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Patriot 338 & 551

Version 10

Patriot Series
338 & 551
OPERATIONS MANUAL

PATRIOT 338/551

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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 Patriot 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 bushings surround the bar, leaving a few millimeters clearance between the bar and the bushings. This void is filled with oil to help further stabilize and support the stock. 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.

Our touch screen control panel gives access to parameters that allow easy set up and operation. Most job changeovers require only one or two parameter settings. While in the automatic mode the screen displays helpful information.

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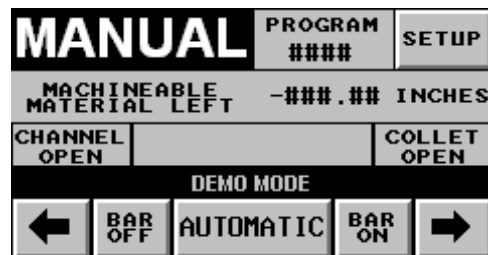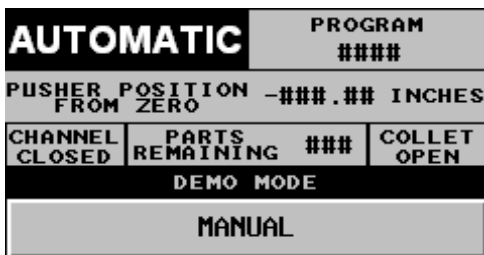
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Following Features

- (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
- (1) O.D. bar stock collet (to be chosen by customer, specific collet needed for each stock diameter)
- (1) Bushing block for outboard anti-vibration device to be chosen by customer based on bar diameter
- Automatic remnant retraction, self-centering gripper
- Synchronization device and Swiss lathe adaption kit
- Custom lathe cable and interface plugs
- Air knife with flow control valve
- 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 Patriot models are available in 3 different pusher length configurations reflected in the chart below.

Model Length	8'	8' extended	12'	12' extended
L	3020mm	3553mm	4222mm	4762mm
A (Max Bar Length)	2600mm		3800mm	
B	276mm		574mm	
C	1309mm		1559mm	
H	850mm to 1300mm			
Weight	850 Kg		950 Kg	

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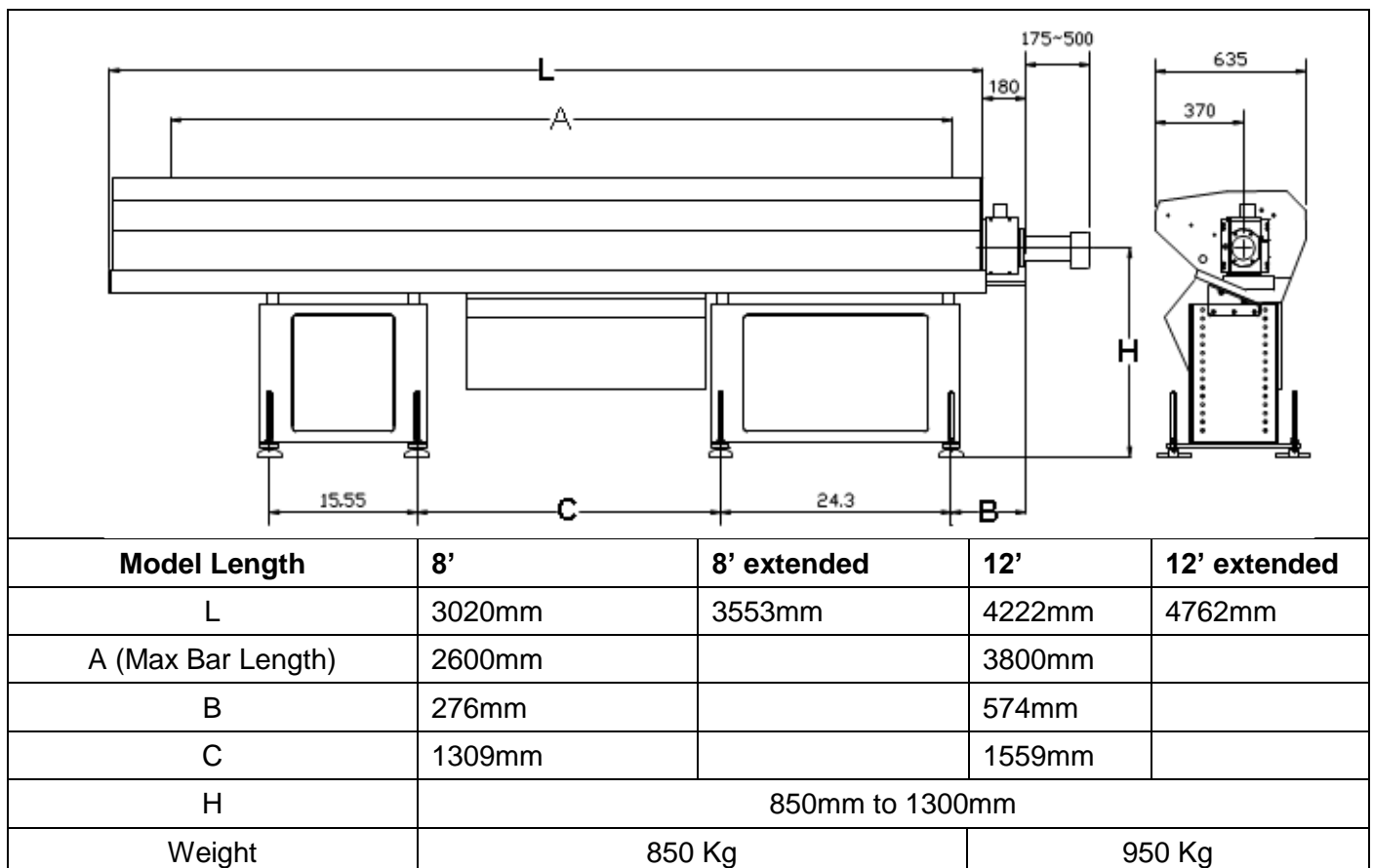
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Installation Area

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.

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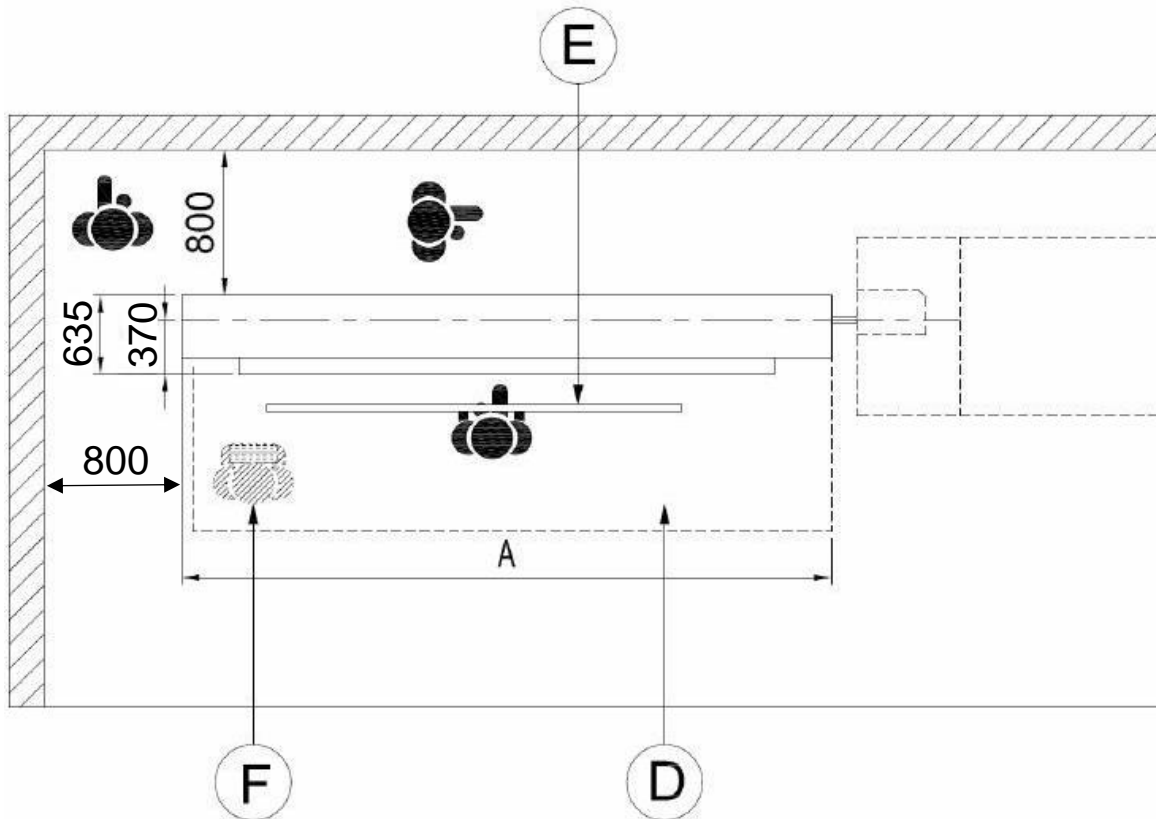
2.3 Specifications and Capacities

Technical Specifications	
Bar diameter capacity-no bar preparation:	3 mm to 35.0 mm (.118" to 1.377")
Bar diameter capacity-with bar preparation:	3 mm to 38 mm (.118" to 1.500")
Maximum bar length:	3800 mm (12 feet 5 inches)
Minimum bar length:	1000 mm (39.400")
Maximum remnant length:	406 mm (16")
Magazine rack capacity:	12"
Bar loading cycle time:	30 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:	750 inches/minute max, adjustable
Return feed rate:	1000 inches/minute max, adjustable
Power consumption:	1.5 kW - (2 kVA)
Operating voltage:	230V/60Hz 3-phase
Control voltage:	24V DC
Oil capacity:	57 liters (15 gallons)
Oil viscosity:	ISO 100 cST
Compressed air supply:	6 bar (90 psi)
Compressed air consumption:	approx. 8 liters per loading cycle
Machine weight:	2,500 lbs

2.3.2 Bar Feeder Oil Requirements

Oil Viscosity	Brand	Description
ISO 100	BP	Energol CS 100
	Castrol	Magna 100
	Chevron	Circulating Oil 100
	Elf	Movixa 100
	Esso	Nuto 100
	Mobil	Vectra 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

Guide Channel Diameter	Bar Pusher Diameter	Permissible Diameter of Bar Stock		
		Minimum [1]	Maximum	Max. Special [2]
ø13mm	12.5mm	5mm (.196")	10mm (.393")	12mm (.472")
ø17mm	16.5mm	5mm (.196")	15mm (.591")	16mm (.629")
ø21mm	20.5mm	8mm (.315")	16mm (.630")	20mm (.787")
ø26mm	25.5mm	8mm (.315")	21mm (.827")	25mm (.984")
ø28mm	27.5mm	10mm (.393")	25.4mm (1.00")	27mm (1.062")
ø33mm	32.5mm	10mm (.393")	28.5mm (1.125")	32mm (1.259")
ø36mm	34mm	12.7mm (.500")	32mm (1.260")	35mm (1.377")
	34.5mm			
ø36mm	35.5mm	12.7mm (.500")	32mm (1.260")	35mm (1.377")
ø38mm	37.0mm	15.8mm (.625")	33.3mm (1.312")	37mm (1.456")
Channel sizes below can be used ONLY with the Patriot 551				
ø39mm	38.0mm	15.8mm (.625")	33.3mm (1.312")	38mm (1.500")
ø43mm	42.5mm	19mm (.750")	38mm (1.500")	42mm (1.653")
ø46mm	45.5mm	22.2mm(.875")	41.2mm (1.625")	44.5mm (1.750")
ø52mm	51.0mm	25.4mm (1.00")	44.5mm (1.750")	50.5mm (2.00")
ø56mm	55.0mm	25.4mm (1.00")	50.8mm (2.00")	50.5mm (2.145")[3]

[1] Although the guide channel is capable of running the minimum diameter listed, the increasing difference between the stock OD and channel ID allows greater potential for vibration. Spindle RPM may need to be reduced accordingly.

[2] Bar stock larger than the standard maximum diameter up to the collet diameter may be used if the bar end diameter is reduced to fit a standard collet. An ejection collet may also be used if the end of the material is chamfered to match the angle of the ejection collet.

[3] Diameter can only be run with a front ejection collet.

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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.

1. 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

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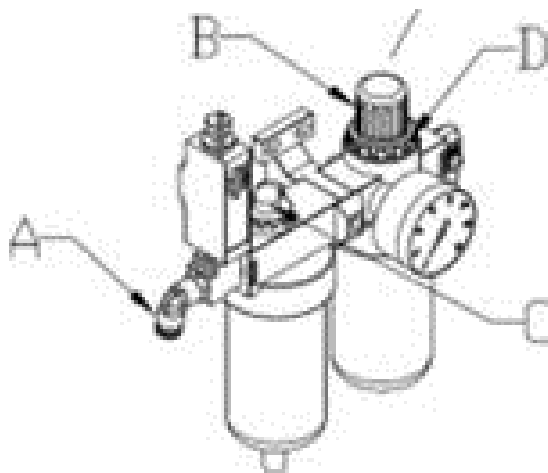
2.4 Safety

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

The patriot 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 Patriot 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 Patriot 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.

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 Patriot.**

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.

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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.

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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 K70 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. The FMB products require moving a wire on a relay specified for the bar feeder automatic signal. 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. The FMB products require moving a wire on a relay specified for the bar feeder signal. 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.

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.

3. Transportation and Handling

⚠ **Warning The weight of the machine without packaging is approximately 2100 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.**

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.
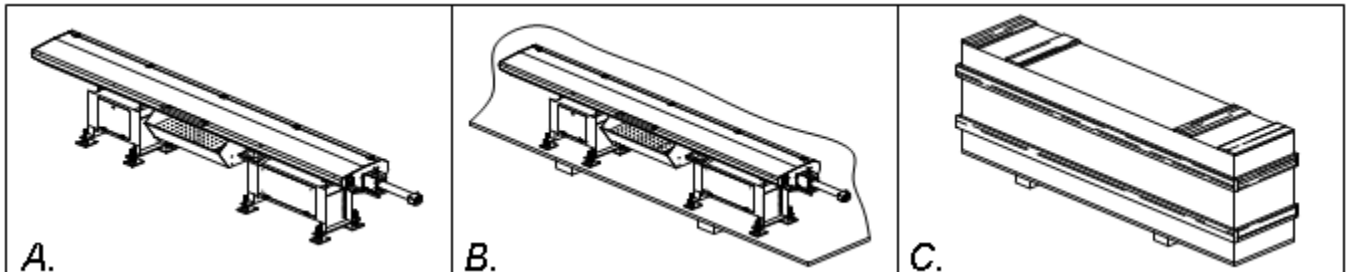
Packaging of the Bar Feeder

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.
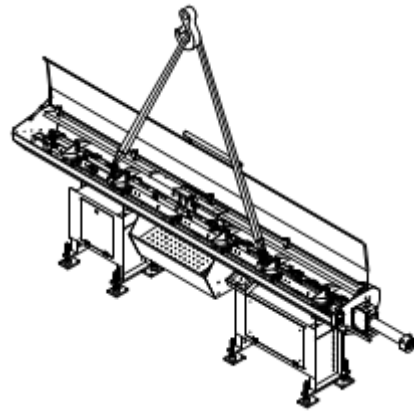
Hoisting with bar feeder on pallet

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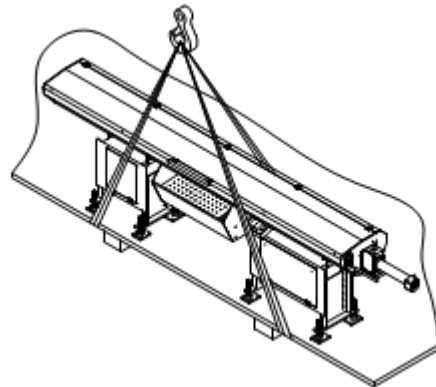
Hoisting the bar feeder in a crate

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

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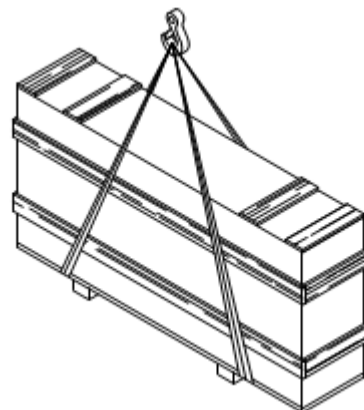
4. Installation

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.

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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
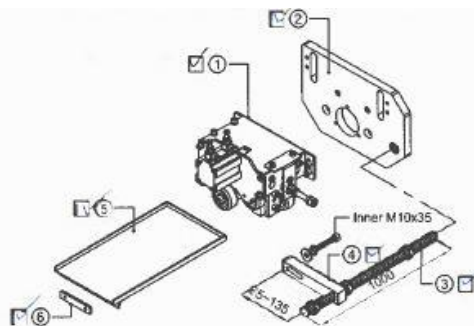
Typical Swiss Headstock machine inventory check off list.

N.	Code	QTY	Description
1	AV51MO000A	1	Anti-vibration device
2	AV51MO1300	1	Adapter plate
3	AV51SY2200	1	Thread bar
4	AV51SY2101	1	Support
5	MEK20801	1	Drip pan
6	MEP20814	1	Plate
7	AV51GR2010	1	Clip cutter
8	AV51MA3300	1	Lever shaft
9	AV51BA1400	8	Arbor
10	AV51BA1500	4	Thread rod
11	AV51BA1200	4	Ejector block
12	AV51BA1100	4	Levelling pad
13	AV51BA3000	4	Levelling pad
14	IER2552010	1	Adapter M25-M10
15	IER2552017	1	Adapter M25-M17
16	IER2552025	1	Adapter M25-M25
17	IEN0712001	1	Washer(R) S7
18	IEN0813001	1	Washer(R) S8
19	IEN1016001	1	Washer(R) S10
20	IEN1724001	1	Washer(R) S16
21	IEN2636001	1	Washer(R) S24
22	AV51OL0400	1	Remnant box
23	ZT013032	1	Open end wrench 30-32
24	ZT040100	1	Claw wrench FGS 30-32
25	ZT031001	1	Hex wrench

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4.2.3 Fixed Headstock Shipped Components

Typical Fixed Headstock machine inventory check off list.
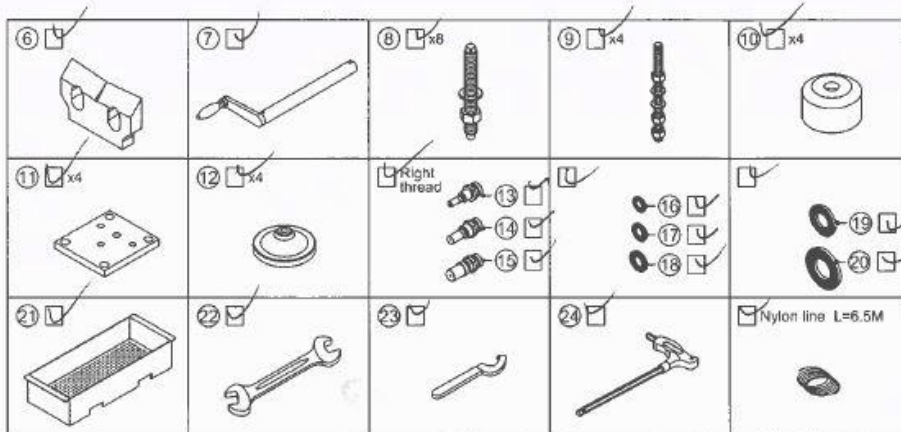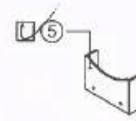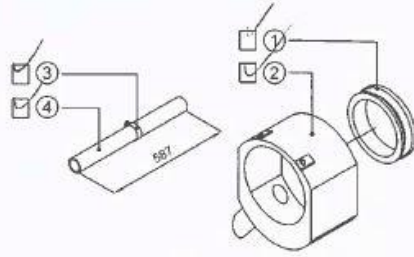
N.	Code	QTY	Description
1	AV51BU1500	1	Oilproof ring
2	AV51BU1300	1	Oil gathering
3	A16120800	1	Cable tie 1"
4	AV51BU2058	1	Hydraulic hose L=587
5	AV51BA2320	1	Cover
6	AV51GR2010	1	Clip cutter
7	AV51MA3300	1	Lever shaft
8	AV51BA1400	8	Arbor
9	AV51BA1500	4	Thread rod
10	AV51BA1200	4	Ejector block
11	AV51BA1100	4	Levelling pad
12	AV51BA3000	4	Levelling pad
13	IER2552010	1	Adapter M25-M10
14	IER2552017	1	Adapter M25-M17
15	IER2552025	1	Adapter M25-M25
16	IEN0712001	1	Washer(R) S7
17	IEN0813001	1	Washer(R) S8
18	IEN1016001	1	Washer(R) S10
19	IEN1724001	1	Washer(R) S16
20	IEN2636001	1	Washer(R) S24
21	AV51OL0400	1	Remnant box
22	ZT013032	1	Open end wrench 30-32
23	ZT040100	1	Claw wrench FGS 30-32
24	ZT031001	1	Hex wrench

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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.

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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
    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

![hand caution symbol] **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. This distance is measured from the front of the anti-vibration device to the face of the lathe collet. In the case of a Swiss style lathe the measurement is taken from the face of the lathe collet when the sliding headstock is in over-travel condition nearest the guide bushing. Please refer to the diagram and chart below for the correct dimension for bar feeder placement. The bar feeder is available in two pusher length configurations, designated "L" for the shorter version and "LL" for the longer version.

Measurement definitions
- Distance A is the distance from the face of the collet or chuck on a fixed headstock machine. On a sliding headstock lathe the distance is 10mm behind the work holding of the guide bushing.
- Distance B is from the end of the pusher at home to the end of the bar feeder channel.
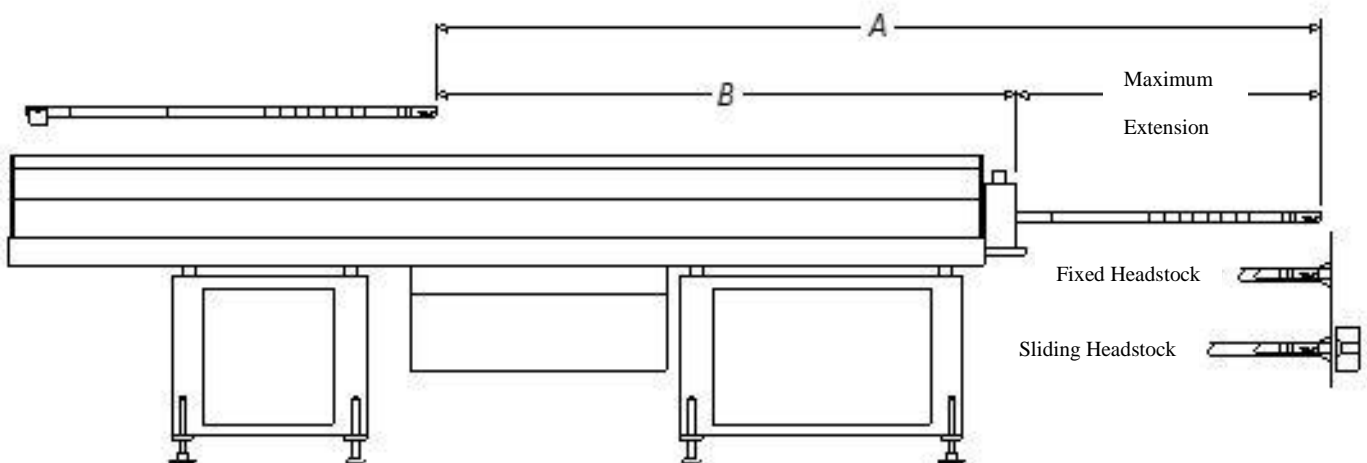
A Dimension	B Dimension L	B Dimension LL	Max Extension L	Max Extension LL
3800mm	2870mm	2540mm	1120mm	1450mm

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4.4 Height adjustment

🖐️ **Caution the assembly of the level pad mounting system must be completed with all the parts for proper installation.**

The anchoring system is unique to the Patriot and must be installed in a specific fashion. The storage and electrical cabinets feature stands attached via 4 screws per side. A unique level pad or leg with an elevating arbor and locking threaded rod is installed to 4 locations. To finish off the stand system, 4 metal level pads with adjusting arbors are installed to the 4 last stand locations. Axial shift equipped machines may have the arrangement of level pad location different.

The level pad assembly for the axial shift machines and non-axial shift machines are the same. However the leveling technique of the axial shift machines a slightly different.
Each level pad requires the following items,

1. Leveling pad
2. Threaded rod with 2 washer and 2 nuts
3. Arbor with 1 nut and washer
4. Ejector block
5. Wedge anchors (3 used)

1 - Stand screws, a total of 4 must be used per stand.

2 - Level pad location

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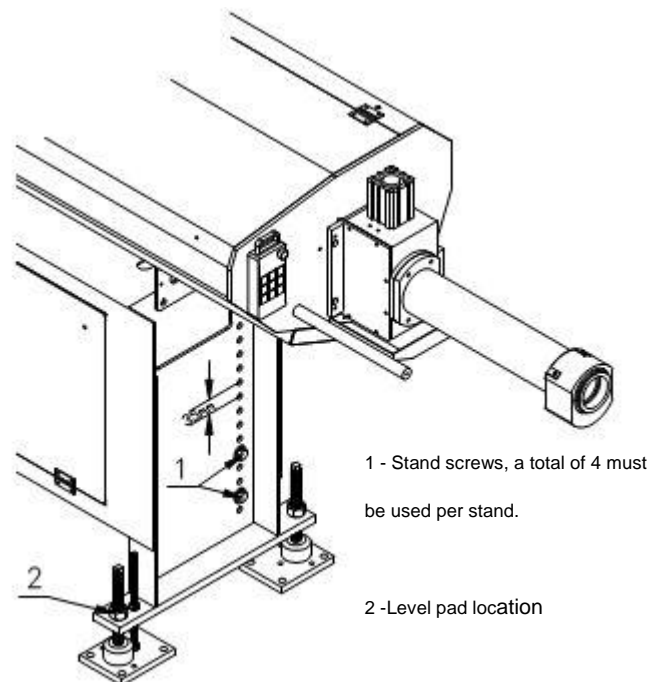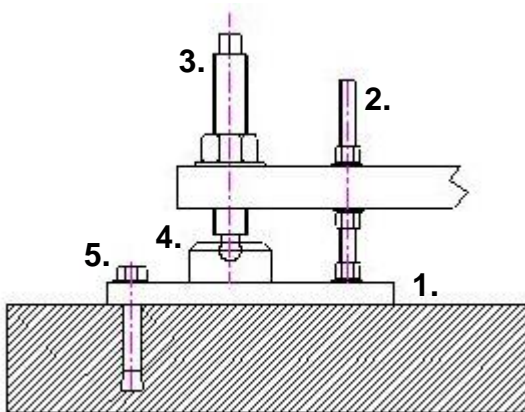
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4.5 Leveling Pad installation

🖐 **Caution only trained installers are to make stand adjustments. Not following proper procedure could lead to personal injury and**

1. Locate and clean all the leveling pad components with a rag. A heavy amount of anti-corrosion lube is applied to keep parts fresh.

4 x Leveling pad

4 x Threaded rod with 2 washer and 2 nuts

4 x Arbor with 1 nut and washer

4 x Ejector block

12 x wedge type anchors

2. Prepare the lower stands by cleaning the holes and thread as required.

1. Arbor hole with threads

2. Thread rod location holes
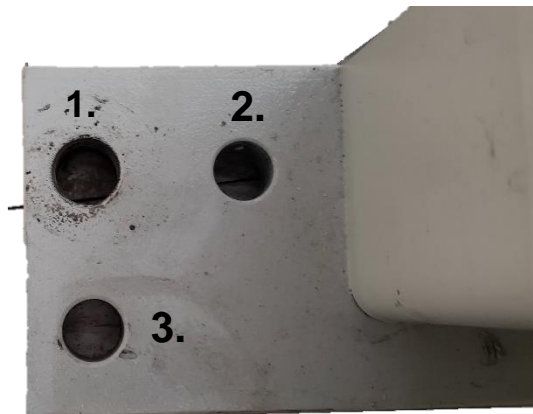
3. Thread the 8 arbors into the stand holes until contact with the floor is achieved.

4. ✋ ⚠ **Caution do not allow the bar feeder to achieve an angle greater than 10 degrees to the floor. This could cause the bar feeder to fall over.**

Continue to thread the arbors located at the 4 end points a few thread turns at a time. It is important to maintain less than 10 degrees tilt to the floor.

5. Once 3 inches from the inner stand to the floor is achieved place the supporting level pads in place and thread the arbors into the level pads. Thread the arbors so the weight of the bar feeder is supported by the inner level pads.

6. Place a small level with a magnetic base on the top of the electrical cabinet. Adjust the center arbors to level the bar feeder.

7. Determine the distance from the floor to the center of the spindle of the lathe. Compare this dimension to the distance from the bottom of the bar feeder stand to the center of the opening of the steady device plus 75mm. If this distance is not within 25mm ± of the lathe center height the bar feeder stands must be adjusted by repositioning the legs on the bar feeder stands. The spacing between the holes of the legs are 35mm. The legs can be adjusted without use of a crane or lift truck by supporting the stand with one set of arbors and level pads while moving the opposite set. The height adjustment need not be exact at this point. The final adjustment will be made during the alignment to the lathe.
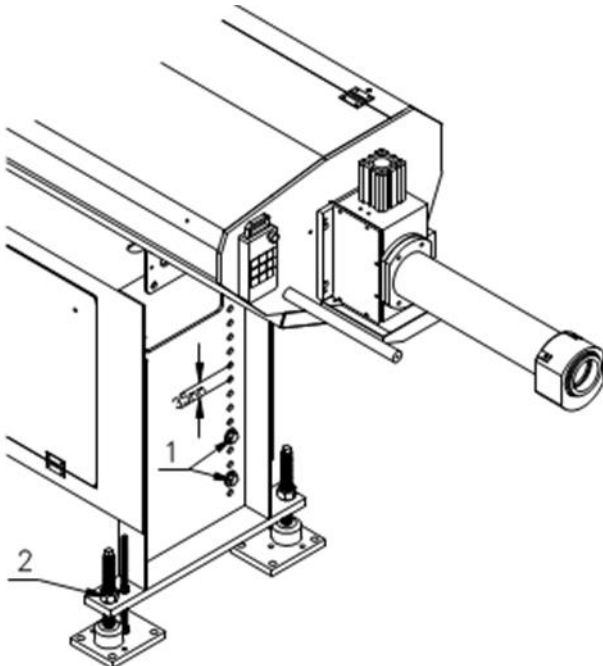
1. Loosen 4 locking screws on the side of the stands (1)

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

Tighten screw (1) when alignment is completed.

8. Place one level pad on the floor with one ejector block positioned into the pad. The pads are the same top and bottom with the longer portion placed towards the stands. See image below.
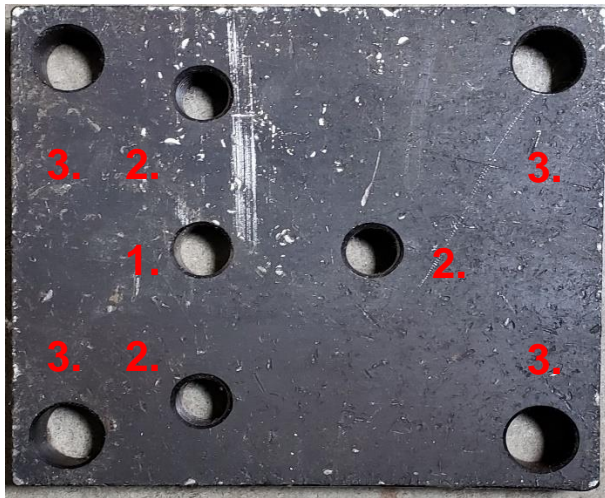
Level pad hole callout

1. Ejector block
2. Thread rod
3. Anchor hole

Positioned inboard of bar feeder stand side
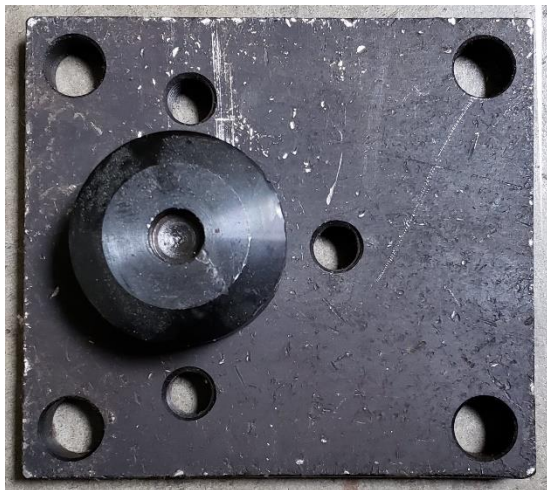
Correct Ejector block location. Block must sit flat onto level pad.

9. Place the level pad with ejector block under the stand mounting holes in all 4 open stand locations.

10. Thread the arbor into the stand until contact with the ejector block is made. Do this for all 4 level pads.

12. Raise the bar feeder so the weight is now on the 4 leveling pads and ejector blocks. Be sure the bar feeder is level.

12. Insert a thread rod into hole 2 of the stand and thread 1 washer and 2 nuts onto the rod. Run the nut about 1.5inches up. Thread the rod into the level plate and tighten the lower nut to lock the threaded rod to leveling plate. **Do not tighten the upper nut at this time**. **Do not allow the threaded rod to make contact with the floor and lift the plate.** The threaded rod should not be locked to the stand at this time, this will be completed later. Do this for all 4 locations.

Nut

Washer

Washer

Nut

Nut
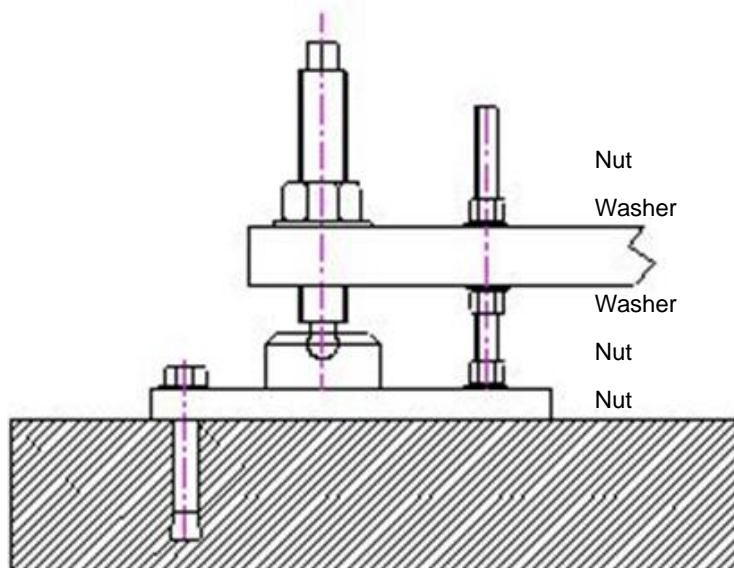
13. Once all 4 level pads are installed the bar feeder movement up and down is by way of the arbor. Perform alingment procedure of choice, string or laser.

4.6 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 make 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 Patriot models. The standard alignment procedure by an Edge Technician is by laser alignment.

The following steps for basic string alignment

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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.
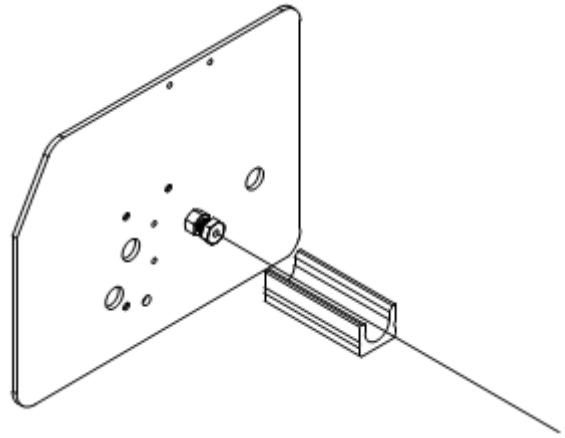
Select a proper plug size for lathe the collet, insert and close lathe collet, move lathe Z axis to –Z over travel, pull the nylon string tight and secure in place.
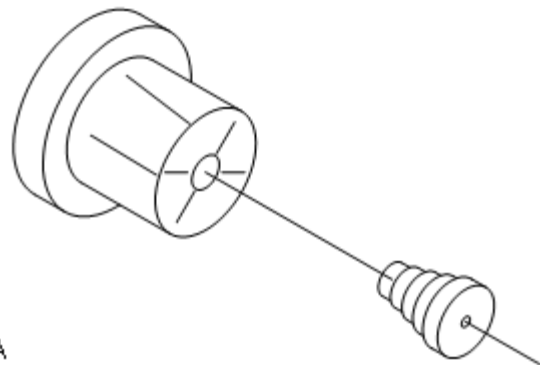
A

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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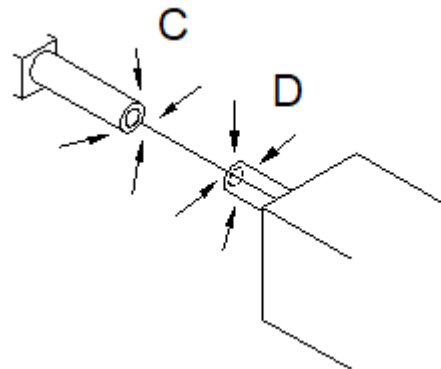
4.7 Laser Alignment.

⚠️ **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. Remove the hood switch latch screw.
2. Insert a laser tool into the lathe spindle.
3. A target is then placed on the bar feeder long pusher.
4. The lathe spindle is rotated at the laser manufactures recommended RPM.
5. 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 arbor screw to adjust the height and tilt of the bar feeder. If the distance between the base of the stand and the floor exceeds 4 inches a stand height adjustment will need to be performed. See stand height adjustment procedure.
6. Install the supporting level pads with the arbor. Adjust the arbor so the ball just touches the level pad. Grasp the arbor with one hand and tighten. Be careful to not move to much weight from the primary level pads. The supporting level pads are to assist the load on the primary level pads.
7. Check the alignment once again. Adjust primary and supporting level pads as required.
8. Once in position prepare 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 Patriot 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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4.7.2 Alignment guidance, Level Pad Arbor and Threaded Rod Tightening.

Once alignment has been completed it is important to lock the threaded rods and arbors in place. When tightening the lock nuts it is possible the alignment could change. It is suggested to check the alignment once the lock nuts have been tightened.

Arbor and threaded rod tightening advice.

1. While holding the arbor in place, tighten lock nut.
2. On the threaded rod position lock nuts top and bottom so they just contact the stand.
3. Tighten the lower threaded rod nut slightly.
4. Tighten upper threaded nut slightly.
5. Lock lower threaded rod nut.
6. Lock upper threaded rod nut.
7. Once the nuts have been locked verify the alignment
8. The supporting level pads are to be set to assist in the overall support of the machine. During the alignment process the primary level pads are used to adjust the position of the machine. The supporting pads may be used with or without the rubber level pad base. The location of the supporting level pads may be swapped with the primary level pads on axial track equipped Patriots. This swap has proven to assist in the alignment ease and accuracy when the machine is shifted. Especially on the electrical cabinet side of the machine.
9. Once supporting arbors are threaded hand tighten the arbor. Do not over tighten. Tighten the lock nuts and check alignment.

Arbor

Level pad

Rubber base (removable)

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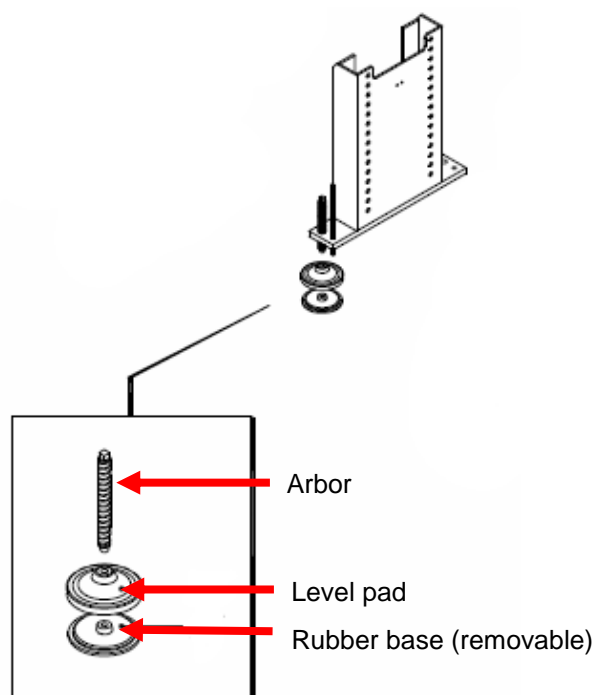
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The image below is a non-axial shift Patriot foot pad configuration. Leveling pads 1 and 2 may be swapped position on axial track equipped machines for more efficient aligning.

1.

2.

2.

1.
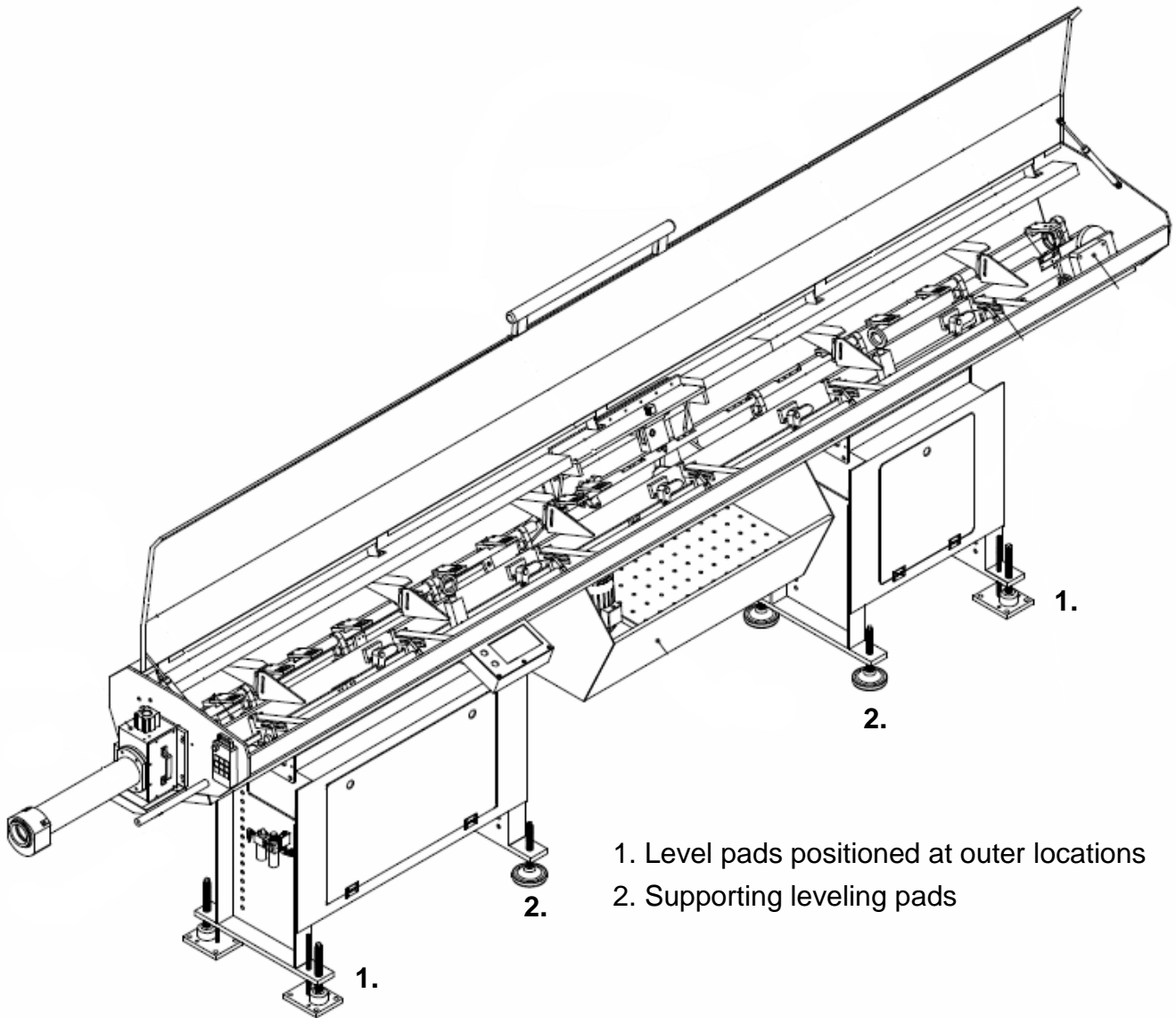
1. Level pads positioned at outer locations
2. Supporting leveling pads

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4.8 Axial Shifting

![hand caution icon] **Caution incorrect machine placement may cause catastrophic damage to lathe or bar feeder.**

![hand caution icon] **Caution all axial shift safeties must be adjusted and set correctly**

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

The Patriot 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.

Note Patriot axial shift equipped machines may be shipped with stands in opposite positions. For example the electrical cabinet stand may be in chucker mode and the storage stand in Swiss. The cabinets must be in the same configuration prior to installation.

Axial track with stop screw locators.
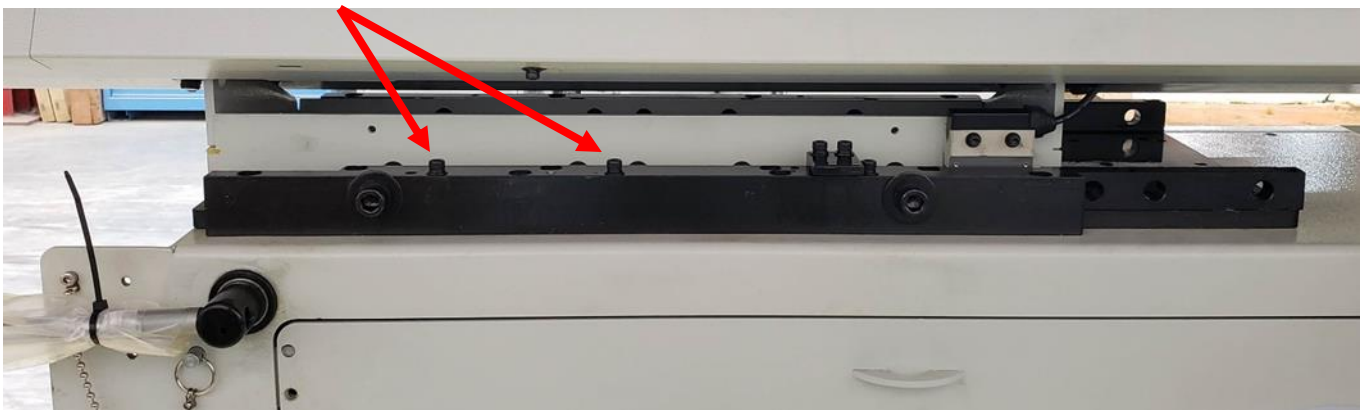
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⚠️ **Warning follow the instructions to shift the Patriot when equipped with Axial shift option.**

In each cabinet a supported shaft with eccentric bearing cams is used to lift the Patriot chassis up and slide fore and aft. Once the locking screws have been removed a lever is used for lifting. A small pin, tethered to the cabinet is used to hold the lever in place when the Patriot is lifted.

No maintenance of the bearing is required. They are sealed for life.
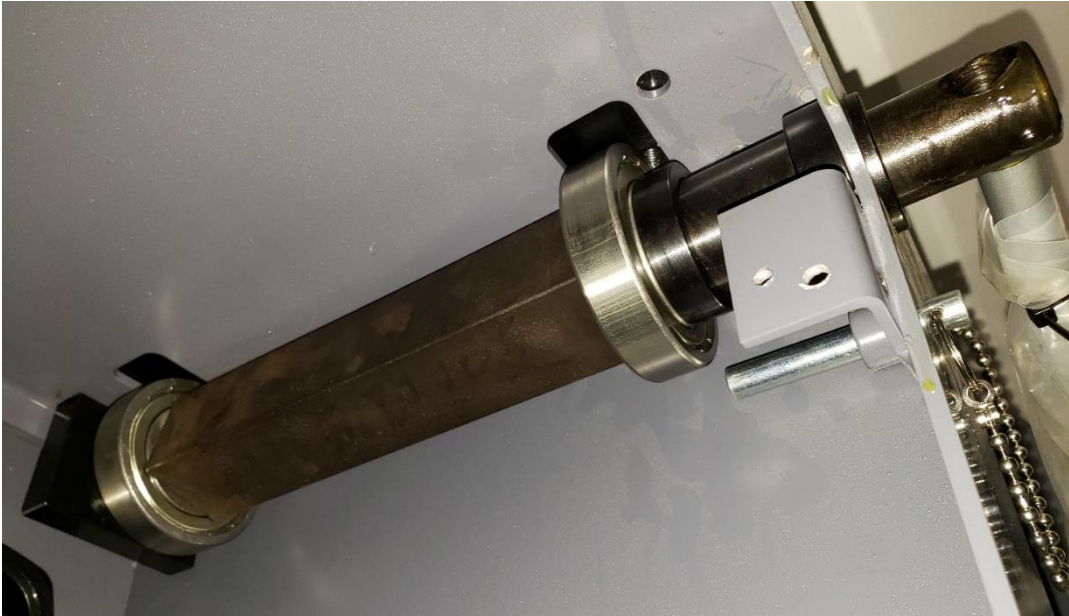
⚠️ **Warning do not attempt to raise the patriot up unless the axial track lock screws are removed. Damage to the lever may occur.**
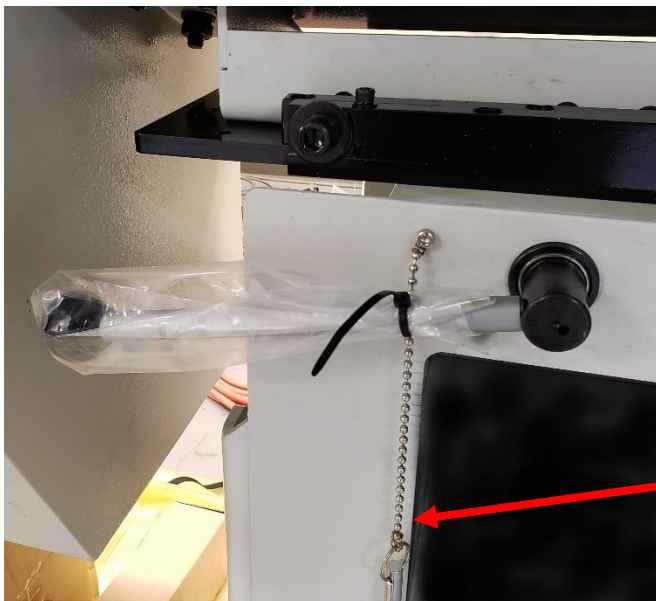
Screw the handle into the axial eccentric bearing shaft.

Once machine is lifted insert the tethered pin into position hole to allow the lever to rest against the pin.

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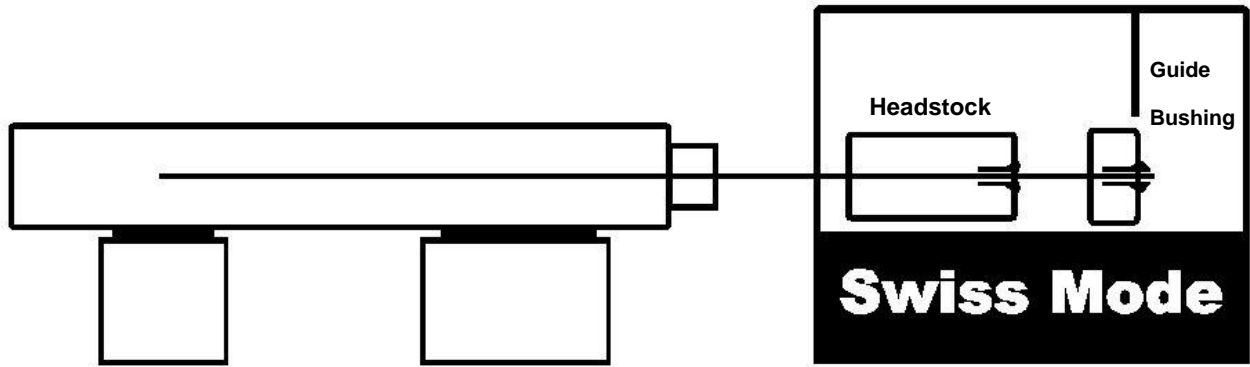
Bar feeder is anchored down to floor and equipped with axial shift option

Bar feeder shifted into chucker position ➡️

Guide bushing removed and headstock in chucker position

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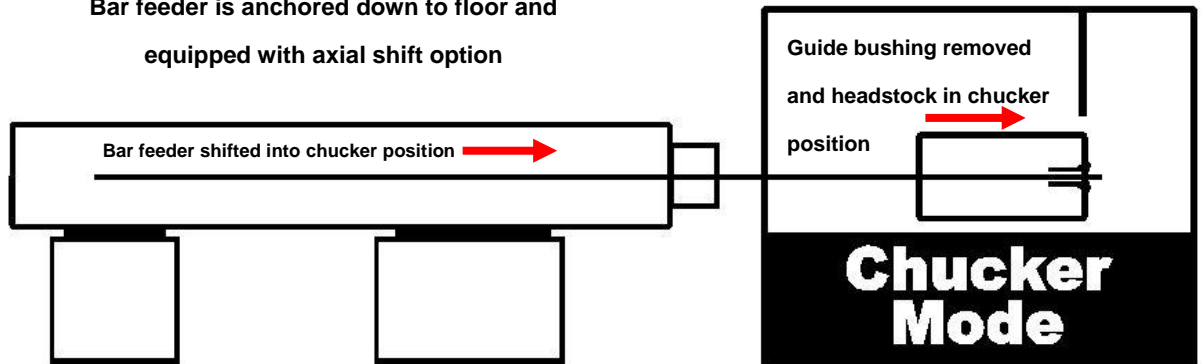
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During the installation process it is important to place the bar feeder in the correct position. On some applications a very small window will exist being too close or too far. Conditions to consider

- 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.

8ft and 12ft Patriots 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 in place when the bar feeder is shifted.

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4.9 Setting Axial Track Synchronization Switches

![hand caution icon] **Caution setting of the synchronization switches is extremely important to reduce a possible crash between lathe and bar feeder.**

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 positioning of the switch plate and trimming the plate as required. There is 300mm between switches.

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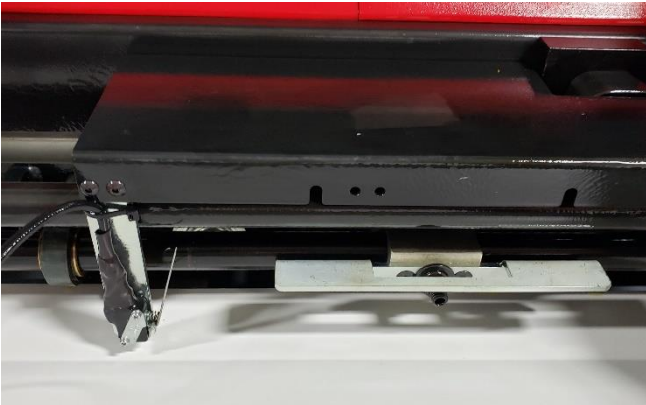
Rear switch mounted

Lock screw and nut. Must be positioned accurately during installation.

Forward switch mounted

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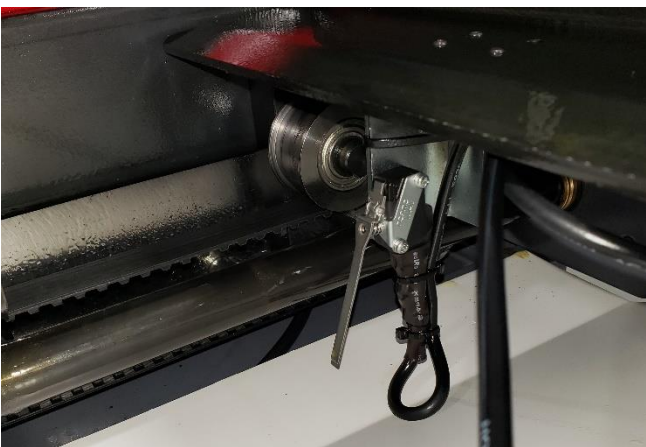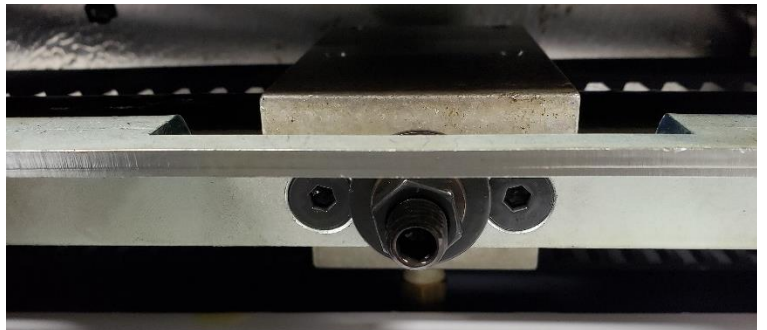
4.10 Change Axial Swiss Mode to Chucker Mode

 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.

1. Follow lathe manufactures instructing for chucker mode setup (removal of guide bushing) Once lathe has been converted to chucker mode proceed to step 2.
2. With the bar feed in manual operation be sure there are no active faults
3. Place lathe headstock in forward Z positive over travel position
4. Place bar feed into Emergency stop condition (Press bar feed E-Stop button)
5. Place lathe into Emergency stop condition (press lathe E-stop button)
6. Disconnect bar feed synchronous rod and telescoping nose from lathe head stock at the MAVD.
7. From the side of stand cabinets remove 2 axial track locking bolts from both stands.
8. Rotate both axial shift levers to raise bar feed.
9. With push bar feed forward to the chucker position.
10. Rotate both axial shift levers to lower bar feed
11. Reinstall 2 locking bolts into the side of the axial track on both stands.
12. Be sure lathe head stock is in the chucker mode position before proceeding to step 13
13. Reattach telescoping nose and sync rod to head stock.
14. Reset Emergency stop condition previously set.
15. Move lathe headstock to the forward Z positive over travel position
16. 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)
17. Verify proper operation of head stock movement and bar feed response.

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4.10.2 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.**

1. With the bar feed in manual operation be sure there are no active faults
2. Place lathe headstock in forward Z positive over travel position Swiss mode.
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 at the MAVD
6. From the side of stand cabinets remove 2 axial track locking bolts from both stands.
7. Rotate both axial shift levers to raise bar feed.
8. Push bar feed rearward to the Swiss position.
9. Rotate both axial shift levers to lower bar feed
10. Reinstall 2 locking bolts into the side of the axial track on both stands.
11. Be sure lathe head stock is in the Swiss mode position before proceeding to step 13
12. Reattach telescoping nose and sync rod to head stock.
13. Reset Emergency stop condition previously set.
14. Move lathe headstock to the forward Z positive over travel position
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.
17. Follow lathe manufactures instructing for Swiss mode setup (Installation of guide bushing)

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, menu page 11
- Facing distance, menu page11
- MAVD opening position, menu page 12

To assist with the change from one operational mode to the other it is advisable to set the parameters on page 11 shown in the table below. Once set, selection of proper mode of operation can be made on part page 3.

Max. End Of Bar COLLET	-####.## MM	Pg 11	Use for Swiss mode measurement
Facing Distance COLLET	-####.## MM	Page Up	Use for Swiss mode measurement
Max. End Of Bar CHUCK	-####.## MM	Save All	Use for chucker mode measurement
Facing Distance CHUCK	-####.## MM	Page Down	Use for chucker mode measurement
Bar Diameter	-###.## Inches	Pg 3	This parameter on page 3 to select mode of operation for proper bar feed measurements
Facing Length Collet	-###.## Inches	Page Up	
Open Collet Speed	#### IN / MIN	Save All	
Open Collet Torque	### %	Page Down	

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4.12 Bushing Block Alignment

✋ **Caution do not adjust bushing block when electrical power is applied to bar feeder.**

The bushing block is aligned by way of 4 jack screws at the mounting flange of the bushing block device. The mounting screws must be loosened. 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 back sheet metal cover will require lowering to access the nuts on the right side of the bushing block device. 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 bushing block alignment. Always check for alignment once an adjustment has been made.
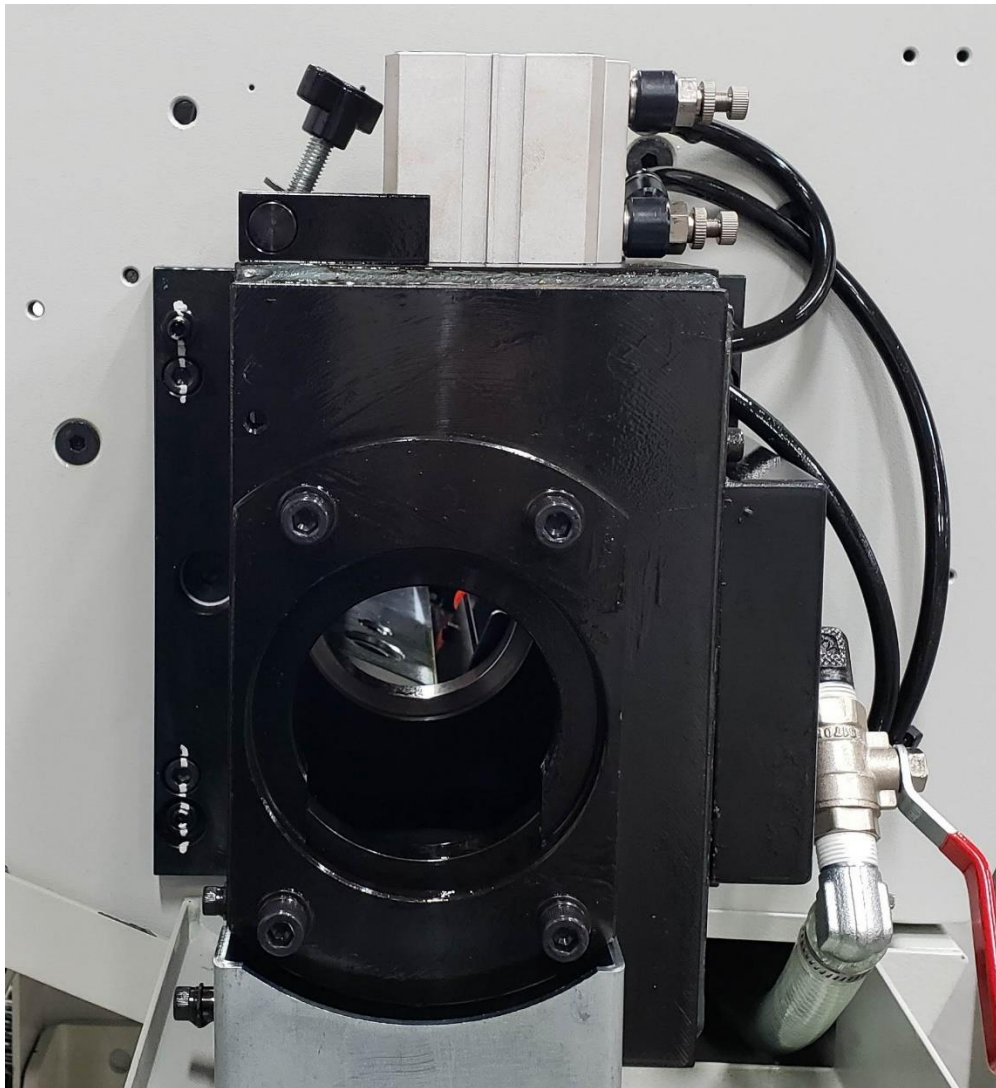
Right side mounting screws will have nuts on the inside of the bar feeder that requires removing prior to adjusting the bushing block device.

4.12.2 Hand Crank

⚠️ **Caution bar feeder power and air supply must be isolated from the bar feeder prior to using the hand crank.**

The pusher carriage may be manually operated with an included hand crank. This is helpful when performing a channel changeover of the bar feeder.

The sheet metal of the Patriot is equipped with an access hole to allow for insertion of the hand crank.

Insert hand crank into the hole and engage the end into the gearbox. Using a flash light will help to view the engagement.

⚠️ **Caution do not operate the bar feeder electrically with the hand crank inserted into the servo gearbox.**

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4.13 Anchoring

![hand caution symbol] **Caution wear protective eyewear when operating a hammer drill or hammer to strike a floor anchor.**

![warning triangle symbol] **Warning do not install level pads over cracked concrete with uneven surfaces.**

![warning triangle symbol] **Warning drilling anchor holes at an angle may affect the final aligning of the bar feeder.**

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

The 4 corners of the leveling pad are the drill locations. Each pad will receive 3 anchors. The hole closest to the bar feeder wil not be used as there is not enough clearnec for a hammer dril.

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

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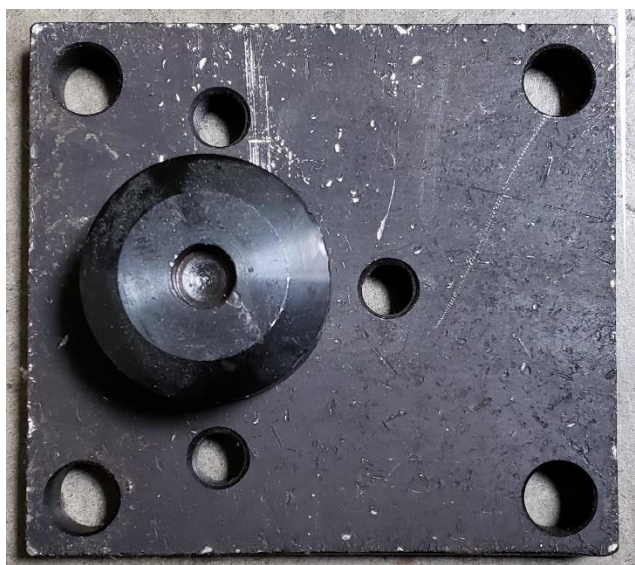
4.14 Installation Components

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.
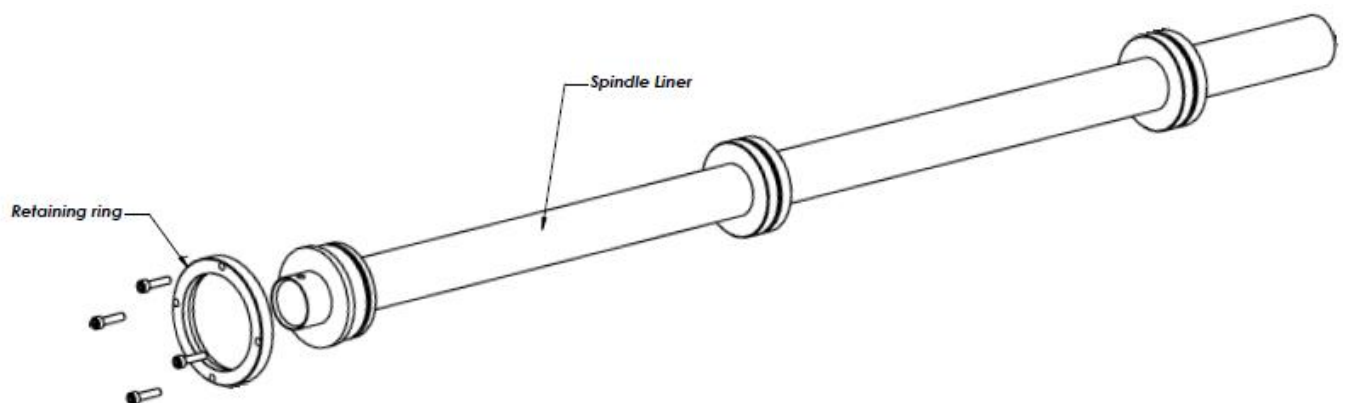
4.16 Telescoping Nose

⚠️**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. This nose must be cut to provide room for the MAVD and keep the nose from collapsing into itself. Additionally there is a spacing ring (A) that is required for the nose to be fastened to the MAVD.

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.

The overall collapsed length of an uncut nose is 397.8mm and 802.8mm at full extension. The nose will always be cut for instalaation to the lathe. The minumun collapsed length is normaly no less than 10 inches.

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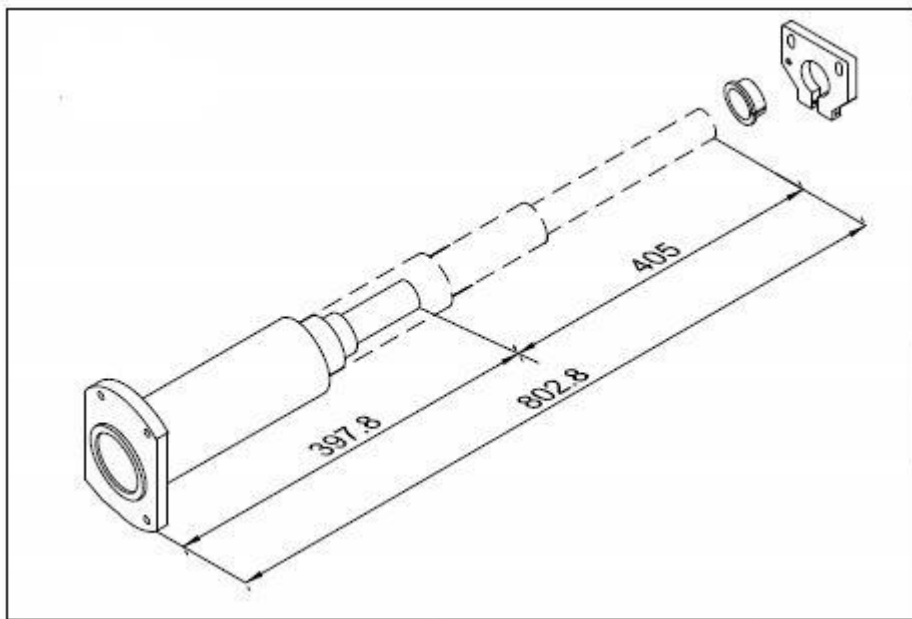
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Each nose with a specific diameter uses a specific retaining ring for that diameter. The ring is attached to the last stage with 2 small grub screws that must be set very tight. The retaining bracket is one size fits all.
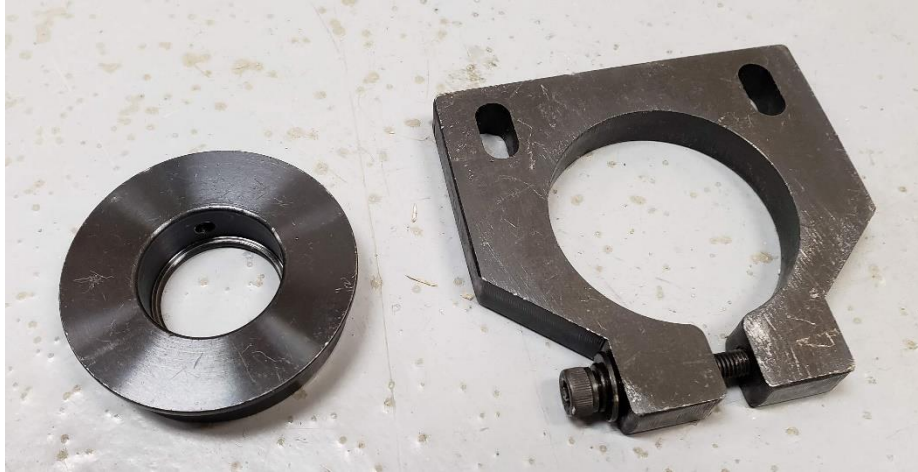
⚠ **Warning machine damage may occur if telescoping nose is not properly connected to lathe headstock.**

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

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The telescoping nose contains various inserts with of the same internal diameter as the 4th stage. The nose may be disassembeled so the 4th stage may be cut with a saw or lathe.

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4.17 Hard Nose

The hard nose on the patriot 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.
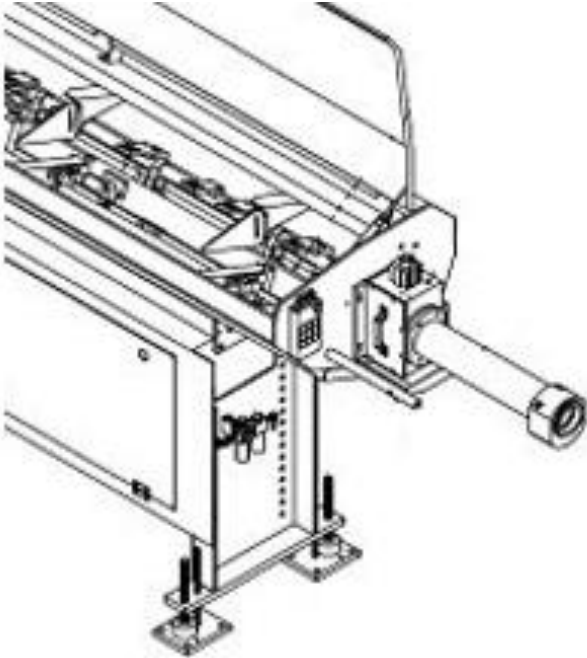
The hardnose must be cut slightly shorter to allow for the installation of the oil gathering device at the end.

The insert must be cut the length of the hard nose. It is also matched to the channel set and pusher.

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1. Flange
2. Hardnose insert
3. Hardnose
4. Oil Collector
5. Seal
6. Oil return hose
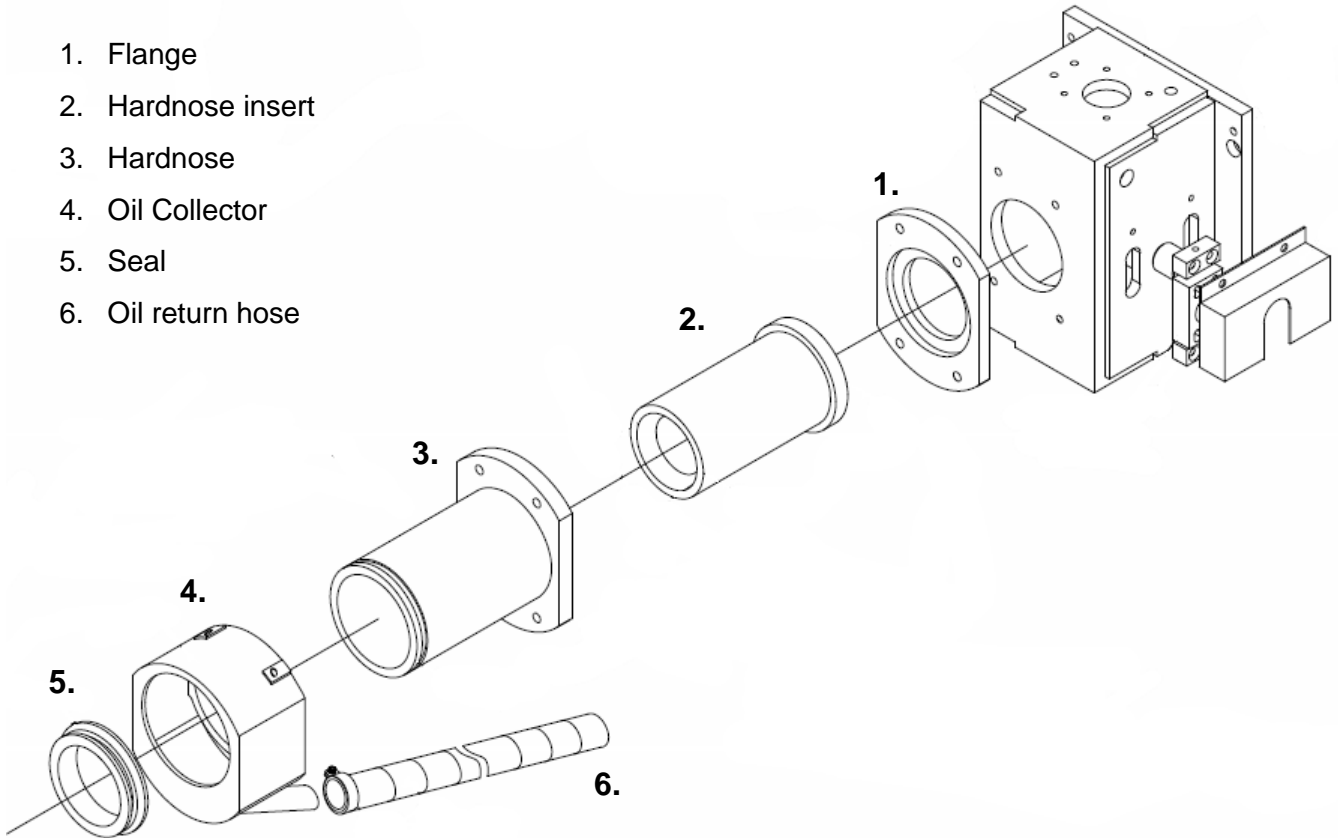
The oil collector is held in place by 2 screws and lock nuts. There is about 2 inches of insertion avaiable of the hard nose. This is used to close up any gap between the lathe sheet metal and attaching seal.

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4.18 MAVD installation

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 Patriot 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. Press the emergency stop button on the lathe and bar feeder.
4. Loosen and separate the telescoping nose cinch plate from the MAVD.

Remove the 2 attaching screws
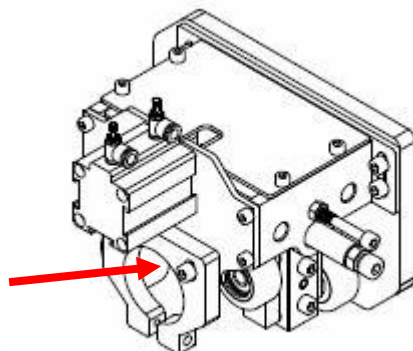
5. Remove the retaining screw from the synchronization rod.

6. Reset the bar feeder and lathe emergency stop circuits.

7. Using caution move the pusher into the lathe spindle until bar feeder collet is 13mm from lathe collet.

8. Press the emergency stop button on the lathe and bar feeder.

9. Remove the compressed air supply from the bar feeder.

10. 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.
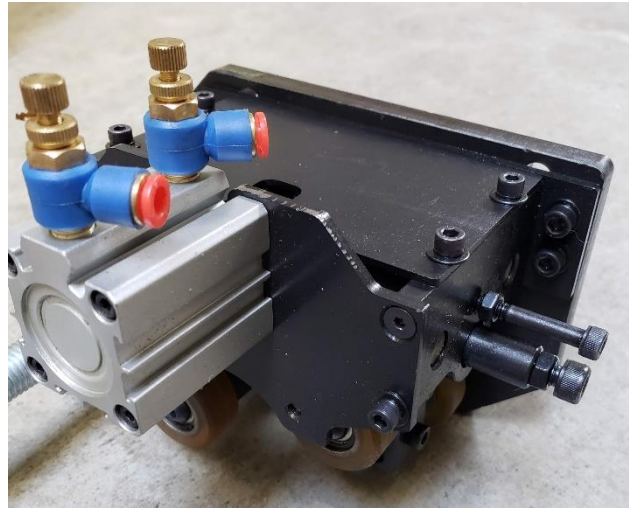
⚠️ **Warning follow procedure for line swapping.**

11. Caution when reconnecting air supply to bar feeder. Reconnect air supply. Keep hands and fingers away from the MAVD when air is reconnected.

12. Loosen the 4 attaching screws for the MAVD.

Loosen 4 attaching screws, 2 on each side.
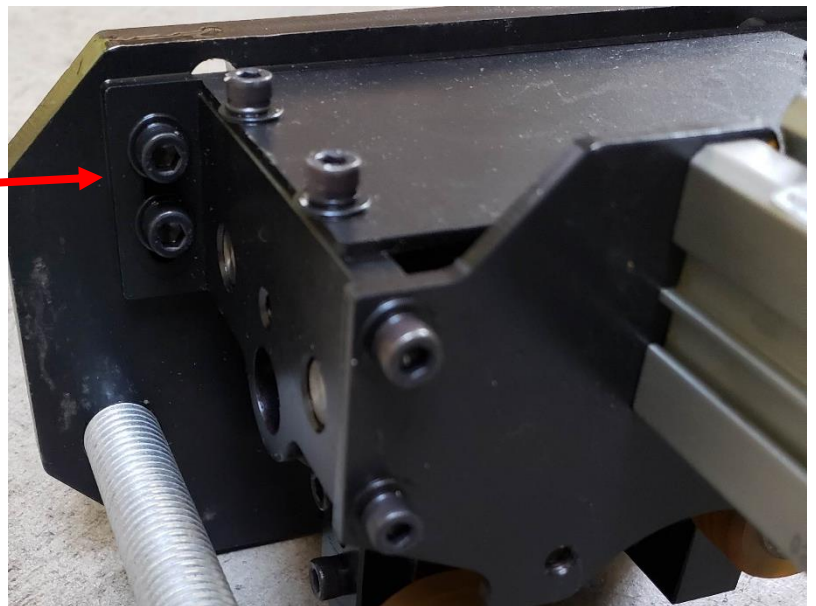
13. Unscrew the MAVD close screw to allow the rollers to grip the pusher.

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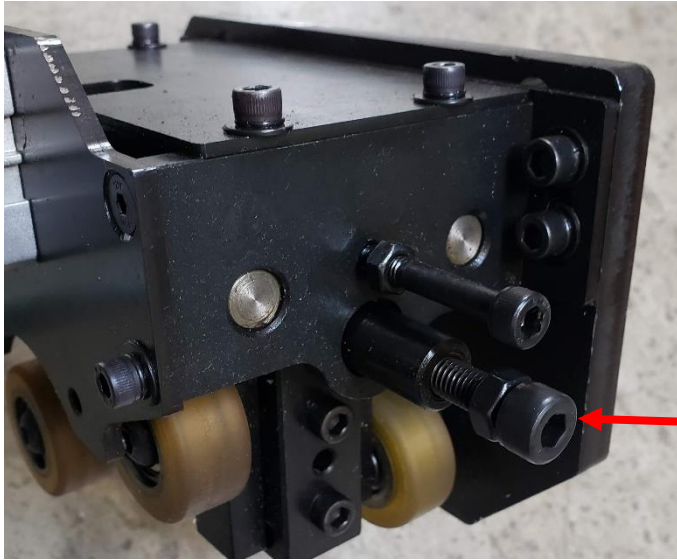
Caution pinch hazard if proper observation is not adhered to.

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

14. Allow the MAVD to find center on the pusher.
15. Once center has been found, tighten the 4 MAVD attaching screws.
16. Tighten the MAVD adjustment screw so the rollers are no longer contacting the pusher.
17. Remove air supply from bar feeder.
18. Reverse MAVD cylinder air lines to original positions.
19. 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.
20. Reattach synchronization rod bolt.
21. Reconnect air supply.
22. Reset emergency stops on the bar feeder and lathe.
23. Follow the MAVD bar adjustment procedure.

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5. Systems and Adjustments

5.1 Bar feeder Component Locations

010	FRAME DEVICE
020	CLAMPING
030	COVER
040	BASES AND BEAM
050	FEED MOTOR DRIVE
060	CUTTING DEVICE
070	GUIDE CHANNEL SUPPORT
080	GUIDE CHANNEL
090	BAR PUSHER DEVICE
100	FIRST ANTI-VIBRATION DEVICE AND FIXED FRONT NOSE
110	SYCHRONIZATION DEVICE
120	TELESCOPIC FRONT NOSE
130	OIL TANK

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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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1. Lever

2. Support plate
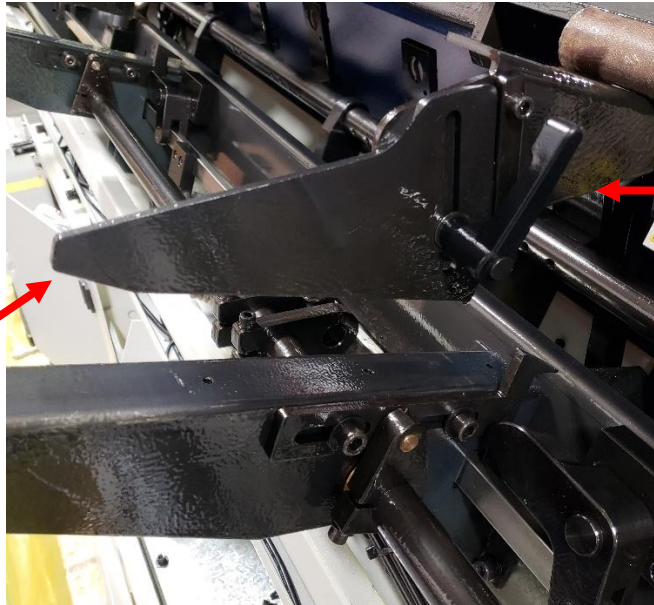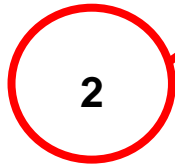
Adjustment Screw
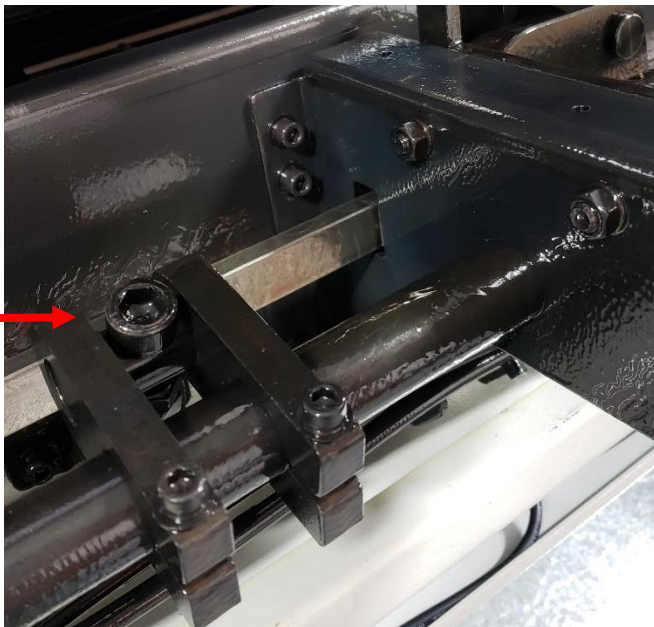
The vertical adjustment plate moves as the adjustment point.

The material lifter is stationary and bar center should be just past the edge of the lifter

> Lifter will move up to lift bar into the channel

5.3 Movable Anti-Vibration Device/MAVD Adjustment

The Proper adjustment of the Movable Anti-Vibration Device 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 Movable Anti-Vibration Device. Only operators properly trained should adjust the MAVD.**

⚠️ **Warning improper adjustment of the MAVD may cause machined part failure.**

Follow the steps below to adjust material to the 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.**

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.
5. Tighten screw A until the rollers just touch the bar. Rotate the screw counterclockwise 1 full turn. Lock jam nut B
6. Press the Manual button, MAVD will open press the Pre-Auto Button, MAVD will close.
7. Press the Manual Button to open MAVD
8. Close hood and adjustment is completed
9. The MAVD may have an opening stop screw and is normally set to full open.

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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)
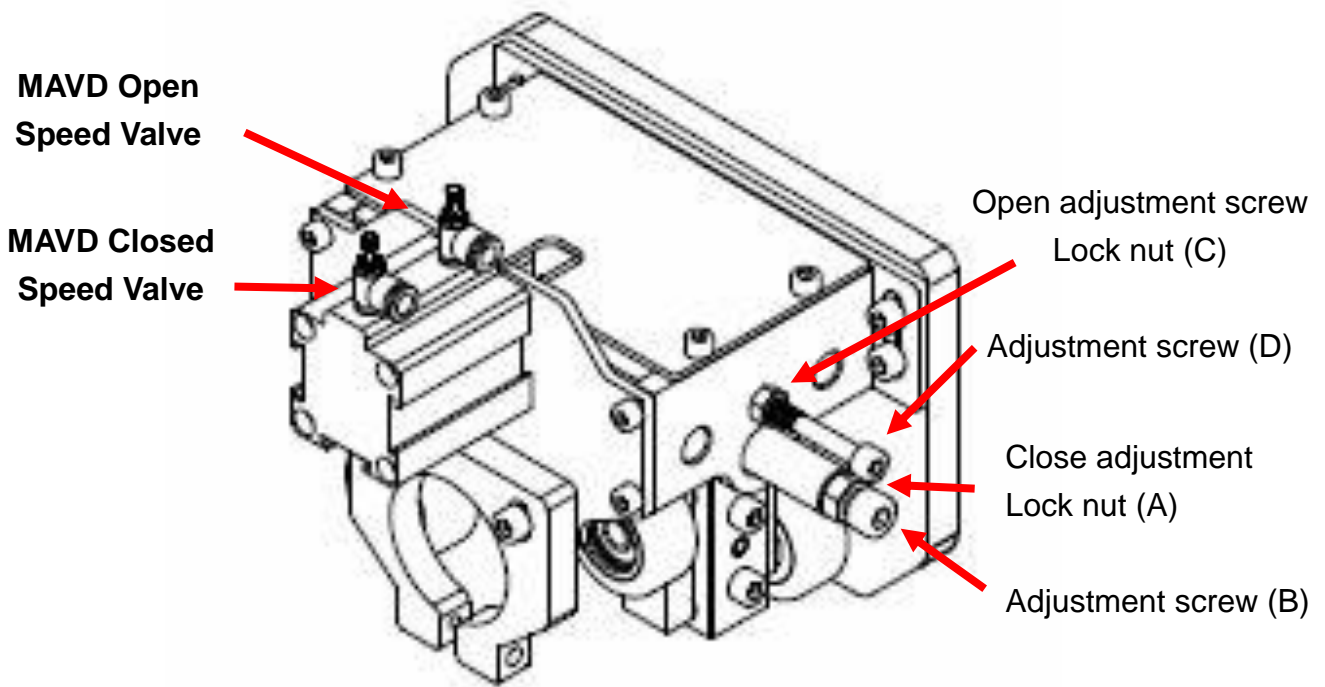
Adjustment screw (B)

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

Adjustment to the open and close speed of the MAVD 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 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 closed. Adjust as required.

The MAVD will include an open stop screw. If this screw is screwed in too far this will keep the MAVD 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

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

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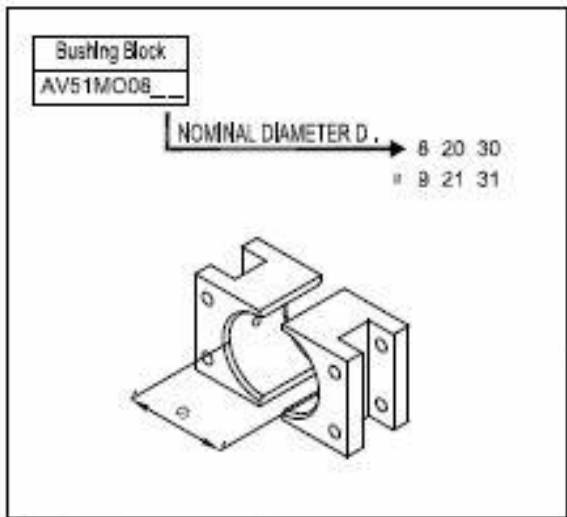
The use of bushing blocks may assist with optimizing the bar feeder performance with certain material, shapes, and operating speeds. 2 Blocks of the same size are required for each MAVD.

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
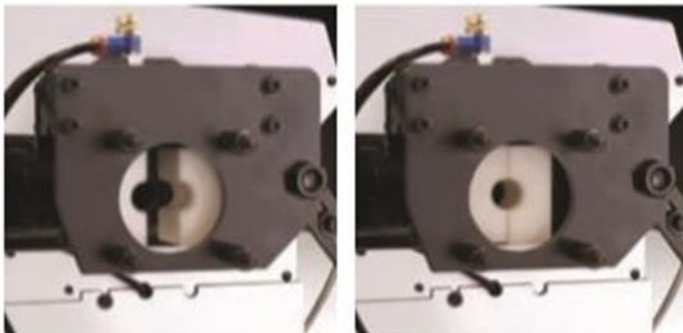
Blocks are optional items, contact Edge Technologies for more information.

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5.4 Bushing Block Device with Air Knife

![hand icon] **Caution the cover for the bushing block device must always be installed during bar feeder operation.**

![hand icon] **Caution do not remove the bushing block cover while bar feeder is in operation.**

![hand icon] **Caution when changing the bushing blocks the bar feeder must be in emergency stop.**

The Patriot is equipped with a unique bushing block device providing material support upon discharge from the channel. Bar feeder oil is supplied to the device which adds to the vibration management. The telescoping/hardnose attaches to the end of the device.
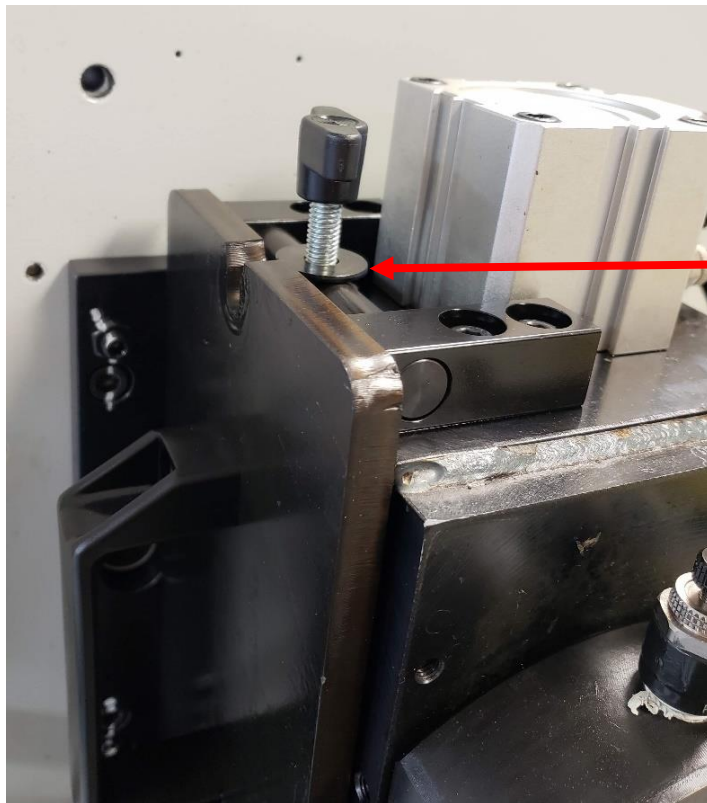
![hand icon] **Caution Bushing cover is removable and must be in place for safe operation of the bar feeder.**

Washer must be over the cover to screw the knob down to secure the cover.

Lower screws do not require removal as the cover is slotted.

Correct washer and knob location when closed.

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⚠ **Caution when installing bushing blocks remove material prior to removing bushing block cover.**

During automatic operation the bushing blocks will shadow the lathe collet open and closing. When the bushing block cover is removed during operation the following will occur

- When in automatic mode and collet is closed blocks will open.
- When in pre auto mode and lathe collet is open blocks will open.

If the lathe collet is closed and pre auto or auto is selected the blocks will close. This is operation is controlled by the bypass switch attached to the upper portion of the bushing block device.

Bypass switch

Note - Bushing blocks have been removed

Universal Bushing Blocks

Durable Polyurethane bushing blocks eliminate bar vibration. Available in 2mm size increments, oil filled to achieve a hydrodynamic bearing effect.
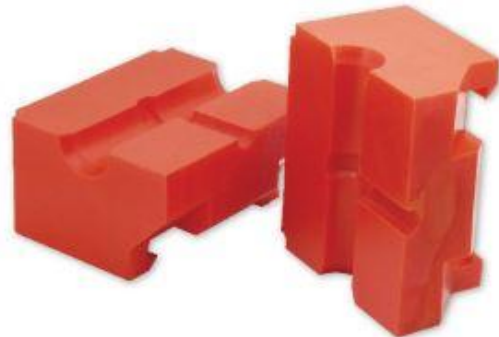
Bushing blocks will only fit one direction into device and are symmetrical. A pair of blocks must be the same diameter for proper operation.

Bushing block Oil Flow

Part of the hydrodynamic bearing effect includes the bushing block device. Oil flows from the bar feeder oil pump to this valve through the oil ports molded into the bushing blocks. Oil is blown off the bar and pusher by the air knife and drains back to the oil tank. The flow can be limited or increased by the valve handle. If too much oil is migrating into the nose of the bar feeder and lathe with the air knife set correctly, then reduce the valve opening.

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Valve full closed, the handle is in line with the valve, valve is closed in image

Valve full open is 90 degrees from valve

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Air knife

✋ **Caution the air flow through the air knife can be set to high which produces an oil vapor around the bar feeder.**

The air knife is an oil blow off valve that helps to displace oil from the material and pusher upon entering the nose. The air control valve is energized when the pusher moves forward. The air flow is adjustable via a thumb wheel on the valve.

Note – The air knife is a standard feature on the Swiss equipped Patriot and an option for fixed headstock Patriot.
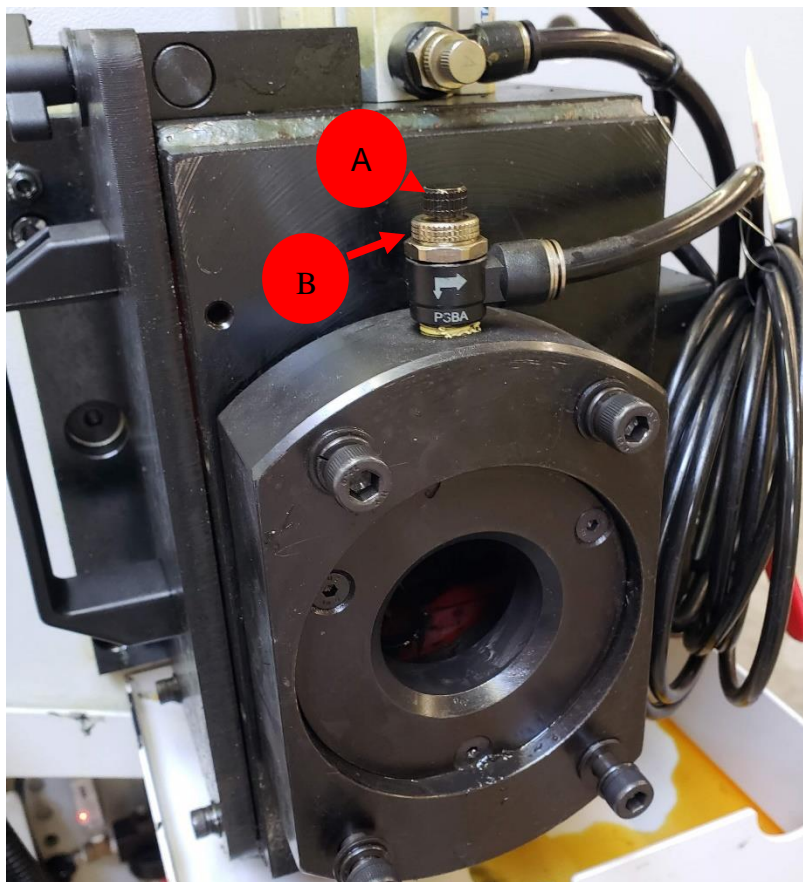
1. To set the air knife rotate the lock nut counterclockwise to loosen.
2. Rotate airflow control knob to the desired setting.
3. Tighten the lock nut to secure the valve position.

(A) Airflow control knob

(B) Lock nut

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5.5 Drip Pan, Oil Management

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

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

The Patriot 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. When the air knife and oil flow is set correctly minimal oil migration to the lathe is substantially limited. 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.

An additional drain cover has been implemented on the patriot that utilizes the drain pan mounting holes. The sheet metal is notched to allow for quick and easy assembly of the drain pan and cover.
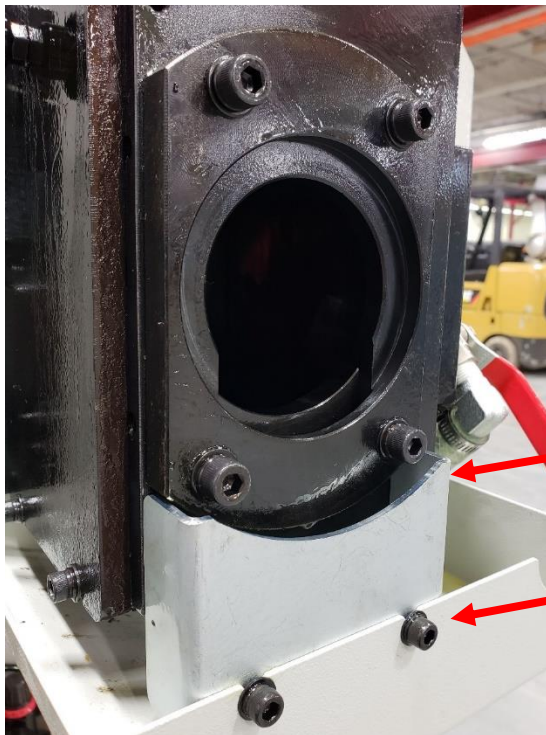
Drain cover mounts with drain pan

Drain pan mount for Swiss headstock applications

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Hardnose oil collector

The oil collector on the hard nose is plumbed to allow oil flow back to the bar feeder. If flow is too high the bushing block devise oiler valve should be adjusted to limit the flow.

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5.6 Pusher Drive Chain

🖐 **Caution bar feeder and lathe must be emergency stop for belt adjustment**

⚠️ **Warning properly trained personnel are required to adjust drive belt**

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

Anytime the drive chain 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. On older Patriot models the front sheet metal requires lowering to access the locking screws. Later built models will have 2 holes in the sheet metal for access.
5. Loosen the 2 locking screws (1) for the tensioner.
6. Rotate screw (2) clockwise to tighten the chain for suitable tension. ***Warning do not set chain tension too tight, as this will stretch the chain and potentially lead to chain failure.***
7. Tighten the locking screws (1).
8. Reattach front cover if removed earlier.
9. Close the bar feeder hood.
10. Reset emergency stops and test pusher operation with the hand held pendant.
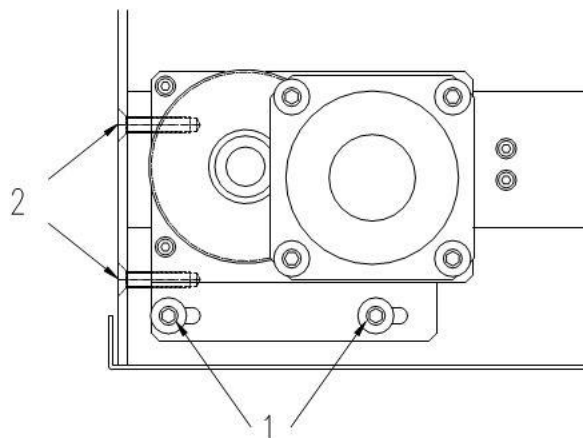
5.7 Synchronization System

⚠ **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 collect 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 a piston assembly is attached to the rod. A timing belt passes through the piston assembly. 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 chain. When the lathe collet is closed an air solenoid valve turns on to supply pressure to the piston assembly. The piston assembly grips the timing belt. 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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1	Synch rod
2	Adjustment plate w/attached pulley
3	Air solenoid valve
4	Timing belt
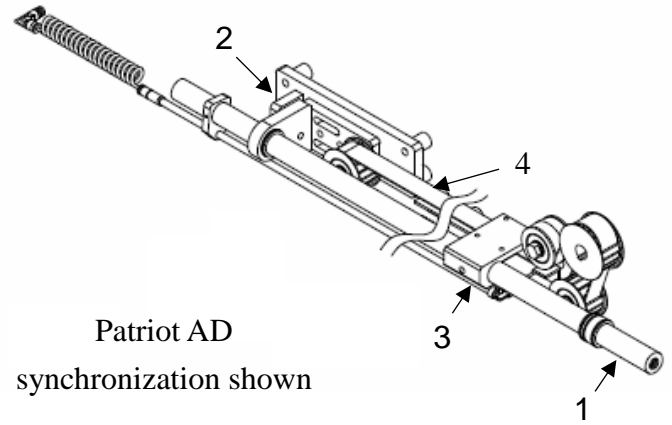
Patriot AD synchronization shown

1. Place bar feeder in emergency stop.
2. Remove front cover from the bar feeder.
3. Loosen lock nut (1).
4. Loosen the adjustment plate locking 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.
8. Tighten the adjustment screw lock nut.
9. Check belt deflection, readjust as required.
10. Install front cover.
11. Veify all tools have been removed and all machine gaurding is in place prior to resetting the emergency stop.
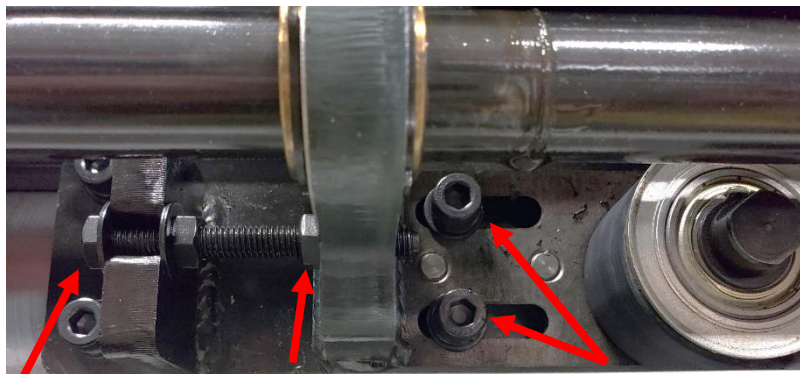
(3) Adjustment screw   (1) Lock nut   (2) Lock Screws

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5.8 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 Patriot 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.

Guide Channel Sets	Pusher Diameter	Minimum Bar Size	Maximum Bar Size	Max. Bar Size With Front Remnant Expulsion *
Ø 13 mm	12.5 mm	3 mm (.118")	10 mm (.393")	12 mm (.472")
Ø 17 mm	16.5 mm	5 mm (.196")	15 mm (.591")	16 mm (.630")
Ø 21 mm	20.5 mm	8 mm (.315")	16 mm (.630")	20 mm (.787")
Ø 26 mm	25.0 mm	8 mm (.315")	22.2 mm (.875")	25 mm (.984")
Ø 28 mm	27.5 mm	10 mm (.393")	25.4 mm (1.000")	27 mm (1.062")
Ø 33 mm	32.5 mm	10 mm (.393")	28.5 mm (1.125")	32 mm (1.259")
Ø 36 mm	34 or 35.5 mm	12.7 mm (.500")	32 mm (1.260")	35 mm (1.377")
Ø 39 mm	38.0 mm	15.8 mm (.625")	35.0 mm (1.377")	38 mm (1.500")

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N.	Code	QTY L	QTY LL	Denomination
1	AV51CH3300	2	2	Fixed ring
2	AV51CH3600	1	1	Support
3	AV51CH2701	1	1	Support
4	AV51CH3200	17	18	Screw
5	AV51CH3100	16	16	Screw
6	AV51CH3900	33	34	Spacer
7	BB25	66	66	Bellerile washer
8	AV51CH3800	33	34	Bushing
9	ZS080425	33	34	Pin
10	AV_CH2700	1	1	Upper guide channel
11	AV_CH2600	1		Upper guide channel
12	AV_CH2500	2	3	Upper guide channel
13	AV_CH2400	1	1	Lower guide channel
14	AV_CH2200	1	1	Lower guide channel
15	AV_CH2100	2		Lower guide channel
16	AV_CH2000	2	3	Lower guide channel
17	AV_CH2800	1	1	Upper guide channel
18	AV_CH2900		1	Upper guide channel
19	AV_CH2300	1	1	Lower guide channel
20	AV_CH3400	1	1	Support
21	AV_CH3500	1	1	Support
22	AV_CH2501	1		Upper guide channel
23	AV_CH0037L		1	Lower guide channel
24	AV_CH0037LL		1	Lower guide channel

NOMINAL DIAMETER D.

12 16 20 25 27 32 35 37 38 42 45 51
13 17 21 26 28 33 36 38 39 43 46 52

| 25 | AV51CH310A | 16 | 16 | Build-in fitting set |
| 26 | AV51CH320A | 17 | 18 | Build-in fitting set |

L LL BAR FEEDER PUSHER REFERENCE ABBREVIATION (L=LONG,LL=EXTRA LONG)
32 37 BAR FEEDER MODEL ACCORDING TO THEMAX .

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

The channel set for the Patriot 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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5.9 Pre-Run Setup Card

The following card may be printed, laminated, and placed near the Patriot. 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

5.10 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.

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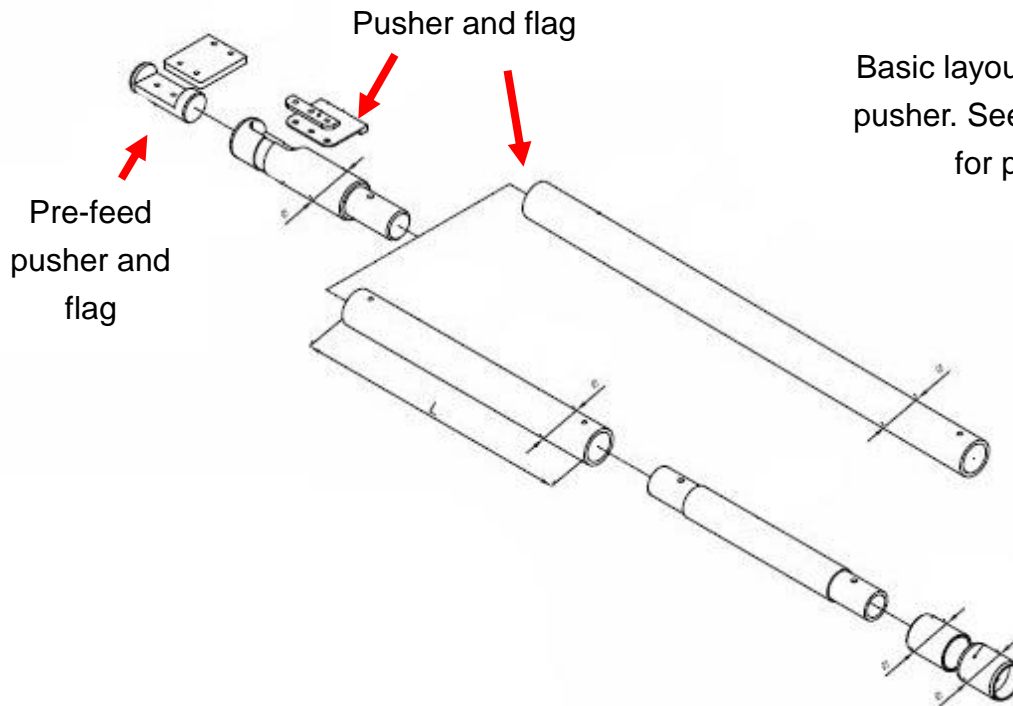
Basic layout of typical Patriot pusher. See the parts section for part details.

Pre-feed pusher and flag

Tech Tip - Care must be taken during the removal and installation of the pre-feed pusher screws. The pre-feed pusher attachment plate is countersunk therefore requires proper tightening of the attaching screws. With any countersunk screws, the holding torque of this type of screw is much greater than a socket head or button head screw. With a counter suck screw there is more surface area between the mating surfaces of the screw. This will act as a locking mechanism, especially if the 2 surfaces were clean of any oils. It is extremely important the screws and threads have been cleaned with denatured alcohol or some type of oil removing cleaner. A medium strength thread lock is recommended when installing the screws. **Do not over tighten these screws!** The screws should not be overly tightened. Doing so may cause issue when removing them.

If the pusher assembly is stuck in any location of the channel it is possible the short feed pusher screws have loosened and wedged between the channel chain guard and carriage. If the pusher will not move freely by the hand crank or by the servo the pre feed pusher attaching screws may

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have backed out and created a wedge in the chain channel. This may require cutting the upper chain channel to remove the screws. Contact Edge Technologies for additional information

5.11 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 Patriot is designed for many hours of operation. A few different tips sizes and collet attaching methods are available. The Patriot 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.
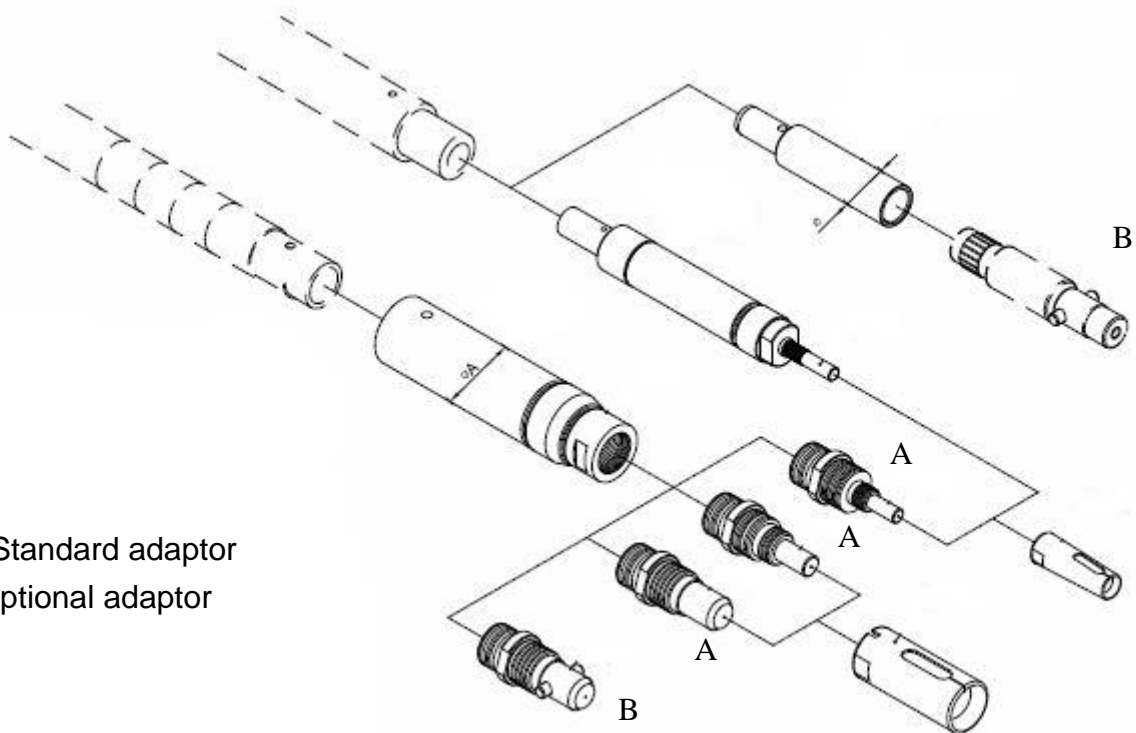
A – Standard adaptor
B- Optional adaptor

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5.12 Channel Set

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.

Tech Tip - The rear lower channel piece at the home and extraction proximity switches uses 2 countersunk screws with a special washer to hold the channel in place. Be sure the washers are in place and properly tightened.
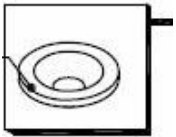
Countersunk washer required for lower, rearmost channel section. 2 required

⚠️ **Warning incorrect removal or installation of the channel sections will damage the retaining pin. Review instructions of channel section removal and installation.**

⚠️ **Warning machine damage will occur if the lower channel is installed in the upper channel locations. This will keep the flow of oil from reaching the channel.**

The lower and upper channel sections use a special retaining mechanism. It is possible to damage the engagement pin if incorrect installation or removal occurs.

Screw, lower channels sections contain a through hole.
Spacer

Bellville Washer (x2)

Spacer
Pin, can shear if screw above is over rotated.

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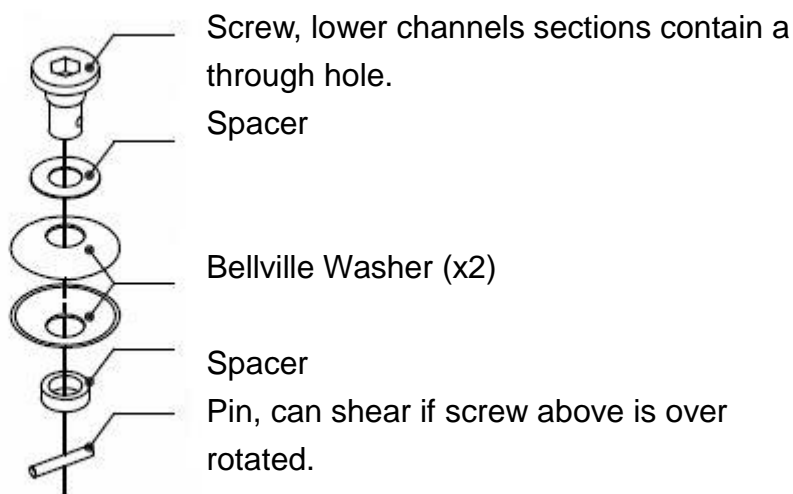
Pin should be centered to shaft.

Replace broken and damaged pins.

Upper channel screw without oil hole.

Lower channel screw with oil hole, lower channels must always contain the mounting screw with hole. Be sure this oil passage is not clogged.
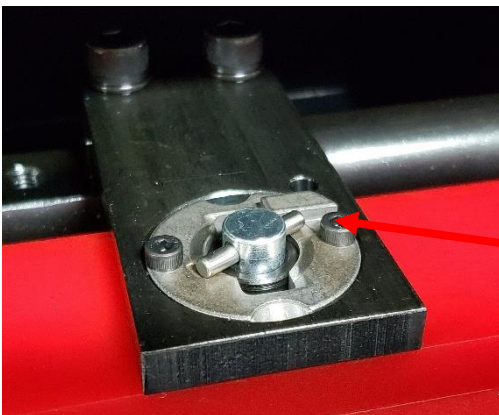
When installed the screw pin will be carful to not over rotate. Doing so will break pin.

Pin will stop at retainer stops.

5.13 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.

Voltage is supplied via the Patriots 24volt power supply to the material flag sensor. The sensor output is sent to the PLC in detection of closing the switch, the sensor is of a PNP 24v, normally open type.
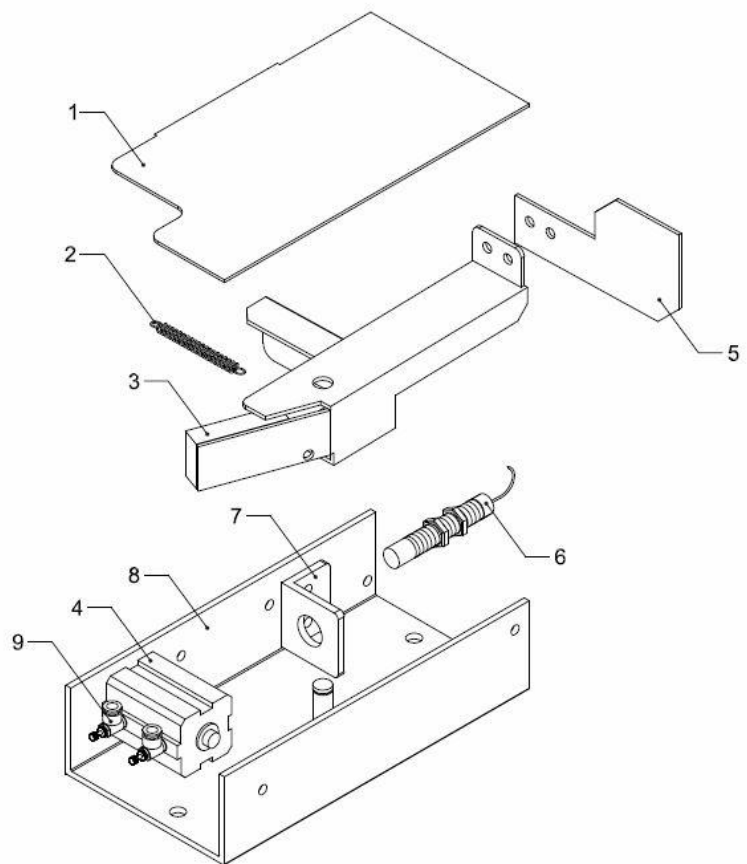
N.	Code	QTY	Denomination
1	AV51FA0500	1	Cover
2	G92120600	1	Spring
3	AV51FA0200	1	Short feed door
4	A11130700	1	Cylinder SDA12x15
5	AV51FA0300	1	Flag
6	J310313	1	Microswitch
7	AV51FA0400	1	Bracket
8	AV51FA0100	1	Housing
9	A12130300	2	Flow regulator JSC 6-M5

A/D device shown

Cutting sensor return cylinder

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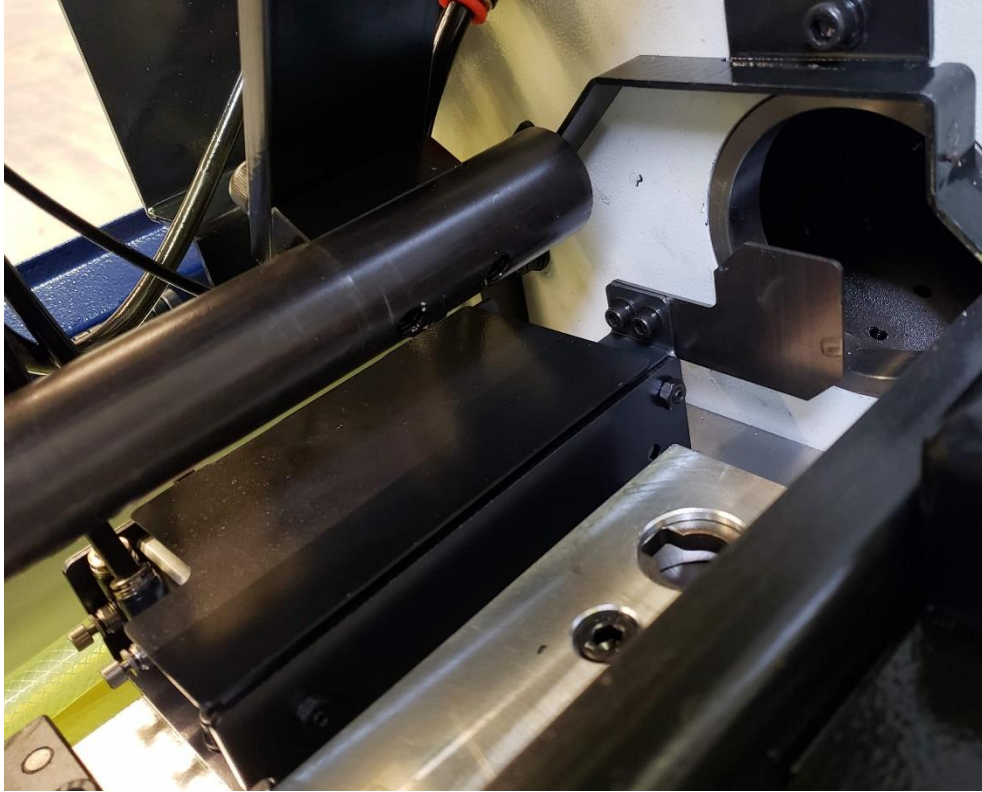
Channel set has been removed.

5.14 Gripper Assembly

![hand caution icon] **Caution the Gripper is a pinch hazard.**

![hand caution icon] **Caution the Gripper assembly is a moving component that should always be service with electrical power and air supply removed.**

![hand caution icon] **Caution place lathe and bar feeder into emergency stop when replacing 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 not adjustable however are 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.

Adjusting parameter Page 12 _**"First Feeding Distance"**_ to fine tune the press upon and press off performance.

Lower gripper jaw with replacable insert.   Upper gripper jaw with replacable insert.

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The gripper assembly is designed to function with out any adjustments.
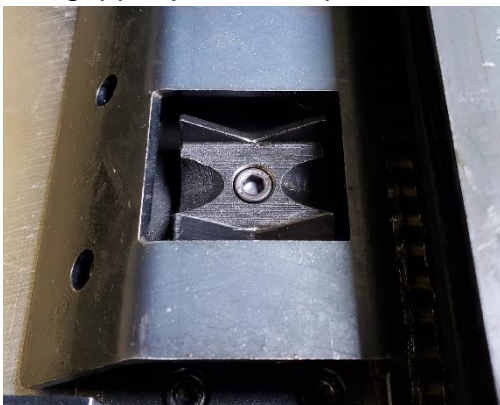
5.15 Shuttle - Extraction / Introduction Cylinder

🖐 **Caution never adjust the air valves without being properly trained**

🖐 **Caution Personal injury could result**

The Patriot 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.

The air cylinder piston shaft is attached to the balance block. The balance block contains a spring loaded finger which fits into a cavity of the carriage (bar pusher bracket). This finger will move the carriage forward and rearward. The chain guide, once installed into the chain cover will cause the finger to slide down and allow the carriage to move forward the length of the bar feeder.
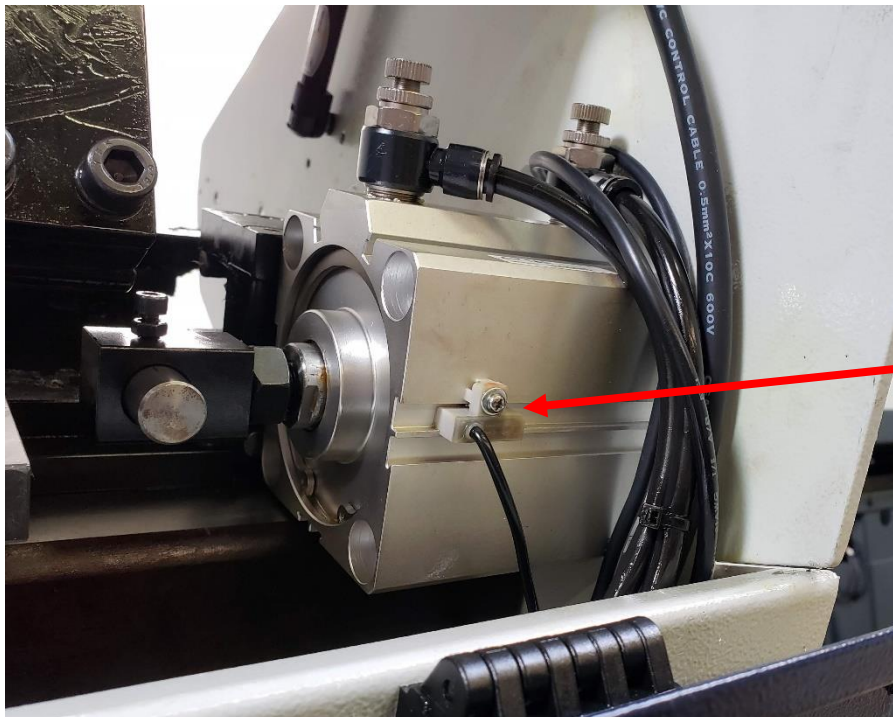
Shuttle - Extraction / Introduction Cylinder used in unison with the servo motor to press and extract material onto the bar feeder collet.

Pusher introduction sensor MS30, must be in correct position or incorrect or no cylinder operation will occur.

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Spring loaded finger attached to the balance block.

The finger will sit inside the carriage pocket

Finger moves from this position back

The chain guide removed from bar feeder.
The finger will move under the chain guide at the point below as it moves forward. In the reverse the finger will engage the carriage pocket as moving in reverse.
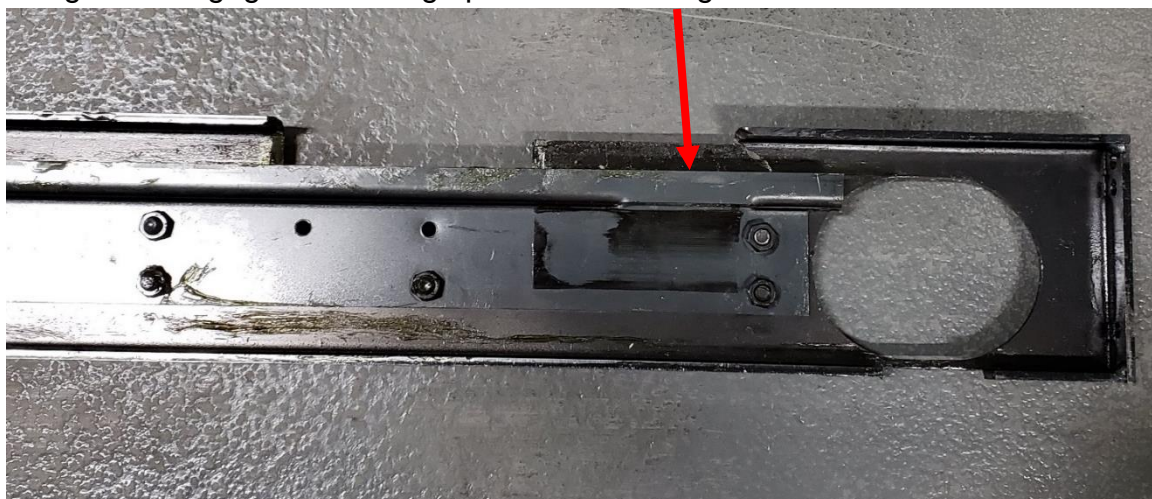
Balance Block Forward
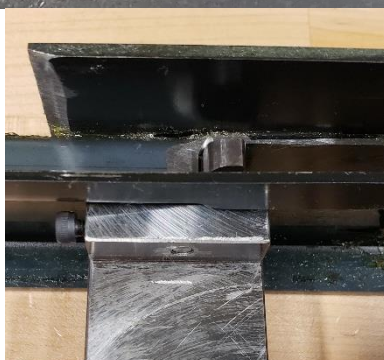
Balance block finger before moving under plate

Balance block at the home position, full rear position.

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The image below with the balance block in the installed position. The block is forward and finger is below the chain guide. The chain is not connected to the carriage for image purpose. When the balance block is moved back the finger will slide up in the opening and engage the carriage pocket. There are no adjustments to the balance block stroke or stop locations.
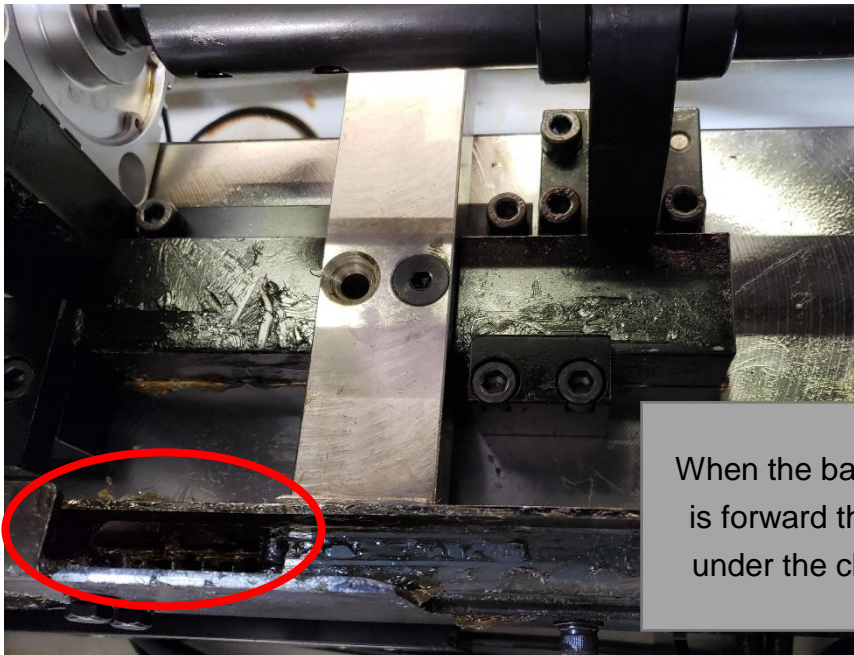
When the balance block is forward the finger is under the chain guide
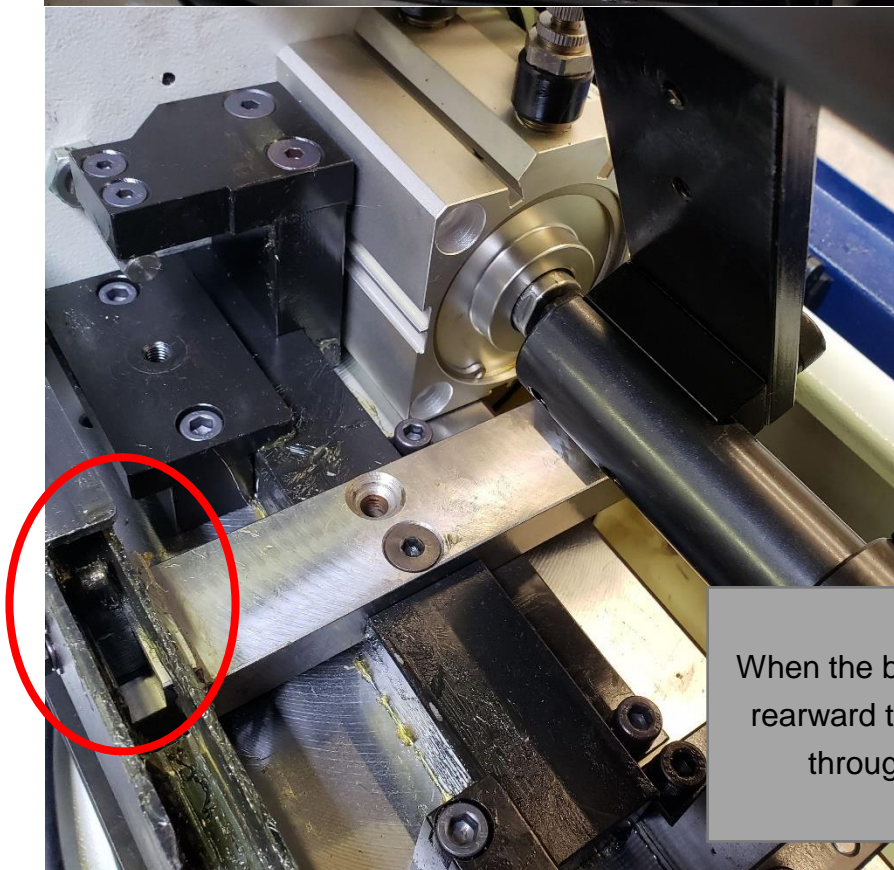
When the balance block is rearward the finger is up through the slot.

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The carriage is the central work horse for the bar feeder. The drive chain attaches to the underside of the carriage and is pulled from end to end of the bar feeder by the servo motor. There is a machined pocket in the underside in which the finger attached to the balance block will be positioned.

Finger pocket

Drive chain attachment points
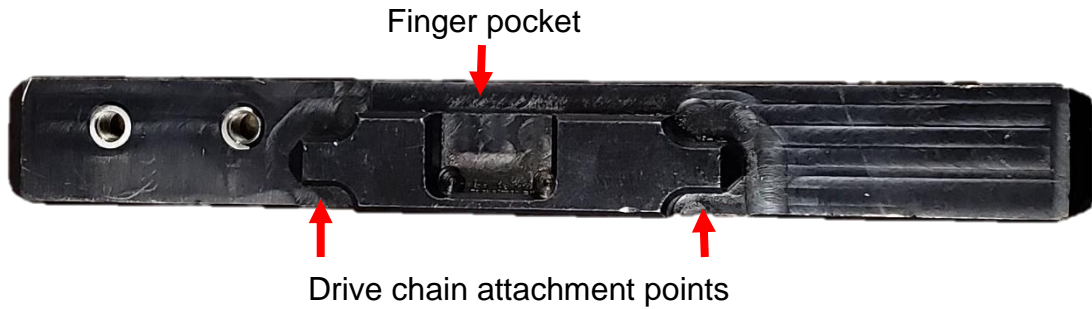
Underside of Carriage

On the top side of the carriage the pre feed pusher is screwed in, while the long pusher flag sits into a machined pocket. It is very important that the attaching screws of the pre feed pusher are properly cleaned and a medium thread lock is used. The pusher flag screws should be checked for proper tightness.

Pre feed pusher pocket   Long feed Pusher pocket

Topside of Carriage

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5.16 Channel Lock system

The channel lock system on the Patriot keeps the channel from being forced open during production. As the bar is rotated and the channel is filled with pressurized oil, this pressure could force the channel open.

A pneumatic cylinder controls the opening and closing of the lock mechanism.

Channel is open and unlocked, channel is removed

Channel lock/unlock cylinder

The 8ft Patriot does not use the lock linkage. The channel open close cylinder is used to hold the channel closed. The amount of strees on the channel on this shorter bar feeder is substantionally less. On the 12ft Patriot when the channel is in the closed the cylinder moves the connector rod (A) which is attached to the support plate (B) into a mechanical lock so the channel will not open. Channel lock/unlock cylinder (C)
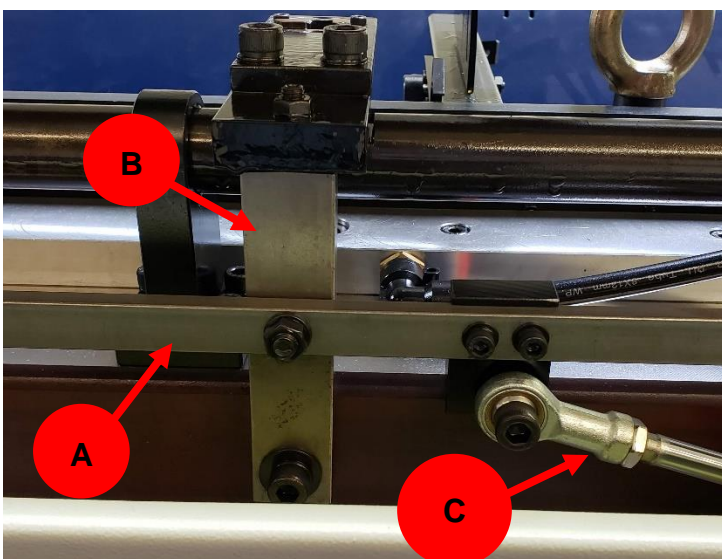
5.17 Material Standards and Requirements

⚠ **Caution the ends of the bar should be relatively straight to the diameter of the bar to help ensure proper positioning of the bar as it reaches the facing position and to keep the bar pusher from sliding off the bar while feeding the material. In most cases chamfering the lathe side of the bar is required and with spindle rotation at approximately 50rpms.**

Material should be relatively straight and clean. A chamfer on the leading bar edge is highly recommended. While bent stock will not necessarily cause problems within the lathe spindle while turning, it may prevent loading if bar condition is such that the bar collides with the back of the lathe spindle or it binds while feeding into the spindle. Bars of small diameter may not pick up properly from the magazine if they are not straight. Excessive chips, burrs or dirt may cause binding within the spindle.

Straightness Requirements

Optimum performance of the bar feeder can only be achieved if the material to be run meets specifications for straightness.   The maximum allowable bend in a bar is 0.5mm T.I.R. in a 1 meter section (.02" T.I.R per 3 foot section).   This tolerance assumes a curvature over the length of the section and not a short kink in the bar.   This tolerance is not accumulative.   The tolerance for the entire length of the bar is 1.7mm TIR.

5.17.2 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"
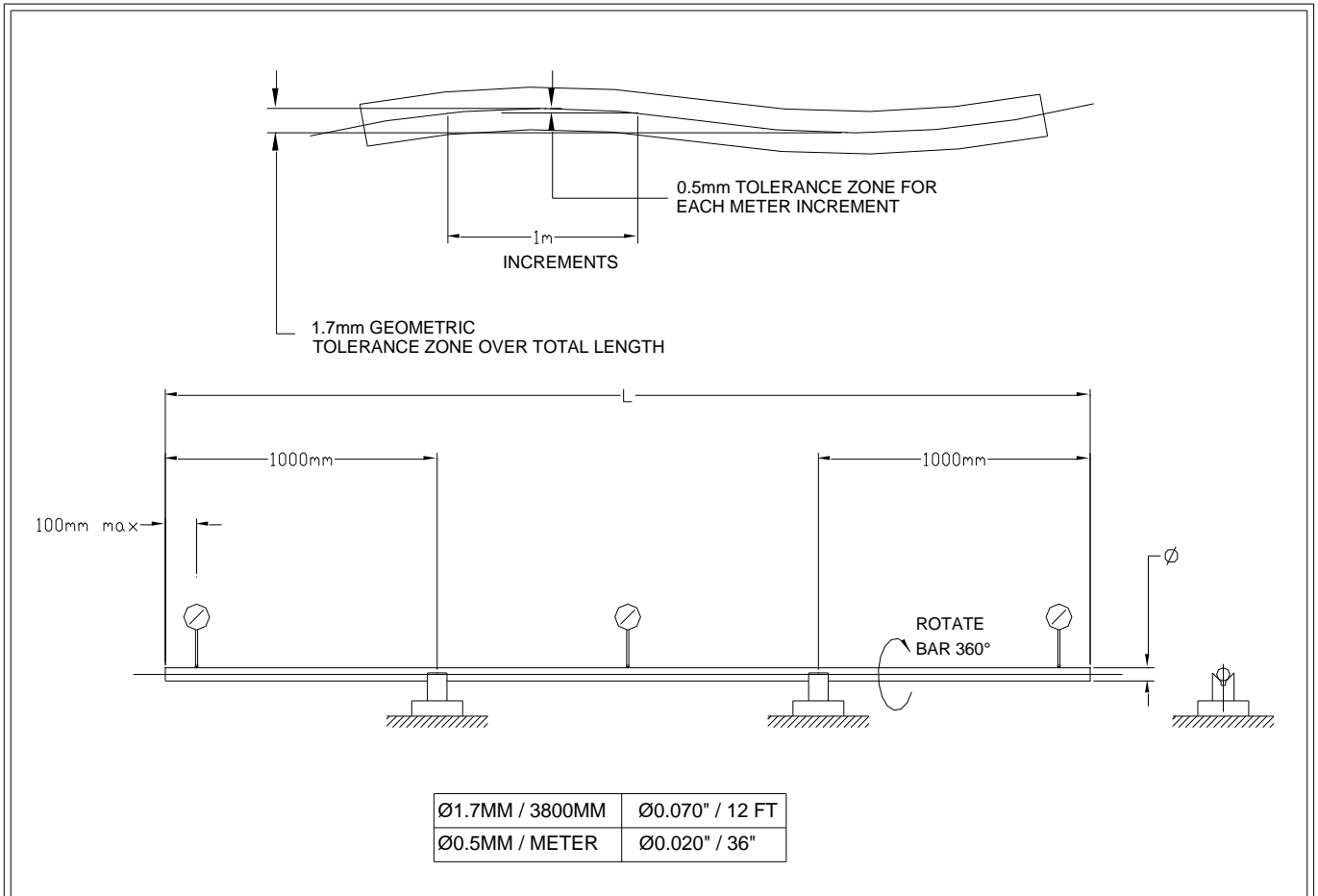
5.17.3 Bar Stock Preparation

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 touch screen. There are many obvious defined buttons or keys when pressed an action of some type appears on screen. There are undefined buttons or keys when a value or description is pressed an action of some type appears on screen. Understanding this function of the HMI will help you in operating the bar feeder.
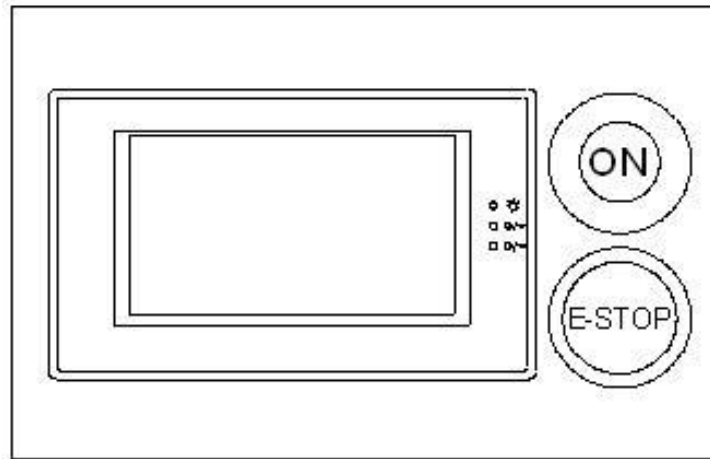
Do not use harsh cleaning chemicals on the HMI screen. Clean the screen with the power off. Use of a micro fiber cloth towel and denatured alcohol is permissible.

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6.2 Handheld Pendant Layout
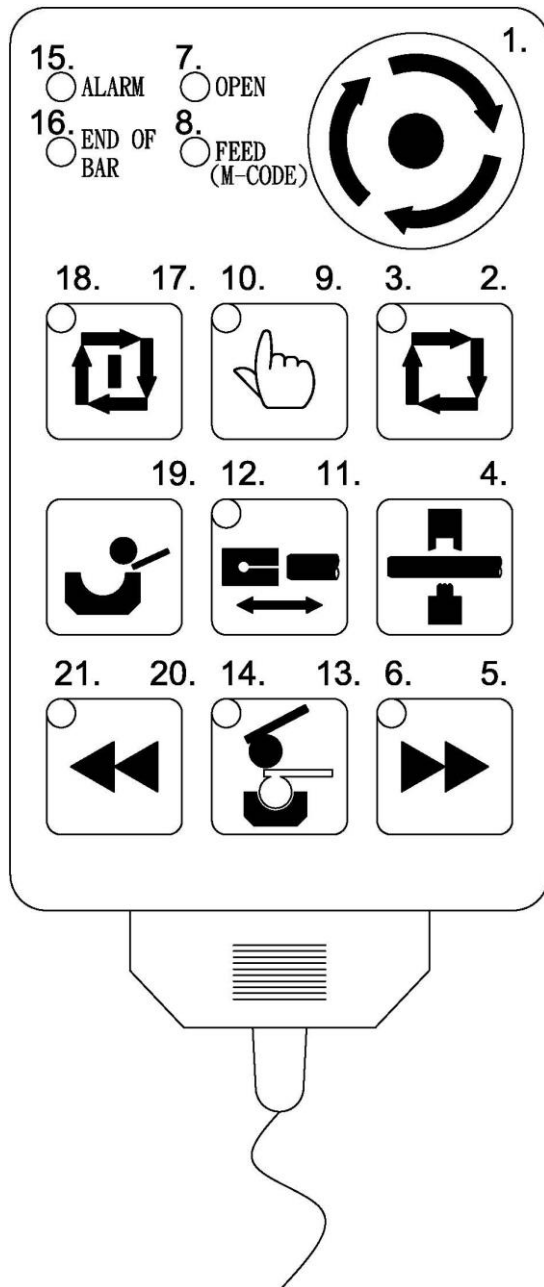
NO.	Function
1.	Emergency STOP
2.	Pre Auto
3.	Pre Auto light
4.	Manual clamping
5.	Manual advance (Right) Manual retreat (Left)
6.	Origin point light (Left)
7.	Chuck open light
8.	Allow feeding on
9.	Manual mode
10.	Manual mode light
11.	Manual Gripping in/out
12.	Pusher extracted
13.	Manual channel 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. Turn on the main switch on the bar feeder electrical cabinet.
2. Check to make sure the emergency stop buttons on the pendant and the main control panel are released.
3. Press and hold the green on button on the main control cabinet. The green button will light when the bar feeder is on.
4. Close the collet on the lathe.
5. 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)

To 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. Press the green start button on the HMI (main control panel of the bar feeder).
4. 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.
5. 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.
6. Before the guide channel can be opened or closed the pusher must be in the extracted position (Rear arrow LED is ON).
7. 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**

(6.4.2) Advance / retreat at low-speed

(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**

(6.4.3) Automatic work operation

While 🔲 and 🔲 the light are on, press 🔲 and 🔲 start to work automatically. Or while 🔲 and 🔲 guiding light off, and either ⏩ or ⏪ is on, press 🔲 and 🔲 start to work automatically.

⚠️ **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.**

(6.4.4) Resetting the Bar Feeder Home Position

When 🔲 guide channel up/down light is on move the pusher at least 16 inches from the home position. Press ⏪ and ⏩ simultaneously for 8 seconds to begin resetting the bar feeder home positon.

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When the pusher begins to move after the 8 second delay, release the jog buttons. The HMI will display a message indicating the zero procedure is in progress.

The PS1 switch will turn on and the HMI will display a message indicating the zero position procedure is complete.

This procedure should be done anytime the bar feeder fails to properly reach a position or alarms during pusher movement to a specific position.

On occasion it may be necessary to perform a re-zero procedure on the Patriot. On **software versions 93-95.1 the following procedure should be used to re-zero the bar pusher.**

🛑 **Caution only trained operators are to perform a re-zeroing procedure.**

🛑 **Caution do not use hands or fingers to trip cutting sensor. Use a chicken stick to trip the cutting sensor flag.**

🛑 **Caution when the hood switch has been by-passed during the re-zero procedure using the "Bar Off" feature.**

⚠️ **Warning this procedure requires access to the factory parameters. Contact Edge Technologies for further information.**

1. While the power is "On" on the barfeeder, move the bar pusher 1' away from the home sensor.

2. Navigate to factory parameter screen page 26, parameter "Hard Stop Location" and verify set value is -3.5mm, If not set to -3.5mm.

3. Cycle power (Verify all lights inside the cabinet turn off completely before powering back on).

4. Return power to the barfeeder, press and hold the green button on the main control box. When the button lights up, the barfeeder will turn to Manual mode. Reset lathe emergency stop if set during power cycle.

5. From the manual screen select "Bar Off". Once the pre feed pusher moves press and hold the "gripper" button on the handheld. Holding the gripper button on the handheld will ignore any

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alarms from the barfeeder regarding "no remnant detected" or "no new bar detected". Do NOT release the "gripper" button until the "Bar Off" cycle has completed.

6. After the bar pusher has completely stopped moving, release the "gripper" button and the zero reference will be complete. At this point, all issues regarding the loss of the home position should be gone and the barfeeder will be ready for production.

All positions to control bar feeder function are referenced from the zero position. Should the zero position shift the bar feeder will not function properly. To reset the zero position follow these steps:

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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.**

Sequence to manually change bars

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.

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 Pre-Auto button. 🔘

7. Press the Automatic button. 🔘

At this point the bar separators will drop a bar into the guide channel. The pre-feed pusher will move the bar forward to position and the grippers will close on the bar. The pre-feed pusher will retract. The shuttle will pull the pre-feed pusher to the rear limit. The guide channel will close. The shuttle will push the bar pusher forward onto the bar stock. The grippers will open. The bar pusher will advance the bar stock to the facing position and stop.

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

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6.5 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.
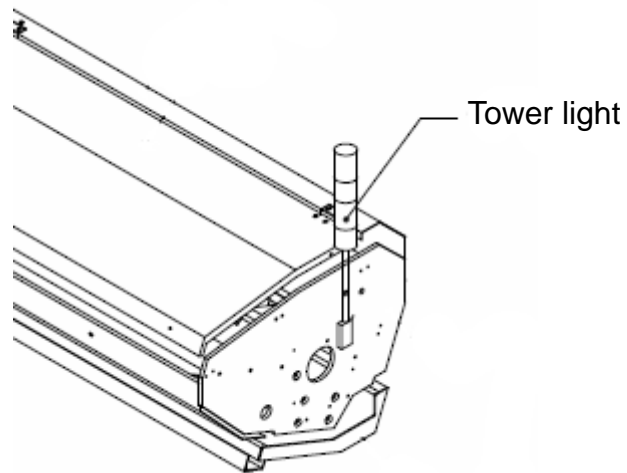
Tower light

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.

6.6 Description of the Manual Screen
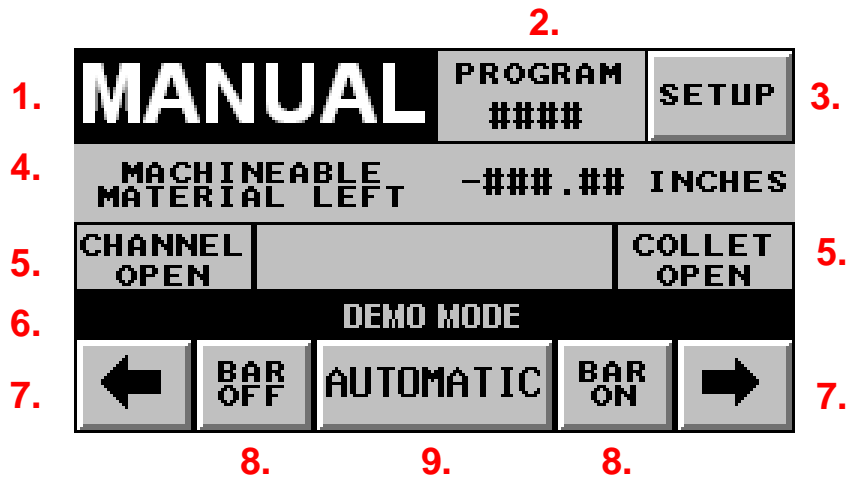
The Manual screen has several information items and function buttons.

1) In the upper left corner is the mode status showing if the bar feeder is in Manual or Automatic mode.

2) The current program number is displayed next to the mode status.

3) The Setup button is located in the upper right corner of the screen. This button is used to access individual programs and parameters. Password may be required.

4) Below the mode status is a display of the remaining material that can be machined. The unit of measurement may be toggled between metric and inch by touching the value on the screen.

5) The next line has information areas to indicate the channel status and the status of the lathe collet.

6) The dark band below the channel and collet status display is a message banner that shows the current operation of the bar feeder. Demo mode is the current state of this image.

7) The bottom row of the screen has buttons for forward and reverse jogging of the bar pusher.

8) The Bar Off and Bar On buttons are next to the jog buttons.

9) A button to change the bar feeder to Automatic mode is between the Bar On and Bar Off buttons.

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6.8 Description of the Automatic Screen

2. AUTOMATIC | PROGRAM ####

3. PUSHER POSITION FROM ZERO -###.## INCHES

4. CHANNEL CLOSED | PARTS REMAINING ### | COLLET OPEN

5. DEMO MODE

MANUAL

1) The AUTOMATIC screen has one function button to change to Manual mode and several information screens.

2) The top line shows the bar feeder mode status and the current program number.

3) The next line shows the position of the bar feeder from the zero position.

4) Below the pusher position is the status of the guide channel, the lathe collet and the number of parts remaining before the bar change.

5) The dark line shows the current operation of the bar feeder.

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6.9 Loading With the Bar On and Bar Off Buttons

⚠️ **Caution do not use bar on if a bar is already in the bar feeder. Doing so will cause damage to the machine.**

```
┌─────────────────────────────────────────────────┐
│  MANUAL        PROGRAM    │ SETUP │               │
│                 ####      │       │               │
│  MACHINEABLE                                      │
│  MATERIAL LEFT      -###.## INCHES                │
│ ┌─────────┐                        ┌──────────┐  │
│ │ CHANNEL │                        │ COLLET   │  │
│ │  OPEN   │                        │  OPEN    │  │
│ └─────────┘                        └──────────┘  │
│           ████ DEMO MODE ████                     │
│ ┌─────┐┌──────┐┌───────────┐┌──────┐┌─────┐     │
│ │  ←  ││ BAR  ││ AUTOMATIC ││ BAR  ││  →  │     │
│ │     ││ OFF  ││           ││ ON   ││     │     │
│ └─────┘└──────┘└───────────┘└──────┘└─────┘     │
└─────────────────────────────────────────────────┘
```
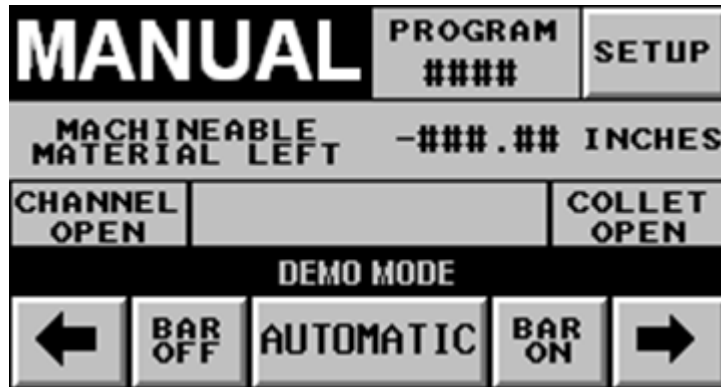
A new bar can be loaded by using the BAR ON button. The lathe collet must be open for bar on to function.

1. Press the BAR ON button. [BAR ON]
2. The bar pusher will retract to the home position.
3. The grippers will close on the bar (if present, there need not be a bar in the channel at this step).
4. The pusher will retract and the channel will open.
5. A new bar will fall into the guide channel.
6. The pre-feed pusher will move the bar forward ahead of the pusher collet.
7. The pre-feed pusher will retract and the channel will close.
8. The grippers will hold the bar as the pusher collet is forced over the material.
9. The grippers will open and the bar will move forward to the facing position and stop.
10. Manually close the lathe collet. The bar feeder can now be placed in Automatic and machining may begin.

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Bar Off

If the material in the channel is too long to drop through the remnant slot use the BAR OFF button.

1. Press BAR OFF. **BAR OFF**
2. The bar pusher will retract to the home position.
3. The grippers will close on the bar and the pusher will pull off the material.
4. The grippers will open.
5. The channel may then be opened with the Pendant control and the stock removed.
6. Close the channel, shuttle the pusher forward and then the BAR ON button may be used to load the machine.

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7.0 Parameters and Program

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. Each parameter screen is listed and a detailed description for each parameter. Certain parameter screens are accessible only with a password. If access to a password protected parameter is required an you don't have the password contact Edge Technologies and speak with our service department.

7.1 Entering a New Program

The Patriot can store up to 36 individual program setups. Each setup will have a user chosen 4 digit numbers. This allows the user to repeat jobs on the bar feeder with only a few steps. Should the memory become full an individual job may be deleted to make room for the next or an existing job can be easily altered.

A template is made in the bar feeder during the machine installation that is pulled up each time a new setup is started. The template stores information such as the maximum useable travel of the bar pusher and the distance from the bar feeder measuring gate to the face of the lathe chuck.

1. Begin entering a new program by pressing the SETUP button on the Manual screen. The program menu will be displayed.

NOTE: See section 8 for parameter descriptions or press the button in the left column and a description of the parameter will be displayed.

2. Press a blank button. The screen for parameter 1 will be displayed. Press the value button for the Part Length 1 parameter and a numeric keypad will be displayed. This number should be equal to the overall part length plus the width of the cut-off tool plus facing stock.

Part Length 1	-###.## Inches	Pg 1
Feedout 1-1	-###.## Inches	
Feedout 1-2	-###.## Inches	Save All
Feedout 1-3	-###.## Inches	Page Down

The Patriot is capable of pushing and monitoring up to three separate distances per part by entering the individual feed distances in the Feedout 1, 2 and 3 parameters. **The total value of the Feedout parameters should match the value in Part Length 1**. Each Feedout parameter screen has a short and long feed safety setting to set allowable minimum and maximum pushing distances. Multiple feedouts per part may also be used without monitoring by entering the same value as Part Length 1 in Feedout 1-1.

3. **Press the value button for Feedout 1-1.**

    Page 1.1 will be displayed.

Feedout 1	-###.## Inches	Pg 1.1
Short Feed Safety	-##.## Inches	
Long Feed Safety	-##.## Inches	
Check 1st Part	No	Back

Feedout: If using only one feedout per part, enter the same value as Part Length 1. If using more than one feedout per part, enter only the distance of the first feedout on this page and the other feedout distances on the appropriate parameter pages.

Short Feed Safety: If desired enter the minimum allowable feed distance in the Short Feed Safety parameter. This value should be at least 1mm less than the Feedout Distance. If the bar feeder's encoder indicates travel less than this value the bar feeder will alarm out. The function is disabled if the value is set to zero.

Long Feed Safety: If required enter the maximum allowable feed distance in the Long Feed Safety parameter.   This value should be at least 1mm longer than the Feedout distance.   If the bar feeder's encoder indicates travel in excess of this value the feeder will alarm out.   The function is disabled if the value is set to zero.

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Check 1st Part: This parameter allows the long and short feed safety values to be disabled on the first part after switching the bar feeder to Automatic mode or for the first part after a bar change.

4. Press the Back button to return to the previous page when finished with this page.

5. Press the page down button to access parameter Page 3.

Bar Diameter		-###.## Inches	Pg 3
Facing Length	Collet	-###.## Inches	Page Up
Open Collet Speed		#### IN / MIN	Save All
Open Collet Torque		### %	Page Down

Bar Diameter: Enter the diameter of the bar stock to be run. For hexagonal and square stock enter the diameter as measured across the points of the material.

Facing Length: This parameter allows adjustment to the stopping position of the new bar at the completion of a bar change. See section 8 for the complete description of the parameter.

Open Collet Speed: This parameter allows adjustment to the feeding speed of the bar stock in Automatic mode.

Open Collet Torque: This parameter allows adjustment of the pushing force of the bar pusher in the Automatic mode. The range is plus or minus 50% of the setting selected through the Bar Diameter parameter.

6. Press the Page Down button to continue.

Feeding Type	Turret Stop	Pg 5
Facing Type	Position	Page Up
Remnant Type	Advanced Return & Wait	Save All
Change Program Number	####	Page Down

Feeding Type Selects the method of feeding. Selections allow feeding to a hard stop on the lathe or feeding to a distance set by the Feedout parameters on parameter page 1.1.

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Facing Type: Selects the type of control of the bar pusher at the end of the bar change. Choices are facing to a hard stop on the lathe or facing to stop at a set position.

Remnant Type: Selects the way the remnant is disposed of. Selections are Extraction, Ejection and Return and Wait. See section 8 for complete parameter descriptions.

Change Program Number: Allows the user to change the number of the current program.

7. Press the Page down Button to continue.

MAVD Close After Opening Position	Off	Pg 6
MAVD Opening Position	-###.## Inches	Page Up
MAVD Open / Close With Lathe Collet	Off	Save All

This page allows control of the Moveable Anti-Vibration Device. Move the pusher just before the MAVD rollers. Note the distance read out on the HMI. This will be the open position.

8. Press the Save All button to exit the parameter screens.

NOTE: Not all screens may be visible. Screens may be turned off in the factory parameters per customer request.

Selecting and Editing an Existing Program

Press the SETUP button on the Manual screen.

Press the button for a previously entered program. A screen with the program number selected will be displayed.

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```
          PROGRAM

           ####
```

| EXIT | LOAD | EDIT |

Press the LOAD button to initialize the program.

Press the EDIT button to make changes to the existing program, then press Save All to store the changes.

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Parameter Page 1

Part Length 1	-###.## Inches	Pg 1
Feedout 1-1	-###.## Inches	
Feedout 1-2	-###.## Inches	Save All
Feedout 1-3	-###.## Inches	Page Down

PART LENGTH 1: Used with Max Feed Position to generate an end of bar signal. Calculate the proper setting by adding the Length of part + Width of cut-off tool + facing stock. End of bar is generated when the encoder reads the position (Max Feed Position – Part Length 1).

Feedout 1-1: Used when making multiple feed outs per part. Feedout 1-1 is the first of 3 possible feedouts per part. Parameter is disabled if set to zero. Press the Feedout 1-1 dimension button to access page 1.1 and additional options.

Feedout 1-2: Used when making multiple feed outs per part. Feedout 1-2 is the second of 3 possible feedouts per part. Parameter is disabled if set to zero. Press the Feedout 1-2 dimension button to access page 1.2 and additional options.

Feedout 1-3: Used when making multiple feed outs per part. Feedout 1-3 is the third of 3 possible feedouts per part. Parameter is disabled if set to zero. Press the Feedout 1-3 dimension button to access page 1.3 and additional options.

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Parameter Page 1.1

Feedout 1	-###.## Inches	Pg 1.1
Short Feed Safety	-##.## Inches	
Long Feed Safety	-##.## Inches	
Check 1st Part	No	Back

Feedout 1: Used when making multiple feedouts per part. Feedout 1-1 is the first of 3 possible feedouts per part. Parameter is disabled if set to zero. Press the dimension button to set the length of the first feedout for fixed headstock lathes, or for the distance of headstock travel before the first re-grip on sliding headstock lathes.

Short Feed Safety: Sets minimum distance pusher can advance during feedout 1. On sliding headstock lathes the pusher must advance at least this distance before the lathe collet opens. On fixed headstock lathes the pusher must advance at least this distance before the lathe collet closes. The parameter is disabled if set to zero.

Long Feed Safety: Sets maximum distance pusher can advance during feedout 1. On sliding headstock lathes the pusher must not advance more than this distance before the lathe collet opens. On fixed headstock lathes the pusher must advance more than this distance before the lathe collet closes. The parameter is disabled if set to zero.

Check 1st Part: Selects option to check or not check the long and short feed safety distances on the first feedout after machine goes into automatic mode and the first feedout after a bar change. Set to yes to check immediately, no to bypass check until second part.

Parameter Page 1.2

Feedout 2	-###.## Inches	Pg 1.2
Short Feed Safety	-##.## Inches	
Long Feed Safety	-##.## Inches	
Check 1st Part	No	Back

Feedout 2: Used when making multiple feedouts per part. Feedout 2 is the 2nd of 3 possible feedouts per part. Parameter is disabled if set to zero. Press the dimension button to set the length of the second feedout for fixed headstock lathes, or for the distance of headstock travel before the first re-grip on sliding headstock lathes.

Short Feed Safety: Sets minimum distance pusher can advance during feedout 2. On sliding headstock lathes the pusher must advance at least this distance before the lathe collet opens. On fixed headstock lathes the pusher must advance at least this distance before the lathe collet closes. The parameter is disabled if set to zero.

Long Feed Safety: Sets maximum distance pusher can advance during feedout 2. On sliding headstock lathes the pusher must not advance more than this distance before the lathe collet opens. On fixed headstock lathes the pusher must advance more than this distance before the lathe collet closes. The parameter is disabled if set to zero.

Check 1st Part: Selects option to check or not check the long and short feed safety distances on the second feedout after machine goes into automatic mode and the second feedout after a bar change. Set to yes to check immediately, no to bypass check until second part.

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Parameter Page 1.3

Feedout 3	-###.## Inches	Pg 1.3
Short Feed Safety	-##.## Inches	
Long Feed Safety	-##.## Inches	
Check 1st Part	No	Back

Feedout 3: Used when making multiple feedouts per part. Feedout 3 is the 3rd of 3 possible feedouts per part. Parameter is disabled if set to zero. Press the dimension button to set the length of the third feedout for fixed headstock lathes, or for the distance of headstock travel after the third re-grip on sliding headstock lathes.

Short Feed Safety: Sets minimum distance pusher can advance during feedout 3. On sliding headstock lathes the pusher must advance at least this distance before the lathe collet opens. On fixed headstock lathes the pusher must advance at least this distance before the lathe collet closes. The parameter is disabled if set to zero.

Long Feed Safety: Sets maximum distance pusher can advance during feedout 3. On sliding headstock lathes the pusher must not advance more than this distance before the lathe collet opens. On fixed headstock lathes the pusher must advance more than this distance before the lathe collet closes. The parameter is disabled if set to zero.

Check 1st Part: Selects option to check or not check the long and short feed safety distances on the third feedout after machine goes into automatic mode and the third feedout after a bar change. Set to yes to check immediately, no to bypass check until second part.

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Parameter Page 2 (Option) This page may be hidden in the factory settings

Part Length 2	-###.## Inches	Pg 2
Feedout 2-1	-###.## Inches	Page Up
Feedout 2-2	-###.## Inches	Save All
Feedout 2-3	-###.## Inches	Page Down

PART LENGTH 2: Used with Max Feed Position to generate second end of bar signal. This makes possible using the remnant to make shorter length parts after the end of bar signal is made. Calculate the proper setting by adding the Length of part + Width of cut-off tool + facing stock. End of bar is generated when the encoder reads the position (Max Feed Position – Part Length 2).

Feedout 2-1: Used when making multiple feed outs per part. Feedout 2-1 is the first of 3 possible feedouts per part. Parameter is disabled if set to zero. Press the Feedout 2-1 dimension button to access page 2.1 and additional options.

Feedout 2-2: Used when making multiple feed outs per part. Feedout 2-2 is the second of 3 possible feedouts per part. Parameter is disabled if set to zero. Press the Feedout 2-2 dimension button to access page 2.2 and additional options.

Feedout 2-3: Used when making multiple feed outs per part. Feedout 2-3 is the third of 3 possible feedouts per part. Parameter is disabled if set to zero. Press the Feedout 2-3 dimension button to access page 2.3 and additional options.

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Parameter Page 2.1 (Option) This page may be hidden in the factory settings

Feedout 1	−###.## Inches	Pg 2.1
Short Feed Safety	−##.## Inches	
Long Feed Safety	−##.## Inches	
Check 1st Part	No	Back

Feedout 1: Used when making multiple feedouts per part. Feedout 1-1 is the first of 3 possible feedouts per part. The parameter is disabled if set to zero. Press the dimension button to set the length of the first feedout for fixed headstock lathes, or for the distance of headstock travel before the first re-grip on sliding headstock lathes.

Short Feed Safety: Sets minimum distance pusher can advance during feedout 1. On sliding headstock lathes the pusher must advance at least this distance before the lathe collet opens. On fixed headstock lathes the pusher must advance at least this distance before the lathe collet closes. The parameter is disabled if set to zero.

Long Feed Safety: Sets maximum distance pusher can advance during feedout 1. On sliding headstock lathes the pusher must not advance more than this distance before the lathe collet opens. On fixed headstock lathes the pusher must advance more than this distance before the lathe collet closes. The parameter is disabled if set to zero.

Check 1st Part: Selects option to check or not check the long and short feed safety distances on the first feedout after machine goes into automatic mode and the first feedout after a bar change. Set to yes to check immediately, no to bypass check until second part.

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Parameter Page 2.2 (Option) This page may be hidden in the factory settings

Feedout 2	-###.## Inches	Pg 1.2
Short Feed Safety	-##.## Inches	
Long Feed Safety	-##.## Inches	
Check 1st Part	No	Back

Feedout 2: Used when making multiple feedouts per part. Feedout 2 is the 2nd of 3 possible feedouts per part. The parameter is disabled if set to zero. Press the dimension button to set the length of the second feedout for fixed headstock lathes, or for the distance of headstock travel before the first re-grip on sliding headstock lathes.

Short Feed Safety: Sets minimum distance pusher can advance during feedout 2. On sliding headstock lathes the pusher must advance at least this distance before the lathe collet opens. On fixed headstock lathes the pusher must advance at least this distance before the lathe collet closes. The parameter is disabled if set to zero.

Long Feed Safety: Sets maximum distance pusher can advance during feedout 2. On sliding headstock lathes the pusher must not advance more than this distance before the lathe collet opens. On fixed headstock lathes the pusher must advance more than this distance before the lathe collet closes. The parameter is disabled if set to zero.

Check 1st Part: Selects option to check or not check the long and short feed safety distances on the second feedout after machine goes into automatic mode and the second feedout after a bar change. Set to yes to check immediately, no to bypass check until second part.

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Parameter Page 2.3 (Option) This page may be hidden in the factory settings

Feedout 3	-###.## Inches	Pg 2.3
Short Feed Safety	-##.## Inches	
Long Feed Safety	-##.## Inches	
Check 1st Part	No	Back

Feedout 3: Used when making multiple feedouts per part. Feedout 3 is the 3rd of 3 possible feedouts per part. The parameter is disabled if set to zero. Press the dimension button to set the length of the third feedout for fixed headstock lathes, or for the distance of headstock travel after the third re-grip on sliding headstock lathes.

Short Feed Safety: Sets minimum distance pusher can advance during feedout 3. On sliding headstock lathes the pusher must advance at least this distance before the lathe collet opens. On fixed headstock lathes the pusher must advance at least this distance before the lathe collet closes. The parameter is disabled if set to zero.

Long Feed Safety: Sets maximum distance pusher can advance during feedout 3. On sliding headstock lathes the pusher must not advance more than this distance before the lathe collet opens. On fixed headstock lathes the pusher must advance more than this distance before the lathe collet closes. The parameter is disabled if set to zero.

Check 1st Part: Selects option to check or not check the long and short feed safety distances on the third feedout after machine goes into automatic mode and the third feedout after a bar change. Set to yes to check immediately, no to bypass check until second part.

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Parameter Page 3 (Option) This page may be hidden in the factory settings

Bar Diameter		-###.## Inches	Pg 3
Facing Length	Collet	-###.## Inches	Page Up
Open Collet Speed		#### IN / MIN	Save All
Open Collet Torque		### %	Page Down

Bar Diameter: Diameter of the material to be used. The control uses this information to set default values for the program.

Facing Length: Stopping point of the material at the end of a bar change and bar on sequence. This dimension is the distance between the measuring flag and the desired stopping point of the material to be loaded.

Collet / Chuck: There are two options for the facing length setting. Pressing the Collet/Chuck button toggles between the two options. This feature allows for two different facing positions for different chucking systems.

Open Collet Speed: Sets the speed of the bar pusher advance when in automatic with the lathe collet open.

Open Collet Torque: Sets the clutch force for the bar pusher when in automatic with the lathe collet open. The setting is expressed as a percentage of the default setting chosen according to the bar diameter parameter. Setting range is +50% to –50%.

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Parameter Page 4 (Option) This page may be hidden in the factory settings

Open Collet Timeout	####.# Sec	Pg 4
Close Collet Timeout	####.# Sec	Page Up
Open Collet Push Delay	####.# Sec	Save All
Close Collet Push Delay	####.# Sec	Page Down

Open Collet Timeout: Allows for the lathe collet to be open when the bar feeder is in automatic for up to the number of seconds set in this parameter. If the length of time is exceeded an alarm is generated. The parameter is disabled if set to zero.

Close Collet Timeout: Allows for the lathe collet to be closed when the bar feeder is in automatic for up to the number of seconds set in this parameter. If the length of time is exceeded an alarm is generated. The parameter is disabled if set to zero.

Open Collet Push Delay: Delays the bar feeder from pushing for the set number of seconds when the bar feeder is in automatic and the lathe collet opens. The parameter is disabled if set to zero.

Close Collet Push Delay: Keeps the bar feeder pushing for the set number of seconds after the lathe collet closes when the bar feeder is in automatic. The parameter is disabled if set to zero.

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Parameter Page 5 (Option) This page may be hidden in the factory settings

Feeding Type	Turret Stop	Pg 5
Facing Type	Position	Page Up
Remnant Type	Advanced Return & Wait	Save All
Change Program Number	####	Page Down

Feeding Type: Selects the mode of feeding material in automatic. In feeding to a turret stop the bar feeder begins to push when the lathe collet opens and stops pushing when the lathe collet closes. The bar feeder will use the feedout lengths 1-3 if they are set.

Facing Type: Selects between modes of bringing a new bar to facing position and restarting the lathe at the end of a bar change. Choices are Position and Turret Stop. In Position mode the bar feeder advances the bar to the position set by parameter Facing Length and stops.   In Turret Stop mode the bar feeder advances the bar to the position in Facing Length, then keeps pushing until the lathe collet closes. In both modes the cycle start signal is sent to the lathe when the Facing Length position is reached.

Remnant Type: Selects between modes of remnant disposal.

Extraction: The material is held in a finger collet. The remnant is returned with the bar pusher, the grippers close on the remnant and the pusher pulls the collet off the bar end. The grippers open and the remnant fall into the pan. The grippers close to check for the presence of material. If no material is found the channels open and the bar change continues.

Ejection: The material is pushed with an ejection collet. At bar change the pusher retracts to the home position, leaving the remnant in the lathe collet. The grippers close to check that no material is present and the guide channel opens. The bar change continues.

Return & Wait: This mode works much as the Ejection mode except that when the lathe collet closes after feeding the last part from the bar stock, the pusher retracts to home position. The channels open, a bar is introduced into the channel and the bar feeder waits for the part to be finished and a signal to begin the bar change sent to the feeder.

Change Program Number: Allows change of the present program number. Will not allow duplicating an existing program number.

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Parameter Page 6 (Option) This page may be hidden in the factory settings

MAVD Close After Opening Position	Off	Pg 6
MAVD Opening Position	−###.## Inches	Page Up
MAVD Open / Close With Lathe Collet	Off	Save All

MAVD Close After Opening Position: Enables or disables the moveable anti-vibration device from closing on the bar pusher after it has opened to allow the bar pusher collet to pass through.

MAVD Opening Position: Sets the position for the moveable anti-vibration device open.

MAVD Open/Close With Lathe Collet: Selects between opening and closing the moveable anti-vibration device each time the lathe collet opens and closes or keeping the unit closed until reaching the MAVD Opening Position.

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Max. End Of Bar COLLET	-####.## MM	Pg 11
Facing Distance COLLET	-####.## MM	
Max. End Of Bar CHUCK	-####.## MM	Save All
Facing Distance CHUCK	-####.## MM	Page Down

Max. End Of Bar - Collet

Fixed headstock lathes: Distance of bar pusher with the collet at the back of the gripping surface of the collet pads to the home position.

Sliding headstock lathes: Distance of the bar pusher from the gripping surface of the collet pads when the lathe headstock forward to the guide bushing.

Facing Distance - Collet

Fixed headstock lathes: Distance from the measuring flag (front gate at the end of the guide channel) to the face of the lathe collet.

Sliding headstock lathe: Distance from the measuring flag (front gate at the end of the guide channel) to the face of the lathe guide bushing.

Max. End Of Bar - Chuck

Fixed headstock lathes: Distance of bar pusher with the collet at the back of the gripping surface of the chuck jaws to the home position.

Facing Distance - Chuck

Fixed headstock lathes: Distance from the measuring flag (front gate at the end of the guide channel) to the face of the chuck jaws.

Factory Parameter Page 12

First Feeding Distance	-####.## MM	Pg 12
Oil Pump Shutoff Distance	-####.## MM	Page Up
MAVD Opening Position	-####.## MM	Save All
Headstock Type	Fixed	Page Down

First Feeding Distance: Sets the stopping point for the pre-feed pusher.

Oil Pump Shutoff Distance: Sets the position from zero for the oil pump to turn off.

MAVD Opening Position: Sets the position from zero that the movable anti-vibration device opens to allow the bar pusher to pass through.

Headstock Type: Selects between different types of lathes: fixed headstock, swiss headstock, sliding bushing.

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Factory Parameter Page 13

1st Anti-Vibration Opening Position	-####.## MM	Pg 13
2nd Anti-Vibration Opening Position	-####.## MM	Page Up
3rd Anti-Vibration Opening Position	-####.## MM	Save All
4th Anti-Vibration Opening Position	-####.## MM	Page Down

1st Anti-Vibration Opening Position: Sets the point of opening for the 1st Anti-Vibration Device (also called the fixed steady roller). Position should be set 1-2 inches before the pusher collet reaches the steady roller unit.

2nd Anti-Vibration Opening Position: Not used on the Patriot Series.

3rd Anti-Vibration Opening Position: Not used on the Patriot Series.

4th Anti-Vibration Opening Position: Not used on the Patriot Series.

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Factory Parameter Page 14

End of Bar Type	Off At Bar Change	Pg 14
Feed Confirm Signal Type	Not Used	Page Up
Pusher Feed Direction	Left To Right	Save All
Inch / Metric	Metric	Page Down

End of Bar Type: Selects between different modes of generating the end of bar signal. Choices are:

Off at Bar Change: Signal resets when the command "Bar Change" is received from the lathe.

Pulse: Signal is a pulse for a duration set in the parameter End Of Bar Pulse on page 16.

Latch: Signal comes on at the end of bar position and turns off when facing position is reached.

Double Pulse: Signal pulses when the end of bar position is reached and again when the facing position is reached. Signal pulses for the duration set in parameter End Of Bar Pulse on page 16.

Feed Confirm Signal Type: Selects between different modes of generating a confirmation signal for bar pushing. Choices are:

Not Used: No signal is output.

Finished Feeding: Signal is sent when the pusher finishes moving the distance set in the feed length.

Start Feeding: Signal is sent when the pusher begins to move.

During Feeding: Signal is sent when the feed out begins and stops when the feed length distance is completed.

Pusher Feed Direction: Allows direction of operation of the jog buttons on the HMI and Remote Pendant to be reversed to accommodate different lathe configurations. Choices are Left to Right and Right to Left.

Inch / Metric: Allows the input and display of the user parameters to be in Inch or Metric.

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Factory Parameter Page 15

Bar Change Return Delay	#### . #	Sec	Pg 15
Cycle Start Delay	#### . #	Sec	Page Up
Impulse On Time	#### . #	Sec	Save All
Impulse Off Time	#### . #	Sec	Page Down

Bar Change Return Delay: Sets a delay in seconds for the pusher to begin the return to home position after the bar change command is received.

Cycle Start Delay: Sets a delay in seconds for the signal to the lathe that the bar change is complete to be sent.

Impulse On Time: Sets a length of time for the bar feeder to send a signal to the lathe to rotate the spindle during bar change. This parameter works with Impulse Off Time. Default is 0 deactivating the parameter.

Impulse Off Time: Sets a length of time for the bar feeder to turn off the Impulse On Timer during the bar change. The combination of these two parameters causes the lathe spindle rotation to pulse as an aid to inserting the new bar through the collet. Default is 0 deactivating the parameter.

End Of Bar Pulse	#### . #	Sec	Pg 16
Feed Confirm Pulse	#### . #	Sec	Page Up
Cycle Start Pulse	#### . #	Sec	Save All
Demo Mode	Off		Page Down

End Of Bar Pulse: Sets the length of time in seconds for the signal to remain on when the end of bar signal is set to pulse.

Feed Confirm Pulse: Sets the length of time in seconds for the signal to remain on when the feed confirmation signal is set to pulse.

Cycle Start Pulse: Sets the length of time in seconds for the cycle start signal to remain on.

Demo Mode: Activates or deactivates the demonstration program of the bar feeder.

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Factory Parameter Page 17

Manual / Auto	Normally Open	**Pg 17**
Lathe Door Safety	Normally Open	Page Up
Lathe Alarm	Normally Open	
Feed Stop	Off	Save All
Lathe Specific	Off	Page Down

Manual/Auto: Allows the bar feeder to accept the Manual / Automatic signal from the lathe as either a normally open or normally closed signal.

Lathe Door Safety: Allows the bar feeder to accept the Lathe Door Open signal from the lathe as either a normally open or normally closed signal.

Lathe Alarm: Allows the bar feeder to accept the Lathe Alarm signal from the lathe as either a normally open or normally closed signal.

Feed Stop: Allows the bar feeder to accept the Feed Stop signal from the lathe as either a normally open or normally closed signal.

Lathe Specific: Special setting for specific lathes that use other than standard interfaces and special software.

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Factory Parameter Page 18

Barfeed Alarm	Y30	Pg 18
Barfeed Auto	Y31	Page Up
Cycle Off Perm	Impulses	Save All
End Of Bar	Cycle Start	Page Down

Barfeed Alarm: Test button to check the operation of the output for Barfeed Alarm. Pressing the button will turn on output Y24 and relay R1.

Barfeed Auto: Test button to check the operation of the output for Barfeed in Automatic. Pressing the button will turn on output Y25 and relay R2.

Cycle Off Perm: Test button to check the operation of the output for Cycle Off Permanent. Pressing the button will turn on output Y26 and relay R3.

End Of Bar: Test button to check the operation of the output for End Of Bar. Pressing the button will turn on output Y27 and relay R4.

Y30: Test button to check the operation of output Y30 and relay R5. Y30 can be used for either a Cycle Stop signal or a Feed Confirmation signal.

Y31: Test button to check the operation of output Y31 and relay R6. Y31 can be used for either a 1st Cycle signal or a second End of Bar (End of Bar 2) signal.

Impulses: Test button to check the operation of the output for Impulses. Pressing the button will turn on output Y32 and relay R7.

Cycle Start: Test button to check the operation of the output for Cycle Start. Pressing the button will turn on output Y33 and relay R8.

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Factory Parameter Page 19

Manual Feed	Lathe Alarm	Pg 19
Manual Return	Feed Stop	Page Up
Manual / Auto	Bar Change	Save All
Lathe Door Safety	Collet Open	Page Down

Manual Feed: Provides visual aid to check the signal Manual Feed from the lathe. Button highlights when the signal is active. Input X16 will also be on.

Manual Return: Provides visual aid to check the signal Manual Return from the lathe. Button highlights when the signal is active. Input X17 will also be on.

Manual / Auto: Provides visual aid to check the signal Manual / Automatic from the lathe. Button highlights when the Auto signal is active. Input X33 will also be on.

Lathe Door Safety: Provides visual aid to check the signal Lathe Door Safety from the lathe. Button highlights when the signal is active. Input X37 will also be on.

Lathe Alarm: Provides visual aid to check the signal Lathe Alarm from the lathe. Button highlights when the signal is active. Input X34 will also be on.

Feed Stop: Provides visual aid to check the signal Feed Stop from the lathe. Button highlights when the signal is active. Input X36 will also be on.

Bar Change: Provides visual aid to check the signal Bar Change from the lathe. Button highlights when the signal is active. Input X35 will also be on.

Collet Open: Provides visual aid to check the signal Collet Open from the lathe. Button highlights when the signal is active. Input X33 will also be on.

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Factory Parameter Page 20

User New Program Password	####	Pg 20
User Load Program Password	####	Page Up
User Edit Program Password	####	Save All
Factory Password	####	Page Down

User New Program Password: Sets a password to be required before access to write a new barfeeder program is allowed. Default password is 0.

User Load Program Password: Sets a password to be required before access to load a new barfeeder program is allowed. Default password is 0.

User Edit Program Password: Sets a password to be required to allow a program to be edited. Default password is 0.

Factory Password: Sets a password to be required to access the factory parameters. Default password is 0.

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Factory Parameter Page 21

User Page 2	OFF	Pg 21
User Page 4	OFF	Page Up
User Page 5	OFF	Save All
User Page 6	OFF	
Initial User Setup	OFF	

User Page 2: Allows User Page 2 to be seen and accessed in User parameters when set to ON.

User Page 4: Allows User Page 4 to be seen and accessed in User parameters when set to ON.

User Page 5: Allows User Page 5 to be seen and accessed in User parameters when set to ON.

User Page 6: Allows User Page 6 to be seen and accessed in User parameters when set to ON.

Initial User Setup: Used to set up the user's template for basic parameters. Max Feeding Position, Facing Position, Feeding Type, Facing Type, Remnant Type. These settings will be the default when the user begins to write a new part program.

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Factory Parameter Page 22

Bar Change Return Speed	#### MM/SEC	**Pg 22**
1st Feed Speed 1	#### MM/SEC	Page Up
1st Feed Speed 2	#### MM/SEC	Save All
1st Feed Return Speed	#### MM/SEC	Page Down

Bar Change Return Speed: Speed of the bar pusher as it retracts to the home position at the beginning of a bar change.

1st Feed Speed 1: Speed of the pre-feed pusher as it advances until it reaches the slowdown position.

1st Feed Speed 2: Speed of the pre-feed pusher in the slow down position as it approaches facing position. This is the speed the pre-feed pusher uses in the pecking cycle.

1st Feed Return Speed: Speed of the pre-feed pusher as it retracts to the home position after completing the 1st feed cycle.

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Factory Parameter Page 23

Facing Speed 1	#### MM/SEC	**Pg 23**
Facing Speed 2	#### MM/SEC	Page Up
Facing Speed Slowdown Distance	-####.## MM	Save All
Facing Return Distance	-####.## MM	Page Down

Facing Speed 1: Forward speed of the bar pusher during the facing operation until it reaches the Facing Speed Slowdown Distance.

Facing Speed 2: Forward speed of the bar pusher during the distance specified in the Facing Speed Slowdown Distance Parameter.

Facing Speed Slowdown Distance: Distance for the facing speed 2 and peck cycle to become active. This distance is measured from the facing position back toward the bar feeder.

Facing Return Distance: Distance the bar pusher backs up when the pecking cycle is active.

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Factory Parameter Page 24

Manual Forward Speed	#### MM/SEC	Pg 24
Manual Forward Torque	### %	Page Up
Manual Reverse Speed	#### MM/SEC	Save All
Manual Reverse Torque	### %	Page Down

Manual Forward Speed: Forward speed of the pusher and pre-feed pusher when commanded to move via the jog buttons or through the input for Manual Forward.

Manual Forward Torque: Sets the amount of force developed by the clutch when moving the bar pusher forward in manual mode via the jog buttons or through the input for Manual Forward.

Manual Reverse Speed: Speed of the pusher and pre-feed pusher in reverse when commanded to move via the jog buttons or through the input for Manual Reverse.

Manual Reverse Torque: Sets the amount of force developed by the clutch when moving the bar pusher backward in manual mode via the jog buttons or through the input for Manual Reverse.

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Factory Parameter Page 25

Collet Close Speed	#### MM/SEC	**Pg 25**
Collet Close Torque	### %	Page Up
1st Anti-Vibration Closing 1st Feed	Off	Save All
		Page Down

Collet Close Speed: Speed of the bar pusher motor in automatic mode when the lathe collet is closed.

Collet Close Torque: Sets the pushing force for the bar pusher when the bar feeder is in automatic mode and the lathe collet is closed.

1st Anti-vibration Closing: When set to on the 1st Anti-Vibration device (steady rollers) will close as soon as the measuring flag is opened during a bar change.

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Factory Parameter Page 26

Pusher Backoff Tolerance	-####.## MM	Pg 26
		Page Up
		Save All

Pusher Back Off Tolerance: Sets an allowable distance for the bar pusher to move backward when the bar feeder is in automatic and the lathe collet is open. If the pusher moves backward in excess of the setting an alarm is generated.

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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			Regular	Period
		200	1250	2500	200	1250
Collet	Check wear	●				
Guide channel	Check wear and clean		●			
Feeding belt	Lubrication	●				
	Tension	●				
Air cleaner	Check				●	

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

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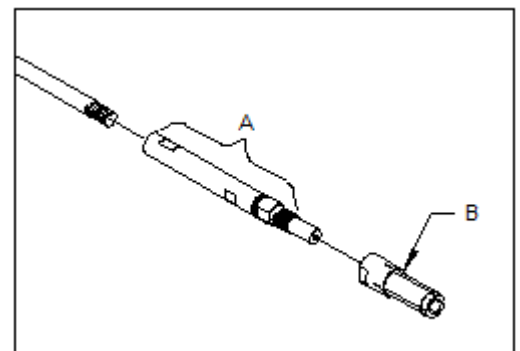
missing. Replace as required.

⚠️ **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
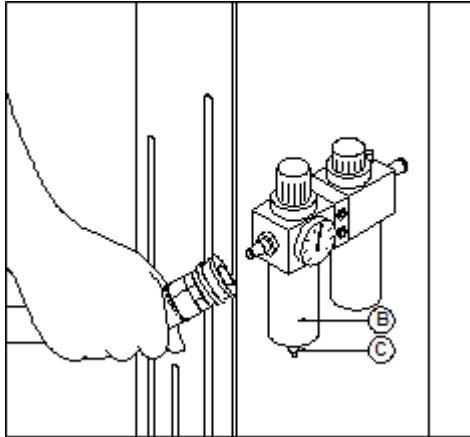
7.1.4 Pneumatic System Lubrication

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 2.3.4

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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. Material lift plates missing bar when raising.	Adjust the material position plates. 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.

```
ALARM 1
PRESS AND HOLD GREEN BUTTON TO RESET

COMMUNICATION ALARM

1. HMI CABLE NOT CONNECTED TO PLC
```

-HMI Cable not attached to PLC- Check the cable from the PLC in the electrical cabinet (round black cable located on the front of the PLC next to the Run/Stop switch) to the back of the control panel (rectangular 9-pin plug connected to the COM 2 port).

```
ALARM 2
PRESS AND HOLD GREEN BUTTON TO RESET

EMERGENCY STOP

1. RELEASE E-STOP ON LATHE
2. RELEASE E-STOP ON PENDANT
3. RELEASE E-STOP ON CONTROL PANEL
4. CHECK RELAY K41
```

-Release E-Stop on Lathe- Make sure lathe is not in an alarm other than a bar feeder alarm.

-Release E-Stop on Bar Feeder Pendant- The pendant E-Stop button will cause the relay R12 to turn off if the button is pressed. Check the relay.

-Release E-Stop on Bar Feeder Control Panel- The e-stop circuit takes 24 volts DC through the Control panel e-stop button, through the R12 relay which is controlled by the Pendant e-stop button, through the JP2 jumper block to the interface, out to the lathe, back through the JP2 jumper block, to the green start button and to the coil of relay MC1.

-Check relay K41.

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```
                    ALARM 3
          PRESS E-STOP THEN RELEASE
    PRESS AND HOLD GREEN BUTTON TO RESET

              SERVO DRIVE ALARM

    1. RELAY K41 NOT ENERGIZED
    2. TORQUE SETTING EXCEDED
    3. MAX TORQUE ON TIME EXCEDED
```

-K41 not energized.

-Torque setting exceeded- Reduce the Open Collet Torque on User Parameter page 3.

-Max torque on time exceeded- Reduce the length of time the lathe collet is open when the bar feeder is in automatic.

```
                    ALARM 4
    PRESS AND HOLD GREEN BUTTON TO RESET

                INVERTER ALARM

    1. CHECK ALARM # ON INVERTER SCREEN
```

-Inverter Alarm.

```
                    ALARM 5
    PRESS AND HOLD GREEN BUTTON TO RESET

            LATHE IN E-STOP OR ALARM

    1. RESET LATHE E-STOP
    2. RESET LATHE ALARM
    3. CHECK WIRING ON INTERFACE
    4. CHECK INPUT ON PLC (X34)
```

-Reset lathe e-stop.

-Reset lathe alarm.

-Check wiring on interface- Check for continuity between the wires for Emergency From Lathe (if used, check the interface drawing specific to the lathe).

-Check input on PLC (X34)- The input should change state when the lathe alarm is turned on and off (if used, check the interface drawing specific to the lathe).

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```
              ALARM 6
PRESS AND HOLD GREEN BUTTON TO RESET

         AIR PRESSURE ALARM

1. CHECK AIR PRESSURE 6-8 BAR
2. CHECK AIR PRESSURE SWITCH
(PRESSURE IS CORRECT WHEN RED LIGHT IS ON)
3. CHECK INPUT AT PLC (X23)
```

-Check Air Pressure 6-8 Bar- If the pressure is low; adjust the regulator to increase setting.

-Check the incoming pressure to the bar feeder- Observe the pressure gauge while the bar feeder operates. A rapid decrease in pressure as an air cylinder operates may indicate low volume.

-Check Air Pressure Switch (Pressure is correct when red light is on).

-Check input at PLC (X23)- The X23 LED will be on when the signal from the switch indicates proper air pressure.

```
              ALARM 7
PRESS AND HOLD GREEN BUTTON TO RESET

       OIL PUMP OVERLOAD ALARM

1. RESET OVERLOAD
2. CHECK OVERLOAD SETTING
3. CHECK INPUT ON PLC (X27)
```

-Reset Overload- The overload is attached to the MS1 relay. Press the blue button to reset.

-Check overload setting- The setting range on the overload is from 1.2 to 1.6 amps. Normal setting is approximately 1.4 amps.

-Check input on PLC (X27)- The LED should be off when the relay MC1 (Servo Drive) is on. Check for continuity between MC1/1 and MC1/2.

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```
ALARM 8
PRESS AND HOLD GREEN BUTTON TO RESET
PUSHER COLLET COULD NOT BE
EXTRACTED FROM BAR STOCK

1. CHECK COLLET ID SIZE IS CORRECT SIZE
2. CHECK AIR CYLINDER FOR OPERATION
3. CHECK AIR VALVUE FOR OPERATION
4. CHECK FLOW CONTROLS ON AIR CYLINDER
```

-Check collet ID size is correct size- Check the collapsed ID of the collet.

-Check air cylinder for operation- Operate the pusher shuttle without material in the collet to check for proper operation.

-Check air valve for operation- Operate the pusher shuttle without material in the collet to check for proper operation.

-Check flow controls on air cylinder- Open the flow control slightly (1/2 to 1 turn).

-Check for kinked air lines running to the cylinder from the solenoid valve.

-Check output Y22- Operate the shuttle and observe the output to make sure it turns on when commanding the shuttle to pull backward.

```
ALARM 9
PRESS AND HOLD GREEN BUTTON TO RESET
PUSHER COLLET COULD NOT BE
INTRODUCED ONTO BAR STOCK

1. CHECK COLLET ID SIZE IS CORRECT SIZE
2. CHECK FOR MIN. CHAMFER OF 3MM ON BAR
3. CHECK AIR CYLINDER FOR OPERATION
4. CHECK AIR VALVUE FOR OPERATION
```

-Check collet ID size is correct size- Check the collapsed ID of the collet.

-Check for minimum chamfer of 3mm on the bar end.

-Check air cylinder for operation- Operate the pusher shuttle without material in the collet to check for proper operation.

-Check air valve for operation- Operate the pusher shuttle without material in the collet to check for proper operation.

-Check flow controls on air cylinder- Open the flow control slightly (1/2 to 1 turn).

-Check for kinked air lines running to the cylinder from the solenoid valve.

-Check output Y22- Operate the shuttle and observe the output to make sure it turns on when commanding the shuttle to pull backward.

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```
ALARM 10
PRESS AND HOLD GREEN BUTTON TO RESET

CHANNEL COULD NOT OPEN

1. NOT ENOUGH AIR PRESSURE TO LIFT CHANNEL
2. BIND IN CHANNEL OPENING MECHANISM
3. PUSHER FLAG NOT LINED UP WITH OPENING
4. PUSHER NOT AT HOME POSITION
```

-Not enough air pressure to lift channel- Check the air pressure gauge. Increase pressure with the regulator if necessary.

-Bind in channel opening mechanism- Check for loose channel sections, alignment of pusher flag in opening, attachment of the air cylinder to the upper channel mechanism.

-Pusher flag not lined up with opening- Cycle the pusher shuttle. Check the attachment of the air cylinder to the shuttle mechanism.

-Pusher not at home position- Re-zero the bar pusher.

```
ALARM 11
PRESS AND HOLD GREEN BUTTON TO RESET

CHANNEL COULD NOT CLOSE

1. NOT ENOUGH AIR PRESSURE TO CLOSE CHANN
2. BAR INTERFERENCE WITH PUSHER HANGERS
3. PUSHER FLAG NOT LINED UP WITH OPENING
4. PUSHER NOT AT HOME POSITION
```

-Not enough air pressure to lift channel- Check the air pressure gauge. Increase pressure with the regulator if necessary. Open the flow control valves for channel close slightly.

-Bar interference with pusher hangers- Check for material under the bar pusher.   Material should be positioned with edge of the bar resting slightly on the edge of the guide channel.

-Pusher flag not lined up with opening- Cycle the pusher shuttle. Check the attachment of the air cylinder to the shuttle mechanism.

-Pusher not at home position- Re-zero the bar pusher.

```
           ALARM 12
PRESS AND HOLD GREEN BUTTON TO RESET

        REMNANT OR BAR DETECTED

1. MOVE MATERIAL OUTSIDE OF GRIPPER AREA
2. GRIPPER SENSOR NOT DETECTED
3. CHECK INPUT ON PLC (X7)
```

-Move material outside of gripper area- Before the channel can open the gripper's first check for material in the grippers. If a bar is present it must be moved forward so the grippers will not close on it.

-Gripper sensor not detected- Check the proximity switch on the gripper unit.

-Check input on PLC (X7).

```
           ALARM 13
PRESS AND HOLD GREEN BUTTON TO RESET

   MEASUREMENT FLAG NOT IN POSITION

1. FLAG STUCK IN DOWN POSITION
2. MATERIAL IMPEADING FLAG MOVEMENT
3. CHECK FLAG SENSOR FOR OPERATION
4. CHECK INPUT ON PLC (X4)
```

-Flag stuck in down position- Manually operate the measuring flag. Check for debris impeding the operation of the flag. Check the flag for damage.

-Material impeding flag movement- Remove the material from the flag area.

-Check flag sensor for operation- Manually operate the flag and check to see that the LED on the proximity switch turns on when the flag is in the closed position.

-Check input on PLC (X4)- This input is operated by the S7 switch. The input should toggle with the opening and closing of the measuring flag.

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```
                    ALARM 14
        PRESS AND HOLD GREEN BUTTON TO RESET

                ZERO POSITION LOST


        1. REZERO BARFEED
        2. CHECK HOME SENSOR FOR OPERATION
        3. CHECK INPUT ON PLC (X2)
```

-Rezero barfeed- Start with the guide channel closed and the pusher forward about 12 inches. Press and hold the forward and reverse buttons on the pendant. After 8 seconds the pusher will begin to move backward. Release the buttons. The pusher will move back to the proximity switch for zero and then stop.

-Check home sensor for operation- Move the bar pusher back and forth under the home proximity sensor and watch for the LED to toggle on and off.

-Check input on PLC (X2)- Move the bar pusher back and forth under the home proximity sensor and watch for the input X2 to turn on and off.

```
                    ALARM 15
        PRESS AND HOLD GREEN BUTTON TO RESET

        PUSHER COULD NOT REACH EJECTION POSITION


        1. ADJUST MAX FEED PARAMETER POSITION
        2. CHECK PARAMETER-COLLET OR CHUCK MODE
        3. REZERO BARFEED
```

-Adjust max feed parameter position- Verify the position.

-Check parameter - collet or chuck mode- Check the setting of this parameter, verify it is set correctly as the two parameters can have different max feed positions.

-Rezero barfeed- Start with the guide channel closed and the pusher forward about 12 inches. Press and hold the forward and reverse buttons on the pendant.   After 8 seconds the pusher will begin to move backward.   Release the buttons.   The pusher will move back to the proximity switch for zero and then stop.

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```
ALARM 16
PRESS AND HOLD GREEN BUTTON TO RESET

PUSHER EXTRACTION COULD NOT START

1. CHECK PUSHER POSITION
2. CHECK ZERO PROX SWITCH
3. REZERO BARFEED
```

-Check pusher position- The zero proximity switch must be on, the pusher position should read near 0.

-Check zero proximity switch- Move the pusher back and forward under the zero proximity switch and check that the LED lights, check input X2 - it should light when the proximity switch lights.

-Rezero barfeed- Start with the guide channel closed and the pusher forward about 12 inches. Press and hold the forward and reverse buttons on the pendant.   After 8 seconds the pusher will begin to move backward.   Release the buttons.   The pusher will move back to the proximity switch for zero and then stop.

```
ALARM 17
PRESS AND HOLD GREEN BUTTON TO RESET

PUSHER INTRODUCTION COULD NOT START

1. CHECK PUSHER POSITION
2. CHECK EXTRACTION PROX SWITCH
3. CHECK ZERO PROX SWITCH
4. REZERO BARFEED
```

-Check pusher position- The zero proximity switch must be on, the pusher position should read near 0.

-Check extraction proximity switch- Verify proximity switch PS3 is on, verify input X3 is on.

-Check zero proximity switch- Move the pusher back and forward under the zero proximity switch and check that the LED lights, check input X2 -   it should light when the proximity switch lights.

-Rezero barfeed- Start with the guide channel closed and the pusher forward about 12 inches. Press and hold the forward and reverse buttons on the pendant.   After 8 seconds the pusher will begin to move backward.   Release the buttons.   The pusher will move back to the proximity switch for zero and then stop.

```
ALARM 20
PRESS AND HOLD GREEN BUTTON TO RESET

COLLET OPEN TIMEOUT

1. LATHE COLLET WAS OPEN LONGER THAN
   SET TIME ALLOWED IN COLLET OPEN TIMEOUT
   PARAMETER
```

-Lathe collet was open longer than set time allowed in collet open timeout parameter.

```
ALARM 21
PRESS AND HOLD GREEN BUTTON TO RESET

COLLET CLOSED TIMEOUT

1. LATHE COLLET WAS CLOSED LONGER THAT
   SET TIME ALLOWED IN COLLET CLOSE TIMEOUT
   PARAMETER
```

-Lathe collet was closed longer than set time allowed in collet close timeout parameter.

```
ALARM 22
PRESS AND HOLD GREEN BUTTON TO RESET

PUSHER RETURN TIMEOUT

1. PUSHER COULD NOT RETURN TO HOME
   SENSOR WITHIN THE TIME ALLOTED
2. CHECK FOR PUSHER IMPEDANCE IN CHANNEL
```

-Pusher could not return to home sensor within the time allotted- Check pusher flag for damage, check bar pusher for protruding roll pins.

-Check for pusher impedance in channel- Verify that channels are free of debris and are securely locked in place.

```
ALARM 23
PRESS AND HOLD GREEN BUTTON TO RESET

NO REMNANT DETECTED

1. REMNANT WAS NOT PULLED OUT OF LATHE
2. CHECK FOR REMNANT IN LATHE OR GUIDE
   CHANNEL AND REMOVE
3. CHECK GRIPPER SENSOR AND PLC INPUT (X7)
```

-Remnant was not pulled out of lathe- Check the part length parameter and feed out sub parameters for correct settings.   Part length should equal the actual part length + cutoff tool width + facing stock.   Feed out sub parameters combined should equal the part length setting.

-Check for remnant in lathe or guide channel and remove.

-Check gripper sensor and PLC input (X7).

-Verify the Max Feed Position- If the max feed position is set to a value higher than the actual position the lathe headstock may push the bar pusher off the material when retracting to re-grip for the last part.

```
ALARM 24
PRESS AND HOLD GREEN BUTTON TO RESET

NEW BAR NOT DETECTED

1. LOAD BARS ON MAGAZINE
2. CHECK GRIPPER SENSOR AND ADJUST
3. CHECK INPUT ON PLC (X7)
```

-Load bars on magazine.

-Check gripper sensor and adjust.

-Check input on PLC (X7).

```
              ALARM 25
  PRESS AND HOLD GREEN BUTTON TO RESET

  LATHE COLLET CLOSED DURING BAR CHANGE

  1. CHECK COLLET POSITION ON LATHE
  2. CHECK INTERFACE
  3. CHECK INPUT ON PLC (X33)
```

-Check collet position on lathe- Verify state of the lathe collet and compare to the bar feeder screen to see if they match.

-Check interface- See interface drawing specific to the lathe, check connections for the collet open signal.

-Check input on PLC (X23)- The input should toggle on and off with the opening and closing of the lathe collet.

```
              ALARM 26
  PRESS AND HOLD GREEN BUTTON TO RESET
        LATHE COLLET DID NOT CLOSE
            AFTER BAR CHANGE

  1. CHECK SIGNAL FOR COLLET CLOSE
  2. CHECK Y33 CYCLE START SIGNAL
```

-Check signal for collet close- Verify that the lathe collet is not closed.

-Check Y33 cycle start signal- Output Y33 and relay R8 should turn on briefly when the bar feeder reaches the facing position.

-Check input on PLC (X23)- The input should toggle on and off with the opening and closing of the lathe collet.

```
ALARM 27
PRESS AND HOLD GREEN BUTTON TO RESET
PREFEED PUSHER COULD NOT REACH
1ST FEEDING POSITION

1. CHECK SPINDLE FOR STEPS THAT CATCH BAR
2. CHECK PREFEED DISTANCE PARAMETER
```

-Check spindle for steps that catch bar.

-Check prefeed distance parameter- Setting should place the rear of the bar to rest slightly on the edge of the channel so the pusher collet will clear the bar when the channel closes.

-Rotate the lathe spindle during the bar change- If possible, rotate the lathe spindle at 50 – 100 RPM during the bar change.   Most lathes can do this through the bar change program. The bar feeder also has an Impulse relay that can be wired to the lathe to control the spindle revolution during the bar change (the lathe must have a provision for this signal).

```
ALARM 28
PRESS AND HOLD GREEN BUTTON TO RESET
PUSHER COULD NOT REACH FACING POSITION

1. FLASHING OR BURRS ON BAR
2. STEPS IN SPINDLE
3. COLLET TO SMALL FOR MATERIAL
4. MATERIAL TO LARGE FOR LATHE COLLET
```

-Flashing or burrs on bar- The front of the bar must be at least burr free and should have a small chamfer.

-Steps in spindle- A spindle liner may be required to provide a clear path for the material.   A larger chamfer on the front end of the bar may help the material past the steps.

-Collet too small for material- A collet that is too small for the bar stock can cause the front of the collet to expand to a diameter larger than the bar pusher and make it more susceptible to catching on a step in the spindle or telescoping nose.

-Material too large for lathe collet- Verify the collet diameter versus the OD of the bar stock.

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```
ALARM 29
PRESS AND HOLD GREEN BUTTON TO RESET
AUTO SIGNAL FROM LATHE
LOST DURING BAR CHANGE

1. CHECK SIGNAL FROM LATHE
2. CHECK X32 INPUT ON PLC
3. LEAVE LATHE IN AUTO DURING BAR CHANGE
```

-Check signal from lathe- Switch the lathe from Auto to Manual modes and check the signal to the bar feeder.

-Check X32 input on PLC- The X32 input changes state with the mode of the lathe.

-Leave lathe in auto during bar change- Some lathes must be left in cycle to maintain the automatic signal.   Turn of the single block mode and leave the lathe door closed during bar change.

```
ALARM 30
PRESS AND HOLD GREEN BUTTON TO RESET
FEEDOUT 1-1 SHORT FEED SAFETY

1. MATERIAL FEEDOUT SHORTER THAN SETTING
   IN PARAMETER
2. SET SHORT FEED VALUE SHORTER THAN
   FEEDOUT NEEDED FOR PART
```

-Material feed out shorter than setting in parameter- Check open collet torque setting. Check lathe collet/spindle for debris.   Check for impedance to the bar pusher.

-Set short feed value shorter than feed out needed for part- The value should be set at least 1mm shorter than the part feed out.

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```
ALARM 31
PRESS AND HOLD GREEN BUTTON TO RESET

FEEDOUT 1-1 LONG FEED SAFETY

1. MATERIAL FEEDOUT LONGER THAN SETTING
   IN PARAMETER
2. SET LONG FEED VALUE LONGER THAN
   FEEDOUT NEEDED FOR PART
```

-Material feed out longer that setting in parameter- Tighten the pusher drive chain.   Verify the pusher collet is fully seated on the material.

-Set long feed value longer than feed out for part- The value should be set at least 1mm longer than the part feed out.

```
ALARM 32
PRESS AND HOLD GREEN BUTTON TO RESET

FEEDOUT 1-2 SHORT FEED SAFETY

1. MATERIAL FEEDOUT SHORTER THAN SETTING
   IN PARAMETER
2. SET SHORT FEED VALUE SHORTER THAN
   FEEDOUT NEEDED FOR PART
```

-Material feed out shorter than setting in parameter- Check open collet torque setting. Check lathe collet/spindle for debris.   Check for impedance to the bar pusher.

-Set short feed value shorter than feed out needed for part- The value should be set at least 1mm shorter than the part feed out.

```
ALARM 33
PRESS AND HOLD GREEN BUTTON TO RESET

FEEDOUT 1-2 LONG FEED SAFETY

1. MATERIAL FEEDOUT LONGER THAN SETTING
   IN PARAMETER
2. SET LONG FEED VALUE LONGER THAN
   FEEDOUT NEEDED FOR PART
```

-Material feed out longer that setting in parameter- Tighten the pusher drive chain.   Verify the pusher collet is fully seated on the material.

-Set long feed value longer than feed out for part- The value should be set at least 1mm longer than the part feed out.

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```
ALARM 34
PRESS AND HOLD GREEN BUTTON TO RESET

FEEDOUT 1-3 SHORT FEED SAFETY

1. MATERIAL FEEDOUT SHORTER THAN SETTING
   IN PARAMETER
2. SET SHORT FEED VALUE SHORTER THAN
   FEEDOUT NEEDED FOR PART
```

-Material feed out shorter than setting in parameter- Check open collet torque setting. Check lathe collet/spindle for debris.   Check for impedance to the bar pusher.

-Set short feed value shorter than feed out needed for part- The value should be set at least 1mm shorter than the part feed out.

```
ALARM 35
PRESS AND HOLD GREEN BUTTON TO RESET

FEEDOUT 1-3 LONG FEED SAFETY

1. MATERIAL FEEDOUT LONGER THAN SETTING
   IN PARAMETER
2. SET LONG FEED VALUE LONGER THAN
   FEEDOUT NEEDED FOR PART
```

-Material feed out longer that setting in parameter- Tighten the pusher drive chain.   Verify the pusher collet is fully seated on the material.

-Set long feed value longer than feed out for part- The value should be set at least 1mm longer than the part feed out.

```
ALARM 36
PRESS AND HOLD GREEN BUTTON TO RESET

FEEDOUT 2-1 SHORT FEED SAFETY

1. MATERIAL FEEDOUT SHORTER THAN SETTING
   IN PARAMETER
2. SET SHORT FEED VALUE SHORTER THAN
   FEEDOUT NEEDED FOR PART
```

-Material feed out shorter than setting in parameter- Check open collet torque setting. Check lathe collet/spindle for debris.   Check for impedance to the bar pusher.

-Set short feed value shorter than feed out needed for part- The value should be set at least 1mm shorter than the part feed out.

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```
              ALARM 37
  PRESS AND HOLD GREEN BUTTON TO RESET

       FEEDOUT 2-1 LONG FEED SAFETY

  1. MATERIAL FEEDOUT LONGER THAN SETTING
     IN PARAMETER
  2. SET LONG FEED VALUE LONGER THAN
     FEEDOUT NEEDED FOR PART
```

-Material feed out longer that setting in parameter- Tighten the pusher drive chain.   Verify the pusher collet is fully seated on the material.

-Set long feed value longer than feed out for part- The value should be set at least 1mm longer than the part feed out.

```
              ALARM 38
  PRESS AND HOLD GREEN BUTTON TO RESET

      FEEDOUT 2-2 SHORT FEED SAFETY

  1. MATERIAL FEEDOUT SHORTER THAN SETTING
     IN PARAMETER
  2. SET SHORT FEED VALUE SHORTER THAN
     FEEDOUT NEEDED FOR PART
```

-Material feed out shorter than setting in parameter- Check open collet torque setting. Check lathe collet/spindle for debris.   Check for impedance to the bar pusher.

-Set short feed value shorter than feed out needed for part- The value should be set at least 1mm shorter than the part feed out.

```
              ALARM 39
  PRESS AND HOLD GREEN BUTTON TO RESET

       FEEDOUT 2-2 LONG FEED SAFETY

  1. MATERIAL FEEDOUT LONGER THAN SETTING
     IN PARAMETER
  2. SET LONG FEED VALUE LONGER THAN
     FEEDOUT NEEDED FOR PART
```

-Material feed out longer that setting in parameter- Tighten the pusher drive chain.   Verify the pusher collet is fully seated on the material.

-Set long feed value longer than feed out for part- The value should be set at least 1mm longer than the part feed out.

```
ALARM 40
PRESS AND HOLD GREEN BUTTON TO RESET

FEEDOUT 2-3 SHORT FEED SAFETY

1. MATERIAL FEEDOUT SHORTER THAN SETTING
   IN PARAMETER
2. SET SHORT FEED VALUE SHORTER THAN
   FEEDOUT NEEDED FOR PART
```

-Material feed out shorter than setting in parameter- Check open collet torque setting. Check lathe collet/spindle for debris.   Check for impedance to the bar pusher.

-Set short feed value shorter than feed out needed for part- The value should be set at least 1mm shorter than the part feed out.

```
ALARM 41
PRESS AND HOLD GREEN BUTTON TO RESET

FEEDOUT 2-3 LONG FEED SAFETY

1. MATERIAL FEEDOUT LONGER THAN SETTING
   IN PARAMETER
2. SET LONG FEED VALUE LONGER THAN
   FEEDOUT NEEDED FOR PART
```

-Material feed out longer that setting in parameter- Tighten the pusher drive chain.   Verify the pusher collet is fully seated on the material.

-Set long feed value longer than feed out for part- The value should be set at least 1mm longer than the part feed out.

```
ALARM 42
PRESS AND HOLD GREEN BUTTON TO RESET

PUSHER REVERSE MOVEMENT DETECTED IN AUTO

1. CHECK LATHE IS NOT PUSHING OR PULLING
   MATERIAL BACK INTO BARFEED
2. CHECK LATHE COLLET IS NOT UNCLAMPING
   OR IS TO TIGHT AT COLLET OPEN
```

-When the bar feeder is in Auto and the lathe collet open, reverse movement in excess of 4mm was detected.

-Check lathe is not pushing or pulling material back into barfeed- Check the bar feeder synchronization device.   Increase the dwell after the collet open before the re-grip.

-Check lathe collet is not unclamping or is too tight at collet open- Clean and adjust the lathe collet.

```
             ALARM 43
  PRESS AND HOLD GREEN BUTTON TO RESET

 HOOD OPEN AT BAR CHANGE OR CHANNEL OPEN

  1. CLOSE HOOD BEFORE START OF BAR CHANGE
     OR CHANNEL OPEN / CLOSE
  2. CHECK INPUT ON PLC (X21)
```

-Close hood before start of bar change or channel open/close- The safety switch on the hood sends a signal to the PLC input X21. Check the switch to make sure it is connected.

-Check input on PLC (X21)- Observe input X21 while opening and closing the hood.   The input should change state with the motion of the hood.

```
             ALARM 44
  PRESS AND HOLD GREEN BUTTON TO RESET

        PREFEED RETURN TIMEOUT

  1. CHECK SPEED OF PREFEED RETURN
  2. CHECK ZERO SENSOR
  3. CHECK INPUT (X2)
```

-Check speed of prefeed return- The speed may be too slow to accomplish the return within the allotted time.

-Check zero sensor- Verify operation of the sensor by observing the LED on switch PS2 and input X2.

-Check input X2- X2 should light when switch PS2 lights and turn off when switch PS2 turns off.

-Check for impedance to the bar pusher- Check for debris or protrusions in the spindle liner, telescoping nose and guide channel.   Check for protruding roll pins on the bar pusher.

```
             ALARM 45
  PRESS AND HOLD GREEN BUTTON TO RESET

  CANNOT JOG PUSHER WITH COLLET CLOSED

  1. OPEN LATHE COLLET
```

-Open lathe collet- Verify that the lathe collet is open.

-Check input X33- The input should turn on and off with the collet opening and closing.

EDGE ○○○
TECHNOLOGIES

```
              ALARM 46
   PRESS AND HOLD GREEN BUTTON TO RESET

   LATHE DOOR OPENED DURING BAR CHANGE


   1. CLOSE THE LATHE DOOR
```

-Close the lathe door- Verify that the lathe door is closed and the safety switches are enabled.

-Check input X37- The input should turn on and off with the door opening and closing.

```
              ALARM 47
   PRESS AND HOLD GREEN BUTTON TO RESET

      NO BAR DETECTED DURING FACING


   1. LOAD BAR INTO BARFEED
```

-Load bar into barfeed- Place material on the bar feeder magazine before the bar change begins.

-Check operation and adjustment of the bar separators- If the separators are not properly adjusted the bar stock may not fall into the channel.

-Check the measuring switch- The switch is on the measuring gate assembly.   Verify operation of the switch by observing input X4 as the measuring flag is opened and closed.

```
              ALARM 48
   PRESS AND HOLD GREEN BUTTON TO RESET

  FACING TO STOP NOT DETECTED WITHIN 250MM


   1. ADJUST FACING POSITION SO FACE OF BAR
      STOPS 5 - 25MM SHORT OF TURRET STOP
```

-Adjust facing position- Alarm occurs when facing mode is set to Turret Stop and the bar travels 5 – 25mm short of the turret stop or in excess of 250mm past the facing length.

PATRIOT 338/551

```
ALARM 51
PRESS AND HOLD GREEN BUTTON TO RESET

EXTRACTION COULD NOT START

1. CHECK S2 SWITCH IS ON
2. REZERO BARFEED
```

-Check S2 switch is on- Verify that the LED of the PS2 switch is on when the pusher reaches the home position and that input X2 is on when the LED of PS2 is on.

-Rezero Barfeed- Start with the guide channel closed and the pusher forward about 12 inches. Press and hold the forward and reverse buttons on the pendant. After 8 seconds the pusher will begin to move backward. Release the buttons. The pusher will move back to the proximity switch for zero and then stop.

```
ALARM 52
PRESS AND HOLD GREEN BUTTON TO RESET

INTRODUCTION COULD NOT START

1. CHECK S2 SWITCH IS ON
2. CHECK S3 SWITCH IN ON
3. REZERO BARFEED
```

-Check S2 switch is on- Verify that the LED of the PS2 switch is on when the pusher reaches the home position and that input X2 is on when the LED of PS2 is on.

-Check S3 switch is on- Verify that the LED of the PS3 switch is on when the pusher is retracted to the remnant extraction position and that input X3 is on when the LED of PS3 is on.

-Rezero Barfeed- Start with the guide channel closed and the pusher forward about 12 inches. Press and hold the forward and reverse buttons on the pendant. After 8 seconds the pusher will begin to move backward. Release the buttons. The pusher will move back to the proximity switch for zero and then stop.

EDGE ○○○
TECHNOLOGIES

REV 10:2019

PATRIOT 338/551

PATRIOT 338/551

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.

1. Identify the current bar feed and lathe mode of operation, Chucker or Swiss.
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.

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TECHNOLOGIES

PATRIOT 338/551

Patriot Setting of the S2 and S3 Sensor Plate

⚠️ **Warning remove electrical power and pneumatic air from lathe and bar feeder prior to setting or checking the S2 and S3 sensor plate.**

A nominal value to use when setting the plate is 52.75mm from the vertical bar feeder plate to the rear edge.

Spacing between the sensors is 22mm

Once set perform a **"Bar Off"** cycle. Verify additional parameter settings for correct position.

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TECHNOLOGIES

REV 10:2019

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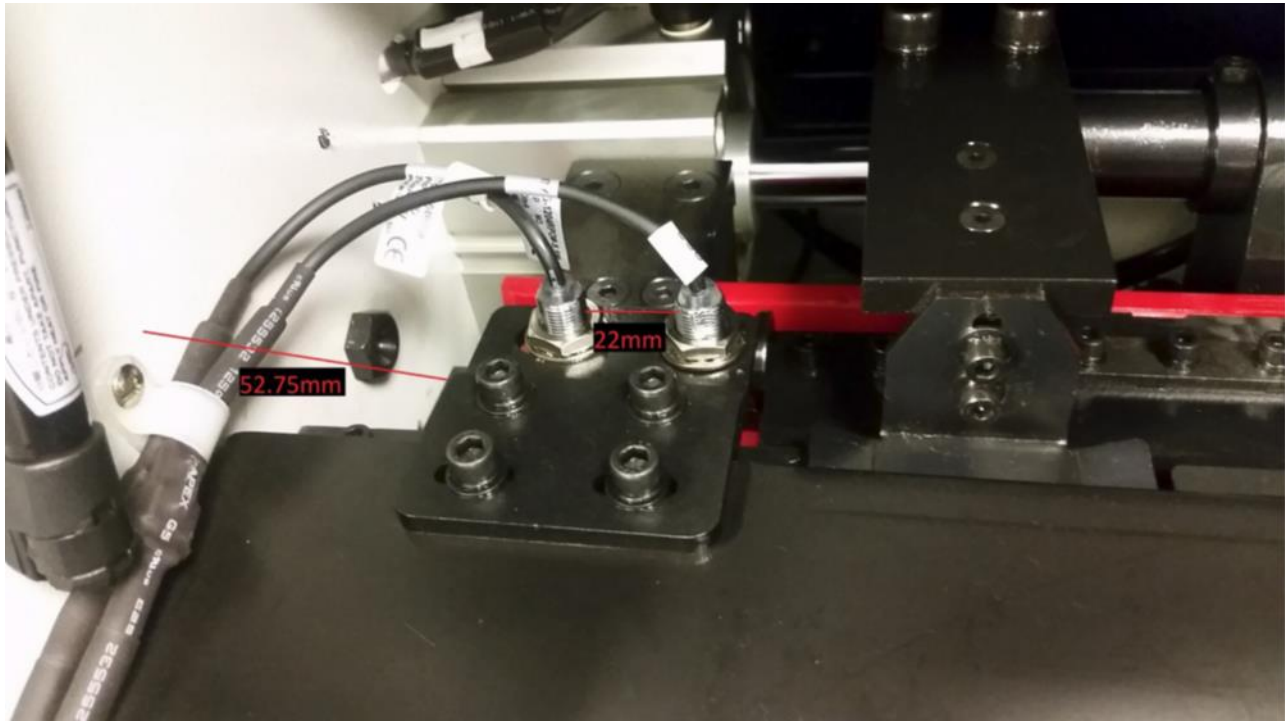
Customer:	HMI Version
Bar feeder Model: S/N:	
Lathe Model: S/N:	
Service Technician:	PLC Version
Date:	
Distance From Lathe: Center Height:	

Pg. 1

Part Length 1 _____ ☐mm ☐in

Feedout 1-1 _____ ☐mm ☐in

Feedout 1-2 _____ ☐mm ☐in

Feedout 1-3 _____ ☐mm ☐in

Pg. 1-1

Feedout 1-1_____ ☐mm ☐in

Short Feed Safety _____ ☐mm ☐in

Long Feed Safety _____ ☐mm ☐in

Check 1st Part: ☐Yes   ☐No

Pg. 1-2

Feedout 1-2 _____ ☐mm ☐in

Short Feed Safety _____ ☐mm ☐in

Long Feed Safety _____ ☐mm ☐in

Check 1st Part: ☐Yes   ☐No

Pg. 1-3

Feedout 1-3 _____ ☐mm ☐in

Short Feed Safety_____ ☐mm ☐in

Long Feed Safety_____ ☐mm ☐in

Check 1st Part: ☐Yes   ☐No

Pg. 3

Bar Diameter _____☐mm ☐in

Facing Length _____☐mm ☐in

Collet / Chuck ☐Collet   ☐Chuck

Open Collet Speed_____☐mm/sec ☐in/min

Open Collet Torque_____%

Pg. 4

Open Collet Timeout_____sec0-60

Close Collet Timeout_____sec0-60

Open Collet Push Delay_____sec0-10

Close Collet Push Delay_____sec0-10

Pg. 5

Feeding Type   ☐Turret Stop

Facing Type   ☐Position ☐Turret Stop

Remnant Type   ☐Extraction ☐Ejection

☐Advanced Return & Wait

Change Program Number_____

Pg. 6

MAVD Open/Close with lathe collet _OFF_

Pg. 11

Max. End Of Bar Collet_____☐mm ☐in

Facing Distance Collet_____☐mm ☐in

Max. End Of Bar Chuck_____☐mm ☐in

Facing Distance Chuck_____☐mm ☐in

Pg. 12

First Feeding Distance_____☐mm ☐in

Oil Pump Shutoff Distance_____☐mm ☐in

MAVD Opening Position_____☐mm ☐in

Headstock Type   ☐Fixed   ☐Sliding

☐Sliding Bushing

Pg. 13

1st **AVD Opening Position** _____ ☐*mm* ☐*in*

2nd **AVD Opening Position** _____ ☐*mm* ☐*in*

3rd **AVD Opening Position** _____ ☐*mm* ☐*in*

4th **AVD Opening Position** _____ ☐*mm* ☐*in*

Intentional left blank

Pg. 14

End of Bar Type: ☐ **Off at Bar Change** ☐ **Pulse** ☐ **Latch** ☐ **Double Pulse**

Feed Confirm Signal: ☐ **Not Used** ☐ **Finished Feeding** ☐ **Start Feeding** ☐ **During Feeding**

Pusher Feed Direction; ☐ **Left to Right** ☐ **Right to Left**

Inch / Metric: ☐ **Metric** ☐ **Inch**

Pg. 15

Bar Change Return Delay _____ **sec 0-10**

Cycle Start Delay _____ **sec0-10**

Impulse On Time _____ **sec0-10**

Impulse Off Time _____ **sec0-10**

Pg. 16

End of Bar Pulse _____ **sec0-10**

Feed Confirm Pulse _____ **sec0-10**

Cycle Start Pulse _____ **sec0-10**

Demo Mode: ☐**Off** ☐**On**

Pg. 17

Manual / Auto: ☐ **Normally Open** ☐ **Normally Closed**

Lathe Door Safety: ☐ **Normally Open** ☐ **Normally Closed**

Lathe Alarm: ☐ **Normally Open** ☐ **Normally Closed**

Feed Stop: ☐ **Off** ☐ **On** ☐ **Pulse**

Lathe Specific: ☐ **Off** ☐ **Other** _____

Pg. 17a

Collet Open: ☐ **Normally Open** ☐ **Closed**

Bar Change: ☐ **Normally Open** ☐ **Closed**

Feed Stop: ☐ **Normally Open** ☐ **Closed**

Pg. 18 No items to record

Pg. 19 No items to record

Pg. 20	**Pg. 21** Note switch HMI to settings below
User New Program Password_____0000_____	User Page 2 ☐Off
User Load Program Password_____0000_____	User Page 3 ☐Off ☐On
User Edit Program Password_____0000_____	User Page 4 ☐Off ☐On
Factory Password_____0000_____	User Page 5 ☐Off ☐On
	User Page 6 ☐Off ☐On
	Initial User Setup ☐Off ☐On
Pg. 22	**Pg. 23**
B. Change Return Speed_____☐mm/s ☐in/m	Facing Speed 1_____☐mm/s ☐in/m
1ˢᵗ Feed Speed 1_____☐mm/s ☐in/m	Facing Speed 2_____☐mm/s ☐in/m
1ˢᵗ Feed Speed 2_____☐mm/s ☐in/m	Facing Speed Slowdown_____☐mm ☐in
1ˢᵗ Feed Return Speed_____☐mm/s ☐in/m	Facing Return Distance_____☐mm ☐in
Pg. 24	**Pg. 25**
M. Forward Speed _____☐mm/s ☐in/m	Collet Close Speed_____☐mm/s ☐in/m
M. Forward Torque_____%	Collet Close Torque_____%
M. Reverse Speed_____☐mm/se ☐in/m	1ˢᵗ Anti-Vibration Closing 1ˢᵗ Feed
M. Reverse Torque_____%	☐Off ☐On
Pg. 26	**Pg. 28**
Pusher Back off Tolerance_____mm	**Intentional left blank**
Hard stop Location_____	

NO.	PART NO.	CODE	FUNCTION
01	J221502	M1	SERVO MOTOR 1KW
02	J310312	PS3	CLAMPING OUT SENSOR
03	J310311	PS2	ORIGIN SENSE
04	AV50L0900	M2	OIL PUMP
05	A12140501	MS6	BAR PUSHER DOWN SENSE
06	A12140501	MS5	BAR PUSHER RISE SENSE
07	J310419	LS41	SYNCHRONIZATION SENSE SENSOR
08	J310409	LS31	AXIAL SENSE SENSOR
09	J310419	LS51	SYNCHRONIZATION SENSE SENSOR
10	J210504	HMI	HUMAN MACHINE INTERFACE
11	J310704	ES1	EMERGENCY STOP
12	J310705	SS1	POWER ON
13	A12140400	AP23	AIR PRESSURT SENSOR
14	JVCQ1B200		REMOTE CONTROL（P.04）
15	J310363	PS4	CUTTING SENSOR
16			SOLENOID VALVE DIAGRAM 2
17	J310314	MS7	CLAMP SENSOR
18			SOLENOID VALVE DIAGRAM 1
19	A12140501	MS30	CLAMP IN SENSOR
20	J311801	LS21	DOOR SAFETY
21	J630110	RL,GL	INDICATOR LIGHT

BAR FEEDER TYPE						
D	PATRIOT / C-332 / M-542					
LATHE NAME	Seven					
LATHE TYPE						

FIRST DATE	REVISION DATE	MAIN VOLTAGE	SIGNAL VOLTAGE	PAGE
2012/11/16	2017/10/02	220 VAC 3-PHASE	24VDC	P.01
DRAWN BY	CHECKED BY	DESCRIPTION	DRAWING NO.	VERSION
		Machine electricity position	JV-CON054-EG	E0

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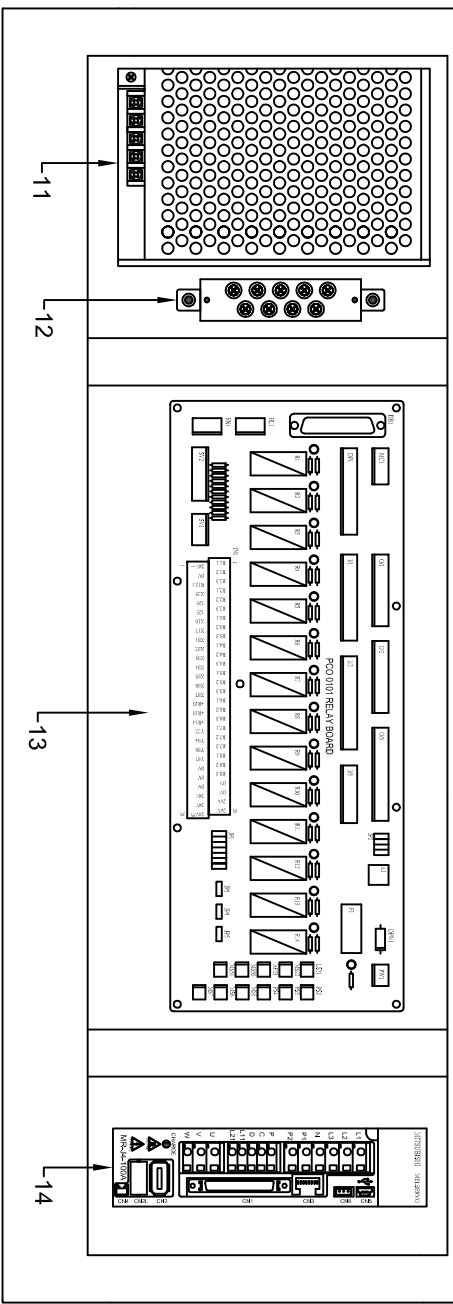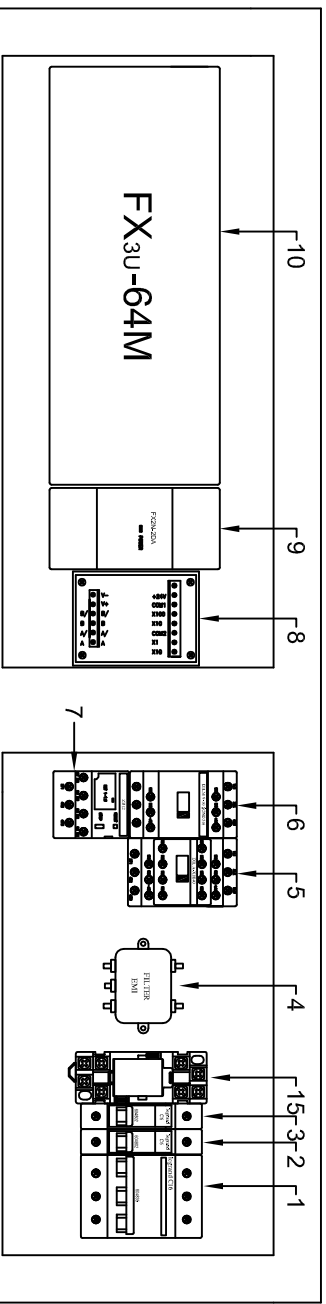
NO.	PART NO.	CODE	NAME
01	J310524	NFB1	NO FUSE BREAKER
02	J310525	CP1	CIRCUIT PROTECTION
03	J310525	CP2	CIRCUIT PROTECTION
04	J220405	FIL	FILTER
05	J312709	MC1	MAGNETIC CONTACTOR
06	J312709	MS1	MAGNETIC CONTACTOR
07	J313350	O.L	OVER RELAY
08	J224106	PCB2	PULSE CHANGE DEVICE
09	J220200	2DA	ANALOGY SIGNAL MODULE
10	J210800	PLC	PROGRAMMABLE LOGIC CONTROLLER
11	J230104	PS	POWER SUPPLY
12	J631202	FG	GROUND
13	J510811	PCB1	MAIN PC RELAY BOARD
14	J221501	SD	SERVO MOTOR RELAY DRIVER
15	J310205	R15	Relay

FX₃ᵤ-64M

FX3U-64M

PCO 1101 RELAY BOARD

MR-J4-70A

FILTER EMI

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BAR FEEDER TYPE: PATRIOT / C-332 / M-542
LATHE NAME
LATHE TYPE

DRAWN BY: Seven
FIRST DATE: 2012/11/16
REVISION DATE: 2017/10/02
CHECKED BY
MAIN VOLTAGE: 220 VAC 3-PHASE
SIGNAL VOLTAGE: 24VDC
DESCRIPTION: Distribution of Electric parts
DRAWING NO.: JV-CON054-EG
PAGE: P.02
VERSION: E0

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NO.	CODE	FUNCTION
01	ES2	EMERGENCY STOP
02	DS2	MANUAL MODE
03	LDS3	MANUAL MODE LIGHT
04	DS3	AUTOMATIC MODE
05	DS6	AUTOMATIC MODE LIGHT
06	DS9	MANUAL CLAMPING
07	LED4	MANUAL ADVANCE
08	LED5	START LIGHT
09	LED6	CHUCK OPEN LIGHT
10	LED1	TORQUE STOP LIGHT
11	LED2	ALARM LIGHT
12	LED3	END OF BAR LIGHT
13	LDS2	BACK START LIGHT
14	LDS1	MANUAL MODE LIGHT
15	DS1	AUTOMATIC START LIGHT
16	DS5	AUTOMATIC START
17	LDS5	MANUAL CLAMPING IN/OUT
18	DS4	CLAMPING IN LIGHT
19	DS8	MANUAL LOADING
20	LDS8	MANUAL BAR-PUSHER RISE/DOWN
21	LDS7	BAR PUSHER DOWN LIGHT
22	DS7	-Z LIGHT
		MANUAL RETREAT

PCO 0101 RELAY BOARD

PCO 0101 RELAY BOARD

147

345

		NO.	PART NO.	CODE	NAME
		01	J310215	R1-R14	RELAY
		02	J620106	F1	FUSE

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LATHE TYPE		LATHE NAME	BAR FEEDER TYPE
			PATRIOT / C-332 / M-542

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DRAWN BY	FIRST DATE	DESCRIPTION	MAIN VOLTAGE
Seven	2012/11/16	Main Pc board	220 VAC 3-PHASE

CHECKED BY	REVISION DATE	DRAWING NO.	SIGNAL VOLTAGE
	2017/10/02	JV-CON054-EG	24VDC

PAGE	VERSION
P. 05	E0

Relay labels: R1, R2, R3, R4, R5, R6, R7, R8, R9, R10, R11, R12, R13, R14

IN1 terminal labels:
24V, 0V, R12.1, I23, I25, X16, X17, X31, X32, X33, X34, X35, X36, X37, +R10, +R13, +R14, Y22, Y34, Y36, Y37, 0V, 0V, 0V, 24V, 24V, 24V

R1.1, R1.2, R1.3, R2.1, R2.2, R3.1, R3.2, R3.3, R4.1, R4.2, R4.3, R5.1, R5.2, R5.3, R6.1, R6.2, R6.3, R7.1, R7.2, R7.3, R8.1, R8.2, R8.3, 0V, 0V, 24V, 24V, 24V

Components: EN1, HL1, DB1, SV2, SV1, MC1, DP1, O/1, I/1, O/2, I/2, O/3, I/3, JP2, A1, F1, DPW1, PW1, JP1, JP3, JP4, JP5, MS31, MS30, AP23, MS22, LS21, MS7, MS6, MS5, PS4, PS3, PS2

Main circuit 1-2

Title block:

BAR FEEDER TYPE	PATRIOT / C-332 / M-542
LATHE NAME	
LATHE TYPE	
LATHE	01
DRAWN BY	Seven
FIRST DATE	2012/11/16
CHECKED BY	
REVISION DATE	2017/10/02
MAIN VOLTAGE	220 VAC 3-PHASE
SIGNAL VOLTAGE	24VDC
DESCRIPTION	Main circuit 1-2
DRAWING NO.	JV-CON054-EG
PAGE	P.06
VERSION	E0

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Schematic labels:

P.21-A.01 R S T FG

NFB1 16A legrand C16

DILM 9-10 SOND 516 MC1

SERVO DRIVER MR-J4

SERVO MOTOR M1 3~

(CNP1) (CNP2) (CNP3)

DILM 9-10 SOND 516 MS1

O.L. SET 1-1.6A

OIL PUMP M2 3~

DIL A-XH140

NFI1 FN 610 LINE LOAD

PLC POWER P.08-B.01

DC CONTROL POWER

CP1 CP2

POWER SUPPLY PWS-LP1050-D24

F1 DPW1

24V 0V

P.07-A.01

FG P.07-A.01

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BAR FEEDER TYPE	PATRIOT / C-332 / M-542
LATHE NAME	
LATHE TYPE	

DRAWN BY	FIRST DATE	REVISION DATE	MAIN VOLTAGE	SIGNAL VOLTAGE	DESCRIPTION	DRAWING NO.	PAGE	VERSION
Seven	2012/11/16	2017/10/02	220 VAC 3-PHASE	24VDC	Main circuit 2-2	JV-CON054-EG	P.07	E0
		CHECKED BY						

HMI PROWER
HMI PWS6310

SERVO ON CIRCUIT

R15 ON CIRCUIT

EMERGENCY STOP

SYNCHRONIZATION SENSE SENSOR — LS51
SYNCHRONIZATION SENSE SENSOR — LS41
AXIAL SENSE SENSOR — LS31

Operation Box
ES2
ES1

P.06-A.06 FG
P.06-C.05 0V
P.06-C.05 24V

P.08-A.01 FG
P.08-A.01 0V
P.08-A.01 24V

MC1 H1 R15 SS1 X25 R15 R12 JP2

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Diagram labels and text (electrical wiring schematic):

Top connectors (right side):
- P.07-A.06 — 24V
- P.07-A.06 — 0V
- P.07-A.06 — FG
- P.09-A.01 — 24V
- P.09-A.01 — 0V
- P.09-A.01 — FG

Left connectors:
- P.06-C.04 — R2
- P.06-C.04 — S2

PLC Module: FX3G-60MR

Terminals and signal descriptions:
- L
- N
- GND
- S/S — 0V — I/1-12
- X0 — X00 (I/1-11) — X00 (EN1-2) — ENCODER A
- X1 — X01 (I/1-10) — X01 (EN1-1) — ENCODER B
- X2 — X02 (I/1-9) — X02 (PS2-2) — ORIGIN SENSE SENSOR — PS2
- X3 — X03 (I/1-8) — X03 (PS3-2) — GUIDE CHANNEL OPEN SENSOR — PS5
- X4 — X04 (I/1-7) — X04 (PS4-2) — CUTTING SENSOR — PS4
- X5 — X05 (I/1-6) — X05 (MS5-1) — BARPUSHER RISE SENSE — MS5
- X6 — X06 (I/1-5) — X06 (MS6-1) — BARPUSHER DOWN SENSE — MS6
- X7 — X07 (I/1-4) — X07 (MS7-1) — CLAMP SENSOR — MS7

PULSE CHANGE DEVICE
- EN1-3 — 24V
- EN1-4 — 0V
- 24V COM *100 *10 X1 X0
- P.17-C.05 (×4)

Sensor power:
- PS2-1 — 0V, PS2-3 — 24V
- PS3-1 — 0V, PS3-3 — 24V
- PS4-1 — 0V, PS4-3 — 24V
- MS5-2 — 24V
- MS6-2 — 24V
- MS7-2 — 24V

Title block:

BAR FEEDER TYPE	PATRIOT / C-332 / M-542
LATHE NAME	
LATHE TYPE	

Seven

FIRST DATE	DRAWN BY	REVISION DATE	CHECKED BY	MAIN VOLTAGE	DESCRIPTION	DRAWING NO.	PAGE	VERSION
2012/11/16		2017/10/02		220 VAC 3-PHASE	PLC INPUT 1-4	JV-CON054-EG	P. 08	E0
				SIGNAL VOLTAGE 24VDC				

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FX3G-60MR

Signal	Input			Switch
AUTOMATIC START	X10	X10 IVI-3	X10 DB1-3	DS1
MANUAL MODE	X11	X11 IVI-2	X11 DB1-4	DS2
READY MODE	X12	X12 IVI-1	X12 DB1-5	DS3
MANUAL LOADING	X13	X13 IV2-13	X13 DB1-6	DS4
MANUAL CLAMPING IN / OUT	X14	X14 IV2-12	X14 DB1-7	DS5
MANUAL CLAMPING	X15	X15 IV2-11	X15 DB1-8	DS6
MANUAL ADVANCE	X16	X16 IV2-10	X16 DB1-9	DS7
MANUAL RETREAT	X17	X17 IV2-9	X17 DB1-10	DS8

24V DB1-1

Operation Box

P.08-A.06 24V
P.08-A.06 0V

P.10-A.01 24V
P.10-A.01 0V

P.21-B.03
P.21-B.03

BAR FEEDER TYPE	PATRIOT / C-332 / M-542			
LATHE NAME				
LATHE TYPE				

DRAWN BY	Seven
FIRST DATE	2012/11/16
CHECKED BY	
REVISION DATE	2017/10/02
MAIN VOLTAGE	220 VAC 3-PHASE
SIGNAL VOLTAGE	24VDC
DESCRIPTION	PLC INPUT 2-4
DRAWING NO.	JV-CON054-EG
PAGE	P. 09
VERSION	E0

			A4

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BAR FEEDER TYPE		
PATRIOT / C-332 / M-542		
LATHE NAME		
LATHE TYPE		Seven

DRAWN BY	FIRST DATE	2012/11/16
CHECKED BY	REVISION DATE	2017/10/02
MAIN VOLTAGE	220 VAC 3-PHASE
SIGNAL VOLTAGE	24VDC
DESCRIPTION	PLC INPUT 3-4
DRAWING NO.	JV-CON054-EG
PAGE	P. 10
VERSION	E0

FX3G-60MR

Operation Box

Input	Description			
X20	MANUAL BAR PUSHER RISE/DOWN	X20 (I/2-8)	X20 (DB1-11)	DS9 3—1	24V (DB1-1)
X21	DOOR SAFETY	X21 (I/2-7)	X21 (MS21-1)	LS21 1—2	24V (MS21-2)
X22	SPARE	X22 (I/2-6)	X22 (MS22-1)		24V (MS22-2)
X23	AIR PRESSURE SENSOR	X23 (I/2-5)	X23 (AP23-1)	AP23 1—2	24V (AP23-2)
X24	SERVO DRIVER ALARM	X24 (I/2-4)		R11 3—1	
X25	EMERGENCY STOP	X25 (I/2-3)			
X26	SERVO DRIVER POWER ON	X26 (I/2-2)	X26 (MC1-2)	MC1 64—63	24V (MC1-1)
X27	OIL PUMP ALARM	X27 (I/2-1)	X27 (MC1-4)	O.L 96—95	

P.09-A.06
0V
24V
P.07-B.03 X25
P.11-A.01 24V
P.11-A.01 0V

FX3G-60MR

PLC	Input	Signal
X30	CLAMP IN SENSOR	I/3-8
X31	EMERGENCY FROM LATHE	I/3-7
X32	MANU / AUTO FROM LATHE	I/3-6
X33	CHUCK OPEN	I/3-5
X34	FEEDING ALLOW	I/3-4
X35	BAR CHANGE	I/3-3
X36	TORQUE STOP	I/3-2
X37	ALARM FROM LATHE	I/3-1
X40	SPARE	
X41	SPARE	
X42	SPARE	
X43	SPARE	

MS30
MS30/1 MS30/2
X30 24V
IN1-28

MS31/1 MS31/2
X31 24V
IN1-P6
IN1-28

P.10-A.06 24V
P.10-A.06 0V
P.12-D.01 24V
P.12-D.01 0V

P.16-A.05
P.16-A.05
P.16-A.05

P.21-A.03
P.21-A.03
P.21-A.03
P.21-A.03
P.21-A.03
P.21-A.03
P.21-A.01
P.21-A.01

EDGE TECHNOLOGIES
A DIVISION OF HYDROMAT INC

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FX3G-60MJR

Terminal	I/O	Wire	Description
COM0	I/O1-11 24V		
Y00	I/O1-10	P.16-A.05	ORIGIN SENSE LIGHT
COM1	I/O1-11 24V		
Y01	I/O1-9	P.16-A.05	+Z LIGHT
COM2	I/O1-11 24V		
Y02	I/O1-8	P.16-A.05	CLAMPING IN LIGHT
Y03	I/O1-7	P.16-B.05	BAR PUSHER DOWN LIGHT
COM3	I/O1-6 0V	SG	
Y04		SON	SERVO ON
Y05		ST1	MOTOR REVERSE
Y06		ST2	MOTOR TURNING
Y07		SP1	MOTOR WITHOUT SPEED

DRIVER CN1

P.11-A.06 24V
P.11-A.06 0V
P.11-A.06 24V

P.13-D.01 0V
P.13-D.01 24V
P.13-D.01

P.17-A.03

EDGE TECHNOLOGIES
A DIVISION OF HYDROMAT INC

FX3G-60MR

COM4	24V			O/1-5
Y10	Y10 / O/1-4	VAL1	Y10 / SV2-1	0V / SV2-10	BAR PUSHER RISE
Y11	Y11 / O/1-3	VAL2	Y11 / SV2-2		BAR PUSHER DOWN
Y12	Y12 / O/1-2	VAL3	Y12 / SV2-3		GUIDE CHANNEL FIX
Y13	Y13 / O/1-1	VAL4	Y13 / SV2-4		GUIDE CHANNEL OPEN
COM5	24V / O/2-10				
Y14	Y14 / O/2-9	VAL6	Y14 / SV2-5	0V / SV2-10	LOADING
Y15	Y15 / O/2-8	VAL5	Y15 / SV2-6		CLAMPING
Y16	Y16 / O/2-7	VAL10	Y16 / SV1-1	0V / SV1-4	SYNCHRONIZATION
Y17	Y17 / O/2-6	VAL9	Y17 / SV1-2		MOVABLE ANTI-VIBRATION

P.12-D.06 24V
P.12-D.06 0V
P.12-D.06

P.14-D.01 24V
P.14-D.01 0V
P.14-D.01

A4

FX3G-60MR

COM6	24V	O/2-5
Y20	Y20 O/2-4	VAL8 SV1-3 / SV1-4 0V	1st ANTI-VIBRATION
Y21	Y21 O/2-3	VAL7 SV2-8 / SV2-10 0V	CLAMPING IN
Y22	Y22 O/2-2	VAL11 SV2-9 / Y22 INI-19d	CLAMPING OUT
Y23	Y23 O/2-1	MS1 MC1-7 / MC1-6 0V	OIL PUMP
COM7	24V O/3-9	
Y24	Y24 O/3-13	RL1 X1/X2 HLL1-3 / HLL1-1 0V — R1 A1/A2	BAR FEEDER ALARM
Y25	Y25 O/3-12	R2 A1/A2 P.16-B.05	BAR FEEDER AUTO MODE
Y26	Y26 O/3-11	GL1 X1/X2 HLL2 / HLL1-1 0V — R3 A1/A2	CYCLE OFF PERMANENT
Y27	Y27 O/3-10	R4 A1/A2 P.16-B.05	END OF BAR

P.13-D.06 24V
P.13-D.06 0V
P.15-D.01 24V
P.15-D.01 0V

LATHE TYPE		01
LATHE NAME		02
BAR FEEDER TYPE	PATRIOT / C-332 / M-542	03

EDGE TECHNOLOGIES
A DIVISION OF HYDROMAT INC

DRAWN BY	Seven
FIRST DATE	2012/11/16
CHECKED BY	
REVISION DATE	2017/10/02
MAIN VOLTAGE	220 VAC 3-PHASE
SIGNAL VOLTAGE	24VDC
DESCRIPTION	PLC OUTPUT 3-4
DRAWING NO.	JV-CON054-EG
PAGE	P. 14
VERSION	E0

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FX2N-8EYR

PLC		Relay	Signal	Description
COM1	24V O/3-9			
(Y30) Y00	Y30 O/3-8	R5 A1 A2		CYCLE STOP
(Y31) Y01	Y31 O/3-7	R6 A1 A2		1st. CYCLE
(Y32) Y02	Y32 O/3-6	R7 A1 A2		IMPULSES
(Y33) Y03	Y33 O/3-5	R8 A1 A2	P.16-B.05	CYCLE START
COM2	24V O/3-9			
(Y34) Y04	Y34 O/3-4	Y34 IN1-20d		CHUCK OPEN START
(Y35) Y05	Y35 O/3-3	R9 A1 A2		AUTO READY
(Y36) Y06	Y36 O/3-2	Y36 IN1-21d	P.16-B.05	BAR FEEDER ALARM LIGHT
(Y37) Y07	Y37 O/3-1	VAL12	Y37 IN1-22d	REMOVE OIL

IN1-23d 0V

P.14-D.06   0V
P.14-D.06   24V

P.16-D.04   0V
P.16-D.01   24V

BAR FEEDER TYPE			
PATRIOT / C-332 / M-542			
LATHE NAME			
LATHE TYPE			

EDGE ○○○ TECHNOLOGIES
A DIVISION OF HYDROMAT INC

FIRST DATE	REVISION DATE	MAIN VOLTAGE	SIGNAL VOLTAGE
2012/11/16	2017/10/02	220 VAC 3-PHASE	24VDC
DRAWN BY	CHECKED BY	DESCRIPTION	
Seven		PLC OUTPUT 4-4	
		DRAWING NO.	PAGE
		JV-CON054-EG	P. 15
			VERSION
			E0

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Control box

Component	Resistor	Terminal	Signal
LED5	R5	X33	DB1-12
LED3	R3	X35	DB1-13
LED6	R6	X36	DB1-14
LDS7	RDS7	Y00	DB1-15
LDS9	RDS9	Y01	DB1-16
LDS5	RDS5	Y02	DB1-17
LDS8	RDS8	Y03	DB1-18
LDS1	RDS1	Y25	DB1-19
LED2	R2	Y27	DB1-20
LED4	R4	Y33	DB1-21
LDS3	RDS3	Y35B	DB1-22
LDS2	RDS2	Y35A	DB1-23
LED1	R1	Y36	DB1-24

R9

DB1-25

Signal connections:

Terminal	Connector	Description
X33	P.11-B.03	CHUCK OPEN LIGHT
X35	P.11-B.03	BAR CHANGE LIGHT
X36	P.11-B.04	TORQUE STOP LIGHT
X00	P.11-C.02	ORIGIN SENSE LIGHT
Y01	P.12-C.03	+Z LIGHT
Y02	P.12-C.03	CLAMP IN LIGHT
Y03	P.12-C.04	BAR PUSHER DOWN SENSE LIGHT
Y25	P.14-C.05	AUTOMATIC START LIGHT
Y27	P.14-C.05	BAR END LIGHT
Y33	P.15-C.04	CYCLE START LIGHT
Y36	P.15-C.05	BAR FEEDER ALARM LIGHT
24V		MANU / AUTO READY LIGHT

P.15-D.06 0V
P.15-D.06 24V
P.17-D.01 0V
P.17-D.01 24V

LATHE TYPE	01
BAR FEEDER TYPE	PATRIOT / C-332 / M-542
LATHE NAME	

EDGE TECHNOLOGIES
A DIVISION OF HYDROMAT INC

DRAWN BY	Seven
FIRST DATE	2012/11/16
CHECKED BY	
REVISION DATE	2017/10/02
MAIN VOLTAGE	220 VAC 3-PHASE
SIGNAL VOLTAGE	24VDC
DESCRIPTION	LED circuit of Remote control pendant
DRAWING NO.	JV-CON054-EG
PAGE	P.16
VERSION	E0

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LATHE TYPE: **01**

LATHE NAME: **Seven**

LATHE TYPE

BAR FEEDER TYPE: **PATRIOT / C-332 / M-542**

FIRST DATE: 2012/11/16
DRAWN BY
REVISION DATE: 2017/10/02
CHECKED BY
MAIN VOLTAGE: 220 VAC 3-PHASE
SIGNAL VOLTAGE: 24VDC
DESCRIPTION: Driver circuit of Servo motor
DRAWING NO.: JV-CON054-EG
PAGE: P.17
VERSION: E0

PLC FX3G-60MR

SERVO ON — Y04
MOTOR REVERSE — Y05
MOTOR TURNING — Y06
MOTOR WITHOUT SPEED — Y07
COM3

SERVO DRIVER MR-J4 CN1

SON 15
ST1 17
ST2 18
SP1 41
DOCOM 46
EMG 42
TL 16
ALM 48

TLA 27
VC 02
LG 28
LA 04
LAR 05
LB 06
LBR 07

FX2N-2DA

CH1-TORQUE
VOUT1
IOUT1
COM1
CH2-SPEED
VOUT2
IOUT2
COM2

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

RR11
LR11
R11 A1 A2
DR11

P.16-D.06 24V
P.16-D.06 0V
P.21-A.02
P.21-A.02

A DIVISION OF HYDROMAT INC

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PCO 0201 KEY BOARD

BAR FEEDER ALARM — LED1 — Y36
BAR END — LED2 — Y27
BACK START — LED3 — X35

CYCLE START — LED4 — Y33
COLLET OPEN — LED5 — X33
TORQUE STOP — LED6 — X36

0V

ES2 XH2.54
02 01
2.7
24V

DB1

X36	01	24V
Y00	02	2.7
Y01	03	X10
Y02	04	X11
Y03	05	X12
Y25	06	X13
Y27	07	X14
Y33	08	X15
Y35B	09	X16
Y35A	10	X17
Y36	11	X20
0V	12	X33
	13	X35

14 15 16 17 18 19 20 21 22 23 24 25

DS1 — 0V — Y25 — 24V X10 / 24V X10
DS2 — 0V — Y35A — 24V X11 / 24V X11
DS3 — 0V — Y35B — 24V X12 / 24V X12
DS4 — 0V — Y02 — 24V X13 / 24V X13
DS5 — 0V — Y02 — 24V X14 / 24V X14
DS6 — Y01 — 24V X15 / 24V X15
DS7 — 0V — Y00 — 24V X16 / 24V X16
DS8 — 0V — Y03 — 24V X20 / 24V X20
DS9 — 0V — Y01 — 24V X17 / 24V X17

EDGE °°° TECHNOLOGIES °°°
A DIVISION OF HYDROMAT INC

BAR FEEDER TYPE	PATRIOT / C-332 / M-542
LATHE NAME	
LATHE TYPE	

DRAWN BY	Seven
FIRST DATE	2012/11/16
CHECKED BY	
REVISION DATE	2017/10/02
MAIN VOLTAGE	220 VAC 3-PHASE
SIGNAL VOLTAGE	24VDC
DESCRIPTION	PC board circuit of Remote control pendant
DRAWING NO.	JV-CON054-EG
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VERSION	E0

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PC0 – 0101 RELAY BOARD

LATHE TYPE		LATHE NAME	DRAWN BY	FIRST DATE	MAIN VOLTAGE	DESCRIPTION
		Seven	2012/11/16	220 VAC 3-PHASE	Main PC board circuit
BAR FEEDER TYPE	PATRIOT / C-332 / M-542		CHECKED BY	REVISION DATE	SIGNAL VOLTAGE	DRAWING NO.
				2017/10/02	24VDC	JV-CON054-EG
					PAGE	VERSION
					P.19	E0

EDGE TECHNOLOGIES
A DIVISION OF HYDROMAT INC

EDGE TECHNOLOGIES
A DIVISION OF HYDROMAT INC
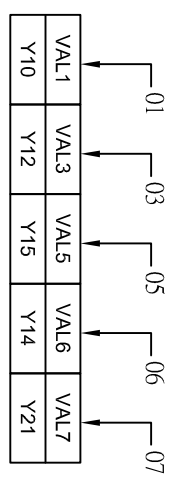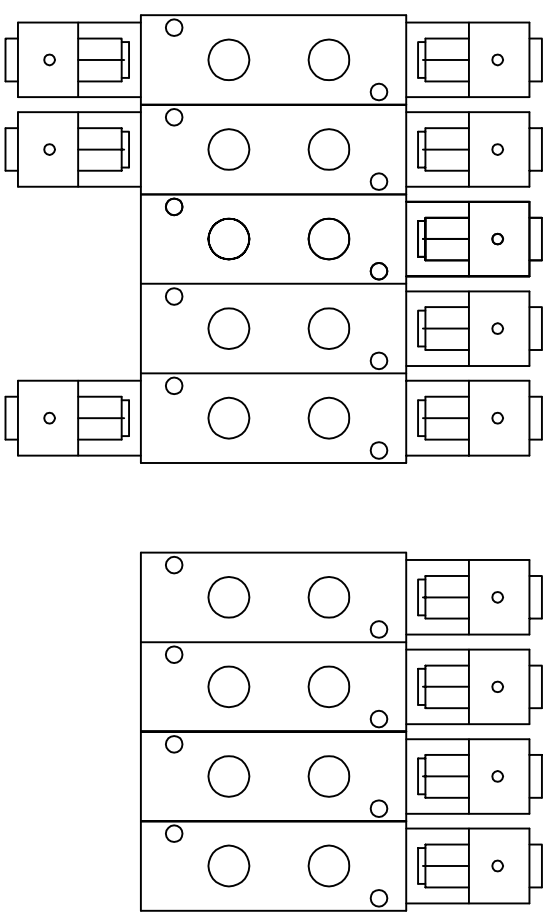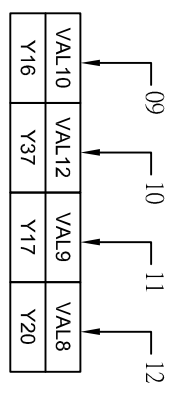
NO.	PART NO.	CODE	FUNCTION
01	A1212020200	VAL1	BAR PUSHER RISE
02	A1212020200	VAL2	BAR PUSHER DOWN
03	A1212020200	VAL3	GUIDE CHANNEL FIX
04	A1212020200	VAL4	GUIDE CHANNEL OPEN
05	A1212010100	VAL5	CLAMPING
06	A1212010100	VAL6	CLAMP IN
07	A1212020200	VAL7	CLAMPING IN
08	A1212020200	VAL11	CLAMPING OUT
09	A1212010100	VAL12	SYNCHRONIZATION
10	A1212010100	VAL10	MOVEABLE ANTI-VIBRATION
11	A1212010100	VAL9	REMOVE OIL
12	A1212010100	VAL8	1nd ANTI-VIBRATION

LED1

LED4

SOLENOID VALVE DIAGRAM 1

VAL1	Y10	01
VAL3	Y12	03
VAL5	Y15	05
VAL6	Y14	06
VAL7	Y21	07

Y11 VAL2 — 02
Y13 VAL4 — 04
Y22 VAL11 — 08

SOLENOID VALVE DIAGRAM 2

VAL10	Y16	09
VAL12	Y37	10
VAL9	Y17	11
VAL8	Y20	12

Title block:

BAR FEEDER TYPE	PATRIOT / C-332 / M-542
LATHE NAME	
LATHE TYPE	

DRAWN BY	Seven

FIRST DATE	2012/11/16
REVISION DATE	2017/10/02
CHECKED BY	
MAIN VOLTAGE	220 VAC 3-PHASE
SIGNAL VOLTAGE	24VDC
DESCRIPTION	Solenoid valves position
DRAWING NO.	JV-CON054-EG
PAGE	P. 20
VERSION	E0

EDGE ○○○ TECHNOLOGIES
A DIVISION OF HYDROMAT INC

Signal labels

- VOLTAGE SUPPLY AC220V
- EMERGENCY FROM LATHE
- MANUAL FEED — X17
- MANUAL RETURN — X16
- MANU / AUTO FROM LATHE — X32
- ALARM FROM LATHE — X37
- FEEDING ALLOW — X34
- TORQUE STOP — X36
- BAR CHANGE — X35
- CHUCK OPEN — X33

Connector / plug references

- X31: R, S, T, ⏚, 24V, X31
- P.06-A.01 (R, S, T)
- P.11-A.06 (24V), X31
- P.17-D.06, 0V, 24V
- P.09-B.06 — X17
- P.09-B.06 — X16
- P.11-A.06 — X32
- P.11-B.06 — X37
- P.11-A.06 — X34
- P.11-B.06 — X36
- P.11-B.06 — X35
- P.11-A.06 — X33
- HARTING PLUG PIN
- WIRE SILKSCREEN

Components

- IN1
- R10, R13, R14
- +R10 / 0V, +R13 / 0V, +R14 / 0V
- JP3 — X36B / X36A
- JP4 — X35B / X35A
- JP5 — X33B / X33A
- JP2: I25 / X25, I23 / X33, 24V / X32, R12.1 / X35, R12.1 / I23 — ON / OFF

Title block

Field	Value
BAR FEEDER TYPE	PATRIOT / C-332 / M-542
LATHE NAME	
LATHE TYPE	
DRAWN BY	Seven
FIRST DATE	2012/11/16
REVISION DATE	2017/10/02
CHECKED BY	
MAIN VOLTAGE	220 VAC 3-PHASE
SIGNAL VOLTAGE	24VDC
DESCRIPTION	Interface signal circuit 1-2
DRAWING NO.	JV-CON054-EG
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EDGE ○○○
TECHNOLOGIES
A DIVISION OF HYDROMAT INC

IN1

EMERGENCY
BAR FEEDER
Y24

BAR FEEDER
ALARM
Y24

BAR FEEDER
AUTO MODE
Y25

CYCLE OFF
PERMANENT
Y26

END OF BAR
Y27

CYCLE STOP
Y30

1st.CYCLE
Y31

IMPULSES
Y32

CYCLE START
Y33

ES1 R12 R15
I23 I24 I25

R1 R1.1 R1.2 R1.3
R2 R2.1 R2.2 R2.3
R3 R3.1 R3.2 R3.3
R4 R4.1 R4.2 R4.3
R5 R5.1 R5.2 R5.3
R6 R6.1 R6.2 R6.3
R7 R7.1 R7.2 R7.3
R8 R8.1 R8.2 R8.3

HARTING PLUG PIN
WIRE SILKSCREEN

06 07 17 18 19 20 21 22 23

PLC OUTPUT
CYCLE START Y33
CHUCK OPEN START Y34

JP1
R1.1 R2.1 R3.1 R4.1 R5.1 R6.1 R7.1 R8.1
R1.1 R2.1 R3.1 R4.1 R5.1 R6.1 R7.1 R8.1
OFF
ON

D			
BAR FEEDER TYPE			
PATRIOT / C-332 / M-542			
LATHE NAME			
LATHE TYPE			
01	02	03	

DRAWN BY	FIRST DATE 2012/11/16	REVISION DATE 2017/10/02	MAIN VOLTAGE 220 VAC 3-PHASE	SIGNAL VOLTAGE 24VDC
Seven	CHECKED BY		DESCRIPTION Interface signal circuit 2-2	
			DRAWING NO. JV-CON054-EG	PAGE P. 22	VERSION E0

04 05 06

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PATRIOT

010	FRAME DEVICE
020	CLAMPING
030	COVER
040	BASES AND BEAM
050	FEED MOTOR DRIVE
060	CUTTING DEVICE
070	GUIDE CHANNEL SUPPORT
080	GUIDE CHANNEL
090	BAR PUSHER DEVICE
100	FIRST ANTI-VIBRATION DEVICE AND FIXED FRONT NOSE
110	SYCHRONIZATION DEVICE
120	TELESCOPIC FRONT NOSE
130	OIL TANK

PICTURE INDEX

FRAME DEVICE

N.	Code	QTY 25	37	Denomination
1	AV51MA2200	1	1	Support
2	AV51MA2300	1	1	Plate
3	AV51MA0110	4	5	Support
4	AV51MA0200	5	6	Plate
5	AV51MA1800	5	6	Collet
6	AV51MA0300	5	6	Plate
7	AV51MA1625	1		Arbor-2.5M L=2160mm
	AV51MA1637	1	1	Arbor-3.7M L=3400mm
8	AV51MA0120	1	1	Support
9	AV51MA2400	1	1	Support
10	AV51MA0800	1	1	Anchor
11	AV51MA1100	2	2	Plate
12	AV51MA1200	2	2	Arbor
13	ZS011212001	1	1	Cap screw
14	AV51MA1700	1	1	Arbor
15	AV51MA0701	2	2	Plate
16	AV51MA0901	2	2	Extension bar
17	AV51MA0900	1	1	Support
18	BPHS16	1	1	Joint
19	A11150500	1	1	Cylinder SC-63x25-CB
20	AV51MA2600	5	6	Adjustable handle
21	AV51MA1025	1	1	Pull rod-2.5M L=2010mm
	AV51MA1032		1	Pull rod-3.7M L=2725mm
22	AV51MA1037	1	1	Pull rod-3.7M L=605mm
23	AV51MA1001		1	Connector rod-3.7M
24	AV51MA0600	5	6	Arbor
25	AV51MA0500	5	6	Hook
26	AV51MA0601	5	6	Lever
27	AV51MA0400	5	6	Support
28	PG38MA0900	5	6	Plate
29	AV51MA1500	5	6	Leaf
30	AV51MA1301	1	1	Plate
31	AV51MA1302	1	1	Shim
32	AV51MA1300	4	5	Plate
33	AV51MA2030	1		Tube-2.5M L=688mm
	AV51MA2000		1	Tube-3.7M L=1888mm
34	AV51MA2100	1	1	Tube L=328mm
35	AV51MA1900	1	1	Tube L=1398mm
36	AV51MA2700	1	1	Plate
37	AV51MA3100	1	1	Ring

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N.	Code	QTY	Denomination
1	AV51GR0300	1	Cover
2	AV51GR1600	1	Plate
3	AV51GR1700	1	Anchor
4	AV51GR1800	2	Pinion 33T
5	AV51GR1801	4	Connetor shaft
6	AV51GR1900	2	Sleeve
7	AV51GR2200	1	Shaft
8	ZS060615	4	6x15 Tab
9	AV51GR2100	1	Rack
10	AV51GR2000	1	Clip cutter
11	AV51GR3110	1	Shelf
12	AV51CH1701	1	Arbor
13	AV51GR2700	1	Lower clamp
14	AV51GR2600	1	Plate
15	AV51GR1701	1	Anchor
16	AV51GR2800	1	Transmission rod
17	AV51GR0100	1	Anchor R
18	A12131000	2	Flow regulator JSC 8-03
19	AV51GR0200	1	Anchor L
20	AV51GR0400	1	Plate
21	AV51GR0600	1	Anchor
22	AV51GR0501	1	Sheel steel
23	AV51GR0500	1	Plate
24	AV51GR0901	1	Pushing stripe
25	AV51GR1001	1	Transmission rod
26	AV51GR0800	1	Spacer
27	AV51GR0701	1	Plate
28	AV51GR1101	1	Rack
29	AV51GR1201	1	Rack
30	AV51GR2400	1	Plate
31	AV51GR2300	2	Bearing
32	AV51GR2500	2	Shim
33	AV51GR1500	1	Shaft
34	AV51GR1300	2	Support
35	AV51GR1400	1	Lever
36	AV51GR3500	1	Anchor
37	AV51GR3000	1	Transmission rod
38	AV51GR2900	1	Anchor
39	AV51GR3140	1	Plate
40	AV51GR4004	1	Plate

N.	Code	QTY	Denomination
41	AV51GR4005	1	Shock absorber
42	AV51GR4010	1	Shock absorber
43	A11130900	1	Cylinder SDA 80x100
44	AV51GR4900	1	Plate
45	AV51GR4100	1	Cover
46	AV51GR1802	2	Pinion 42T

CLAMPING

Tab. 020 6

PATRIOT

COVER 25
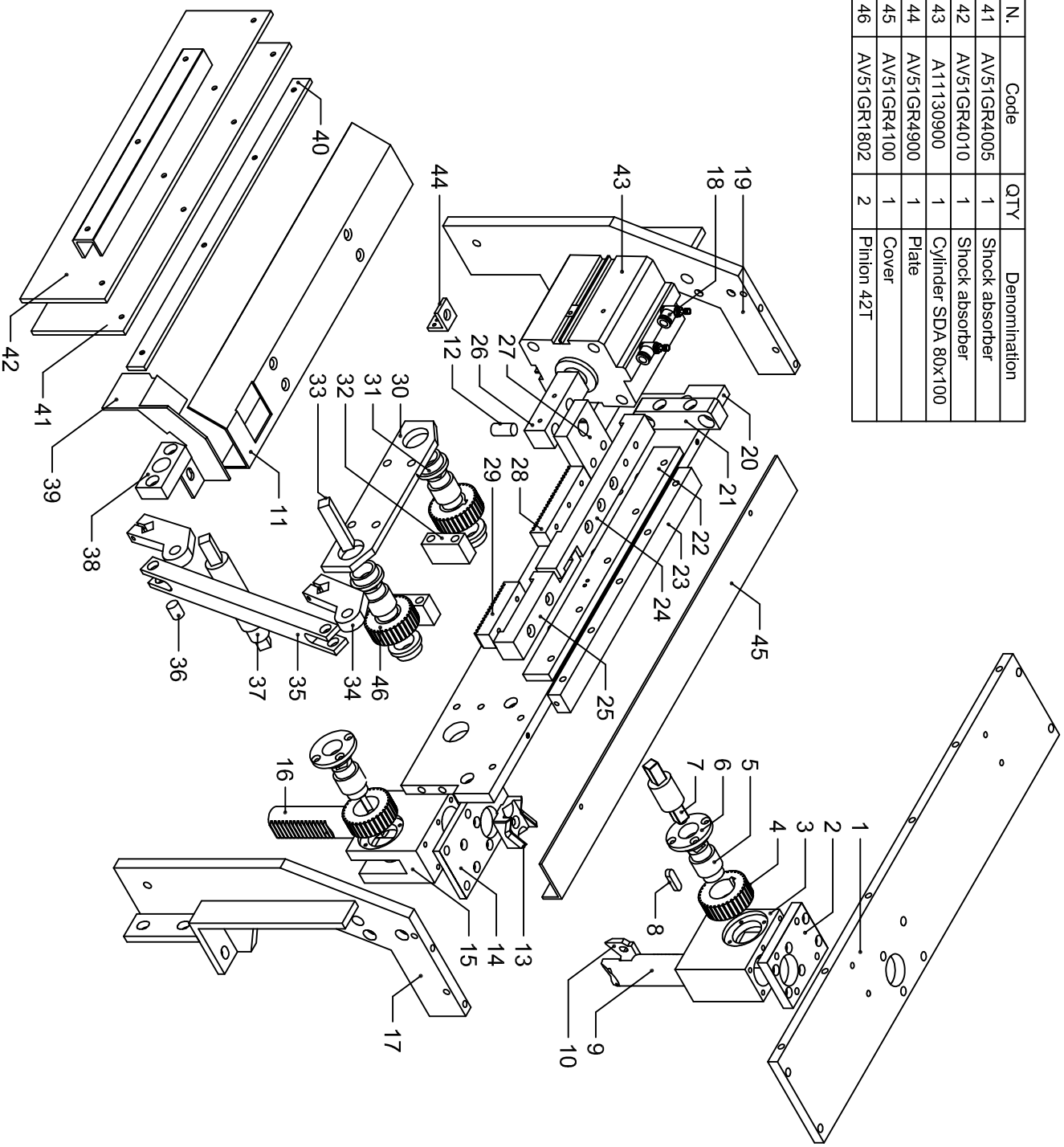
N.	Code	QTY	Denomination
1	AV51BA2201	4	Plate
2	AV51BA4025	1	Cover L=2996mm
3	AV51BA2125	1	Cover L=2992mm
4	AV51BA1700	1	Plate
5	AV51BA2300	1	Oil box
6	AV51BA1825	1	Bowl L=3031mm
6	AV51BA18251	1	Bowl(XL) L=3031mm
7	AV51BA1600	1	Plate
8	AV51BA1925	1	Cover L=2996mm
9	AV51BA3325	1	Plate L=2970mm
10	AV51BA3810	2	Hood shock
11	AV51BA3400	1	Profile
12	J630110	1	Luminous indicator unit
13	AV51BA3700	1	Profile
14	AV51BA2103	1	Plexiglass window
15	AV51BA4100	2	Access Panel
16	AV51BA2104	2	Sound absorbing cotton
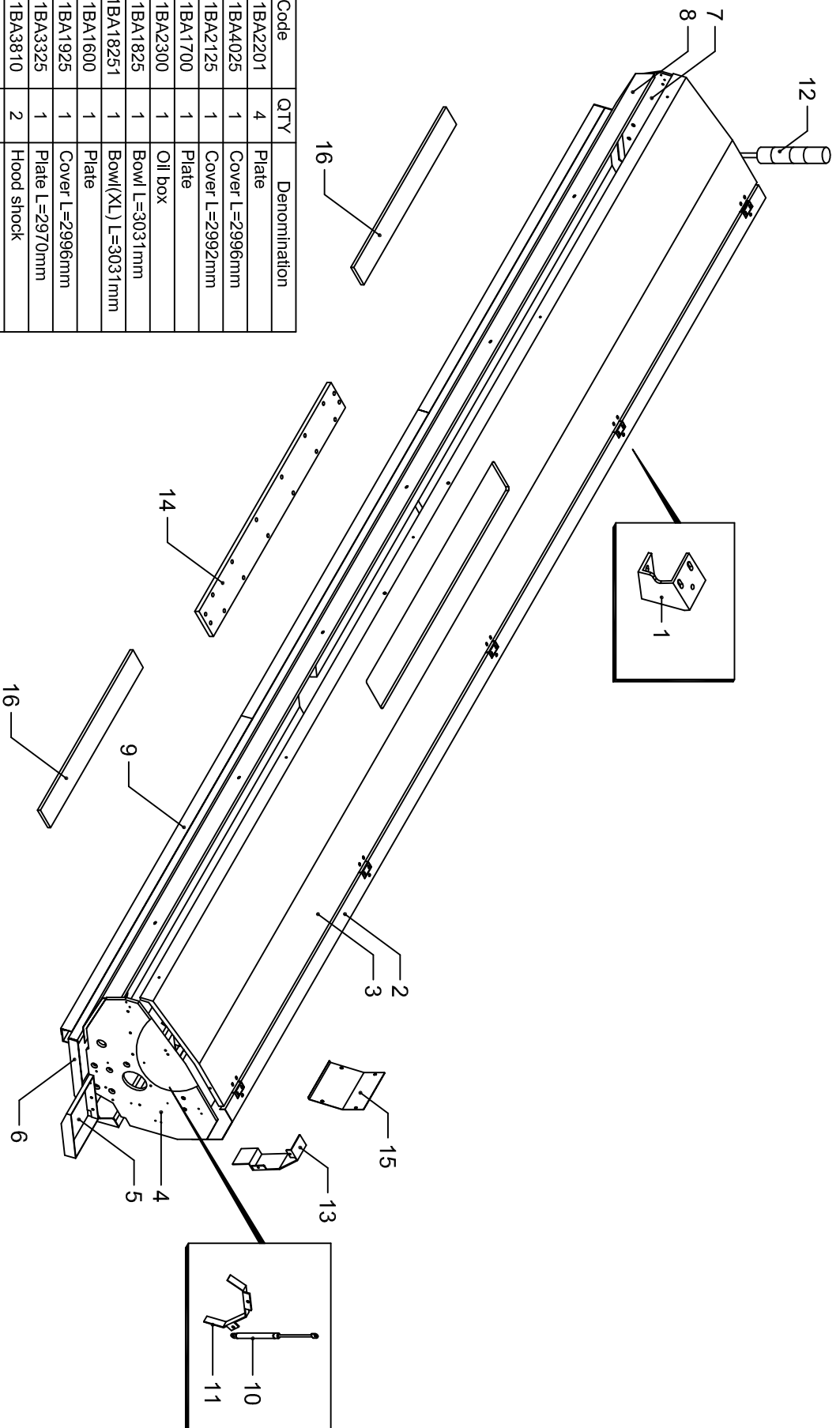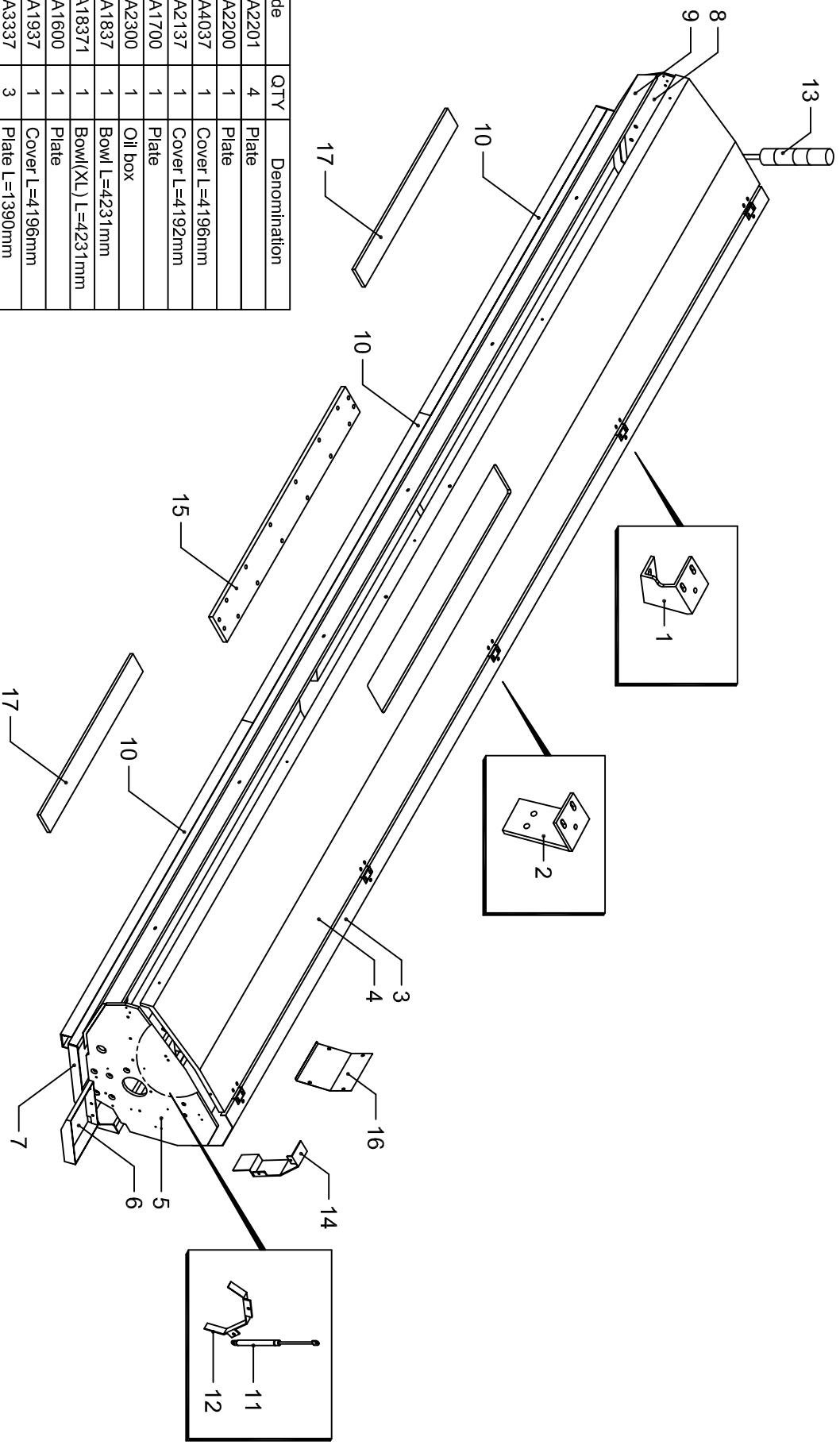
N.	Code	QTY	Denomination
1	AV51BA2201	4	Plate
2	AV51BA2200	1	Plate
3	AV51BA4037	1	Cover L=4196mm
4	AV51BA2137	1	Cover L=4192mm
5	AV51BA1700	1	Plate
6	AV51BA2300	1	Oil box
7	AV51BA1837	1	Bowl L=4231mm
7	AV51BA18371	1	Bowl(XL) L=4231mm
8	AV51BA1600	1	Plate
9	AV51BA1937	1	Cover L=4196mm
10	AV51BA3337	3	Plate L=1390mm
11	AV51BA3810	2	Hood shock
12	AV51BA3400	1	Profile
13	J630110	1	Luminous indicator unit
14	AV51BA3700	1	Profile
15	AV51BA2103	1	Plexiglass window
16	AV51BA4100	2	Access Panel
17	AV51BA2104	2	Sound absorbing cotton

COVER 37

25 37 BAR FEEDER MODEL ACCORDING TO THEMAX.

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PATRIOT

BASES AND BEAM 37

N.	Code	QTY	Denomination
1	AV51CH0137	1	Beam L=4200
2	AV51BA0701	1	Cover
3	AV51BA0100	1	Base
4	AV51BA0101	2	Base
5	AV51BA0410	4	Support
6	AV51BA0300	1	Panel
7	AV51BA0200	1	Door
8	AV51BA0500	1	Door
9	AV51BA0500	1	Base
10	AV51BA0501	1	Door
11	AV51BA0600	2	Support
12	AV51BA0702	1	Cover
13	AV51BA0700	2	Support
14	AV51BA2800	1	Key-board
15	AV51BA2500	1	Housing
16	AV51BA2600	2	Support
17	AV51BA2900	2	Support
18	AV51BA3301	2	Bushing
19	AV51BA3300	2	Eyebolt
20	AV51BA0800	14	Column
21	AV51BA0900	28	Washer
22	AV51BA1000	28	Washer
23	AV51BA1400	8	Screw
24	AV51BA1500	4	Tie rod
25	AV51BA1200	4	Plate
26	AV51BA1100	4	Plate
27	AV51BA3000	4	Plug
28	AV51BA3100	4	Plug
28	AB110300	1	Joint
29	A12110300	1	Pneumatically-actuated electrical microswitch PM-20
30	A15140200	1	Connection 1/4"
31	A13120500	1	Connection 1/4"xø8
32	A12140400	1	Pressure switch
33	A17110300	1	90° Connection 1/4"x1/4"

N.	Code	QTY	Denomination
1	AV51CH0125	1	Beam L=3000
2	AV51BA0701	1	Cover
3	AV51BA0100	1	Base
4	AV51BA0101	2	Base
5	AV51BA0410	4	Support
6	AV51BA0300	1	Panel
7	AV51BA0200	1	Door
8	AV51BA0510	1	Base
9	AV51BA0600	2	Support
10	AV51BA0700	2	Support
11	AV51BA2800	1	Key-board
12	AV51BA2500	1	Housing
13	AV51BA2700	1	Support
14	AV51BA2600	1	Support
15	AV51BA2900	2	Support
16	AV51BA3301	2	Bushing
17	AV51BA3300	2	Eyebolt
18	AV51BA0800	14	Column
19	AV51BA0900	28	Washer
20	AV51BA1000	28	Washer
21	AV51BA1400	8	Screw
22	AV51BA1500	4	Tie rod
23	AV51BA1200	4	Plate
24	AV51BA1100	4	Plate
25	AV51BA3000	4	Plug
26	AV51BA3100	4	Plug
27	AB110300	1	Joint
28	A12110300	1	Pneumatically-actuated electrical microswitch PM-20
29	A15140200	1	Connection 1/4"
30	A13120500	1	Connection 1/4"xø8
31	A12140400	1	Pressure switch
32	A17110300	1	90° Connection 1/4"x1/4"

BASES AND BEAM 25

25 37 BAR FEEDER MODEL ACCORDING TO THEMAX.

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N.	Code	QTY	Denomination
1	AV51CH0137	1	Beam L=4200
2	AV51BA0120	1	Base
3	AV51BA0410	4	Support
4	AV51BA0300	1	Panel
5	AV51BA0200	1	Door
6	AV51BA0520	1	Door
7	AV51BA0501	1	Base
8	AV51BA2800	1	Door
9	AV51BA2500	1	Key-board
10	AV51BA2600	2	Housing
11	AV51BA2900	2	Support
12	AV51BA3301	2	Support
13	AV51BA3300	2	Bushing
14	AV51BA0800	14	Eyebolt
15	AV51BA0900	28	Column
16	AV51BA1000	28	Washer
17	AV51BA1400	8	Washer
18	AV51BA1500	4	Screw
19	AV51BA1200	4	Tie rod
20	AV51BA1100	4	Plate
21	AV51BA3000	4	Plate
22	AV51BA3100	4	Plug
23	AB110300	1	Plug
24	A12110300	1	Joint
25	A15140200	1	Pneumatically-actuated electrical microswitch PM-20
26	A13120500	1	Connection 1/4"
27	A12140400	1	Connection 1/4"x⌀8
28	A17110300	1	Pressure switch
			90° Connection 1/4"x1/4"

PATRIOT

BASES AND BEAM (TRACKING SYSTEM) 25

25 37 BAR FEEDER MODEL ACCORDING TO THEMAX.

Tab: 044 2

N.	Code	QTY	Denomination
1	AV51CH0125	1	Beam L=3000
2	AV51BA0120	1	Base
3	AV51BA0101	2	Base
4	AV51BA0410	4	Support
5	AV51BA0300	1	Panel
6	AV51BA0200	1	Door
7	AV51BA0550	1	Base
8	AV51BA2800	1	Key-board
9	AV51BA2500	1	Housing
10	AV51BA2700	1	Support
11	AV51BA2600	1	Support
12	AV51BA2900	2	Support
13	AV51BA3301	2	Bushing
14	AV51BA3300	2	Eyebolt
15	AV51BA0800	14	Column
16	AV51BA0900	28	Washer
17	AV51BA1000	28	Washer
18	AV51BA1400	8	Screw
19	AV51BA1500	4	Tie rod
20	AV51BA1200	4	Plate
21	AV51BA1100	4	Plate
22	AV51BA3000	4	Plug
23	AV51BA3100	4	Plug
24	AB110300	1	Joint
25	A12110300	1	Pneumatically-actuated electrical microswitch PM-20
26	A15140200	1	Connection 1/4"
27	A13120500	1	Connection 1/4"x⌀8
28	A12140400	1	Pressure switch
29	A17110300	1	90° Connection 1/4"x1/4"

N.	Code	QTY	Denomination
1	AV51MZ0201	1	Fixing plate
2	AV51MZ1600	1	Positioning plate
3	AV51MZ0400	1	Plate
4	AV51MZ0500	1	Plate
5	AV51MZ0600	1	Arbor
6	AV51MZ0700	2	Ring
7	AV51MZ0800	1	Block
8	AV51MZ000B	1	Bolt
9	AV51MZ1000	1	Anchor
10	AV51BA0810	1	Bushing
11	B6207ZZ	2	Bearing
12	P3520I200	1	Handle 1160-M14-250
13	BSF2815	2	Bearing SF-2815
14	AV51MZ1500	1	Fixing plate
15	AV51MZ1400	1	Positioning plate
16	ZS0112300	2	Screw bolt
17	J310409	1	Microswitch TZ-7311
18	J310419	2	Microswitch V-15-1A5
19	ADP77981O026	1	Support
20	ADP77981O027	1	Support
21	AV51MA3100	2	Ring
22	ADP77981O028	1	Support
23	AV51MZ004A	1	Axial tracking system

BACK TRACKING SYSTEM 37

N.	Code	QTY	Denomination
1	AV51MZ0201	1	Fixing plate
2	AV51MZ1600	1	Positioning plate
3	AV51MZ0400	1	Plate
4	AV51MZ0500	1	Plate
5	AV51MZ0600	1	Arbor
6	AV51MZ0700	2	Ring
7	AV51MZ0800	1	Block
8	AV51MZ000B	1	Bolt
9	AV51MZ1000	1	Anchor
10	AV51BA0810	1	Bushing
11	B6207ZZ	2	Bearing
12	P3520120O	1	Handle 1160-M14-250
13	BSF2815	2	Bearing SF-2815
14	AV51MZ1500	1	Fixing plate
15	AV51MZ1400	1	Positioning plate
16	ZS0112300	2	Screw bolt
17	AV51MZ001A	1	Axial tracking system
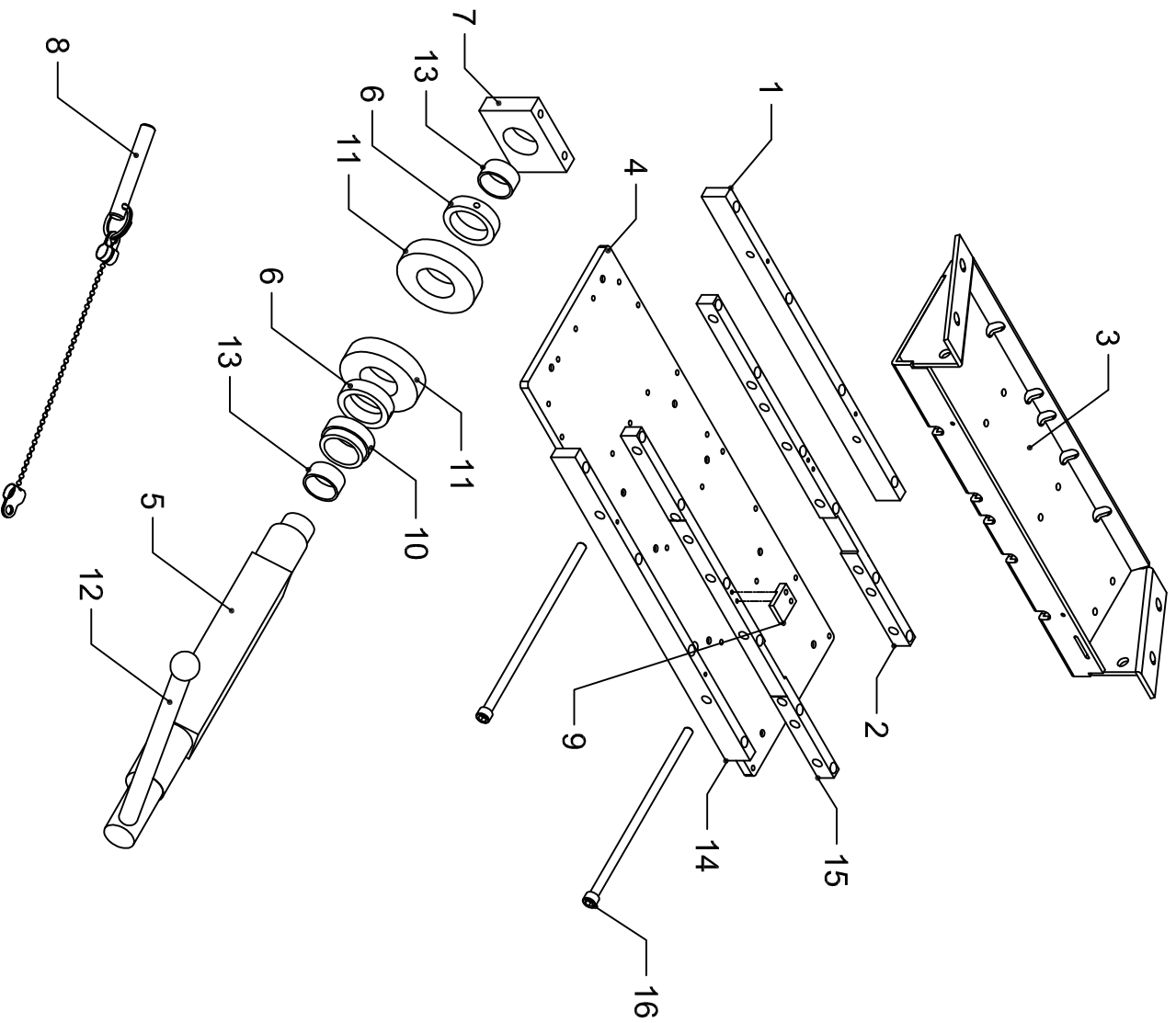
N.	Code	QTY	Denomination
1	AV51MZ1600	1	Positioning plate
2	AV51MZ2900	1	Fixing plate
3	AV51MZ0440	1	Plate
4	AV51MZ0500	1	Plate
5	AV51MZ0600	1	Arbor
6	AV51MZ0700	2	Ring
7	AV51MZ0800	1	Block
8	AV51MZ000B	1	Bolt
9	AV51MZ1400	1	Positioning plate
10	AV51BA0810	1	Bushing
11	B627ZZ	2	Bearing
12	P3520120O	1	Handle 1160-M14-250
13	AV51MZ1000	1	Anchor
14	BSF2815	2	Bearing SF-2815
15	AV51MZ2800	1	Fixing plate
16	ZS0112300	2	Screw bolt
17	AV51MZ000C	1	Back tracking system

BACK TRACKING SYSTEM 25

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PATRIOT

FEED MOTOR DRIVE

N.	Code	QTY 25	QTY 37	Denomination
1	J221202	1		Motor HF-SP102
2	AV51DR0500	1		Whorl pole 28T
3	AV51DR0401	1		Support
4	AV51DR0300	6		Pillar
5	AV51DR0100	1		Worm gear 80T
6	AV51DR0200	1		Whorl pole 19T
7	B6005ZZ	2		Bearing
8	B6907ZZ	1		Bearing
9	AV51DR0400	1		Support
10	AV51DR0600	1		Support
11	AV51DR1401	1		Sensor bracket
12	AV51DR1402	1		Bracket
13	AV51DR1300	1		Plate
14	AV51DR1200	1		Chain adjustable block
15	AV51DR1100	1		Chain guide-3.7M L=1094
16	AV51DR1103	1		Chain guide-2.5M L=2830
17	AV51DR1101	1		Chain guide-3.7M L=2925
	AV51DR1000	1		Chain guide-3.7M L=2980
18	AV51DR1003		1	Chain guide-2.5M L=2996
	AV51DR1001		1	Chain guide-3.7M L=1215
19	AV51DR0700	1		Sprocket 39T
20	AV51DR0900	1		Spacer
21	AV51DR0801	1		Support
22	B6003ZZ	2		Bearing
23	AV51DR0810	1		Support
24	AV51DR1601	1	1	Chain-2.5M L=617P
	AV51DR1700			Chain-3.7M L=875P
25	AV51DR1800	2		Chain link 3/8"
26	A12131000	2		Adjustable valve JSC 8-03
27	A11131000	1		Cylinder SDAS 80x45
28	A12140501	1		Magnetic sensor LY-67A-5M
29	AV51GR4200	1		Slide block
30	AV51GR4500	1		CAM
31	AV51GR4700	1		Pin
32	AV51GR0800	1		Connector
33	AV51CH1701	1		Pillar
34	AV51GR4600	1		Extensive block
35	AV51GR4300	1		Push block
36	AV51GR4400	1		OAM block
37	AV51GR3202	1		Guide block 2

N.	Code	QTY 25	QTY 37	Denomination
38	AV51GR3201	1		Guide block
39	AV51GR5000	1		Spring
40	AV51MA3301	1		Screw
41	AV51MA3302	1		Handle
42	AV51GR4800		1	Push block plwnger

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CUTTING DEVICE

N.	Code	QTY	Denomination
1	AV51FA0500	1	Cover
2	G92120600	1	Spring
3	AV51FA0200	1	Short feed door
4	A11130700	1	Cylinder SDA12x15
5	AV51FA0300	1	Flag
6	J310313	1	Microswitch
7	AV51FA0400	1	Bracket
8	AV51FA0100	1	Housing
9	A12130300	2	Flow regulator JSC 6-M5
10	AV51FA000A	1	Cutting assembly

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PATRIOT

GUIDE CHANNEL SUPPORT 25 L

N.	Code	QTY	Denomination
1	AV51CH0701	1	Plate
2	AV51CH0600	7	Support
3	AV51CH1525	1	Shaft L=2765
4	AV51CH0900	12	Support
5	AV51CH0700	11	Support
6	AV51CH0800	21	Collet
7	A11130600	1	Cylinder SDAS 50x100B
8	BPHS18	1	Joint
9	AV51CH1701	2	Arbor
10	AV51CH1700	2	Support
11	AV51CH1900	1	Support
12	AV51CH1800	1	Cylinder anchor
13	AV51CH0500	2	Anchor
14	AV51CH0501	2	Anchor
15	AV51CH0300	1	Aluminum batten
16	AV51CH0200	1	Aluminum batten
17	AV51CH0400	2	Aluminum batten
18	AV51CH4100	3	Stopper holder
19	AV51CH4000	3	Stpper
20	AV51CH3700	2	Fixing ring
21	A121405 01	2	Sensor switch LY-67A-5M
22	AV51CH3300	2	Fixed ring

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N.	Code	QTY	Denomination
1	AV51CH0701	1	Plate
2	AV51CH0600	7	Support
3	AV51CH1525	1	Shaft L=2765
4	AV51CH0900	12	Support
5	AV51CH0700	11	Support
6	AV51CH0800	20	Collet
7	A11130600	1	Cylinder SDAS 50x100B
8	BPHS18	1	Joint
9	AV51CH1701	2	Arbor
10	AV51CH1700	2	Support
11	AV51CH1900	1	Support
12	AV51CH1800	1	Cylinder anchor
13	AV51CH0500	2	Anchor
14	AV51CH0501	2	Anchor
15	AV51CH0300	2	Aluminum batten
16	AV51CH0200	1	Aluminum batten
17	AV51CH4100	3	Stopper holder
18	AV51CH4000	3	Stpper
19	AV51CH3700	2	Fixing ring
20	A121405O1	2	Sensor switch LY-67A-5M
21	AV51CH3300	2	Fixed ring

PATRIOT

GUIDE CHANNEL SUPPORT 25 LL

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GUIDE CHANNEL SUPPORT 37 L

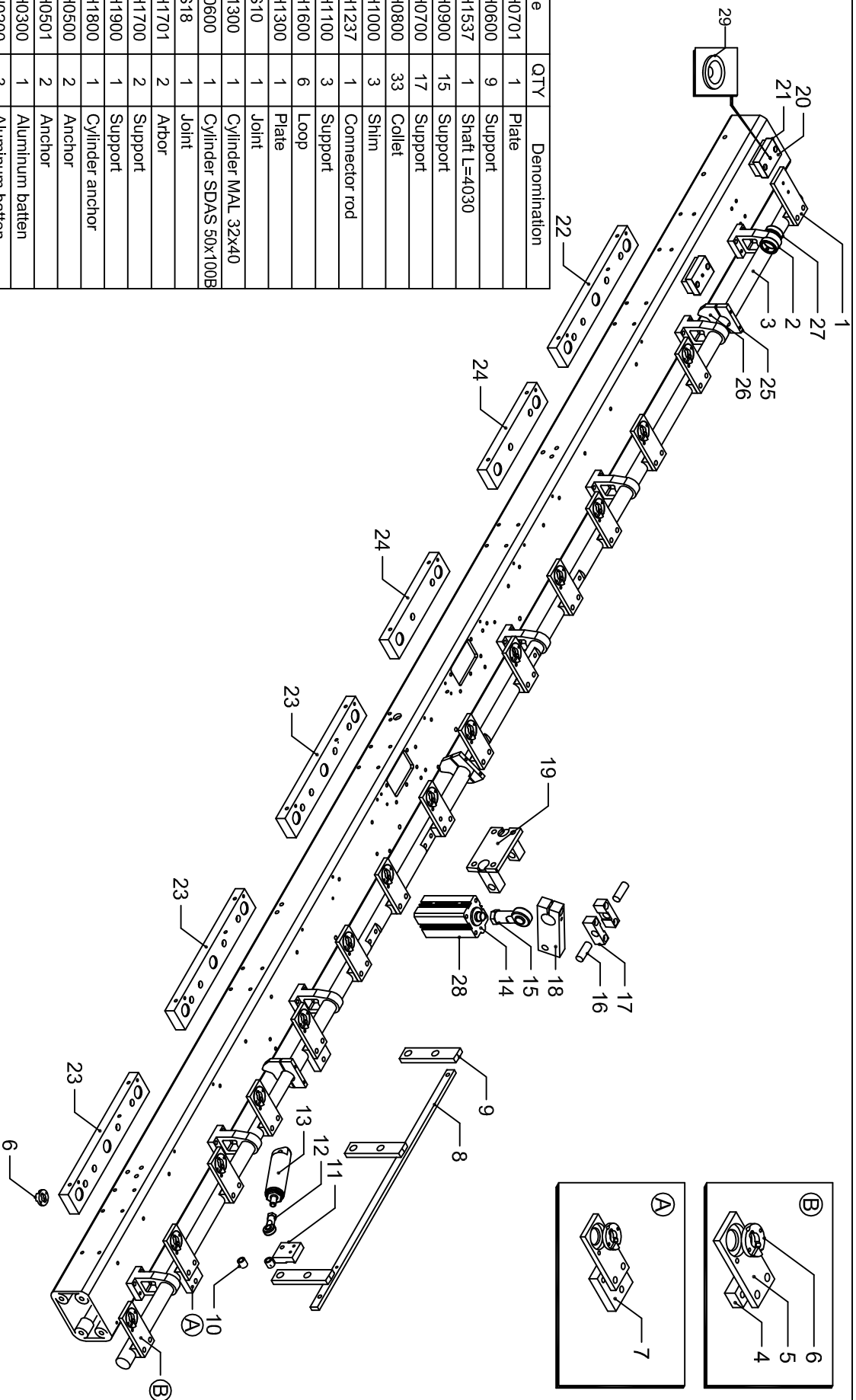| N.	Code	QTY	Denomination
1	AV51CH0701	1	Plate
2	AV51CH0600	9	Support
3	AV51CH1537	1	Shaft L=4030
4	AV51CH0900	15	Support
5	AV51CH0700	17	Support
6	AV51CH0800	33	Collet
7	AV51CH1000	3	Shim
8	AV51CH1237	1	Connector rod
9	AV51CH1100	3	Support
10	AV51CH1600	6	Loop
11	AV51CH1300	1	Plate
12	BPHS10	1	Joint
13	A11111300	1	Cylinder MAL 32x40
14	A11130600	1	Cylinder SDAS 50x100B
15	BPHS18	1	Joint
16	AV51CH1701	2	Arbor
17	AV51CH1700	2	Support
18	AV51CH1900	1	Support
19	AV51CH1800	1	Cylinder anchor
20	AV51CH0500	2	Anchor
21	AV51CH0501	2	Anchor
22	AV51CH0300	1	Aluminum batten
23	AV51CH0200	3	Aluminum batten
24	AV51CH0400	2	Aluminum batten
25	AV51CH4100	3	Stopper holder
26	AV51CH4000	3	Stpper
27	AV51CH3700	2	Fixing ring
28	A12140501	2	Sensor switch LY-67A-5M
29	AV51CH3300	2	Fixed ring

L LL | BAR FEEDER PUSHER REFERENCE ABBREVIATION (L=LONG,LL=EXTRA LONG)
25 37 | BAR FEEDER MODEL ACCORDING TO THEMAX.

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PATRIOT

GUIDE CHANNEL SUPPORT 37 LL

N.	Code	QTY	Denomination
1	AV51CH0701	1	Plate
2	AV51CH0600	9	Support
3	AV51CH1537	1	Shaft L=4030
4	AV51CH0900	15	Support
5	AV51CH0700	17	Support
6	AV51CH0800	32	Collet
7	AV51CH1000	3	Shim
8	AV51CH1237	1	Connector rod
9	AV51CH1100	3	Support
10	AV51CH1600	6	Loop
11	AV51CH1300	1	Plate
12	BPHS10	1	Joint
13	A11111300	1	Cylinder anchor
14	A11130600	1	Cylinder SDAS 50x100B
15	BPHS18	1	Joint
16	AV51CH1701	2	Arbor
17	AV51CH1700	2	Support
18	AV51CH1900	1	Support
19	AV51CH1800	1	Cylinder anchor
20	AV51CH0500	2	Anchor
21	AV51CH0501	2	Anchor
22	AV51CH0300	3	Aluminum batten
23	AV51CH0200	3	Aluminum batten
24	AV51CH4100	3	Stopper holder
25	AV51CH4000	3	Stpper
26	AV51CH3700	2	Fixing ring
27	A121405O1	2	Sensor switch LY-67A-5M
28	AV51CH3300	2	Fixed ring

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PATRIOT

GUIDE CHANNEL [25]

N.	Code	QTY L	LL	Denomination
1	AV51CH3600	1	1	Support
2	AV51CH2701	1	1	Support
3	AV51CH3200	11	11	Screw
4	AV51CH3100	10	9	Screw
5	AV51CH3900	21	20	Spacer
6	BB25	42	40	Bellerille washer
7	AV51CH3800	21	20	Bushing
8	ZS080425	21	20	Pin
9	AV__CH2700	1	1	Upper guide channel
10	AV__CH2600	1		Upper guide channel
11	AV__CH2500	1	2	Upper guide channel
12	AV__CH2400	1	1	Lower guide channel
13	AV__CH2200	1	1	Lower guide channel
14	AV__CH2100	2		Lower guide channel
15	AV__CH2000	1	2	Lower guide channel
16	AV__CH2900		1	Upper guide channel
17	AV__CH3400	1	1	Support
18	AV__CH3500	1	1	Support
19	AV__CH2501	1		Upper guide channel
20	AV51CH4200	10	12	Arbor (12~37 Type)
21	AV__CH0025-L	1		Guide channel
22	AV__CH0025-LL		1	Guide channel
23	AV51CH310A	10	9	Build-in fitting set
24	AV51CH320A	11	11	Build-in fitting set

NOMINAL DIAMETER D.

φ 12 16 20 25 27 32 35 37 38 42 45 51
13 17 21 26 28 33 36 38 39 43 46 52

[L] [LL] BAR FEEDER PUSHER REFERENCE ABBREVIATION (L=LONG, LL=EXTRA LONG)
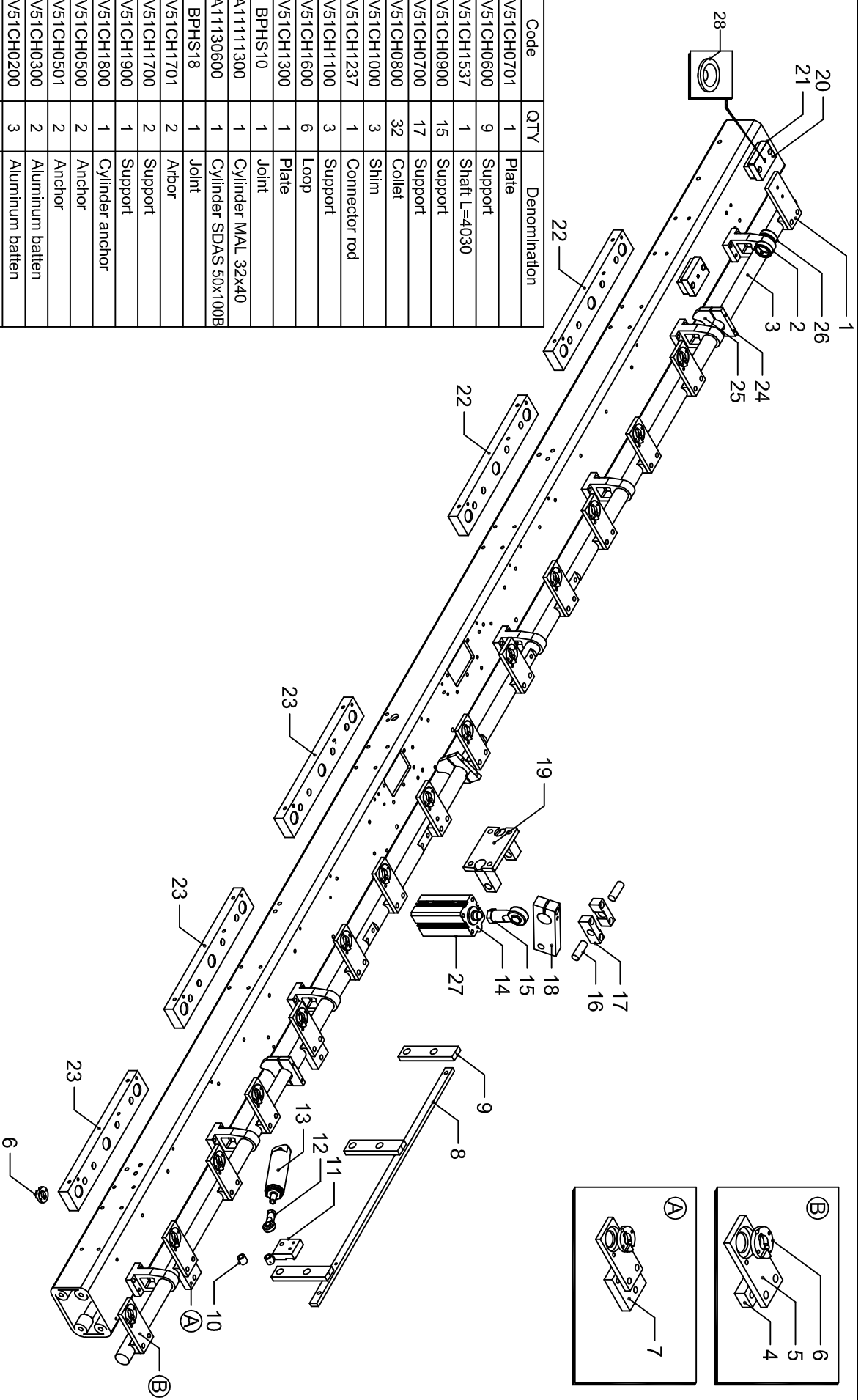[25] [37] BAR FEEDER MODEL ACCORDING TO THEMAX.

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PATRIOT

GUIDE CHANNEL 37

N.	Code	QTY				Denomination
		L	LL	XL		
1	AV51CH3600	1	1	1		Support
2	AV51CH2701	1	1	1		Support
3	AV51CH3200	17	17	17		Screw
4	AV51CH3100	16	15	18		Screw
5	AV51CH3900	33	32	35		Spacer
6	BB25	66	64	70		Belleville washer
7	AV51CH3800	33	32	35		Bushing
8	ZS080425	33	32	35		Pin
9	AV__CH2700	1	1	1		Upper guide channel
10	AV__CH2600	1				Upper guide channel
11	AV__CH2500	2	3	3		Upper guide channel
12	AV__CH2400	1	1	1		Lower guide channel
13	AV__CH2200	1	1	1		Lower guide channel
14	AV__CH2100	2				Lower guide channel
15	AV__CH2000	2	3	3		Lower guide channel
16	AV__CH2800	1	1	1		Upper guide channel
17	AV__CH2900	1	1	1		Upper guide channel
18	AV__CH2300	1	1	2		Lower guide channel
19	AV__CH3400	1	1	1		Support
20	AV__CH3500	1	1	1		Support
21	AV__CH2501	1				Upper guide channel
22	AV51CH4200	16	18	20		Arbor (12~37 Type)
23	AV__CH0037-L	1				Lower guide channel
24	AV__CH0037-LL		1			Lower guide channel
25	AV__CH0037-XL			1		Lower guide channel
26	AV51CH310A	16	15	18		Build-in fitting set
27	AV51CH320A	17	17	17		Build-in fitting set

NOMINAL DIAMETER D.
→ 12 16 20 25 27 32 35 37 38 42 45 51
φ 13 17 21 26 28 33 36 38 39 43 46 52

L LL BAR FEEDER PUSHER REFERENCE ABBREVIATION (L=LONG,LL=EXTRA LONG)
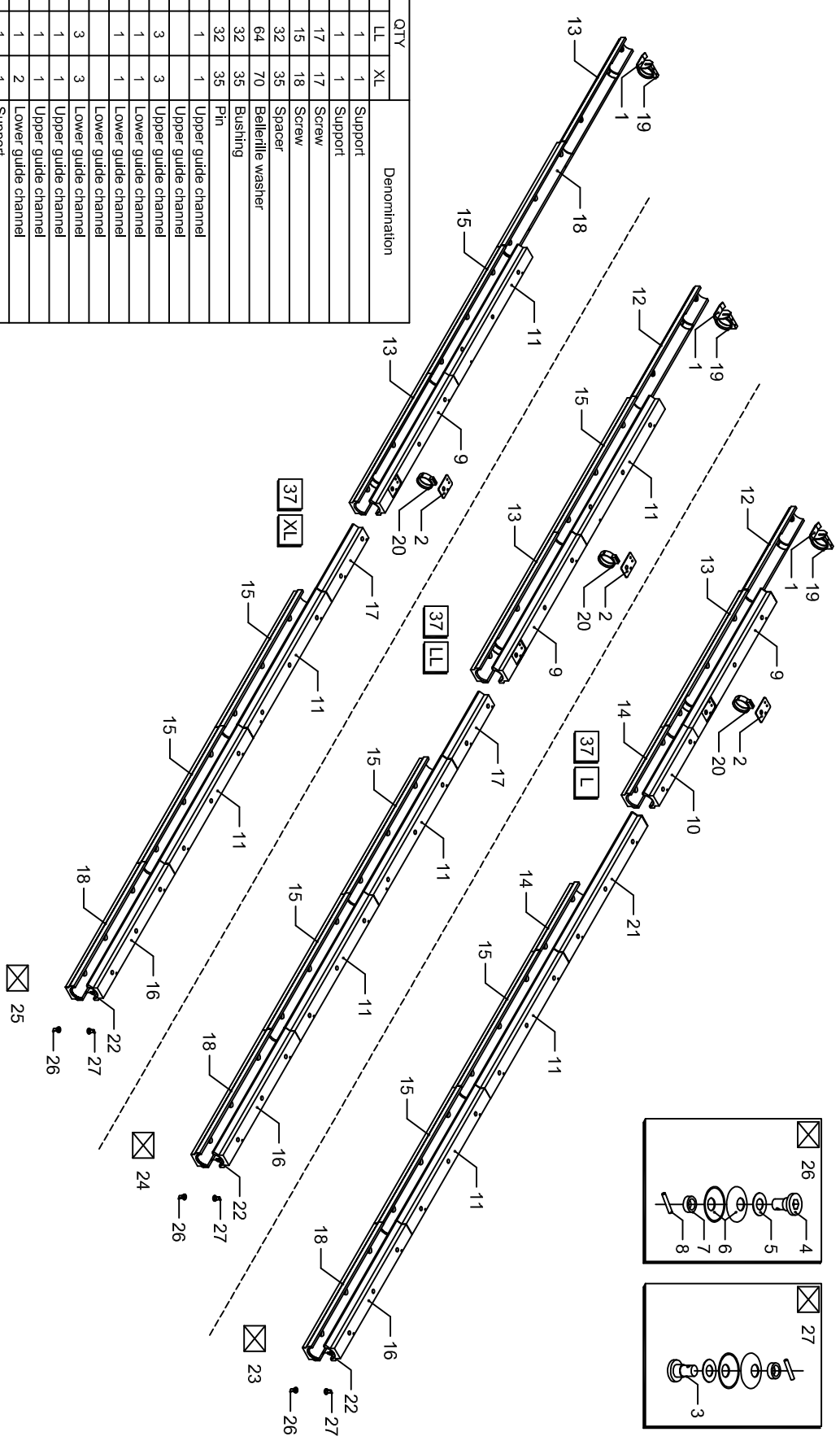25 37 BAR FEEDER MODEL ACCORDING TO THEMAX.

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PATRIOT   GUIDE CHANNEL 37

N.	Code	QTY L	LL	Denomination
1	AV51CH3600	1		Support
2	AV51CH3200	18	18	Screw
3	AV51CH3100	17	16	Screw
4	AV51CH3900	35	34	Spacer
5	BB25	70	68	Bellerille washer
6	AV51CH3800	35	34	Bushing
7	ZS080425	35	34	Pin
8	AV55CH2730	1	1	Upper guide channel
9	AV55CH2720	1	1	Upper guide channel
10	AV55CH2600	1		Upper guide channel
11	AV55CH2500	2	3	Upper guide channel
12	AV55CH2400	1	1	Lower guide channel
13	AV55CH2230	1	1	Lower guide channel
14	AV55CH2220	1	1	Lower guide channel
15	AV55CH2000	2	3	Lower guide channel
16	AV55CH2100	2		Upper guide channel
17	AV55CH2800	1	1	Upper guide channel
18	AV55CH2300	1	1	Lower guide channel
19	AV55CH3400	2	2	Support
20	AV55CH2900		1	Upper guide channel
21	AV55CH2501	1		Upper guide channel
22	AV55CH0037-LL		1	Guide channel
23	AV55CH0037-L	1		Guide channel
24	AV51CH310A	17	16	Build-in fitting set
25	AV51CH320A	18	18	Build-in fitting set
26	AV55CH0300	1	1	Aluminum batten
27	AV55CH0700	1	1	Support
28	AV51CH0810	2	2	Retaining ring

L 25
LL 37

BAR FEEDER PUSHER REFERENCE ABBREVIATION (L=LONG, LL=EXTRA LONG)
BAR FEEDER MODEL ACCORDING TO THEMAX.

Tab. 083 2

PATRIOT

BAR PUSHER DEVICE

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$\llcorner 12 \lrcorner \div \llcorner 27 \lrcorner$

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$\llcorner 32 \lrcorner \div \llcorner 45 \lrcorner$

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$\llcorner 12 \lrcorner \div \llcorner 27 \lrcorner$

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L

L		
LL		
XL		

L 1223 - 1258

LL 1553 - 1588

XL 2093

L LL XL BAR FEEDER PUSHER REFERENCE ABBREVIATION (LL=LONG,LL=EXTRA LONG)

$\llcorner 12 \lrcorner \div \llcorner 51 \lrcorner$ RATED REFERENCE DIAMETER DEFINING THE BAR FEEDER EQUIPMENT.

Tab.
090
13

Main parts list

N.		Code	QTY	Denomination
1		AV51PB1002	1	Prefeed pusher flag
2		AV__PB0900	1	Prefeed pusher
		NOMINAL DIAMETER D.		12 16 20 25 27 32 35 37 38 42 45 51
				φ 12 16 20 25 27 32.5 35.5 37.5 38.5 42.5 45.5 51.5
3		AV16PB0300	1	Anchor 10 - 16
		AV20PB0300	1	Anchor 18 - 20
		AV51PB0300	1	Anchor 25 - 51
4		AV20PB0200	1	Flag 10 - 20
		AV51PB0200	1	Flag 25 - 51
5		AV__PB0100	1	Pusher
		NOMINAL DIAMETER D.		12 16 20 25 27 32 35 37 38 42 45 51
				φ 12 16 20 25 27 32 35 37 38 42 45 51
6	XL	AV__PB0530	1	Bar pusher L=540
		NOMINAL DIAMETER D.		12 16 20 25 27 32 35 37 38 42 45 51
				φ 12 16 20 25 27 32 35 37 38 42 45 51
7	L	AV51PB0400	1	Bar pusher φ50.8 L=1005 (51 Type)
	LL	AV51PB0500	1	Bar pusher φ50.8 L=1335 (51 Type)
8	L	AV__PB0400	1	Bar pusher L=642
	LL	AV__PB0500	1	Bar pusher L=972
	XL	AV__PB0500	1	Bar pusher L=972
		NOMINAL DIAMETER D.		12 16 20 25 27 32 35 38 42
				φ 12 16 20 25 27 32 35 38 42
9		AV__PB0600	1	Bar pusher
		NOMINAL DIAMETER D.		32 35 37 38 42 45
				φ 30 34 35 38 40 45
10		AV__PB0700	3	Spacer
		NOMINAL DIAMETER D.		32 35 37 38 42 45 51
				φ 27.4 30 32 35 40
11		AV__PB0800	4	Bronze ring
		NOMINAL DIAMETER D.		32 35 37 38 42 45 51
				φ 31.5 34 36 37 40 43 49
12		AV51PB1100	1	Connector rod (51 Type)
13		AV51PB1200	1	Piston (51 Type)

Secondary parts list

N.		Code	QTY	Denomination
14	L	AV__PB0400	1	Bar pusher
	LL	AV__PB0500	1	Bar pusher
	XL	AV__PB0500	1	Bar pusher
		NOMINAL DIAMETER D.		12 16 20 25 27
				φ 12 16 20 25.2 27
15		AV__PB0010-_	1	Bar pusher device
		TYPE.		L [L] LL [LL] XL [XL]
		NOMINAL DIAMETER D.		12 16 20 25 27 32 35 36 37 38 42 45 51
				φ 12 16 20 25 27 32 34.5 36 37 38 41.5 44.3 51

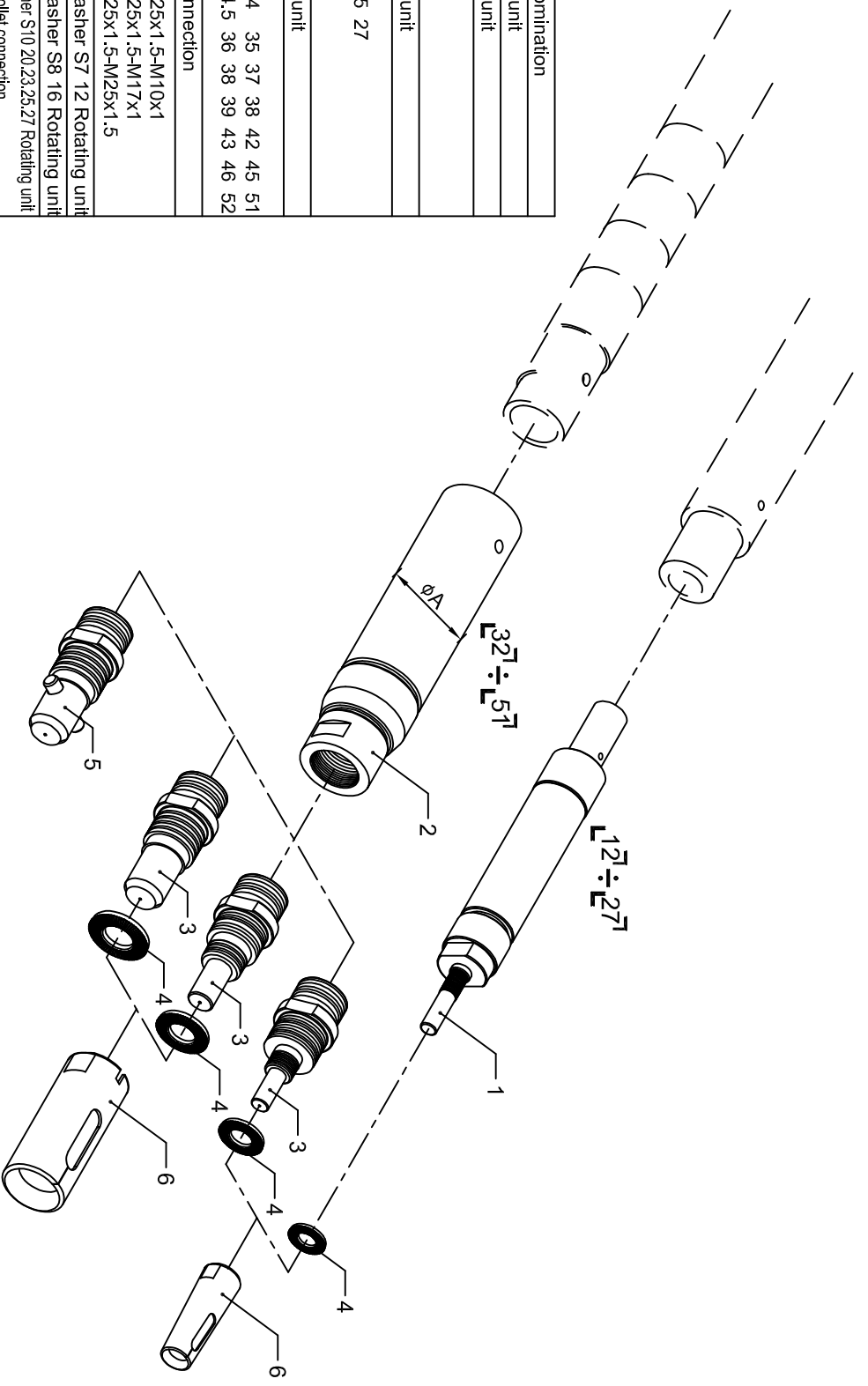[L] [LL] [XL] BAR FEEDER PUSHER REFERENCE ABBREVIATION (L=LONG, LL=EXTRA LONG)

12÷51 RATED REFERENCE DIAMETER DEFINING THE BAR FEEDER EQUIPMENT.

ROTATING UNIT

N.	Code	QTY	Denomination
1	IE_0712000	1	Rotating unit
1	IE_0816000	1	Rotating unit
	L : Left thread R : Right thread		
1	IE_10_000	1	Rotating unit
	L : Left thread R : Right thread		
	NOMINAL DIAMETER D → 20 25 27		
2	IE_25_000	1	Rotating unit
	L : Left thread R : Right thread		
	NOMINAL DIAMETER D → 32 34 35 37 38 42 45 51 φA 33 34.5 36 38 39 43 46 52		
3	IE_25520_	1	Collet connection
	L : Left thread R : Right thread		
	10 → M25x1.5-M10x1 17 → M25x1.5-M17x1 25 → M25x1.5-M25x1.5		
4	IEN0712001	1	Safety washer S7 12 Rotating unit
4	IEN0813001	1	Safety washer S8 16 Rotating unit
4	IEN1016001	1	Safety washer S10 20.23.25.27 Rotating unit M25-M10 Collet connection
4	IEN1724001	1	Safety washer S16 M25-M17 Collet connection
4	IEN2636001	1	Safety washer S24 M25-M25 Collet connection
5	IE_2552020	1	Grease nipple M25-φ20
6	IE_1020__	1	Bar collet
	L : Left thread R : Right thread		
	EX : φ12 → 120 ; φ22.5 → 225 Out diameter The metric thread : M7, M8, M10, M17, M25 L : Left thread R : Right thread		

⌐12÷51⌐ RATED REFERENCE DIAMETER DEFINING THE BAR FEEDER EQUIPMENT.

Tab. 091 8

PATRIOT

BAR PUSHER DEVICE

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φ

7

⌐51⌐
L
φ

8

⌐32⌐ ÷ ⌐45⌐
L
φ

13

⌐12⌐ ÷ ⌐27⌐
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L 1223 - 1258
LL 1553 - 1588
XL 2093

Tab. 092 9

N.	Code	QTY	Denomination
1	AV51PB1002	1	Prefeed pusher flag
2	AV__PB0900	1	Prefeed pusher
[L]	NOMINAL DIAMETER D.		ø 12 16 20 25 27 32 35 38 42 45 51 / 12 16 20 25 27 32.5 35.5 38.5 42.5 45.5 51.5
3	AV16PB0300	1	Anchor 10 - 16
	AV20PB0300	1	Anchor 18 - 20
	AV51PB0300	1	Anchor 25 - 51
4	AV20PB0210	1	Flag 10 - 20
	AV51PB0210	1	Flag 25 - 51
5	AV__PB0120	1	Pusher
[XL]	NOMINAL DIAMETER D.		ø 12 16 20 25 27 32 35 38 42 45 51
6	AV__PB0530	1	Bar pusher L=540
[L]	NOMINAL DIAMETER D.		ø 12 16 20 25 27 32 35 38 42 45 51
7	AV51PB0420	1	Bar pusher ø49 L=997 (51 Type)
	AV51PB0520	1	Bar pusher ø49 L=1327 (51 Type)
[L]	AV__PB0420	1	Bar pusher L=1061
[LL]	AV__PB0520	1	Bar pusher L=1391
8	AV__PB0520	1	Bar pusher L=1391
[LL]	NOMINAL DIAMETER D.		ø 32 34 35 38 42 45 / 30 33 36 40 43
9	AV__PB0700	3	Spacer
[XL]	NOMINAL DIAMETER D.		32 35 38 42 45 51 / ø 31.5 34 37 40 43 49
10	AV__PB0800	4	Bronze ring
	NOMINAL DIAMETER D.		32 34 35 38 42 45 51 / ø 32 34 34.5 38 41.5 44.3 51
11	AV51PB1100	1	Connector rod (51 Type)
12	AV51PB1200	1	Piston (51 Type)

N.	Code	QTY	Denomination
13	AV__PB0420	1	Bar pusher
[L]	AV__PB0520	1	Bar pusher
[LL]	AV__PB0520	1	Bar pusher
[XL]	NOMINAL DIAMETER D.		ø 10 15 18 23 24 / 12 16 20 25 27
14	AV__PB0020_	1	Bar pusher device
	TYPE:	L [L] LL [LL] XL [XL]	
	NOMINAL DIAMETER D.		ø 11 15 19 24 25 / 12 16 20 25 27 32 34 35 38 42 45 51 / 32 34 34.5 38 41.5 44.3 51

[L] [LL] [XL] BAR FEEDER PUSHER REFERENCE ABBREVIATION (L=LONG,LL=EXTRA LONG)
⌜12÷51⌝ RATED REFERENCE DIAMETER DEFINING THE BAR FEEDER EQUIPMENT.

PATRIOT

PUSHER EXTENSION KIT 540MM

Tab. 095 4

N.	Code	QTY	Denomination
1	AV51CH000J	1	Support
2	AV51CH000C	1	Aluminum batten
3	AV__CH2300	1	Lower guide channel
4	AV51CH0139	1	Beam
5	AV51BA1538	1	Shaft
6	AV51BA1640	1	Plate
7	AV51CH4900	1	Connector rod
8	AV51CH5100	2	Connector rod
9	AV51BA1650	1	Plate
10	AV51CH3700	2	Fixing ring
11	A17140700	1	L Fitting 3/8"Px1/2E"
12	AV51MA2201	1	Support
13	G8112000A	4	Hinge
14	AV51BA1901	3	Plate
15	AV51MA2300	1	Support
16	AV51BA1839	1	Bowl
17	AV51MA1920	1	Tube
18	AV51BA2201	2	Plate
19	AV51BA1950	1	Cover
20	AV51BA2050	1	Cover
21	AV51BA2150	1	Cover
22	AV51DR1603	1	Chain
23	AV51DR1801	2	Chain link
24	G81121000	2	Rubber mounting
25	AV51GR4900	1	Plate
26	A16120400	2	5/8" Hose clamp
27	AV51BA6200	1	Plate
28	AV51XL000A	1	Pusher extension kit

A15110802 2.5M

PATRIOT

FIRST ANTI-VIBRATION DEVICE AND FIXED FRONT NOSE

N.	Code	QTY	Denomination
1	G53120900	1	Screw
2	AV51BU0410	1	Plate
3	A12130800	2	Connection
4	A11131800	1	Cylinderr SDA 50x30
5	AV51BU0900	1	Support
6	AV51BU1600	2	Bushing
7	AV51BU0810	1	Ring
8	AV51BU0310	2	Slide
9	BIRT1220	2	Bearing
10	AV51BU0100	1	Support
11	BCB852010	1	Bearing
12	AV51BU0220	1	Case
13	AV51BU0500	1	Ring
14	AV51BU0700	1	Cover
15	AV51BU1100	1	Flange
16	AV51BU1800	1	Oil hose holder
17	AV51BU1900	2	Adjuster
18	AV51BU1900	1	Valve
19	A13110800	2	Straight connector SPC 8-01
20	AV51BU2300	2	Block
21	AV51BU0430	2	Gasket
22	AV51BU2400	1	Shaft
23	A17110200	1	Connector 1/4"x3/8"

N.	Code	QTY	Denomination
24	A16130100	1	Ball valve 3/8"
25	A17140500	1	L incision 3/8"x5/8"
26	ZS01085001	1	Screw 8x50
27	ZS160830	1	Handle screw
28	AV51BU1300	1	Oil recovery
29	AV51BU1500	1	Seal
30	A16120800	1	1" Cable tie
31	AV51BU2058	1	Hydraulic hose L=587

Bushing
AV51BU10__

ØA 09 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39 41 43 45 47 49 51 53

08 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52

ΦA

Sleere
AV51BU1248

First block
AV___BU1449

NOMINAL DIAMETER D.

ØA 13 17 21 26 28 33 36 38 39 43 46 52

12 16 20 25 27 32 35 37 38 42 45 51

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Tab.

100 g

SYCHRONIZATION DEVICE

N.	Code	QTY	Denomination
1	AV51SY1000	7	Bushing
2	AV51SY0600	1	Plate
3	AV51SY1400	1	Profile
4	AV51SY0500	1	Support
5	AV51SY1800	1	Toothed belt
6	AV51SY0100	1	Roller
7	AV51SY0300	1	Pulley 19T
8	AV51SY0400	2	Pulley 16T
9	B6003ZZ	6	Bearing
10	AV51SY0200	3	Pin
11	AV51SY0900	1	Shaft
12	AV51SY0800	1	Bronze ring
13	AV51SY1200	1	Guide
14	AV51SY1700	1	Spring
15	AV51SY1300	1	Jacket
16	AV51SY2010	1	Seal
17	AV51SY1510	1	Piston
18	AV51SY1910	1	Seal
19	AV51SY1100	2	Spacer
20	AV51SY0700	1	Support
21	A13121300	1	Bended connector SHP 8-01
22	A15120300	1	Copper connector 1/8"x1/8"
23	A12120100	1	Electro valve
24	A14110200	2	Silencer
25	A13120500	2	Bended connector SPL 8-02 Ø8
26	A13120501	1	Bended connector SPLL 8-02 Ø8
27	A13130400	1	Three port Y type SPY-8 Ø8
28	AV51SY1503	1	Guide
29	AV51SY3400	1	Belt cover
30	AV51SY0010	1	Sychronization device

Tab. 110

PATRIOT

SYCHRONIZATION DEVICE 71.5MM

N.	Code	QTY	Denomination
1	AV51SY1000	7	Bushing
2	AV51SY0600	1	Plate
3	AV51SY1410	1	Profile
4	AV51SY0500	1	Support
5	AV51SY1810	1	Toothed belt
6	AV51SY0100	1	Roller
7	AV51SY0300	1	Pulley 19T
8	AV51SY0400	2	Pulley 16T
9	B6003ZZ	6	Bearing
10	AV51SY0200	3	Pin
11	AV51SY0900	1	Shaft
12	AV51SY0800	1	Bronze ring
13	AV51SY1200	1	Guide
14	AV51SY1700	1	Spring
15	AV51SY1300	1	Jacket
16	AV51SY2010	1	Seal
17	AV51SY1510	1	Piston
18	AV51SY1910	1	Seal
19	AV51SY1100	2	Spacer
20	AV51SY0700	1	Support
21	A13121300	1	Bended connector SHP 8-01
22	A15120300	1	Copper connector 1/8"x1/8"
23	A12120100	1	Electro valve
24	A14110200	2	Silencer
25	A13120500	2	Bended connector SPL 8-02 Ø8
26	A13120501	1	Bended connector SPLL 8-02 Ø8
27	A13130400	1	Three port Y type SPY-8 Ø8
28	AV51SY1503	1	Guide
29	AV51SY3400	1	Belt cover
30	AV51SY0010	1	Sychronization device

Tab. 111 3

OIL RECOVERY

N.	Code	QTY	Denomination
1	A12120100	1	Solenoid valve
2	A14110200	2	Silencer
3	A13120500	2	Bended connector SPL 8-02 Ø8
4	A13120501	1	Bended connector SPLL 8-02 Ø8
5	A13130400	1	Three port Y type SPY-8 Ø8
6	AV51TE1001	1	Housing
7	AV51TE1101	1	Flange
8	A12130901	1	Air Control valve JSC8 1/4", ø8
9	AV51RE0001	1	Oil Recovery

Tab. 121 6

MOVEABLE ANTI-VIBRATION DEVICE

Tab. 123 5

Bushing Block
AV51MO08_ _

ø 09 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39 41 43 45 47 49 51 53
ø 08 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52

N.	Code	QTY	Denomination
1	AV51MO1000	1	Plate
2	AV51MO0100	1	Cam
3	AV51MO0500	1	Plate
4	HP8127000F	4	Roller
5	AV51MO2200	1	Tube
6	AV51MO0300	2	Plate
7	AV51MO0200	2	Arm
8	AV51MO0700	2	Bar
9	AV51MO1100	2	Bracket
10	AV51MO0600	1	Plate
11	A12130100	2	Flow throttle
12	A11131100	1	Cylinder SDA32x30
13	AV51MO3000	2	Roller
14	AV51MO2300	1	Plate
15	AV51MO000A	1	Anti-vibration device
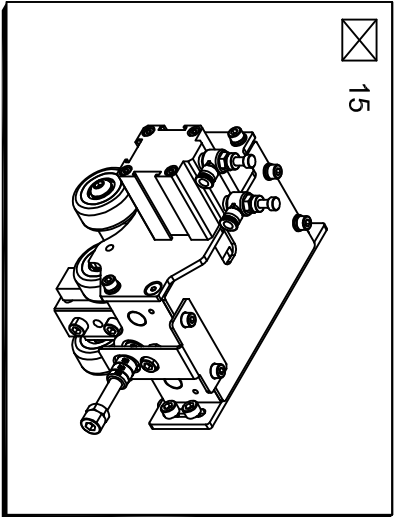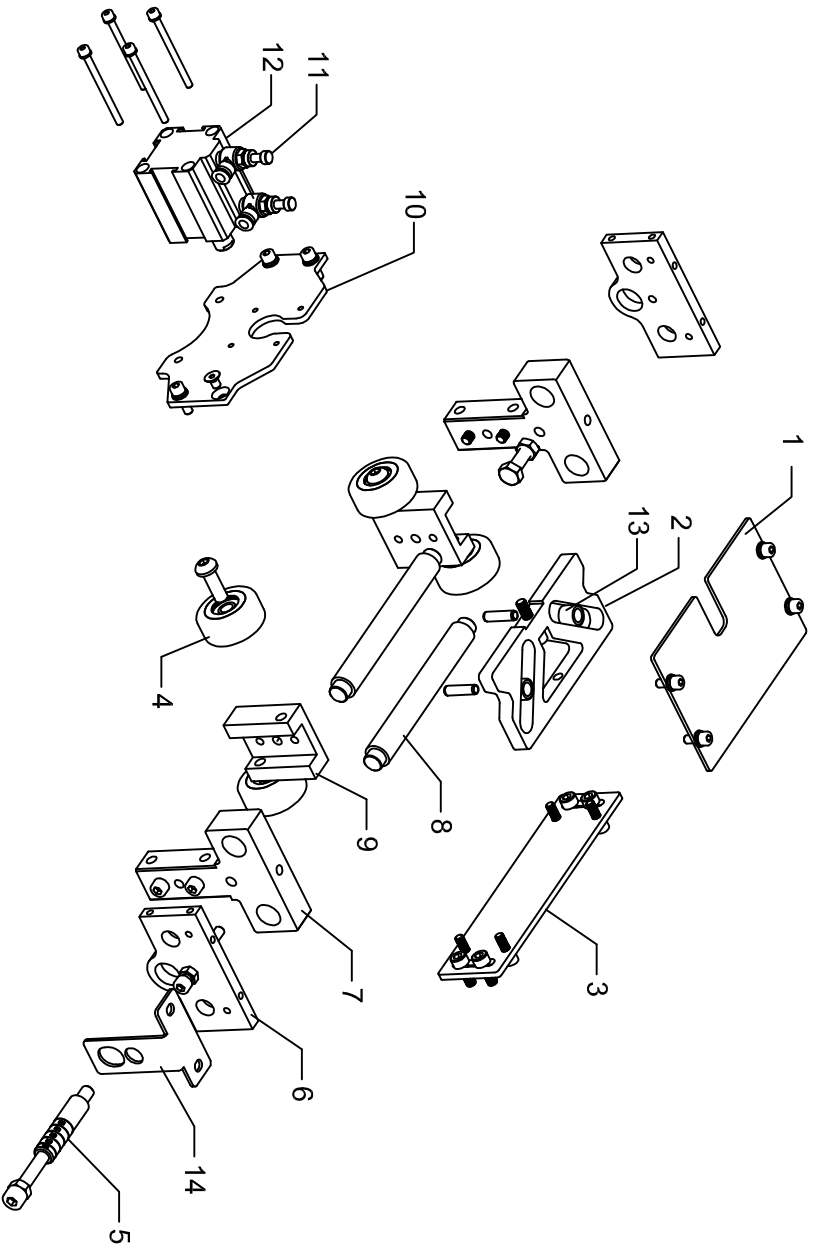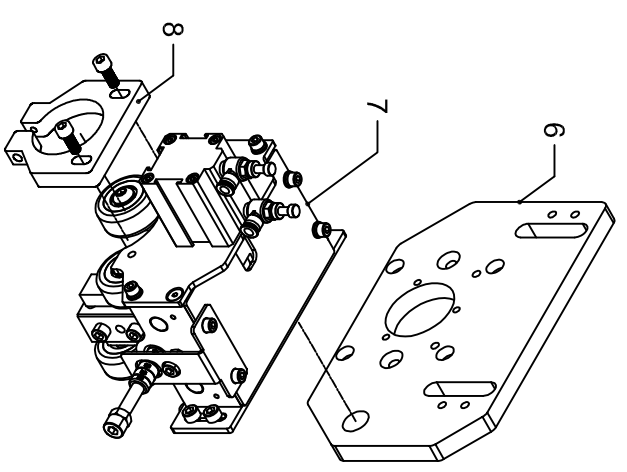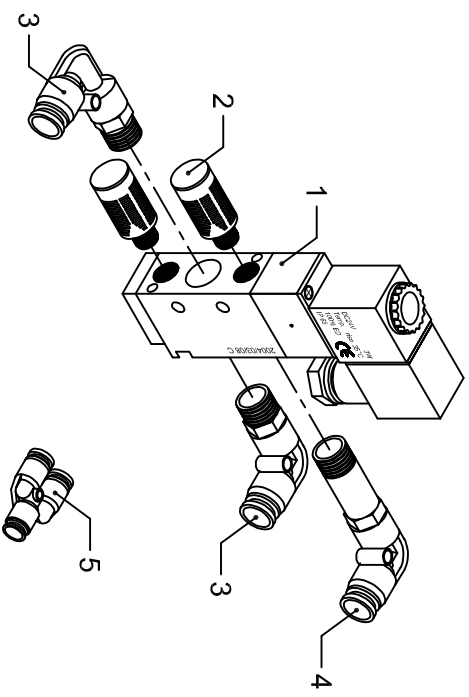
MOVABLE ANTI-VIBRATION + SOLENOID VALVE

N.	Code	QTY	Denomination
1	A12120100	1	Electro valve
2	A14110200	2	Silencer
3	A13120500	2	Bended connector SPL 8-02 Ø8
4	A13120501	1	Bended connector SPLL 8-02 Ø8
5	A13130400	1	Three port Y type SPY-8 Ø8
6	AV51MO1300	1	Plate
7	AV51MO000A	1	Anti-vibration device
8	AV37TE0700	1	Clamp
9	AV51MO1002	1	Movable anti-vibration + Solenoid valve

Tab. 124 5
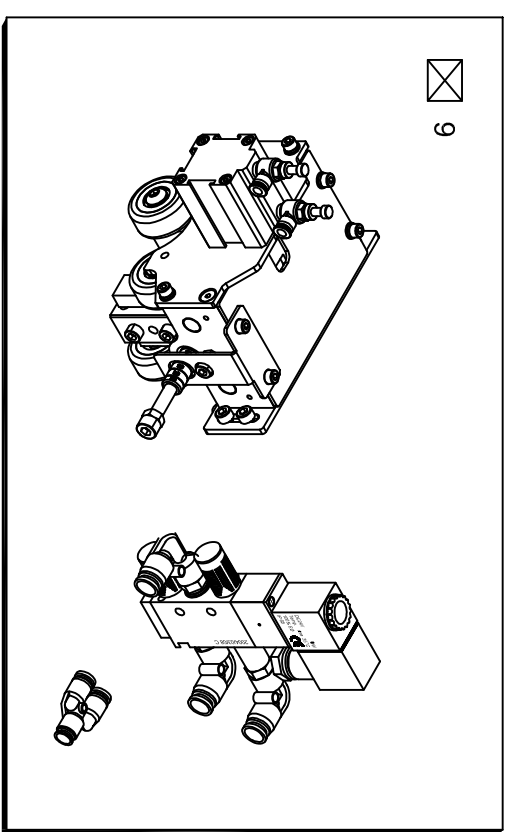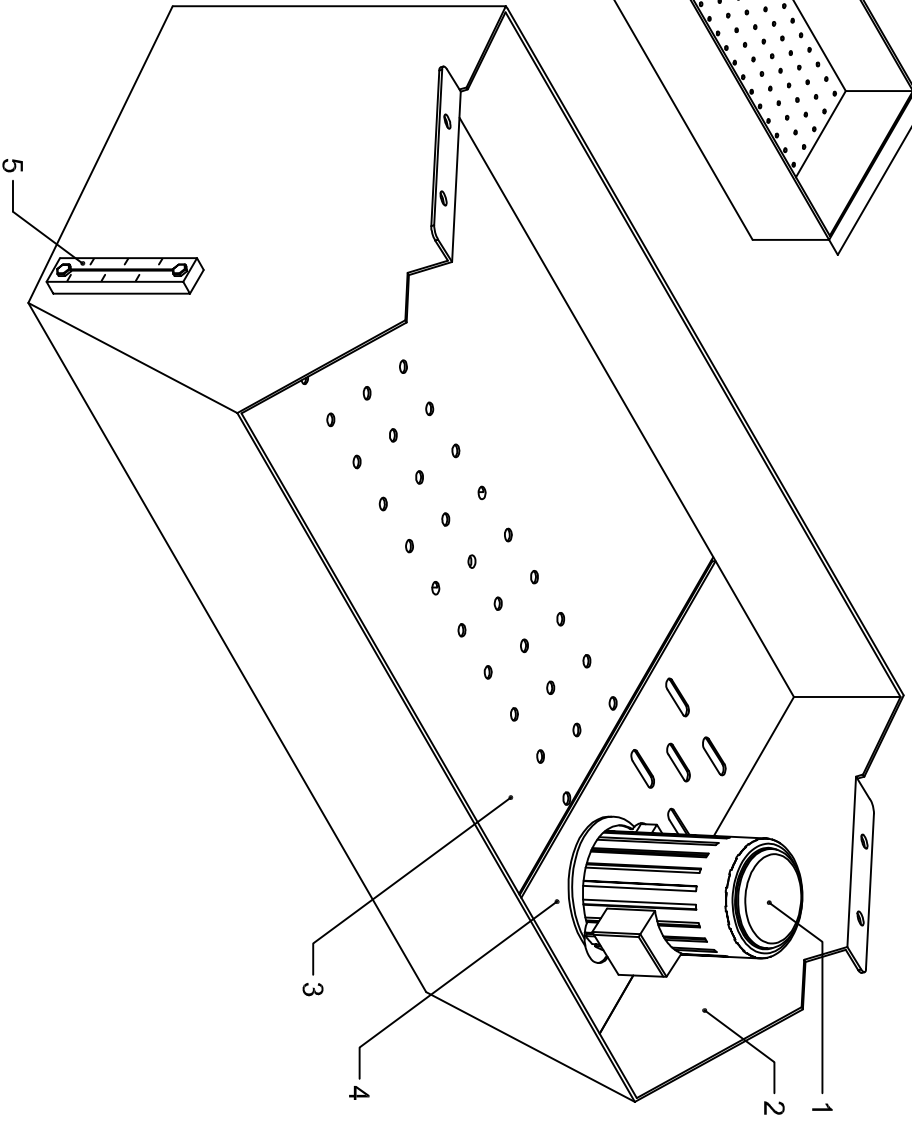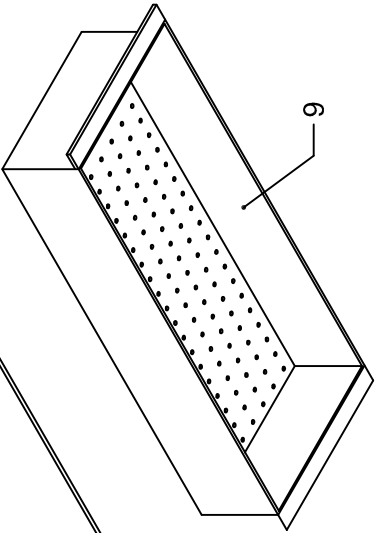
PATRIOT

OIL TANK

N.	Code	QTY	Denomination
1	AV51OL0900	1	Pump SP-4180
2	AV51OL0100	1	Oil tank
3	AV51OL0200	1	Cover
4	AV51OL0240	1	Cover
5	A16110100	1	Oil meter
6	AV51OL0400	1	Renman tank

Tab. 130 6

PATRIOT

OIL TANK (TRACKING SYSTEM) 25
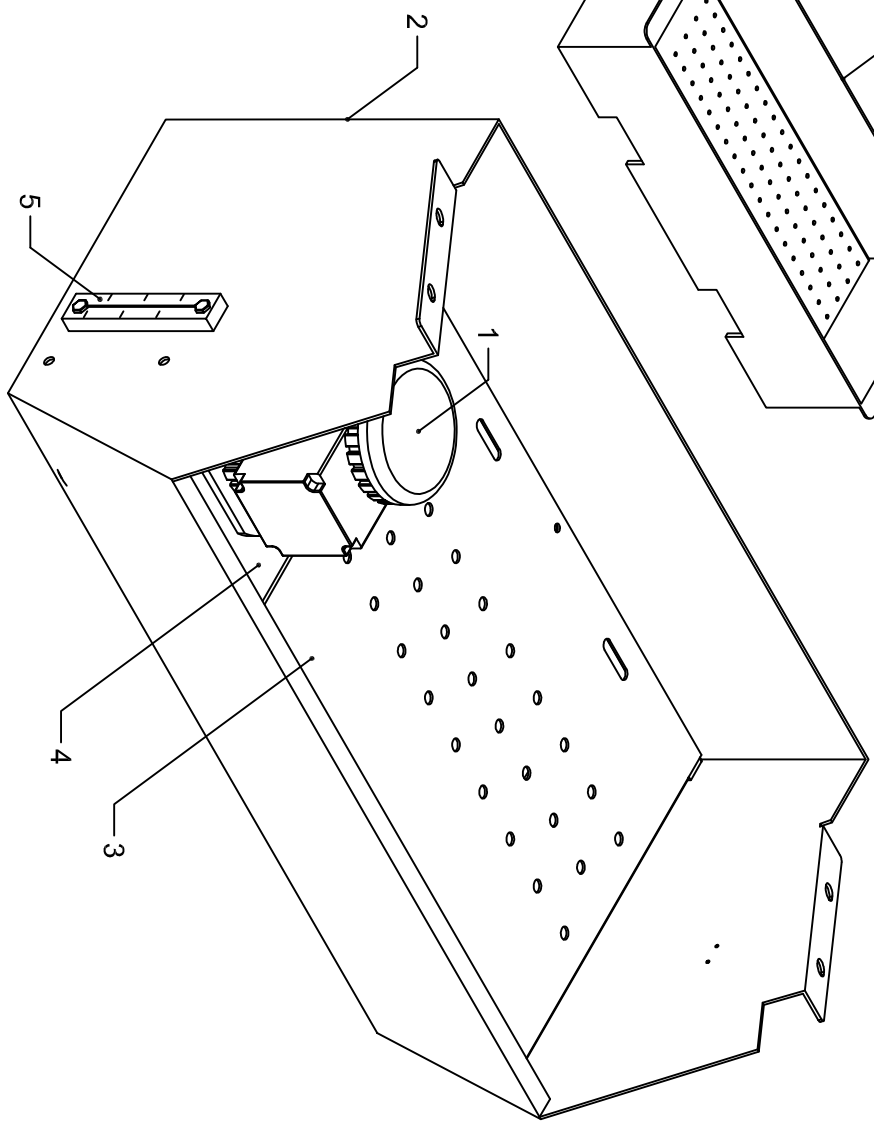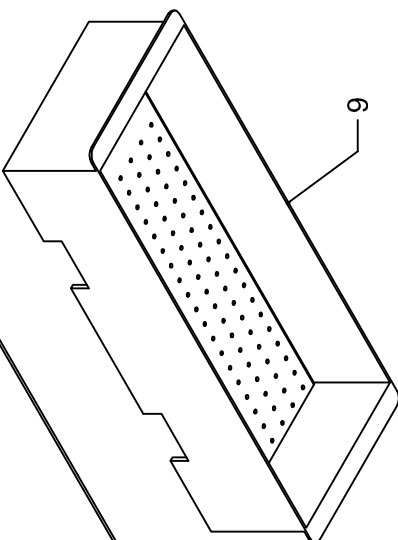
N.	Code	QTY	Denomination
1	AV51OL0900	1	Pump SP-4180
2	AV51OL0140	1	Oil tank
3	AV51OL0201	1	Cover
4	AV51OL0240	1	Cover
5	A16110100	1	Oil meter
6	AV51OL0400	1	Renman tank

Tab. 131 1
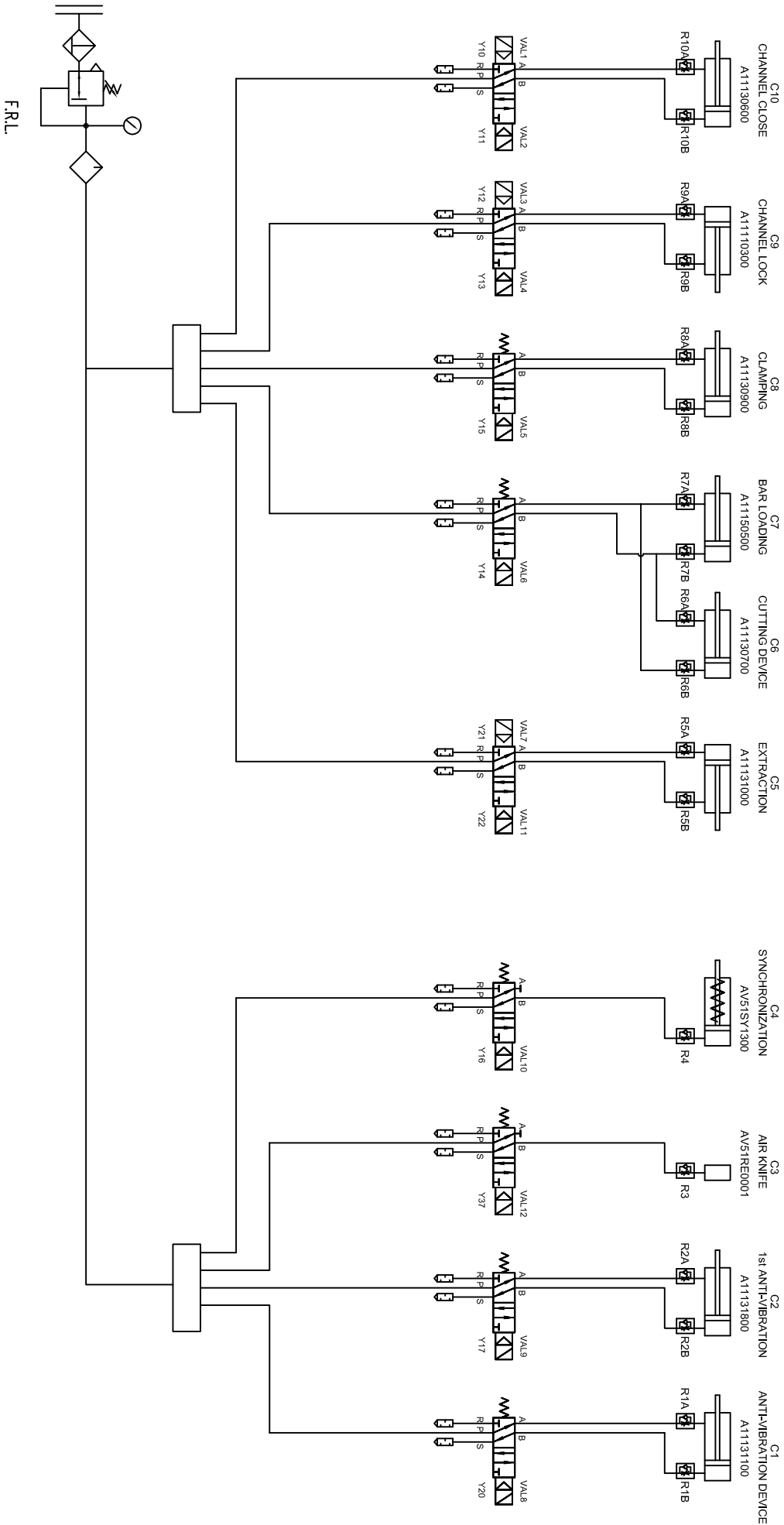
PATRIOT

PRESSURE DIAGRAM

F.R.L.

Tab. 140 1

C10 CHANNEL CLOSE A11130600
VAL1 A B Y10 R P S VAL2 Y11
R10A R10B

C9 CHANNEL LOCK A11110300
VAL3 A B Y12 R P S VAL4 Y13
R9A R9B

C8 CLAMPING A11130900
A B R P S VAL5 Y15
R8A R8B

C7 BAR LOADING A11150500
A B R P S VAL6 Y14
R7A R7B

C6 CUTTING DEVICE A11130700
R6A R6B

C5 EXTRACTION A11131000
VAL7 A B Y21 R P S VAL11 Y22
R5A R5B

C4 SYNCHRONIZATION AV51SY1300
A B R P S VAL10 Y16
R4

C3 AIR KNIFE AV51RE0001
A B R P S VAL12 Y37
R3

C2 1st ANTI-VIBRATION A11131800
A B R P S VAL9 Y17
R2A R2B

C1 ANTI-VIBRATION DEVICE A11131100
A B R P S VAL8 Y20
R1A R1B

Drawing No	Item designation	Description and function	Technical data	Quantity	Supplier	Suppliers reference	Remarks
A12131000	R9A	HOSE TO HOSE		1		SPA-8 φ8	
	R9B	HOSE TO HOSE		1			
	R10A	FLOW REGULATOR		1			
A12130900	R5A	FLOW REGULATOR	1-10 bar	1		JSC 8-03 1/4", φ8	
	R5B			1			
	R7A			1			
	R7B			1			
	R8A			1			
	R8B			1			
A12121300	R4	L tape joint		1		SPH8-01	ISO 9001
A12130901	R3	FLOW REGULATOR		1		JSC 8-02 1/4", φ8	
A12130800	R2A	FLOW REGULATOR		1		JSC 8-02 1/4", φ8	
	R2B			1			
	R10B			1			
A12130100	R1A	FLOW REGULATOR		1		SC6-01MA (PSB6-01N1)	
	R1B			1			
A11130600	C10	CHANNEL CLOSE & OPEN		1	AIRTAC	SDA 40x25	
A11130300	C9	CHANNEL LOCK		1		SDA 40x25	
A11130900	C8	CLAMPING		1		SDA 80x100	
A11150500	C7	BAR LOADING		1		SC-63x25-CB	
A11130700	C6	CUTTING DEVICE		1		SDA 12x15	
A11131000	C5	EXTRACTION		1		SDA 80x45	
AV51SY1300	C4	SYNCHRONIZATION		1		AV51SY1300	
AV51RE0001	C3	AIR KNIFE		1		AV51RE0001	
A11131800	C2	1st ANTI-VIBRATION		1		SDA 50x30	
A11131100	C1	ANTI-VIBRATION DEVICE		1		SDA 32x30	
A12120100	VAL 5	5/2 WAY VALVE	DC24	1		4V210-08	
	VAL 6			1			
	VAL 8			1			
	VAL 9			1			
	VAL 10			1			
	VAL 12			1			
A12120200	VAL 1	5/2 WAY VALVE	DC24	1		4V220-08	VLMH9465
	VAL 2						
	VAL 3			1			
	VAL 4						
	VAL 7			1			
	VAL 11			1			
A12110300	F.R.L.	FILTER,REGULATOR, LUBRICATOR	1.0-10kgf/cm²	1		BFC-2000	

PATRIOT

250MM TELE NOSE ASSEMBLY

N.	Code	QTY	Denomination
1	DHO-88	1	INTERNAL SNAP RING (DHO-88)
2	MEP2061_	1	TELE NOSE 1ST STAGE CHANNEL ID INSERT
			NOMINAL DIAMETER D. → 24 25 26 27 28 29 39 30 46
			ø 39 36 33 28 26 21 17 13 43
3	MEK206102	1	250MM TELE NOSE 1ST STAGE TUBE
4	DHO-65	1	INTERNAL SNAP RING (DHO-65)
5	MEK206104	1	250MM TELE NOSE 2ND STAGE TUBE
6	DHO-50	1	INTERNAL SNAP RING (DHO-50)
7	MEK206106_	1	250MM TELE NOSE 3RD STAGE TUBE
			NOMINAL DIAMETER D. → 11 12 13 44
			ø45 ø35 ø25 ø48
			FOR I.D. ø43 ø33 ø26 ø13
			ø36 ø28 ø17
			ø39 ø21

N.	Code	QTY	Denomination
8	MEK206108_	1	4TH STAGE TUBE ASSEMBLY
			NOMINAL DIAMETER D. → 12 16 20 25 27 32 35 38
			ø 13 17 21 26 28 33 36 39
9	MEP206145	1	4TH STAGE TUBE ASSEMBLY (42)

N.	Code	QTY	Denomination
10	MEP2061_	1	RING (12~38)
			NOMINAL DIAMETER D. → 40 41 42
			ø40 ø30 ø22
			FOR I.D. ø33 ø26 ø13
			ø36 ø28 ø17
			ø39 ø21
11	AV37TE0700	1	PLATE
12	MEK206110_	1	250MM TELE NOSE ASSEMBLY
			NOMINAL DIAMETER D. → 12 16 20 25 27 32 35 38 42
			ø 13 17 21 26 28 33 36 39 43

371.5
627.5
250
Ø48

Tab. MEK206110 _ 11

400MM TELE NOSE ASSEMBLY

N.	Code	QTY	Denomination
1	DHO-88	1	INTERNAL SNAP RING (DHO-88)
2	MEP2061	1	TELE NOSE 1ST STAGE CHANNEL ID INSERT
3	MEK206101	1	400MM TELE NOSE 1ST STAGE TUBE
4	ZS07R070	1	INTERNAL SNAP RING
5	MEP2061	1	TELE NOSE 2ND STAGE CHANNEL ID INSERT
6	MEK206105	1	400MM TELE NOSE 2ND STAGE TUBE
7	DHO-50	1	INTERNAL SNAP RING (DHO-50)
8	MEK206107	1	400MM TELE NOSE 3RD STAGE TUBE
9	MEK206108	1	4TH STAGE TUBE ASSEMBLY

Item 2 — NOMINAL DIAMETER D.:
24 25 26 27 28 29 30 46
φ 39 36 33 28 26 21 17 13 43

Item 5 — NOMINAL DIAMETER D.:
31 32 33 34 35 36 38 37 47
φ 39 36 33 28 26 21 17 13 43

Item 8 — NOMINAL DIAMETER D.:
11 12 13 44
φ45 φ35 φ25 φ48
FOR I.D. φ33 φ26 φ13 φ43
φ36 φ28 φ17 φ21
φ39

Item 9 — NOMINAL DIAMETER D.:
12 16 20 25 27 32 35 38
φ 13 17 21 26 28 33 36 39

N.	Code	QTY	Denomination
10	MEP206145	1	4TH STAGE TUBE ASSEMBLY (42)
11	MEP2061	1	RING (12~38)
12	AV37TE0700	1	PLATE
13	MEK206111	1	400MM TELE NOSE ASSEMBLY

Item 10 — NOMINAL DIAMETER D.:
40 41 42
φ40 φ30 φ22
FOR I.D. φ33 φ13 φ17
φ26 φ21
φ28
φ36 φ39

Item 11 — NOMINAL DIAMETER D.:
12 16 20 25 27 32 35 38 42
φ 13 17 21 26 28 33 36 39 43

397.8
802.8
405
φ48
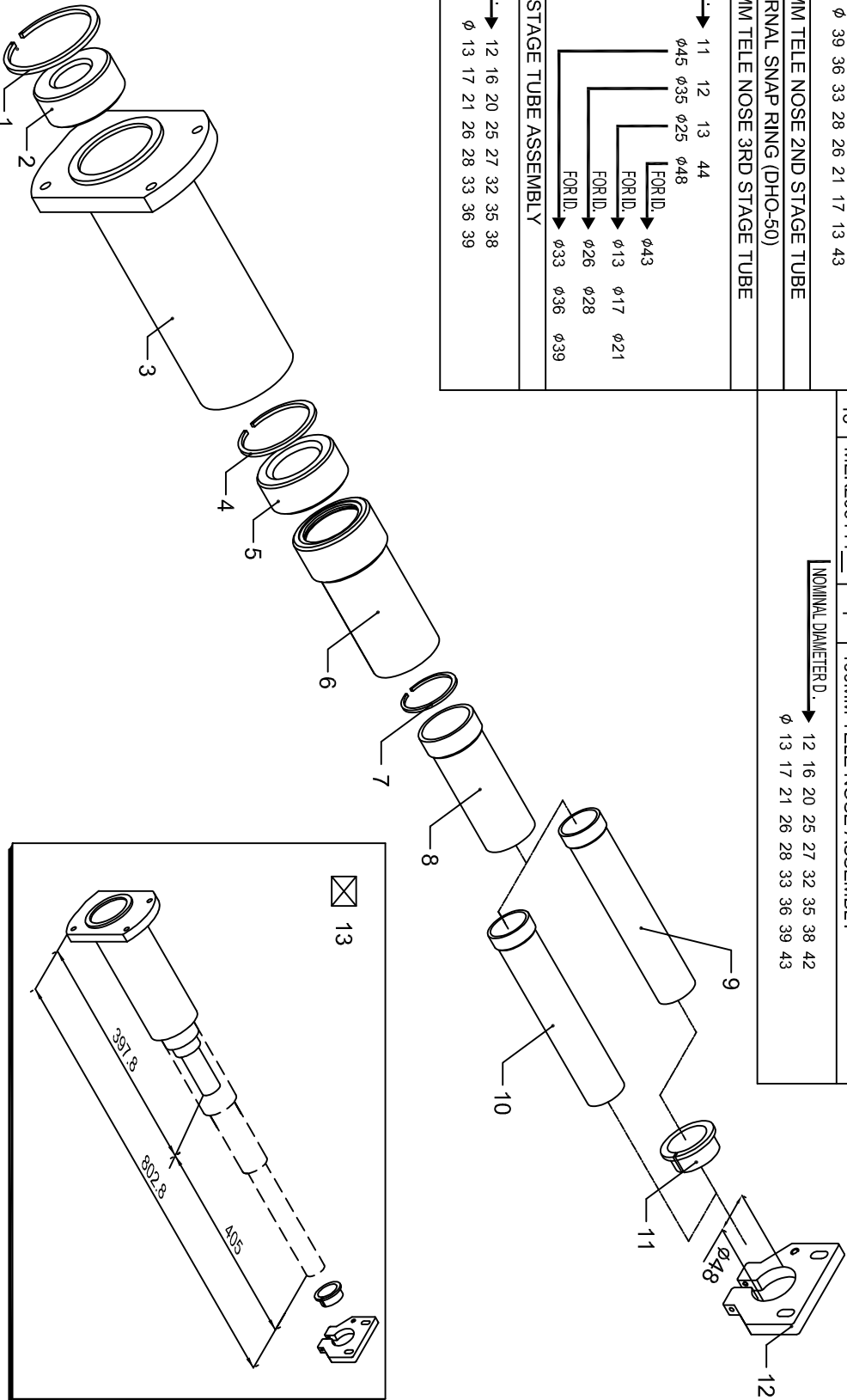
Tab. MEK206111 — 11

N.	Code	QTY	Denomination
1	DHO-88	1	INTERNAL SNAP RING (DHO-88)
2	MEP2061	1	TELE NOSE 1ST STAGE CHANNEL ID INSERT
	NOMINAL DIAMETER D.		φ 24 25 26 27 28 29 30 46 39 36 33 28 26 21 17 13 43
3	MEK20610110	1	440MM TELE NOSE 1ST STAGE TUBE
4	ZS07R070	1	INTERNAL SNAP RING
5	MEP2061	1	TELE NOSE 2ND STAGE CHANNEL ID INSERT
	NOMINAL DIAMETER D.		φ 31 32 33 34 35 36 38 37 47 39 36 33 28 26 21 17 13 43
6	MEK20610510	1	440MM TELE NOSE 2ND STAGE TUBE
7	DHO-50	1	INTERNAL SNAP RING (DHO-50)
8	MEK206107	1	440MM TELE NOSE 3RD STAGE TUBE
9	MEK206108	1	4TH STAGE TUBE ASSEMBLY
	NOMINAL DIAMETER D.		φ 11 12 13 44 45 φ35 φ25 φ48 FOR I.D. φ33 φ26 φ13 φ43 φ36 φ28 φ17 φ39 φ21
			φ 12 16 20 25 27 32 35 38 13 17 21 26 28 33 36 39

N.	Code	QTY	Denomination
10	MEP206145	1	4TH STAGE TUBE ASSEMBLY (42)
11	MEP2061	1	RING (12~38)
	NOMINAL DIAMETER D.		φ 40 41 42 φ40 φ30 φ22 FOR I.D. φ33 φ26 φ13 φ36 φ28 φ17 φ39 φ21
			φ 12 16 20 25 27 32 35 38 42 13 17 21 26 28 33 36 39 43
12	AV37TE0700	1	PLATE
13	MEK206112	1	440MM TELE NOSE ASSEMBLY

PATRIOT

606MM TELE NOSE ASSEMBLY

N.	Code	QTY	Denomination
1	DHO-88	1	INTERNAL SNAP RING (DHO-88)
2	MEP2061 __	1	TELE NOSE 1ST STAGE CHANNEL ID INSERT

NOMINAL DIAMETER D. 24 25 26 27 28 29 39 30 46
φ 39 36 33 28 26 21 17 13 43

N.	Code	QTY	Denomination
3	MEK206101	1	TELE NOSE 1ST STAGE TUBE
4	ZS07R070	1	INTERNAL SNAP RING
5	MEP2061	1	TELE NOSE 2ND STAGE CHANNEL ID INSERT

NOMINAL DIAMETER D. 31 32 33 34 35 36 38 37 47
φ 39 36 33 28 26 21 17 13 43

N.	Code	QTY	Denomination
6	MEK206205	1	606MM TELE NOSE 2ND STAGE TUBE
7	DHO-50	1	INTERNAL SNAP RING (DHO-50)
8	MEK206207 __	1	606MM TELE NOSE 3RD STAGE TUBE
9	MEK206208 __	1	4TH STAGE TUBE ASSEMBLY

NOMINAL DIAMETER D. 11 12 13 44
φ45 φ35 φ25 φ48
FOR ID. φ33 φ36 φ39
FOR ID. φ26 φ28
FOR ID. φ13 φ17 φ21
FOR ID. φ43

N.	Code	QTY	Denomination
10	MEP206245	1	4TH STAGE TUBE ASSEMBLY (42)
11	MEP2061 __	1	RING (12~38)

NOMINAL DIAMETER D. 40 41 42
φ40 φ30 φ22
FOR ID. φ33 φ26 φ13
FOR ID. φ36 φ28 φ17
FOR ID. φ39 φ21

N.	Code	QTY	Denomination
12	AV37TE0700	1	PLATE
13	MEK206113 __	1	606MM TELE NOSE ASSEMBLY

NOMINAL DIAMETER D. 12 16 20 25 27 32 35 38 42
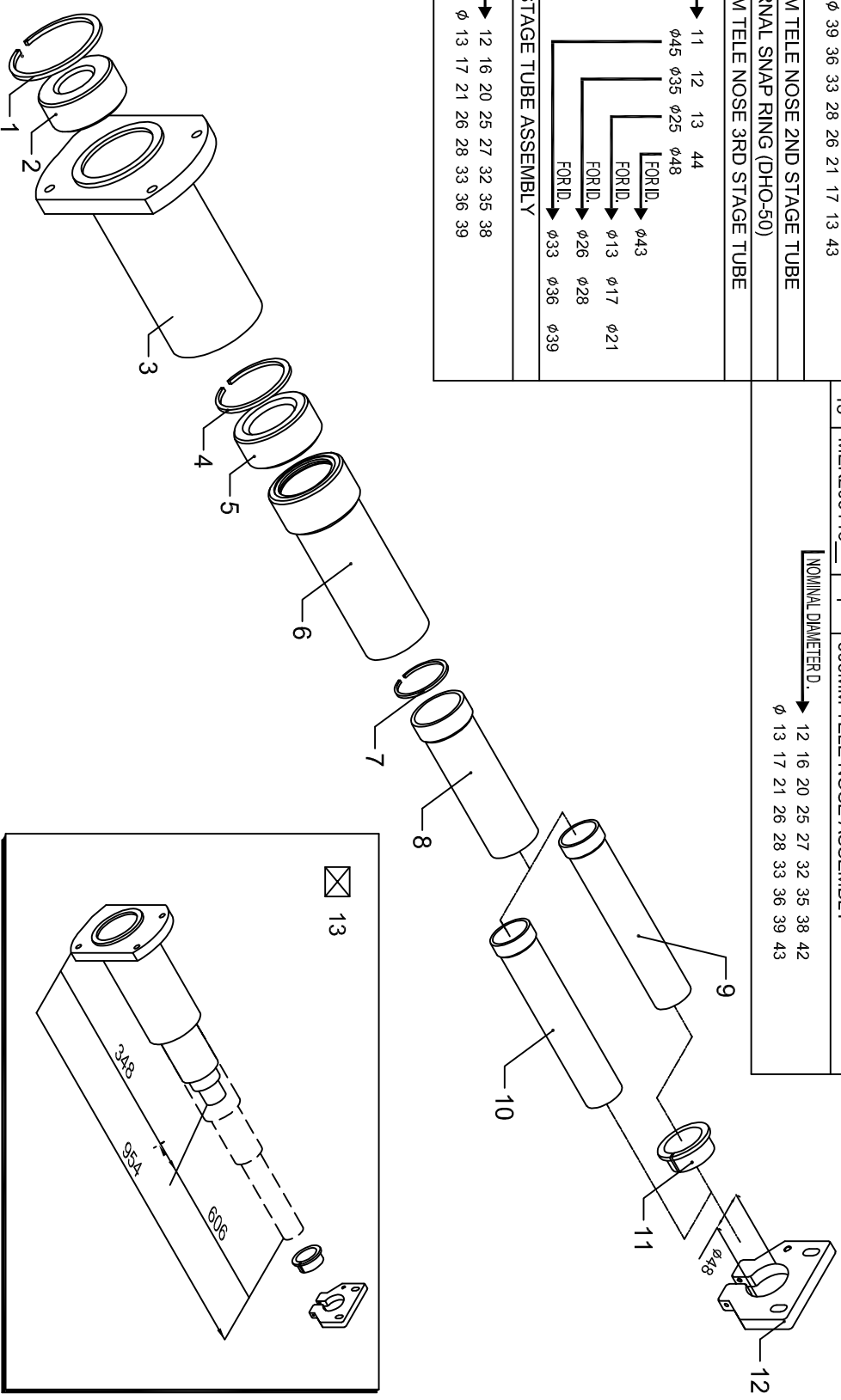φ 13 17 21 26 28 33 36 39 43

13

3A8 95A 606

φ48

Tab. MEK206113 ___ 5

PATRIOT-SX

010	FRAME DEVICE
020	CLAMPING
030	COVER
040	BASES AND BEAM
050	FEED MOTOR DRIVE
060	CUTTING DEVICE
070	GUIDE CHANNEL SUPPORT
080	GUIDE CHANNEL
090	BAR PUSHER DEVICE
100	FIRST ANTI-VIBRATION DEVICE AND FIXED FRONT NOSE
110	SYCHRONIZATION DEVICE
120	TELESCOPIC FRONT NOSE
130	OIL TANK

PICTURE INDEX

Tab. 000 2

FRAME DEVICE

Tab. 010 3

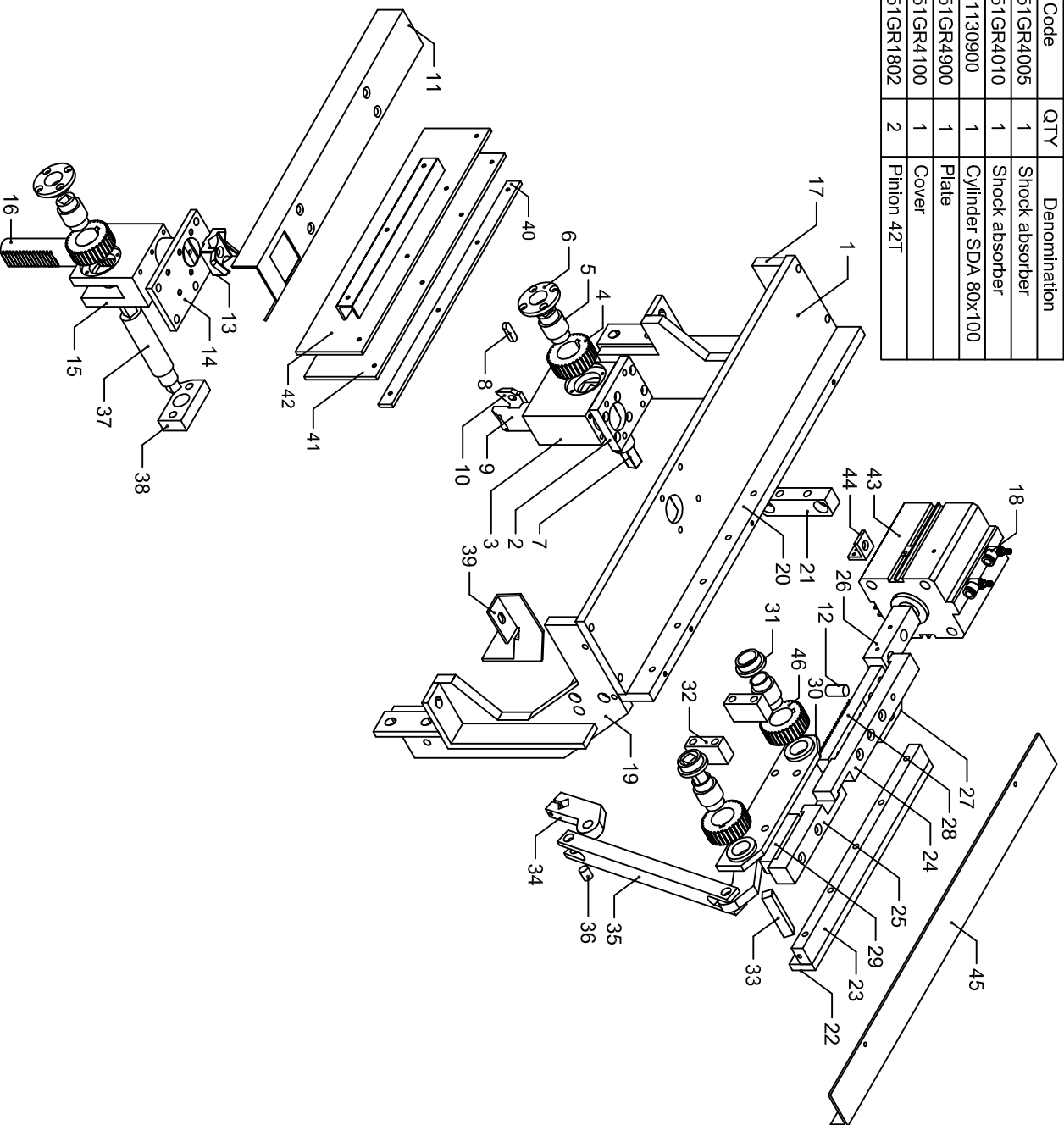| N.	Code	QTY		Denomination
		25	37	
1	AV51MA2400	1	1	Support
2	AV51MA2300	1	1	Plate
3	AV51MA0110	4	5	Support
4	AV51MA0200	5	6	Plate
5	AV51MA1800	5	6	Plate
6	AV51MA0300	5	6	Collet
7	AV51MA1625		1	Plate
7	AV51MA1637	1		Arbor-2.5M L=2160mm
8	AV51MA0120	1	1	Arbor-3.7M L=3400mm
9	AV51MA2210	1	1	Support
10	AV51MA0800	1	1	Support
11	AV51MA1100	2	2	Anchor
12	AV51MA1200	2	2	Plate
13	ZS01212001	1	1	Arbor
14	AV51MA1700	1	1	Cap screw
15	AV51MA0701	2	2	Arbor
16	AV51MA0901	2	2	Plate
17	AV51MA0900	1	1	Extension bar
18	BPHS16	1	1	Support
19	A11150500	1	1	Joint
20	AV51MA2600	5	6	Cylinder SC-63x25-CB
21	AV51MA1025	1		Adjustable handle
21	AV51MA1032		1	Pull rod-2.5M L=2010mm
22	AV51MA1037	1		Pull rod-3.7M L=2725mm
23	AV51MA1001		1	Pull rod-3.7M L=605mm
24	AV51MA0600	5	6	Connector rod-3.7M
25	AV51MA0500	5	6	Arbor
26	AV51MA0601	5	6	Hook
27	AV51MA0400	5	6	Lever
28	PG38MA0900	5	6	Support
29	AV51MA1500	5	6	Plate
30	AV51MA1303	1	1	Leaf
31	AV51MA1302	1	1	Plate
32	AV51MA1300	4	5	Shim
33	AV51MA2130	1		Plate
33	AV51MA2020		1	Tube-2.5M L=688mm
34	AV51MA2100	1		Tube-3.7M L=1888mm
35	AV51MA1910	1		Tube L=328mm
36	AV51MA2700	1	1	Tube L=1398mm
37	AV51MA3100	1	1	Plate
37			1	Ring

CLAMPING

N.	Code	QTY	Denomination
1	AV51GR0300	1	Cover
2	AV51GR1600	1	Plate
3	AV51GR1700	1	Anchor
4	AV51GR1800	2	Pinion 33T
5	AV51GR1801	4	Connector shaft
6	AV51GR1900	2	Sleeve
7	AV51GR2200	1	Shaft
8	ZS060615	4	6x15 Tab
9	AV51GR2100	1	Rack
10	AV51GR2000	1	Clip cutter
11	AV51GR3130	1	Shelf
12	AV51CH1701	1	Arbor
13	AV51GR2700	1	Lower clamp
14	AV51GR2610	1	Plate
15	AV51GR1701	1	Anchor
16	AV51GR2800	1	Transmission rod
17	AV51GR0100	1	Anchor R
18	A12131000	2	Flow regulator JSC 8-03
19	AV51GR0200	1	Anchor L
20	AV51GR0410	1	Plate
21	AV51GR0600	1	Anchor
22	AV51GR0501	1	Sheel steel
23	AV51GR0500	1	Plate
24	AV51GR0901	1	Pushing stripe
25	AV51GR1001	1	Transmission rod
26	AV51GR0800	1	Spacer
27	AV51GR0701	1	Plate
28	AV51GR1101	1	Rack
29	AV51GR1201	1	Rack
30	AV51GR2400	1	Plate
31	AV51GR2300	2	Bearing
32	AV51GR2500	2	Shim
33	AV51GR1500	1	Shaft
34	AV51GR1300	2	Support
35	AV51GR1400	1	Lever
36	AV51GR3500	1	Anchor
37	AV51GR3000	1	Transmission rod
38	AV51GR2900	1	Anchor
39	AV51GR3150	1	Plate
40	AV51GR4004	1	Plate

N.	Code	QTY	Denomination
41	AV51GR4005	1	Shock absorber
42	AV51GR4010	1	Shock absorber
43	A11130900	1	Cylinder SDA 80x100
44	AV51GR4900	1	Plate
45	AV51GR4100	1	Cover
46	AV51GR1802	2	Pinion 42T

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PATRIOT-SX

COVER 25

N.	Code	QTY	Denomination
1	AV51BA2201	4	Plate
2	AV51BA4026	1	Cover L=2996mm
3	AV51BA2126	1	Cover L=2992mm
4	AV51BA1710	1	Plate
5	AV51BA2310	1	Oil box
6	AV51BA1826	1	Bowl L=3031mm
7	AV51BA18261	1	Bowl(XL) L=3031mm
8	AV51BA1600	1	Plate
9	AV51BA1926	1	Cover L=2996mm
9	AV51BA3325	1	Plate L=2970mm
10	AV51BA3810	2	Hood shock
11	AV51BA3400	1	Profile
12	J630110	1	Luminous indicator unit
13	AV51BA3700	1	Profile
14	AV51BA2103	1	Plexiglass window
15	AV51BA4100	2	Access Panel
16	AV51BA2104	2	Sound absorbing cotton
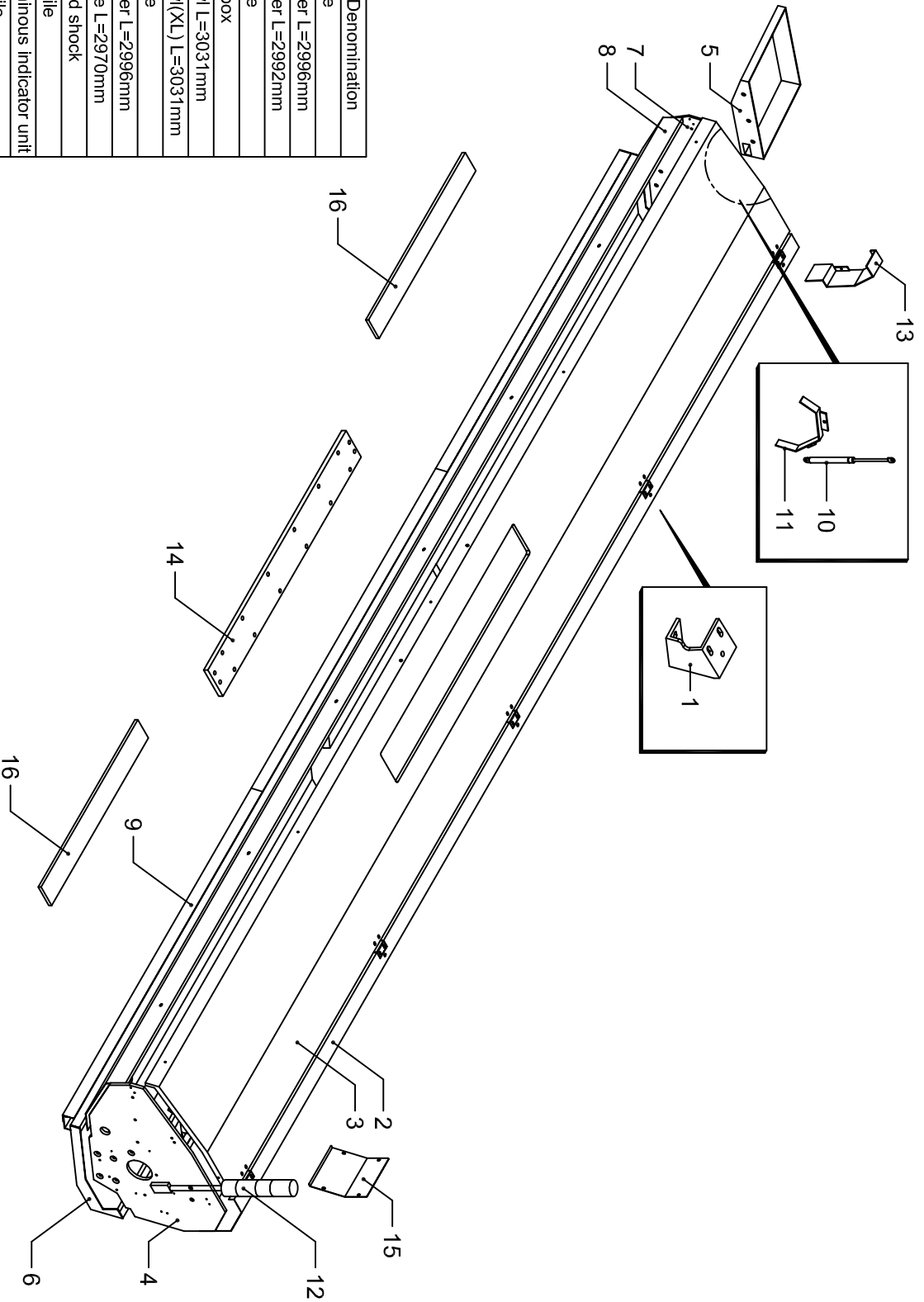
Tab. 030 6

N.	Code	QTY	Denomination
1	AV51BA2201	4	Plate
2	AV51BA2200	1	Plate
3	AV51BA4038	1	Cover L=4196mm
4	AV51BA2137	1	Cover L=4192mm
5	AV51BA1710	1	Plate
6	AV51BA2310	1	Oil box
7	AV51BA1838	1	Bowl L=4231mm
	AV51BA18381	1	Bowl(XL) L=4231mm
8	AV51BA1610	1	Plate
9	AV51BA1938	1	Cover L=4196mm
10	AV51BA3337	3	Plate L=1390mm
11	AV51BA3810	2	Hood shock
12	AV51BA3410	1	Profile
13	J630110	1	Luminous indicator unit
14	AV51BA3710	1	Profile
15	AV51BA2103	1	Plexiglass window
16	AV51BA4100	2	Access Panel
17	AV51BA2104	2	Sound absorbing cotton
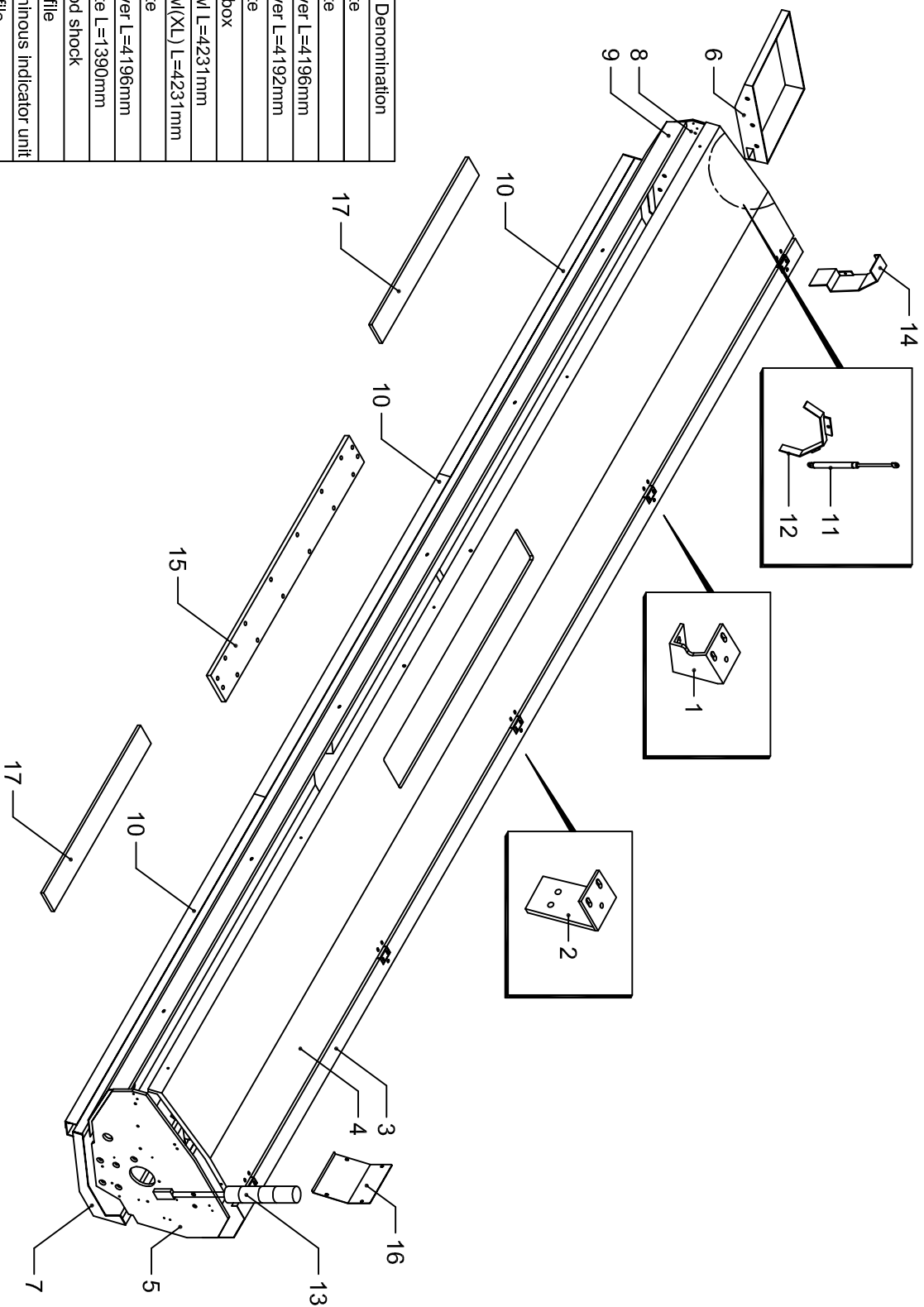
PATRIOT-SX

COVER 37

25 37 BAR FEEDER MODEL ACCORDING TO THEMAX.

Tab. 031 10

PATRIOT-SX

BASES AND BEAM 37

N.	Code	QTY	Denomination
1	AV51CH0138	1	Beam L=4200mm
2	AV51BA0701	1	Cover
3	AV51BA0100	1	Base
4	AV51BA0101	2	Base
5	AV51BA0410	4	Support
6	AV51BA0300	1	Panel
7	AV51BA0200	1	Door
8	AV51BA0500	1	Door
9	AV51BA0501	1	Base
10	AV51BA0600	2	Door
11	AV51BA0702	1	Support
12	AV51BA0700	2	Cover
13	AV51BA0800	1	Support
14	AV51BA2800	1	Key-board
15	AV51BA2500	1	Housing
16	AV51BA2600	2	Support
17	AV51BA2900	2	Support
18	AV51BA3301	2	Bushing
19	AV51BA3300	2	Eyebolt
20	AV51BA0800	14	Column
21	AV51BA0900	28	Washer
22	AV51BA1000	28	Washer
23	AV51BA1400	8	Screw
24	AV51BA1500	4	Tie rod
25	AV51BA1200	4	Plate
26	AV51BA1100	4	Plate
27	AV51BA3000	4	Plug
28	AV51BA3100	4	Plug
29	AB110300	1	Joint
30	A12110300	1	Pneumatically-actuated electrical microswitch PM-20
31	A15140200	1	Connection 1/4"
32	A13120500	1	Connection 1/4"x⌀8
33	A12140400	1	Pressure switch
	A17110300	1	90° Connection 1/4"x1/4"

N.	Code	QTY	Denomination
1	AV51CH0126	1	Beam L=3000mm
2	AV51BA0701	1	Cover
3	AV51BA0100	1	Base
4	AV51BA0101	2	Base
5	AV51BA0410	4	Support
6	AV51BA0300	1	Panel
7	AV51BA0200	1	Door
8	AV51BA0510	1	Base
9	AV51BA0600	2	Support
10	AV51BA0700	2	Support
11	AV51BA2800	1	Key-board
12	AV51BA2500	1	Housing
13	AV51BA2700	1	Support
14	AV51BA2600	1	Support
15	AV51BA2900	2	Support
16	AV51BA3301	2	Bushing
17	AV51BA3300	2	Eyebolt
18	AV51BA0800	14	Column
19	AV51BA0900	28	Washer
20	AV51BA1000	28	Washer
21	AV51BA1400	8	Screw
22	AV51BA1500	4	Tie rod
23	AV51BA1200	4	Plate
24	AV51BA1100	4	Plate
25	AV51BA3000	4	Plug
26	AV51BA3100	4	Plug
27	AB110300	1	Joint
28	A12110300	1	Pneumatically-actuated electrical microswitch PM-20
29	A15140200	1	Connection 1/4"
30	A13120500	1	Connection 1/4"x⌀8
31	A12140400	1	Pressure switch
32	A17110300	1	90° Connection 1/4"x1/4"

BASES AND BEAM 25

BASES AND BEAM (TRACKING SYSTEM) 37

N.	Code	QTY	Denomination
1	AV51CH0138	1	Beam L=4200mm
2	AV51BA0140	1	Base
3	AV51BA0410	4	Support
4	AV51BA0300	1	Panel
5	AV51BA0200	1	Door
6	AV51BA0540	1	Door
7	AV51BA0501	1	Base
8	AV51BA2800	1	Door
9	AV51BA2500	1	Key-board
10	AV51BA2600	2	Housing
11	AV51BA2900	2	Support
12	AV51BA3301	2	Support
13	AV51BA3300	2	Bushing
14	AV51BA0800	14	Eyebolt
15	AV51BA0900	28	Column
16	AV51BA1000	28	Washer
17	AV51BA1400	8	Washer
18	AV51BA1500	4	Screw
19	AV51BA1200	4	Tie rod
20	AV51BA1100	4	Plate
21	AV51BA3000	4	Plate
22	AV51BA3100	4	Plug
23	AB110300	1	Plug
24	A12110300	1	Joint
25	A15140200	1	Pneumatically-actuated electrical microswitch PM-20
26	A13120500	1	Connection 1/4"
27	A12140400	1	Connection 1/4"x⌀8
28	A17110300	1	Pressure switch
			90° Connection 1/4"x1/4"

BASES AND BEAM (TRACKING SYSTEM) 25

N.	Code	QTY	Denomination
1	AV51CH0126	1	Beam L=3000mm
2	AV51BA0140	1	Base
3	AV51BA0101	2	Base
4	AV51BA0410	4	Support
5	AV51BA0300	1	Panel
6	AV51BA0200	1	Door
7	AV51BA0550	1	Base
8	AV51BA2800	1	Key-board
9	AV51BA2500	1	Housing
10	AV51BA2700	1	Support
11	AV51BA2600	1	Support
12	AV51BA2900	2	Support
13	AV51BA3301	2	Bushing
14	AV51BA3300	2	Eyebolt
15	AV51BA0800	14	Column
16	AV51BA0900	28	Washer
17	AV51BA1000	28	Washer
18	AV51BA1400	8	Screw
19	AV51BA1500	4	Tie rod
20	AV51BA1200	4	Plate
21	AV51BA1100	4	Plate
22	AV51BA3000	4	Plug
23	AV51BA3100	4	Plug
24	AB110300	1	Joint
25	A12110300	1	Pneumatically-actuated electrical microswitch PM-20
26	A15140200	1	Connection 1/4"
27	A13120500	1	Connection 1/4"xø8
28	A12140400	1	Pressure switch
29	A17110300	1	90° Connection 1/4"x1/4"

25 37 BAR FEEDER MODEL ACCORDING TO THEMAX.

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PATRIOT-SX

TRACKING SYSTEM

N.	Code	QTY	Denomination
1	AV51MZ0201	1	Fixing plate
2	AV51MZ1400	1	Positioning plate
3	AV51MZ0420	1	Plate
4	AV51MZ0500	1	Plate
5	AV51MZ0610	1	Arbor
6	AV51MZ0700	2	Ring
7	AV51MZ0800	1	Block
8	AV51MZ000B	1	Bolt
9	AV51MZ1000	1	Anchor
10	AV51BA0810	1	Bushing
11	B6207ZZ	2	Bearing
12	P35201200	1	Handle 1160-M14-250
13	BSF2815	2	Bearing SF-2815
14	AV51MZ1500	1	Fixing plate
15	AV51MZ1600	1	Positioning plate
16	ZS0112300	2	Screw bolt
17	J310409	1	Microswitch TZ-7311
18	J310419	2	Microswitch V-15-1A5
19	ADP779810026	1	Support
20	ADP779810027	1	Support
21	AV51MA3100	2	Ring
22	ADP779810028	1	Support
23	AV51MZ008A	1	Axial tracking system
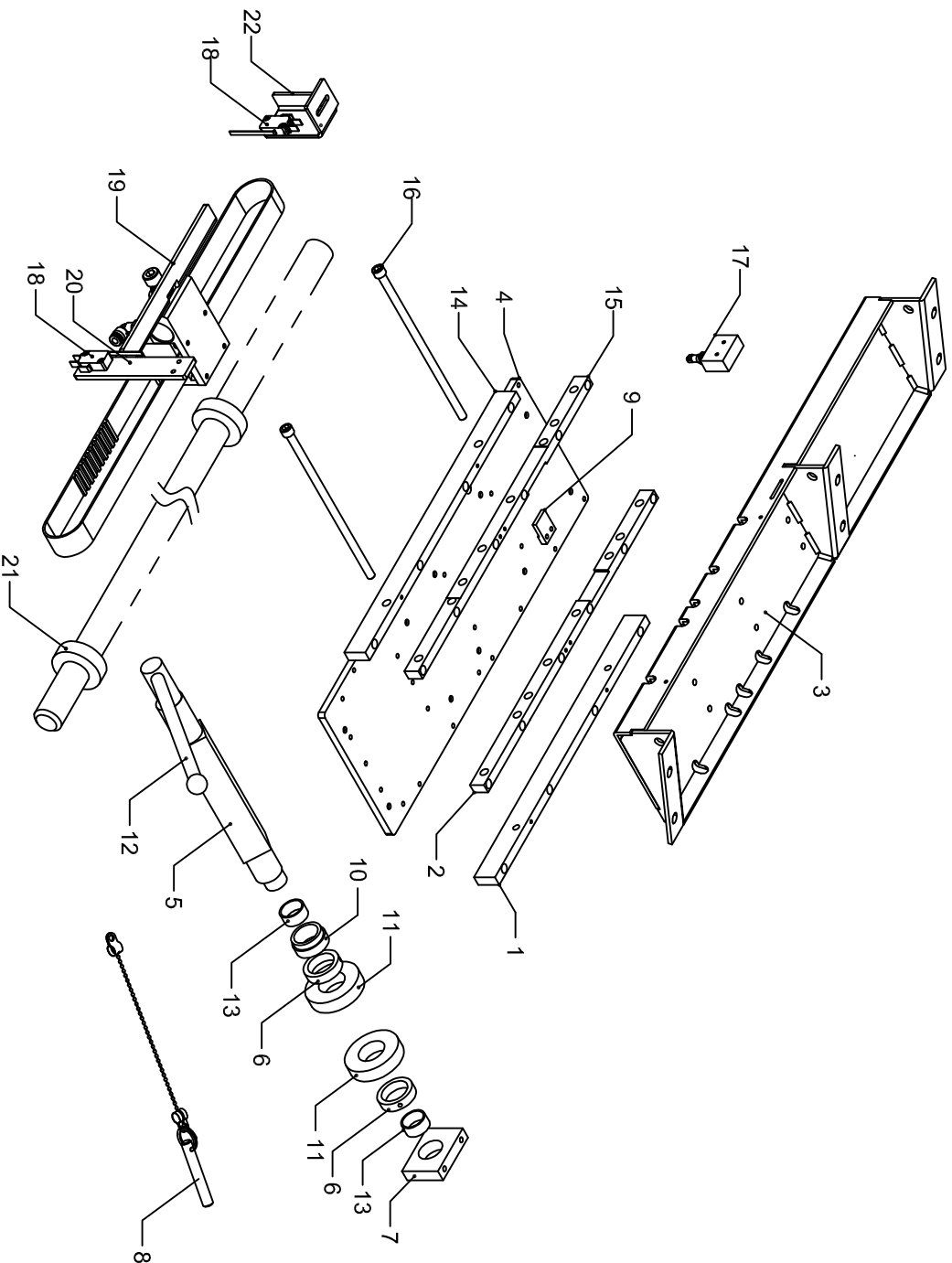
※ 3.7M FOR FRONT / 2.5M FOR BACK

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PATRIOT-SX

BACK TRACKING SYSTEM 37

N.	Code	QTY	Denomination
1	AV51MZ0201	1	Fixing plate
2	AV51MZ1400	1	Positioning plate
3	AV51MZ0430	1	Plate
4	AV51MZ0500	1	Plate
5	AV51MZ0610	1	Arbor
6	AV51MZ0700	2	Ring
7	AV51MZ0800	1	Block
8	AV51MZ000B	1	Bolt
9	AV51MZ1000	1	Anchor
10	AV51BA0810	1	Bushing
11	B6207ZZ	2	Bearing
12	P35201200	1	Handle 1160-M14-250
13	BSF2815	2	Bearing SF-2815
14	AV51MZ1500	1	Fixing plate
15	AV51MZ1600	1	Positioning plate
16	ZS0112300	2	Screw bolt
17	AV51MZ009A	1	Axial tracking system

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⊠ 17

FRONT TRACKING SYSTEM 25

Tab. 048 1

N.	Code	QTY	Denomination
1	AV51MZ1400	1	Positioning plate
2	AV51MZ2900	1	Fixing plate
3	AV51MZ0450	1	Plate
4	AV51MZ0500	1	Plate
5	AV51MZ0610	1	Arbor
6	AV51MZ0700	2	Ring
7	AV51MZ0800	1	Block
8	AV51MZ000B	1	Bolt
9	AV51MZ1600	1	Positioning plate
10	AV51BA0810	1	Bushing
11	B6207ZZ	2	Bearing
12	P3520I200	1	Handle 1160-M14-250
13	AV51MZ1000	1	Anchor
14	BSF2815	2	Bearing SF-2815
15	AV51MZ2800	1	Fixing plate
16	ZS0112300	2	Screw bolt
17	AV51MZ001C	1	Axial tracking system

PATRIOT-SX

FEED MOTOR DRIVE

N.	Code	QTY 25	QTY 37	Denomination
1	J221202	1		Motor HF-SP102
2	AV51DR0500	1		Whorl pole 28T
3	AV51DR0420	1		Support
4	AV51DR0300	6		Pillar
5	AV51DR0100	1		Worm gear 80T
6	AV51DR0200	1		Whorl pole 19T
7	B6005ZZ	2		Bearing
8	B6907ZZ	1		Bearing
9	AV51DR0410	1		Support
10	AV51DR0600	1		Support
11	AV51DR1401	1		Sensor bracket
12	AV51DR1402	1		Bracket
13	AV51DR1300	1		Plate
14	AV51DR1210	1		Chain adjustable block
15	AV51DR1110	1		Chain guide-3.7M L=1094
16	AV51DR1113	1		Chain guide-2.5M L=2830
17	AV51DR1111	1		Chain guide-3.7M L=2925
18	AV51DR1010	1		Chain guide-3.7M L=2980
	AV51DR1013		1	Chain guide-2.5M L=2996
	AV51DR1011		1	Chain guide-3.7M L=1215
19	AV51DR0700	1		Sprocket 39T
20	AV51DR0900	1		Spacer
21	AV51DR0801	1		Support
22	B6003ZZ	2		Bearing
23	AV51DR0810	1		Support
24	AV51DR1601		1	Chain-2.5M L=617P
25	AV51DR1700	2		Chain-3.7M L=875P
26	AV51DR1800	2		Chain link 3/8"
27	A11131000	1		Adjustable valve JSC 8-03
28	A12140501	1		Cylinder SDAS 80x45
29	AV51GR4200	1		Magnetic sensor LY-67A-5M
30	AV51GR4500	1		Slide block
31	AV51GR4700	1		CAM
32	AV51GR0800	1		Pin
33	AV51CH1701	1		Connector
34	AV51GR4610	1		Pillar
35	AV51GR4300	1		Extensive block
36	AV51GR4410	1		Push block
37	AV51GR3202	1		OAM block
37				Guide block 2

N.	Code	QTY 25	QTY 37	Denomination
38	AV51GR3201	1		Guide block
39	AV51GR5000	1		Spring
40	AV51MA3301	1		Screw
41	AV51MA3302	1		Handle
42	AV51GR4800		1	Push block plwnger
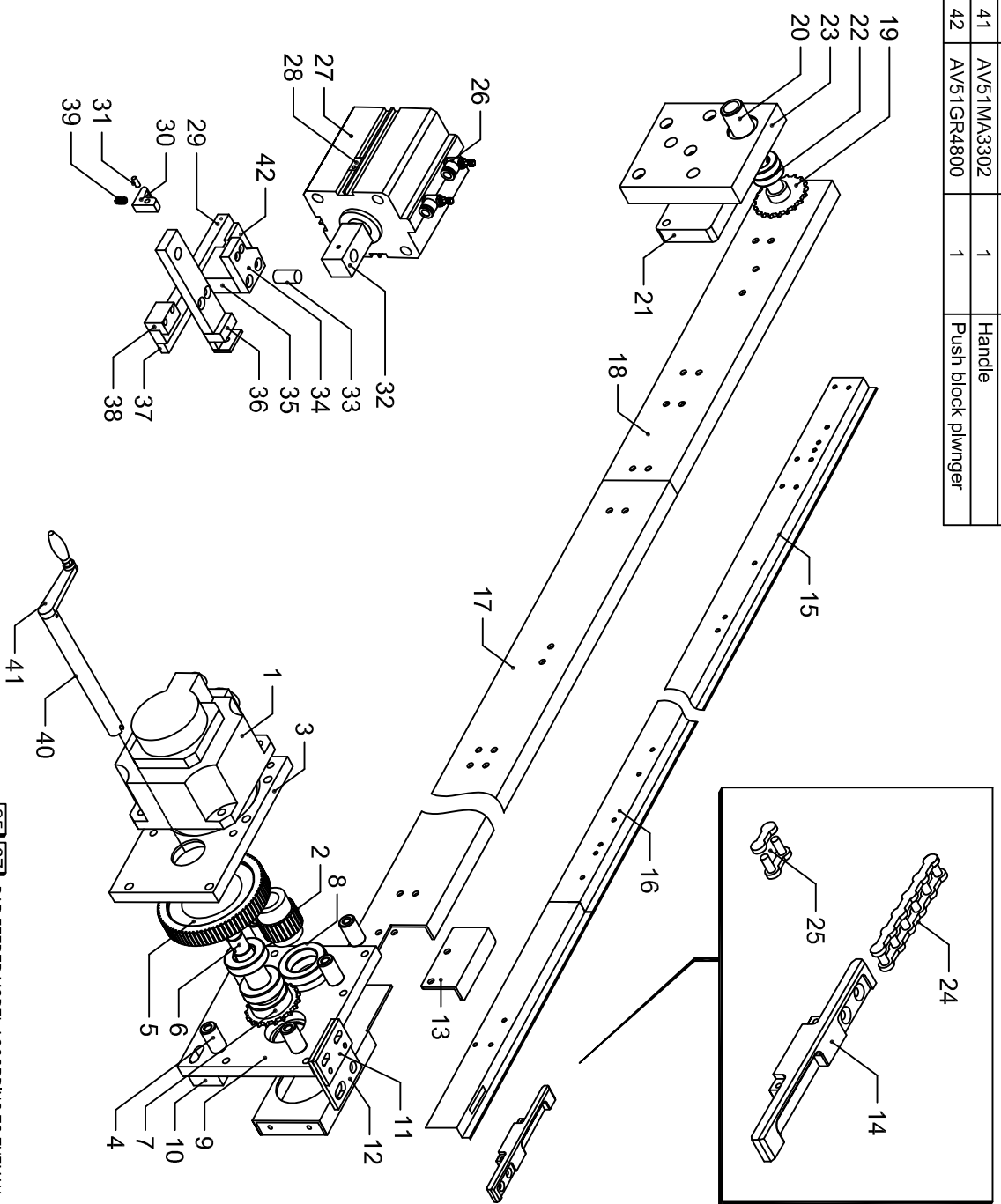
25 37 BAR FEEDER MODEL ACCORDING TO THEMAX.

PATRIOT-SX

CUTTING DEVICE

N.	Code	QTY	Denomination
1	AV51FA0510	1	Cover
2	G92120600	1	Spring
3	AV51FA0210	1	Short feed door
4	A11130700	1	Cylinder SDA12x15
5	AV51FA0300	1	Flag
6	J310313	1	Microswitch
7	AV51FA0400	1	Bracket
8	AV51FA0110	1	Housing
9	A12130300	2	Flow regulator JSC 6-M5
10	AV51FA001A	1	Cutting assembly

Tab. 060 5

N.	Code	QTY	Denomination
1	AV51CH0701	1	Plate
2	AV51CH0600	7	Support
3	AV51CH1525	1	Shaft L=2765
4	AV51CH0900	12	Support
5	AV51CH0700	11	Support
6	AV51CH0800	21	Collet
7	A11130600	1	Cylinder SDAS 50x100B
8	BPHS18	1	Joint
9	AV51CH1701	2	Arbor
10	AV51CH1700	2	Support
11	AV51CH1900	1	Support
12	AV51CH1800	1	Cylinder anchor
13	AV51CH0500	2	Anchor
14	AV51CH0501	2	Anchor
15	AV51CH0300	1	Aluminum batten
16	AV51CH0200	1	Aluminum batten
17	AV51CH0400	2	Aluminum batten
18	AV51CH4100	3	Stopper holder
19	AV51CH4000	3	Stpper
20	AV51CH3700	2	Fixing ring
21	A12140501	2	Sensor switch LY-67A-5M
22	AV51CH3300	2	Fixed ring

PATRIOT-SX

GUIDE CHANNEL SUPPORT 25 L

Tab.
070 2

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PATRIOT-SX

GUIDE CHANNEL SUPPORT [25] [LL]

N.	Code	QTY	Denomination
1	AV51CH0701	1	Plate
2	AV51CH0600	7	Support
3	AV51CH1525	1	Shaft L=2765
4	AV51CH0900	12	Support
5	AV51CH0700	11	Support
6	AV51CH0800	20	Collet
7	A11130600	1	Cylinder SDAS 50x100B
8	BPHS18	1	Joint
9	AV51CH1701	2	Arbor
10	AV51CH1700	2	Support
11	AV51CH1900	1	Support
12	AV51CH1800	1	Cylinder anchor
13	AV51CH0500	2	Anchor
14	AV51CH0501	2	Anchor
15	AV51CH0300	2	Aluminum batten
16	AV51CH0200	1	Aluminum batten
17	AV51CH4100	3	Stopper holder
18	AV51CH4000	3	Stpper
19	AV51CH3700	2	Fixing ring
20	A12140501	2	Sensor switch LY-67A-5M
21	AV51CH3300	2	Fixed ring

[L] [LL] BAR FEEDER PUSHER REFERENCE ABBREVIATION (l=LONG,LL=EXTRA LONG)
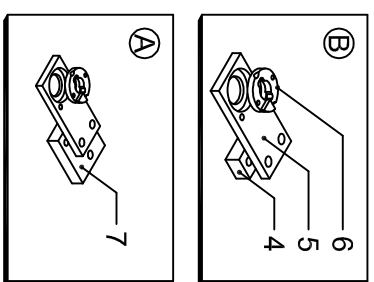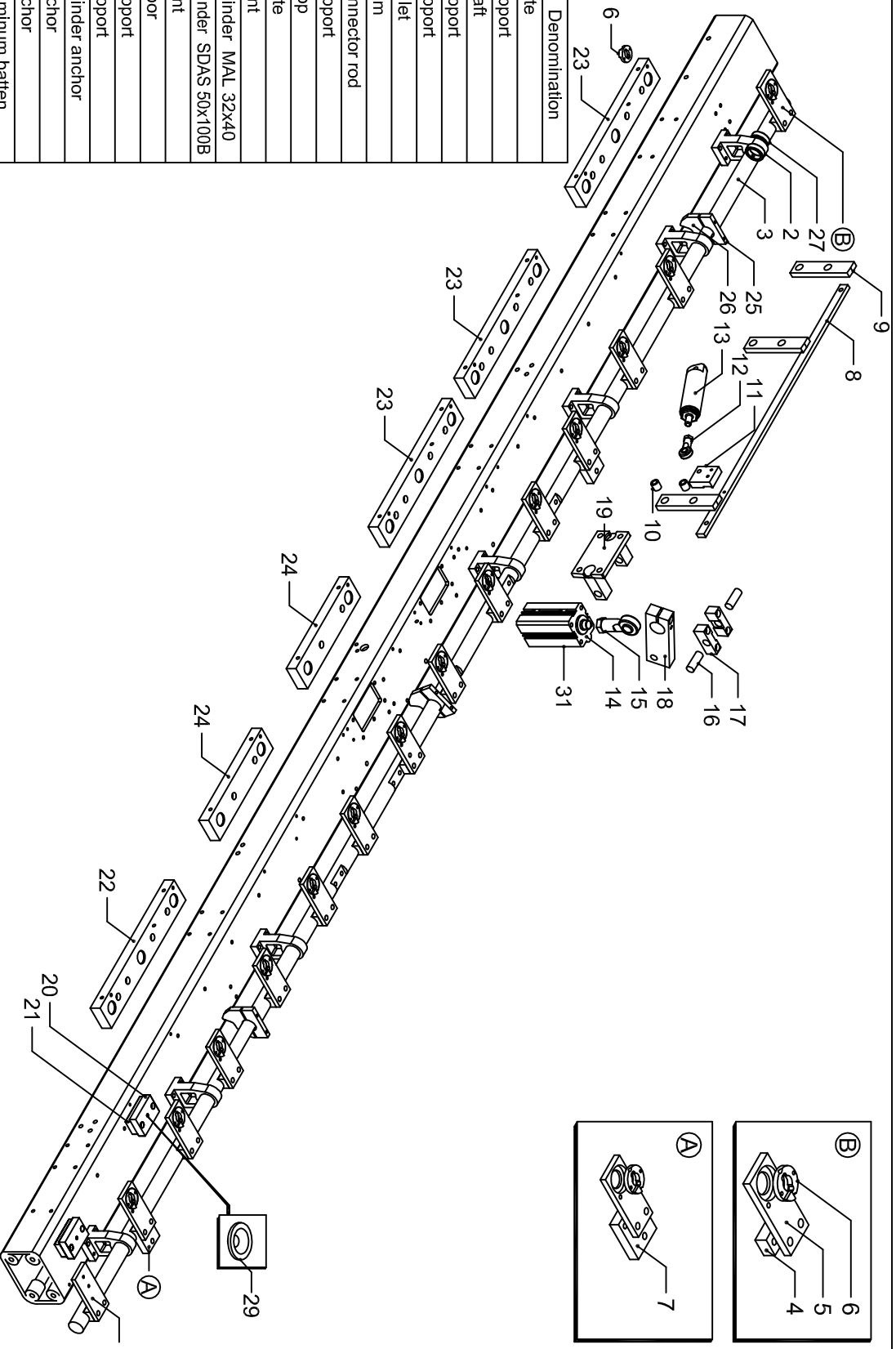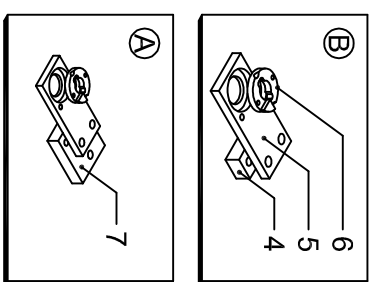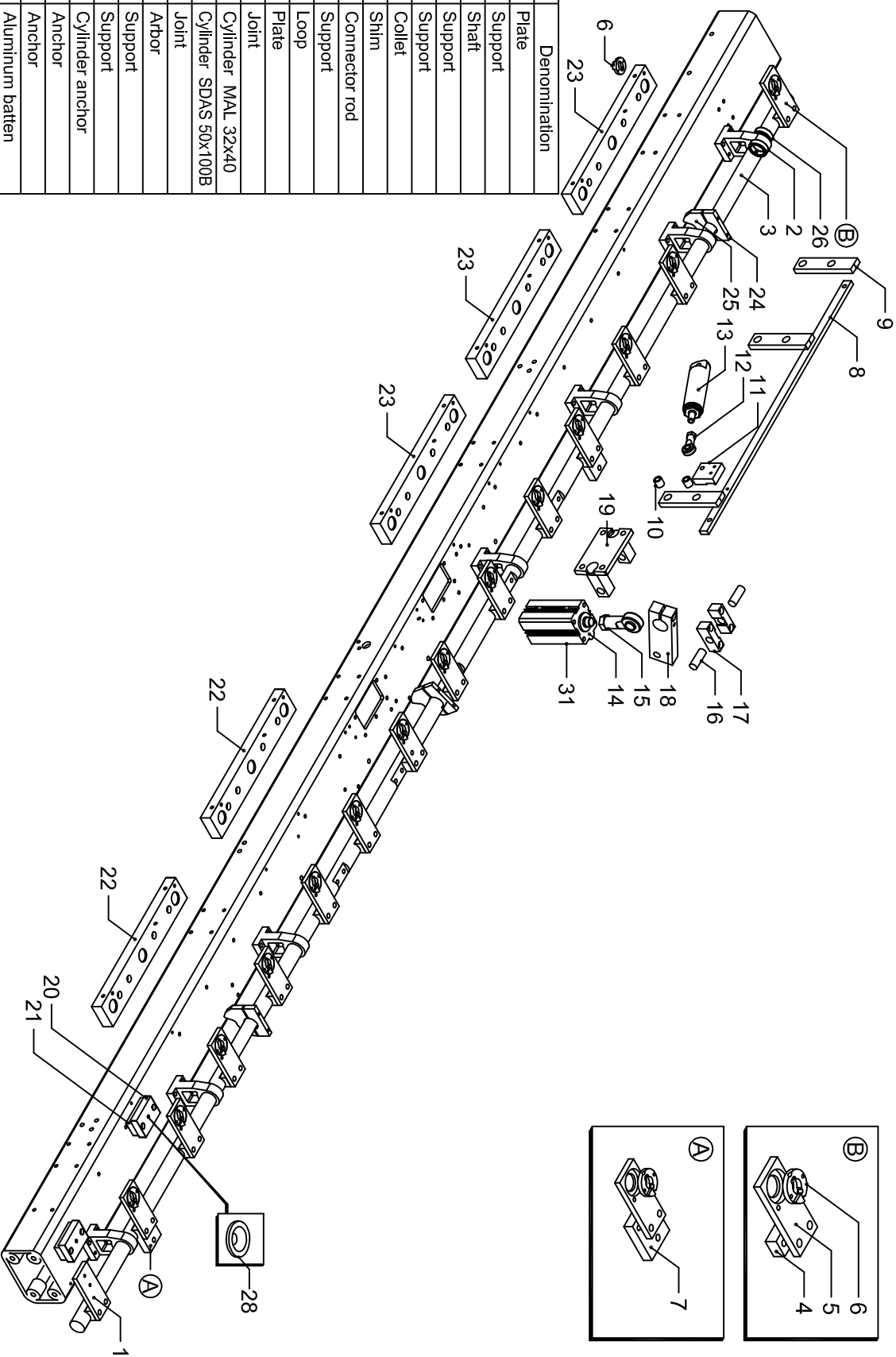
[25] [37] BAR FEEDER MODEL ACCORDING TO THE MAX.

Tab. 071 2

PATRIOT-SX

GUIDE CHANNEL SUPPORT [37] [L]

N.	Code	QTY	Denomination
1	AV51CH0701	1	Plate
2	AV51CH0600	9	Support
3	AV51CH1537	1	Shaft
4	AV51CH0900	15	Support
5	AV51CH0700	17	Support
6	AV51CH0800	33	Collet
7	AV51CH1000	3	Shim
8	AV51CH1237	1	Connector rod
9	AV51CH1100	3	Support
10	AV51CH1600	6	Loop
11	AV51CH1300	1	Plate
12	BPHS10	1	Joint
13	A11111300	1	Cylinder MAL 32x40
14	A11130600	1	Cylinder anchor
15	BPHS18	1	Joint
16	AV51CH1701	2	Arbor
17	AV51CH1700	2	Support
18	AV51CH1900	1	Support
19	AV51CH1800	1	Cylinder anchor
20	AV51CH0500	2	Anchor
21	AV51CH0501	2	Anchor
22	AV51CH0300	1	Aluminum batten
23	AV51CH0200	3	Aluminum batten
24	AV51CH0400	2	Aluminum batten
25	AV51CH4100	3	Stopper holder
26	AV51CH4000	3	Stpper
27	AV51CH3700	2	Fixing ring
28	A12140501	2	Sensor switch LY-67A-5M
29	AV51CH3300	2	Fixed ring

Tab: 072 4

N.	Code	QTY	Denomination
1	AV51CH0701	1	Plate
2	AV51CH0600	9	Support
3	AV51CH1537	1	Shaft
4	AV51CH0900	15	Support
5	AV51CH0700	17	Support
6	AV51CH0800	32	Collet
7	AV51CH1000	3	Shim
8	AV51CH1237	1	Connector rod
9	AV51CH1100	3	Support
10	AV51CH1600	6	Loop
11	AV51CH1300	1	Plate
12	BPHS10	1	Joint
13	A11111300	1	Joint
14	A11130600	1	Cylinder SDAS 50x100B
15	BPHS18	1	Joint
16	AV51CH1701	2	Arbor
17	AV51CH1700	2	Support
18	AV51CH1900	1	Support
19	AV51CH1800	1	Cylinder anchor
20	AV51CH0500	2	Anchor
21	AV51CH0501	2	Anchor
22	AV51CH0300	2	Aluminum batten
23	AV51CH0200	3	Aluminum batten
24	AV51CH4100	3	Stopper holder
25	AV51CH4000	3	Stpper
26	AV51CH3700	2	Fixing ring
27	A12140501	2	Sensor switch LY-67A-5M
28	AV51CH3300	2	Fixed ring

PATRIOT-SX

GUIDE CHANNEL 25

N.	Code	QTY L	QTY LL	Denomination
1	AV51CH3600	1	1	Support
2	AV51CH2701	1	1	Support
3	AV51CH3200	11	11	Screw
4	AV51CH3100	10	9	Screw
5	AV51CH3900	21	20	Spacer
6	BB25	42	40	Bellerille washer
7	AV51CH3800	21	20	Bushing
8	ZS080425	21	20	Pin
9	AV__CH2710	1	1	Upper guide channel
10	AV__CH2610	1		Upper guide channel
11	AV__CH2500	1	2	Upper guide channel
12	AV__CH2400	1	1	Lower guide channel
13	AV__CH2210	1	1	Lower guide channel
14	AV__CH2110	2	1	Lower guide channel
15	AV__CH2000	1	2	Lower guide channel
16	AV__CH2910		1	Upper guide channel
17	AV__CH3400	1	1	Support
18	AV__CH3500	1	1	Support
19	AV__CH2501	1		Upper guide channel
20	AV51CH4200	10	12	Arbor (12~37 Type)
21	AV__CH0025-LR	1		Guide channel
22	AV__CH0025-LLR		1	Guide channel
23	AV51CH310A	10	9	Build-in fitting set
24	AV51CH320A	11	11	Build-in fitting set

NOMINAL DIAMETER D.
ø 12 16 20 25 27 32 35 37 38 42 45 51
13 17 21 26 28 33 36 38 39 43 46 52

L LL BAR FEEDER PUSHER REFERENCE ABBREVIATION (L=LONG,LL=EXTRA LONG)
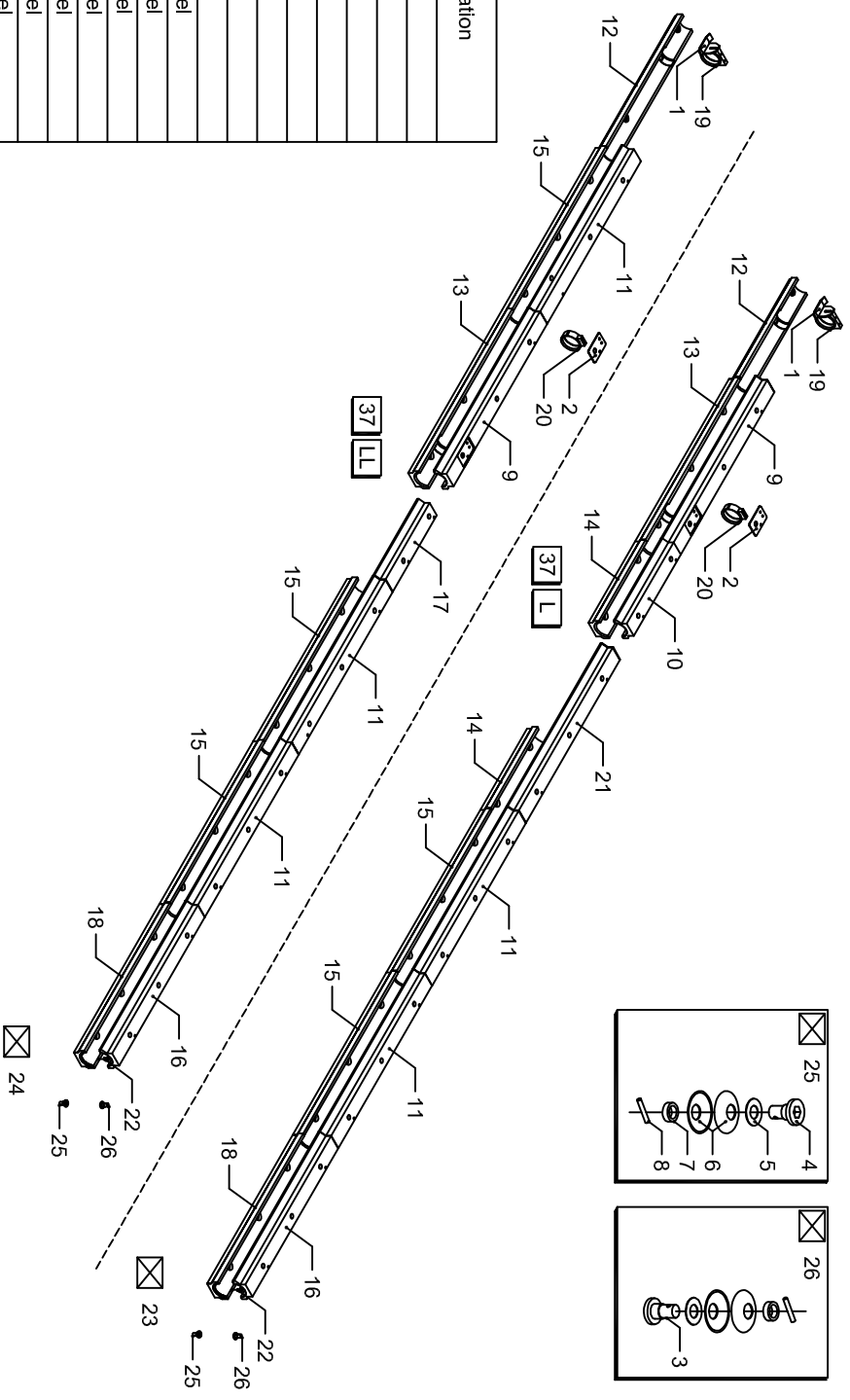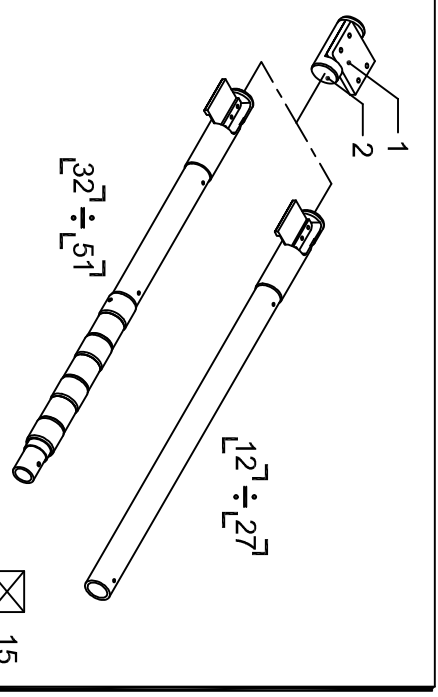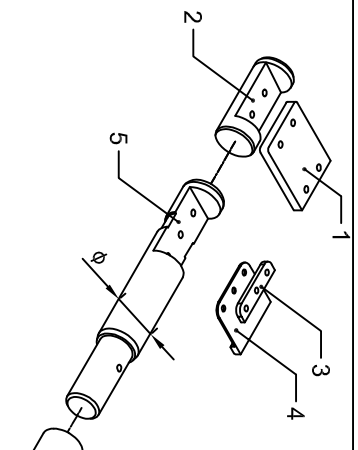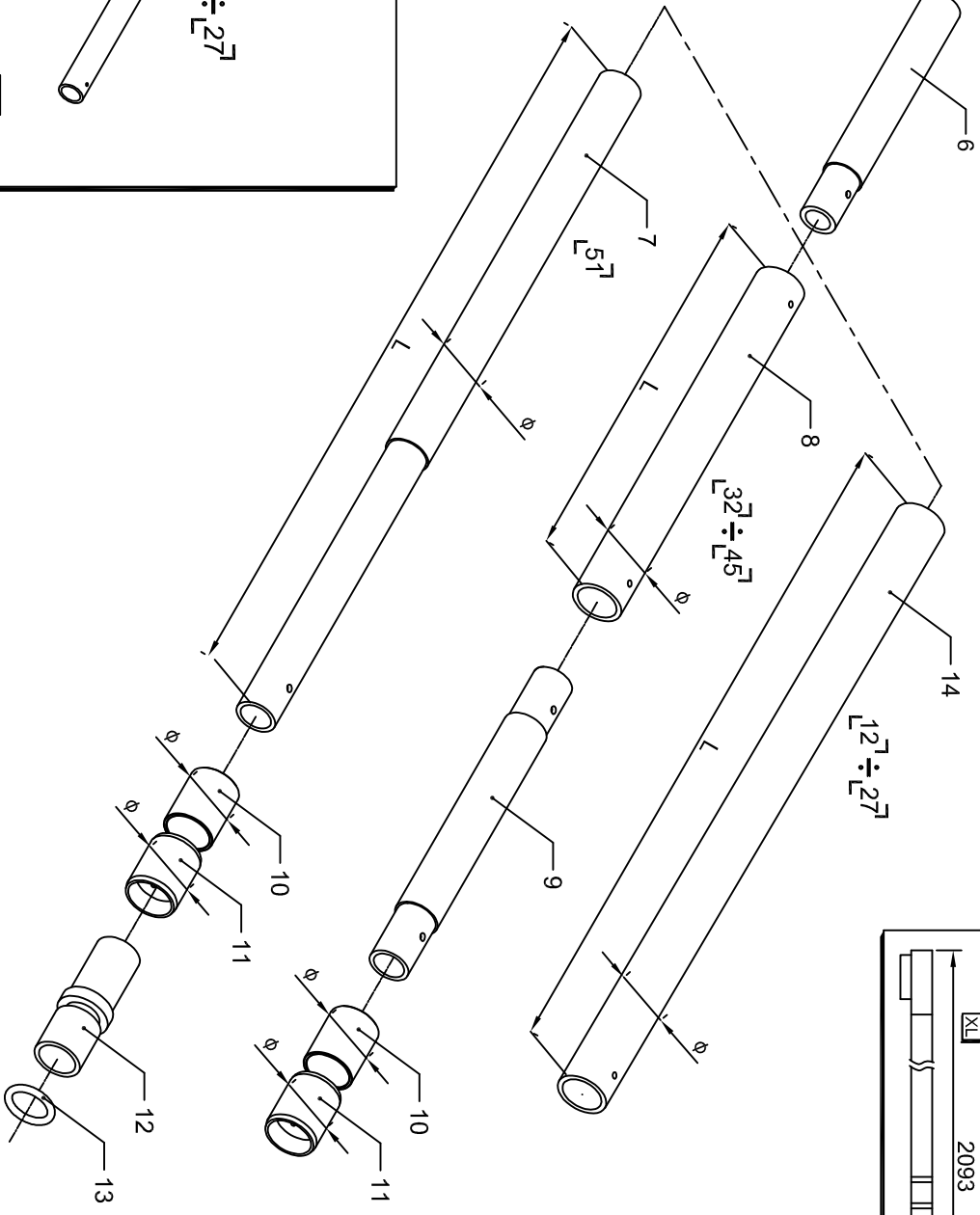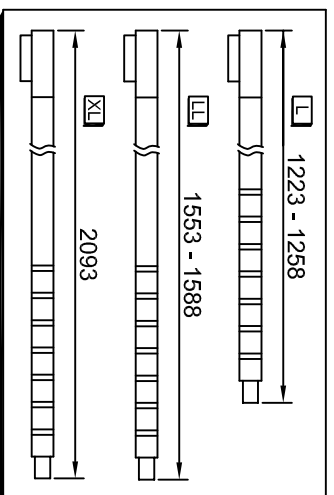25 37 BAR FEEDER MODEL ACCORDING TO THEMAX.

N.	Code	QTY L	LL	Denomination
1	AV51CH3600	1	1	Support
2	AV51CH2701	1	1	Support
3	AV51CH3200	17	17	Screw
4	AV51CH3100	16	15	Screw
5	AV51CH3900	33	32	Spacer
6	BB25	66	64	Bellerille washer
7	AV51CH3800	33	32	Bushing
8	ZS080425	33	32	Pin
9	AV__CH2710	1	1	Upper guide channel
10	AV__CH2610	1		Upper guide channel
11	AV__CH2500	2	3	Upper guide channel
12	AV__CH2400	1		Upper guide channel
13	AV__CH2210	1	1	Lower guide channel
14	AV__CH2110	2		Lower guide channel
15	AV__CH2000	2	3	Lower guide channel
16	AV__CH2810	1	1	Upper guide channel
17	AV__CH2910	1	1	Upper guide channel
18	AV__CH2310	1	1	Lower guide channel
19	AV__CH3400	1	1	Support
20	AV__CH3500	1	1	Support
21	AV__CH2501	1		Upper guide channel
22	AV51CH4200	16	18	Arbor (12~37 Type)
23	AV__CH0037-LR	1		Lower guide channel
24	AV__CH0037-LLR		1	Lower guide channel
25	AV51CH310A	16	15	Build-in fitting set
26	AV51CH320A	17	17	Build-in fitting set

NOMINAL DIAMETER D.
⌀ 13 17 21 26 28 33 36 38 39 43 46 52
12 16 20 25 27 32 35 37 38 42 45 51

L LL   25   BAR FEEDER PUSHER REFERENCE ABBREVIATION (L=LONG, LL=EXTRA LONG)
37   BAR FEEDER MODEL ACCORDING TO THE MAX.

BAR PUSHER DEVICE

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⌐L⌐ ⌐LL⌐ ⌐XL⌐ BAR FEEDER PUSHER REFERENCE ABBREVIATION (LL=LONG,LL=EXTRA LONG)

⌐12⌐÷⌐5⌐ RATED REFERENCE DIAMETER DEFINING THE BAR FEEDER EQUIPMENT.

L	1223 - 1258
LL	1553 - 1588
XL	2093

Tab. 090 1:1

N.	Code	QTY	Denomination
1	AV51PB1002	1	Prefeed pusher flag
2	AV__PB0900	1	Prefeed pusher
			NOMINAL DIAMETER D. 12 16 20 25 27 32 35 37 38 42 45 51 / φ 12 16 20 25 27 32.5 35.5 37.5 38.5 42.5 45.5 51.5
3	AV16PB0300	1	Anchor 10 - 16
	AV20PB0300	1	Anchor 18 - 20
	AV51PB0300	1	Anchor 25 - 51
4	AV20PB0200	1	Flag 10 - 20
	AV51PB0200	1	Flag 25 - 51
5	AV__PB0110	1	Pusher
6 (XL)			NOMINAL DIAMETER D. 12 16 20 25 27 32 35 37 38 42 45 51 / φ 12 16 20 25 27 32 35 37 38 42 45 51
	AV__PB0530	1	Bar pusher L=540
7			NOMINAL DIAMETER D. 12 16 20 25 27 32 35 38 42 / φ 12 16 20 25 27 32 35 38 42
(L)	AV51PB0400	1	Bar pusher φ50.8 L=1005 (51 Type)
(LL)	AV51PB0500	1	Bar pusher φ50.8 L=1335 (51 Type)
8			
(L)	AV__PB0400	1	Bar pusher L=642
(LL)	AV__PB0500	1	Bar pusher L=972
(XL)	AV__PB0500	1	Bar pusher L=972
9	AV__PB0600	1	NOMINAL DIAMETER D. 32 35 37 38 42 45 / φ 30 34 35 38 40 45 Bar pusher
10	AV__PB0700	3	NOMINAL DIAMETER D. 32 35 37 38 42 45 51 / φ 27.4 30 32 35 40 Spacer
11	AV__PB0800	4	NOMINAL DIAMETER D. 32 35 37 38 42 45 51 / φ 31.5 34 36 37 40 43 49 Bronze ring
12	AV51PB1100	1	NOMINAL DIAMETER D. 32 35 37 38 42 45 51 / φ 32 34.5 37 38 41.5 44.3 51 Connector rod (51 Type)
13	AV51PB1200	1	Piston (51 Type)

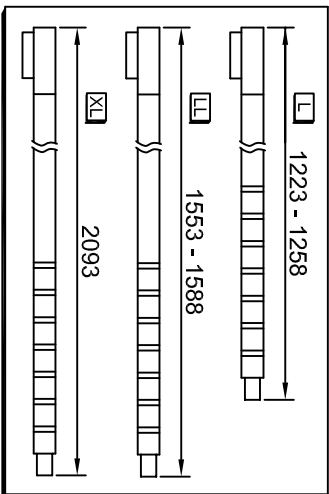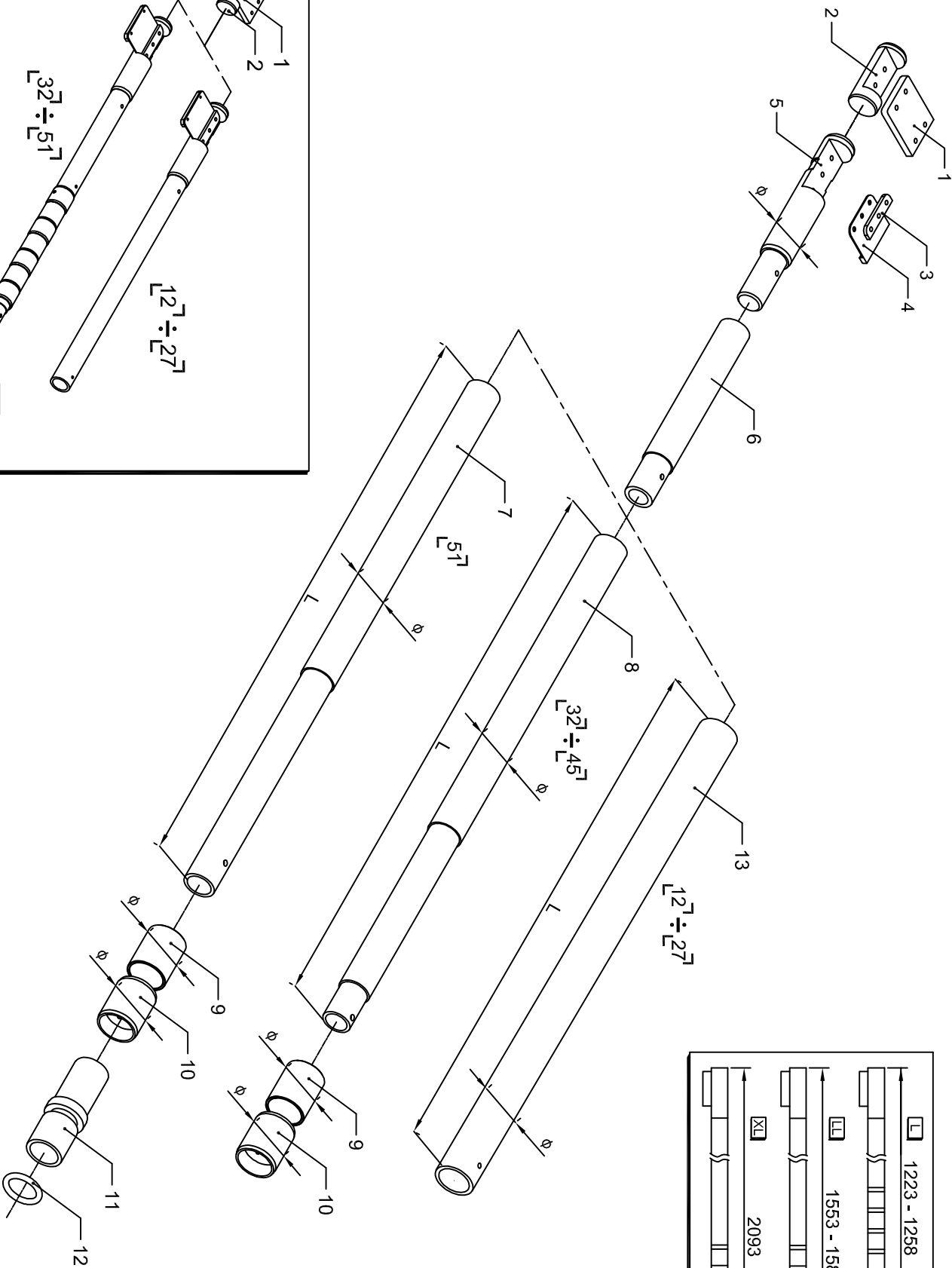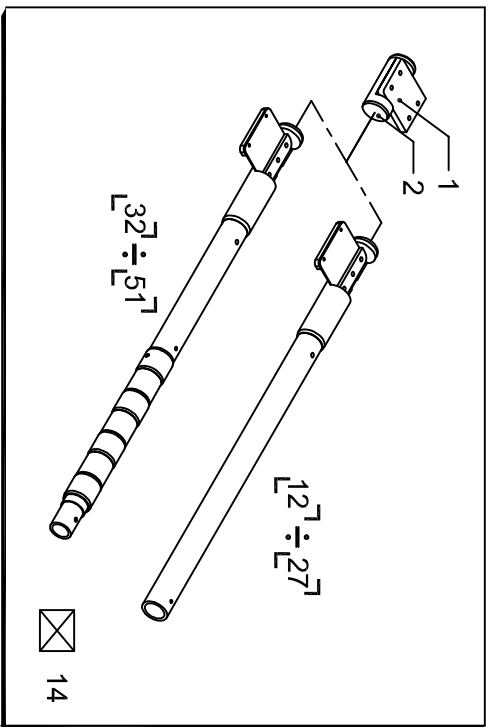| N.	Code	QTY	Denomination
14			
(L)	AV__PB0400	1	Bar pusher
(LL)	AV__PB0500	1	Bar pusher
(XL)	AV__PB0500	1	Bar pusher
			NOMINAL DIAMETER D. 12 16 20 25 27 / φ 12 16 20 25.2 27
15	AV__PB0010-__R	1	TYPE. L [L] LL [LL] XL [XL] Bar pusher device
			NOMINAL DIAMETER D. 12 16 20 25 27 32 35 36 37 38 42 45 51 / φ 12 16 20 25 27 32 34.5 36 37 38 41.5 44.3 51

φ12÷51 RATED REFERENCE DIAMETER DEFINING THE BAR FEEDER EQUIPMENT.

[L] [LL] [XL] BAR FEEDER PUSHER REFERENCE ABBREVIATION (L=LONG, LL=EXTRA LONG)

PATRIOT-SX

BAR PUSHER DEVICE

Tab. 092 1:1

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L 1223 - 1258

LL 1553 - 1588

XL 2093

BAR PUSHER DEVICE

Tab. 092 1/1

N.	Code	QTY	Denomination
1	AV51PB1002	1	Prefeed pusher flag
2	AV__PB0900	1	Prefeed pusher
	NOMINAL DIAMETER D. : 12 16 20 25 27 32 35 38 42 45 51 φ12 16 20 25 27 32.5 35.5 38.5 42.5 45.5 51.5		
3	AV16PB0300	1	Anchor 10 - 16
	AV20PB0300	1	Anchor 18 - 20
	AV51PB0300	1	Anchor 25 - 51
4	AV20PB0210	1	Flag 10 - 20
	AV51PB0210	1	Flag 25 - 51
5	AV__PB0120	1	Pusher
	NOMINAL DIAMETER D. : 12 16 20 25 27 32 35 38 42 45 51 φ12 16 20 25 27 32 35 38 42 45 51		
[XL] 6	AV__PB0530	1	Bar pusher L=540
	NOMINAL DIAMETER D. : 12 16 20 25 27 32 35 38 42 45 51 φ12 16 20 25 27 32 35 38 42 45 51		
7 [L]	AV51PB0420	1	Bar pusher φ49 L=997 (51 Type)
[XL]	AV51PB0520	1	Bar pusher φ49 L=1327 (51 Type)
8 [L]	AV__PB0420	1	Bar pusher L=1061
[LL]	AV__PB0520	1	Bar pusher L=1391
[XL]	AV__PB0520	1	Bar pusher L=1391
	NOMINAL DIAMETER D. : 12 16 20 25 27 32 35 38 42 45 51 φ12 16 20 25 27 32 35 38 42 45 51		
9	AV__PB0700	3	Spacer
	NOMINAL DIAMETER D. : 32 35 38 42 45 51 φ31.5 34 37 40 43 49		
10	AV__PB0800	4	Bronze ring
	NOMINAL DIAMETER D. : 32 34 35 38 42 45 51 φ32 34 34.5 38 41.5 44.3 51		
11	AV51PB1100	1	Connector rod (51 Type)
12	AV51PB1200	1	Piston (51 Type)

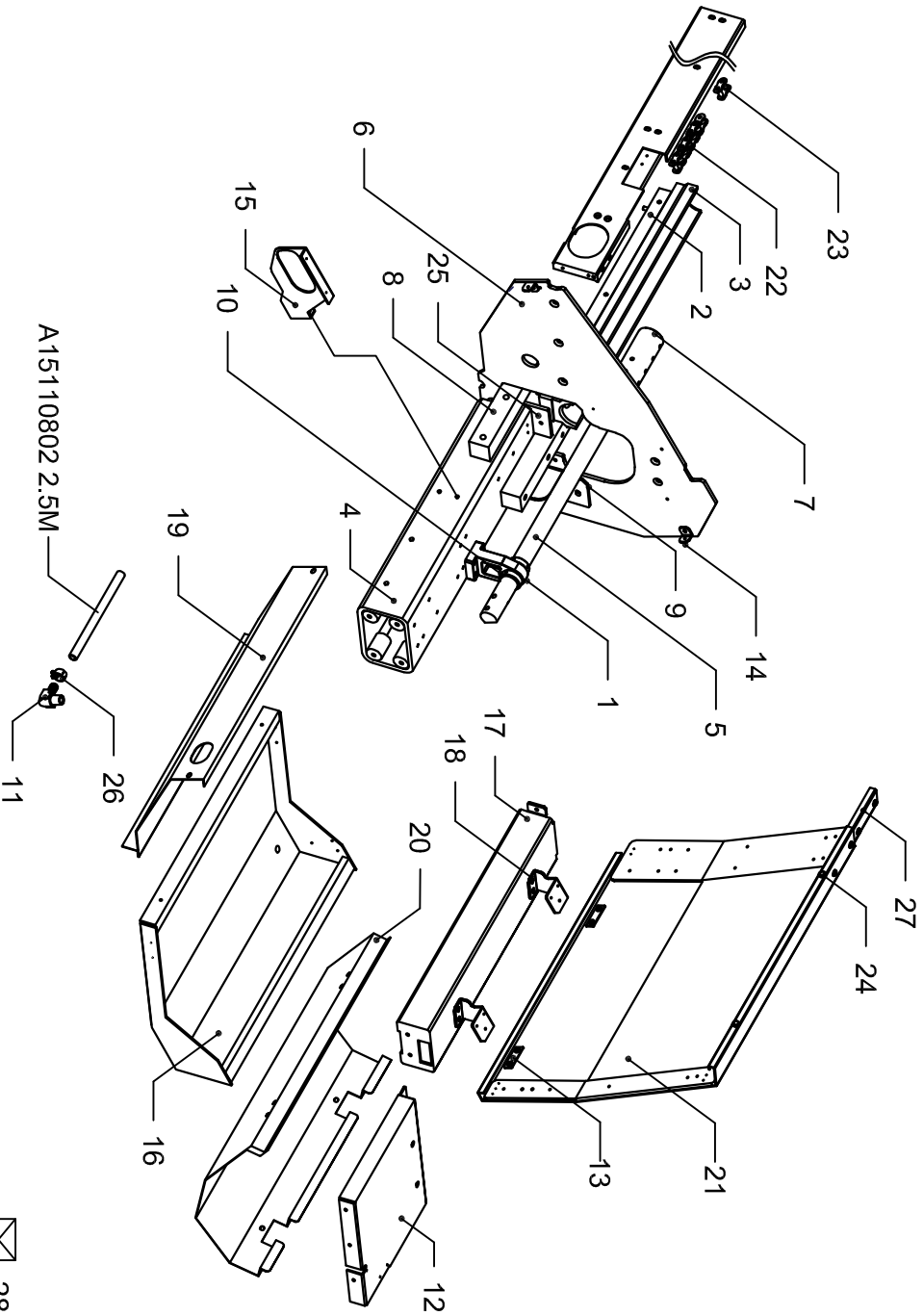| N.	Code	QTY	Denomination
13 [L]	AV__PB0520	1	Bar pusher
[LL]	AV__PB0520	1	Bar pusher
[XL]	AV__PB0420	1	Bar pusher
	NOMINAL DIAMETER D. : 12 16 20 25 27 φ10 15 18 23 24		
14	AV__PB0020-__R	1	Bar pusher device
	TYPE. : L [L] LL [LL] XL [XL]		
	NOMINAL DIAMETER D. : 12 16 20 25 27 32 34 35 38 42 45 51 φ11 15 19 24 25 32 34 34.5 38 41.5 44.3 51		

[L] [LL] [XL] BAR FEEDER PUSHER REFERENCE ABBREVIATION (L=LONG, LL=EXTRA LONG)
12÷51 RATED REFERENCE DIAMETER DEFINING THE BAR FEEDER EQUIPMENT.

PATRIOT-SX

PUSHER EXTENSION KIT 540MM

N.	Code	QTY			Denomination
		25	37		
1	AV51CH000J	1			Support
	AV51CH000C		1		Aluminum batten
2	AV51CH000C			1	Aluminum batten
	AV51CH001C			1	Aluminum batten-AS
3	AV__CH2300		1		Aluminum batten
4	AV51CH0141		1		Lower guide channel
5	AV51BA1538		1		Beam
6	AV51BA1641		1		Shaft
7	AV51CH4900		1		Plate
8	AV51CH5100		2		Connector rod
9	AV51BA1651		1		Connector rod
10	AV51CH3700		2		Plate
11	A17140700		1		Fixing ring
12	AV51MA2202		1		L Fitting 3/8"Px1/2E"
13	G8112000A		4		Support
14	AV51BA1901		3		Hinge
15	AV51MA2300		1		Plate
16	AV51BA1841		1		Support
17	AV51MA1920		1		Bowl
18	AV51BA2201		2		Tube
19	AV51BA1960		1		Plate
20	AV51BA2060		1		Cover
21	AV51BA2180	1			Cover
22	AV51BA2170		1		Cover
23	AV51DR1603		1		Cover
24	G81121000		2		Chain
25	AV51GR4900		1		Chain link
26	A16120400		2		Rubber mounting
27	AV51BA6200		1		Plate
28	AV51XL000C	1			5/8" Hose clamp
	AV51XL000B		1		Plate
	AV51XL000D			1	Pusher extension kit
					Pusher extension kit-AS
					Pusher extension kit

A15110802 2.5M

Tab. 095 4

N.	Code	QTY	Denomination
1	G53120900	1	Screw
2	AV51BU0410	1	Plate
3	A12130800	2	Connection
4	A11131800	1	Cylinder SDA 50x30
5	AV51BU0900	1	Support
6	AV51BU1600	2	Bushing
7	AV51BU0810	1	Ring
8	AV51BU0310	2	Slide
9	BIRT1220	2	Bearing
10	AV51BU0100	1	Support
11	BCB852010	1	Bearing
12	AV51BU0230	1	Case
13	AV51BU0500	1	Ring
14	AV51BU0700	1	Cover
15	AV51BU1100	1	Flange
16	AV51BU1800	1	Oil hose holder
17	AV51BU1900	2	Adjuster
18	A12120800	1	Valve
19	A13110800	2	Straight connector SPC 8-01
20	AV51BU2300	2	Block
21	AV51BU0430	2	Gasket
22	AV51BU2400	1	Shaft
23	A17110200	1	Connector 1/4"x3/8"

N.	Code	QTY	Denomination
24	A16130100	1	Ball valve 3/8"
25	A17140500	1	L incision 3/8"x5/8"
26	ZS01085001	1	Screw 8x50
27	ZS160830	1	Handle screw
28	AV51BU1300	1	Oil recovery
29	AV51BU1500	1	Seal
30	A16120800	1	1" Cable tie
31	AV51BU2058	1	Hydraulic hose L=587

Bushing
AV51BU10__

φA 08 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52
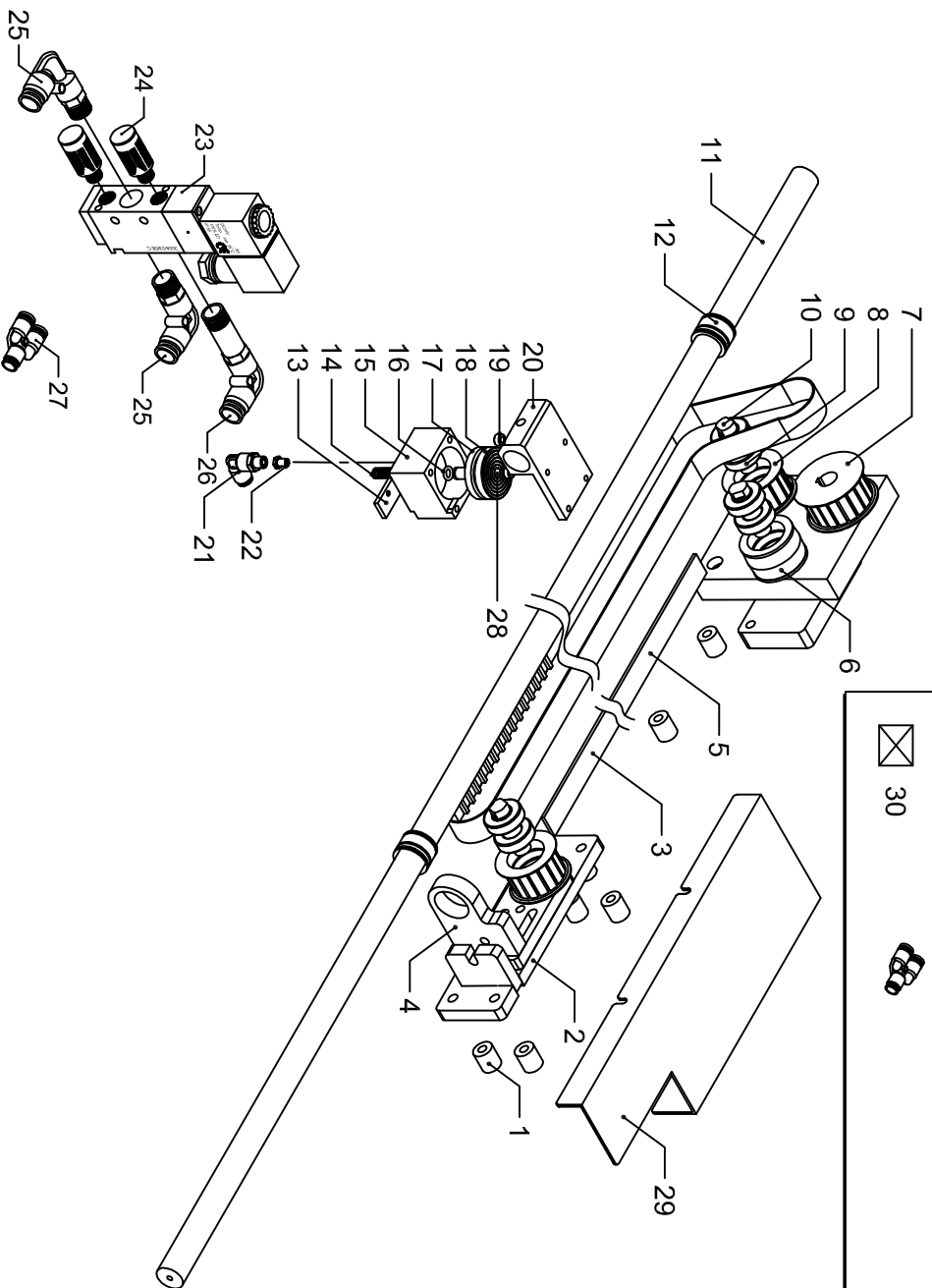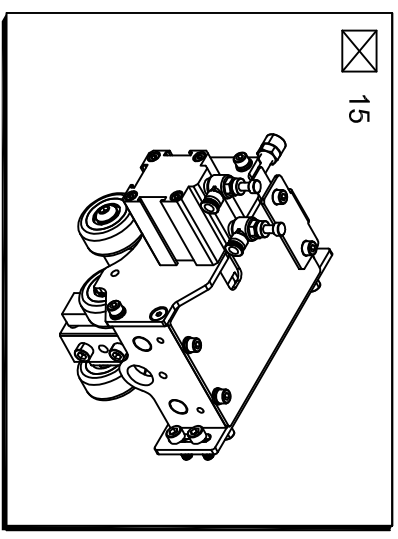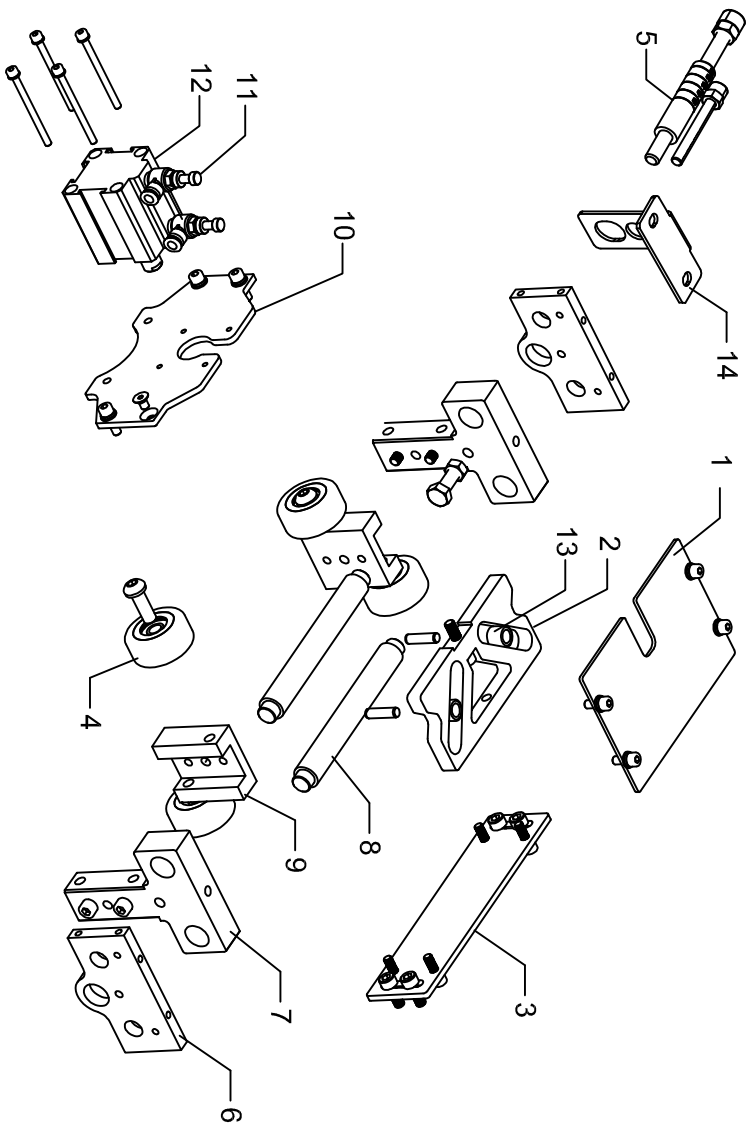09 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39 41 43 45 47 49 51 53

φA

Sleeve
AV51BU1248

First block
AV__BU1449

NOMINAL DIAMETER D.
φA 12 16 20 25 27 32 35 37 39 42 45 51
13 17 21 26 28 33 36 38 43 46 52

PATRIOT-SX

SYCHRONIZATION DEVICE

Tab. 110 10
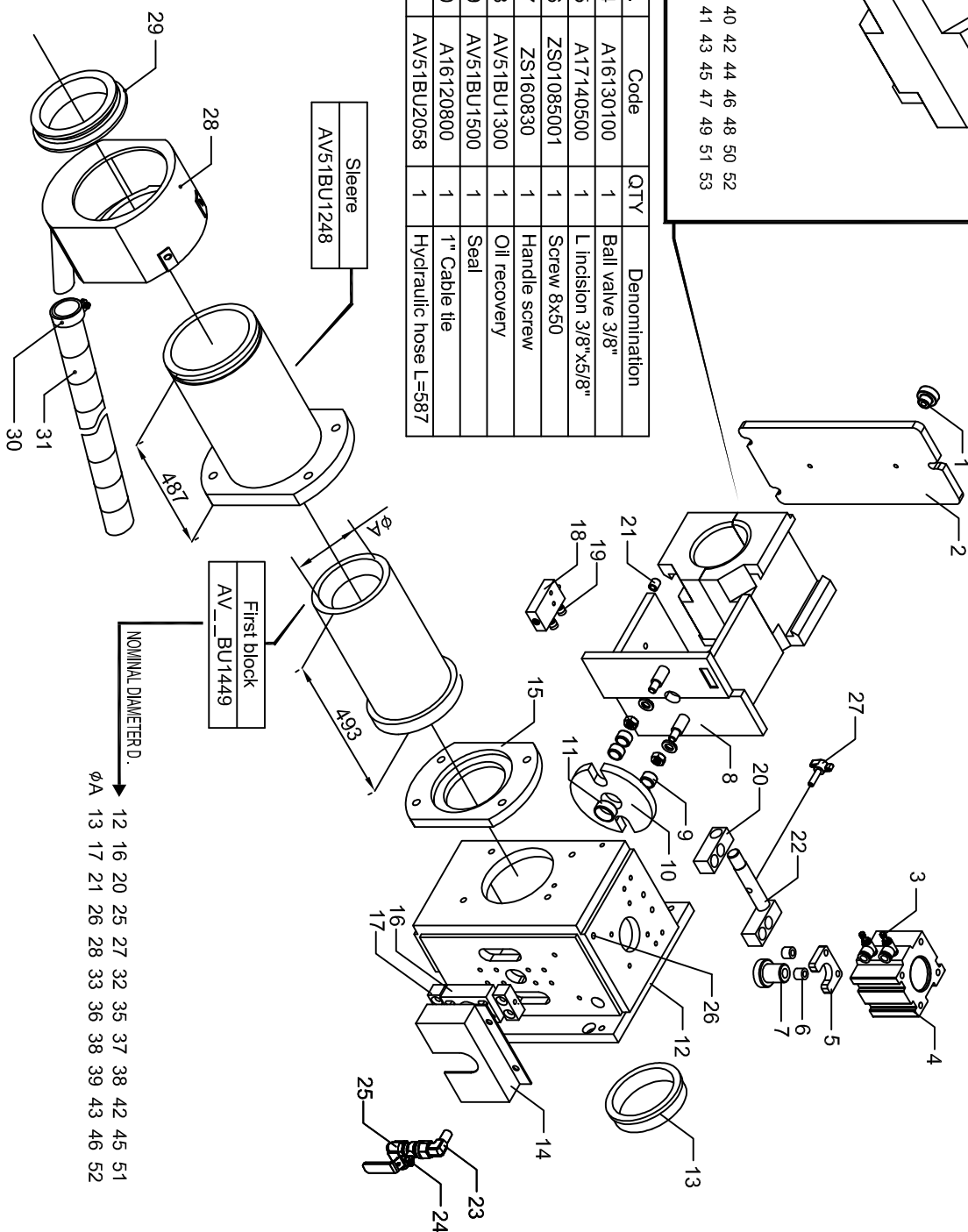
N.	Code	QTY	Denomination
1	AV51SY1000	7	Bushing
2	AV51SY0610	1	Plate
3	AV51SY1400	1	Profile
4	AV51SY0510	1	Support
5	AV51SY1800	1	Toothed belt
6	AV51SY0100	1	Roller
7	AV51SY0300	1	Pulley 19T
8	AV51SY0400	2	Pulley 16T
9	B6003ZZ	6	Bearing
10	AV51SY0200	3	Pin
11	AV51SY0901	1	Shaft
12	AV51SY0800	1	Bronze ring
13	AV51SY1200	1	Guide
14	AV51SY1700	1	Spring
15	AV51SY1300	1	Jacket
16	AV51SY2010	1	Seal
17	AV51SY1510	1	Piston
18	AV51SY1910	1	Seal
19	AV51SY1100	2	Spacer
20	AV51SY0700	1	Support
21	A13121300	1	Bended connector SHP 8-01
22	A15120300	1	Copper connector 1/8"x1/8"
23	A12120100	1	Electro valve
24	A14110200	2	Silencer
25	A13120500	2	Bended connector SPL 8-02 Ø8
26	A13120501	1	Bended connector SPL 8-02 Ø8
27	A13130400	1	Three port Y type SPY-8 Ø8
28	AV51SY1503	1	Guide
29	AV51SY3500	1	Belt cover
30	AV51SY0010	1	Sychronization device

PATRIOT-SX

MOVEABLE ANTI-VIBRATION DEVICE
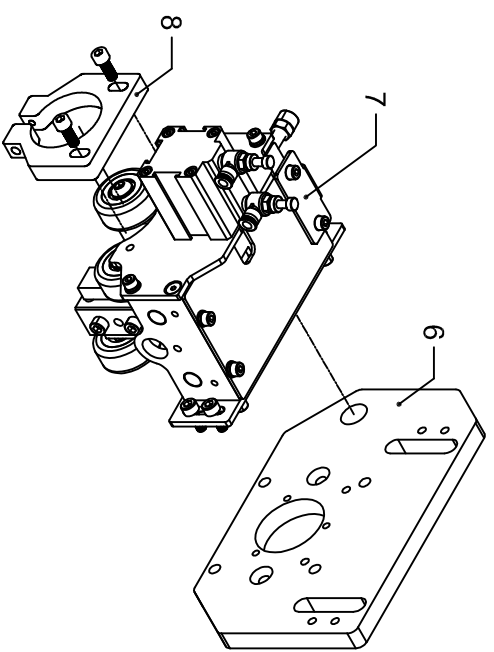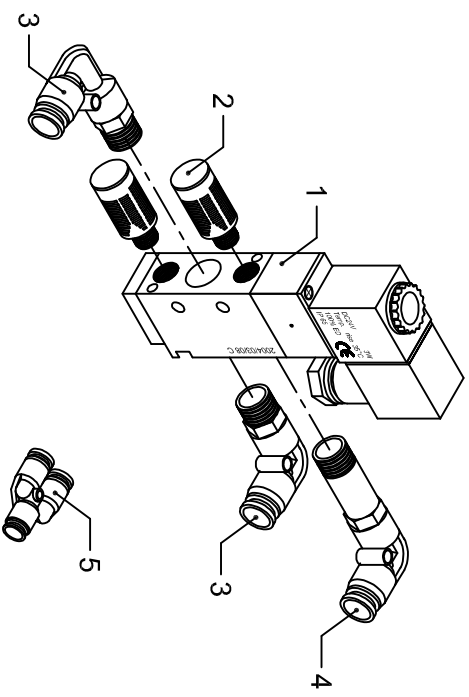
Tab. 123 / 7

Bushing Block
AV51MO08__

∅ 09 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39 41 43 45 47 49 51 53

08 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52

N.	Code	QTY	Denomination
1	AV51MO1000	1	Plate
2	AV51MO0100	1	Cam
3	AV51MO0500	1	Plate
4	HP8127000F	4	Roller
5	AV51MO2200	1	Tube
6	AV51MO0300	2	Plate
7	AV51MO0200	2	Arm
8	AV51MO0700	2	Bar
9	AV51MO1100	2	Bracket
10	AV51MO0600	1	Plate
11	A12130100	2	Flow throttle
12	A11131100	1	Cylinder SDA32x30
13	AV51MO3000	2	Roller
14	AV51MO2300	1	Plate
15	AV51MO002A	1	Anti-vibration device

PATRIOT-SX

MOVABLE ANTI-VIBRATION + SOLENOID VALVE

N.	Code	QTY	Denomination
1	A12120100	1	Electro valve
2	A14110200	2	Silencer
3	A13120500	2	Bended connector SPL 8-02 Ø8
4	A13120501	1	Bended connector SPLL 8-02 Ø8
5	A13130400	1	Three port Y type SPY-8 Ø8
6	AV51MO1300	1	Plate
7	AV51MO002A	1	Anti-vibration device
8	AV37TE0700	1	Clamp
9	AV51MO1002	1	Movable anti-vibration + Solenoid valve

Tab. 124 7

PATRIOT-SX

OIL TANK

N.	Code	QTY	Denomination
1	AV51OL0900	1	Pump SP-4180
2	AV51OL0100	1	Oil tank
3	AV51OL0220	1	Cover
4	AV51OL0240	1	Cover
5	A16110100	1	Oil meter
6	AV51OL0400	1	Remnan tank
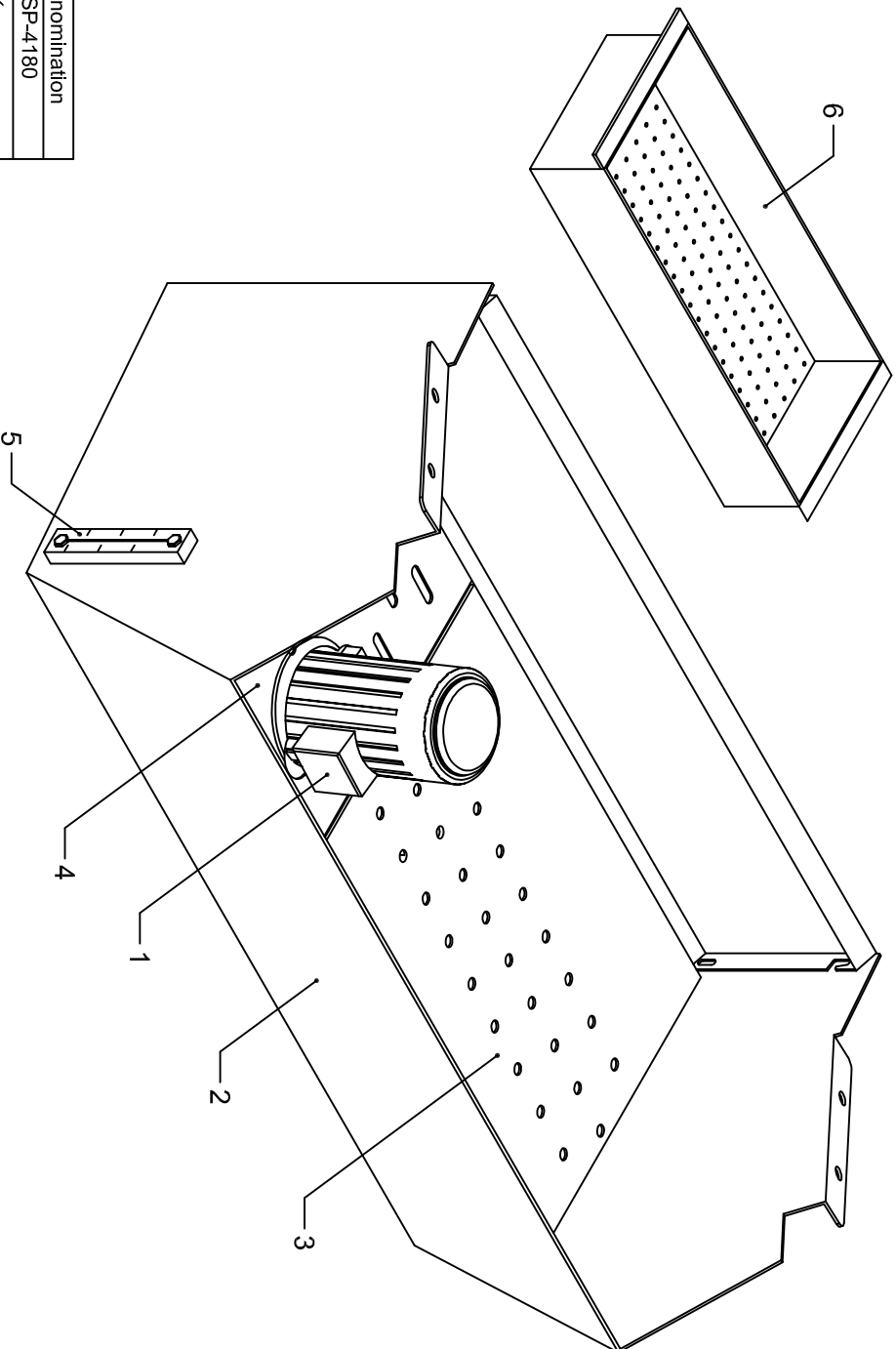
Tab. 130 6

EDGE TECHNOLOGIES

Patriot Series *338 & 551*

OPERATIONS MANUAL

175~500 mm

635 mm

4222mm

180 mm

370mm

3800mm

850mm~1300mm

Technical data subject to change without notice

EDGE TECHNOLOGIES   PRODUCTIVITY SOLUTIONS PROVIDER

11600 ADIE ROAD   MARYLAND HEIGHTS, MO 63043

314.692.8388   f 314.692.5152   www.edgetechnologies.com