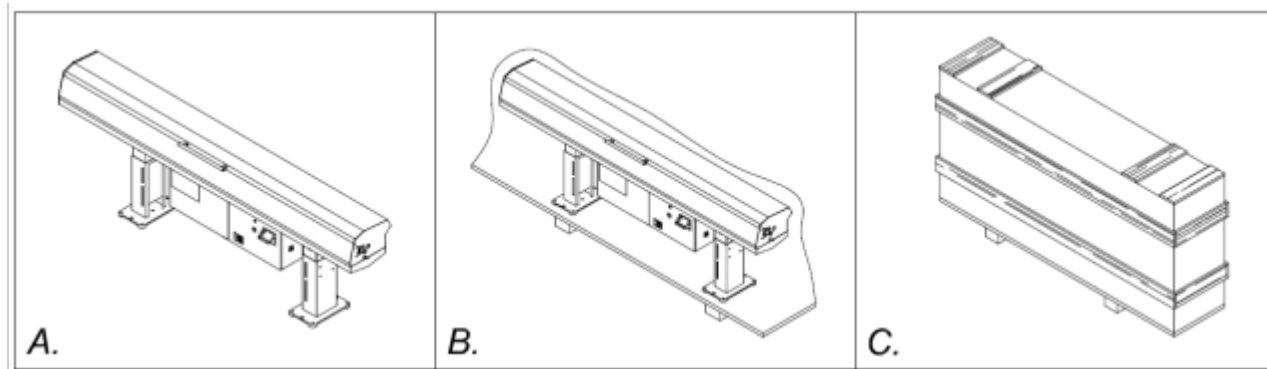
Packaging of the Bar Feeder

The bar feeder will arrive in one of three ways:

A: Without packaging.

B: Attached to a skid or pallet.

C: Crated in a wooden box.

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3.2 Transportation and Hoisting

Hoisting bar feeder

Place two steel bars (Diameter: 30mm, length: 1M) under the bar feeder outside of the stands, using suitable lifting straps hoist the bar feeder.
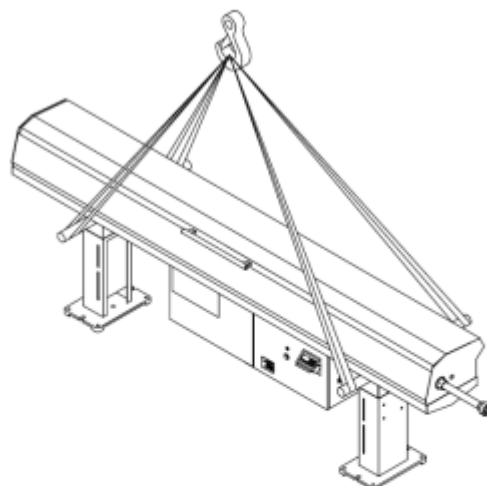
Hoisting with bar feeder on pallet

Using suitable lifting straps positioned under the pallet near the stands.
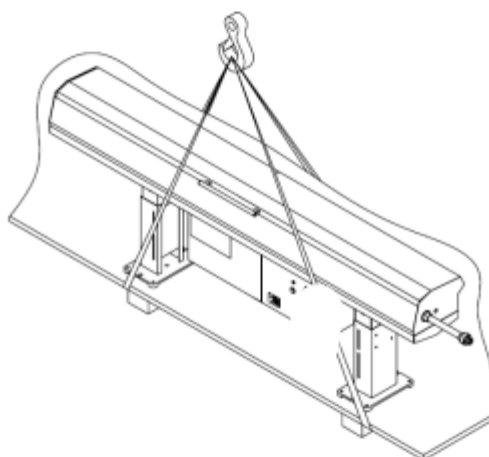
Hoisting the bar feeder in a crate

Using suitable lifting straps positioned under the pallet near the stands.

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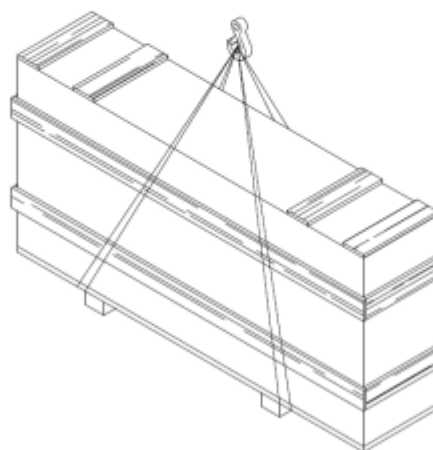
4.1 Lathe Preparation

Prior to installing the bar feeder, the lathe installation must be completed and ready to produce parts. If no lathe spindle work holding is installed or no compressed air the bar feeder cannot be installed.

Caution should be taken, only qualified electrician or serviceman should perform any electrical troubleshooting or maintenance to this equipment.

Warning be sure lathe and bar feeder emergency stop is engaged when performing the manual alingment procedure.

Lathe must be operational to perform the alingment and installation with the proper chucking package.

On some lathe models there are covers for the spindle area. These covers may or may not be on the lathe when the lathe is ready for bar feeder installation. A review with the lathe personal would prove useful to identify the related covers. If the covers are off the lathe this may become an issue when the bar feeder is placed too close but ok for reach. When the covers are placed on the lathe the bar feeder could be in the way. It is suggested to test fit the covers prior to securring the bar feeder to the floor.

Refer to the Typical Installation Guide following this section

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4.2 Typical Installation Guide

⚠️ **Warning the proceeding steps are to be performed by a trained technician.**

Step 1. Inspect the bar feeder for damage.

We all know that when a bar feeder is received by the End User it is very seldom inspected for damages that may have occurred during transport or handling, unless there is overwhelming evidence that something major has occurred. Regardless of the fact that we are not responsible for these damages, more often than not we find ourselves replacing small components that sustained them. When it comes to major damages, we practice the right to ship items only by Purchase Order, as the customer will most likely be in need to initiate an Insurance claim.
It is important to always communicate with the Edge Technologies when the equipment sustained any kind of damage. Together we'll evaluate the situation and formulate a feasible solution designed to overcome the current situation, hopefully even before the customer is exposed to the trouble area.

The main goal of the preliminary inspection is to minimize delays in the completion or the necessary postponement of the installation. A secondary goal is to prevent the occurrence of illegitimate claims by the end user.

This is the time to plan a course of action with you as the expert (always) in the eye of the customer.

Step 2 Required Items from the Location.

- Make sure that you are communicating with the person in charge, so decisions can be made in a timely manner.
- Ask to be made aware of any special regulations or safety requirements that you will need to adhere to while working in their facility.
- At this time would be opportune to ask and be introduced to the employee/s that will require training.
- Let your contact know that they would greatly benefit if they their personnel will be involved with the installation process. Especially if they are a 1st time users.
- Request to see the bar stock that will be used on the 1st job, and make sure that they have all of the accessories necessary to handle it.
- Ask to make sure that the oil for the loader (i is available.

Step 3 Check Inventory.

- Adaptation kit. Check parts and test. If not familiar with the application, call Edge Technologies and request an assembly/detail drawing and or pictures.
- Guide channel, pushers, collets and noses. Make sure that all is available and correct according to the customer's pick ticket in the bar feeder.
- Spindle liners. Check that I.D. matches pusher, test-fit in the lathe, verify that the retaining ring is available and functional, and finally make sure that the liner can be removed once the loader is installed.
- Hardware needed to align, level and anchor the bar feeder to the ground? Is a pigtail required?

4.2.2 Swiss Headstock Shipped Components

N.	Code	QTY	Description
1	HP8127002A	1	Anti-vibration device
2	P82200804	1	Plate
3	P82200805	1	Collet
4	P43200930	1	Theread rod
5	B RBI-12R	1	Cardan
6	P43200801	1	Plate Ø 6
7	P78200901	1	Support Ø 48
8	P85201100	1	Plate
9	P78200700	1	Oil gathering
10	P78200500	1	Ring
11	P78200600	1	Oil gathering
12	P83200300	8	Fixed screw
13	P58200600	1	Wrench
14	P76200500	1	Remnan tank
15	P32200600	8	Pad
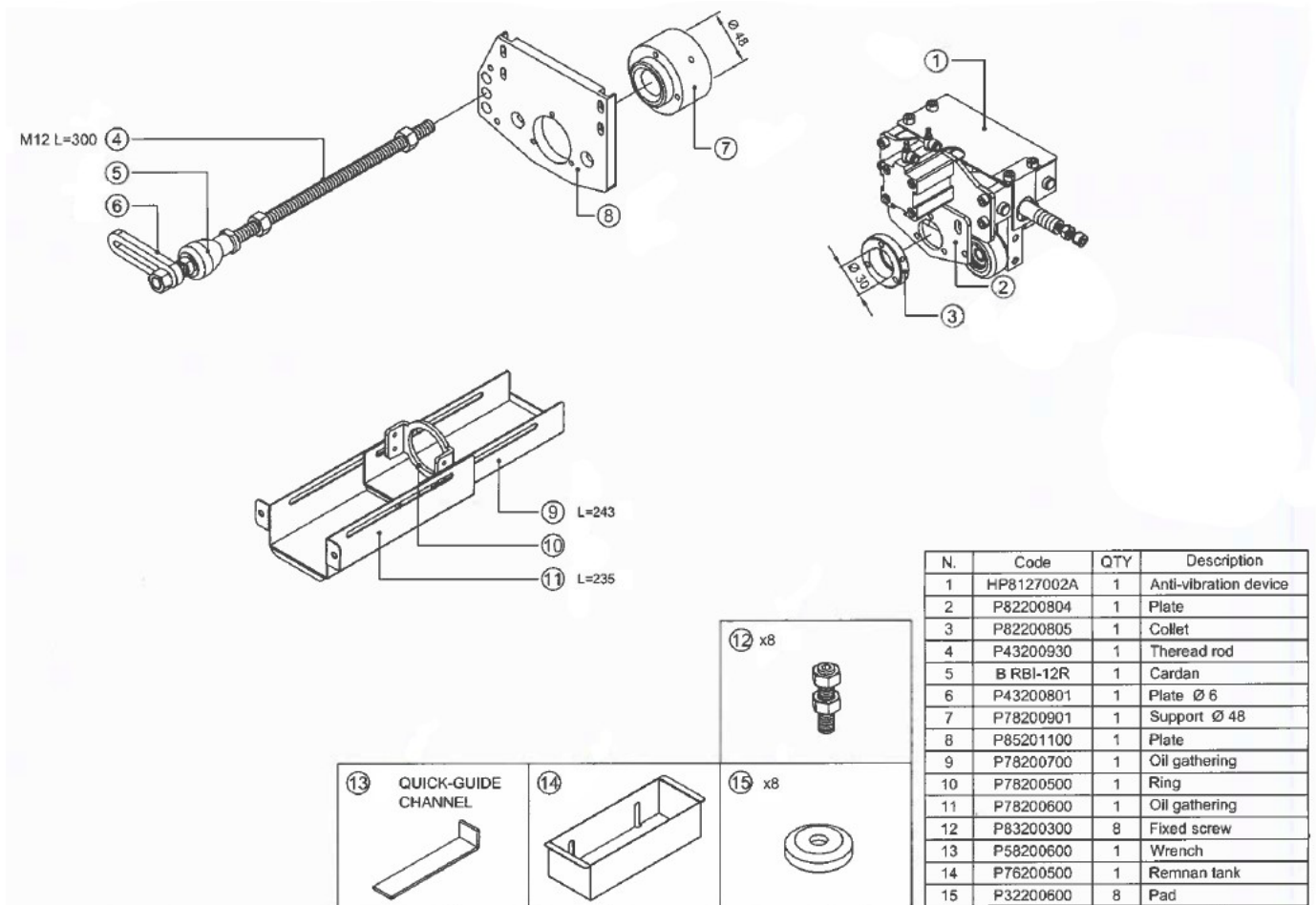
4.2.3 Fixed Headstock Shipped Components

All Minuteman are shipped as a Swiss style bar feeder with fixed headstock components. Items include a hard nose and nose liner. Installation requires the use of these additional components sold by Edge Technologies.

Step 4 Lathe Condition

While field retrofits on existing lathes maybe challenging when it comes to the presence of an effective and properly documented electrical interface, the installation on new lathes requires us to perform a comprehensive assessment as well.

- Lathe under power and leveled.
- Electrical interface available and installed. Don't forget to double check the AC supplied voltage and pins location prior to plug-in.
- Chucking package available and installed.
- Collets available (for laser as well as material).
- Tooling available for eventual test or production run.
- Will the customer switch to a different chuck in the future or regularly.

Once the preparations have been made perform the following installation and alignment procedures.

4.2.4 Bar feeder Install Process

1. Inspect bar feeder for any shipping or handling damage, report as necessary
2. Verify lathe installation condition
    a. Lathe level for operation
    b. Lathe will power up
    c. Lathe has collet or chuck package
    d. Lathe is free of any alarms
3. Verify components of the pre installation check list are complete
    a. Compressed air available to bar feeder install location
    b. Bar feed oil is required, and correct for application
    c. Material for lathe
    d. Spindle liner on site
4. Verify bar feeder components to pick list are present
    a. Required bar feed level pads and associated nuts, washers and screws
    b. Anchor bolts

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    c. Head stock adaptors

    d. Correct channel set installed

    e. Threaded rod, bracket, and nuts

    f. Telescoping or hard nose

    g. Hardnose nose insert, if required

    h. Bushing blocks or rollers

    i. MAVD if equipped

5. Calculate bar feeder positioning

    a. Consider lathe headstock stroke

    b. Consider bar feeder reach capability

    c. Determine distance based on manual specifications

    d. Consider axial shift requirements

    e. Verify collapsibility of telescoping nose

    f. Verify Reach of telescoping nose

6. Install laser or string components for alignment and target to bar pusher

    a. Lathe collet/chuck

    b. Lathe guide bushing as required

    c. Lathe spindle

        i. Verify bar pusher reach and head stock stroke

        ii. Verify axial shift reach and stroke

7. Drill and anchor bar feeder to floor

    a. Verify floor is not heated

    b. Drill holes complete through floor, entire 12 inch drill stroke

    c. Drive anchors complete into floor with associated fender washers installed

    d. Tighten anchors fully

8. Verify alignment, adjust as necessary

    a. Verify bar pusher reach and head stock stroke

    b. Verify axial shift reach and stroke

9. Install MAVD as required

    a. Align MAVD

    b. Adjust as required

10. Install telescoping or hard nose

    a. Required inserts installed, as required

    b. Align as required

    c. Cut telescoping or hardnose nose, as required

      i.   Verify collapsibility of telescoping nose

     ii.   Verify Reach of telescoping nose

11. Connect synchronization rod

   a.   Cut threaded rod, as required

   b.   Adjust stroke of synch rod on bar feed

   c.   Verify axial shift synch switch adjustment, adjust as required

12. Cut lathe sheet metal

   a.   If additional machines are present review for consistent appearance

13. Verify lathe signals

   a.   Emergency stop from lathe

   b.   Emergency stop from bar feeder

   c.   Door signal

   d.   Torque stop

   e.   Bar change

   f.   Auto cycle/cycle start

   g.   Collet open/close

14. Perform auto bar change with lathe

   a.   Add bar change program to lathe

15. Add oil to bar feeder

   a.   Verify oil off and on position

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4.3 Distance From Lathe

⚠️ **Caution verify proper installation distance or machine crash may occur.**

Verifying the proper install location is critical for complete material utilization and collapsing of the telescoping nose.

The bar feeder must be set the proper distance from the lathe. The set distance from the bar feed to the lathe is 1346 mm (53 inches). Measure from the face of the lathe collet to the first anti-vibration device channel support block face (See inset A). For sliding headstock lathes make sure headstock has gone to Z+ over travel limit toward the guide bushing. For lathes that have both a fixed headstock and sliding headstock modes set Z axis at the maximum distance away from the bar feeder.

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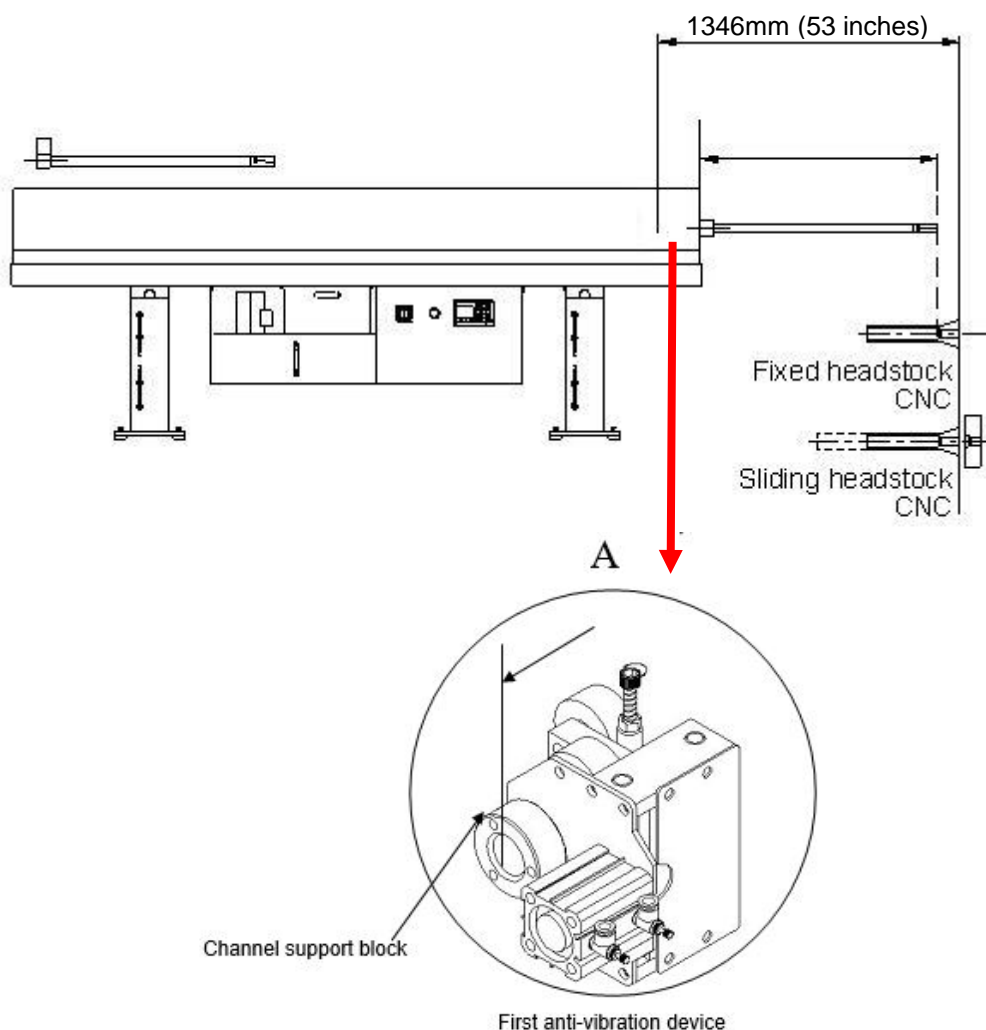
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4.4 Height adjustment

![hand caution icon] **Caution the assembly of the level pad mounting system must be completed with all the parts for proper installation.**

![hand caution icon] **Caution only trained installers are to make stand adjustments. Not following proper procedure could lead to personal injury and**

The Minuteman utilizes a simple stand system for height adjustment. Height adjustment is the same with the axial track option. The placement of the leveling pads must be performed prior to adjusting the stands.
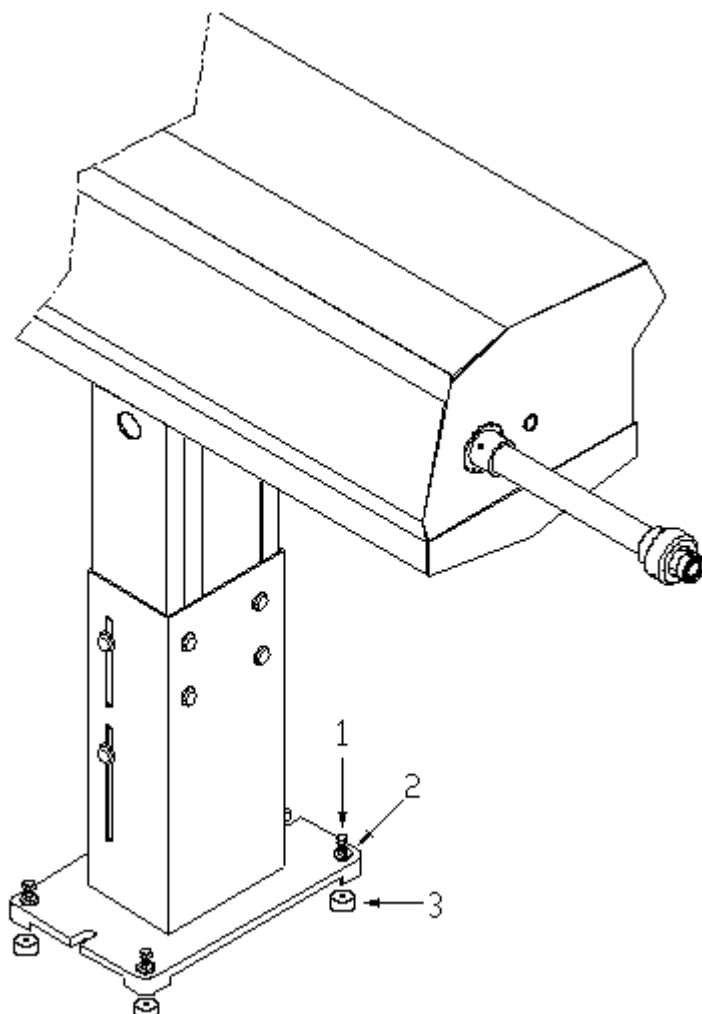
Install leveling screws (1) and nuts (2) in both front and back legs

Place one leveling pad (3) under each screw

Run screw down into leveling pad. Once touching rotate screw two revolutions

Level stands

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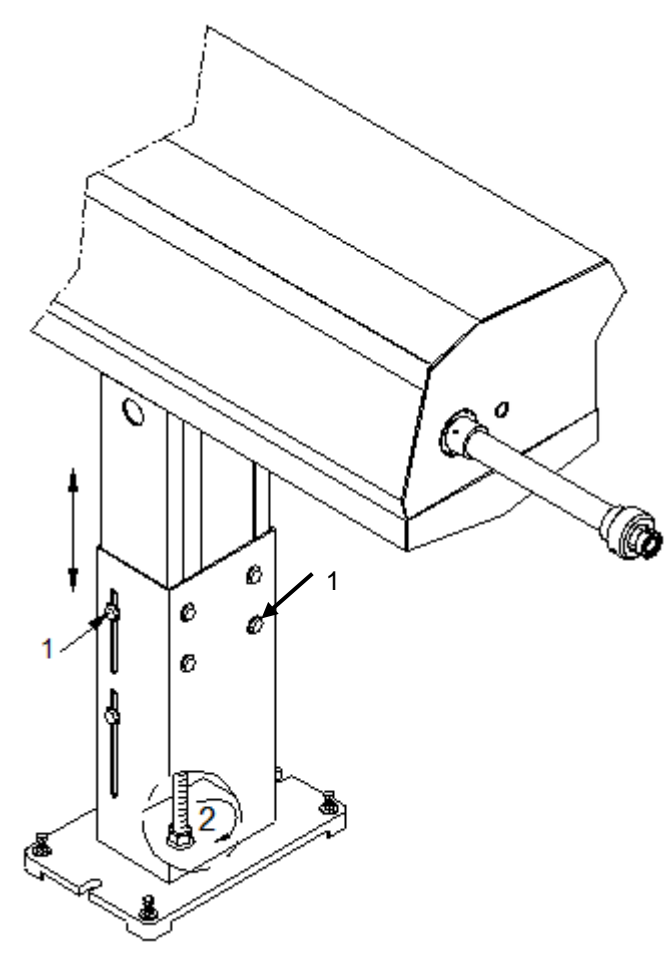
Loosen the 8 stand screws (1)

Adjust the screw (2) up or down to achieve correct height. Adjust the bar feed height to center the channel to the lathe spindle.

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4.5 String Alignment

⚠️ **Caution disabling the hood switch on the bar feeder is required to view the laser target and align the bar feeder.**

⚠️ **Caution manually moving the pusher with the pendant when the hood is disabled.**

Note: As alignment is adjusted verify distance from bar feeder to lathe does not change.

String Alignment Procedure

Not supplied is the rear centering plug and spindle plug. These items can be made for the string alignment. These items are not available from Edge Technologies. The string is included with all Minuteman models. The standard alignment procedure by an Edge Technician is by laser alignment.

The following steps for basic string alignment-

1. In order to achieve a correct alignment, prepare a nylon string 1.27mm. (.050").
2. Pull the nylon string from the lathe (A) to the end of the bar feeder (B)

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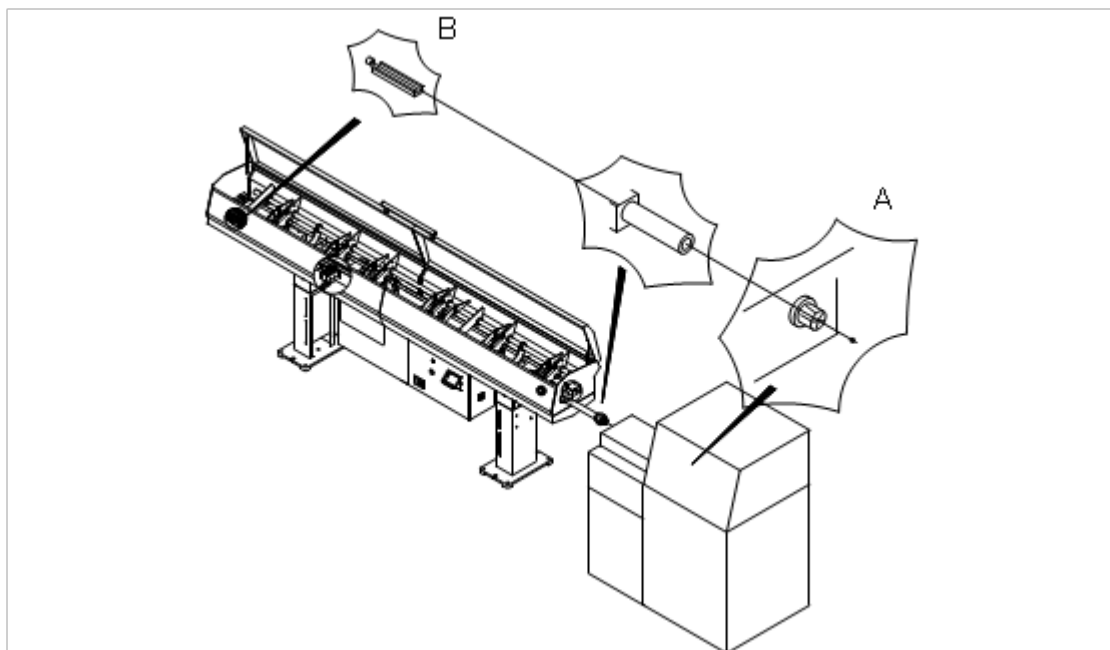
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Remove the bar pusher out and insert a centering plug, pull the nylon string from the lathe A, to the end of the bar feeder B.
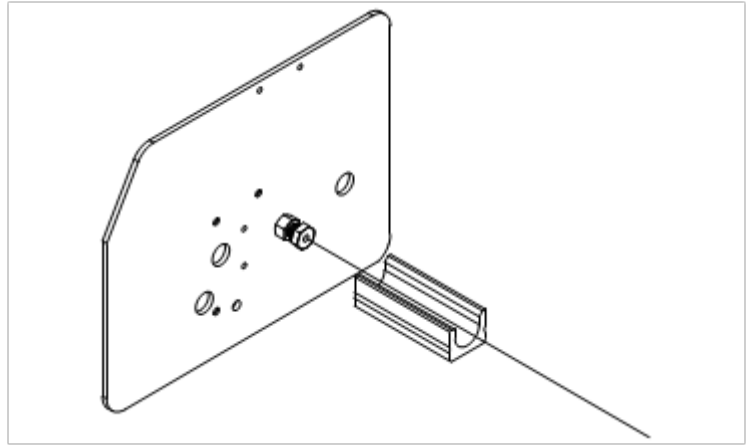
Select a proper plug size for lathe the collet, insert and close lathe collet, move lathe Z axis to –Z over travel, pull the nylon string tight and secure in place.
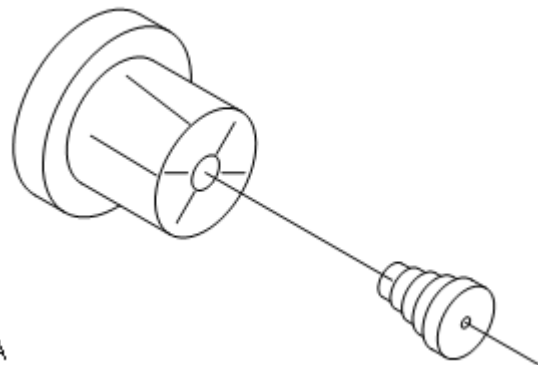
A

Directional adjustment

Move the bar feeder so that when using a ruler or centering device, check the center of the nylon string, nose adapter (C), and spindle (D). The distance of the four directions is to be within 0.15 mm.

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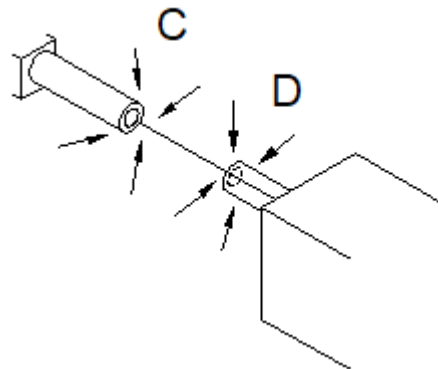
4.6 Laser Alignment.

⚠ **Warning use protected eyewear when using a laser during bar feeder alignment.**

The preferred method of aligning the bar feeder is by way of a laser aligning. The instructions below are general in nature. Follow the laser tool manufactures instructions for laser usage.

✋ **Caution disabling the hood switch on the bar feeder is required to view the laser target and align the bar feeder.**

✋ **Caution manually moving the pusher with the pendant when the hood is disabled.**

1. Prepare the level pads and screws to the bar feeder per service procedure.
2. Remove the hood switch latch screw.
3. Insert a laser tool into the lathe spindle.
4. A target is then placed on the bar feeder long pusher.
5. The lathe spindle is rotated at the laser manufactures recommended RPM.
6. Looking at the target at the front and rear potion of the bar feeder, shift the bar feeder to center the laser circle to the target center. Use the stand height screw to raise and lower the bar feeder to achieve alignment. Tighten stand screws once machine is aligned. See stand height adjustment procedure.
7. Check the distance of the bar feeder and adjust as required. Check the alignment once again.
8. Once in position drill the floor to anchor the bar feeder.
9. When bar feeder has been anchored down recheck alignment. Make additional adjustment to align the bar feeder.
10. If the Minuteman is equipped with axial track move the bar feeder into the opposite position and check alignment. Adjust as required.
11. Once alignment is complete remove the laser from the lathe, target from the pusher and reattach the hood switch.

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4.7 Axial Shifting

⚠️ **Warning incorrect machine placement may cause catastrophic damage to lathe or bar feeder.**

✋ **Caution all axial shift safeties must be adjusted and set correctly**

✋ **Caution bar feeder must be in emergency stop prior to axial shifting bar feeder.**

The Minuteman may be equipped with an Axial Shifting option on some lathe applications that require this feature. Normally lathes that require an axial shifting option are equipped with a guide bushing-less feature. When the guide bushing is removed from the lathe the head stock will then be positioned in place of the guide bushing. The distance of headstock movement forward into chucker mode will be the amount of bar feeder movement required. This type of arrangement requires the bar feeder pusher to reach further into the lathe. In order to meet this required distance, the bar feeder may be moved closer to the lathe without repositioning the anchoring of the bar feeder.

Additional safety switches are installed on the machine. 2 synchronization limiting switches and 1 axial stand position switch are wired in series to the emergency stop circuit. The synchronization switches must be set to the proper position during installation. If the switches are not set correctly mechanical interference will occur. See section 4.9.

Note Minuteman axial shift equipped machines may be shipped with stands in opposite positions. The stands must be in the same configuration prior to installation.

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⚠️ **Warning follow the instructions to shift the Minuteman when equipped with Axial shift option.**

One stand contains a rack and pinion type of movement system used to slide the bar feeder between Swiss and Chucker positions. The 2nd stand will contain a slide feature. Screws are used in both stands to lock the bar feeder into the desired positon. The axial track engagement switch is located on the stand with the gear set.
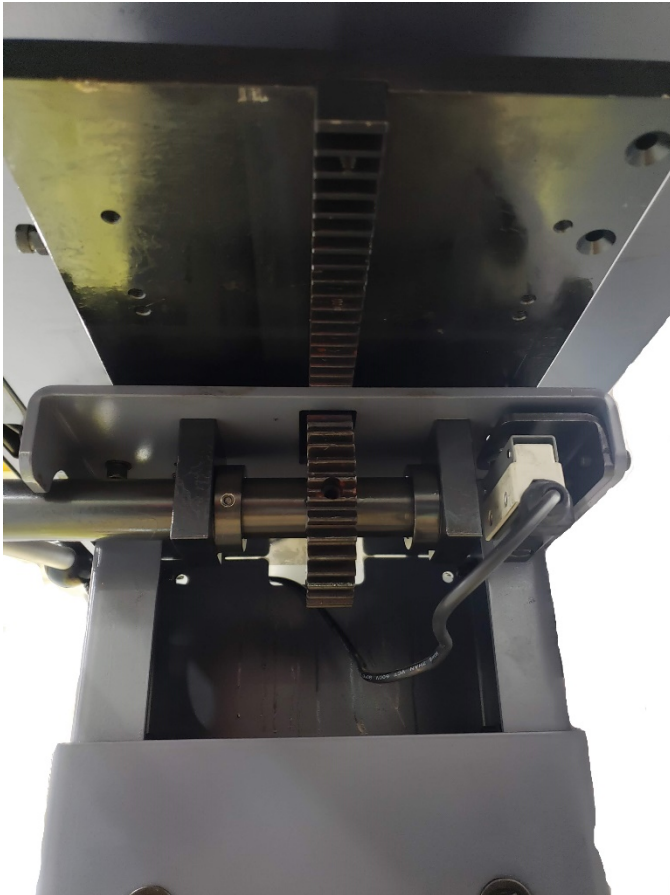
The correct shift limit position must be set for the lathe application. This is normally set from Edge Technologies with the most current information on hand of the lathe manufacture. There are times the lathe manufacture will change lathe specifications and not notify Edge Technologies. It is important to understand the headstock position change distance from swiss to chucker mode. This movement should correspond to the axial shifting distance. For example if the lathe conversion is 9 inch movement of the head stock from swiss to chucker the bar feeder must be able to move the same distance. Obviously if the bar feeder axial stroke was limited to say 6 inches then a crash or over extension would most certainly occur. Contact Edge Technologies Service Department for addition help.

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![caution hand symbol] **Caution do not change the axial stoke distance once it has been set by the installer.**

The Position stop screws allow an axial stroke to be set to one of 3 positions. Once the bar feeder has been installed changes to this screw position must not be changed. The position will be determined by Edge Technologies to the lathe model.

Axial stop screw location

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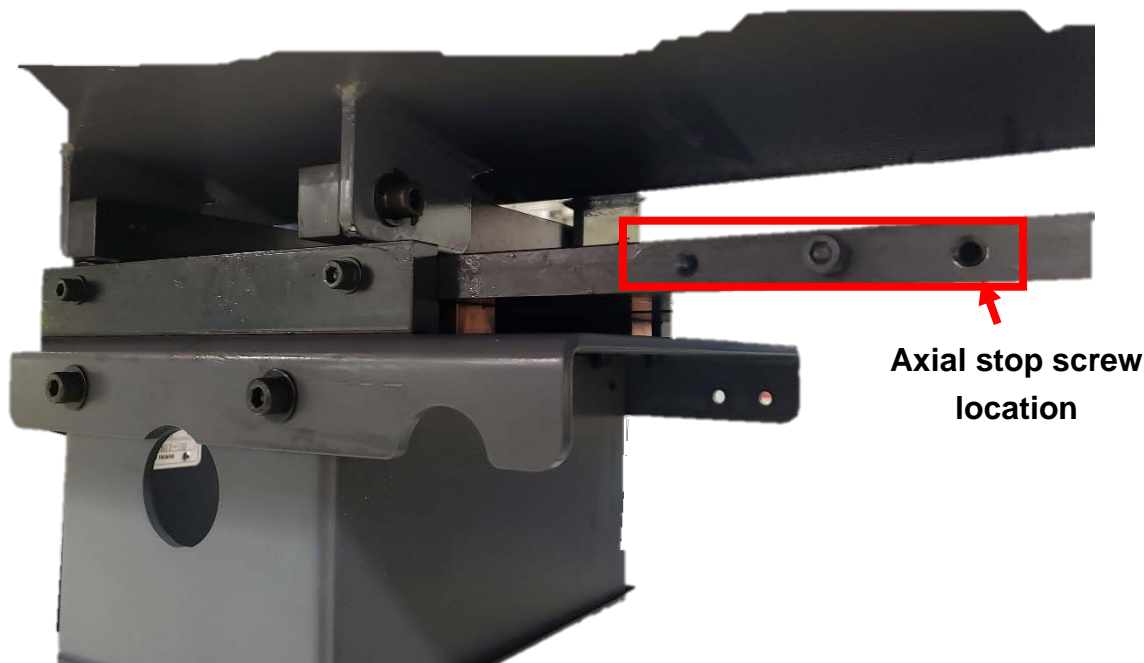
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The graphic below represents the bar feeder movement and head stock movement during the Swiss and Chucker change.

Headstock

Guide Bushing

Swiss Mode

Bar feeder is anchored down to floor and equipped with axial shift option

Bar feeder shifted into chucker position ➡️

Guide bushing removed and headstock in chucker position ➡️

Chucker Mode

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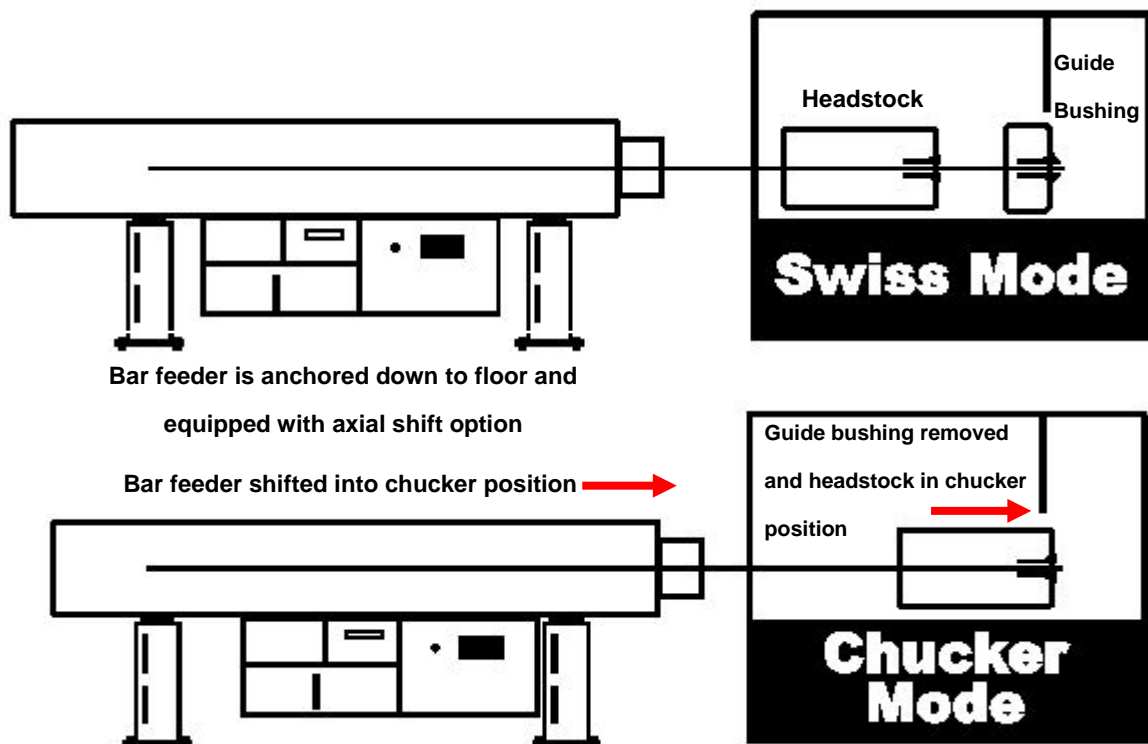
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During the installation process it is important to place the bar feeder in the correct position. On some applications a very small window will exist being too close or too far. Conditions to consider

- In Swiss mode, the bar feeder long pusher, with a pusher collet installed must be able to reach the back of the lathe collet when the headstock is full forward or Z positive over travel.
- In Swiss mode the maximum loading length is the magazine length of 12 feet 6 inches. From the gripper jaws to the face of the guide bushing are the typical measurement points.
- In chucker mode the when the bar feeder is shifted the bar feeder long pusher, with a pusher collet installed must be able to reach the back of the lathe collet when the headstock is full forward or Z positive over travel in the chucker mode position.
- In Chucker mode the maximum loading length is the magazine length of 12 feet 6 inches. From the gripper jaws to the face of the lathe collet are the typical measurement points.
- The telescoping nose must be short enough to collapse without bottoming out and extend without over extending.
- The synchronization safety switches must be set so the normal working range will allow for operation. When the stroke is over extended or collapsed the switch must be set just before either condition occurs.
- The Drip pan must be functional between Swiss and chucker positions.

6ft and 12ft Minuteman's may be equipped with the Axial Track option. This is not an option that can be installed in the field and requires assembly at Edge Technologies.

The axial shift offers 3 positions based on application. During installation the correct position must be verified by Edge and lathe manufacture application information. If the bar feeder was prepped and shipped from Edge Technologies the axial shift position will be set according to the lathe. On occasion a bar feeder from a dealer or a used bar feeder may have axial track settings for a different lathe than originally prepped for. It is important to verify axial shift requirements for the lathe with Edge Technologies.

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Axial shift setting options. The specific position is based on the following parameters.

- Chucker/Swiss position
- Pusher reach distance
- Bar feeder material loading position

Position	Movement length
1	120mm
2	160mm
3	230mm
When position 2 is to be used, remove screw from position 1 and place it into hole position 2.	

The axial track positions stops are selectable based on the application stroke. The chucker mode stop screw must in place when the bar feeder is shifted. Be sure the stop screw is in the appropriate screw hole.

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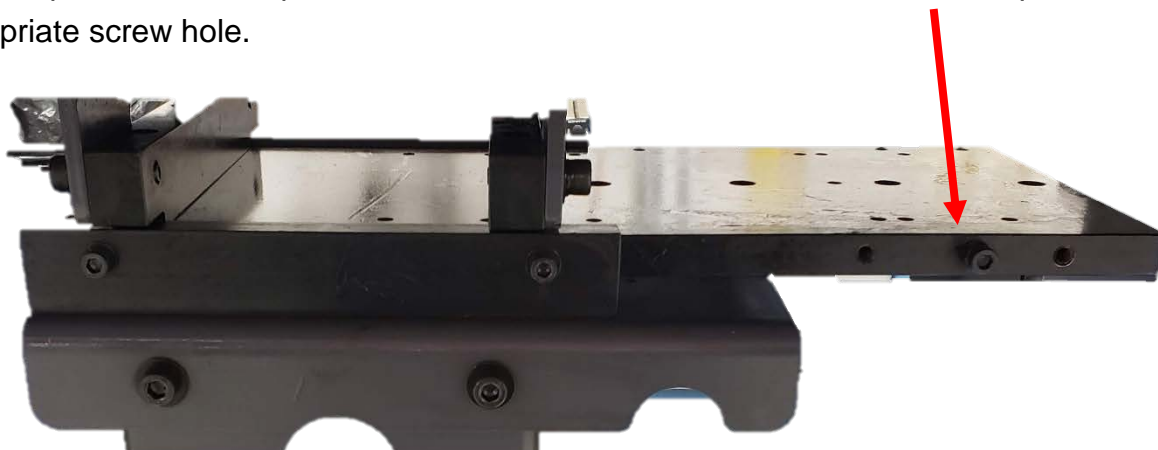
4.8 Setting Axial Track Synchronization Switches

✋ **Caution setting of the synchronization switches is extremely**

✋ **Important to reduce a possible crash between lathe and bar feeder.**

Caution Place bar feeder and lathe into emergency stop when setting switch positions

The first step in proper switch positioning is placing the synch rod block in the correct position. See section for setting of the synch block.

Setting of the axial synchronization emergency stop switches is critical during the installation. The switch locations are preinstalled and do not require adjusting. The adjustment will come from the trimming of the synch switch plate as required.

The switches must be set so if the headstock was moved no over collapse or over extension of the telescoping nose would occur.

Inboard switch position below

Synch plate must be removed and trimmed as required.
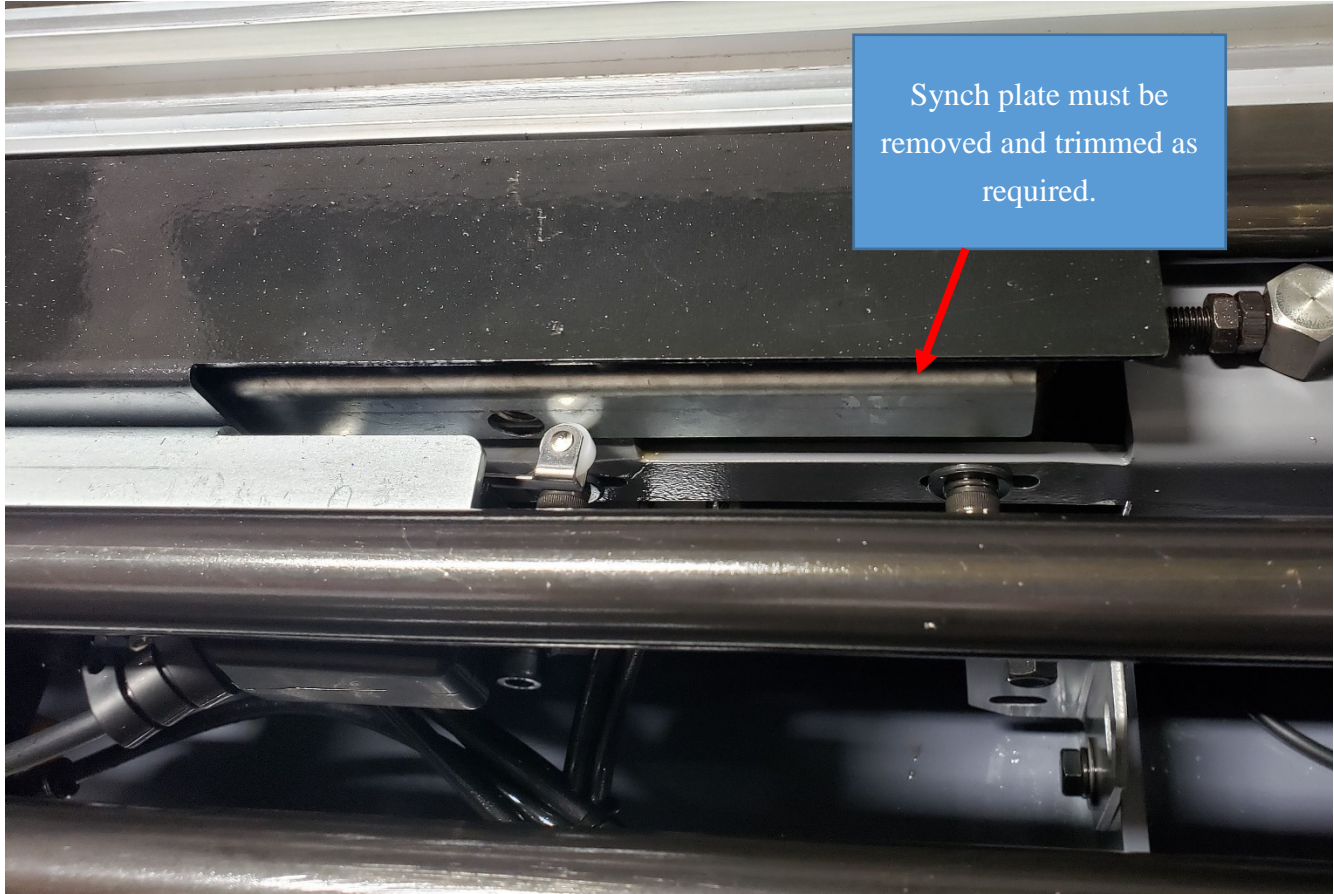
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The outer switch location is not adjustable. The adjustement will come from trimming the switch plate attached to the synchronization belt slide.
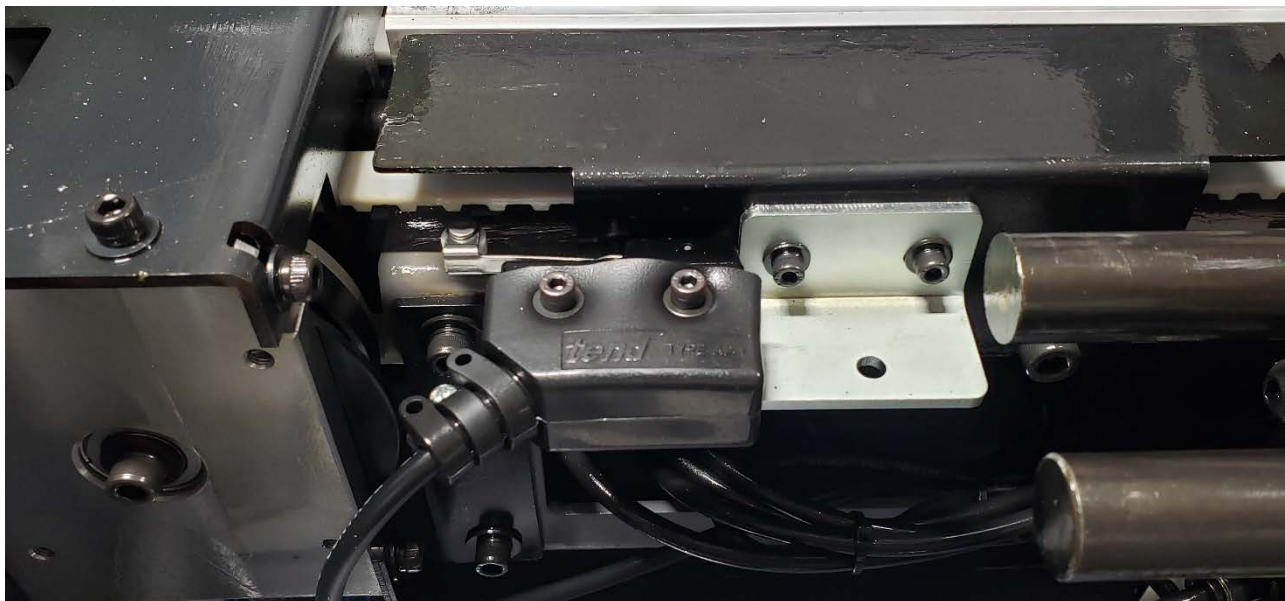
- The synch belt covers (**A**) must be removed to gain access to the switch plate (**B**).
- The switch plate is fastened with 2 screws. Remove the 2 screws and plate.
- Perform the required material removal
- Reinstall the switch plate and synch belt covers and check for bar feeder placement

Synchronization belt slider block

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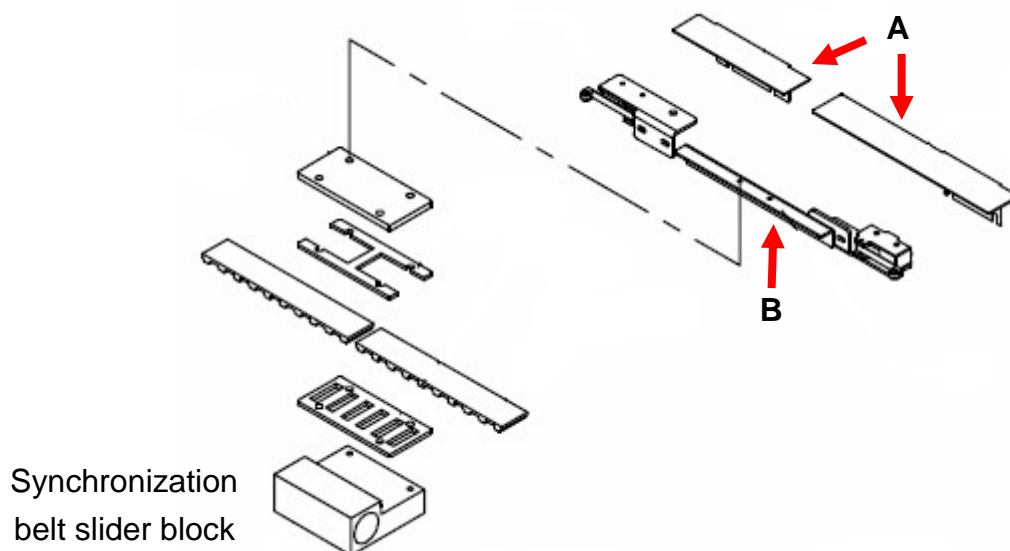
4.9 Change Axial Swiss Mode to Chucker Mode

![hand caution icon] **Caution bar feeder must be in emergency stop prior to axial shifting bar feeder.**

![hand caution icon] **Caution all attaching components must be installed and tightened prior to production.**

![hand caution icon] **Caution only trained personnel should be converting the lathe and bar feeder to Swiss or chucker option.**

1. With the bar feed in manual operation be sure there are no active faults
2. Place lathe headstock in Swiss mode Z positive over travel position
3. Place bar feed into Emergency stop condition (press bar feed E-Stop button)
4. Place lathe into Emergency stop condition (press lathe E-stop button)
5. Disconnect bar feed synchronous rod and telescoping nose from lathe head stock.
6. While in Swiss mode remove the guide bushing assembly per lathe manufacture instructions. It may be required to reset the emergency stops to complete the removal of the guide bushing. Use extreme caution.
7. From the underside of bar feeder stand cabinets, remove 4 axial track locking bolts from both stands
8. Rotate axial shift lever to move bar feed.
9. Push bar feed forward to the chucker position.
10. Reinstall 4 locking bolts into axial track plates.
11. Verify headstock is in the chucker zone.
12. Reattach telescoping nose and sync rod to head stock.
13. Reset Emergency stop condition previously set.
14. Verify the emergency stop safety interlocks on the synch assembly are properly positioned.
15. The parameter values below must be checked and changed as necessary.
    a. Max end of bar
    b. Facing distance
    c. MAVD opening position (if used)
16. Verify proper operation of head stock movement and bar feed response.

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4.10 Change Chucker Mode to Swiss Mode

⚠ **Caution bar feeder must be in emergency stop prior to axial shifting bar feeder.**

⚠ **Caution all attaching components must be installed and tightened prior to production.**

⚠ **Caution only trained personnel should be converting the lathe and bar feeder to Swiss or chucker option.**

1. With the bar feed in manual operation be sure there are no active faults
2. Place bar feed into Emergency stop condition (Press bar feed E-Stop button)
3. Place lathe into Emergency stop condition (press lathe E-stop button)
4. Disconnect bar feed synchronous rod and telescoping nose from lathe head stock.
5. From the underside of bar feeder stand cabinets, remove 4 axial track locking bolts from both stands
6. Rotate axial shift lever to move bar feed.
7. Push bar feed rearward to the Swiss position.
8. Reinstall 4 locking bolt into axial track plates.
9. While in Chucker mode install the guide bushing assembly per lathe manufacture instructions. It may be required to reset the emergency stops to complete the installation of the guide bushing. Use extreme caution.
10. Verify headstock is in the Swiss zone.
11. Reattach telescoping nose and sync rod to head stock.
12. Reset Emergency stop condition previously set.
13. The parameter values below must be checked and changed as necessary.
    a. Max end of bar
    b. Facing distance
    c. MAVD opening position (if used)
14. Verify proper operation of head stock movement and bar feed response.

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4.11 Axial Track Programing Tech Tip

Anytime bar feed configuration is changed from one operational mode to another certain position parameters must be changed in order for proper operation. If these parameters are not changed machine alarms can be produced or excessive remnants will be observed.

During initial setup it is required to measure and record the following

- Parameters, Max end of bar
- Facing distance
- MAVD opening position

⚠ **Warning do not allow bar pusher collet to make contact with lathe collet during operation. Damage to machines could occur.**

A 5 mm to 10mm clearance must be maintained between the lathe collet and bar feeder collet when setting the max end of bar position.
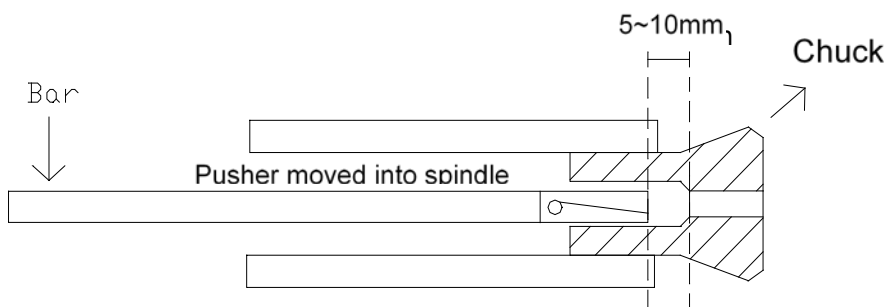
4.12 Nose Block Alignment

🖐️ ⚠️ **Caution do not adjust nose block when electrical power is applied to bar feeder.**

The nose block is aligned by way of 4 jack screws at the mounting flange of the nose block device. The vertical mounting plate holes on the bar feeder are threaded for the bushing block mounting flange. There are nuts on the screws as well. The 4 jack screws can then be used to adjust the alignment of the bushing block and attached nose.

Use incremental adjustments to fine tune the nose block alignment. Always check for alignment once an adjustment has been made.
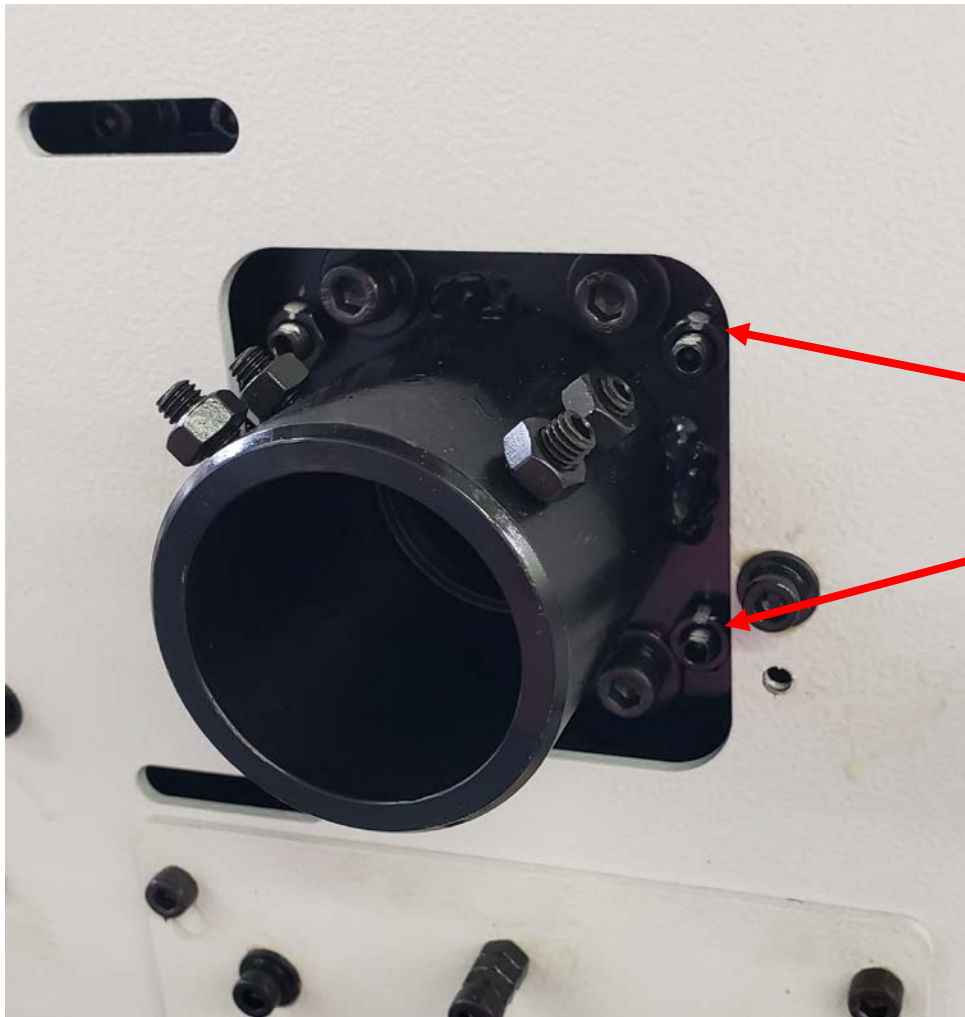
Loosen lock nuts (4) for adjustment

Tighten lock nut (4) once adjust.

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4.13 Anchoring

⚠️ **Warning do not install level pads over cracked concrete with uneven surfaces.**

⚠️ **Warning drilling anchor holes at an angle may affect the final aligning of the bar feeder.**

✋ **Caution wear protective eyewear when operating a hammer drill or hammer to strike a floor anchor.**

When the alignment is completed the bar feeder must be anchored to the floor to prevent it from moving out of position. The machine is supplied with ½" diameter wedge anchor bolts to secure the level pads to the floor. It is recommended to drill the holes for the anchor bolts completely through the floor if possible or at least as deep as the anchor bolt is long so that the bolt may be driven flush with the floor should the machine need to be moved. Alignment should be rechecked after anchoring the machine to the floor. This includes moving the machine on the axial track if equipped and rechecking alignment.

Wedge style anchor

Note - Be sure the holes are drilled perpendicular to the floor. Drilling a hole on an angle is not recommended.

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4.14 Installation Components

Spindle Liner: Used to reduce spindle diameter to support the pusher. Some applications do not require a spindle liner. This is true when the spindle bore diameter is the same as the pusher.

Fixed front nose and insert: This nose is cut to fit and used on fixed headstock lathes. If multiple inserts.

Telescopic front nose: The telescoping nose is normally used with sliding headstock lathes and attaches from the bar feeder to the MAVD when equipped. This nose is normally cut to provide room for the MAVD and keep the nose from collapsing into itself. Additionally there is a spacing ring that is required for the nose to be fastened to the MAVD.

Movable anti – vibration Device (MAVD): Used only on Swiss type lathes, The MAVD is fixed at the end of the spindle of the lathe. The device aids in material support between the headstock and bar feeder. This is always installed unless a special condition is present that would keep the pusher from reaching the required maximum pusher travel. Contact Edge Technologies for more information. Swiss lathe applications only.

Synchronization connecting rod: Synchronization rod is connected at the MAVD. Swiss applications only.

Oil tray drip pan: This is used under the telescoping nose to collect any oil that leaks out of the telescoping nose and back into the bar feeder. Swiss applications only.

Oil Gathering: Used on fixed headstock applications only.

4.15 Spindle Liner

⚠️ **Warning prior to spindle liner insertion or removal be sure the lathe is in emergency stop or power to lathe is off. Never remove or install a spindle liner to a spindle that can be powered on during this process.**

⚠️ **Warning do not operate lathe if using an extended spindle liner and the extended cover is off of the spindle. Doing so could cause personal injury and machine damage.**

✋ **Caution be sure to use the proper fasteners for the spindle liner retaining ring and if equipped spindle liner extension housing.**

For the most support of the long pusher the lathe spindle normally requires a spindle liner. This liner reduces the inner diameter of the spindle to the diameter of the pusher. The liner diameter should be approximately 2mm larger than the pusher.

When installing a spindle liner for the first time the liner end may need to be cut. This is a normal practice for the liner to be longer for the various chucking packages that are available. A longer liner is better to have than a too short of one. The end of the liner should be approximately 13mm from the rear of the chuck jaws or collet. Any further and this could cause a load or remnant ejection issue

Normally a spindle liner will be part of the options ordered from Edge Technologies. Additional spindle liners may be order from Edge technologies.
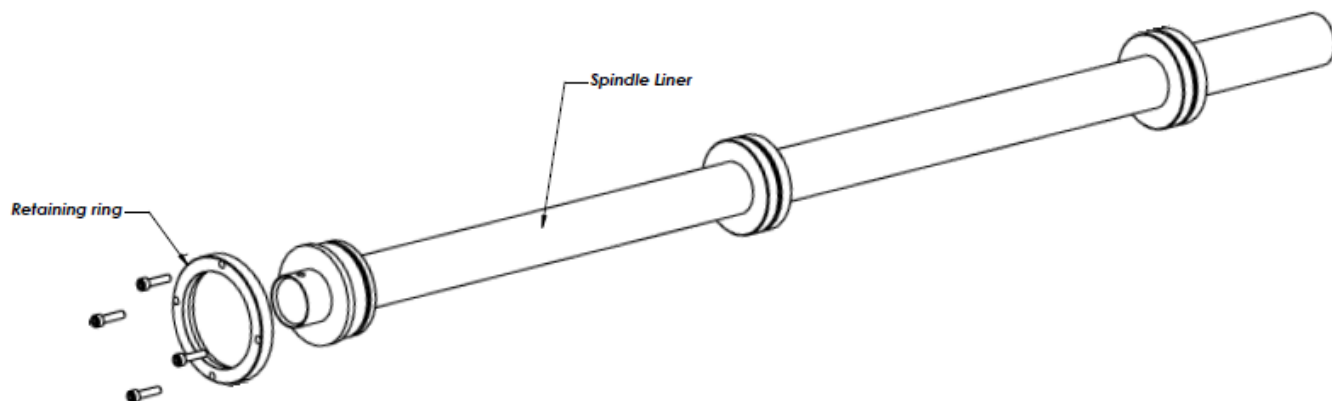
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4.16 Telescoping Nose

![hand caution symbol] **Caution cutting of the telescoping nose should be carefully performed.**

The telescoping nose is normally used with sliding headstock lathes and attaches from the bar feeder to the MAVD when equipped. The Minuteman may be equipped with a 3 stage or 4 stage telescoping nose depending on lathe application. The 3 stage nose must be cut to provide room for the MAVD and keep the nose from collapsing into itself. 4 stage telescoping noses are shorter than the 3 stage nose but allows for a great reach and not normally cut. However in some rare instances these have been cut. Cutting a 4 stage nose requires partial disassembly to cut the nose. Additionally there is a spacing ring that is required for the nose to be fastened to the MAVD. Ultimately the placement of the bar feeder based on required location will dictate the cut length of the telescoping nose.

**Note: when cutting the nose it is very important the surface is perpendicular to the shaft**

The telescoping nose is matched to the channel set. Anytime a channel set is changed the nose must be changed as well. During an installation all telescoping noses must be cut the same length as required.

When mounting the nose to the bar feeder be sure all fasteners and locking nuts are used. 4 Stage nose shown below.

Each nose with a specific diameter uses a specific retaining bushing for that diameter. The bushing may be attached to the last stage with 2 small grub screws that must be set very tight or could slide onto the small outside diameter of the telescoping nose. The retaining bracket is one size fits all.

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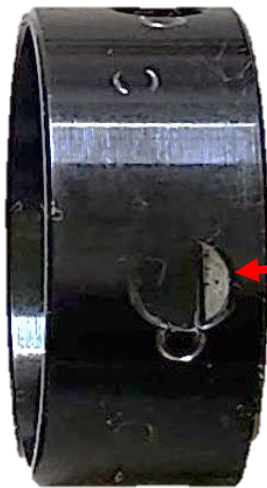
The bushing is directional, Note the offset of the retaining hole.

⚠️ **Warning machine damage may occur if telescoping nose is not properly securred to lathe headstock.**

Be sure the retaining ring and plate fit flush and completely inserted into the diameter of each.

The MAVD collet screws are offset and must alinged with the telescoping nose bushing when used.

The 2 retaining screws must be tight and locked with the locking nut. Not doing so may cause telescoping nose separating from the MAVD.
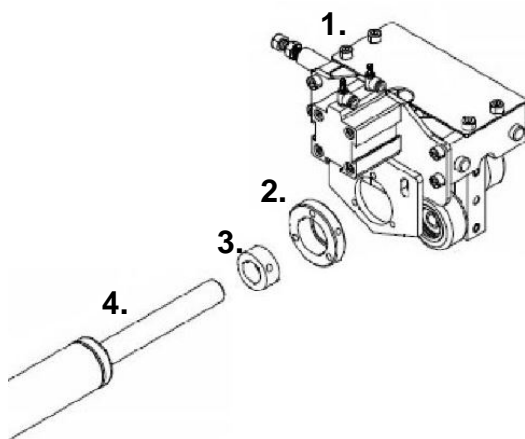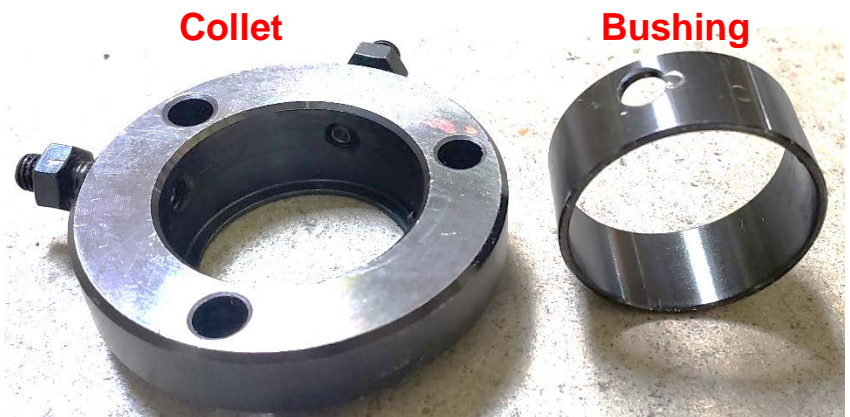
Collet　　　**Bushing**

1. MAVD
2. Collet
3. Bushing, slipe on or screw retained
4. Telescoping nose

Note - Be sure all fasteners are tight and set with all locking nuts. Meadium strength threadlock is highly advisable on all fasteners.

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When using small diameter bar stock the use of the MAVD and AVD are normally ill advised. The telescoping nose will have aditional insert lengths to pass into the MAVD and/or AVD clamping areas. The small insert on the MAVD side must not be cut. When the nose must be cut remove the insert and trim the 3rd stage of the nose. Reinstall the small diamtere insert into the trimmed section. The 3 stage telescoping nose below is for an 8mm channel set.

This section of the nose will extend into the MAVD clamping area.

This section of the telescoping nose will extend into the AVD clamping area.
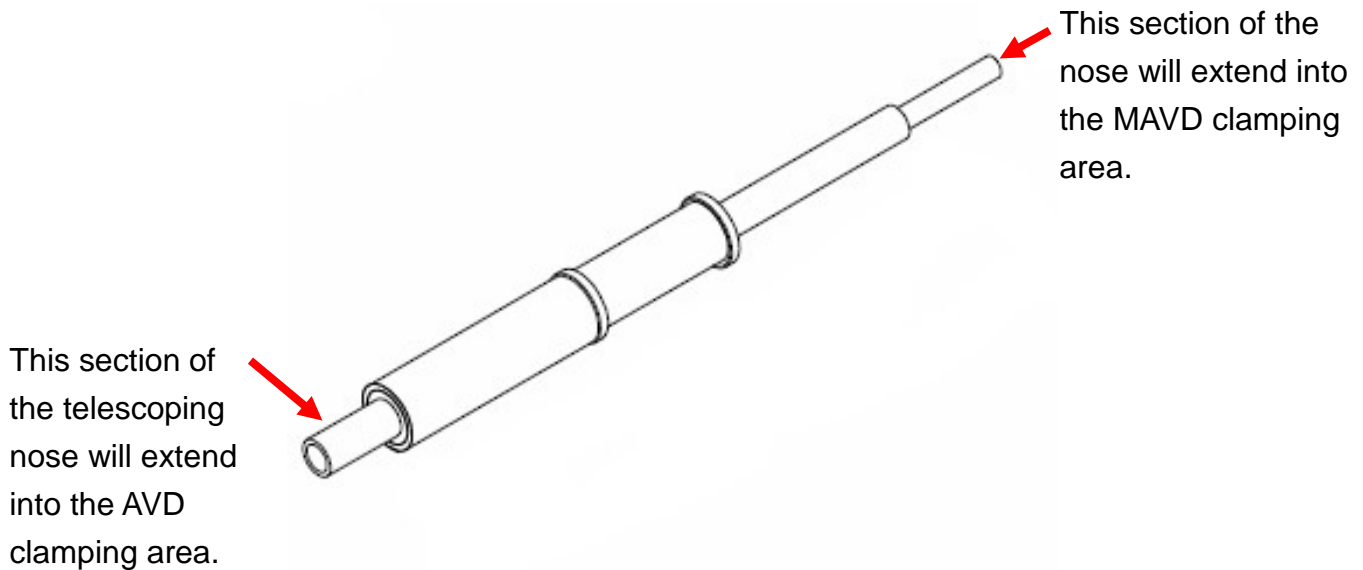
⚠ **Warning freshly cut telescoping nose shafts can be sharpe. Corner break all surfaces prior to installing.**

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Telescoping Nose Measuring and Cutting

1. Move lathe Z axis to –Z over travel position.
2. Measure from face of nose adapter (A) on bar feeder to inside shoulder (B) of moveable anti-vibration device on lathe. Note measurement (#1).
3. Move lathe Z axis to +Z over travel position toward guide bushing.
4. Measure from face of nose adapter (A) on bar feeder to inside shoulder (B) of moveable anti-vibration device on lathe. Note measurement (#2).

If lathe has a chuck change position closer to the guide bushing than +Z over travel, measure to chuck change position.
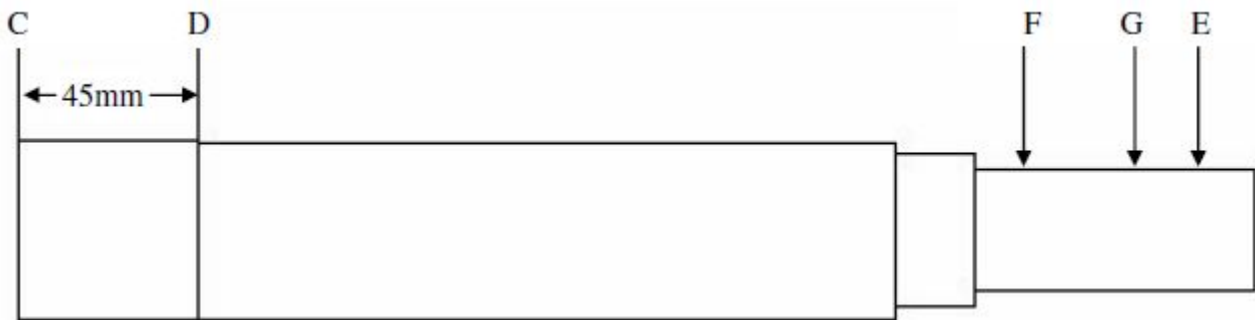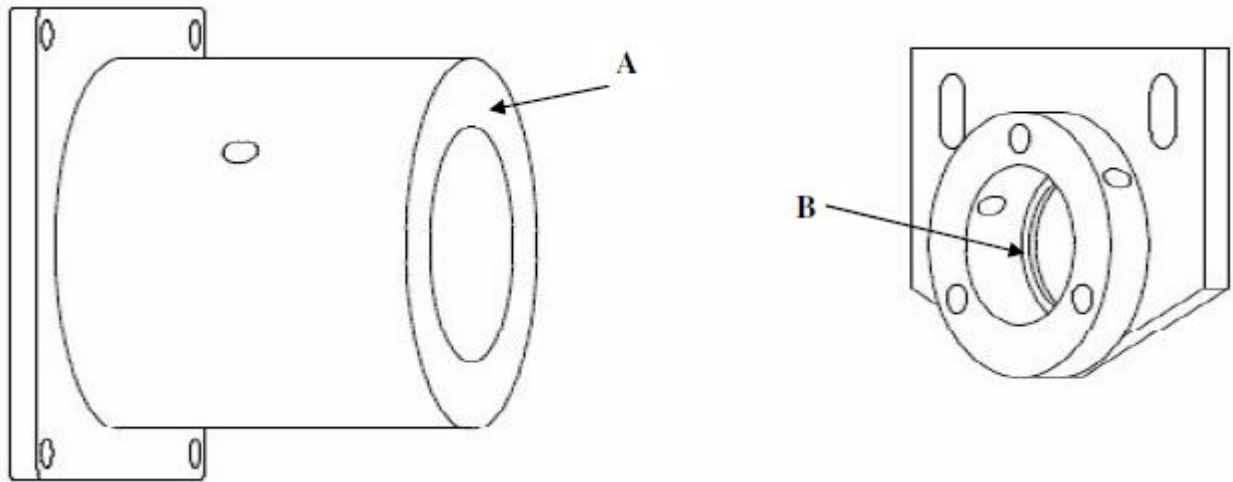
5. With telescoping nose in hand, find slight grove (D) (Distance from end of telescoping nose (C) to grove (D) is 45mm / 1.77).
6. Collapse telescoping nose to its shortest dimension, with measurement #1, measure from point (D) forward and mark the position on the nose (E).
7. Extend telescoping nose to its longest dimension, with measurement #2, measure from point (D) forward and mark the position (F).
8. Point (F) should be behind point (E) as shown above.
9. Divide the distance between points (E) and (F) by 2 and cut straight through nose at point (G). **Corner break after cut.**

Telescoping nose installed and collapsed completely
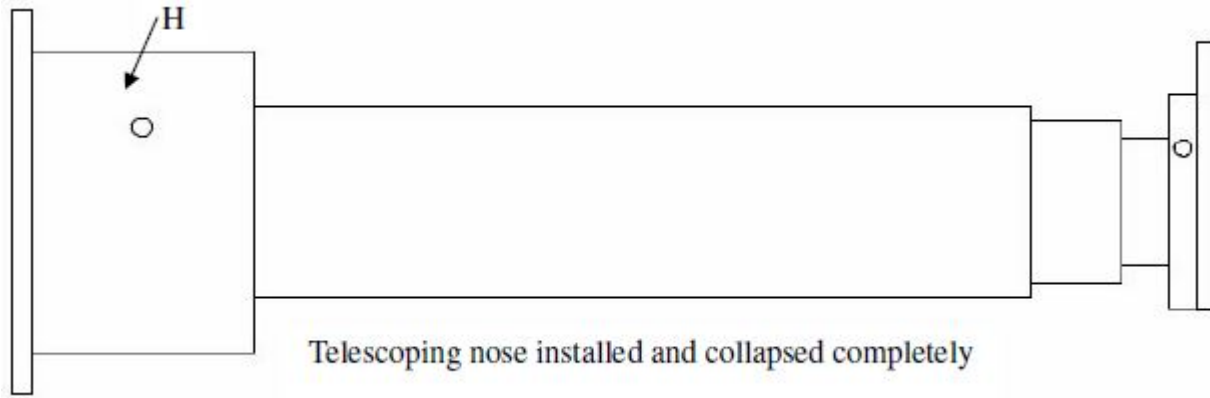
10. Slide on nose (C) into nose adapter (H) up to point (D). Grove (D) will be flush with face (A).

11. Tighten screws to hold nose in place.

⚠️ **Warning use extreme care and alertness when performing the following step.**

12. Collapse telescoping nose all the way, while slowly moving lathe Z axis to –Z over travel position, check that moveable anti-vibration device inside shoulder (B) does not touch new cut end of telescoping nose once lathe reaches –Z over travel. **If it does, re-measure all distances and re-cut telescoping nose. Corner break after cut.**

13. Move lathe Z axis to +Z over travel or chuck change position and check that new cut end of telescoping nose touches inside shoulder (B) on moveable anti-vibration device. **If it does not, the nose has been cut to short, acquire replacement nose.**

14. Install cut end of telescoping nose to inside shoulder (B) of moveable anti-vibration device and secure with screws.

15. Telescoping nose is now completed. If additional noses are part of the installation they will require cutting to the same length.

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4.17 Hard Nose

Caution cutting of the hard nose should be carefully performed.

The hard nose on the Minuteman is cut to size once the bar feeder is aligned and anchored. The oil gathering device is then attached to the end of the nose for ejected oil to gather and return to the with a drain hose to the bar feeder. Each hardnose internal diameter is specific to the channel set used.
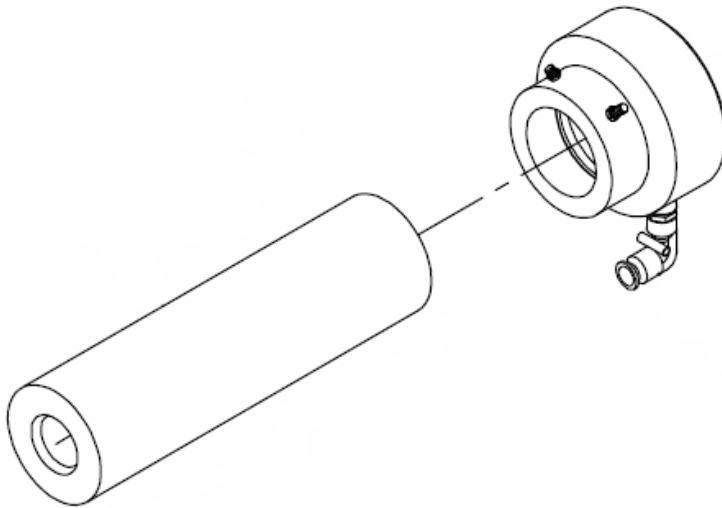
The hardnose must be cut slightly shorter to allow for the installation of the oil gathering device at the end.

The oil collector is held in place by 2 screws and lock nuts. There is about 2 inches of insertion avaiable of the hard nose. This is used to close up any gap between the lathe sheet metal and attaching seal.

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4.18 MAVD Installation and Alignment

When installing the MAVD all headstock adaption components must be installed. All adaption prints are shipped with the prepped bar feeder from Edge Technologies for the appropriate lathe.

MAVD alignment may only be performed once the Minuteman is aligned and anchored to the floor.

Once the MAVD and mounting plate is installed onto the headstock, adjustment of the MAVD to center may be performed. One easy way of aligning the MAVD is perform the procedure below. The following must be performed prior to adjusting the MAVD center.

- Spindle liner, pusher and channel set installed into bar feeder and lathe.
- MAVD equipped with rollers in good condition, no chunked, different diameter, or gouged rollers may be used. It is preferred to have new rollers available for alignment purposes.
- Alignment of bar feeder to lathe spindle should be verified.

Caution the following procedure requires disassembly of telescoping nose components and moving of the bar feeder pusher. Only trained personnel should perform procedure.

Warning MAVD bar adjustment must be performed anytime the centering procedure has been performed.

1. Remove any material from the bar feeder channel and/or lathe spindle.
2. Position the lathe head stock 5 inches from Z- over travel.
3. Using caution move the pusher into the lathe spindle until bar feeder collet is 13mm from lathe collet.
4. Press the emergency stop button on the lathe and bar feeder.
5. Loosen and separate the telescoping nose mounting plate from the MAVD.

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Remove the 2 attaching screws
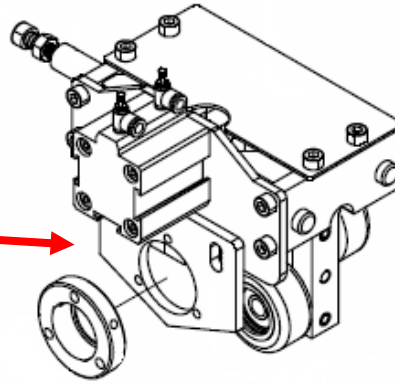
6. Press the emergency stop button on the lathe and bar feeder.
7. Remove the compressed air supply from the bar feeder.
8. Reverse the 2 airlines at the MAVD air cylinder. This will allow the MAVD to close on the pusher when air is reconnected.

The air cylinder supply lines on top of the MAVD will be swapped only for adjusting and centering of the MAVD. This will close the MAVD rollers once air supply is reconnected.

⚠ **Warning follow procedure for line swapping.**
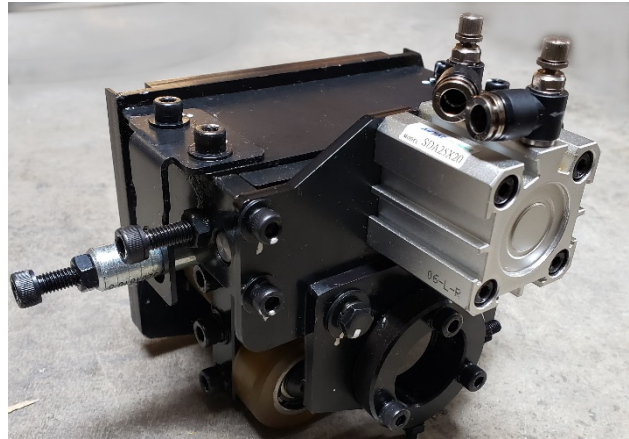
9. Caution when reconnecting air supply to bar feeder. Reconnect air supply. Keep hands and fingers away from the MAVD when air is reconnected.
10. Loosen the 4 attaching screws for the MAVD.

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Loosen 4 attaching screws, 2 on each side.

11. Unscrew the MAVD close screw to allow the rollers to grip the pusher.
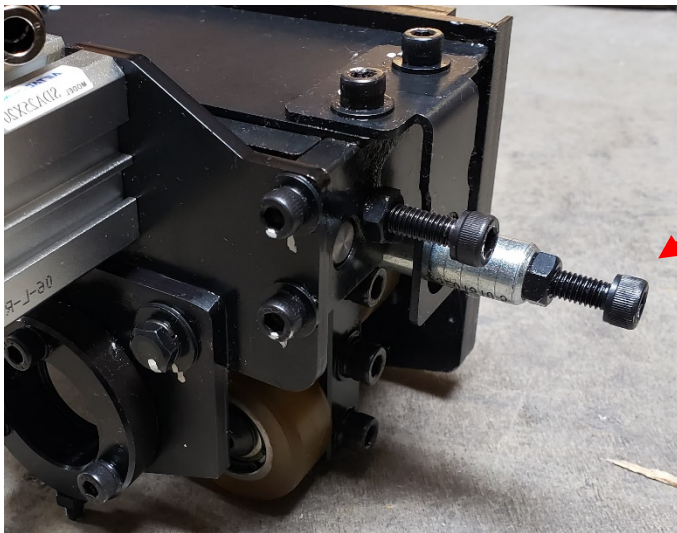
✋ **Caution pinch hazard if proper observation is not adhered to.**

Loosen the lower lock nut and rotate the screw counterclockwise until all 4 rollers make equal contact with the pusher.

12. Allow the MAVD to find center on the pusher.
13. Once center has been found, tighten the 4 MAVD attaching screws.
14. Tighten the MAVD adjustment screw so the rollers are no longer contacting the pusher.
15. Remove air supply from bar feeder.
16. Reverse MAVD cylinder air lines to original positions.
17. Attach the telescoping nose cinch plate. Take note to the nose, as it may droop due to wear. It may be necessary to raise the nose up as cinch screws are tightened.
18. Reattach synchronization rod bolt.
19. Reconnect air supply.
20. Reset emergency stops on the bar feeder and lathe.
21. Follow the MAVD bar adjustment procedure.

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4.19 AVD Centering

⚠️ **Warning AVD bar adjustment must be performed anytime the centering procedure has been performed.**

The AVD (Anti Vibration Device) is located at the exit point of the bar feeder. This roller steady functions similar to the MAVD to manage vibrations, however the AVD is stationary. The AVD centering may be adjusted through the end plate slide holes. AVD construction and operation is identical to the MAVD. ***AVD CENTERING ADJUSTMENT MUST BE PERFOMRED AFTER MAVD AND TELESCOPINMG NOSE ALINGMENT HAS BEEN PERFORMED.***

Access location for 2 upper and 2 lower AVD mounting screws that must be loosened in order to center.

Lower AVD roller access panel
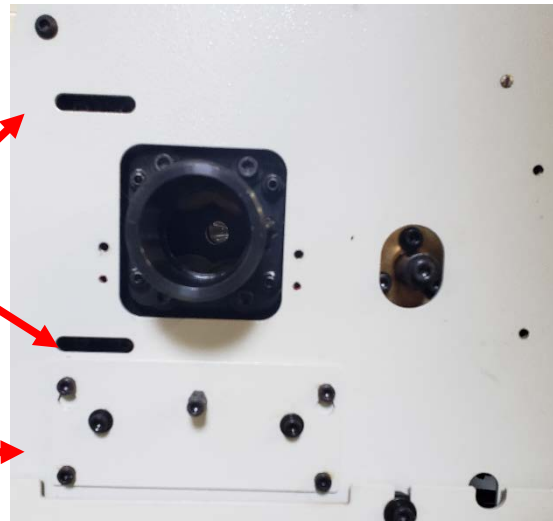
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Use a long reach allen wrench to access the mounting screws.

![hand icon] **Caution lathe and bar feeder must be powered on to adjust the AVD roller/block settings.**

![warning icon] **Warning the correct spindle liner must be installed in the lathe spindle according to the pusher diameter. See parts requirments.**

1. Remove any material from the bar feeder channel and/or lathe spindle.
2. Using caution move the pusher into the lathe spindle until bar feeder collet is 13mm from lathe collet.

Adjustment screw location similar to the MAVD

3. Access the HMI to the F2 parameters menu.
4. Locate the First Anti-Vibration opening posistion paremter and record the current value. Set to the value greater than the current pusher position.
5. Close the lathe collet.
6. Press the pre auto button on the pendant. AVD rollers should close on pusher.
7. Adjust the centering of the AVD via the adjustment screws.
8. Open lathe collet and AVD will release.
9. Move pusher home.
10. Access the HMI F2 menu once again and locate the First Anti-Vibration Opening position. Place the pre recorded value from step 4.
11. Adjustmnent is complete.
12. Adjust roller settings for material diameter.

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4.20 Synchronization Connecting Rod

⚠️ **Caution do not operate without synchronization rod securely connected. Machine damage will occur.**

⚠️ **Warning always double check required length of the synch rod prior to trimming.**

The synchronization connecting rod allows the mechanical connection between lathe and barfeed which allows synchronized movement between the lathe z axis, material, and barfeed pusher when lathe collet is closed.

The rod may be trimmed to meet this specification. Always verify positioning of bar feeder and pusher reach prior to cutting the synch rod.

Assemble synch rod with supplied ball joint assembly
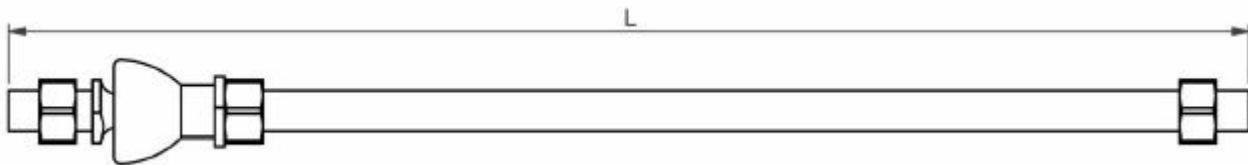
⚠️ **Warning Machines with axial track option, the meaurement must be made in the proper configuration. For example if the lathe is in Guide Bushing Less Mode the bar feeder must be shifted closer to the lathe. Just the oposite is true for Guide Bushing Mode.**

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![hand icon] **Caution lathe and bar feeder must be powered for installation synch rod installation.**

![warning icon] **Warning lathe must be aligned and anchored for synch rod cutting and installation.**

If the length of the synch rod is in question follow the procedure to determine the length of the rod.

Synchronization Connecting Rod Measurement

1. Move lathe Z axis to –Z over travel position.
2. Verify the stroke of the bar feeder synchronization rod. The rod should be able to be positioned just inside of plate (D). If the rod stops prior to the plate investigate as to why this is occurring. The extension of the rod should be at least to the MAVD plate (C)
3. Measure from back side of plate (C) to face of plate (D) and subtract 12.7mm (.500). This measurement is (E), length required for the synch rod assembly.
4. Thread threaded rod (A) into swivel (B). Tighten lock nut.
5. With measurement, from point (E) and swivel on threaded rod (A), cut to length.
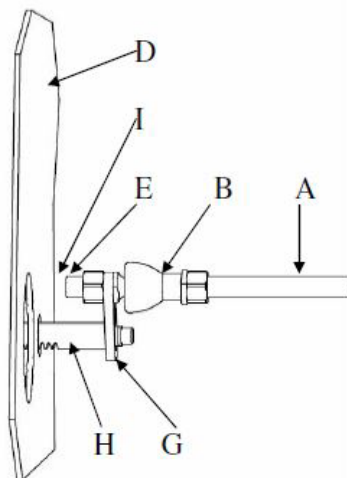
A. Threaded rod
B. Swivel
D. Bar feeder side plate
E. Length required for the synch rod assembly
I. Gap from (D) in Z- over travel
H. Synchronization rod
G. Adapter plate
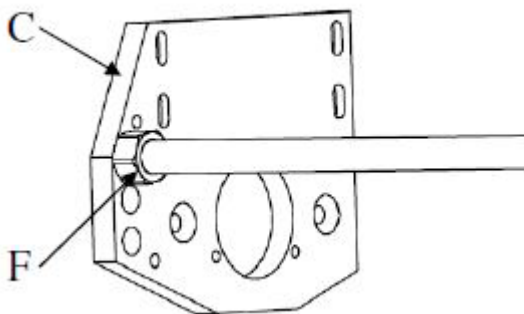
C. MAVD plate
F. Lock nut

6. Thread threaded rod (A) flush with back side of plate (C) and tighten nut (F) as shown.

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7. Connect adapter (G) to swivel (B) and tighten.

8. Connect adapter (G) to synchronization rod (H) with screws supplied.

9. Gap (I) should be approximately 12.7mm (.500").Adjust the length of the rod as required.

10. Synch rod should never make contact with bar feeder.

Move lathe Z axis forward and back checking for smooth operation and clearance of synchronization rod (H), adapter (G) and threaded rod (A).

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4.21 Drip Pan

🖐 **Caution verify the lathe headstock will not make contact with the oil drain pan.**

Note- The Swiss headstock Minuteman will come with a drain pan, the fixed headstock will not.

The Minuteman is designed to reclaim the oil that is circulated throughout the bar feeder back into the oil tank. On Swiss head stock lathes that will utilize a telescoping nose, the nose stepped design will allow for oil to flow back to the bar feeder. On fixed headstock lathes an oil collector with drain hose attached to the end of the fixed nose. Directing the oil with a drain pan is limited to the stroke of the Swiss headstock as it moves towards the bar feeder. The lathe sheet metal should be cut so the drain pan may be as long as possible without crashing the headstock. Extra-long drain pans are available from Edge Technologies. The drain pan can be cut based on the application.

The drip pan comes in 2 sections in a slide design. The length may be changed by moving one into and out of the other. Oil gathering (A) and (B)

The ring (C) may or may not be used which is typically used with the 3 stage nose. The 4 stage nose will interfere with the ring in place. Use a bolt and screw to fasten the 2 oil gathering slides when ring is not used.

The drip pan may be mounted in 2 locations on the side of the Minuteman. Use the location that is best suited for the application and clearance.
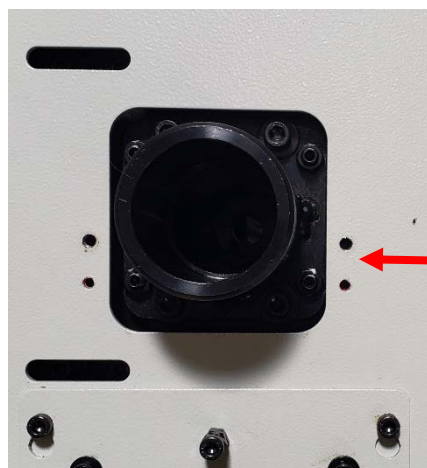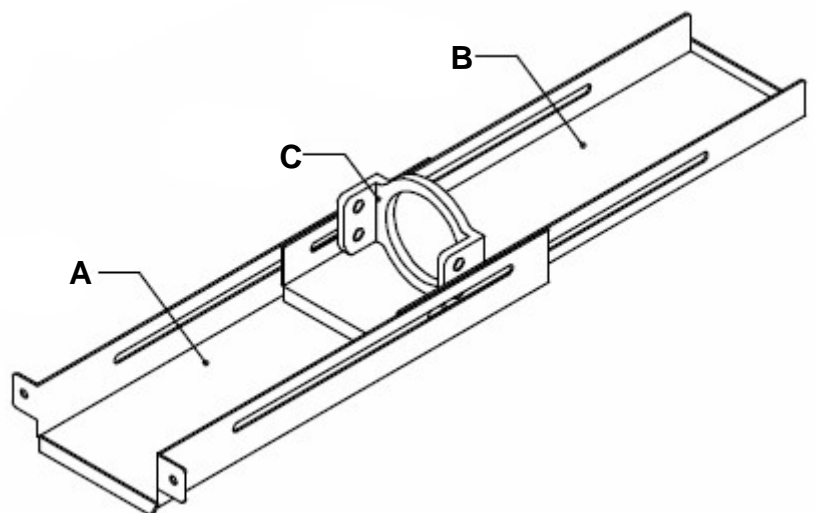
Upper and lower mounting holes.

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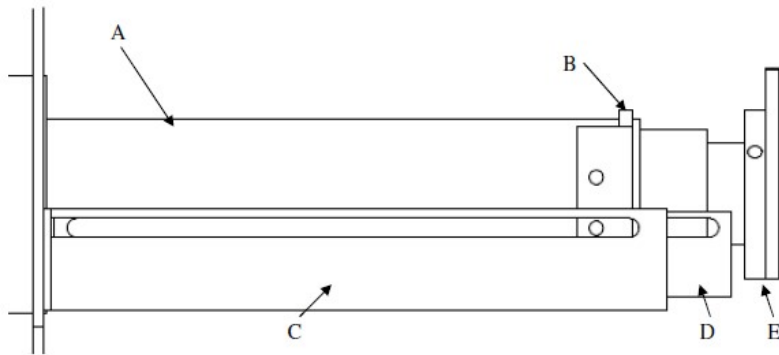
![Caution hand icon] **Caution when removing or installed the drip pan be sure lathe and bar feeder are in emergency stop.**

The tray setup with the retaining ring is used only on the 3 stage nose.

Installation steps of the drip pan

MAVD must be installed and telescoping nose must be cut to installation length.

1. Be sure the lathe headstock is at least 6 inches from the Z- position (position closest to the bar feeder)
2. Set emergency stop on lathe and bar feeder.
3. Attach oil tray to front plate of bar feeder.
4. If using the install ring with the 3 stage nose, start by sliding the nose (A) through ring (B).
5. Slide the nose onto the mounting flange and tighten the mounting screws and locking nuts.
6. Line the (B) ring mounting holes to the oil pan slot.
7. Slide inner tray (D) all the way back toward bar feeder.
8. Caution reset the emergency stop switches on the lathe and bar feeder to move lathe headstock closest to the bar feeder. Be very careful moving the headstock as to not make any physical contact with bar feeder components. Once in position set the emergency switches on the lathe and bar feeder.
9. Slide inner tray toward moveable anti-vibration device (E) until there is a gap of 3-5mm.
10. Using sheet metal shears or cutoff wheel to contour the end of the drip pan may be an option for oil control.
11. Lock tray in place at ring.
12. Verify no contact is made between the drip tray.
13. Reset the emergency stop switches on the lathe and bar feeder.

![EDGE TECHNOLOGIES logo] ●○○

4.22 Hardnose Oil Collector

⚠ **Caution install the hardnose when lathe and bar feeder is in emergency stop.**

The oil collector on the hard nose is plumbed to allow oil flow back to the bar feeder. The inside diameter of the hard nose must match the pusher and guide channel set. When measuring the distance requirements, be sure the lathe spindle liner is installed. Allow for space to remove the oil collector from the hardnose without interference. Anytime a new hard nose is used it must be cut to fit.
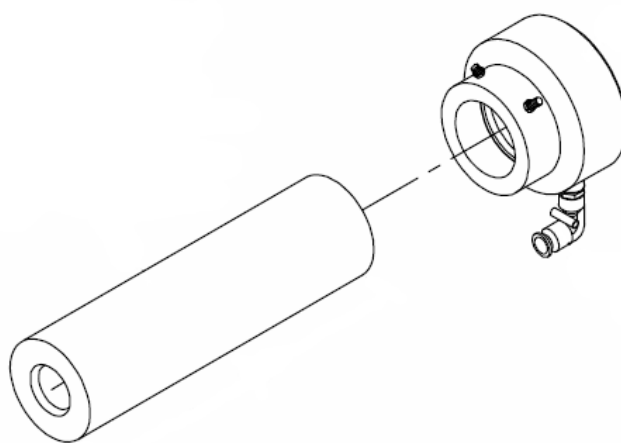
5. Systems and Adjustments

5.1 Bar feeder Component Locations

010	FRAME DEVICE
020	CLAMP DEVICE
030	LOADING-UNLOADING CONTROL
040	BASES AND BEAM
050	FEED MOTOR DRIVE
060	CUTTING DEVICE
070	GUIDE CHANNEL
080	BAR PUSHER DEVICE
090	SUPPORT
100	FIRST ANTI-VIBRATION DEVICE
110	SYCHRONIZATION DEVICE
120	TELESCOPIC FRONT NOSE / FIXED FRONT NOSE

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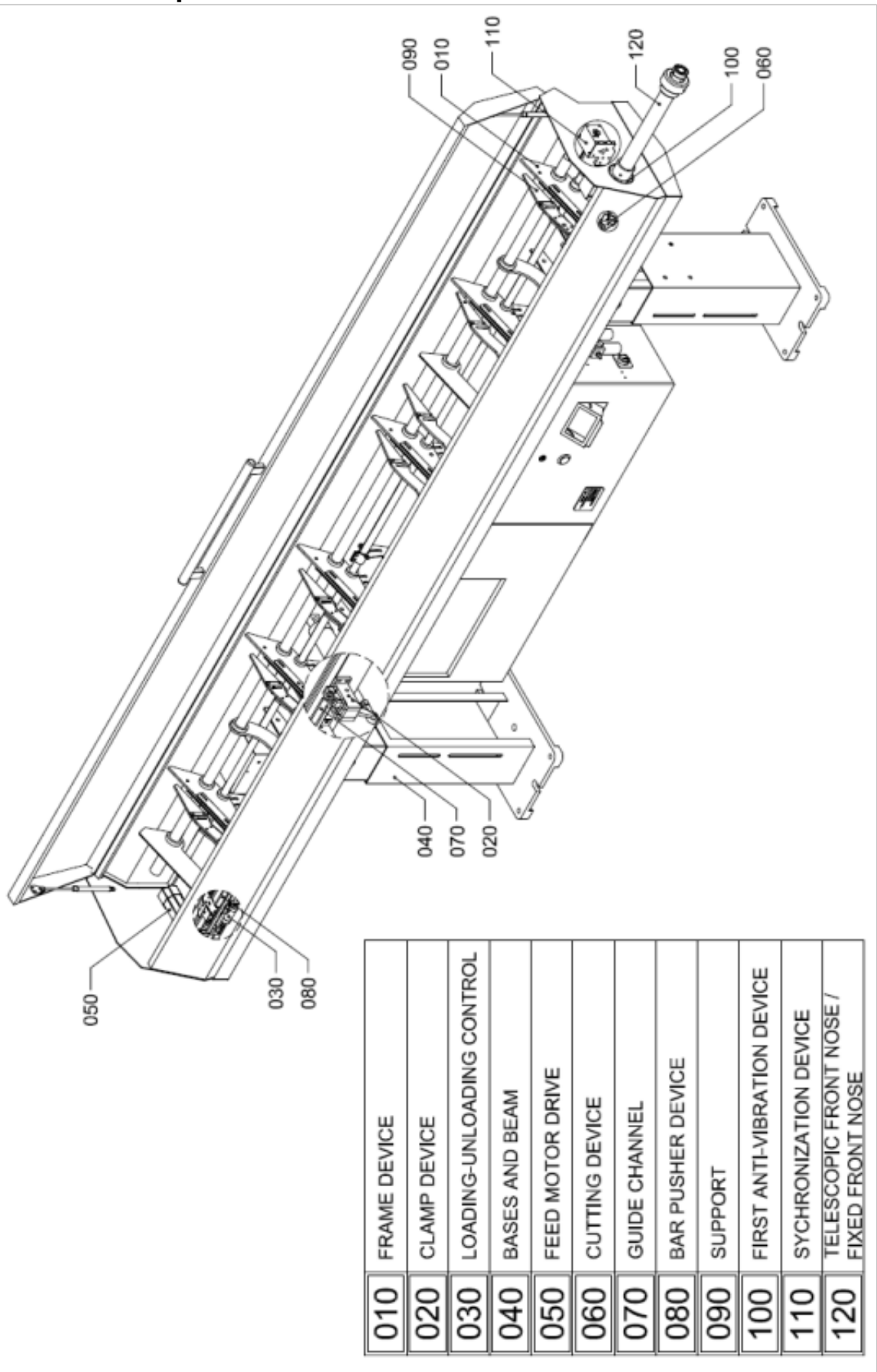
5.2 Magazine adjustment

Follow the procedure below anytime the bar diameter requires changing.

⚠ Caution when adjusting the magazine be sure the lathe and bar feeder is in emergency stop

⚠ Caution, adjusting the magazine can produce pinch points between magazine and material

⚠ Caution when lifting material into the magazine, 2 or more people or a lifting device may be required to load material

1. Place the lathe and bar feeder into emergency stop prior to adjusting magazine
2. Remove any material from the magazine
3. Loosen the locking lever for the support plate (1) and lift the plate to the highest position
4. Place one bar to be loaded on the magazine
5. Rotate the screw (2) to adjust the bar stop so that only the first bar on the magazine is lifted into the guide channel. While you rotate the screw you will see the size plate move in the direction the screw is rotated
6. Loosen the lever (1) and slide the support plate down to 1mm over the bar to be machined.
7. Tighten the lever (1)
8. Load the desired material requirement
9. Close the bar feeder hood.
10. Reset emergency stops on the lathe and bar feeder
11. Repeat above steps when changing bar diameters

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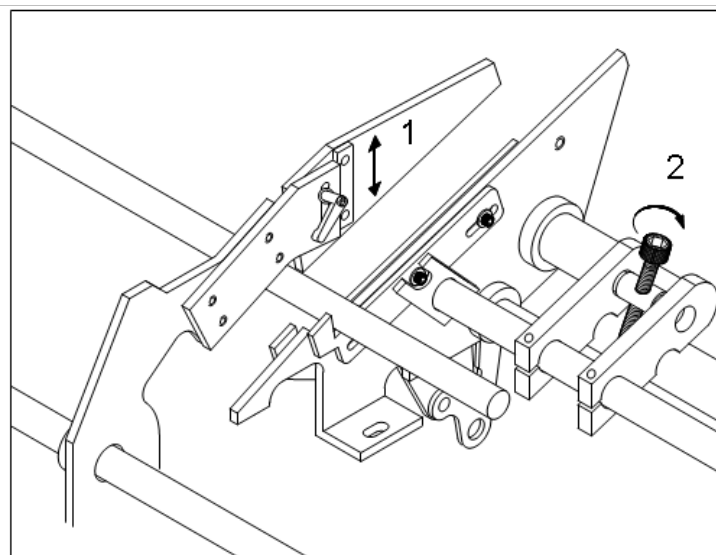
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When adjustming the magazine do not loosen or tighten nuts. Only move the large allen bolt to make adjustments.
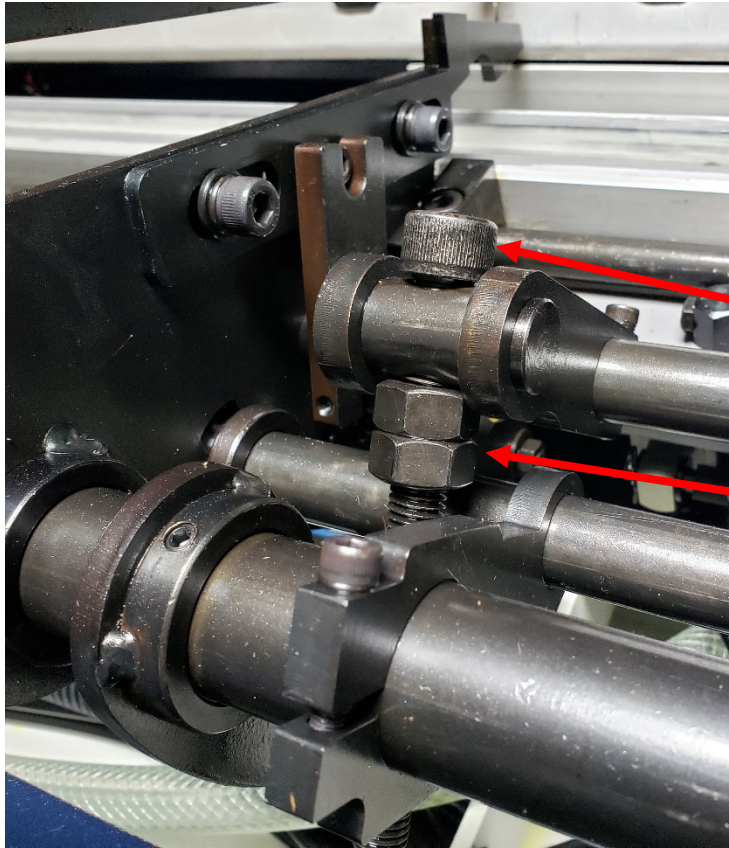
Adjust allen bolt for material diameter loading

Do not loosen or tighten nuts.

5.3 AVD/MAVD Adjustment

Proper adjustment of the Anti-Vibration Device **(AVD)** and Movable Anti-Vibration Device **(MAVD)** is important for proper machine operation. Proper adjustment will help support the bar and possibly reduce vibrations during production.

⚠️ **Warning lathe and bar feeder must be in a manual mode during the adjustment of the Anti-Vibration Device/Movable. Only operators properly trained should adjust the AVD/MAVD.**

⚠️ **Warning proper improper adjustment of the AVD/MAVD may cause machine part failure**

Follow the steps below to adjust material to the AVD/MAVD

✋ **Caution when loading a bar for the first time make sure the Movable Anti-Vibration Device rollers are open. Roller damage may occur when material or pusher is moved into the rollers.**

The AVD/MAVD is normally adjusted at the same time. Follow the adjustment process for both devices. Note- If the devices open when the bar feeder hood is open the hood switch will be need to be deactivated for the duration of the adjustment process. Once adjustment has been completed reactivating the hood switch is required.

1. Load a bar using the bar feeder into the lathe and close lathe collet.
2. Open the bar feeder hood
3. Loosen nut **(A)** and back screw **(B)** off counterclockwise until no tension is felt on the screw. Rollers will be open from material centerline.

4. Press the Pre-Auto button, both Anti-vibration devices will close.

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AVD adjustment screw (A) and lock nut.
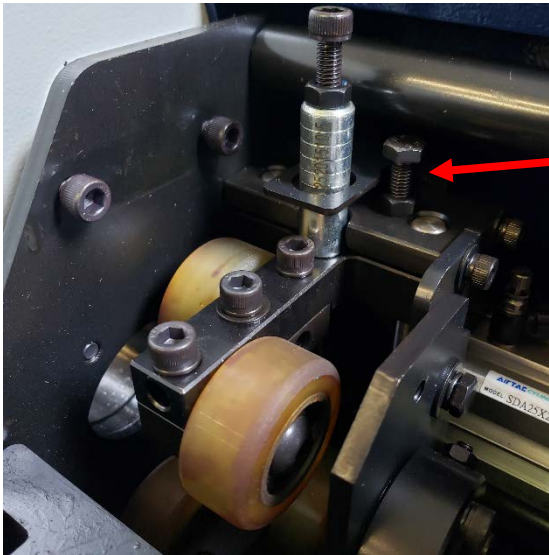
If the open stop must be adjusted removing the cover will aid in accessing the screw and lock nut.

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Adjustment screw (B)

Lock nut (A)

MAVD/AVD
Closed Speed
Valve

MAVD/AVD Open
Speed Valve
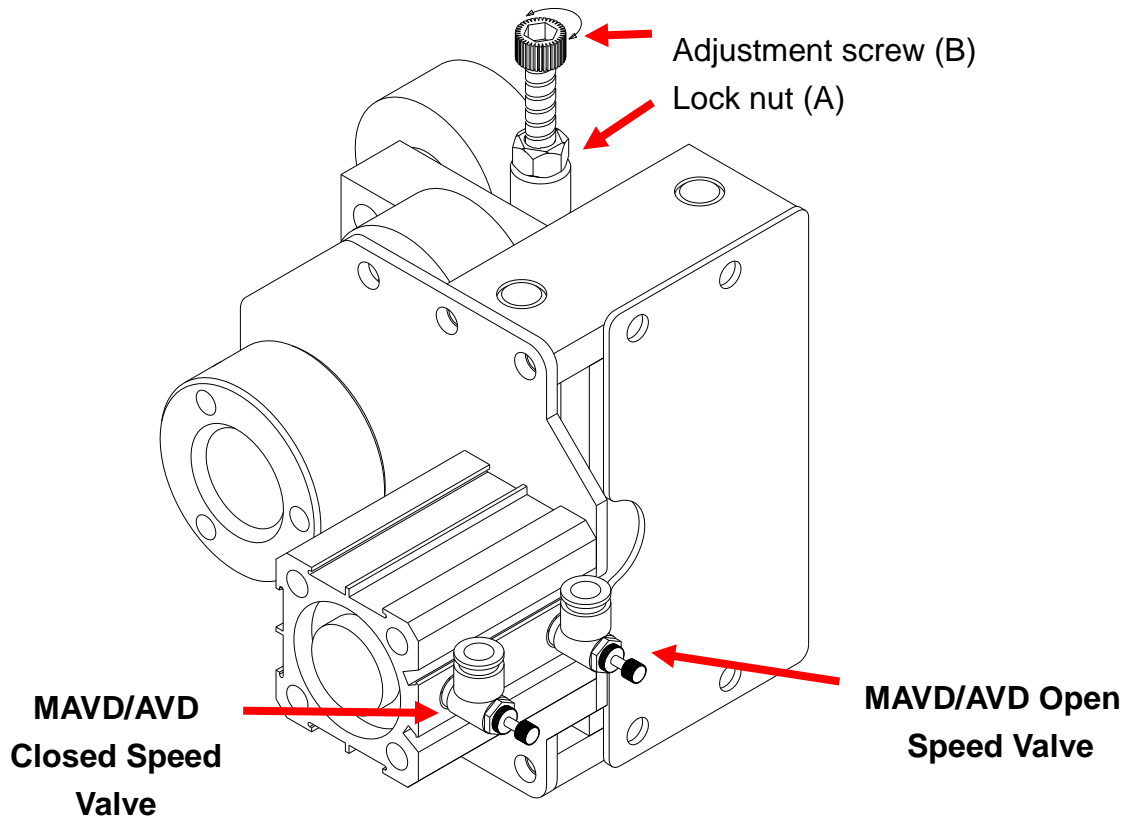
5. Tighten screw A until the rollers just touch the bar. Rotate the screw to back off the rollers from the bar 1 full turn. Lock jam nut B

6. Press the Manual button [icon], MAVD/AVD will open, press the Pre-Auto Button [icon], rollers will close.

7. Press the Manual Button [icon] to open MAVD/AVD

8. Close hood and adjustment is completed

9. The MAVD/AVD may have an opening stop screw and is normally set to full open.

⚠ **Warning improper adjustment can lead to premature roller wear.**

Adjustment to the open and close speed of the MAVD/AVD is by way of the thumb screws on the cylinder. Be sure the air supply lines are installed on the correct valve for correct operation.

When the lathe collet is closed the MAVD/AVD rollers/blocks will be closed if parameter is set to operate this way. Pressing the Pre-Auto button and the lathe collet closed will command the MAVD/AVD closed. Adjust as required.

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**MAVD Open
Speed Valve**

**MAVD Closed
Speed Valve**

Open adjustment screw
Lock nut (C)

Adjustment screw (D)

Close adjustment
Lock nut (A)
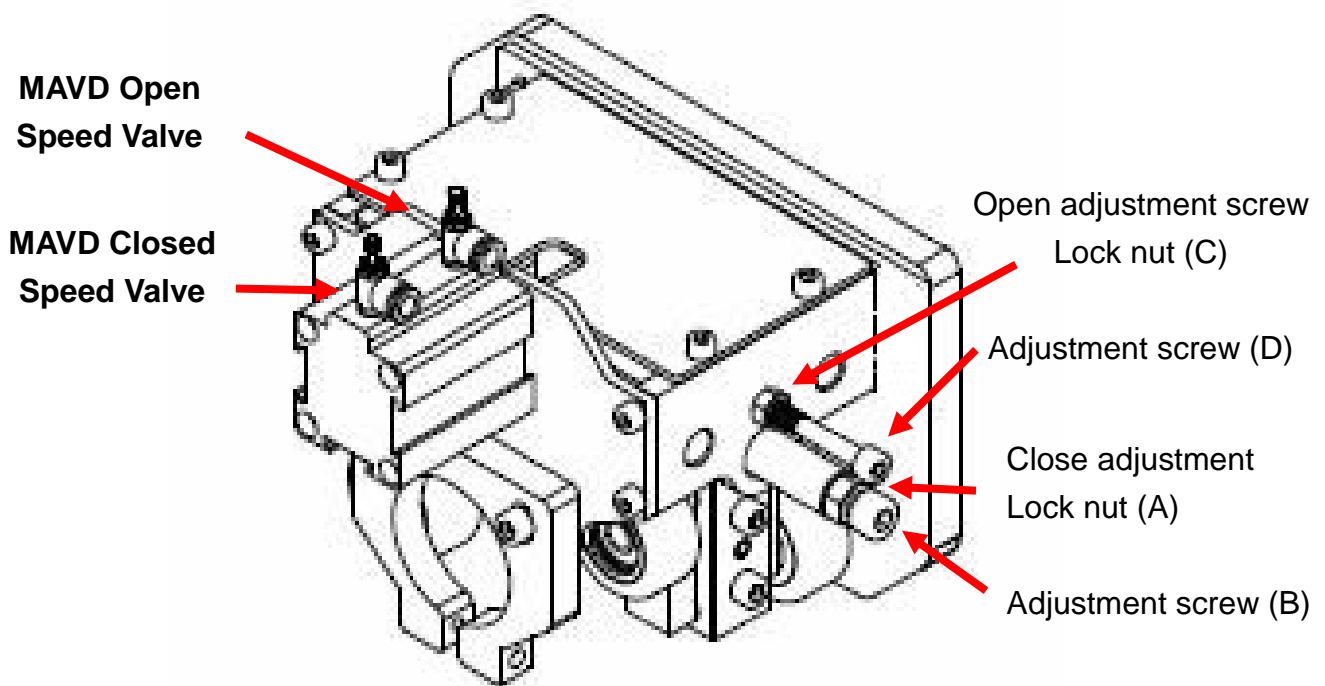
Adjustment screw (B)

⚠️ **Warning improper MAVD adjustment can lead to premature roller wear.**

Adjustment to the open and close speed of the MAVD/AVD is by way of the thumb screws on the cylinder. Be sure the air supply lines are installed on the correct valve for correct operation.

When the lathe collet is closed the MAVD/AVD rollers/blocks will be closed if parameter is set to operate this way. Pressing the Pre-Auto button and the lathe collet closed will command the MAVD/AVD closed. Adjust as required.

The MAVD/AVD will include an open stop screw. If this screw is screwed in too far this will keep the MAVD/AVD from opening fully. This could damage the rollers if larger material is loaded without proper adjustment.

Installation tip – The MAVD air cylinder normally comes in the orientation shown in the image above. We suggest removing the 4 mounting screws of the air cylinder and rotating the air cylinder body so the air valves are positioned horizontal. This will help with the final cutting of the lathe sheet metal covers.

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5.3.2 MAVD Block Sets

⚠️ **Warning the block sets must be used in same sized pairs.**
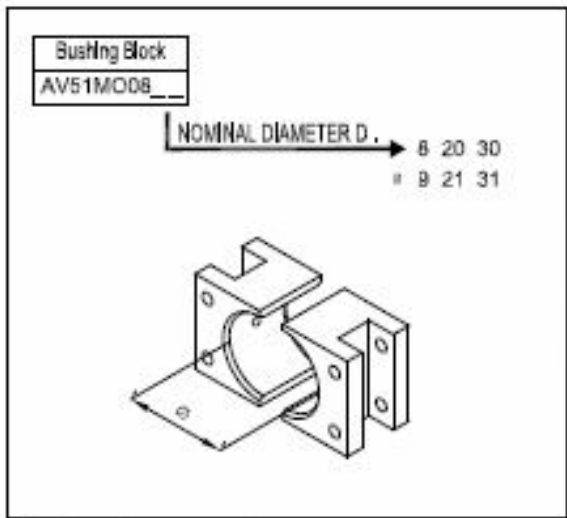
The use of bushing blocks may assist with optimizing the bar feeder performance with certain material, shapes, and operating speeds. 2 Blocks of the same size are required for each MAVD.

Choose a block size that is 2mm larger than your working diameter. The blocks are not intended to clamp onto the material

A variety of sizes are available from Edge Technologies. See the parts listing.

Example of blocks installed to MAVD
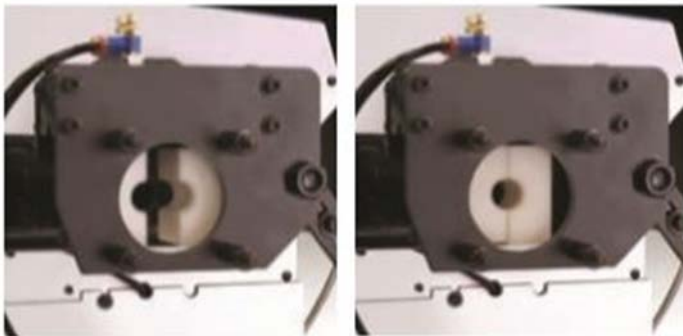
Blocks are optional items, contact Edge Technologies for more information.

✋ **Caution do not insert blocks into MAVD with electrical power applied to the bar feeder or lathe.**

5.4 AVD Roller/Block replacement

The rollers and blocks if equipped are replaceable for wear and size requirements.

Procedure
1. Remove material from the guide channel
2. Place bar feeder into emergency stop
3. Place lathe into emergency stop
4. Open the bar feeder hood

5. Remove the upper access plate

Loosen retaining screws, do not remove screws. The cover is slotted, remove AVD top cover.
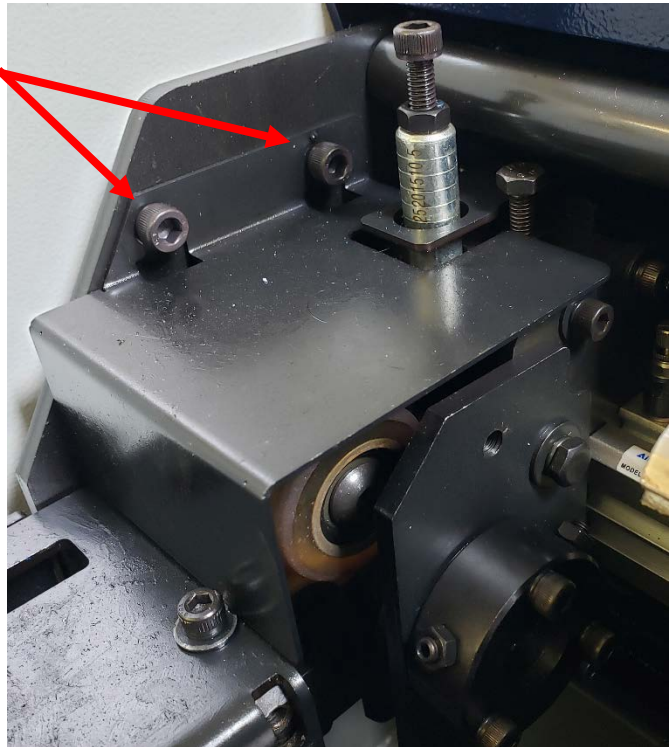
6. The center socket head cap screw retaines the roller block. The 2 outer socket head cap screws must stay in position for roller block alingment.

DO NOT REMOVE

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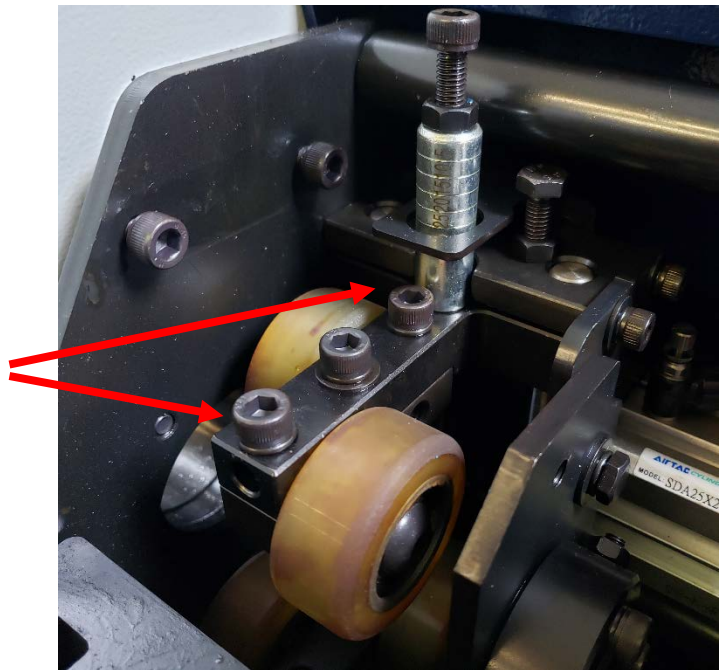
7. Remove AVD access plate

8. Once cover is removed, locate the long 10mm hex screw. Remove this screw, pull the roller block up to clear the SHCS alingment screws.
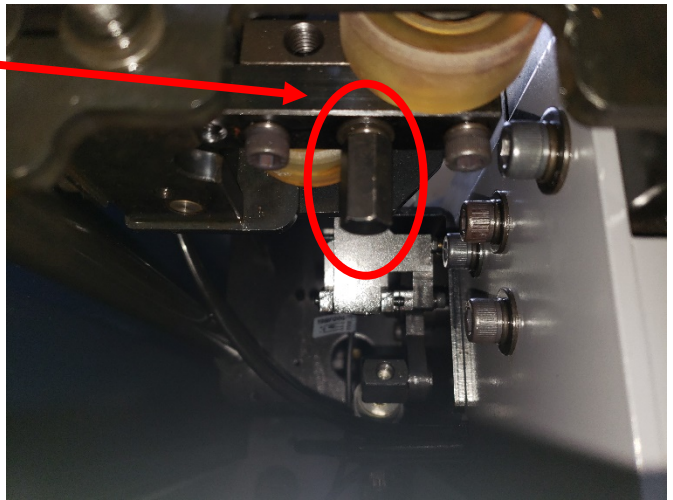
Do not remove the SHCS alingment screws.

9. Remove both roller sets from the AVD
10. Insert the bushing blocks into the AVD. The bushing block contains a retaining pin that will slide into the center hole. The blocks are held in place by the interferance of each one.
11. Reinstall the AVD acccess plate and cover plate.
12. Close the bar feeder hood.
13. Reset the bar feeder and lathe emergency stop switches.

5.5 Pusher Drive Belt Adjustment

![hand caution icon] **Caution bar feeder and lathe must be emergency stop for belt adjustment**

![warning triangle icon] **Warning properly trained personnel are required to adjust drive belt**

The pusher drive belt is connected to the carriage. The belt runs the length of the machine contained inside of a channel. The belt is driven by a servo drive motor via gear reduction system opposite of the lathe for adequate torque production.

If belt replacement required be sure the carriage mounting screws and holes are clean and dry of any oils. **A medium thread lock is required.**
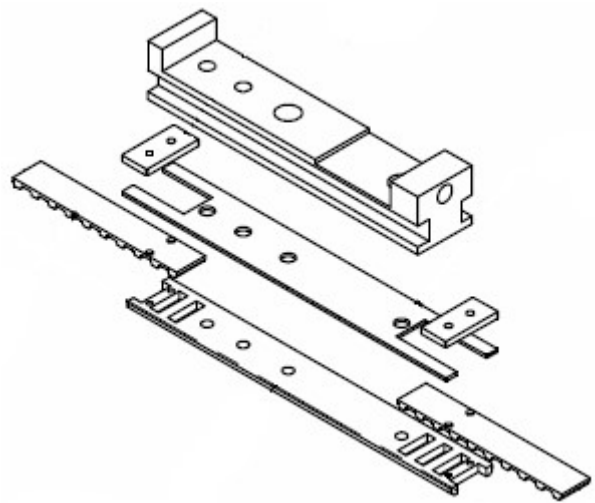
Anytime the drive belt requires adjustment follow the procedure below.

1. Place bar feeder and lathe into emergency stop.
2. Material may need to be removed form channel if the pusher cannot be moved without obstruction.
3. Open bar feeder hood.

4. Loosen the 2 locking screws (1) for the tensioner.
5. Move the motor assembly to the desired tension. *Warning do not set belt tension too tight, as this will stretch the belt and potentially lead to belt failure.*
6. Tighten the locking screws (1).
7. Close the bar feeder hood.
8. Reset emergency stops and test pusher operation with the hand held pendant.

5.6 Synchronization System

🖐 **Caution Warning operation of the synchronization will move at random times during the automatic operation. Access covers to the synch device should always be in place during operation.**

🖐 **Caution belt adjustment should only be performed when bar feeder electrical power has been removed. Follow local, state and federal lock out tag out standards.**

Description: The synchronization belt becomes the physical link between the lathe headstock and bar pusher. The lathe collet closure on the bar maintains the connection point of the material. The end of the bar material must be supported by the bar feeder collet which is attached to the end of the bar pusher. To maintain this physical connection point the bar pusher must move at the same rate and distance as the material. If this synchronization is not maintained bar and bar pusher separation will occur leading to issues such as insufficient material feed out and vibrations.

Operation: For installations on sliding headstock lathes a synchronization device may be used. A rod is linked to the moveable anti-vibration device mounted to the lathe spindle. This rod passes through the front plate of the bar feeder. Inside the bar feeder an electromagnetic clutch assembly is attached to the synchronization belt pulley. The timing belt runs between two pulleys, one of which is attached to the same shaft as the front pulley of the bar pusher drive belt. When the lathe collet is closed the PLC turns on 24volts to energize the coil of the synch clutch. The clutch locks the synch pulley to the adjoined shaft which the drive belt pulley is locked. In this condition, every move made by the headstock Z axis is transferred through the synchronization device to the bar pusher to keep the bar pusher in sync with the lathe headstock.

Machines equipped with the axial shift feature will have 2 additional electrical switches to limit the total synchronization stroke. When the switch contacts are closed the bar feeder will be in emergency stop. The final positioning of the switches is performed during the installation process of the bar feeder. Once set the switch locations should not be moved.

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Synchronization Belt Adjustment

⚠️ **Warning when adjusting synch belt place lathe and bar feeder into emergencey stop.**

✋ **Catuion do not operate bar feeder with synch belt covers installed.**

1. Place bar feeder in emergency stop.
2. Open the bar feeder hood.

3. Remove synch belt cover. Loosen 2 screws and lift cover up.
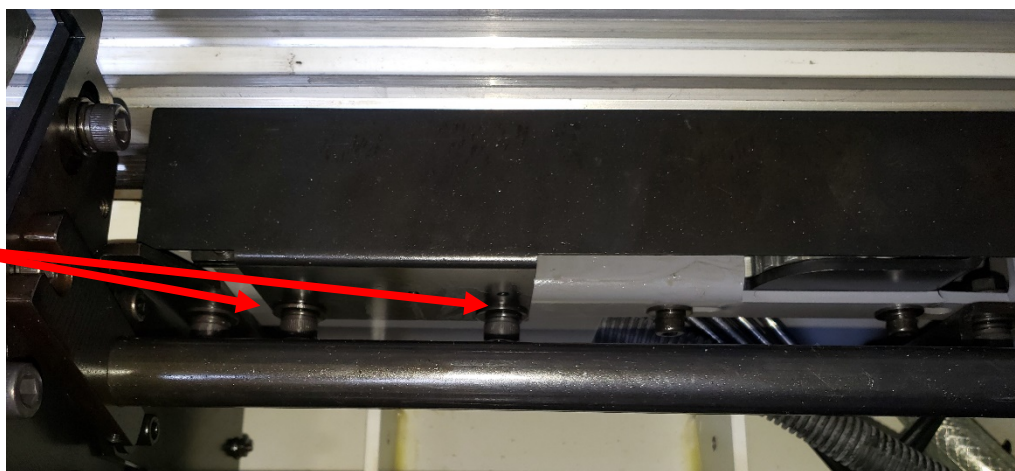
4. Loosen lock nut (1).

Adjustment screw (3)

Lock screws (2)
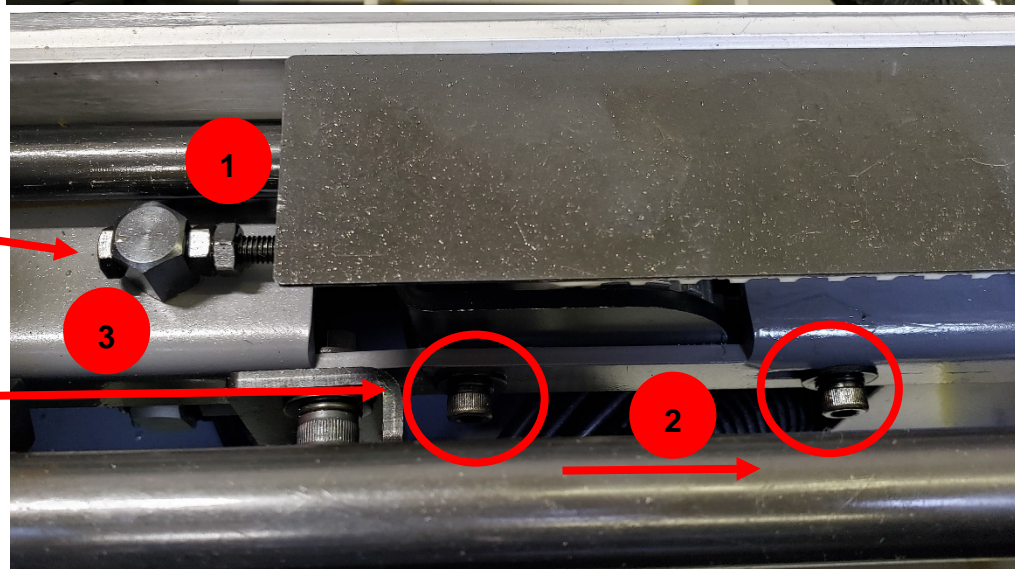
5. Rotate the adjustment screw (3) clockwise to tighten belt tension/rotate counterclockwise to loosen the belt.
6. Adjust belt tension to no more than 10mm of deflection. **Do not over tighten the belt. Premature failure of the belt may occur.**

7. Once the adjustment has been made secure the adjustment plate lock screws (2).

8. Tighten the adjustment screw lock nut (1).

9. Check belt deflection, readjust as required.

10. Reinstall belt cover.

11. Veify all tools have been removed and all machine gaurding is in place prior to resetting the emergency stop.

5.7 Channel Set Components

⚠️ **Caution when changing channel set be sure the electrical power to the bar feeder is off.**

⚠️ **Warning proper channel set to material diameter is important. Damage to the bar feeder and or the lathe may result.**

⚠️ **Warning all channel sections must be in position prior to operation. Machine damage will occur if channel sections are not in the proper position.**

The channel set on the Minuteman may be changed to a variety of sizes. It is important to note the material diameter to be used in the bar feeder fits in the proper channel set. Channel set components are specific to each channel set. Contact Edge Technologies for additional channel sizes and sets.

Channel	Pusher Ø	Min	Max	Max Bar With Remnant Ejection
8	7.5	3mm (.118")	6.4mm (.250")	7mm (.275")
11	10	3mm (.118")	9mm (.354")	10mm (.393")
14	12	3.2mm (.125")	11mm (.437")	13mm (.512")
16	15	5mm (.196")	12.7mm (.500")	15mm (.594")
18	16	5mm (.196")	14.2mm (.562")	17mm (.669")
20	18	8mm (.315")	18mm (.709")	19mm (.750")
22	20	8mm (.315")	19mm (.750")	21mm (.826")
24	22	8mm (.315")	20mm (.787")	23mm (.905")
28	26	10mm (.393")	25.4mm (1.000")	27mm (1.062")

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N.	Code	QTY	Denomination
1	P59__0154	6	Guide channel L=540
2	P58__0158	1	Guide channel L=582
3	P59__0136	1	Guide channel L=365

NOMINAL DIAMETER D.		08	10	12	15	16	18	20	23	25
	ØA	8	11	14	16	18	20	22	24	28

4	P53__0201	2	Anchor

NOMINAL DIAMETER D.	08	10	12	16	18	20	23	25

5	P82__0803	1	Fixed block

NOMINAL DIAMETER D.		08	10	12	16	18	20	23	25
	ØA	9	12	15	19	21	23	26	29

6	HL59__441	1	Lower guide channel

NOMINAL DIAMETER D.		08	10	12	15	16	18	20	23	25
	ØA	8	11	14	16	18	20	22	24	28

⚠ **Warning be sure to use the correct channel set components for a specific size.**

The channel set for the Minuteman contains many pieces that must be placed in certain locations. The length of the channel section is specific to a region within the channel rail. It is recommended that 1 channel section at a time is removed and replaced with the conversion piece. All components with in a channel set is specific to the size of that channel set. Combining the channel; sets will not work properly and will produce poor bar feeder performance.

For available guide channel sets reference this manual or contact Edge Technologies for the most up to date information.

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5.8 Pre-Run Setup Card

The following card may be printed, laminated, and placed near the Minuteman. Great for the changeover tech.

EDGE TECHNOLOGIES	Pre-Run Setup
⇒	**Follow bar feed and lathe manufactures instructions on machine changes**
⇒	**All bar feed and Lathe safety's installed and functional**
⇒	**Air pressure set at 75-90 PSI (5-6 bar)**
⇒	**Proper oil viscosity and oil level set**
⇒	**Remnant tray empty**
⇒	**Correct guide channels installed**
⇒	**Correct pusher size and corresponding guide channel installed**
⇒	**Install corresponding lathe spindle liner**
⇒	**Adjust roller steady (Only if roller steady used)**
⇒	**Adjust movable roller steady (Only if roller steady used)**
⇒	**Install appropriate steady blocks for bar stock diameter (If blocks are used)**
⇒	**Install corresponding telescoping nose or hard nose and appropriate inserts**
⇒	**Correct collet for bar stock diameter installed**
⇒	**Part program parameters programmed in bar feed**
⇒	**Bar stock loaded into magazine and positioned to rear**
	EdgeTechnologies.com

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5.9 Pre-feed Pusher and Pusher

⬛ **Caution do not replace pusher or pre-feeder pusher with electrical power applied to lathe or bar feeder.**

⚠ **Warning the correct pusher length must be used for the correct length of bar feeder or machine damage may occur.**

The pre-feed pusher and pusher diameters must match as a set with the corresponding guide channel and components sizes.

Pusher and flag
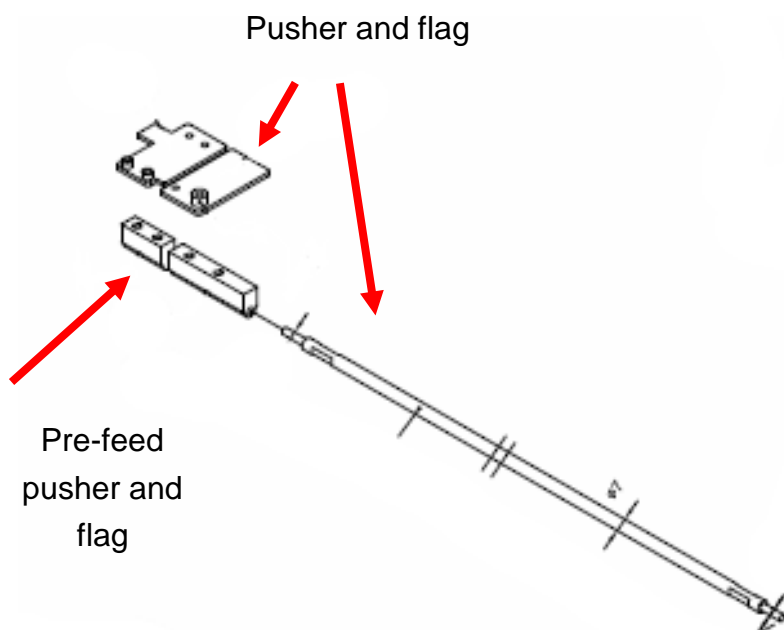
Basic layout of Minuteman pusher. See the parts section for part details.

Pre-feed pusher and flag

Tech Tip - Care must be taken during the removal and installation of the pre-feed pusher screws. A fresh allen wrench and screws should be used to avoid screw head stripping.

⬛ **Caution adjustment of the pusher home position may require power applied to the bar feeder. Only trained operators are to make adjustments.**

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The pusher flag is physically locked into the press plate. A small metal block is used to spring closed to keep the pusher flag locked in place.

Stop plate is adjustable for the compression of the spring block.
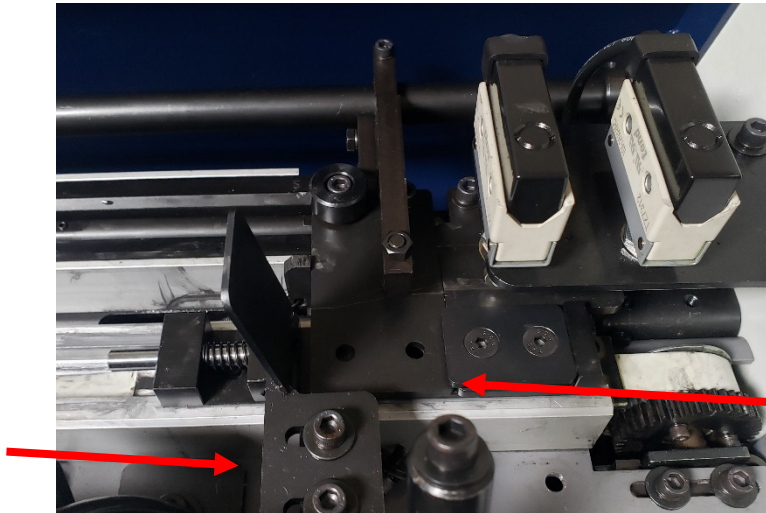
Pusher flag locks under press plate

During the extracted movement the spring is compressed and pusher swing is raised disengaging the pusher flag from the press plate.

Pusher is in the up position.

Block spring is compressed.
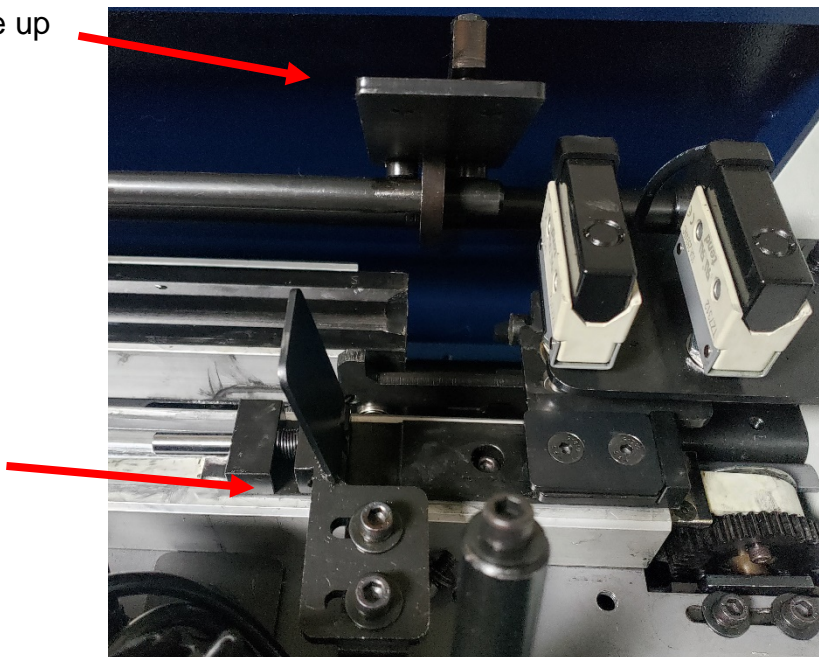
Carriage is in the extracted position.

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When the carriage is fully retracted back the spring block is captured by the stop plate. This allows the pusher flag to be clear of the press plate and raised.

There is a small adjustment screw located on the pusher swing arm. This screw is set from the factory. Over time the screw head and pusher flag could wear causing poor reengagement of the pusher flag into the carriage.
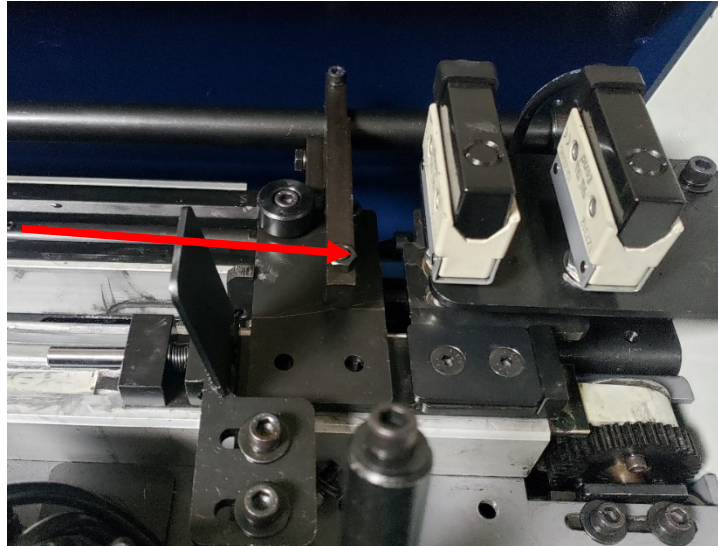
Adjust screw so positive so there is approximant 1mm of clearance. Make sure the lock nut is fully tightened prior to starting machine.

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5.10 Rotating Tip

⚠️ **Warning the rotating tip should match the diameter of the pusher. Running too small or too large of a rotating tip diameter will cause damage.**

The rotating tip used in the Minuteman is designed for many hours of operation. A few different tips sizes and collet attaching methods are available. The Minuteman comes standard with 3 collet screw on tip adapters. An adaptor with a pin securement is available from Edge Technologies as well. Refer to parts section for part numbers and available sizes. The rotating tip diameter should be 1mm smaller diameter than the guide channel set.

The rotating tip is internally lubricated by the factory and normally does not require additional lubrication. However the rotating type does require proper oil flow with in the channel. This helps to cool the rotating tip and provide lubrication between the channel and tip. Some users operate the bar feeder with lathe cutting fluid or an aqueous based fluid. Edge does not recommend using anything but what is recommended in this manual for oil type. Rotating tip operating life may be significantly reduced without the proper bar feeder oil.

Collet : IER 0712XXX

Bar Size
EX: φ12→120

Outer DIA. φ22.5→225

Figure: M7, M12, M18

R is Right thread

Roll pin is used to secure rotating tip to pusher.
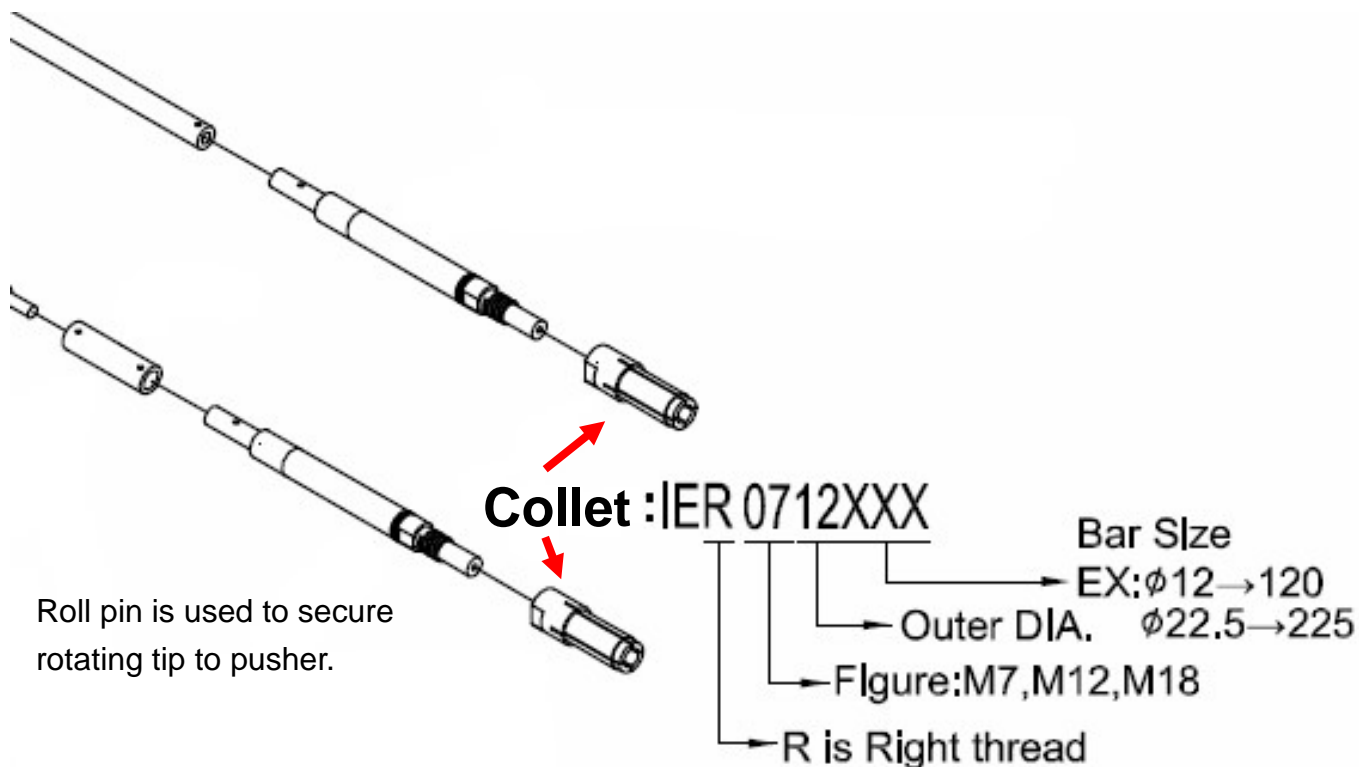
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5.11 Channel Set Replacement

Warning set the lathe and bar feeder emergency stops prior to channel change over.

When changing the channel set it is important to remove then replace one item at a time. If you get ahead of yourself it may take longer setting up the new channel set. The channels pieces are directional and may be installed 180 degrees off.

Note- Any time a channel change is required be sure the correct spindle liner is installed.

N.	Code	QTY	Denomination
1	P59__0154	6	Guide channel L=540
2	P59__0136	1	Guide channel L=365
3	P64__1000	1	Guide channel L=289

NOMINAL DIAMETER D. → 08 10 12 15 16 18 20 23 25
ØA 8 11 14 16 18 20 22 24 28

| 4 | P53__0201 | 2 | Anchor |

NOMINAL DIAMETER D. → 08 10 12 16 18 20 23 25

| 5 | P82__0803 | 1 | Fixed block |

NOMINAL DIAMETER D. → 08 10 12 16 18 20 23 25
ØA 9 12 15 19 21 23 25 29

| 6 | HL59__371-LL | 1 | Lower guide channel |

NOMINAL DIAMETER D. → 08 10 12 15 16 18 20 23 25
ØA 8 11 14 16 18 20 22 24 28

The channel set is a large kit containing matching components that must be used together. Using a channel set with miss matched components will severely compromise overall performance of bar feeder operation.
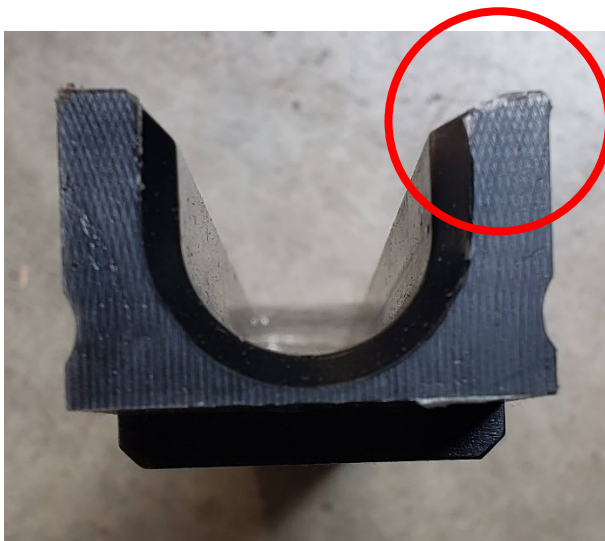
All of the channel sections are directional and must be installed accordingly. One side of the channel has a lower chamfer and will be placed toward the magazine side of the machine. Installing the channel 180's off will not allow the pusher to move.

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Channel sections will contain an oil port that is molded into location. This hole should line up with the oil hole in the channel. The channel is fastened in place by an interference fit. No fasteners are required to be used. If the channel section is pushed up from the channel lowering the oil pump will reduce this issue.
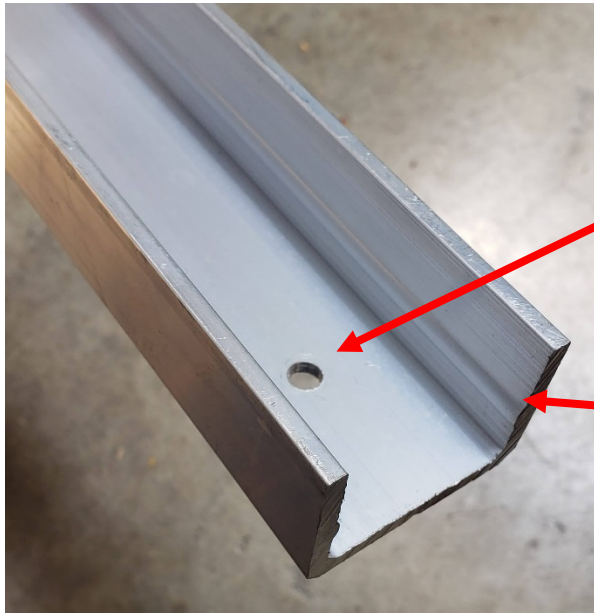
Channel rail extrusion removed from bar feeder for visual purpose.

Oil hole present

Bump in the extrusion to hold the channel section.
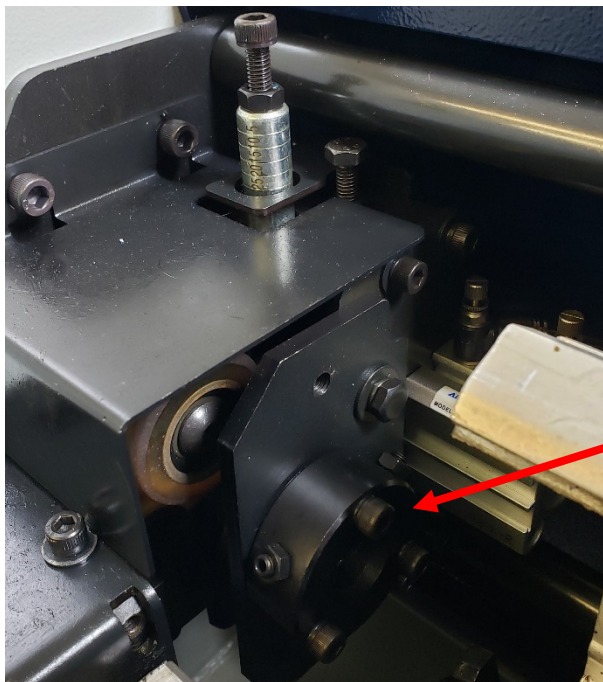
The AVD and MAVD will contain an anchor that assist in pusher support. Each channel set will contain 2 of these anchors and will match the pusher set. AVD shown

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The AVD and MAVD will contain an anchor that assist in pusher support. Each channel set will contain 2 of these anchors and will match the pusher set. MAVD show
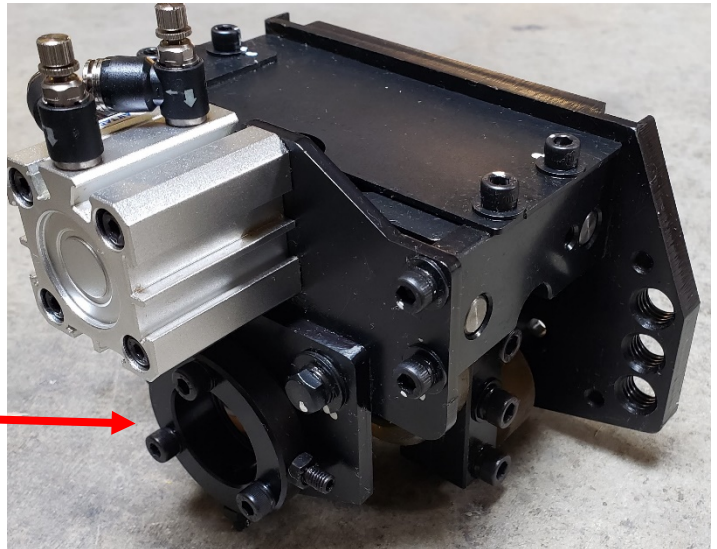
Be sure the telescoping nose is properly attached when reinstalled.

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5.12 Material Measurement sensor/Cutting sensor

⚠️ **Caution prior to inspecting the Material Measurement sensor/Cutting sensor place the bar feeder into emergency stop.**

The material measurement or cutting sensor is an input to the PLC. When material is moved forward during the pre-feed bar change process, the end of the bar makes contact with a steel flap. This flap is moved away from the cutting sensor and triggers the PLC to determine the length of the bar based on the current pusher location. To reset the cutting Sensor flap back to measuring positon a small throttle valve is used to push the flap back into position. This valve is air controlled by the PLC.

The resetting of this device is important to proper bar change cycles. If the material gate is unable to reset bar changes will not occur. Check for a bent flag or obstruction with the channel.

Note if the measurement sensor is in the wrong state of position, bar changes will not occur.

N,	Code	QTY	Denomination
1	P75201600	1	Bracket
2	P75201700	1	Plate
3	P45200300	1	Bush
4	P75201800	1	Plate
5	P53200401	1	Connector
6	G92120600	1	Spring
7	A11110700	1	Cylinder MAL-CA-20x10
8	G92120700	1	Central shaft
9	P75201900	1	Plate
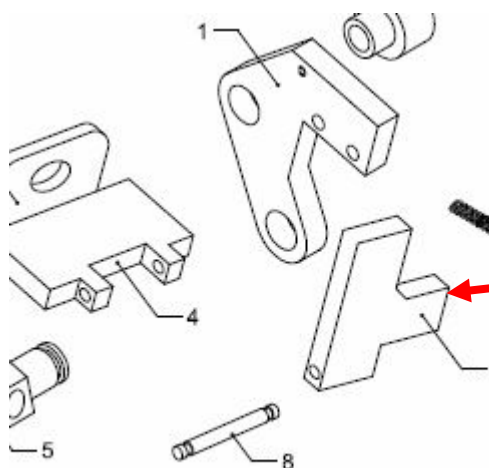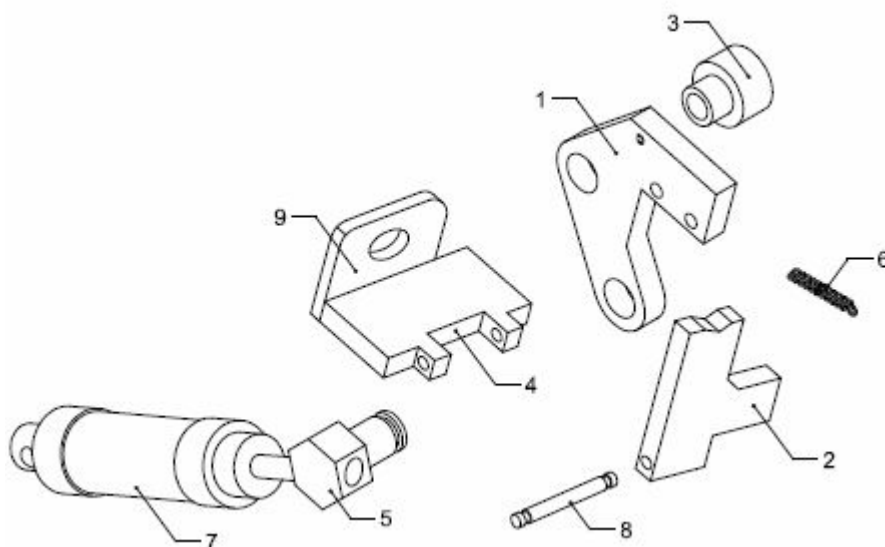
The standard cutting sensor trip plate is designed for bar stock larger than 2mm. If 2mm and smaller bar stock is to be used a new trip plate may be obtained from Edge Technologies.

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5.15 Gripper Assembly

⚠ **Caution the Gripper is a pinch hazard.**

⚠ **Caution the Gripper assembly is a moving component that should always be service with electrical power and air supply removed.**

⚠ **Caution place lathe and bar feeder into emergency stop when replacing gripper jaws.**

⚠ **Caution place lathe and bar feeder into emergency stop when adjusting gripper jaws,**

The gripper device is used to press material onto the bar feeder collet and remove remnants from the collet. Gripping force is determined by the air supply and not adjustable to the assembly. The gripper jaws are adjustable and replicable.

The gripper assembly is stationary and the amount of material insertion into the bar feeder collet is based on the pre feed positioning of the material. If the material is placed farther from the gripper, the correct amount of material will not be inside the bar feeder collet. This may lead to material and bar feeder collet separation. Thus causing additional issues.

Just the opposite may happen if the material is inserted too far into the bar feeder collet. If the material is placed passed the correct position for optimal insertion during pre-feed, the material may be inserted too far into the bar-feeder collet. If this happens the remnant removal may not occur due to the material is too far into the collet. This condition may cause a servo alarm during press upon. If the bar is not placed far enough the pusher collet could make contact when the channel is closed causing an alarm.

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Adjusting parameter ***"First Feeding Distance"*** to fine tune the press upon and press off performance.

The gripper assembly is a pnumatic/mechanical design. The closing and opening command of the gripper is by the PLC. The PLC directly controls the air solenoid coil. Once the air valve is energized the pnumatic cyclinder moves a gear set to open and close the gripper jaws.

Clamp in detection switch.
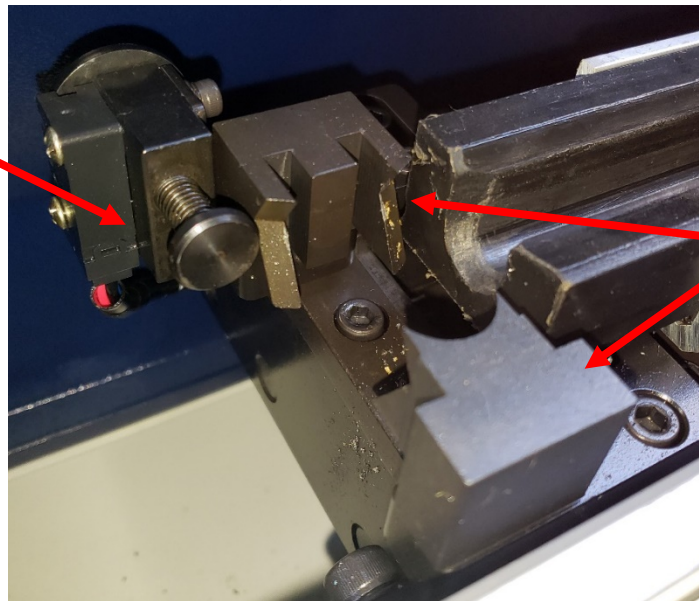
Replacable griper jaws.
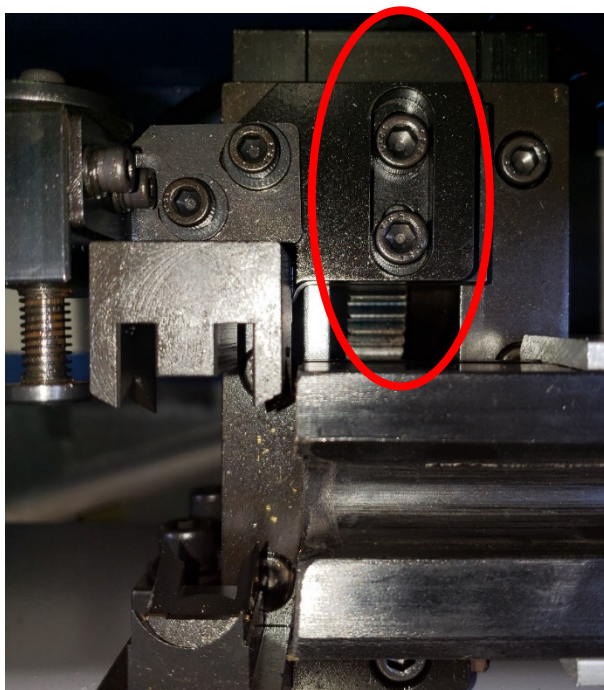
Be cautious when adjusting gripper jaws. Do not position jaws that cause deformation of the material during clamping. This may cause material loading and unloading issues.The gripper tension should be enough to hold the bar during the extracion and introduction of the material to the pusher collet.

5.14 Shuttle - Extraction / Introduction Cylinder

⚠ Caution never adjust the air valves without being properly trained

The Minuteman is equipped with a robust extraction and insertion system designed to provide exceptional durability. The operation of this cylinder is known as the shuttle.

During introduction of the bar feeder collet onto the bar end, the servo drive motor is engaged with the shuttle (air cylinder) moving simultaneously. The process is the same during the extraction step. The movement between extraction and introduction should always be fluid with the servo drive motor. There is no adjustment for this system.

Air cylinder controls the pullback of the extraction lever.
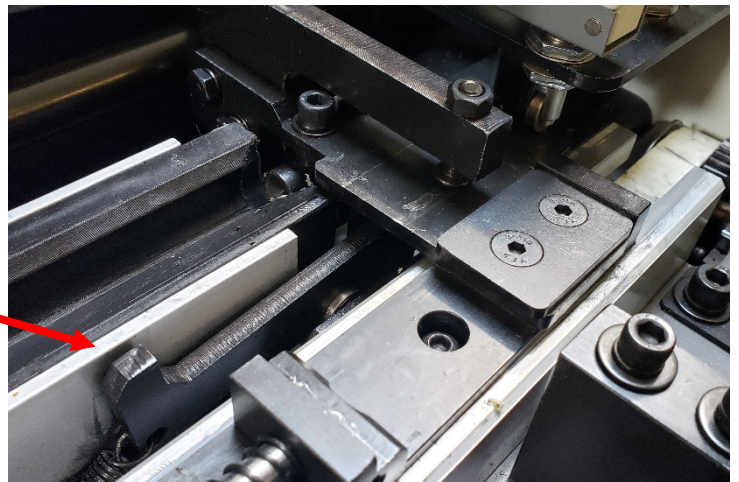
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5.15 Procedure for Checking Bar Straightness (Reference ASTM B249)

1. Find a suitable surface to allow the bar to rest on V-blocks without any rocking movement.
2. Rotate the bar 360°. Record the dial indicator readings at each location.
3. Calculate both the tolerance for each meter increment and also the tolerance over the entire length of bar. Compare the recorded values to the required tolerances to determine the bar suitability for operation with a bar feeder.

Ø1.7MM / 3800MM	Ø0.070" / 12 FT
Ø0.5MM / METER	Ø0.020" / 36"

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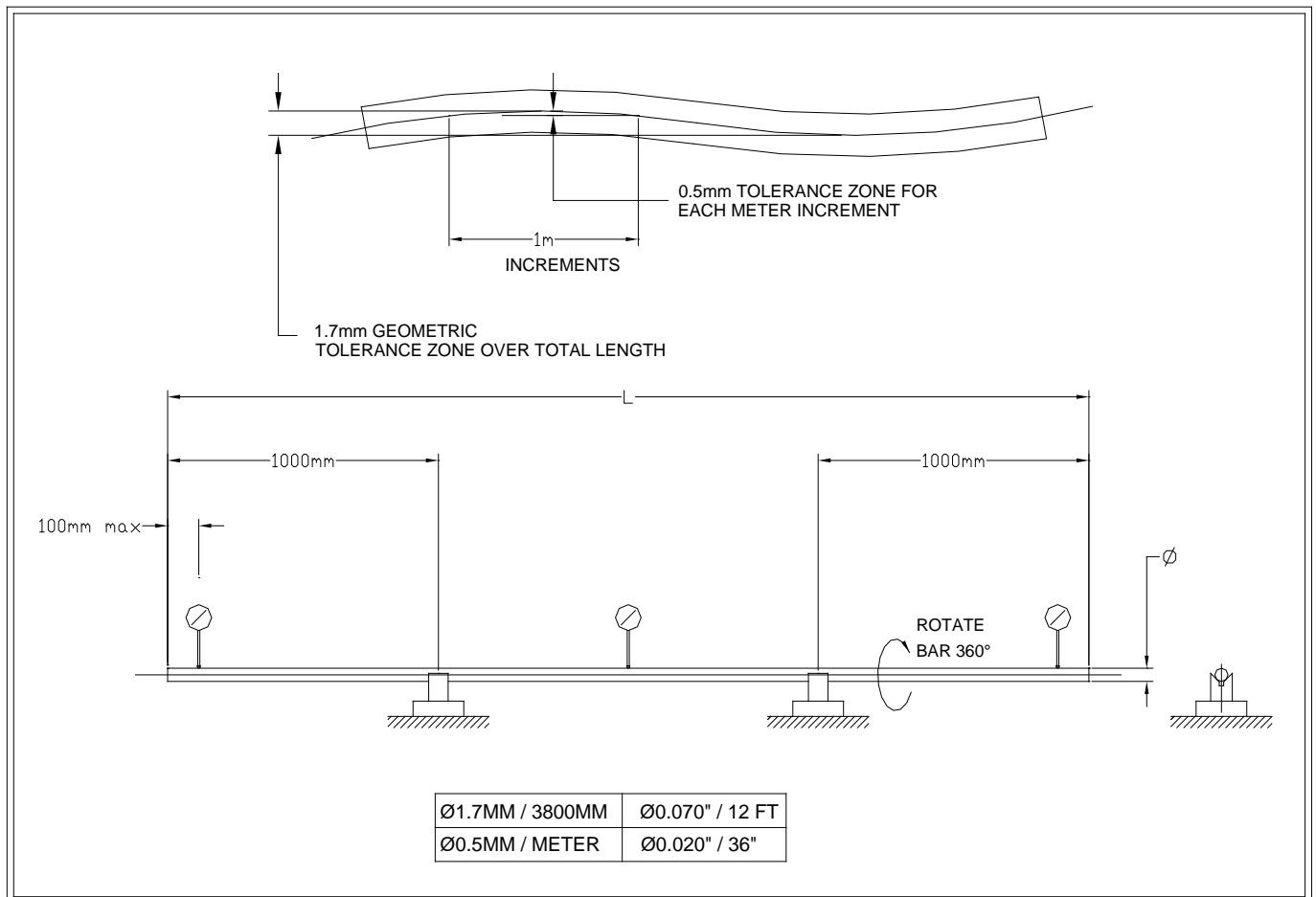
5.15.1 Bar Stock Preparation

The bar stock must be free of burrs, chips and excessive dirt. Clean bars will extend the life of the channel guides and bearing unit of the pusher as well as the oil pump impeller. The bar ends should be relatively square to the length of the bar.

Chamfers on the bar ends are generally not needed except when the stock OD is close to the bar pusher OD. In this case the wall of the pusher collet is thin and has only a small lead-in chamfer.

Profiled material such as hex and square stock should have a generous chamfer on the bar feeder end of the bar. This chamfer will help negate the offset of the bar centerline to that of the bar pusher when the stock falls differently into the channel (corners up versus flats up). Chamfers on the lathe end of the bar are not usually required, only an edge break to ensure no burrs remain to snag on the lathe collet.

RPM Limiting Factors

Certain conditions may limit the lathe to less than full speed rotation of the spindle. Among these conditions are the following:

- Bent bars (bar stock with straightness of less than .5mm/1 meter.
- Bars with an irregular profile or shaped material.
- Improperly sized guide channel in relation to the bar stock diameter.
- Incorrect sizing of guide blocks or incorrect adjustment of steady rollers.
- Lack of support in the lathe spindle for the bar pusher.
- Characteristics of the bar stock (copper, brass, plastic etc.).
- Improper viscosity lubricant in the oil tank of the bar feeder.
- Unbalanced bar stock.
- Sheared bar ends.
- Non-concentric chamfered bar end when using an ejection collet.

These factors may work alone or in combination to cause a vibration that requires a reduction in the lathe spindle speed.

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5.18 Vibration Troubleshooting Check List

VIBRATION TROUBLESHOOTING CHECK LIST

Bar Feeder Model	Serial Number	Lathe Model

TESTS TO BE CONDUCTED AND RECORDED

	Comments and Feedback	
• Material Type and Diameter		
1. Bar Straightness (See attached .007"/ft)		☐
2. Surface Finish		☐
• Bar Feeder Alignment		
1. Bar Feeder Alignment and Fastened		☐
2. Spindle Adapter alignment and condition		☐
3. Nose Alignment & Insert Conditions		☐
4. Steady Alignment		☐
5. MAVD Alignment		☐
• Guide Channel Diameter		
1. Revolving Tip Condition		☐
2. Pusher-Collet Runout		☐
3. Pusher Straightness		☐
• Spindle liner		
1. Tube concentric to Journals (max .004" or .1mm TIR)		☐
2. Fit with Spindle I.D.		☐
• Lathe influencing Factors		
1. Lathe Stability (not rocking on its pads)		☐
2. Work-Holding Runout & chuck pressure		☐
3. Guide Bushing Condition (Swiss Lathe)		☐

Additional Comments

Technician's Name and Signature _____

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6. Control Operation and HMI Description

6.1 HMI Operation Description

⚠️ **Warning proper training is required for bar feeder operators. A lack of training may lead to personal or machine damage.**

The HMI is a microprocessor based, touch screen unit that receives the user input commands directly through the keypad. There are many obvious defined buttons or keys when pressed an action of some type appears on screen. The HMI is programmable and the software may be updated by Edge Technologies.
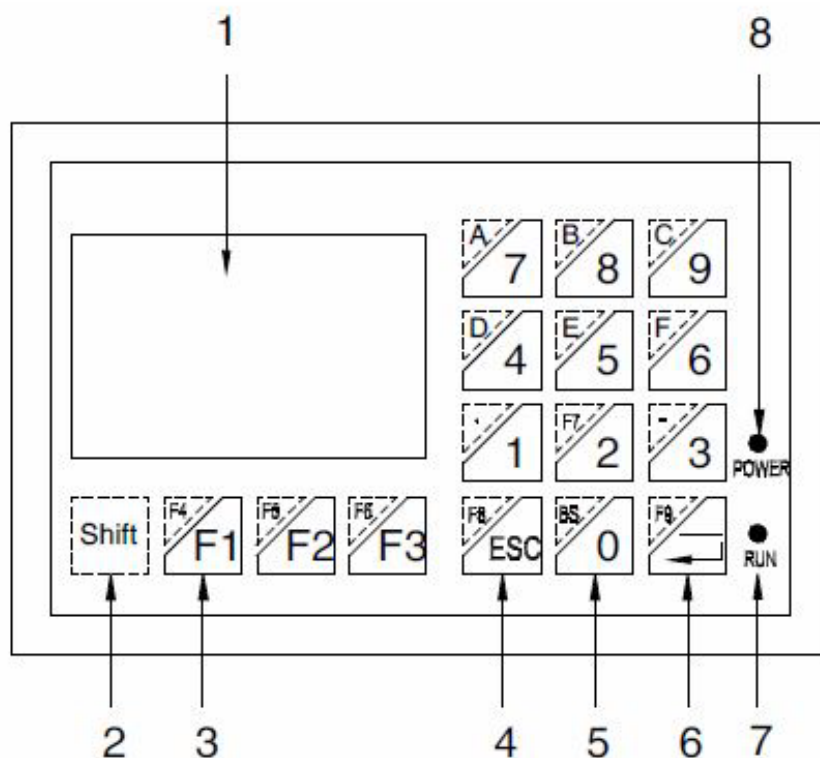
NO.	Function
1	LCD Display area
2	Shift
3	Function
4	ESC
5	Number
6	Enter
7	Run light
8	Power light

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Do not use harsh cleaning chemicals on the HMI screen. Clean the screen with the power off. Use of a micro fiber cloth towel and denatured alcohol is permissible.

Basic HMI navigation

Distance the pusher position from the home switch, this can be changed between inch and metric.

```
Pusher      ####.## In
Position
F1  User
    Parameter   EDGE
F2  Fixed
    Parameter
F3  System
    Parameter
```
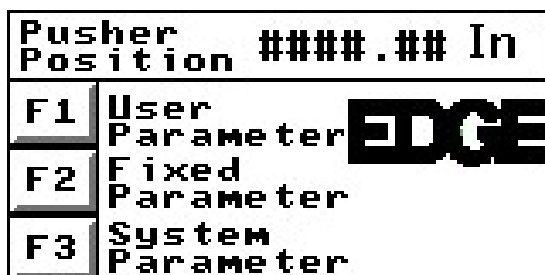
There are 9 "F" key menus. Not all are to be used by the operator. A password is required for access to some of the menus.

Shift screen

Press the key according to the indication on the display:

1. | F1 ⌃ | :Page up

2. | F2 ⌄ | :Page Down

3. | F3 ⌂ | :Back to the Main Menu

To Change Values:

1. Depress numbers as you require 0-9

2. Press enter/F9 | F9 → | again the value is changed. If you want to give up the value

   press F8 | F8 ESC |.

Function of F1-F9 keys:

1. Select F1-F3 the screen will change to corresponding page

2. To select F4-F9 use Shift | ⇧ Shift | plus the corresponding F button to enter the assigned page

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The monitor screen displays the following items while in auto,

- Pusher position – Position of pusher from bar feeder zero

- Material remaining – amount of material left on bar being machined

- Parts remaining – amount of parts left on bar being machined

- F1 and F2 will toggle to available screens

The following screen is an example of the F4 through F9 screens. A passcode is required for access. By pressing the indicated F key for the parameter the mode options will toggle though the available option. Leaving the option type on the screen will save the selection.

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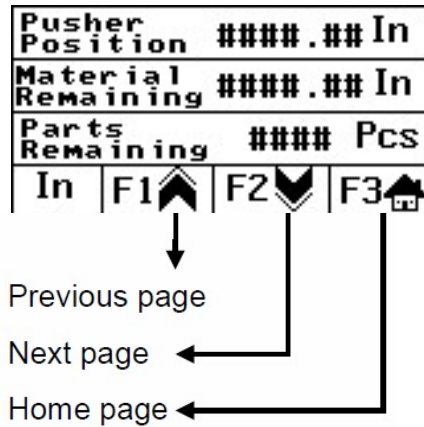
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6.2 Handheld Pendant Layout
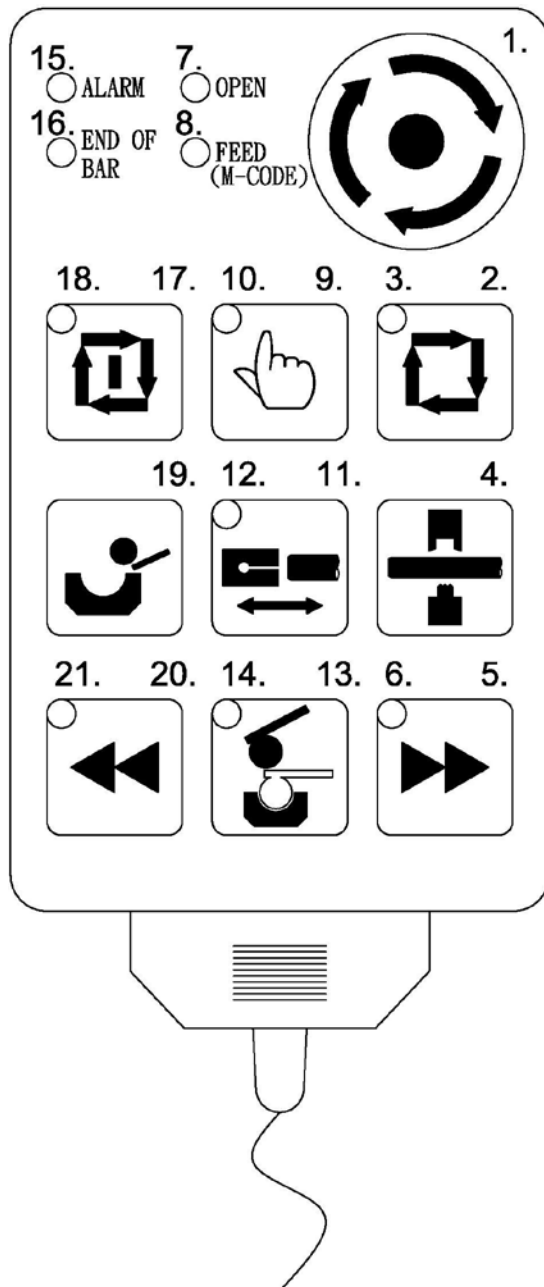
NO.	Function
1.	Emergency STOP
2.	Pre Auto
3.	Pre Auto light
4.	Manual clamping
5.	Manual advance (Right) Manual retreat (Left)
6.	Origin point light (Left)
7.	Chuck open light
8.	Allow feeding on
9.	Manual mode
10.	Manual mode light
11.	Manual Gripping in/out
12.	Pusher extracted
13.	Manual channel open/close
14.	Channel down light
15.	Alarm light
16.	Bar end
17.	Automatic start
18.	Automatic start light
19.	Manual loading
20.	Manual advance (Right) Manual retreat (Left)
21.	+Z light (Left)

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6.3 Power up:

To Power Up and Place the Bar Feeder In Automatic (must have bar stock loaded in bar feeder and lathe ready for production)

1. Check to make sure the emergency stop buttons on the pendant and the main control panel are released.
2. Turn on the main switch on the bar feeder electrical cabinet.
3. Close the collet on the lathe.
4. Press the Automatic button on the touch screen to place the bar feeder in automatic mode. (The guide channel must be closed before pressing the Automatic button or the bar feeder will not change to Automatic)

Power Up After An Alarm:

1. Check the alarm message, there will be details about the alarm.
2. Clear the cause of the alarm.
3. It is possible to have more than one alarm at a time. If a second alarm is active it will show on the display after the first alarm is cleared.
4. If the bar feeder experiences a fault during the process of changing bars the guide channels must restored to the fully opened or closed position after the bar feeder is restarted. This may require reloading the bar or bar removal.
5. Before the guide channel can be opened or closed the pusher must be in the extracted position (Rear arrow LED is ON).
6. When the guide channel is closed the pusher must be in the introduction position (LED on the rear button OFF) before the pusher can move forward.

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6.4 Basic Movement Functions

⚠️ **Warning proper training is required for bar feeder operators. A lack of training may lead to personal or machine damage.**

⚠️ **Warning be sure lathe is ready for bar feeder operation.**

(6.4.1) Advance / retreat at low-speed (Creep)

(When the lathe on the left, the motion of [◀◀] and [▶▶] are opposite).

Advance at low-speed, press [⊡] and [▶▶]

Retreat at low-speed, press [⊡] and [◀◀]

⚠️ **Warning complete understanding of machine operation is required.**

⚠️ **Warning be sure if material is in the bar feeder that lathe tooling is out of the way of the bar if it moves into the lathe tooling area.**

By following the procedure below, the Minuteman will automatically load the bar the facing position. For the success of loading the correct parameters must be set and material loaded in the magazine.

(6.4.2) Automatic Load Operation

1. Open lathe collet
2. Jog pusher home if not already done so. Back button led will be on.
3. Press [⇄] button, pusher will move back to position
4. Open channel by pressing [⟋]
5. Press the pre-auto [▢] button until light is on then press the auto [⊡] until light is on Magazine will load bar into channel and bar loading to the facing position will start.

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6. Once bar is in the lathe collet and at facing position, the barfeed will time out after 20 sec. with an alarm unless the lathe collet is closed or the manual button on the bar feeder is pressed.

6.5 Loading and Unloading Bar Stock

⚠️ **Warning proper training is required for bar feeder operators. A lack of training may lead to personal or machine damage.**

Bar Loading

Retract the bar stock from the lathe guide bushing and open the lathe collet. Make sure the lathe tools are clear of the guide bushing for the new bar to come in. ***The procedure below is for bar feeder feeding left to right (AD configuration steps below, BC is feed right to left)***

1. Press and hold the Reverse Jog button until the pusher is fully retracted to home position.

2. Press the Grippers button to close the grippers on the bar stock.

3. Press the extraction button to activate the air cylinder to pull the pusher off the material. The LED on the button will light when the carriage is pulled back to the rear limit.

4. Press the Grippers button to open the grippers.

5. Press the Channel Open / Close button to open the guide channels. The LED on the button will light when the channels are fully opened.

6. Press the bar feeder emergency stop. Open the hood and remove barstock from the channel.

Now that the bar feeder channel is clear of a bar follow the process below to load the material.

7. Press the Pre-Auto button.

8. Press the Automatic button.

Bar will load automatically

1. The bar separators will lift and drop a bar into the guide channel.

2. The pre-feed pusher will move the bar forward to position and the grippers will close on the bar.

3. The pre-feed pusher will retract.

4. The shuttle will pull the pre-feed pusher to the rear limit.

5. The guide channel will close.

6. The shuttle will push the bar pusher forward onto the bar stock.

7. The grippers will open.

8. The bar pusher will advance the bar stock to the facing position and stop.

9. If the lathe is not placed into auto mode the bar feeder will alarm out after 20 seconds

When this is complete close the lathe collet and use the headstock to move the bar through the guide bushing as needed..

6.6 Tower Light

The indicator light provides quick visual indication of bar feeder status. The bar feeder PLC directly controls the operation of the tower light.

Status conditions below,

- Red light is on, bar feeder is in emergency stop.
- Green light is on, bar feeder is in machining mode.
- Green light is flashing, bar feeder is in bar change operation.

The tower light attaches to the bar feeder plate with 2 screws. The latest version of the tower light is an LED. If the LED fails replacement of the light tower is required.

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7.1 Programming

⚠ Caution only trained operators are to change part parameters.

Parameters can have a large impact on efficiency of the production process. A parameter value could lead to longer than desired remnants to inability to run nonstop production. Understanding the parameters and how to set them is important. Certain parameter screens are accessible only with a password. If access to a password protected parameter is required and you don't have the password contact Edge Technologies and speak with our service department.

During the installation process certain parameters must be set in order for the bar feeder to perform properly in the automatic mode. If the parameters are not set correctly production problems are almost certainly guaranteed. The minuteman does not use a stored program system. Anytime a part program change is required each parameter value will need to be modified. Note normally parameters set during the installation process are normally not adjusted. See parameters list in this manual.

Edge Technologies reserves the right to make programming modifications to the HMI and PLC software. As of the printing of this manual the current software available is represented with in this manual. Any deviations between this manual and your machine is the result of software version difference. For additional information please contact Edge Technologies Service Department.

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The monitor screen displays the following items while in auto,

- Pusher position – Position of pusher from bar feeder zero

- Material remaining – amount of material left on bar being machined

- Parts remaining – amount of parts left on bar being machined

- F1 and F2 will toggle to available screens
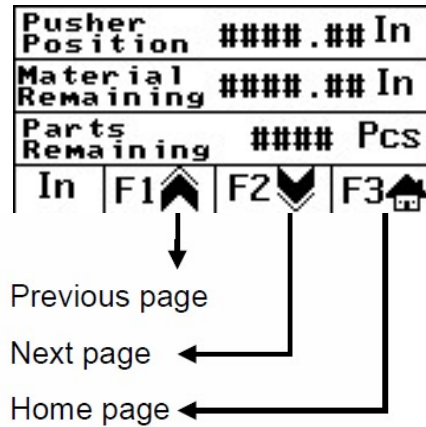
The following screen is an example of the F4 through F9 screens. A passcode is required for access. By pressing the indicated F key for the parameter the mode options will toggle though the available option. Leaving the option type on the screen will save the selection.

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7.1 F1 – F4 Parameter Screen Settings Worksheets

🖐 **Caution making changes to parameter screens require thorough knowledge of the bar feeder system. Only trained operators may make adjustments.**

The following parameter pages will indicate which parameters are to be set during installation and for part change over.

※ **Modify value of program while change work piece**

◎ **Depend on situation**

Setting up by technician

F1 User parameter				
Symbol		**Description**	**Default**	**Installed Setting**
※		Part length + cutoff tool width	100 mm	
※		Collet open pusher speed	20%	
※		Collet open pusher torque	20%	
※		Collet closed pusher speed	80%	
※		Collet closed pusher torque	6%	
※		Manual pusher speed	30%	
※	**Enter password 258**	Manual pusher torque	30%	
※		Movable anti-vibration opening position	2900 mm	
※		First feeding speed	20%	
※		Oil pump shutoff position	0 mm	
※		Long feed safety max. distance	5 mm	
※		Short feed safety min. distance	0 mm	
※		Sync device disengagement position	0 mm	
※		2nd End of Bar	0 mm	
※		Pecking Cycles		

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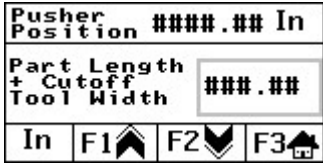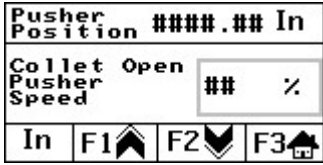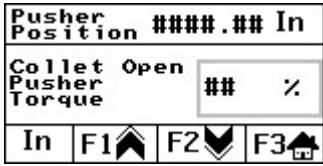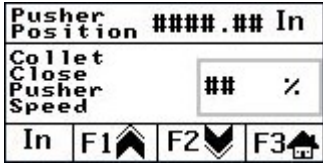
F2 Fixed parameter				
Symbol		**Description**	**Default**	**Installed Setting**
#		Facing position	1435 mm	
#		Max. pusher forward travel	3920 mm	
#		First anti-vibration opening position	2550 mm	
#		Second anti-vibration opening position	3200 mm	
#		Third anti-vibration opening position	2200 mm	
#		Fourth anti-vibration opening position	1350 mm	
#		First feed max. travel	1438 mm	
#	**Enter**	Cycle start delay after bar change	.5 sec.	
#	**password**	Movable Anti-Vib Reclose Position		
#	**258**	Bar change return delay	0 sec.	
#		Push after collet close	.2 sec.	
#		Closed collet timeout	0 sec.	
#		Open collet timeout	0 sec.	
#		Bar change speed return speed	90%	
#		Maximum Pushback Collet Open	0 mm	
#		Cycle start pulse timer	0 sec.	
#		Pusher length	0 mm	

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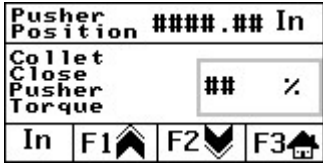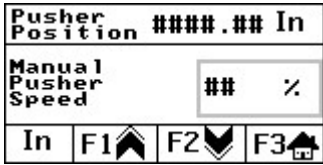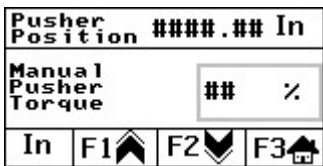
F3 Fixed parameter				
Symbol		**Description**	**Default**	**Installed Setting**
#		F4: Demo Mode	On/off	
#		F5: Swiss	Swiss/Fixed	
#		F6: Cont Feed	On/Off	
#		F:4 Bar Loader	Roller/Bar	
#	**Enter**	F:6 Front Eject	Extract/Eject	
#	**password**	F:4 MAVD W/O Collet	With/Without	
#	**258**	F5: AVD W/O Collet	With/Without	
#		F:4 Feed Stop	Latch/Normal	
#		F:5 Do Not Feed After EOB	Feed/Donotfeed	

F4 Fixed parameter				
Symbol		**Description**	**Option**	**Installed Setting**
#	**Enter**	Home Position Slow Down		
#	**password 258**	Pre Feed Slow Down Position		

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F1 Turning parameter			
Pusher Position ####.## In Part Length + Cutoff Tool Width ###.## In F1▲ F2▼ F3⌂	Setting unit	Range	Suggested setup
	mm/In	0~9999	New part length

Description:	Change this parameter each time part length changes.
Setting method:	Part length + cutoff tool width = Total part machining length.
Note:	Parts remaining is calculated based on this parameter and max pusher travel.

Pusher Position ####.## In Collet Open Pusher Speed ## % In F1▲ F2▼ F3⌂	Setting unit	Range	Suggested setup
	%	0~99	20%

Description:	Sets the pusher forward speed in automatic with lathe collet open.
Setting method:	According to material size in relation with the collet open pusher torque.
Note:	Adjust in small increments to avoid bending of material, breakage of cutoff tool, or hitting material stop excessively hard.

Pusher Position ####.## In Collet Open Pusher Torque ## % In F1▲ F2▼ F3⌂	Setting unit	Range	Suggested setup
	%	0~99	20%

Description:	Sets the pusher forward torque in automatic with lathe collet open.
Setting method:	According to material size and in relation with the torque of collet open.
Note:	Adjust in small increments to avoid bending of material, breakage of cutoff tool, or hitting material stop excessively hard.

Pusher Position ####.## In Collet Close Pusher Speed ## % In F1▲ F2▼ F3⌂	Setting unit	Range	Suggested setup
	%	0~99	80%

Description:	Sets the pusher forward speed in automatic with lathe collet closed.
Setting method:	According to material size and in relation with the torque of collet close.
Note:	Adjust in small increments to avoid bending of material.

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F1 Turning parameter			
Pusher Position ####.## In Collet Close Pusher Torque ## % In F1 F2 F3	**Setting unit**	**Range**	**Suggested setup**
	%	0~99	80%

Description:	Sets the pusher forward torque in automatic with lathe collet closed.
Setting method:	According to material size and in relation with the speed of collet close.
Note:	Adjust in small increments to avoid bending of material.

Pusher Position ####.## In Manual Pusher Speed ## % In F1 F2 F3	**Setting unit**	**Range**	**Suggested setup**
	%	0~50	30%

Description:	Sets the pusher forward speed when bar feeder is in manual.
Setting method:	According to material size and weight.
Note:	Adjust in small increments to avoid moving material too fast or slow. Setting too high or low could cause servo motor fault.

Pusher Position ####.## In Manual Pusher Torque ## % In F1 F2 F3	**Setting unit**	**Range**	**Suggested setup**
	%	0~100	30%

Description:	Sets the pusher forward torque when bar feeder is in manual.
Setting method:	According to material size and weight.
Note:	Adjust in small increments to avoid moving material too fast or slow. Setting too high or low could cause servo motor fault.

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<table>
<tr><td colspan="4" align="center">**F1 Turning parameter**</td></tr>
<tr>
<td rowspan="2">Pusher Position ####.## In
Movable Anti-Vib Opening Pos ###.##
In F1▲ F2▼ F3⌂</td>
<td align="center">Setting unit</td>
<td align="center">Range</td>
<td align="center">Suggested setup</td>
</tr>
<tr>
<td align="center">mm/In</td>
<td align="center">0~9999</td>
<td align="center">Short 25 ~ 50 mm from

Movable anti-vibration</td>
</tr>
</table>

Description:	The movable anti–vibration opening position allows the pusher to proceed past the movable anti–vibration device in automatic mode. Value must be changed accordingly each time lathe Z axis re-chuck position is changed.
Setting method:	Move lathe Z axis to part re-chuck position. Jog pusher forward until pusher collet is just visible inside moveable anti-vibration device. Subtract 25 ~ 50 mm from pusher position and input value Adjust in small increments to avoid bending of material, breakage of cutoff tool, or hitting material stop excessively hard.
Note:	If unable to set this setting each time, move lathe Z axis to –Z over travel position away from guide bushing. Jog pusher forward until pusher collet is just visible inside moveable anti-vibration device. Subtract 25 ~ 50 mm from pusher position and input value. Value will not have to be changed again.

<table>
<tr>
<td rowspan="2">Pusher Position ####.## In
First Feeding Speed ## %
In F1▲ F2▼ F3⌂</td>
<td align="center">Setting unit</td>
<td align="center">Range</td>
<td align="center">Suggested setup</td>
</tr>
<tr>
<td align="center">%</td>
<td align="center">0~50</td>
<td align="center">20%</td>
</tr>
</table>

Description:	The first feeding speed is set when material is being loaded into lathe.
Setting method:	Set value according to material diameter for first feeding speed.
Note:	Set speed so material loads smoothly and does not drift off pusher because of inertia.

<table>
<tr>
<td rowspan="2">Pusher Position ####.## In
Oil Pump Shutoff Position ###.##
In F1▲ F2▼ F3⌂</td>
<td align="center">Setting unit</td>
<td align="center">Range</td>
<td align="center">Suggested setup</td>
</tr>
<tr>
<td align="center">mm/In</td>
<td align="center">0~4000</td>
<td align="center">3000mm</td>
</tr>
</table>

Description:	Position of pusher when oil shuts off during automatic mode.
Setting method:	Move lathe Z axis to –Z over travel position, move barfeed pusher to the face of the moveable anti-vibration device. Set value matching pusher position.

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Note:	Value is initially set to zero upon arrival at customer, please set during installation. Oil pump will come on once barfeed is in automatic.

F1 Turning parameter			
Pusher Position ####.## In Long Feed Safety ###.## In F1 F2 F3	Setting unit	Range	Suggested setup
	mm/In	0~999	Product length + cutoff + 5~30mm
Description:	When pusher moves further than value set in automatic, when lathe collet closes, barfeed will alarm with long feed error.		
Setting method:	Finish product length + permissible feeding error = Long feed alarm distance. See figure 1 below.		
Note:	Setting parameter to 0 will disable short feed safety alarm.		
Pusher Position ####.## In Short Feed Safety ###.## In F1 F2 F3	Setting unit	Range	Suggested setup
	mm/In	0~999	Product length + cutoff - 5~30mm
Description:	When pusher moves less than value set in automatic when lathe collet closes, barfeed will alarm with short feed error.		
Setting method:	Finish product length - permissible feeding error = Short feed alarm distance. See figure 1 below.		
Note:	Setting parameter to 0 will disable short feed safety alarm.		

(Figure 1)

50mm
Product length + cutoff

0mm → Feeding direction

45mm
Short feed safety
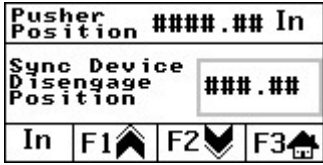
55mm
Long feed safety

Abnormal area

Permit error value

Material

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F1 Turning parameter			
 Pusher Position ####.## In Sync Device Disengage ###.## Position In | F1⬆ | F2⬇ | F3⌂	Setting unit	Range	Suggested setup
	mm/In	0~999	Sync. Device disengagement position ＝ The product length + cutoff length – 10mm

Description:	The synchronization device will disengage prior to lathe collet opening so when lathe headstock moves to rechuck position, no delay is needed between lathe collet open and Z axis movement. (It is restricted to Sliding headstock mode only).
Setting method:	Sliding headstock－Synchronization device opening position：Part length + cutoff + required to release range = Synchronization device opening position **(Normally set to zero, synchronization device will disengage at lathe collet open and engage at lathe collet close)**
Note:	This parameter allows the bar feeder to be placed closer than normal if required. It is possible for the bar stock to be very close to the home position. If the lathe were to recheck and move back with the synch engaged, the pusher carriage would hit the hard stop of the bar feeder and cause a crash and movement of the barfeeder and or lathe.

Fixed headstock： Feeding slowdown position.	Setting unit	Range	Suggested setup
	mm/In	0~999	20%

Description:	Allow slowdown of pusher during feedout of material to prevent material from hitting stock stop excessively hard.(Restricted to Fixed headstock mode only）
Setting method:	Depend on the finish product length. The finish product length 50mm – 10mm = Feeding slowdown position
Note:	Adjust in small increments to avoid inertia tracking.

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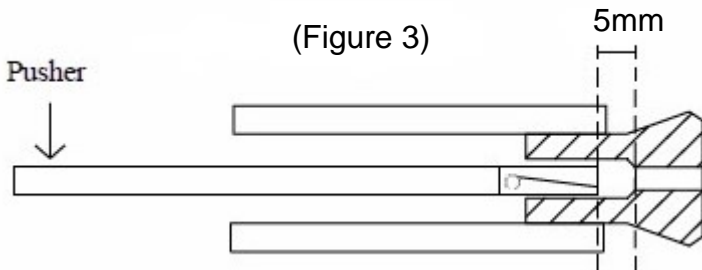
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F1 Turning parameter			
 Pusher Position ####.## In 2nd End of Bar ###.## In | F1⋀ | F2⋁ | F3⌂	Setting unit	Range	Suggested setup
	mm/In	0~ 4294967295	Set as required

Description:	Allows the user to program 2 different length part programs in the lathe. This is helpful when the remnant length is long enough to produce shorter parts reducing waste.
Setting method:	
Note:	The 2nd end of bar position will need to be set just beyond the 1st end of bar.

	Setting unit	Range	Suggested setup
 Pusher Position ####.## In Pecking Cycles ### In | F1⋀ | F2⋁ | F3⌂	Cycle count	0~50	20

Description:	If the end of the bar stock catches any of the transition points during bar loading and stops the servo motor. The servo will reverse for a few millimeters and then move forward. If the bar is not loaded after the number of set pecking cycles the bar feeder will alarm.
Setting method:	Set to the desired number of pecking cycles desired
Note:	Bar ends with a corner break or greater chamfer will load more efficiently.
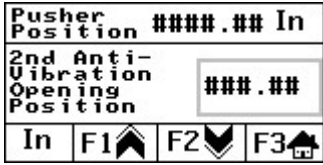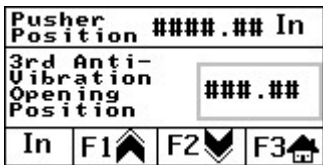
F2 Fixed Parameter			
	Setting unit	Range	Suggested setup
Pusher Position ####.## In / Facing Position ###.## / In F1 F2 F3	mm/In	0~9999	Depend on actual length

Description:	Position of new bar loaded automatically by bar feed. All bars regardless of length will load to this position when bar feed is in automatic.
Setting method:	**Sliding headstock:** Measure from facing flag (LS4) to 5mm from the back side of the guide bushing, set value into the HMI. **Fixed headstock :** Measure from facing flag (LS4) to face of collet, note value, add additional amount for lathe to cutoff, set total value.
Note:	The bar feeder is not to push the bar though the guide bushing. Doing so may cause a servo alarm on the bar feeder

(Figure 2)   Guide Bushing

Bar feeder side

5mm

Facing detection LS4   Facing position distance

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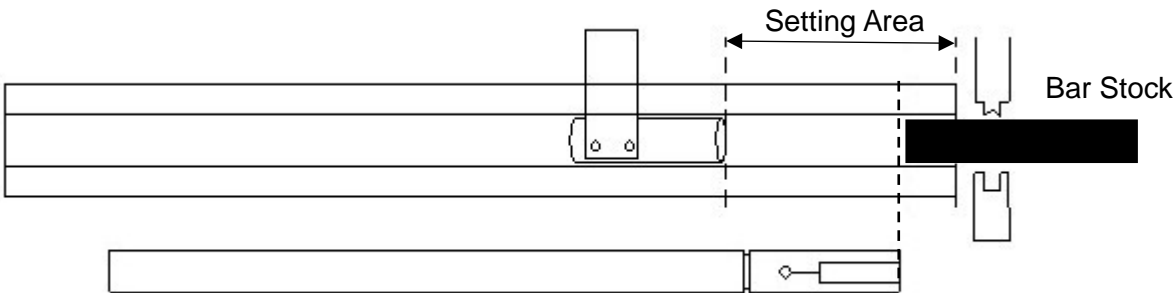
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	F2 Fixed Parameter		
Pusher Position ####.## In Maximum Pusher Forward Travel ###.## In F1▲ F2▼ F3⌂	Setting unit	Range	Suggested setup
	mm/In	0~999	Depend on actual length

Description:	Maximum distance pusher can feed into lathe.
Setting method:	**Sliding headstock :** Move lathe Z axis to over travel position toward guide bushing. In manual mode move pusher forward until pusher collet stops moving against lathe, subtract 5mm from current pusher position and set value. **Fixed headstock :** In manual mode move pusher forward until pusher collet stops moving against lathe collet, subtract 5mm from current pusher position and set value.
Note:	On some lathe collets the inside diameter may be smaller than the pusher collet. In this case the distance will need to be set so the pusher collet doesn't make contact with lathe collet.

(Figure 3)

Pusher Position ####.## In First Anti-Vibration Opening Position ###.## In F1▲ F2▼ F3⌂	Setting unit	Range	Suggested setup
	mm/In	0~9999	2550mm/12ft model

Description:	The first anti–vibration device will open just prior to the pusher collet reaching the first anti–vibration device in automatic.
Setting method:	In manual jog pusher forward until pusher collet is 30~50mm away from first anti–vibration device. Set the value using the pusher position current value.
Note:	First anti–vibration device should be open before the pusher collet arrives to avoid material separating from the pusher collet.

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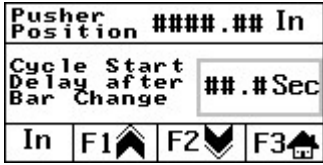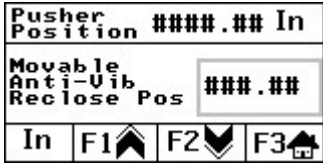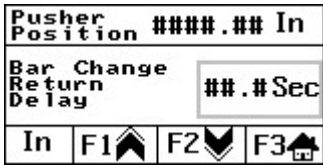
F2 Fixed Parameter			
Pusher Position ####.## In 2nd Anti-Vibration Opening Position ###.## In F1 F2 F3	**Setting unit**	**Range**	**Suggested setup**
	mm/In	0~9999	3200mm/12ft model

Description:	The second anti–vibration device will open just prior to the pusher flag reaching the second anti-vibration device. (Channel section nearest AVD)
Setting method:	In manual jog pusher forward until pusher flag is 80-120mm away from second anti–vibration device. Set the value using the pusher position current value.
Note:	The Second anti–vibration device should be open before the pusher flag arrives to avoid material separating from the pusher collet. Default set by Edge.

	Setting unit	**Range**	**Suggested setup**
Pusher Position ####.## In 3rd Anti-Vibration Opening Position ###.## In F1 F2 F3	mm/In	0~9999	2200mm/12ft model

Description:	The third anti–vibration device will open just prior to the pusher flag reaching the second anti-vibration device. (2nd channel section from AVD)
Setting method:	In manual jog pusher forward until pusher flag is 80-120mm away from third anti–vibration device. Set the value using the pusher position current value.
Note:	The Third anti–vibration device should be open before the pusher flag arrives to avoid material separating from the pusher collet. Default set by Edge.
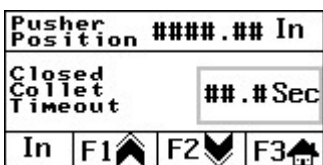
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F2 Fixed Parameter			
Pusher Position ####.## In 4th Anti-Vibration Opening Position ###.## In F1▲ F2▼ F3⌂	Setting unit	Range	Suggested setup
	mm/In	0~9999	1350mm/12ft model

Description:	The Forth anti–vibration device will open just prior to the pusher flag reaching the second anti-vibration device. (3rd channel section nearest AVD)
Setting method:	In manual jog pusher forward until pusher flag is 80-120mm away from forth anti–vibration device. Set the value using the pusher position current value.
Note:	The Forth anti–vibration device should be open before the pusher flag arrives to avoid material separating from the pusher collet. Default set by Edge.

	Setting unit	Range	Suggested setup
Pusher Position ####.## In First Feed Max Travel ###.## In F1▲ F2▼ F3⌂	mm/In	0~9999	Depend on desired depth

Description:	Position of new bar during first feed to allow pusher collet to enter material.
Setting method:	In manual mode open channel, move the first feeding pusher forward to the main pusher insert depth of limitation. Set the current value of pusher position.
Note:	Distance shall be set to avoid material collision with pusher collet at channel close. Distance should allow for pusher introduction onto material. For greater collet and material engagement decrease the distance. For less collet engagement with material increase the position value.

Bar stock must be placed past pusher collet end.

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F2 Fixed Parameter			
Pusher Position ####.## In Cycle Start Delay after Bar Change ##.#Sec In F1▲ F2▼ F3⌂	Setting unit	Range	Suggested setup
	Sec	0~10	0.5 sec

Description:	Delay after new bar reaches facing position before cycle start signal is sent from bar feed to lathe.
Setting method:	Enter value required for delay.
Note:	The longer the set time the longer bar change will take

	Setting unit	Range	Suggested setup
Pusher Position ####.## In Movable Anti-Vib Reclose Pos ###.## In F1▲ F2▼ F3⌂	mm/In	0~999	Depend on actual position

Description:	The position in which the Moveable anti-vibration device will reclose back on the pusher.
Setting method:	After setting the MAVD opening position, measure to when the Pusher and rotating tip have passed entirely through the MAVD and then set it as that distance.
Note:	If this parameter is set to 0 it will disable the MAVD from reclosing on the pusher.

	Setting unit	Range	Suggested setup
Pusher Position ####.## In Bar Change Return Delay ##.#Sec In F1▲ F2▼ F3⌂	Sec	0~999	0.5sec

Description:	When barfeed is sending End of Bar signal to lathe, lathe goes to bar change program, lathe collet will open, bar change signal is sent to barfeed. Once barfeed receives the bar change signal the barfeed will wait for value set then start bar change sequence)
Setting method:	Enter value required for delay.
Note:	If value is too long, pusher may start forward into lathe again.

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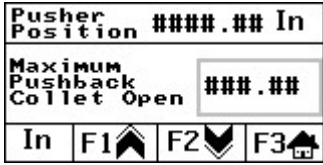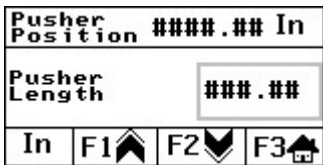
F2 Fixed Parameter			
Pusher Position ####.## In Push After Collet Close ##.#Sec In F1▲ F2▼ F3⌂	Setting unit	Range	Suggested setup
	Sec	0~999	0.5 sec

Description:	Time pusher will continue to push bar after collet closes when in automatic (Collet open speed and torque parameters are used).
Setting method:	Enter value required to continue pushing.
Note:	Adjust only for time difference between when lathe collet open signal is lost to barfeed and lathe collet is fully closed.

	Setting unit	Range	Suggested setup
Pusher Position ####.## In Closed Collet Timeout ##.#Sec In F1▲ F2▼ F3⌂	Sec	0~999	Depend on cycle time of workpiece

Description:	Time between collet open and collet closed (rechuck time) when in automatic. If set time is reached alarm will occur.
Setting method:	Enter value for rechuck time plus 2-3 seconds.
Note:	When set and lathe is stopped with collet open, alarm will occur when time is reached.

	Setting unit	Range	Suggested setup
Pusher Position ####.## In Open Collet Timeout ##.#Sec In F1▲ F2▼ F3⌂	Sec	0~999	Depend on rechuck time of workpiece

Description:	The position in which the Moveable anti-vibration device will reclose back on the pusher.
Setting method:	After setting the MAVD opening position, measure to when the Pusher and rotating tip have passed entirely through the MAVD and then set it as that distance.
Note:	If this parameter is set to 0 it will disable the MAVD from reclosing on the pusher.

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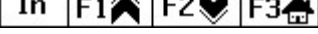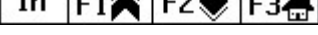
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F2 Fixed Parameter			
Pusher Position ####.## In Bar Change Return Speed ## % In F1 F2 F3	Setting unit	Range	Suggested setup
	%	0~999	90%
Description:	Speed pusher returns at during bar change.		
Setting method:	Enter the value needed for return speed.		
Note:	Return speed starts once pusher moves 200mm during return move.		

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F2 Fixed Parameter			
Pusher Position ####.## In Maximum Pushback Collet Open ###.## In F1 F2 F3	Setting unit	Range	Suggested setup
	mm/In	0~999	0.5 sec

Description:	Time pusher will continue to push bar after collet closes when in automatic (Collet open speed and torque parameters are used).
Setting method:	Enter value required to continue pushing.
Note:	Adjust only for time difference between when lathe collet open signal is lost to barfeed and lathe collet is fully closed.

Pusher Position ####.## In Cycle Start Pulse Timer (0 = latch) ## sec In F1 F2 F3	Setting unit	Range	Suggested setup
	Sec	0~999	Depend on cycle time of workpiece

Description:	Amount of time that the cycle start is on before it shuts off
Setting method:	Enter the value needed for cycle start
Note:	If this parameter is set to 0, the cycle start latches until the collet is closed

Pusher Position ####.## In Pusher Length ###.## In F1 F2 F3	Setting unit	Range	Suggested setup
	Sec	0~999	90%

Description:	This parameter is set by measuring the pusher length.
Setting method:	Measure from the prefeed pusher to the end of the pusher collet. Input value into HMI
Note:	This allows to accurately measure long bars.

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F3 System Function			
 F4 Demo Mode On **F5** Swiss **F6** Cont Feed Off In F1⌃ F2⌄ F3⌂	Setting unit	Range	Suggested setup
	On / Off	On / Off	Off
Description: **Demo Mode** **Setting method:** **Note:**	Sets the barfeed to demo mode. (Set collet open and bar change to on) Select to turn demo mode on or off. Not for use by end user		
 F4 Demo Mode On **F5** Swiss **F6** Cont Feed Off In F1⌃ F2⌄ F3⌂	Setting unit	Range	Suggested setup
	Sliding / Fixed	Sliding / Fixed	Sliding
Description: **Swiss** **Setting method:** **Note:**	Sets the type of lathe, **sliding headstock** or **fixed headstock**. Enter the value needed for application type. This setting basically disables the synchronization clutch when in fixed headstock mode		
 F4 Demo Mode On **F5** Swiss **F6** Cont Feed Off In F1⌃ F2⌄ F3⌂	Setting unit	Range	Suggested setup
	Off	Off	Off
Description: **Cont Feed Off**	Not used, saved for engineering testing		
 F4 Bar Loader **F6** Front Eject In F1⌃ F2⌄ F3⌂	Setting unit	Range	Suggested setup
	Bar / Roller	Bar / Roller	Bar
Description: **Bar Loader** **Roller Loader** **Setting method:** **Note:**	Special application setting Enter the value required. Roller loader is not generally used.		

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F3 System Function			
F4 Bar Loader **F6** Front Eject In F1⌃ F2⌄ F3⌂	Setting unit	Range	Suggested setup
	Front Eject/Extract	Front Eject/Extract	Extract

Description: **Front Eject** **Extraction:** **Ejection:**	Select removal method of remnant During bar change the barfeed will pull the remnant back with the pusher, the grippers will check the remnant was pulled out of the lathe spindle and drop the remnant in the catch pan. During bar change the barfeed will leave the remnant in the lathe spindle. The barfeed pusher will return and load a new bar. (The grippers will not check for the presents of the remnant). During loading of the new bar into the spindle the bar will push the previous remnant through the lathe collet and into the bottom of the lathe.

F4 MAVD W/O Collet **F5** AVD W/O Collet In F1⌃ F2⌄ F3⌂	Setting unit	Range	Suggested setup
	On / Off	On / Off	on

Description: **MAVD** **On:** **Off:**	Sets the useable modes of the moveable anti-vibration device. The movable anti -vibration will open or close along with the chuck of the lathe after the pusher collet reaches the movable anti-vibration opening parameter plus 150mm. The movable anti -vibration will open when the pusher collet reaches the movable anti-vibration device opening parameter and stay open until after the next bar change.

F4 MAVD W/O Collet **F5** AVD W/O Collet In F1⌃ F2⌄ F3⌂	Setting unit	Range	Suggested setup
	On / Off	On / Off	On

Description: **AVD** **AVD open with Collet :** **AVD Always Closed:**	AVD will open with Lathe Collet open or Stay closed the entire time. The 1st AVD & MAVD will open and close with the lathe collet. The 1st AVD & MAVD will stay closed on the material at all times.

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F3 System Function			
F4 Feed Stop Latch / F5 Do Not Feed After EOB / In F1 F2 F3	Setting unit	Range	Suggested setup
	Normal / Latch	Normal / Latch	Normal

Description: **Feed Stop Latch/Normal**	When lathe collet opens normal setting allows bar feeder to feed. When latch is set bar feeder must receive a signal from lathe when collet is open.
Setting method:	Set normal to feed when collet opens. Set latch to feed when collet is open and the lathe commands the feed stop.
Note:	

F3 System Function (cont.)			
F4 Feed Stop Latch / F5 Do Not Feed After EOB / In F1 F2 F3	Setting unit	Range	Suggested setup
	Feed / Do Not Feed	Feed / Do Not Feed	Feed

Description: **Do Not Feed After EOB**	When the end of bar signal is sent to the lathe the bar feeder will or will not feed once the lathe collet opens.
	Select feed or do not feed in the parameter.
Setting method:	
Note:	

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F4 System Function			
	Setting unit	Range	Suggested setup
	mm/In	0 - 99999	Depend on actual position
Description:	The position the pusher starts slowing down while it returns to the home position		
Setting method:			
Note:			
	Setting unit	Range	Suggested setup
	mm/In	0 - 99999	Depend on actual position
Description:	The position the pusher starts slowing down as it is feeding the bar up to the grippers.		
Setting method:			
Note:			

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7. Maintenance

7.1 Maintenance Chart

⚠️ **Warning prior to bar feeder maintenance turn off 3 phase power to the bar feeder and place the lathe into emergency stop**

⚠️ **Warning prior to pneumatic system service be sure to evacuate the system.**

Observe the following guidance

- For consistent operation of the bar feeder, please do maintenance checks regularly.
- The area around the bar feed should be kept clean to avoid safety issues.
- Using petroleum or other solvents may damage plastic components.
- Dust and or wipe down the bar feeder with a mild cleaner daily

Component	Action	Frequency Hours		
		200	1000	2500
Collet	Check wear	●		
Guide channel	Check wear and clean		●	
Feeding belt	Lubrication	●		
	Tension	●		
Air cleaner	Check	●		
Bar Feeder Oil	Replace		●	

7.1.2 Inspecting the pusher collet and revolving tip

Check that revolving tip (A) rotates smoothly and does not have excessive run out. If any problems detected the tip should be replaced.

Check that pusher collet (B) has the correct tension. The collet should press on a bar with some pressure required. The collet should be able to retain a proper length remnant. Inspect for cracks of pieces of material missing. Replace as required.

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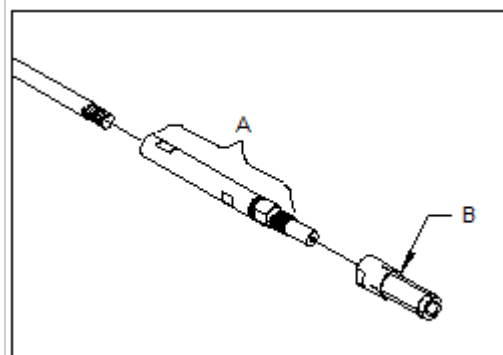
⚠️ **Warning always use proper eye protection when working with compressed air systems.**

7.1.3 Inspecting the air regulator

- Check the bottle (B) for water.
- Press button (C) to exhaust water out of bottle.

Inspect for the following

- Air leaks
- Cracks
- Oil level ok
- Secure mounting
- Proper air regulation is set

Repair any issues above
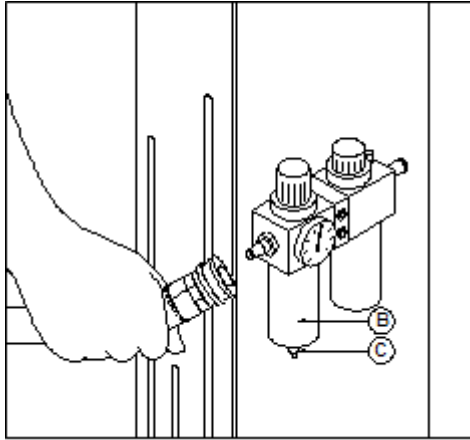
7.1.4 Pneumatic System Lubrication

The pneumatic systems incorporates a self-oiling system into the air regulator. Adjustment to the oiler is made via the adjustment ring. Set the dial position based on the oil needs for the operating strategy employed for the bar feeder. The lower the number setting the less oil will be dispensed into the system.

Verify pneumatic system oil type in section 2.3.2

7.1.5 Air Control Valves

⚠️ **Warning when servicing the air system use proper personal protective equipment.**

⚠️ **Warning only trained service technicians are to perform maintenance and service to the air system.**

⚠️ **Warning discharge the air system prior to disconnecting component air lines**

The air system valve solenoids on the Minuteman are directly controlled by the PLC. The air cylinders are lubricated via the oil reservoir attached to the air regulator assembly. The amount of oil dispersed through the system is controlled by a rotary knob atop the regulator. The normal setting is 4 but should be adjusted to match the operating conditions. Too little oil too much oil in the system could cause performance issues of the air cylinders. The higher the oil setting value the more oil will be released.

The valves are enabled with a manual release function.

✋ **Caution Do not manually actuate a valve without proper system knowledge.**

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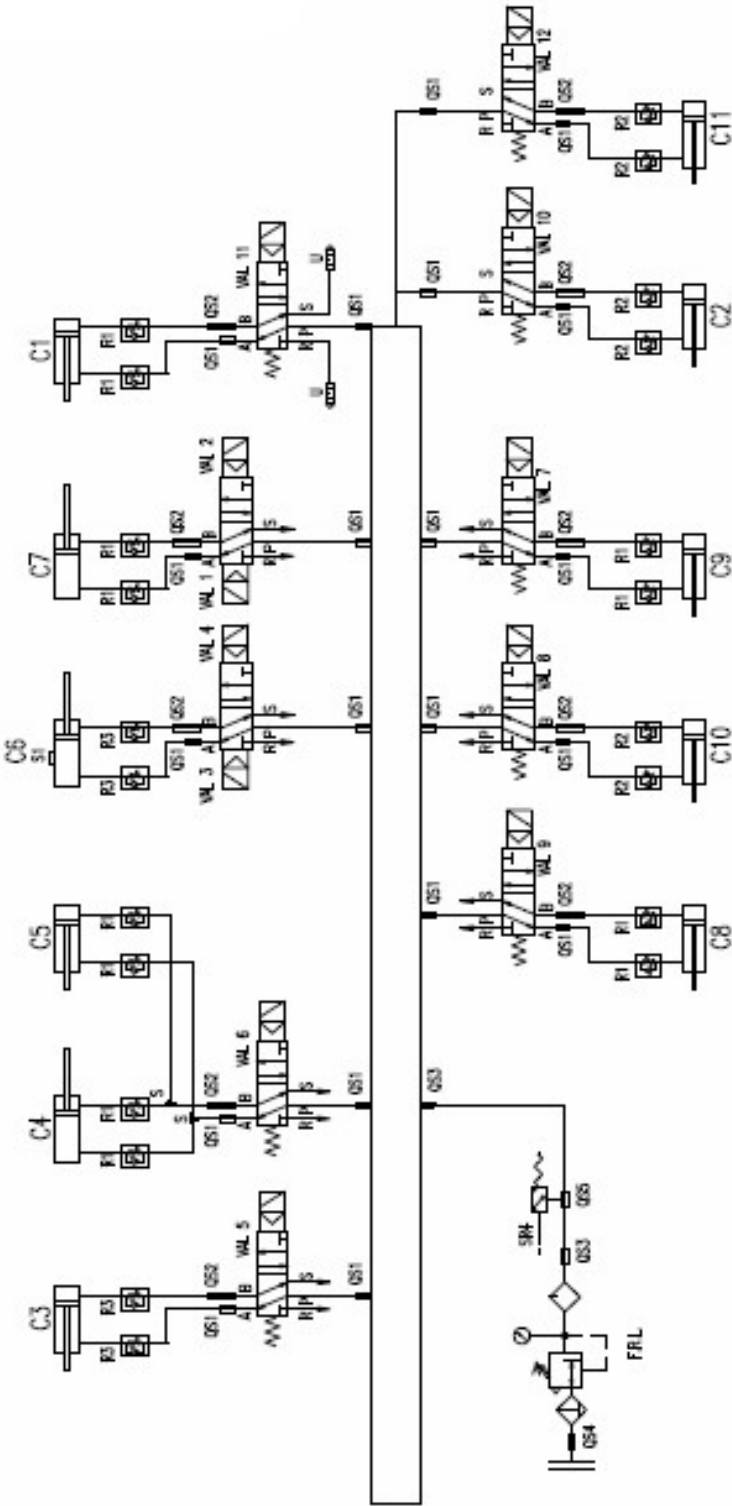
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7.2 Air Component Identification Chart

Item designation	Part NO.	Description and function		Suppliers reference	Supplier
C10	A11110200	PISTON CYLINDER	1st Guide up	MAL-CA-20×50	AIRTAC
C8			2nd Guide up		AIRTAC
C1			3rd Guide up		AIRTAC
C9	A11130100		1st anti-vibration	SDA 25×20	AIRTAC
C2			Movable anti-vibration		AIRTAC
C3	A11110601		Clamping	MAL-CA-40×75(90°)	AIRTAC
C4	A11110400		Loading	MAL-CA-40×25	AIRTAC
C5	A11110700		Cutting	MAL-CA-20×10	AIRTAC
C6	A11150200		Clamping	SC-50×50-S-CA	AIRTAC
C7	A11110300		Bar pusher	MAL-CA-25×75	AIRTAC
C11	A11132100		Cylinder	SDA 40x5	AIRTAC
VAL 8	A12120100	MECHANICALLY ACTUATED VALVE	1st Guide up	5/2 WAY VALVE	AIRTAC
VAL 9			2nd Guide up		AIRTAC
VAL 11			3rd Guide up		AIRTAC
VAL 7			1st anti-vibration		AIRTAC
VAL 10			Movable anti-vibration		AIRTAC
VAL 5			Clamping		AIRTAC
VAL 6			Loading / Cutting		AIRTAC
VAL 12			Synchronization		AIRTAC
VAL 3 / VAL 4	A12120200		Clamping in / Clamping out		AIRTAC
VAL 1 / VAL 2			Bar pusher rise / Bar pusher down		AIRTAC
R1	A12130100	FLOW REGULATOR		JSC 6-01 ⅛" ,Ø6	AIRTAC
R2	A12130300			JSC 6-M5 M5,Ø6	AIRTAC
R3	A12130400			JSC 6-02 ¼" ,Ø6	AIRTAC
S1	A12140100	SENSOR		CS1-U	AIRTAC
QS1	A13120500	QUICK JOINT		SPL 8-02 ¼" ,Ø8	AIRTAC
QS2	A13120400			SPLL 6-02 ¼" ,Ø6	AIRTAC
QS3	A13120500			SPL 8-02 ¼" ,Ø8	AIRTAC
QS4	A13110301	QUICK COVPLER		APM-20	AIRTAC
QS5	A15140200	JOINT		¼"	AIRTAC

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8. Troubleshooting

✋ **Caution troubleshooting and diagnosis of the bar feeder must be carried out by a trained and qualified technician. Contact Edge Technologies if a qualified technician is unavailable.**

The PLC monitors various systems with in the bar feeder. When problems are detected with in this system an alarm code will be displayed on the HMI. The following pages will list the alarm number, the name of the alarm and the possible causes of the alarm.

8.1 Troubleshooting Chart

ITEM	Cause	Solution
Unable to start the bar Feeder.	Without power.	Check the power source.
	In emergency.	Restart.
The bar feeder is reset but the bar feeder can't auto to start.	The lathe is sending signal.	Check the connection.
Air devices are not functioning	Compressed air is not present.	Check the air supply.

Situation	Cause	Solution
Material not loading into channel	The material position plates are too low.	Adjust the material position plates.
	Material lift plates missing bar when raising.	Increase bar diameter setting on magazine.

Situation	Cause	Solution
Material is unable to be inserted into the bar feeder collet	The adjustment of the clamp device is not correct.	Re-adjust.
	The diameter of the collet and material are different.	Change to correct collet size.
	The end of the material is too rough.	Chamfering before loading material.
	The air pressure is without chamfer.	Check the pressure.

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Material feeding failure

Situation	Cause	Solution
Material can't feed into the spindle smoothly	The center of the bar feeder and the lathe isn't correct	Re-adjust the alignment
Material can't feed into the chuck of the lathe smoothly	The front of the material is too rough.	Chamfering before loading material.

When diagnosing an issue following a plan of action proves to be the most effective process. Using the 6 step diagnostic process is helpful in reducing down time and repair time.

The six steps of troubleshooting.
1. Identify the problem.
2. Establish a theory of probable cause.
3. Test probable cause theory to determine actual cause.
4. Establish an action plan and execute the plan.
5. Verify full system functionality.
6. Document the process.

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Alarm NO.	ERROR / CAUSE	CURE
Alarm01	Pusher cannot return to home during bar change	Check for pusher obstruction. Adjust home return speed.
Alarm02	Long feed safety	Pusher moved further than set value with collet open, check parameter, check lathe collet.
Alarm03	Short feed safety	Pusher moved less than set value when collet closed, check parameter, check lathe collet.
Alarm04	Collet closed during bar change	Then collet open signal was lost to barfeed during automatic bar change. Check lathe program, check wiring to and in barfeed.
Alarm05	No remnant	Check tension of collet on material. Check gripper tension. Check gripper switch
Alarm06	Lathe Alarm	Lathe alarm was sent to barfeed, check E-stop on lathe
Alarm07	Remnant detected after extraction	Remnant did not drop in barfeed, check pusher collet tension, check gripper switch
Alarm08	Pusher up time out	Channel could not open, check switch LS3 , check air pressure.
Alarm09	Pusher down time out	Channel could not close, check switch LS4 , check air pressure. Check for obstruction in channel
Alarm10	Facing flag proximity switch not present	Check switch SR2, Check input to PLC
Alarm11	First feeding timeout	Check parameter of first feeding speed, check for material obstruction.
Alarm12	No new bar present	Material did not load into channel, gripper switch did not detect bar, gripper switch not working.
Alarm13	First feeding return time timeout	Pusher did not return in time during first feeding return, check for obstruction, check air pressure.
Alarm14	Pusher collet introduction onto bar timeout	Check collet to small for material O.D., material O.D. to large, No chamfer on material, Check switch SR1, check air pressure.

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Alarm NO.	ERROR / CAUSE	CURE
Alarm15	Material is too short.	Material length is too short to load automatically
Alarm16	Barfeed cannot reach facing position	Check material for burr or chamfer, check the value of facing position.
Alarm17	Lathe failed to start after cycle start	Check lathe wiring for receiving of cycle start signal
Alarm18	LS3 and LS4 on at the same time	Check position of LS3 and LS4
Alarm19	LS2 and SR1 on at the same time	Check position of LS2 and SR1
Alarm20	Collet close timeout	Lathe collet close longer that set parameter timer
Alarm21	Servo alarm	Check the alarm No. on LCD display of servo. Reset with power down of barfeed by 3 phase switch for 5 sec.
Alarm22	Barfeed not in auto when lathe is running	After lathe collet opens and close 3 times with the barfeed in manual alarm will occur.
Alarm23	Oil pump overloads tripped	Reset overloads, check for oil in tank, check electrical connections.
Alarm24	Program has mistake	Program downloaded incorrectly, download again.
Alarm25	Hood not closed during bar change.	Hood must be closed during bar change, check hood safety switch.
Alarm26	Collet open timeout	Lathe collet open longer that set parameter timer.
Alarm27	Synchronization device disengaged at pusher zero position	Pusher within 20mm of zero with sync engaged (lathe collet closed). Move pusher past 20mm and close collet.
Alarm28	Cannot jog pusher with collet closed	Synchronization device engaged. Open lathe collet to jog barfeed pusher manually
Alarm29	Air pressure low	Increase air pressure.
Alarm 30	Pendant E-Stop pressed	Release pendant E-Stop
Alarm 91	Pusher Forced Backwards While Chuck Open	Check for lathe turret movement into bar.
Alarm 92	Pecking Cycles Exceeded	Check for obstruction to bar end insertion points.
Alarm 93	Home Sensor on when starting homeing routine	Move the carriage away from the home sensor at least 12 inches.

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Alarm 94	Cannot Go Into Auto While The Collet is Open	Close the lathe collet
Alarm 95	Hood Not closed while Operating Channel	Close the hood
Alarm 96	Hood Not Closed During Insertion or Extraction	Close the hood
Alarm 97	Hood not closed During Gripper Actuation	Close the hood
Alarm 98	Hood Not closed During Bar Load	Close the hood
Alarm 99	Movement Detected During Collet Open	Bar feeder detected stock movement beyond pushback distance
Alarm 100	Bar Jammed	Remove bar following bar removal procedure. Check for obstruction in bar path.
Alarm 101	Channel Must Be Open To Enter Auto	Open the channel
Alarm 102	Bar Detected By Front Proximity	Bar detected
Alarm103	Extraction Failure	Check for pusher collet condition
Alarm104	Extraction Failure	Check for pusher collet condition

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Description of alarm 21:

⚠️ **Warning** Before wiring and inspections, turn off the power and wait for 15 minutes or more until the charge lamp turns off. Otherwise, an electric shock may occur. In addition, when confirming whether the charge lamp is off or not, always confirm it from the front of the servo amplifier.

⚠️ **Warning** Any person who is involved in wiring and inspection should be fully competent to do the work.

Alarm 21 directs the troubleshooter to the servo drive module. The Servo drive will display the internal alarm that is set. The following list reflects the alarms available with the servo drive. The list is just to guide the operator through basic troubleshooting. Only factor trained technicians should attempt to diagnose internal problems. Contact Edge Technologies for further troubleshooting.

Display	Name	Definition	Cause	Action
AL.10	Undervoltage	Power supply voltage dropped. MR-J2S-□A: 160VAC or less MR-J2S-□A1: 83VAC or less	1. Power supply voltage is low. 2. There was an instantaneous control power failure of 60ms or longer. 3. Shortage of power supply capacity caused the power supply voltage to drop at start, etc. 4. The bus voltage dropped to 200VDC.	Review the power supply.
			5. Faulty parts in the servo amplifier ⸻ Checking method ⸻ Alarm (AL.10) occurs if power is switched on after disconnection of all cables but the control circuit power supply cables.	Change the servo amplifier.
AL.12	Memory error 1	RAM, memory fault	Faulty parts in the servo amplifier	Change the servo amplifier.
AL.13	Clock error	Printed board fault	⸻ Checking method ⸻ Alarm (any of AL.11 and AL.13) occurs if power is switched on after disconnection of all cables but the control circuit power supply cables.	

Display	Name	Definition	Cause	Action
AL.15	Memory error 2	EEP-ROM fault	1. Faulty parts in the servo amplifier ┌─ Checking method ─┐ Alarm (AL.15) occurs if power is switched on after disconnection of all cables but the control circuit power supply cables. └────────┘	Change the servo amplifier.
			2. The number of write times to EEP-ROM exceeded 100,000.	
AL.16	Encoder error 1	Communication error occurred between encoder and servo amplifier.	1. Encoder connector (CN2) disconnected.	Connect correctly.
			2. Encoder fault	Change the servo motor.
			3. Encoder cable faulty (Wire breakage or shorted)	Repair or change cable.
AL.17	Board error 2	CPU/parts fault	1. Faulty parts in the servo amplifier. ┌─ Checking method ─┐ Alarm (AL.17) occurs if power is switched on after disconnection of all cable but the control circuit power supply cable. └────────┘	Change the servo amplifier.
		The output terminals U, V, W of the servo amplifier and the input terminals U, V, W of the servo motor are not connected.	2. The wiring of U, V, W is disconnected or not connected.	Correctly connect the output terminals U, V, W of the servo amplifier and the input terminals U, V, W of the servo motor.
AL.19	Memory error 3	ROM memory fault	Faulty parts in the servo amplifier. ┌─ Checking method ─┐ Alarm (AL.19) occurs if power is switched on after disconnection of all cable but the control circuit power supply cable. └────────┘	Change the servo amplifier.
AL.1A	Motor combination error	Wrong combination of servo anplifier and servo motor.	Wrong combination of servo amplifier and servo motor connected.	Use correct combination.
AL.20	Encoder error 2	Communication error occurred between encoder and servo amplifier.	1. Encoder connector (CN2) disconnected.	Connect correctly.
			2. Encoder cable faulty (Wire breakage or shorted)	Repair or change the cable.
			3. Encoder fault	Change the servo motor.
AL.24	Main circuit error	Ground fault occurred at the servo motor outputs (U,V and W phases) of the servo amplififer.	1. Power input wires and servo motor output wires are in contact at main circuit terminal block (TE1).	Connect correctly.
			2. Sheathes of servo motor power cables deteriorated, resulting in ground fault.	Change the cable.
			3. Main circuit of servo amplifier failed. ┌─ Checking method ─┐ AL.24 occurs if the servo is switched on after disconnecting the U, V, W power cables from the servo amplifier. └────────┘	Change the servo amplifier.

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Display	Name	Definition	Cause	Action
AL.25	Absolute position erase	Absolute position data in error	1. Reduced voltage of super capacitor in encoder	After leaving the alarm occurring for a few minutes, switch power off, then on again. Always make home position setting again.
			2. Battery voltage low	Change battery.
			3. Battery cable or battery is faulty.	Always make home position setting again.
		Power was switched on for the first time in the absolute position detection system.	4. Super capacitor of the absolute position encoder is not charged	After leaving the alarm occurring for a few minutes, switch power off, then on again. Always make home position setting again.
AL.30	Regenerative alarm	Permissible regenerative power of the built-in regenerative brake resistor or regenerative brake option is exceeded.	1. Wrong setting of parameter No. 0	Set correctly.
			2. Built-in regenerative brake resistor or regenerative brake option is not connected.	Connect correctly
			3. High-duty operation or continuous regenerative operation caused the permissible regenerative power of the regenerative brake option to be exceeded. ┌─ Checking method ─┐ Call the status display and check the regenerative load ratio.	1. Reduce the frequency of positioning. 2. Use the regenerative brake option of larger capacity. 3. Reduce the load.
			4. Power supply voltage is abnormal. MR-J2S-□A:260VAC or more MR-J2S-□A1:135VAC or more	Review power supply
			5. Built-in regenerative brake resistor or regenerative brake option faulty.	Change servo amplifier or regenerative brake option.
		Regenerative transistor fault	6. Regenerative transistor faulty. ┌─ Checking method ─┐ 1) The regenerative brake option has overheated abnormally. 2) The alarm occurs even after removal of the built-in regenerative brake resistor or regenerative brake option.	Change the servo amplifier.
AL.31	Overspeed	Speed has exceeded the instantaneous permissible speed.	1. Input command pulse frequency exceeded the permissible instantaneous speed frequency.	Set command pulses correctly.
			2. Small acceleration/deceleration time constant caused overshoot to be large.	Increase acceleration/deceleration time constant.
			3. Servo system is instable to cause overshoot.	1. Re-set servo gain to proper value. 2. If servo gain cannot be set to proper value: 1) Reduce load inertia moment ratio; or 2) Reexamine acceleration/deceleration time constant.
			4. Electronic gear ratio is large (parameters No. 3, 4)	Set correctly.
			5. Encoder faulty.	Change the servo motor.

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Display	Name	Definition	Cause	Action
AL.32	Overcurrent	Current that flew is higher than the permissible current of the servo amplifier.	1. Short occurred in servo amplifier output phases U, V and W.	Correct the wiring.
			2. Transistor (IPM) of the servo amplifier faulty. ┌─ Checking method ─┐ Alarm (AL.32) occurs if power is switched on after U,V and W are disconnected.	Change the servo amplifier.
			3. Ground fault occurred in servo amplifier output phases U, V and W.	Correct the wiring.
			4. External noise caused the overcurrent detection circuit to misoperate.	Take noise suppression measures.
		Current higher than the permissible current flew in the regenerative brake transistor. (MR-J2S-500A only)	5. Improper wiring of the regenerative brake option.	Wire the regenerative brake option correctly.
AL.33	Overvoltage	Converter bus voltage exceeded 400VDC.	1. Regenerative brake option is not used.	Use the regenerative brake option.
			2. Though the regenerative brake option is used, the parameter No. 0 setting is " 00 □□ (not used)".	Make correct setting.
			3. Lead of built-in regenerative brake resistor or regenerative brake option is open or disconnected.	1. Change lead. 2. Connect correctly.
			4. Regenerative transistor faulty.	Change servo amplifier
			5. Wire breakage of built-in regenerative brake resistor or regenerative brake option	1. For wire breakage of built-in regenerative brake resistor, change servo amplifier. 2. For wire breakage of regenerative brake option, change regenerative brake option.
			6. Capacity of built-in regenerative brake resistor or regenerative brake option is insufficient.	Add regenerative brake option or increase capacity.
			7. Power supply voltage high.	Review the power supply.
			8. Ground fault occurred in servo amplifier output phases U, V and W.	Correct the wiring.
AL.35	Command pulse frequency error	Input pulse frequency of the command pulse is too high.	1. Pulse frequency of the command pulse is too high.	Change the command pulse frequency to a proper value.
			2. Noise entered command pulses.	Take action against noise.
			3. Command device failure	Change the command device.
AL.37	Parameter error	Parameter setting is wrong.	1. Servo amplifier fault caused the parameter setting to be rewritten.	Change the servo amplifier.
			2. Regenerative brake option not used with servo amplifier was selected in parameter No.0.	Set parameter No.0 correctly.
			3. The number of write times to EEP-ROM exceeded 100,000 due to parameter write, etc.	Change the servo amplifier.
			4. The alarm code output (parameter No. 49) was set by the absolute position detection system.	The absolute position detection system and the alarm code output function are exclusive. Set as either one of the two is used.
			5. The alarm code output (parameter No.49) was set with the electromagnetic brake interlock (MBR) assigned to pin CN1B-19.	The signal assignment function of the electromagnetic interlock (MBR) to pin CN1B-19 and the alarm code output function are exclusive. Set as either one of the two is used.

Display	Name	Definition	Cause	Action
AL.45	Main circuit device overheat	Main circuit device overheat	1. Servo amplifier faulty.	Change the servo amplifier.
			2. The power supply was turned on and off continuously by overloaded status.	The drive method is reviewed.
			3. Air cooling fan of servo amplifier stops.	1. Exchange the cooling fan or the servo amplifier. 2. Reduce ambient temperature.
AL.46	Servo motor overheat	Servo motor temperature rise actuated the thermal sensor.	1. Ambient temperature of servo motor is over 40°C (104°F).	Review environment so that ambient temperature is 0 to 40°C (104°F).
			2. Servo motor is overloaded.	1. Reduce load. 2. Review operation pattern. 3. Use servo motor that provides larger output.
			3. Thermal sensor in encoder is faulty.	Change servo motor.
AL.50	Overload 1	Load exceeded overload protection characteristic of servo amplifier.	1. Servo amplifier is used in excess of its continuous output current.	1. Reduce load. 2. Review operation pattern. 3. Use servo motor that provides larger output.
			2. Servo system is instable and hunting.	1. Repeat acceleration/deceleration to execute auto tuning. 2. Change auto tuning response setting. 3. Set auto tuning to OFF and make gain adjustment manually.
			3. Machine struck something.	1. Review operation pattern. 2. Install limit switches.
			4. Wrong connection of servo motor. Servo amplifier's output terminals U, V, W do not match servo motor's input terminals U, V, W.	Connect correctly.
			5. Encoder faulty. ─ Checking method ─ When the servo motor shaft is rotated with the servo off, the cumulative feedback pulses do not vary in proportion to the rotary angle of the shaft but the indication skips or returns midway.	Change the servo motor.
AL.51	Overload 2	Machine collision or the like caused max. output current to flow successively for several seconds. Servo motor locked: 1s or more During rotation: 2.5s or more	1. Machine struck something.	1. Review operation pattern. 2. Install limit switches.
			2. Wrong connection of servo motor. Servo amplifier's output terminals U, V, W do not match servo motor's input terminals U, V, W.	Connect correctly.
			3. Servo system is instable and hunting.	1. Repeat acceleration/deceleration to execute auto tuning. 2. Change auto tuning response setting. 3. Set auto tuning to OFF and make gain adjustment manually.
			4. Encoder faulty. ─ Checking method ─ When the servo motor shaft is rotated with the servo off, the cumulative feedback pulses do not vary in proportion to the rotary angle of the shaft but the indication skips or returns midway.	Change the servo motor.

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Display	Name	Definition	Cause	Action
AL.52	Error excessive (Note)	The difference between the model position and the actual servomotor position exceeds 2.5 rotations. (Refer to the function block diagram in Section 1.2.)	1. Acceleration/deceleration time constant is too small.	Increase the acceleration/deceleration time constant.
			2. Torque limit value (parameter No.28) is too small.	Increase the torque limit value.
			3. Motor cannot be started due to torque shortage caused by power supply voltage drop.	1. Review the power supply capacity. 2. Use servo motor which provides larger output.
			4. Position control gain 1 (parameter No.6) value is small.	Increase set value and adjust to ensure proper operation.
			5. Servo motor shaft was rotated by external force.	1. When torque is limited, increase the limit value. 2. Reduce load. 3. Use servo motor that provides larger output.
			6. Machine struck something.	1. Review operation pattern. 2. Install limit switches.
			7. Encoder faulty	Change the servo motor.
			8. Wrong connection of servo motor. Servo amplifier's output terminals U, V, W do not match servo motor's input terminals U, V, W.	Connect correctly.
AL.8A	Serial communication time-out error	RS-232C or RS-422 communication stopped for longer than the time set in parameter No.56.	1. Communication cable breakage.	Repair or change communication cable
			2. Communication cycle longer than parameter No. 56 setting.	Set correct value in parameter.
			3. Wrong protocol.	Correct protocol.
AL.8E	Serial communication error	Serial communication error occurred between servo amplifier and communication device (e.g. personal computer).	1. Communication cable fault (Open cable or short circuit)	Repair or change the cable.
			2. Communication device (e.g. personal computer) faulty	Change the communication device (e.g. personal computer).
88888	Watchdog	CPU, parts faulty	Fault of parts in servo amplifier. Checking method — Alarm (88888) occurs if power is switched on after disconnection of all cables but the control circuit power supply cable.	Change servo amplifier.

MINUTEMAN 320
MM320 MR-JE-40A Servo Configuration

⚠ **Warning do not make changes to drive setting different than the list below. Doing so will cause failure to drive and/or servo.**

⚠ **Warning use the parameter settings for the specific drive. Using the wrong drive values will cause damage.**

The MR-JE-40A servo drive is the latest drive in the C320. Older units will contain the MR-E 40AG. Verify on the drive the version you have

The following settings are the standard settings for the Minuteman drive. If a drive must be replaced and the values could not be retrieved from the old drive, use the settings below.

Change or view parameters
1. Power on bar feeder clear any alarms
2. Press mode until desired parameter list is shown, example would be PA01.
3. Use the up and down arrows to toggle between parameters.
4. Press set to view programed value.
5. To change the value press set again and the character will flash.
6. Use the up and down arrows to change values.
7. Press set once more to keep value.
8. Use the up and down arrows to toggle through the parameter list.

MINUTEMAN 320

MM320 MR-JE-40A Servo Drive Settings

PA		PB		PB		PC		PC			PD		PD	
PA01	1004	PB01	0000	PB43	0000	PC01	150	PC43	0		PD01	0C00	PD43	0000
PA02	0000	PB02	0000	PB44	0.00	PC02	0	PC44	0000		PD02	0000	PD44	0000
PA03	0000	PB03	0	PB45	0000	PC03	500	PC45	0000		PD03	0202	PD45	0000
PA04	2000	PB04	0	PB46	4500	PC04	0	PC46	0		PD04	0002	PD46	0000
PA05	0000	PB05	500	PB47	0000	PC05	45	PC47	0		PD05	0000	PD47	0000
PA06	1	PB06	7.00	PB48	4500	PC06	600	PC48	0		PD06	0000	PD48	0000
PA07	1	PB07	15	PB49	0000	PC07	1000	PC49	0		PD07	0000		
PA08	0001	PB08	37.0	PB50	4500	PC08	200	PC50	0000		PD08	0000		
PA09	16	PB09	823	PB51	0000	PC09	300	PC51	100		PD09	0000		
PA10	100	PB10	33.7	PB52	100.0	PC10	500	PC52	0		PD10	0000		
PA11	100.0	PB11	980	PB53	100.0	PC11	800	PC53	0		PD11	0803		
PA12	100.0	PB12	0	PB54	0.00	PC12	700	PC54	0		PD12	0008		
PA13	100	PB13	4500	PB55	0.00	PC13	100.0	PC55	0		PD13	0706		
PA14	1	PB14	0000	PB56	0.0	PC14	0000	PC56	100		PD14	0007		
PA15	300	PB15	4500	PB57	0.0	PC15	0001	PC57	0000		PD15	0000		
PA16	1	PB16	0000	PB58	0.00	PC16	0	PC58	0		PD16	0000		
PA17	0000	PB17	0103	PB59	0.00	PC17	50	PC59	0000		PD17	200A		
PA18	0000	PB18	18000	PB60	0.0	PC18	0000	PC60	0000		PD18	0020		
PA19	000C	PB19	100.0	PB61	0.0	PC19	0000	PC61	0000		PD19	2106		
PA20	0000	PB20	100.0	PB62	0000	PC20	0	PC62	0000		PD20	0021		
PA21	0001	PB21	0.00	PB63	0000	PC21	0000	PC63	0000		PD21	0000		
PA22	0000	PB22	0.00	PB64	0000	PC22	0020	PC64	0000		PD22	0000		
PA23	0000	PB23	0100			PC23	0000	PC65	0000		PD23	0000		
PA24	0000	PB24	0000			PC24	0000	PC66	0000		PD24	000C		
PA25	0	PB25	0000			PC25	0000	PC67	0000		PD25	0004		
PA26	0000	PB26	0000			PC26	0000	PC68	0000		PD26	0000		
PA27	0000	PB27	10			PC27	0000	PC69	0000		PD27	0003		
PA28	0000	PB28	1			PC28	0000	PC70	0000		PD28	0002		
PA29	0000	PB29	7.00			PC29	0000	PC71	0000		PD29	0004		
PA30	0000	PB30	0.0			PC30	0	PC72	0000		PD30	0000		
PA31	0000	PB31	0			PC31	0	PC73	0		PD31	0000		
PA32	0000	PB32	0.0			PC32	1	PC74	0000		PD32	0000		
		PB33	0.0			PC33	1	PC75	0000		PD33	0000		
		PB34	0.0			PC34	1	PC76	0000		PD34	0000		
		PB35	0.00			PC35	100.0	PC77	0000		PD35	0000		
		PB36	0.00			PC36	0000	PC78	0000		PD36	0000		
		PB37	1600			PC37	51	PC79	0000		PD37	0000		
		PB38	0.00			PC38	0	PC80	0000		PD38	0		
		PB39	0.00			PC39	0				PD39	0		
		PB40	0.00			PC40	0				PD40	0		
		PB41	0000			PC41	0				PD41	0000		
		PB42	0000			PC42	0				PD42	0000		

EDGE ○○○
TECHNOLOGIES

REV 13.1:2020

MINUTEMAN 320

MM320 MR-E 40AG Servo Configuration

⚠️ **Warning do not make changes to drive setting different than the list below. Doing so will cause failure to drive and/or servo.**

⚠️ **Warning use the parameter settings for the specific drive. Using the wrong drive values will cause damage.**

The MR-JE-40A servo drive is the latest drive in the C320. Older units will contain the MR-E 40AG. Verify on the drive the version you have

The following settings are the standard settings for the older Minuteman drive. If a drive must be replaced and the values could not be retrieved from the old drive, use the settings below.

Parameter #	Current Setting	Parameter #	Current Setting		Parameter #	Current Setting
0	2.002	20	0000		54	0000
1	0002	21	0000		55	0000
2	0105	22	0000		56	0000
3	1	23	0000		57	10
4	1	24	50		58	0000
5	100	25	700		59	0000
6	35	26	80		60	0000
7	3	27	300		61	70
8	30	28	100		62	100
9	400	29	0000		63	100
10	1000	30	0000		64	100
11	150	31	0000		65	0000
12	0	32	0000		66	10
13	500	33	100		67	1
14	0	34	176		68	0000
15	0	35	31		69	1
16	0000	36	155		70	1
17	0100	37	1615		71	1
18	0	38	56		72	200
19	E (write enabled)	39	980		73	300
		40	0000		74	500
		41	0110		75	800
		42	0002		76	100
		43	0111		77	100
		44	0882		78	10000
		45	0995		79	10
		46	0660		80	10
		47	0770		81	100
		48	0403		82	100
		49	0000		83	100
					84	0000

EDGE TECHNOLOGIES ○○○

MINUTEMAN 320

Description of Alarm 23

⚠ **Warning do not change overload amperage settings with power on to the bar feeder.**

⚠ **Warning reset the overload when power is removed.**

Oil pump overload

In normal operation identification window is blue. The identification window will show "T" up when overload is tripped. Check whether enough oil is in the oil tank or if pump has malfunctioned. If ok, press the "Reset" button at the right corner, the identification window will return to blue.

The current setting may be adjusted as well. Rotate the amperage pot to the desired value.

MINUTEMAN 320
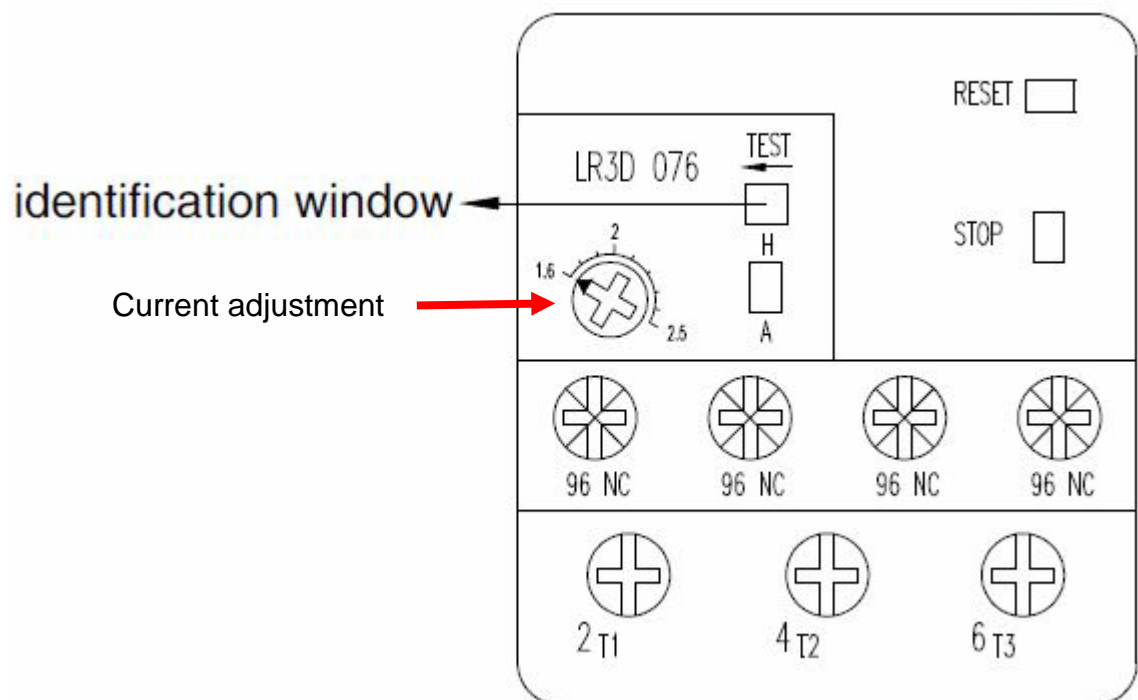
Resetting Emergency Stop Safety interlocks (ESSI)

⚠️ **Caution the emergency stop switches must be set correctly to keep lathe and bar feeder from crashing together.**

⚠️ **Caution all covers must be in place once adjustments have been made**.

⚠️ **Caution the reset procedure requires proper training to do so.**

In the event of operating the lathe headstock and bar feed outside the intended design envelop, will cause a bar feed safety interlock to engage. Follow the instructions below to reset the condition. This is usually caused by attempting to jog the headstock into the opposite mode of the bar feed position. Example lathe and bar feed in Swiss mode and operator attempts to move head stock into Chucker mode. This will cause the Emergency Stop Safety to engage on the sync rod assembly.

Resetting Emergency Stop Safety interlocks (ESSI)

In the event of operation of lathe and bar feed outside of the intended design envelops causes a bar feed safety interlock to engage follow the instructions below to reset the condition. This is usually caused by attempting to jog the headstock into the opposite mode of the bar feed. Example lathe and bar feed in GB mode and operator attempts to move head stock into NGB mode. This will cause the Emergency Stop Safety to engage on the sync rod assembly.

1. Identify the current bar feed and lathe mode of operation, NGB or GB
2. Remove bolt from bar feed sync rod.
3. Loosen locking nut at threaded rod and sync rod bracket and allow swinging out from the sync rod.
4. Loosen telescoping nose retaining clamp at MAVD or headstock adaptor and fully collapse nose.
5. Be sure sync rod or telescoping nose will not make contact with headstock
6. Move sync rod away from end of stroke. Bar feed Emergency Stop Interlock should now be inactive.
7. Verify release by pressing green start button on bar feed.
8. Move head stock to appropriate mode based on bar feed mode.
9. Reinstall telescoping nose.
10. Reinstall sync rod bolt and tighten threaded rod nuts
11. Verify proper operation.

NO.	PART NO.	CODE	NAME
1.	J2210021	SM	Servo Motor
2.	J310413	LS2	Clamp oue sense
3.	J310413	LS1	Orgin sense
4.	A1214O100	SR1	Clamp in sense
5.	J310409	LS4	Clamp in sense
6.	J310409	LS3	Bar pusher down sense
7.	J310403	LS5	Clamp rise sense
8.	P7620200	M	Oil pump
9.	J310701	PB1	Emergency stop
10.	J210502	HMI	Human/machine interface
11.	J310502	CSI	Power switch
12.		RCB	Remote Control
13.	J310361	SR2	Cutting sense
14.	P43201000	CL	Synchronization
15.	J311801	LS6	Safety switch
16.	J630110	TL	Indicator light
17.	J310409	ASI	AXIAL SENSE SENSOR
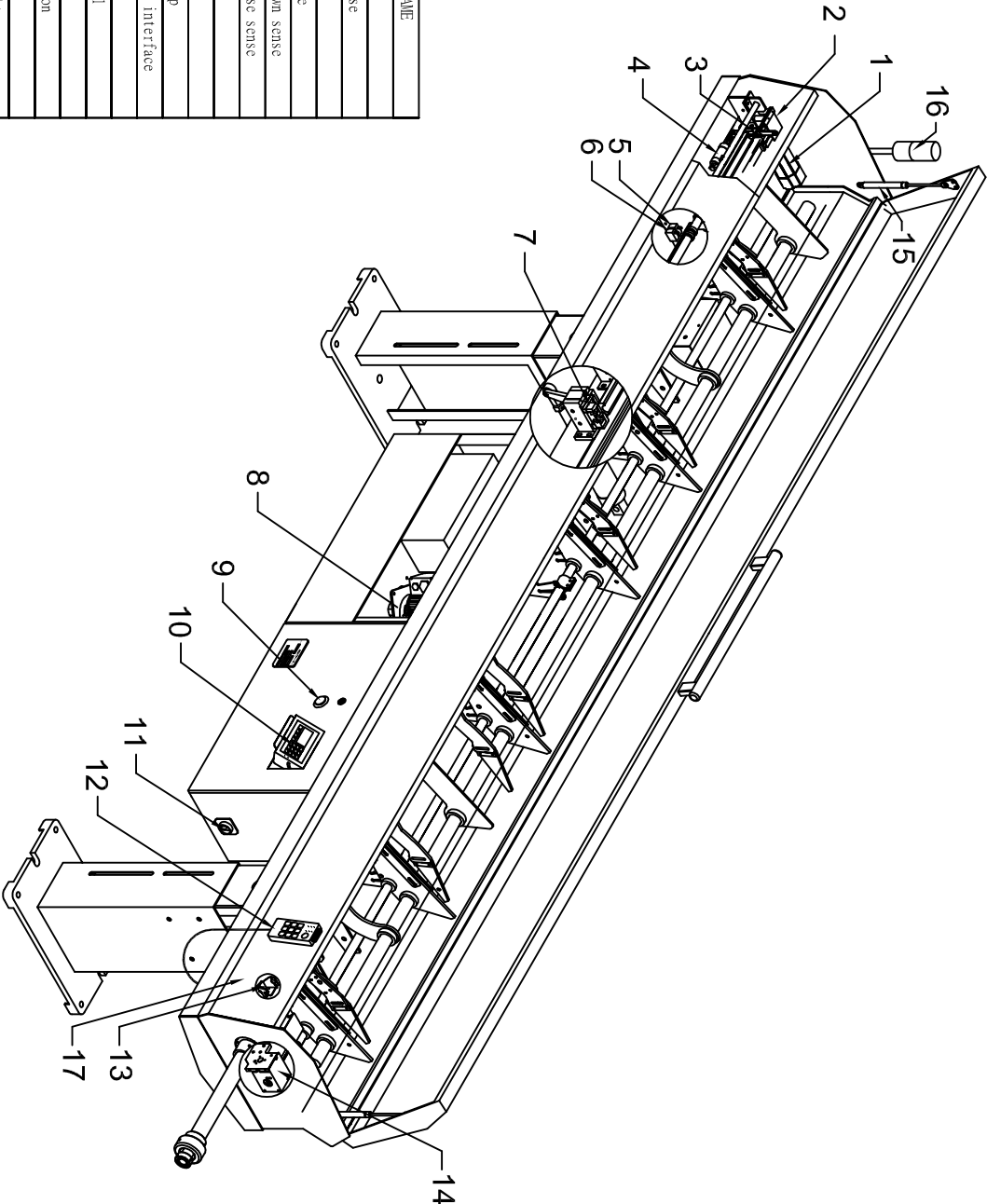
D	BAR FEEDER TYPE	MINUTEMAN 320
	LATHE NAME	
	LATHE TYPE	

DRAWN BY	Seven	
FIRST DATE	2011/01/24	
REVISION DATE	2020/09/15	
CHECKED BY		
MAIN VOLTAGE	220 VAC 3-PHASE	
SIGNAL VOLTAGE	24VDC	
DESCRIPTION	Machine electricity position	
DRAWING NO.	JV-EDGE HL(MIX)-EG	
PAGE	P. 01	
VERSION	G0	

EDGE TECHNOLOGIES
A DIVISION OF HYDROMAT INC

EDGE TECHNOLOGIES
A DIVISION OF HYDROMAT INC

Parts list
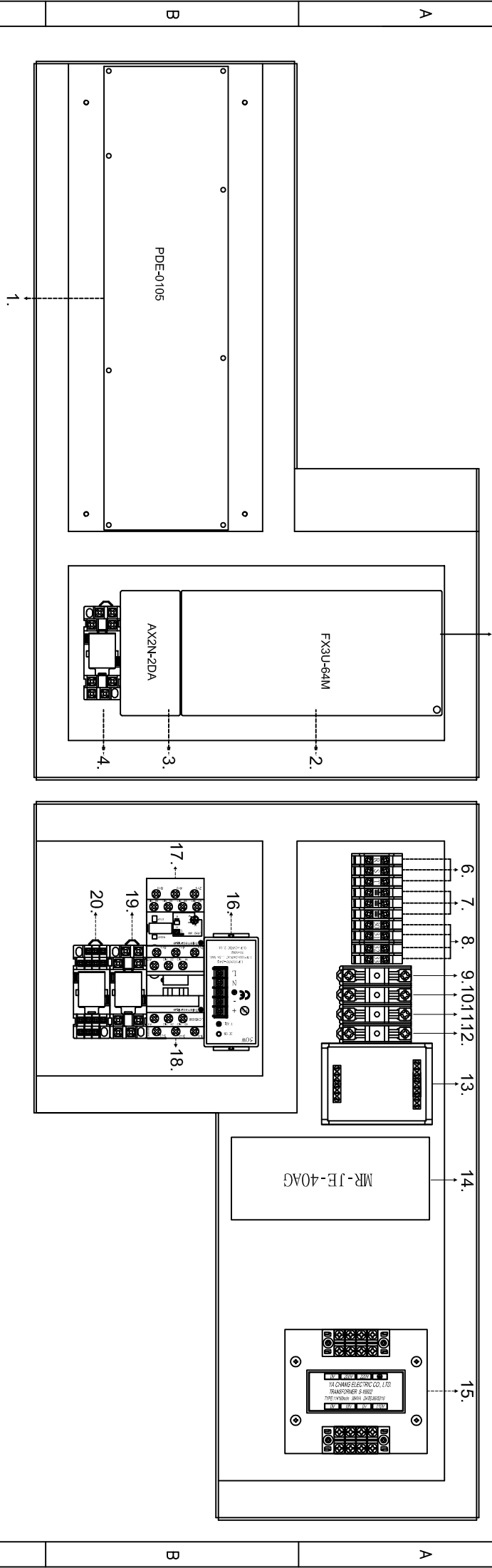
NO.	PART NO.	CODE	NAME
1.	J511100	PCB1	Interface circuit board
2.	I210800	PLC	PROGRAMMABLE LOGIC CONTROLLER
3.	I220200	2DA	Analogy signal module
4.	J310206	R9	Relay
5.	I210508	Cable	PLC to HMI cable
6.	I610301	TB	3φ 220V terminal block
7.	I610301	TB	Earth terminal block
8.	I610301	TB	Signal terminal block
9.	J620103	f1	Power Fuse

NO.	PART NO.	CODE	NAME
10.	J312000	F5	Fuse Socket
11.	J620103	F6	Power Fuse
12.	J620102	F4	Power Fuse
13.	J224106	PCB2	Pulse change device
14.	J221021	SERVO	Servo motor driver
15.	J110100	CN1	Cable
16.	J250101	TR	Transformer
17.	J313100	Pr	Power supply
		O.L.	Over current relay

NO.	PART NO.	CODE	NAME
18.	J312702	MC1	Magnetic contactor
19.	J310206	R7	Relay Socket
	J310203		Relay Socket
20.	J310211	R8	Relay Socket
	J310205		Relay

Drawing labels: PDE-0105, FX3U-64M, AX2N-2DA, MR-JE-40AG, YA CHANG ELECTRIC CO., LTD. TRANSFORMER S-16002

Title block

Field	Value
BAR FEEDER TYPE	MINUTEMAN 320
LATHE NAME	
LATHE TYPE	
DRAWN BY	Seven
FIRST DATE	2011/01/24
CHECKED BY	
REVISION DATE	2020/09/15
MAIN VOLTAGE	220 VAC 3-PHASE
SIGNAL VOLTAGE	24VDC
DESCRIPTION	Distribution of Electric parts
DRAWING NO.	JV-EDGE HL(MIX)-EG
PAGE	P.02
VERSION	G0

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EDGE
TECHNOLOGIES
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PCB3 SIZE

117mm

75mm

45mm

35mm

PGE0205

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NO.	PART NO.	CODE	NAME
01	A12120100	VAL5	Clamping
02	A12120100	VAL6	Loading
03	A12120100	VAL3	Clamping in
04	A12120200	VAL4	Clamping out
05	A12120200	VAL1	Bar pusher rise
06	A12120200	VAL2	Bar pusher down
07	A12120100	VAL9	3rd anti-vibration
08	A12120100	VAL7	2nd anti-vibration
09	A12120100	VAL8	1st anti-vibration
10	A12120100	VAL11	4th anti-vibration (OPTION)
11	A12120100	VAL10	Movable anti-vibration

(PV1)

VAL5	VAL6	VAL3	VAL1	VAL9	VAL7	VAL8	VAL11
Y14	Y15	Y12	Y10	Y22	Y20	Y21	Y24

01 02 03 05 07 08 09 10

Y13	Y11
VAL4	VAL2

04 06

(PV2)

VAL10
Y17

11

BAR FEEDER TYPE: MINUTEMAN 320
LATHE NAME:
LATHE TYPE:

NO.	PART NO.	CODE	NAME
01	J310215	R1-RF	Relay
02	J620106	F2	DC control Power fuse
03	J620106	F3	PLC power fuse

BAR FEEDER TYPE: MINUTEMAN 320
LATHE NAME:
LATHE TYPE:

DRAWN BY: Seven
FIRST DATE: 2011/01/24
CHECKED BY:
REVISION DATE: 2020/09/15
MAIN VOLTAGE: 220 VAC 3-PHASE
SIGNAL VOLTAGE: 24VDC
DESCRIPTION: Main PC board
DRAWING NO.: JV-EDGE HL(MIX)-EG
PAGE: P.05
VERSION: G0

PDE0105

3φ220VAC

P.20-B,01
P.20-B,01
P.20-B,01
P.20-B,01

R S T
1 3 5
CS1
2 4 6
R0 S0 T0
F1-5A F5-5A F6-5A
R1 S1 T1

MR-E-40A-G
SERVO DRIVER
L1 L2 L3
U V W
R0

SERVO MOTOR
SM 3~
U V W

OIL PUMP
M 3~
U1 V1 W1

MC
A1 A2
95 96 97 98

MC
A1 A2
20
S1
R7
6 4

LF3 DF3 RF3
PLC-9,1

PLC POWER
P.08-A,01
9 6 RE 7 PW1-7
PLC-9-9

P.08-A,01
10 F3 3A 8 PW1-8
PLC-10

DC CONTROL POWER
P.07-A,01
+ F2 3A 4 PW1-4
F2-1 F2-2

P.07-A,01
− 6 PW1-6

TR
110V 0V 220V 200V 18V 0V
R1 S1

HMI POWER
P.07-A,01
8 R8 5 +V F4 3A 24V
3

P.07-A,01
−V −V

SYNCHRONIZATION POWER
P.07-A,01
+V

P.07-A,01
−V

LP1050D-24S
Power supply
+ −
L N R1 S1 E5 T1
P.07-A,01

EDGE TECHNOLOGIES
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BAR FEEDER TYPE	MINUTEMAN 320	
LATHE NAME		
LATHE TYPE		

DRAWN BY: Seven
FIRST DATE: 2011/01/24
REVISION DATE: 2020/09/15
CHECKED BY:
DESCRIPTION: Main circuit 1-2
DRAWING NO.: JV-EDGE HL(MIX)-EG
MAIN VOLTAGE: 220 VAC 3-PHASE
SIGNAL VOLTAGE: 24VDC
PAGE: P.06
VERSION: G0
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Main circuit 2-2

BAR FEEDER TYPE	MINUTEMAN 320	FIRST DATE	2011/01/24	REVISION DATE	2020/09/15	MAIN VOLTAGE	220 VAC 3-PHASE	SIGNAL VOLTAGE	24VDC
LATHE NAME		DRAWN BY	Seven	CHECKED BY		DESCRIPTION	Main circuit 2-2	DRAWING NO.	JV-EDGE HL(MIX)-EG
LATHE TYPE								PAGE	P.07
								VERSION	G0

EDGE TECHNOLOGIES
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HMI
PWS-6310S
HMI
24V 0V FG

Synchronization clutch
(Sliding headstock mode)

Operation Box

HMI POWER Control
DC POWER Control
AXIAL SENSE SENSOR
Synchronization clutch Control

A4

Diagram labels (as read from the schematic):

- P.06-D.04 — 9
- P.06-D.04 — 10
- P.07-A.06
- P.12-C.01 — COM
- P.12-C.01 — +24V

FX3U 64MR

- L
- N
- GND
- S/S
- X00 — ENCODER A
- X01 — ENCODER B
- X02 — ORIGIN SENSE SENSOR
- X03 — GUIDE CHANNEL OPEN SENSOR
- X04 — CLAMP IN SENSOR
- X05 — BAR-PUSHER RISE SENSE
- X06 — BAR-PUSHER DOWN SENSE
- X07 — CLAMP SENSOR

PULSE CHANGE DEVICE

- P.17-B.05
- P.17-B.05
- P.17-B.05
- P.17-C.05

Sensor/limit switch connections:

- X02 PN1-X02 / X02 PN2-X02 — LS01 NO COM — COM PN2-COM
- X03 PN1-X03 / X03 PN2-X03 — LS02 NO COM
- X04 PN1-X04 / X04 PN2-X04 — SR01
- X05 PN1-X05 / X05 PN2-X05 — LS03 NO COM — COM PN2-COM
- X06 PN1-X06 / X06 PN2-X06 — LS04 NO COM
- X07 PN1-X07 / X07 PN2-X07 — LS05 NO COM

- +24V — P.09-A.01
- COM — P.09-A.01

EDGE TECHNOLOGIES
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BAR FEEDER TYPE	MINUTEMAN 320
LATHE NAME	
LATHE TYPE	

| FIRST DATE | 2011/01/24 | REVISION DATE | 2020/09/15 | MAIN VOLTAGE | 220 VAC 3-PHASE | SIGNAL VOLTAGE | 24VDC |
| DRAWN BY | Seven | CHECKED BY | | DESCRIPTION | PLC INPUT 1-4 | DRAWING NO. | JV-EDGE HL(MIX)-EG |

| PAGE | P. 08 | VERSION | G0 |

FX3U 64MR

READY MODE — X10 — X10 / X10 — P.20-A,01 — DS06
PN3 - X10 / DB1 - 02

AUTOMATIC START — X11 — X11 / X11 — P.20-A,01 — DS05
PN3 - X11 / DB1 - 03

MANUAL MODE — X12 — X12 / X12 — P.20-A,01 — DS07
PN3 - X12 / DB1 - 04

MANUAL RETREAT — X13 — X13 / X13 — P.20-A,01 — DS01
PN3 - X13 / DB1 - 05

MANUAL ADVANCE — X14 — X14 / X14 — P.20-A,01 — DS02
PN3 - X14 / DB1 - 06

MANUAL CLAMPING IN / OUT — X15 — X15 / X15 — DS03
PN3 - X15 / DB1 - 07

MANUAL BAR PUSHER RISE/DOWN — X16 — X16 / X16 — DS04
PN3 - X16 / DB1 - 08

EMERGENCY STOP — X17 — X17 / X17 — DS08
PN3 - X17 / DB1 - 09

COM — COM
PN1 - COM / DB1-01

Operation Box

P.08-A.06   +24V
P.08-A.06   COM

+24V   P.10-A,01
COM   P.10-A,01
P.10-A,01

BAR FEEDER TYPE	MINUTEMAN 320						
LATHE NAME							
LATHE TYPE							

EDGE ○○○
TECHNOLOGIES
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FIRST DATE	REVISION DATE	MAIN VOLTAGE	SIGNAL VOLTAGE	
2011/01/24	2020/09/15	220 VAC 3-PHASE	24VDC	
DRAWN BY	CHECKED BY	DESCRIPTION		
Seven		PLC INPUT 2-4		

DRAWING NO. JV-EDGE HL(MIX)-EG
PAGE P.09   VERSION G0

A4

FX3U 64MR

Operation Box

DS09

DS10

SR2

MANUAL LOADING — X20 — X20 / X20 — X20 / DB1 - 10 — PO3 - X20 — 3 / 1

MANUAL CLAMPING — X21 — X21 / X21 — X21 / DB1 - 11 — PO3 - X21 — 3 / 1

CUTTING SENSOR — X22 — X22 / X22 — X22 / PN1 - X22 — PN2 - X22

CHUCK OPEN *(RA) — X23 — X23 / X23 — X23 / I17 - COM — PN1 - X23

BAR CHANGE *(RB) — X24 — X24 / X24 — X24 / I16 - COM — PN1 - X24

TORQUE STOP *(RC) — X25 — X25 / X25 — X25 / I15 - COM — PN1 - X25

ALARM FROM LATHE *(RD) — X26 — X26 / X26 — X26 / I18 - COM — PN1 - X26

OIL PUMP ALARM — X27 — X27 / X27 — X27 / PN1 - X27 — PN2 - X27

P.20-A.01
P.20-A.01
P.20-A.03
P.20-A.03
X27

MC
OL
97
98

P.09-A.06
P.09-A.06   COM
P.09-A.06   +24V

P.11-A.01   +24V
P.11-A.01   COM
P.11-A.01

BAR FEEDER TYPE	MINUTEMAN 320
LATHE NAME	
LATHE TYPE	

FIRST DATE	REVISION DATE	MAIN VOLTAGE	SIGNAL VOLTAGE	
2011/01/24	2020/09/15	220 VAC 3-PHASE	24VDC	
DRAWN BY	CHECKED BY	DESCRIPTION		PAGE
Seven		PLC INPUT 3-4		P. 10
		DRAWING NO.		VERSION
		JV-EDGE HL(MIX)-EG		G0

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FX3U 64MR

Input	Signal
X30	CUTTING CYLINDER SENSOR
X31	SAFETY COVER SENSE
X32	SPARE
X33	AIR PRESSURE SENSOR
X34	SERVO DRIVER ALARM
X35	SPARE
X36	PROGRAM SHIFT
X37	PROGRAM SHIFT
X40	SPARE
X41	SPARE
X42	SPARE
X43	SPARE

DP1, LS6, DP2, DP3, AS1, DP4, RF, DP6, DP7, DP8

COM
+24V
P.10-A.06
P.10-A.06
COM

+24V
COM
P.20-A.04
P.20-A.04

PN2 - COM
PN4 - X30
PN4 - X31
PN4 - X32
PN4 - X33
PN4 - X34
PN4 - X35
PN4 - X36
PN4 - X37

		A	01
		B	
		C	
		D	

Title block (right side):

BAR FEEDER TYPE — MINUTEMAN 320

LATHE NAME

LATHE TYPE

EDGE TECHNOLOGIES
A DIVISION OF HYDROMAT INC

DRAWN BY — Seven

FIRST DATE — 2011/01/24
REVISION DATE — 2020/09/15
CHECKED BY
MAIN VOLTAGE — 220 VAC 3-PHASE
SIGNAL VOLTAGE — 24VDC
DESCRIPTION — PLC OUTPUT 1-4
DRAWING NO. — JV-EDGE HL(MIX)-EG
PAGE — P.12
VERSION — G0

Signal labels:

END OF BAR

BAR FEEDER ALARM

IMPULSES

AUTO START SIGNAL

CYCLE START

MANUAL / PRE-AUTO

BAR FEEDER ALARM LIGHT

OIL PUMP ASSISTANCE

Terminal / connection labels:

24V — +24V
0V — COM
COM1 — P01 +
Y00 — P04-Y00 — RR1 — LR1 — R1 — A1 A2 DR1
Y01 — P04-Y01 — RR2 — LR2 — R2 — A1 A2 DR2
Y02 — P04-Y02 — RR3 — LR3 — R3 — A1 A2 DR3
Y03 — P04-Y03 — RR4 — LR4 — R4 — A1 A2 DR4
Y3 — J21-01 — GL — X1 X2
COM2 — P01 +
Y04 — P04-Y04 — RR5 — LR5 — R5 — A1 A2 DR5
Y05 — P04-Y05 — RR6 — LR6 — R6 — A1 A2 DR6
Y06 — P04-Y06 — P02-Y06 — RL — X1 X2 — P02 -
Y07 — P04-Y07 — P02-Y07 — R7 — 8 9 — P02 -

P.08-A.01 — +24V
P.08-A.01 — COM
P.07-A.06 — +
P.07-A.06 — -
P.13-D.01 — +
P.13-D.01 — -

A4

			A4

Signal labels (right side):
- BAR-PUSHER RISE — Y10
- BAR-PUSHER DOWN — Y11
- CLAMPING IN — Y12
- CLAMPING OUT — Y13
- CLAMPING — Y14
- LOADING — Y15
- CHUCK LIGHT — Y16
- MOVABLE ANTI-VIBRATION — Y17

COM3 — PO1 - + +
COM4 — PO1 - + +

Terminal	Valve	Diode	Signal refs
Y10 / PO1 - Y10 / PV1 - Y10	VAL1	DV13	
Y11 / PO1 - Y11 / PV1 - Y11	VAL2	DV14	
Y12 / PO1 - Y12 / PV1 - Y12	VAL3	DV15	
Y13 / PO1 - Y13 / PV1 - Y13	VAL4	DV16	
Y14 / PO1 - Y14 / PV1 - Y14	VAL5	DV17	
Y15 / PO1 - Y15 / PV1 - Y15	VAL6	DV18	
Y16 / PO5 - Y16 / DB1 - 22	Operation Box	DB1 - 25	
Y17 / PO1 - Y17 / PV1 - Y17	VAL10	DV19	

PV1 -

P.12-D.06 −
P.12-D.06 +

P.14-D.01 −
P.14-D.01 +

EDGE ○○○ TECHNOLOGIES
A DIVISION OF HYDROMAT INC

Title block:

BAR FEEDER TYPE	MINUTEMAN 320
LATHE NAME	
LATHE TYPE	

EDGE ○○○
TECHNOLOGIES
A DIVISION OF HYDROMAT INC

FIRST DATE	REVISION DATE	MAIN VOLTAGE
2011/01/24	2020/09/15	220 VAC 3-PHASE
DRAWN BY	CHECKED BY	SIGNAL VOLTAGE
Seven		24VDC

DESCRIPTION	PLC OUTPUT 3-4
DRAWING NO.	JV-EDGE HL(MIX)-EG
PAGE	P. 14
VERSION	G0

Schematic labels:

- P.13-D.06 (−)
- P.13-D.06 (+)
- COM5 / PO1 − +
- Y20 — 2nd ANTI-VIBRATION — VAL7 / DV20 / PO1 - Y20 / PV1 −
- Y21 — 1st ANTI-VIBRATION — VAL8 / DV21 / PO1 - Y21
- Y22 — 3rd ANTI-VIBRATION — VAL9 / DV22 / PO1 - Y22
- Y23 — SYNCHRONIZATION — SSR (1, 2) SSR Control / PO5 - Y23
- Y24 — 4th ANTI-VIBRATION — VAL11 / Y24
- Y25 — ORIGIN SENSE LIGHT — DB1 - 13 / DB1 - 25 / PO3 - Y25
- Y26 — CLAMPING IN LIGHT — DB1 - 14 / DB1 - 25 / PO3 - Y26
- Y27 — BAR-PUSHER DOWN LIGHT — DB1 - 15 / DB1 - 25 / PO3 - Y27
- Operation Box
- P.15-D.01 (−)
- P.15-D.01 (+)

A4

SERVO DRIVER CN1

Signal	PLC Output	Description
SG	COM6	
SP1	(Y30) Y00	SLOW SPEED
TL	(Y31) Y01	FAST SPEED
ST1	(Y32) Y02	TURNING
ST2	(Y33) Y03	REVERSE
SON	(Y34) Y04	SERVO ON
	(Y35) Y05	SPARE (SERVO DRIVER ONLY)
	(Y36) Y06	SPARE (SERVO DRIVER ONLY)
	(Y37) Y07	SPARE (SERVO DRIVER ONLY)

PW2 — / 0V

P.14-D.06 +
P.14-D.06 −

P.17-B.03

P.17-D.03 +
P.17-D.03 −

LED circuit of Remote control pendant — wiring schematic

Operation Box components: LDS7/RDS7, LDS6/RDS6, LDS5/RDS5, LDS4/RDS4, LDS3/RDS3, LDS2/RDS2, LDS1/RDS1, L6/R6, L5/R5, L4/R4, L3/R3, L2/R2, L1/R1

Terminal references: DB1-25, DB1-16, DB1-17, DB1-18, DB1-15, DB1-14, DB1-13, DB1-24, DB1-23, DB1-22, DB1-21, DB1-20, DB1-19

JY00: Y00.2, Y00, Y00.1

P.07-C.03

Signal	Connector	Description
R6.5	P.07-C.03	MANU READY LIGHT
R6.6	P.07-C.04	AUTO READY LIGHT
R4.6	P.07-C.03	AUTOMATIC START LIGHT
Y27	P.07-C.04	BAR-PUSHER DOWN SENSE LIGHT
Y26	P.14-C.05	CLAMP IN LIGHT
Y25	P.14-C.05	ORIGIN SENSE LIGHT
RC.C	P.07-C.04	TORQUE STOP LIGHT
RB.3	P.07-C.04	BAR CHANGE LIGHT
Y16	P.13-C.05	CHUCK OPEN LIGHT
R5.6	P.07-C.03	CYCLE START LIGHT
R2.6	P.07-C.03	BAR FEEDER ALARM LIGHT
R1.6	P.07-C.03	BAR END LIGHT

BAR FEEDER TYPE	MINUTEMAN 320	
LATHE NAME		
LATHE TYPE		
DRAWN BY	Seven	
CHECKED BY		
FIRST DATE	2011/01/24	
REVISION DATE	2020/09/15	
MAIN VOLTAGE	220 VAC 3-PHASE	
SIGNAL VOLTAGE	24VDC	
DESCRIPTION	LED circuit of Remote control pendant	
DRAWING NO.	JV-EDGE HL(MIX)-EG	
PAGE	P.16	
VERSION	G0	

A4

	01	02	03	04	05	06	

PLC
AX2N-8EYR
FX3U-64MR

(Y30) Y0 — SP1
(Y31) Y1 — TL
(Y32) Y2 — ST1
(Y33) Y3 — ST2
(Y34) Y4 — SON
COM1 — /SG / 0V
COM2

P.15-D.06
P.15-D.06 + −

INI − :

LRF
RRF
RF A1 A2
DRF

POS - 20
20
PW2 − : +

POS - 21
21 ALM
DOCOM SG
EMG

SERVO DRIVER
MR-JE-40AG
CN1

DICOM 21 (BLUE)
ALM 48 (RED)
SG 47 (BLACK)
EMG 42 (PINK)
SON 15 (WHITE)
SON 41 (GREEN)
ST2 19 (PURPLE)
ST1 44 (ORANGE/BLACK)
TL 43 (GREY)
SP1 2 (ORANGE)

LBR 7 (GREEN)
LB 6 (BLACK)
LAR 5 (WHITE)
LA 4 (RED)
LG 28 (BROWN)
TLA 27 (YELLOW)
VC 2

P.08-A.03
P.08-A.03
P.08-A.03
P.08-A.03

ANALOGY SIGNAL MODULE
AX2N 2DA

CH1-SPEED VOUT1
VOUT1
IOUT1
COM1
LG
VC VC
TLA TLA
VOUT2
CH2-TORQUE IOUT2
LG LG
COM2

DICOM

P.20-A.01
P.20-A.01
− +

LATHE TYPE		LATHE NAME		BAR FEEDER TYPE	
LATHE				MINUTEMAN 320	

FIRST DATE	REVISION DATE	MAIN VOLTAGE	SIGNAL VOLTAGE		
2011/01/24	2020/09/15	220 VAC 3-PHASE	24VDC		
DRAWN BY	CHECKED BY	DESCRIPTION			
Seven		Driver circuit of Servo motor			

DRAWING NO. JV-EDGE HL(MIX)-EG
PAGE P.17
VERSION G0

EDGE TECHNOLOGIES — A DIVISION OF HYDROMAT INC

PGE 0205 KEY BOARD

BAR END

BAR FEEDER ALARM

AUTO START SIGNAL

L3 R3 R4.6
L2 R2 R2.6
L1 R1 R1.6

L6 R6 RC.C
L5 R5 RB.3
L4 R4 Y16

COLLET OPEN
BAR CHANGE
TORQUE STOP

ER8 L6 L5 02 01 XH 2.54

ER8 04 I63 03 2.9 02 I61 01 2.8 XH 2.54

JY00 Y00.2 Y00 Y00.1

DB1

14 15 16 17 18 19 20 21 22 23 24 25
Y26 Y27 R6.5 R6.6 R4.6 R1.6 R2.6 R5.6 Y16 RB.3 RC.C —

01 02 03 04 05 06 07 08 09 10 11 12 13
COM X10 X11 X12 X13 X14 X15 X16 X17 X20 X21 X24 / I63 Y25

LDS2 RDS2 Y00.2
DS2
COM 1 2
X14 3 4

LDS4 RDS4 Y27
DS4
COM 1 2
X16 3 4

LDS1 RDS1 Y00.1
DS1
COM 1 2
X13 3 4

DS9
COM 1 2
X20 3 4

LDS3 RDS3 Y26
DS3
COM 1 2
X15 3 4

DS10
COM 1 2
X21 3 4

LDS5 RDS5 R4.6
DS5
COM 1 2
X11 3 4

LDS7 RDS7 R6.5
DS7
COM 1 2
X12 3 4

LDS6 RDS6 R6.6
DS6
COM 1 2
X10 3 4

DS8
COM 1 2
X17 3 4

This is an engineering schematic diagram.

EDGE ○○○
TECHNOLOGIES
A DIVISION OF HYDROMAT INC

+ 24V
COM
P.11-A.06 COM
P.11-A.06 + 24V
P.10-B.04 X23
P.10-B.04 X24
P.10-B.02 X10
P.09-B.02 X11
P.09-B.03 X12
P.09-B.03 X13
P.09-B.04 X14
P.06-A.01 ⏚
P.06-A.01 T
P.06-A.01 S
P.06-A.01 R

TB1
1.1 1.2 1.3 1.4

Red   1   VOLTAGE SUPPLY
White   2
Black   3
Green   4

PLC
X14 23   23 MANUAL RETURN X14
X13 21   21 MANUAL FEED   X13
X12 19   19 MANUAL MODE   X12
X11 17   17 AUTO START SIGNAL X11
X10 15   15 AUTO MODE   X10
COM 10   10

P.17-D.06 IN1
P.17-D.06 —
P.16-A.05 +
P.10-B.05 RC.C
P.10-B.05 X26
         X25

1 H
2
3 G   RD   09 09 LATHE ALARM   X26
4 F
5 E   RC   08 08 FEED STOP   X25
6
7 D   RB   07 07 BAR CHANGE   X24
8
9 C
10 B   RA   06 06 CHUCK OPEN   X23
11
12 A
13 +   05 05

HARTING PLUG PIN
WIRE SILKSCREEN

JP1
B D F H   ON
A C E G   OFF

RC.3 J19 3 8 RC
RC.1 J18 1 5 RD   X26B
      J15 5 6 RC   X26A
      J16 5 6 RB   X25B
      J17 5 6 RA   X25A
                     X24B
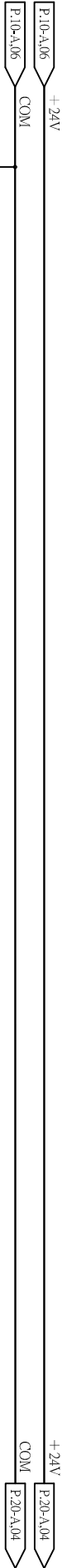   X24A
                     X23B
                     X23A

BAR FEEDER TYPE   MINUTEMAN 320
LATHE NAME
LATHE TYPE   Seven

FIRST DATE   2011/01/24   REVISION DATE 2020/09/15
DRAWN BY   CHECKED BY

MAIN VOLTAGE   220 VAC 3-PHASE   SIGNAL VOLTAGE 24VDC
DESCRIPTION   Interface
DRAWING NO.   JV-EDGE HL(MIX)-EG
PAGE   P.20   VERSION G0

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TB1

R8

PB1 BAR FEEDER E-stop

30
31

IN2

1C
1B END OF BAR Y00
1A R1

2C
2B BAR FEEDER ALARM Y01
2A R2

3C
3B IMPULSES Y02
3A R3

4C
4B AUTO START SIGNAL Y03
4A R4

5C
5B CYCLE START Y04
5A R5

6C
6B MANUAL / PRE-AUTO Y05
6A R6

JP2
ON OFF

HARTING PLUG PIN
WIRE SILKSCREEN

EDGE ○○○
TECHNOLOGIES
A DIVISION OF HYDROMAT INC

D	BAR FEEDER TYPE				
	MINUTEMAN 320				
	LATHE NAME				
	LATHE TYPE				
	01	02	03	04	05	06

Seven

FIRST DATE	REVISION DATE	MAIN VOLTAGE	SIGNAL VOLTAGE	PAGE
2011/01/24	2020/09/15	220 VAC 3-PHASE	24VDC	P. 21
DRAWN BY	CHECKED BY	DESCRIPTION	DRAWING NO.	VERSION
		Interface	JV-EDGE HL(MIX)-EG	G0

A4

010	FRAME DEVICE
020	CLAMP DEVICE
030	LOADING-UNLOADING CONTROL
040	BASES AND BEAM
050	FEED MOTOR DRIVE
060	CUTTING DEVICE
070	GUIDE CHANNEL
080	BAR PUSHER DEVICE
090	SUPPORT
100	FIRST ANTI-VIBRATION DEVICE
110	SYCHRONIZATION DEVICE
120	TELESCOPIC FRONT NOSE / FIXED FRONT NOSE

PICTURE INDEX

Tab. 000 5

FRAME DEVICE

Table 1

N.	Code	QTY				Denomination
		22	32	37	44	
17	P12200401	22	6	7	8	Plate
18	P12200300	4	6	7	8	Plate
19	P11201300			1		Bushing
20	P11201800			1		Plate
21	P11201400	4	6	7	8	Plate
22	P11201110		3			Support
23	P11201600		2			Plate
24	AV51MA1200		1			Arbor
25	P11201500		1			Arbor
26	P11201700		1			Plate

Table 2

N.	Code	QTY				Denomination
		22	32	37	44	
1	P11203310	1				Support
2	P76200800		2			Support
3	P11201200	4	6	7	8	Plate
4	P12200800		1			Cylinder anchor
5	P11200410	2	2	3	3	Support
6	P12200722	1				Support
	P12200732		2			Arbor-3.2M L=2900mm
	P12200737			2		Arbor-3.7M L=3500mm
	P12200744				2	Arbor-4.4M L=4000mm
7	P11200822	1				Arbor-2.2M L=2060mm
	P11200832		1			Arbor-3.2M L=3090mm
	P11200837			1		Arbor-3.7M L=3690mm
	P11200844				1	Arbor-4.4M L=4290mm
8	P13200600		2			Bushing
9	P53200500		2			Plate
10	P12200600		1			Plate
11	A11110410		1			Piston cylinder
12	P11200402		3			Plate
13	P11201101	3	4	4	5	Frame
14	P12200100	4	6	7	8	Plate
15	P12200200	20	30	35	40	Bushing
16	P12200402				8	Collet

Tab. 011 g

CLAMP

Tab. 020 6
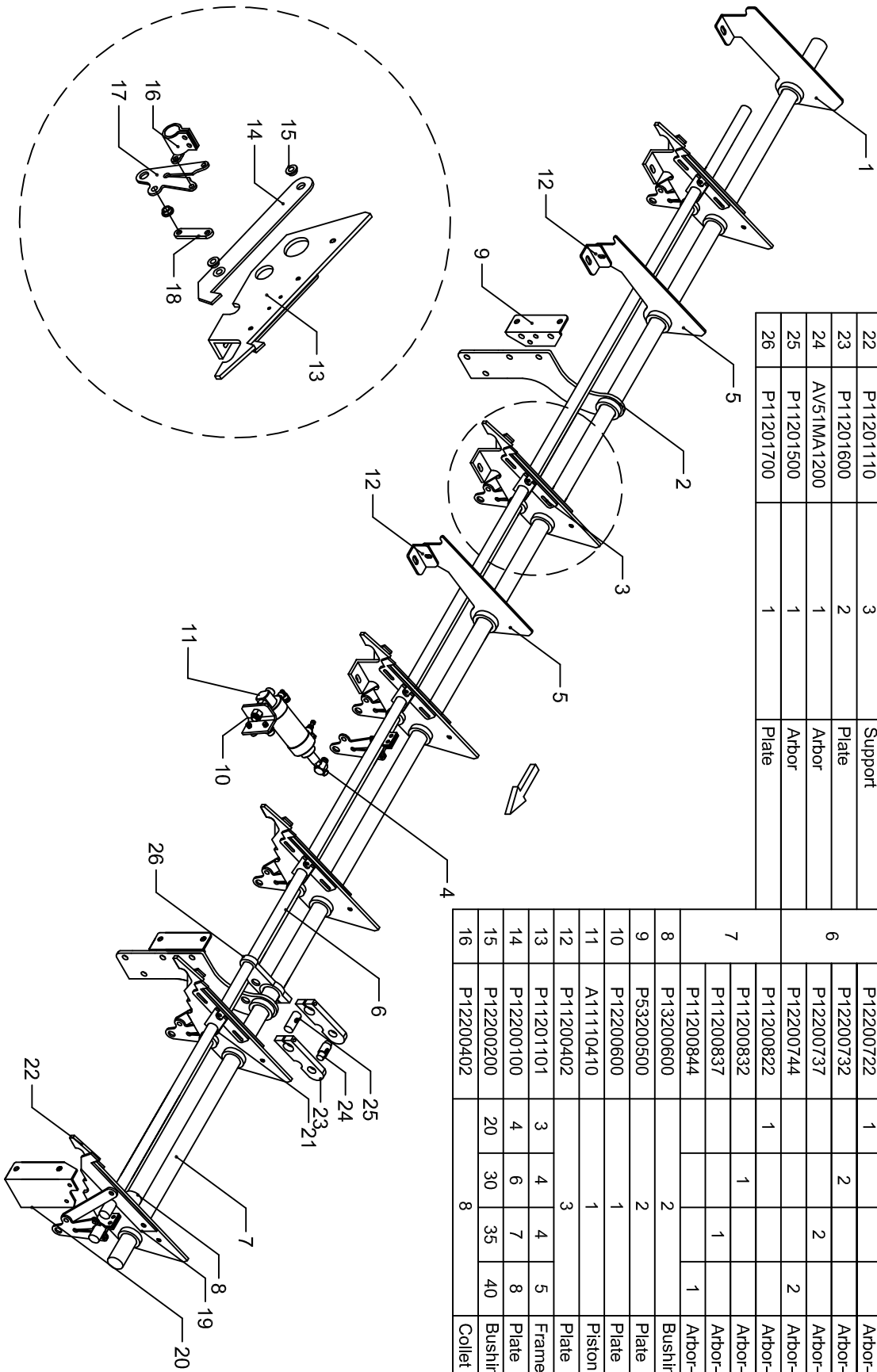
N.	Code	QTY	Denomination
1	P21200100	1	Support
2	P21200101	1	Support
3	P21200200	2	Anchor
4	P21200300	1	Plate
5	P21200401	1	Seal (A)
6	P21200500	1	Plate
7	P21200601	1	Seal (B)
8	P21200700	1	Support
9	P21200800	2	Arbor
10	P21200900	1	Anchor
11	P21201000	2	Anchor
12	P21201100	2	Spur gear
13	P21201200	1	Plate
14	P21201500	1	Anchor
15	P21201600	1	Arbor
16	P21201700	1	Plate
17	P21201800	1	Plate
18	BPHS12	1	Joint
19	A111110601	1	Cylinder MAL-CA40x75
20	607310600	1	Spring

LOADING-UNLOADING CONTROL

Tab. 030 8
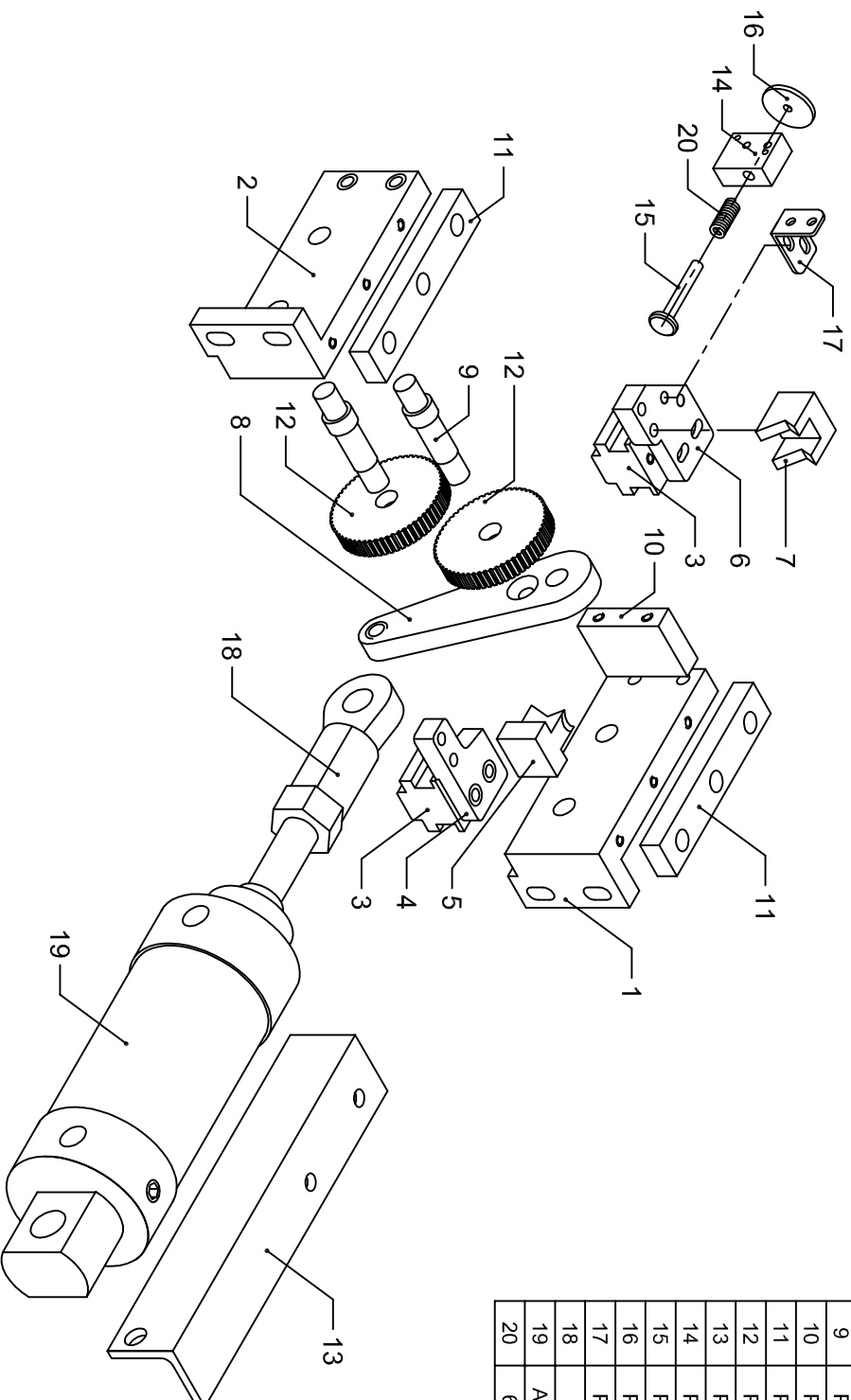
N.	Code	QTY	Denomination
1	P22200100	2	Anchor
2	P22200201	1	Anchor
3	P22201700	1	Bushing
4	P22200400	1	Arbor-3.2M 3.7M 4.4M
5	P22200410	1	Arbor-2.2M
6	P22201500	1	Plate
7	G52121100	1	Plate
8	B69GZZ	2	Bearing 69GZZ
9	P22201600	1	Spring
10	P22200800	1	Anchor
11	P22201400	1	Support
11	A11150200	1	Piston cylinder-3.2M 3.7M 4.4M SC-50x50-S-CA
	A11150210	1	Piston cylinder-2.2M SC-50x60-S-CA
12	A12140110	1	Sensor CS1-U

BASES AND BEAM
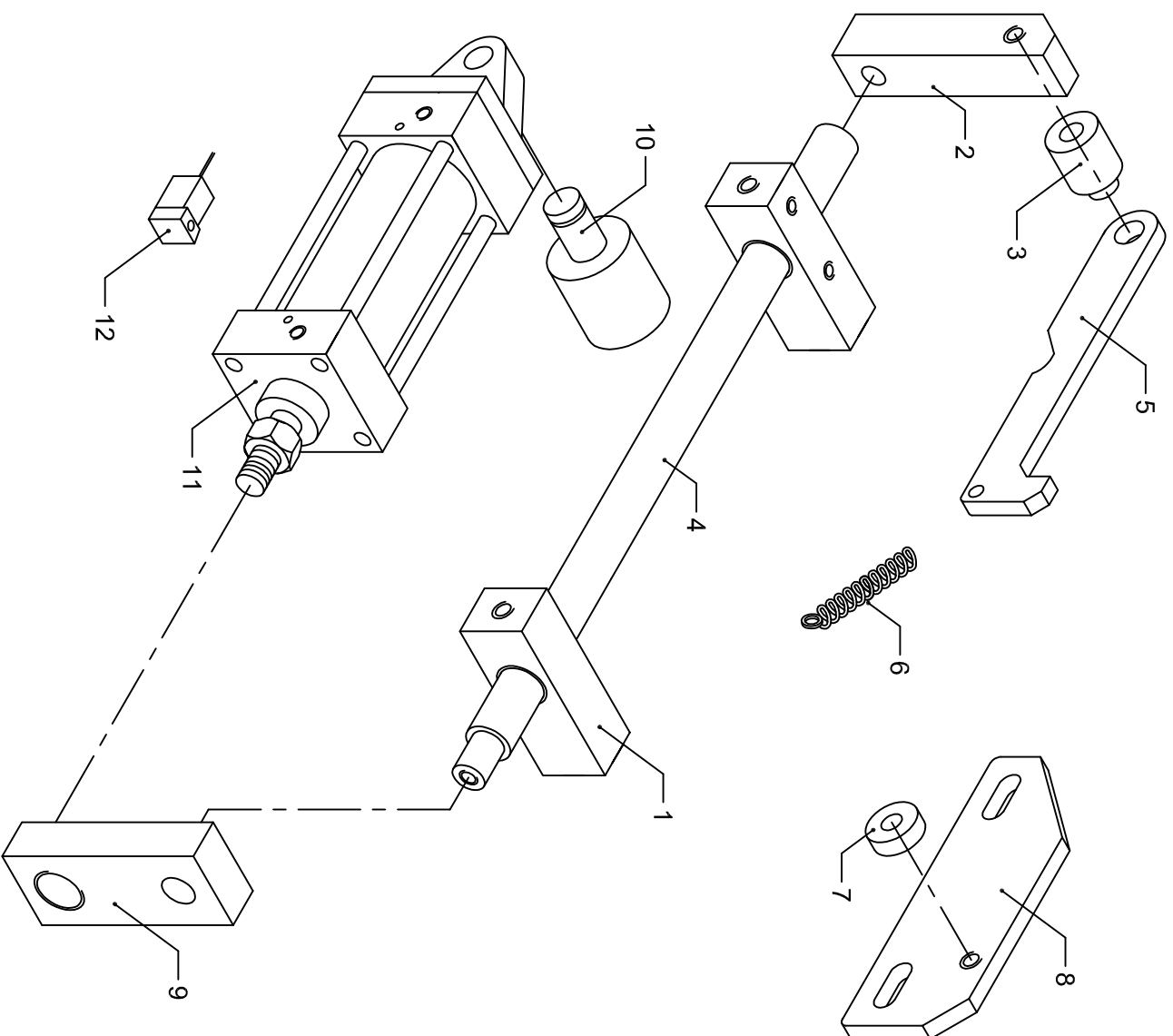
N.	Code	QTY	Denomination
1	P76201222	1	Cover-2.2M L=2820mm
	P76201234	1	Cover-3.2M L=3850mm
25	P76201239	1	Cover-3.7M L=4350mm
	P76201244	1	Cover-4.4M L=4950mm
26	AV51BA2103	1	Plexiglass window

N.	Code	QTY	Denomination
1	P76201900	1	Handle
	P76201422	1	Cover-2.2M L=2810mm
2	P76201434	1	Cover-3.2M L=3840mm
	P76201439	1	Cover-3.7M L=4344mm
	P76201445	2	Cover-4.4M L=4944mm
	P76201445	2	Cover-4.4M L=4950mm
3	P76201322	1	Cover-2.2M L=2820mm
	P76201334	1	Cover-3.2M L=3850mm
	P76201339	1	Cover-3.7M L=4350mm
	P76201344	1	Cover-4.4M L=4950mm
4	P76202100	1	Cover
5	P76201002	1	Plate
6	P76200100	2	Stand
7	P76200200	2	Stand
8	P76201601	2	Plate
9	AV51BA3810	2	Shaft KS-105-269-13KG-1/3-AF 2.2M 4.4M
	P76201803	2	Shaft KS-105-269-13/kg-20-AF 3.7M
10	P76201101	1	Plate
11	P76202400	2	Screw
12	P76201003	1	Plate
15	P76202200	1	Plate
14	P76202300	1	Cover
13	P79200244	1	Beam-4.4M L=4906mm
	P79200237	1	Beam-3.7M L=4306mm
	P79200232	1	Beam-3.2M L=3806mm
	P79200222	1	Beam-2.2M L=2776mm
16	P76201801	2	Plate
	P76200322	1	Dislot-2.2M L=2842mm
	P76200333	1	Dislot-3.2M L=3872mm
	P76200339	1	Dislot-3.7M L=4372mm
	P76200344	1	Dislot-4.4M L=4972mm
17	P76200900	2	Plate
18	P76202000	1	Pump
19	P76200401	2	Cover
20	P76200500	1	Remnant tank
21	P76200400	1	Oil tank
22	P76200604	2	Cover
23	P76200602	1	Control box
24	P76200601	1	Housing
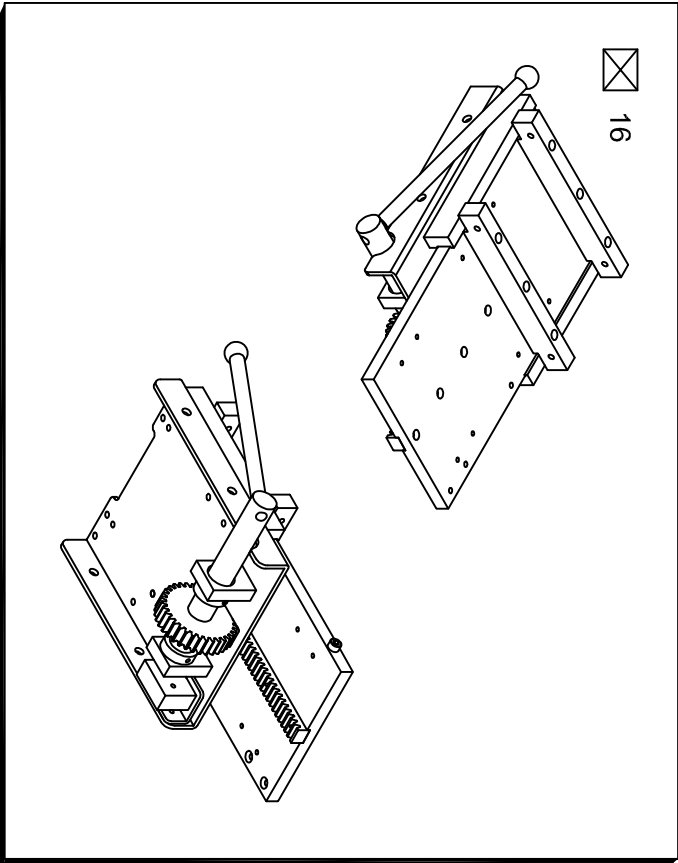
Tab. 041 / 7

MM-320

FRONT TRACKING SYSTEM
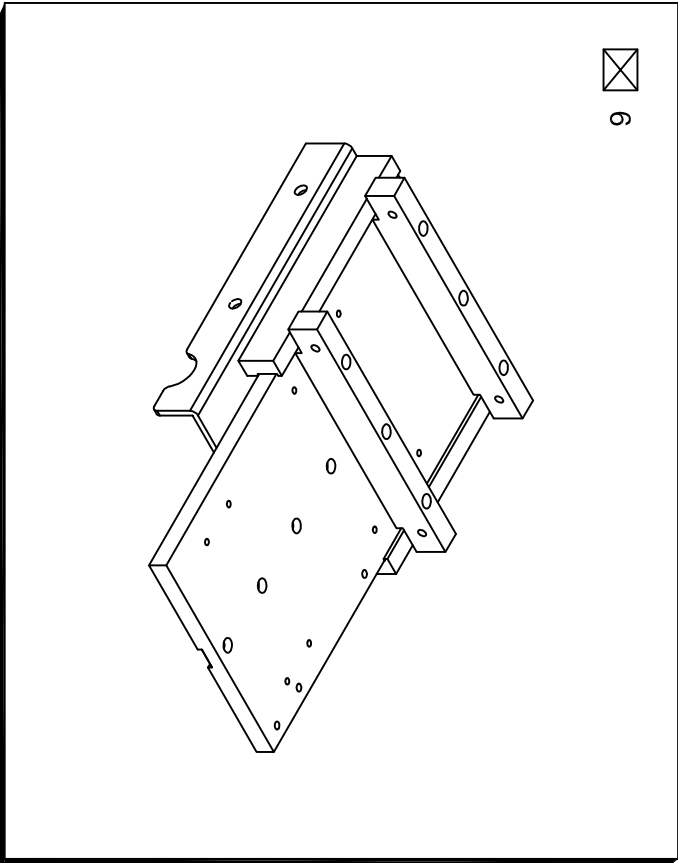
N.	Code	QTY	Denomination
1	P35200100	2	Support
2	P35200200	1	Plate
3	P35200300	2	Track
4	P35200400	1	Rack
5	P35200500	1	Plate
6	P35200600	1	Pinion 34T
7	P35200700	2	Support
8	P35200800	2	Ring
9	P35200900	2	Support
10	P35201000	1	Arbor
11	P35201100	1	Plate
12	P35201200	1	Handle
13	J310409	1	Micro switch TZ-7311
14	ZS0060620	1	Shaft key 6x6x20
15	BSF2815	2	Bearing SF-2815
16	HP3127000A	1	Axial track device

16

Tab. 046 2

BACK TRACKING SYSTEM

N.	Code	QTY	Denomination
1	P35200100	2	Support
2	P35200200	1	Plate
3	P35200300	2	Track
4	P35200500	1	Plate
5	P35200700	2	Support
6	HP3127001A	1	Axial track device

6

4

5

3

1

2

Tab. 047 | 2

FEED MOTOR DRIVE

Tab. 051 6
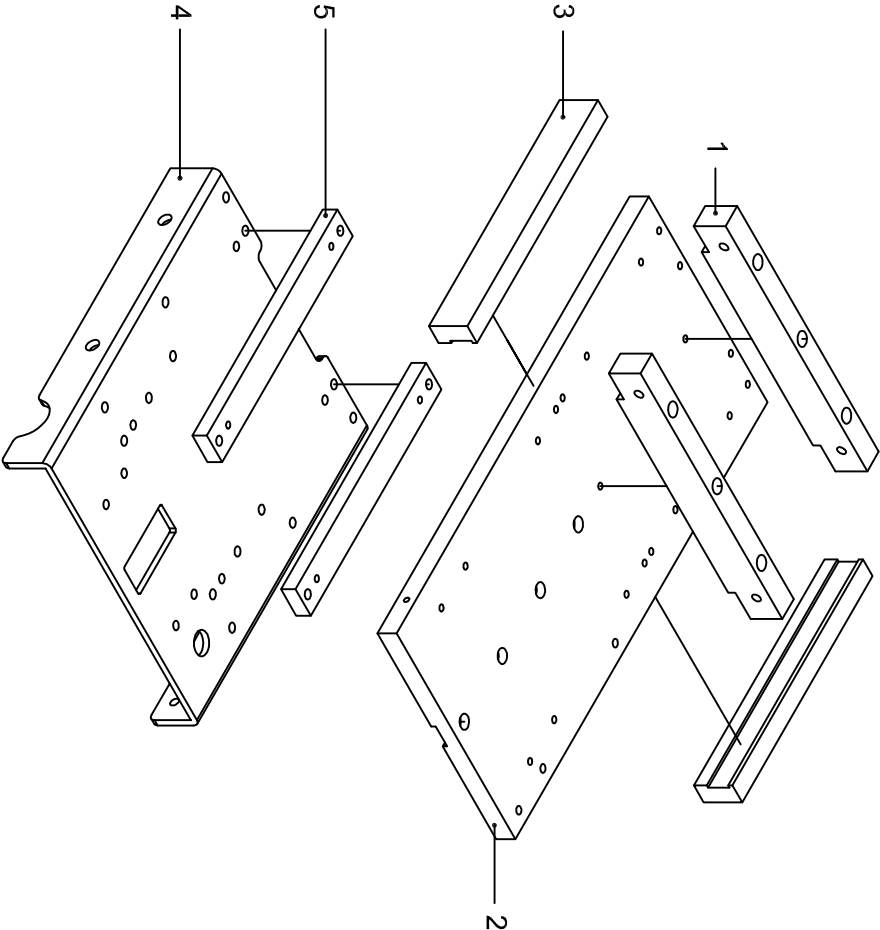
N.	Code	QTY	Denomination
1	J2210021	1	Motor
2	P48200100	1	Seat
3	RA26DR1600	1	Gear wheel T=22
4	P48200200	1	Gear wheel T=42
5	P48200300	1	Pulley 15T
6	B6000ZZ	2	Bearing
7	BTLA1212	2	Bearing TLA1212
8	BIRT812	2	Bearing IRT812
9	P63200500	1	Belt
10	P63200300	1	Seat
11	P63200400	2	Cover
12	P63200200	1	Spacer
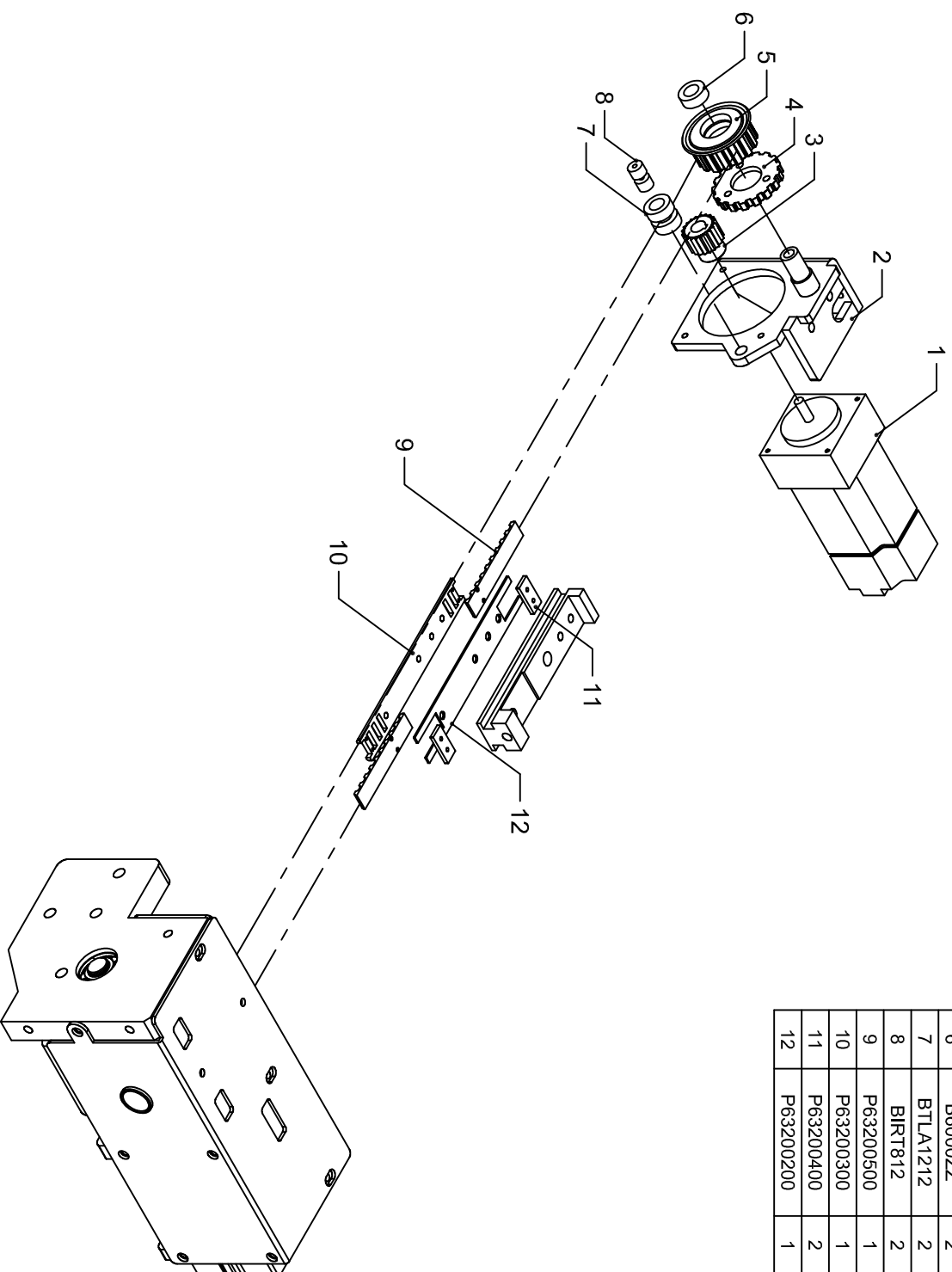
CUTTING DEVICE

Tab. 060 7

N.	Code	QTY	Denomination
1	P75201600	1	Bracket
2	P75201700	1	Plate
3	P45200300	1	Bush
4	P75201800	1	Plate
5	P53200401	1	Connector
6	G92120600	1	Spring
7	A11110700	1	Cylinder MAL-CA20x10
8	G92120700	1	Central shaft
9	P75201900	1	Plate
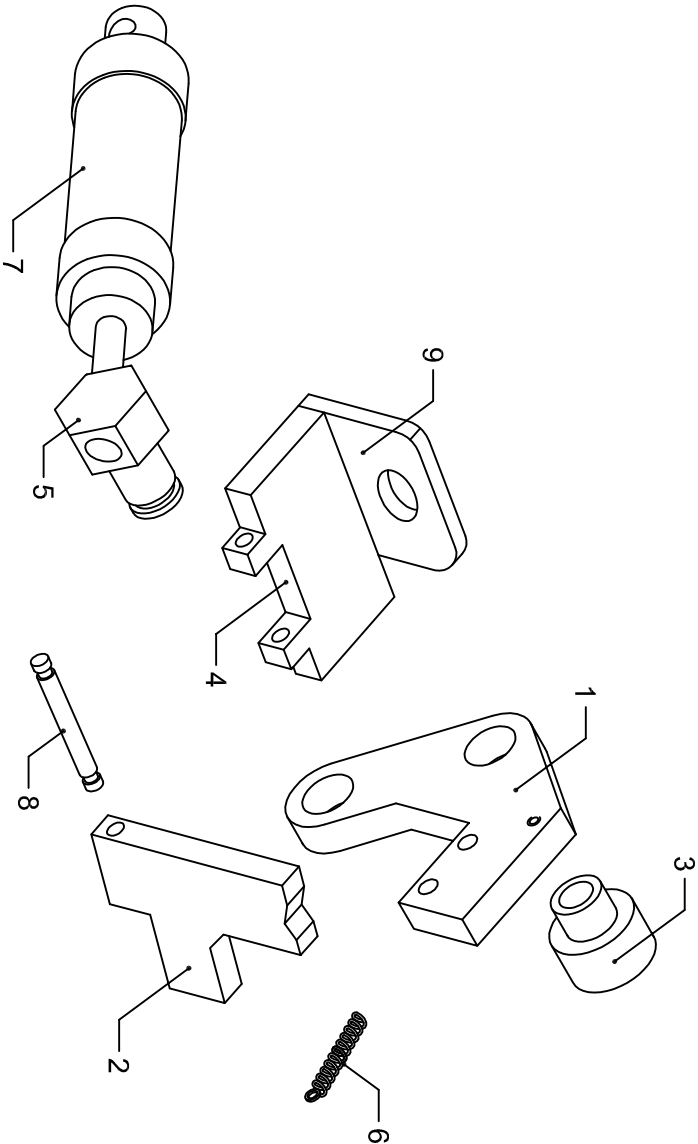
MM-320

CUTTING DEVICE FOR 2MM

Tab. 061 2

N.	Code	QTY	Denomination
1	P75201600	1	Bracket
2	P75201712	1	Plate for 2mm
3	P45200300	1	Bush
4	P75201800	1	Plate
5	P53200401	1	Connector
6	G92120600	1	Spring
7	A11110700	1	Cylinder MAL-CA20x10
8	G92120700	1	Central shaft
9	P75201900	1	Plate

N.	Code	QTY	Denomination
1	P59__0162	1	Guide channel L=626
2	P59__0154	2	Guide channel L=540
3	P59__0136	1	Guide channel L=365
			NOMINAL DIAMETER D. ΦA 8 10 11 12 14 15 16 16 18 18 20 20 22 23 24 25 28
4	P53__0201	2	Anchor
			NOMINAL DIAMETER D. ΦA 8 10 12 16 18 20 23 25
5	P82__0803	1	Fixed block
			NOMINAL DIAMETER D. ΦA 9 12 15 16 19 18 21 20 23 25 29
6	HL59__221	1	Lower guide channel
			NOMINAL DIAMETER D. ΦA 8 10 11 14 12 16 15 18 16 20 18 22 20 24 23 28 25

QUICK-GUIDE CHANNEL 37

N.	Code	QTY	Denomination
1	P59___0154	6	Guide channel L=540
2	P59___0136	1	Guide channel L=365
	NOMINAL DIAMETER D.		ØA 8 11 14 16 18 20 22 24 28
			08 10 12 15 16 18 20 23 25
3	P53___0201	2	Anchor
	NOMINAL DIAMETER D.		ØA 8 10 12 16 18 20 23 25
			08 10 12 16 18 20 23 25
4	P82___0803	1	Fixed block
	NOMINAL DIAMETER D.		ØA 9 12 15 19 21 23 25 29
			08 10 12 16 18 20 23 25
5	HL59___371	1	Lower guide channel
	NOMINAL DIAMETER D.		ØA 8 11 14 16 18 20 22 24 28
			08 10 12 15 16 18 20 23 25

QUICK-GUIDE CHANNEL [44]

N.	Code	QTY	Denomination
1	P59___0154	6	Guide channel L=540
2	P58___0158	1	Guide channel L=582
3	P59___0136	1	Guide channel L=365
	NOMINAL DIAMETER D.		φA 8 10 12 15 16 18 20 23 25 11 14 16 18 20 22 24 28
4	P53___0201	2	Anchor
	NOMINAL DIAMETER D.		φA 8 10 12 16 18 20 23 25
5	P82___0803	1	Fixed block
	NOMINAL DIAMETER D.		φA 9 12 15 19 21 23 25 29 10 16 18 20
6	HL59___441	1	Lower guide channel
	NOMINAL DIAMETER D.		φA 8 10 12 15 16 18 20 23 25 11 14 16 18 20 22 24 28

Q072 Tab. 6

QUICK-GUIDE CHANNEL 37 LL

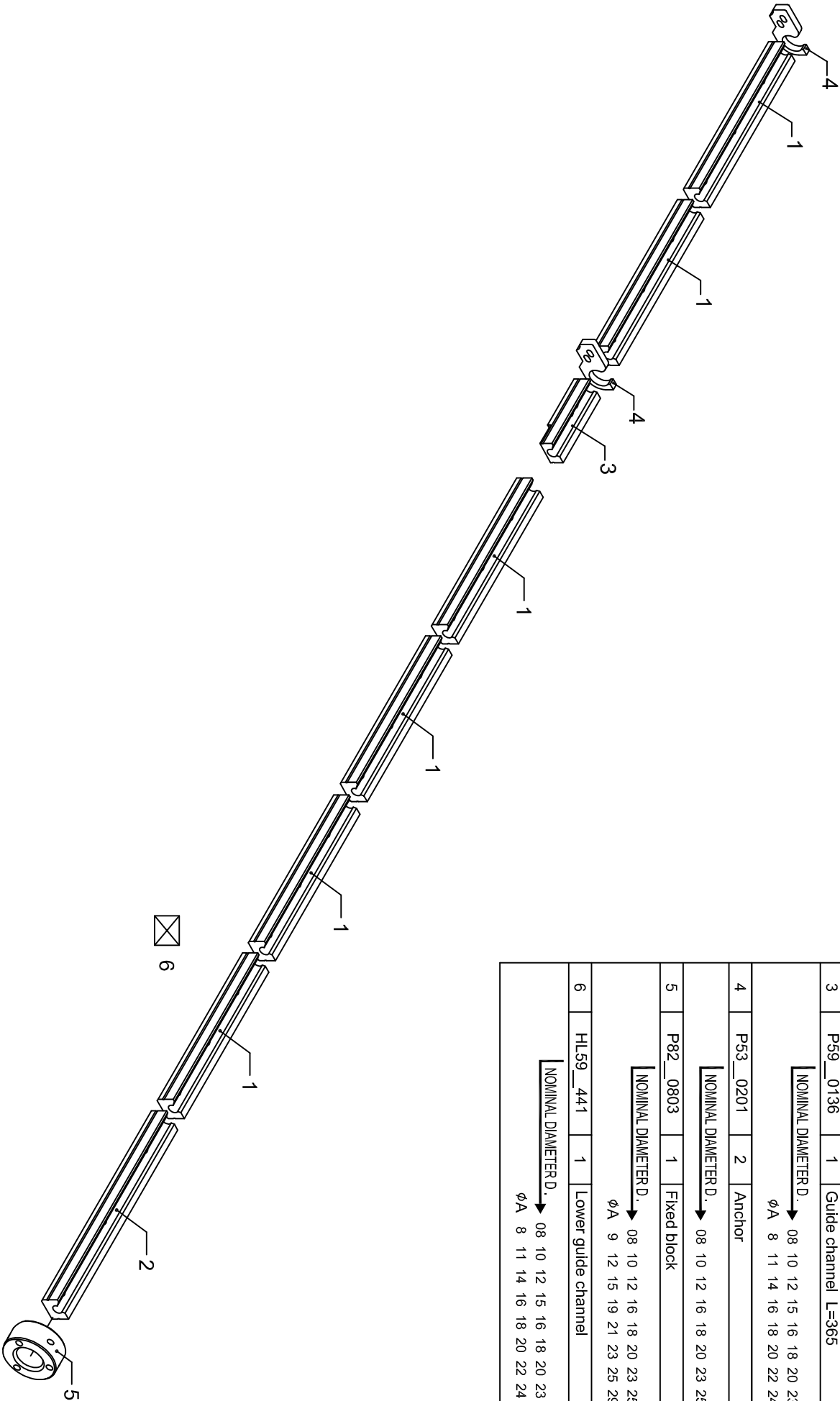| N.	Code	QTY	Denomination
1	P59__0154	6	Guide channel L=540
2	P59__0136	1	Guide channel L=365
3	P64__1000	1	Guide channel L=289
			NOMINAL DIAMETER D. ⌀A 08 10 12 15 16 18 20 23 25 8 11 14 16 18 20 22 24 28
4	P53__0201	2	Anchor
			NOMINAL DIAMETER D. ⌀A 08 10 12 16 18 20 23 25
5	P82__0803	1	Fixed block
			NOMINAL DIAMETER D. ⌀A 08 10 12 16 18 20 23 25 9 12 15 19 21 23 25 29
6	HL59__371-LL	1	Lower guide channel
			NOMINAL DIAMETER D. ⌀A 08 10 12 15 16 18 20 23 25 8 11 14 16 18 20 22 24 28

QUICK-GUIDE CHANNEL 22 LL

N.	Code	QTY	Denomination
1	P59___0162	1	Guide channel L=626
2	P59___0154	2	Guide channel L=540
3	P59___0136	1	Guide channel L=365
4	P64___1000	1	Guide channel L=289
	NOMINAL DIAMETER D.:		ØA 8 11 14 16 18 20 22 24 28
			08 10 12 15 16 18 20 23 25
5	P53___0201	2	Anchor
	NOMINAL DIAMETER D.:		08 10 12 16 18 20 23 25
6	P82___0803	1	Fixed block
	NOMINAL DIAMETER D.:		ØA 9 12 15 19 21 23 25 29
			08 10 12 16 18 20 23 25
7	HL59___221-LL	1	Lower guide channel
	NOMINAL DIAMETER D.:		ØA 8 11 14 16 18 20 22 24 28
			08 10 12 15 16 18 20 23 25

QUICK-GUIDE CHANNEL 32
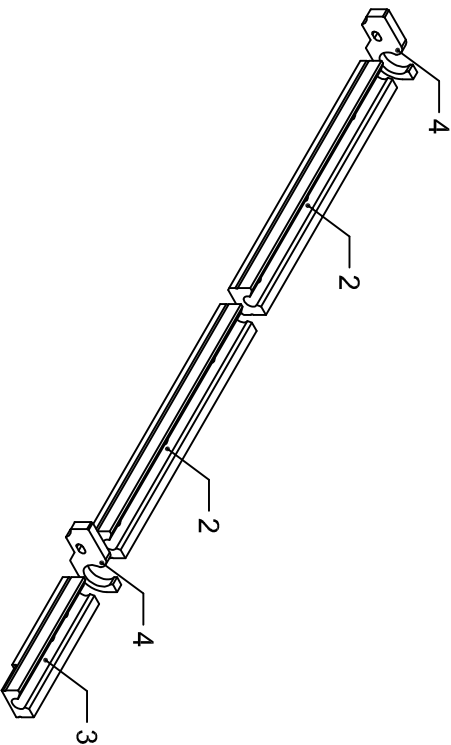
N.	Code	QTY	Denomination
1	P59__0158	1	Guide channel L=582
2	P59__0154	4	Guide channel L=540
3	P59__0136	1	Guide channel L=365
	NOMINAL DIAMETER D. 08 10 12 16 18 20 23 25		
	ØA 8 11 14 18 20 22 24 28		
4	P53__0201	2	Anchor
	NOMINAL DIAMETER D. 08 10 12 16 18 20 23 25		
5	P82__0803	1	Fixed block
	NOMINAL DIAMETER D. 08 10 12 16 18 20 23 25		
	ØA 9 12 15 19 21 23 25 29		
6	HL59__321	1	Lower guide channel
	NOMINAL DIAMETER D. 08 10 12 16 18 20 23 25		
	ØA 8 11 14 18 20 22 24 28		

BAR PUSHER DEVICE FOR MINUTEMAN 320

Tab. 082 10
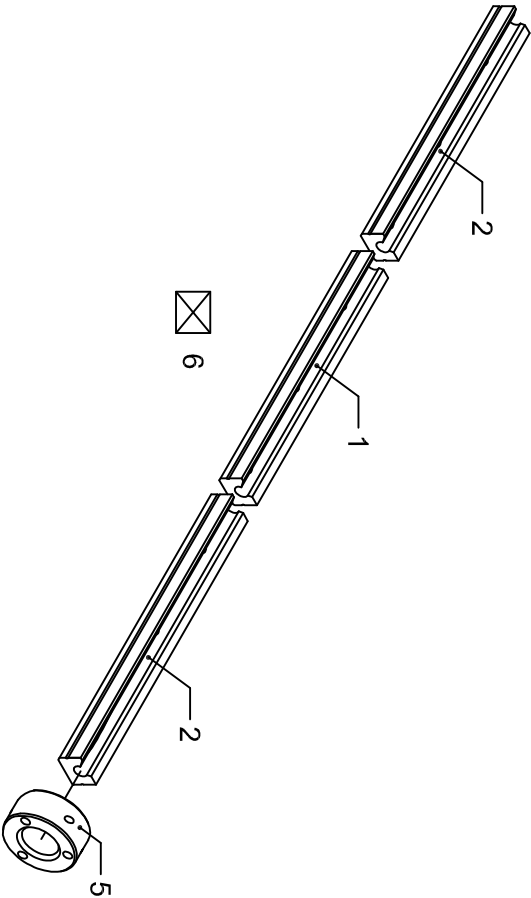
Bushing

Bushing	#	T
P52160200	12	6
	15	
	16	
P52200200	20	3.5
	23	
	25	

Push head

Push head	φ
P52120100	13
P52150100	15
P52160100	17
P52200100	21
P52230100	23
P52250100	27

Rear bar

Rear bar	φ
P52120600	13
P52150600	15
P52160600	17
P52200600	21
P52230600	23
P52250600	27

Parts list

N.	Code	QTY	Denomination
1	P52_0100	1	Push head
2	P52_0200	4	Bushing
3	P52200300	1	Plate
4	P52200500	1	Push plate
5	P52_0600	1	Rear bar
6	P5200700	1	Stop bush
7	P54_0102	1	Bar pusher
7	P54_0104	1	Bar pusher (LL)
8	P54_0500	1	Grease nipple
9	PD52_008	1	Bar pusher device
9	PD52_008-LL	1	Bar pusher device (LL)

Push bar sleeve(PE)

	Code	φA	φB
15#	P54150400	φ14.5	φ10.1
16#	P54160400	φ15.5	φ10.1
20#	P54200400	φ19.5	φ12.1
23#	P54230400	φ21.5	φ12.1
25#	P54250416	φ24.5	φ16.1

Bar pusher

Code	Bar pusher	φA	L
P54160102	15# 16#	φ10	1382
P54200102	20#	φ12	
P54250102	25#	φ16	
P54200104	20#	φ10	1367
P54230104	23#	φ12	
P54250104	25#	φ16	

Grease nipple

Code	Grease nipple φA
P54150500	φ15
P54160500	φ16
P54200500	φ20
P54230500	φ22
P54250500	φ25

Bar pusher (12#)

Code	Bar pusher φA		L
P54120102	12#	φ12	1435

Code	Bar pusher φA		L
P54120104	12#	φ12	1435

Tip

Tip	Figure	Code
12#	M7*P0.75	IER0712000

Tip	Figure	Code
15#	M8*P1.0	IER0815000
16#	M8*P1.0	IER0816000
20#	M10*P1.0	IER1020000
23#	M10*P1.0	IER1023000
25#	M10*P1.0	IER1025000

R is Right thread

Finger: IER 0712XXX
→ R is Right thread
→ Figure: M7, M12, M18
→ Outer DIA. EX: φ12→120
φ22.5→225
Bar Size

NOMINAL DIAMETER D.
→ 12 15 16 20 23 25

15÷25

12

9

8MM BAR PUSHER DEVICE FOR MINUTEMAN 320
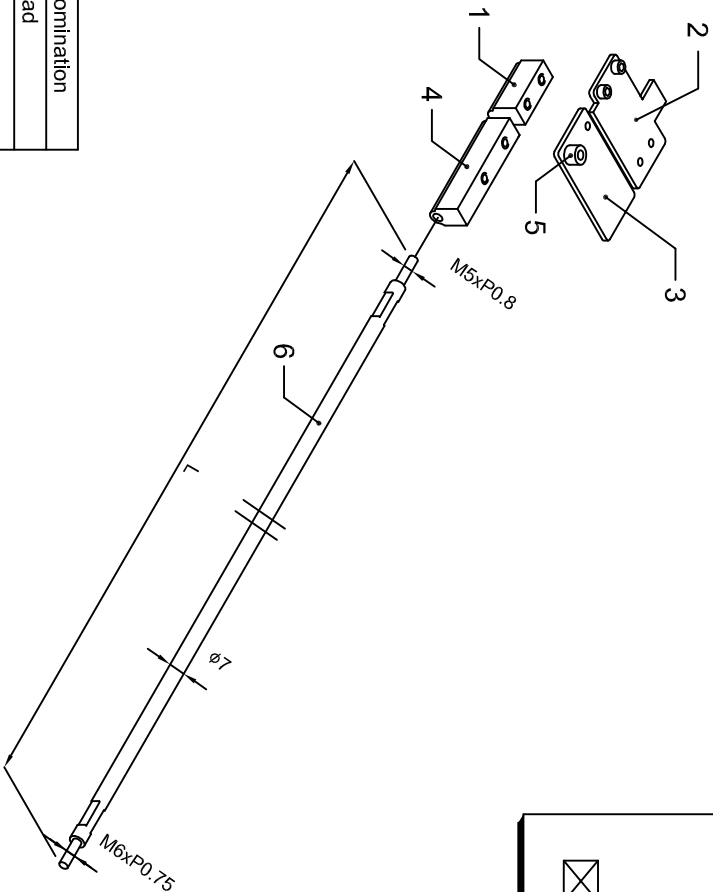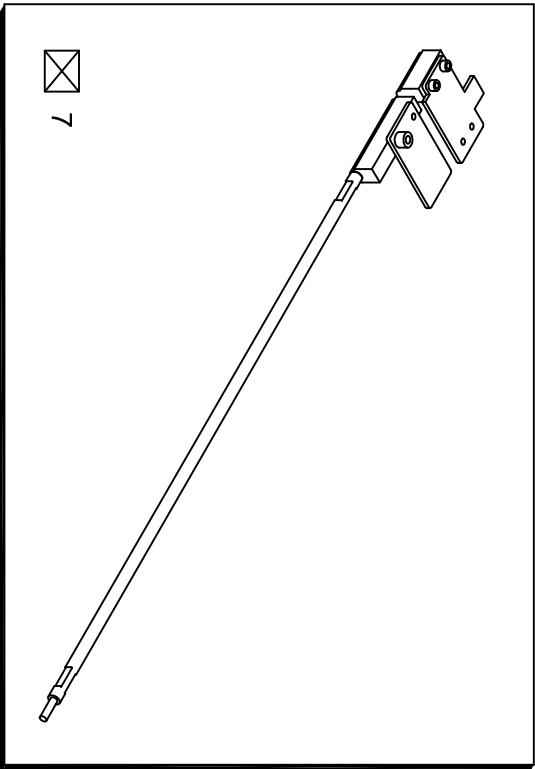
N.	Code	QTY	Denomination
1	P52080100	1	Push head
2	P52200300	1	Plate
3	P52200500	1	Push plate
4	P52080600	1	Rear bar
5	P5200700	1	Stop bush
6	P54080102	1	Bar pusher L=1243
6	P54080104	1	Bar pusher L=1534
7	PD5208008	1	Bar pusher device
7	PD5208008-LL	1	Bar pusher device (LL)

M5xP0.8

M6xP0.75

ø7

L

1
4
2
5
3
6
7

BAR PUSHER DEVICE FOR MINUTEMAN 320

N.	Code	QTY	Denomination
1	P52___0100	1	Push head
2	P52___0200	4	Bushing
3	P5200300	1	Plate
4	P5200500	1	Push plate
5	P52___0600	1	Rear bar
6	P5200700	1	Stop bush
7	PD52___008	1	Bar pusher device

NOMINAL DIAMETER D. → 10 18

Bushing	#	T
P52100200	10	8
P5200200	18	3.5

Push head	φ	QTY
P52100100	9.5	1
P52180100	19	

Rear bar	φ	QTY
P52100600	10	1
P52180600	19	

Code	Bar pusher	φA	QTY
P54100102	10#	φ10	1
AV18PB0400	18#	φ18	

Tip	Figure	Code
10#	M6*P0.75	IER0610000
18#	M8*P1.0	IER0818000

φA

1
2
3
4
5
6
7

PUSHER EXTENSION KIT 291MM

16
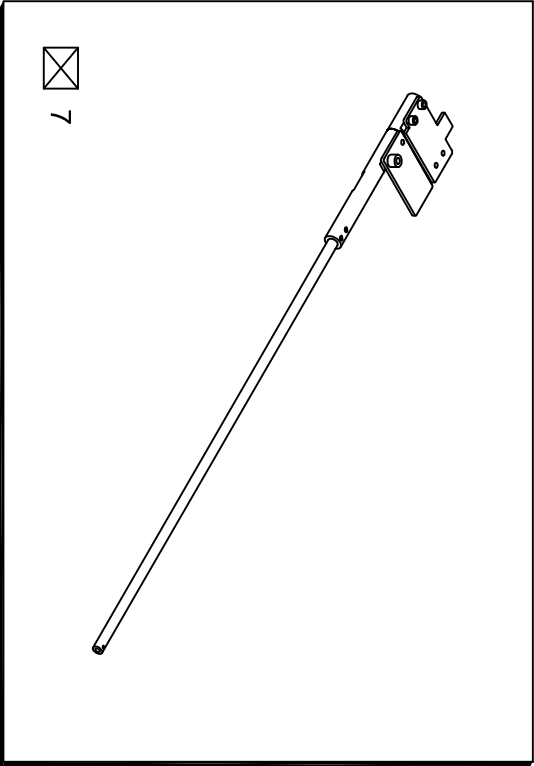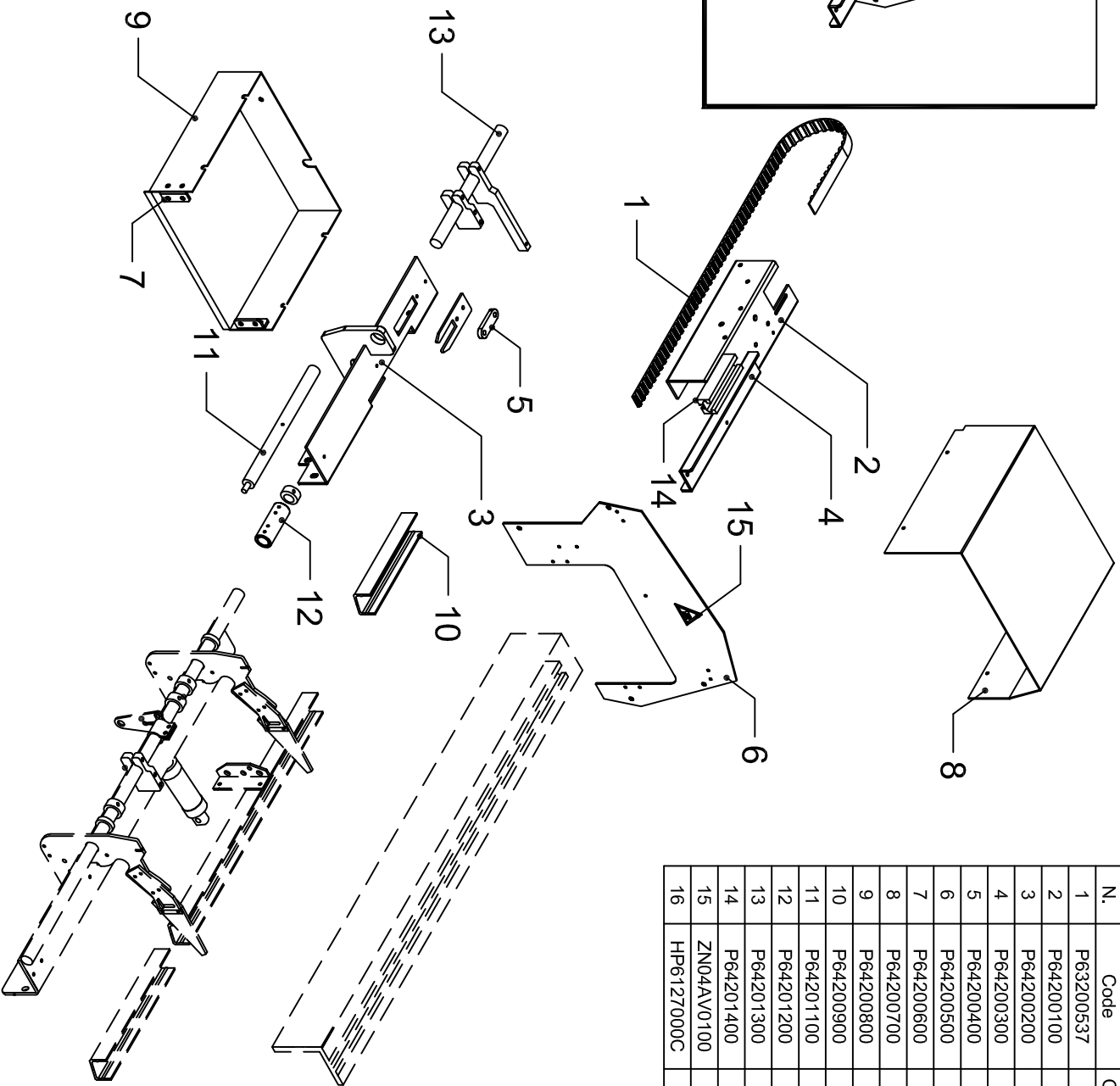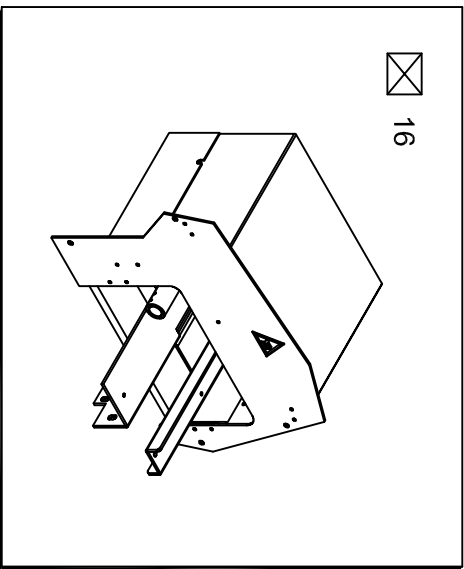
N.	Code	QTY	Denomination
1	P63200537	1	Belt open 9132L-16MM
2	P64200100	1	Beam L=289
3	P64200200	1	Seat
4	P64200300	1	Central shaft
5	P64200400	1	Spacer
6	P64200500	1	Plate
7	P64200600	2	Plate
8	P64200700	1	Cover
9	P64200800	1	Dilslot
10	P64200900	1	Seat
11	P64201100	1	Arbor
12	P64201200	1	Connector rod
13	P64201300	1	Arbor
14	P64201400	1	Arbor
15	ZN04AV0100	1	Rail L=291
16	HP6127000C	1	Ming version
			Pusher extension kit

Tab. 088 2

MM-320

COOLANT THROUGH PUSHER KIT

Tab. 089 1

N.	Code	QTY	Denomination
1	HP6520000B	2	Lead reel plate
2	P62200502	1	Baffle plate
3	A13130800	1	Quick coupling
4	A13130900	1	Hose nipple
5	A13120310	1	Elbow connector
6	P65200200	1	Support plate (Left)
7	P65200210	1	Support plate (Right)
8	P65201100	1	Cover
9	P65200900	2	Connecting rod
10	P65201300	1	Oil drip tray
11	P65200400	1	Arbor
12	P65200310	1	Bearing bracket
13	P65201400	1	Volute spring
14	P65200100	1	Spring plate
15	P65200110	2	Stop plate
16	P65200120	1	Bobbin
17	P65201600	1	Nylon air hose
18	P65200500	1	Locating plate
19	P65200300	1	Side bearing bracket
20	B6902ZZ	4	Bearing
21	P76201103	1	Rear plat
22	P652001500	1	Dowel pin
23	HP6520000A	1	Coolant through pusher kit
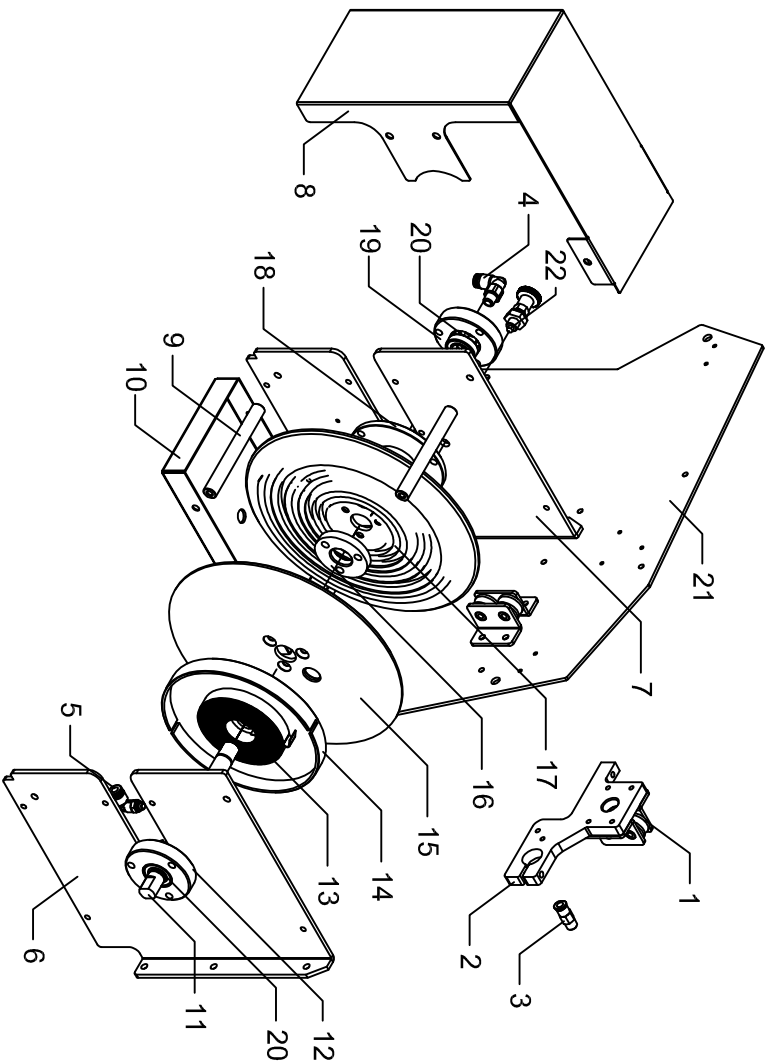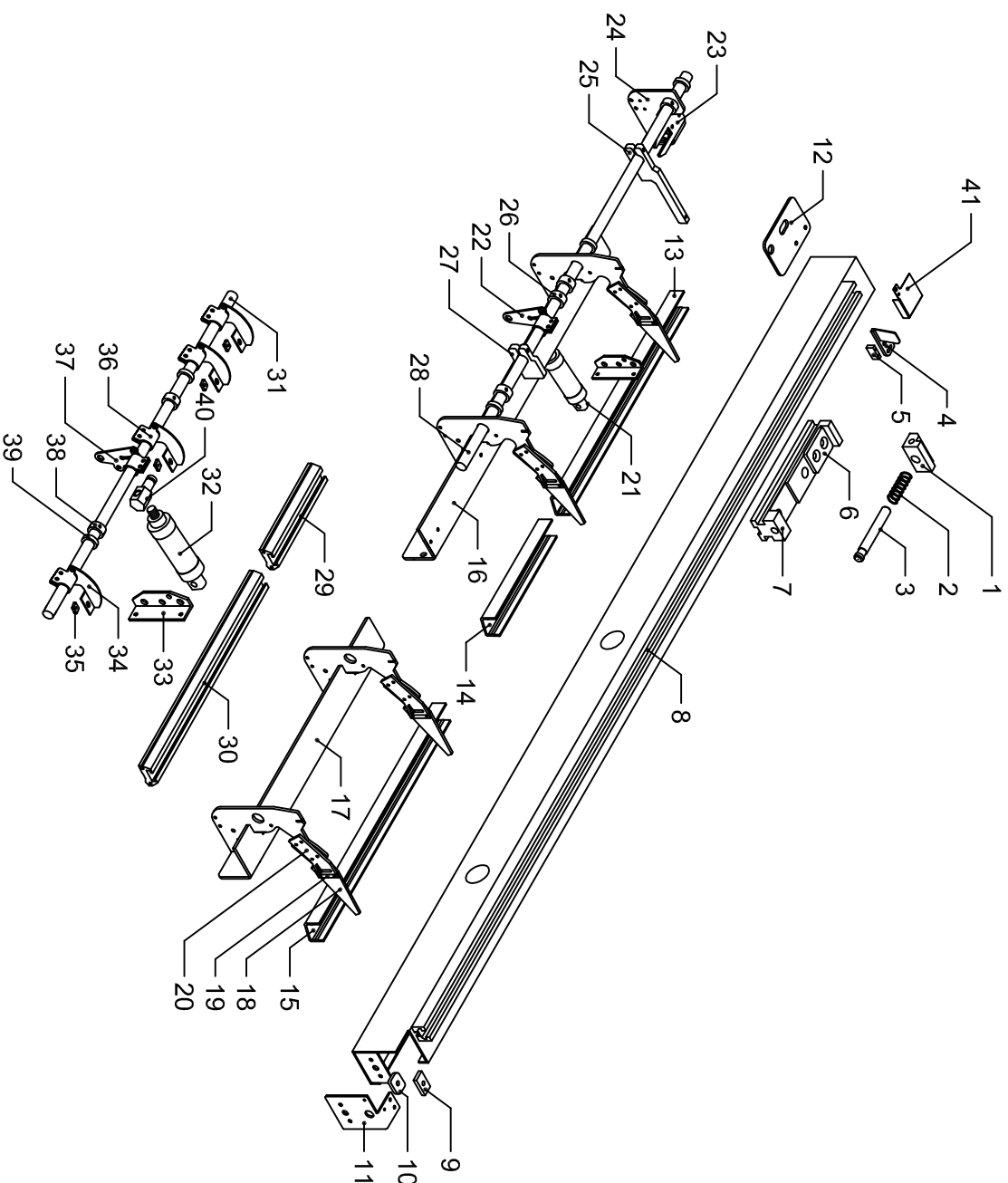
N.	Code	QTY	Denomination
1	P61200400	1	Stop block
2	P61200600	1	Spring
3	P61200300	1	Central shaft
4	P62200300	1	Stop plate
5	P62200401	1	Anchor
6	P52200400	1	Press plate
7	P63200100	1	Push block
8	P61200122	1	Rail L=2632
9	P62201800	1	Block
10	P62201700	1	Fixed block
11	P43201400	1	Extension plate
12	P62200710	1	Anchor
13	P13200400	4	Plate
14	P58200100	1	Back aluminum batten L=1047
15	P58200200	1	Center aluminum batten L=310
16	P16200100	1	Aluminum batten L=634
17	P16200122	1	Seat L=1342.5
18	P13200300	4	Seat L=650
19	P13200400	4	Press plate
20	P13200200	4	Plate
21	A11110300	1	Connection plate
22	P12200403	2	Cylinder MAL-25x75-CA
23	P62201900	1	Support
24	P13200500	1	Plate
25	P62200501	1	Anchor
26	P13200700	2	Support
27	P53200200	1	Bushing
28	P13200814	1	Anchor
29	P58200331	1	Arbor L=1400
30	P58200362	1	Upper guide channel L=310
31	P13200800	1	Upper guide channel L=620
32	A11111320	1	Arbor L=3000
33	P53200500	2	Cylinder MAL-25x50-CA
34	P58200500	4	Plate
35	P58200400	4	Support
36	P12200402	4	Arbor
37	P12200401	2	Support
38	P13200600	4	Collet
39	P14200700	5	Bushing
40	P53200400	2	Ring
41	P48200500	1	Connector M10xP1.25
			Cover

SUPPORT 37
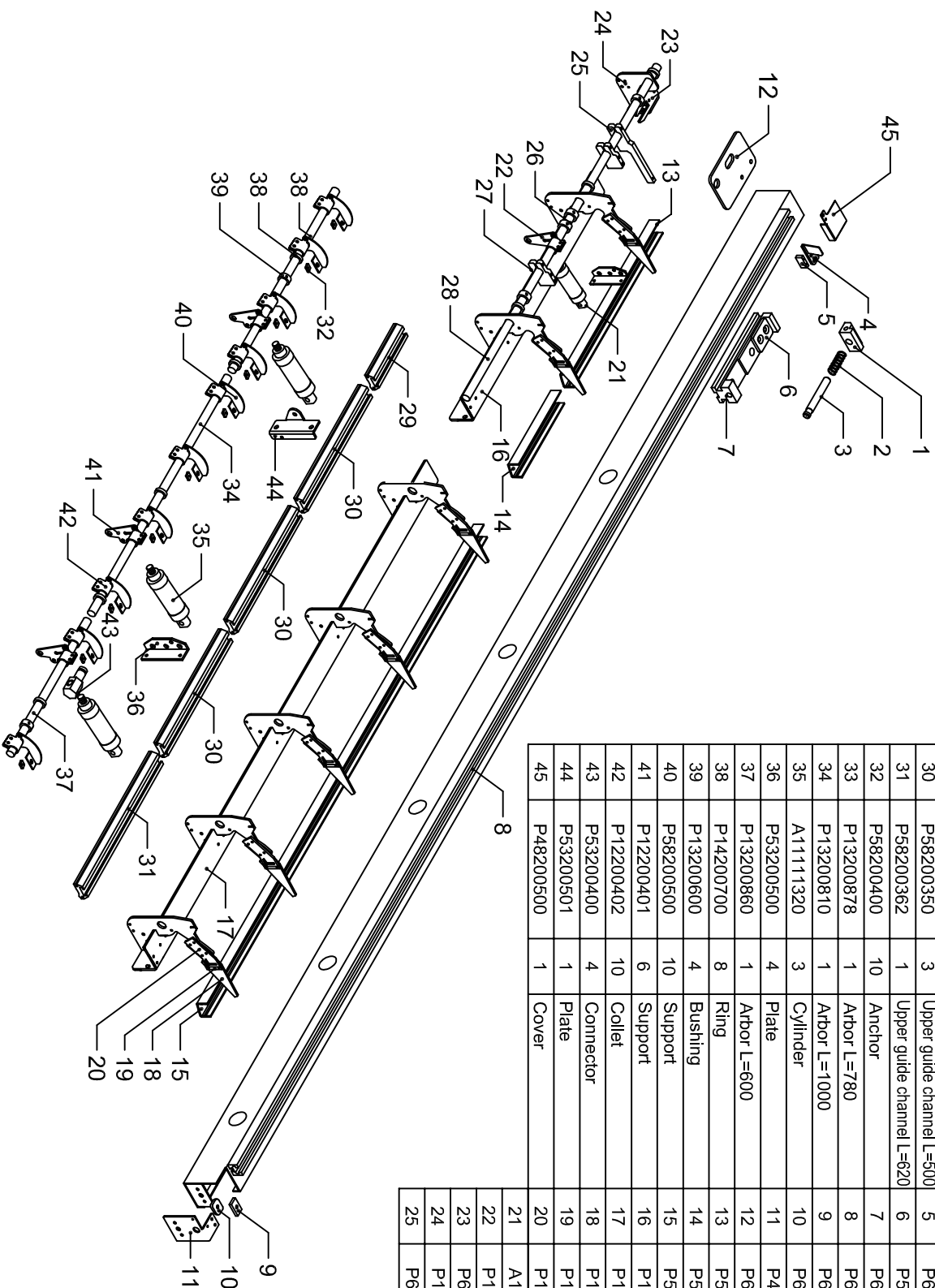
N.	Code	QTY	Denomination
26	P13200700	2	Bushing
27	P53200200	1	Anchor
28	P13200814	1	Arbor L=1400
29	P58200331	1	Upper guide channel L=310
30	P58200350	3	Upper guide channel L=500
31	P58200362	1	Upper guide channel L=620
32	P58200400	10	Anchor
33	P13200878	1	Arbor L=780
34	P13200810	1	Arbor L=1000
35	A11111320	3	Cylinder
36	P53200500	4	Plate
37	P13200860	1	Arbor L=600
38	P14200700	8	Ring
39	P13200600	4	Bushing
40	P58200500	10	Support
41	P12200401	6	Support
42	P12200402	10	Collet
43	P53200400	4	Connector
44	P53200501	1	Plate
45	P48200500	1	Cover

N.	Code	QTY	Denomination
1	P61200400	1	Stop block
2	P61200600	1	Spring
3	P61200300	1	Central shaft
4	P62200300	1	Stop plate
5	P62200401	1	Anchor
6	P52200400	1	Press plate
7	P63200100	1	Push block
8	P61200138	1	Rail L=4166
9	P62201800	1	Block
10	P62201700	1	Fixed block
11	P43201400	1	Extension plate
12	P62200710	1	Anchor
13	P58200100	1	Back aluminum batten L=1047
14	P58200200	1	Center aluminum batten L=310
15	P58200137	1	Aluminum batten L=2175
16	P16200100	1	Seat L=1342,5
17	P16200137	1	Seat L=2190
18	P13200300	7	Press plate
19	P13200400	7	Plate
20	P13200200	7	Connection plate
21	A11110300	1	Cylinder MAL-25x75-CA
22	P12200403	2	Support
23	P62201900	1	Plate
24	P13200500	1	Anchor
25	P62200501	1	Support

SUPPORT 44
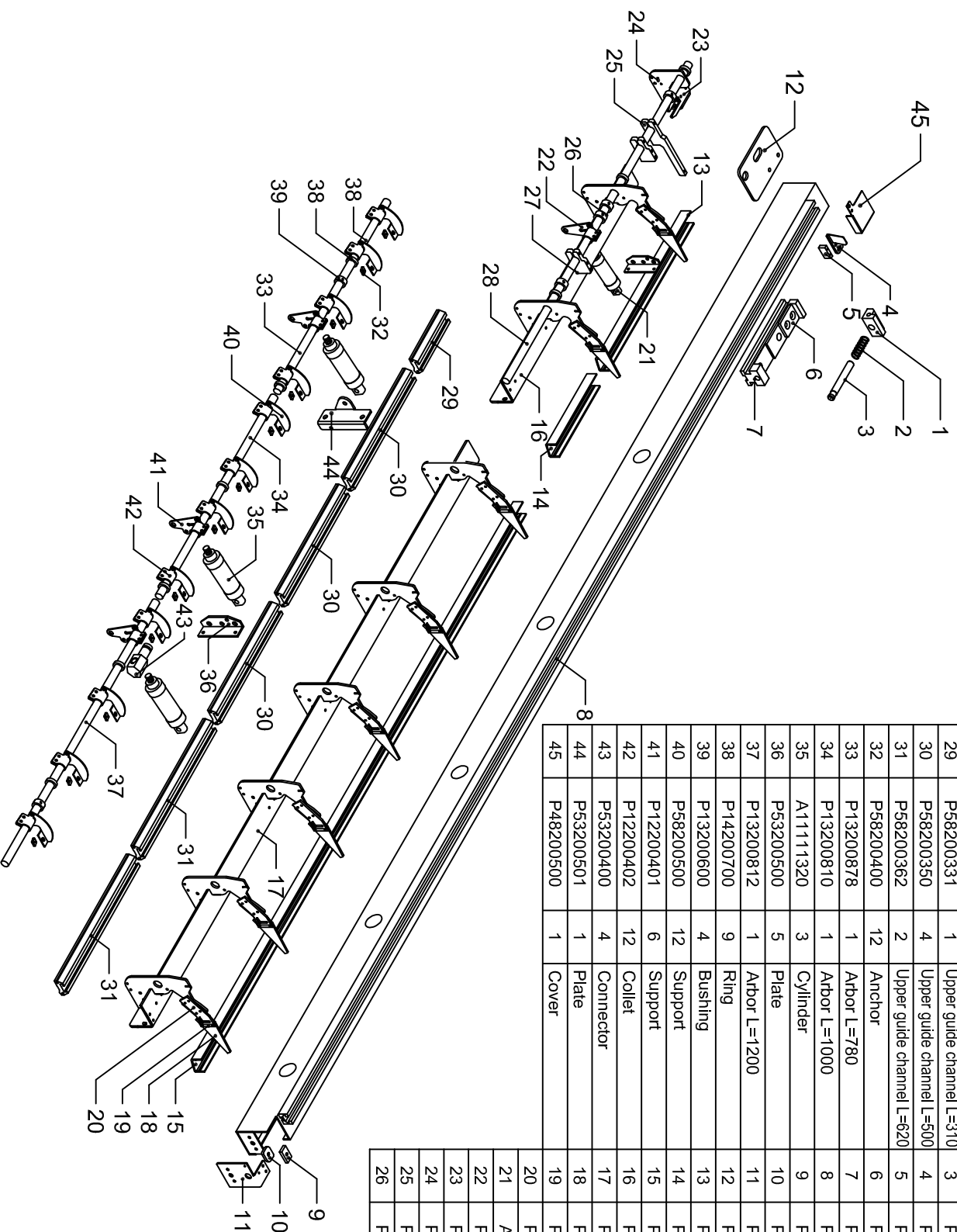
N.	Code	QTY	Denomination
27	P53200200	1	Anchor
28	P13200814	1	Arbor L=1400
29	P58200331	1	Upper guide channel L=310
30	P58200350	4	Upper guide channel L=500
31	P58200362	2	Upper guide channel L=620
32	P58200400	12	Anchor
33	P13200878	1	Arbor L=780
34	P13200810	1	Arbor L=1000
35	A11111320	3	Cylinder
36	P53200500	5	Plate
37	P13200812	1	Arbor L=1200
38	P14200700	9	Ring
39	P13200600	4	Bushing
40	P58200500	12	Support
41	P12200401	6	Support
42	P12200402	12	Collet
43	P53200400	4	Connector
44	P53200501	1	Plate
45	P48200500	1	Cover

N.	Code	QTY	Denomination
1	P61200400	1	Stop block
2	P61200600	1	Spring
3	P61200300	1	Central shaft
4	P62200300	1	Stop plate
5	P62200401	1	Anchor
6	P52200400	1	Press plate
7	P63200100	1	Push block
8	P61200144	1	Rail L=4766
9	P62201800	1	Block
10	P62201700	1	Fixed block
11	P43201400	1	Extension plate
12	P62200710	1	Anchor
13	P58200100	1	Back aluminum batten L=1047
14	P58200200	1	Center aluminum batten L=310
15	P58200144	1	Aluminum batten L=2760
16	P16200100	1	Seat L=1342.5
17	P16200144	1	Seat L=2774
18	P13200300	8	Press plate
19	P13200400	8	Plate
20	P13200200	8	Connection plate
21	A11110300	1	Cylinder MAL-25x75-CA
22	P12200403	2	Support
23	P62201900	1	Plate
24	P13200500	1	Anchor
25	P62200501	1	Support
26	P13200700	2	Bushing

SUPPORT 32
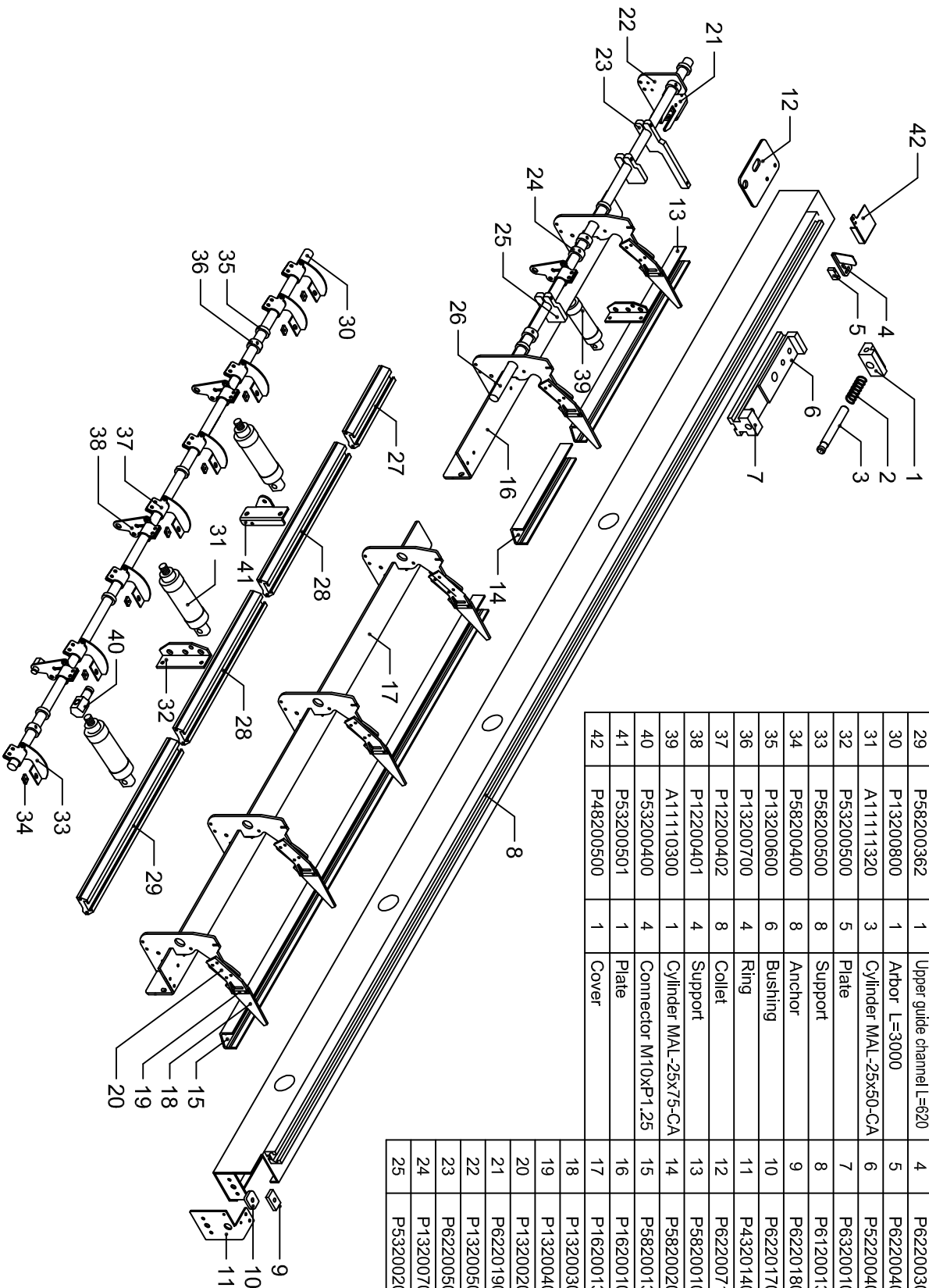
N.	Code	QTY	Denomination
26	P13200814	1	Arbor L=1400
27	P58200331	1	Upper guide channel L=310
28	P58200350	2	Upper guide channel L=500
29	P58200362	1	Upper guide channel L=620
30	P13200800	1	Arbor L=3000
31	A11111320	3	Cylinder MAL-25x50-CA
32	P53200500	5	Plate
33	P58200500	8	Support
34	P58200400	8	Anchor
35	P13200600	6	Bushing
36	P13200700	4	Ring
37	P12200402	8	Collet
38	P12200401	4	Support
39	A11110300	1	Cylinder MAL-25x75-CA
40	P53200400	4	Connector M10xP1.25
41	P53200501	1	Plate
42	P48200500	1	Cover

N.	Code	QTY	Denomination
1	P61200400	1	Stop block
2	P61200600	1	Spring
3	P61200300	1	Central shaft
4	P62200300	1	Stop plate
5	P62200401	1	Anchor
6	P52200400	1	Press plate
7	P63200100	1	Push block
8	P61200133	1	Rail L=3666
9	P62201800	1	Block
10	P62201700	1	Fixed block
11	P43201400	1	Extension plate
12	P62200710	1	Anchor
13	P58200100	1	Back aluminum batten L=1047
14	P58200200	1	Center aluminum batten L=310
15	P58200132	1	Aluminum batten L=1675
16	P16200100	1	Seat L=1342.5
17	P16200132	1	Seat L=1690
18	P13200300	6	Press plate
19	P13200400	6	Plate
20	P13200200	6	Connection plate
21	P62201900	1	Plate
22	P13200500	1	Anchor
23	P62200501	1	Anchor
24	P13200700	2	Bushing
25	P53200200	1	Anchor

FIRST ANIT-VIBRATION DEVICE

Tab. 101 g

N.	Code	QTY	Denomination
1	P85200700	2	Plate
2	P85200100	2	Arbor
3	P85200200	2	Anchor
4	P85200300	1	Plate
5	P85200400	1	Plate
6	P85200500	1	Plate
7	P85200600	1	Plate
8	P82200900	1	Anchor
9	HP8127000F	4	Spacer set
10	P85201360	1	Indicator plate
11	P85201350	1	Scale shaft
12	A11130100	1	Cylinder SDA 25x20
13	P82201200	2	Fix rod
14	P76202100	1	Cover
15	BMR126	4	Bushing
16	P85200900	2	Anchor
17	P85201300	1	Arbor
18	G55120900	2	Ball BP-06L
19	A12130300	2	Flow regulator M5,ϕ6
20	P852010__A	1	Anti-vibration bushing set
21	P852010__	2	Bushing block

	NOMINAL DIAMETER D.		
	ϕ 02 08 10 12 14 16 18 20 22 24 26 28		
	3 9 11 13 15 17 19 21 23 25 27 29		
22	P85200800	2	Arbor

ϕ6x22x6

ANTI-VIBRATION DEVICE (LEFT)

Tab. 102 8

N.	Code	QTY	Denomination
1	P85200700	2	Plate
2	P85200100	2	Arbor
3	P85200200	2	Anchor
4	P85200300	1	Plate
5	P85200500	1	Plate
6	P85200600	1	Plate
7	HP8127000F	4	Spacer Set
8	P85201350	1	Scale shaft
9	A11130100	1	Cylinder SDA 25x20
10	BMR126	4	Bushing
11	P85200900	2	Anchor
12	G55120900	2	Ball BP-06L
13	A12130300	2	Flow regulator M5,⌀6
14	P85201360	1	Indicator plate
15	HP8127001A	1	Anti-vibration device
16	P852010___A	1	Bushing set
17	P852010___	2	Bushing block
18	P85200800	2	Arbor

NOMINAL DIAMETER D.
⌀ 02 08 10 12 14 16 18 20 22 24 26 28
3 9 11 13 15 17 19 21 23 25 27 29

MM-320

ANTI-VIBRATION DEVICE (RIGHT)

Tab. 103/4

N.	Code	QTY	Denomination
1	P85200700	2	Plate
2	P85200100	2	Arbor
3	P85200200	2	Anchor
4	P85200300	1	Plate
5	P85200500	1	Plate
6	P85200600	1	Plate
7	HP8127000F	4	Spacer Set
8	P85201350	1	Scale shaft
9	A11130100	1	Cylinder SDA 25x20
10	BMR126	4	Bushing
11	P85200900	2	Anchor
12	G55120900	2	Ball BP-06L
13	A12130300	2	Flow regulator M5,⌀6
14	P85201360	1	Indicator plate
15	HP8127002A	1	Anti-vibration device
16	P852010 __ A	1	Bushing set
17	P852010 __	2	Bushing block
18	P85200800	2	Arbor

NOMINAL DIAMETER D.

⌀ 02 08 10 12 14 16 18 20 22 24 26 28
3 9 11 13 15 17 19 21 23 25 27 29

MM-320

SYNCHRONIZATION
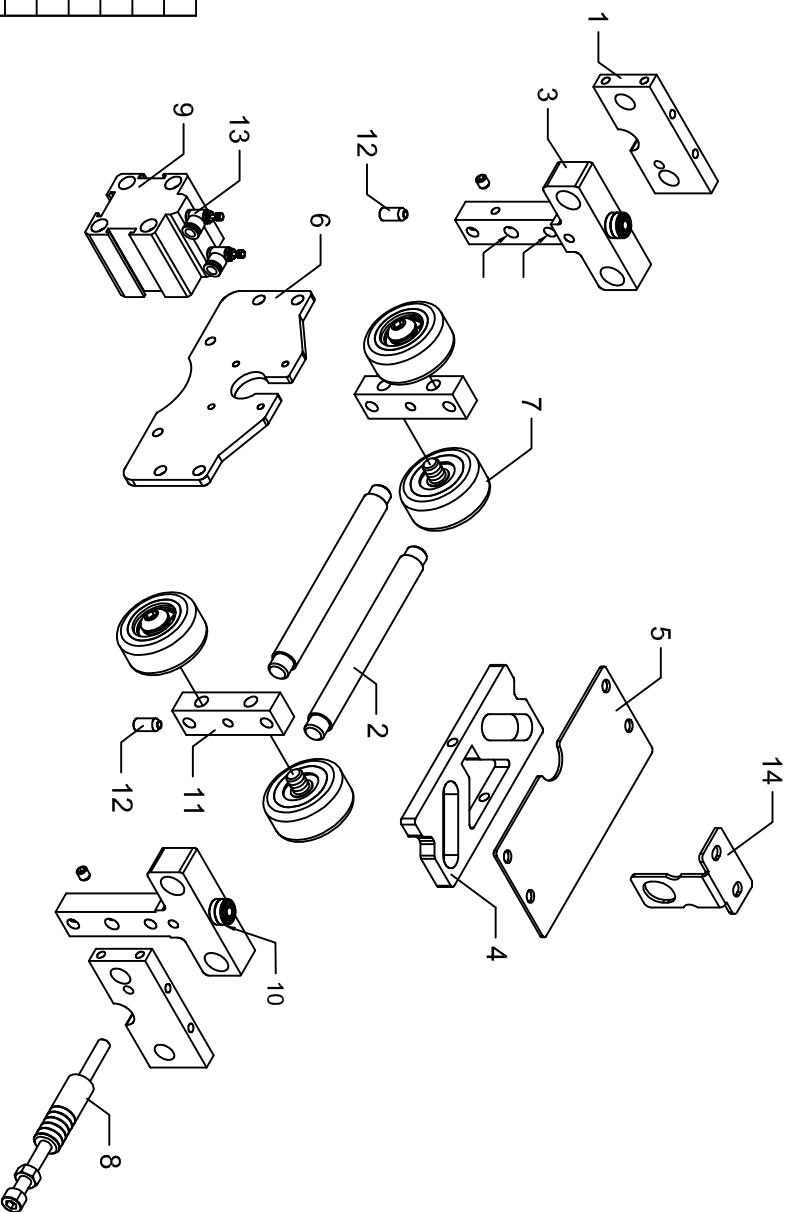
N.	Code	QTY	Denomination
1	P49200700	1	Base plate
2	B6001ZZ	2	Bearing 6001ZZ
3	P49201700	1	Pulley L 17T
4	P49203300	1	Shaft
5	P49203900	1	Spacer
6	P49203100	1	Pulley L 17T
7	B6002ZZ	2	Bearing 6002ZZ
8	P49203200	1	Spacer
9	RA26DR2000	1	Clutch
10	P49203800	1	Spacer
11	P49203400	1	Plate
12	P49202403	1	Bar
13	P49202600	1	Bush
14	P49203500	1	Front cover
15	ZS0605052O	2	Key 5x20
16	P49203600	1	Rear cover
17	P49203700	1	Support
18	607460402	1	Plate
19	P49202100	1	Cover
20	P49202200	1	Cover
21	P49201000	1	Slider
22	P49202300	1	Belt
23	P49201300	1	Seat
24	P49201400	1	Spacer
25	P49201500	1	Cover
26	P49200400	1	Tighten seat
27	P49200500	1	Support
28	P48200300	1	Pulley L 15T
29	B6000ZZ	2	Bearing 6000ZZ
30	P11201900	2	Support
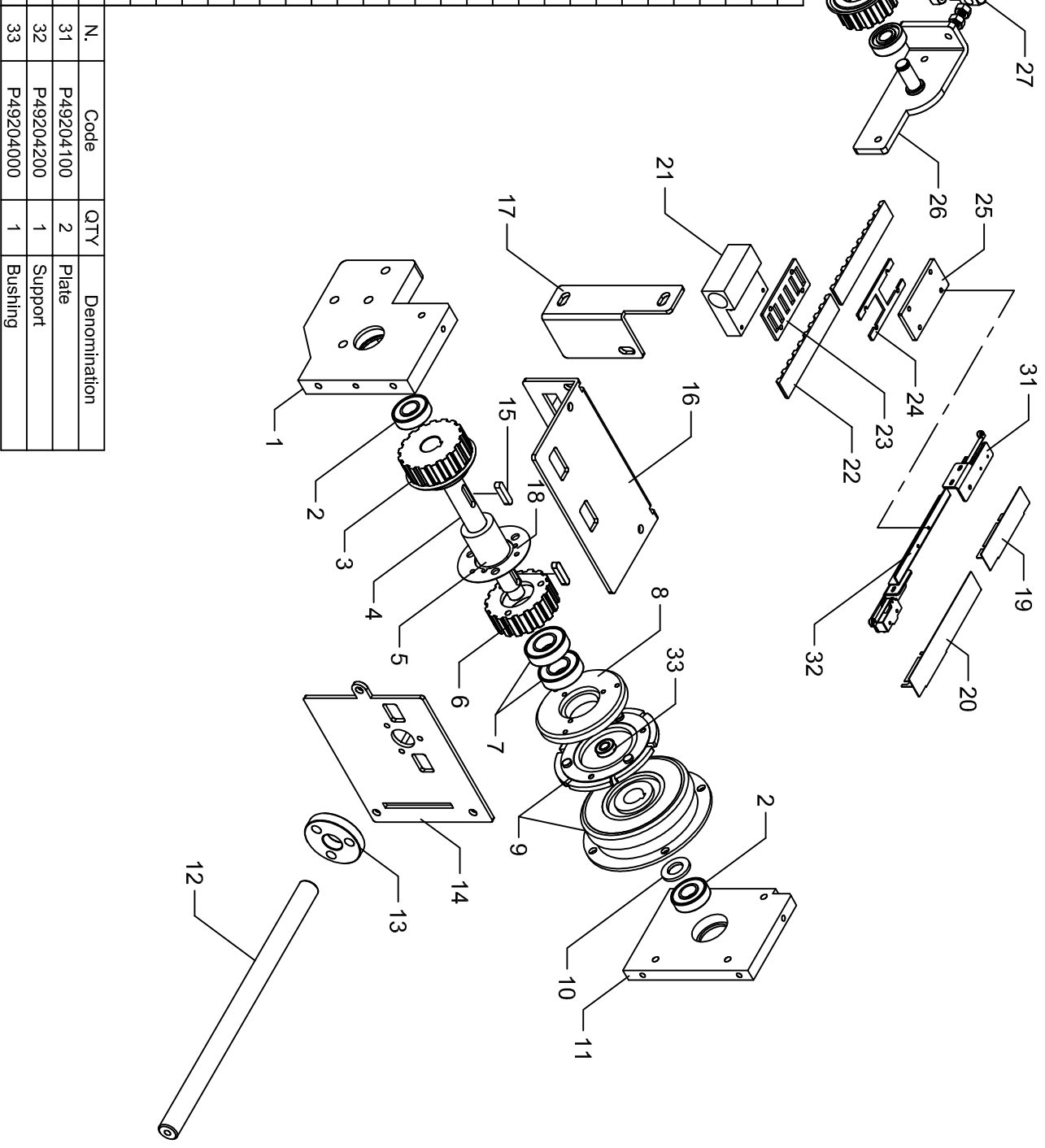
N.	Code	QTY	Denomination
31	P49204100	2	Plate
32	P49204200	1	Support
33	P49204000	1	Bushing

Tab. 111 8

MM-320

316MM TELESCOPIC FRONT NOSE

Tab. 120 | 8

N.	Code	QTY	Denomination
1	P78200101	1	Telescopic pipe L=235
2	P78200102	1	Collet
3	P78200201	1	First block L=195
4	P78200700	1	Oil gathering L=243
5	P78200500	1	Ring
6	P78200600	1	Oil gathering L=235
7	HP77___001	1	Telescopic front nose

NOMINAL DIAMETER D. → 12 16 20 23
øA 14 18 22 24

Support P77__1101

øA	--
14	12
18	16
22	20
24	23

Bushing P78__0300

øA	--
14	12
18	16
22	20
24	23

Collet P78__0202

øA	--
12	16
18	20
27.5	23
28	
30	

Small pipe P78__0400
0401+0402

øA	--	øB
12	18	18
14	27.4	
18	16	20
22	20	23
24	28	30

Bushing P78__1500

øA	--
12	18
16	27.4
20	28

ø30

660

316

316MM TELESCOPIC FRONT NOSE-8#

N.	Code	QTY	Denomination
1	P78200101	1	Telescopic pipe L=235
2	P78200102	1	Collet
3	P78200201	1	First block L=195
4	P78161500	1	Bushing
5	P78200700	1	Oil gathering L=243
6	P78200500	1	Ring
7	P78200600	1	Oil gathering L=235
8	HP7708001	1	Telescopic front nose

Support		
P77081101	φA	08

Bushing		
P78080300	φA	08

Collet		
P78160202	φA	27.5

Small pipe L=275	
P78080400	

Small pipe		
P78080436	φA	8

⊠ 8

660

316

φ8

φ27.4

φ30

Tab. 121 | 8

316MM TELESCOPIC FRONT NOSE-18#

N.	Code	QTY	Denomination
1	P78200101	1	Telescopic pipe L=235
2	P78200102	1	Collet
3	P78200201	1	First block L=195
4	P78160402	1	Ring
5	P78180401	1	Sleeve18 L=259
6	P78200700	1	Oil gathering L=243
7	P78200500	1	Ring
8	P78200600	1	Oil gathering L=235
9	HP7718001	1	Telescopic front nose

Support		
P77181101	øA	20

Bushing		
P78180300	øA	20

Collet		
P78230202	øA	30

Tab. 122 2

316MM TELESCOPIC FRONT NOSE-10#

Tab. 123 3

N.	Code	QTY	Denomination
1	P78200101	1	Telescopic pipe L=235
2	P78200102	1	Collet
3	P78200201	1	First block L=195
4	P78101500	1	Bushing
5	P78200700	1	Oil gathering L=243
6	P78200500	1	Ring
7	P78200600	1	Oil gathering L=235
8	HP77100001	1	Telescopic front nose

Support		
P77101101	ϕA	11

Bushing		
P78100300	ϕA	11

Collet		
P78100202	ϕA	15

Small pipe L=275	
P78100420	
0421+0402	

MM-320

320MM TELESCOPIC FRONT NOSE-25#

N.	Code	QTY	Denomination
1	P78250101	1	Telescopic pipe L=220
2	P78250102	1	Collet
3	P78250200	1	2ND Telescopic pipe L=245
4	P78250202	1	Collet
5	P78250400	1	Small pipe L=245
6	P77251101	1	Bushing
7	P82250802	1	Plate
8	P78200700	1	Oil gathering L=243
9	P78200500	1	Ring
10	P78200600	1	Oil gathering L=235
11	HP7725001	1	Telescopic front nose

φ44.5

φ56.5

6

1

2

3

4

5

7

10

9

8

11

660

320

φ28

φ44.5

φ56.5

FIXED FRONT NOSE

First block

P55 _ 0 _

ØA				L
14	12	—	200	100
18	16	—	300	250
22	20	—	302	300
24	23			
28	25		300	

N.	Code	QTY	Denomination
1	P77200800	1	Oil ring
2	A13120600	1	Joint

Tab. 130 2

Minuteman Parameter Record

Customer:	*HMI Version*
Bar feeder Model: *S/N:*	
Lathe Model: *S/N:*	
Service Technician	*PLC Version*
Date:	
Distance From Lathe: *Center Height:*	

F1 Turning Parameter

Part Length + Cut Off Tool Width _____ ☐ mm ☐ in   *First Feeding Speed* _____ %

Collet Open Pusher Speed _____ %   *Oil Pump Shutoff Position* _____ ☐ mm ☐ in

Collet Open Pusher Torque _____ %   *Long Feed Safety Max. Distance* _____ ☐ mm ☐ in

Closed Collet Pusher Speed _____ %   *Short Feed Safety Min. Distance* _____ ☐ mm ☐ in

Closed Collet Pusher Torque _____ %   *Sync Device Disengagement Position* _____ ☐ mm ☐ in

Manual Pusher Speed _____ %   *2nd EOB when this Length Remains* _____ ☐ mm ☐ in

Manual Pusher Torque _____ %   *Number of Pecking Cycles* _____

Movable Anti-vibration Opening Position _____ ☐ mm ☐ in **Part Length 2** _____ ☐ mm ☐ in

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F2 Fixed Parameters

Facing Position _____ □mm □in Barchange Return Delay _____ □mm □in

Maximum Pusher Forward Travel _____ □mm □in Pushing After Collet Closed _____ □mm □in

1ˢᵗ AVD Opening Position _____ □mm □in Closed Collet Timeout _____ □mm □in

2ⁿᵈ AVD Opening Position _____ □mm □in   Open Collet Timeout _____ □mm □in

3ʳᵈ AVD Opening Position _____ □mm □in Barchange Return Speed _____ %

4ᵗʰ AVD Opening Position _____ □mm □in Max Pushback Collet Open _____ □mm □in

First Feed Max Travel _____ □mm □in Cycle Start Pulse Timer _____ Seconds

Cycle Start Delay After Barchange _____ Seconds   Pusher Length _____ □mm □in

Movable Anti-vibration Reclose Position _____ □mm □in   Facing Slowdown Spd _____ %

F3 Particular Program Modify

F4: Demo Mode: □ On   □ Off

F5: Swiss/Fixed headstock Mode: □ Swiss   □ Fixed Headstock

F6: Continuous Feeding: □ On   □ Off

F3 Page Continue

F4: □ Bar Loader   □ Roller Loader

F5: □ Face To pos □ Face To Stop

F6: □ Extract   □ Front Eject

F3 Page Continue

F4: MAVD: □ W/Collet Open □ W/O Collet Open

F5: AVD: □ W/Collet Open □ W/O Collet Open

F6: AVD: □ Normal Lathe   □ Gild

F3 Particular Program Modify (Continued)

F3 Page Continue

F4: Feed Stop: ☐ *Normal*   ☐ *Feedstop Latch*

F5: ☐ *Do Not Feed After EOB*   ☐ *Feed After EOB*

F4 Slow Down Positions

Home Slowdown Position _____ ☐*mm* ☐*in*

Pre-feed Slowdown Position _____ ☐*mm* ☐*in*

F7 Change MM/IN Mode

F8 Program Version

PLC _____

HMI _____

F9 Signal Test

OPERATIONS MANUAL

Version 13.1
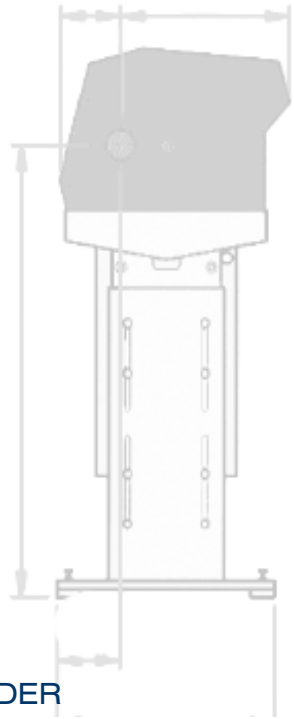
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